APPENDIX 7

Stormwater Pollution Prevention Plan

STORMWATER POLLUTION PREVENTION PLAN

John Jay Homestead
Site and Building Enhancements
400 Jay Street
Katonah, New York

CHA Project Number: 080675.000

May 2024
Revised July 2024

Prepared for:
New York State Parks, Recreation and Historic Preservation Taconic Region
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1.0 PROJECT INFORMATION

Project Name and Location	Owner Name and Address
John Jay Homestead Site and Building Enhancements 400 Jay Street Katonah, New York	NYS OPRHP Taconic Region 9 Old Post Road, PO Box 308 Staatsburg, NY 12580

2.0 PROJECT DESCRIPTION

2.1 Purpose and Extent of Proposed Development

This Stormwater Pollutions Prevention Plan (SWPPP) has been prepared in accordance with the design guidelines and criteria presented in the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-20-001), Chapter 9: Redevelopment Activity and Chapter 10: Enhanced Phosphorus Removal Supplement of the New York State Stormwater Management Design Manual (January 2015), the New York State Standards and Specifications for Erosion and Sediment Control (July 2016), and Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources (November 29, 2019) Section 18-39(b)(4).

The proposed project site is located at 400 Jay Street (John Jay Homestead State Historic Site) in Katonah, Westchester County, New York (see Figure 1 – Site Location Map). The John Jay Homestead State Historic Site is an approximately 62-acre site comprised of 10 buildings, including the original 1787 John Jay House, barns, visitor center, access roads, stone walls, and wooded areas throughout the site. Existing wetland areas and a small pond are located to the south and east of the project site. NYS Route 22 is located to the south, and the Cross River Reservoir is located approximately 3,000 feet northeast of the project site.

The project involves the design of repairs to existing pathways, interior and exterior renovation of John Jay house, construction of a new entry access road, a new parking area, and stormwater management practices. The existing main access road, proposed access road and parking lot will be paved with chip seal pavement. The existing access road will not include cuts and will be constructed at grades similar to the existing grade. The new access road and parking area will require changes to the existing topography and new stormwater management practices.

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated using standard NRCS TR-55 methodology. Peak flows were computed using the Bentley Pondpack Hydrology Program (Version V8i) and the required Water Quality Volume (WQv) and Runoff Reduction Volume (RRv) were computed using the Runoff Frequency Spectrum (RFS) Method, discussed in the New York State Stormwater Management Design Manual.

For the purposes of the hydrologic analysis, 2 design points and 5 contributing sub-areas were defined to characterize the drainage patterns of the existing conditions watershed. The proposed improvements will increase impervious area and alter the permeability of the project site. This increase in impervious area will create the potential for an increase in the amount of stormwater runoff and a need for stormwater treatment. To meet the full stormwater quality (WQv) and minimum runoff reduction volume (RRv) criteria, the project proposes to install three (3) bioretention areas and two (2) dry ponds, and new tree planting to provide WQv and RRv treatment and meet the required 1-, 10-, and 100-year peak flows mitigation criteria.

This SWPPP covers the entire project construction site, scheduled to proceed from June 2024 until March 2026. The project is intended to be constructed in phases and not to disturb greater than 5 acres of soil at any one time. Therefore, the 5 Acre Waiver is not anticipated for this project at this time.

Table 1 – Nature of Construction Project

The nature of this construction project is checked below:	
	New construction with proposed standard SMPs, Green Infrastructures, and ESC measures.
X	Redevelopment with increase in impervious areas with proposed standard SMPs and ESC measures. Green Infrastructures are required for the new impervious areas onsite.
	Redevelopment with no increase in impervious areas with proposed ESC measures only and no SMPs.

2.2 Project Disturbance Area

Overall Site Area:	62.0± acres
Total Disturbed Area:	8.30± acres
Existing Total Impervious Area:	2.25± acres
Proposed Total Impervious Area:	2.71± acres

2.3 Description and Limitations of On-Site Soils

A subsurface investigation was conducted on the project site in January 2024 by CHA which included eleven (11) test borings and two (2) infiltration tests. The Geotechnical Report is included in Appendix C of this SWPPP. Based on the boring logs, the seasonal ground water table was estimated at depths ranging from 3.1 feet to 13.2 feet on site. The two infiltration tests located on the proposed parking lot found an infiltration rate of 0.0 inches per hour.

The soil disturbance for the proposed work is limited to the 8.3 acres and consists of mostly loamy fine sand. Based on a review of the USDA Soil Surveys of Westchester County, New York, soils on the project site are described in the following list (see Figure 2 – USDA Soils Classification Map). A summary of the soil composition is shown in Table 1.

Table 2 - Soil Analysis Summary

Soil Name	Hydrologic Soil Group
PnB - Paxton fine sandy loam, 3 to 8 percent slopes	C
PnC - Paxton fine sandy loam, 8 to 15 percent slopes	C
WdA - Woodbridge loam, 0 to 3 percent slopes	C/D

The Natural Resource Conservation Service (NRCS, formerly known as the SCS), as part of their soil classification system, assigns each soil series to a Hydrologic Soil Group (HSG). The HSG is a four-letter index intended to indicate the minimum rate of infiltration obtained after prolonged wetting, and to indicate the relative potential for a soil type to generate runoff. The infiltration rate is the rate at which water enters the soil at the soil surface. The HSG also indicates the transmission rate – the rate at which water moves within the soil. Soil scientists define the four groups as follows:

- HSG 'A' (sand, loamy sand, or sandy loam): Soils have low runoff potential and high infiltration rates even when thoroughly wetted. They consist chiefly of deep, well to excessively drained sands or gravels and have a high rate of water transmission (> than 0.30 inches/hour).

- HSG 'B' (silt loam or loam): Soils have moderate infiltration rates when thoroughly wetted, and consist chiefly of moderately deep to deep, moderately well to well drained soils with moderately fine to fine texture. These soils have a moderate rate of water transmission (0.15 to 0.30 inches/hour).

- HSG 'C' (sandy clay loam): Soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water, and soils with moderately fine to fine texture. These soils have a low rate of water transmission (0.05 to 0.15 inches/hour).

- HSG 'D' (clay loam, silty clay loam, sandy clay, silty clay, or clay): Soils have high runoff potential. They have very low infiltration rates when thoroughly wetted, and consist chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very low rate of water transmission (< 0.05 inches/hour).

If a soil is classified to a dual hydrologic group (A/D, B/D, or C/D), the first letter represents drained conditions and the second letter represents undrained conditions.

2.4 Historic Places

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) SHPO has reviewed the recent submission for the John Jay Homestead Historic Site Project and SHPO has indicated that the proposed project will have NO Adverse Effect to historic and cultural resources. A copy of the letter from SHPO dated 04/29/2024 will be included in Appendix B.

3.0 SEQUENCE OF MAJOR ACTIVITIES

3.1 Construction Sequence

This SWPPP presents erosion and sediment controls, both temporary and permanent, to assist the operator in compliance with the project's SPDES General Permit for construction activity. To the degree practicable, all temporary erosion and sediment control mitigation measures shall be installed immediately before associated project areas are disturbed in anticipation of all soil disturbing activities to follow.

It is the responsibility of the Contractor to ensure that all soils removed from the project site are spoiled in a manner consistent with all local, state, and federal regulations. Appropriate erosion and sediment controls shall be installed at all spoil sites. Additionally, the Contractor is responsible for coordinating the application for a GP-0-20-001 permit (and development of an associated SWPPP) if disturbance associated with any soil spoils area is greater than 0.4 hectares (1 acre). GP-0-20-001 applications must be signed by the owner of the lands on which soils are spoiled. Disturbances associated with offsite spoil areas do not contribute to the total disturbances associated with onsite activities.

This project will be carried out in 3 phases as outlined below, while maintaining the amount of concurrently disturbed soil in compliance with the NYS DEC limit (see appendix H).

Phase 1 (±2.34acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove asphalt entrance drive and subbase as shown on demolition plans.
- Remove entrance gate and other amenities as shown on demolition plans.
- Install topsoil, seed, and mulch for final stabilization.

Phase 2A (±4.96 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Rough grade site for proposed access road and parking lot area.
- Grade and construct the proposed stormwater bioretention and dry ponds.
- Fine grade site and install subbase to stabilize disturbed areas.
- Construct the proposed parking lot, gravel road, walkway and ramps as shown on layout plans.
- Install proposed landscaping, topsoil, and seed for final stabilization of all disturbed areas.

Phase 2B (±3.68 acres)

- Establish work area, contractor staging area, and install stabilized temporary construction entrance.
- Install temporary erosion and sediment control measures as shown on plans.
- Remove existing gravel loop drive and other amenities as shown on demolition plans.
- Grade and install proposed chip seal road as shown on plans.

- Grade and install proposed chip seal walkways as shown on plans.
- Repair and renovate the existing John Jay House.
- Install proposed trees and landscaping, topsoil, and seed for final stabilization of all disturbed areas.

3.2 Name of Receiving Waters

Stormwater runoff from the John Jay Homestead campus site will either drain eastwards and discharge into the existing wetlands and unnamed tributary to Cross River Reservoir (Class B, Standards B), or drain westwards into the existing wetlands and unnamed tributary to Stone Hill River (Class C, Standards C(TS)). The Cross River Reservoir (Class AA(T), Standards AA) is located approximately 3,000 feet northeast of the project site and it is identified as an enhanced phosphorus watershed (Appendix C of the GP-0-20-001 permit). However, it is not listed as 303(d) segments impaired by construction related pollutants (Appendix E of the GP-0-20-001 permit).

The water quality of surface waters in New York State is classified by the New York State Department of Environmental Conservation as A, B, C, or D, with special classifications for water supply sources (AA). A "T" used with the classification indicates the stream supports, or may support, a trout population. Water quality standards are also provided. The standards apply the same classification system but, in some cases, are more stringent in an effort to eventually improve the water quality. The higher standard is most often used to reflect the existence or the potential for breeding trout (designation of (T) as discussed above). All surface waters with a Classification and/or a Standard of C (T), or better, are regulated by the State.

4.0 EROSION AND SEDIMENT CONTROLS

4.1 Pre-Construction

Prior to construction, the Owner shall have the Contractors and subcontractors identify at least one (1) person from their company who meets the requirements of a Trained Contractor. A Trained Contractor will be responsible for installing, constructing, repairing, and replacing the erosion and sediment control (ESC) practices.

In addition, the Trained Contractor will be responsible for the implementation of the Stormwater Pollution Prevention Plan (SWPPP) and the inspection and maintenance in accordance with New York Standards and Specifications for Erosion & Sediment Control (Blue Book). The Owner's Representative shall ensure that at least one (1) Trained Contractor is on-site daily when soil disturbance activities are being performed. The Trained Contractor shall inspect the site's ESC practices daily to ensure these facilities are operational. Pre-construction requirements to be followed by the Owner and Contractors prior to the commencement of any construction activities are described in Appendix E.

4.2 Timing of Controls/Measures

The erosion and sediment control measures shall be constructed prior to clearing or grading of any portion of the project. Where land disturbance is necessary, temporary seeding or mulching must be used on areas which will be exposed for more than 10 days. Permanent stabilization should be performed as soon as possible after completion of grading. After the entire project area is stabilized, the accumulated sediment shall be removed from the project area. Erosion control devices shall remain in place until disturbed areas are permanently stabilized. For projects where soil disturbance is greater than five (5) acres, and construction activity has temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed or initiated/implemented by the end of the next day and complete within seven (7) days from the date the soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the most current version of the technical standard, New York Standards and Specifications for Erosion and Sediment Control.

4.3 Erosion and Sediment Controls / Stabilization Practice

Applicable erosion and sediment control measures and details are included in Appendix H.

4.3.1 Temporary Stabilization

Topsoil stockpiles, staging areas and disturbed pervious portions of the project area where construction activity temporarily ceases for at least 10 days shall be stabilized with temporary seed and mulch no later than 10 days from the last construction activity in that area.

Temporary seed shall be ryegrass applied at the rates specified below:

- If seeding in spring, summer or early fall then seed with annual or perennial rye at a rate of 30 lbs per acre. If area is to remain stabilized over the winter into the following spring use perennial rye only.

- If seeding in late fall or early winter, use certified Aroostook winter rye (cereal rye) at a rate of 90 lbs per acre.

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact. Area must be free of large rocks and debris and seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding. Fertilizer or lime is not typically used for temporary plantings.

Mulch shall be applied in conjunction with seeding and applied at the rate of 90 lbs per 1000 square feet. Mulch shall be reapplied as necessary. Areas of the project area, which are to be paved, shall be temporarily stabilized by applying temporary gravel subbase until pavement can be applied.

Bioretention basins shall be built according to the plans provided. Begin by clearing the designated area of any large rocks and debris. Ensure that the seeding method chosen guarantees uniform distribution across the site, enhancing soil-to-seed contact as per the provided plans. Address any soil surface disturbances within 24 hours, utilizing scarification if necessary to facilitate successful seeding.

Tree planting, adhere closely to the provided plans. Follow the recommended seeding or planting method to ensure even distribution and proper soil-to-seed contact as per the provided guidelines. Avoid the use of unnecessary fertilizers or lime, prioritizing natural growth processes as directed.

Sediment control fencing shall be installed around the site where depicted on the attached plan sheets. Prior to commencing any earthwork, a stabilized construction entrance shall be installed as indicated on the attached plans. This entrance shall be utilized as the exclusive construction entrance and exit to the construction areas. Construction traffic shall be limited to the construction entrance.

4.3.2 Permanent Stabilization

Disturbed portions of the project area where construction activities permanently cease shall be stabilized with permanent seed no later than 10 days after the last construction activity. The permanent seed mix shall be in accordance with the project specifications and plans. Construction and maintenance of erosion and siltation control measures are in accordance with the New York Standards and Specifications for Erosion and Sediment Control.

Where construction activity is complete over areas to be permanently vegetated, stabilize with permanent seeding. Verify seeding dates with engineer. If engineer determines that seed cannot be applied due to climate, topsoil shall not be spread and mulching shall be applied to the exposed surface to stabilize soils until the next recommended seeding period. Other project areas shall be permanently stabilized with pavement, concrete, gravel or building structures.

4.4 Winter Operations

If construction activities proceed through the winter season, access points should be enlarged and stabilized to provide for snow stockpiling. Drainage structures should be kept open and free of potential snow and ice dams. Inspection and maintenance are necessary to ensure the function of these practices during runoff events. For sites where construction activities temporarily cease, temporary and/or permanent soil stabilization measures shall be installed or initiated/implemented by the end of the next day and complete within seven (7) days from the date the soil disturbance activity ceased. Disturbed areas should be stabilized with seed and mulch, or other approved methods, even if the ground is covered by significant amounts of snow.

4.4.1 Winter Shutdown

Site inspections (by the qualified inspector) may be decreased to a minimum of one (1) time every thirty (30) days for sites where soil disturbing activities have ceased and at least 100% of the site has been stabilized by an approved method. Inlet protection should be installed and/or repaired before shutdown of the site. The owner or operator shall provide written notification to the respective DEC regional office prior to reducing the frequency of any site inspections.

4.5 Final Site Inspection

The qualified inspector shall perform a final inspection of the site to certify that:

- All disturbed areas have achieved final stabilization;
- Temporary erosion and sediment control practices have been removed; and
- Post-construction stormwater management practices (if required) have been constructed in conformance with the SWPPP.

Upon satisfactory completion of the final site inspection, the qualified inspector shall sign the appropriate sections of the Notice of Termination (NOT) form included in Appendix E.

4.6 Other Controls

4.6.1 Waste Disposal

Waste materials – Foreign waste materials shall be collected and stored in a secured area until removal and disposal by a licensed solid waste management company. All trash and construction debris from the project area shall be disposed of in a portable container unit. No foreign waste materials shall be buried within the project area. All personnel shall be instructed regarding the correct procedure for waste disposal. Notices stating these practices shall be posted in the project trailer and the individual who manages day-to-day project operations will be responsible for seeing that these procedures are followed.

Petroleum Impacted Waste – During the excavation activities, there is the potential that petroleum impacted soils may be encountered. In the event that field evidence of contamination is identified during the project, potentially contaminated soils will be segregated and stockpiled on polyethylene sheeting and covered in a predetermined staging area. The potentially impacted, stockpiled soils will then be sampled to determine if the soils are suitable for use as clean backfill. In the event that the soils are not suitable for re-use, the contaminated soil will be properly characterized and disposed of at an off-site NYSDEC permitted facility. The excavation will then be backfilled with clean, imported fill.

Hazardous Waste - All hazardous waste materials shall be disposed of in a manner specified by local or state regulations or by the manufacturer. Project personnel shall be instructed in these practices and the individual who manages day-to-day project operations shall be responsible for seeing that these practices are followed.

Sanitary Waste - Any sanitary waste from portable units shall be collected from the portable units by a licensed sanitary waste management contractor, as required by NYS DEC regulations.

4.6.2 Sediment Tracking by Vehicles

A stabilized construction entrance shall be installed (where depicted on attached plan) and maintained as necessary to help reduce vehicular tracking of sediment. The entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring. Dump trucks hauling materials to and from the construction project area shall be covered with a tarpaulin to reduce dust. Any sediment and debris tracked from work area along project adjacent roadways shall be immediately removed with a street sweeper or equivalent sweeping method.

4.6.3 Non-Stormwater Discharges

Non-stormwater discharges are not expected to exit the project area during construction.

4.7 Certification of Compliance with Federal, State, and Local Regulations

The stormwater pollution prevention plan reflects the New York State requirements for stormwater management and erosion and sediment control. To ensure compliance, this plan was prepared in accordance with New York State Standards. There are no other applicable State or Federal requirements for sediment and erosion plans (or permits), or stormwater management plans (or permits).

5.0 POST CONSTRUCTION STORMWATER MANAGEMENT

5.1 Hydrologic Evaluation

5.1.1 Methodology

The proposed project has been designed in accordance with the design guidelines and criteria presented in the State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities (GP-0-20-001), Chapter 9: Redevelopment Activity and Chapter 10: Enhanced Phosphorus Removal Supplement of the New York State Stormwater Management Design Manual (January 2015), the New York State Standards and Specifications for Erosion and Sediment Control (July 2016), and Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources (November 29, 2019) Section 18-39(b)(4).

In order to evaluate the potential impacts associated with the development of the site, existing and proposed condition hydrographs were generated. The conditions were modeled using the SCS unit hydrograph method using a type II rainfall distribution. Rainfall amounts were referenced from the New York State Stormwater Management Design Manual, January 2015. The 24-hour rainfall amounts for the 1-, 10-, and 100-year design storms in Katonah, Westchester County are 2.80-, 5.09- and 9.11-inches respectively.

Runoff curve numbers and times of concentration were computed using standard NRCS TR-55 methodology. Additionally, peak stormwater flows and hydrographs for the existing and post-development conditions were computed using the Bentley Pondpack Hydrology Program (Version V8i).

Since the proposed redevelopment project is located within the New York City Watershed East of the Hudson River as shown in Appendix C of the SPDES General Permit (GP-0-20-001) where enhanced phosphorus removal standards are required, the total Water Quality Volume (WQv) shall be calculated in accordance with Chapter 10 of the New York State Stormwater Management Design Manual (January 2015). The total estimated WQv required is calculated based on the 1-year, 24-hour design storm over the post development disturbed drainage areas using standard NRCS TR-55 methodology to account for runoff volume from the drainage areas.

Moreover, the minimum Runoff Reduction Volume (RRv) is calculated using the 1-year storm event and the amount of new impervious area within the drainage area. The required RRv criteria is applied to the new developed impervious area only.

5.1.2 Redevelopment Criteria

Redevelopment of previously developed sites is encouraged from a watershed protection standpoint because it often provides an opportunity to conserve natural resources in less impacted areas by targeting development to areas with existing services and infrastructure. Redevelopment provides an opportunity to correct existing problems and reduce pollutant discharges from previously developed areas that were constructed without effective stormwater pollution controls.

Because the technical standards contained in the New York State Stormwater Management Design Manual were primarily intended for new development projects, compliance with the standards may present a challenge on some redevelopment projects. Therefore, Chapter 9 of the New York State Stormwater Management Design Manual give the following definition for redevelopment activity on page 9-2.

Redevelopment Activity / Activities – Disturbance and reconstruction of existing impervious surfaces. This includes impervious surfaces that were removed within the last five (5) years.

If the construction project includes both new development and redevelopment activities, treatment would be required for 25% of the existing, disturbed impervious area, however, the stormwater management practices for the new development portion of the project must be designed in accordance with the sizing criteria in Chapter 4.

5.2 Existing Condition Hydrology

For the purpose of this analysis, the extent of the hydrologic model was limited to the areas affected by the proposed improvements. For the existing condition analysis, two design points and five contributing sub-areas were defined to characterize the natural drainage patterns of the watershed (See Figure 3 – Existing Conditions Watershed Map).

Design Point 1 (DP-1) is located along the southern and eastern boundary of the project site discharging into the existing wetlands and unnamed tributary to Cross River Reservoir. Stormwater runoff from DA-1, DA-2, DA-3, and DA-5 will sheet flow and drain towards DP-1, and eventually outfall into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Design Point 2 (DP-2) is located southwestern boundary of the project site and collects stormwater runoff from Drainage Area 4 (DA-4), which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 1 (DA-1) comprises of 3 existing buildings and a large, vegetated area located on the northeastern portion of the project site. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 2 (DA-2) encompasses of a large, vegetated area, an existing gravel road, and a brick cottage building. Runoff in this drainage area sheet flows overland directed eastwards and southwards into the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 3 (DA-3) contains an existing gravel entrance and access road and some vegetated areas along both sides of the road. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 4 (DA-4) consists of most of the project site west of the existing gravel entrance road including the original 1787John Jay House, existing loop gravel drive, sundial garden, herb garden, existing pathways, parking areas, and associated site amenities. Runoff in this drainage area will sheet flow overland directed towards DP-2, which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 5 (DA-5) comprises of five existing buildings including the Main Barn, an existing gravel road, and some vegetated areas located northeast of the John Jay House. Runoff in this sub-area sheet flows overland directed towards DA-1 and discharge into the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

The results of the existing condition analyses are presented in Table 3, with detailed computations provided in Appendix D.

Table 3 - Existing Condition Analysis Summary

Design Point	Watershed	Area (acres)	Tc (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1	4.75	0.135	75	3.71	11.8	27.88
	DA-2	3.65	0.105	75	2.99	9.40	22.10
	DA-3	1.36	0.083	82	1.74	4.42	9.29
	DA-5	1.33	0.103	82	1.66	4.25	8.95
	Total	11.09	--	--	10.00	29.72	67.98
DP-2	DA-4	7.63	0.102	79	8.08	22.39	49.29
	Total	7.63	--	--	8.08	22.39	49.29

5.3 Proposed Condition Hydrology

The proposed improvements will increase the impervious area and alter the permeability of the project site. This increase in impervious area will potentially lead to an increase in stormwater runoff and necessitate stormwater treatment. The existing condition drainage areas have been revised to reflect the new drainage patterns of the proposed watershed with two design points and ten contributing sub-areas (See Figure 4 – Proposed Conditions Watershed Map).

Design Point 1 (DP-1) continues to be located along the southern and eastern boundary of the project site discharging into the existing wetlands and unnamed tributary to Cross River Reservoir. Stormwater runoff DA 1A, DA-1B, DA-1C, DA-1D, DA-2A, DA-2B, DA-3, DA-5A, and DA-5B will sheet flow and drain towards DP-1, and eventually outfall into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Design Point 2 (DP-2) continues to be located at the southwestern boundary of the project site and collects stormwater runoff from Drainage Area 4 (DA-4), which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 1A (DA-1A) encompasses the proposed parking lot area, where runoff will be directed to drain towards the proposed bioretention area 1 and dry pond 1 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 1B (DA-1B) consists of the northern portion of the proposed access road leading to the new parking lot area, where runoff will be directed to drain towards the proposed bioretention area 2 and dry pond 2 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 1C (DA-1C) receives runoff from DA-5B and contains the cottage fabric building and an old concrete foundation, both surrounded by grassed areas. Stormwater flowing through DA-1C will be conveyed to DA-1B.

Drainage Area 1D (DA-1D) is mainly composed of grassed areas with an old concrete foundation slab and some woods on its northwest portion. Stormwater flowing through DA-1D will be conveyed to DA-1A.

Drainage Area 2A (DA-2A) contains the proposed access drive, the existing brick cottage building surrounded by woods, and a grass field. Runoff will be sheet flow and directed towards the proposed bioretention area 3 located within DA-2B.

Drainage Area 2B (DA-2B) collects water from part of DA-2A, containing the southern portion of the proposed access road and the proposed bioretention basin 3, which will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 3 (DA-3) contains an existing gravel entrance and access road, which will be widened and reconstructed with chip seal pavement. The project will propose new trees to be planted along the existing trees and vegetated areas along both sides of the road. Runoff in this sub-area sheet flows overland directed towards the existing wetlands and unnamed tributary to Cross River Reservoir at DP-1.

Drainage Area 4 (DA-4) consists of most of the project site west of the existing gravel entrance road including the original 1787John Jay House, existing loop gravel drive, sundial garden, herb garden, existing pathways, parking areas, and associated site amenities. Runoff in this drainage area will sheet flow overland directed towards DP-2, which ultimately drains into the existing wetlands and unnamed tributary to Stone Hill River.

Drainage Area 5A (DA-5A) consist of the proposed chip seal road, some grassed areas, and four existing buildings. The stormwater runoff will flow into DA-1D, and eventually into DA-1A, where runoff will be directed to drain towards the proposed bioretention area 1 and dry pond 1 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Drainage Area 5B (DA-5B) contains chip seal road, some grass areas, and three existing buildings. The stormwater runoff will flow into DA-1C, and eventually into DA-1B, where runoff will be directed to drain towards the proposed bioretention area 2 and dry pond 2 and will outlet directly towards DP-1, and eventually discharges into the Cross River Reservoir located approximately 3,000 feet northeast of the project site.

Table 4 – Proposed Condition Analysis Summary

Design Point	Watershed	Area (acres)	Tc (hrs)	Curve Number	Peak Flow Rate (cfs)		
					1-yr	10-yr	100-yr
DP-1	DA-1A	1.91	0.083	82	2.45	6.20	13.04
	DA-1B	0.60	0.083	81	0.73	1.90	4.04
	DA-1C	1.37	0.134	76	1.15	3.52	8.19
	DA-1D	1.51	0.088	74	1.18	3.83	9.09
	DA-2A	2.53	0.098	76	2.24	6.78	15.64
	DA-2B	0.53	0.083	82	0.68	1.72	3.62
	DA-3	1.41	0.083	84	2.00	4.82	9.86
	DA-5A	0.77	0.104	82	0.96	2.46	5.18
	DA-5B	0.57	0.083	80	0.66	1.75	3.79
	Outfall	11.20	--	--	11.93	32.81	72.17
DP-2	DA-4	7.60	0.104	77	7.11	20.93	47.58
	Outfall	7.60	--	--	7.11	20.93	47.58

5.4 Post-Development Stormwater Management Practices

5.4.1 Runoff Reduction Volume

In accordance with the New York State Stormwater Management Design Manual (January 2015), further reduction in the water quality volume (WQv) shall be designed to reduce the total amount of runoff leaving the project site and to replicate pre-development hydrology. This volumetric reduction is defined as the Runoff Reduction Volume (RRv). Runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle evaporation or evapotranspiration of 100% of the post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, discharge volume, as well as minimizing concentrated flow by using runoff control techniques to provide treatment in a distributed manner before runoff reaches the collection system. This requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. Runoff reduction can be achieved by three methods: reduction of contributing drainage area, reduction of runoff volume through practice storage, and using standard stormwater practices with runoff reduction capacity.

Projects that cannot meet 100% of runoff reduction requirement must provide a justification that evaluates each of the green infrastructure planning and reduction techniques and identifies the specific limitations of the site according to which application of this criterion is technically infeasible. Implementation of green infrastructure cannot be considered infeasible unless physical constraints, hydraulic conditions, soil testing, existing and proposed slopes, or other existing technical limitations are objectively documented. And determination of application of none of the runoff reduction options is feasible may not be based on the cost of implementation measures or lack of space for required footprint of the practice.

Project that do not achieve runoff reduction to pre-construction condition must, at a minimum reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group(s) (HSG) of the site and is defined as Specific Reduction Factor (S) and is defined as the following list.

HSG A = 0.55 (55%)
HSG B = 0.40 (40%)
HSG C = 0.30 (30%)
HSG D = 0.20 (20%)

Based on Chapter 10 of the New York State Stormwater Management Design Manual, the required minimum RRv for redevelopment projects within enhanced phosphorous removal watershed areas is computed using the equation presented below.

$$\boldsymbol{RRv_{min} = \{(P_{1\text{-}yr})\ (Rv)\ (Aic)(S)\}\ /\ 12}$$

Where:

RRv_{min}	=	Minimum runoff reduction volume required from impervious area (acre-feet)
P1-yr	=	1-year storm event rainfall (inches)
Rv	=	0.05 + 0.009 (I), where I is 100% impervious cover
Aic	=	total area of new impervious cover
S	=	Hydrologic Soil Group (HSG) Specific Reduction Factor

For Katonah, Westchester County, the 1-year storm event is 2.80 inches of rainfall.

Green Infrastructure Techniques

Runoff reduction was achieved for the proposed project with the application of the green infrastructure techniques including three (3) new bioretention areas and planting new trees for drainage areas (DA-1A,1B,1C,1D,2A,2B,3, 5A, and 5B) contributing runoff to DP-1 of the project site. Since this project proposes a total of 1.10 acres of new impervious area to be constructed within these drainage areas to DP-1, the remaining impervious areas to be replaced within these areas are considered as redevelopment work. Subsequently, the minimum RRv criteria is applied to the new developed impervious area only. Therefore, the three (3) proposed bioretention areas and new trees to be planted are designed to treat the minimum RRv required for 1.10 acre of new developed impervious area.

A summary of the practice used in the project for runoff reduction is provided in Table 5 and detailed worksheets are included in Appendix G. Runoff reduction practices not applicable for the proposed project and justification for each practice is summarized in Table 6.

Table 5 - Summary of Required Runoff Reduction Volumes

Design Point	Drainage Areas	Min. RRv Required (ac-ft)	RRv Provided (ac-ft)	Runoff Reduction Techniques
DP-1	DA-1A,1B,1C, 1D,2A,2B,3,5A, and 5B	0.073	0.233	3 Bioretention areas and tree planting
DP-2	DA-4	0.000	0.000	N/A

Since drainage area DA-4 included an existing entrance access road that will be removed and turned into grassed area in post development conditions, resulting in a 37.5% reduction of imperviousness within the disturbed drainage area. Based on the regulations listed in Chapter 9 Redevelopment criteria of the New York State Stormwater Management Design Manual, this over 25 percent of reduction in imperviousness will reduce the volume of stormwater runoff, essentially, providing both water quality and water quantity. Therefore, post-construction stormwater management measures for water quality and runoff reduction treatment are not required for the redevelopment work withing drainage area DA-4, which drains into DP-2.

Table 6 – Stormwater Management Practices for Runoff Reduction Not Used in Project

Practice / Technique	Reason for Not Applying the Practice / Technique to Project
Conservation of Natural Areas	Runoff already treated with bioretention and tree planting.
Riparian Buffers / Filter Strips	Runoff already treated with bioretention and tree planting.
Rooftop Disconnection	Not applicable to proposed parking lot and access roads.
Infiltration Trench	Runoff already treated with bioretention and tree planting.
Drywell	Runoff already treated with bioretention and tree planting.
Infiltration Basin	Existing soils onsite does not infiltrate.
Dry Swale	Runoff already treated with bioretention and tree planting.
Vegetated Swale	Runoff already treated with bioretention and tree planting.
Green Roof	Not applicable to proposed parking lot and access roads.
Rain Garden	Runoff already treated with bioretention and tree planting.
Planters	Runoff already treated with bioretention and tree planting.
Cisterns / Rain Barrels	No regular use for the collected water on site.
Porous Pavement	Runoff already treated with bioretention and tree planting.

5.4.2 Water Quality Volume

Since the proposed redevelopment project is located within the New York City Watershed East of the Hudson River as shown in Appendix D of the SPDES General Permit (GP-0-20-001) where enhanced phosphorus removal standards are required, the total Water Quality Volume (WQv) shall be calculated in accordance with Chapter 10 of the New York State Stormwater Management Design Manual (January 2015). The total estimated WQv required is calculated based on the 1-year, 24-hour design storm over the post development disturbed drainage areas using standard NYSDEC Green Infrastructure worksheets.

To meet the water quality criteria listed above, three (3) new bioretention areas and new tree planting will be employed for drainage areas (DA-1A,1B,1C,1D,2A,2B,3, 5A, and 5B) contributing runoff to DP-1 of the project site. A summary of the required and provided water quality volumes (WQv) are shown in Table 7 and detailed computations are included in Appendix G.

Table 7 - Summary of Water Quality Volumes

Drainage Areas	Total Area (ac)	New Impervious Area (ac)	Required WQv (ac-ft)	Provided RRv (ac-ft)	Remaining WQv Provided (ac-ft)	Treatment Practice
DA-1A	1.91	0.60	0.148	0.069	0.079	Bioretention Area 1
DA-1B	0.60	0.18	0.045	0.019	0.026	Bioretention Area 2
DA-2B	0.53	0.18	0.044	0.020	0.024	Bioretention Area 3
DA1C,1D,2A,3, 5A, AND 5B	8.16	0.14	0.125	0.125	0.000	Tree Planting
Total to DP-1	11.20	1.10	0.362	0.233	0.129	Total Provided = 0.362 ac-ft
DA-4 (DP-2)	7.60	-0.66	0.000	0.000	0.000	Over 25% Impervious Area Reduction

Drainage Area DA-4 included an existing entrance access road that will be removed and turned into grassed area in post development conditions. Thus, the existing impervious area of 1.76 acres will be reduced to 1.10 acres, resulting in a 37% reduction of imperviousness within the disturbed drainage area. Based on the regulations listed in Chapter 9 Redevelopment criteria of the New York State Stormwater Management Design Manual, this over 25 percent of reduction in imperviousness will reduce the volume of stormwater runoff, essentially, providing both water quality and water quantity. Therefore, post-construction stormwater management measures for water quality and runoff reduction treatment are not required and not included as for this portion of the project.

5.4.3 Channel Protection Volume

Based on the sizing criteria listed in Chapter 9 of the New York State Stormwater Management Design Manual, channel protection for redevelopment activities is not required if there are no changes to the hydrology that increase the discharge rate from the project site. Since, the hydrology analysis results showed the 1-year 24-hour storm peak flow rate from the project site for post-construction condition is equal to the peak flow rate of existing condition, providing the channel protection volume (Cpv, 1-year storm) criteria is not required for the proposed redevelopment project.

5.4.4 Peak Flow Attenuation

Based on a comparison between the existing conditions and the unmitigated proposed peak flow rates, the proposed development will increase peak rates of runoff at DP-1. In accordance with the governing regulations, this increase in peak flows must be mitigated such that the post-development peak runoff rates will be no greater than the existing condition rates for the 10-year and 100-year 24-hour storm events. A summary of the existing conditions and mitigated post-development peak flow comparison is shown in Table 8, and detailed computations are included in Appendix F.

Table 8 – Existing Condition & Mitigated Post-Development Peak Flow Comparison

Design Point	Peak Flow Rate (cfs)								
	1-Year Storm			10-Year Storm			100-Year Storm		
	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)	Exist (cfs)	Mitigated (cfs)	Δ (cfs)
DP-1	10.00	6.15	-3.85	29.72	23.30	-6.42	67.98	48.05	-19.93
DP-2	8.08	7.11	-0.97	22.39	20.93	-1.46	49.29	47.58	-1.71

5.4.5 Stormwater Conveyance Systems

The proposed drainage system located in the proposed parking lot and access road have been designed for the 10-year, 24-hour event, while also providing safe conveyance of the 100-year, 24-hour event.

5.5 Floodplains

Based on a review of the FEMA Flood Insurance Rate Map for the City of Katonah, Westchester County, NY (dated September 28, 2007); the entire project site is not located in the 100-year floodplain (see Figure 5 – FEMA FIRM).

6.0 MAINTENANCE/INSPECTION PROCEDURES

6.1 Erosion and Sediment Control Inspection and Maintenance Practices

These are the minimum required inspection and maintenance practices that shall be used to maintain erosion and sediment controls:

6.1.1 Owner/Operator Inspection Requirements

- Prior to construction activity the owner/operator shall have contractors and sub-contractors identify a trained individual responsible for the implementation of the SWPPP. The trained individual must be on-site on a daily basis when soil disturbing activities are occurring.

- The owner/operator shall inspect the erosion and sediment control measures as identified in the SWPPP to ensure that they are being maintained in effective operating conditions at all times. Where soil disturbing activities temporarily cease (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the owner/operator can reduce frequency of inspections, but shall maintain a minimum of monthly inspections, and after significant rain storms and snow thaws. The owner/operator shall resume inspections when soil disturbing activities begin again.

- Where soil disturbing activities have ceased with partial project completion, the owner/operator can stop conducting inspections when disturbed areas have reached final stabilization. The qualified inspector shall coordinate and obtain approval from the Owner and Engineer that final stabilization has been achieved. All post construction stormwater management practices required for the completed areas shall have been constructed in conformance with the SWPPP and be fully operational. Final stabilization means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

- The owner/operator shall notify the DEC Regional Office's stormwater contact person prior to any reduction in the frequency of site inspections.

- The owner/operator shall retain copies of the NOI, NOI acknowledgment letter, SWPPP, MS4 SWPPP acceptance form and any inspection reports submitted in conjunction with this permit and records, or all data used to complete the NOI to be covered by this permit for a period of at least five (5) years from the date that the site is finally stabilized.

6.1.2 Qualified Inspector Inspection Requirements

- The qualified inspector is defined as a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other Department endorsed individual(s). It may also mean someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means the person has received four (4) hours of training endorsed by the Department and shall receive four (4) hours of training every three (3) years after the initial training.

- A site inspection shall be conducted at least twice every seven (7) days by the qualified inspector when soil disturbing activities are occurring. The two inspections shall be separated by a minimum of two full calendar days. A copy of the "Construction Duration Inspection Form" is included in the Appendix E section of this plan.

- All measures shall be maintained in good working order; if any repairs or corrective actions are necessary, it is the responsibility of the qualified inspector to notify the owner/operator and appropriate contractor within one business day. The contactor shall begin implementing the corrective action within one business day of being notified.

- All inspection forms must be signed by a qualified inspector.

- For construction sites where soil disturbing activities are temporarily suspended, temporary stabilization measures shall be applied, and the qualified inspector shall conduct a site inspection at least once every thirty (30) calendar days.

- Where soil disturbing activities have ceased with partial project completion the qualified inspector can stop conducting inspections when disturbed areas have reached final stabilization and all post construction stormwater management practices required for the completed areas have been constructed in conformance with the SWPPP and are fully operational.

- Where soil disturbing activities are not resumed within two (2) years, from the date of shut down of partial project completion, the qualified inspector shall perform a final inspection and certify that all disturbed areas have achieved final stabilization, all temporary and permanent erosion control measures have been removed, and post-construction stormwater management practices have been constructed in conformance with the SWPPP. Qualified inspector shall sign the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination (NOT).

6.1.3 General Requirements

- A copy of the SPDES General Permit (GP-0-20-001), the signed Notice of Intent (NOI), NOI acknowledgement letter, SWPPP, and inspection reports shall be maintained onsite until the site has achieved final stabilization.

- Built up sediment shall be removed from any silt fence when it has reached one-third the height of the fence / dike.

- Sediment fencing and wetland protection barrier shall be inspected for depth of sediment, and tears, to see if fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.

- The construction entrance shall be cleaned of sediment and redressed when voids in the crushed stone become filled and vehicular tracking of sediment is occurring.

- Dust shall be controlled on access points and other disturbed areas subject to surface dust movement and blowing.

- Inspection must verify that all practices are adequately operational, maintained properly and that sediment is removed from all control structures.

- Inspection must look for evidence of soil erosion on the site, potential of pollutants entering drainage systems, problems at the discharge points, and signs of soil and mud transport from the site to the public road.

6.1.4 Dewatering Methods

During the recent geotechnical investigation activities conducted at the Site, the seasonal ground water table was estimated at depths ranging from 3.1 feet to 13.2 feet on site. Dewatering is anticipated for construction of the meadow road. If localized dewatering becomes necessary to conduct the planned construction activities, the water will be evaluated for evidence of potential contamination.

Water that exhibits no visual (e.g. free product/sheens) or olfactory evidence of contamination will be directed to a discharge area established within a vegetated portion of the Site, and will be pumped through filter bags or socks for removal of sediment prior to discharge. The water will be discharged to the ground at a controlled rate in a manner that will prevent significant runoff. Discharge of dewatering effluent into the storm sewer system is not permitted under any circumstance.

6.1.5 Dust Control

Dust control shall be used through dry weather periods until all disturbed areas are stabilized and will be controlled as needed based on site conditions. Only plain water will be used for dust suppression. Stabilized construction entrances for dust control will be consistent with NYSDEC stabilized construction entrance requirements. All applicable regulations and standards related to dust control will be followed including the New York State Standards and Specifications for Erosion and Sediment Control ("Blue Book") for dust control.

6.2 Post-Construction Stormwater Inspection and Maintenance Practices

Long-term inspection forms for the stormwater management practices are included in Appendix E are referenced from Appendix G of the New York State Stormwater Management Design Manual.

7.0 INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be within the project area during construction:

- Portland cement concrete.
- Fertilizers / seeding materials.
- Stone.
- Chip seal asphalt.
- Petroleum based products.
- Silt fence fabric.
- Lumber.
- Pavement marking paint.
- PVC and HDPE.

8.0 SPILL PREVENTION

The following are the material management practices that shall be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff.

8.1 Good Housekeeping

The following good housekeeping practices shall be followed within project areas during construction:

- An effort shall be made to store only enough products required to do the job.
- All materials stored within project areas shall be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- Products shall be kept in their original containers with the original manufacturer's label.
- Substances shall not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product shall be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal shall be followed.
- The project superintendent shall inspect daily to ensure proper use and disposal of materials.

8.2 Hazardous Products

These practices are used to reduce the risks associated with hazardous materials:

- Products shall be kept in original containers unless they are not resealable.
- Original labels and material safety data shall be retained.

- If surplus product must be disposed of, manufacturers' or local and state recommended methods of proper disposal shall be followed.
- Material Safety Data Sheets for all hazardous products shall be within the project area for the duration of construction.

8.3 Product Specific Practices

The following product-specific practices shall be followed within the project areas:

Petroleum Products

All project related vehicles shall be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products shall be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used during construction shall be applied according to the manufacturer's recommendations.

Fertilizers

Fertilizers used shall be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer shall be worked into the soil to limit exposure to stormwater. Fertilizers shall be stored in a covered or other contained area.

Paints

All containers shall be tightly sealed and stored when not required for use. Excess paint shall not be discharged to the storm sewer system but shall be properly disposed of according to manufacturer's instructions or State regulations.

Concrete Trucks

Concrete trucks shall be allowed to wash out within project areas provided that the contractor provides an area which collects and contains any concrete / slurry material washed from trucks for recovery and disposal at a later time. No concrete / slurry shall be discharged from the property at any time of construction. If such washing is anticipated, the contractor shall submit a plan detailing the control of concrete / slurry to the engineer for approval.

Watercourse Protection

Construction operations shall be conducted in such a manner as to prevent damage to watercourses from pollution of debris, sediment, or other foreign material, or from manipulation, from equipment and/or materials in or near the watercourse. The contractor shall not return directly to the watercourse any water used for wash purposes or other similar operations which may cause the water to become polluted with sand, silt, cement, oil or other impurities. If the contractor uses water from the water course, the contractor shall construct an intake or temporary dam to protect and maintain watercourse water quality.

8.4 Spill Control Practices

The contractor will be responsible for preparing a project area specific spill control plan in accordance with local and NYS DEC regulations. At a minimum this plan should:

- Reduce stormwater contact if there is a spill.

- Contain the spill.
- Stop the source of the spill.
- Dispose of contaminated material in accordance with manufactures procedures, and NYS DEC regulations.
- Identify responsible and trained personnel.
- Ensure spill area is well ventilated.

9.0 UPDATING THE SWPPP

The SWPPP shall be updated/revised as conditions merit or as directed by the regulating authority. The attached inspection forms included with this document allows for the certification of any updates/revisions.

10.0 SWPPP CERTIFICATION

Contracting Firm Information:

____
Contracting Firm

____
Address

____
City/Town ***State*** ***Zip***

Site Location:

John Jay Homestead Historic Site
400 Jay St, Katonah
Westchester, New York

Contractor's Certification

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

____ ____________________
Signature (Contractor/Subcontractor) ***Date***

____
For

____
Responsible For

____ ____________________
Signature (Trained Individual) ***Date***

____
For

____
Responsible For

____ ____________________
Signature (Contractor/Subcontractor) ***Date***

____
For

____
Responsible For

Signature (Trained Individual) *Date*

For

Responsible For

10.0 SWPPP CERTIFICATION

Contracting Firm Information:

Contracting Firm

Address

City/Town ***State*** ***Zip***

Site Location:

John Jay Homestead Historic Site
400 Jay St, Katonah
Westchester, New York

Contractor's Certification

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Signature (Contractor/Subcontractor) ***Date***

For

Responsible For

Signature (Trained Individual) ***Date***

For

Responsible For

Signature (Contractor/Subcontractor) ***Date***

For

Responsible For

Signature (Trained Individual) *Date*

For

Responsible For

APPENDIX A

Figures

Figure 1 – Project Location Map

Figure 2 – USDA Soils Map

Figure 3 – Existing Conditions Watershed Map

Figure 4 - Proposed Conditions Watershed Map

Figure 5 – FEMA FIRM Map

CHA
III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 . www.chasolutions.com

SITE LOCATION MAP

JOHN JAY HOMESTEAD STATE HISTORIC SITE
400 JAY ST, KATONAH, 10536
WESTCHESTER COUNTY, NEW YORK

PROJECT NO.
080675

DATE: 05/06/24

FIGURE 1

File: V:\PROJECTS\ANY\K6\080675.000\09_DESIGN\EXHIBITS\STORMWATER\ARCHIEVED\066076_FIG1-SITE LOC MAP_ JOHN JAY.DWG Saved: 5/6/2024 11:34:27 AM Plotted: 5/6/2024 11:35:58 AM Current User: Bouillon, Hugo LastSavedBy: 7895

Hydrologic Soil Group—Westchester County, New York

Map Scale: 1:3,340 if printed on A portrait (8.5" x 11") sheet.

0 45 90 180 270 Meters

0 150 300 600 900 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Figure 2 - USDA Soil Map

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Westchester County, New York
Survey Area Data: Version 19, Sep 6, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	C	20.1	86.1%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	C	2.6	11.0%
WdA	Woodbridge loam, 0 to 3 percent slopes	C/D	0.7	2.9%
Totals for Area of Interest			**23.3**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

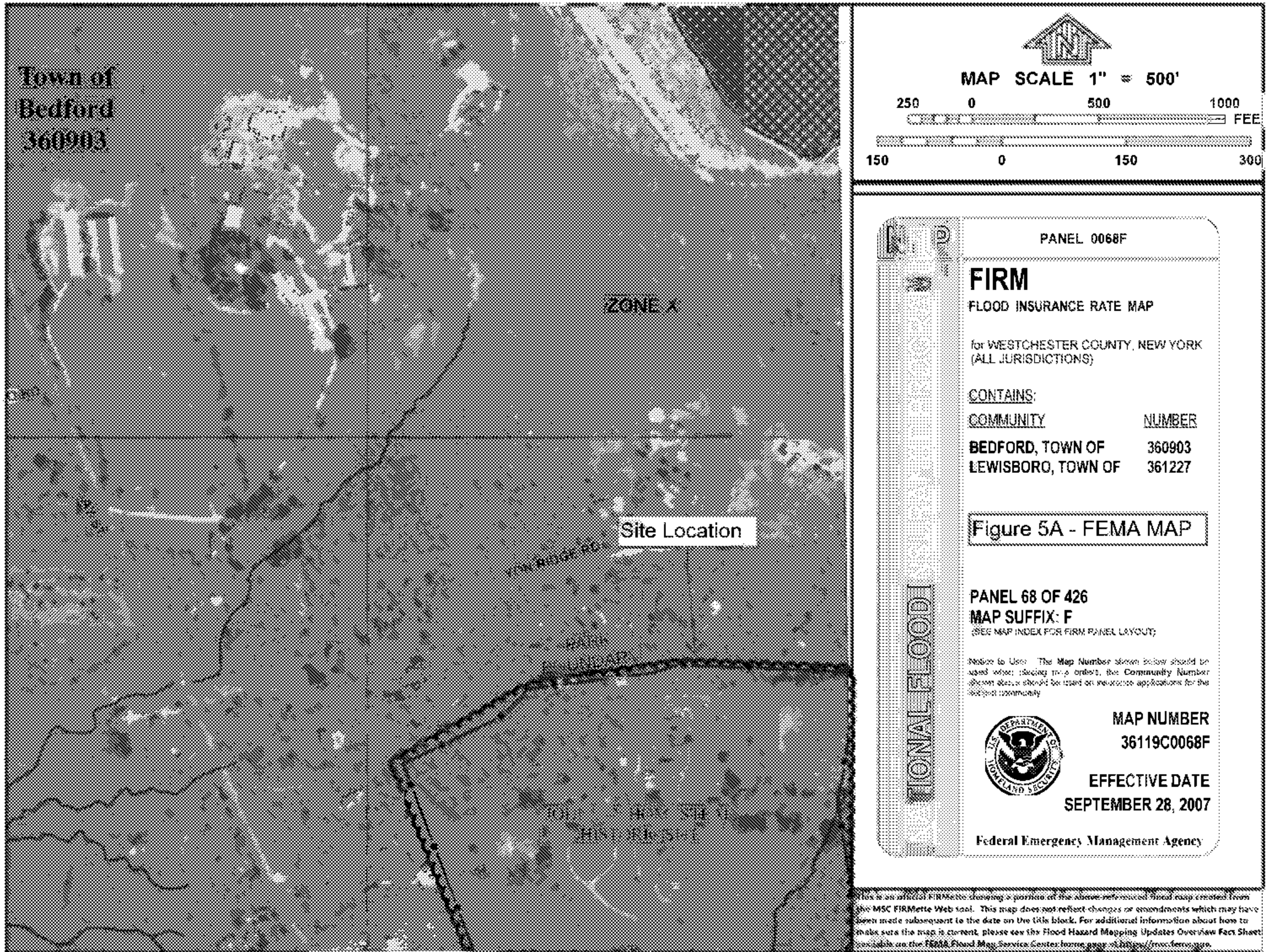
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

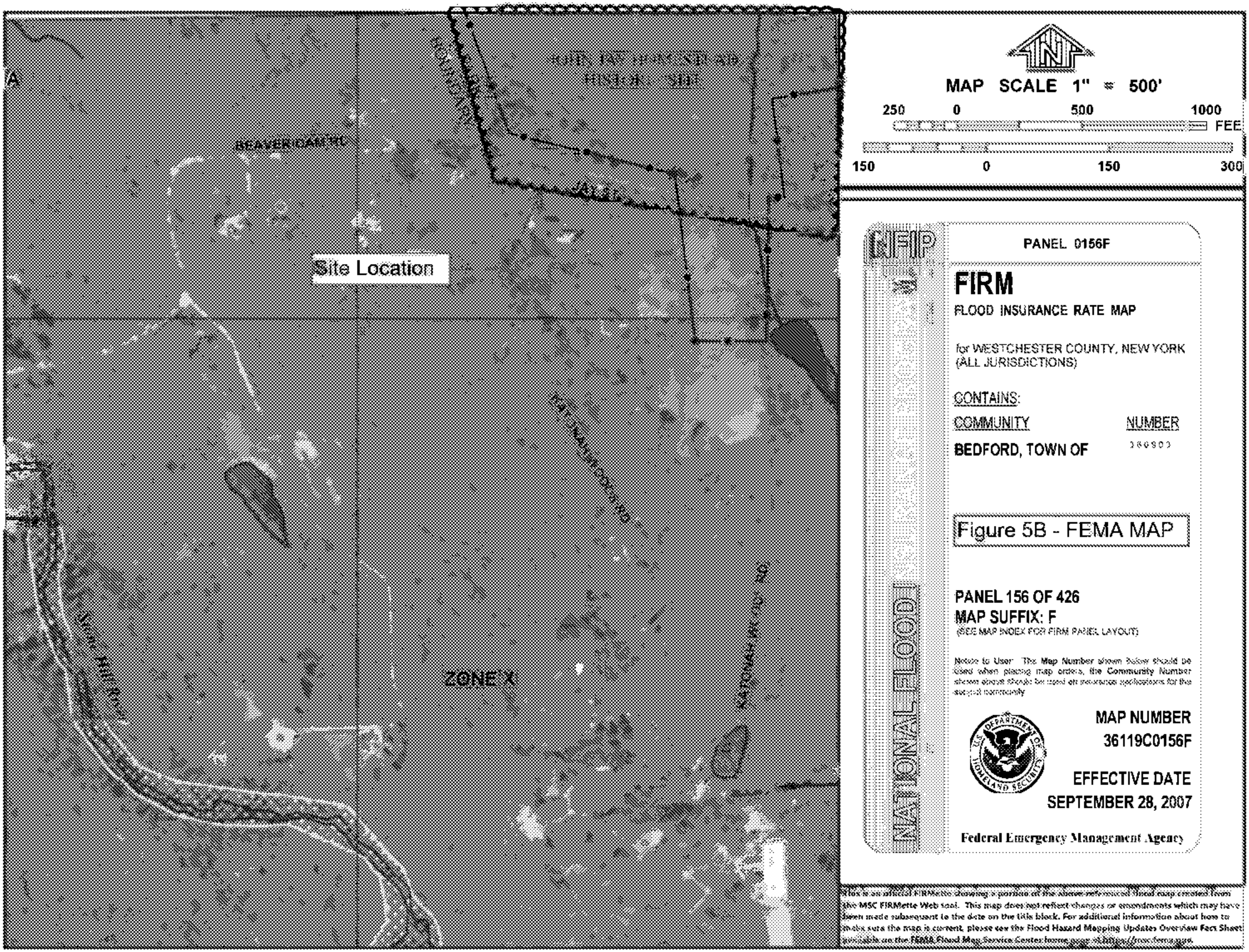
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher


Town of
Bedford
360903
ZONE X
Site Location
MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300
PANEL 0068F
FIRM
FLOOD INSURANCE RATE MAP
for WESTCHESTER COUNTY, NEW YORK
(ALL JURISDICTIONS)
CONTAINS:
COMMUNITY NUMBER
BEDFORD, TOWN OF 360903
LEWISBORO, TOWN OF 361227
Figure 5A - FEMA MAP
PANEL 68 OF 426
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
MAP NUMBER
36119C0068F
EFFECTIVE DATE
SEPTEMBER 28, 2007
Federal Emergency Management Agency



BEAVER DAM RD
JAY ST
Site Location
ZONE X
KATONAH WOODS RD
KATONAH WOOD RD
MAP SCALE 1" = 500'
250
0
500
1000
FEET
150
0
150
300
NFIP
PANEL 0156F
FIRM
FLOOD INSURANCE RATE MAP
for WESTCHESTER COUNTY, NEW YORK
(ALL JURISDICTIONS)
CONTAINS:
COMMUNITY
NUMBER
BEDFORD, TOWN OF
Figure 5B - FEMA MAP
PANEL 156 OF 426
MAP SUFFIX: F
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
NATIONAL FLOOD INSURANCE PROGRAM
MAP NUMBER
36119C0156F
EFFECTIVE DATE
SEPTEMBER 28, 2007
Federal Emergency Management Agency
This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

APPENDIX B
Historic Cultural Resource

KATHY HOCHUL
Governor

RANDY SIMONS
Commissioner *Pro Tempore*

April 29, 2024

Erin Moroney
NYS OPRHP
1 Delaware Ave
Cohoes, NY 12047

Re: OPRHP/14.09
John Jay Homestead SHS/Building & Site Enhancements
400 Jay St, Katonah, NY 10536
23PR07343

Dear Erin Moroney:

Thank you for requesting the comments of the Division for Historic Preservation (DHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 NYSPRHPL) and OPRHP Agency Protocol HP-PCD-002. These comments are those of the DHP and relate only to Historic/ Cultural resources.

We note that John Jay Homestead is a State Historic Site, a National Historic Landmark and listed in the State and National Registers of Historic Places. National Historic Landmarks (NHLs) are nationally significant places designated by the Secretary of the Interior because they possess exceptional value or quality in illustrating or interpreting the heritage of the United States.

We have reviewed the drawings dated 1/31/2024, the e-mails from Erin Moroney dated 3/18, 3/21, 4/24 and meeting notes from the 4/11/2024. For clarity, we understand the project to include:

1) Bedford House
    a. Interior restoration: including period appropriate interior finishes such as flooring and wallpaper as approved by the Bureau of Historic Sites and structural repairs (sistering with steel)
    b. Exterior restoration: including window restoration and replacement and exterior masonry work, roof replacement, porch repair.
    c. ADA compliance: Including stair/elevator improvements for access to the second floor, access to the front door via a porch lift.
    d. Electrical – including museum and exit lighting.
    e. HVAC – including geothermal.
2) Site
    a. Parking and circulation – new road to parking lot
    b. Wayfinding and exterior lighting
    c. Landscape restoration of Haha's and stone walls

3) Potting Shed
4) Carriage Barn/Visitor Center
    a. HVAC including Geothermal.
    b. ADA upgrades including raising of floors to remove interior ramps and leveling of courtyard between Carriage Barn and Coachman’s House
5) Brick Cottage - Stabilization

Only the work noted above has been reviewed. Any additional work will need to be submitted as a new project for review. We note our Archeology Unit has no archeological concerns with the work as proposed. Based upon our review, it is DHP’s opinion that the proposed work will have No Adverse Impact upon historic resources provided the following conditions are met:

1. The potting shed shall be treated as described in the e-mail dated 4/24/2024.
2. The Brick Cottage stabilization plans shall be submitted for review and comment when they are available.
3. Any substantive changes proposed to the project shall be submitted for our review and comment.

If you have any questions, you can call or e-mail me at the contact information below.

Sincerely,

Daniel McEneny
Division Director

APPENDIX C

Geotechnical Report

Geotechnical Engineering Report

John Jay Homestead Site and Building Enhancements

Katonah, NY

Prepared for:

Beyer Blinder Belle Architects & Planners LLP

120 Broadway, 20th Floor
New York, NY 10271

March 2024, Revised May 2024

CHA Project No.:
80675

CHA

III Winners Circle,
Albany, NY 12205

This report has been prepared and reviewed by the following qualified engineers employed by CHA.

Report Prepared By:

Adam J. Bryant, P.E.

Geotechnical Engineer

Report Reviewed By:

Scott M. Doehla, P.E.

Senior Geotechnical Engineer

TABLE OF CONTENTS

SECTION **PAGE NUMBER**

TABLES

APPENDICES

1.0 INTRODUCTION

CHA was retained by Beyer, Blinder, Belle Architects & Planners, LLP to complete a geotechnical exploration and evaluation for the design of the brick cottage reconstruction at John Jay Homestead State Historic Site located at 400 Jay Street in Katonah, New York. The project site is shown on *Figure 1 - Site Location Map*, included in Appendix A.

The primary objectives of the exploration were to evaluate the subsurface conditions at the site and to provide geotechnical recommendations for the design of the proposed brick cottage reconstruction and paving of the existing access road.

2.0 SITE AND PROJECT DESCRIPTION

The project site is located in the John Jay Homestead State Historic Site in Katonah, New York. The John Jay Homestead State Historic Site is an approximately 62-acre site comprised of 10 buildings, including the original 1787 John Jay House, with access roads, stone walls, and wooded areas throughout the site. The project site consists of the brick cottage located east of the John Jay House, and an access road and open fields located to the north, east and south of the John Jay House. Wetland areas and a small pond are located to the south and east of the project site. Standing water was observed in the wetland area approximately 100 feet east of the existing access road in April 2024. NYS Route 22 is located to the south, and the Cross River Reservoir is located approximately 3,000 feet northeast of the project site. The ground surface at the project site slopes down from northwest to the southeast from about El. 470 feet to El. 440 feet based on a site survey. The ground surface at the brick cottage slopes down from the northwest to southeast between El. 470 feet to El. 467 feet. The brick cottage has a two-story section with a partially below grade basement of unknown height and a one-story area without a basement. The total approximate footprint of the brick cottage is 3,000 square feet. The brick cottage has a finished floor elevation (FFE) of El. 471.8 feet. An approximately 3-foot-tall stone wall is located to the north of the building. Photographs of the site are included in Appendix B.

The project involves the design of repairs to the existing brick cottage and an existing access road, a new access road, a parking area and stormwater improvements. The repairs to the brick cottage will include partial or full reconstruction of the foundations and basement walls. The existing main access road, proposed access road and parking lot will be paved with asphalt. The existing access road will not include cuts and will be constructed at grades similar to the existing grade. The new access road requires cuts of up to 2 feet and fills of up to 2 feet. The new parking area requires cuts of up to 3 feet and fills of up to 4 feet. The new parking area will have a retaining wall with a north to south orientation, dividing the parking lot in half. The retaining wall will have exposed heights ranging from 2 to 8 feet and a total length of approximately 200 feet. The parking lot area to the east of the retaining wall will have a ground surface elevation of approximately 449 feet and the area to the west will have a ground surface elevation of approximately 459 feet. Stormwater areas will consist of three bioretention ponds located to the east of the proposed new access road and parking area. The bioretention ponds will have footprints of approximately 2,500 to 5,500 square feet. Foundation work was originally being considered at the maintenance garage but was removed from the project scope by the client. Additional park access roads will be paved, the design of which is outside the scope of this report. The existing and proposed site features are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

3.0 SUBSURFACE EXPLORATION

The subsurface explorations and laboratory testing performed for this project are described in the following sections.

3.1 Boring Program

CHA conducted a subsurface exploration program consisting of fourteen total borings designated as B-1 through B-6, B-6A, B-7 through B-10, and B-101 through B-103. Borings B-1 through B-6, B-6A and B-7 through B-10 were completed between January 16 and 19, 2024. Borings B-101 through B-103 were completed on April 15, 2024. CHA retained Underground Surveying, LLC to perform a non-destructive, non-intrusive subsurface utility survey prior to drilling. Borings B-1 and B-2 were performed adjacent to the brick cottage and extended to depths of 20.9 to 22 feet. Boring B-3 was performed adjacent to the maintenance garage and extended to a depth of 22 feet. Borings B-4 and B-5 were performed along the existing access road to depths of 10 feet. Borings B-6, B-6A and B-7 through B-10 were performed for roadway and preliminary stormwater design purposes in the eastern portion of the site to depths of 12 feet. Boring B-7 is located in the vicinity of the parking area site retaining wall, which was added after the completion of the subsurface exploration. Borings B-101 through B-103 were performed for final stormwater design purposes in the eastern portion of the site to depths of 10.5 to 12 feet.

Borings B-1 through B-3 were located onsite by measuring from existing site features. Borings B-4 through B-6, B-6A, B-7 through B-10 and B-101 through B-103 were located onsite using a backpack GPS unit accurate to 1 meter. Ground surface elevations at boring locations were estimated based on interpolation between contours on the site survey and are based on NAVD88. The locations and elevations should be considered accurate only to the degree implied by the method used to determine them. The approximate boring locations are shown on *Figure 2 – Subsurface Exploration Plan*, included in Appendix A.

New England Boring Contractors of Glastonbury, Connecticut was retained by CHA to advance the borings. The field exploration was performed under the observation of a CHA geotechnical engineer who confirmed proper drilling and sampling methods were utilized for the exploration, observed and described soil samples, prepared field logs documenting the subsurface conditions, and conducted infiltration testing.

The borings were advanced with a Mobile Drill B53 truck mounted drill rig and Mobile Drill B53 rubber track mounted drill rig using hollow stem augers (HSA) with an inside diameter of 4.25 inches or solid stem augers (SSA) with an inside diameter of 2.25 inches. Continuous split spoon sampling was generally performed to a depth of up to 12 feet below ground surface, and then at standard 5-foot intervals thereafter to the boring termination depths. Standard Penetration Testing (SPT) was utilized during split-spoon sampling in general accordance with ASTM International (ASTM) Standard D-1586 "Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils." The split spoon samples were advanced using an automatic 140 (±) pound hammer falling 30 (±) inches. "Blow counts" recorded on the boring logs indicate the penetration resistance for a 6-inch advancement of the split soon. Initially, the spoon is driven 6 inches to seat the sampler in undisturbed material. The number of blows required to drive the sampler the next 12 inches is taken as the SPT resistance or N-value. This value is indicative of the soil's in-place density or consistency. The final 6-inch increment that the spoon is driven is not included in the determination of the N-value. Boreholes B-1 through B-6 were backfilled with soil cuttings upon completion.

Infiltration tests were planned adjacent to borings B-6A, B-7 through B-10 and B-101 through B-103. Infiltration tests were not performed adjacent to B-8 through B-10 and B-101 through B-103 due to shallow groundwater. The infiltration tests conducted adjacent to B-6A and B-7 were designated as IT-6 and IT-7, respectively. Infiltration testing was conducted according to Appendix D of the 2022 New York State Stormwater Management Design Manual. After a presoak was conducted, water was added to the infiltration casing to set it to 24 inches above the bottom of the casing. The distance that the water within the casing dropped in an hour was measured and recorded. Water was added to bring the level back to 24 inches above the bottom of casing for the next testing interval. The test was terminated after five test intervals. Infiltration test holes were backfilled with soil cuttings upon completion. A New York City Department of Environmental Conservation (NYCDEP) representative was onsite to oversee the infiltration testing.

Water level observations were made during and upon completion of drilling. Observation wells were installed in borings B-6A and B-7 through B-10 to depths of 12 feet. Details of the observation well construction are shown on the boring logs included in Appendix C. The water levels within the wells were recorded during the subsurface exploration, and are included in *Section 4.3 – Groundwater* Conditions and on the boring logs in Appendix C.

3.2 Laboratory Analysis

Select soil samples were submitted for laboratory analysis to confirm visual descriptions. Testing included five tests for particle-size analysis (ASTM D422), one test for Atterberg Limits analysis (ASTM D4318) and one test for water content of soil (ASTM D2216). The results of the laboratory testing are included in Appendix D.

4.0 SUBSURFACE CONDITIONS

Subsurface conditions at the site were assessed based on a review of published geologic maps and the results of the subsurface exploration performed on-site and are summarized below.

4.1 Regional Geology

According to the Surficial *Geologic Map of New York – Lower Hudson Sheet*, (Cadwell, D.H. 1991), the surficial soil at the site consists of glacial till.

According to the *Geologic Map of New York – Lower Hudson Sheet*, (Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., 1970), the bedrock underlying the site consists of Fordham Gneiss.

4.2 Subsurface Stratigraphy

Subsurface conditions encountered in individual borings are detailed and described on the boring logs included in Appendix C. Subsurface conditions can generally be described as follows, in order of increasing depth:

<u>Topsoil</u> – Topsoil was encountered at the ground surface in borings B-1 through B-3, B-6 through B-10 and B-101 through B-103 and extended to depths ranging from 0.1 to 0.2 feet.

<u>Fill</u> – A layer of existing fill was encountered below the topsoil in borings B-1 and B-2 and at the ground surface in borings B-4 and B-5 and extended to depths ranging from 2 to 4 feet. The layer consisted of varying amounts of fine to coarse sand, silt, fine to coarse gravel, wood and organics. The fill was brown or gray and visually classified as moist, and some near-surface samples appeared frozen. The SPT N-values ranged from 4 to 74, indicating a very loose to very compact density, however, the presence of frost likely affected N-values within the samples taken at shallow depths.

Silt/Clayey Silt/Silty Clay – A layer of silt, clayey silt or silty clay was encountered below the topsoil layer in boring B-3, B-6, B-7, and B-101 through B-103, and below the fill in borings B-1 and B-5 and extended to depths ranging from 2 to 6 feet. The layer consisted of silt, clayey silt, or silty clay with varying amounts of fine to coarse sand, fine gravel and organics. The soil was brown and visually classified as moist. The SPT N-values ranged from 2 to 8, indicating a medium stiff consistency for cohesive samples and a very loose to loose density for cohesionless samples.

Glacial Till – Glacial till was encountered below the topsoil layer in borings B-8 through B-10, below the fill in borings B-2 and B-4, below the silt, clayey silt and silty clay layer in borings B-1, B-3, B-5 through B-7 and B-101 through B-103. The glacial till layer extended to depths ranging from 10 to 22 feet. Borings B-2, B-4 through B-10 and B-101 through B-103 terminated within the glacial till layer. The layer generally consisted of various proportions of fine to coarse sand, fine to coarse gravel, silt, clay and organics. The soil was brown and visually classified as moist to wet. The SPT N-values ranged from 5 to split spoon refusal, indicating a very stiff to hard consistency for cohesive samples and a loose to very compact density for cohesionless samples.

Completely Weathered Rock – Completely weathered rock was encountered below the glacial till layer in borings B-1 and B-3 and extended to depths of 20.9 to 22 feet. Borings B-1 and B-3 terminated within the completely weathered rock. The layer consisted of fine to coarse sand with little silt and trace fine gravel. The soil was brown and visually classified as wet. The SPT N-values ranged from 85 to split spoon refusal, indicating a very compact density.

4.3 Groundwater Observations

Table 1 summarizes the observation well measurements.

Table 1: Groundwater Observation Well Measurements

Boring ID	Surface Elevation (Feet)	Screen Interval Elevation (Feet)	Date	Water Depth (Feet)	Water Elevation (Feet)
B-6A	459.5	447.5 to 452.5	1/17/2024	11.7	447.8
			1/18/2024	11.7	447.8
			1/19/2024	11.7	447.8
			4/15/2024	12.4	447.1
			4/16/2024	12.4	447.1
B-7	451.0	439.0 to 444.0	1/18/2024	7.0	444.0
			1/19/2024	7.3	443.7
			4/15/2024	8.2	442.8
			4/16/2024	7.9	443.1
B-8	451.0	439.0 to 444.0	1/18/2024	9.1	441.9
			1/19/2024	3.5	447.5
			4/15/2024	0.1	450.9
			4/16/2024	0.1	450.9
B-9	449.5	437.5 to 442.5	1/18/2024	1.1	448.4
			1/19/2024	0.8	448.7
			4/15/2024	0.7	448.8
			4/16/2024	0.7	448.8
B-10	448.5	436.5 to 441.5	1/18/2024	4.2	444.3
			1/19/2024	3.0	445.5
			4/15/2024	2.5	446
			4/16/2024	2.8	445.7

Groundwater levels were estimated based upon measurements or observed soil sample moisture content in the remaining boreholes during drilling operations and at the completion of drilling. These estimates are indicated on the boring logs included in Appendix C. Groundwater was estimated at depths ranging from 0.4 to 13.2 feet during drilling. Standing water was observed at the ground surface at boring B-101. The boreholes were only open for a short duration and seasonal factors such as temperature and precipitation affect groundwater levels. For these reasons, long-term groundwater levels may differ from those described in this report.

4.4 Infiltration Test Results

NYCDEP requires two phases of subsurface exploration and testing for stormwater management design. Borings for preliminary design consisted of B-6, B-6A and B-7 through B-10 and borings for final design consisted of B-101 through B-103. Infiltration testing was not performed at the B-8, B-9, B-10, B-101, B-102 and B-103 locations due to shallow groundwater. The results of the testing adjacent to borings B-6A and B-7 are outlined in Table 2.

Table 2: Infiltration Test Results

Boring Location	Depth Performed (ft)	Approx. Elevation Performed (ft)	Observed Infiltration Rate (in/hour)				
			Infiltration Test Run No.				
			1	2	3	4	5
IT-6A	2.0	457.5	0.0	0.0	0.0	0.0	0.0
IT-7	2.0	449.0	0.0	0.0	0.0	0.0	0.0

5.0 GEOTECHNICAL RECOMMENDATIONS

The following sections provide geotechnical recommendations for design of the project. These recommendations are based on our review of the results of the subsurface exploration.

5.1 Shallow Foundations

Shallow foundations are recommended for support of the reconstruction of the existing brick cottage and the parking area site retaining wall. The foundations should bear on the natural clayey silt or glacial till soil. Spread footings should be designed based on a maximum net allowable bearing capacity of 3 kips per square foot (ksf). Foundations should be founded at a minimum depth of 4.0 feet below finished grade to provide frost protection. We recommend that isolated footings be a minimum of 3.0 feet wide and continuous strip footings be a minimum of 18 inches wide.

Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. Foundation excavations should be backfilled with structural fill in accordance with the placement and compaction procedures included in *Section 5.6 - Structural Fill*.

Footing subgrade shall be protected from freezing during construction. Any disturbed, frozen or softened subgrade should be removed and replaced with structural fill as required to minimize detrimental impacts to foundation performance.

The natural soil is moisture sensitive and prone to disturbance when wet or when exposed to excessive foot traffic. Foundations should be constructed as soon as possible after excavation to minimize the risk of disturbance to the bearing surface by exposure to precipitation or other adverse conditions. To protect the footing subgrade and to provide a stable working surface a minimum of 6-inches of crushed stone over separation geotextile fabric or a 2-inch to 3-inch concrete mud mat should be placed below the footing subgrade. The separation geotextile shall be a non-woven geotextile with an apparent opening size (AOS) equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. Crushed stone should consist of a 50:50 mix of NYSDOT size designation No. 1 and No. 2 crushed stone.

A detailed settlement analysis was beyond the scope of this report. However, based on the information obtained during the subsurface exploration and the recommendations outlined in this report, we anticipate that total foundation settlement will be less than 1 inch, with differential settlement of about 1/2 inch across a distance of 20 feet. These estimates are based on the assumption that foundations are constructed as recommended herein and that proper site preparation and construction monitoring is performed.

5.2 Lateral Earth Pressures

The new basement walls and the parking area site retaining wall should be designed to resist lateral soil pressure as well as surcharges from adjacent loads. Basement walls restrained against lateral movement should be designed to resist at-rest earth pressures.

New basement walls and the parking area site retaining wall should be backfilled with structural fill meeting the requirements of *Section 5.6 – Structural Fill* for a lateral distance equal to at least one-half of the wall height. Walls backfilled with structural fill should be designed to resist lateral earth pressures based on the following soil properties:

- Total Unit Weight 125 pcf
- Angle of Internal Friction 32 Degrees
- Coefficient of At-Rest Earth Pressure[1] 0.47
- Coefficient of Active Earth Pressure[1] 0.31
- Coefficient of Sliding (Mass concrete on Natural Soil) 0.3

Notes:
1. Earth pressure coefficients assume level backfill behind walls and should be adjusted if non-level backfill is proposed.

Design for new basement walls should incorporate drainage measures to prevent hydrostatic build-up and to provide positive drainage. Drainage measures should include a minimum 1-foot-thick horizontal layer of drainage stone from the surrounding soil by a separation geotextile having an AOS equal to or smaller than the U.S. Standard sieve size of 70, such as Mirafi 160N. A prefabricated drainage board may be utilized in lieu of the crushed stone layer. New basement walls that do not include drainage features should be designed for full hydrostatic pressure.

5.3 Pavement

The existing fill, natural clayey silt and silt and glacial till soils anticipated at pavement subgrade elevation are suitable for support of the proposed paved main access road, additional new access road and proposed parking area. The flexible pavement section should be designed using a California Bearing Ratio (CBR) of 5. The anticipated subgrade soils contain a significant amount of fine-grained soil and are poor draining. This soil is considered susceptible to frost heave, particularly if water is available for formation of ice lenses. Subbase course drainage is essential for successful pavement performance and longevity. The subbase course should be maintained in a drained condition at all times. Underdrains should be constructed along portions of the proposed new access road and consist of 4-inch diameter drain, spaced at 15 feet and drained to positive outlet. The underdrains should be a minimum of two feet below the proposed final grade and should be located in the access road areas that have a finished grade of less than or equal to El. 250 feet. Along the existing main access road, drainage may consist of either installing underdrains or sloping the subgrades to planned draining systems or otherwise.

The subgrade should be prepared in accordance with *Section 5.5 – Site and Subgrade Preparation*. The pavement section should include an aggregate subbase course such as NYSDOT Type 2 Subbase. The subbase along the existing access road should be underlain by a woven separation and stabilization geotextile. The geotextile should have an AOS equal to or smaller than the U.S. Standard sieve size of 40, such as Mirafi 600X.

5.4 Seismic Site Classification and Design Parameters

Based on the site location, and in accordance with the 2020 Building Code of New York State (NYSBC) Section 1613, the following spectral response accelerations should be used for seismic design:

- Mapped Spectral Response Acceleration at Short Periods (S_s) 0.27g
- Mapped Spectral Response Acceleration at 1 Second Period (S_1) 0.06g

The location based spectral response accelerations are based on seismic Site Class B and must be adjusted for the project site class based on subsurface conditions. Site class D is recommended based on the subsurface conditions. In accordance with section 1613 of the NYSBC the following seismic design coefficients shall be used:

- Site Coefficient F_a..1.6
- Site Coefficient F_v..2.4

The potential for earthquake induced soil liquefaction was not required based on the subsurface conditions encountered and seismic design category of B for the project site.

5.5 Site and Subgrade Preparation

The areas within the improvements shall be stripped of any vegetation, topsoil and other deleterious materials. Subsequent to excavating to proposed grades, the exposed subgrade should be proofrolled with a smooth drum roller with a minimum static weight of 10 tons. The roller should operate in its vibratory mode, and complete at least six passes over the subgrade at a speed not exceeding 3 feet per second (fps). Areas which pump or weave during proof rolling shall be undercut by a minimum of 12 inches and stabilized with structural fill meeting the requirements of *Section 5.6 - Structural Fill*. If the vibration roller tends to "bring up" moisture, the subgrade should be proof rolled with the roller operating in the static mode.

5.6 Structural Fill

Structural fill should be used for backfilling foundation excavations, for raising grade behind he site retaining wall, and overexcavations. Structural fill shall consist of sound, durable, non-plastic sand and gravel, free of stumps, roots, organics, and any frozen or deleterious materials.

Structural fill shall be placed in loose lifts not exceeding 8 inches in thickness and should be compacted to at least 95 percent of the maximum laboratory dry density as determined by the modified Proctor test (ASTM D-1557). Structural fill shall conform to the gradation requirements in Table 3.

Table 3: Gradation Requirements for Structural Fill

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

The on-site soil generally does not meet the requirements for Structural Fill.

5.7 Groundwater and Control of Water

Groundwater may be encountered when excavating during foundation construction and when excavating to establish roadway subgrades. At the brick cottage, a design groundwater elevation of 465 feet is recommended. At the existing access road, a design groundwater elevation of 448 feet is recommended. At proposed parking area, design groundwater elevations of 448 feet for the western side and 444 feet for the eastern side and site retaining wall are recommended. At the new access road, a design groundwater elevation of 449 feet is recommended. Project specifications should require that groundwater be maintained at a minimum depth of 2.0 feet below the excavation bottom at all times. It is the responsibility of the contractor to determine the most appropriate dewatering methods and to maintain dry conditions so that foundation construction may be completed in the dry.

6.0 EXCAVATIONS

All excavations should be performed in accordance with the Occupational Safety and Health Administration (OSHA) standards, and applicable state and local codes. Where adequate sloping or benching is not possible, excavation support should be provided. The design of a temporary excavation system shall be performed by a registered Professional Engineer licensed in the State of New York.

7.0 OBSERVATION DURING CONSTRUCTION

A qualified geotechnical engineer should carefully inspect all excavations, backfilling, and final bearing surfaces for foundations to ascertain that subgrades have been properly prepared. The inspection of soil subgrades should include probing of select areas to confirm density. The materials used as fill should be tested by a qualified soils laboratory to verify they meet the specified gradations and to determine their optimum moisture content and maximum dry density for compaction. In-place density tests should be performed to verify that compaction methods and equipment achieve the required densities.

8.0 CLOSURE

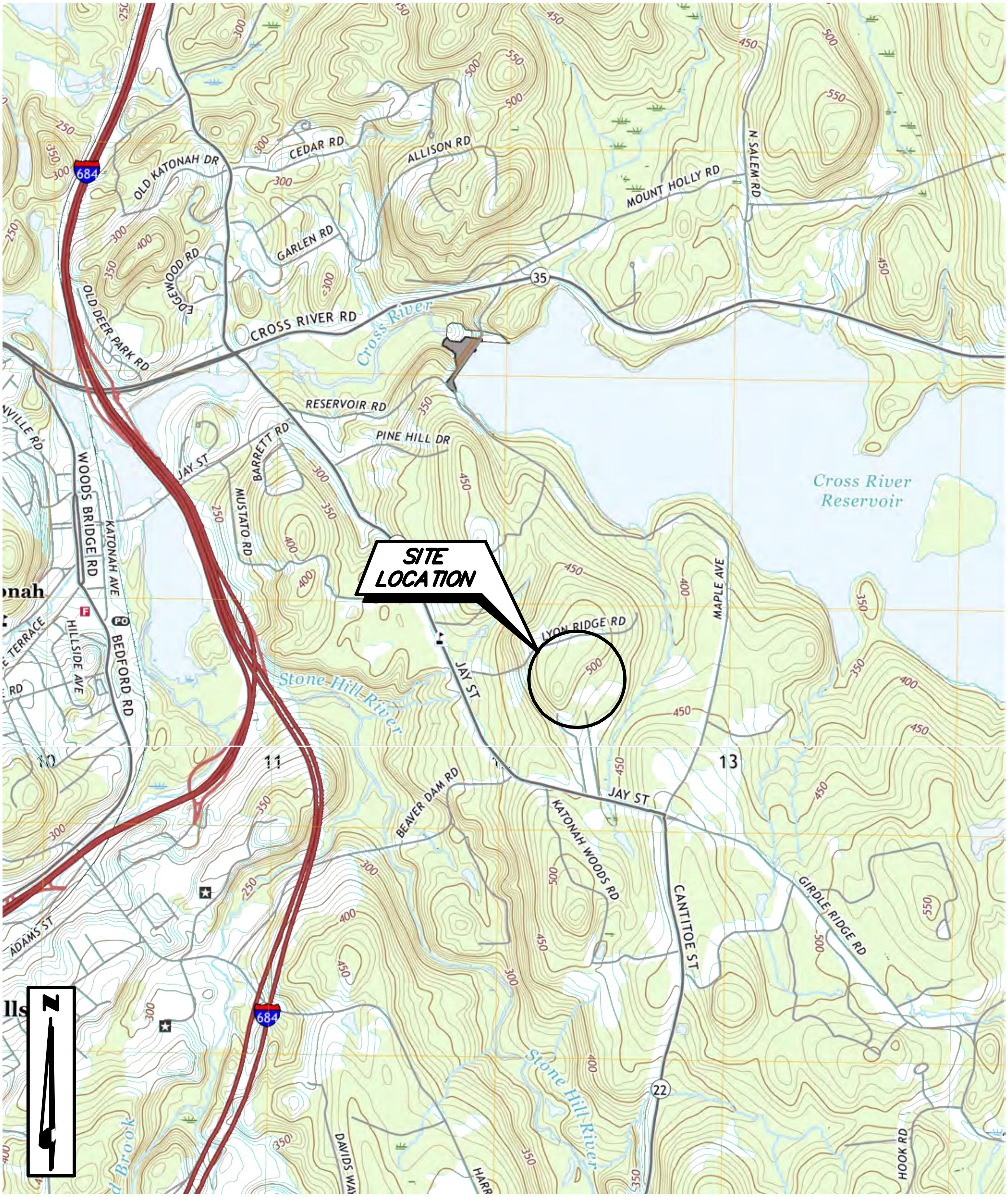
The geotechnical recommendations presented in this report are based, in part, on project and subsurface information available at the time this report was prepared and in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Some variation of subsurface conditions may occur between locations explored that may not become evident until construction. Depending on the nature and extent of the variations, it may be necessary to re-evaluate the data presented in this report.

This report has been prepared solely for design purposes and shall not be incorporated by reference of other means in the Contract Documents. If this report is included in the Contract Documents, it shall be for information only. Specifications shall take precedence.

CHA does not accept responsibility for designs based upon our recommendations unless we are engaged to review the final plans and specifications to determine whether any changes in the project affect the validity of our recommendations and whether our recommendations have been properly implemented in the design.

APPENDIX A

FIGURES



SOURCE: U.S.G.S. 7.5' Topographic
QUADRANGLES: CROTON FALLS AND MOUNT KISCO, NY

SCALE: 1"=2000'

CHA
III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 · www.chacompanies.com

SITE LOCATION MAP

JOHN JAY HOMESTEAD STATE HISTORIC SITE
KATONAH, NEW YORK

PROJECT NO. 080675

DATE: 05/2024

FIGURE 1

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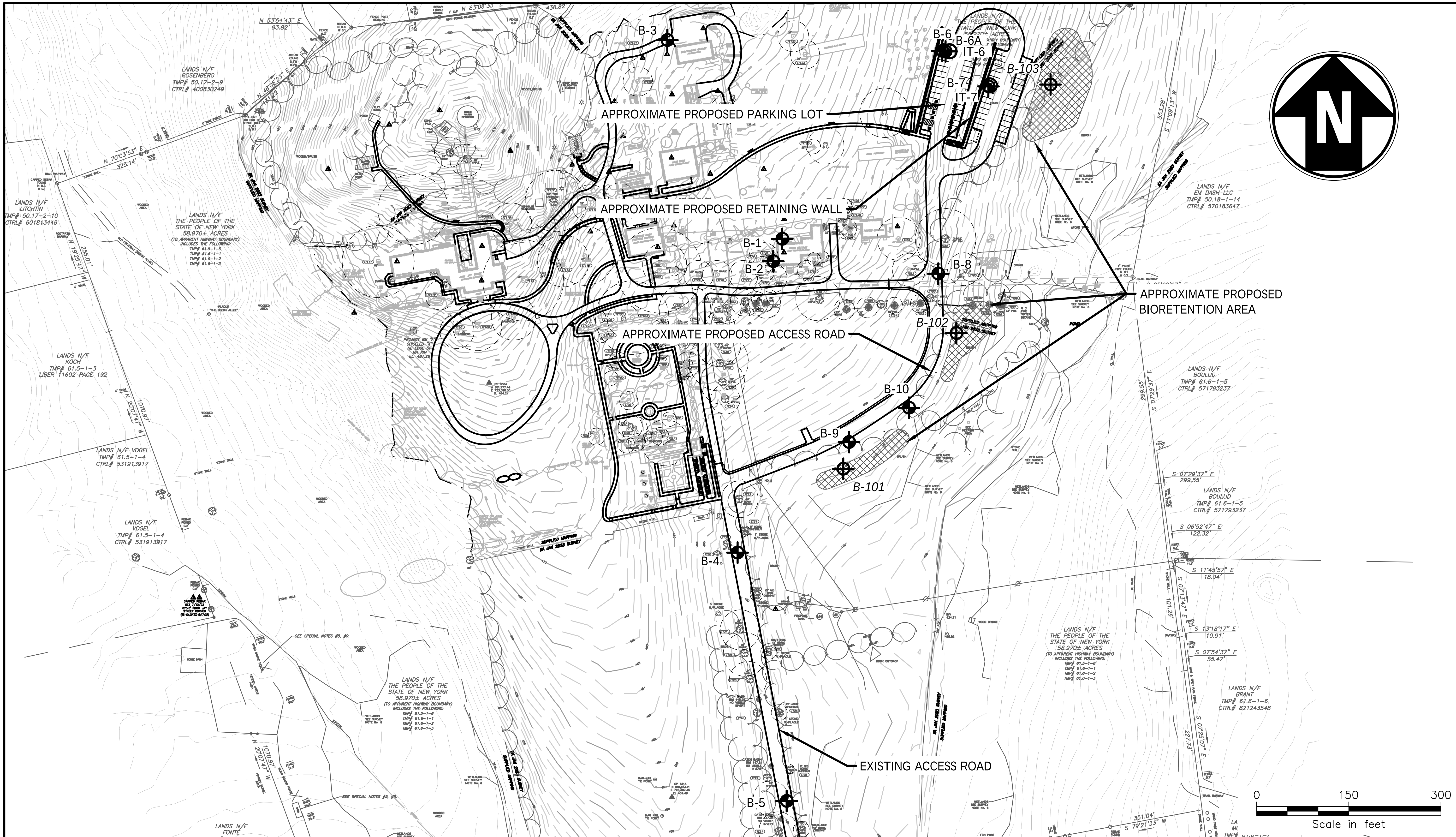

LEGEND

B-1 APPROXIMATE JANUARY 2024 BORING LOCATION

IT-6 APPROXIMATE JANUARY 2024 INFILTRATION TEST LOCATION

B-101 APPROXIMATE APRIL 2024 BORING LOCATION

CHA

III Winners Circle, PO Box 5269
Albany, NY 12205-0269
518.453.4500 • www.chacompanies.com

SUBSURFACE EXPLORATION PLAN

JOHN JAY HOMESTEAD STATE HISTORIC SITE
KATONAH, NEW YORK

PROJECT NO. 080675

DATE: 05/2024

FIGURE 2

File: V:\PROJECTS\ANY\K6\080675.000\09_DESIGN\DRAWINGS\GEO\080675_BLP.DWG
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APPENDIX B

PHOTOGRAPHS

1

Drilling operations at boring B-1, looking south

2

Drilling operations at boring B-2, looking south

CHA	**John Jay Homestead Site and Building Enhancements** **Katonah, NY**
CHA # 80675	January 2024 – April 2024

3

Drilling operations at boring B-5, looking northwest

4

Groundwater observation well and infiltration casing installed at boring B-6A, looking west

5

Drilling operations at boring B-8, looking southeast

6

Groundwater observation well installed at boring B-10, looking southeast

7

Drilling operations at boring B-101, looking east

8

Drilling operations at boring B-103, looking east

APPENDIX C

BORING LOGS

LEGEND TO SUBSURFACE LOGS

SAMP./CORE NUMBER	SAMP. ADV(ft) LEN CORE (ft)	RECOVERY (ft)	Blows per 6" on Split Spoon Sampler	"N" VALUE or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	Remarks on Character of Drilling, water return, etc	WATER LEVELS AND/OR WELL DATA
S1	2.0	1.8	2-3-4-5	7				f. SAND, Some Silt, trace f. gravel, brown, loose, moist (SM)	100		
R1	2.0	2.0	N/A	88%				Mica SCHIST, gray, soft, slightly weathered, closely fractured, good RQD			
1	2	3	4	5	6	7	8	9 / 10	11	12	13

Subsurface Logs present material classifications, test data, and observations from subsurface investigations at the subject site as reported by the inspecting geologist or engineer. In some cases, the classifications may be made based on laboratory test data when available. It should be noted that the investigation procedures only recover a small portion of the subsurface materials at the site. Therefore, actual conditions between borings and sampled intervals may differ from those presented on the Subsurface Logs. The information presented on the logs provide a basis for an evaluation of the subsurface conditions and may indicate the need for additional exploration. Any evaluation of the conditions reported on the logs must be performed by Professional Engineers or Geologists.

1. SAMP./CORE NUMBER – Samples are numbered for identification on containers, laboratory reports or in text reports.

2. SAMP.ADV/LEN.CORE – Length of sampler advance or length of coring run measured in feet.

3. RECOVERY – Amount of sample actually recovered after withdrawing sampler or core barrel from bore hole measured in feet.

4. SAMPLE BLOWS/6" – Unless otherwise noted, blow counts represent values obtained by driving a 2.0" (O.D.), 1-3/8" (I.D.) split spoon sampler into the subsurface strata with a 140 pound weight falling 30" as per ASTM International D1586. After an initial penetration of 6" to seat the sampler into undisturbed material, the sampler is then driven an additional 2 or 3 six inch increments. Refusal is defined as a resistance greater than 50 blows per 6" of penetration.

5. "N" Value or RQD % – "N" VALUE – The sum of the second and third sample blow increments is generally termed the Standard Penetration Test (SPT) "N" value. Refusal (R) is defined as a resistance greater than 50 blows for 6 inches of penetration. CORE RQD – Core Rock Quality Designation, RQD, is defined as the summed length of all pieces of core equal to or longer than 4 inches divided by the total length of the coring run. Fresh, irregular breaks distinguishable as being caused by drilling or recovery operations are ignored and the pieces are counted as intact lengths. RQD values are valid only for cores obtained with NX size core barrels.

6. SAMPLE – Graphical presentation of sample type and advance or core run length. See Table 1.

7. DEPTH – Depth as measured from the ground surface in feet.

8. GRAPHICS – Graphical presentation of subsurface materials. See Table 4. Dual soil classification and rock graphics may vary and are not shown on Table 4.

9. DESCRIPTION AND CLASSIFICATION – SOIL – Recovered samples are visually classified in the field by the supervising geologist or engineer unless otherwise noted. Particle size and plasticity classification is based on field observations, and using the Unified Soil Classification System (USCS). See Table 4. USCS symbols are presented in parentheses following the soil description. Where necessary, dual symbols may be used for combinations of soil types. Relative proportions, by weight and/or plasticity, are described in general accordance with "Suggested Methods of Test for Identification of Soils" by D.M. Burmister, ASTM Special Publication 479, 6-1970. See Table 2. Soil density or consistency description is based on the penetration resistance. See Table 3. Soil moisture description is based on the observed wetness of the soil recovered being moist or wet. Water introduced into the boring during drilling may affect the moisture content of the materials. Other geologic terms may also be used to further describe the subsurface materials. ROCK – Rock core descriptions are based on the inspector's observations and may be examined and described in greater detail by the project engineer or geologist. Terms used in the description of rock core are presented in Table 5.

10. DIVISION LINES – Division lines between deposits are based on field observations and changes in recovered material. Solid lines depict contacts between two deposits of different geologic depositional environment of known elevation. Dashed lines represent estimated elevation of contacts between two deposits of different geologic depositional environment. Dotted lines depict transitions of deposits within the same depositional environment, such as grain size or density.

11. ELEVATION – Elevation of strata changes in feet.

12. REMARKS – Miscellaneous observations.

13. WATER LEVELS & WELL DATA – Hollow water level symbol, if present, represents level at which first saturated sample or water level was encountered. Solid water level symbol, if present, depicts the most probable static water elevation at the time of drilling or as measured in an installed observation well at a later date. Subsurface water conditions are influenced by factors such as precipitation, stratigraphic composition, and drilling/coring methods. Conditions at other times may differ from those described on the logs. For graphical presentation of observation/monitoring well construction, see Table 6. Elevations of changes in construction are noted at the bottom of each section.

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LEGEND TO SUBSURFACE LOGS

TABLE 1
TYPICAL SAMPLE TYPES

- SPLIT SPOON (1 3/8" I.D.)
- NX SIZE ROCK CORE
- SHELBY TUBE "UNDISTURBED"
- AUGER SAMPLE

TABLE 2
SAMPLE MATERIAL PROPORTIONS

ADJECTIVE	PERCENTAGE OF SAMPLE
"and"	35% – 50%
"some"	20% – 35%
"little"	10% – 20%
"trace"	< 10%

Standard split spoon samples may not recover particles with any dimension larger than 1 3/8". Therefore, reported gravel percentages may not reflect actual conditions.

TABLE 3
DENSITY/CONSISTENCY

GRANULAR SOILS		COHESIVE SOILS	
Blows/ft.	Density	Blows/ft.	Consistency
< 5	Very Loose	< 2	Very Soft
5–10	Loose	2–4	Soft
11–30	Med. Compact	5–8	Med. Stiff
31–50	Compact	9–15	Stiff
> 50	Very Compact	16–30	Very Stiff
		> 30	Hard

TABLE 4
USCS CLASSIFICATION, PARTICLE SIZE, & GRAPHICS

	MAJOR PARTICLE SIZE DIVISION	USCS SYMBOL	GRAPHIC SYMBOL	GENERAL DESCRIPTION
COARSE GRAINED SOILS	GRAVEL Coarse: 3"–3/4" Fine: 3/4"–#4 Classification based on > 50% being gravel	GW		Well graded gravels, gravel & sand mix.
		GP		Poorly graded gravels, gravel & sand mix.
		GM		Gravel, sand and silt mix.
		GC		Gravel, sand and clay mix.
	SAND Coarse: #4–#10 Med.: #10–#40 Fine: #40–#200 Classification based on > 50% being sand	SW		Well graded sand, sand & gravel mix.
		SP		Poorly graded sand, sand & gravel mix.
		SM		Sand and silt mix.
		SC		Sand and clay mix.
FINE GRAINED SOILS	SILT & CLAY Classification based on > 50% passing #200 sieve.	ML		Inorganic silt, low plasticity.
		CL		Inorganic clay, low plasticity.
		OL		Organic silt/clay, low plasticity.
		MH		Inorganic silt, high plasticity.
		CH		Inorganic clay, high plasticity.
		OH		Organic silt/clay, high plasticity.
ORGANIC SOILS		Pt		Peat and other highly organic soils.
FILL		Fill		Miscellaneous fill materials.

TABLE 5
ROCK CLASSIFICATION TERMS

HARDNESS:

Very Soft	Carves
Soft	Grooves with knife
Med. Hard	Scratched easily with knife
Hard	Scatched with difficulty
Very Hard	Cannot be scratched with knife

WEATHERING:

Fresh	Slight or no staining of fractures, little or no discoloration, few fractures.
Slightly	Fractures stained, discoloration may extend into rock 1", some soil in fractures.
Moderately	Significant portions of rock stained and discolored, soil in fractures, loss of strength.
Highly	Entire rock discolored and dull except quartz grains, severe loss of strength.
Complete	Weathered to a residual soil.

BEDDING:		FRACTURE SPACING:		RQD:	
Massive	> 40"	Massive/V. Wide	> 6'	Excellent	> 90%
Thick	12' – 40"	Thick/Wide	2' – 6'	Good	76% – 90%
Medium	4" – 12"	Med./Med.	8" – 24"	Fair	51% – 75%
Thin	< 4"	Thin/Close	2 1/2" – 8"	Poor	25% – 50%
		V. Thin/V. Close	< 2 1/2"	V. Poor	< 25%

TABLE 6
WELL CONSTRUCTION

- SOLID PVC PIPE
- SCREENED PVC PIPE
- STAINLESS STEEL SCREENED PIPE
- FINE GRAINED WASHED SAND
- WASHED SAND
- BENTONITE PLUG
- AIR ENTRAINED CEMENT
- NATURAL SOIL/ ROCK FILL
- BENTONITE/ CEMENT GROUT

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John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-1

PROJECT NUMBER: 080675 4/26/2024

LOCATION: Katonah, New York	DRILL FLUID: None; DRILLING METHOD: 4.25" HSA; ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic; DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 1/18/2024 11:05:00 AM; FINISH: 1/18/2024 12:10:00 PM
DRILLER: D. DeAngelis; INSPECTOR: C. Hourigan	
CHECKED BY: CWS	
COORDS. NORTHING: 882013.49 EASTING: 723564.52	
SURFACE ELEV: 470.0 (ft; Estimated) DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-18-24	12:10 PM	Completion	10.7	20	20.9
1-18-24	1:15 PM	Completion	7.9	20	20.9

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
						TOPSOIL			
S-1	2	0.8	10-5-3-2	8		**SILT**, Some f.m.c. Sand, trace organics, brown, loose, moist **(FILL)**			
S-2	2	1.2	2-2-3-3	5		**f.m.c. SAND**, Some Silt, brown, loose, moist **(FILL)**			
S-3	2	1.4	5-5-3-3	8	5	**Clayey SILT**, Some f.m.c. Sand, brown, medium stiff, moist **(ML)**	465		
S-4	2	1.5	8-16-13-9	29		**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**			▽
S-5	2	1.3	15-34-25-19	59		**f.m.c. SAND**, Some Silt, trace f.c. gravel, brown, very compact, moist **(SM-TILL)**		Water level observations made during drilling may not represent static groundwater conditions.	
S-6	2	0.7	14-20-18-16	38	10	**f.m.c. SAND**, little silt, brown, compact, brown, moist **(SM-TILL)**	460		
S-7	2	1	6-9-10-14	19	15	**f.c. GRAVEL**, Some Silt, Some f.m.c. Sand, brown, medium compact, wet **(GM-TILL)**	455		
S-8	0.9	0.9	51-100/0.4'	R	20	**f.m.c. SAND**, little silt, brown, very compact, wet **(COMPLETELY WEATHERED ROCK)**	450		
						End of Boring at 20.9 ft			

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-2

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 4.25" HSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: CWS	HAMMER TYPE: Automatic
COORDS. NORTHING: 881975.48	EASTING: 723552.39
SURFACE ELEV: 469.5 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 1/18/2024 1:45:00 PM	FINISH: 1/18/2024 2:40:00 PM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-18-24	2:15 PM	Estimated	10	8	12
	1-18-24	2:40 PM	Completion	12.3	20	22

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
						TOPSOIL			
S-1	2	1	2-2-2-3	4		**SILT**, Some f.m.c. Sand, trace f. gravel, trace organics, trace wood, brown, very loose, moist **(FILL)**			
S-2	2	1.2	2-2-3-7	5		**SILT**, little f.m.c. sand, trace organics, brown, loose, moist **(FILL)**			
S-3	2	1.2	10-10-15-13	25	5	**f.m.c. SAND**, Some Silt, little f.c. gravel, brown, medium compact, moist **(SM-TILL)**	465		
S-4	2	1.4	13-13-14-18	27		**Similar Soil (SM-TILL)**			
S-5	2	0.4	19-16-9-8	25		Grades to little silt **(SM-TILL)**	460		
S-6	2	1.7	5-11-12-12	23	10	**f.m.c. SAND**, And Silt, little f. gravel, brown, medium compact, wet **(SM-TILL)**		Water level estimated based on visual soil sample moisture content. Water level observations made during drilling may not represent static groundwater conditions.	▽
							455		
S-7	2	1.4	11-17-10-8	27	15	Grades to little silt, trace f. gravel **(SM-TILL)**			
							450		
S-8	2	0.4	18-17-68-47	85	20	**f.m.c. SAND**, Some Silt, trace f.c. gravel, brown, very compact, wet **(SM-TILL)**			
						End of Boring at 22 ft	445		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-3

LOCATION: Katonah, New York	DRILL FLUID: None	DRILLING METHOD: 4.25" HSA	ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic	DRILL RIG: Rubber Track ATV	
CONTRACTOR: New England Boring Contractors	START: 1/19/2024 9:25:00 AM	FINISH: 1/19/2024 11:15:00 AM	
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan		
CHECKED BY: CWS			
COORDS. NORTHING: 882335.02	EASTING: 723379.97		
SURFACE ELEV: 487.0 (ft; Estimated)	DATUM: NAD83 / NAVD88		

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-19-24	10:30 AM	Estimated	10	8	12
	1-19-24	11:15 AM	Completion	13.2	20	22
	1-19-24	12:30 PM	Completion	11.8	20	22

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
					0	**TOPSOIL**			
S-1	2	0.3	1-2-3-2	5		**SILT**, little f.m. sand, trace organics, brown, loose, moist **(ML)**			
S-2	2	0.8	6-5-4-8	9		**SILT**, Some f. Sand, trace f. gravel, brown, loose, moist **(ML-TILL)**	485		
S-3	2	1	12-19-24-24	43	5	**f.m.c. SAND**, Some Silt, Some f.c. gravel, brown, compact, moist **(SM-TILL)**			
S-4	2	1.5	34-31-26-57	57		Becomes very compact **(SM-TILL)**	480		
S-5	2	0.5	23-35-36-82	71		Grades to Some f.c. Gravel **(SM-TILL)**			
S-6	2	1	27-70-56-78	R	10	**f.m.c. SAND**, little silt, trace f. gravel, brown, very compact, wet **(COMPLETELY WEATHERED ROCK)**	475	Water level estimated based on visual soil sample moisture content. Water level observations made during drilling may not represent static groundwater conditions.	▽
S-7	2	1.5	76-45-40-37	85	15	**Similar Soil (COMPLETELY WEATHERED ROCK)**	470		
S-8	2	0.6	30-28-78-84	R	20	Grades to no f. gravel **(COMPLETELY WEATHERED ROCK)**	465		
					22	End of Boring at 22 ft			

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John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-4

PROJECT NUMBER: 080675 4/26/2024

LOCATION: Katonah, New York	DRILL FLUID: None / DRILLING METHOD: 2.25" SSA / ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic / DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 1/18/2024 10:00:00 AM / FINISH: 1/18/2024 10:35:00 AM
DRILLER: D. DeAngelis / INSPECTOR: C. Hourigan	
CHECKED BY: CWS	
COORDS. NORTHING: 881500.69 EASTING: 723494.50	
SURFACE ELEV: 450.0 (ft; Estimated) DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-18-24	10:35 AM	Completion	4	N/A	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	159-53-21-15	74				**f.m.c. SAND**, Some Silt, little f.c. gravel, gray, very compact, moist **(FILL)**			
S-2	2	0.6	12-9-9-7	18				**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**			
S-3	2	2	2-6-10-16	16		5		**f.m.c. SAND**, Some Silt, brown, medium compact, wet **(SM-TILL)**	445	Water level observations made during drilling may not represent static groundwater conditions.	▽
S-4	2	1.5	14-16-16-16	32				Becomes compact **(SM-TILL)**			
S-5	2	2	20-14-15-11	29				Grades to trace f.c. gravel, becomes medium compact **(SM-TILL)**			
						10		End of Boring at 10 ft	440		
						15			435		
						20			430		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-5

LOCATION: Katonah, New York	DRILL FLUID: None / DRILLING METHOD: 2.25" SSA / ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic / DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 1/17/2024 3:00:00 PM / FINISH: 1/17/2024 3:25:00 PM
DRILLER: D. DeAngelis / INSPECTOR: C. Hourigan	
CHECKED BY: CWS	
COORDS. NORTHING: 881096.64 EASTING: 723574.13	
SURFACE ELEV: 450.0 (ft; Estimated) DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-17-24	3:25 PM	Completion	3.1	N/A	10

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	SAMPLE	DEPTH (Feet)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
S-1	2	1	82-51-23-17	74				**f.m.c. SAND**, And f.c. Gravel, Some Silt, gray, very compact, moist **(FILL)**			
S-2	2	1.5	3-4-3-6	7				**Clayey SILT**, little f.m.c. sand, brown, medium stiff, moist **(ML)**		Water level observations made during drilling may not represent static groundwater conditions.	▽
S-3	2	1.1	17-22-20-20	42		5		**f.m.c. SAND**, little silt, brown, compact, wet **(SM-TILL)**	445		
S-4	2	1	18-24-23-24	47				Grades to trace f. gravel **(SM-TILL)**			
S-5	2	2	25-23-23-51	46				**Similar Soil (SM-TILL)**			
						10		End of Boring at 10 ft	440		
						15			435		
						20			430		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-6

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 882317.48 EASTING: 723827.65

SURFACE ELEV: 459.5 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None | DRILLING METHOD: 2.25" SSA | ROD SIZE: NW

HAMMER TYPE: Automatic | DRILL RIG: Rubber Track ATV

START: 1/16/2024 10:45:00 AM | FINISH: 1/16/2024 11:15:00 AM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
						TOPSOIL			
S-1	2	0.3	1-2-1-2	3		**SILT**, little f.m.c. sand, trace organics, brown, very loose, moist **(ML)**			
S-2	2	1.4	5-8-9-8	17		**Clayey SILT**, little f.m.c. sand, trace organics, brown, medium compact, moist **(ML-TILL)**			
S-3	1	0.5	17-50/0.5'	R	5	**f.m.c. SAND**, Some Silt, trace f. gravel, brown, very compact, moist **(SM-TILL)**	455		
						End of Boring at 5.5 ft		SSA refusal at 5.5' due to possible boulder. Offset 4 feet east to B-6A.	
					10		450		
					15		445		
					20		440		
							435		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-6A

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: CWS	HAMMER TYPE: Automatic
COORDS. NORTHING: 882316.50	EASTING: 723832.82
SURFACE ELEV: 459.5 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 1/16/2024 11:15:00 AM	FINISH: 1/16/2024 11:45:00 AM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-19-24	1:40 PM	Static	11.7	12	12
4-15-24	8:45 AM	Static	12	12	12
4-16-24	9:15 AM	Static	12	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					5		455	
						SILT, And f.m.c. Sand, brown, medium compact, moist **(ML-TILL)**		Refer to B-6 for subsurface data to a depth of 5.5 feet.
S-1	2	1	10-10-13-15	23				
S-2	2	2	14-16-15-16	31		Becomes compact **(ML-TILL)**		
					10		450	
S-3	2	2	10-12-13-16	25		Becomes medium compact **(ML-TILL)**		Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 2 feet. Water level observations made during drilling may not represent static groundwater conditions.
						End of Boring at 12 ft		
					15		445	
					20		440	
							435	

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-7

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 882259.83 EASTING: 723902.72

SURFACE ELEV: 451.0 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None | DRILLING METHOD: 2.25" SSA | ROD SIZE: NW

HAMMER TYPE: Automatic | DRILL RIG: Rubber Track ATV

START: 1/16/2024 1:35:00 PM | FINISH: 1/16/2024 2:10:00 PM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-19-24	1:45 PM	Static	7.3	12	12
4-15-24	8:40 AM	Static	8.2	12	12
4-16-24	9:10 AM	Static	7.9	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					0	**TOPSOIL**	451	
S-1	2	1	2-1-1-1	2		**SILT**, little f.m.c. sand, trace organics, brown, very loose, moist **(ML)**	450	
S-2	2	1.5	8-12-12-16	24	2	**f.m.c. SAND**, Some Silt, trace organics, brown, medium compact, moist **(SM-TILL)**		
S-3	2	0.8	8-10-16-16	26	5	**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**		
						Similar Soil (SM-TILL)	445	
S-4	2	1	10-16-14-16	30				
S-5	2	0.4	10-14-16-13	30		Grades to And Silt, becomes wet **(SM-TILL)**		Water level observations made during drilling may not represent static groundwater conditions.
					10	**Similar Soil (SM-TILL)**		Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 2 feet.
S-6	2	1	16-16-12-11	28			440	
					12	End of Boring at 12 ft		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-8

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 881955.04 EASTING: 723820.85

SURFACE ELEV: 451.0 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None | DRILLING METHOD: 2.25" SSA | ROD SIZE: NW

HAMMER TYPE: Automatic | DRILL RIG: Rubber Track ATV

START: 1/17/2024 9:30:00 AM FINISH: 1/17/2024 10:20:00 AM

WATER LEVEL OBSERVATIONS	DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
	1-19-24	1:45 PM	Static	3.5	12	12
	4-15-24	8:50 AM	Static	0.1	12	12
	4-16-24	9:20 AM	Static	0.1	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
						TOPSOIL		Water level observations made during drilling may not represent static groundwater conditions.
S-1	2	1.1	2-2-3-8	5		**SILT**, Some f.m.c. Sand, trace organics, brown, loose, moist **(ML-TILL)**	450	
S-2	2	1	8-10-10-13	20		Grades to no organics, becomes medium compact **(ML-TILL)**		
S-3	2	1.2	22-14-22-16	36	5	**f.m.c. SAND**, Some Silt, brown, compact, moist **(SM-TILL)**		
S-4	2	1.1	26-22-30-29	52		**SILT**, And f.m.c. Sand, brown, very compact, moist **(ML-TILL)**	445	
S-5	2	0.7	25-41-31-29	72		Grades to Some f.m.c. Sand **(ML-TILL)**		
S-6	2	2	28-32-40-44	72	10	Becomes wet **(ML-TILL)**	440	Installed observation well to a depth of 12 feet upon completion. Infiltration test set adjacent to the borehole at a depth of 3 feet. Test was not completed due to groundwater level observations after installation.
						End of Boring at 12 ft		
					15		435	
					20		430	

WATER LEVELS AND/OR WELL DATA

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-9

LOCATION: Katonah, New York

CLIENT: Beyer, Blinder, Belle Architects & Planners LLP

CONTRACTOR: New England Boring Contractors

DRILLER: D. DeAngelis INSPECTOR: C. Hourigan

CHECKED BY: CWS

COORDS. NORTHING: 881680.96 EASTING: 723675.63

SURFACE ELEV: 449.5 (ft; Estimated) DATUM: NAD83 / NAVD88

DRILL FLUID: None | DRILLING METHOD: 2.25" SSA | ROD SIZE: NW

HAMMER TYPE: Automatic | DRILL RIG: Rubber Track ATV

START: 1/17/2024 1:30:00 PM | FINISH: 1/17/2024 2:10:00 PM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-17-24	2:10 PM	Completion	2.7	N/A	12
1-18-24	9:20 AM	24 Hours	1.1	12	12
1-19-24	1:50 PM	Static	0.8	12	12
4-15-24	8:40 AM	Static	0.7	12	12
4-16-24	9:10 AM	Static	0.7	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					0	**TOPSOIL**	449.5	Water level observations made during drilling may not represent static groundwater conditions.
S-1	2	0.1	2-1-2-3	3				
S-2	2	1.5	3-7-18-26	25		**f.m.c. SAND**, Some Silt, brown, medium compact, moist **(SM-TILL)**		
S-3	2	0.7	20-15-10-9	25	5	**f.m.c. SAND**, Some Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**	445	
S-4	2	0.7	12-14-17-16	31		Becomes compact **(SM-TILL)**		
S-5	1	0.4	8-50/0.5'	R		Becomes very compact **(SM-TILL)**		
S-6	2	0.8	16-19-19-40	38	10	Grades to little silt, becomes compact **(SM-TILL)**	440	Installed observation well to a depth of 12 feet upon completion.
					12	End of Boring at 12 ft		
					15		435	
					20		430	
							425	

WATER LEVELS AND/OR WELL DATA

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PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-10

LOCATION: Katonah, New York	DRILL FLUID: None	DRILLING METHOD: 2.25" SSA	ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic		DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 1/17/2024 1:30:00 PM		FINISH: 1/17/2024 2:10:00 PM
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan		
CHECKED BY: CWS			
COORDS. NORTHING: 881736.79	EASTING: 723773.25		
SURFACE ELEV: 448.5 (ft; Estimated)	DATUM: NAD83 / NAVD88		

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
1-17-24	12:50 PM	Completion	2	N/A	12
1-18-24	9:15 AM	24 Hours	4.2	12	12
1-19-24	1:50 PM	Static	3	12	12
4-15-24	8:40 AM	Static	2.5	12	12
4-16-24	9:10 AM	Static	2.8	12	12

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					0	**TOPSOIL**	448.5	
S-1	2	0.2	1-2-2-2	4				
S-2	2	0.9	2-19-10-8	29		**f.m.c. SAND**, little silt, brown, medium compact, moist **(SM-TILL)**	445	Water level observations made during drilling may not represent static groundwater conditions.
S-3	2	1.4	8-10-11-14	21	5	**f.m.c. SAND**, Some Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**		
S-4	2	0	23-15-19-16	34		No Recovery		
S-5	1	0.8	13-19-21-18	40		**SILT**, And f.m.c. Sand, brown, compact, wet **(ML-TILL)**	440	
S-6	2	2	17-20-22-17	42	10	Grades to Some f.m.c. Sand **(ML-TILL)**		Installed observation well to a depth of 12 feet upon completion.
					12	End of Boring at 12 ft		
					15		435	
					20		430	
							425	

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-101

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: SMD	HAMMER TYPE: Automatic
COORDS. NORTHING: 881637.41	EASTING: 723666.60
SURFACE ELEV: 445.5 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 4/15/2024 1:30:00 PM	FINISH: 4/15/2024 2:20:00 PM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-15-24	2:20 PM	Completion	5.8	None	12
4-15-24	2:55 PM	End of Day	1	None	12
4-16-24	9:30 AM	Start of Day	0.4	None	5

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DEPTH (Feet)	DESCRIPTION AND CLASSIFICATION	ELEVATION (Feet)	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.	WATER LEVELS AND/OR WELL DATA
					0	**TOPSOIL**	445	Standing water observed surrounding borehole. Water level observations made during drilling may not represent static groundwater conditions.	▽
S-1	2	1.7	WH-1-4-11	5		**Silty CLAY**, little f.m.c. sand, trace organics, brown, medium stiff, moist **(CL)**			
S-2	2	1.5	6-16-17-14	33		**f.m.c. SAND**, Some Silt, trace f. gravel, trace organics, brown, compact, wet **(SM-TILL)**			
						grades to little f.c. gravel, no organics **(SM-TILL)**			
S-3	2	1.3	15-18-18-14	36	5		440		
S-4	2	1	6-8-10-8	18		**Clayey SILT**, Some f.m.c. Sand, trace f. gravel, brown, very stiff, wet **(ML-TILL)**			
S-5	2	0.7	4-10-13-10	23		**f.m.c. SAND**, Some clayey Silt, trace f. gravel, brown, medium compact, wet **(SM-TILL)**			
S-6	0.1	0.1	100/0.1'	R	10	Insufficient recovery			
						End of Boring at 10.5 ft	435	Solid Stem Auger refusal at 10.5 feet. The borehole was backfilled with soil cuttings upon completion.	
					15		430		
					20		425		

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-102

LOCATION: Katonah, New York	DRILL FLUID: None; DRILLING METHOD: 2.25" SSA; ROD SIZE: NW
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	HAMMER TYPE: Automatic; DRILL RIG: Rubber Track ATV
CONTRACTOR: New England Boring Contractors	START: 4/15/2024 11:10:00 AM; FINISH: 4/15/2024 11:40:00 AM
DRILLER: D. DeAngelis; INSPECTOR: C. Hourigan	
CHECKED BY: SMD	
COORDS. NORTHING: 881858.22 EASTING: 723850.49	
SURFACE ELEV: 445.2 (ft; Estimated) DATUM: NAD83 / NAVD88	

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-15-24	11:40 AM	Completion	2.1	None	12
4-15-24	2:50 PM	End of Day	1.8	None	12
4-16-24	9:25 AM	Start of Day	2.2	None	3.8

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					TOPSOIL	
S-1	2	0.6	WH-WH-4-11	4	**Silty CLAY**, little f.m.c. sand, trace organics, brown, soft, moist **(CL)**	
S-2	2	0.6	9-8-12-14	20	**f.m.c. SAND**, Some Silt, Some f.c. Gravel, brown, medium compact, wet **(SM-TILL)**	Water level observations made during drilling may not represent static groundwater conditions.
S-3	2	1.4	20-24-25-15	49	grades to little f.c. gravel, becomes compact **(SM-TILL)**	
S-4	2	1.8	11-10-9-11	19	**f.m.c. SAND**, Some Silt, trace f. gravel, trace organics, brown, medium compact, wet **(SM-TILL)**	
S-5	2	1.1	18-18-13-14	31	**f.m.c. SAND**, little silt, trace f.c. gravel, brown, compact, wet **(SM-TILL)**	
S-6	2	1.4	14-9-23-22	32	grades to little f.c. gravel **(SM-TILL)**	
					End of Boring at 12 ft	The borehole was backfilled with soil cuttings upon completion.

DEPTH (Feet): 5, 10, 15, 20

ELEVATION (Feet): 445, 440, 435, 430, 425

PROJECT NUMBER: 080675 4/26/2024

John Jay Homestead
SUBSURFACE LOG
HOLE NUMBER B-103

LOCATION: Katonah, New York	DRILL FLUID: None
CLIENT: Beyer, Blinder, Belle Architects & Planners LLP	DRILLING METHOD: 2.25" SSA
CONTRACTOR: New England Boring Contractors	ROD SIZE: NW
DRILLER: D. DeAngelis	INSPECTOR: C. Hourigan
CHECKED BY: SMD	HAMMER TYPE: Automatic
COORDS. NORTHING: 882262.66	EASTING: 724003.70
SURFACE ELEV: 439.8 (ft; Estimated)	DATUM: NAD83 / NAVD88
DRILL RIG: Rubber Track ATV	
START: 4/15/2024 9:25:00 AM	FINISH: 4/15/2024 10:05:00 AM

WATER LEVEL OBSERVATIONS

DATE	TIME	READING TYPE	WATER DEPTH (ft)	CASING BOTTOM (ft)	HOLE BOTTOM (ft)
4-15-24	10:05 AM	Completion	8.1	None	12
4-15-24	2:40 PM	End of Day	3.8	None	12
4-16-24	9:10 AM	Start of Day	3.6	None	7.8

SAMP./CORE NUMBER	SAMP. ADV. (ft) LEN. CORE (ft)	RECOVERY (ft)	BLOWS PER 6" ON SPLIT SPOON SAMPLER	"N" Value or RQD%	DESCRIPTION AND CLASSIFICATION	REMARKS ON CHARACTER OF DRILLING, WATER RETURN, ETC.
					TOPSOIL	
S-1	2	1.5	1-3-2-2	5	**Clayey SILT**, little f.m.c. sand, trace f.c. gravel, trace organics, brown, loose, moist **(ML)**	
S-2	2	1.4	4-7-9-8	16	**f.m.c. SAND**, Some Silt, trace f. gravel, brown, compact, moist **(SM-TILL)**	
S-3	2	2	8-9-7-4	16	**f.m.c. SAND**, And clayey Silt, trace f. gravel, trace organics, brown, medium compact, moist **(SM-TILL)**	Water level observations made during drilling may not represent static groundwater conditions.
S-4	2	2	8-11-13-20	24	**f.m.c. SAND**, Some clayey Silt, trace f. gravel, trace organics, brown, medium compact, wet **(SM-TILL)**	
S-5	2	0.9	26-16-16-14	32	**f.m.c. SAND**, little silt, little f.c. gravel, brown, compact, wet **(SM-TILL)**	
S-6	2	1.4	13-15-17-14	32	**Clayey SILT**, Some f.m.c. Sand, trace f.c. gravel, brown, hard, wet **(ML-TILL)**	
					End of Boring at 12 ft	The borehole was backfilled with soil cuttings upon completion.

DEPTH (Feet): 5, 10, 15, 20

ELEVATION (Feet): 435, 430, 425, 420, 415

APPENDIX D

LABORATORY TEST RESULTS

3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787
877 US-4, Schuylerville, NY 12871

Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-4 S-1	**Project Number:**	240100
Source:	0-2'	**Lab Number:**	Q24-004E
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004E	B-4 S-1	In-Place	No Specification

Sieve Size		%	%	Spec. %
mm	**Inches**	**Retained**	**Passing**	**Pass**
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	10.6	89	
6.3 mm	1/4"	15.1	74	
4.75 mm	#4	3.3	71	
2.00 mm	#10	10.7	60	
0.850 mm	#20	8.1	52	
0.600 mm	#30	2.1	50	
0.425 mm	#40	4.5	46	
0.150 mm	#100	13.4	32	
0.075 mm	#200	8.7	24	
Pan		23.5		

Comments:

Minus #200 by wash-sieve method.

Emily J. Rodriguez

Report Reviewed By:

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3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787
877 US-4, Schuylerville, NY 12871

Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-5 S-1	**Project Number:**	240100
Source:	0-2'	**Lab Number:**	Q24-004F
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004F	B-5 S-1	In-Place	No Specification

Sieve Size		%	%	Spec. %
mm	Inches	Retained	Passing	Pass
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	8.5	92	
6.3 mm	1/4"	20.4	71	
4.75 mm	#4	7.4	64	
2.00 mm	#10	13.0	51	
0.850 mm	#20	10.9	40	
0.600 mm	#30	2.2	38	
0.425 mm	#40	3.7	34	
0.150 mm	#100	6.6	27	
0.075 mm	#200	4.4	23	
Pan		22.9		

Comments:

Minus #200 by wash-sieve method.

Report Reviewed By: Emily J. Rodriguez

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3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787

Client:	CHA, Inc.	**Project:**	John Jay Homestead Historic Site
Material:	B-1 S-3	**Project #:**	240100
Source:	4-6'	**Lab No.:**	Q24-004A
Location:	In-Place	**Item Number:**	No Specifications
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/24	**Tested By:**	Michael Thomas

REPORT OF ATTERBERG LIMITS TEST RESULTS

TEST METHOD: ASTM D4318; LL Method B

Lab Number:	Q24-004A	**Specification**
Liquid Limit:	21	
Plastic Limit:	17	
Plasticity Index:	4	

Notes: Values shown are percent moisture.
Customary procedure is to round results to the nearest whole number.

Comments:

Report Reviewed By: Emily J. Rodriguez

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3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787

Client:	CHA, Inc.	**Project:**	John Jay Homestead Historic Site
Material:	B-1 S-3	**Project Number:**	240100
Source:	4-6'	**Lab Number:**	Q24-004A
Location:	In-Place	**Item Number:**	No Specifications
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/29/2024	**Tested By:**	Michael Thomas

Report of Natural Moisture Content of Soil and Rock

Test Method: ASTM D2216

Wet Weight (g):	299.7
Dry Weight (g):	250.5
% Nat. Moisture:	**19.6**

Specification:

Comments:

No specifications available at time of testing.

Emily J. Rodriguez

Report Reviewed By:

Advance Testing

3348 Route 208, Campbell Hall, NY 10916
Phone: 845-496-1600 Fax: 845-496-1398
12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787
877 US-4, Schuylerville, NY 12871

Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-1 S-7	**Project Number:**	240100
Source:	15-17'	**Lab Number:**	Q24-004B
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004B	B-1 S-7	In-Place	No Specification

Sieve Size		% Retained	% Passing	Spec. % Pass
mm	Inches			
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	13.6	86	
12.5 mm	1/2"	11.1	75	
6.3 mm	1/4"	12.4	63	
4.75 mm	#4	1.0	62	
2.00 mm	#10	2.9	59	
0.850 mm	#20	3.5	56	
0.600 mm	#30	1.0	55	
0.425 mm	#40	3.4	51	
0.150 mm	#100	12.2	39	
0.075 mm	#200	9.7	29	
Pan		29.2		

Comments:

Minus #200 by wash-sieve method.

Report Reviewed By: Emily J. Rodriguez

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3348 Route 208, Campbell Hall, NY 10916
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12960 Commerce Lake Drive, A14, Fort Myers, FL 33913
42 Day Farm Road, West Stockbridge, MA 01266
1813 State Route 7, Harpursville, NY 13787
877 US-4, Schuylerville, NY 12871

Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-2 S-6	**Project Number:**	240100
Source:	10-12'	**Lab Number:**	Q24-004C
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004C	B-2 S-6	In-Place	No Specification

Sieve Size		% Retained	% Passing	Spec. % Pass
mm	Inches			
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	0.0	100	
12.5 mm	1/2"	4.5	96	
6.3 mm	1/4"	5.4	90	
4.75 mm	#4	0.1	90	
2.00 mm	#10	3.3	87	
0.850 mm	#20	5.9	81	
0.600 mm	#30	2.3	79	
0.425 mm	#40	6.2	72	
0.150 mm	#100	19.9	52	
0.075 mm	#200	12.4	40	
Pan		40.0		

Comments:

Minus #200 by wash-sieve method.

Report Reviewed By: Emily J. Rodriguez

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Client:	**CHA, Inc.**	**Project:**	John Jay Homestead Historic Site
Item:	B-3 S-4	**Project Number:**	240100
Source:	6-8'	**Lab Number:**	Q24-004D
Date Sampled:	1/29/2024	**Sampled By:**	Client
Date Tested:	1/30/2024	**Tested By:**	Michael Thomas

GRADATION (SIEVE ANALYSIS) OF SOIL OR AGGREGATE

Test Method(s): ASTM D422, C136, C117; AASHTO T88, T27, T11

Lab Number	Sample Type	Sampling Location	Specification
Q24-004D	B-3 S-4	In-Place	No Specification

Sieve Size		%	%	Spec. %
mm	Inches	Retained	Passing	Pass
100.0 mm	4"	0.0	100	
75.0 mm	3"	0.0	100	
63.0 mm	2 1/2"	0.0	100	
50.0 mm	2"	0.0	100	
37.5 mm	1 1/2"	0.0	100	
25.0 mm	1"	0.0	100	
19.0 mm	3/4"	9.4	91	
12.5 mm	1/2"	4.5	86	
6.3 mm	1/4"	4.2	82	
4.75 mm	#4	1.6	80	
2.00 mm	#10	3.2	77	
0.850 mm	#20	5.1	72	
0.600 mm	#30	1.5	71	
0.425 mm	#40	5.3	65	
0.150 mm	#100	17.6	48	
0.075 mm	#200	14.0	34	
Pan		33.6		

Comments:

Minus #200 by wash-sieve method.

Report Reviewed By: Emily J. Rodriguez

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APPENDIX D

Existing Condition PondPack Outputs

Scenario: 1 year