NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE SUPERFUND PROGRAM
ECL §27-1301 *et seq.*

In the Matter of a Remedial Program for

ORDER ON CONSENT AND ADMINISTRATIVE SETTLEMENT
Index No. R9-20240227-28

DEC Site Name: Amherst Central Park
DEC Site No.: 915291
Site Address: 772 North Forest Road
Town of Amherst, New York

Hereinafter identified in further detail and referred to as the "Site"

by: the Town of Amherst, New York

Hereinafter referred to as the "Respondent"

---

1. A. The New York State Department of Environmental Conservation ("Department") is responsible for inactive hazardous waste disposal site remedial programs pursuant to Article 27, Title 13 of the Environmental Conservation Law ("ECL") and Part 375 of Title 6 of the Official Compilation of Codes, Rules and Regulations ("6 NYCRR") and may issue orders consistent with the authority granted to the Commissioner by such statute.

B. The Department is responsible for carrying out the policy of the State of New York to conserve, improve, and protect its natural resources and environment and control water, land, and air pollution consistent with the authority granted to the Department and the Commissioner by Article 1, Title 3 of the ECL.

C. This Order is issued pursuant to the Department's authority under, *inter alia*, ECL Article 27, Title 13 and ECL 3-0301, and resolves Respondent's liability to the State as provided at 6 NYCRR 375-1.5(b)(5).

2. The Site is not currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State and is instead identified as a “P” or potential site with a Site Number of 915291. Respondent purchased the Site in April 2023.

3. Respondent consents to the issuance of this Order without (i) an admission or finding of liability, fault, wrongdoing, or violation of any law, regulation, permit, order, requirement, or standard of care of any kind whatsoever; (ii) an acknowledgment that there has been a release or threatened release of hazardous waste at or from the Site;

and/or (iii) an acknowledgment that a release or threatened release of hazardous waste at or from the Site constitutes a significant threat to the public health or environment.

4. Respondent and the Department agree that the primary goals of this Order are to appropriately characterize the contamination at the Site under Department oversight and in coordination with Respondent's proposed construction activities and its intended use of the Site.

5. Solely with regard to the matters set forth below, Respondent hereby waives any right to a hearing as may be provided by law, consents to the issuance and entry of this Order, and agrees to be bound by its terms. Respondent consents to and agrees not to contest the authority or jurisdiction of the Department to issue or enforce this Order, and agrees not to contest the validity of this Order or its terms or the validity of data submitted to the Department by Respondent pursuant to this Order.

NOW, having considered this matter and being duly advised, **IT IS ORDERED THAT**:

I. Real Property

The Site subject to this Order has been assigned identification number 915291, consists of approximately 170.5 acres, and is as follows:

Subject Property Description (A map of the Site is attached as Exhibit A)

Tax Map/Parcel No.: 68.01-1-1.2
772 North Forest Road, Town of Amherst
Owner: The Town of Amherst

II. Submittals to the Department; Deviations from Standard Clauses

A. A Construction Characterization Work Plan ("CCWP") submitted on behalf of Respondent and approved by the Department is attached hereto as Exhibit B and is incorporated herein and made a part of this Order.

B. The CCWP referenced in the preceding section II.A covers an approximately 18-acre portion of the Site, which Respondent has identified as Phase 1 of a project intended to convert the Site into a public park. Respondent shall submit additional Work Plans covering the remaining portions of the Site within a reasonable time, pursuant to a timeline to be mutually agreed upon by Respondent and the Department. Respondent and the Department shall cooperate in good faith to finalize and implement said additional Work Plans. Upon approval of said additional Work Plans by the Department, the approved Work Plans shall be automatically incorporated into and made a part of this Order, and Respondent shall comply with all provisions of said approved Work Plans in its performance of work at the Site, subject to the rights and defenses of Respondent.

C. Respondent shall not be required to submit a regulatory Citizen Participation Plan pursuant to Section I of Appendix A - "Standard Clauses for All New York State Superfund Administrative Orders" ("Standard Clauses") attached hereto, or a Records Search Report pursuant to Section II of the Standard Clauses. Respondent and the Department may mutually agree in writing on other departures from requirements set forth in the Standard Clauses.

D. Respondent shall not be required to submit a Change of Use notification to the Department pursuant to Section XI of the Standard Clauses for any proposed activity or change of use on the Site that has already been disclosed to the Department in a Work Plan (including but not limited to the CCWP). For any proposed activity or change of use on the Site that has not already been disclosed to the Department in a Work Plan (including but not limited to the CCWP), Respondent shall submit a Change of Use notification to the Department using the Department's publicly available notification form.

III. Payment of State Costs

Respondent shall not be responsible for reimbursing the Department for oversight costs incurred by the Department pursuant to this Order.

IV. Communications

A. All written communications required by this Order shall be transmitted by United States Postal Service, by private courier service, by hand delivery, or by electronic mail.

1. Communication from Respondent shall be sent to:

Andrew Zwack, DEC Project Manager (electronic copy only)
New York State Department of Environmental Conservation
Division of Environmental Remediation
700 Delaware Ave
Buffalo, NY 14209-2202
andrew.zwack@dec.ny.gov

Christine Vooris (electronic copy only)
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza
Corning Tower Room 1787
Albany, NY 12237
christine.vooris@health.ny.gov

2. Communication from the Department to Respondent shall be sent to:

Supervisor Brian J. Kulpa
Town of Amherst
5583 Main Street
Williamsville, NY 14221
bkulpa@amherst.ny.us

Town Attorney Martin Polowy, Esq.
Town of Amherst
5583 Main Street
Williamsville, NY 14221
mpolowy@amherst.ny.us

Doreen A. Simmons, Esq.
Hancock Estabrook, LLP
1800 AXA Tower I
100 Madison Street
Syracuse, NY 13202
dsimmons@hancocklaw.com

B. The Department and Respondent reserve the right to designate additional or different addressees for communication on written notice to the other. Additionally, the Department reserves the right to request that Respondent provide one or more paper copies of any work plan or report.

C. Each party shall notify the other within ninety (90) days after any change in the contact information listed in this section IV.

V. Satisfactory Completion

A. If the Department determines that one or more portions of the Site have been investigated and/or remediated such that no further remedial action is presently necessary, other than implementation of a Site Management Plan (if a Site Management Plan is required by the Department for such portion or portions of the Site), the Department may issue a Satisfactory Completion/No Further Action Letter for any such portion of the Site, and may issue multiple such letters at different times for different portions of the Site. To request a Satisfactory Completion/No Further Action Letter from the Department for a portion of the Site, Respondent shall submit a Construction Completion Report identifying the boundaries and size of the portion to be covered by the letter and describing all activities completed and sampling performed on that portion of the Site pursuant to a Department-approved Work Plan. The Construction Completion Report shall contain sufficient information to allow the Department to determine whether the portion of the Site in question requires further action based on sampling data and the proposed land use. Satisfactory Completion/No Further Action Letters issued for portions of the Site pursuant to this section V.A may differ from the Department's draft Satisfactory Completion/No Further Action Letter attached as Exhibit

C and referenced below in section V.B, as needed based on relevant facts and circumstances.

B. If, after the completion of any required investigations, interim remedial measures, and/or construction activity as described in the Department-approved CCWP and other Department-approved Work Plans for the entire Site, the Department determines that the Site will not be listed in the *Registry of Inactive Hazardous Waste Disposal Sites in New York State*, the Department will issue a Satisfactory Completion/No Further Action Letter to Respondent reflecting the Department's determination that, other than implementation of a Site Management Plan (if a Site Management Plan is required by the Department), no further remedial action at the Site is presently necessary. A draft reflecting the typical form and substance of the Department's Satisfactory Completion/No Further Action Letter for the Site is attached hereto as Exhibit C.

VI. Restriction of Site Access

Respondent shall cause all areas of the Site that are not covered by a Department-approved Work Plan (including but not limited to the CCWP) or by a Satisfactory Completion/No Further Action Letter to be at all times fenced or otherwise secured to the Department's satisfaction, to prevent entry by the public. Respondent shall provide at least 60 days' written notice to the Department before allowing public access to any portion(s) of the Site.

VII. Miscellaneous

A. Exhibit A (Site map), Exhibit B (Department-approved CCWP), Exhibit C (draft Satisfactory Completion/No Further Action Letter), and Appendix A (Standard Clauses for All New York State Superfund Administrative Orders) are attached to and hereby made a part of this Order as if set forth fully herein.

B. In the event of a conflict between the main body of this Order (including any and all attachments thereto and amendments thereof) and the terms of Appendix A, the main body of this Order shall control.

C. The effective date of this Order is the 10th day after it is signed by the Commissioner or the Commissioner's designee.

DATED: February 27, 2024

BASIL SEGGOS
COMMISSIONER
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

By: Andrew Guglielmi

Andrew Guglielmi, Director
Division of Environmental Remediation

CONSENT BY RESPONDENT

Respondent hereby consents to the issuing and entering of this Order, waives Respondent's right to a hearing herein as provided by law, and agrees to be bound by this Order.

The Town of Amherst, New York

By: _____

Title: Town Supervisor

Date: 2/16/24

STATE OF NEW YORK)
) ss:
COUNTY OF)

On the _____ day of _____ in the year 20___, before me, the undersigned, personally appeared _____*(full name)* personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

Acknowledgment by a corporation, in New York State:

On the 16th day of February in the year 2024, before me, the undersigned, personally appeared Brian J. Kulpa *(full name)* personally known to me who, being duly sworn, did depose and say that he/she/they reside at 81 Milan, Williamsville NY 14221*(full mailing address)* and that he/she/they is (are) the Supervisor *(president or other officer or director or attorney in fact duly appointed)* of the Town of Amherst *(full legal name of corporation)*, the corporation described in and which executed the above instrument; and that he/she/they signed his/her/their name(s) thereto by the authority of the board of directors of said corporation.

NICOLE MARIA BURROUGHS
Notary Public, State of New York
No. 01BU6040745
Qualified in Erie County
Commission Expires 4-24-26

Notary Public, State of New York

{H5358029.1}

EXHIBIT A
Site Map

Town of Amherst Westwood Site
Intended Use Exhibit
772 North Forest Road (SBL 68.01-1-1.2)
December 1, 2022

NOTES:
THE FOLLOWING DRAWING IS NOT SURVEYED OR PROPERLY ALIGNED TO A COORDINATE SYSTEM. THIS PLAN REFLECTS TAX PARCEL DATA, AERIAL IMAGERY AND OTHER TOWN GEOSPATIAL DATA.

EXHIBIT B

Construction Characterization Work Plan

Construction Characterization Work Plan

Amherst Town Park South (Phase 1)
Portion of 772 North Forest Road
Amherst, Erie County, New York

Prepared for:
Owner: Town of Amherst
5583 Main Street
Williamsville, New York 14221

December 22, 2023

TABLE OF CONTENTS

{H5307494.1}

FIGURES

TABLES

ACRONYM LIST

ASP	Analytical Services Protocol
BCP	Brownfield Cleanup Program
BGS	Below Ground Surface
NYSDEC	New York State Department of Conservation
ELAP	Environmental Laboratory Accreditation Program
REC	Recognized Environmental Condition
SCO	Soil Cleanup Objectives
Site	Portion of 772 North Forest Road, Amherst, New York
SVOC	Semi-volatile Organic Compounds
TCLP	Toxicity Characteristic Leaching Procedure
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1 INTRODUCTION

In April 2023, the Town of Amherst purchased the former Westwood Country Club 170-acre property ("Property") located at 772 North Forest Road, Amherst, New York. **Figure 1** shows the location of the Property (former Westwood County Club). The Town intends to transform the Property into a new public park. The park will be developed in stages. The first section of the park will be a 57.65-acre southern portion of the Property. This portion will be referred to as "Amherst Town Park South." The first phase of Amherst Town Park South (called "Phase 1") will consist of 18 acres of land along Sheridan Drive and North Forest Road. **Figure 2** shows the boundary of Phase 1 and Amherst Town Park South. Phase 1, scheduled for construction in 2024, will be developed in three sub phases: Phase 1.1, 1.2, and 1.3, these sub-phases are presented in **Figure 3**.

This Work Plan describes the soil characterization activities for Phase 1 of Amherst Town Park South only.

The previous owner completed preliminary sampling of surface soils to determine if long-term, historic use of golf-course-related pesticides impacted the property. Contamination was identified and the previous owner entered into the New York State Brownfield Cleanup Program (BCP) in 2015 (NYSDEC Site No. C915291). After several long negotiations between the previous owner and the Town of Amherst, the property was sold to the Town and the 2015 Brownfield Cleanup Agreement was terminated. The Town is executing a regulatory order for the Property with the New York State Department of Environmental Conservation (NYSDEC) prior to the commencement of construction, which shall include regulatory oversight and approval of work plans.

C&S has prepared this Work Plan to provide a soil sampling program to be implemented in the areas of Phase 1.1, 1.2, and 1.3, as shown on Figure 3, in these construction areas. The resulting information will be utilized to develop a Soil Management Plan for construction.

1.1 Site Description/History

The 170-acre Site is located at 772 North Forest Road in the south-central portion of the Town of Amherst, Erie County, New York. The Site is generally bounded by Sheridan Drive (State Route 324) on the south; former Westwood Country Club golf course on the north; North Forest Road (County Road 294) on the east; and Frankhauser Road on the west. **Figure 1** shows the Site boundaries.

The Site is relatively flat with some minor topographic relief commonly associated with golf courses. Three fairways, greens, and rough are located within the Site and have not been maintained since 2014. The Site contains areas developed with a number of structures consisting of the clubhouse and associated buildings. A berm is located onsite

along Sheridan Drive and runs west to east along the full length of the southern Site boundary. The berm is approximately 6 to 10 feet high.

The Site was first partially developed as a golf course in 1921. Prior to 1921, land use was agricultural and residential.

1.2 Site Geography, Geology, and Hydrogeology

Structures on the property include six main buildings, several sheds, a swimming pool and tennis courts associated with the former Westwood Country Club, as shown on **Figure 2**.

Topography on the Site averages approximately 600 feet above sea level. Overall, the topography of the Site is relatively level, with the exception of previous modifications resulting from the construction, operation, and maintenance of the golf course.

The Soil Survey of Erie County (U.S. Department of Agriculture, Soil Conservation Service www.websoilsurvey.nrcs.usda.gov) identifies soils on the Site as loamy fine sand, silt loam, and urban land. The results of the soil borings conducted during the geotechnical evaluation were consistent with the mapped soils information and is shown in **Appendix A**. Specifically, the soil borings encountered native soils consisting of glacial till deposited silty, clayey silt, silt and silty or clayey sand soils overlying the shale bedrock. In most cases, the soil borings indicated the presence of surface topsoil and man-placed fill or disturbed indigenous soils above native soils, and consistent with topographic modifications associated with golf course construction.

Bedrock in the vicinity of the Site consists generally of shale bedrock and the depth to bedrock in the area ranges from approximately 15 to 65 feet.

Based on a review of NYSDEC data, the Site is not underlain by any mapped principal or primary aquifers. Groundwater at and in the vicinity of the Site is not used for public drinking water supply. Groundwater was evaluated as part of a geotechnical evaluation of the Site. As part of its geotechnical analysis, three groundwater observation wells were installed. Results indicate that the water table is present at 17 to 22 feet beneath the surface, although perched water is present in the upper soils, in some instances within a few feet of the surface.

1.3 Proposed Site Redevelopment

The Town of Amherst is planning a world class park at the Property. Following many meetings and engagements with residents, stakeholders and constituents the Town identified the following objectives for the Amherst Town Park South – Phase 1.1,1.2, and 1.3:

- Construct a Community Theatre, Winter Market and Skating Area
- Enhance and create related parking, roadways and upgrade needed utilities

2 SUMMARY OF ENVIRONMENTAL CONDITIONS

Preliminary environmental information currently exists for the Property. Previous investigations, largely not specific to the Phase 1.1, 1.2, and 1.3 project, provides useful background information for the Work Plan.

Previous investigations were conducted in 2015 through 2017, and in 2022, included surface soil, subsurface soil, sediment, groundwater, and surface water sampling with analysis for a wide variety of contaminants throughout the Property. These results were provided to the NYSDEC, and the following briefly summarizes the characterization results.

2.1 Soil

The historic soil sampling identified the presence of a number of metals in soils at concentrations above the NYSDEC SCOs at the Property. The following summarizes and discusses the data generated during the 2015, 2016, and 2017 Pilot Studies. Concentrations are compared to NYSDEC Restricted Residential Use Soil Cleanup Objectives (SCOs), which apply to areas in which active recreation is expected. However, much of the planned development of the Amherst Town Park South is expected to be passive recreation, which uses the less stringent Commercial Use SCOs as guidance.

- A number of contaminants were detected at concentrations above the Restricted Residential Use SCOs in one or more samples collected at the Property, including:
    - Arsenic
    - Cadmium
    - Chromium
    - Cyanide
    - Mercury
    - Zinc
- The presence of the metals listed above is consistent with the historic use of pesticides, herbicides, and fungicides at a golf course. Although these metals are no longer commonly used in pesticides, herbicides, and fungicides, these metals once formed the basis for these products.
- Hole 9 sample results in the vicinity of Phase 1.1, 1.2, and 1.3 contained exceedances for chromium above Restricted-Residential SCOs and cadmium above Commercial SCOs.
- Generally, the depths of elevated metals concentrations within the Property are:
    - Greens: within the top 12 to 18 inches

  - Fairways: within the top six inches
  - Tee boxes: within the top six to 12 to 18 inches
  - Rough: within the top two to six inches

- Contaminant concentrations are generally highest in the greens, followed by the tees and fairways. The lowest concentrations were detected in the rough areas.

- One composite soil sample was collected from the grid locations with the highest metal concentrations from the greens and tees. The samples were analyzed for waste characterization using the Toxicity Characteristic Leaching Procedure (TCLP). Results indicate that, although soils from this Site are contaminated with heavy metals, the concentrations do not exceed hazardous levels.

2.2 Sediment

The sediment sampling arsenic results were generally low and ranged from 1.3 to 11.3 mg/kg. These concentrations are below the NYSDEC Unrestricted Use SCO. Using the NYSDEC's June 24, 2014 "Screening and Assessment of Contaminated Sediments Guidance," eleven of the concentrations are characterized as Class A, which is defined as sediments that present little to no potential for risk to aquatic life.

2.3 Groundwater

None of the contaminants found in the soils at elevated concentrations (metals) were detected in the groundwater samples. The groundwater samples did contain concentrations of magnesium and iron above NYSDEC groundwater standards; however, it is common for groundwater in this region to contain high concentrations of metals such as calcium, iron and magnesium. Arsenic, chromium, and lead were also detected in groundwater samples, but were at levels lower than NYSDEC groundwater standards.

2.4 Surface Water

Two surface water samples were collected from the water hazards on the former hole #8 and #9 in May of 2022. Results from the hole #9 water hazards show exceedances for PFOs and Benzo(k)fluoranthene. The NYSDEC has determined that this sampling is sufficient for site characterization efforts, however, should the project call for draining of the water hazards and discharging to the site or another body of water, additional sampling will be required. If the water is to be discharged to a publicly owned treatment work (POTW) facility, then the NYSDEC would not require sampling outside of the POTW required.

3 PRE-CONSTRUCTION SOIL CHARACTERIZATION

Previous soil investigations encountered historic heavy metal-impacted soils at the Property. The objectives of the scope of work described in this Work Plan are to evaluate contaminant impacts to soil to determine appropriate soil management practices during construction activities scheduled to commence in 2024 within Phase 1.1,1.2, and 1.3.

3.1 Field Investigation

This Work Plan intends to consider the previous site characterization information by the advancement of soil borings (drilled and hand augered) and collecting and analyzing soil samples. The field investigation activities will conform to procedures in NYSDEC DER-10.

Sample locations described in the sections below will be surveyed using a hand-held Global Positioning System (GPS) unit. Horizontal and vertical survey data will be collected using the most current datum.

3.1.1 Soil Boring Program

Soil samples will be collected from grid locations throughout Phase 1.1, 1.2, and 1.3.

The general details of the sampling program include the following:

- Sampling on a 200-foot by 200-foot grid, shown in **Figure 4**
- Hand auger soil borings will be advanced in 18 locations across the Site. The sampling efforts will include the following:
    - C&S will use a decontaminated stainless-steel shovel or trowel to dig into the soil surface to allow for visual examination and screening of the soil.
    - Soil samples will be collected from the top 0-2 inches of soil immediately below the vegetative layer and from the layer 2-6 inches below the surface.
    - Samples will be immediately placed in pre-cleaned glassware provided by the laboratory.
    - C&S will submit soil/fill samples under standard chain-of-custody procedures for laboratory analyses using United States Environmental Protection Agency (USEPA) methods.
    - The samples will be analyzed for Target Analyte List (TAL) Metals, mercury, cyanide and four samples for hexavalent chromium.
- Drilled soil borings will be advanced in 5 locations. These locations are around the Hole 9 green and a section of the existing berm that will be removed for a new road to serve the park.

- A qualified environmental drilling firm will be retained to advance the borings using direct-push drilling techniques.
- C&S will provide a qualified scientist or engineer to supervise and document the boring program, and prepare logs describing the overburden stratigraphy, field measurements, visual /olfactory observations, and other pertinent observations.
- Soil/fill from the borings will be continuously assessed in the field for visible impairment, olfactory indications of impairment, and total VOCs using a photoionization detector (PID). Positive indications from any of these screening methods are collectively referred to as "evidence of impairment." If VOCs detected in screening at 10 ppm or above, a corresponding sample will be analyzed for TCL VOCs. Evidence of impairment that is gathered at the time of the fieldwork will be used with observed hydrogeologic conditions to assist in determining the location and depth for sample collection. Note that the presence of historic fill material (HFM) is considered evidence of impairment. HFM may include brick, coal, ash, cinder, and other such debris.
- From each sample location in the area of Hole 9 green, soil samples will be collected from the following depth horizons:
  - Horizon A: 0 to 2 inches below grade
  - Horizon B: 2 to 6 inches below grade
  - Horizon C: 6 to 12 inches below grade
  - Horizon D: 12 to 18 inches below grade
  - Horizon E: 18 to 24 inches below grade
- Soil samples from Horizon C and D will be collected and archived until it is determined if further evaluation will be required at deeper depths.
- From each sample location on the berm, one soil samples will be collected from 0-6 inches or from the depth of any HFM encountered. Boreholes will be advanced until native soil is reached. Observations will be recorded for soil characterization.
- Any drilling equipment that has the potential to come in contact with the soils samples wither either be decontaminated prior to each use or will disposable, dedicated materials.
- C&S will place the samples for analysis in pre-cleaned bottles provided by the laboratory with a decontaminated stainless-steel spoon or by gloved hand.
- C&S will submit soil samples under standard chain-of-custody procedures for laboratory analyses using United States Environmental Protection Agency (USEPA) methods.
- The samples will be analyzed for Target Analyte List (TAL) Metals, mercury, cyanide and two samples for hexavalent chromium.

3.1.2 Sediment Sampling Program

C&S will characterize sediment conditions through collection via shovel from the pond. The sediment sampling efforts will include the following:

- C&S will implement a sampling program to collect one sample from the sediment surface along the edge of the pond.
- C&S will utilize a shovel to collect the sediment sample.
- C&S will provide a qualified scientist or engineer to supervise and document the sediment sampling program, and prepare logs describing the sediment stratigraphy, field measurements, visual /olfactory observations, and other pertinent observations.
- The sample will be collected and place in pre-cleaned bottles provided by the laboratory with a decontaminated stainless-steel spoon or by gloved hand.
- C&S will submit sediment samples under standard chain-of-custody procedures for laboratory analyses using United States Environmental Protection Agency (USEPA) methods.
- Sample analysis will be done by an environmental laboratory approved by the New York State Department of Health (ELAP)
- The samples will be analyzed for Target Analyte List (TAL) Metals, mercury, cyanide and hexavalent chromium.

4 QUALITY ASSURANCE AND QUALITY CONTROL PROTOCOLS

To ensure that suitable and verifiable data results are obtained from the information collected at the Site, quality assurance procedures are detailed in this section.

4.1 Sampling Methods, Analytical Procedures and Documentation

4.1.1 Sampling Methods

Sampling procedures will be conducted in accordance with the NYSDEC *Sampling Guidelines and Protocols Manual*. Collection of representative samples will include the following procedures:

- Ensuring that the sample taken is representative of the material being sampled;
- Using proper sampling, handling and preservation techniques;
- Properly identifying the collected samples and documenting their collection in field records;
- Maintaining chain-of-custody; and
- Properly preserving samples after collection.

Soil Sampling

Soil sampling will be performed using two methods: (1) field screening using a PID; and (2) grab samples. Whether soil samples are collected from the excavator bucket, direct-push rig sleeves, or split-spoons, they will be collected as grab samples that are split and placed into jars supplied by the laboratory as well as into individual zip-lock bags for screening. Screening soil samples will be allowed to sit in sealed zip-lock bag for a short period of time (minimum of five minutes). Head space measurements will then be taken from each zip-lock bag. If VOCs detected in screening at 10 ppm or above, a corresponding sample will be analyzed for TCL VOCs. To prevent cross contamination, zip-lock bags will not be reused and will be properly disposed. Calibration of all electronic field screening equipment will be completed daily and will be done to manufacturer's specifications.

As detailed in the *Sampling Guidelines and Protocols Manual*, grab samples will be placed in 4-ounce and 8-ounce, wide-mouth, glass jars. Sample jars will immediately be placed on ice in a cooler.

To satisfy DER-10 requirements, two Matrix Spike (MS), and two Matrix Spike Duplicate samples for TAL Metals, mercury, and cyanide will be collected.

4.1.2 Analytical Procedures

Laboratory Analysis

Laboratory analysis will be conducted by a third-party laboratory that is accredited by the NYSDOH Environmental Laboratory Accreditation Program (ELAP). Laboratory analytical methods will include the most current NYSDEC Analytical Services Protocol (ASP).

Soil and groundwater samples sent to a certified laboratory will be analyzed in accordance with EPA SW-846 methodology for the following contaminants:

- Mercury (USEPA Method 7471A);
- Hexavalent Chromium (USEPA Method 7196A); and
- Metals (EPA Method 6010B).
- Cyanide (EPA 9010C/9012B)

4.1.3 Documentation

Custody Procedures

As outlined in NYSDEC *Sampling Guidelines and Protocols,* a sample is in custody under the following conditions:

- It is in your actual possession;
- It is in your view after being in your physical possession;
- It was in your possession and then you locked or sealed it up to prevent tampering; or
- It is in a secure area.

The qualified environmental professional will maintain all chain-of-custody documents that will be completed for all samples that will leave the Site to be tested in the laboratory.

5 REPORTING

Based on the results of the work described above, C&S will prepare a report along with a final draft Soil Management Plan to describe the methodologies and results of the Construction Characterization. The Report will describe:

- Investigative methods;
- Observations and findings; and
- Analytical results.

A third-party data consultant will prepare a Data Usability Summary Report (DUSR). The following items will be reviewed

- Laboratory Narrative Discussion
- Custody Documentation
- Holding Times
- Surrogate Standard Recoveries
- Matrix Spike Recoveries. Duplicate Recoveries
- Preparation/calibration Blanks
- Laboratory Control Samples (LCSs)
- Calibration/Low Level Standards
- ICP Serial Dilution
- Instrument MDLs
- Sample Result Verification.

A New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory will perform the analytical testing. The laboratory results for the samples will be reported in a Category B deliverables package to facilitate validation of the data, and a third-party validator will review the laboratory data and prepared a Data Usability and Summary Report (DUSR). The validator will evaluate the analytical results for the field samples and quality assurance / quality control samples and compared the findings to USEPA guidance to determine the accuracy and validity of the results.

The Soil Management Plan portion of the Report will include the following elements:

- Description of soil screening methods, if any
- Identification of potential remedial measures, if any
- Description of onsite material handling
- Health and Safety Plan

6 SCHEDULE

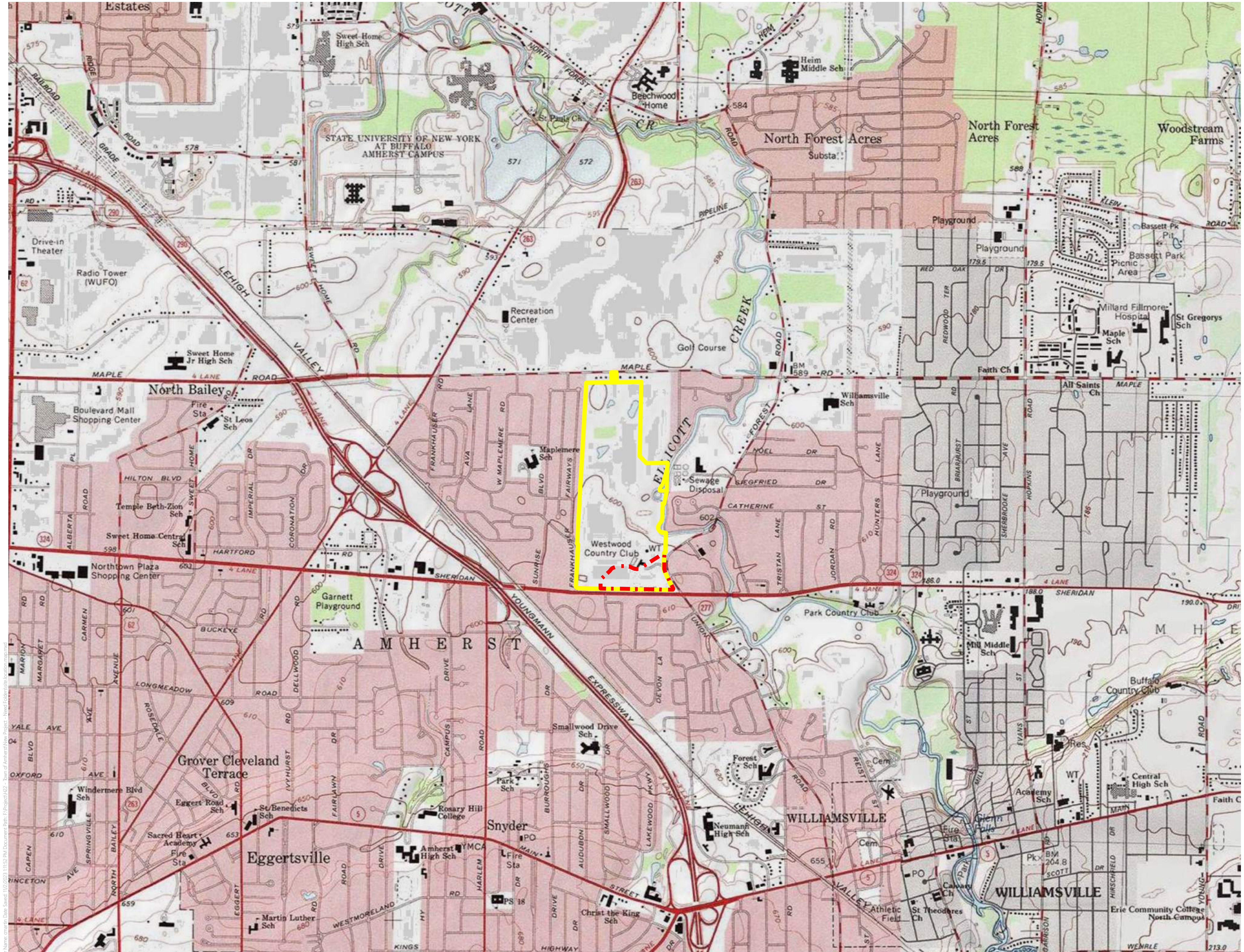
The field program, once initiated, should be completed within one week. Laboratory reports will be received within one month of the completion of the field efforts, and the characterization report and accompanying Soil Management Plan will be submitted within two weeks of receipt of the analytical results. The Soil Management Plan may be initiated and submitted in draft form prior to the receipt of analytical results to expedite the review and approval of this document. Other project milestones include:

Task	Due Date
Submission of Construction Characterization Work Plan (CCWP)	November 8, 2023
DEC Approval of CCWP	December 22, 2023
Upon approval of the CCWP (December 8) the Town commences Construction documentation for Bidding; surveying	Start Date: December 22
On site activities: Implementation of CCWP Sampling / Submission of Draft Construction Soil Management Plan (CSMP)	Week of December 25, 2023
Negotiation/ Execution of "P" Order	December 31, 2023
Submission of Characterization Report and Final Draft CSMP	February 1, 2024
DEC Approval of Characterization Report and CSMP	March 1, 2024
Commencement of on-site physical construction activities	June 1, 2024
Construction: Phase 1.2 Theatre (PRIORITY) completion	November 30, 2024
Concrete/steel or concrete/wood building complete	July 31, 2025

** *NOTE: Winter Market, Play Surface, Splashpad, Parking, Utility and Roadway designs are ongoing – various construction to commence late 2024 to early 2025*

{H5307494.1}

FIGURES



C&S COMPANIES®

Figure 1

Site Location

2024 Phase 1 Constrution

Former Westwood Country Club Property

N

0 1,000 2,000 4,000 Feet

1 in. = 2,000 feet
When printed at 11 in. by 17 in.

Amherst Central Park South Phase 1 Construction Characterization

Sources: . Created by C&S Engineers, Inc.

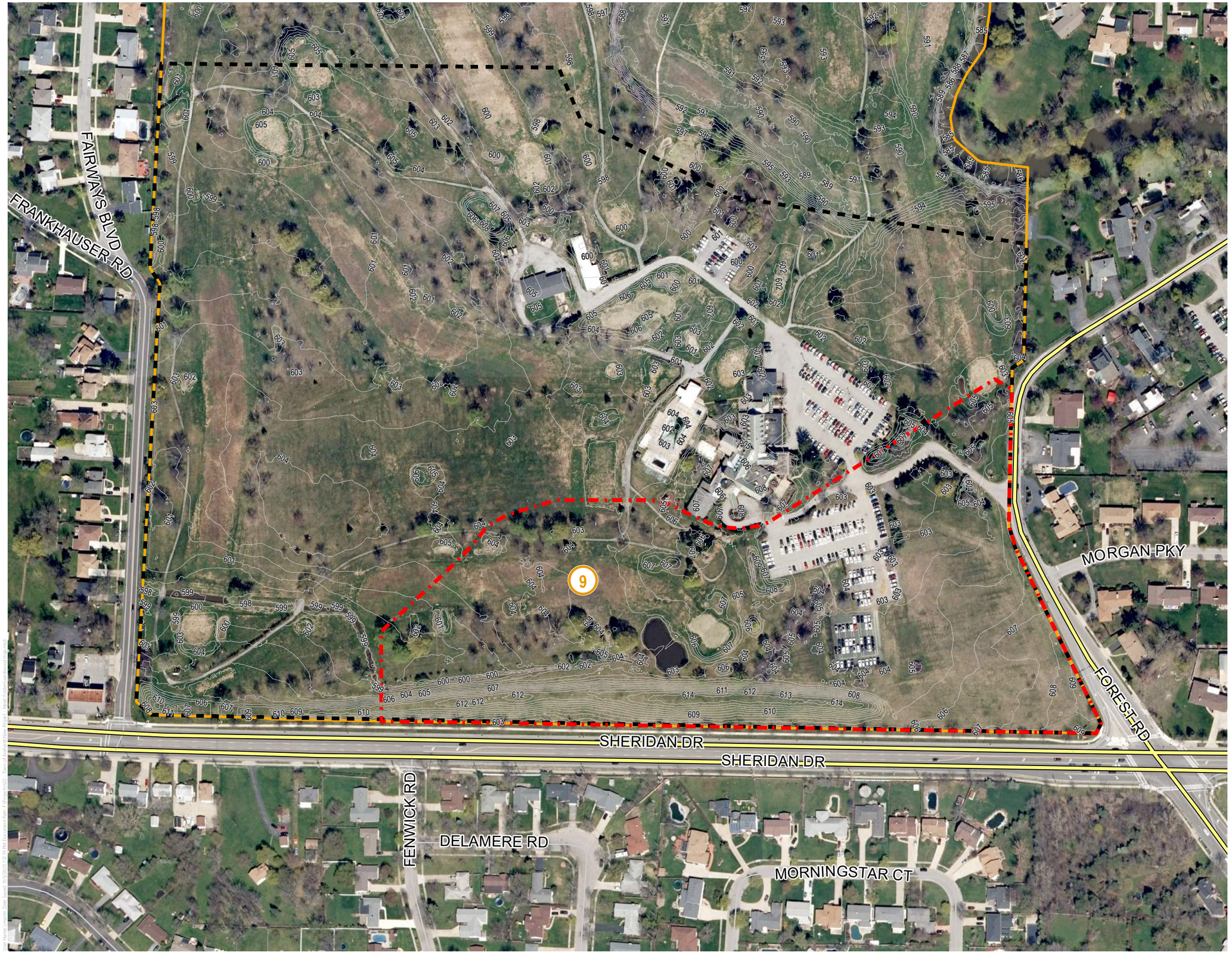


Figure 2

Site Map

- 2024 Phase 1 Construction
- Amherst Central Park South
- Former Westwood Country Club Property
- Elevation Contour
- 11 Golf Course Hole Number

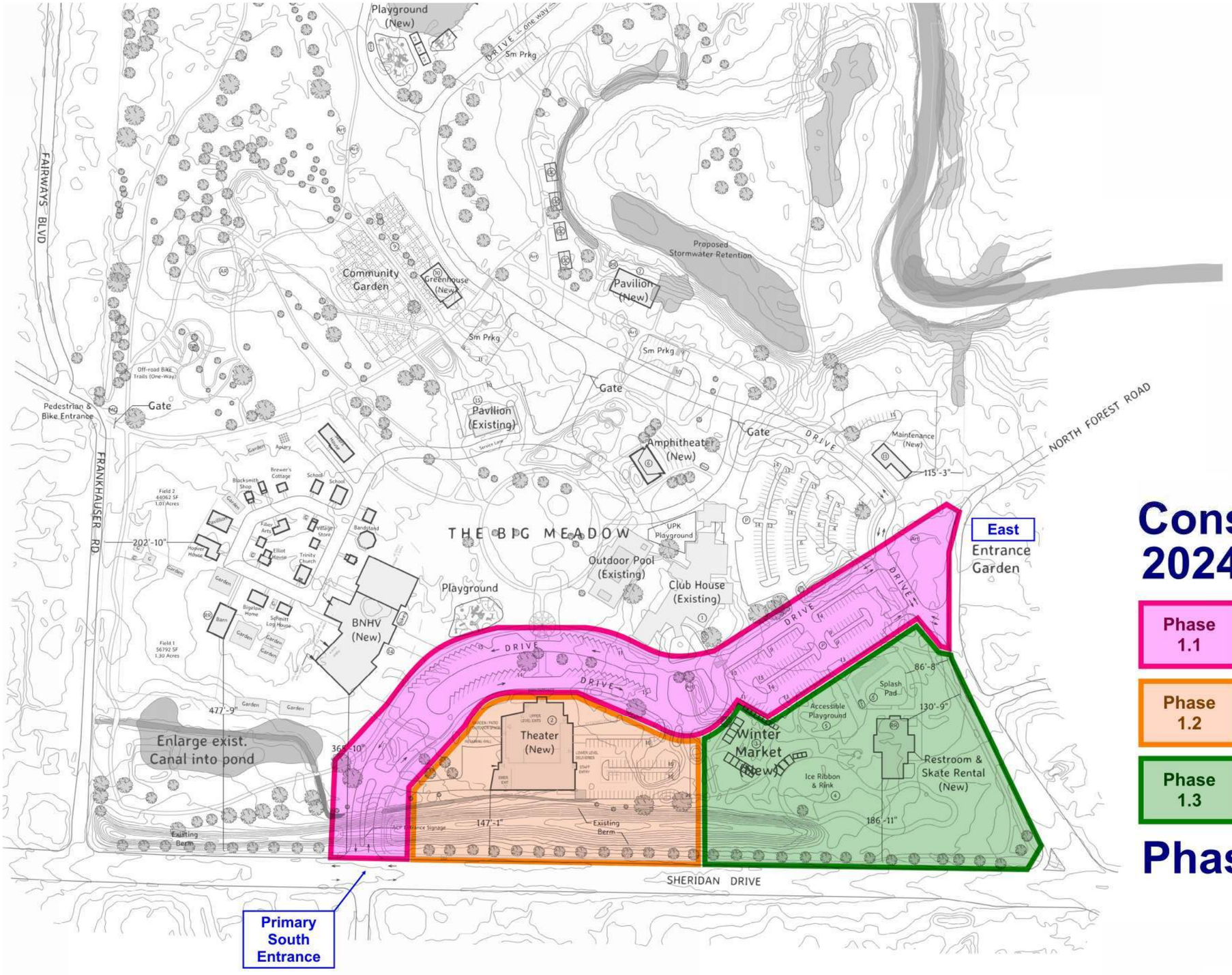
N

0 100 200 400 Feet

1 in. = 200 feet
When printed at 11 in. by 17 in.

Amherst Central Park South Phase 1 Construction Charactaerization

Sources: . Created by C&S Engineers, Inc.



Construction 2024 Phasing Plan

Phase 1.1 — **Construction Preparation**
Utilities, Access Drive and Staging Area

Phase 1.2 — **Theater**
Split-Level Building, Geothermal, Retaining Walls

Phase 1.3 — **Recreation Area**
Winter Market, Playground, Splash Pad, Restroom & Ice Ribbon

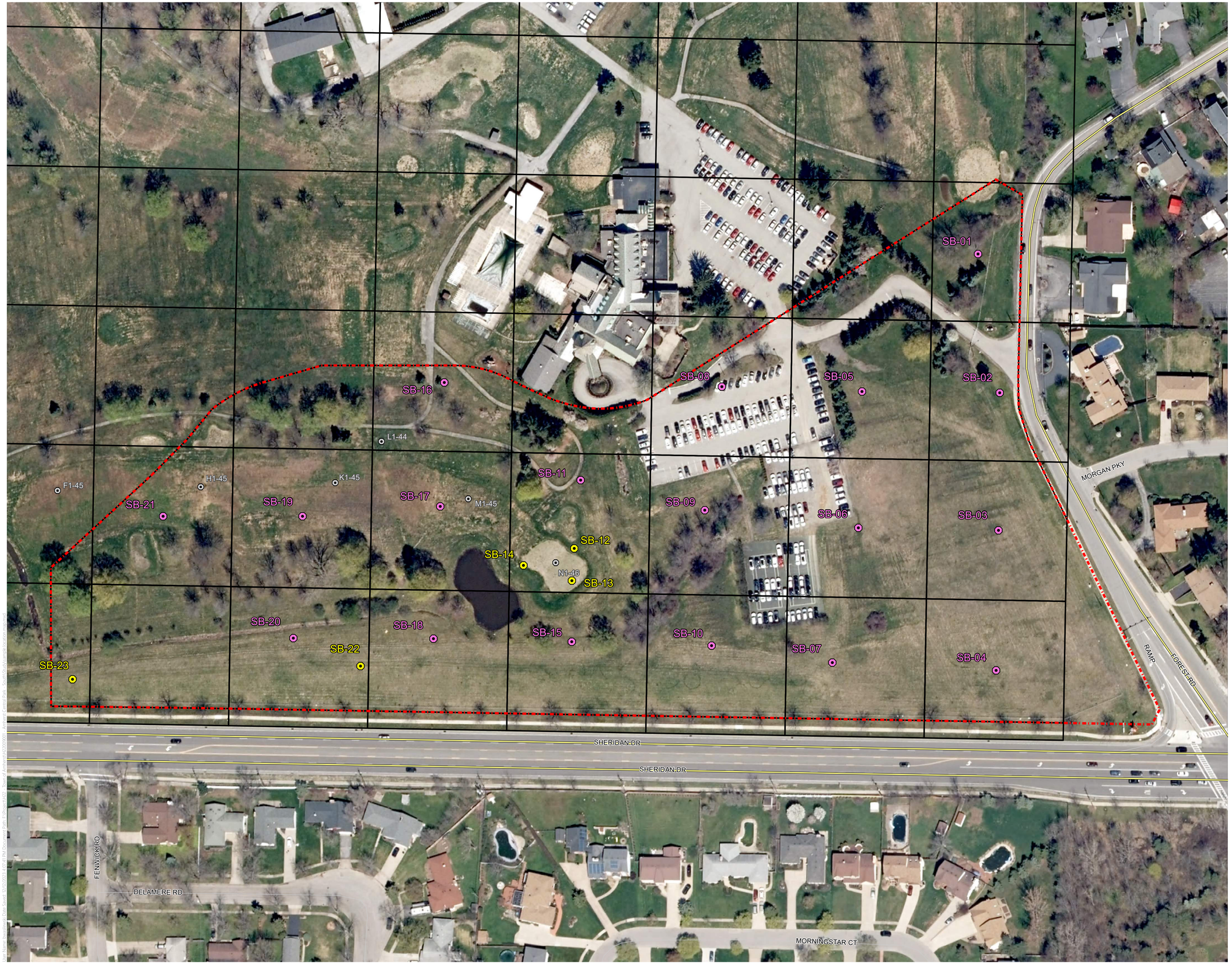
Phase 1 = 18 acres

C&S COMPANIES®

Figure 4

Soil Sample Locations

- 2024 Phase 1 Construction
- Sample Grid 200-ft x 200-ft
- Sample Grid 200-ft x 200-ft
- Proposed Soil Sample Locations (Hand Auger)
- Proposed Soil Sample Locations (Drill Rig)
- Historic Soil Sample Locations



N

0 30 60 120 Feet

1 in. = 60 feet

When printed at 22 in. by 36 in.

Amherst Central Park South Phase 1 Construction Characterization

Sources: . Created by C&S Engineers, Inc.

TABLES

Table 1
Proposed Sampling Program

Matrix	Sample Type	Lab Analysis	No. Samples	Field Duplicates	Matrix Spike	Matrix Spike Duplicate	Trip Blank	Total
Soil	Hand Auger	TCL VOC	0	0	0	0	--	0
		TCL SVOC	0	0	0	0	--	0
		TCL Pesticides	0	0	0	0	--	0
		Total PCB	0	0	0	0	--	0
		TAL Metals including Mercury	36	0	1	1	--	38
		Cyanide	36	0	1	1	--	38
		Hexavalent Chromium	4	0	0	0	--	4
		Silvex	0	0	0	0	--	0
		PFAS	0	0	0	0	--	0
		1,4-Dioxane	0	0	0	0	--	0
	Drilled Boring	TCL VOC	0	0	0	0	--	0
		TCL SVOC	0	0	0	0	--	0
		TCL Pesticides	0	0	0	0	--	0
		Total PCB	0	0	0	0	--	0
		TAL Metals including Mercury	14	0	1	1	--	16
		Cyanide	14	0	1	1	--	16
		Hexavalent Chromium	2	0	0	0	--	2
		Silvex	0	0	0	0	--	0
		PFAS	0	0	0	0	--	0
		1,4-Dioxane	0	0	0	0	--	0
Sediment	Hand Tools	TCL VOC	0	0	0	0	--	0
		TCL SVOC	0	0	0	0	--	0
		TCL Pesticides	0	0	0	0	--	0
		Total PCB	0	0	0	0	--	0
		TAL Metals including Mercury	1	0	0	0	--	1
		Cyanide	1	0	0	0	--	1
		Hexavalent Chromium	1	0	0	0	--	1
		Silvex	0	0	0	0	--	0
		PFAS	0	0	0	0	--	0
		1,4-Dioxane	0	0	0	0	--	0

Type of Analysis	Type and Size of Container	Number of Containers and Sample Volume (per sample)	Preservation	Holding Time Until Extraction/ Analysis
VOCs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	14 days
VOCs via EPA 5035	40 mL vials with sodium bisulfate, methanol,	Three (3), 5 grams each	Cool to 4° C (ice in cooler)	2 days

	and/or DI water			
SVOCs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	7/40 days
PCBs	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	7/40 days
Pesticides	4-oz, glass jar with Teflon-lined cap	One (1), fill as completely as possible	Cool to 4° C (ice in cooler)	14/40 days
Metals	4-oz, glass jar with	One (1), fill as	Cool to 4° C (ice in	180 days (28 for

APPENDICES

APPENDIX A

PREVIOUSLY COMPLETED ENVIRONMENTAL INVESTIGATIONS

EMPIRE GEO SERVICES, INC.
A SUBSIDIARY OF SJB SERVICES, INC.

April 24, 2014
Project No. BE-13-192

Mr. Bradley A. Packard, Project Manager
Mensch Capital Partners, LLC
350 Essjay Road, Suite 304
Williamsville, New York 14221

Re: Geotechnical Evaluation Report for
Proposed Westwood Country Club Development Project
North Forest Road
Amherst, New York

Dear Mr. Packard:

Empire Geo-Services, Inc. is pleased to submit three (3) copies of the enclosed Geotechnical Evaluation Report to Mensch Capital Partners, LLC (Mensch) for the above referenced project. We have also forwarded to you, via e-mail, an electronic pdf file copy of this report for your use and distribution, as appropriate.

Please contact me should you have any questions or wish to discuss this report. Thank you for considering Empire for this work and we look forward to working with you through completion of this project.

Sincerely,

EMPIRE GEO-SERVICES, INC.

John J. Danzer, P.E.
Senior Geotechnical Engineer

Enc.: Geotechnical Evaluation Report (3 Copies) & Electronic pdf file copy / via e-mail

cc: Mr. Robert J. Pidanick – Nussbaumer & Clarke, Inc. w/ Electronic pdf copy via e-mail only

CORPORATE/ BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

ALBANY OFFICE
PO Box 2199
Ballston Spa, NY 12020

5 Knabner Road
Mechanicville, NY 12118
Phone: (518) 899-7491
Fax: (518) 899-7496

CORTLAND OFFICE
60 Miller Street
Cortland, NY 13045
Phone: (607) 758-7182
Fax: (607) 758-7188

ROCHESTER OFFICE
535 Summit Point Drive
Henrietta, NY 14467
Phone: (585) 359-2730
Fax: (585) 359-9668

EMPIRE GEO SERVICES, INC.
A SUBSIDIARY OF SJB SERVICES, INC.

CORPORATE/
BUFFALO OFFICE
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

ALBANY OFFICE
PO Box 2199
Ballston Spa, NY 12020

5 Knabner Road
Mechanicville, NY 12118
Phone: (518) 899-7491
Fax: (518) 899-7496

CORTLAND OFFICE
60 Miller Street
Cortland, NY 13045
Phone: (607) 758-7182
Fax: (607) 758-7188

ROCHESTER OFFICE
535 Summit Point Drive
Henrietta, NY 14467
Phone: (585) 359-2730
Fax: (585) 359-9668

MEMBER
ACEC New York
American Council of Engineering Companies of New York

Geotechnical Evaluation Report for Proposed Westwood Country Club Redevelopment Project North Forest Road Amherst, New York

Prepared For:

Mensch Capital Partners, LLC
350 Essjay Road, Suite 304
Williamsville, New York 14221

Prepared By:

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York 14075

4/24/14

Project No. BE-13-192
April 2014

Geotechnical Evaluation Report for
Proposed Westwood Country Club Redevelopment Project
North Forest Road
Amherst, New York

EXECUTIVE SUMMARY

Introduction

This report summarizes the results of a subsurface exploration program and geotechnical engineering evaluation completed by Empire Geo-Services, Inc. (Empire) for a proposed mixed use redevelopment project being considered by Mensch Capital Partners, LLC on the site of the Westwood Country Club off North Forest Road in Amherst, New York. The approximate location of the project site is shown on Figure No. 1.

The proposed redevelopment project is proposed within the existing Westwood Country Club golf course area, which is bounded by Maple Road to the north, North Forest Road, Ellicott Creek and the Audubon Par 3 Golf Course to the east, Sheridan Drive to the south and Frankhauser Road and Fairways Boulevard to the west.

The proposed redevelopment project is currently planned to include the following:

- 1 to 2 story single family residential home lots in the northern eastern portion of the site;
- Adjoining 1 to 2 story townhome style residential units in the northern western portion of the site;
- Larger 1 to 2 story single family residential home lots in the eastern center portion of the site;
- An approximate 30 acre parcel in the west center potion of the site for senior living development;
- Mixed use town center type development in the southern portion of the site including commercial/retail buildings, office buildings, multi family townhomes and multi family apartments; and
- Re-use of the existing club house building for conference and reception use, in association with construction of an adjoining hotel building.

In addition the project will also include construction of roadways, access drives and parking lot areas with access to the development from Sheridan Drive and Maple Road.

The subsurface exploration program consisted of a total of forty-nine (49) test borings, designated as B-1 through B-49, which were advanced across the site. Thirty (30) borings were advanced to apparent bedrock refusal, with the remaining nineteen (19) borings being advanced to a planned depth of 20 feet and then terminated. Apparent bedrock refusal was encountered at depths ranging between 13.5 feet and 62.5 feet and confirmed by rock coring in seven (7) of the test borings. Three (3) groundwater observation wells

were installed in borings B-6, B-24 and B-48 to help assess groundwater conditions on the site, Geotechnical laboratory testing of selected recovered soil samples was also completed.

SJB Services, Inc. (SJB), our affiliated drilling and materials testing company, completed the test borings and laboratory testing for the subsurface exploration program. The test borings and groundwater observation well installations were completed between December 3rd, 2013 and February 5, 2014. The approximate locations of the test borings with respect to an aerial photograph of the existing site are shown on Figure No. 2 and the approximate locations of the test borings with respect to the currently proposed conceptual site development plan are shown on Figure No. 3.

The elevations presented in this report were referenced to the rim of an electrical manhole (temporary benchmark established by SJB), which is located off the front of the existing golf cart storage building, located in the south center portion of the site, as shown on Figure No. 2. This benchmark has an elevation El. datum of 602.38 feet, as measured and reported by Nussbaumer & Clarke, Inc.

This report summarizes the subsurface conditions encountered by the exploration program and presents preliminary geotechnical engineering considerations and recommendations to assist in planning and preliminary design of the site redevelopment. Specifically our evaluation addresses the soil, bedrock and groundwater conditions present on the site, with regard to their impacts on foundation, slab-on-grade floor construction, underground utility construction and pavement construction.

Existing Site Information

As part of our study Empire researched existing information concerning the geologic and flood plain conditions present in the Westwood Country Club site area, including the Soil Survey for Erie County, Surficial Geology and Bedrock Geology Maps, and FEMA Flood Plain Mapping.

The USDA – Erie County Soil Survey data indicate that the surficial soils (i.e. soils typically within the upper 5 feet of the existing ground surface) within the Westwood Country Club facility site consist predominately of “clay loam”, “silt loam”, and “loamy fine sand” type soils. These surficial soil types are similarly classified as CL, ML and SM group soils using the Unified Soil Classification System (USCS), respectively.

Geologic maps prepared by the New York State Geological Survey indicate the surficial overburden soils present consist predominately of glacial till deposits of clay, silt and bouldery clay, with glacial outwash deposits of sand and gravel along Ellicott Creek. The uppermost bedrock formation in this area is the upper (late) Silurian period, Camillus Shale formation of the Salina Geologic Group. This bedrock formation is characterized as medium hard, weathered to sound Shale rock, with occasional gypsum partings and seams and has a generally fair to good rock mass quality.

The FEMA flood plain mapping indicates the 500 year and 100 year flood plains from Ellicott Creek extend into the eastern portions of the Westwood Country Club facility site. The 500 year flood elevations range from El. 595 feet to El. 594 feet where it extends onto the site from the southern end to the center portion, and to about El. 593 feet where it extends onto the northern portion of the site.

Subsurface Exploration Results

The subsurface conditions encountered in the test borings consisted generally of surface topsoil, along with man placed fill or disturbed indigenous soils typically extending to depths ranging between about 2 feet and 5 feet, which are underlain by predominately indigenous glacial till deposited silty clay, clayey silt, silt, and silty or clayey sand soils, overlying the Camillus Shale Bedrock. Table 2 summarizes the surface topsoil depths, the depths and bottom elevation of the man-placed fill, the depth and elevation of auger refusal (i.e. apparent bedrock refusal), and the groundwater observations made in the test borings and the wells installed for this investigation.

The indigenous soils are classified as CL, CH, ML, SM-SC and SM group soils using the Unified Soil Classification System (ASTM D2488). The consistency of the cohesive silty clay and clayey silt soils typically ranged between medium and hard, while the more granular silty or clayey sand soils and the non-plastic silt soils were typically of a firm to very compact relative density. Deeper soft to very soft clay soil deposits having SPT "N" values of less than 4 or "woh - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon), were encountered in only a few test borings (B-1, B-18, B-20 and B-25). Accordingly, significant deposits of highly compressible soft to very soft clays, as present in other portions of northern Amherst, are generally absent within this site.

Shale bedrock, as indicated by the auger refusal conditions, and confirmed by rock coring, was encountered at depths ranging between about 13.5 feet (boring B-10) and 62.5 feet (boring B-1), with corresponding elevations ranging between approximately El. 586.9 feet to El. 543.4 feet. The bedrock core recovered consisted generally of gray, medium hard, sound, thinly bedded to bedded Shale Rock, with occasional partings, seams and layers of gypsum. The core recoveries ranged between 100% and 50%, and the rock quality designation (RQD) values ranged between 20% and 82% indicating the recovered rock cores have a varying rock mass quality ranging between "very poor" and "good".

Based on the water levels obtained at the completion of coring in borings B-4, B-43 and B-48, as well as the readings obtained in borings B-9, B-20 and B-25 following completion soil sampling to auger refusal, and the April 1st, 2014 level in well B-24 tends to suggest that a permanent groundwater table may be present at elevations in the range of about El 580 feet to El. 589 feet, although this is not confirmed by the other groundwater observation wells at this time, as they may be partially impacted by upper perched groundwater..

It also appears that zones of perched or trapped groundwater are present in the topsoil and the fill soils at or near the ground surface, at various locations on the site, due to the relatively low permeability of the underlying soils present, and depending on site drainage conditions. Such conditions were observed during the subsurface exploration where areas of standing water and spongy surface conditions were present, hindering some of the drill rig access.

Laboratory Test Results

The laboratory test data indicates the clay soils encountered within the upper reaches of the site below the immediate surface soils, (i.e. within the anticipated depths of proposed spread foundations) appear to be partially desiccated and have a generally non-existent to low potential susceptibility to shrinkage. Also, given the relatively medium stiff to hard nature of the indigenous clay soils and their inherent low permeability it is unlikely saturation and potential swelling of these soils would occur in an undisturbed state. The upper surficial clayey silt /silty clay fill soils, however, which are in a less dense condition, may be more susceptible to potential shrinkage and swelling where they are inundated with poor draining surface water.

Based on DIPRA tests performed the site soils tested appear to have a low corrosion potential to ductile iron waterline pipes and other buried metallic pipes/elements. Accordingly, cathodic protection or a suitable protective coating of metallic pipes and conduits, to resist potential corrosion, does not appear necessary. Also based on sulfate concentrations, the soils are considered to have a negligible potential for sulfate exposure. Accordingly, a Type I-II Portland Cement appears will be acceptable for the concrete structure elements placed in these soils.

Preliminary Geotechnical Considerations and Recommendations

<u>General</u>

The indigenous soils encountered consist predominately of partially desiccated, medium stiff to hard silty clay and clayey silt and firm to very compact silty or clayey sand deposits with some intermixed gravel, and occasional cobbles/boulders and shale fragments. These soils are non-organic, and are not considered to be highly compressible, nor highly susceptible to shrinkage, swelling, or liquefaction. Significant deposits of highly moist, soft to very soft clays, as present in other areas of northern Amherst and which have been problematic to residential foundation/structure movement and distress (i.e. basement foundation subsidence / settlement and lateral movement), are generally absent within this site.

The indigenous soil conditions encountered in the test borings are generally considered suitable to support the anticipated residential and mixed use structure loads using conventional spread foundation systems. In a few cases (i.e. within borings B-9, B-11, B-19, B-21, B-22 and B-45) some limited zones of weaker soils were encountered which may impact the use of spread foundations. Accordingly, these conditions possibly may

require consideration of deep foundations (i.e. driven piles) particularly if a multiple-story more heavily loaded building structure would be proposed at or near these locations.

The existing fill and indigenous soil subgrades are also considered to be generally suitable for basement, at-grade and garage slab-on-grade floor construction, with proper site preparation. The soils encountered are also considered generally suitable for construction of the proposed infrastructure, including the roadways, parking lots, storm and sanitary sewers, waterlines and retention pond structures. The poor draining surface conditions, however, are expected to make site stripping and subgrade preparation difficult, particularly during wet periods

Given, the relatively low to medium low permeability of the soils present, both permanent and perched groundwater seepage if encountered should be relatively slow and of low quantities. Accordingly, these conditions should not significantly impact basement and utility construction. It is anticipated that conventional sump and pump methods of dewatering should generally be sufficient to control surface water, as well as permanent and perched groundwater seepage conditions, should they be encountered.

Based on the subsurface conditions encountered, the overall site should be classified as Seismic Site Class "D" in accordance with the Building Code of New York State. Therefore, seismic design may be based on this site classification.

Foundation Support

Preliminarily, it is expected that spread foundations can be sized, based on net allowable bearing capacities in the range of about 2,000 to 4,000 pounds per square foot (psf) ±, depending on location, foundation bearing depths and actual structure loads.

Spread foundations should bear on suitable, undisturbed, indigenous soil bearing grades, after the removal of all fill soils and any unsuitable indigenous soft or wet soils. Alternatively, the foundations may also bear on Engineered Fill (i.e. compacted Structural Fill or flowable backfill), which is placed over the suitable indigenous soil bearing grades, following excavation and removal of fill soils and any unsuitable indigenous soils which are present below the design bearing grade elevation of the footings.

Where zones of softer soils were encountered, which may impact the use of spread foundations for heavier building structures, the use of driven H-piles or pipe piles driven to refusal on the Shale bedrock appear would be the best suited deep foundation system option for the site conditions present. For preliminary information, a driven HP12x53 H-pile, driven to refusal on the bedrock, would be expected to develop an axial compressive capacity in the range of about 100 to 120 tons ± per pile. Other pile sections can also be used, based on product availability and costs, which would provide higher or lower allowable axial capacities, based on the actual pile section.

Basement Structure Design

Where suitable foundation drainage is provided, the basement walls can be designed for "at rest" lateral earth pressure computed on the basis of an "equivalent fluid unit weight" of 70 pounds per cubic foot (pcf). This is based on the assumption that the wall backfill beyond the drainage system is a suitable well draining granular backfill material, such as a crusher run stone Structural Fill. In this case suitable damp proofing of the walls and floors should also be provided. Alternatively, the basement structures could also be designed to resist potential full hydrostatic pressure. In such case the basement structure should also be fully water proofed.

The use of the on-site clayey silt, silty clay and silty or clayey sand soils to backfill the basement walls is not recommended as they will be susceptible to potential swelling in a looser disturbed state, which could cause additional lateral pressures on the basement walls. The on-site soils could be used, however, to backfill non-earth retaining foundation walls provided they can be properly placed and compacted to a stable and well engineered condition.

Slab-on Grade Floor Construction

The building floors can be constructed as slab-on-grade following proper subgrade preparation. For preliminary design purposes, a minimum of 6-inches of Subbase Stone is recommended beneath the lightly loaded floor slabs (residential floors, lightly loaded office floors, etc.). A minimum 12-inch thick layer of Subbase Stone is recommended beneath more heavily loaded floor slabs (i.e. garage areas, storage areas, mechanical rooms, etc.). A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing soil or fill soil subgrades prior to placement of the Subbase Stone layer.

Seismic Design Considerations

Based on the subsurface conditions encountered, the overall site should be classified as Seismic Site Class "D" in accordance with the Building Code of New York State. The soil conditions encountered are generally not considered to be susceptible to potential liquefaction in the case of a seismic event. Therefore, seismic design may proceed based on these considerations.

It is possible that a seismic shear wave velocity study of the site may refine and possibly upgrade the seismic design site class. This may be particularly beneficial in the areas of the mixed use commercial and apartment buildings depending on the costs associated with seismic reinforcement of these structures. It should be understood, however, that there is no guarantee that an upgrade can be made if a seismic shear wave study is performed,

Pavement Design Considerations

The Town of Amherst requires a typical pavement section consisting of the following components for residential and commercial development roadways:

Town of Amherst Asphalt Concrete Pavement Section:

- 1.5 inches – Top Course
- 2.5 inches – Binder Course
- 4.0 inches – Base Course
- 11 inches – Subbase Stone Course

We would recommend, however, the Town of Amherst pavement section also include a suitable stabilization/separation geotextile (i.e. Mirafi 600X or suitable equivalent).

Pavement design recommendations are also provided for two (2) flexible pavement structure types within the proposed mixed use development areas. These include the following:

Heavy Duty Asphalt Concrete Pavement (for the entrance, access drives and pavement areas, which will be subject to delivery truck traffic):

- 1.5 inches – Top Course
- 3.0 inches – Binder Course
- 15 inches – Subbase Stone Course
- Stabilization/Separation Geotextile
- Prepared Subgrade

Light Duty Asphalt Concrete Pavement (for automobile / light SUV only parking areas):

- 1.5 inches – Top Course
- 2.0 inches – Binder Course
- 10 inches – Subbase Stone Course
- Stabilization/Separation Geotextile
- Prepared Subgrade

The installation of suitable drainage is also recommended to drain the pavement subbase course and subgrades in order to limit the potential for frost action and improve pavement structure performance and design life.

Underground Utility Construction

The in-situ soils should provide generally suitable subgrade conditions for underground utility construction, including storm and sanitary sewers, water lines, gas lines and buried

electrical / communication conduits. Accordingly, standard bedding materials and thicknesses can generally be used to support this infrastructure.

Site Preparation

Measures to improve site drainage should be implemented as necessary prior to commencing the site stripping and subgrade preparation work.

All existing structures, trees, stumps, vegetation, topsoil, organic soils, etc., and any other deleterious materials within the proposed building pad areas and pavement areas should be removed. Following stripping and removal of the surface materials (i.e. topsoil, asphalt pavement, concrete pads and structures, etc.), the exposed subgrades should be proof-rolled. The subgrade proof-rolling should be done under the guidance of, and observed by qualified geotechnical engineering personnel. The subgrade fill placement necessary to raise the site grades and/or the placement of subbase courses may proceed following proper site preparation and acceptance of the existing soil subgrades.

The on-site soils could be used for constructing the fills for establishing the building pad and pavement areas, provided they can be properly placed and compacted in a controlled manner and to a stable well engineered condition, in accordance with our recommendations. It should be understood, however, that these soils will be very difficult to dry and work with. Therefore the use of imported granular fill materials will be better suited for building pad, roadway and parking lot fill areas. Efforts should be made to maintain the subgrades in a dry and stable condition at all times, and limit construction traffic directly over these soils, particularly if they become wet.

Additional Geotechnical Investigations

Additional investigations and further evaluations are recommended for final design when final building development plans and loading conditions, along with final site development plans, are established, as discussed further in the report. Empire can assist in planning the locations and scope of the additional explorations and evaluations that may be necessary for final design.

Closing

Additional more detailed site condition findings, along with considerations and recommendations for permitting, planning and preliminary design of the proposed site redevelopment project are presented in the Geotechnical Evaluation Report, which follows.

TABLE OF CONTENTS

1.00 INTRODUCTION

1.10 GENERAL

This report summarizes the results of a subsurface exploration program and geotechnical engineering evaluation completed by Empire Geo-Services, Inc. (Empire) for a proposed mixed use redevelopment project being considered on the site of the Westwood Country Club off North Forest Road in Amherst, New York. The approximate location of the project site is shown on Figure No. 1.

Mensch Capital Partners, LLC (Mensch) retained Empire to complete this work, which was done in accordance with our proposal dated October 11, 2013. This work was completed to evaluate the geotechnical characteristics of the site, with regard to foundation support of the proposed mixed use buildings being considered for redevelopment of the site, and to provide preliminary geotechnical design and construction considerations / recommendations to assist the design team with planning and preliminary design.

The subsurface exploration program completed by Empire consisted of a total of forty-nine (49) test borings advanced across the site, of which thirty (30) borings were advanced to apparent bedrock refusal at depths ranging between 13.5 feet and 62.5 feet, with the remaining nineteen (19) borings being advanced to a planned depth of 20 feet and then terminated. Bedrock was cored in seven (7) of the test borings advanced to refusal. In addition, three (3) groundwater observation wells were installed and geotechnical laboratory testing of selected recovered soil samples was also completed. SJB Services, Inc. (SJB), our affiliated drilling and materials testing company, completed the test borings and laboratory testing for the subsurface exploration program.

On this basis, Empire prepared this report, which summarizes the subsurface conditions encountered by the test borings, groundwater observation wells and laboratory testing, and presents preliminary geotechnical engineering considerations and recommendations to assist in planning and preliminary design of the site redevelopment. Specifically our evaluation addresses the soil, bedrock and groundwater conditions present on the site, with regard to their impacts on foundation, slab-on-grade floor construction, underground utility construction and pavement construction.

1.20 SITE DESCRIPTION AND PROPOSED DEVELOPMENT PROJECT

The proposed site redevelopment project comprises approximately 170 acres and is bounded within the area of Maple Road to the north, North Forest Road, Ellicott Creek and the Audubon Par 3 Golf Course to the east, Sheridan Drive to the south and Frankhauser Road and Fairways Boulevard to the west. The redevelopment project is generally proposed within the existing Westwood Country Club golf course area, which currently consists of the golf tees, fairways, hazards, greens along with bordering cart paths, tall grass, trees, brush and ponds. The main club house building, pool and tennis amenities, maintenance buildings, access drive and parking lot areas are located in the southeast portion of the site, with access from North Forest Road. Grades across the site gradually drop in elevation about 10 to 13 feet from south (i.e. Sheridan Drive) to north (Maple Road). Figure No. 2 presents an aerial photograph of the existing site, along with the approximate locations of the test borings plotted on the plan.

The proposed redevelopment project is currently planned to include the following:

- 1 to 2 story single family residential home lots in the northern eastern portion of the site;
- Adjoining 1 to 2 story townhome style residential units in the northern western portion of the site;
- Larger 1 to 2 story single family residential home lots in the eastern center portion of the site;
- An approximate 30 acre parcel in the west center potion of the site for senior living development;
- Mixed use town center type development in the southern portion of the site including commercial/retail buildings, office buildings, multi family townhomes and multi family apartments; and
- Re-use of the existing club house building for conference and reception use, in association with construction of an adjoining hotel building.

In addition the project will also include construction of roadways, access drives and parking lot areas with access to the development from Sheridan Drive and Maple Road. Figure No. 3 presents a conceptual plan of the proposed site development along with the approximate locations of the test borings plotted on the plan.

The1 to 2 story single family residential homes and townhome residential units are expected to consist of wood framed construction, with possible basement structures. The commercial/retail buildings, office buildings, multi family townhomes and multi family apartments are also expected to be 1 to 2 stories with

either wood or steel frame type construction, and with at grade ground floors constructed as slab-on-grade. Accordingly, basements are not anticipated for these structures. The new hotel building is expected to be multiple-story with steel frame or masonry with pre-cast plank type construction. The hotel building is also not expected to include a basement structure.

At this time the final building configurations and structure loads have not been established. The development plan currently anticipates that the building structures can generally be supported using conventional spread foundation systems, although it is understood that deep foundation systems could be necessary in some cases, depending on the actual structure loads and soil conditions present.

2.00 SUBSURFACE EXPLORATION

The subsurface exploration program completed to characterize the subsurface conditions consisted of a total of forty-nine (49) test borings, designated as B-1 through B-49. In addition, groundwater observation wells were installed in three (3) of the test borings (B-6, B-24 and B-48). The test borings and groundwater observation well installations were completed by SJB between December 3rd, 2013 and February 5, 2014. The approximate locations of the test borings with respect to an aerial photograph of the existing site are shown on Figure No. 2 and the approximate locations of the test borings with respect to the currently proposed conceptual site development plan are shown on Figure No. 3.

The proposed test boring locations were initially established on a site plan, along with location coordinates, prepared by Nussbaumer & Clarke, Inc. (N&C), which were provided to Empire through Mensch. The boring locations were established to provide general coverage over the project site. Using this plan and the location coordinates, SJB then staked the boring locations in the field using hand held global positioning satellite (gps) instrumentation and visual observations referenced to existing site features. The locations should be considered accurate only to the degree implied by the methodologies used.

The ground surface elevation at each test boring location was measured and recorded by SJB using laser survey level techniques. The elevations were referenced to the rim of an electrical manhole (benchmark established by SJB) located off the front of the existing golf cart storage building, located in the south center portion of the site. The approximate location of the benchmark is shown on Figure No. 2 and has an elevation El. datum of 602.38 feet, as measured and reported by N&C.

Thirty (30) borings were advanced to apparent bedrock refusal at depths ranging between 13.5 feet and 62.5 feet, with the remaining nineteen (19) boring advanced to a depths ranging between about 18 feet and 22 feet. Bedrock was cored in seven (7) of the test borings advanced to refusal (borings B-1, B-4, B-29, B-31, B-43, B-45 and B-47). The borings advanced to apparent bedrock refusal and the borings advanced to a depth of 18 to 22 feet (scheduled to be 20 feet) are designated on Figures No. 2 and No. 3.

The test borings were made using a Central Mine Equipment (CME) model 550X and a CME model 550SE rubber tire, all terrain drill rigs, using hollow stem auger and split spoon sampling techniques. Split spoon samples and Standard Penetration Tests (SPTs) were taken continuously from the ground surface to a depth of 12 feet or 16 feet and in intervals of five feet or less below the zone of continuous sampling until boring completion. The split spoon sampling and SPTs were completed in general accordance with *ASTM D 1586 - "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils"*.

After reaching auger refusal at test boring locations B-1, B-4, B-29, B-31, B-43, B-45 and B-47 the refusal material encountered was cored using a NQ size double tube core barrel in accordance with *ASTM D 2113 – "Standard Practice for Rock core Drilling and Sampling of Rock for Site Investigation"*. Five (5) feet of bedrock was cored at each of these locations.

Groundwater observation wells were installed in test borings B-6, B-24 and B-48 to help assess groundwater levels on the site. The wells were installed with hollow stem auger drilling techniques in general accordance with *ASTM D5092 Standard Practice for Design and Installation of Ground Water Monitoring Wells in Aquifers.* The well installation consisted of a 2-inch diameter PVC well screen and riser pipe with sand filter, bentonite seal and soil backfill. A protective flush mount surface casing and surrounding concrete seal were installed at the surface of boring B-6 to finish the well installation. The wells installed at borings B-24 and B-48 were completed with a PVC stickup riser and cap, and without a protective surface casing. Additional details regarding the construction of the observation wells are shown on the Monitoring Well Completion Records presented following their respective test boring logs in Appendix A.

A geologist from SJB prepared the test boring logs based on visual observation of the recovered soil samples and bedrock core, along with review of the driller's field notes. The soil samples were described based on visual/manual estimation of the grain size distribution, along with characteristics such as color, relative density, consistency, moisture, etc. In addition the Unified Soil Classification System

(USCS) group symbols were also established and are presented on the logs for the soil types encountered. The recovered rock core samples were also described, including characteristics such as color, rock type, hardness, weathering, bedding thickness, core recovery and rock quality designation (RQD). The test boring logs are presented in Appendix A, along with general information and a key of terms and symbols used to prepare the logs.

3.00 LABORATORY TESTING PROGRAM

Selected recovered soil samples were tested in SJB's geotechnical testing laboratory to confirm the visual soil classifications and provide index properties to aid in our evaluations. The laboratory testing program included the following index tests:

1. Moisture content in accordance with *ASTM D 2216 – "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass"*.

2. Grain size distribution in general accordance with *ASTM C136 – "Standard Test Method for Particle-Size Analysis of Soils"*;

3. Liquid limit, plastic limit and plasticity index in accordance with *ASTM D 4318 – "Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils"*.

4. In addition, the samples tested for liquid limit, plastic limit and plasticity index were also tested for shrinkage limit in accordance with *ASTM D 427 – "Test Method for Shrinkage Factors of Soils by Mercury Method"*. Using the shrinkage test data and the moisture content data, Empire calculated the coefficient of linear extensibility (COLE factor) of the clay soils at the various measured moisture contents, to qualitatively evaluate their shrinkage potential. The COLE factors were determined following a procedure similar to those described in the *Soil Survey Investigation Report No. 42, Soil Survey Laboratory Methods Manual 1996, USDA, NRCS, NSSC.*

The soil samples tested for the above index properties, as well as a summary of the results, are presented on Table 1.

Composite soil samples were also prepared from test borings B-6 (samples S-2 through S-4, 2.0'-8.0'); B-34 (samples S-2 through S-5, 2.0'-10.0'); and B-45 (samples S-2 through S-5, 2.0'-10.0') and were tested for the following:

- Resistivity, redox, pH, moisture, and sulfides according to procedures established by the Ductile Iron Pipe Research Association (DIPRA test) to provide an indication of the corrosion potential of the on-site soils with regard to buried metallic conduits; and

- Sulfate and chloride concentration in the soils, with regard to potential impacts on buried concrete structures.

This laboratory test data is also presented in Appendix B, as well as summarized on Table 1.

4.00 EXISTING SITE INFORMATION

As part of our study Empire researched existing information concerning the geologic and flood plain conditions present in the Westwood Country Club site area. This included:

- USDA - Natural Resource Conservation Service - Soil Survey for Erie County (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx);

- NYSED – New York State Museum and Science Service - Surficial Geology and Bedrock Geology Maps (http://www.nysm.nysed.gov/gis/); and

- Erie County On-Line GIS Mapping System – FEMA Flood Plain Mapping (http://gis1.erie.gov/Geocortex/Essentials/Web/viewer.aspx?Site=FEMA&reloadkey=true).

4.10 SOIL SURVEY INFORMATION

The USDA – Erie County Soil Survey data indicate that the surficial soils (i.e. soils typically within the upper 5 feet of the existing ground surface) within the Westwood Country Club facility site consist predominately of "clay loam", "silt loam", and "loamy fine sand" type soils. These surficial soil types are similarly classified as CL, ML and SM group soils using the Unified Soil Classification System (USCS), respectively.

These soils typically consist of silty clay, clayey silt, non-plastic silt and silty fine sand and are of a medium-low to low permeability (i.e. poor draining). These soils are also considered to be highly moisture sensitive and have a relatively poor value (i.e. difficult to place and compact) as subgrade fill material to raise site grades beneath slab-on-grade and pavement construction. The locations of the various surficial soil types, as mapped by the Erie County Soil Survey, are presented in Appendix C1.

4.20 SURFICIAL AND BEDROCK GEOLOGY

Geologic maps prepared by the New York State Geological Survey indicate the surficial overburden soils present within the Westwood Country Club facility site consist predominately of glacial till deposits of clay, silt and bouldery clay, with glacial outwash deposits of sand and gravel along Ellicott Creek.

The geologic maps indicate the uppermost bedrock formation in this area is the upper (late) Silurian period, Camillus Shale formation of the Salina Geologic Group. This bedrock formation is characterized as medium hard, weathered to sound Shale rock, with occasional gypsum partings and seams and has a generally fair to good rock mass quality.

Excerpted portions of the surficial soil and bedrock geologic maps, along with applicable associated legends, are presented in Appendix C2.

4.30 FLOOD PLAIN MAPPING

Review of the FEMA flood plain mapping indicates the 500 year and 100 year flood plains from Ellicott Creek extend into the eastern portions of the Westwood Country Club facility site. The 500 year flood elevations range from El. 595 feet to El. 594 feet where it extends onto the site from the southern end to the center portion, and at about El. 593 feet where it extends onto the northern portion of the site.

The flood plain mapping obtained from the Erie County On-Line GIS Mapping System is presented in Appendix C3.

5.00 SUBSURFACE CONDITIONS

5.10 GENERAL SUBSURFACE CONDITIONS ENCOUNTERED

The test borings completed at the site encountered soil and bedrock conditions generally similar to those indicated by existing site information which was researched, as described above in Section 4.00. The stratigraphy encountered in the test borings consisted generally of surface topsoil, along with man placed fill or disturbed indigenous soils typically extending to depths ranging between about 2 feet and 5 feet, which are underlain by indigenous glacial till deposited silty clay, clayey silt, silt, and silty or clayey sand soils, overlying Shale Bedrock.

The consistency of the cohesive silty clay and clayey silt soils typically ranged between medium and hard, while the more granular silty or clayey sand soils and the non-plastic silt soils were typically of a firm to very compact relative density. Deeper soft to very soft clay soil deposits having SPT "N" values of less than 4 or "woh - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon), were encountered in only a few test borings (B-1, B-18, B-20 and B-25). Accordingly, significant deposits of wet, highly compressible, soft to very soft clays, as present in other portions of northern Amherst, are generally absent within this site.

Shale bedrock, as indicated by the auger refusal conditions, and confirmed by rock coring, was encountered at depths ranging between about 13.5 feet (boring B-10) and 62.5 feet (boring B-1), with corresponding elevations ranging between approximately El. 586.9 feet to El. 543.4 feet, with an average elevation of about El. 560.1 feet.

Groundwater levels measured in the groundwater observation wells (B-6, B-24 and B-48) ranged between depths of 0.6 feet, 8.2 feet and 2.4 feet bgs, respectively, during the site visit on April 1st, 2014.

The soil and bedrock stratigraphy encountered and the groundwater conditions observed are described in more detail in the following sections and on the test boring logs presented in Appendix A. Also included, is a table (Table 2) summarizing the surface topsoil depths, the depths and bottom elevation of the man-placed fill, the depth and elevation of auger refusal (i.e. apparent bedrock refusal), and the groundwater observations made in the test borings and the wells installed for this investigation.

5.20 SURFACE MATERIALS AND FILL SOILS

The driller noted a distinct topsoil layer at the ground surface of most of the test borings, with the exception of test borings B-21, B-27 and B-38. The topsoil thickness typically ranged between about 2-inches and 14-inches, based on the driller's measurements and interpretation of topsoil. These measurements are widely spaced and are subject to interpretation. Therefore, these measurements should not be solely relied on for construction quantity estimates.

Beneath the topsoil and at the ground surface of the remaining test borings, man placed fill and/or disturbed or reworked indigenous soils were encountered at most of the test boring locations. The fill soils consisted of red-brown, brown-black and black clayey silt and silty clay soils with occasional zones or inclusions of organics, cinders and wood. The fill, where present, was typically found to extend to depths ranging between about 2 feet and 5 feet bgs.

Most of the fill soils are similar in character to the indigenous soils and appear were most likely placed during past site grading associated with the country club development. It can be expected that fill soils will also be present, and will extend to the bottom of the existing foundations near and adjacent to the existing building structures and amenities as well as to the bottom of previous excavations for existing utility lines within the site.

5.30 INDIGENOUS SOILS

The indigenous soil deposits encountered beneath the surface materials and fill consisted predominately of glacial till deposited silty clay, clayey silt, silt and silty or clayey sand soils, which also contain some intermixed gravel, apparent occasional cobbles/boulders and shale fragments. These indigenous soil deposits were found to extend to the top of bedrock. The indigenous soils are classified as CL, CH, ML, SM-SC and SM group soils using the Unified Soil Classification System (ASTM D2488).

Standard Penetration Test (SPT) "N" values obtained in the indigenous silty clay and clayey silt soils ranged from "woh - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon), to "REF – sample spoon refusal" (i.e. 50 blows to advance the split spoon with 6-inches or less of penetration). The SPT "N" values indicate the consistency of the fine grained cohesive clayey silt and silty clay soils vary from very soft to hard, while the relative density of the more granular silty sand soils and non-plastic silt soils vary from loose to very compact.

Some limited zones of deeper soft to very soft clay soil deposits having SPT "N" values of less than 4 or "woh - weight of hammer" (i.e. the sample spoon was advanced with only the weight of the drop hammer and drill rods applied statically to the sample spoon), were encountered in only a few test borings (B-1, B-18, B-20 and B-25). Accordingly, significant deposits of soft to very soft clays, as present in other areas of northern of Amherst, are generally absent within this site. Some soft clay soils were also present in the upper reaches of a few of the test borings (B-8, B-9, B-11, B-19, and B-22).

5.40 BEDROCK

As discussed above, thirty (30) of the test borings were advanced through the overburden until auger refusal (presumed bedrock refusal) was encountered at depths ranging between about 13.5 feet (boring B-10) and 62.5 feet (boring B-1), with corresponding elevations ranging between approximately El. 586.9 feet to El. 543.4 feet. The borings, as well as the depth and elevation where auger refusal (presumed bedrock refusal) was encountered are summarized on Table 2. Within test borings B-7 and B-22 a zone of weathered Shale was encountered before reaching auger refusal.

Bedrock core samples were obtained from test borings B-1, B-4, B-29, B-31, B-43, B-45 and B-47 after reaching auger refusal. Five (5) feet of bedrock was cored at each of these locations. The bedrock core recovered consisted generally of gray, medium hard, sound, thinly bedded to bedded Shale Rock, with occasional partings, seams and layers of gypsum. Within test boring B-31, the recovered shale rock core was described as being partially slightly weathered and laminated.

The shale bedrock recovered is part of the Camillus Shale geologic formation. The core recoveries ranged between 100% and 50%. The rock quality designation (RQD) values ranged between 20% and 82% indicating the recovered rock cores have a varying rock mass quality ranging between "very poor" and "good".

5.50 GROUNDWATER CONDITIONS

Water level measurements were made in most of the test borings at the completion of overburden drilling and soil sampling. Freestanding water was encountered in borings B-1, B-4, B-5, B-9, B-14, B-20, B-21, B-25, B-26, B-29, B-36, B-37, B-40, B-43, B-45 and B-47 at depths ranging from 13.6 feet to 53.4 feet bgs. These water levels correspond to elevations ranging between El. 586.7 feet and El. 552.5 feet. Each of these borings were advanced to auger refusal (presumed bedrock refusal).

No freestanding water was recorded following the completion of overburden drilling and sampling, at the remaining test borings advanced to auger refusal or at the shallower test borings (i.e. test borings advanced to a depth of 18 to 22 feet and terminated). It is possible that in many cases within the deeper test borings, that groundwater may not have had sufficient time to accumulate and/or stabilize in the boring holes within the time that had elapsed from the completion of soil drilling operations and the time of the observations / measurements.

Following coring at boring locations B-4, B-43 and B-48, freestanding water was recorded at depths of 20.0 feet, 10.0 feet and 10.0 feet respectively below the existing ground surface. These depths correspond to elevations ranging between El. 581.5 feet and El. 583.2 feet. We note that water was added to these test borings to facilitate the rock coring. Water level measurements were not obtained at the completion of coring at the remaining rock core borings (B-1, B-29, B-31 and B-47).

A 2-inch diameter, PVC, groundwater observation well was installed in borings B-6 B-24 and B-48 following the completion of drilling. The wells installed at borings B-24 and B-48 extend to presumed top of bedrock (auger refusal) at depths of 41.3 feet and 31.0 feet, respectively. The well installed at boring B-6 is seated within the silty clay and clayey silt soils at a depth of 22.0 feet.

A geotechnical engineer visited the site on February 7th, February 17th, March 4th, and April 1st, 2014 to record the water level in the wells. The water level depths and corresponding elevations are as follows:

Groundwater Observation Well Water Level Depths and Elevations			
Boring / Well No.	Ground Surface El. (feet)	Water Level Depth (feet)	Water Level El. (feet)
February 7th, 2014			
B-6	603.1	1.1	602.0
B-24	598.6	30.1	568.5
B-48	595.8	3.6	592.2
February 17th, 2014			
B-6	603.1	2.1	601.0
B-24	598.6	13.1	585.5
B-48	595.8	4.5	591.3
March 4th, 2014			
B-6	603.1	4.4	598.7
B-24	598.6	8.1	590.5
B-48	595.8	3.5	592.3
April 1st, 2014			
B-6	603.1	0.6	602.5
B-24	598.6	8.2	590.4
B-48	595.8	2.4	593.4

The water levels observed and measured in the wells, particularly at boring locations B-6 and B-48, may in part be the result of wet surface conditions or perched water present in the upper soils. Based on the water levels obtained at the completion of coring in borings B-4, B-43 and B-48, as well as the readings obtained in borings B-9, B-20 and B-25 following completion soil sampling to auger refusal, and the level in well B-24 tends to suggest that a permanent groundwater table may be present at elevations in the range of about El 580 feet to El. 589 feet, although this is not confirmed by the other groundwater observation wells at this time. Continued monitoring of the water levels in the existing wells, particularly into the summer months, as well as the installation of additional wells is recommended to better confirm the depths / elevations of permanent groundwater conditions present on the site.

It also appears that zones of perched or trapped groundwater are present in the topsoil and fill soils at or near the ground surface, at various locations on the site, due to the relatively low permeability of the underlying soils present, and depending on site drainage conditions. Such conditions were observed during the subsurface exploration where areas of standing water and spongy surface conditions were present, hindering some of the drill rig access. These conditions can be particularly

more prevalent following heavy or extended periods of precipitation and during seasonally wet periods, and therefore should be anticipated with the new development site preparation. The clayey and silty fill and indigenous soils encountered are considered to be poor draining soils.

6.00 LABORATORY TEST RESULTS

6.10 SHRINKAGE / SWELL POTENTIAL OF CLAY SOILS

A total of thirteen (13) silty clay / clayey silt soil samples, obtained at various locations and depths as summarized on Table 1, were evaluated qualitatively for shrinkage potential using soil shrinkage and moisture content index test data from the laboratory testing program.

The range of moisture content, liquid limit, plastic limit, plasticity index and shrinkage limit of the clay type soil samples tested, were as follows:

Index Property	Range
Moisture Content	10.7 % to 28.1 %
Liquid Limit	20 % to 61 %
Plastic Limit	12 % to 25 %
Plasticity Index	8 to 37
Shrinkage Limit	12 % to 23 %

The plasticity indices indicate the clay soils vary between a low and high plasticity. Based on the moisture contents and the shrinkage test data, the COLE factors determined ranged from 0 to 0.034.

The laboratory test data and COLE factors calculated suggest that the silty clay soils encountered within the upper reaches of the site below the immediate surface soils, (i.e. within the anticipated depths of proposed spread foundations) are partially desiccated and have a generally non-existent to low potential susceptibility to shrinkage. Therefore, spread foundation settlement should generally be limited to normal consolidation settlement as a result of the compressive structural loads.

The following conditions were noted to support these conclusions.

1. The moisture content of the clay soil samples tested were either lower or just slightly above their shrinkage limit.

2. The COLE factors determined generally ranged from 0 to 0.025, with one sample slightly greater at 0.034.

COLE factors of 0 correlate to a non-existent shrinkage potential. COLE factors between 0 and 0.03 correlate to a low shrinkage potential. COLE factors of 0.03 to 0.06 correlate to a moderate shrinkage potential and COLE factors of about 0.06 and greater correlate to a high to very high shrinkage potential.

With regard to potential swelling, the clay soils would have to be in a loose condition and be inundated with water for long periods to cause saturation and potential swelling. Given the relatively medium stiff to hard nature of the indigenous clay soils and their inherent low permeability it is unlikely saturation and potential swelling of these soils would occur in an undisturbed state. We note, however the upper surficial clayey silt /silty clay fill soils are in a less dense condition and may be more susceptible to potential shrinkage and swelling, where they are inundated with poor draining surface water.

In addition, drying and re-wetting cycles occurring in clayey fill soils, if used to backfill the foundation walls, could result in soil swelling/shrinkage cycles that can exert additional lateral pressures acting on earth retaining foundation walls. Such action may cause cracking and distortion of the walls if not properly accounted for. Accordingly, to reduce risks associated with the potential for soil expansion and minimize the potential for additional lateral earth pressures to act on the walls, the backfill against any earth retaining structures (i.e. basement foundation walls, depressed crawl space walls, pit structures, etc,) should consist of a suitable non-plastic soil such as a granular sand and gravel backfill material or a crusher run stone Structural Fill material.

6.20 SOIL CORROSION AND SULFATE ATTACK POTENTIAL

Three (3) composite soil samples were prepared from the samples obtained from the upper reaches of test boring locations B-6, B-34 and B-45. The composite samples were tested for resistivity, redox, pH, and sulfides according to procedures established by the Ductile Iron Pipe Research Association (DIPRA). These samples were also tested for chlorides and sulfates.

This analytical laboratory test data is included in Appendix B and is also summarized in the following tables.

Summary of DIPRA Test Results							
Test Boring	Sample Depth (feet bgs)	Resistivity (ohm-cm)	Redox (mv)	ph	Sulfides	Moisture (%)	Total DIPRA Points
B-6	2 to 8	15,000	-35.2	7.0	Negative	9.5	6
B-34	2 to 10	11,500	-22.6	6.4	Negative	8.9	6
B-45	2 to 10	2,700	9.0	7.6	Negative	23.9	7

Based on the DIPRA publication "American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems", if the total DIPRA points exceed 10, the soil is considered corrosive to ductile iron pipe, and protection against exterior corrosion should be provided.

Based on the test results, the site soils tested appear to have a low corrosion potential to ductile iron waterline pipes and other buried metallic pipes/elements. Accordingly, cathodic protection or a suitable protective coating of metallic pipes and conduits, to resist potential corrosion, does not appear necessary.

Summary of Chloride and Sulfate Test Results			
Test Boring	Sample Depth (feet bgs)	Chloride (mg/kg)	Sulfate (mg/kg)
B-6	2 to 8	15	N.D.
B-34	2 to 10	10	N.D.
B-45	2 to 10	18	N.D.

N.D. – Non Detectable within test parameters.

Based on the sulfate concentrations, the soils, which make up these samples, are considered to have a negligible potential for sulfate exposure. Accordingly, a Type I-II Portland Cement appears will be acceptable for the concrete structure elements placed in these soils.

Refer to the laboratory test data included in Appendix B for more information.

7.00 PRELIMINARY GEOTECHNICAL CONSIDERATIONS AND RECOMMENDATIONS FOR SITE DEVELOPMENT

7.10 GENERAL CONSIDERATIONS

The following general considerations and recommendations are provided to assist with the permitting, planning and preliminary design for the proposed mixed use redevelopment project being considered on the site of the Westwood Country Club. This information is based on the recently completed geotechnical investigation, which included 49 test borings completed across the site to characterize the soil and bedrock conditions present, groundwater observations during drilling and from 3 installed wells to assess groundwater conditions present on the site, and laboratory testing to further characterize soil conditions. Additional investigations and further evaluations will be necessary, as discussed below, for final design once final building development plans and loading conditions, along with final site development plans, are established.

Topsoil, along with underlying man-placed fill or disturbed indigenous soils, were encountered at the surface of most of the test boring locations. The topsoil thickness typically ranged between about 2-inches and 14-inches, based on the driller's measurements and interpretation of topsoil. The fill, where present, was typically found to extend to depths ranging between about 2 feet and 5 feet bgs.

The indigenous soils encountered consist predominately of medium stiff to hard silty clay and clayey silt and firm to very compact silty or clayey sand deposits with some intermixed gravel, and occasional cobbles/boulders and shale fragments. These soils are non-organic, and are not considered to be highly compressible, nor highly susceptible to shrinkage, swelling, or liquefaction. Significant deposits of highly moist, soft to very soft clays, as present in other areas of northern Amherst and which have been problematic to residential foundation/structure movement and distress (i.e. basement foundation subsidence / settlement and lateral movement), appear to be generally absent within this site.

Accordingly, the indigenous soil conditions encountered in the test borings are generally considered suitable to support the anticipated residential and mixed use structure loads using conventional spread foundation systems. Spread foundations and any underlying Engineered Fill (i.e. compacted Structural Fill or suitable flowable backfill material), however, will need to bear on suitable indigenous soil

subgrades established below the upper existing man-placed fill and disturbed indigenous soils.

In a few cases (i.e. within borings B-9, B-11, B-19, B-21, B-22 and B-45) some limited zones of weaker soils were encountered which may impact the use of spread foundations from a structure bearing capacity and settlement stand point, particularly if a multiple-story more heavily loaded building structure would be proposed at or near these locations. Accordingly, these conditions possibly may require consideration of deep foundations (i.e. driven piles) for multiple-story more heavily loaded building structures at or near these locations.

The existing fill and indigenous soil subgrades are also considered to be generally suitable for basement, at-grade and garage slab-on-grade floor construction, with proper site preparation. The soils encountered are also considered generally suitable for construction of the proposed infrastructure, including the roadways, parking lots, storm and sanitary sewers, waterlines and retention pond structures.

Based on the water level observations made in the test borings, as well as in the groundwater observation wells, it appears that a permanent general groundwater zone (i.e. groundwater table) should generally not be encountered within the excavations for shallow spread foundations and shallow utility construction. The groundwater observations made during drilling and in well B-24 suggest that a permanent groundwater table may be present at elevations in the range of about El 580 feet to El. 589 feet, although this was not confirmed by all of the groundwater observation wells at this time.

Zones of perched or trapped groundwater are also present in the topsoil and upper fill soils at or near the ground surface, at various locations on the site, due to the relatively low permeability of the underlying soils present, and poor site drainage conditions. These conditions therefore will make site stripping and subgrade preparation difficult, particularly during wet periods.

Given, the relatively low to medium low permeability of the soils present, both permanent and perched groundwater seepage if encountered should be relatively slow and of low quantities. Accordingly, these conditions should not significantly impact basement and utility construction. It is anticipated that conventional sump and pump methods of dewatering should generally be sufficient to control surface water, as well as permanent and perched groundwater seepage conditions, should they be encountered.

Based on the subsurface conditions encountered, the overall site should be classified as Seismic Site Class "D" in accordance with Table 1613.5.2 of the Building Code of New York State - December 2010 (NYS Building Code). As previously stated, the soil conditions encountered are not considered to be susceptible to potential liquefaction in the case of a seismic event. Therefore, seismic design may be based on these criteria.

The following sections present additional and more detailed geotechnical considerations and recommendations to assist with permitting, planning, and preliminary design of the proposed site redevelopment project.

7.20 FOUNDATION SUPPORT

As stated above, the indigenous soil conditions encountered in the test borings are generally considered suitable to support the anticipated residential and mixed use structures using conventional spread foundation systems. Preliminarily, it is expected that spread foundations can be sized, based on net allowable bearing capacities in the range of about 2,000 to 4,000 pounds per square foot (psf) ±, depending on location, foundation bearing depths and actual structure loads.

Spread foundations should bear on suitable, undisturbed, indigenous soil bearing grades, after the removal of all fill soils and any unsuitable indigenous soft or wet soils. Alternatively, the foundations may also bear on Engineered Fill (i.e. compacted Structural Fill or flowable backfill), which is placed over the suitable indigenous soil bearing grades, following excavation and removal of fill soils and any unsuitable indigenous soils which are present below the design bearing grade elevation of the footings.

Suitable indigenous soil bearing subgrades should consist of stiff to hard silty clay and clayey silt soils or firm to very compact silty or clayey sand soils. Suitable bearing subgrade conditions were typically encountered in the test borings at depths ranging between about 2 feet and 5 feet bgs. At boring locations B-19 and B-22 suitable bearing subgrade conditions were deeper at about 10 feet and 6.5 feet, respectively.

In a few cases (i.e. within borings B-9, B-11, B-19, B-21, B-22 and B-45) zones of weaker soils were encountered which may impact the use of spread foundations. Accordingly, these conditions possibly may require consideration of a deep foundation system; particularly if multiple-story more heavily loaded building structures would be proposed at or near these locations.

Driven H-piles or pipe piles driven to refusal on the Shale bedrock appear would be the best suited deep foundation system option for the site conditions present. Zones of gypsum present in the Shale bedrock may require socketting of drilled piers in the bedrock in order to bear the piers on suitable bedrock below these zones. Therefore, it appears the use of drilled piers would be less favorable from both a constructability and economic standpoint.

For preliminary information, a driven HP12x53 H-pile, driven to refusal on the bedrock, would be expected to develop an axial compressive capacity in the range of about 100 to 120 tons ± per pile. Other pile sections can also be used, based on product availability and costs, which would provide higher or lower allowable axial capacities, based on the actual pile section.

7.30 BASEMENT STRUCTURE DESIGN CONSIDERATIONS

Basement structures should be designed for lateral earth pressures caused by the load of backfill against the wall and the surcharge effects from any permanent or temporary loads. In addition suitable foundation drainage should be provided to relieve potential hydrostatic pressure from developing against the basement walls and floors due to the possible presence of groundwater. In this case suitable damp proofing of the walls and floors should also be provided. Alternatively, the basement structures could also be designed to resist potential full hydrostatic pressure. In such case the basement structure should also be fully water proofed.

Where suitable foundation drainage is provided, the basement walls can be designed for “at rest” lateral earth pressure computed on the basis of an “equivalent fluid unit weight” of 70 pounds per cubic foot (pcf). This is based on the assumption that the wall backfill beyond the drainage system is a suitable well draining granular backfill material, such as a crusher run stone Structural Fill.

The use of the on-site clayey silt, silty clay and silty or clayey sand soils to backfill the basement walls is not recommended as they will be susceptible to potential swelling in a looser disturbed state, which could cause additional lateral pressures on the basement walls. The on-site soils could be used, however, to backfill non-earth retaining foundation walls provided they can be properly placed and compacted to a stable and well engineered condition.

The foundation drainage system should be properly designed, installed and maintained for long-term performance and should drain to a sump and pump system or a gravity drain relief point, which is not susceptible to potential backup.

The foundation drainage system should include a drainage/separation geotextile installed around drainage stone, which surrounds a slotted under-drain pipe. The drainage stone should be sized in accordance with the pipe slotting. A crushed aggregate conforming to NYSDOT Standard Specifications Section 703-02, Size Designation No. 1 (½-inch washed gravel or stone) is generally acceptable for slotted under-drain pipe. The foundation under-drain pipes should be set at a depth of about 1 foot below the top of the finish basement floor grade.

A pervious granular backfill (i.e. concrete sand or crusher run stone) or a suitable geosynthetic drainage composite (i.e. Miradrain, Grace Hydroduct, Delta MS, etc.) should be placed against the basement foundation wall, above the drainage system, to allow infiltration to the drainage system.

7.40 SLAB-ON-GRADE FLOOR CONSTRUCTION

The building floors can be constructed as slab-on-grade following proper subgrade preparation as outlined in Section 7.80. For preliminary design purposes, a minimum of 6-inches of Subbase Stone is recommended beneath the lightly loaded floor slabs (residential floors, lightly loaded office floors, etc.). A minimum 12-inch thick layer of Subbase Stone is recommended beneath more heavily loaded floor slabs (i.e. garage areas, storage areas, mechanical rooms, etc.). A suitable stabilization/separation geotextile, such as Mirafi 500X, should be placed over the existing soil or fill soil subgrades prior to placement of the Subbase Stone layer.

An imported suitable granular fill material is generally recommended to be used as subgrade fill to raise the site grades, beneath the Subbase Stone course for the slab-on-grade construction. The use of the soils from the site may be possible for the building pad site filling, provided the soil can be properly placed and compacted in a controlled manner, as discussed further in Section 7.80 below.

In order to limit potential post construction settlement, due to required site filling, we recommend the subgrade fill placement, in areas requiring more than about 2 to 3 feet of fill, be completed at least 1 to 2 months month in advance of the final subgrade preparation, Subbase Stone placement, and floor slab construction.

Preliminarily, the slab-on-grade floor slabs may be designed using a modulus of subgrade reaction of 150 pounds per cubic inch (pci) at the top of the subbase layer. It is recommended that the slab-on-grade be constructed such that it is not structurally connected to, or resting directly on, perimeter walls or column footings in order to limit differential settlement effects.

The above subbase stone thicknesses should not be considered sufficient for carrying construction vehicle loads. Therefore, contingencies should be planned for to temporarily increase the Subbase Stone thickness within the building pad areas to provide a suitable working surfaces to stage the construction, carry construction vehicle loads and protect the underlying subgrades. This will be particularly important when wet periods occur. The additional subbase stone material could then be removed and re-graded in preparation for the actual floor construction and/or re-used as foundation backfill or as pavement area subbase or as otherwise determined appropriate.

A moisture barrier is generally not considered warranted where the floor slabs are constructed at or above the final site grades, unless otherwise recommended by the finished flooring manufacturer. A suitable moisture barrier, however, is recommended beneath the below grade floor areas (i.e. basement areas) to reduce the potential for dampness.

7.50 SEISMIC DESIGN CONSIDERATIONS

Based on the subsurface conditions encountered in the test borings, the upper 100 feet of the site should be classified as Seismic Site Class “D” in accordance with the criteria presented on Table 1613.5.2 of the Building Code of New York State - December 2010 (NYS Building Code). The soil conditions encountered are generally not considered to be susceptible to potential liquefaction in the case of a seismic event. Therefore, seismic design may proceed based on these considerations.

The spectral response accelerations in the project area were obtained by Empire using the United States Geological Survey (USGS) web site application (https://geohazards.usgs.gov/secure/designmaps/us/). These accelerations were then adjusted, as recommended by the USGS, to obtain the 2% probability in 50 years mapping accelerations, as presented in the NYS Building Code.

Using the site location, the calculated spectral response accelerations for Site Class “B” soils are 0.221g for the short period (0.2 second) response (S_S) and 0.051g for the one second response These spectral response accelerations were then adjusted for the Seismic Site Class “D” soil profile determined for the project site.

Accordingly, the adjusted spectral response accelerations for Site Class "D" are as follows:

- Short Period Response (S_{MS}) - 0.354g
- 1 Second Period Response (S_{M1}) - 0.122g

The corresponding five percent damped design spectral response accelerations (S_{DS} and S_{D1}) are as follows:

- S_{DS} - 0.236g
- S_{D1} - 0.081g

It is possible that a seismic shear wave velocity study of the site may refine and possibly upgrade the seismic design site class. This may be particularly beneficial in the areas of the mixed use commercial and apartment buildings depending on the costs associated with seismic reinforcement of these structures. It should be understood, however, that there is no guarantee that an upgrade can be made if a seismic shear wave study is performed,

7.60 PAVEMENT DESIGN CONSIDERATIONS

The Town of Amherst requires a typical pavement section consisting of the following components for residential and commercial development roadways:

Town of Amherst Asphalt Concrete Pavement Section:

- 1.5 inches – Top Course
- 2.5 inches – Binder Course
- 4.0 inches – Base Course
- 11 inches – Subbase Stone Course

It is estimated that the existing subgrade soils will have a typical CBR value of about 2 to 3 ±. This correlates to a soil resilient modulus of about 3,500 psi, which has been used for our pavement design evaluations. The pavement sections were analyzed using the NYSDOT Thickness Design Manual for New and Reconstructed Pavement, along with the American Association of State Highway and Transportation Officials (AASHTO) "Interim Guide Method for Design of Flexible Pavements".

Based on our analyses, the Town of Amherst pavement section will provide approximately 1.2 million, 18-kip equivalent axle loads (EAL's) over its design life, provided the subgrades are prepared in accordance with the recommendations

presented in Section 7.80. This design life is considered to be within an acceptable range for this type of application.

We would recommend, however, the Town of Amherst pavement section also include a suitable stabilization/separation geotextile (i.e. Mirafi 600X or suitable equivalent). It may also be necessary to increase the subbase thickness in some areas to improve subgrade conditions in some areas, as well as to promote drainage to underdrains, etc. as discussed below.

Pavement design recommendations are also provided for two (2) flexible pavement structure types within the proposed mixed use development areas. These include the following:

- A heavy duty asphalt concrete pavement for the entrance, access drives and pavement areas, which will be subject to delivery truck traffic. (Heavy Duty Asphalt Concrete Pavement Structure); and
- A light duty asphalt concrete pavement for automobile / light SUV only parking areas (Light Duty Asphalt Concrete Pavement Structure).

  <u>Heavy Duty Asphalt Concrete Pavement:</u>

  - 1.5 inches – Top Course
  - 3.0 inches – Binder Course
  - 15 inches – Subbase Stone Course
  - Stabilization/Separation Geotextile
  - Prepared Subgrade

  <u>Light Duty Asphalt Concrete Pavement:</u>

  - 1.5 inches – Top Course
  - 2.0 inches – Binder Course
  - 10 inches – Subbase Stone Course
  - Stabilization/Separation Geotextile
  - Prepared Subgrade

Based on our analyses, the Heavy Duty and Light Duty pavement sections will provide approximately 350,000 and 45,000 18-kip equivalent axle loads (EAL's), respectively, over their design life.

The installation of underdrains and/or edge drains is recommended to drain the pavement subbase course and subgrades in order to limit the potential for frost action and improve pavement structure performance and design life. Alternatively, the pavement subbase course can also be allowed to daylight/drain to an adjacent perimeter drainage swale.

Proper grading of the pavement structure subgrades is also recommended Accumulation of water on pavement subgrades should be avoided by grading the subgrade to a slope of at least 2 percent to allow drainage to the underdrains or drainage swale.

The subbase stone course for the above pavement sections should not be considered sufficient for use as construction haul roads. Therefore, contingencies should be planned for to temporarily increase the Subbase Stone thickness or provide additional base stabilization / reinforcement within the areas that will be used as construction roads and to stage the construction.

7.70 UNDERGROUND UTILITY CONSTRUCTION

The generally medium stiff to hard clayey silt and silty clay and firm to very compact silty or clayey soils should provide generally suitable subgrade conditions for underground utility construction, including storm and sanitary sewers, water lines, gas lines and buried electrical / communication conduits. Accordingly, standard bedding materials and thicknesses can generally be used to support this infrastructure. It should be expected, however, that in some localized cases that subgrade undercuts and the placement of additional bedding material or subgrade stabilizing materials may be required to provide suitable and stable subgrades for the utility construction. Therefore, some contingencies should be planned for, should such localized conditions be encountered.

7.80 SUBGRADE PREPARATION FOR PAVEMENT AND SLAB-ON-GRADE CONSTRUCTION

The site preparation work should be performed during seasonal dry periods to minimize potential degradation of the subgrade soils and potential undercuts which may be required to establish a stable base for construction. It should be understood that the indigenous subgrade soils that will be exposed are sensitive and will degrade and lose strength when they are wet and disturbed by construction equipment traffic. Accordingly, efforts should be made to maintain the subgrades in a dry and stable condition at all times, and not permit excessive or heavy construction traffic directly over these soils.

It is noted that zones of perched or trapped groundwater are present in the topsoil and upper fill soils at or near the ground surface, at various locations on the site, due to the relatively low permeability of the underlying soils and poor site drainage conditions present. Such conditions occurred during the subsurface exploration where areas of standing water and spongy surface conditions were present, hindering some of the drill rig access, until the site became frozen in the later part of January and early February. These conditions therefore will make site stripping and subgrade preparation difficult, particularly during wet periods, and therefore should be anticipated.

Measures to improve site drainage should be implemented as necessary prior to commencing the site stripping and subgrade preparation work. Such measures, may include installation of drainage swales to intercept and divert surface runoff away from the construction areas, sloping of the subgrade and "sealing" of the surface with a smooth drum roller to promote runoff, and restricting construction equipment traffic from traveling directly over the subgrade surfaces, especially when they are wet. The placement of a suitable base material and underlying stabilization geotextile, beneath haul roads, and in construction staging areas, will help to protect the subgrades and minimize problems associated with subgrade degradation.

All existing structures, trees, stumps, vegetation, topsoil, organic soils, etc., and any other deleterious materials within the proposed building pad areas and pavement areas should be removed. Following stripping and removal of the surface materials (i.e. topsoil, asphalt pavement, concrete pads and structures, etc.), the exposed subgrades should be proof-rolled. The proof-rolling should be performed, prior to the overlying fill placement, using a smooth drum roller weighing at least 10 tons.

The subgrade proof-rolling should be done under the guidance of, and observed by qualified geotechnical engineering personnel. In some cases it may be necessary to waive the proof-rolling requirement if wet subgrades are present. This should be determined by the geotechnical engineer (i.e. Empire). Any undercuts, which may be required as the result of the proof-rolling, should be performed based on guidance and evaluation of the conditions by the geotechnical engineer. Resulting undercuts should be backfilled with a suitable material as recommended by the geotechnical engineer.

The placement of an initial lift of suitable oversized stone fill material (i.e. "surge stone", "shot rock", minus 6-inch crusher run stone, No.3 & No.4 Stone, etc.) encased in stabilization geotextile top and bottom, may be necessary in some cases

to help stabilize the subgrades prior to the subgrade fill placement, particularly if the existing subgrades are in a soft/wet condition.

The subgrade fill placement necessary to raise the site grades may proceed following preparation and acceptance of the existing soil subgrades.

The majority of the site filling and grading necessary to raise site grades should be performed sufficiently in advance of the foundation, pavement and utility construction. Therefore we recommend the subgrade fill placement, in areas requiring more than about 2 to 3 feet of fill, be completed at least 1 to 2 months in advance of the final subgrade preparation and subbase stone placement for floor slab and pavement construction.

The on-site soils could be used for constructing the fills for establishing the building pad and pavement areas, provided they can be properly placed and compacted in a controlled manner and to a stable well engineered condition, in accordance with our recommendations. It should be understood, however, that these soils will be very difficult to dry and work with. Therefore the use of imported granular fill materials will be better suited for building pad, roadway and parking lot fill areas. On-site soils used for filling within the building pad area and pavement areas must be free of all organics, and any soft, wet or otherwise deleterious material.

As stated above, the use of the fine grained on-site soils for site filling will be difficult to work with (i.e. dry for proper compaction), vs. an imported Suitable Granular Fill or Structural Fill material, particularly during seasonally inclement or wet weather. Efforts should be made to maintain the subgrades in a dry and stable condition at all times, and limit construction traffic directly over these soils, particularly if they become wet.

Subgrade fill placed to establish the building pad, roadway and parking lot areas, using the on-site soil material, should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor moisture-density relationship (ASTM D 1557). The subgrade fill should be placed in horizontal lifts that do not exceed a maximum loose lift thickness of 6 to 9 inches. The loose lift thickness should be reduced in conjunction with the compaction equipment used so that the required density is attained. On-site soil used for subgrade fill should have a moisture content within –3 % to +1 % of the optimum moisture content (determined by ASTM D 1557) when it is placed and compacted. On-site soils having moisture contents exceeding this range will require drying efforts to be implemented by the contractor.

The subgrade fill should be placed to a stable condition and should not "pump" or show signs of movement or significant deflection (i.e. unstable conditions) as it is being constructed. Any unsuitable conditions should be undercut and removed. The fill subgrades should also be properly graded, drained and protected from moisture and frost. Placement of fill over wet, soft, snow covered or frozen subgrades should not be permitted.

Suitable Granular Fill or Structural Fill as described below in Section 7.90, or other imported suitable granular soil materials are recommended as better suited for subgrade fill to raise the existing site grades for slab-on-grade and pavement construction. Empire, however, should be consulted regarding the acceptability of any off-site materials, which do not meet the requirements stated below for Suitable Granular Fill or Structural Fill. All fill placement and compaction should be closely monitored and tested on a "full-time" basis by qualified geotechnical engineering personnel.

7.90 STRUCTURAL FILL AND SUITABLE GRANULAR FILL MATERIALS

Structural Fill Material

Structural Fill (Subbase Stone) should consist of crusher run stone, which is free of clay, organics and friable or deleterious particles. The crusher stone should meet the requirements of New York State Department of Transportation, Standard Specifications, Item 304.12 – Type 2 Subbase, with the following gradation requirements.

Sieve Size Distribution	Percent Finer by Weight
2 inch	100
¼ inch	25-60
No. 40	5-40
No. 200	0-10

Suitable Granular Fill

Suitable Granukar Fill should be well graded from coarse to fine and classified as GW, GP, GM, SW, SP and SM soils using the Unified Soil Classification System (ASTM D-2487). It should have no more than 85- percent by weight material passing the No. 4 sieve, no more than 20- percent by weight material passing the No. 200 sieve and should be generally free of particles greater than 4-inches. It should also be

free of topsoil, asphalt, concrete rubble, wood, debris, clay and other deleterious materials.

Material meeting the requirements of New York State Department of Transportation, Standard Specifications, Item 203.07 – Select Granular Fill is acceptable for use as Suitable Granular Fill.

Placement and Compaction

Structural Fill and Suitable Granular Fill should be compacted to a minimum of 95 percent of the maximum dry density as measured by the modified Proctor test (ASTM D1557). Placement of the fill should not exceed a maximum loose lift thickness of 6 to 9 inches, with the exception of the subbase course beneath the slab-on-grade and pavement construction, which can be placed in a single lift not exceeding 15-inches. It may be necessary to reduce the loose lift thickness depending on the type of compaction equipment used so that the required density is attained. The fill should have a moisture content within two percent of the optimum moisture content at the time of compaction.

8.00 RECOMMENDATIONS FOR ADDITIONAL GEOTECHNICAL INVESTIGATIONS

As discussed above, it is recommended that additional explorations be completed for final site redevelopment design particularly in the mixed use town center and future senior housing building development areas

Preliminarily we would recommend that additional test borings in the mixed use town center and senior housing building development areas be performed to provide an approximate frequency of at least one (1) boring per about 3,000 to 4,000 square feet of building footprint, with no less than 4 borings per building. The recommended depth of these borings will be dependent on the building structure loads and foundation bearing depths. At least half of these borings, however, should be extended to bedrock, if a deep foundation system appears may be warranted.

Additional borings within the proposed residential areas should be made to provide a frequency of about one (1) boring per 4 to 5 residential units, with these borings extending to a depth of about 20 feet ±. Additional borings along the proposed roadway and parking lot areas should be made to provide a frequency of about one (1) boring per 400 linear feet of road and/or about one (1) boring per about 10,000 square feet of parking lot area. The roadway borings should extend at least 5 feet

beneath the anticipated utility inverts and the parking lot area borings should extend to a depth of about 6 feet.

Empire can be consulted to assist in planning the locations and scope of the additional explorations and evaluations that may be necessary for final design, based on the final development plans, building sizes and loads.

9.00 CONCLUDING REMARKS

This report was prepared to assist in evaluating the geotechnical characteristics of the subsurface conditions present at the Westwood Country Club site in Amherst, New York, with regard to the proposed mixed use redevelopment project being considered on the site. The report has been prepared for the exclusive use of Mensch Capital Partners, LLC and related parties, for specific application to this site and this project only.

The considerations and preliminary recommendations presented were prepared based on Empire Geo-Services, Inc.'s understanding of the proposed site redevelopment, as described herein, and through the application of generally accepted soils and foundation engineering practices. No warranties, expressed or implied are made by the conclusions, opinions, recommendations or services provided.

This report was prepared for site characterization and preliminary site development planning purposes only. It should not be considered as providing complete or sufficient subsurface information for final building foundation design and construction. Additional subsurface explorations and geotechnical engineering evaluations will be necessary based on the actual planned site development, including the building sizes, location, use and structural loads.

Additional information regarding the use and interpretation of this report is presented in Appendix D.

Sincerely,

EMPIRE GEO-SERVICES, INC.

John J. Danzer, P.E.
Senior Geotechnical Engineer

TABLES

TABLE 1

SUMMARY OF LABORATORY INDEX TESTS

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

Test Boring Number	Sample Number	Sample Depth	Moisture Content (%)	Grain Size Distribution			Atterberg Limits				COLE Factor	Shrinkage Potential	Soil Description	USCS Group Soil
				Gravel (%)	Sand (%)	Silt & Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Shrinkage Limit (%)				
B-1	S-3	4' - 6'	14.6	5.2	27.0	67.8	20	12	8	12	0.015	Low	Red-Brown Silty Clay / Clayey Silt, some Sand, trace gravel	CL / ML
B-3	S-4	6' - 8'	14.8	2.0	14.8	83.2	24	13	11	13	0.010	Low	Red-Brown Silty Clay, little Sand, trace gravel	CL
B-7	S-6	10' - 12'	12.6	8.3	17.4	74.3	24	12	12	13	0	Non - Existent	Brown-Gray, Silty Clay, little Sand, Trace gravel	CL
B-12	S-3	4'- 6'	13.1	8.6	23.2	68.2	24	13	11	12	0.009	Low	Red-Brown Silty Clay, some Sand, trace gravel	CL
B-14	S-4	6' - 8'	10.7	7.9	22.0	70.1	23	12	11	17	0	Non-Existent	Red-Brown Silty Clay, some Sand, trace gravel	CL
B-20	S-5	10' - 12'	23.3	0.0	1.0	99.0	37	17	20	19	0.025	Low	Red-Brown Silty Clay, trace sand	CL
B-22	S-3	4' - 6'	26.5	0.0	0.8	99.2	52	22	30	23	0.018	Low	Red-Brown Silty Clay, trace sand	CH
B-30	S-5	8' - 10'	11.4	4.3	22	72.8							Red-Brown Clayey Silt, some Sand, trace gravel	ML
B-31	S-6	10' - 12'	10.7	9.1	21.6	69.3	23	13	10	12	0	Non-Existent	Orange-Brown Silty Clay, some Sand, trace gravel	CL
B-35	S-7	15' - 17'	8.7	11.8	29.4	58.8							Red-Brown Clayey Silt, some Sand, little Gravel	ML
B-38	S-2	2' - 4'	21.3	0.0	3.8	96.2	44	20	24	20	0.008	Low	Brown Silty Clay, trace sand	CL
B-40	S-4	6' - 8'	12.0	2.2	14.8	83	25	14	11	13	0	Non-Existent	Red-Brown Silty Clay, little Sand, trace gravel	CL
B-44	S-3	4' - 6'	21.3	0.0	2.2	97.8	59	22	37	22	0	Non-Existent	Red-Brown Silty Clay, trace sand	CH
B-46	S-3	4' - 6'	28.1	0.0	0.8	99.2	61	25	36	22	0.034	Low-Medium	Red-Brown Silty Clay, trace sand	CH
B-48	S-5	8' - 10'	11.8	3.8	19.1	77.1	23	13	10	14	0	Non-Existent	Red-Brown Silty Clay, little Sand, trace gravel	CL
COMPOSITE SAMPLES											DIPRA Points	Chlorides / Sulfates (ppm)		
B-6	S-2 to S-4	2' - 8'	4.5 to 11.3	5.8	14.9	79.3					6	15 / ND	Red-Brown Silty Clay, little Sand, trace gravel	ML / CL
B-34	S-2 to S-5	2' - 10'	5.9 to 12.0	7.8	10.7	81.5					6	10 / ND	Red-Brown Silty Clay, little Sand, trace gravel	ML / CL
B-45	S-2 to S-5	2' - 10'	20.2 to 28.6	4.5	1.7	93.8					7	18 / ND	Red-Brown Silty Clay, trace sand	CL

TABLE 2 (SHEET 1 OF 3)

SUMMARY OF SUBSURFACE CONDITIONS

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

Boring Number	Ground Surface El. (feet)	Total Boring Depth (feet)	Surface Material	Fill Depth (feet)	Bottom of Fill El. (feet)	Auger Refusal Depth (feet)	Auger Refusal El. (feet)	Depth of Freestanding Water in Boring (feet)	El. of Freestanding Water in Boring (feet)	Depth to Groundwater in Well (feet)	El. of Groundwater in Well (feet)
B-1	605.9	67.5	Topsoil	2.0	603.9	62.5	543.4	53.4	552.5		
B-2	603.7	20.0	12" - Topsoil	2.0	601.7	N.E.	N.E.	N.E.	N.E.		
B-3	603.1	20.0	12" - Topsoil	2.0	601.1	N.E.	N.E.	N.E.	N.E.		
B-4	601.5	53.5	3" - Topsoil	2.0	599.5	48.5	553.0	47.0	554.5		
B-5	603.2	32.7	2" - Topsoil	2.0	601.2	32.7	570.5	16.5	586.7		
B-6 w/Well	603.1	22.0	14" - Topsoil	2.0	601.1	N.E.	N.E.	N.E.	N.E.	0.6	602.5
B-7	603.0	47.6	8" - Topsoil	N.E.	N.E.	47.6	555.4	N.E.	N.E		
B-8	602.8	47.5	2" - Topsoil	N.E.	N.E.	47.5	555.3	N.E.	N.E.		
B-9	602.4	44.0	3" - Topsoil	2.0	600.4	44.0	558.4	22.0	580.4		
B-10 / 10A	600.4	13.5	3" - Topsoil	2.0	598.4	13.5	586.9	N.E.	N.E.		
B-11	601.7	45.7	4" - Topsoil	2.0	599.7	45.7	556.0	N.E.	N.E.		
B-12	599.1	20.0	4" - Topsoil	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.		
B-13	599.1	21.0	10" - Topsoil	2.0	597.1	N.E.	N.E.	N.E.	N.E.		
B-14	602.9	47.7	10" - Topsoil	2.0	600.9	47.7	555.2	38.2	564.7		
B-15	602.9	20.0	3.5" - Topsoil	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.		
B-16	599.5	20.0	6" - Topsoil	2.0	597.5	N.E.	N.E.	N.E.	N.E.		
B-17	598.2	22.0	Topsoil	2.0	596.2	N.E.	N.E.	N.E.	N.E.		

Boring Advanced to Auger Refusal

Boring Scheduled to be Advanced to 20 feet and Terminated

Boring Advanced 5 feet into Bedrock with Rock Coring

Groundwater Observation Well Installed in Boring. Water Level on April 1st, 2014

N.E. - Not Encountered N.E.B.C. - Not Encountered Before Water Added to Boring to Facilitate Rock Coring N.D. - Not Determined

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York 14075

TABLE 2 (SHEET 2 OF 3)

SUMMARY OF SUBSURFACE CONDITIONS

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

Boring Number	Ground Surface El. (feet)	Total Boring Depth (feet)	Surface Material	Fill Depth (feet)	Bottom of Fill El. (feet)	Auger Refusal Depth (feet)	Auger Refusal El. (feet)	Depth of Freestanding Water in Boring (feet)	El. of Freestanding Water in Boring (feet)	Depth to Groundwater in Well (feet)	El. of Groundwater in Well (feet)
B-18	588.5	35.0	3" - Topsoil	4.0	584.5	35.0	553.5	N.E.	N.E.		
B-19	592.3	20.0	Topsoil	2.0	590.3	N.E.	N.E.	N.E.	N.E.		
B-20	597.0	43.5	Topsoil	2.0	595.0	43.5	553.5	16.5	580.5		
B-21	598.2	41.5	Native Soil	N.E.	N.E.	41.5	556.7	39.0	559.2		
B-22	599.1	44.1	11" - Topsoil	N.E.	N.E.	44.1	555.0	N.E.	N.E.		
B-23	596.8	22.0	11" - Topsoil	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.		
B-24 w/Well	598.6	41.3	Topsoil	4.0	594.6	41.3	557.3	N.E.	N.E	8.2	588.6
B-25	594.8	40.2	4" - Topsoil	2.0	592.8	40.2	554.6	13.6	581.2		
B-26	594.1	40.8	Topsoil	2.0	592.1	40.8	553.3	33.5	560.6		
B-27	594.3	22.0	Fill	2.0	592.3	N.E.	N.E.	N.E.	N.E.		
B-28	593.2	20.0	6" - Topsoil	2.0	591.2	N.E.	N.E.	N.E.	N.E.		
B-29	594.5	38.5	3" - Topsoil	2.0	592.5	33.5	561.0	19.3	575.2		
B-30	594.8	20.0	8" - Topsoil	4.0	590.8	N.E.	N.E.	N.E.	N.E.		
B-31	592.5	43.5	6" - Topsoil	N.E.	N.E.	38.5	554.0	N.E.B.C.	N.E.B.C.		
B-32	594.0	30.5	3" - Topsoil	4.0	590.0	30.5	563.5	N.E.	N.E.		
B-33	592.9	20.0	Topsoil	2.0	590.9	N.E.	N.E.	N.E.	N.E.		
B-34	593.4	31.4	12" - Topsoil	2.0	591.4	31.4	562.0	N.E.	N.E.		

Boring Advanced to Refusal

Boring Scheduled to be Advanced to 20 feet and Terminated

Boring Advanced 5 feet into Bedrock with Rock Coring

Groundwater Observation Well Installed in Boring. Water Level on April 1st, 2014.

N.E. - Not Encountered N.E.B.C. - Not Encountered Before Water Added to Boring to Facilitate Rock Coring N.D. - Not Determined

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York 14075

TABLE 2 (SHEET 3 OF 3)

SUMMARY OF SUBSURFACE CONDITIONS

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

Boring Number	Ground Surface El. (feet)	Total Boring Depth (feet)	Surface Material	Fill Depth (feet)	Bottom of Fill El. (feet)	Auger Refusal Depth (feet)	Auger Refusal El. (feet)	Depth of Freestanding Water in Boring (feet)	El. of Freestanding Water in Boring (feet)	Depth to Groundwater in Well (feet)	El. of Groundwater in Well (feet)
B-35	593.0	32.5	7" - Topsoil	N.E.	N.E.	32.5	560.5	N.E.	N.E.		
B-36	593.3	31.0	3" - Topsoil	2.0	591.3	31.0	562.3	28.0	565.3		
B-37	592.1	22.5	8" - Topsoil	4.0	588.1	22.5	569.6	20.0	572.1		
B-38	592.4	24.0	Fill	2.0	590.4	24.0	568.4	N.E.	N.E.		
B-39	592.0	18.1	4" - Topsoil	2.0	590.0	N.E.	N.E.	N.E.	N.E.		
B-40	588.9	22.0	Topsoil	5.0	583.9	22.0	566.9	19.0	569.9		
B-41	590.3	20.0	3" - Topsoil	2.0	588.3	N.E.	N.E.	N.E.	N.E		
B-42	601.1	22.0	13" - Topsoil	2.0	599.1	N.E.	N.E.	N.E.	N.E.		
B-43	593.2	35.0	6" - Topsoil	2.0	591.2	30.0	563.2	20.0	573.2		
B-44	592.7	18.7	6" - Topsoil	2.0	590.7	N.E.	N.E.	N.E.	N.E.		
B-45	591.9	29.5	7" - Topsoil	2.0	589.9	24.5	567.4	15.0	576.9		
B-46	591.6	20.0	Topsoil	2.0	589.6	N.E.	N.E.	N.E.	N.E.		
B-47	594.9	39.0	6" - Topsoil	2.0	592.9	34.0	560.9	20.0	574.9		
B-48	595.8	31.0	3" - Topsoil	2.0	593.8	31.0	564.8	N.E.	N.E.	2.4	593.4
B-49	593.5	20.0	5" - Topsoil	2.0	591.5	N.E.	N.E.	N.E.	N.E.		

Boring Advanced to Refusal

Boring Scheduled to be Advanced to 20 feet and Terminated

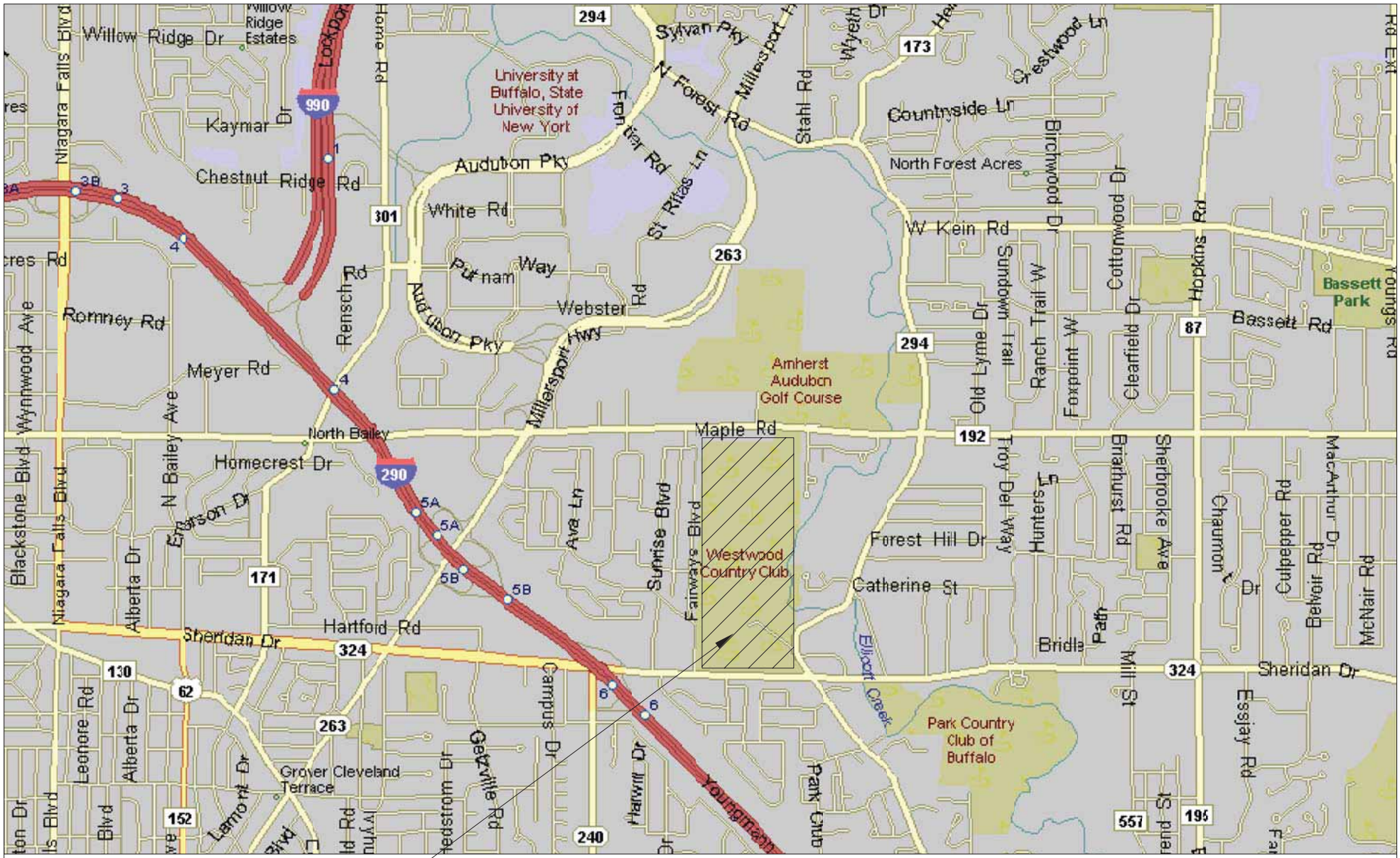
Boring Advanced 5 feet into Bedrock with Rock Coring

Groundwater Observation Well Installed in Boring. Water Level on April 1st, 2014.

N.E. - Not Encountered N.E.B.C. - Not Encountered Before Water Added to Boring to Facilitate Rock Coring N.D. - Not Determined

Empire Geo-Services, Inc.
5167 South Park Avenue
Hamburg, New York 14075

FIGURES



APPROXIMATE PROJECT SITE LOCATION

N

NOTE:
SITE LOCATION PLAN DEVELOPED
FROM MICROSOFT STREETS & TRIPS 2006

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

SITE LOCATION PLAN

DR BY: EDG	SCALE: NTS	PROJ NO.: BE-13-192
CHKD BY: JJD	DATE: 12/18/13	FIGURE NO: 1

LEGEND:

B-5 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING ADVANCED TO AUGER REFUSAL (PRESUMED BEDROCK REFUSAL).

B-6 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING ADVANCED TO AUGER REFUSAL, WITH GROUNDWATER OBSERVATION WELL INSTALLATION.

B-1 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING ADVANCED TO AUGER REFUSAL, WITH FIVE (5) FEET OF ROCK CORE.

B-2 INDICATES APPROXIMATE LOCATION AND DESIGNATION OF TEST BORING PLANNED TO BE ADVANCED TO TWENTY (20) FEET AND TERMINATED.

B.M. APPROXIMATE LOCATION OF BENCHMARK ESTABLIHSED BY SJB SERVICES, INC. TOP OF EXISTING ELECTRICAL MANHOLE RIM. BENCHMARK ELEVATION = 602.38 FEET AS ESTABLISHED AND REPORTED BY NUSSBAUMER & CLARKE, INC.

NOTE:

FIGURE DEVELOPED FROM DRAWING PROVIDED BY MENSCH CAPITAL PARTNERS, LLC.

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN
EXISTING SITE CONDITIONS

DR BY: EDG	APPROX. SCALE: NTS	DATE: 04/23/14
CHKD BY: JJD	PROJ NO.: BE-13-192	FIGURE NO: 2

LEGEND:

WESTWOOD COMMONS:

A.	OFFICE:	200,000 SQFT.
B.	RESIDENTIAL:	72 UNITS
C.	HOTEL:	130 KEYS
D.	MULTI-FAMILY:	280 UNITS
D.	NEIGHBORHOOD BUSINESS/OFFICE:	15,000 SQFT.
E.	LAKE EDGE TOWNHOMES / MULTI-FAMILY:	37 UNITS
F.	RIVER'S EDGE MULTI-FAMILY APARTMENTS:	56 UNITS
G.	EVENT SPACE	1.2 ACRES
H.	EXISTING CLUBHOUSE	

WESTWOOD RESIDENTIAL:

I.	PATIO HOME LOTS:	108 UNITS
J.	LARGER LOTS - SINGLE FAMILY	46 UNITS
K	TOWNHOMES:	90 UNITS
L.	SENIOR LIVING FACILITY	ASSISTED LIVING 200 / INDEPENDENT 96

NOTES:

1. TOTAL PARKING COUNT IN THE WESTWOOD COMMONS AREA: 2,180 STALLS.
2. WESTWOOD PARKWAY WIDTH: 80 FT.
3. STANDARD ROADWAY WIDTH: 50 FT.

DENOTES PEDESTRIAN TRAILS (2ML)

NOTE:

FIGURE DEVELOPED FROM DRAWING PROVIDED BY MENSCH CAPITAL PARTNERS, LLC.

EMPIRE GEO SERVICES INC
a subsidiary of SJB Services, Inc.

PROPOSED WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
NORTH FOREST ROAD
AMHERST, NEW YORK

SUBSURFACE EXPLORATION PLAN PROPOSED SITE DEVELOPMENT	DR BY: EDG/WMA	APPROX. SCALE: NTS	DATE: 04/23/14
	CHKD BY: JJD	PROJ NO.: BE-13-192	FIGURE NO: 3

APPENDIX A

TEST BORING LOGS

DATE
START 12/3/2013
FINISH 12/3/2013
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 605.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	1			TOPSOIL	
		3	6		4	Red-Brown Clayey SILT, tr.-little f-c Sand (moist, FILL)	WOH = Weight of
	2	7	9			Red-Brown Silty CLAY / Clayey Silt, some f-c Sand,	Hammer and Rods
		12	17		21	tr.gravel (moist, v.stiff, CL-ML)	
5	3	5	5				
		7	12		12	(stiff)	
	4	13	23				
		36	39		59	Contains some-and f-c Sand (hard)	
	5	9	16				
10		24	32		40	Becomes Brown	
	6	9	22				
		26	32		48	Contains tr.-little f-c Gravel	
15							
	7	8	13			Becomes Brown-Gray	
		18	22		31		
20							
	8	6	10			(v.stiff)	
		13	19		23		
25							
	9	8	10				
		13	18		23		
30							
	10	7	10				
		14	19		24		
35							
	11	6	7				
		9	15		16		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. KOSKE

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/3/2013
FINISH 12/3/2013
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-1
SURF. ELEV 605.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	7	7			(stiff)	
		8	12		15		
45	13	3	3			Brown-Gray Silty CLAY, tr.sand	
		3	4		6	(moist-wet, medium, CL)	
50	14	1	2			Becomes Red-Brown (soft)	
		1	2		3		
55	15	3	1				
		4	6		5		
60	16	50/0.1			REF		REF = Sample Spoon Refusal
							NQ '2' Size Rock Core
65						Gray SHALE Rock, medium hard, sound, bedded.	RUN #1: 62.5' - 67.5' REC = 96% RQD = 82%
70						Boring Complete at 67.5'	Free standing water recorded at 53.4' prior to coring.
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. KOSKE

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/17/2013
FINISH 12/17/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-2
SURF. ELEV 603.7' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 12" Topsoil
		5	6		8	Red-Brown and Black Silty CLAY, tr.sand (moist, FILL)	
	2	5	4			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7	8		11		
5	3	4	7			(v.stiff)	
		22	25		29		
	4	8	9			Brown Clayey SILT, tr.-little f-c Sand (moist, v.stiff, ML)	
		19	23		28		
	5	7	8			Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
10		10	12		18		
	6	5	10				
		11	14		21		
15							
	7	5	7			Becomes Brown-Gray, contains little-some f-c Sand	
		15	16		22		
	8	8	8			Brown-Gray Clayey SILT, some f-c Sand, tr.gravel	
20		17	20		25	(moist, v.stiff, ML)	
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/17/2013
FINISH 12/17/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-3
SURF. ELEV 603.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	Driller notes approx. 12" Topsoil
		2	3		3	Red-Brown and Black Silty CLAY, tr.sand (moist, FILL)	
	2	5	6			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		6	9		12		
5	3	7	8			(v.stiff)	
		8	11		16		
	4	10	12				
		11	14		23		
	5	10	12			Becomes Brown-Gray, contains little f-c Sand, tr.gravel	
10		14	17		26		
	6	15	17	50/0.3	REF	Contains tr.boulder fragments (hard)	REF = Sample Spoon Refusal
15							
	7	12	11			(v.stiff)	
		15	14		26		
20							
	8	15	10				No Recovery Sample #8
		12	16		22		
25						Boring Complete at 22.0'	No free standing water encountered at boring completion.
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/28/2014
FINISH 1/30/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 601.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	Driller notes approx. 3" Topsoil
		5	5		8	Red-Brown and Black Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	4	3				
		4	6		7	Red-Brown Silty CLAY, tr.sand (moist, medium, CL)	
5	3	5	6			Brown Clayey SILT, tr.-little f-c Sand (moist, stiff, ML)	
		7	9		13		
	4	5	8			(v.stiff)	
		10	14		18		
	5	16	23			(hard)	
10		19	21		42		
	6	12	21				
		25	26		46		
15							
	7	5	9			Brown-Gray Silty CLAY, little-some f-c Sand, tr.gravel (moist, v.stiff, CL)	
		11	13		20		
20							
	8	6	10			Brown-Gray Clayey SILT, little f-c Sand (moist, v.stiff, ML)	
		13	19		23		
25							
	9	5	7				
		10	17		17		
30							
	10	5	6			Contains some f-c Sand, tr.-little f-c Gravel	
		12	14		18		
35							
	11	4	8				
		14	16		22		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/28/2014
FINISH 1/30/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-4
SURF. ELEV 601.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	6	10				
		13	15		23		
45	13	8	14			Gray-Brown f-m SAND, some-and Silt, tr.-little f-c Gravel (moist, compact, SM)	
		26	37		40		NQ '2' Size Rock Core
50						Gray SHALE Rock, medium hard, sound, thinly bedded to bedded, numerous gypsum partings and seams.	RUN #1: 48.5' - 53.5' REC = 75% RQD = 40% 1
55						Boring Complete at 53.5'	Free standing water recorded at 47.0' prior to coring. Free standing water recorded at 20.0' after coring.
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/15/2014
FINISH 1/15/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-5
SURF. ELEV 603.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	3			TOPSOIL	Driller notes approx. 2" Topsoil
		6	7		9	Brown-Black Clayey SILT, tr.sand, tr.organics (moist-wet, FILL)	
	2	5	6				
		7	8		13	Red-Brown Silty CLAY, tr.sand (moist-wet, stiff, CL)	
5	3	7	9			Becomes Brown (v.stiff)	
		11	15		20		
	4	14	17				
		19	15		36	Contains occasional Silt seams (hard)	
	5	4	8			Red-Brown Clayey SILT, little-some f-c Sand, tr.gravel	
10		6	7		14	(moist, stiff, ML)	
	6	11	12			(v.stiff)	
		10	12		22		
15							
	7	24	11				No Recovery Sample #7
		12	7		23		
20							
	8	15	11			Becomes Brown-Gray, contains some f-c Sand	
		10	18		21		
25							
	9	15	17			Brown-Gray Silty CLAY, little f-c Sand, tr.gravel	
		21	24		38	(moist, hard, CL)	
30							
	10	15	18			Brown-Gray Clayey SILT, some f-c Sand, tr.gravel	
		50	50/0.4		68	(moist, hard, ML)	
35						Boring Complete with Sample Spoon Refusal at 31.9' and Auger Refusal at 32.7'	Free standing water recovery at 16.5' at boring completion.
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/5/2013
FINISH 12/5/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-6
SURF. ELEV 603.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller notes approx. 14" Topsoil
		1	2		3	Red-Brown Clayey SILT, little f-c Sand (moist, FILL)	
	2	3	2			Red-Brown Silty CLAY, tr.sand (moist, medium, CL)	
		4	4		6		
5	3	4	5			Red-Brown Clayey SILT, tr.-little f-c Sand (moist, stiff, ML)	
		6	8		11		
	4	7	9				
		11	12		20	(v.stiff)	
	5	6	7				
10		6	9		13	(stiff)	
	6	7	8				
		7	11		15		
15							
	7	4	4			Brown-Gray Silty CLAY and f-c Sand, tr.gravel	
		5	7		9	(moist, stiff, CL)	
20							No free standing water noted at boring completion
	8	8	8			Brown-Gray Clayey SILT and f-c Sand, tr.gravel	
		11	12		19	(moist, v.stiff, ML)	
						Boring Complete at 22.0'	2" PVC Groundwater Observation Well installed at boring completion. Refer to installation log for details.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

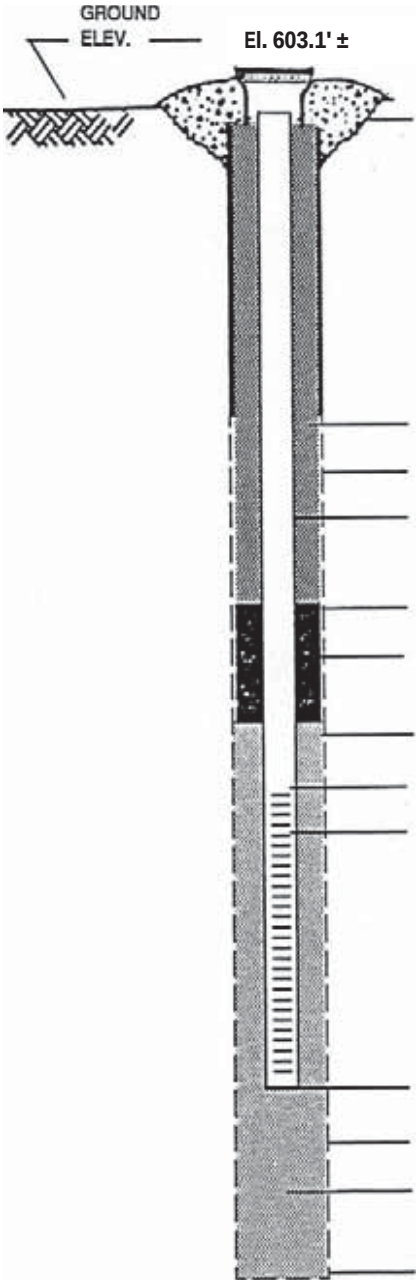
DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

MONITORING WELL COMPLETION RECORD

WELL NUMBER: B-6	
PROJECT NAME: WESTWOOD CC	DRILLING METHOD: HOLLOW STEM AUGERS
PROJECT NUMBER: BE-13-192	GEOLOGIST: N/A
DRILLER: T. FARRELL	INSTALLATION DATE(S): 12/5/2013



TYPE OF SURFACE SEAL:	CONCRETE PAD WITH FLUSH MOUNT SURFACE CASING
TYPE OF BACKFILL:	AUGER CUTTINGS
BOREHOLE DIAMETER:	8" ±
I.D. OF RISER PIPE:	2.0"
TYPE OF RISER PIPE:	PVC
DEPTH OF SEAL:	5.0' El. 598.1' ±
TYPE OF SEAL:	BENTONITE CHIPS
DEPTH OF SAND PACK:	8.0' El. 595.1' ±
DEPTH OF TOP OF SCREEN:	10.0' El. 593.1' ±
TYPE OF SCREEN:	PVC
SLOT SIZE X LENGTH:	.010 X 10.0'
I.D. OF SCREEN:	2.0"
TYPE OF SAND PACK:	MORIE "O" FILTER SAND
DEPTH BOTTOM OF SCREEN:	20.0' El. 583.1' ±
DEPTH BOTTOM OF SAND PACK:	20.0' El. 583.1' ±
TYPE OF BACKFILL BELOW OBSERVATION WELL:	FILTER SAND
ELEVATION/ DEPTH OF HOLE:	22.0' El 581.1' ±

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 603.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	2			TOPSOIL	Driller notes approx. 8" Topsoil
		3	2		5	Brown Silty CLAY, tr.sand (moist, medium, CL)	
	2	3	3				
		3	5		6		
5	3	7	11			Red-Brown Clayey SILT, little f-c Sand, tr.gravel,	
		13	10		24	tr.boulder fragments (moist, v.stiff, ML)	
	4	10	8				
		5	5		13	(stiff)	
	5	7	8				
10		7	11		15	Becomes Brown	
	6	8	9			Brown-Gray Silty CLAY, tr.-little f-c Sand, tr.gravel	
		13	15		22	(moist-wet, v.stiff, CL)	
15							
	7	7	4				
		6	7		10	(stiff)	
20							
	8	6	5				No Recovery Sample #8
		7	6		12		
25							
	9	6	8			Brown-Gray Clayey SILT, little-some, f-c Sand, tr.gravel	
		8	12		16	(moist, v.stiff, ML)	
30							
	10	6	8			(stiff)	
		7	14		15		
35							
	11	10	12			(v.stiff)	
		9	5		21		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-7
SURF. ELEV 603.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	4	5			Gray Highly Weathered SHALE Rock (wet)	
		3	7		8		
45	13	5	4				
		3	8		7		
	14	50/0.1			REF		
						Boring Complete with Sample Spoon Refusal at 47.5' and Auger Refusal at 47.6'	No free standing water encountered at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/14/2014
FINISH 1/14/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-8
SURF. ELEV 602.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	Driller notes approx. 2" Topsoil
		2	3		3	Brown Silty CLAY, tr.sand (moist-wet, soft, CL)	
	2	6	7			Becomes Red-Brown and Gray (moist, stiff)	
		5	5		12		
5	3	5	4			Becomes Brown	
		7	9		11		
	4	15	16			(hard)	
		17	19		33		
	5	5	5			Contains occasional Silt partings and seams (stiff)	
10		7	9		12		
	6	6	7			Red-Brown Clayey SILT, little f-c Sand, tr.gravel	
		7	7		14	(moist, stiff, ML)	
15							
	7	9	8			Brown Silty CLAY, little f-c Sand, tr.gravel	
		8	10		16	(moist, v.stiff, CL)	
20							
	8	7	12			Brown-Gray Clayey SILT, little f-c Sand, tr.gravel	
		16	14		28	(moist, v.stiff, ML)	
25							
	9	7	15			Contains some f-c Sand	
		14	12		29		
30							
	10	12	17			(hard)	
		28	27		45		
35							
	11	16	17				
		23	25		40		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/14/2014
FINISH 1/14/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-8
SURF. ELEV 602.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	13	17				No Recovery Sample #12
		16	15		33		
45	13	13	21			Contains occasional Shale fragments	
		38	32		59		
50						Boring Complete with Auger Refusal at 47.5'	No free standing water encountered at boring completion.
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/27/2014
FINISH 1/27/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-9
SURF. ELEV 602.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 3" Topsoil
		2	2		4	Brown-Black Silty CLAY, tr.sand, tr.organics (moist-wet, FILL)	
	2	2	3				
		3	4		6	Red-Brown Silty CLAY, tr.sand, occasional Silt partings (moist, medium, CL)	
5	3	4	7				
		9	15		16	(v.stiff)	
	4	5	8				
		10	14		18		
	5	4	5			(moist-wet, stiff)	
10		8	8		13		
	6	4	4				
		5	6		9		
15							
	7	2	2			Red-Brown Clayey SILT, some f-m Sand	
		2	3		4	(moist-wet, medium, ML)	
20							
	8	9	12			Contains tr.gravel (moist, v.stiff)	
		14	16		26		
25							
	9	14	16			(hard)	
		15	17		31		
30							
	10	14	19			Gray-Brown f-c SAND, some-and Silt, tr.gravel	
		20	22		39	(moist, compact, SM)	
35							
	11	13	15				
		17	19		32		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/27/2014
FINISH 1/27/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-9
SURF. ELEV 602.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	14	19			Brown-Gray f-m SAND and Silt, tr.gravel	
		21	23		40	(moist, compact, SM)	
45						Boring Complete with Auger Refusal at 44.0'	Free standing water recorded at 22.0' at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/27/2014
FINISH 1/27/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-10
SURF. ELEV 600.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 3" Topsoil
		3	3		5	Black Organic Clayey SILT, little f-c Sand (moist, FILL)	
	2	4	5			Red-Brown Clayey SILT, little f-c Sand, tr.gravel	
		7	6		12	(moist, stiff, ML)	
5	3	12	11				
		11	12		22		
	4	8	10				
		13	12		23		
	5	12	5				
10		15	17		20		
	6	5	14				
		17	15		31	(hard)	
15						Boring Complete with Auger Refusal at 13.5'	No free standing water encountered at boring completion.
20							
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/27/2014
FINISH 1/27/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-10A
SURF. ELEV 600.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
5						OVERBURDEN SOILS	Boring B-10A is a continuation of Boring B-10. Driller notes moving 7' north and augering to refusal.
10							
15						Boring Complete with Auger Refusal at 11.7'	No free standing water encountered at boring completion.
20							
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/6/2013
FINISH 12/6/2013
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-11
SURF. ELEV 601.7' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 4" Topsoil
		3	2		5	Black CINDERS, little Silt (moist, FILL)	
	2	2	3			Red-Brown Silty CLAY, tr.sand (moist, medium, CL)	
		4	4		7		
5	3	4	4			Red-Brown Clayey SILT, tr.sand (moist, stiff, ML)	
		5	5		9		
	4	5	6			Becomes Brown	
		5	6		11		
	5	2	3			Brown Silty CLAY, tr.sand (moist-wet, medium, CL)	
10		2	3		5		
	6	3	3				
		4	5		7		
15							
	7	1	2			Contains some f-c Sand	
		2	3		4		
20							
	8	2	2			Contains tr.sand, tr.gravel	
		3	4		5		
25							
	9	8	9			Brown-Orange Clayey SILT, little f-c Sand, tr.gravel	
		12	13		21	(moist, v.stiff, ML)	
30							
	10	4	3			(wet, medium)	
		4	5		7		
35							
	11	2	1				
		3	1		4		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/6/2013
FINISH 12/6/2013
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-11
SURF. ELEV 601.7' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	4	4			Contains some-and f-c SAND (stiff)	
		8	12		12		
45	13	21	50/0.2		REF	Gray SHALE Rock fragments (moist)	
						Boring Complete with Sample Spoon and Auger Refusal at 45.7'	No free standing water reading obtained at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/26/2014
FINISH 1/26/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-12
SURF. ELEV 599.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 4" Topsoil
		3	4		5	Red-Brown Silty CLAY, little f-c Sand (moist, medium, CL)	
	2	3	5			(stiff)	
		4	6		9		
5	3	5	7			Contains some f-c Sand, tr.gravel (v.stiff)	
		10	13		17		
	4	4	9				
		12	15		21		
	5	6	21			Becomes Brown-Gray, contains tr.gravel (hard)	
10		33	30		54		
	6	10	19				
		36	37		55		
15							
	7	13	28			Brown-Gray f-m SAND and Clayey Silt, tr.gravel (moist, v.compact, SC-SM)	
		36	38		64		
	8	22	36				
20		34	39		70		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/16/2013
FINISH 12/16/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-13
SURF. ELEV 599.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller notes approx. 10" Topsoil
		2	3		4	Red-Brown Silty CLAY, tr.sand (moist, FILL)	
	2	3	5			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7	7		12		
5	3	5	7			Red-Brown Clayey SILT, tr.sand (moist, stiff, ML)	
		8	12		15		
	4	4	2			Brown Fine SAND, some Silt, occasional Silt seams	
		3	2		5	(moist-wet, v.loose, SM)	
	5	4	8			Brown Silty CLAY, tr.sand (moist-wet, v.stiff, CL)	
10		8	8		16		
	6	5	6			Red-Brown Clayey SILT, little f-c Sand (moist, stiff, ML)	
		6	10		12		
15	7	3	7				
		6	8		13		
20	8	7	8				
		7	10		15		
						Boring Complete at 21.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/5/2013
FINISH 12/5/2013
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-14
SURF. ELEV 602.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	3			TOPSOIL	Driller notes approx. 10" Topsoil
		4	9		7	Red-Brown and Black Clayey SILT, little f-c Sand, tr.gravel (moist, FILL)	
	2	12	6				
		8	10		14	Red-Brown Silty CLAY, tr.-little f-c Sand	
5	3	8	7			(moist, stiff, CL)	
		10	11		17	Contains some f-c Sand, tr.gravel (v.stiff)	
	4	9	10				
		9	11		19		
	5	9	12				
10		11	15		23		
	6	10	14				
		15	18		29		
15							
	7	4	5			(moist-wet, stiff, CL)	
		6	8		11		
20							
	8	6	7			(v.stiff)	
		11	15		18		
25							
	9	12	14			Brown-Gray f-c SAND and Clayey Silt, little f-c Gravel (moist, firm, SC-SM)	
		8	13		22		
30							
	10	15	10				Poor Recovery Sample #10
		9	12		19		
35							
	11	12	13			Red-Brown Silty CLAY, tr.sand (moist-wet, v.stiff, CL)	
		15	16		28		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/5/2013
FINISH 12/5/2013
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-14
SURF. ELEV 602.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	6	10				
		13	14		23		
45	13	13	18			Brown-Gray SILT and Fine Sand, tr.gravel (moist, compact, ML)	
		20	23		38		
	14	50/0.1			REF		
50						Boring Complete with Sample Spoon Refusal at 47.5' and Auger Refusal at 47.7'	Free standing water recorded at 38.2' at boring completion.
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. KOSKE

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-15
SURF. ELEV 602.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	Driller notes approx. 3.5" Topsoil
		5	6		8	Red-Brown Clayey SILT, little f-c Sand	
	2	6	11			(moist, medium, ML)	
		12	14		23	(v.stiff)	
5	3	11	12			Becomes Brown	
		12	16		24		
	4	14	18			Contains tr.gravel (hard)	
		23	24		41		
	5	9	12			(v.stiff)	
10		14	16		26		
	6	12	14				
		11	16		25		
15							
	7	5	9				
		15	16		24		
	8	17	21			Contains some f-c Sand (hard)	
20		26	30		47		
						Boring Complete at 20.0'	No free standing water enountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-16
SURF. ELEV 599.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	3			TOPSOIL	Driller notes approx. 6" Topsoil
		4	4		7	Red-Brown Clayey SILT, little-some f-c Sand, tr.gravel (moist, FILL)	
	2	12	11				
		12	16		23	Red-Brown Clayey SILT, tr.-little f-c Sand	WOH = Weight of Hammer and Rods
5	3	10	11			(moist, v.stiff, ML)	
		18	17		29		
	4	16	25				
		27	33		52	Contains little f-c Gravel (hard)	
	5	11	18				
10		22	24		40		
	6	10	14				
		19	23		33		
15							
	7	5	10			(moist-wet, v.stiff)	
		10	12		20		
	8	15	21			Red-Brown Silty CLAY, tr.-little f-c Sand	
20		22	18		43	(moist, hard, CL)	
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-17
SURF. ELEV 598.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	2			TOPSOIL	
		1	2		3	Brown-Black Silty CLAY, tr.sand, tr.organics (wet, FILL)	
	2	4	3			Gray-Brown f-c SAND and Silt (wet, FILL)	
		4	3		7		
5	3	4	6			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		5	6		11		
	4	8	7			Red-Brown Clayey SILT, little f-c Sand, tr.gravel	
		8	11		15	(moist, stiff, ML)	
	5	6	11			Red-Brown Silty CLAY, tr.sand (moist, hard, CL)	
10		20	16		31		
	6	12	14				
		20	22		34		
15							
	7	10	10			(v.stiff)	
		12	15		22		
20							
	8	11	16			Brown-Gray Clayey SILT, some f-c Sand, tr.gravel	
		15	20		31	(moist, hard, ML)	
						Boring Complete at 22.0'	No free standing water reading obtained at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/20/2014
FINISH 1/20/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-18
SURF. ELEV 588.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 3" Topsoil
		3	3		6	Brown-Black Silty CLAY, tr.sand, tr.organics	
	2	5	6			(moist, FILL)	
		5	7		11		
5	3	3	5			Red-Brown Silty CLAY, tr.-little f-c Sand	
		5	4		10	(moist-wet, stiff, CL)	
	4	7	11			Brown-Gray Clayey SILT, some f-c Sand, tr.gravel	
		14	12		25	(moist, v.stiff, ML)	
	5	7	11				
10		12	15		23		
	6	8	8				Poor Recovery Sample #6
		10	14		18		
15							
	7	14	15			(hard)	
		17	21		32		
20							
	8	5	7				
		34	50/0.4		41		
25							
	9	4	8			Brown-Gray Silty CLAY, some f-c Sand, tr.gravel	
		12	14		20	(moist-wet, v.stiff, CL)	
30							
	10	1	1			Becomes Red-Brown (wet, medium)	
		3	2		4		
35							
						Boring Complete with Auger Refusal at 35.0'	No free standing water reading obtained at boring completion.
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE :

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-19
SURF. ELEV 592.3' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	
		2	4		4	Black-Brown Clayey SILT, some f-c Sand (moist, FILL)	
	2	2	2			Yellow-Brown Silty CLAY, little Fine Sand	
		2	2		4	(moist-wet, medium, CL)	
5	3	3	3			Yellow-Brown Fine SAND, little-some Silt	
		2	2		5	(moist-wet, v.loose, SM)	
	4	2	2				
		3	2		5		
	5	2	2			Red-Brown Silty CLAY, little f-c Sand, tr.gravel	
10		4	5		6	(moist-wet, medium, CL)	
	6	4	6			(stiff)	
		5	7		11		
15							
	7	7	8			Red-Brown f-m SAND, some-and Silt, little f-c Gravel	
		12	14		20	(moist, firm, SM)	
	8	10	11			Contains tr.clay	
20		13	11		24		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/21/2014
FINISH 1/21/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-20
SURF. ELEV 597.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	6	3			TOPSOIL	
		5	3		8	Black-Brown Clayey SILT, tr.sand, tr.organics	
	2	5	5			(moist-wet, FILL)	
		5	5		10	Red-Brown Clayey SILT, tr.sand (moist, stiff, ML)	
5	3	5	8				
		7	6		15		
	4	8	10			Red-Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
		12	8		22		
	5	6	6			Becomes Brown (stiff)	
10		6	6		12		
	6	3	4				
		5	6		9		
15							
	7	4	7			Brown-Gray Clayey SILT, little-some f-c Sand, tr.gravel	
		8	12		15	(moist, stiff, ML)	
20							
	8	12	13			(v.stiff)	
		15	14		28		
25							
	9	7	11				
		12	12		23		
30							
	10	3	7				
		12	13		19		
35							
	11	WOH/2.0			WOH	Brown-Gray Silty CLAY, tr.sand (moist-wet, v.soft, CL)	WOH = Weight of Hammer and Rods
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/21/2014
FINISH 1/21/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-20
SURF. ELEV 597.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	WOH/2.0			WOH	Gray Fine SAND, some-and Silt, tr.gravel (wet, v.loose, SM)	WOH = Weight of Hammer and Rods
45						Boring Complete with Auger Refusal at 43.5'	Free standing water recorded at 16.5' at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/21/2014
FINISH 1/21/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-21
SURF. ELEV 598.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			Red-Brown Silty CLAY, tr.sand (moist, medium CL)	
		3	2		4		
	2	3	3				Poor Recovery Sample #2 and #3
		3	4		6		
5	3	6	9			Red-Brown Clayey SILT, little f-c Sand	
		12	12		21	(moist, v.stiff, ML)	
	4	9	6			Contains tr.gravel	
		12	17		18		
	5	25	24			(hard)	
10		35	37		59		
	6	34	50/0.1		REF		REF = Sample Spoon Refusal
15							
	7	9	15			Becomes Brown	
		31	38		46		
20							
	8	3	2			Brown Silty CLAY, tr.sand (moist-wet, medium, CL)	
		3	3		5		
25							
	9	1	1			Becomes Red-Brown (v.soft)	
		1	1		2		
30							
	10	3	4			(stiff)	
		5	8		9		
35							
	11	12	23			Becomes Brown-Gray (hard)	
		22	28		45		
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/21/2014
FINISH 1/21/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-21
SURF. ELEV 598.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	31	46	50/0.4	REF	Brown-Gray f-c SAND and Silt, little f-c Gravel (moist, v.compact, SM)	
						Boring Complete with Sample Spoon Refusal at 41.4' and Auger Refusal at 41.5'	Free standing water recorded at 39.0' at boring completion.
							REF = Sample Spoon Refusal
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-22
SURF. ELEV 599.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	WOH	1			TOPSOIL	Driller notes approx. 11" Topsoil
		1	2		2	Brown Silty CLAY, tr.sand (moist, v.soft, CL-CH)	
	2	2	2			(medium)	
		3	3		5		WOH = Weight of Hammer and Rods
5	3	4	3				
		4	5		7	Becomes Red-Brown	
	4	4	5				
		5	5		10	(stiff, CL)	
	5	4	7				
10		8	7		15	Contains "and" f-c Sand, tr.gravel	
	6	12	7				No Recovery Sample #6 and #7
		8	8		15		
15							
	7	13	8				
		9	10		17		
20							
	8	4	5			Contains tr.-little f-c Sand	
		4	6		9		
25							
	9	3	4			(medium)	
		4	4		8		
30							
	10	2	3			Becomes Brown	
		2	3		5		
35							
	11	5	6			Brown f-c SAND and Clayey Silt, little f-c Gravel	
		7	7		13	(moist, firm, SC-SM)	
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-22
SURF. ELEV 599.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	37	42	50/0.3	REF	Gray Highly Weathered SHALE Rock (wet)	
45						Boring Complete with Sample Spoon Refusal at 41.3' and Auger Refusal at 44.1'	No free standing water reading obtained at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-23
SURF. ELEV 596.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	3			TOPSOIL	Driller notes approx. 11" Topsoil
		3	3		6	Brown Silty CLAY, tr.sand (moist, medium, CL)	
	2	3	2				
		4	5		6		
5	3	2	4			Becomes Red-Brown, Contains occasional Silt seams	
		5	5		9	(stiff)	
	4	5	6			Red-Brown Clayey SILT, tr.sand, tr.gravel	
		7	6		13	(moist, stiff, ML)	
	5	7	8				
10		7	9		15		
	6	8	7				
		10	10		17	(v.stiff)	
15							
	7	7	10			Becomes Brown-Gray	
		12	14		22		
20							
	8	11	10			Gray-Brown f-m SAND and Clayey Silt, tr.gravel	
		11	14		21	(moist, firm, SC-SM)	
						Boring Complete at 22.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/22/2014
FINISH 1/22/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-24
SURF. ELEV 598.6' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	
		1	1		2	Black-Brown Clayey SILT, little f-c Sand, tr.gravel	
	2	2	2			(moist, FILL)	
		3	2		5	Contains tr.wood fragments	
5	3	5	4			Red-Brown and Gray Silty CLAY, tr.sand, occasional	
		4	5		8	Silt partings (moist, medium, CL)	
	4	9	9			(v.stiff)	
		9	8		18		
	5	10	7			Red-Brown Clayey SILT, tr.sand, occasional Fine Sand	
10		9	9		16	lenses (moist, v.stiff, ML)	
	6	10	12			Contains tr.gravel	
		15	15		27		
15							
	7	4	7			Brown-Gray Silty CLAY, little-some f-c Sand, tr.gravel	
		14	11		21	(moist, v.stiff, CL)	
20							
	8	6	15			(hard)	
		17	22		32		
25							
	9	10	14				
		17	20		31		
30							
	10	3	3			(medium)	
		4	5		7		
35							
	11	14	17			Brown-Gray f-m SAND, some-and Silt, tr.gravel	
		21	28		38	(moist, compact, SM)	
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/22/2014
FINISH 1/22/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-24
SURF. ELEV 598.6' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	47	50	50/0.2	REF	(v.compact)	
						Boring Complete with Sample Spoon Refusal at 41.2' and Auger Refusal at 41.3'	No free standing water reading obtained at boring completion. 2" PVC Groundwater Observation Well installed at boring completion. Refer to installation log for details.
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

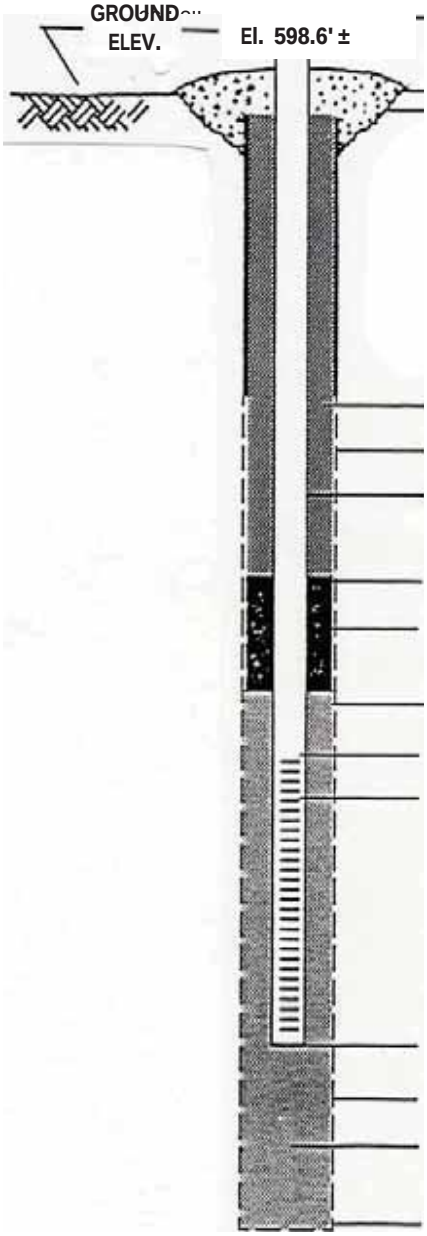
DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

MONITORING WELL COMPLETION RECORD

WELL NUMBER: B-24	
PROJECT NAME: WESTWOOD CC	DRILLING METHOD: HOLLOW STEM AUGERS
PROJECT NUMBER: BE-13-192	GEOLOGIST: N/A
DRILLER: A. JAKUBCZAK	INSTALLATION DATE(S): 1/22/2014



RISER STICK-UP:	0.7' El. 599.3' ±
TYPE OF SURFACE SEAL:	NONE
TYPE OF BACKFILL:	AUGER CUTTINGS
BOREHOLE DIAMETER:	8" ±
I.D. OF RISER PIPE:	2.0"
TYPE OF RISER PIPE:	PVC
DEPTH OF SEAL:	32.0' El. 566.6' ±
TYPE OF SEAL:	BENTONITE CHIPS
DEPTH OF SAND PACK:	34.0' El. 564.6' ±
DEPTH OF TOP OF SCREEN:	36.0' El. 562.6' ±
TYPE OF SCREEN:	PVC
SLOT SIZE X LENGTH:	.010 X 5.0'
I.D. OF SCREEN:	2.0"
TYPE OF SAND PACK:	MORIE "O" FILTER SAND
DEPTH BOTTOM OF SCREEN:	41.0' El. 557.6' ±
DEPTH BOTTOM OF SAND PACK:	41.0' El. 557.6' ±
TYPE OF BACKFILL BELOW OBSERVATION WELL:	N/A
ELEVATION/ DEPTH OF HOLE:	41.0' El. 557.6' ±

DATE
START 1/22/2014
FINISH 1/22/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-25
SURF. ELEV 594.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	Driller notes approx. 4" Topsoil.
		3	7		4	Red-Brown Clayey SILT, tr.-little f-c Sand (moist, FILL)	
	2	4	5			Red-Brown Clayey SILT, little-some f-c Sand, tr.gravel	
		9	9		14	(moist, stiff, ML)	
5	3	5	9				
		11	12		20	(v.stiff)	
	4	9	7				
		10	11		17		
	5	10	12				
10		11	11		23	Contains little f-c Sand	
	6	6	10				
		12	14		22		
15							
	7	12	14				
		16	17		30		
20							
	8	7	11				
		13	17		24		
25							
	9	10	13			Contains occasional boulder fragments	
		12	15		25		
30							
	10	2	6			Brown-Gray Silty CLAY, tr.sand (moist-wet, stiff, CL)	
		6	6		12		
35							
	11	WOH/2.0			WOH	Becomes Red-Brown (v.soft)	WOH = Weight of Hammer and Rods
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/22/2014
FINISH 1/22/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-25
SURF. ELEV 594.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	50/0.2			REF	Gray-Black Weathered SHALE Rock (moist-wet)	
						Boring Complete with Sample Spoon Refusal and Auger Refusal at 40.2'	Free standing water recorded at 13.6' at boring completion.
							REF = Sample Spoon Refusal
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-26
SURF. ELEV 594.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	
		2	3		3	Brown-Black Organic Clayey SILT, little Fine Sand (wet, FILL)	
	2	4	5				
		7	6		12	Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
5	3	4	7			Contains occasional Silt partings	
		8	7		15		
	4	11	11			(v.stiff)	
		10	5		21		
	5	7	5			(stiff)	
10		10	9		15		
	6	2	4			Brown Clayey SILT, little f-c Sand, tr.gravel	
		7	8		11	(moist, stiff, ML)	
15							
	7	5	8			Brown Silty CLAY, little f-c Sand (moist, v.stiff, CL)	
		13	14		21		
20							
	8	6	10			Brown Clayey SILT, little-some f-c Sand, tr.gravel	
		11	11		21	(moist, v.stiff, ML)	
25							
	9	8	11			Becomes Brown-Gray	
		12	14		23		
30							
	10	WOH	3			Red-Brown and Gray Silty CLAY, tr.sand	WOH = Weight of
		6	6		9	(moist, stiff, CL)	Hammer and Rods
35							
	11	8	11			Brown-Gray f-m SAND and Silt, tr.-little f-c Gravel	
		13	10		24	(moist, firm, SM)	
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-26
SURF. ELEV 594.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	12	6	50/0.3		REF	Contains little SILT, tr.shale	
						Boring Complete with Sample Spoon Refusal and Auger Refusal at 40.8'	Free standing water recorded at 33.5' at boring completion. REF = Sample Spoon Refusal
45							
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-27
SURF. ELEV 594.3' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			Brown-Black Silty CLAY, tr.sand (moist, FILL)	
		1	2		2		
	2	2	3			Brown Silty CLAY, tr.sand (moist, medium, CL)	
		2	2		5		
5	3	3	3			Becomes Red-Brown	
		4	7		7		
	4	4	5			(stiff)	
		7	7		12		
	5	6	7			(v.stiff)	
10		11	11		18		
	6	9	9				
		11	14		20		
15							
	7	12	16			Becomes Brown-Gray, contains little f-c Sand (hard)	
		20	26		36		
20							
	8	14	22			Brown-Gray Clayey SILT, some-and f-c Sand	
		26	27		48	(moist, hard, ML)	
						Boring Complete at 22.0'	No free standing water reading obtained at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-28
SURF. ELEV 593.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	4			TOPSOIL	Driller notes approx. 6" Topsoil
		5	4		9	Brown-Black Clayey SILT, tr.sand, tr.organics (moist, FILL)	
	2	4	6				
		5	7		11	Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
5	3	3	9			Red-Brown Clayey SILT, little f-c Sand, tr.gravel	
		14	15		23	(moist, v.stiff, ML)	
	4	5	12				
		16	19		28		
	5	6	19				
10		25	27		44	(hard)	
	6	9	17				
		23	29		40		
15							
	7	6	13			Becomes Brown-Gray (v.stiff)	
		16	20		29		
	8	9	12			Red-Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
20		15	19		27		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 2/5/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-29
SURF. ELEV 594.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 3" Topsoil
		2	2		4	Brown-Black Clayey SILT, tr.sand, tr.organics (moist, FILL)	
	2	3	4				
		5	9		9	Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
5	3	3	5				
		9	9		14		
	4	8	11			Red-Brown Clayey SILT, little-some f-c Sand, tr.gravel	
		13	15		24	(moist, v.stiff, ML)	
	5	15	16			(hard)	
10		18	18		34		
	6	7	12			(v.stiff)	
		14	16		26		
15							
	7	15	14				
		16	17		30		
20							
	8	8	30			Gay-Brown f-m SAND, some-and Silt, little f-c Gravel	
		38	36		68	(moist, v.compact, SM)	
25							
	9	10	17			Gray Fine SAND, some Silt (moist-wet, compact, SM)	
		28	25		45		
30							Free standing water recorded at 19.3' prior to coring. NQ '2' Size Rock Core
	10	15	25			Gray-Brown f-m SAND, some-and Silt, little f-c Gravel	
		24	27		49	(moist, compact, SM)	
35						Gray Shale Rock, medium hard, sound, thinly bedded to bedded, occasional gypsum partings.	RUN #1: 33.5' - 38.5' REC = 82% RQD = 42%
40						Boring Complete at 38.5'	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-30
SURF. ELEV 594.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	Driller notes approx. 8" Topsoil
		3	5		6	Red-Brown Silty CLAY, tr.sand (moist, FILL)	
	2	5	6				
		9	10		15		
5	3	7	9			Red-Brown Clayey SILT, tr.sand (moist, v.stiff, ML)	
		12	15		21		
	4	6	11				
		15	16		26		
	5	9	17			Contains little-some f-c Sand (hard)	
10		18	22		35		
	6	10	15			(v.stiff)	
		14	19		29		
15							
	7	5	11				
		15	15		26		
	8	15	7				
20		10	12		17		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 1 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-31
SURF. ELEV 592.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 6"
		3	5		6	Orange-Brown mottled Silty CLAY, tr.sand	Topsoil
	2	4	5			(moist, medium, CL)	
		6	7		11	Orange-Brown and Gray Silty CLAY, some Fine Sand	
5	3	4	10			(moist, stiff, CL)	
		11	22		21	Becomes Red-Brown, contains tr.sand (v.stiff)	
	4	6	10				
		13	19		23		
	5	16	50/0.3		REF	Contains little f-c Sand, tr.gravel, tr.boulder fragments	REF = Sample Spoon
10						(hard)	Refusal
	6	10	15			Contains some f-c Sand	
		23	26		38		
15							
	7	9	20				No Recovery Sample #7
		21	23		41		
20							
	8	6	9			Becomes Brown-Gray (v.stiff)	
		15	17		24		
25							
	9	5	4			Contains some f-c Sand (stiff)	
		7	11		11		
30							
	10	1	3			Brown Silty CLAY, tr.sand, numerous Silt partings and	
		8	10		11	seams (moist-wet, stiff, CL)	
35							
	11	23	31	50/0.4	REF	Brown f-c SAND and Silt, tr.gravel, tr.shale	
						(moist, v.compact, SM)	
							NQ '2' Size Rock Core
40							RUN #1: 38.5' - 43.5'

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/17/2014
FINISH 1/17/2014
SHEET 2 OF 2

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-31
SURF. ELEV 592.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
						Gray SHALE Rock, medium hard, slightly weathered to sound, laminated to bedded, occasional gypsum partings and seams	REC = 75% RQD = Approx. 25%
45						Boring Complete at 43.5'	No free standing water reading obtained at boring completion.
50							
55							
60							
65							
70							
75							
80							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/31/2014
FINISH 1/31/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-32
SURF. ELEV 594.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 3" Topsoil
		2	2		5	Brown-Black Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	4	3				
		3	5		6		
5	3	5	8			Red-Brown Clayey SILT, tr.sand (moist v.stiff, ML)	
		10	13		18		
	4	6	7				
		9	10		16		
	5	8	10			(moist-wet)	
10		11	12		21		
	6	7	10			Contains tr.gravel	
		13	15		23		
15							
	7	6	12			Becomes Brown	
		12	16		24		
20							
	8	5	7			Brown Silty CLAY, tr.sand (moist-wet, v.stiff, CL)	
		11	10		18		
25							
	9	17	28			Brown-Gray f-m SAND and Silt, tr.gravel (moist, v.compact, SM)	
		27	29		55		REF = Sample Spoon Refusal
30							
	10	50/0.4			REF	Gray-Brown SHALE Rock fragments (moist)	
						Boring Complete with Sample Spoon Refusal at 30.4' and Auger Refusal at 30.5'	No free standing water encountered at boring completion.
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/24/2014
FINISH 1/24/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-33
SURF. ELEV 592.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	1			TOPSOIL	
		1	1		2	Red-Brown and Black Clayey SILT, little f-c Sand	
	2	6	5			(moist, FILL)	
		5	5		10	Brown Silty CLAY, tr.sand (moist, stiff, CL)	
5	3	2	4			Red-Brown f-c SAND, some-and Silt, tr.gravel	
		7	7		11	(moist-wet, firm, SM)	
	4	10	10			Red-Brown Clayey SILT, some-and f-c Sand, little f-c	
		12	13		22	Gravel (moist, v.stiff, ML)	
	5	11	13				
10		12	14		25	Contains little f-c Sand	
	6	8	11				
		12	15		23		
15							
	7	8	14				
		13	13		27		
	8	22	34			Becomes Brown (hard)	
20		38	27		72		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/12/2013
FINISH 12/12/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-34
SURF. ELEV 593.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	3			TOPSOIL	Driller notes approx. 12" Topsoil
		4	4		7	Red-Brown and Black Silty CLAY, tr.sand (moist, FILL)	
	2	11	4			Brown Clayey SILT, tr.sand (moist, stiff, ML)	
		5	6		9		
5	3	6	8			Red-Brown Silty CLAY, tr.sand, occasional Silt	
		7	7		15	partings (moist, stiff, CL)	
	4	10	7			Red-Brown Clayey SILT, tr.-little f-c Sand, tr.gravel	
		8	12		15	(moist, stiff, ML)	
	5	10	12				
10		13	13		25	(v.stiff)	
	6	15	10				
		12	15		22		
15							
	7	11	12			Gray-Brown f-c SAND and Clayey Silt, little f-c Gravel	
		15	17		27	(moist, firm, SC-SM)	
20							
	8	7	7				
		15	18		22		
25							
	9	41	50/0.3		REF	Brown-Gray f-m SAND and Silt, tr.gravel	REF = Sample Spoon Refusal
30						(moist, v.compact, SM)	
	10	50/0.4			REF		
						Boring Complete with Sample Spoon Refusal and Auger Refusal at 31.4'	No free standing water encountered at boring completion.
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/13/2013
FINISH 12/13/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-35
SURF. ELEV 593.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	3			TOPSOIL	Driller notes approx. 7" Topsoil
		3	2		6	Orange-Brown and Gray Mottled Clayey SILT, tr.sand (moist, medium, ML)	
	2	3	3				
		4	5		7	Becomes Brown	
5	3	7	8			Red-Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
		11	11		19		
	4	10	10				
		9	11		19		
	5	6	10			Red-Brown Clayey SILT, little f-c Sand (moist, v.stiff, ML)	
10		11	13		21		
	6	7	12				
		14	16		26		
15							
	7	11	13			Contains some f-c Sand, little Gravel	
		15	15		28		
20							
	8	50/0.4			REF	Red-Brown f-m SAND and Silt, tr.gravel (moist, v.compact, SM)	No Recovery Sample #8
							REF = Sample Spoon Refusal
25							
	9	39	50/0.1		REF	Becomes Brown-Gray, contains tr.boulder fragments (v.compact)	
30							
	10	50/0.2			REF		
						Boring Complete with Sample Spoon Refusal at 30.2' and Auger Refusal at 32.5'	No free standing water reading obtained at boring completion.
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/30/2014
FINISH 1/30/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-36
SURF. ELEV 593.3' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	Driller notes approx. 3" Topsoil
		3	3		6	Brown Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	6	6			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7	8		13		
5	3	5	6				
		5	7		11		
	4	7	7				
		8	7		15		
	5	6	5			Red-Brown Clayey SILT, tr.-little f-c Sand	
10		8	12		13	(moist, stiff, ML)	
	6	12	15			(hard)	
		17	19		32		
15							
	7	15	17			Becomes Brown	
		21	18		38		
20							
	8	5	5			Brown-Gray f-m SAND, some-and Silt, tr.gravel	
		7	31		12	(moist, firm, SM)	
25							
	9	18	21			(compact)	
		27	41		48		REF = Sample Spoon Refusal
30							
	10	50/0.4			REF	Brown-Gray SHALE Rock fragements (wet)	
						Boring Complete with Sample Spoon Refusal at 30.4' and Auger Refusal at 31.0'	Free standing water recorded at 28.0' at boring completion.
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/16/2014
FINISH 1/17/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-37
SURF. ELEV 592.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	2			TOPSOIL	Driller notes approx. 8" Topsoil
		3	4		5	Brown-Black Silty CLAY, tr.sand (moist, FILL)	
	2	4	4				
		5	6		9		
5	3	3	6			Red-Brown Silty CLAY, tr.sand, occasional Silt	
		8	12		14	partings (moist, stiff, CL)	
	4	10	12			Red-Brown Clayey SILT, tr.sand (moist, v.stiff, ML)	
		15	17		27		
	5	9	14			Contains some f-c Sand (hard)	
10		17	18		31		
	6	10	13			(v.stiff)	
		15	14		28		
15							
	7	29	50/0.4		REF	Gray-Brown f-m SAND and Silt, tr.gravel, tr.boulder fragments (moist, v.compact, SM)	REF = Sample Spoon Refusal
20							
	8	50/0.4			REF		No Recovery Sample #9
	9	50/0.0			REF		
						Boring Complete with Sample Spoon and Auger Refusal at 22.5'	Free standing water recorded at 20.0' at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/23/2014
FINISH 1/23/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-38
SURF. ELEV 592.4' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			Black-Brown Clayey SILT, little f-c Sand, tr.gravel	
		3	3		6	(moist, FILL)	
	2	2	4			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		5	5		9		
5	3	3	5			(moist-wet)	
		8	12		13		
	4	13	14			(v.stiff)	
		13	15		27		
	5	17	14				
10		7	10		21		
	6	2	4				
		6	7		10		
15	7	5	17			Brown-Gray Clayey SILT, some f-c Sand, tr.gravel	
		26	24		43	(moist, hard, ML)	
20	8	8	17			Brown-Gray f-c SAND, some-and Silt, tr.gravel	
		21	19		38	(moist, compact, SM)	
25						Boring Complete with Auger Refusal at 24.0'	No free standing water encountered at boring completion.
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/16/2014
FINISH 1/16/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-39
SURF. ELEV 592.0' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 4" Topsoil
		2	3		5	Brown-Black Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	7	9				
		10	10		19	Brown Silty CLAY, tr.sand (moist, v.stiff, CL)	
5	3	6	7				
		10	8		17	Becomes Red-Brown	
	4	4	7				
		8	9		15	(stiff)	
	5	10	9			Contains occasional Silt seams (v.stiff)	
10		8	9		17		
	6	4	5			Red-Brown f-c SAND and Silt, tr.gravel	
		5	9		10	(moist-wet, loose, SM)	
							REF = Sample Spoon Refusal
15							
	7	21	38			Brown-Gray f-m SAND and Silt, tr.gravel, tr.boulder	
		41	49		79	fragments (moist, v.compact, SM)	
	8	50/0.1			REF		
20						Boring Complete at 18.1'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/29/2014
FINISH 1/29/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-40
SURF. ELEV 588.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	
		2	2		5	Black Organic Silty CLAY, tr.sand (moist, FILL)	
	2	3	3			Becomes Red-Brown	
		6	7		9		
5	3	4	7				No Recovery Sample #3
		10	11		17		
	4	8	8			Red-Brown Silty CLAY, tr.-little f-c Sand	
		7	10		15	(moist, stiff, CL)	
	5	17	15			(hard)	
10		16	18		31		
	6	15	18			Red-Brown f-m SAND and Silt, tr.gravel	
		21	19		39	(moist, compact, SM)	
15							
	7	18	21			Becomes Brown-Gray	
		27	33		48		
20							
	8	22	23			(v.compact)	
		35	50/0.4		58		
25						Boring Complete with Sample Spoon Refusal at 21.9' and Auger Refusal at 22.0'	Free standing water recorded at 19.0' at boring completion.
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/28/2014
FINISH 1/28/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-41
SURF. ELEV 590.3' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	5			TOPSOIL	Driller notes approx. 3" Topsoil
		7	10		12	Brown Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	5	4			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		5	4		9		
5	3	5	5			Contains occasional Silt partings	
		7	6		12		
	4	14	9			(v.stiff)	
		7	8		16		
	5	4	5			(moist-wet, stiff)	
10		5	7		10		
	6	3	4			Contains little f-c Sand, tr.gravel	
		5	8		9		
15							
	7	17	31			Brown-Gray f-m SAND, some-and Silt, tr.gravel	
		47	50/0.3		78	(moist, v.compact, SM)	
	8	18	28				
20		35	44		63		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 12/17/2013
FINISH 12/17/2013
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-42
SURF. ELEV 601.1' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	1			TOPSOIL	Driller notes approx. 13"
		3	3		4	Black Clayey SILT, little Fine Sand (moist, FILL)	Topsoil
	2	5	6			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7	9		13		
5	3	9	8			(v.stiff)	
		8	10		16		
	4	12	8				No Recovery Sample #4
		9	9		17		
	5	8	11			(moist-wet)	
10		12	13		23		
	6	10	10				
		12	12		22		
15							
	7	9	9			Becomes Red-Brown, contains little f-c Sand	
		10	10		19		
20							
	8	8	9				
		8	12		17		
25						Boring Complete at 22.0'	No free standing water encountered at boring completion.
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: T. FARRELL

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/30/2014
FINISH 1/31/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-43
SURF. ELEV 593.2' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	4			TOPSOIL	Driller notes approx. 6" Topsoil
		5	6		9	Black Organic Clayey SILT, little f-c Sand (moist, FILL)	
	2	4	6			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		7	7		13		
5	3	5	8			Becomes Red-Brown (v.stiff)	
		10	12		18		
	4	6	6			(stiff)	
		9	14		15		
	5	2	6			Red-Brown Clayey SILT, little-some f-c Sand, tr.-little	
10		7	11		13	f-c Gravel (moist, stiff, ML)	
	6	5	5				
		8	9		13		
15							
	7	6	27			Becomes Brown-Gray (hard)	
		48	50		75		
20							
	8	8	13			Contains little f-c Sand (v.stiff)	
		12	15		25		
25							
	9	10	12				
		16	17		28		Free standing water recorded at 20.0' prior to coring.
30							NQ '2' Size Rock Core
						Gray SHALE Rock, medium hard, sound, thinly bedded to bedded, grades predominantly gypsum at approximately 34.0'	RUN #1: 30.0' - 35.0' REC = 60% RQD = 40%
35							
						Boring Complete at 35.0'	Free standing water recorded at 10.0' after coring.
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/16/2014
FINISH 1/16/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-44
SURF. ELEV 592.7' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 6" Topsoil
		4	7		7	Red-Brown and Black Silty CLAY, tr.sand (moist, FILL)	
	2	7	8			Red-Brown Clayey SILT, tr.sand, occasional Fine Sand	
		4	10		12	lenses (moist, stiff, ML)	
5	3	5	8			Red-Brown Silty CLAY, tr.sand (moist, v.stiff, CL-CH)	
		10	12		18		
	4	11	14				
		17	8		31	Contains occasional Silt seams (hard)	
	5	11	10			(v.stiff)	
10		8	10		18		
	6	20	14				Poor Recovery Sample #6
		15	17		29		
15							
	7	18	40			Brown-Gray f-m SAND, some Silt, tr.gravel, tr.boulder	REF = Sample Spoon
		39	42		79	fragments (moist, v.compact, SM)	Refusal
	8	44	50/0.2		REF		
20						Boring Complete with Sample Spoon Refusal at 18.7'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550SE

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 2/4/2014
FINISH 2/4/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-45
SURF. ELEV 591.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	3	3			TOPSOIL	Driller notes approx. 7" Topsoil
		5	5		8	Brown-Black Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	4	5			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		6	9		11		
5	3	3	6				
		9	10		15		
	4	5	8			(v.stiff)	
		12	15		20		
	5	3	4			(wet, medium)	
10		4	3		8		
	6	3	3				
		4	5		7		
15							
	7	4	4				
		4	5		8		
20							REF = Sample Spoon Refusal
	8	50/0.4			REF	Gray f-m SAND, some-and Silt, tr.gravel (moist, SM)	
25	9	50/0.0			REF		NQ '2' Size Rock Core
						Gray SHALE Rock, medium hard, sound, thinly bedded to bedded, occasionally gypsum seams.	RUN #1: 24.5' - 29.5' REC = Approx. 50% RQD = Approx. 20%
30							
						Boring Complete at 29.5'	Free standing water recorded at 15.0' prior to coring. Free standing water recorded at 10.0' after coring.
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/28/2014
FINISH 1/28/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-46
SURF. ELEV 591.6' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	4			TOPSOIL	
		4	4		8	Black Organic Silty CLAY, tr.sand (moist, FILL)	
	2	4	6			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL-CH)	
		7	8		13		
5	3	7	7				
		6	7		13		
	4	11	10			(v.stiff)	
		12	13		22		
	5	11	13			Contains tr.gravel	
10		12	11		25		
	6	2	4			(moist-wet, medium)	
		4	4		8		
15							
	7	10	20			Red-Brown f-m SAND and Silt, tr.gravel	
		38	33		58	(moist, v.compact, SM)	
	8	21	33				
20		42	44		75		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: S. WOLKIEWICZ

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 1/31/2014
FINISH 2/3/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-47
SURF. ELEV 594.9' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	4	5			TOPSOIL	Driller notes approx. 6" Topsoil
		6	6		11	Red-Brown Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	3	7			Red-Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		8	10		15		
5	3	5	5			Red-Brown Clayey SILT, little f-c Sand, tr.gravel	
		9	12		14	(moist, stiff, ML)	
	4	4	8			(v.stiff)	
		10	14		18		
	5	6	10			Red-Brown Silty CLAY, tr.-little f-c Sand, tr.gravel	
10		20	23		30	(moist, v.stiff, CL)	
	6	8	15			Red-Brown Clayey SILT, tr.-little f-c Sand	
		25	29		40	(moist, hard, ML)	
15							
	7	15	19				
		31	25		50		
20							
	8	12	21				
		26	29		47		
25							
	9	17	22			Contains some f-c Sand	
		24	24		46		REF = Sample Spoon Refusal
30							
	10	12	42	50/0.3	REF	Gray f-c SAND, some Silt, tr.gravel, tr.shale	
						(moist, v.compact, SM)	Free standing water recorded at 20.0' prior to coring.
35							
						Gray SHALE Rock, medium hard, sound, thinly bedded to bedded, grade to predominantly gypsum at approximately 36.5'	RUN #1: 34.0' - 39.0' REC = 100% RQD = 64%
40						Boring Complete at 39.0'	

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

DATE
START 2/3/2014
FINISH 2/3/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-48
SURF. ELEV 595.8' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	1	2			TOPSOIL	Driller notes approx. 3" Topsoil
		5	5		7	Brown Silty CLAY, tr.sand, tr.organics (moist, FILL)	
	2	3	4			Brown Silty CLAY, tr.sand (moist, stiff, CL)	
		5	6		9		
5	3	4	13			Becomes Red-Brown, contains occasional Silt partings	
		16	17		29	(v.stiff)	
	4	6	10			Red-Brown Silty CLAY, little f-c Sand, tr.gravel	
		18	18		28	(moist, v.stiff, CL)	
	5	3	13				
10		24	26		37		
	6	5	15			(hard)	
		27	30		42		
15							
	7	7	18			Becomes Brown-Gray	
		26	28		44		
20							
	8	6	11				
		28	30		39		
25							
	9	4	10			Contains little-some f-c Sand (v.stiff)	
		19	25		29		REF = Sample Spoon Refusal
30						Brown-Gray f-c SAND and Silt, tr.gravel, tr.shale	
	10	16	50/0.4		REF	(moist, SM)	
						Boring Complete with Sample Spoon Refusal at 30.9' and Auger Refusal at 31.0'	No free standing water encountered at boring completion.
35							2" PVC groundwater observation well installed at boring completion. Refer to installation log for details.
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

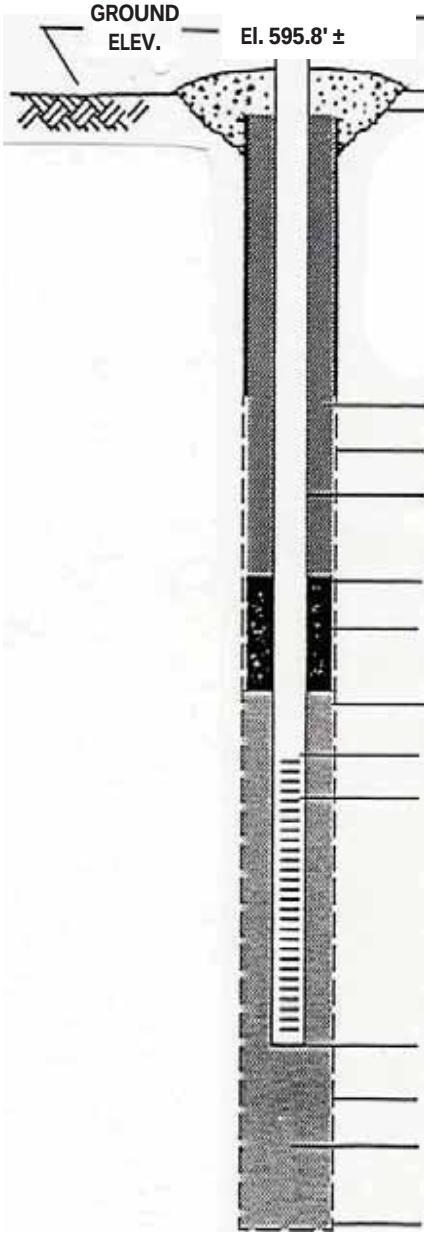
DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

MONITORING WELL COMPLETION RECORD

WELL NUMBER: B-48	
PROJECT NAME: WESTWOOD CC	DRILLING METHOD: ASTM D1586 USING HSA
PROJECT NUMBER: BE-13-192	GEOLOGIST: N/A
DRILLER: A. JAKUBCZAK	INSTALLATION DATE(S): 2/3/2014



RISER STICK-UP:	0.9' El. 596.7' ±
TYPE OF SURFACE SEAL:	NONE
TYPE OF BACKFILL:	AUGER CUTTINGS
BOREHOLE DIAMETER:	+/- 8"
I.D. OF RISER PIPE:	2.0"
TYPE OF RISER PIPE:	PVC
DEPTH OF SEAL:	22.0' El. 573.8' ±
TYPE OF SEAL:	BENTONITE CHIPS
DEPTH OF SAND PACK:	24.0' El. 571.8' ±
DEPTH OF TOP OF SCREEN:	25.0' El. 570.8' ±
TYPE OF SCREEN:	PVC
SLOT SIZE X LENGTH:	.010 X 5.0'
I.D. OF SCREEN:	2.0"
TYPE OF SAND PACK:	MORIE "O" FILTER SAND
DEPTH BOTTOM OF SCREEN:	30.0' El. 565.8' ±
DEPTH BOTTOM OF SAND PACK:	30.0' El. 565.8' ±
TYPE OF BACKFILL BELOW OBSERVATION WELL:	NATIVE SOILS
ELEVATION/ AUGERED DEPTH:	31.0' El. 564.8' ±

DATE
START 2/4/2014
FINISH 2/4/2014
SHEET 1 OF 1

SJB SERVICES, INC.
SUBSURFACE LOG

HOLE NO. B-49
SURF. ELEV 593.5' ±
G.W. DEPTH See Notes

PROJECT: PROPOSED IMPROVEMENTS
PROJ. NO.: BE-13-192
LOCATION: WESTWOOD COUNTRY CLUB
AMHERST, NEW YORK

DEPTH FT.	SMPL NO.	BLOWS ON SAMPLER 0/6	6/12	12/18	N	SOIL OR ROCK CLASSIFICATION	NOTES
	1	2	3			TOPSOIL	Driller notes approx. 5" Topsoil
		4	4		7	Black Organic Clayey SILT, tr.-little f-c Sand (moist-wet, FILL)	
	2	3	5				
		5	7		10	Brown-Black Silty CLAY, tr.sand (moist, FILL)	
5	3	5	9			Red-Brown Clayey SILT, tr.sand (moist, v.stiff, ML)	
		10	13		19		
	4	4	12				
		14	16		26		
	5	6	9			Becomes Brown-Gray	
10		16	17		25		
	6	5	14			Contains tr.gravel (hard)	
		18	21		32		
15							
	7	8	12				
		20	27		32		
	8	10	16				
20		28	31		44		
						Boring Complete at 20.0'	No free standing water encountered at boring completion.
25							
30							
35							
40							

N = NO. BLOWS TO DRIVE 2-INCH SPOON 12-INCHES WITH A 140 LB. PIN WT. FALLING 30-INCHES PER BLOW

CLASSIFIED BY: Geologist

DRILLER: A. JAKUBCZAK

DRILL RIG TYPE : CME-550X

METHOD OF INVESTIGATION ASTM D-1586 USING HOLLOW STEM AUGERS

APPENDIX B

LABORATORY TEST DATA

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

Attached are the results of laboratory testing conducted on various samples from the above referenced project. Mr. John Danzer, representing Empire –Geo Services, Inc, chose samples contained in this report.

The testing conducted was as follows:

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil & Rock

ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Samples were received at the SJB Services, Inc. laboratory on January 21, 2014 where they were processed for testing.

If the reviewer should have any questions concerning this report, please do not hesitate to contact our office at any time.

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-033
SAMPLE LOCATION: B-1, S-3: 4' – 6'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
14.6 %	20	12	8

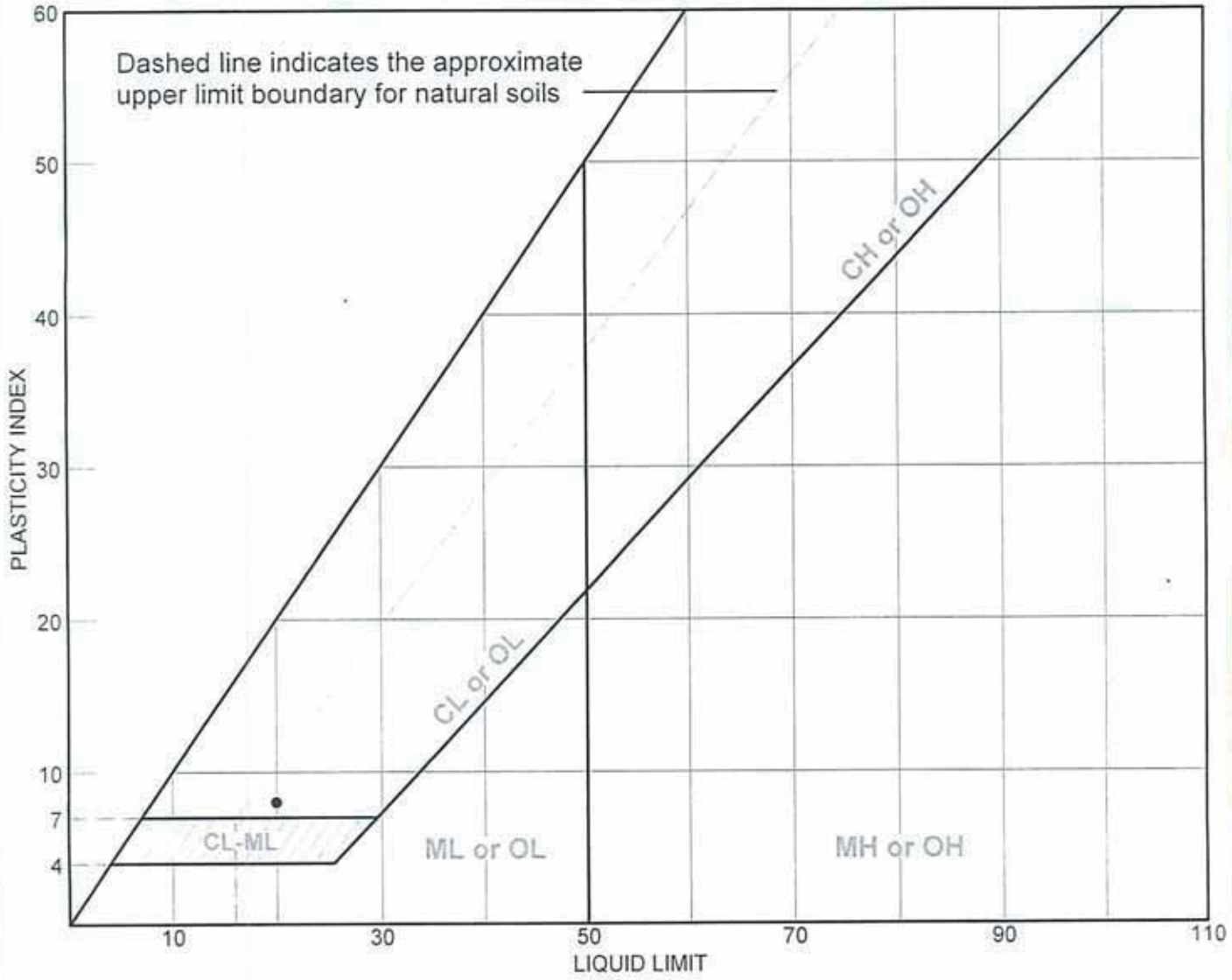
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 27.7 %
Value of Shrinkage Limit = 12
Value of Shrinkage Ratio = 2.02

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
¾"	100.0
½"	98.4
3/8"	97.6
¼"	95.8
#4	94.8
#10	91.9
#20	88.6
#40	85.2
#100	76.8
#200	57.8

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

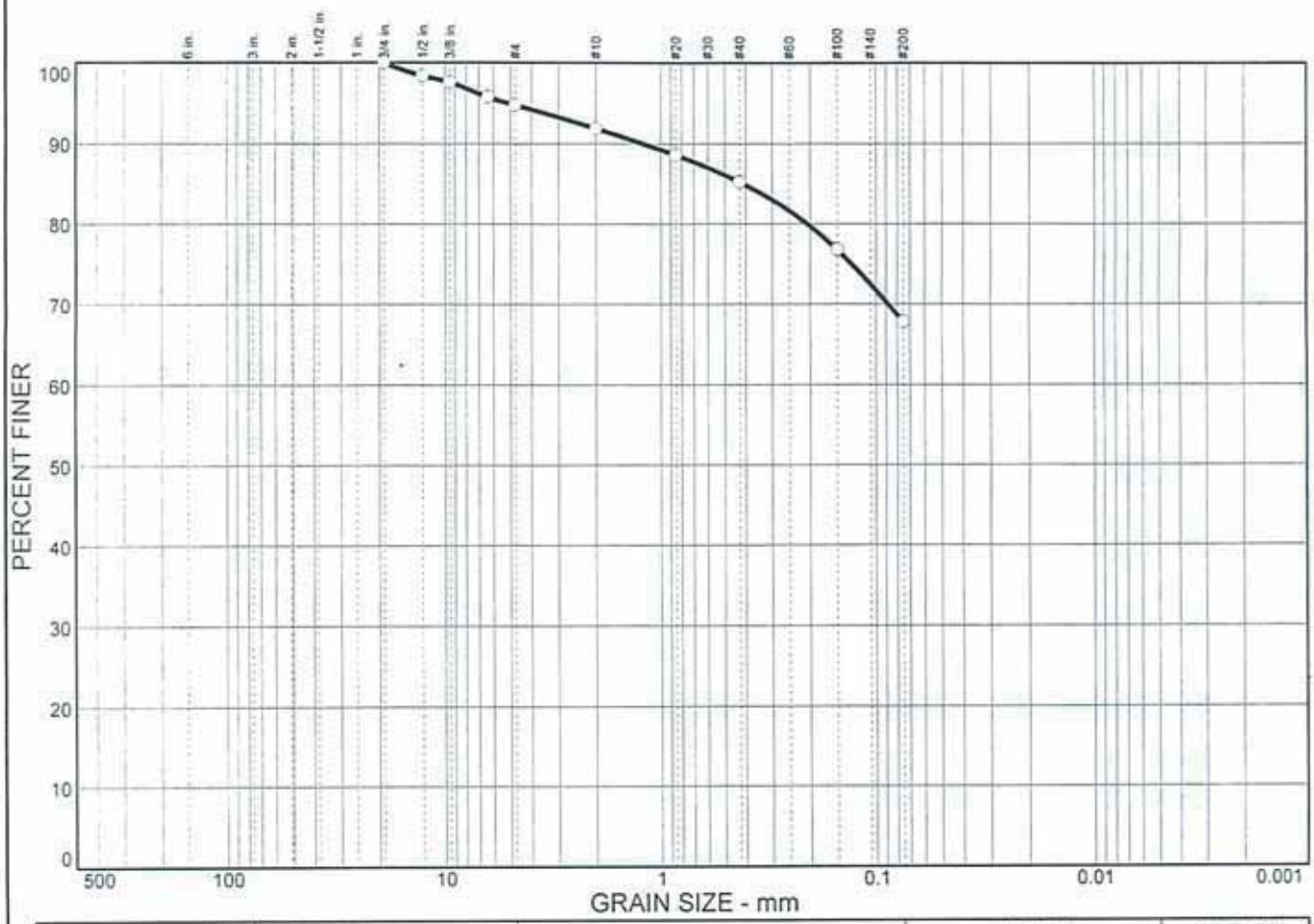


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-1	S-3	4' - 6'	14.6 %	12	20	8	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	5.2	27.0	67.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.5 in.	98.4		
.375 in.	97.6		
.25 in.	95.8		
#4	94.8		
#10	91.9		
#20	88.6		
#40	85.2		
#100	76.8		
#200	67.8		

* (no specification provided)

Soil Description

B-1, S-3: 4' - 6'

Atterberg Limits

PL= 12 LL= 20 PI= 8

Coefficients

D_{85}= 0.411 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-033

Sample No.: S-3 **Source of Sample:** B-1 **Date:** 1-29-14
Location: B-1, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-034
SAMPLE LOCATION: B-3, S-4: 6' – 8'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
14.8 %	24	13	11

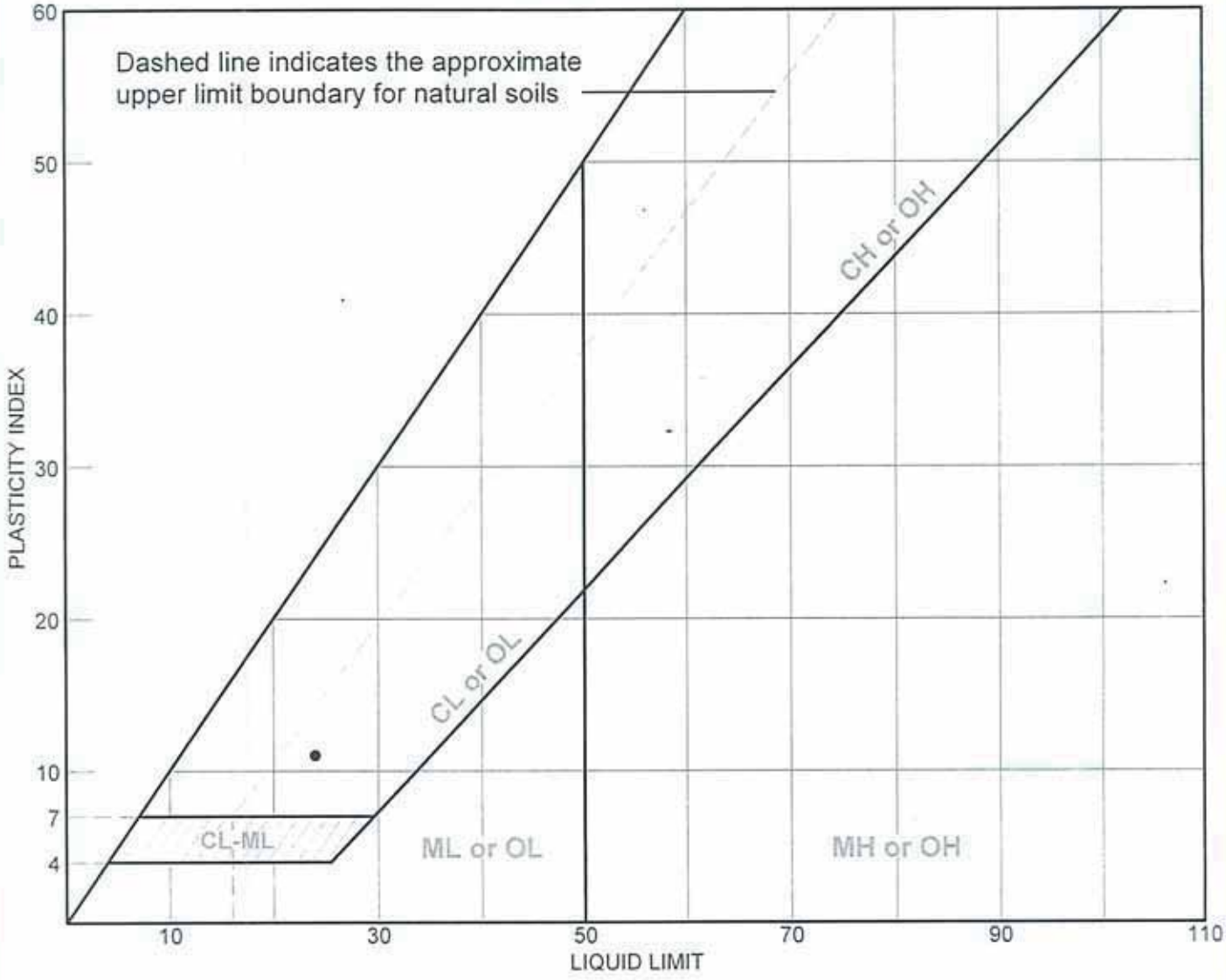
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 32.3 %
Value of Shrinkage Limit = 13
Value of Shrinkage Ratio = 1.94

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
½"	100.0
3/8"	98.8
¼"	98.3
#4	98.0
#10	97.2
#20	95.6
#40	94.0
#100	89.5
#200	83.2

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-3	S-4	6' - 8'	14.8 %	13	24	11	

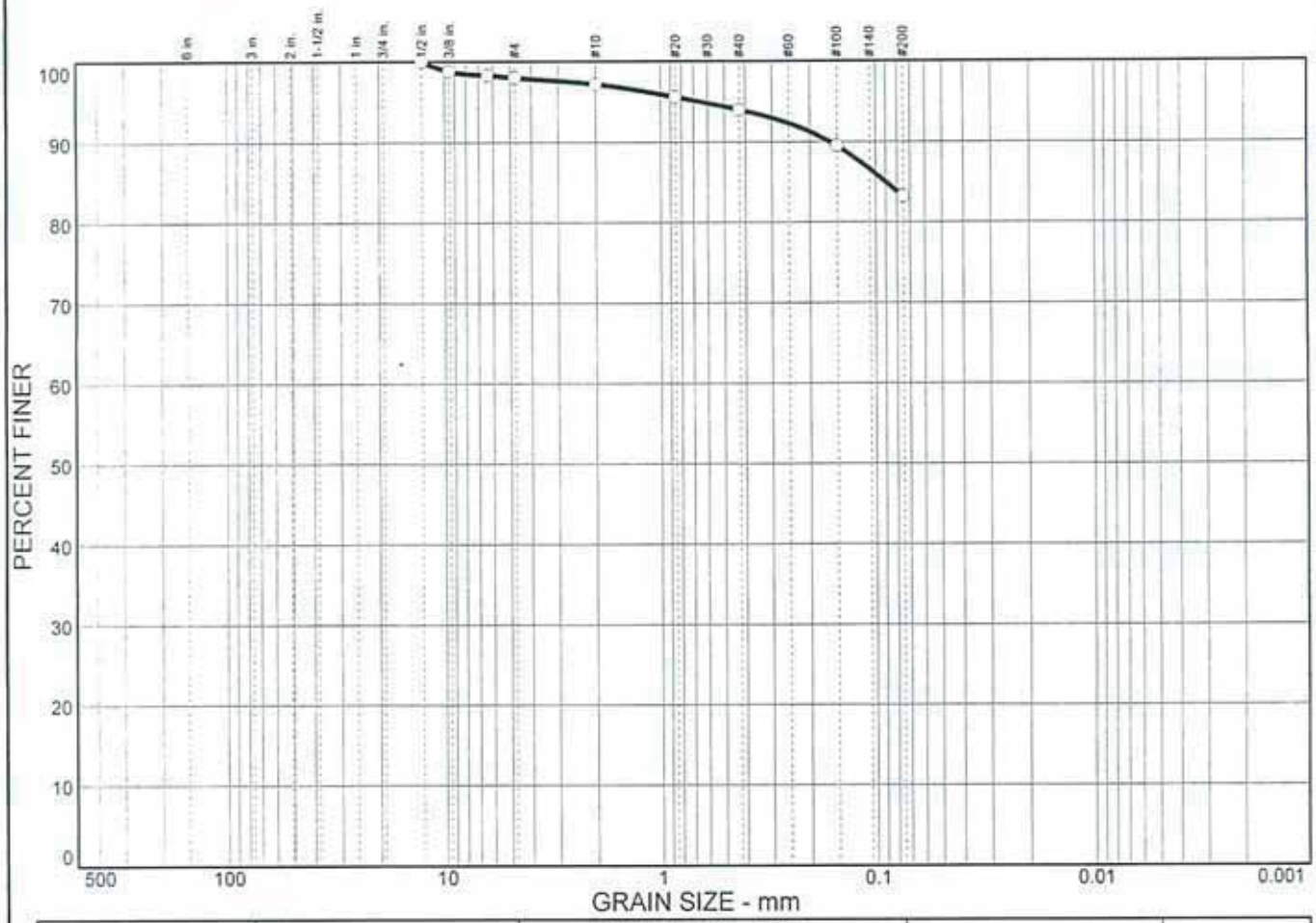
SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC

Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT

Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	2.0	14.8	83.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5 in.	100.0		
.375 in.	98.8		
.25 in.	98.3		
#4	98.0		
#10	97.2		
#20	95.6		
#40	94.0		
#100	89.5		
#200	83.2		

* (no specification provided)

Soil Description

B-3, S-4: 6' - 8'

Atterberg Limits

PL= 13 LL= 24 PI= 11

Coefficients

D_{85}= 0.0899 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-034

Sample No.: S-4 **Source of Sample:** B-3 **Date:** 1-29-14
Location: B-3, S-4: 6' - 8' **Elev./Depth:** 6' - 8'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT

Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-039
SAMPLE LOCATION: B-7, S-6: 10' – 12'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
12.6 %	24	12	12

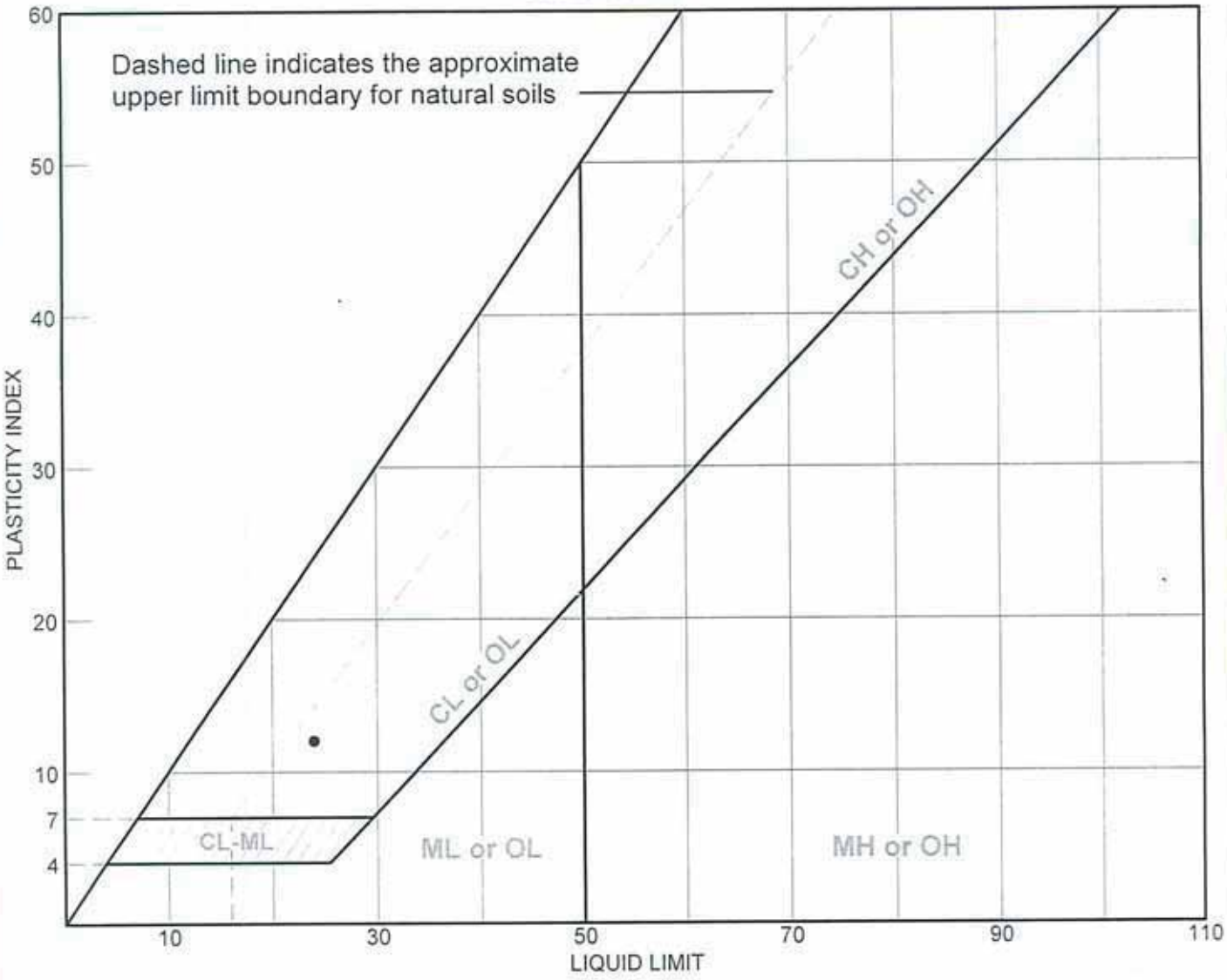
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 37.9 %
Value of Shrinkage Limit = 13
Value of Shrinkage Ratio = 1.93

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
¾"	100.0
½"	97.2
3/8"	95.9
¼"	92.5
#4	91.7
#10	89.1
#20	86.8
#40	85.0
#100	80.2
#200	74.3

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

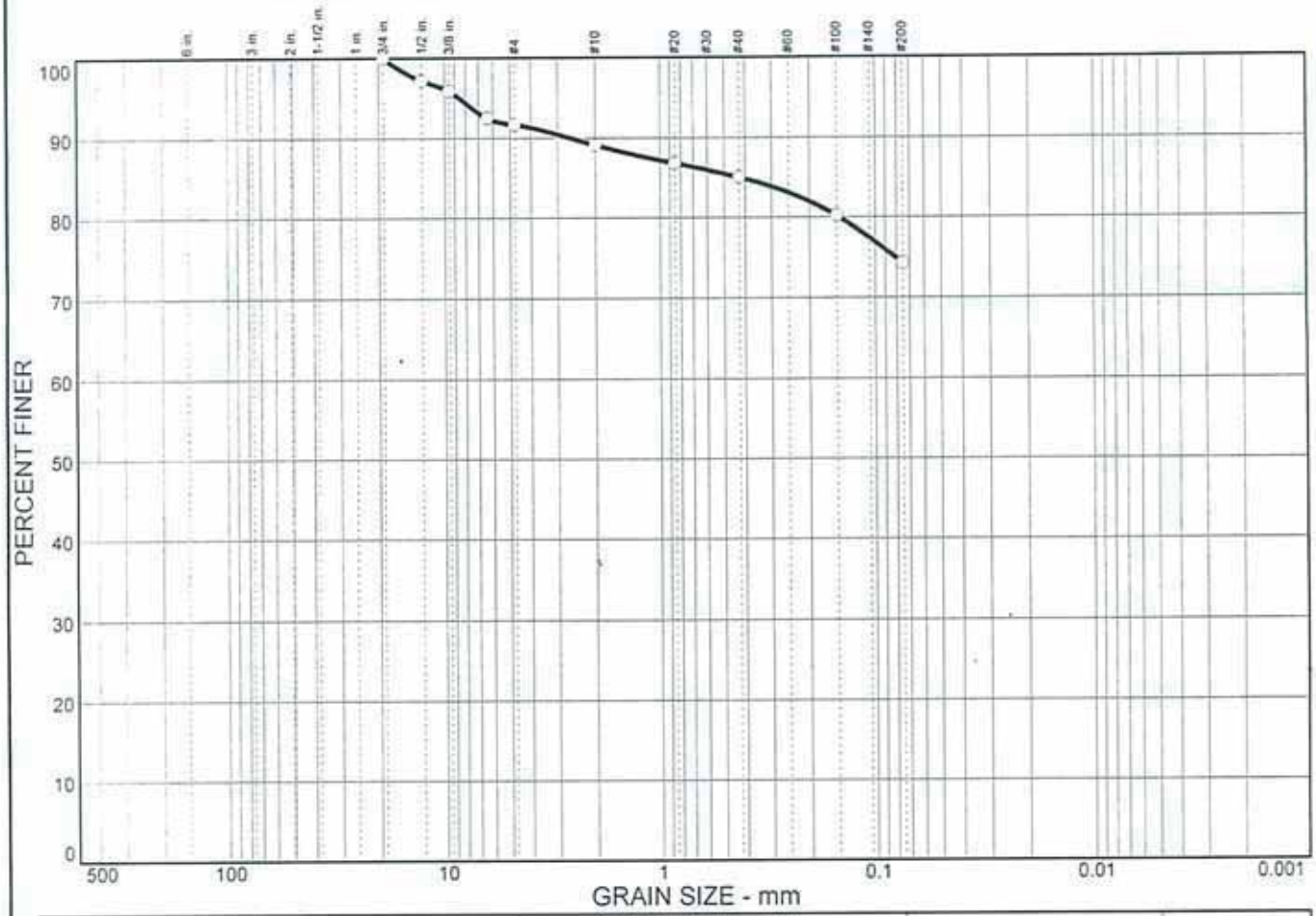


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-7	S-6	10' - 12'	12.6 %	12	24	12	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	8.3	17.4	74.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.5 in.	97.2		
.375 in.	95.9		
.25 in.	92.5		
#4	91.7		
#10	89.1		
#20	86.8		
#40	85.0		
#100	80.2		
#200	74.3		

* (no specification provided)

Soil Description

B-7, S-6: 10' - 12'

Atterberg Limits

PL= 12 LL= 24 PI= 12

Coefficients

D_{85}= 0.425 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-039

Sample No.: S-6 **Source of Sample:** B-7 **Date:** 1-29-14
Location: B-7, S-6: 10' - 12' **Elev./Depth:** 10' - 12'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-040
SAMPLE LOCATION: B-14, S-4: 6' – 8'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
10.7 %	23	12	11

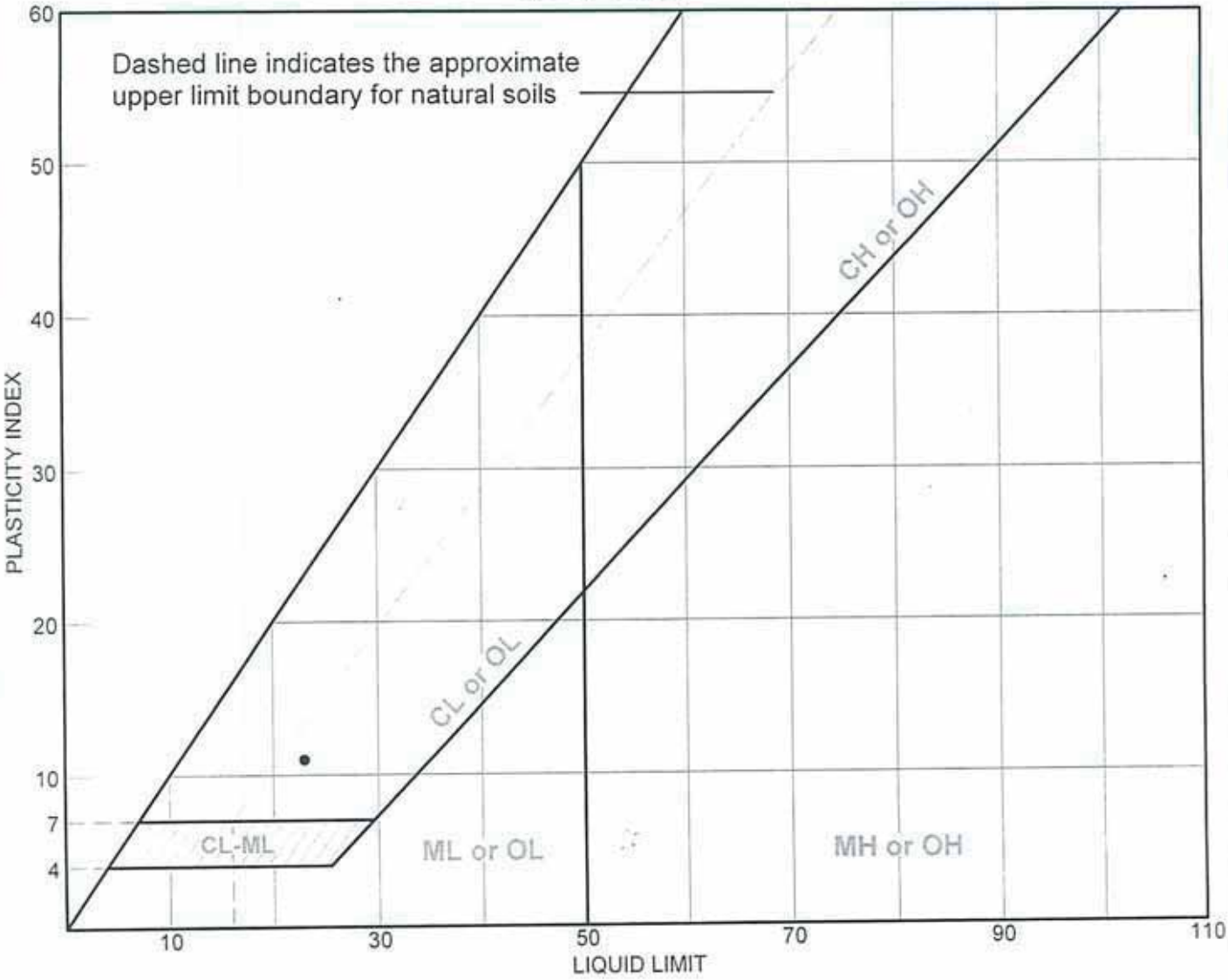
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 32.9 %
Value of Shrinkage Limit = 17
Value of Shrinkage Ratio = 1.93

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
¾"	100.0
½"	97.0
⅜"	95.3
¼"	93.2
#4	92.1
#10	89.4
#20	86.5
#40	84.1
#100	77.6
#200	70.1

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-14	S-4	6' - 8'	10.7 %	12	23	11	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report

% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	7.9	22.0	70.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.5 in.	97.0		
.375 in.	95.3		
.25 in.	93.2		
#4	92.1		
#10	89.4		
#20	86.5		
#40	84.1		
#100	77.6		
#200	70.1		

* (no specification provided)

Soil Description

B-14, S-4: 6' - 8'

Atterberg Limits

PL= 12 LL= 23 PI= 11

Coefficients

D_{85}= 0.541 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=*

Remarks

SAMPLE NUMBER: 13-040

Sample No.: S-4 **Source of Sample:** B-14 **Date:** 1-29-14
Location: B-14, S-4: 6' - 8' **Elev./Depth:** 6' - 8'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-041
SAMPLE LOCATION: B-22, S-3: 4' – 6'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
26.5 %	52	22	30

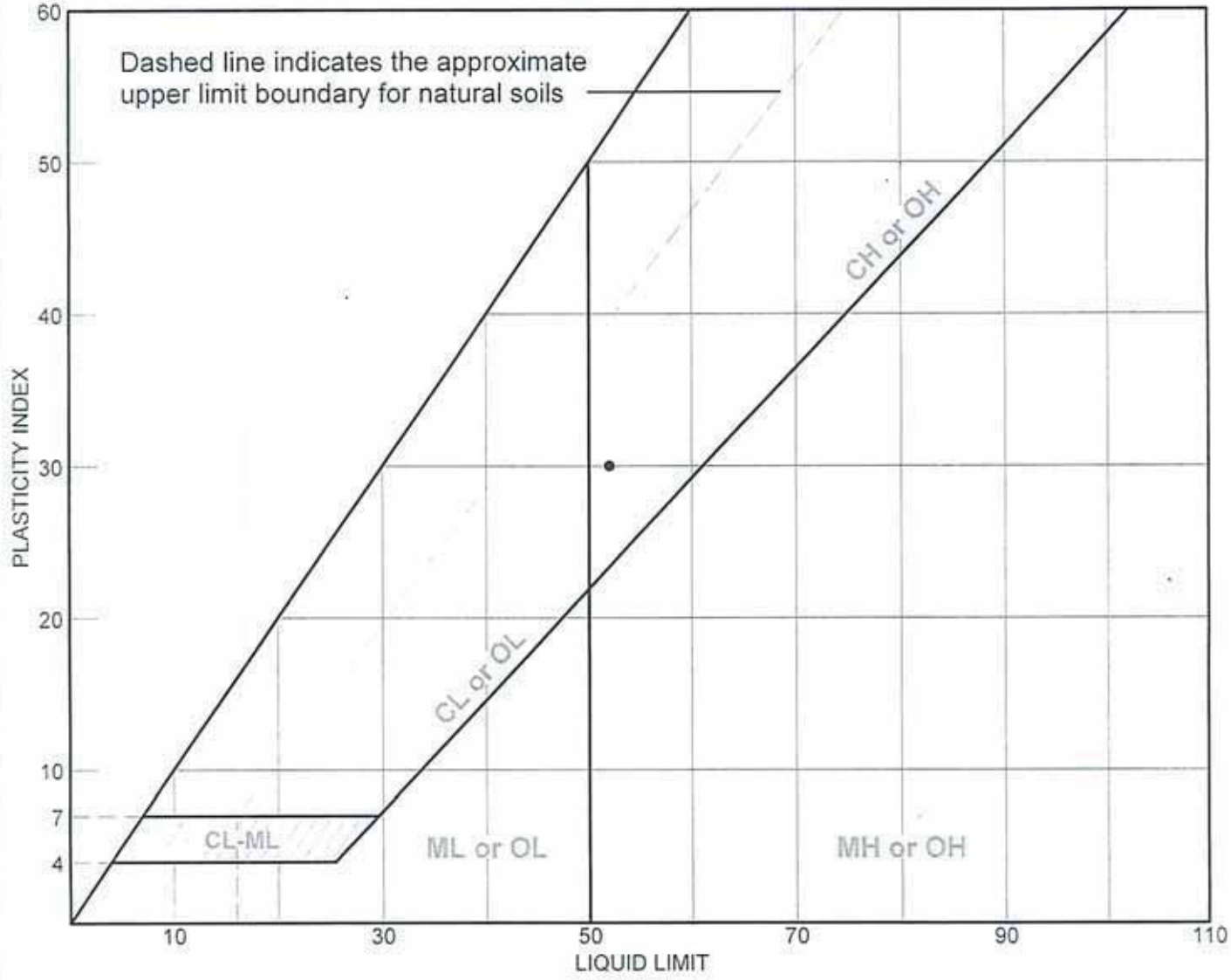
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 64.8 %
Value of Shrinkage Limit = 23
Value of Shrinkage Ratio = 1.69

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
#4	100.0
#10	100.0
#20	99.9
#40	99.8
#100	99.5
#200	99.2

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

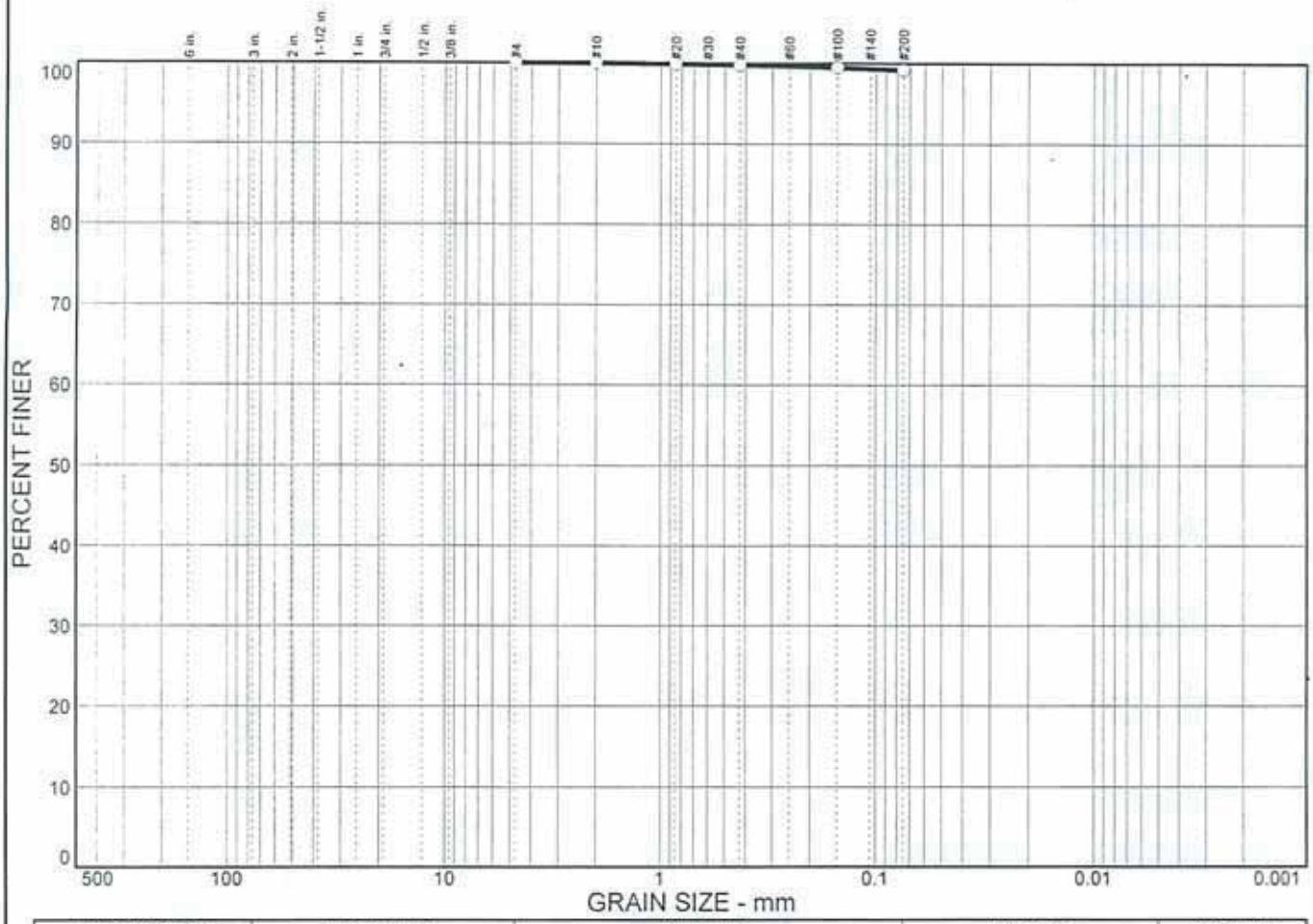


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-22	S-3	4' - 6'	26.5 %	22	52	30	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	0.8	99.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.9		
#40	99.8		
#100	99.5		
#200	99.2		

* (no specification provided)

Soil Description

B-22, S-3: 4' - 6'

Atterberg Limits

PL= 22 LL= 52 PI= 30

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-041

Sample No.: S-3 **Source of Sample:** B-22 **Date:** 1-29-14
Location: B-22, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **January 29, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-1

SAMPLE NUMBER: 14-047
SAMPLE LOCATION: B-35, S-7: 15' – 17'

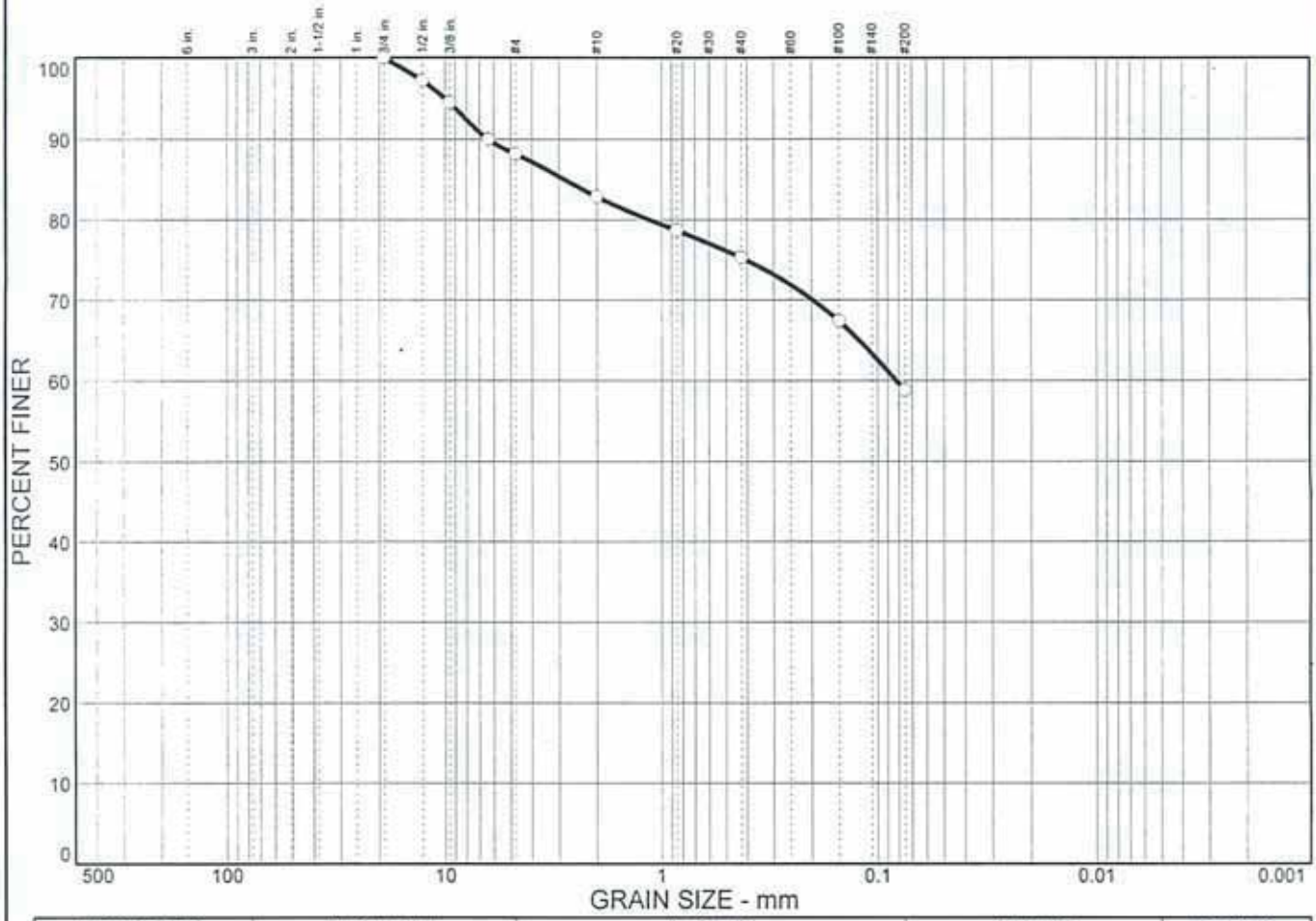
ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock

Moisture Content: 8.7 %

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
¾"	100.0
½"	97.2
3/8"	94.5
¼"	90.0
#4	88.2
#10	82.9
#20	78.7
#40	75.3
#100	67.4
#200	58.8

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	11.8	29.4	58.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.5 in.	97.2		
.375 in.	94.5		
.25 in.	90.0		
#4	88.2		
#10	82.9		
#20	78.7		
#40	75.3		
#100	67.4		
#200	58.8		

* (no specification provided)

Soil Description

B-35, S-7: 15' - 17'

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 2.81 D_{60}= 0.0821 D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-047

Sample No.: S-7 **Source of Sample:** B-35 **Date:** 1-29-14
Location: B-35, S-7: 15' - 17' **Elev./Depth:** 15' - 17'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 6, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

Attached are the results of laboratory testing conducted on various samples from the above referenced project. Mr. John Danzer, representing Empire –Geo Services, Inc, chose samples contained in this report.

The testing conducted was as follows:

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil & Rock

ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Samples were received at the SJB Services, Inc. laboratory on January 27, 2014 where they were processed for testing.

If the reviewer should have any questions concerning this report, please do not hesitate to contact our office at any time.

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 6, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-098
SAMPLE LOCATION: B-20, S-5: 8' – 10'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
23.3 %	37	17	20

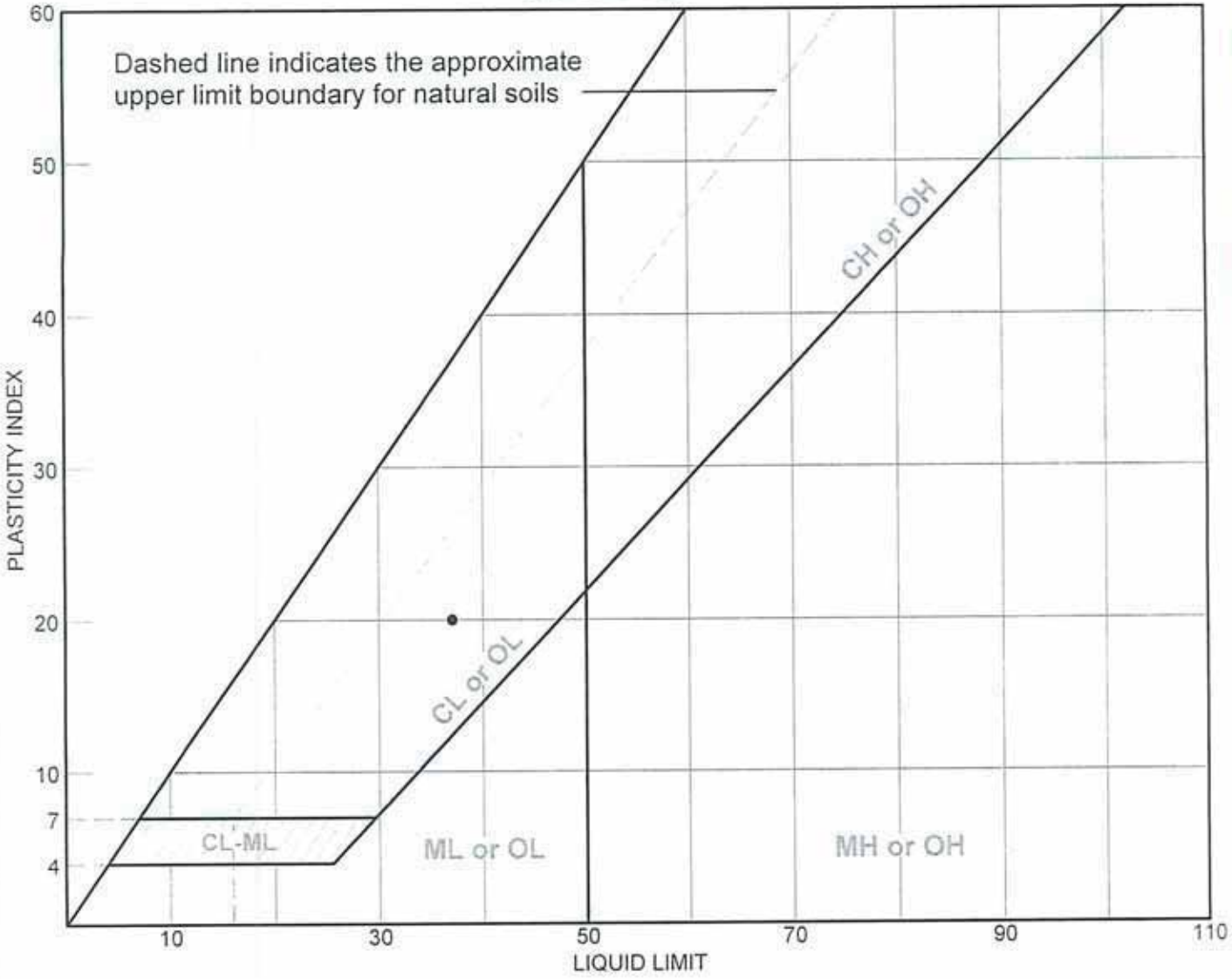
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 51.6 %
Value of Shrinkage Limit = 19
Value of Shrinkage Ratio = 1.81

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
#4	100.0
#10	99.8
#20	99.7
#40	99.5
#100	99.3
#200	99.0

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

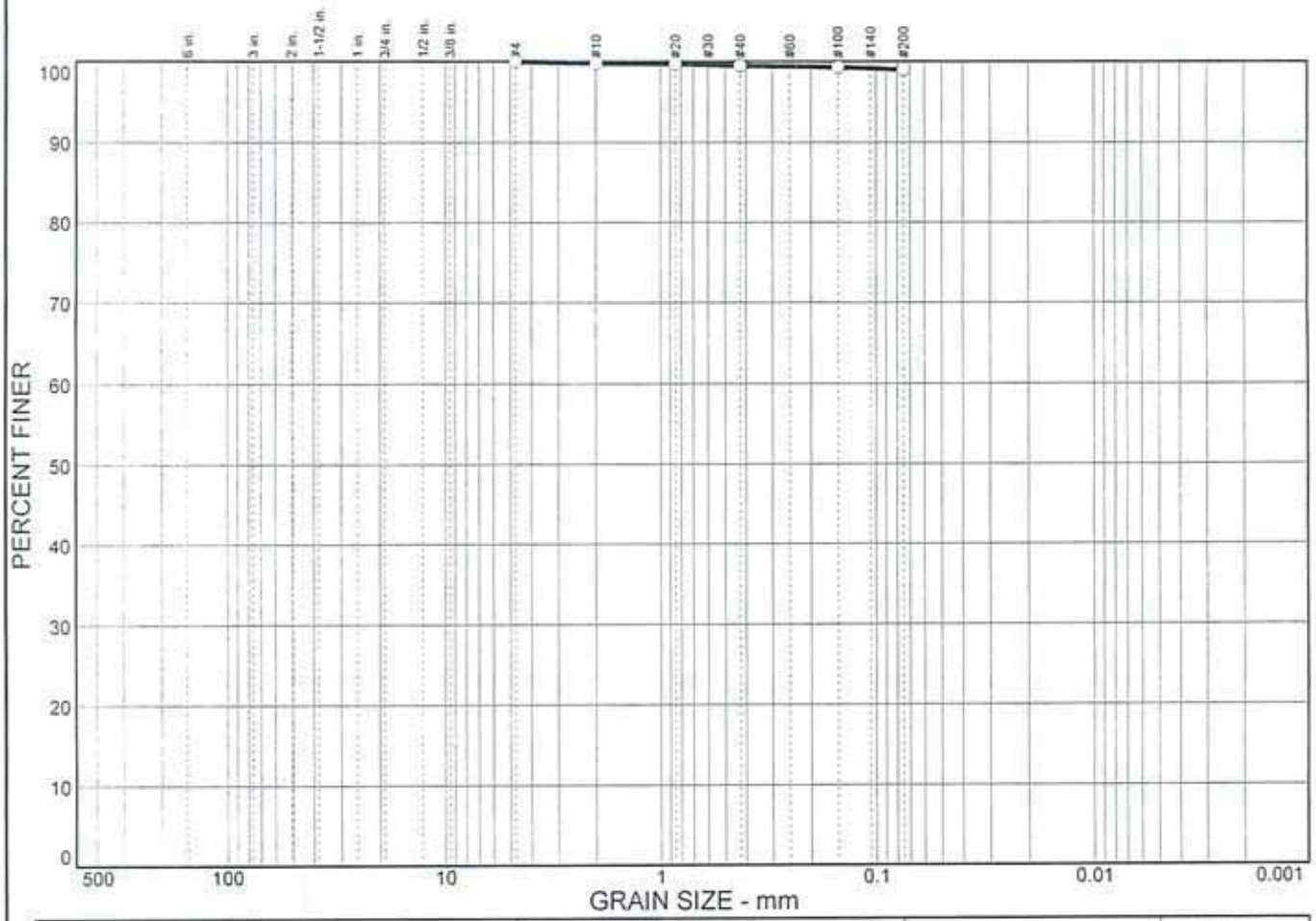


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-20	S-5	8' - 10'	23.3 %	17	37	20	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	1.0	99.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.8		
#20	99.7		
#40	99.5		
#100	99.3		
#200	99.0		

* (no specification provided)

Soil Description

B-20, S-5: 8' - 10'

Atterberg Limits

PL= 17 LL= 37 PI= 20

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-098

Sample No.: S-5 **Source of Sample:** B-20 **Date:** 2-6-14
Location: B-20, S-5: 8' - 10' **Elev./Depth:** 8' - 10'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 6, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-099
SAMPLE LOCATION: B-30, S-5: 8' – 10'

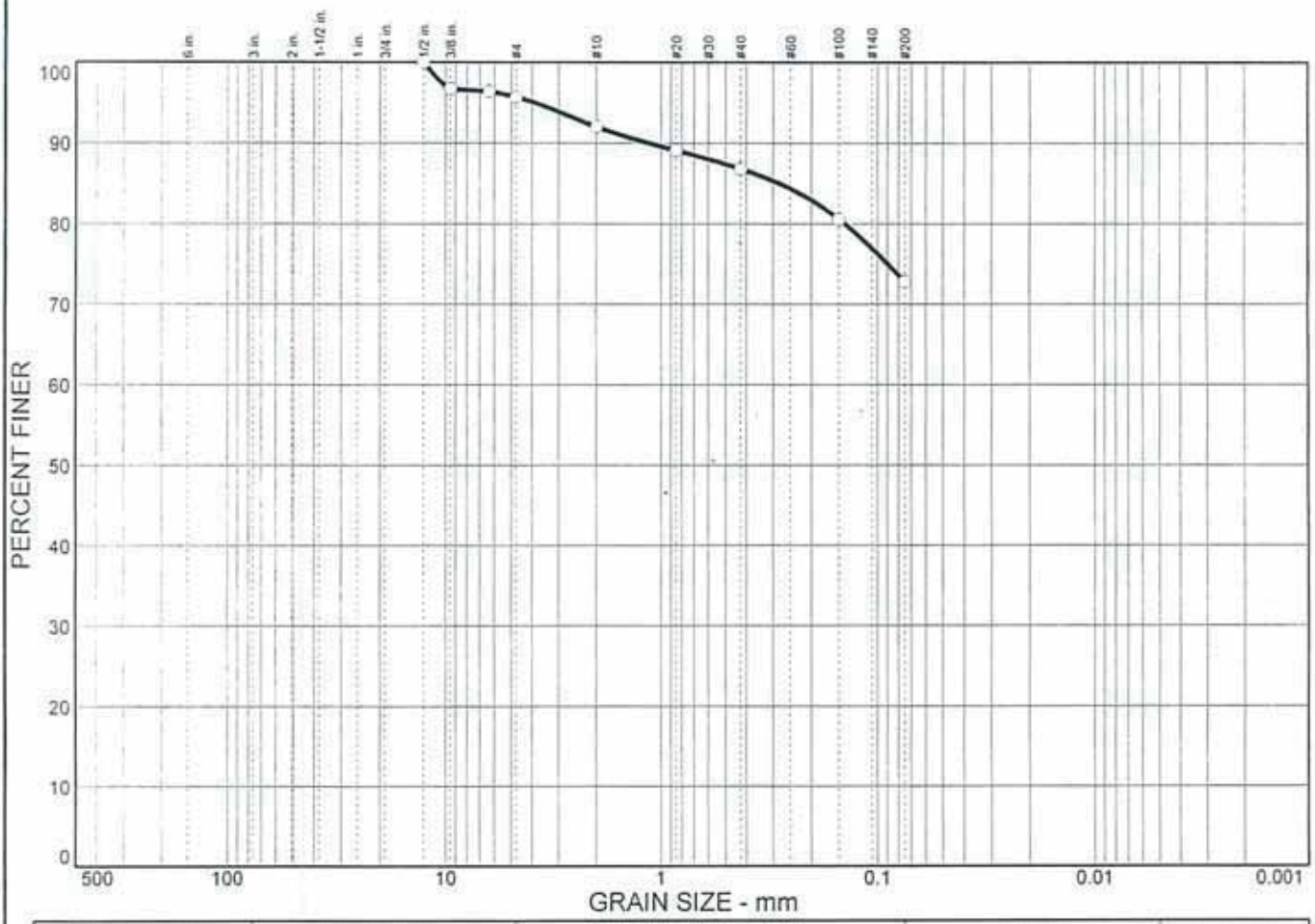
ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content = 11.4 %

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
½"	100.0
3/8"	96.7
¼"	96.4
#4	95.7
#10	92.0
#20	89.1
#40	86.8
#100	80.6
#200	72.8

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	4.3	22.9	72.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5 in.	100.0		
.375 in.	96.7		
.25 in.	96.4		
#4	95.7		
#10	92.0		
#20	89.1		
#40	86.8		
#100	80.6		
#200	72.8		

* (no specification provided)

Soil Description

B-30, S-5: 8' - 10'

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.282 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-099

Sample No.: S-5 **Source of Sample:** B-30 **Date:** 2-6-14
Location: B-30, S-5: 8' - 10' **Elev./Depth:** 8' - 10'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 6, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-100
SAMPLE LOCATION: B-44, S-3: 4' – 6'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
21.3 %	59	22	37

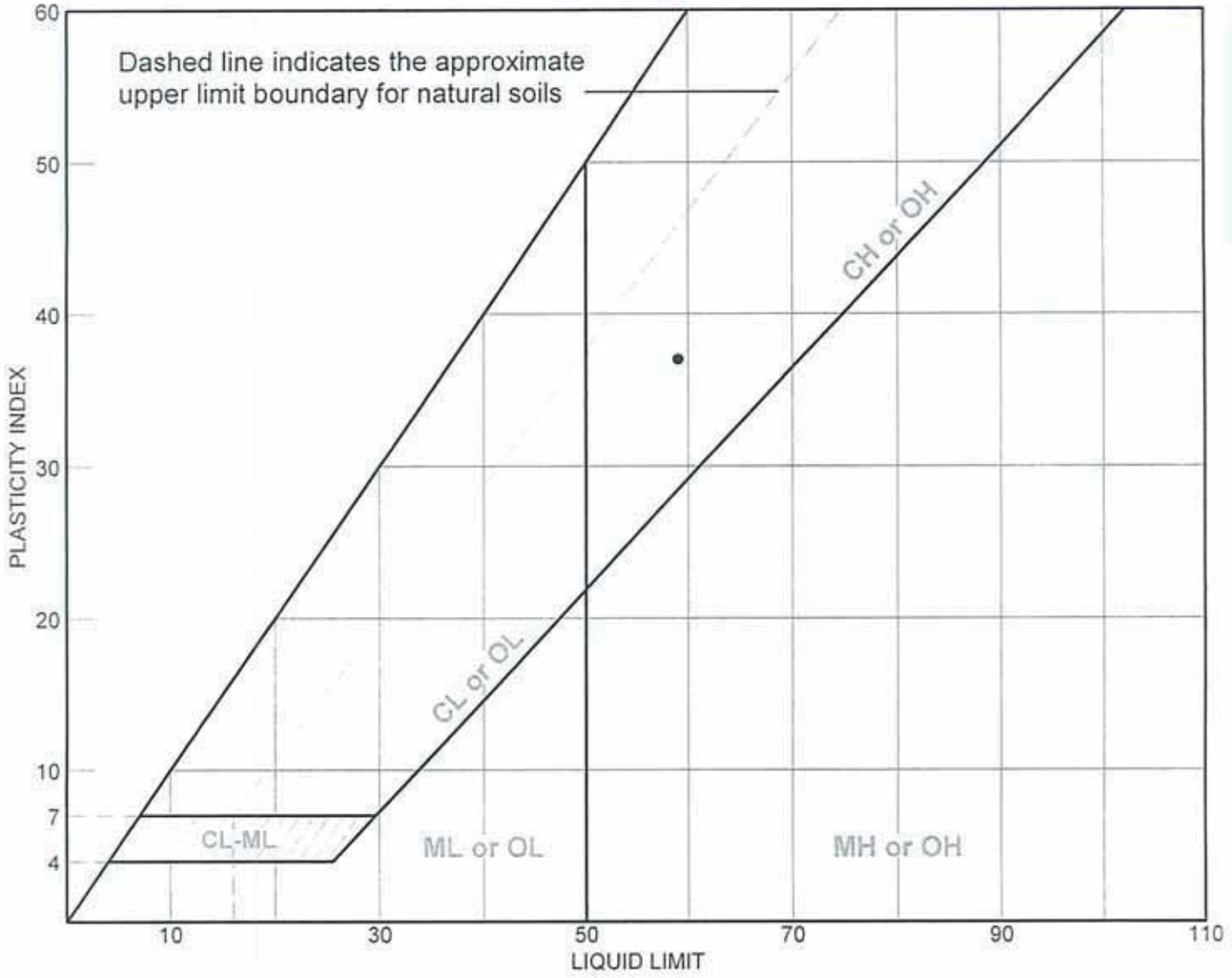
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 72.6 %
Value of Shrinkage Limit = 22
Value of Shrinkage Ratio = 1.69

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
#4	100.0
#10	100.0
#20	99.8
#40	99.6
#100	99.0
#200	97.8

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

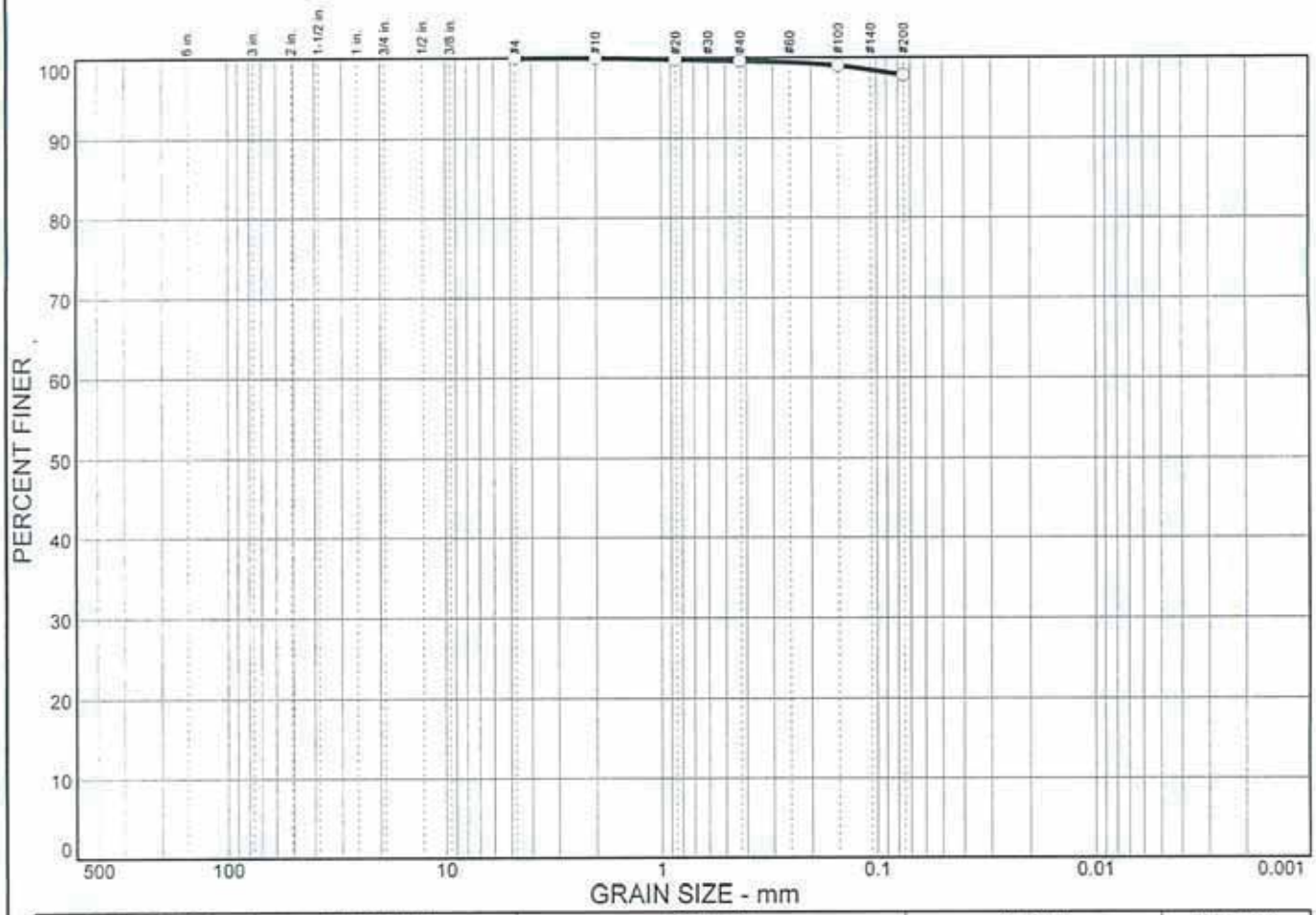


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-44	S-3	4' - 6'	21.3 %	22	59	37	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	2.2	97.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	100.0		
#20	99.8		
#40	99.6		
#100	99.0		
#200	97.8		

* (no specification provided)

Soil Description

B-44, S-3: 4' - 6'

Atterberg Limits

PL= 22 LL= 59 PI= 37

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-100

Sample No.: S-3 **Source of Sample:** B-44 **Date:** 2-6-14
Location: B-44, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-3

Attached are the results of laboratory testing conducted on various samples from the above referenced project. Mr. John Danzer, representing Empire –Geo Services, Inc, chose samples contained in this report.

The testing conducted was as follows:

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil & Rock

ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Samples were received at the SJB Services, Inc. laboratory on February 7, 2014 where they were processed for testing.

If the reviewer should have any questions concerning this report, please do not hesitate to contact our office at any time.

SJB Services, Inc.

Paul Gregorczyk
Laboratory Manager

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-3

SAMPLE NUMBER: 14-122
SAMPLE LOCATION: B-12, S-3: 4 – 6'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
13.1 %	24	13	11

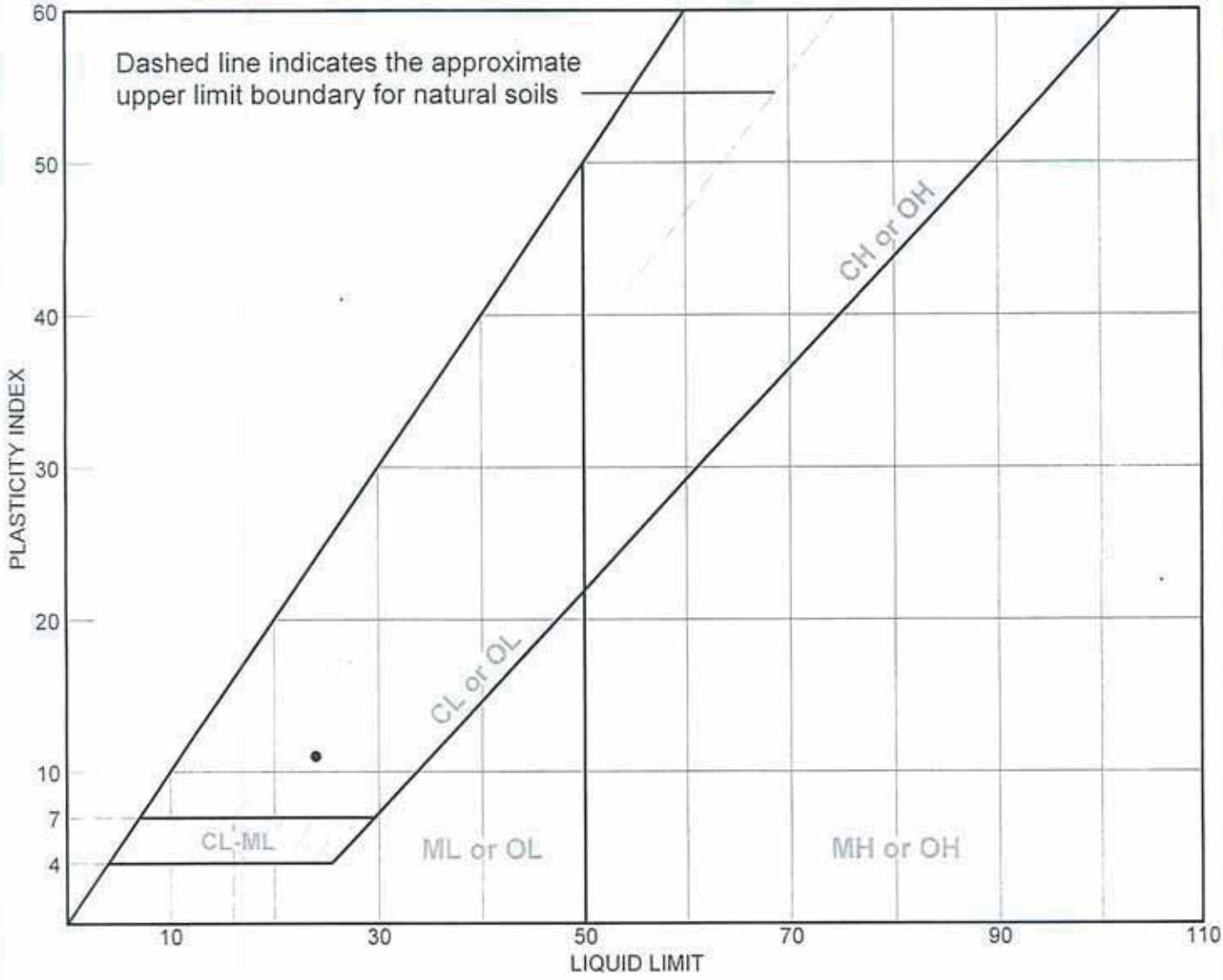
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 28.5 %
Value of Shrinkage Limit = 12
Value of Shrinkage Ratio = 1.98

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
½"	100.0
3/8"	98.0
¼"	93.5
#4	91.4
#10	87.6
#20	84.5
#40	82.1
#100	75.7
#200	68.2

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

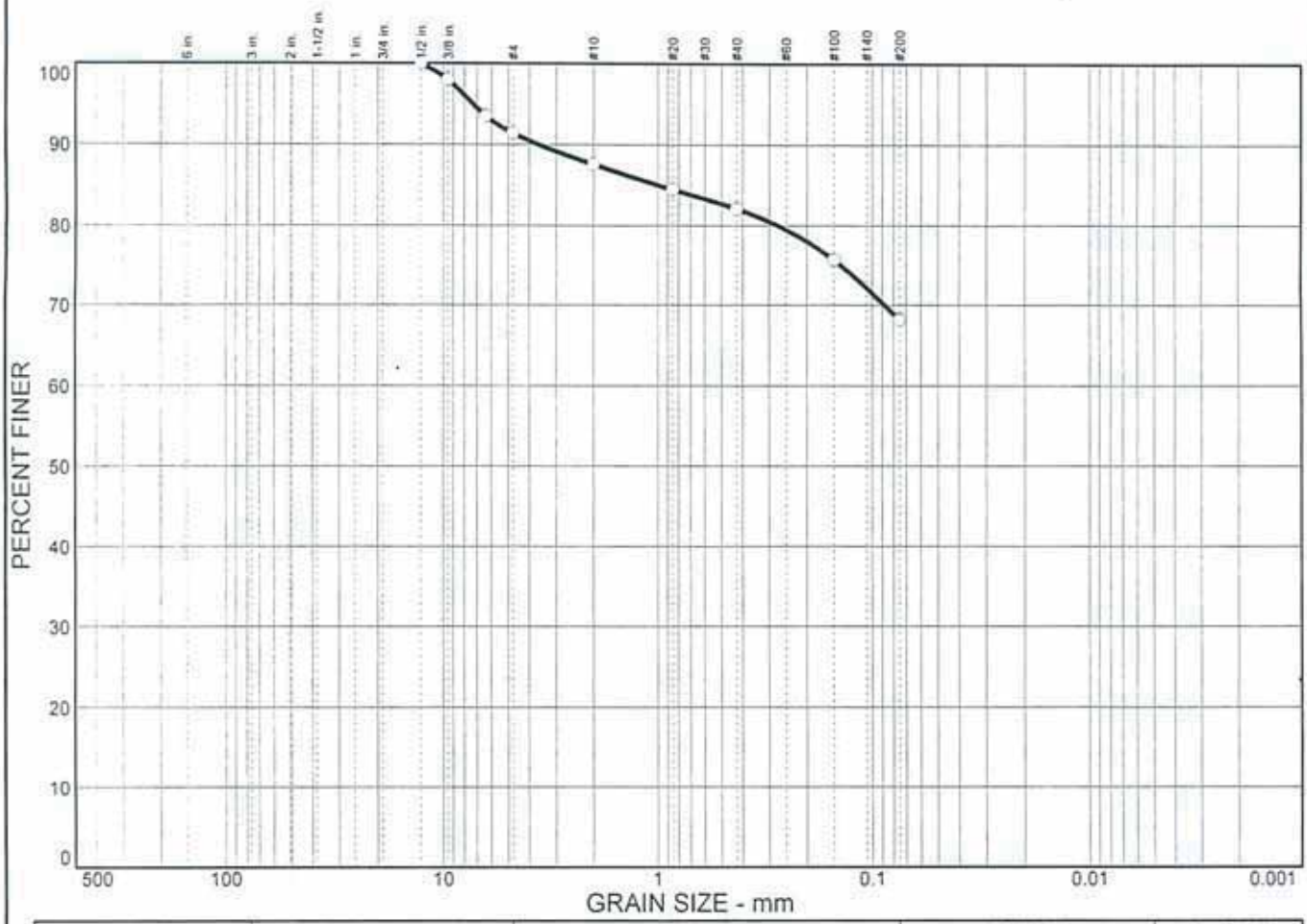


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-12	S-3	4' - 6'	13.1 %	13	24	11	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	8.6	23.2	68.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.5 in.	100.0		
.375 in.	98.0		
.25 in.	93.5		
#4	91.4		
#10	87.6		
#20	84.5		
#40	82.1		
#100	75.7		
#200	68.2		

* (no specification provided)

Soil Description

B-12, S-3: 4' - 6'

Atterberg Limits

PL= 13 LL= 24 PI= 11

Coefficients

D_{85}= 0.983 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-122

Sample No.: S-3 **Source of Sample:** B-12 **Date:** 2-14-14
Location: B-12, S-3: 4' - 6' **Elev./Depth:** 4' - 6'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-123
SAMPLE LOCATION: B-31, S-6: 10' – 12'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
10.7 %	23	13	10

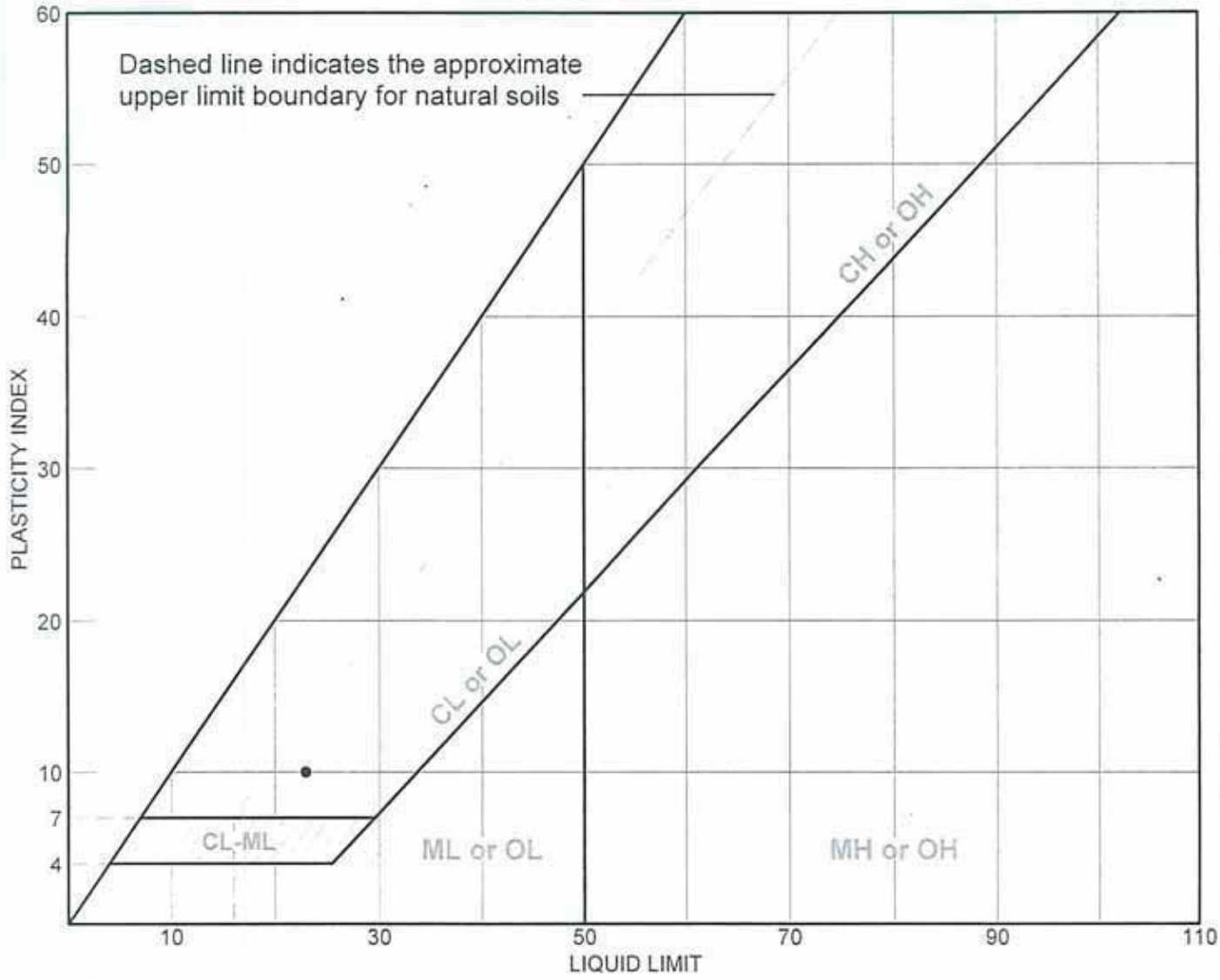
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 43.0 %
Value of Shrinkage Limit = 12
Value of Shrinkage Ratio = 1.94

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
¾"	100.0
½"	96.5
⅜"	94.4
¼"	92.2
#4	90.9
#10	87.1
#20	84.5
#40	82.4
#100	76.4
#200	69.3

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

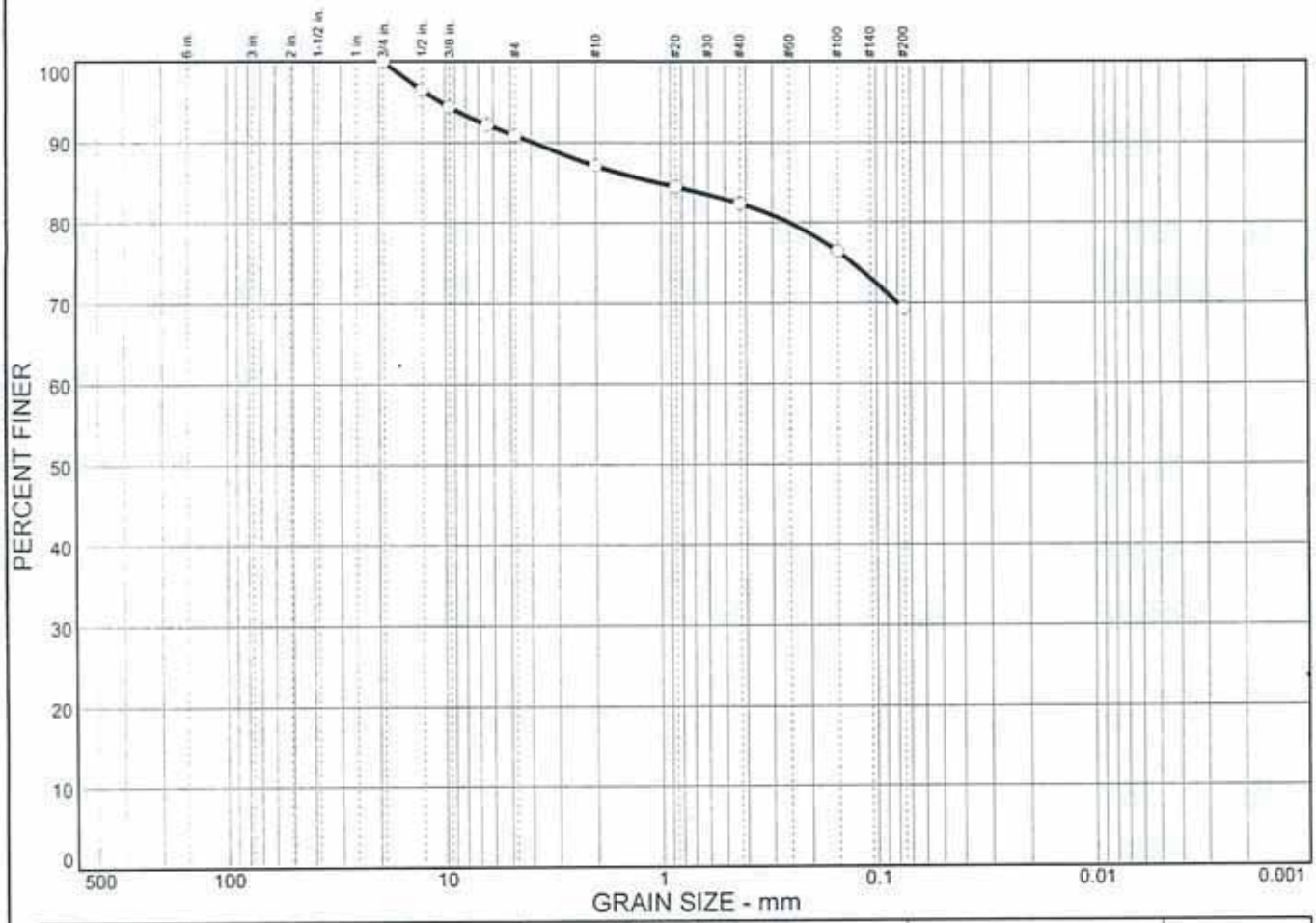


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-31	S-6	10' - 12'	10.7 %	13	23	10	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	9.1	21.6	69.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75 in.	100.0		
.5 in.	96.5		
.375 in.	94.4		
.25 in.	92.2		
#4	90.9		
#10	87.1		
#20	84.5		
#40	82.4		
#100	76.4		
#200	69.3		

* (no specification provided)

Soil Description

B-31, S-6: 10' - 12'

Atterberg Limits

PL= 13 LL= 23 PI= 10

Coefficients

D_{85}= 1.02 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-123

Sample No.: S-6 **Source of Sample:** B-31 **Date:** 2-14-14
Location: B-31, S-6: 10' - 12' **Elev./Depth:** 10' - 12'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-124
SAMPLE LOCATION: B-38, S-2: 2' – 4'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
21.3 %	44	20	24

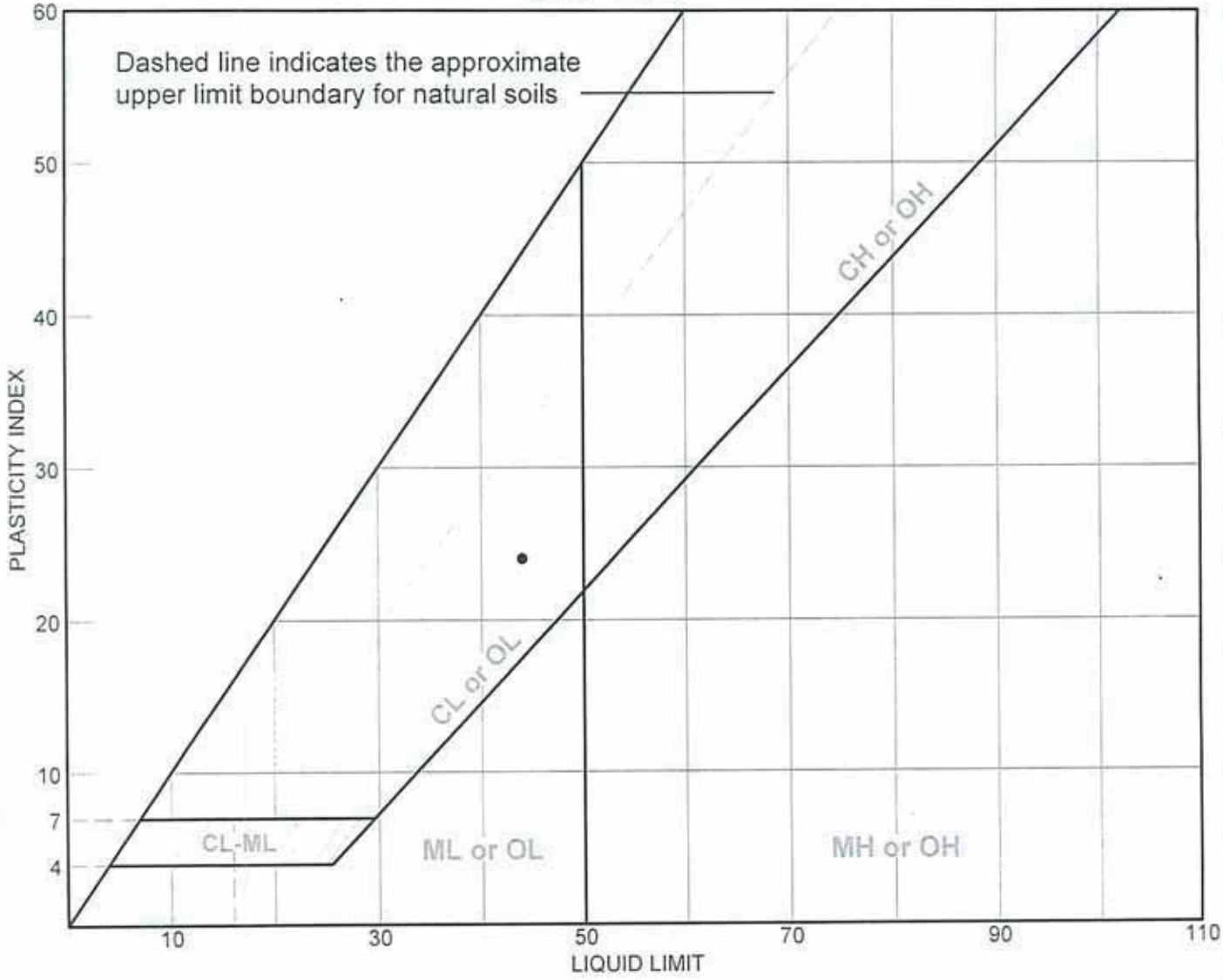
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 51.2 %
Value of Shrinkage Limit = 20
Value of Shrinkage Ratio = 1.64

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
#4	100.0
#10	99.6
#20	99.2
#40	98.7
#100	97.3
#200	96.2

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

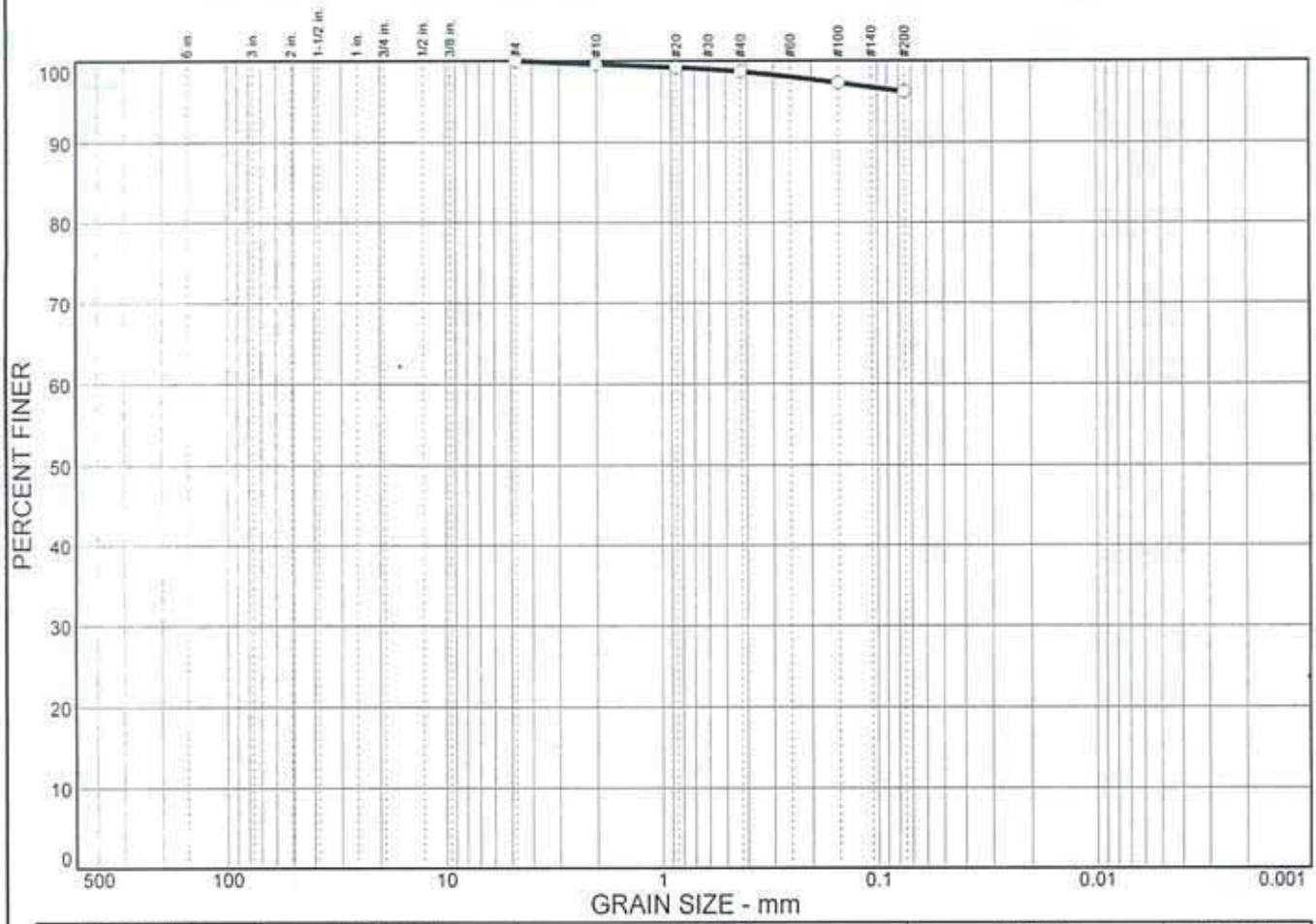


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-38	S-2	2' - 4'	21.3 %	20	44	24	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	3.8	96.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.6		
#20	99.2		
#40	98.7		
#100	97.3		
#200	96.2		

* (no specification provided)

Soil Description

B-38, S-2: 2' - 4'

Atterberg Limits

PL= 20 LL= 44 PI= 24

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-124

Sample No.: S-2 **Source of Sample:** B-38 **Date:** 2-14-14
Location: B-38, S-2: 2' - 4' **Elev./Depth:** 2' - 4'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-125
SAMPLE LOCATION: B-40, S-4: 6' – 8'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
12.0 %	25	14	11

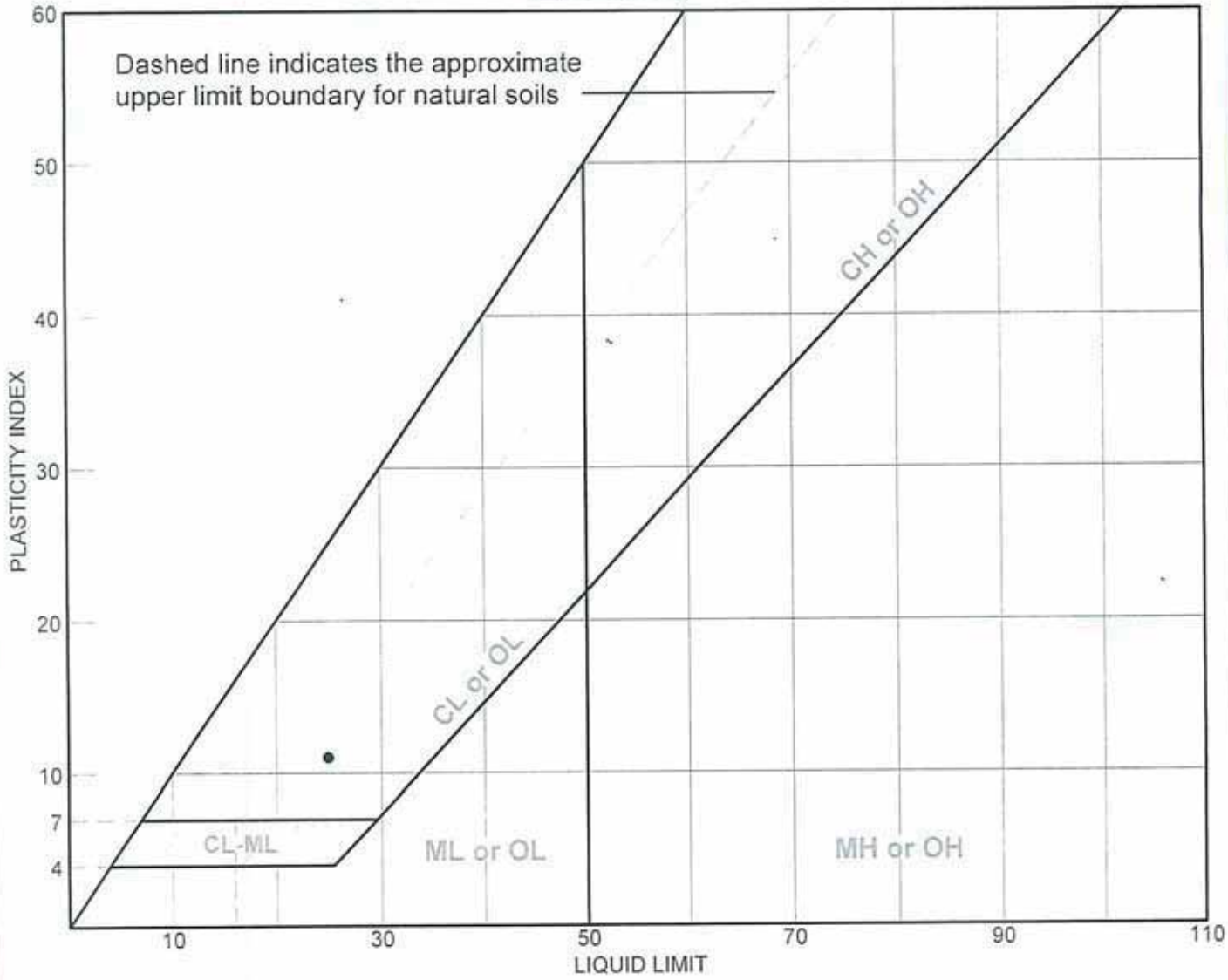
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 31.5 %
Value of Shrinkage Limit = 13
Value of Shrinkage Ratio = 1.95

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
3/8"	100.0
¼"	98.8
#4	97.8
#10	95.8
#20	94.0
#40	92.6
#100	88.6
#200	83.0

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

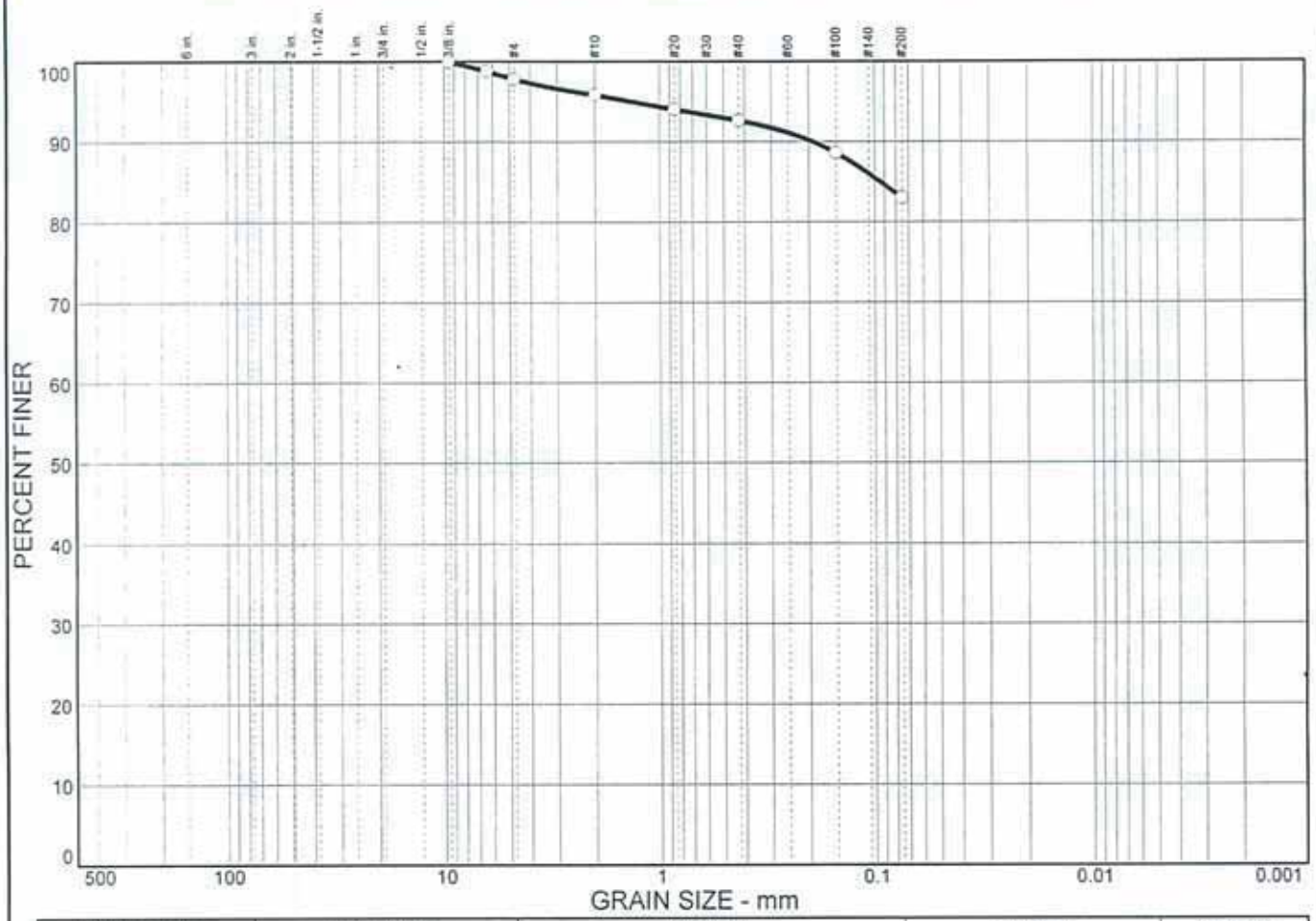


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
●	B-40	S-4	6' - 8'	12.0 %	14	25	11	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	2.2	14.8	83.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375 in.	100.0		
.25 in.	98.8		
#4	97.8		
#10	95.8		
#20	94.0		
#40	92.6		
#100	88.6		
#200	83.0		

* (no specification provided)

Soil Description

B-40, S-4: 6' - 8'

Atterberg Limits

PL= 14 LL= 25 PI= 11

Coefficients

D_{85}= 0.0941 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-125

Sample No.: S-4 **Source of Sample:** B-40 **Date:** 2-14-14
Location: B-40, S-4: 6' - 8' **Elev./Depth:** 6' - 8'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-126
SAMPLE LOCATION: B-46, S-3: 4' – 6'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil & Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
28.1 %	61	25	36

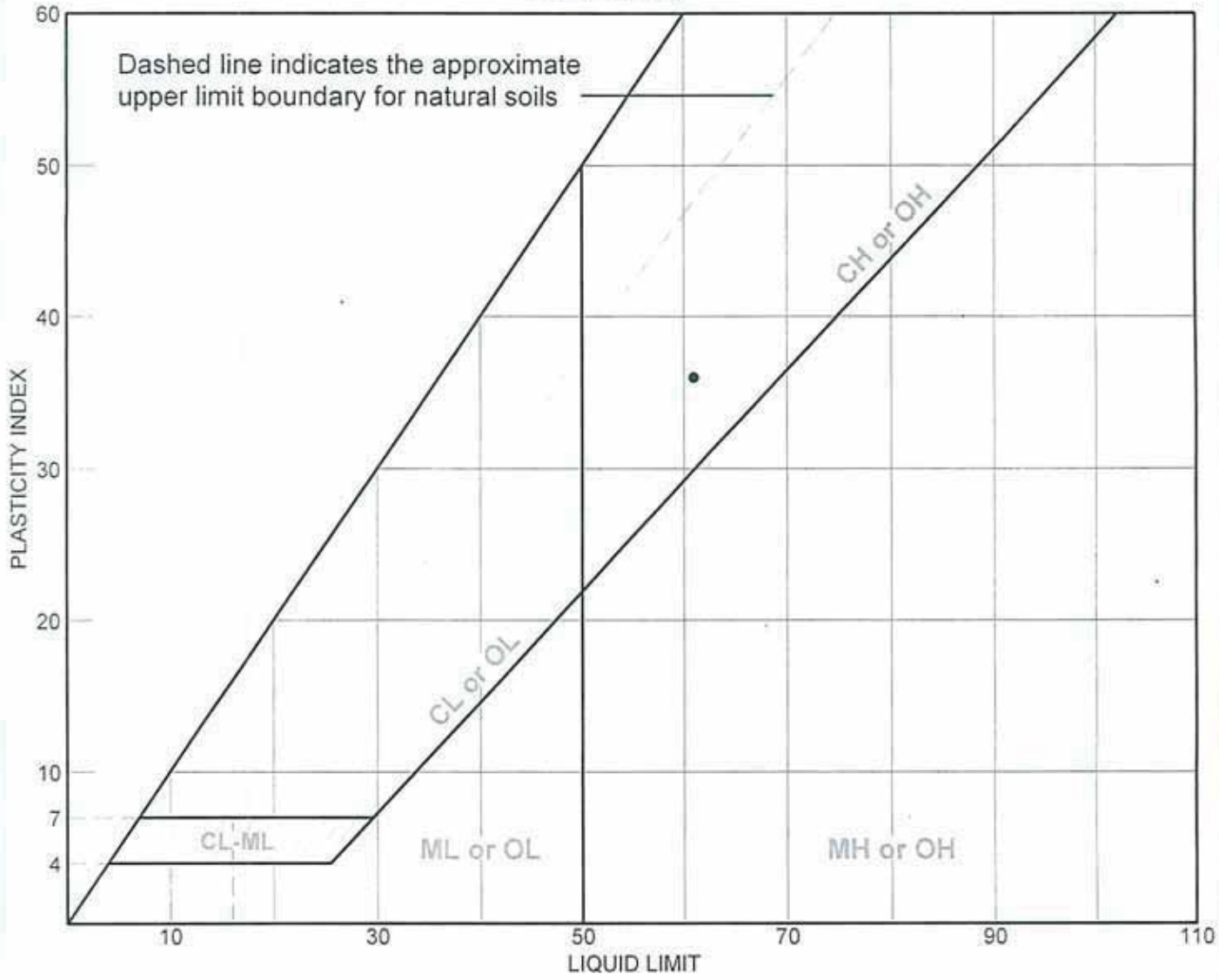
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 66.6 %
Value of Shrinkage Limit = 22
Value of Shrinkage Ratio = 1.65

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
#4	100.0
#10	99.9
#20	99.9
#40	99.7
#100	99.4
#200	99.2

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT

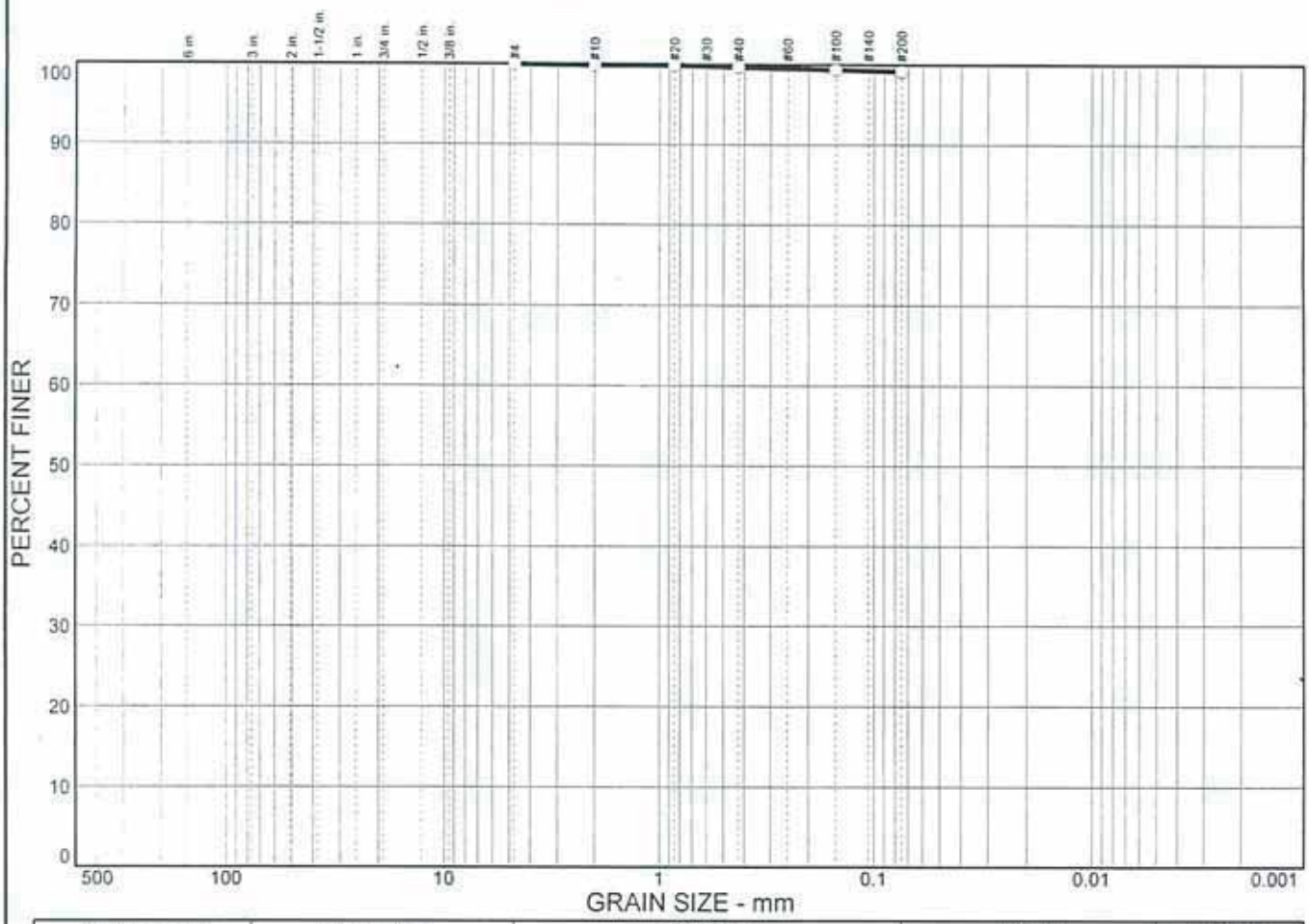


SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-46	S-3	4' - 6'	28.1 %	25	61	36	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	0.8	99.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.9		
#40	99.7		
#100	99.4		
#200	99.2		

* (no specification provided)

Soil Description

B-46, S-3: 4' - 6'

Atterberg Limits

PL= 25 LL= 61 PI= 36

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-126

Sample No.: S-3 Source of Sample: B-46 Date: 2-14-14
Location: B-46, S-3: 4' - 6' Elev./Depth: 4' - 6'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

Western New York Office
5167 South Park Avenue
Hamburg, NY 14075
Phone: (716) 649-8110
Fax: (716) 649-8051

Laboratory Test Report

PROJECT: **Proposed Westwood Country Club Development Project**

CLIENT: **Mensch Capital Partners, LLC.**

DATE: **February 14, 2014**

PROJECT NO.: BE-13-192
REPORT NO.: LTR-2

SAMPLE NUMBER: 14-127
SAMPLE LOCATION: B-48, S-5: 8' – 10'

ASTM D-2216: Laboratory Determination of Water (Moisture) Content of Soil &Rock
ASTM D-4318: Liquid Limit, Plastic Limit, and Plasticity Index of Soil

Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index
11.8 %	23	13	10

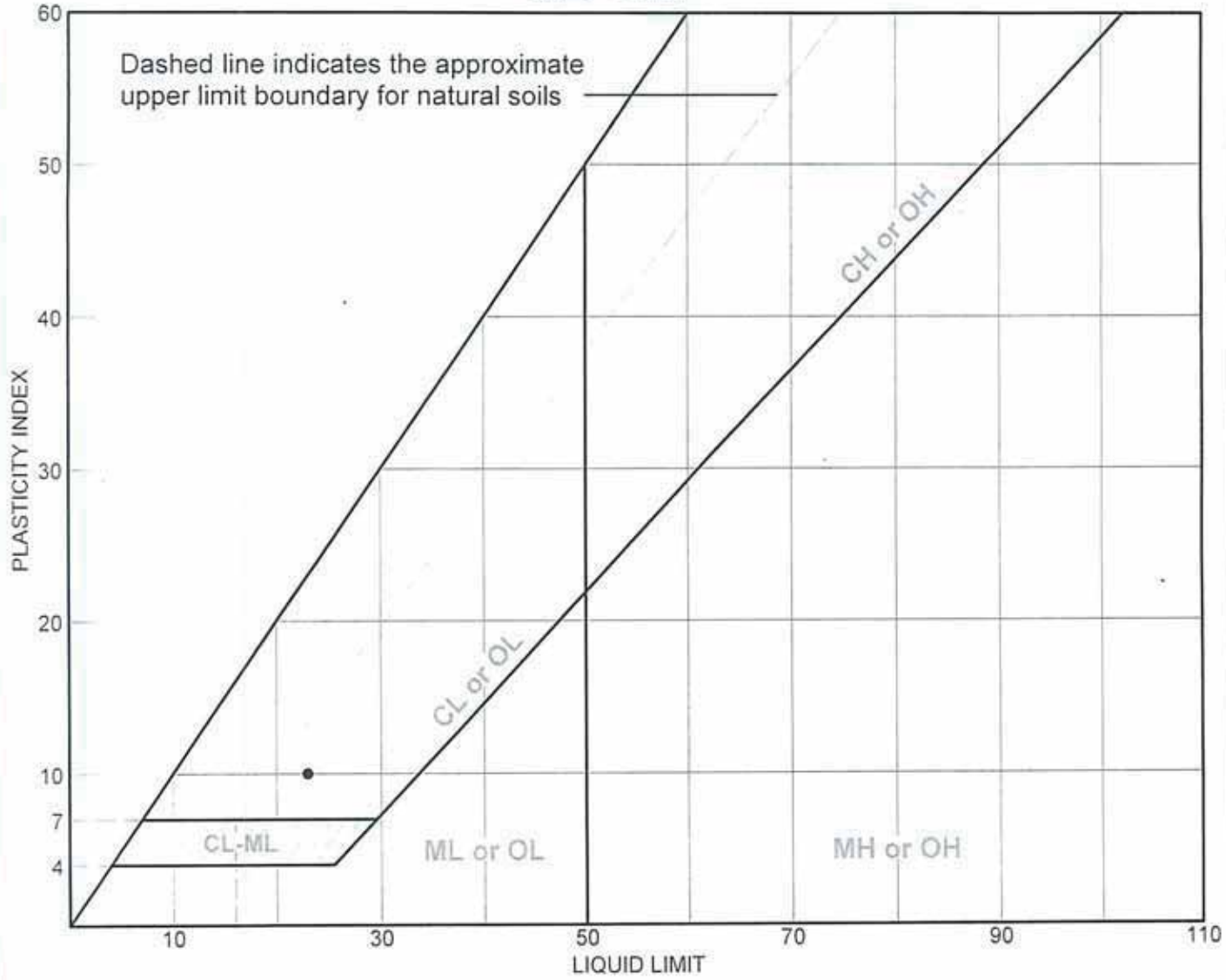
ASTM D-427: Shrinkage Factors of Soils by the Mercury Method

Value of Initial Water Content = 34.4 %
Value of Shrinkage Limit = 14
Value of Shrinkage Ratio = 1.94

ASTM C-136: Sieve Analysis of Fine and Coarse Aggregates

Sieve Size	*Percent Passing*
3/8"	100.0
¼"	97.9
#4	96.2
#10	93.0
#20	90.5
#40	88.5
#100	83.5
#200	77.1

SJB SERVICES, INC. LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA								
SYMBOL	SOURCE	SAMPLE NO.	DEPTH (ft.)	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	USCS
•	B-48	S-5	8' - 10'	11.8 %	13	23	10	

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No.: BE-13-192

ASTM C-136: Particle Size Distribution Report

% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	3.8	19.1	77.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375 in.	100.0		
.25 in.	97.9		
#4	96.2		
#10	93.0		
#20	90.5		
#40	88.5		
#100	83.2		
#200	77.1		

* (no specification provided)

Soil Description

B-48, S-5: 8' - 10'

Atterberg Limits

PL= 13 LL= 23 PI= 10

Coefficients

D_{85}= 0.196 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

SAMPLE NUMBER: 14-128

Sample No.: S-5 **Source of Sample:** B-48 **Date:** 2-14-14
Location: B-48, S-5: 8' - 10' **Elev./Depth:** 8' - 10'

SJB SERVICES, INC.

Client: MENSCH CAPITAL PARTNERS, LLC
Project: WESTWOOD COUNTRY CLUB DEVELOPMENT PROJECT
Project No: BE-13-192

SJB SERVICES, INC.
Contract Drilling and Testing

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467
Phone: 585-359-2730
Fax: 585-359-9668

Summary of Laboratory Testing

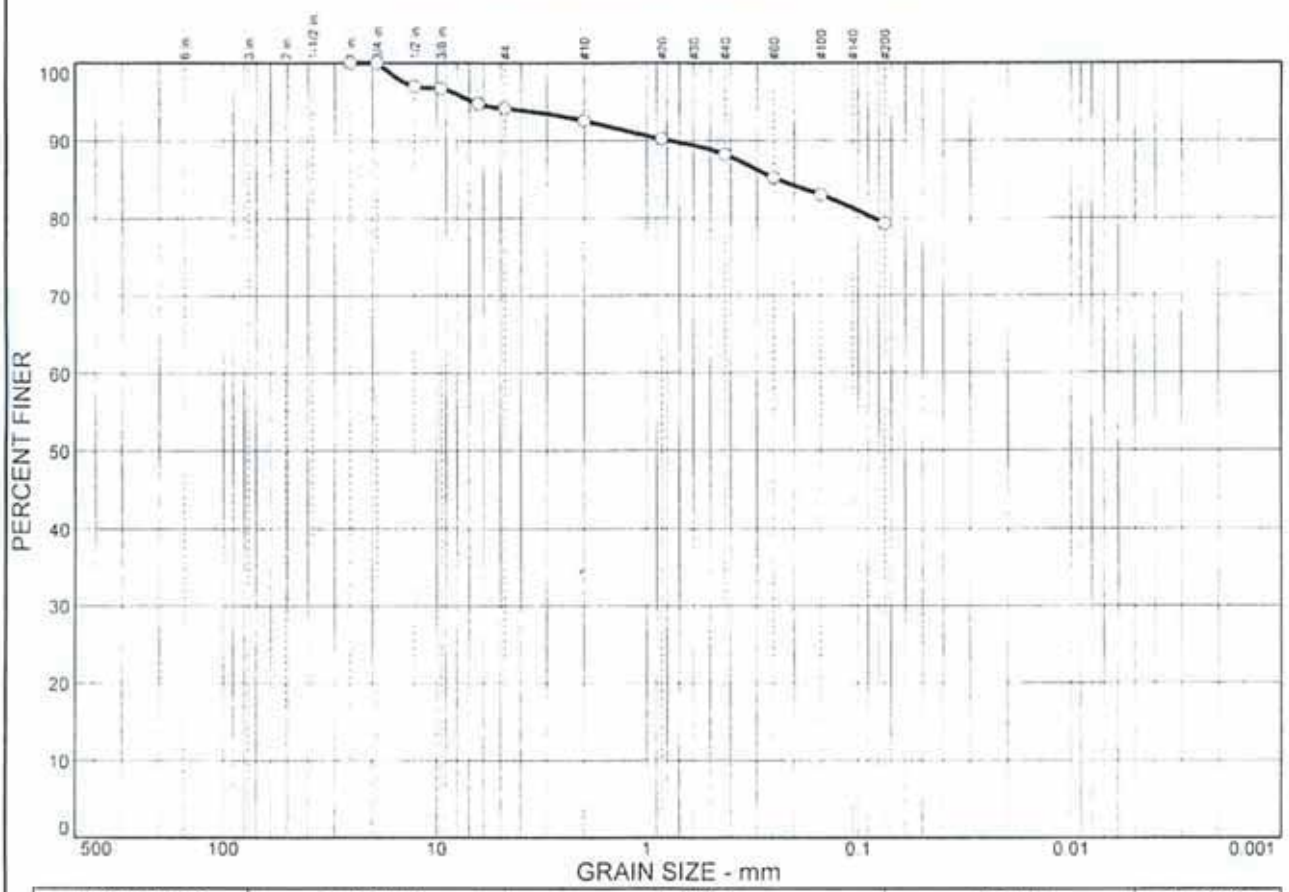
Project:	Westwood Country Club Development Project	**Date:**	02-03-2014
Client:	Mensch Capital Partners		
Project Number:	BE-13-192		

Lab Id#	Location	Depth (ft)	Moisture Content (%)
14-035	B-6, S-2	2 – 4	4.5
14-036	B-6, S-3	4 – 6	11.3
14-037	B-6, S-4	6 – 8	10.3
14-042	B-34, S-2	2 – 4	6.1
14-043	B-34, S-3	4 – 6	5.9
14-044	B-34, S-4	6 – 8	12.0
14-045	B-34, S-5	8 – 10	10.1

SJB Laboratory Technician: William Gilmore

Respectfully submitted:
SJB Services, Inc.

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	5.8	14.9	79.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 in.	100.0		
3/4 in.	100.0		
1/2 in.	97.0		
3/8 in.	96.7		
1/4 in.	94.8		
#4	94.2		
#10	92.6		
#20	90.2		
#40	88.2		
#60	85.2		
#100	83.0		
#200	79.3		

* (no specification provided)

Soil Description

Fines, Little Sand, Trace Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.240 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

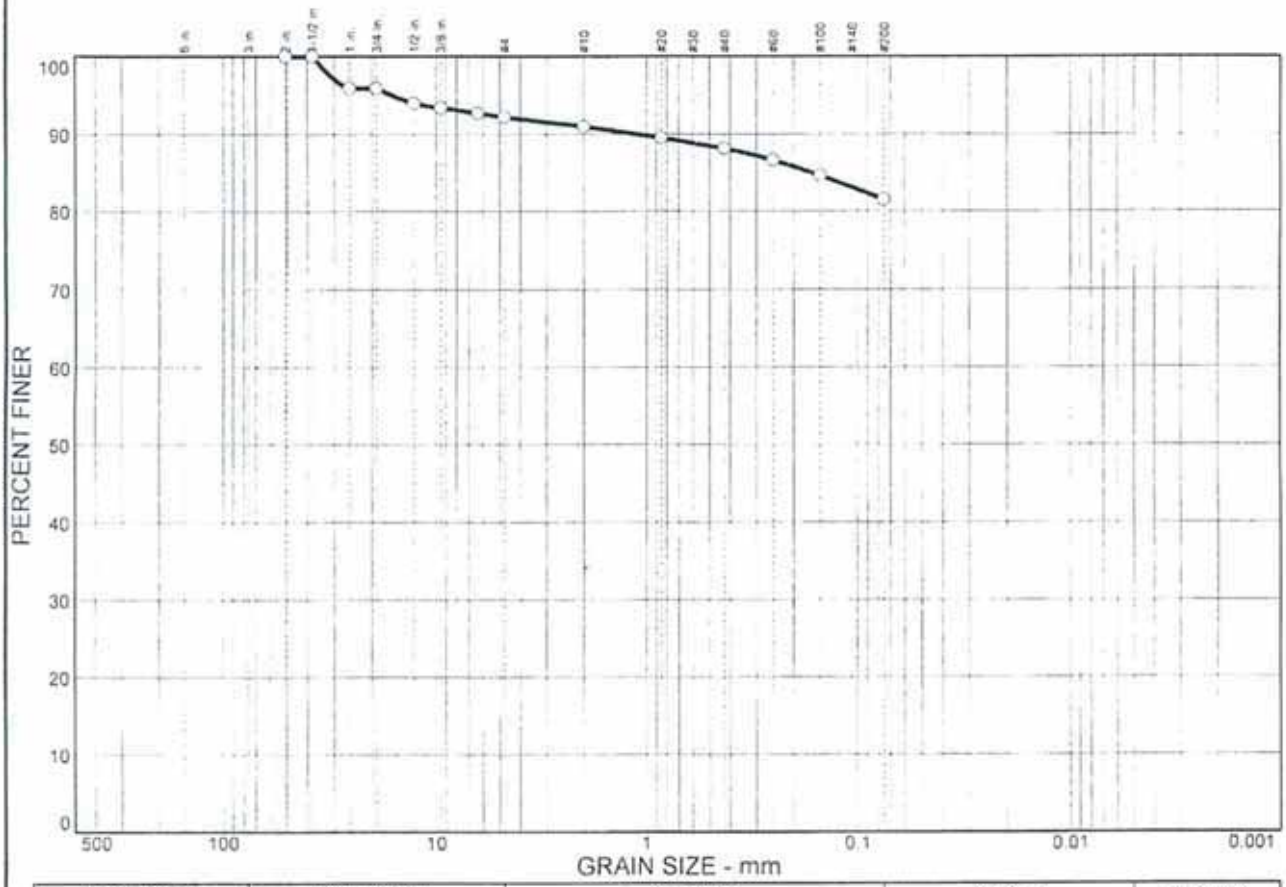
Remarks

Sample No.: 14-038 **Source of Sample:** B-6 **Date:** 02-03-2014
Location: B-6 **Elev./Depth:** 2' - 8'

SJB SERVICES, INC.

Client: Mensch Capital Partners
Project: Westwood Country Club development Project
Project No: BE-13-192 **Plate** 14-038

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	7.8	10.7	81.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
2 in.	100.0		
1.5 in.	100.0		
1 in.	95.9		
3/4 in.	95.9		
1/2 in.	94.0		
3/8 in.	93.4		
1/4 in.	92.7		
#4	92.2		
#10	91.0		
#20	89.5		
#40	88.1		
#60	86.6		
#100	84.6		
#200	81.5		

* (no specification provided)

Soil Description

Fines, Trace Sand, Trace Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= 0.165 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: 14-046 **Source of Sample:** B-34 **Date:** 02-03-2014
Location: B-34 **Elev./Depth:** 2' - 10'

SJB SERVICES, INC.

Client: Mensch Capital Partners
Project: Westwood Country Club development Project
Project No: BE-13-192 **Plate** 14-046

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467

LABORATORY D.I.P.R.A. TESTS

Project: Westwood Country Club

Project Number: BE-13-192

Town /City: N/A

Date: 02-03-2014

Client: Mensch Capital Partners

Technician: William Gilmore

Summary of Laboratory Analysis Soil

Lab ID:	Location:	Resistivity (Ohm-cm)	Redox (mv)	PH	Sulfides (+,T,-)	% Moisture Content (wet, moist, dry)	TOTAL POINTS
		Points	*Points*	*Points*	*Points*	*Points*	
14-038	B-6 Composite	*15,000*	*-35.2*	*6.95*	-	*Moist (9.5%)*	6
	Depth = 2' – 8'	*0*	*5*	*0*	*0*	*1*	
14-046	B-34 Composite	*11,500*	*-22.6*	*6.35*	-	*Moist (8.9%)*	6
	Depth = 2' – 10'	*0*	*5*	*0*	*0*	*1*	

Per the Ductile Iron Pipe Research Association (DIPRA), point totals 10 or greater should be considered for Cathodic Protection.

SJB SERVICES, INC.
Contract Drilling and Testing

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467
Phone: 585-359-2730
Fax: 585-359-9668

Summary of Laboratory Testing

Project:	Westwood Country Club Development Project	**Date:**	02-03-2014
Client:	Mensch Capital Project		
Project Number:	BE-13-192		

Lab#	Location	Depth (Feet)	Chlorides (ppm)	Sulfates (ppm)
14-038	B-6 Composite	2 – 8	15	ND
14-046	B-34 Composite	2 –10	10	ND

SJB Laboratory Technician: William Gilmore

Respectfully submitted:
SJB Services, Inc.

Chuck Guzzetta
District Manager

SJB SERVICES, INC.
Contract Drilling and Testing

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467
Phone: 585-359-2730
Fax: 585-359-9668

Summary of Laboratory Testing

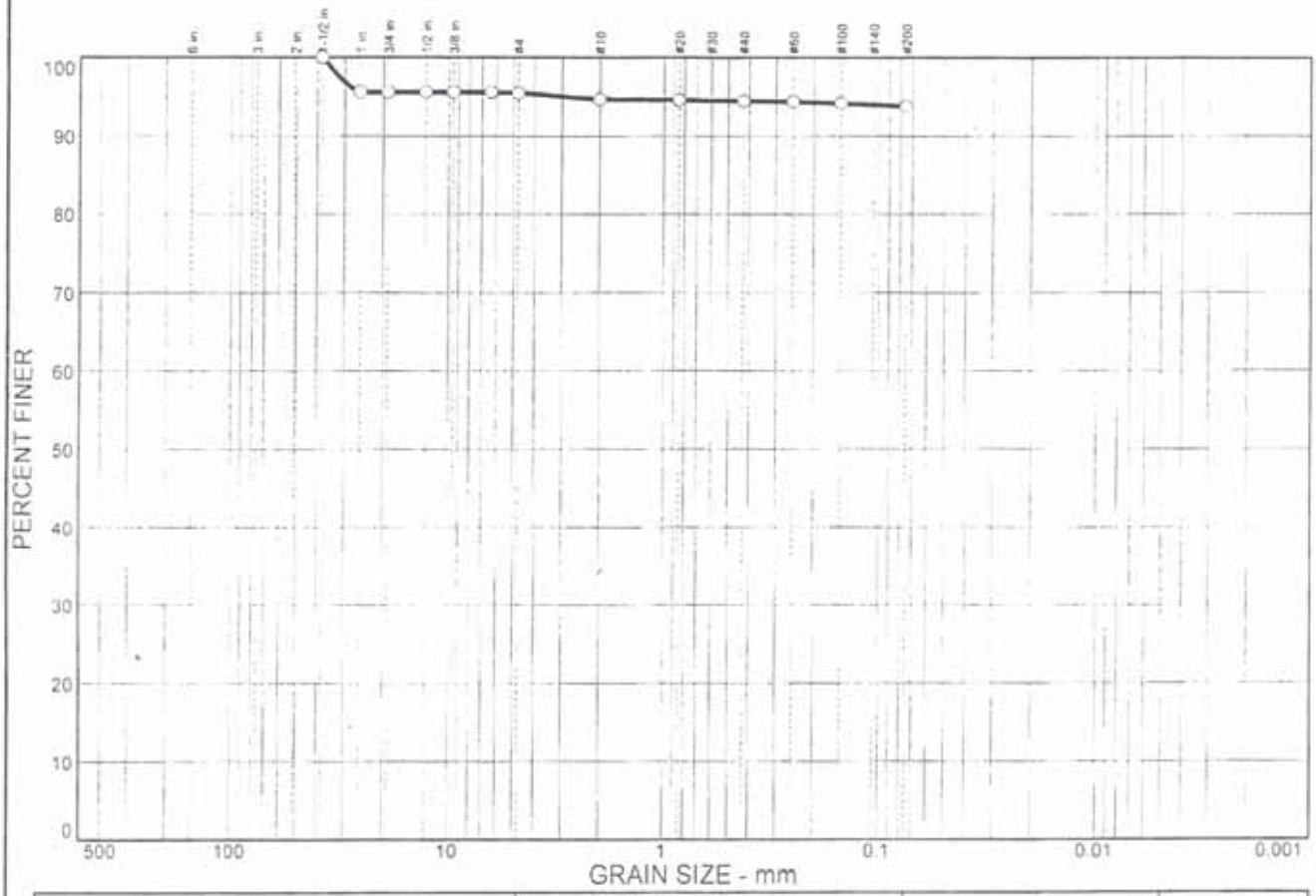
Project: Proposed Westwood Country Club Development Project **Date:** 02-24-2014
Client: Mensch Capital Partners, LLC
Project Number:

Lab Id#	Location	Depth (ft)	Moisture Content (%)
14-121	B-45	2 – 4	23.1
14-122	B-45	4 – 6	23.4
14-123	B-45	6 – 8	28.6
14-124	B-45	8 – 10	20.2
14-125	B-45	2 – 10	23.9

SJB Laboratory Technician: William Gilmore

Respectfully submitted:
SJB Services, Inc.

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	4.5	1.7	93.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1.5 in.	100.0		
1 in.	95.6		
3/4 in.	95.6		
1/2 in.	95.6		
3/8 in.	95.6		
1/4 in.	95.6		
#4	95.5		
#10	94.7		
#20	94.6		
#40	94.5		
#60	94.4		
#100	94.2		
#200	93.8		

* (no specification provided)

Soil Description

Fines, Trace Gravel, Trace Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{85}= D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= AASHTO=

Remarks

Sample No.: 14-125 **Source of Sample:** B-45 Composite **Date:** 02-24-2014
Location: B-45 Composite **Elev./Depth:** 2' - 10'

SJB SERVICES, INC.

Client: Mensch Capital Partners
Project: Westwood Country Club development Project
Project No: BE-13-192 **Plate** 14-125

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467

LABORATORY D.I.P.R.A. TESTS

Project: Westwood Country Club

Project Number: BE-13-192

Town /City: N/A

Date: 02-24-2014

Client: Mensch Capital Partners

Technician: William Gilmore

Summary of Laboratory Analysis Soil

Lab ID:	Location:	Resistivity (Ohm-cm)	Redox (mv)	PH	Sulfides (+,T,-)	% Moisture Content (wet, moist, dry)	TOTAL POINTS
		Points	*Points*	*Points*	*Points*	*Points*	
14-125	B-45 Composite	*2,700*	*9.0*	*7.55*	-	*Wet (23.9%)*	**7**
	Depth = 2' – 10'	*1*	*4*	*0*	*0*	*2*	

Per the Ductile Iron Pipe Research Association (DIPRA), point totals 10 or greater should be considered for Cathodic Protection.

SJB SERVICES, INC.
Contract Drilling and Testing

Rochester Office
535 Summit Point Drive
Henrietta, NY 14467
Phone: 585-359-2730
Fax: 585-359-9668

Summary of Laboratory Testing

Project: Westwood Country Club Development Project **Date:** 02-24-2014
Client: Mensch Capital Project
Project Number: BE-13-192

Lab#	Location	Depth (Feet)	Chlorides (ppm)	Sulfates (ppm)
14-125	B-6 Composite	2 –10	18	ND

SJB Laboratory Technician: William Gilmore

Respectfully submitted:
SJB Services, Inc.

Chuck Guzzetta
District Manager

APPENDIX C

EXISTING SITE INFORMATION

APPENDIX C1

SOIL SURVEY INFORMATION

Unified Soil Classification (Surface)—Erie County, New York
(Westwood Country Club)

Map Scale: 1:8,660 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 400 800 1600 2400

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- CH
- CL
- CL-A (proposed)
- CL-K (proposed)
- CL-ML
- CL-O (proposed)
- CL-T (proposed)
- GC
- GC-GM
- GM
- GP
- GP-GC
- GP-GM
- GW
- GW-GC
- GW-GM
- MH
- MH-A (proposed)
- MH-K (proposed)
- MH-O (proposed)
- MH-T (proposed)
- ML
- ML-A (proposed)
- ML-K (proposed)
- ML-O (proposed)
- ML-T (proposed)
- OH
- OH-T (proposed)
- OL
- PT
- SC
- SC-SM
- SM
- SP
- SP-SC
- SP-SM
- SW
- SW-SC
- SW-SM
- Not rated or not available

Soil Rating Lines
- CH
- CL
- CL-A (proposed)
- CL-K (proposed)
- CL-ML
- CL-O (proposed)
- CL-T (proposed)
- GC
- GC-GM
- GM
- GP
- GP-GC
- GP-GM
- GW
- GW-GC
- GW-GM
- MH
- MH-A (proposed)
- MH-K (proposed)
- MH-O (proposed)
- MH-T (proposed)
- ML
- ML-A (proposed)
- ML-K (proposed)
- ML-O (proposed)
- ML-T (proposed)
- OH
- OH-T (proposed)
- OL
- PT
- SC
- SC-SM
- SM
- SP
- SP-SC
- SP-SM
- SW
- SW-SC
- SW-SM
- Not rated or not available

Soil Rating Points
- CH
- CL
- CL-A (proposed)
- CL-K (proposed)
- CL-ML
- CL-O (proposed)
- CL-T (proposed)
- GC
- GC-GM
- GM
- GP
- GP-GC
- GP-GM
- GW
- GW-GC
- GW-GM
- MH
- MH-A (proposed)
- MH-K (proposed)
- MH-O (proposed)
- MH-T (proposed)
- ML
- ML-A (proposed)
- ML-K (proposed)
- ML-O (proposed)
- ML-T (proposed)
- OH
- OH-T (proposed)
- OL
- PT
- SC
- SC-SM
- SM
- SP
- SP-SC
- SP-SM
- SW
- SW-SC
- SW-SM
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails

MAP INFORMATION


Interstate Highways


US Routes


Major Roads

Local Roads

Background


Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Erie County, New York
Survey Area Data: Version 11, Dec 1, 2011

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 2, 2010—Jul 1, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Unified Soil Classification (Surface)

Unified Soil Classification (Surface)— Summary by Map Unit — Erie County, New York (NY029)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
CrA	Claverack loamy fine sand, 0 to 3 percent slopes	SM	36.1	14.9%
Cv	Cosad loamy fine sand	SM	25.9	10.7%
La	Lakemont silt loam	CL	8.2	3.4%
Od	Odessa silt loam	ML	77.6	32.0%
SaA	Schoharie silt loam, 0 to 3 percent slopes	CL	7.4	3.1%
SaB	Schoharie silt loam, 3 to 8 percent slopes	CL	41.8	17.2%
Sw	Swormville clay loam	CL	8.2	3.4%
Te	Teel silt loam	CL	15.4	6.3%
Ut	Urban land-Odessa complex		13.4	5.5%
W	Water		2.9	1.2%
Wd	Wayland silt loam	ML	5.9	2.4%
Totals for Area of Interest			**242.8**	**100.0%**

Description

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Rating Options

Aggregation Method: Dominant Condition

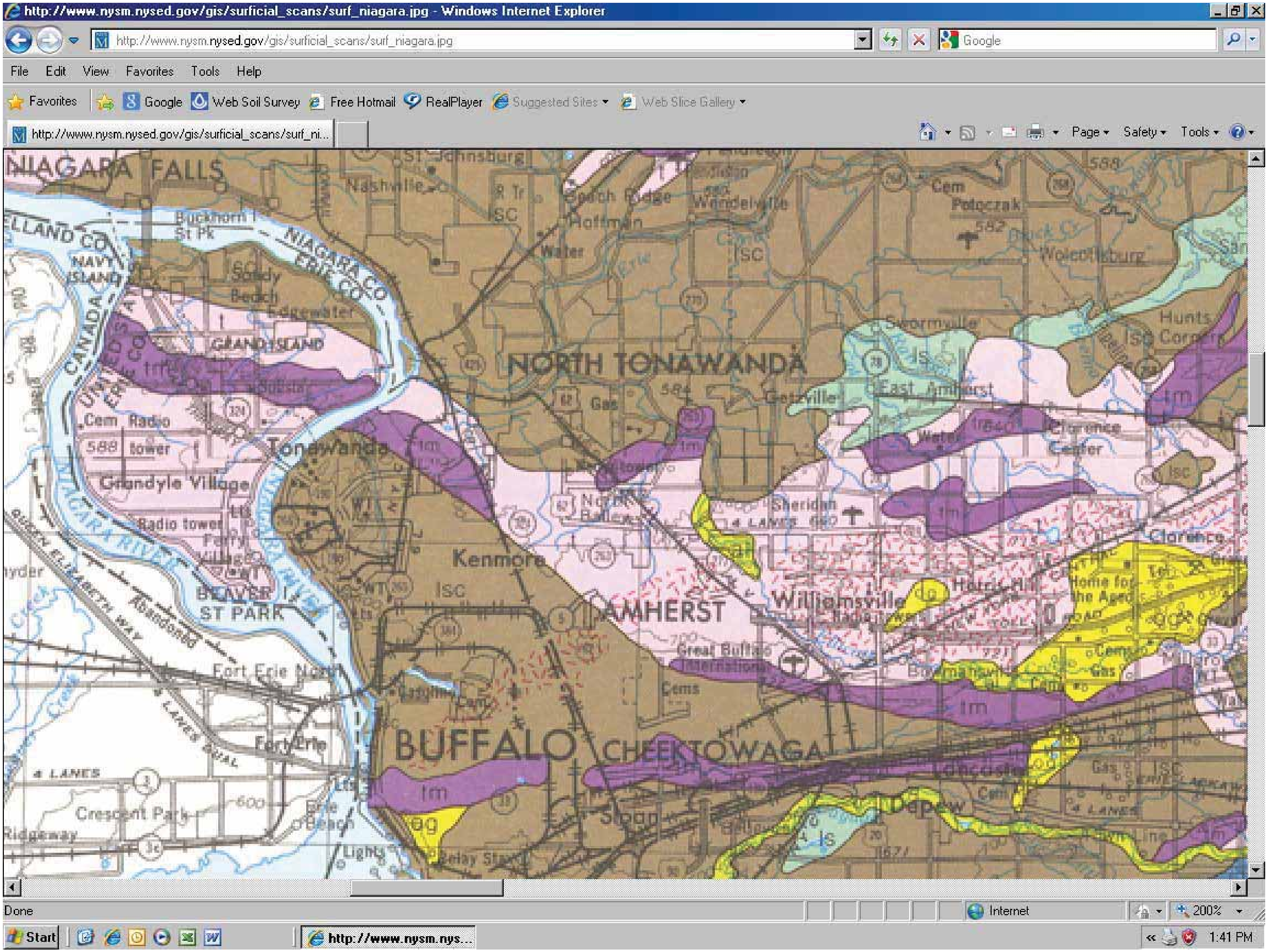
Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

APPENDIX C2

SURFICIAL AND BEDROCK GEOLOGY


http://www.nysm.nysed.gov/gis/surficial_scans/surf_niagara.jpg - Windows Internet Explorer
File Edit View Favorites Tools Help
Favorites
Google
Web Soil Survey
Free Hotmail
RealPlayer
Suggested Sites
Web Slice Gallery
Page
Safety
Tools
NIAGARA FALLS
NORTH TONAWANDA
Tonawanda
Kenmore
AMHERST
Williamsville
BUFFALO
CHEEKTOWAGA
GRAND ISLAND
NIAGARA RIVER
NIAGARA CO
ERIE CO
East Amherst
Getzville
Clarence Center
Clarence
Depew
Sloan
Grandyle Village
BEAVER IS ST PARK
Fort Erie
lm
Done
Internet
200%
Start
1:41 PM

generally more permeable than till,
deposition adjacent to ice,
more variably drained,
may include ablation till,
thickness variable (10–30 meters).

t

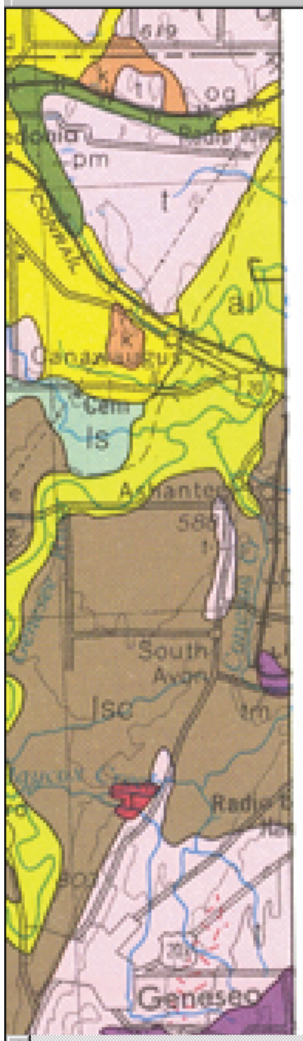
t — Till
Variable texture (e.g. clay, silt-clay, boulder clay),
usually poorly sorted diamict,
deposition beneath glacier ice,
relatively impermeable (loamy matrix),
variable clast content — ranging from abundant well-rounded diverse lithologies in valley tills to relatively angular, more limited lithologies in upland tills, tends to be sandy in areas underlain by gneiss or sandstone,
potential land instability on steep slopes,
thickness variable (1–50 meters).

r

r — Bedrock
Exposed or generally within 1 meter of the surface.

Bedrock stipple overprint
Bedrock may be within 1–3 meters of the surface,
may sporadically crop out,
variable mantle of rock debris and glacial till.

MAP SYMBOLS



thickness variable (up to 100 meters);
stipple overprint where bedrock is within 1–3 meters of the surface.

ls

ls — Lacustrine sand
Sand deposits associated with large bodies of water,
generally a near-shore deposit or near a sand source,
well sorted, stratified,
generally quartz sand,
thickness variable (2–20 meters).

og

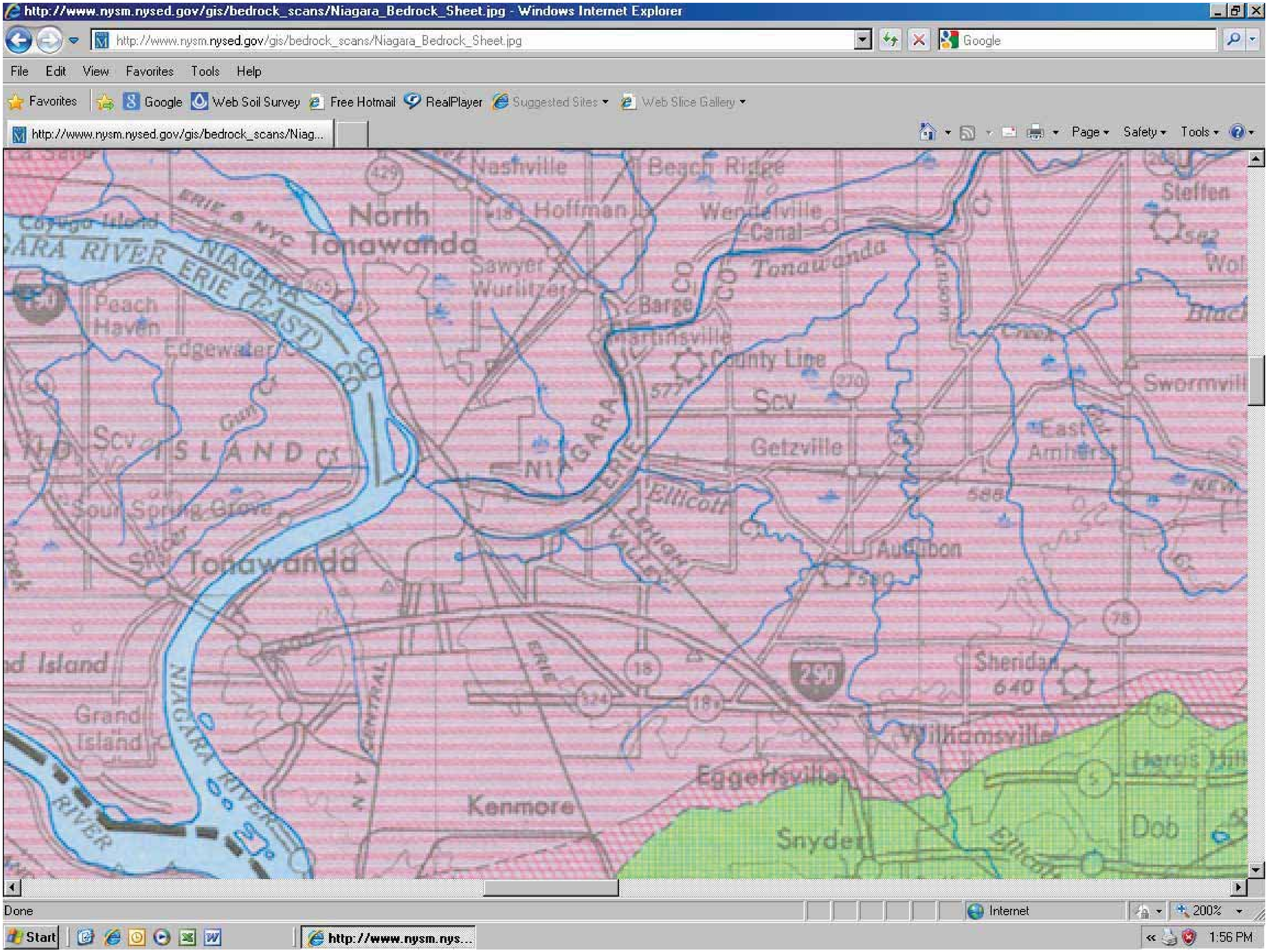
og — Outwash sand and gravel
Coarse to fine gravel with sand,
proglacial fluvial deposition,
well rounded and stratified,
generally finer texture away from ice border,
may be calcreted beyond Wisconsinan glacial limit,
thickness variable (2–20 meters).

fg

fg — Fluvial gravel
Same as outwash sand and gravel,
except deposition farther from glacier,
age uncertain.

k

k — Kame deposits
Includes kames, eskers, kame terraces, kame deltas,
coarse to fine gravel and/or sand,
deposition adjacent to ice (if at ice margin, relief is below elevation of associated o


http://www.nysm.nysed.gov/gis/bedrock_scans/Niagara_Bedrock_Sheet.jpg - Windows Internet Explorer
http://www.nysm.nysed.gov/gis/bedrock_scans/Niagara_Bedrock_Sheet.jpg
Google
File Edit View Favorites Tools Help
Favorites
Google
Web Soil Survey
Free Hotmail
RealPlayer
Suggested Sites
Web Slice Gallery
Page Safety Tools
North Tonawanda
Nashville
Hoffman
Beach Ridge
Wendelville
Canal
Tonawanda
Sawyer
Wurlitzer
Barge
Martinsville
County Line
Scv
Getzville
Steffen
Swormville
East Amherst
Peach Haven
Edgewater
ISLAND
NIAGARA
ERIE
ERIE (EAST)
NIAGARA RIVER
Ellicott
LEHIGH VALLEY
Audubon
South Spring Grove
Tonawanda
Grand Island
CENTRAL
Kenmore
Eggertsville
Williamsville
Sheridan
640
Snyder
Dob
Done
Internet
200%
Start
1:56 PM

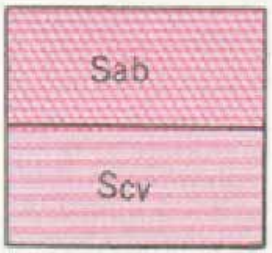
Lower

Bois Blanc Formation—dolostone, limestone, sandstone (Springvale).

Do Oriskany Sandstone.

Upper Silurian

AKRON DOLOSTONE AND SALINA GROUP
400-700 ft. (120-210 m.)



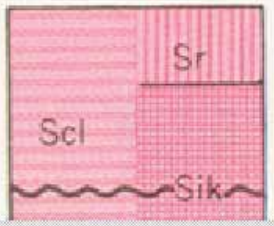
Sab Akron Dolostone; Bertie Formation—dolostone, shale.

Scv Camillus, Syracuse, and Vernon Formations—shale, dolostone, salt, and gypsum.

LOCKPORT GROUP
150-200 ft. (45-60 m.)

Sl Guelph, Oak Orchard, Eramosa, and Goat Island Dolostones; Gasport Limestone—local bioherms.

CLINTON GROUP
100-150 ft. (30-45 m.)



Scl Decew Dolostone; Rochester Shale; Irondequoit and Merriton Limestones.

Sr Decew Dolostone; Rochester Shale.

Sik Irondequoit Limestone; Rockway Dolostone; Hickory Corners Limestone; Neahga Shale; Kodak Sandstone.

urian

APPENDIX C3

FLOOD PLAIN MAPPING

Erie County On-Line Mapping System

Legend

Base Flood Elevation

Flood Hazard Lines

- <all other values>
- 0.2 PCT ANNUAL CHANCE FLOO
- 0.2 PCT ANNUAL CHANCE FLOO
- 1 PCT ANNUAL CHANCE FLOOD
- 1 PCT ANNUAL CHNACE FLOOD
- APPARENT LIMIT
- AREA NOT INCLUDED
- END OF SPATIAL EXTENT
- FLOODWAY
- ZONE BREAK/ FLOODWAY
- FLOWAGE EASEMENT BOUNDAI
- LIMIT OF DETAILED STUDY
- LIMIT OF DETAILED STUDY/ ZON
- LIMIT OF FLOODWAY
- LIMIT OF FLOODWAY/ ZONE BRE
- LIMIT OF STUDY
- SOURCE BOUNDARY
- STATE ENCROACHEMENT LINE
- ZONE BREAK
- ZONE D
- Not Printed / ZONE D

Cross Section Lines

Streets and Highways

- Interstate
- Primary State Road
- Secondary State Road
- County Road
- Local Road

Parcels

1: 10,476

Notes

Enter Map Description

0.3 0 0.17 0.3 Miles

ERIE COUNTY, NEW YORK
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GEOGRAPHIC INFORMATION SERVICES

APPENDIX D

GEOTECHNICAL REPORT LIMITATIONS

GEOTECHNICAL REPORT LIMITATIONS

Empire Geo-Services, Inc. (Empire) has endeavored to meet the generally accepted standard of care for the services completed, and in doing so is obliged to advise the geotechnical report user of our report limitations. Empire believes that providing information about the report preparation and limitations is essential to help the user reduce geotechnical-related delays, cost over-runs, and other problems that can develop during the design and construction process. Empire would be pleased to answer any questions regarding the following limitations and use of our report to assist the user in assessing risks and planning for site development and construction.

PROJECT SPECIFIC FACTORS: The conclusions and recommendations provided in our geotechnical report were prepared based on project specific factors described in the report, such as size, loading, and intended use of structures; general configuration of structures, roadways, and parking lots; existing and proposed site grading; and any other pertinent project information. Changes to the project details may alter the factors considered in development of the report conclusions and recommendations. *Accordingly, Empire cannot accept responsibility for problems which may develop if we are not consulted regarding any changes to the project specific factors that were assumed during the report preparation.*

SUBSURFACE CONDITIONS: The site exploration investigated subsurface conditions only at discrete test locations. Empire has used judgement to infer subsurface conditions between the discrete test locations, and on this basis the conclusions and recommendations in our geotechnical report were developed. It should be understood that the overall subsurface conditions inferred by Empire may vary from those revealed during construction, and these variations may impact on the assumptions made in developing the report conclusions and recommendations. *For this reason, Empire should be retained during construction to confirm that conditions are as expected, and to refine our conclusions and recommendations in the event that conditions are encountered that were not disclosed during the site exploration program.*

USE OF GEOTECHNICAL REPORT: Unless indicated otherwise, our geotechnical report has been prepared for the use of our client for specific application to the site and project conditions described in the report. *Without consulting with Empire, our geotechnical report should not be applied by any party to other sites or for any uses other than those originally intended.*

CHANGES IN SITE CONDITIONS: Surface and subsurface conditions are subject to change at a project site subsequent to preparation of the geotechnical report. Changes may include, but are not limited to, floods, earthquakes, groundwater fluctuations, and construction activities at the site and/or adjoining properties. *Empire should be informed of any such changes to determine if additional investigative and/or evaluation work is warranted.*

MISINTERPRETATION OF REPORT: The conclusions and recommendations contained in our geotechnical report are subject to misinterpretation. *To limit this possibility, Empire should review project plans and specifications relative to geotechnical issues to confirm that the recommendations contained in our report have been properly interpreted and applied.*

Subsurface exploration logs and other report data are also subject to misinterpretation by others if they are separated from the geotechnical report. This often occurs when copies of logs are given to contractors during the bid preparation process. *To minimize the potential for misinterpretation, the subsurface logs should not be separated from our geotechnical report and the use of excerpted or incomplete portions of the report should be avoided.*

OTHER LIMITATIONS: Geotechnical engineering is less exact than other design disciplines, as it is based partly on judgement and opinion. For this reason, our geotechnical report may include clauses that identify the limits of Empire's responsibility, or that may describe other limitations specific to a project. These clauses are intended to help all parties recognize their responsibilities and to assist them in assessing risks and decision making. Empire would be pleased to discuss these clauses and to answer any questions that may arise.

APPENDIX B

HEALTH AND SAFETY PLAN

Health and Safety Plan
for
Amherst Central Park-South

Amherst Central Park-South
772 North Forest Road
Amherst, Erie County, New York

Prepared by

C&S Engineers, Inc.
141 Elm Street, Suite 100
Buffalo, New York 14203

December, 2023

EMERGENCY PHONE NUMBERS

Emergency Medical Service 911

Police Department.....911

Fire Department.....911

Millard Fillmore Suburban Hospital.....(716) 568-3600

National Response Center .....(800) 424-8802

Poison Control Center .....(800) 222-1222

Center for Disease Control .....(800) 311-3435

NYSDEC Region 9 (Buffalo, New York).....(716) 851-7201

C&S Engineers.....(315) 455-2000

TABLE OF CONTENTS

Page

FIGURES

SECTION 1 – GENERAL INFORMATION

This Health and Safety Plan (HASP) addresses health and safety considerations for the activities that personnel employed by C&S Engineers, Inc., (C&S) may be engaged in during site investigation at the Amherst Central Park- South located in Amherst, New York (Site). **Figure 1** and **Figure 2** shows the location and layout of the Site. This HASP will be implemented by the Health and Safety Officer (HSO) during site work.

Compliance with this HASP is required of C&S personnel who enter this Site. The content of the HASP may change or undergo revision based upon additional information made available to the health, safety, and training (H&S) committee, monitoring results or changes in the technical scope of work. Any changes proposed must be reviewed by the H&S committee.

1.1 Responsibilities

Project Manager……	Dan Riker Phone: (716) 847-1630
Health and Safety Manager……	Brent Testut Phone: (315) 703-4376 Cell: (707) 631-8846
Site Health and Safety Officer……..	Cody Martin Phone: (716) 955-3021
Emergency Coordinator……..	Cody Martin Phone: (716) 955-3021

SECTION 2 - HEALTH AND SAFETY PERSONNEL

The following information briefly describes the health and safety designations and general responsibilities for this Site.

2.1 Project Manager (PM)

The PM is responsible for the overall project including the implementation of the HASP. Specifically, this includes allocating adequate manpower, equipment, and time resources to conduct Site activities safely.

2.2 Health and Safety Manager

- Has the overall responsibility for coordinating and reporting health and safety activities and the health and safety of Site Workers.
- Must have completed, at a minimum, the OSHA 30-Hour Construction Safety Training, and either the 24-Hour training course for the Occasional Hazardous Waste Site Worker or the 40-Hour training course for the Hazardous Waste Operations Worker that meets OHSA 29 CFR 1910.
- Must have completed the 8-Hour Site supervisor/manager's course for supervisors and managers having responsibilities for hazardous waste Site operations and management.
- Directs and coordinates health and safety monitoring activities.
- Ensures that field teams utilize proper personal protective equipment (PPE).
- Conducts initial on-site specific training prior to Site Workers commencing work.
- Conducts and documents daily and periodic safety briefings.
- Ensures that field team members comply with this HASP.
- Immediately notifies the Project Manager of all accident/incidents.
- Determines upgrading or downgrading of PPE based on Site conditions and/or real time monitoring results.
- Ensures that monitoring instruments are calibrated daily or as the manufacturer's instructions determine.
- Provides daily summaries of field operations and progress to the Project Manager.
- Submits and maintains all documentation required in this HASP and any other pertinent health and safety documentation.

2.3 Health and Safety Officer (HSO)

- Must be designated by the Health and Safety Manager and at a minimum, have the 40-Hour training course for the Hazardous Waste Operations Worker that meets OHSA 29 CFR 1910, as well as the OSHA 10-Hour Construction Safety Training.
- Must schedule and attend a Pre-Construction Safety Meeting with the Health and Safety Manager to discuss the Subcontractor Safety Requirements and must attend the Weekly Subcontractor Coordination Meeting.
- Responsible for ensuring subcontractors and their lower tier contractors comply with project safety requirements.

- Must make frequent and regular inspections of their work areas and activities and ensure hazards that are under their control are corrected immediately and all other hazards are reported to the Project Manager and Health and Safety Manager.
- Must report all work related injuries, regardless of severity, to the Project Manager and the Health and Safety Manager within 24 hours after they occur.

2.4 Emergency Coordinator

- Will at a minimum, have the 40-Hour training course for the Hazardous Waste Operations Worker that meets OHSA 29 CFR 1910, as well as the OSHA 10-Hour Construction Safety Training.
- The Emergency Coordinator or his on-site designee will, in coordination with Town of Amherst, implement the emergency response procedures outlined in Section 12 whenever conditions at the Site warrant such action.
- The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel as necessary, and notification of emergency response units (refer to phone listing in the beginning of this HASP) and the appropriate management staff.

2.5 Site Workers

- Report any unsafe or potentially hazardous conditions to the Health and Safety Manager.
- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.
- Comply with rules, regulations, and procedures as set forth in this HASP, including any revisions that are instituted.
- Prevent unauthorized personnel from entering work Site.

SECTION 3 - PERTINENT SITE INFORMATION

3.1 Site Location and General History

The Site is located at 772 North Forest Road, Amherst, New York (Tax Parcel ID# 68.01-1-1.2). The Site is 18 acres in size and sits on the southern portion of the former Westwood Country Club.

The previous owner completed preliminary sampling of surface soils to determine if long-term, historic use of golf-course-related pesticides impacted the property. Contamination was identified and the owner entered into the New York State Brownfield Cleanup Program (BCP) in 2015 (NYSDEC Site No. C915291). After several long negotiations between the owner and the Town of Amherst, the property was sold to the Town and the 2015 Brownfield Cleanup Agreement was terminated.

Previous investigations revealed the contamination present on the Site:

- Metals historically commonly used in pesticides with concentrations above Restricted Residential Use SCOs throughout the site

- Surface water samples with exceedances for PFOs and Benzo(k)fluoranthene

SECTION 4 – TRAINING

4.1 Site-Specific Training

Training will be provided that specifically addresses the activities, procedures, monitoring, and equipment for the Site operations prior to going on site. Training will include familiarization with Site and facility layout, known and potential hazards, and emergency services at the Site, and details all provisions contained within this HASP. This training will also allow Site Workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

4.2 Safety Briefings

C&S project personnel will be given briefings by the HSO on a daily or as needed basis to further assist Site workers in conducting their activities safely. Pertinent information will be provided when new operations are to be conducted. Changes in work practices must be implemented due to new information made available, or if Site or environmental conditions change. Briefings will also be given to facilitate conformance with prescribed safety practices. When conformance with these practices is not occurring or if deficiencies are identified during safety audits, the project manager will be notified.

SECTION 5 - PERSONAL PROTECTIVE EQUIPMENT

5.1 General

The level of protection to be worn by field personnel will be defined and controlled by the HSO. Depending upon the type and levels of material present or anticipated at the site, varying degrees of protective equipment will be needed. If the possible hazards are unknown, a reasonable level of protection will be taken until sampling and monitoring results can ascertain potential risks. The levels of protection listed below are based on USEPA Guidelines. A list of the appropriate clothing for each level is also provided.

Level A protection must be worn when a reasonable determination has been made that the highest available level of respiratory, skin, eye, and mucous membrane protection is needed. It should be noted that while Level A provides maximum available protection, it does not protect against all possible hazards. Consideration of the heat stress that can arise from wearing Level A protection should also enter into the decision making process. Level A protection includes:

- Open circuit, pressure-demand self-contained breathing apparatus (SCBA)
- Totally encapsulated chemical resistant suit
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level B protection must be used when the highest level of respiratory protection is needed, but hazardous material exposure to the few unprotected areas of the body (e.g., the back of the neck) is unlikely. Level B protection includes:

- Open circuit, pressure-demand SCBA or pressure airline with escape air bottle
- Chemical protective clothing: Overalls and long sleeved jacket; disposal chemical resistant coveralls; coveralls; one or two piece chemical splash suit with hood
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level C must be used when the required level of respiratory protection is known, or reasonably assumed to be, not greater than the level of protection afforded by air purifying respirators; and hazardous materials exposure to the few unprotected areas of the body (e.g. the back of the neck) is unlikely. Level C protection includes:

- Full or half face air-purifying respirator
- Chemical protective clothing: Overalls and long-sleeve jacket; disposable chemical resistant coveralls; coveralls; one or two piece chemical splash suit
- Gloves, inner (surgical type)
- Gloves, outer, chemical protective
- Boots, chemical protective

Level D is the basic work uniform. It cannot be worn on any site where respiratory or skin hazards exist. Level D protection includes:

- Safety boots/shoes
- Safety glasses
- Hard hat with optional face shield

Note that the use of SCBA and airline equipment is contingent upon the user receiving special training in the proper use and maintenance of such equipment.

5.2 Personal Protective Equipment – Site Specific

Level D with some modification will be required when working in the work zone on this Site. In addition to the basic work uniform specified by Level D protection, Nitrile gloves will be required when contact with soil or ground water is likely. Hearing protection will be worn when power equipment is used to perform subsurface investigation work. An upgrade to a higher level (Level C) of protection may occur if determined necessary by the HSO.

SECTION 6 - MONITORING PROCEDURES

6.1 Monitoring During Site Operations

All Site environmental monitoring should be accompanied by periodic meteorological monitoring of appropriate climatic conditions.

6.1.1 Drilling Operations (Monitoring Well Installation and Subsurface Borings)

Monitoring will be performed by the HSO or drilling observer during the conduct of work. A photoionization detector (PID) equipped with an appropriate map (e.g. 10.6 or 11.7 eV) will be utilized to monitor for the presence of volatile organic vapors within the breathing zone, the borehole, and subsurface samples upon their retrieval. Drill cuttings and excavation spoils will also be monitored by use of the PID. The PID will be field checked for calibration accuracy three times per day (morning, lunch, and end of day. If subsurface conditions warrant, a combustible gas indicator (CGI) with oxygen alarm may also be used to monitor the borehole for the presence of combustible gases. Similar monitoring of fluids produced during well development will also be conducted.

6.2 Action Levels

The action threshold for VOCs established in the CAMP is 5ppm above background. If this value is exceeded for the 15-minute average work will be halted and work may resume once instantaneous readings will also be conducted.

The action level for dust is 100 (µg/m3) over background during a 15-minute average. If this limit is exceeded, dust suppression techniques will be employed, including using water to wet the area.

The NYSDEC will be notified of any exceedances in CAMP monitoring which persist for the 15-minute average within 24-hours. CAMP monitoring and reporting will be submitted to the DEC following sampling.

6.3 Personal Monitoring Procedures

Personal monitoring shall be performed as a contingency measure in the event that VOC concentrations are consistently above the 10 ppm action level as detected by the PID. If the concentration of VOCs is above this action level, then amendments to the HASP must be made before work can continue at the Site.

SECTION 7 – COMMUNICATIONS

Cell phones will be the primary means of communicating with emergency support services/facilities.

SECTION 8 - SAFETY CONSIDERATIONS FOR SITE OPERATIONS

8.1 General

Standard safe work practices that will be followed include:

- Do not climb over/under drums, or other obstacles.
- Do not enter the work zone alone.
- Practice contamination avoidance, on and off-site.
- Plan activities ahead of time, use caution when conducting concurrently running activities.
- No eating, drinking, chewing or smoking is permitted in work zones.
- Due to the unknown nature of waste placement at the Site, extreme caution should be practiced during excavation activities.
- Apply immediate first aid to any and all cuts, scratches, abrasions, etc.
- Be alert to your own physical condition. Watch your buddy for signs of fatigue, exposure, etc.
- A work/rest regimen will be initiated when ambient temperatures and protective clothing create a potential heat or cold stress situation.
- No work will be conducted without adequate natural light or without appropriate supervision.
- Task safety briefings will be held prior to onset of task work.
- Ignition of flammable liquids within or through improvised heating devices (barrels, etc.) or space heaters is forbidden.
- Entry into areas of spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment is prohibited.
- Any injury or unusual health effect must be reported to the Site health and safety officer.
- Prevent splashing or spilling of potentially contaminated materials.
- Use of contact lenses is prohibited while on site.
- Beards and other facial hair that would impair the effectiveness of respiratory protection are prohibited if respiratory protection is necessary.
- Field crew members should be familiar with the physical characteristics of investigations, including:

    - Wind direction in relation to potential sources
    - Accessibility to co-workers, equipment, and vehicles
    - Communication
    - Hot zones (areas of known or suspected contamination)
    - Site access
    - Nearest water sources

- The number of personnel and equipment in potentially contaminated areas should be minimized consistent with site operations.

8.2 Field Operations

The HSO or designee will be present on-site during all intrusive work (e.g., drilling operations, excavations, trenching) and will provide monitoring to oversee that appropriate levels of protection and safety procedures are utilized by C&S personnel. The use of salamanders or other equipment with an open flame is prohibited and the use of protective clothing, especially hard hats and boots, will be required during drilling or other heavy equipment operations.

SECTION 9 - DECONTAMINATION PROCEDURES

Decontamination involves physically removing contaminants and/or converting them chemically into innocuous substances. Only general guidance can be given on methods and techniques for decontamination. Decontamination procedures are designed to:

- Remove contaminant(s).
- Avoid spreading the contamination from the work zone.
- Avoid exposing unprotected personnel outside of the work zone to contaminants.

Contamination avoidance is the first and best method for preventing spread of contamination from a hazardous site. Each person involved in site operations must practice the basic methods of contamination avoidance listed below. Additional precautions may be required in the HASP.

- Know the limitations of all protective equipment being used.
- Do not enter a contaminated area unless it is necessary to carry out a specific objective.
- When in a contaminated area, avoid touching anything unnecessarily.
- Walk around pools of liquids, discolored areas, or any area that shows evidence of possible contamination.
- Walk upwind of contamination, if possible.
- Do not sit or lean against anything in a contaminated area. If you must kneel (e.g., to take samples), use a plastic ground sheet.
- If at all possible, do not set sampling equipment directly on contaminated areas. Place equipment on a protective cover such as a ground cloth.
- Use the proper tools necessary to safely conduct the work.

Specific methods that may reduce the chance of contamination are:

- Use of remote sampling techniques.
- Opening containers by non-manual means.
- Bagging monitoring instruments.
- Use of drum grapplers.
- Watering down dusty areas.

Equipment which will need to be decontaminated includes tools, monitoring equipment, and personal protective equipment. Items to be decontaminated will be brushed off, rinsed, and dropped into a plastic container supplied for that purpose. They will then be washed with a detergent solution and rinsed with clean water. Monitoring instruments may be wrapped in plastic bags prior to entering the field in order to reduce the potential for contamination. Instrumentation that is contaminated during field operations will be carefully wiped down. Heavy equipment, if utilized for operations where it may be contaminated, will have prescribed decontamination procedures to prevent contaminant materials from potentially leaving the Site. On-site contractors, such as drillers or backhoe operators, will be responsible for decontaminating all construction equipment prior to demobilization.

SECTION 10 – DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to reduce or eliminate the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials, e.g., clothing, gloves, etc., will be bagged or drummed as necessary and segregated for proper disposal. All contaminated waste materials shall be disposed of as required by the provisions included in the contract and consistent with regulatory provisions. All non-contaminated materials shall be collected and bagged for appropriate disposal. Investigation Derived Waste (IDW) will be managed and characterized. Characterization of IDW may require TCLP sampling and analysis consistent with the work plan for the Site and DER-10 Technical Guidance for Site Investigation and Remediation.

SECTION 11 - EMERGENCY RESPONSE PROCEDURES

As a result of the hazards at the Site, and the conditions under which operations are conducted, there is the possibility of emergency situations. This section establishes procedures for the implementation of an emergency plan.

11.1 Emergency Coordinator

Emergency Coordinator:..... Cody Martin .....Work Phone: (716) 955-3021

The Emergency Coordinator or his on-site designee will, in concert with the Town of Amherst, implement the emergency response procedures whenever conditions at the Site warrant such action. The Emergency Coordinator or his on-site designee will be responsible for assuring the evacuation, emergency treatment, emergency transport of C&S personnel as necessary, and notification of emergency response units (**refer to phone listing** in the beginning of this HASP) and the appropriate management staff.

11.2 Evacuation

In the event of an emergency situation, such as fire, explosion, significant release of toxic gases, etc., all personnel will evacuate and assemble in a designated assembly area. The Emergency Coordinator or his on-site designee will have authority to contact outside services as required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The Emergency Coordinator or his on-site designee must see that access for emergency equipment is provided and that all ignition sources have been shut down once the emergency situation is established. Once the safety of all personnel is established, the Fire Department and other emergency response groups will be notified by telephone of the emergency.

11.3 Potential or Actual Fire or Explosion

Immediately evacuate the Site and notify local fire and police departments, and other appropriate emergency response groups, if LEL values are above 25% in the work zone or if an actual fire or explosion has taken place.

11.4 Environmental Incident (spread or release of contamination)

Control or stop the spread of contamination if possible. Notify the Emergency Coordinator and the Project Manager. Other appropriate response groups will be notified as appropriate.

11.5 Personnel Injury

Emergency first aid shall be applied on-site as necessary. Then, decontaminate (en route if necessary) and transport the individual to nearest medical facility if needed. The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. A map of directions to the nearest hospital is shown in **Attachment A**.

11.6 Personnel Exposure

- *Skin Contact*: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, and then provide appropriate medical attention. Eyes should be thoroughly rinsed with water for at least 15 minutes.
- *Inhalation*: Move to fresh air and/or, if necessary, decontaminate and transport to emergency medical facility.
- *Ingestion*: Decontaminate and transport to emergency medical facility.
- *Puncture Wound/Laceration*: Decontaminate, if possible, and transport to emergency medical facility.

11.7 Adverse Weather Conditions

In the event of adverse weather conditions, the HSO will determine if work can continue without sacrificing the health and safety of field workers.

11.8 Incident Investigation and Reporting

In the event of an incident, procedures discussed in the Medical Emergency/Incident Response Protocol, presented in **Appendix A** of this HASP, shall be followed.

SECTION 12 – COMMUNITY RELATIONS

13.1 Community Health and Safety Plan

13.1.1 Community Health and Safety Monitoring

As part of the site work, three general types of efforts are scheduled, *update as necessary:* including, non-intrusive reconnaissance tasks, sampling or monitoring tasks (monitoring point sampling), and intrusive tasks (test trenching, subsurface borings, monitoring well installation). During completion of general reconnaissance and sampling or monitoring tasks, potential for health and safety risks to off-site landowners or the local community are not anticipated.

During completion of intrusive efforts at or adjacent to the Site; health and safety monitoring efforts will be concentrated on the area or areas in which intrusive efforts are being completed. Since the air pathway is the most available and likely avenue for the release of potential contaminants to the atmosphere at or near the Site, in addition to limiting public or community access to the areas in which intrusive efforts are completed, health and safety measures will primarily consist of monitoring the air pathway for worker exposure.

13.1.2 Community Air Monitoring Plan

Efforts will be taken to complete field work in a manner which will minimize the creation of airborne dust or particulates. Under dry conditions, work areas may be wetted to control dust. During periods of extreme wind, intrusive field work may be halted until such time as the potential for creating airborne dust or particulate matter as a result of investigation activities is limited. Periodic monitoring following the guidelines of the site's Community Air Monitoring Plan (CAMP) will be implemented during all non-intrusive Site investigation activities, including surface soil and sediment sampling, and collection of groundwater samples from groundwater monitoring wells.

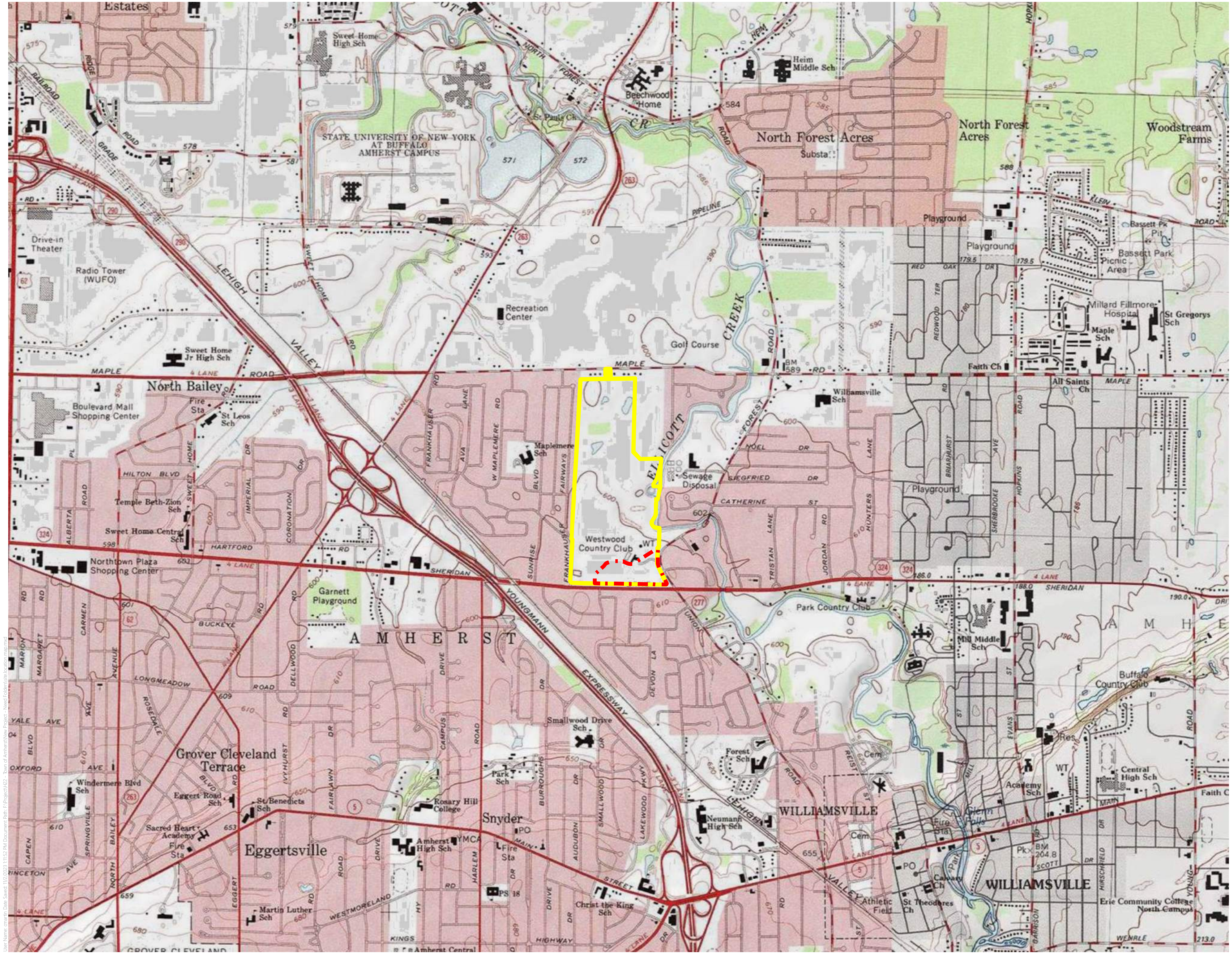
During completion of Site investigation, a CAMP will be implemented for the duration of intrusive activities. These additional air monitoring activities will include establishment of background conditions, continuous monitoring for volatile organic compounds and/or particulates at the downwind work area (exclusion zone) perimeter, recording of monitoring data, and institution and documentation of response levels and appropriate actions consistent with NYSDOH guidance.

SECTION 13 - AUTHORIZATIONS

Personnel authorized to enter the Site while operations are being conducted must be approved by the HSO. Authorization will involve completion of appropriate training courses, medical examination requirements, and review and sign-off of this HASP. No C&S personnel should enter the work zone alone. Each site visitor should check in with the HSO or Project Manager prior to entering the work zones.

FIGURE 1

SITE LOCATION MAP



C&S COMPANIES®

Figure 1

Site Location

2024 Phase 1 Constrution

Former Westwood Country Club Property

N

0 1,000 2,000 4,000 Feet

1 in. = 2,000 feet
When printed at 11 in. by 17 in.

Amherst Central Park South Phase 1 Construction Characterization

Sources: . Created by C&S Engineers, Inc.

FIGURE 2

SITE DETAIL PHOTO

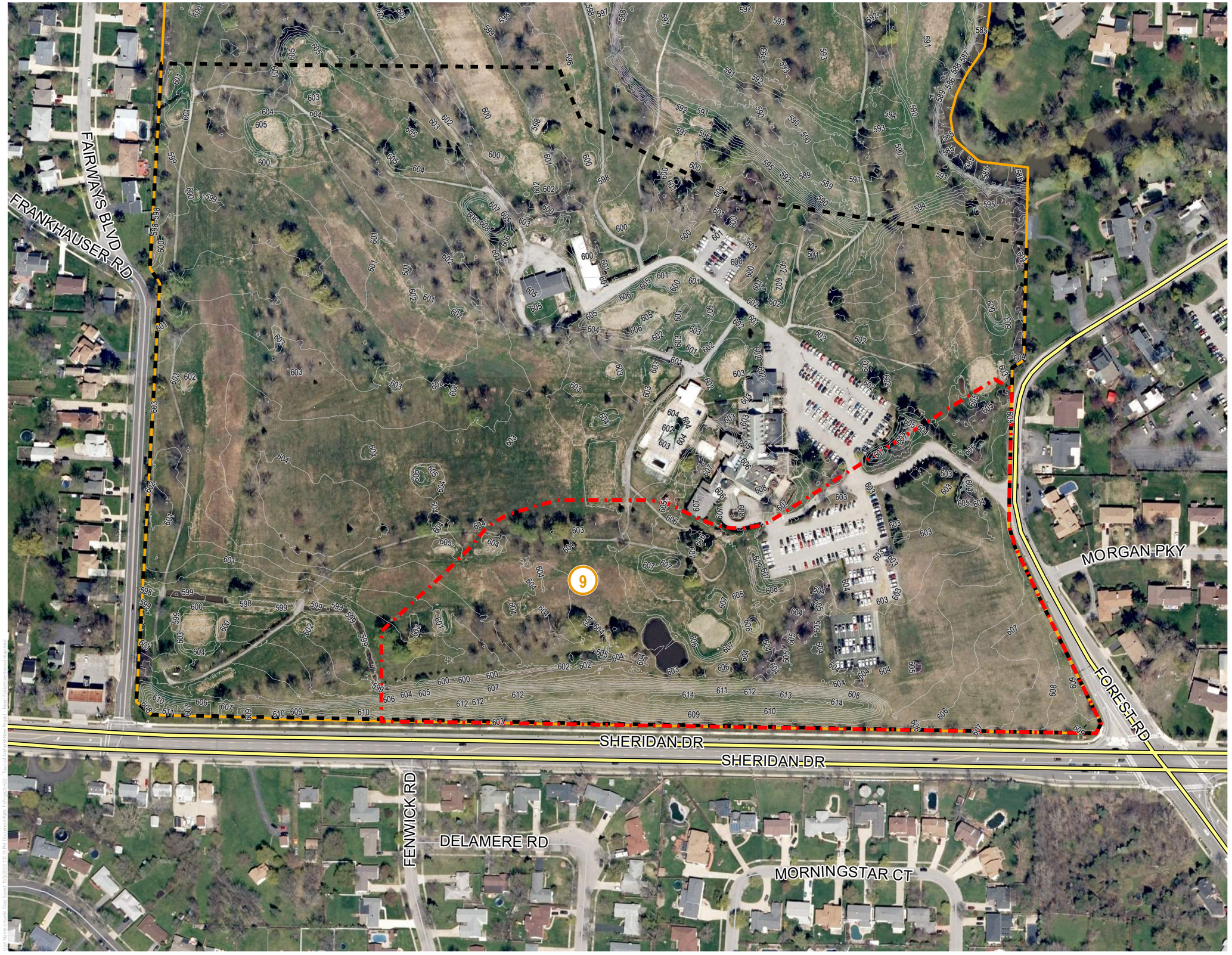


Figure 2

Site Map

- 2024 Phase 1 Construction
- Amherst Central Park South
- Former Westwood Country Club Property
- Elevation Contour
- 11 Golf Course Hole Number

N

0 100 200 400 Feet

1 in. = 200 feet
When printed at 11 in. by 17 in.

Amherst Central Park South Phase 1 Construction Charactaerization

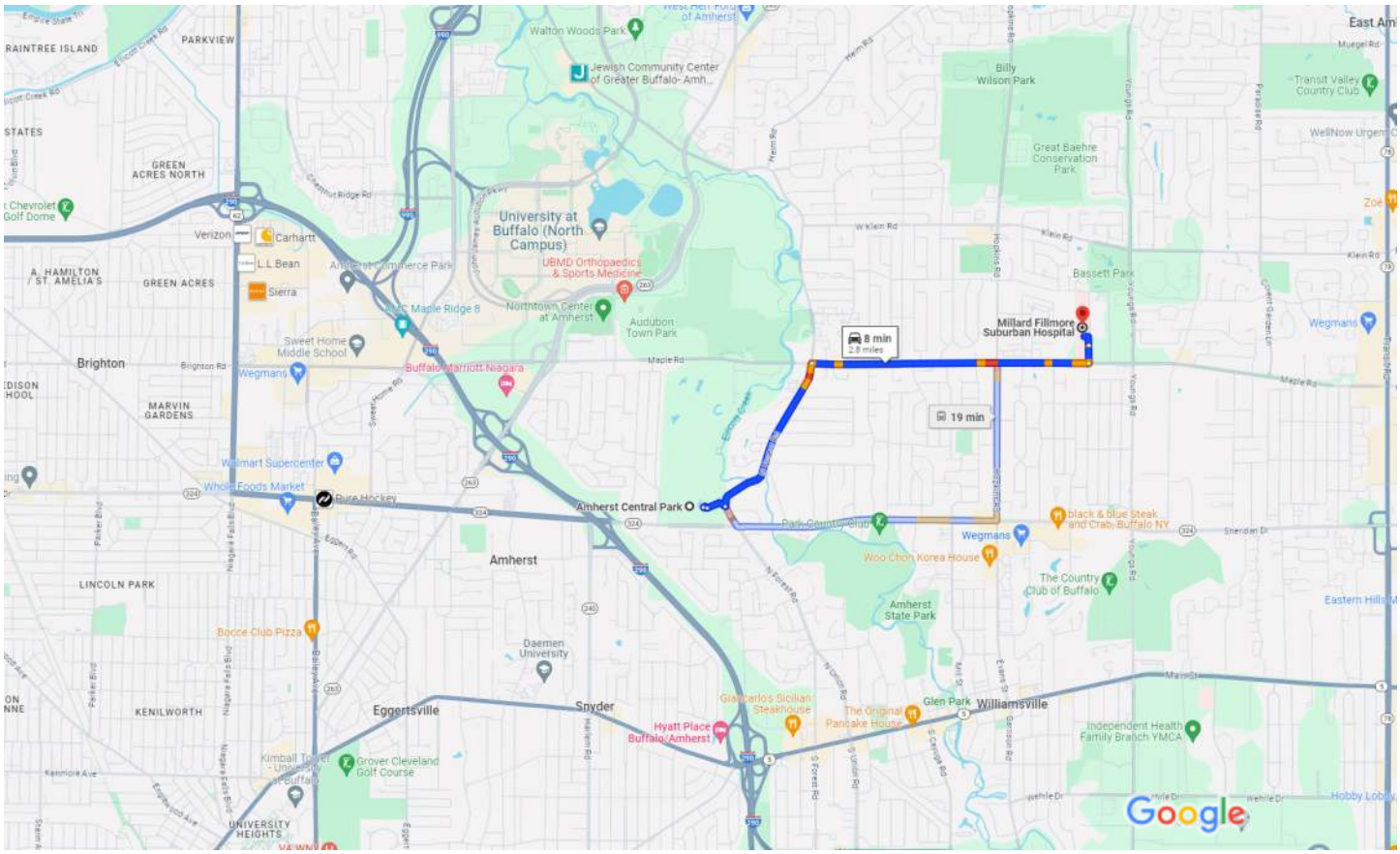
Sources: . Created by C&S Engineers, Inc.

ATTACHMENT A

MAP TO HOSPITAL

Amherst Central Park, Amherst, NY 14221 to Millard Fillmore Suburban Hospital

Drive 2.8 miles, 8 min



Map data ©2023 Google 2000 ft

Amherst Central Park
Amherst, NY 14221

1. Head northeast
   151 ft
2. Turn left toward N Forest Rd
   0.1 mi
3. Turn left onto N Forest Rd
   1.0 mi
4. Turn right onto Maple Rd
   1.5 mi
5. Turn left onto MacArthur Dr
   0.1 mi
6. Continue straight
   Destination will be on the right
   377 ft

Appendix A

GUIDANCE ON INCIDENT INVESTIGATION AND REPORTING

MEDICAL EMERGENCY / INCIDENT RESPONSE PROTOCOL

1.0 PURPOSE

From time to time employees of C&S Engineers, Inc. will sustain an injury while working on the job. While every effort is being made to prevent this, in the event of an injury or illness on the job, the following procedures will be implemented. This format may also be utilized in the event of a property damage incident.

2.0 SCOPE

This guideline applies to all C&S Engineers, Inc. job sites and employees.

3.0 GUIDELINES

Upon notification or awareness of an incident/accident with injuries or illness the Emergency Coordinator or his On-Site Designee will:

1. Ensure that the injured employee is receiving immediate first aid and medical care.
2. Notify Emergency Services (911) if injuries are severe.
3. Stabilize the work area; ensure that no one else can be injured.
4. Notify the Project Manager at the earliest possible convenience**.**
5. Notify the Owner/Client at the earliest possible convenience.

To assist the Health and Safety Manager in the root cause analysis, the Emergency Coordinator or his On-Site Designee will also make an attempt to:

1. Obtain the names and phone numbers of witnesses.
2. Preserve the accident scene if possible for analysis.

3.1 Injury Management

1. If the patient is stable with non-life threatening injuries, the foreman will ensure the employee is transported to the emergency medical facility listed in Section 1 of the HASP. Directions to the nearest emergency medical facility are located in **Attachment A** of the HASP.

At no time will an injured employee drive themselves to medical care.

2. If the patient has serious or life threatening injuries, the emergency coordinator or his on- site designee will notify the emergency services for the area for treatment and transport to a hospital or emergency room. Serious injuries can be considered but not limited to head injuries, loss of consciousness, severe laceration or amputation, fractured bones, burns and eye injuries.

3. Following the treatment and care of the injured employee, the emergency coordinator or his on-site designee and the project manager will initiate the completion of the first injury report. The Health & Safety Manager will assist.

3.2 Project Manager

1. Upon notification of a personal injury or illness on the job site, will notify C&S Engineers, Inc, President and Corporate Legal and C&S Companies Health and Safety Manager.
2. Will report to the worksite to initiate the first injury report.
3. Will report to the treatment facility to check on the well being of the injured employee.
4. The project manager will ensure that the treatment facility is aware that this is a workers compensation case.
5. Will assist the Health and Safety Manager in the analysis of the incident.

3.3 Health & Safety Manager

1. Upon notification of the personal injury will determined if it is necessary to report to the treatment facility or the accident site, depending on the nature of the injuries and the circumstances of the accident.
2. Will report to the worksite to begin a root cause analysis investigation of the accident.
3. The investigation may include interview of witnesses, field crew , and project manager, the photographing of the scene, reconstruction of the accident scene, using test instruments and taking measurements. The Health and Safety Manager may draw diagrams from the information learned.
4. The Health and Safety Manager will work with the owner/client as necessary to investigate the accident.
5. The Health & Safety manager will ensure that the site is safe to resume work.
6. The Health & Safety Manager shall initiate the New York State Compensation form requirements (C-2) and forward a copy of the C-2 to the C & S Engineers, Inc. controller for transmittal to the Compensation Carrier within 8 hrs of notification of the incident or by the end of the next business day.
7. The Health and Safety manager, upon completion of the investigation, will provide the
8. Project Manager with a written investigative report (copy to the President)
9. The accident will be reviewed at the next Project Managers meeting with the intent to prevent further or similar events on other projects.
10. The Health & Safety Manager will assess the incident to determine OSHA record ability and make record if necessary on the OSHA 300 form, within five working days.

4.0 INCIDENT RESPONSE

4.1 Purpose

To prevent the occurrence of accidents on C&S Engineers, Inc., work sites and to establish a procedure for investigation and reporting of incidents occurring in, or related to C&S work activities.

4.2 Scope

Applies to all incidents related to C&S Engineers, Inc. work activities.

4.3 Definitions

Accident - An undesired event resulting in personal injury and/or property damage, and/or equipment failure.

Fatality - An injury or illness resulting in death of the individual.

Incident - Any occurrence which results in, or could potentially result in, the need for medical care or property damage. Such incidents shall include lost time accidents or illness, medical treatment cases, unplanned exposure to toxic materials or any other significant occurrence resulting in property damage or in "near misses."

Incidence Rate - the number of injuries, illnesses, or lost workdays related to a common exposure base of 100 full-time workers. The rate is calculated as:

N/EH x 200,000

N = number of injuries and illnesses or lost workday cases; EH = total hours worked by all associates during calendar year. 200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

Injury - An injury such as a cut, fracture, sprain, amputation, etc. which results from a work accident or from a single instantaneous event in the work environment.

Lost Workday Case - A lost workday case occurs when an injured or ill employee experiences days away from work beginning with the next scheduled work day. Lost workday cases do not occur unless the employee is effected beyond the day of injury or onset of illness.

Recordable Illness - An illness that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These illnesses require medical treatment and evaluation of work related injury. For example, dermatitis, bronchitis, irritation of eyes, nose, and throat can result from work and non-work related incidents.

Recordable Injury - An injury that results from the course of employment and must be entered on the OSHA 300 Log and Summary of Occupational Injuries and Illnesses. These injuries require medical treatment; may involve loss of consciousness; may result in restriction of work or motion or transfer to another job; or result in a fatality.

Near Miss - An incident which, if occurring at a different time or in a different personnel or equipment configuration, would have resulted in an incident.

4.4 Responsibilities

Employees - It shall be the responsibility of all C&S Engineers, Inc. employees to report all incidents as soon as possible to the HSC, regardless of the severity.

Human Resources - has overall responsibility for maintaining accident/ incident reporting and investigations according to current regulations and recording injuries/ illness on the OSHA 300 log, and posting the OSHA 300 log.

Emergency Coordinator - It is the responsibility of the Emergency Coordinator to investigate and prepare an appropriate report of all accidents, illnesses, and incidents occurring on or related to C&S Engineers, Inc. work. The Emergency Coordinator shall complete **Attachment A** within 24 hours of the incident occurrence.

Health and Safety Manager (HSM) - It is the responsibility of the HSM to investigate and prepare an appropriate report of all lost time injuries and illnesses and significant incidents occurring on or related to C&S Companies. The HSM shall maintain the OSHA 300 form.

Project Managers (PM) - It shall be the PM's responsibility to promptly correct any deficiencies in personnel, training, actions, or any site or equipment deficiencies that were determined to cause or contribute to the incident investigated.

5.0 GUIDELINES

5.1 Incident Investigation

The Project Manager will immediately investigate the circumstances surrounding the incident and will make recommendations to prevent recurrence. The HSM shall be immediately notified by telephone if a serious accident/ incident occurs. The incident shall be evaluated to determine whether it is OSHA recordable. If the incident is determined to be OSHA 300 recordable, it shall be entered on the OSHA 300 form.

The Project Manager with assistance from the HSM must submit to the office an incident report form pertaining to any incident resulting in injury or property damage.

5.2 Incident Report

The completed incident report must be completed by the Project Manager within 12 hours of the incident and distributed to the HSM, and Human Resources. This form shall be maintained by Human Resources for at least five years for all OSHA recordable cases. This form serves as an equivalent to the OSHA 101 form.

5.3 Incident Follow-up Report

The Incident Follow-Up Report (**Attachment B**) shall be distributed with the Incident Report within one week of the incident. Delay in filing this report shall be explained in a brief memorandum.

5.4 Reporting of Fatalities or Multiple Hospitalization Accidents

Fatalities or accidents resulting in the hospitalization of three or more employees must be reported to OSHA verbally or in writing within 8 hours. The report must contain 1) circumstances surrounding the accident(s), 2) the number of fatalities, and 3) the extent of any injuries.

5.5 OSHA 300A Summary Form

Recordable cases must be entered on the log within six workdays of receipt of the information that a recordable case has occurred. The OSHA log must be kept updated to within 45 calendar days.

OSHA 300 forms must be updated during the 5 year retention period, if there is a change in the extent or outcome of an injury or illness which affects an entry on a log. If a change is necessary, the original entry should be lined out and a corrected entry made on that log. New entries should be made for previously unrecorded cases that are discovered or for cases that initially weren't recorded but were found to be recordable after the end of the year. Log totals should also be modified to reflect these changes.

5.6 Posting

The log must be summarized at the end of the calendar year and the summary must be posted from February 1 through May 31.

5.7 OSHA 300A

Facilities selected by the Bureau of Labor Statistics (BLS) to participate in surveys of occupational injuries and illnesses will receive the OSHA 300A. The data from the annual summary on the OSHA 300 log should be transferred to the OSHA 300A, other requested information provided and the form returned as instructed by the BLS.

5.8 Access to OSHA Records

All OSHA records (accident reporting forms and OSHA 300 logs) should be available for inspection and copying by authorized Federal and State government officials.

Employees, former employees, and their representatives must be given access for inspection and copying to only the log, OSHA No. 300, for the establishment in which the employee currently works or formerly worked.

6.0 REFERENCES

29 CFR Part 1904

7.0 ATTACHMENTS

Attachment A - Incident Investigation Form
Attachment B - Incident Follow-Up Report
Attachment C - Establishing Recordability

ATTACHMENT A

INCIDENT INVESTIGATION FORM

Accident investigation should include:

Location: _____

Time of Day: _____

Accident Type: _____

Victim: _____

Nature of Injury: _____

Released Injury: _____

Hazardous Material: _____

Unsafe Acts: _____

Unsafe Conditions: _____

Policies, Decisions: _____

_____

Personal Factors: _____

_____

Environmental Factors: _____

_____

_____

ATTACHMENT B

INCIDENT FOLLOW-UP REPORT

Date _____

Foreman: _____

Date of Incident: _____

Site: _____

Brief description of incident: _____

_____

_____

_____

_____

Outcome of incident: _____

_____

_____

_____

Physician's recommendations: _____

_____

_____

_____

Date the injured returned to work: _____

Project Manager Signature: _____

Date: _____

ATTACH ANY ADDITIONAL INFORMATION TO THIS FORM

ATTACHMENT C

ESTABLISHING RECORDABILITY

1. Deciding whether to record a case and how to classify the case.

   Determine whether a fatality, injury or illness is recordable.

   A fatality is recordable if:

   - Results from employment

   An injury is recordable if:

   - Results from employment and
   - It requires medical treatment beyond first aid or
   - Results in restricted work activity or job transfer, or
   - Results in lost work day or
   - Results in loss of consciousness

   An illness is recordable if:

   - It results from employment

2. Definition of "Resulting from Employment"

   Resulting from employment is when the injury or illness results from an event or exposure in the work environment. The work environment is primarily composed of: 1) The employer's premises, and 2) other locations where associates are engaged in work-related activities or are present as a condition of their employment.

   The employer's premises include company rest rooms, hallways, cafeterias, sidewalks and parking lots. Injuries occurring in these places are generally considered work related.

   The employer's premises EXCLUDES employer controlled ball fields, tennis courts, golf courses, parks, swimming pools, gyms, and other similar recreational facilities, used by associates on a voluntary basis for their own benefit, primarily during off work hours.

   Ordinary and customary commute, is not generally considered work related.

   Employees injured or taken ill while engaged in consuming food, as part of a normal break or activity is not considered work related. Employees injured or taken ill as the result of smoking, consuming illegal drugs, alcohol or applying make up are generally not considered work related. Employee injured by un authorized horseplay is generally not considered work related, however, an employee injured as a result of a fight or other workplace violence act, may be considered work related.

Associates who travel on company business are considered to be engaged in work related activities all the time they spend in the interest of the company. This includes travel to and from customer contacts, and entertaining or being entertained for purpose of promoting or discussing business. Incidents occurring during normal living activities (eating, sleeping, recreation) or if the associate deviates from a reasonably direct route of travel are not considered OSHA recordable.

3. Distinction between Medical Treatment and First Aid.

First aid:

Any one-time treatment, and any follow up visit for the purpose of observation, of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care. Such one time treatment, and follow up visit for the purpose of observation, is considered first aid even though provided by a physician or registered professional personnel.

Medical Treatment (recordable):

a) Must be treated only by a physician or licensed medical personnel.
b) Impairs bodily function (i.e. normal use of senses, limbs, etc.).
c) Results in damage to physical structure of a non-superficial nature (fractures).
d) Involves complications requiring follow up medical treatment.

EXHIBIT C

[Date]

[Respondent name and address]

RE: Satisfactory Completion/No Further Action Letter
Site No.:
Site Name:

Dear Respondent:

This letter is sent to notify Respondent that it has satisfactorily completed the [***Site Characterization/Interim Remedial Measure***] of the remediation project that Respondent undertook under the Consent Order Index No. _____ for [Address, County], New York [Tax Map/Parcel No.] (the "Site"). The New York State Department of Environmental Conservation ("Department") has determined, subject to the Department's reservation of rights outlined below, contained in the Consent Order, or existing at law, based upon our inspection of the above-referenced Site and upon our review of the documents you have submitted, that you completed the project in accordance with the terms and conditions of the above-referenced Consent Order and no further remedial action (other than implementation of the Site Management Plan if required) is necessary. As a result, the Department is issuing this Satisfactory Completion/No Further Action Letter for the project.

Notwithstanding that the Department has determined that no further remedial action is necessary with respect to the Site, the Department reserves any and all rights and authority, including rights concerning any claim for natural resource damages or the authority to engage in or require any further investigation or remediation the Department deems necessary. The Department retains all its respective rights concerning circumstances where Respondent, their lessees, sublessees, successors, or assigns cause or permit a Release or threat of Release at the site of any hazardous substance (as that term is defined at 42 USC 9601[14]) or petroleum (as that term is defined in Navigation Law § 172[15]).

Additionally, with respect to the site, nothing contained in this letter shall be construed to:

- preclude the State of New York on behalf of the New York State Environmental Protection and Spill Compensation Fund from recovering a claim of any kind or nature against any party;

- prejudice any rights of the Department to take any investigatory action or remediation or corrective measures it may deem necessary if Respondent fails to

comply with the Consent Order or if contamination other than contamination within the present knowledge of the Department is encountered at the Site;

- prohibit the Commissioner or his duly authorized representative from exercising any summary abatement powers.

In conclusion, the Department is pleased to be part of this effort to return the Site to productive use and benefit to the entire community.

If you have any questions, please do not hesitate to contact [project manager], site project manager, at [phone number/email].

Sincerely,

Andrew O. Guglielmi
Director
Division of Environmental Remediation

ec: [TBD]

APPENDIX A

STANDARD CLAUSES FOR ALL NEW YORK STATE SUPERFUND ADMINISTRATIVE ORDERS

APPENDIX A

STANDARD CLAUSES FOR ALL NEW YORK STATE SUPERFUND ADMINISTRATIVE ORDERS

The parties to the State Superfund Order (hereinafter "Order") agree to be bound by the following clauses which are hereby made a part of the Order. The word "Respondent" herein refers to any party to the Order, other than the New York State Department of Environmental Conservation (hereinafter "Department").

I. Citizen Participation Plan

Within twenty (20) days after the effective date of this Order, Respondent shall submit for review and approval a written citizen participation plan prepared in accordance with the requirements of ECL §27-1417 and 6 NYCRR sections 375-1.10 and 375-3.10. Upon approval, the Citizen Participation Plan shall be deemed to be incorporated into and made a part of this Order.

II. Initial Submittal

Within thirty (30) days after the effective date of this Order, Respondent shall submit to the Department a Records Search Report prepared in accordance with Exhibit “B” attached to the Order. The Records Search Report can be limited if the Department notifies Respondent that prior submissions satisfy specific items required for the Records Search Report.

III. Development, Performance, and Reporting of Work Plans

A. Work Plan Requirements

All activities at the Site that comprise any element of an Inactive Hazardous Waste Disposal Site Remedial Program shall be conducted pursuant to one or more Department-approved work plans (“Work Plan” or “Work Plans”) and this Order and all activities shall be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, as required under CERCLA, 42 U.S.C. § 9600 *et seq*. The Work Plan(s) under this Order shall address both on-Site and off-Site conditions and shall be developed and implemented in accordance with 6 NYCRR § 375-1.6(a), 375-3.6, and 375-6. All Department-approved Work Plans shall be incorporated into and become enforceable parts of this Order. Upon approval of a Work Plan by the Department, Respondent shall implement such Work Plan in accordance with the schedule contained therein. Nothing in this Subparagraph shall mandate that any particular Work Plan be submitted.

The Work Plans shall be captioned as follows:

1. Site Characterization (“SC”) Work Plan: a Work Plan which provides for the identification of the presence of any hazardous waste disposal at the Site;

2. Remedial Investigation/Feasibility Study (“RI/FS”) Work Plan: a Work Plan which provides for the investigation of the nature and extent of contamination within the boundaries of the Site and emanating from such Site and a study of remedial alternatives to address such on-site and off-site contamination;

3. Remedial Design/Remedial Action (“RD/RA”) Work Plan: a Work Plan which provides for the development and implementation of final plans and specifications for implementing the remedial alternative set forth in the ROD;

4. "IRM Work Plan" if the Work Plan provides for an interim remedial measure;

5. "Site Management Plan" if the Work Plan provides for the identification and implementation of institutional and/or engineering controls as well as any necessary monitoring and/or operation and maintenance of the remedy; or

6. "Supplemental" if additional work plans other than those set forth in II.A.1-5 are required to be prepared and implemented.

B. Submission/Implementation of Work Plans

1. Respondent may opt to propose one or more additional or supplemental Work Plans (including one or more IRM Work Plans) at any time, which the Department shall review for appropriateness and technical sufficiency.

2. Any proposed Work Plan shall be submitted for the Department's review and approval and shall include, at a minimum, a chronological description of the anticipated activities, a schedule for performance of those activities, and sufficient detail to allow the Department to evaluate that Work Plan.

i. The Department shall notify Respondent in writing if the Department determines that any element of a Department-approved Work Plan needs to be modified in order to achieve the objectives of the Work Plan as set forth in Subparagraph III.A or to ensure that the Remedial Program otherwise protects human health and the environment. Upon receipt of such notification, Respondent shall, subject to dispute resolution pursuant to Paragraph XV, modify the Work Plan.

ii. The Department may request, subject to dispute resolution pursuant to Paragraph XV, that Respondent submit additional or supplemental Work Plans for the Site to complete the current remedial phase within thirty (30) Days after the Department's written request.

3. A Site Management Plan, if necessary, shall be submitted in accordance with the schedule set forth in the IRM Work Plan or Remedial Work Plan.

4. During all field activities conducted under a Department-approved Work Plan, Respondent shall have on-Site a representative who is qualified to supervise the activities undertaken in accordance with the provisions of 6 NYCRR 375-1.6(a)(3).

5. A Professional Engineer licensed and registered in New York State must stamp and sign all Work Plans other than SC or RI/FS Work Plans.

C. Submission of Final Reports and Periodic Reports

1. In accordance with the schedule contained in a Work Plan, Respondent shall submit a final report as provided at 6 NYCRR 375-1.6(b) and a final engineering report as provided at 6 NYCRR 375-1.6(c).

2. Any final report or final engineering report that includes construction activities shall include "as built" drawings showing any changes made to the remedial design or the IRM.

3. In the event that the final engineering report for the Site requires Site management, Respondent shall submit an initial periodic report by in accordance with the schedule in the Site Management Plan and thereafter in accordance with a schedule determined by the Department. Such periodic report shall be signed by a Professional Engineer or by such other qualified environmental professional as the Department may find acceptable and shall contain a certification as provided at 6 NYCRR 375-1.8(h)(3). Respondent may petition the Department for a determination that the institutional and/or engineering controls may be terminated. Such petition must be supported by a statement by a Professional Engineer that such controls are no longer necessary for the protection of public health and the environment. The Department shall not unreasonably withhold its approval of such petition.

4. Within sixty (60) days of the Department's approval of a Final Report, Respondent shall submit such additional Work Plans as is required by the Department in its approval letter of such Final Report. Failure to submit any additional Work Plans within such period shall be a violation of this Order.

D. Review of Submittals

1. The Department shall make a good faith effort to review and respond in writing to each submittal Respondent makes pursuant to this Order within sixty (60) Days. The Department's response shall include, in accordance with 6 NYCRR 375-1.6(d), an approval, modification request, or disapproval of the submittal, in whole or in part.

i. Upon the Department's written approval of a Work Plan, such Department-approved Work Plan shall be deemed to be incorporated into and made a part of this Order and shall be implemented in accordance with the schedule contained therein.

ii. If the Department modifies or requests modifications to a submittal, it shall specify the reasons for such modification(s). Within fifteen (15) Days after the date of the Department's written notice that Respondent's submittal has been disapproved, Respondent shall notify the Department of its election in accordance with 6 NYCRR 375-1.6(d)(3). If Respondent elects to modify or accept the Department's modifications to the submittal, Respondent shall make a revised submittal that

incorporates all of the Department's modifications to the first submittal in accordance with the time period set forth in 6 NYCRR 375-1.6(d)(3). In the event that Respondent's revised submittal is disapproved, the Department shall set forth its reasons for such disapproval in writing and Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and its position prevails. Failure to make an election or failure to comply with the election is a violation of this Order.

iii. If the Department disapproves a submittal, it shall specify the reasons for its disapproval. Within fifteen (15) Days after the date of the Department's written notice that Respondent's submittal has been disapproved, Respondent shall notify the Department of its election in accordance with 6 NYCRR 375-1.6(d)(4). If Respondent elects to modify the submittal, Respondent shall make a revised submittal that addresses all of the Department's stated reasons for disapproving the first submittal in accordance with the time period set forth in 6 NYCRR 375-1.6(d)(4). In the event that Respondent's revised submittal is disapproved, the Department shall set forth its reasons for such disapproval in writing and Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and its position prevails. Failure to make an election or failure to comply with the election is a violation of this Order.

2. Within thirty (30) Days after the Department's approval of a final report, Respondent shall submit such final report, as well as all data gathered and drawings and submittals made pursuant to such Work Plan, in an electronic format acceptable to the Department. If any document cannot be converted into electronic format, Respondent shall submit such document in an alternative format acceptable to the Department.

E. Department's Issuance of a ROD

1. Respondent shall cooperate with the Department and provide reasonable assistance, consistent with the Citizen Participation Plan, in soliciting public comment on the proposed remedial action plan ("PRAP"), if any. After the close of the public comment period, the Department shall select a final remedial alternative for the Site in a ROD. Nothing in this Order shall be construed to abridge any rights of Respondent, as provided by law, to judicially challenge the Department's ROD.

2. Respondent shall have 60 days from the date of the Department's issuance of the ROD to notify the Department in writing whether it will implement the remedial activities required by such ROD. If the Respondent elects not to implement the required remedial activities, then this order shall terminate in accordance with Paragraph XIV.A. Failure to make an election or failure to comply with the election is a violation of this Order.

F. Institutional/Engineering Control Certification

In the event that the remedy for the Site, if any, or any Work Plan for the Site, requires institutional or engineering controls, Respondent shall submit a written certification in accordance with 6 NYCRR 375-1.8(h)(3) and 375-3.8(h)(2).

IV. Penalties

A. 1. Respondent's failure to comply with any term of this Order constitutes a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a)(4). Nothing herein abridges Respondent's right to contest any allegation that it has failed to comply with this Order.

2. Payment of any penalties shall not in any way alter Respondent's obligations under this Order.

B. 1. Respondent shall not suffer any penalty or be subject to any proceeding or action in the event it cannot comply with any requirement of this Order as a result of any Force Majeure Event as provided at 6 NYCRR 375-1.5(b)(4). Respondent must use best efforts to anticipate the potential Force Majeure Event, best efforts to address any such event as it is occurring, and best efforts following the Force Majeure Event to minimize delay to the greatest extent possible. "Force Majeure" does not include Respondent's economic inability to comply with any obligation, the failure of Respondent to make complete and timely application for any required approval or permit, and non-attainment of the goals, standards, and requirements of this Order.

2. Respondent shall notify the Department in writing within five (5) Days of the onset of any Force Majeure Event. Failure to give such notice within such five (5) Day period constitutes a waiver of any claim that a delay is not subject to penalties. Respondent shall be deemed to know of any

circumstance which it, any entity controlled by it, or its contractors knew or should have known.

3. Respondent shall have the burden of proving by a preponderance of the evidence that (i) the delay or anticipated delay has been or will be caused by a Force Majeure Event; (ii) the duration of the delay or the extension sought is warranted under the circumstances; (iii) best efforts were exercised to avoid and mitigate the effects of the delay; and (iv) Respondent complied with the requirements of Subparagraph IV.B.2 regarding timely notification.

4. If the Department agrees that the delay or anticipated delay is attributable to a Force Majeure Event, the time for performance of the obligations that are affected by the Force Majeure Event shall be extended for a period of time equivalent to the time lost because of the Force majeure event, in accordance with 375-1.5(4).

5. If the Department rejects Respondent's assertion that an event provides a defense to non-compliance with this Order pursuant to Subparagraph IV.B, Respondent shall be in violation of this Order unless it invokes dispute resolution pursuant to Paragraph XV and Respondent's position prevails.

V. Entry upon Site

A. Respondent hereby consents, upon reasonable notice under the circumstances presented, to entry upon the Site (or areas in the vicinity of the Site which may be under the control of Respondent) by any duly designated officer or employee of the Department or any State agency having jurisdiction with respect to matters addressed pursuant to this Order, and by any agent, consultant, contractor, or other person so authorized by the Commissioner, all of whom shall abide by the health and safety rules in effect for the Site, for inspecting, sampling, copying records related to the contamination at the Site, testing, and any other activities necessary to ensure Respondent's compliance with this Order. Upon request, Respondent shall (i) provide the Department with suitable work space at the Site, including access to a telephone, to the extent available, and (ii) permit the Department full access to all non-privileged records relating to matters addressed by this Order. Raw data is not considered privileged and that portion of any privileged document containing raw data must be provided to the Department. In the event Respondent is unable to obtain any authorization from third-party property owners necessary to perform its obligations under this Order, the Department may, consistent with its legal authority, assist in obtaining such authorizations.

B. The Department shall have the right to take its own samples and scientific measurements and the Department and Respondent shall each have the right to obtain split samples, duplicate samples, or both, of all substances and materials sampled. The Department shall make the results of any such sampling and scientific measurements available to Respondent.

VI. Payment of State Costs

A. Within forty-five (45) days after receipt of an itemized invoice from the Department, Respondent shall pay to the Department a sum of money which shall represent reimbursement for State Costs as provided by 6 NYCRR 375-1.5 (b)(3)(i). Failure to timely pay any invoice will be subject to late payment charge and interest at a rate of 9% from the date the payment is due until the date the payment is made.

B. Costs shall be documented as provided by 6 NYCRR 375-1.5(b)(3). The Department shall not be required to provide any other documentation of costs, provided however, that the Department's records shall be available consistent with, and in accordance with, Article 6 of the Public Officers Law.

C. Each such payment shall be made payable to the New York State Department of Environmental Conservation and shall be sent to:

Director, Bureau of Program Management
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7012

D. The Department shall provide written notification to the Respondent of any change in the foregoing addresses.

E. If Respondent objects to any invoiced costs under this Order, the provisions of 6 NYCRR 375-1.5 (b)(3)(v) and (vi) shall apply. Objections shall be sent to the Department as provided under subparagraph VI.C above.

F. In the event of non-payment of any invoice within the 45 days provided herein, the Department may seek enforcement of this provision pursuant to

Paragraph IV or the Department may commence an enforcement action for non-compliance with ECL '27-1423 and ECL 71-4003.

VII. Release and Covenant Not to Sue

Upon the Department's issuance of a Certificate of Completion as provided at 6 NYCRR 375-1.9 and 375-2.9, Respondent shall obtain the benefits conferred by such provisions, subject to the terms and conditions described therein.

VIII. Reservation of Rights

A. Except as provided at 6 NYCRR 375-1.9 and 375-2.9, nothing contained in this Order shall be construed as barring, diminishing, adjudicating, or in any way affecting any of the Department's rights or authorities, including, but not limited to, the right to require performance of further investigations and/or response action(s), to recover natural resource damages, and/or to exercise any summary abatement powers with respect to any person, including Respondent.

B. Except as otherwise provided in this Order, Respondent specifically reserves all rights and defenses under applicable law respecting any Departmental assertion of remedial liability and/or natural resource damages against Respondent, and further reserves all rights respecting the enforcement of this Order, including the rights to notice, to be heard, to appeal, and to any other due process. The existence of this Order or Respondent's compliance with it shall not be construed as an admission of liability, fault, wrongdoing, or breach of standard of care by Respondent, and shall not give rise to any presumption of law or finding of fact, or create any rights, or grant any cause of action, which shall inure to the benefit of any third party. Further, Respondent reserves such rights as it may have to seek and obtain contribution, indemnification, and/or any other form of recovery from its insurers and from other potentially responsible parties or their insurers for past or future response and/or cleanup costs or such other costs or damages arising from the contamination at the Site as may be provided by law, including but not limited to rights of contribution under section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

IX. Indemnification

Respondent shall indemnify and hold the Department, the State of New York, the Trustee of the State's natural resources, and their representatives and employees harmless as provided by 6 NYCRR 375-2.5(a)(3)(i).

X. Public Notice

A. Within thirty (30) Days after the effective date of this Order, Respondent shall provide notice as required by 6 NYCRR 375-1.5(a). Within sixty (60) Days of such filing, Respondent shall provide the Department with a copy of such instrument certified by the recording officer to be a true and faithful copy.

B. If Respondent proposes to transfer by sale or lease the whole or any part of Respondent's interest in the Site, or becomes aware of such transfer, Respondent shall, not fewer than forty-five (45) Days before the date of transfer, or within forty-five (45) Days after becoming aware of such conveyance, notify the Department in writing of the identity of the transferee and of the nature and proposed or actual date of the conveyance, and shall notify the transferee in writing, with a copy to the Department, of the applicability of this Order. However, such obligation shall not extend to a conveyance by means of a corporate reorganization or merger or the granting of any rights under any mortgage, deed, trust, assignment, judgment, lien, pledge, security agreement, lease, or any other right accruing to a person not affiliated with Respondent to secure the repayment of money or the performance of a duty or obligation.

XI. Change of Use

Respondent shall notify the Department at least sixty (60) days in advance of any change of use, as defined in 6 NYCRR 375-2.2(a), which is proposed for the Site, in accordance with the provisions of 6 NYCRR 375-1.11(d). In the event the Department determines that the proposed change of use is prohibited, the Department shall notify Respondent of such determination within forty-five (45) days of receipt of such notice.

XII. Environmental Easement

A. If a Record of Decision for the Site relies upon one or more institutional and/or engineering controls, Respondent (or the owner of the Site) shall submit to the Department for approval an Environmental Easement to run with the land in favor of the State which complies with the requirements of ECL Article 71, Title 36, and 6 NYCRR 375-1.8(h)(2). Upon acceptance of the Environmental

Easement by the State, Respondent shall comply with the requirements of 6 NYCRR 375-1.8(h)(2).

B. If the ROD provides for no action other than implementation of one or more institutional controls, Respondent shall cause an environmental easement to be recorded under the provisions of Subparagraph XII.A.

C. If Respondent does not cause such environmental easement to be recorded in accordance with 6 NYCRR 375-1.8(h)(2), Respondent will not be entitled to the benefits conferred by 6 NYCRR 375-1.9 and 375-2.9 and the Department may file an Environmental Notice on the site.

XIII. Progress Reports

Respondent shall submit a written progress report of its actions under this Order to the parties identified in Subparagraph IV.A.1 of the Order by the 10th day of each month commencing with the month subsequent to the approval of the first Work Plan and ending with the Termination date as set forth in Paragraph XIV, unless a different frequency is set forth in a Work Plan. Such reports shall, at a minimum, include: all actions relative to the Site during the previous reporting period and those anticipated for the next reporting period; all approved activity modifications (changes of work scope and/or schedule); all results of sampling and tests and all other data received or generated by or on behalf of Respondent in connection with this Site, whether under this Order or otherwise, in the previous reporting period, including quality assurance/quality control information; information regarding percentage of completion; unresolved delays encountered or anticipated that may affect the future schedule and efforts made to mitigate such delays; and information regarding activities undertaken in support of the Citizen Participation Plan during the previous reporting period and those anticipated for the next reporting period.

XIV. Termination of Order

A. This Order will terminate upon the earlier of the following events:

1. Respondent's election in accordance with Paragraph III.E.2 not to implement the remedial activities required pursuant to the ROD. In the event of termination in accordance with this Subparagraph, this Order shall terminate effective the 5th Day after the Department's receipt of the written notification, provided, however, that if there are one or more Work Plan(s) for which a final report has not been approved at the time of Respondent's notification of its election not to implement the remedial activities in accordance with the ROD, Respondent shall complete the activities required by such previously approved Work Plan(s) consistent with the schedules contained therein. Thereafter, this Order shall terminate effective the 5th Day after the Department's approval of the final report for all previously approved Work Plans; or

2. The Department's written determination that Respondent has completed all phases of the Remedial Program (including Site Management), in which event the termination shall be effective on the 5th Day after the date of the Department's letter stating that all phases of the remedial program have been completed.

B. Notwithstanding the foregoing, the provisions contained in Paragraphs VI and IX shall survive the termination of this Order and any violation of such surviving Paragraphs shall be a violation of this Order, the ECL, and 6 NYCRR 375-2.11(a)(4), subjecting Respondent to penalties as provided under Paragraph IV so long as such obligations accrued on or prior to the Termination Date.

C. If the Order is terminated pursuant to Subparagraph XIV.A.1, neither this Order nor its termination shall affect any liability of Respondent for remediation of the Site and/or for payment of State Costs, including implementation of removal and remedial actions, interest, enforcement, and any and all other response costs as defined under CERCLA, nor shall it affect any defenses to such liability that may be asserted by Respondent. Respondent shall also ensure that it does not leave the Site in a condition, from the perspective of human health and environmental protection, worse than that which existed before any activities under this Order were commenced. Further, the Department's efforts in obtaining and overseeing compliance with this Order shall constitute reasonable efforts under law to obtain a voluntary commitment from Respondent for any further activities to be undertaken as part of a Remedial Program for the Site.

XV. Dispute Resolution

A. In the event disputes arise under this Order, Respondent may, within fifteen (15) Days after Respondent knew or should have known of the facts

which are the basis of the dispute, initiate dispute resolution in accordance with the provisions of 6 NYCRR 375-1.5(b)(2).

B. All cost incurred by the Department associated with dispute resolution are State costs subject to reimbursement pursuant to this Order.

C. Nothing contained in this Order shall be construed to authorize Respondent to invoke dispute resolution with respect to the remedy selected by the Department in the ROD or any element of such remedy, nor to impair any right of Respondent to seek judicial review of the Department's selection of any remedy.

XVI. Miscellaneous

A. Respondent agrees to comply with and be bound by the provisions of 6 NYCRR Subparts 375-1 and 375-2; the provisions of such Subparts that are referenced herein are referenced for clarity and convenience only and the failure of this Order to specifically reference any particular regulatory provision is not intended to imply that such provision is not applicable to activities performed under this Order.

B. The Department may exempt Respondent from the requirement to obtain any state or local permit or other authorization for any activity conducted pursuant to this Order in accordance with 6 NYCRR 375-1.12(b), (c), and (d).

C. 1. Respondent shall use best efforts to obtain all Site access, permits, easements, approvals, institutional controls, and/or authorizations necessary to perform Respondent's obligations under this Order, including all Department-approved Work Plans and the schedules contained therein. If, despite Respondent's best efforts, any access, permits, easements, approvals, institutional controls, or authorizations cannot be obtained, Respondent shall promptly notify the Department and include a summary of the steps taken. The Department may, as it deems appropriate and within its authority, assist Respondent in obtaining same.

2. If an interest in property is needed to implement an institutional control required by a Work Plan and such interest cannot be obtained, the Department may require Respondent to modify the Work Plan pursuant to 6 NYCRR 375-1.6(d)(3) to reflect changes necessitated by Respondent's inability to obtain such interest.

D. The paragraph headings set forth in this Order are included for convenience of reference only and shall be disregarded in the construction and interpretation of any provisions of this Order.

E. 1. The terms of this Order shall constitute the complete and entire agreement between the Department and Respondent concerning the implementation of the activities required by this Order. No term, condition, understanding, or agreement purporting to modify or vary any term of this Order shall be binding unless made in writing and subscribed by the party to be bound. No informal advice, guidance, suggestion, or comment by the Department shall be construed as relieving Respondent of Respondent's obligation to obtain such formal approvals as may be required by this Order. In the event of a conflict between the terms of this Order and any Work Plan submitted pursuant to this Order, the terms of this Order shall control over the terms of the Work Plan(s). Respondent consents to and agrees not to contest the authority and jurisdiction of the Department to enter into or enforce this Order.

2. i. Except as set forth herein, if Respondent desires that any provision of this Order be changed, Respondent shall make timely written application to the Commissioner with copies to the parties listed in Subparagraph IV.A.1.

ii. If Respondent seeks to modify an approved Work Plan, a written request shall be made to the Department's project manager, with copies to the parties listed in Subparagraph IV.A.1.

iii. Requests for a change to a time frame set forth in this Order shall be made in writing to the Department's project attorney and project manager; such requests shall not be unreasonably denied and a written response to such requests shall be sent to Respondent promptly.

F. 1. If there are multiple parties signing this Order, the term "Respondent" shall be read in the plural, the obligations of each such party under this Order are joint and several, and the insolvency of or failure by any Respondent to implement any obligations under this Order shall not affect the obligations of the remaining Respondent(s) under this Order.

2. If Respondent is a partnership, the obligations of all general partners (including limited

partners who act as general partners) under this Order are joint and several and the insolvency or failure of any general partner to implement any obligations under this Order shall not affect the obligations of the remaining partner(s) under this Order.

3. Notwithstanding the foregoing Subparagraphs XVI.F.1 and 2, if multiple parties sign this Order as Respondents but not all of the signing parties elect to implement a Work Plan, all Respondents are jointly and severally liable for each and every obligation under this Order through the completion of activities in such Work Plan that all such parties consented to; thereafter, only those Respondents electing to perform additional work shall be jointly and severally liable under this Order for the obligations and activities under such additional Work Plan(s). The parties electing not to implement the additional Work Plan(s) shall have no obligations under this Order relative to the activities set forth in such Work Plan(s). Further, only those Respondents electing to implement such additional Work Plan(s) shall be eligible to receive the release and covenant not to sue referenced in Paragraph VII.

G. Respondent shall be entitled to receive contribution protection and/or to seek contribution to the extent authorized by ECL 27-1421(6) and 6 NYCRR 375-1.5(b)(5).

H. Unless otherwise expressly provided herein, terms used in this Order which are defined in ECL Article 27 or in regulations promulgated thereunder shall have the meaning assigned to them under said statute or regulations.

I. Respondent's obligations under this Order represent payment for or reimbursement of response costs, and shall not be deemed to constitute any type of fine or penalty.

J. Respondent and Respondent's successors and assigns shall be bound by this Order. Any change in ownership or corporate status of Respondent shall in no way alter Respondent's responsibilities under this Order.

K. This Order may be executed for the convenience of the parties hereto, individually or in combination, in one or more counterparts, each of which shall be deemed to have the status of an executed original and all of which shall together constitute one and the same instrument.