EXPANDED ENVIRONMENTAL ASSESSMENT

PART 3

RESIDENTIAL DEVELOPMENT

120 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

Prepared for: **Canoe Brook**
75 Eisenhower Parkway, Suite 180
Roseland, NJ 07068

Prepared by:

120 Bedford Road
Armonk, NY 10504
JMC Project 15245

Date: October 5, 2018

p:\2015\15245\admin\expanded eaf part 3 report final 10-05-2018.docx

EXPANDED ENVIRONMENTAL ASSESSMENT REPORT
PART 3

APPENDICES

Appendix	Description
A.	"Full Environmental Assessment Form" dated 10/05/2018
B.	"Traffic Study" dated October 5, 2018
C.	"Preliminary Stormwater Pollution Prevention Plan" dated October 10, 2018
D.	"School Children and Tax Analysis" dated October 5, 2018
E.	"Wetland Investigation and Regulatory Assessment", dated October 10, 2018

APPENDIX A

"FULL ENVIRONMENTAL ASSESSMENT FORM" DATED 10/05/2018

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Residential Development		
Project Location (describe, and attach a general location map): 320 Old Briarcliff Road, Briarcliff Manor, NY		
Brief Description of Proposed Action (include purpose or need): The existing property is zoned B "Planned Office Building and Laboratory" district, and contains two tax parcels (98.05-1-9 and 90.17-1-45). Parcel 98.05-1-9 is developed with two vacant office buildings and an off-street parking lot. Parcel 90.17-1-45 is undeveloped and will remain so. Tax Parcel 98.05-1-9 is to be redeveloped with a 142 unit rental apartment building consisting of 53 1-bedroom and 89 2-bedroom apartments. Also proposed is a text amendment to the zoning code to permit in the B district a multifamily residential use, subject to a special permit.		
Name of Applicant/Sponsor: Canoe Brook	Telephone: (973) 852-1706 E-Mail: jacktycher@canoebrook.com	
Address: 75 Eisenhower Parkway, Suite 180		
City/PO: Roseland	State: NJ	Zip Code: 07068
Project Contact (if not same as sponsor; give name and title/role): Mr. Jack Tycher	Telephone: (973) 852-1706 E-Mail: jacktycher@canoebrook.com	
Address: Canoe Brook, 75 Eisenhower Parkway, Suite 180		
City/PO: Roseland	State: NJ	Zip Code: 07068
Property Owner (if not same as sponsor): Emigrant Bank, James Jung, Escrow Administrative Department	Telephone: E-Mail:	
Address: 6 East 42nd Street, Floor 7		
City/PO: New York	State: NY	Zip Code: 10017

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Council, Town Board, ☑Yes ☐No or Village Board of Trustees	Zoning Text Amendment	10/05/2018
b. City, Town or Village ☑Yes ☐No Planning Board or Commission	Special Permit; Wetlands Permit; Lot Merger	TBD
c. City Council, Town or ☐Yes ☑No Village Zoning Board of Appeals		
d. Other local agencies ☑Yes ☐No Building Department	Building Permit	TBD
e. County agencies ☑Yes ☐No Planning Dept.; Dept. of Public Works	NYS Municipal Law Referral; Potential Traffic Signal Permit	TBD
f. Regional agencies ☐Yes ☑No		
g. State agencies ☐Yes ☑No		
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☑Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
B "Planned Office Building and Laboratory"

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? Permit in the B district a multifamily use, subject to a special permit.

C.4. Existing community services.

a. In what school district is the project site located? Ossining Union Free School District

b. What police or other public protection forces serve the project site?
Briarcliff Manor Police Department

c. Which fire protection and emergency medical services serve the project site?
Briarcliff Manor Fire Department and Briarcliff Manor Ambulance Corps.

d. What parks serve the project site?
Tommy Thurber Preserve; Chillmark Village Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?
Residential

b. a. Total acreage of the site of the proposed action? ±16.3 acres
b. Total acreage to be physically disturbed? ±5.6 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? ±16.3 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
Residential lot consolidation
ii. Is a cluster/conservation layout proposed? ☑ Yes ☐ No
iii. Number of lots proposed? 1
iv. Minimum and maximum proposed lot sizes? Minimum 16.3 acres Maximum 16.3 acres

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 18-24 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				142
At completion of all phases				142

g. Does the proposed action include new non-residential construction (including expansions)? ☐ Yes ☑ No

If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____height; _____width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐ Yes ☑ No

If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify:

_____

iii. If other than water, identify the type of impounded/contained liquids and their source.

_____

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

_____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

i*v.* Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☑ Yes ☐ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): Local Wetland Buffer

_____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:
Within the 50' buffer setback, 2,565 s.f. of existing impervious will be reduced to zero s.f. Between 50' and 100', existing impervious is 8,161 s.f. and proposed is 9,906 s.f. Within the 100' buffer in total, there will be a net impervious reduction of 820 s.f.

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐ Yes ☑ No
If Yes, describe: _____

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐ Yes ☑ No
If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____
- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

c. Will the proposed action use, or create a new demand for water? ☑ Yes ☐ No
If Yes:

i. Total anticipated water usage/demand per day: 25,410 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑ Yes ☐ No
If Yes:

- Name of district or service area: Briarcliff Manor Village
- Does the existing public water supply have capacity to serve the proposal? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No
- Do existing lines serve the project site? ☑ Yes ☐ No

iii. Will line extension within an existing district be necessary to supply the project? ☐ Yes ☑ No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____
- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☑ No
If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑ Yes ☐ No
If Yes:

i. Total anticipated liquid waste generation per day: 25,410 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): Sanitary wastewater.

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑ Yes ☐ No
If Yes:

- Name of wastewater treatment plant to be used: Ossining Treatment Plant
- Name of district: Ossining
- Does the existing wastewater treatment plant have capacity to serve the project? ☑ Yes ☐ No
- Is the project site in the existing district? ☑ Yes ☐ No
- Is expansion of the district needed? ☐ Yes ☑ No

- Do existing sewer lines serve the project site? ☑ Yes ☐ No
- Will line extension within an existing district be necessary to serve the project? ☐ Yes ☑ No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐ Yes ☑ No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: None

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑ Yes ☐ No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

44,587 Square feet or 1.02 acres (impervious surface)

710,675 Square feet or 16.31 acres (parcel size)

ii. Describe types of new point sources. Pipes, swales, curbs, retaining wall, building

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

On-site stormwater management structures

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☑ Yes ☐ No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑ Yes ☐ No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐ Yes ☑ No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐ Yes ☑ No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐ Yes ☐ No

ii. In addition to emissions as calculated in the application, the project will generate:
- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend

☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

_____

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: TBD

_____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

Local Utility

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 8:00 AM - 7:00 PM
- Saturday: 8:30 AM - 5:30 PM
- Sunday: _____
- Holidays: _____

ii. During Operations:

- Monday - Friday: 24/7
- Saturday: 24/7
- Sunday: 24/7
- Holidays: 24/7

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Typical construction noise during permitted construction hours.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: _____

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Lighting will be standard outdoor security and parking lot lighting, high efficiency down lighting.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally describe proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☑ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: TBD tons per TBD (unit of time)
- Operation : 12-13 tons per month (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Debris recyling will be in accordance with all applicable local requirements.
- Operation: Recycling will be in accordance with applicable County requirements.

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: Solid construction waste will be disposed of in accordance with all applicable local requirements.
- Operation: Private carter.

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

_____

_____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

_____

_____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

_____

_____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

_____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

_____

_____

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)

☑ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): Religious

ii. If mix of uses, generally describe:

_____

_____

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	2.15	3.17	+1.02
• Forested	11.65	10.48	-1.17
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	2.51	2.66	+0.15
• Agricultural (includes active orchards, field, greenhouse etc.)	0	0	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0.06	0.06	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: _____ _____			

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No

If Yes,

i. Identify Facilities:

Congregation Sons of Israel Religious School

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 1.3 - 6+ feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

CrC Charlton-Chatfield Complex	45 %
HrF Hollis-Rock Outcrop Complex	45 %
Ra Raynham Silt Loam	7 %

d. What is the average depth to the water table on the project site? Average: 6.5+ feet

e. Drainage status of project site soils:
☑ Well Drained: 90 % of site
☐ Moderately Well Drained: _____% of site
☑ Poorly Drained 10 % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 32 % of site
☑ 10-15%: 14 % of site
☑ 15% or greater: 54 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☐ Yes ☑ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Local Wetland Approximate Size ±2,770 s.f.
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100 year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500 year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☑ Yes ☐ No
If Yes:

i. Name of aquifer: Principal Aquifer

m. Identify the predominant wildlife species that occupy or use the project site: _____
Typical suburban species _____ _____ _____
_____ _____ _____

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation): _____
_____
ii. Source(s) of description or evaluation: _____
iii. Extent of community/habitat:
- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No
If yes, give a brief description of how the proposed action may affect that use: _____
_____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No
If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No
i. If Yes: acreage(s) on project site? _____
ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____
_____
_____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No
If Yes:
i. CEA name: _____
ii. Basis for designation: _____
iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Taconic State Parkway

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): Scenic byway

iii. Distance between project and resource: ±1.3 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

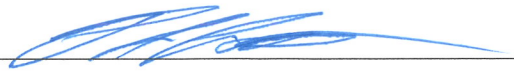
Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

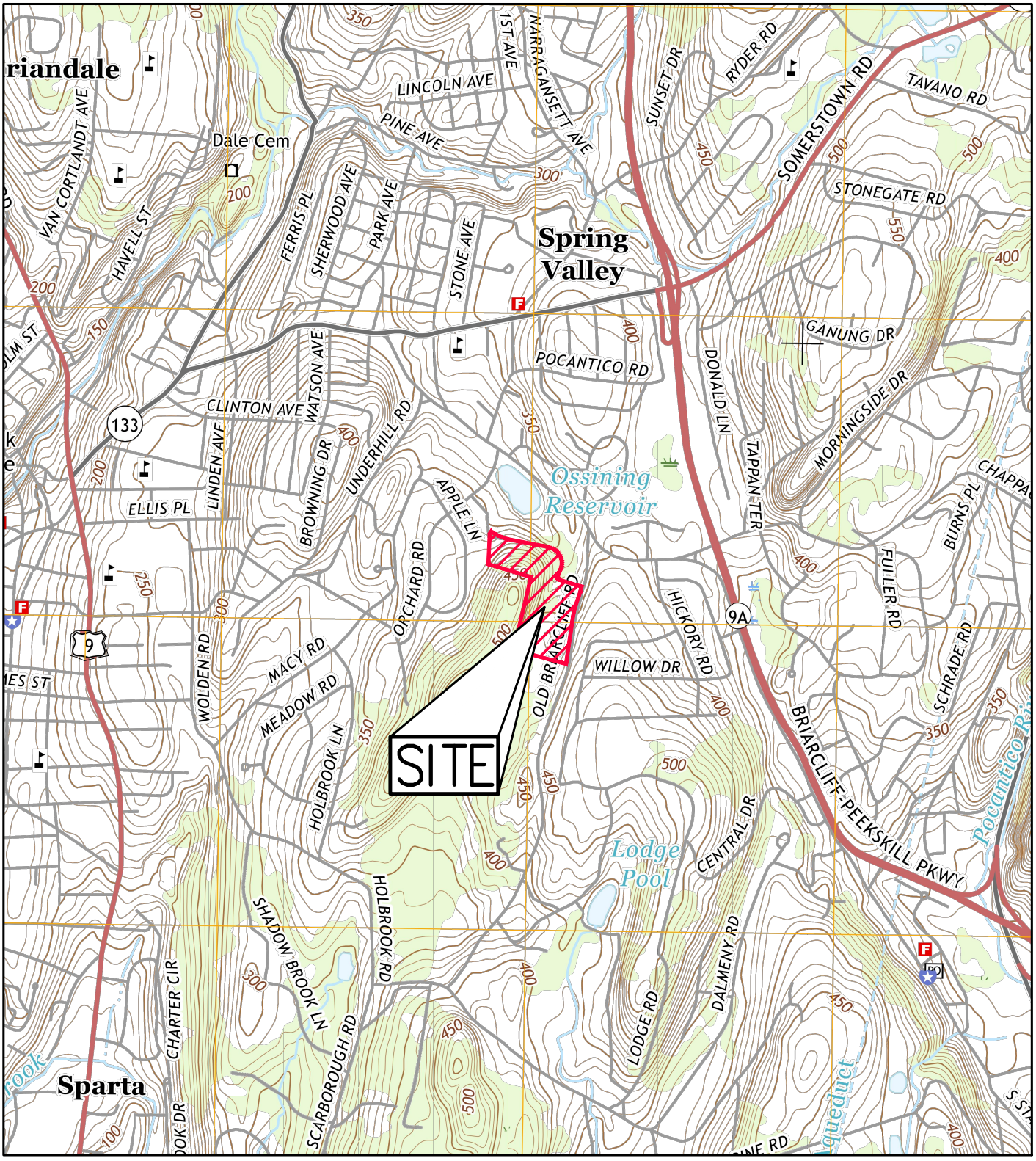
G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC, Agent Richard J. Pearson, PE, PTOE Date 10/05/2018

Signature  Title Senior Associate Principal

PRINT FORM



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD — VILLAGE OF BRIARCLIFF MANOR, NEW YORK

SITE LOCATION MAP

DATE: 10/05/2018 — JMC PROJECT: 15245

FIGURE: SLM-1 — SCALE: 1" = 1,500'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.

15245–COVER.dwg; SLM.tab; 9_COVER.scr

APPENDIX B

"TRAFFIC STUDY" DATED OCTOBER 5, 2018

TRAFFIC STUDY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

Prepared for: **Canoe Brook**
75 Eisenhower Parkway
Suite 180
Roseland, NJ 07068

Prepared by:

JMC Project **15245**

Date: October 5, 2018

TABLE OF CONTENTS

LIST OF APPENDICES

B. FIGURES

P:\2015\15245\ADMIN\Traffic\TS_2018-10-05.docx

I. INTRODUCTION

This Traffic Study has been prepared to assess existing conditions as well as future traffic operations in association with the proposed redevelopment located at 320 Old Briarcliff Road in the Village of Briarcliff Manor. The location of the site is illustrated on the figures included in Appendix B.

The subject property is currently developed with two vacant office buildings and an off-street parking lot. Access to the property is provided via one site access driveway off Old Briarcliff Road, which extends along the eastern portion of the property.

The Applicant proposes to raze the two existing buildings and construct a three-story building containing 142 residential apartments. Off-street parking will be provided via surface parking spaces and a parking level located under the proposed building. The existing driveway connecting to Old Briarcliff Road is proposed to be reconstructed to provide access to and from the proposed building.

II. EXISTING CONDITIONS

A. Existing Roadway Network

JMC performed field reconnaissance at the site and adjoining roadway network in order to gather existing conditions data. The field work included a determination of lane widths, striping, horizontal and vertical alignments, signs, speed limits, pedestrian activities, traffic flows, on street parking, sidewalks, curbing, etc.

Pleasantville Road is generally an northwest-southeast roadway under the jurisdiction of the Westchester County Department of Public Works and Transportation (WCDPWT) within the Village of Briarcliff Manor. The roadway is also known as County Road 4011. It generally provides one travel in each direction within the study area and widens to provide

additional lanes at various locations. Within the study area, Pleasantville Road has a posted speed limit of 30 mph.

Old Briarcliff Road is a village roadway which traverses in a north/south direction. Old Briarcliff Road provides one travel lane in each direction. The roadway has a posted speed limit of 30 mph in the study area.

In order to evaluate the changes in traffic associated with the proposed redevelopment, the following intersections have been analyzed:

1. Pleasantville Road & Old Briarcliff Road
2. Old Briarcliff Road & Site Driveway

Old Briarcliff Road intersects Pleasantville Road (County Road 4011) north of the existing site driveway. Pleasantville Road consists of one travel lane in each direction and provides a 120 foot long westbound left turn lane at its intersection with Old Briarcliff Road. The Old Briarcliff Road approach to the intersection is controlled by a stop sign.

The site driveway intersects Old Briarcliff Road at an unsignalized 'T' intersection. Old Briarcliff Road provides one travel lane in each direction with shared turning movements. The site driveway provides one travel lane in each direction with shared turning movements and is controlled by a stop sign.

B. Existing Volumes

Manual traffic counts were performed in order to quantify and analyze existing peak hour volumes as well as to establish base conditions for projecting future operations. The counts included pedestrian activities and truck traffic.

Traffic counts were conducted at the Pleasantville Road/Old Briarcliff Road intersection.

Weekday traffic counts were conducted on Thursday, January 7, 2016 at the Pleasantville Road/Old Briarcliff Road intersection. The counts were conducted from 7:00 AM - 7:00 PM. The counted volumes were reviewed to determine the peak morning and afternoon hours. The peak weekday AM hour occurred from 7:30-8:30 AM and the peak weekday PM hour occurred from 4:30-5:30 PM. The volumes at the intersection with the site driveway were projected from the intersection of Pleasantville Road and Old Briarcliff Road. The peak hour volumes are shown on the attached Figures 1 and 2. The vacant office square footage was not reoccupied as part of the existing volumes. The volumes are shown on Figures 1 and 2 "2016 Existing Volumes". All figures are included in Appendix B.

C. Intersection Analysis Methodology

The intersections have been analyzed based on the methodologies of the Highway Capacity Manual 6th Edition. Information derived from the manual relative to the level of service criteria is provided below.

1. Level-of-Service Criteria for Signalized Intersections

Levels of Service (LOS) for signalized intersections are defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called control delay. Control delay includes the delays of initial deceleration, move-up time in the queue, stops, and reacceleration. In this chapter, control delay may also be referred to as signal delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a peak 15-minute analysis period.

Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the volume/capacity (*v/c)* ratio for the lane group in question.

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of services occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both.

LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle and/or the arrival flow rates exceed the capacity of the intersection. It will also occur at high *v/c* ratios below 1.0 with many individual cycle failures. If the volume-to-

capacity (v/c) is greater than 1.0, the LOS is considered an F, even if the delays are lower than 80 seconds.

The LOS criteria for signalized intersections are presented below.

Signalized Level of Service Criteria		
Control Delay (Seconds/Vehicle)	**LOS by Volume-to-Capacity Ratio**	
	v/c ≤ 1.0	**v/c > 1.0**
≤10	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

For approach-based and intersectionwide assessments, LOS is defined solely by control delay.

2. Level of Service for Unsignalized Intersections

The Levels of Service (LOS) for Two Way Stop Control (TWSC) and All Way Stop Control (AWSC) intersections and Roundabouts are determined by the computed or measured control delay and are defined for each minor movement. LOS is not defined for the intersection as a whole for TWSC intersections. LOS criteria are presented below.

Unsignalized Level of Service Criteria		
Control Delay (Seconds/Vehicle)	**LOS by Volume-to-Capacity Ratio**	
	v/c ≤ 1.0	**v/c > 1.0**
≤10	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

For TWSC intersections, the LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or the intersection as a whole at TWSC intersections. For approach-based and intersectionwide assessments at AWSC intersections and roundabouts, LOS is defined solely by control delay.

Average control delay less than 10 seconds/vehicle are defined as LOS A. Follow-up times of less than 5 seconds/vehicle have been measured when there is no conflicting traffic, so control delays of less than 10 seconds/vehicle are appropriate for low flow conditions. If the volume-to-capacity (v/c) is greater than 1.0, the LOS is considered an F, even if the delays are lower than 50 seconds.

The LOS criteria for unsignalized intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from different kinds of transportation facilities. A number of driver behavior considerations combine to make delays at signalized intersections less onerous than delays at unsignalized intersections. For example, drivers at signalized intersections are able to relax during the red interval, whereas drivers on the minor approaches to unsignalized intersections must remain attentive to the task of identifying acceptable gaps and vehicle conflicts. Also, there is often much more variability in the amount of delay experienced by individual drivers at an

unsignalized intersections versus that at signalized intersections. For these reasons, it is considered that the control delay threshold for any given LOS would be less for an unsignalized intersection than it would be for a signalized intersection.

D. Existing Operations

The intersection capacity analyses based on existing volumes and conditions are shown on Tables 2 and 3. The specific volume/capacity ratios, delay for average vehicle in seconds and the associated levels of service are summarized for each lane group, the approach as well as the overall intersection as applicable are depicted on Tables 2 and 3. All tables are included in Appendix A.

The analyses confirm that vehicles exiting Old Briarcliff Road onto Pleasantville Road operate with moderate delays, level of service C. Vehicles completing a westbound left turn onto Old Briarcliff Road experience short delays, level of service B or better.

E. Accident History

Accident reports were obtained from the Village of Briarcliff Manor Police Department for a three year period between 11/01/2012 and 10/31/2015 at the intersection of Pleasantville Road and Old Briarcliff Road. The accident data has been analyzed and provided into tabular format as depicted in Table 4. There were four reported accidents at the intersection. One of the accidents occurred in snowy conditions causing a vehicle to slide while another accident involved a vehicle striking a deer. One accident involved a driver turning left onto Pleasantville Road and not providing the proper right-of-way to a vehicle turning left onto Old Briarcliff Road from Pleasantville Road. The last accident involved a vehicle waiting to make a left onto Old Briarcliff Road which was rear-ended by a second vehicle traveling westbound on Pleasantville Road.

III. PROJECTED CONDITIONS

A. No-Build Volumes

The existing volumes were seasonally adjusted since the counts were conducted in the month of January. They were adjusted based on NYSDOT 2015 data which represented a seasonal adjustment factor of dividing by 0.941 for the month of January during a work week. The seasonally adjusted peak hour traffic volumes were increased by a general growth rate of two percent per year compounded annually to the 2021 design year for completion of the proposed development. Additionally, this study incorporates the traffic volumes associated with the redevelopment of the former Philips Research property located 345 Scarborough Road within the Village. The existing site contains 60,000 square feet of vacant office space. Projected traffic volumes associated with the reoccupancy of the existing office space are based on information published by the Institute of Traffic Engineers (ITE) and are depicted on Table 1. The reoccupied development volumes are projected to generate 71 entering trips and 12 exiting trips during the peak weekday AM hour as well as 11 entering trips and 59 exiting trips during the peak weekday PM hour. The reoccupied volumes and other development volumes were added to the general growth volumes to project the 2021 No Build Volumes.

The capacity analyses indicate that the levels of service are anticipated to increase from a level of service C under existing conditions to a level of service E and D during the peak weekday AM and PM hours, respectively, under no-build conditions on the northbound approach at the intersection of Old Briarcliff Road and Pleasantville Road. The Pleasantville Road westbound left turn movement will continue to operate at the same level of service as experienced under existing conditions. Vehicles exiting the site driveway are projected to operate at a level of service A during both studied peak hours. The northbound approach on Old Briarcliff Road at the site driveway is project to operate at a level of service A during both studied peak hours.

B. Build Volumes

Traffic volumes generated by the proposed residential development are based on information published by ITE. Table 1 shows the traffic volumes related to the proposed development and the net additional primary trips associated with the redevelopment. The development is projected to decrease entering trips by 58 and generate 26 additional exiting trips as compared to the reoccupied trips during peak weekday AM hour. Compared to the reoccupied trips, the development is projected to generate 27 additional entering trips and reduce exiting trips by 35 during the peak weekday PM hour.

The projected site generated traffic was superimposed on the area intersections based on the existing traffic volumes. Figures showing the site related traffic and intersection capacity analyses are attached.

As shown on Tables 2 and 3, the intersections with the proposed development will operate at the same levels of service as projected for the no-build condition except for the Old Briarcliff Road approach to Pleasantville Road during the peak weekday AM hour. The Old Briarcliff Road approach to Pleasantville Road is projected to operate at a level of service F during the peak weekday AM hour. The movements at the site driveway are projected to operate at a level of service A during both studied peak hours.

C. Potential Mitigation

Our office reviewed the capacity analyses to provide potential mitigation at the intersection of Pleasantville Road and Old Briarcliff Road. We reviewed and analyzed the intersection if a traffic signal was constructed at the intersection as potential mitigation. The intersection capacity analyses are attached and have been depicted on Tables 2 and 3.

During the peak weekday AM hour, the overall intersection is projected to operate at a level of service C with the potential traffic signal and the proposed development. The

westbound left turn lane and the eastbound approach are projected to operate at a level of service C while the Old Briarcliff Road approach is projected to operate at a level of service B. All remaining movements are projected to operate at a level of service A.

During the peak weekday PM hour, the overall intersection is projected to operate at a level of service A with the potential traffic signal and the proposed development. The Old Briarcliff Road approach is projected to operate at a level of service B. All remaining movements are projected to operate at a level of service A.

D. Traffic Signal Warrant Analysis

The manual traffic counts were analyzed to provide the hourly traffic volumes from 7:00 AM – 7:00 PM along Pleasantville Road and Old Briarcliff Road. The existing hourly volumes are depicted on Table 5. These existing volumes were seasonally adjusted based on New York State Department of Transportation (NYSDOT) 2015 data factors for a work week in the month of January. The table also mentions the requirements to satisfy the Eight-Hour Vehicular Volume Traffic Signal Warrant as detailed in the "Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition (MUTCD)". The traffic volumes at the intersection need to meet a minimum hourly threshold for at least eight hours in a day to satisfy the warrant for installation of a traffic signal at the intersection of Pleasantville Road and Old Briarcliff Road. Table 5, based on existing seasonally adjusted volumes, depicts that the Eight-Hour Warrant (Warrant #1) is not satisfied.

Table 6 is similar to Table 5; however, Table 6 incorporates the proposed residential development at 320 Old Briarcliff Road. The seasonally adjusted existing volumes were increased by a general growth factor of 2% per year compounded annually to the 2019 design year. The traffic volumes associated with the other development (at the former Philips Research property) and the proposed development were superimposed onto the increased existing volumes. The residential volumes were projected utilizing the "Trip

Generation Manual, 10th Edition" published by the Institute of Transportation Engineers (ITE) and distributed onto the roadway network based on the existing traffic volumes. Table 6 shows that the Eight-Hour Warrant is met for seven out of the eight required hours. Though the warrant is not met based on the projected volumes, we recommend monitoring the Pleasantville Road/Old Briarcliff Road intersection after the completion and full occupancy of the proposed development to determine if a traffic signal is warranted at the intersection based on actual future traffic volumes.

IV. FINDINGS & CONCLUSION

Based on the intersection capacity analyses, the Old Briarcliff Road intersection with the proposed site driveway is projected to operate with minimal delays. The unsignalized intersection of Pleasantville Road & Old Briarcliff Road is projected to operate at acceptable levels of service during both studied hours, except for the Old Briarcliff Road approach during the peak weekday AM Hour. Old Briarcliff Road at its intersection with Pleasantville Road is projected to operate just below a level of service E under no-build conditions and at a level of service F under build conditions during the peak weekday AM hour; however, the volume-to-capacity (v/c) ratio is a 0.58 so there is ample capacity available for the approach and the delay is only 4.7 seconds into the 50 second threshold for a level of service F for an unsignalized intersection.

As previously stated above, the intersection of Pleasantville Road and Old Briarcliff Road does not meet the traffic signal warrant; however, we recommend monitoring of the intersection after completion and occupancy of the proposed residential development to determine if a traffic signal is warranted based on actual traffic volumes. The Applicant is willing to install a traffic signal at the intersection if the traffic signal is warranted and approved by WCDPWT.

It is the professional opinion of JMC that the proposed redevelopment of the property to a 142-apartment building will not have a significant impact on future traffic operations in the study area compared to future traffic operations without the proposed redevelopment. The potential traffic signal installation will be monitored by the Applicant based on actual future traffic volumes.

Respectfully submitted,
JMC Planning Engineering Landscape Architecture & Land Surveying, PLLC

Richard J. Pearson, PE, PTOE
Senior Associate Principal

Marc Petroro, PE, PTOE
Senior Project Manager

APPENDIX A

TABLES

TABLE 1

DEVELOPMENT VOLUMES[1]

LAND USE	PEAK WEEKDAY AM HOUR			PEAK WEEKDAY PM HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
a. Reoccupied 60,000 s.f. General Office (ITE Code 710)[2]	71	12	83	11	59	70
b. Proposed 142 Apartments (ITE Code 221)[3]	13	38	51	38	24	62
c. Net Additional Primary Trips (Row c = Row a - Row b)	(58)	26	(32)	27	(35)	(8)

Notes:

(1) The projected traffic is based on ITE (Institute of Transportation Engineers) Trip Generation Manual, 10th Edition.

(2) General Offfice Building (ITE Code 710) is defined by ITE as a location where affairs of businesses, commercial or industrial organizations, or professional persons or firms are conducted.

(3) Multifamily Housing (Mid-Rise) (ITE Code 221) is defined by ITE as multifamily housing including apartments, townhouses, and condominiums located within the same building with at lease three other dwelling units and that have between three and ten levels.

TABLE 2

INTERSECTION OPERATIONS-PEAK WEEKDAY AM HOUR

INTERSECTION	APPROACH	LANE GROUP	2016 EXISTING			2021 NO BUILD WITH REOCCUPIED VOLUMES			2021 BUILD		
			V/C(1)	DELAY(2)	LOS(3)	V/C(1)	DELAY(2)	LOS(3)	V/C(1)	DELAY(2)	LOS(3)
1. Old Briarcliff Road & Pleasantville Road (Unsignalized)	EASTBOUND	THRU/RIGHT	-	-	-	-	-	-	-	-	-
	WESTBOUND	LEFT	0.08	11.4	B	0.21	14.2	B	0.13	13.1	B
		THRU	-	-	-	-	-	-	-	-	-
	NORTHBOUND	LEFT/RIGHT	0.17	23.2	C	0.45	48.5	E	0.58	54.7	F
1a. Old Briarcliff Road & Pleasantville Road (Potential Signal)	EASTBOUND	THRU/RIGHT							0.96	27.9	C
	WESTBOUND	LEFT							0.56	30.6	C
		THRU		N/A			N/A		0.23	3.2	A
		COMPOSITE							-	7.7	A
	NORTHBOUND	LEFT/RIGHT							0.47	19.8	B
	INTERSECTION	COMPOSITE							-	23.2	C
2. Old Briarcliff Road & Site Driveway (Unsignalized)	EASTBOUND	LEFT/RIGHT				0.02	9.9	A	0.06	9.7	A
	NORTHBOUND	LEFT/THRU		N/A		0.01	7.6	A	0.00	7.4	A
	SOUTHBOUND	THRU/RIGHT				-	-	-	-	-	-

TABLE 3

INTERSECTION OPERATIONS-PEAK WEEKDAY PM HOUR

INTERSECTION	APPROACH	LANE GROUP	2016 EXISTING			2021 NO BUILD WITH REOCCUPIED VOLUMES			2021 BUILD		
			V/C(1)	DELAY(2)	LOS(3)	V/C(1)	DELAY(2)	LOS(3)	V/C(1)	DELAY(2)	LOS(3)
1. Old Briarcliff Road & Pleasantville Road (Unsignalized)	EASTBOUND	THRU/RIGHT	-	-	-	-	-	-	-	-	-
	WESTBOUND	LEFT	0.02	8.4	A	0.03	8.7	A	0.05	8.8	A
		THRU	-	-	-	-	-	-	-	-	-
	NORTHBOUND	LEFT/RIGHT	0.16	20.9	C	0.47	33.9	D	0.36	32.3	D
1a. Old Briarcliff Road & Pleasantville Road (Potential Signal)	EASTBOUND	THRU/RIGHT							0.40	4.8	A
	WESTBOUND	LEFT							0.08	3.9	A
		THRU		N/A			N/A		0.67	9.5	A
		COMPOSITE							-	9.2	A
	NORTHBOUND	LEFT/RIGHT							0.32	17.8	B
	INTERSECTION	COMPOSITE							-	8.0	A
2. Old Briarcliff Road & Site Driveway (Unsignalized)	EASTBOUND	LEFT/RIGHT				0.07	9.4	A	0.03	9.3	A
	NORTHBOUND	LEFT/THRU		N/A		0.00	7.3	A	0.00	7.4	A
	SOUTHBOUND	THRU/RIGHT				-	-	-	-	-	-

Notes:

(1) V/C represents volume/capacity ratio

(2) Delay is average seconds delay per vehicle

(3) LOS represents level of service

TABLE 4

INTERSECTION NAME: Pleasantville Road & Old Briarcliff Road

TOTAL ACCIDENTS: 4

INTERSECTION NUMBER: 1

TIME PERIOD: 11/01/2012 - 10/31/2015

Day of Week	Number	%
Sunday		
Monday		
Tuesday	1	25
Wednesday	1	25
Thursday		
Friday		
Saturday	2	50
Time of Day	**Number**	**%**
6 am-10 am	2	50
10 am-4 pm	1	25
4 pm-7 pm		
7 pm-12 Mid	1	25
12 Mid-6 am		
Weather	**Number**	**%**
Clear	1	25
Cloudy	1	25
Fog		
Rain	1	25
Sleet/Snow	1	25
Pavement	**Number**	**%**
Dry	2	50
Snow/Ice	1	25
Wet	1	25
Light Conditions	**Number**	**%**
Day	3	75
Night	1	25
Dawn/Dusk		

Accident Type	Number	%
Rear End	2	50
Sideswipe		
Left Turn	1	25
Right Turn		
Right Angle		
Head On		
Bicyclist		
Pedestrian		
Animal (Deer)	1	25
Unknown		
Severity	**Number**	**%**
Fatal Injury		
Non-Fatal Injury		
Property-Damage Only	4	100
Time of Year	**Number**	**%**
Winter (Dec-Feb)	1	25
Spring (Mar-May)	1	25
Summer (June-Aug)	1	25
Fall (Sep-Nov)	1	25
Contributing Factors	**Number**	**%**
Driver Inexperience		
Failure to Yield ROW	1.00	25
Following Too Closely		
Traffic Control Disregard		
Unsafe Speed		
Pavement Slippery	1.00	25
Unknown	2.00	50

Accident Rate Calculations

Total Volume:	12,590	vehicles per day (AADT Source: JMC base counts)
	4.60	Million Vehicles per Year
	1.3	Average number of accidents per year
	0.29	Accident Rate in accidents per Million entering vehicles (MEV)
	0.16	NYSDOT Mean collision rate (Urban 3-leg unsignalized intersection)

Specific Collisions Types

Rear End

0.7 Average number of Rear End accidents per year
0.15 Accident Rate in Accidents per Million entering vehicles
0.05 NYSDOT Mean Accident Rate

Left Turn

0.3 Average number of Left Turn accidents per year
0.07 Accident Rate in Accidents per Million entering vehicles
0.01 NYSDOT Mean Accident Rate

Wet Pavement

0.7 Average number of Wet Pavement accidents per year
0.15 Accident Rate in Accidents per Million entering vehicles
0.03 NYSDOT Mean Accident Rate

TABLE 5

Traffic Signal Warrant Analysis

Time	Existing Volumes		Existing Volumes with Seasonal Adjustment [3]		Warrant #1 Satisfied 100% Columns		Warrant #1 Satisfied 80% Columns	
	Major	Minor	Major	Minor				
	Pleasantville Road	Old Briarcliff Road	Pleasantville Road	Old Briarcliff Road	$A_{100\%}$ [1]	$B_{100\%}$ [2]	$A_{80\%}$ [4]	$B_{80\%}$ [4]
7:00-8:00 AM	1,161	32	1,234	34	NO	NO	NO	NO
8:00-9:00 AM	1,021	41	1,085	44	NO	NO	NO	NO
9:00-10:00 AM	771	37	819	39	NO	NO	NO	NO
10:00-11:00 AM	670	22	712	23	NO	NO	NO	NO
11:00-12:00 PM	668	43	710	46	NO	NO	NO	NO
12:00-1:00 PM	764	29	812	31	NO	NO	NO	NO
1:00-2:00 PM	809	32	860	34	NO	NO	NO	NO
2:00-3:00 PM	754	46	801	49	NO	NO	NO	NO
3:00-4:00 PM	938	53	997	56	NO	NO	NO	NO
4:00-5:00 PM	1,169	38	1,242	40	NO	NO	NO	NO
5:00-6:00 PM	1,205	53	1,281	56	NO	NO	NO	NO
6:00-7:00 PM	974	45	1,035	48	NO	NO	NO	NO
		TOTAL HOURS SATISFIED			0	0	0	0
		REQUIRED EIGHT HOURS SATISFIED			NO	NO	NO	

Notes:

[1] Warrant 1 100% Column Condition A is satisfied when there are 500 vehicles per hour or more on a major street having one lane in each approach and there are 150 vehicles per hour or more on the higher-volume minor street having a one lane approach.

[2] Warrant 1 100% Column Condition B is satisfied when there are 750 vehicles per hour or more on a major street having one lane in each approach and there are 75 vehicles per hour or more on the higher-volume minor street having a one lane approach.

[3] Existing volumes have been increased by a seasonal adjustment factor based on NYSDOT 2015 data for a work week in the month of January.

[4] Warrant 1 80% Column is satisfied when both Condition A and Condition B are met. Condition A 80% column is satisfied when there are 400 vehicles per hour or more on a major street having one lane in each approach and there are 120 vehicles per hour or more on the higher-volume minor street having a one lane approach. Condition B 80% column is satisfied when there are 600 vehicles per hour or more on a major street having one lane in each approach and there are 60 vehicles per hour or more on the higher-volume minor street having a one lane approach.

TABLE 6

Traffic Signal Warrant Analysis

Time	Existing Volumes		Seasonally Adjusted Existing Volumes with General Growth, Other Development and Proposed Development [3][4]		Warrant #1 Satisfied 100% Columns		Warrant #1 Satisfied 80% Columns	
	Major	Minor						
	Pleasantville Road	Old Briarcliff Road	Pleasantville Road	Old Briarcliff Road	$A_{100\%}$ [1]	$B_{100\%}$ [2]	$A_{80\%}$ [5]	$B_{80\%}$ [5]
7:00-8:00 AM	1,161	32	1,402	76	NO	YES	NO	YES
8:00-9:00 AM	1,021	41	1,210	83	NO	YES	NO	YES
9:00-10:00 AM	771	37	932	70	NO	NO	NO	YES
10:00-11:00 AM	670	22	809	48	NO	NO	NO	NO
11:00-12:00 PM	668	43	808	74	NO	NO	NO	YES
12:00-1:00 PM	764	29	923	60	NO	NO	NO	NO
1:00-2:00 PM	809	32	978	65	NO	NO	NO	YES
2:00-3:00 PM	754	46	912	80	NO	YES	NO	YES
3:00-4:00 PM	938	53	1,134	94	NO	YES	NO	YES
4:00-5:00 PM	1,169	38	1,412	84	NO	YES	NO	YES
5:00-6:00 PM	1,205	53	1,448	84	NO	YES	NO	YES
6:00-7:00 PM	974	45	1,177	86	NO	YES	NO	YES
		TOTAL HOURS SATISFIED			0	7	0	10
		REQUIRED EIGHT HOURS SATISFIED			NO	NO	NO	

Notes:

[1] Warrant 1 100% Column Condition A is satisfied when there are 500 vehicles per hour or more on a major street having one lane in each approach and there are 150 vehicles per hour or more on the higher-volume minor street having a one lane approach.

[2] Warrant 1 100% Column Condition B is satisfied when there are 750 vehicles per hour or more on a major street having one lane in each approach and there are 75 vehicles per hour or more on the higher-volume minor street having a one lane approach.

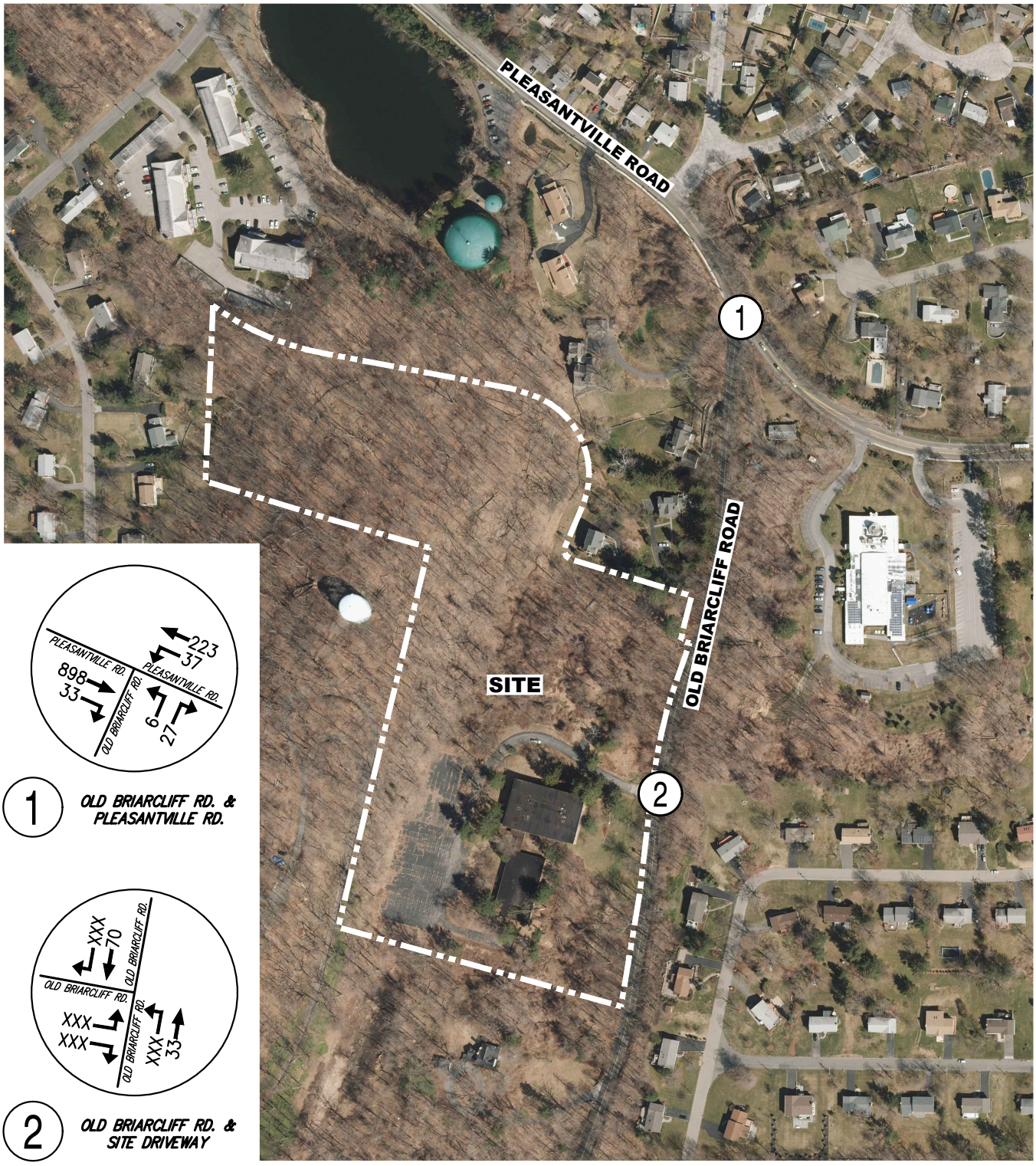
[3] Existing volumes have been increased by a seasonal adjustment factor based on NYSDOT 2015 data for a work week in the month of January. The adjusted volumes have been increased by a general growth rate of 2% per year compounded annually to the 2021 design year.

[4] Traffic volumes related to the other development and proposed development are based on the Institute of Transportation Engineers Trip Generation Manual, 10th Edition

[5] Warrant 1 80% Column is satisfied when both Condition A and Condition B are met. Condition A 80% column is satisfied when there are 400 vehicles per hour or more on a major street having one lane in each approach and there are 120 vehicles per hour or more on the higher-volume minor street having a one lane approach. Condition B 80% column is satisfied when there are 600 vehicles per hour or more on a major street having one lane in each approach and there are 60 vehicles per hour or more on the higher-volume minor street having a one lane approach.

APPENDIX B

FIGURES



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2016 EXISTING VOLUMES

PEAK WEEKDAY AM HOUR (7:30 - 8:30)

DATE: 10/05/2018 JMC PROJECT: 15245

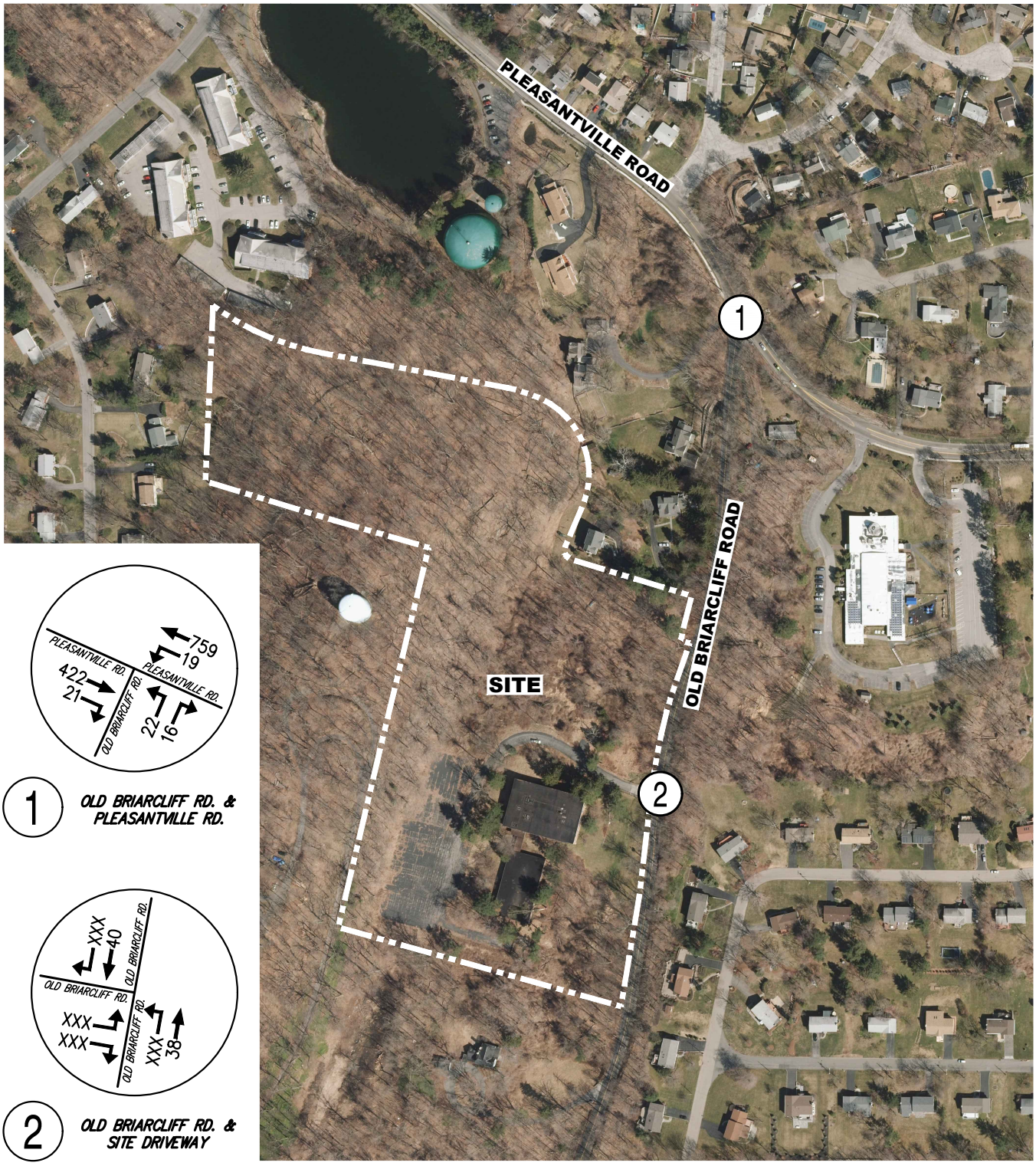
FIGURE: 01 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2016 EXISTING VOLUMES

PEAK WEEKDAY PM HOUR (4:30 - 5:30)

DATE: 10/05/2018 JMC PROJECT: 15245

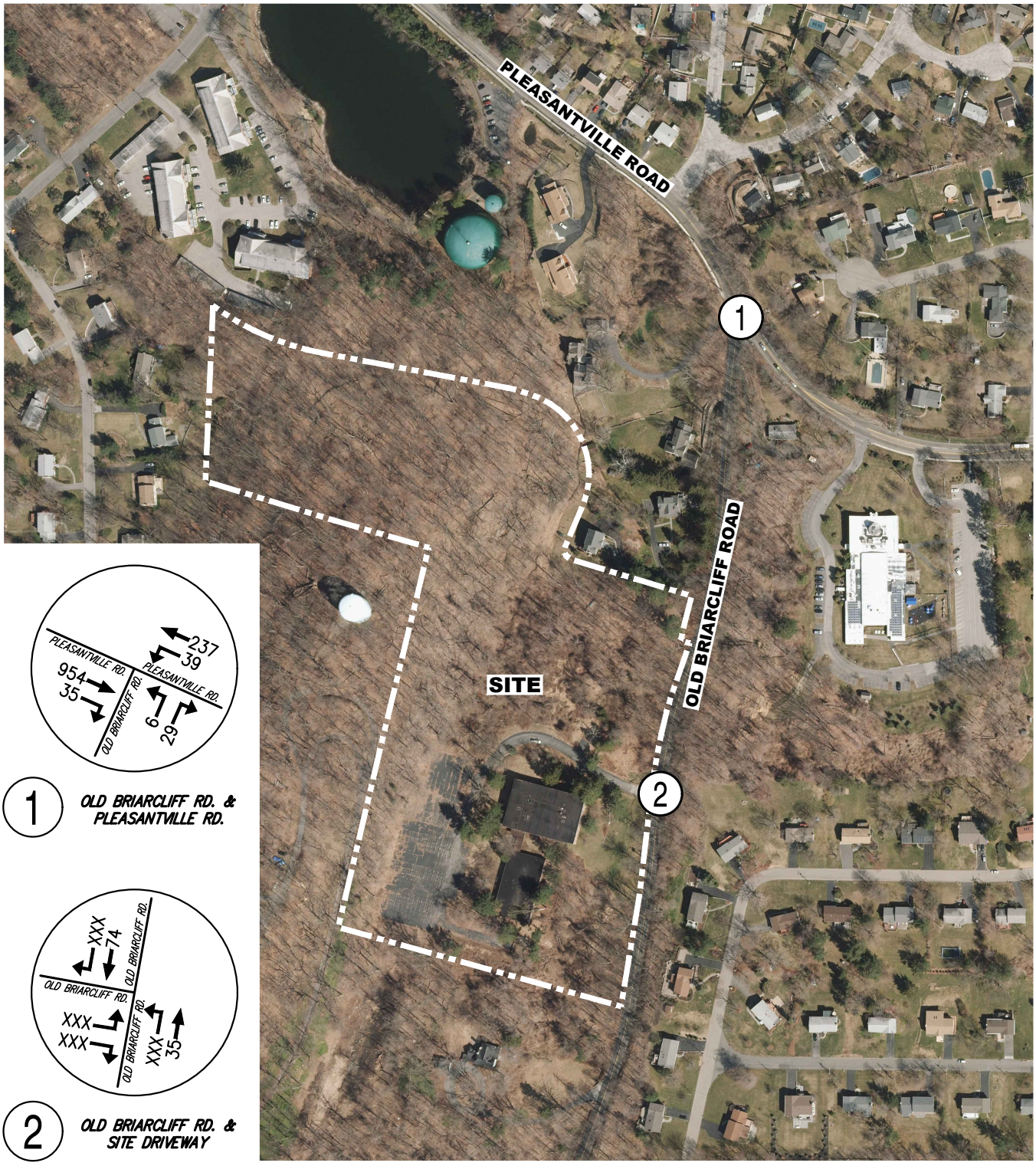
FIGURE: 02 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

SEASONALLY ADJUSTED EXISTING VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

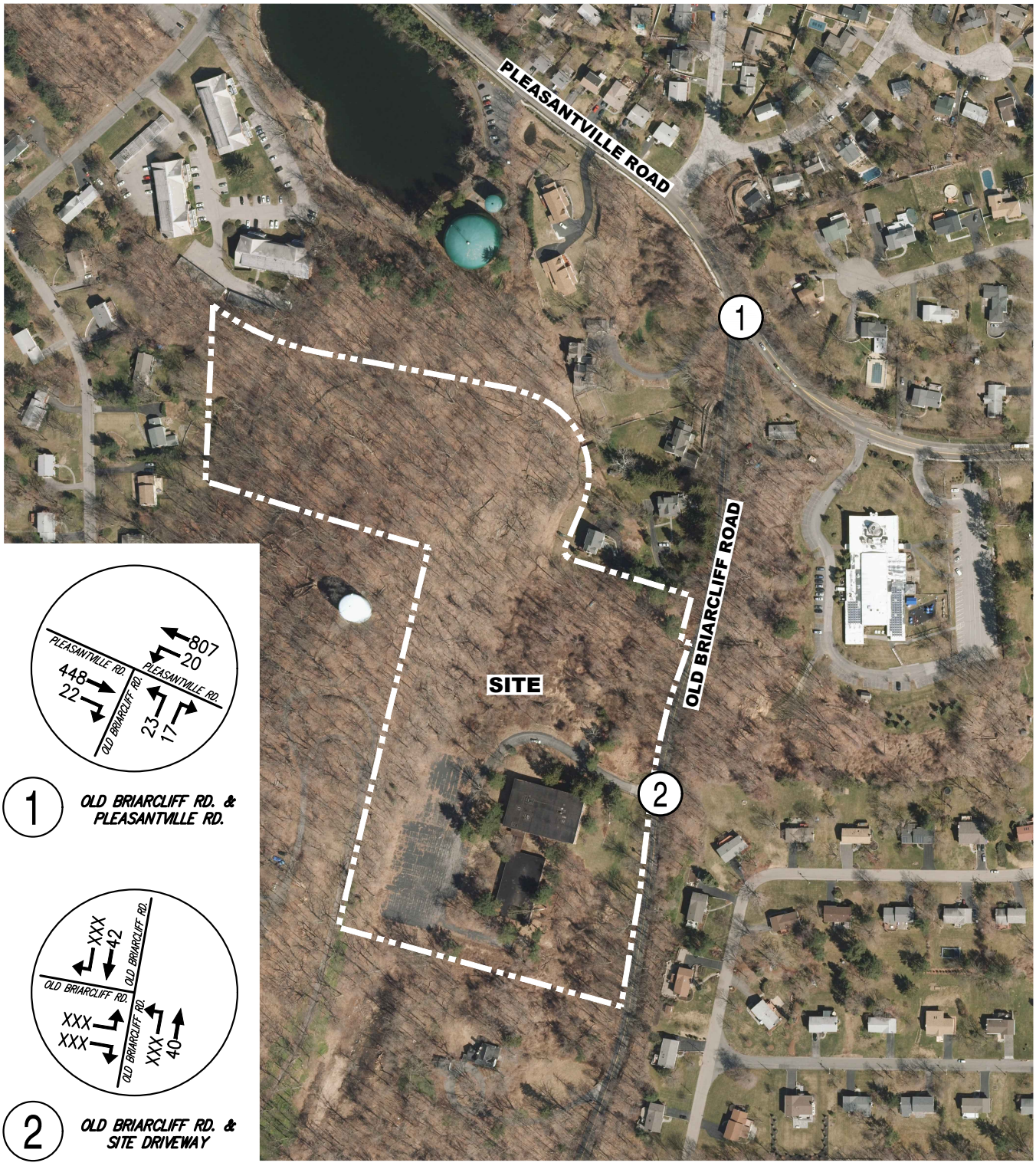
FIGURE: 03 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

SEASONALLY ADJUSTED EXISTING VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

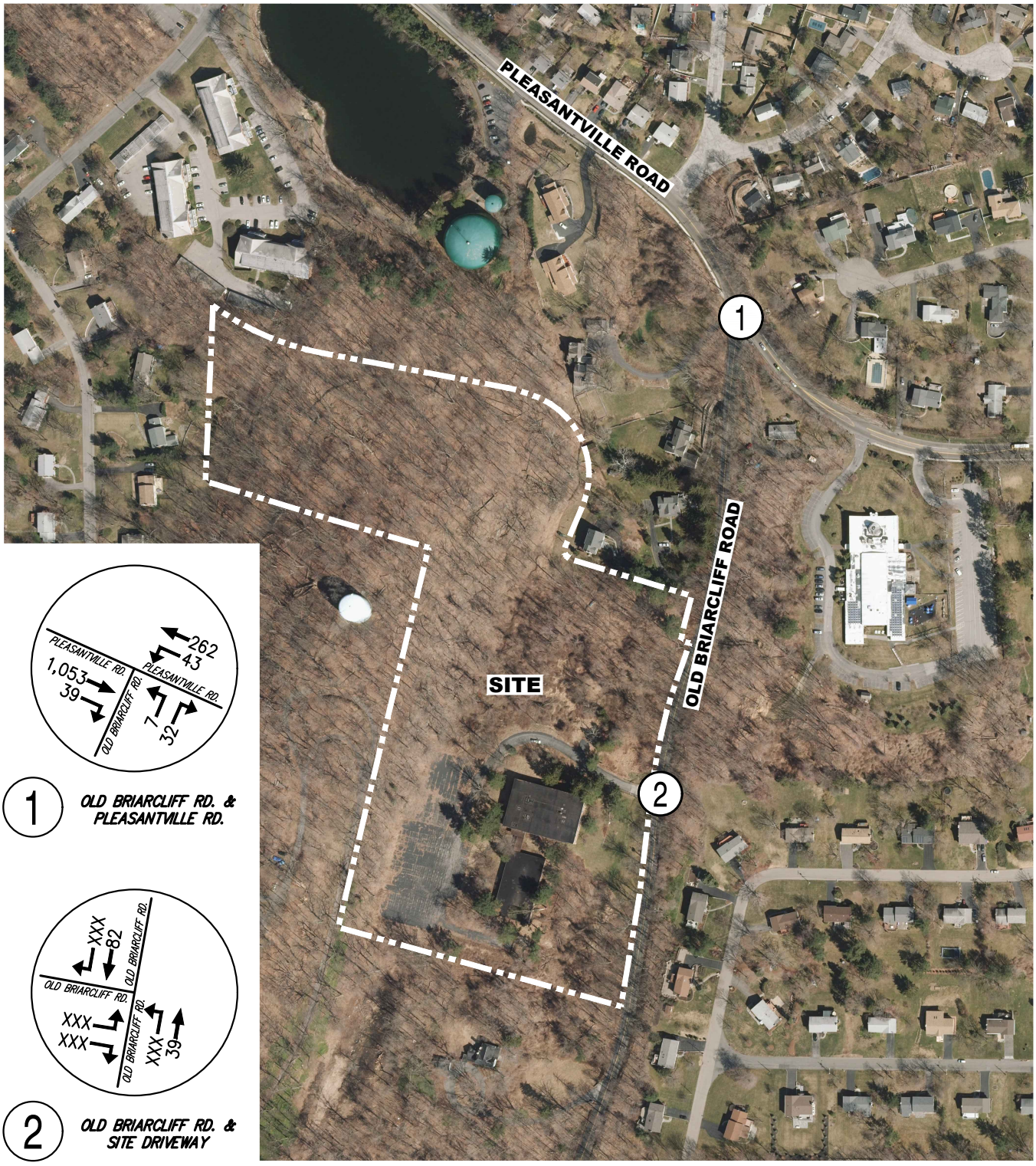
FIGURE: 04 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 GENERAL GROWTH VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

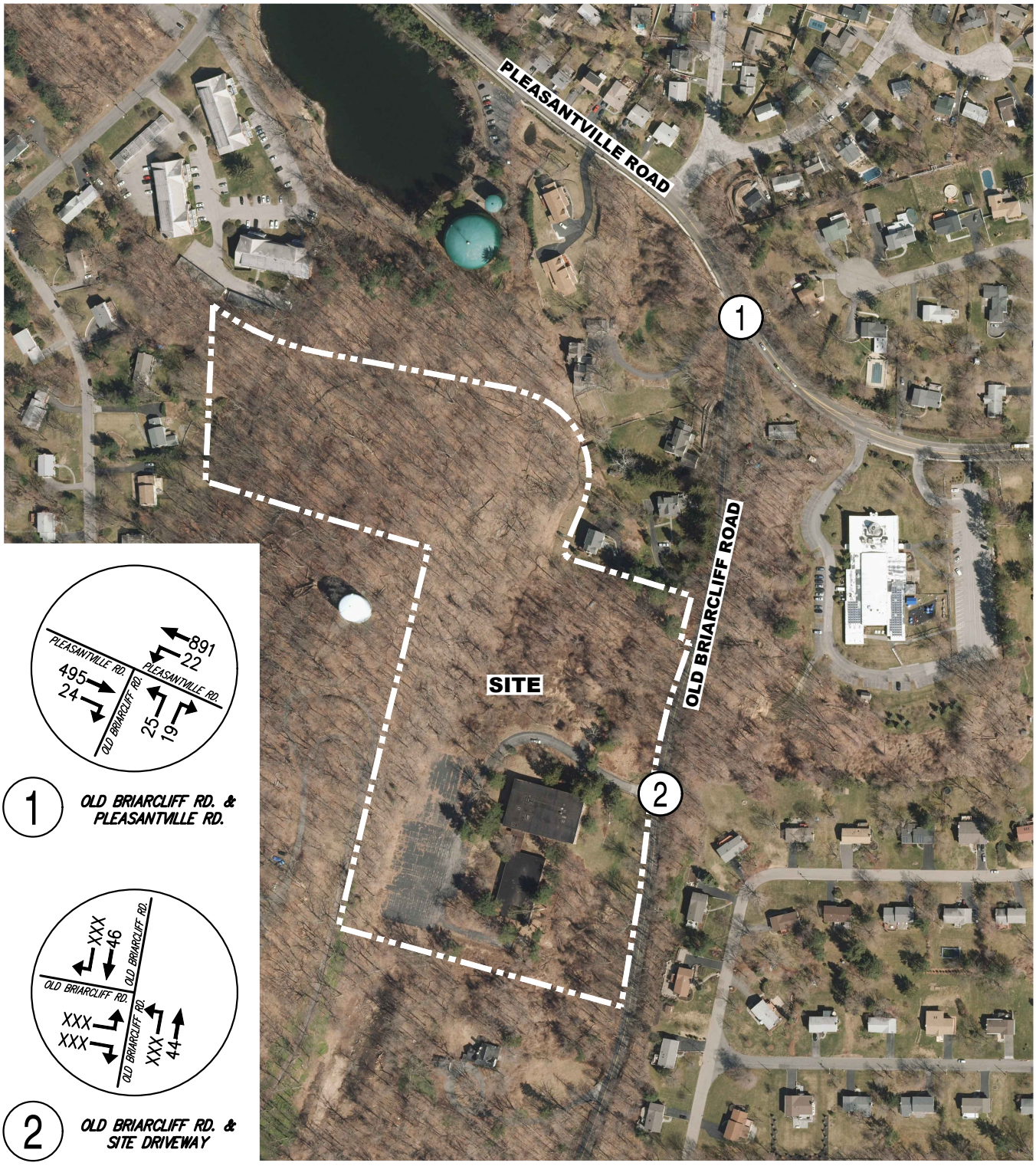
FIGURE: 05 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 GENERAL GROWTH VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

FIGURE: 06 SCALE: 1" = 300'

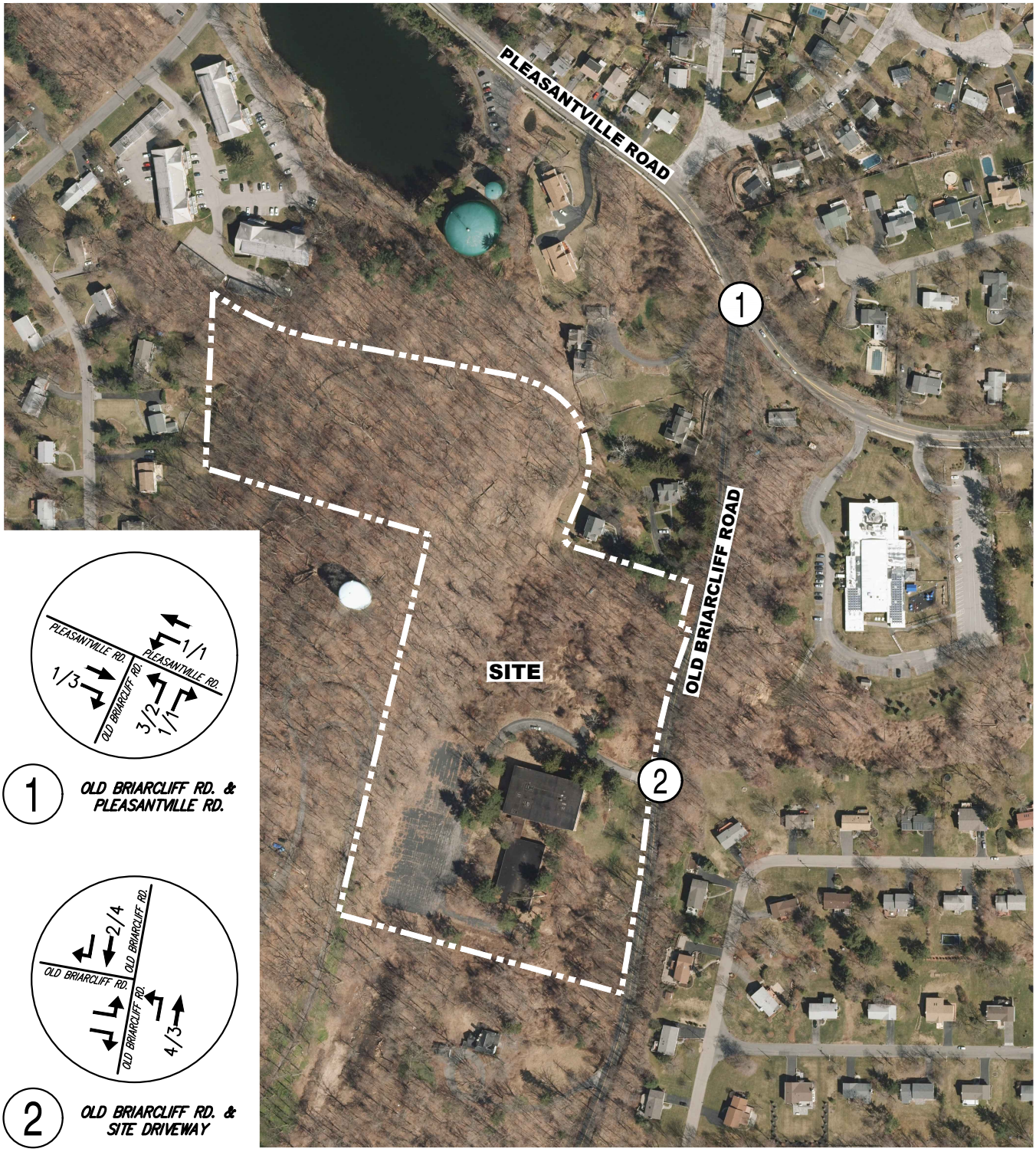
120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.

LEGEND: PEAK WEEKDAY AM HOUR / PEAK WEEKDAY PM HOUR



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

OTHER DEVELOPMENT VOLUMES

PHILLIPS RESEARCH PROPERTY REDEVELOPMENT

DATE: 10/05/2018 JMC PROJECT: 15245

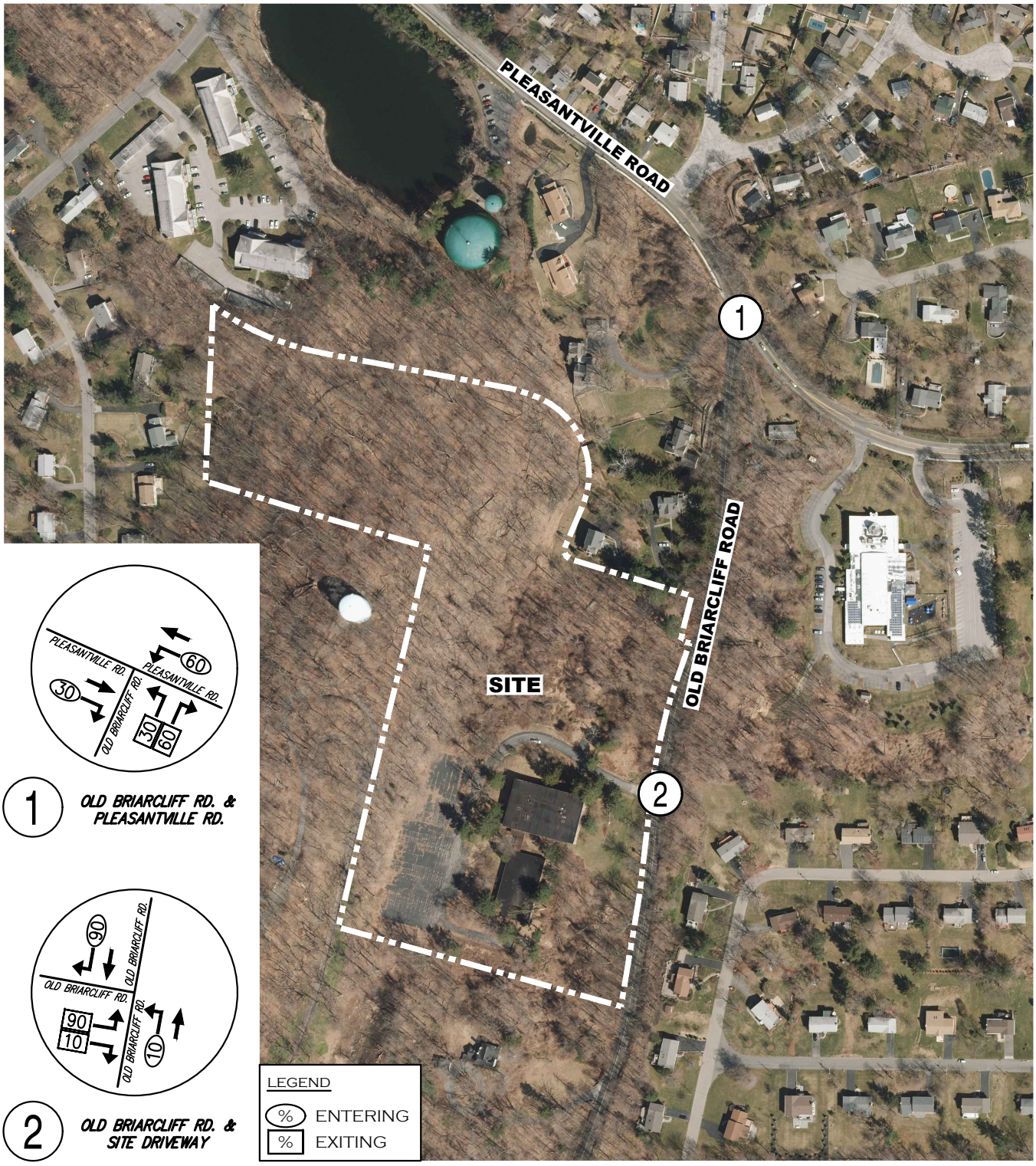
FIGURE: 07 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

REOCCUPIED TRIP DISTRIBUTIONS

DATE: 10/05/2018 JMC PROJECT: 15245

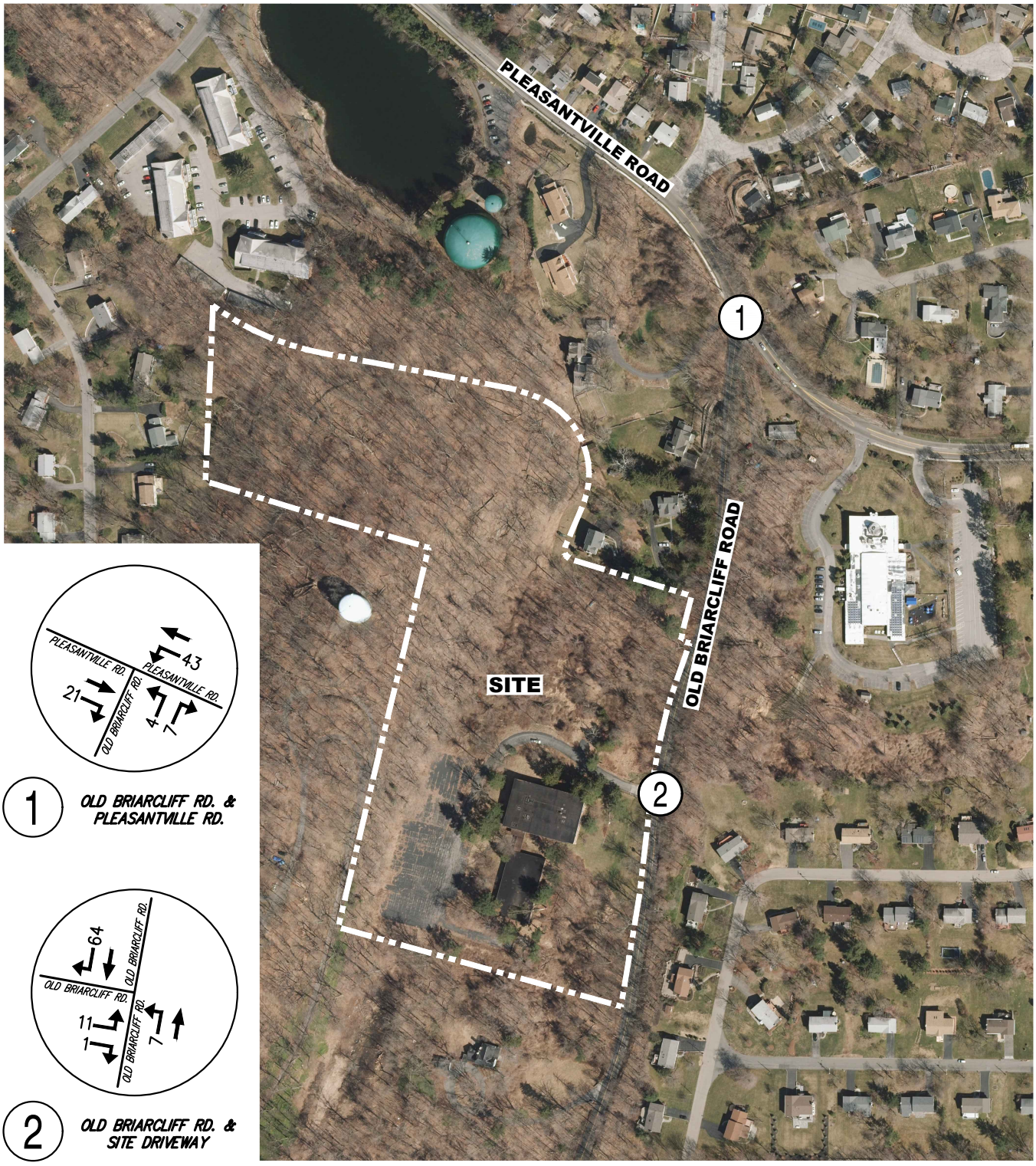
FIGURE: 08 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

REOCCUPIED TRIP VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

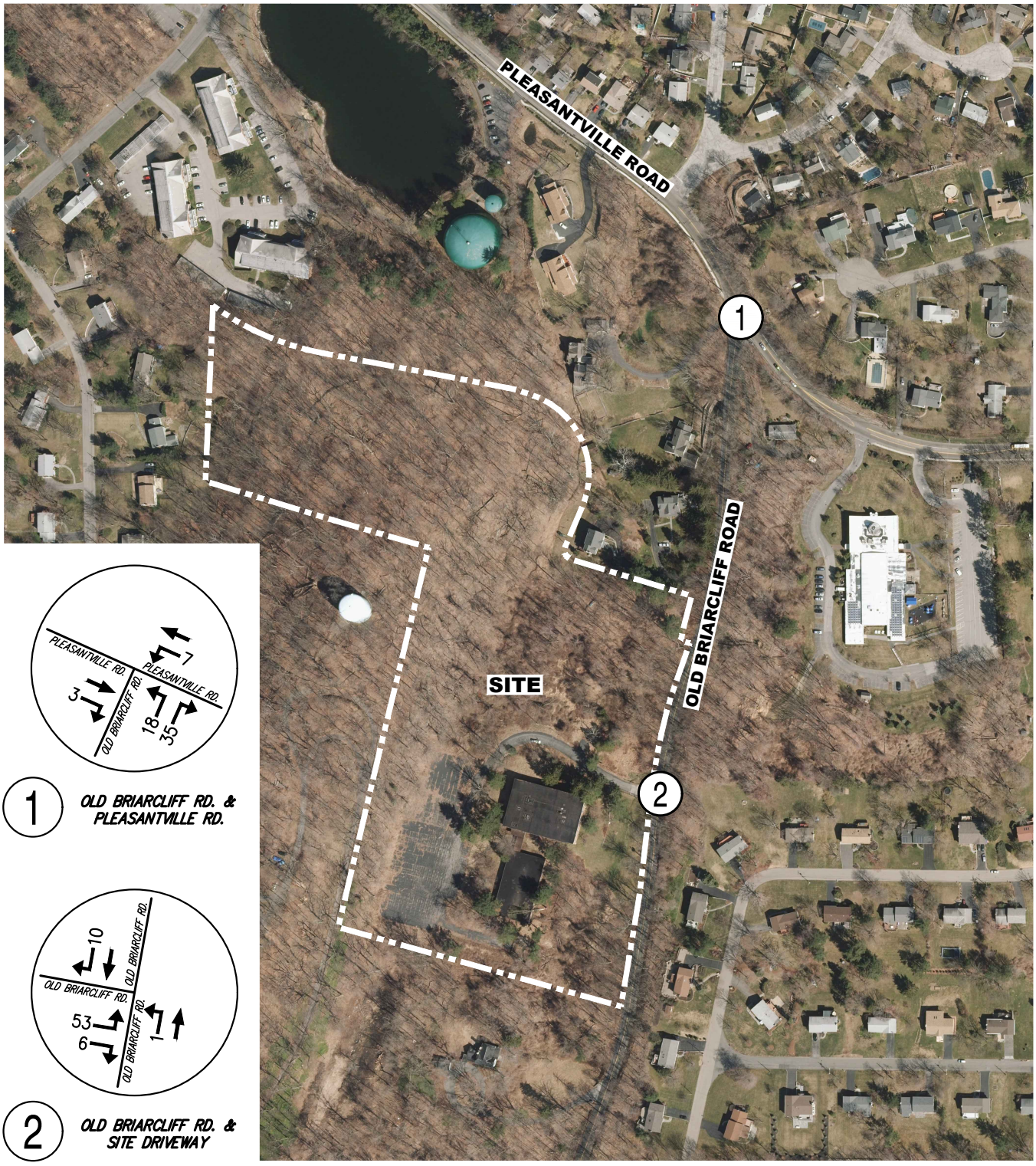
FIGURE: 09 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

REOCCUPIED TRIP VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

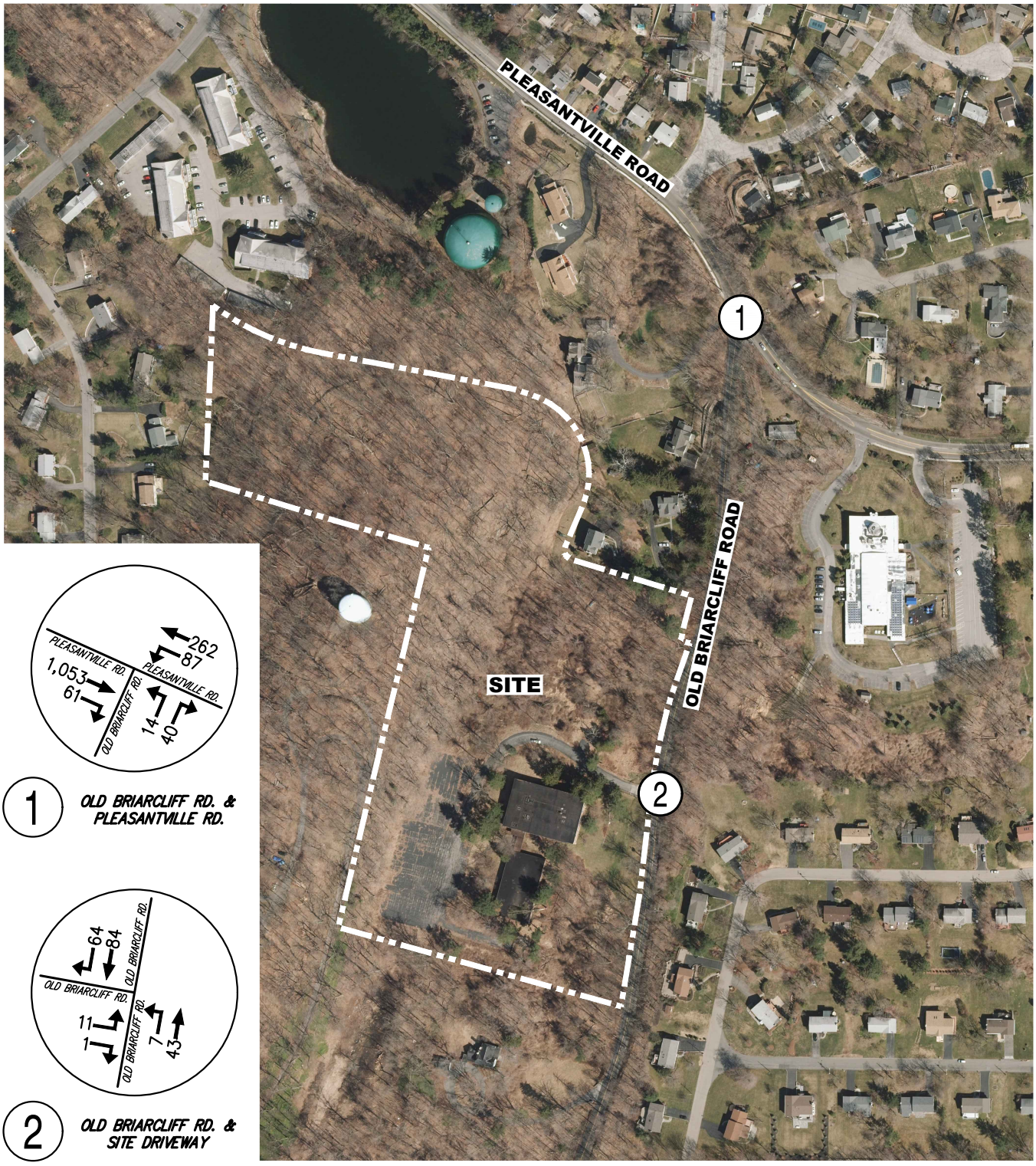
FIGURE: 10 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 NO BUILD WITH REOCCUPIED VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

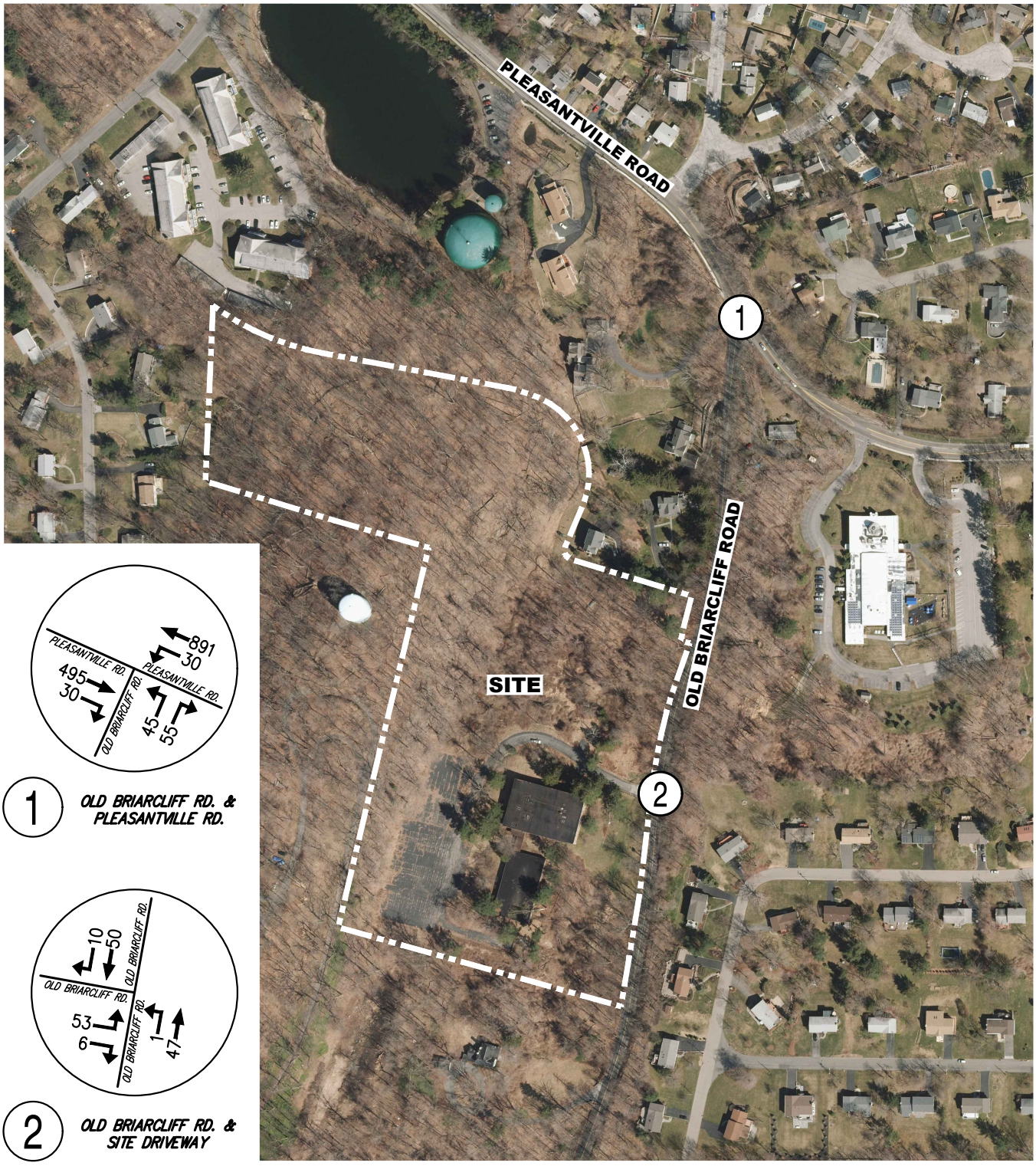
FIGURE: 11 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 NO BUILD WITH REOCCUPIED VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

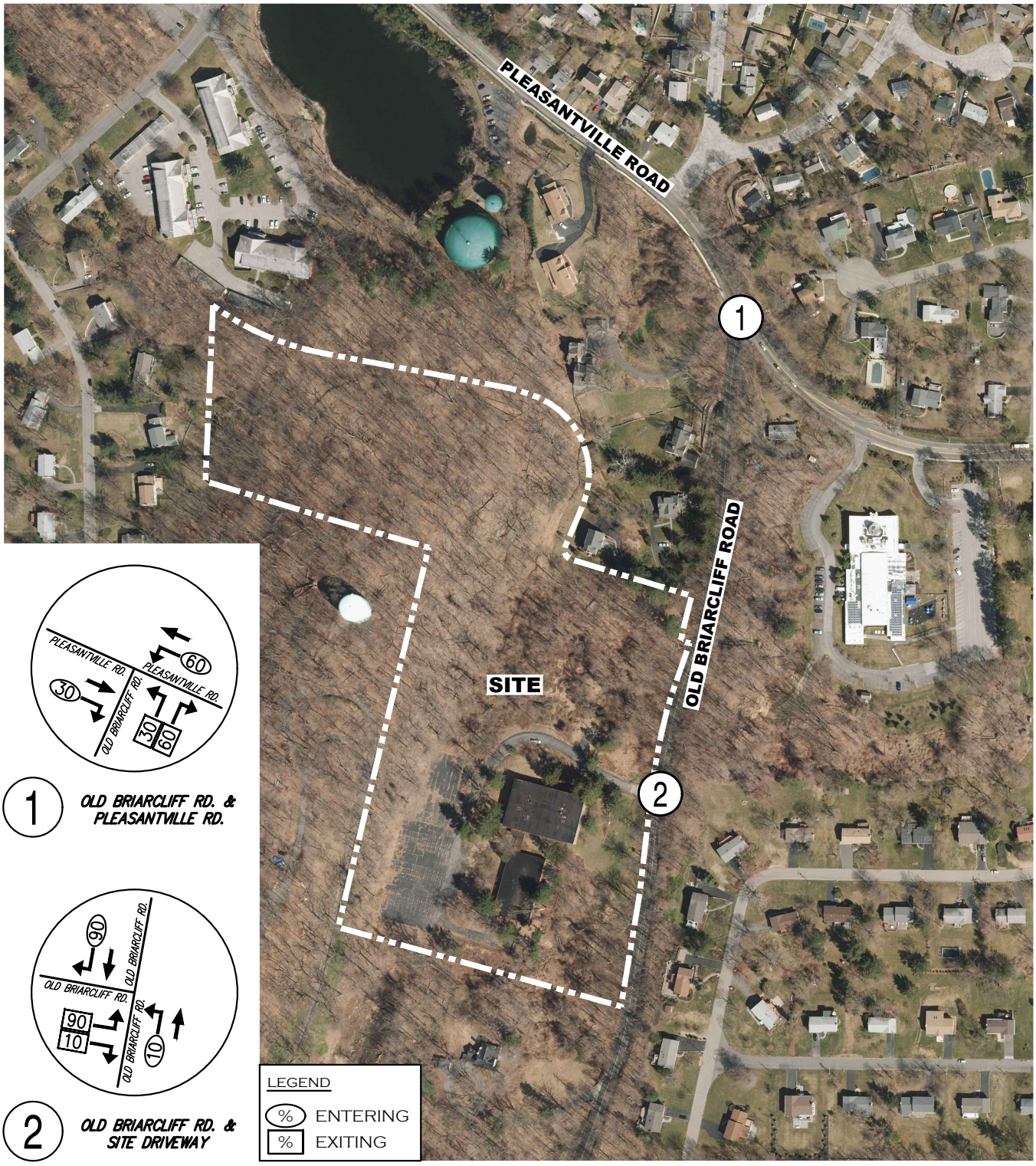
FIGURE: 12 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

PRIMARY TRIP DISTRIBUTIONS

DATE: 10/05/2018 JMC PROJECT: 15245

FIGURE: 13 SCALE: 1" = 300'

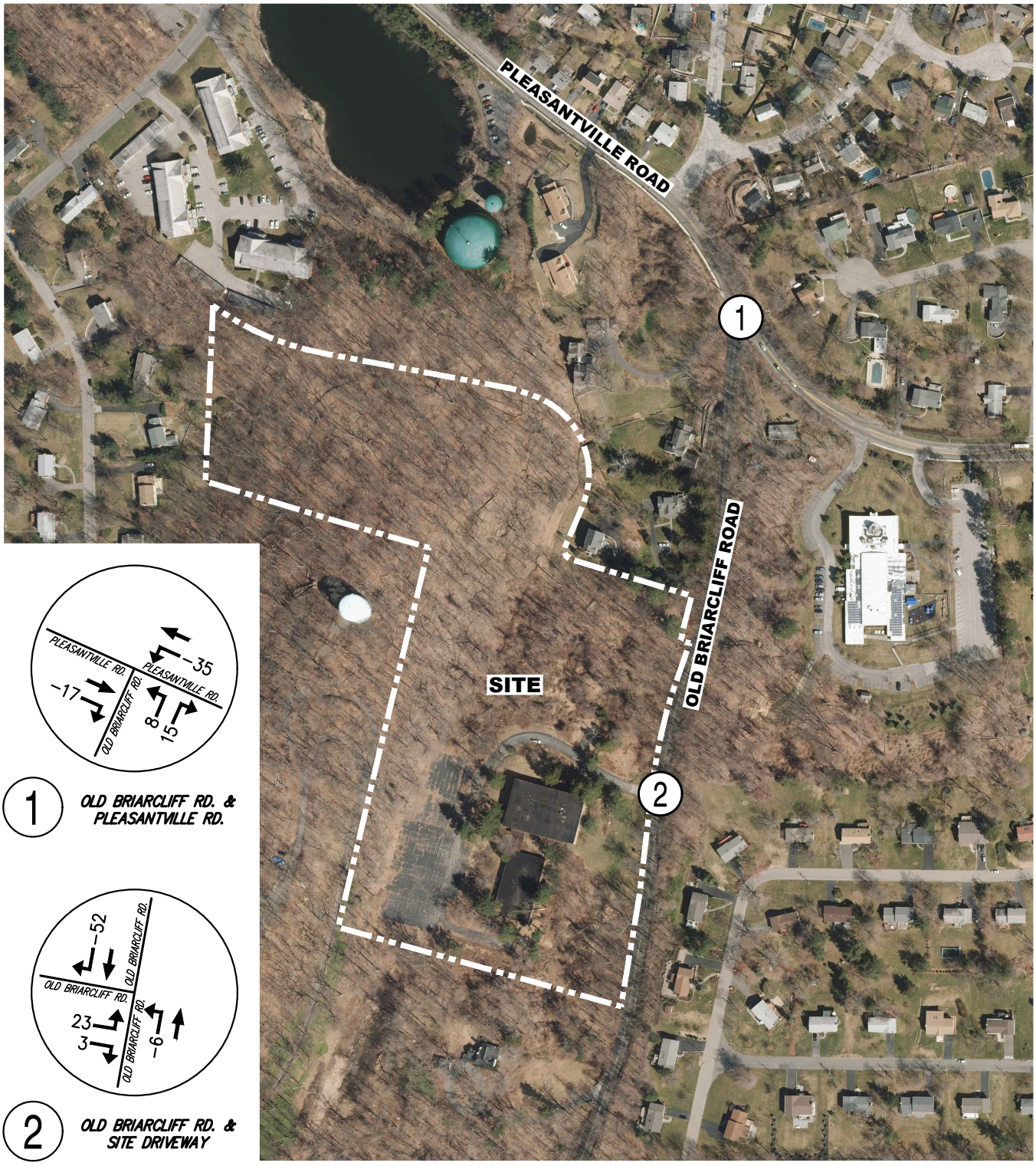
120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.

15245–TRAFFIC–FIG.dwg; TRAFFIC–FIGS.tab



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

NET ADDITIONAL PRIMARY VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

FIGURE: 14 SCALE: 1" = 300'

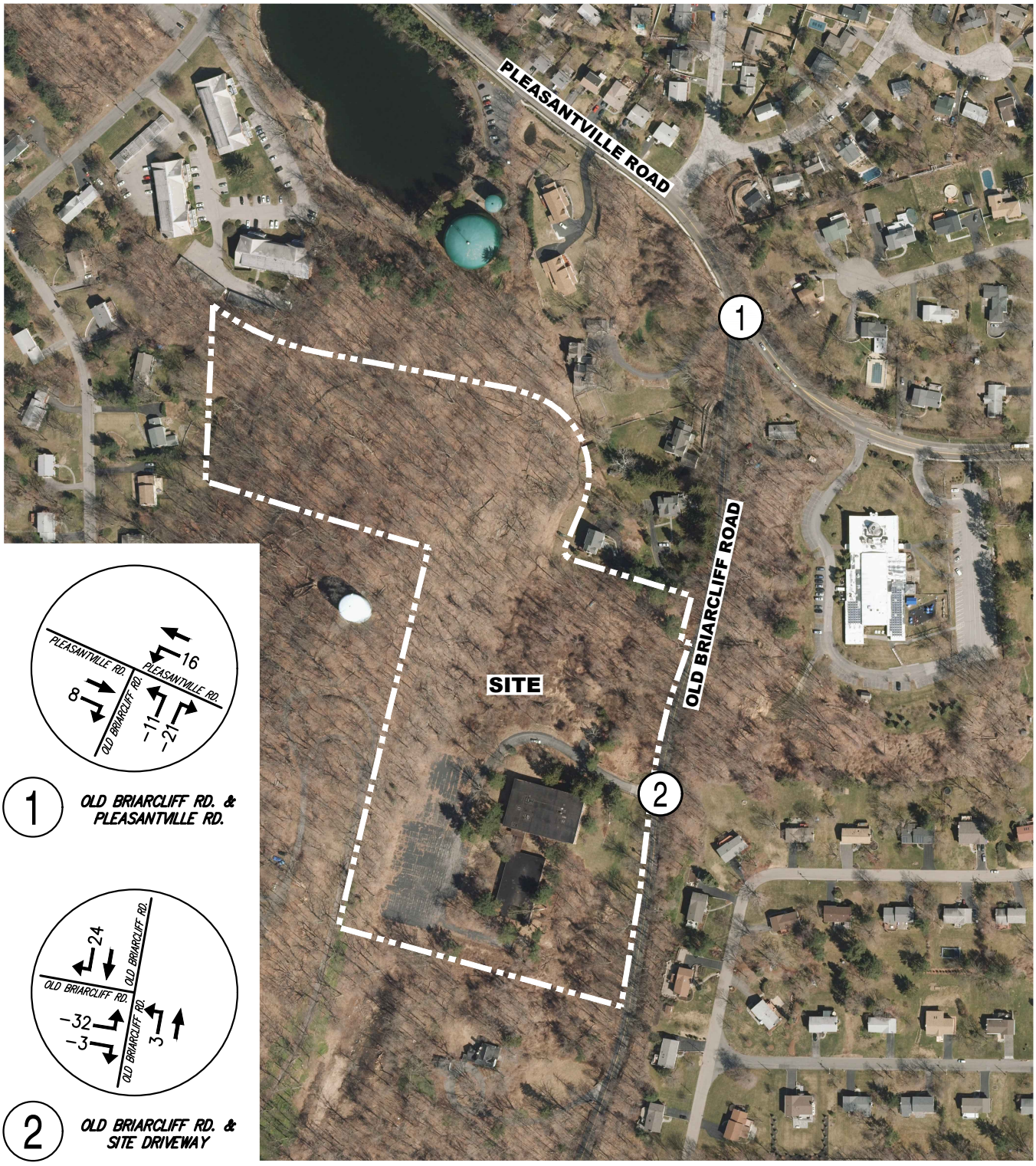
120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

JMC

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

NET ADDITIONAL PRIMARY VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

FIGURE: 15 SCALE: 1" = 300'

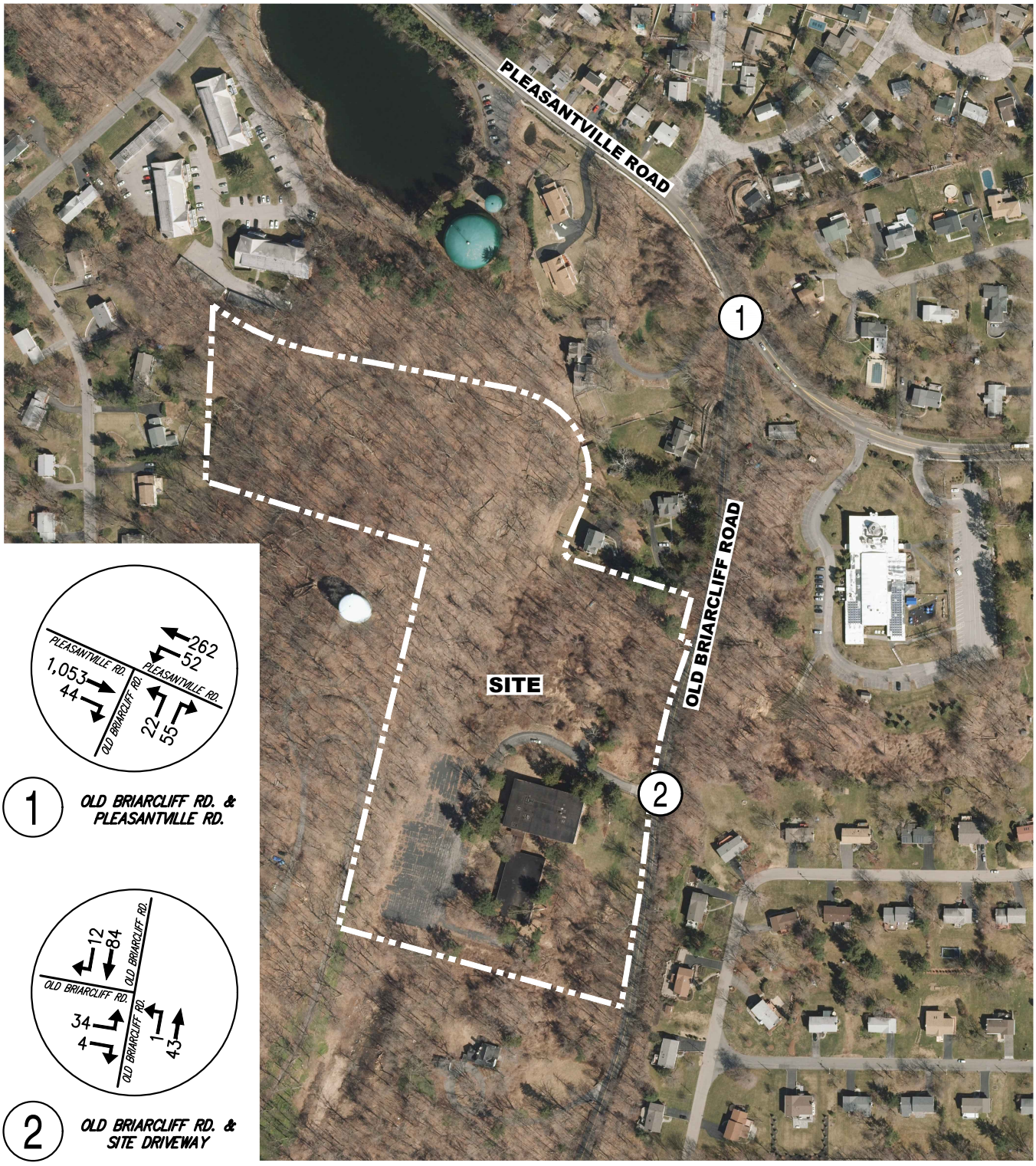
120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

JMC

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



1 OLD BRIARCLIFF RD. & PLEASANTVILLE RD.

2 OLD BRIARCLIFF RD. & SITE DRIVEWAY

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 BUILD VOLUMES

PEAK WEEKDAY AM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

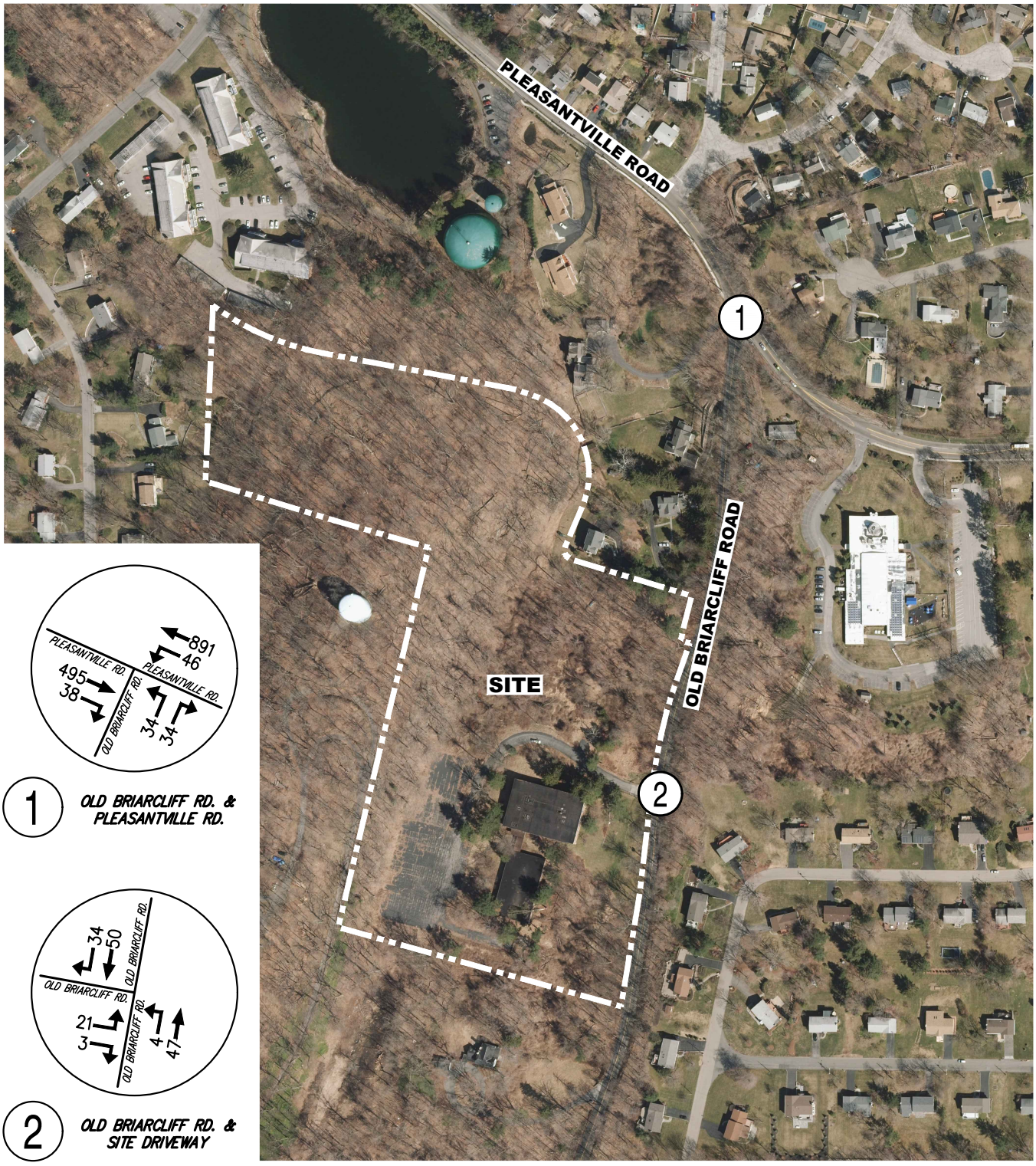
FIGURE: 16 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.



RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD VILLAGE OF BRIARCLIFF MANOR, NEW YORK

2021 BUILD VOLUMES

PEAK WEEKDAY PM HOUR

DATE: 10/05/2018 JMC PROJECT: 15245

FIGURE: 17 SCALE: 1" = 300'

120 BEDFORD RD
ARMONK
NY 10504

(914) 273-5225
fax 273-2102

JMCPLLC.COM

COPYRIGHT © 2018 by JMC All Rights Reserved. No part of this document may be reproduced, stored in a retrieval system, or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of JMC PLANNING, ENGINEERING, LANDSCAPE ARCHITECTURE & LAND SURVEYING, PLLC | JMC SITE DEVELOPMENT CONSULTANTS, LLC | JOHN MEYER CONSULTING, INC. (JMC). Any modifications or alterations to this document without the written permission of JMC shall render them invalid and unusable.

APPENDIX C

TURNING MOVEMENT COUNTS

DATE:	1/7/2016
PERIOD:	7AM-7PM
LOCATION:	Pleasantville Rd. & Old Briarcliff Rd.

CALCULATIONS - DO NOT EDIT THIS SHEET

JOB NO:	15245
NAME:	EK&KM
INT #:	1

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
7:00 - 7:15 AM	TOTAL	0	0	0	9	57	0	0	182	2	2	0	5	257						
	TRUCK	0	0	0	1	8	0	0	1	0	0	0	0		0	0	0	0	0	
7:15 - 7:30 AM	TOTAL	0	0	0	14	68	0	0	165	8	3	0	4	262						
	TRUCK	0	0	0	1	5	0	0	2	0	0	0	0		0	0	0	0	0	
7:30 - 7:45 AM	TOTAL	0	0	0	8	60	0	0	285	10	2	0	6	371						
	TRUCK	0	0	0	1	1	0	0	4	1	0	0	0		0	0	0	0	0	
7:45 - 8:00 AM	TOTAL	0	0	0	15	56	0	0	215	7	2	0	8	303						
	TRUCK	0	0	0	0	1	0	0	5	0	0	0	0		0	0	0	0	0	
8:00 - 8:15 AM	TOTAL	0	0	0	0	53	0	0	208	6	1	0	8	276						
	TRUCK	0	0	0	0	1	0	0	2	0	0	0	0		0	0	0	0	0	
8:15 - 8:30 AM	TOTAL	0	0	0	14	54	0	0	190	10	1	0	5	274						
	TRUCK	0	0	0	1	3	0	0	2	1	0	0	0		0	0	0	0	0	
8:30 - 8:45 AM	TOTAL	0	0	0	6	0	0	0	210	12	7	0	7	242						
	TRUCK	0	0	0	0	8	0	0	2	0	0	0	0		0	0	0	0	0	
8:45 - 9:00 AM	TOTAL	0	0	0	11	75	0	0	161	11	3	0	9	270						
	TRUCK	0	0	0	0	3	0	0	4	0	0	0	0		0	0	1	0	1	
9:00 - 9:15 AM	TOTAL	0	0	0	12	56	0	0	158	6	6	0	12	250						
	TRUCK	0	0	0	0	1	0	0	24	0	1	0	0		0	0	0	0	0	
9:15 - 9:30 AM	TOTAL	0	0	0	12	74	0	0	114	2	1	0	3	206						
	TRUCK	0	0	0	0	1	0	0	2	0	0	0	0		0	0	1	0	1	
9:30 - 9:45 AM	TOTAL	0	0	0	2	64	0	0	115	5	3	0	4	193						
	TRUCK	0	0	0	0	0	0	0	2	0	0	0	0		0	0	0	0	0	
9:45 - 10:00 AM	TOTAL	0	0	0	3	59	0	0	85	4	3	0	5	159						
	TRUCK	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	
10:00 - 10:15 AM	TOTAL	0	0	0	2	71	0	0	100	8	3	0	5	189						
	TRUCK	0	0	0	0	2	0	0	2	0	1	0	0		0	0	0	0	0	
10:15 - 10:30 AM	TOTAL	0	0	0	4	63	0	0	75	3	2	0	4	151						
	TRUCK	0	0	0	0	1	0	0	3	0	0	0	0		0	0	0	0	0	
10:30 - 10:45 AM	TOTAL	0	0	0	5	77	0	0	99	6	1	0	1	186						
	TRUCK	0	0	0	0	3	0	0	3	0	0	0	0		0	0	0	0	0	
10:45 - 11:00 AM	TOTAL	0	0	0	3	71	0	0	84	7	4	0	2	171						
	TRUCK	0	0	0	0	5	0	0	0	0	0	0	0		0	0	0	0	0	

11:00 - 11:15 AM	TOTAL	0	0	0	3	69	0	0	85	7	4	0	3	171						
	TRUCK	0	0	0	0	4	0	0	2	0	0	0	0		0	0	1	0	1	
11:15 - 11:30 AM	TOTAL	0	0	0	3	66	0	0	86	7	3	0	3	168						
	TRUCK	0	0	0	0	3	0	0	4	0	0	0	0		1	0	2	0	3	
11:30 - 11:45 AM	TOTAL	0	0	0	7	79	0	0	74	6	5	0	7	178						
	TRUCK	0	0	0	0	3	0	0	1	0	0	0	0		0	0	0	0	0	
11:45 - 12:00 PM	TOTAL	0	0	0	5	86	0	0	81	4	5	0	13	194						
	TRUCK	0	0	0	0	1	0	0	0	0	0	0	0		0	0	0	0	0	
12:00 - 12:15 PM	TOTAL	0	0	0	12	94	0	0	83	3	3	0	4	199						
	TRUCK	0	0	0	0	2	0	0	1	0	0	0	0		0	0	0	0	0	
12:15 - 12:30 PM	TOTAL	0	0	0	4	92	0	0	91	5	2	0	6	200						
	TRUCK	0	0	0	0	2	0	0	3	0	0	0	0		0	0	0	0	0	
12:30 - 12:45 PM	TOTAL	0	0	0	4	86	0	0	98	9	4	0	5	206						
	TRUCK	0	0	0	0	1	0	0	5	1	0	0	0		0	0	0	0	0	
12:45 - 1:00 PM	TOTAL	0	0	0	4	73	0	0	97	9	2	0	3	188						
	TRUCK	0	0	0	0	2	0	0	158	1	0	0	0		0	0	0	0	0	
1:00 - 1:15 PM	TOTAL	0	0	0	3	87	0	0	18	8	3	0	4	123						
	TRUCK	0	0	0	1	0	0	0	1	0	0	0	0		0	0	2	0	2	
1:15 - 1:30 PM	TOTAL	0	0	0	8	109	0	0	170	5	4	0	1	297						
	TRUCK	0	0	0	1	5	0	0	2	0	0	0	0		0	0	0	0	0	
1:30 - 1:45 PM	TOTAL	0	0	0	3	88	0	0	102	5	5	0	3	206						
	TRUCK	0	0	0	0	8	0	0	6	0	1	0	1		0	0	0	0	0	
1:45 - 2:00 PM	TOTAL	0	0	0	1	93	0	0	105	4	4	0	8	215						
	TRUCK	0	0	0	1	4	0	0	0	0	0	0	1		0	0	0	0	0	
2:00 - 2:15 PM	TOTAL	0	0	0	9	113	0	0	99	4	4	0	7	236						
	TRUCK	0	0	0	0	15	0	0	2	1	0	0	0		0	0	0	0	0	
2:15 - 2:30 PM	TOTAL	0	0	0	4	94	0	0	109	6	5	0	5	223						
	TRUCK	0	0	0	0	1	0	0	2	1	1	0	0		0	0	0	0	0	
2:30 - 2:45 PM	TOTAL	0	0	0	7	91	0	0	96	4	8	0	3	209						
	TRUCK	0	0	0	0	6	0	0	3	1	0	0	0		0	0	0	0	0	
2:45 - 3:00 PM	TOTAL	0	0	0	4	101	0	0	3	10	8	0	6	132						
	TRUCK	0	0	0	0	5	0	0	4	1	1	0	2		0	0	0	0	0	
3:00 - 3:15 PM	TOTAL	0	0	0	2	101	0	0	109	4	5	0	8	229						
	TRUCK	0	0	0	1	5	0	0	2	0	0	0	0		0	0	0	0	0	
3:15 - 3:30 PM	TOTAL	0	0	0	8	101	0	0	84	4	5	0	8	210						
	TRUCK	0	0	0	0	0	0	0	4	0	0	0	0		0	0	0	0	0	
3:30 - 3:45 PM	TOTAL	0	0	0	6	163	0	0	110	6	2	0	7	294						
	TRUCK	0	0	0	1	4	0	0	8	0	0	0	0		0	0	0	0	0	
3:45 - 4:00 PM	TOTAL	0	0	0	4	120	0	0	112	4	8	0	10	258						
	TRUCK	0	0	0	0	2	0	0	10	0	0	0	2		0	0	0	0	0	

4:00 - 4:15 PM	TOTAL	0	0	0	7	174	0	0	99	5	7	0	9	301						
	TRUCK	0	0	0	0	0	0	0	9	0	0	0	1		0	0	0	0	0	
4:15 - 4:30 PM	TOTAL	0	0	0	4	171	0	0	104	3	3	0	2	287						
	TRUCK	0	0	0	0	1	0	0	6	0	0	0	0		0	0	1	0	1	
4:30 - 4:45 PM	TOTAL	0	0	0	7	203	0	0	104	5	5	0	1	325						
	TRUCK	0	0	0	0	1	0	0	1	0	0	0	0		0	0	0	0	0	
4:45 - 5:00 PM	TOTAL	0	0	0	2	174	0	0	103	4	5	0	6	294						
	TRUCK	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	
5:00 - 5:15 PM	TOTAL	0	0	0	4	194	0	0	128	7	4	0	5	342						
	TRUCK	0	0	0	0	4	0	0	0	0	0	0	0		0	0	0	0	0	
5:15 - 5:30 PM	TOTAL	0	0	0	6	188	0	0	87	5	8	0	4	298						
	TRUCK	0	0	0	0	1	0	0	0	0	1	0	0		0	0	0	0	0	
5:30 - 5:45 PM	TOTAL	0	0	0	4	190	0	0	102	8	7	0	7	318						
	TRUCK	0	0	0	0	0	0	0	1	0	0	0	0		0	0	0	0	0	
5:45 - 6:00 PM	TOTAL	0	0	0	4	183	0	0	92	3	9	0	9	300						
	TRUCK	0	0	0	0	0	0	0	2	0	0	0	0		0	0	1	0	1	
6:00 - 6:15 PM	TOTAL	0	0	0	4	157	0	0	95	7	3	0	9	275						
	TRUCK	0	0	0	0	0	0	0	1	0	1	0	0		0	0	0	0	0	
6:15 - 6:30 PM	TOTAL	0	0	0	4	163	0	0	87	7	4	0	7	272						
	TRUCK	0	0	0	0	1	0	0	2	0	0	0	0		0	0	0	0	0	
6:30 - 6:45 PM	TOTAL	0	0	0	6	136	0	0	73	4	7	0	4	230						
	TRUCK	0	0	0	0	3	0	0	2	0	0	0	0		0	0	0	0	0	
6:45 - 7:00 PM	TOTAL	0	0	0	8	124	0	0	95	4	2	0	9	242						
	TRUCK	0	0	0	0	0	0	0	0	0	1	0	0		0	0	1	0	1	
7:00 - 7:15 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
7:15 - 7:30 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
7:30 - 7:45 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
7:45 - 8:00 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
8:00 - 8:15 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
8:15 - 8:30 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
8:30 - 8:45 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	
8:45 - 9:00 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	

1:
2:
3:
4: Pleasantville Rd. WB Left
5: Pleasantville Rd. WB Thru
6:
7:
8: Pleasantville Rd. EB Thru
9: Pleasantville Rd. EB Right
10: Old Briarcliff Rd. NB Left
11:
12: Old Briarcliff Rd. NB Right

A:
B: Cross Pleasantville Rd. East Side of I
C: Cross Old Briarcliff Rd. South Side o
D: Cross Pleasantville rd. West Side of I

DATE:	1/7/2016
PERIOD:	7AM-7PM
LOCATION:	Pleasantville Rd. & Old Briarcliff Rd.

PEAK HOUR MOVEMENTS & % HEAVY VEHICLES - DO NOT EDIT THIS SHEET

JOB NO:	15245
NAME:	EK&KM
INT #:	1

TIME	CLASS	VEHICLE MOVEMENT												TOTAL VEHICLES	PEDESTRIAN MOVEMENT				TOTAL PEDS	INT. PHF
		1	2	3	4	5	6	7	8	9	10	11	12		A	B	C	D		
7:00 - 8:00 AM	TOTAL	0	0	0	46	241	0	0	847	27	9	0	23	1,193						
	TRUCK	#####	#####	#####	7%	6%	#####	#####	1%	4%	0%	#####	0%		0	0	0	0	0	0.80
7:15 - 8:15 AM	TOTAL	0	0	0	37	237	0	0	873	31	8	0	26	1,212						
	TRUCK	#####	#####	#####	5%	3%	#####	#####	1%	3%	0%	#####	0%		0	0	0	0	0	0.82
7:30 - 8:30 AM	TOTAL	0	0	0	37	223	0	0	898	33	6	0	27	1,224						
	TRUCK	#####	#####	#####	5%	3%	#####	#####	1%	6%	0%	#####	0%		0	0	0	0	0	0.82
7:45 - 8:45 AM	TOTAL	0	0	0	35	163	0	0	823	35	11	0	28	1,095						
	TRUCK	#####	#####	#####	3%	8%	#####	#####	1%	3%	0%	#####	0%		0	0	0	0	0	0.90
8:00 - 9:00 AM	TOTAL	0	0	0	31	182	0	0	769	39	12	0	29	1,062						
	TRUCK	#####	#####	#####	3%	8%	#####	#####	1%	3%	0%	#####	0%		0	0	1	0	1	0.96
8:15 - 9:15 AM	TOTAL	0	0	0	43	185	0	0	719	39	17	0	33	1,036						
	TRUCK	#####	#####	#####	2%	8%	#####	#####	4%	3%	6%	#####	0%		0	0	1	0	1	0.95
8:30 - 9:30 AM	TOTAL	0	0	0	41	205	0	0	643	31	17	0	31	968						
	TRUCK	#####	#####	#####	0%	6%	#####	#####	5%	0%	6%	#####	0%		0	0	2	0	2	0.90
8:45 - 9:45 AM	TOTAL	0	0	0	37	269	0	0	548	24	13	0	28	919						
	TRUCK	#####	#####	#####	0%	2%	#####	#####	6%	0%	8%	#####	0%		0	0	2	0	2	0.85
9:00 - 10:00 AM	TOTAL	0	0	0	29	253	0	0	472	17	13	0	24	808						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	6%	0%	8%	#####	0%		0	0	1	0	1	0.81
9:15 - 10:15 AM	TOTAL	0	0	0	19	268	0	0	414	19	10	0	17	747						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	1%	0%	10%	#####	0%		0	0	1	0	1	0.91
9:30 - 10:30 AM	TOTAL	0	0	0	11	257	0	0	375	20	11	0	18	692						
	TRUCK	#####	#####	#####	0%	2%	#####	#####	2%	0%	9%	#####	0%		0	0	0	0	0	0.90
9:45 - 10:45 AM	TOTAL	0	0	0	14	270	0	0	359	20	9	0	15	663						
	TRUCK	#####	#####	#####	0%	3%	#####	#####	2%	20%	11%	#####	0%		0	0	0	0	0	0.89
10:00 - 11:00 AM	TOTAL	0	0	0	14	282	0	0	358	16	10	0	12	670						
	TRUCK	#####	#####	#####	0%	4%	#####	#####	2%	25%	10%	#####	0%		0	0	0	0	0	0.90
10:15 - 11:15 AM	TOTAL	0	0	0	15	280	0	0	343	8	11	0	10	489						
	TRUCK	#####	#####	#####	0%	5%	#####	#####	2%	50%	0%	#####	0%		0	0	1	0	1	0.66
10:30 - 11:30 AM	TOTAL	0	0	0	14	283	0	0	354	5	12	0	9	499						
	TRUCK	#####	#####	#####	0%	5%	#####	#####	3%	80%	0%	#####	0%		1	0	3	0	4	0.67
10:45 - 11:45 AM	TOTAL	0	0	0	16	285	0	0	329	27	16	0	15	688						
	TRUCK	#####	#####	#####	0%	5%	#####	#####	2%	0%	0%	#####	0%		1	0	3	0	4	0.97
11:00 - 12:00 AM	TOTAL	0	0	0	18	300	0	0	326	24	17	0	26	711						
	TRUCK	#####	#####	#####	0%	4%	#####	#####	2%	0%	0%	#####	0%		1	0	3	0	4	0.92

11:15 - 12:15 AM	TOTAL	0	0	0	27	325	0	0	324	20	16	0	27	739						
	TRUCK	#####	#####	#####	0%	3%	#####	#####	2%	0%	0%	#####	0%		1	0	2	0	3	0.93
11:30 - 12:30 AM	TOTAL	0	0	0	28	351	0	0	329	18	15	0	30	771						
	TRUCK	#####	#####	#####	0%	2%	#####	#####	2%	0%	0%	#####	0%		0	0	0	0	0	0.96
11:45 - 12:45 PM	TOTAL	0	0	0	25	358	0	0	353	21	14	0	28	799						
	TRUCK	#####	#####	#####	0%	2%	#####	#####	3%	5%	0%	#####	0%		0	0	0	0	0	0.97
12:00 - 1:00 PM	TOTAL	0	0	0	24	345	0	0	369	26	11	0	18	793						
	TRUCK	#####	#####	#####	0%	2%	#####	#####	4%	8%	0%	#####	0%		0	0	0	0	0	0.96
12:15 - 1:15 PM	TOTAL	0	0	0	15	338	0	0	304	31	11	0	18	717						
	TRUCK	#####	#####	#####	7%	1%	#####	#####	5%	6%	0%	#####	0%		0	0	2	0	2	0.87
12:30 - 1:30 PM	TOTAL	0	0	0	19	355	0	0	383	31	13	0	13	814						
	TRUCK	#####	#####	#####	11%	2%	#####	#####	5%	6%	0%	#####	0%		0	0	2	0	2	0.69
12:45 - 1:45 PM	TOTAL	0	0	0	18	357	0	0	387	27	14	0	11	814						
	TRUCK	#####	#####	#####	11%	4%	#####	#####	5%	4%	7%	#####	9%		0	0	2	0	2	0.69
1:00 - 2:00 PM	TOTAL	0	0	0	15	377	0	0	395	22	16	0	16	841						
	TRUCK	#####	#####	#####	20%	5%	#####	#####	2%	0%	6%	#####	13%		0	0	2	0	2	0.71
1:15 - 2:15 PM	TOTAL	0	0	0	21	403	0	0	476	18	17	0	19	954						
	TRUCK	#####	#####	#####	10%	8%	#####	#####	2%	6%	6%	#####	11%		0	0	0	0	0	0.80
1:30 - 2:30 PM	TOTAL	0	0	0	17	388	0	0	415	19	18	0	23	880						
	TRUCK	#####	#####	#####	6%	7%	#####	#####	2%	11%	11%	#####	9%		0	0	0	0	0	0.93
1:45 - 2:45 PM	TOTAL	0	0	0	21	391	0	0	409	18	21	0	23	883						
	TRUCK	#####	#####	#####	5%	7%	#####	#####	2%	17%	5%	#####	4%		0	0	0	0	0	0.94
2:00 - 3:00 PM	TOTAL	0	0	0	24	399	0	0	307	24	25	0	21	800						
	TRUCK	#####	#####	#####	0%	7%	#####	#####	4%	17%	8%	#####	10%		0	0	0	0	0	0.85
2:15 - 3:15 PM	TOTAL	0	0	0	17	387	0	0	317	24	26	0	22	793						
	TRUCK	#####	#####	#####	6%	4%	#####	#####	3%	13%	8%	#####	9%		0	0	0	0	0	0.87
2:30 - 3:30 PM	TOTAL	0	0	0	21	394	0	0	292	22	26	0	25	780						
	TRUCK	#####	#####	#####	5%	4%	#####	#####	4%	9%	4%	#####	8%		0	0	0	0	0	0.85
2:45 - 3:45 PM	TOTAL	0	0	0	20	466	0	0	306	24	20	0	29	865						
	TRUCK	#####	#####	#####	10%	3%	#####	#####	6%	4%	5%	#####	7%		0	0	0	0	0	0.74
3:00 - 4:00 PM	TOTAL	0	0	0	20	485	0	0	415	18	20	0	33	991						
	TRUCK	#####	#####	#####	10%	2%	#####	#####	6%	0%	0%	#####	6%		0	0	0	0	0	0.84
3:15 - 4:15 PM	TOTAL	0	0	0	25	558	0	0	405	19	22	0	34	1,063						
	TRUCK	#####	#####	#####	4%	1%	#####	#####	8%	0%	0%	#####	9%		0	0	0	0	0	0.88
3:30 - 4:30 PM	TOTAL	0	0	0	21	628	0	0	425	18	20	0	28	1,140						
	TRUCK	#####	#####	#####	5%	1%	#####	#####	8%	0%	0%	#####	11%		0	0	1	0	1	0.95
3:45 - 4:45 PM	TOTAL	0	0	0	22	668	0	0	419	17	23	0	22	1,171						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	6%	0%	0%	#####	14%		0	0	1	0	1	0.90
4:00 - 5:00 PM	TOTAL	0	0	0	20	722	0	0	410	17	20	0	18	1,207						
	TRUCK	#####	#####	#####	0%	0%	#####	#####	4%	0%	0%	#####	6%		0	0	1	0	1	0.93

4:15 - 5:15 PM	TOTAL	0	0	0	17	742	0	0	439	19	17	0	14	1,248						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	2%	0%	0%	#####	0%		0	0	1	0	1	0.91
4:30 - 5:30 PM	TOTAL	0	0	0	19	759	0	0	422	21	22	0	16	1,259						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	0%	0%	5%	#####	0%		0	0	0	0	0	0.92
4:45 - 5:45 PM	TOTAL	0	0	0	16	746	0	0	420	24	24	0	22	1,252						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	0%	0%	4%	#####	0%		0	0	0	0	0	0.92
5:00 - 6:00 PM	TOTAL	0	0	0	18	755	0	0	409	23	28	0	25	1,258						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	1%	0%	4%	#####	0%		0	0	1	0	1	0.92
5:15 - 6:15 PM	TOTAL	0	0	0	18	718	0	0	376	23	27	0	29	1,191						
	TRUCK	#####	#####	#####	0%	0%	#####	#####	1%	0%	7%	#####	0%		0	0	1	0	1	0.94
5:30 - 6:30 PM	TOTAL	0	0	0	16	693	0	0	376	25	23	0	32	1,165						
	TRUCK	#####	#####	#####	0%	0%	#####	#####	2%	0%	4%	#####	0%		0	0	1	0	1	0.92
5:45 - 6:45 PM	TOTAL	0	0	0	18	639	0	0	347	21	23	0	29	1,077						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	2%	0%	4%	#####	0%		0	0	1	0	1	0.90
6:00 - 7:00 PM	TOTAL	0	0	0	22	580	0	0	350	22	16	0	29	1,019						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	1%	0%	13%	#####	0%		0	0	1	0	1	0.93
6:15 - 7:15 PM	TOTAL	0	0	0	18	423	0	0	255	15	13	0	20	744						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	2%	0%	8%	#####	0%		0	0	1	0	1	0.68
6:30 - 7:30 PM	TOTAL	0	0	0	14	260	0	0	168	8	9	0	13	472						
	TRUCK	#####	#####	#####	0%	1%	#####	#####	1%	0%	11%	#####	0%		0	0	1	0	1	0.49
6:45 - 7:45 PM	TOTAL	0	0	0	8	124	0	0	95	4	2	0	9	242						
	TRUCK	#####	#####	#####	0%	0%	#####	#####	0%	0%	50%	#####	0%		0	0	1	0	1	0.25
7:00 - 8:00 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		0	0	0	0	0	#####
7:15 - 8:15 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		0	0	0	0	0	#####
7:30 - 8:30 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		0	0	0	0	0	#####
7:45 - 8:45 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		0	0	0	0	0	#####
8:00 - 9:00 PM	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0						
	TRUCK	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		0	0	0	0	0	#####

1:
2:
3:
4: Pleasantville Rd. WB Left
5: Pleasantville Rd. WB Thru
6:
7:
8: Pleasantville Rd. EB Thru
9: Pleasantville Rd. EB Right
10: Old Briarcliff Rd. NB Left
11:
12: Old Briarcliff Rd. NB Right

A:
B: Cross Pleasantville Rd. East Side of I
C: Cross Old Briarcliff Rd. South Side of
D: Cross Pleasantville rd. West Side of I

APPENDIX D

CAPACITY ANALYSES

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	898	33	37	223	6	27
Future Volume (vph)	898	33	37	223	6	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.889	
Flt Protected			0.950		0.991	
Satd. Flow (prot)	1803	0	1601	1782	1691	0
Flt Permitted			0.950		0.991	
Satd. Flow (perm)	1803	0	1601	1782	1691	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	6%	5%	3%	0%	0%
Adj. Flow (vph)	1095	40	45	272	7	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1135	0	45	272	40	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

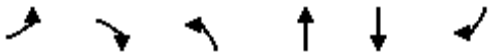
Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	898	33	37	223	6	27
Future Vol, veh/h	898	33	37	223	6	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	1	6	5	3	0	0
Mvmt Flow	1095	40	45	272	7	33

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1135	0	1477	1115
Stage 1	-	-	-	-	1115	-
Stage 2	-	-	-	-	362	-
Critical Hdwy	-	-	4.15	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	605	-	165	272
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	738	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	605	-	153	272
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	332	-
Stage 2	-	-	-	-	738	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.6	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	238	-	-	605	-
HCM Lane V/C Ratio	0.169	-	-	0.075	-
HCM Control Delay (s)	23.2	-	-	11.4	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.6	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	33	70	0
Future Volume (vph)	0	0	0	33	70	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1800	0	0	1818	1647	0
Flt Permitted						
Satd. Flow (perm)	1800	0	0	1818	1647	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Adj. Flow (vph)	0	0	0	40	85	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	40	85	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	33	70	0
Future Vol, veh/h	0	0	0	33	70	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	0	0	0	40	85	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	125	85	85	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	40	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	851	970	1524	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	979	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	851	970	1524	-	-	-
Mov Cap-2 Maneuver	851	-	-	-	-	-
Stage 1	926	-	-	-	-	-
Stage 2	979	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1524	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	422	21	19	759	22	16
Future Volume (vph)	422	21	19	759	22	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.944	
Flt Protected			0.950		0.972	
Satd. Flow (prot)	1822	0	1681	1817	1711	0
Flt Permitted			0.950		0.972	
Satd. Flow (perm)	1822	0	1681	1817	1711	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	459	23	21	825	24	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	482	0	21	825	41	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

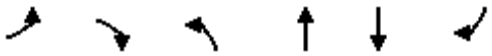
Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	422	21	19	759	22	16
Future Vol, veh/h	422	21	19	759	22	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	5	0
Mvmt Flow	459	23	21	825	24	17

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	482	0	1338	471
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	867	-
Critical Hdwy	-	-	4.1	-	6.05	6
Critical Hdwy Stg 1	-	-	-	-	5.05	-
Critical Hdwy Stg 2	-	-	-	-	5.05	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1091	-	193	613
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1091	-	189	613
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	267	-	-	1091	-
HCM Lane V/C Ratio	0.155	-	-	0.019	-
HCM Control Delay (s)	20.9	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.5	-	-	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	38	40	0
Future Volume (vph)	0	0	0	38	40	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1800	0	0	1765	1729	0
Flt Permitted						
Satd. Flow (perm)	1800	0	0	1765	1729	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	0	0	0	41	43	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	41	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	38	40	0
Future Vol, veh/h	0	0	0	38	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	0	0	0	41	43	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	84	43	43	0	-	0
Stage 1	43	-	-	-	-	-
Stage 2	41	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	905	1028	1579	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	978	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	905	1028	1579	-	-	-
Mov Cap-2 Maneuver	905	-	-	-	-	-
Stage 1	975	-	-	-	-	-
Stage 2	978	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1579	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1053	61	87	262	14	40
Future Volume (vph)	1053	61	87	262	14	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.900	
Flt Protected			0.950		0.987	
Satd. Flow (prot)	1798	0	1601	1782	1705	0
Flt Permitted			0.950		0.987	
Satd. Flow (perm)	1798	0	1601	1782	1705	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	6%	5%	3%	0%	0%
Adj. Flow (vph)	1284	74	106	320	17	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1358	0	106	320	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

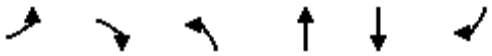
Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1053	61	87	262	14	40
Future Vol, veh/h	1053	61	87	262	14	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	1	6	5	3	0	0
Mvmt Flow	1284	74	106	320	17	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1358	0	1853	1321
Stage 1	-	-	-	-	1321	-
Stage 2	-	-	-	-	532	-
Critical Hdwy	-	-	4.15	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	497	-	101	208
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	629	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	497	-	79	208
Mov Cap-2 Maneuver	-	-	-	-	79	-
Stage 1	-	-	-	-	230	-
Stage 2	-	-	-	-	629	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.5	48.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	146	-	-	497	-
HCM Lane V/C Ratio	0.451	-	-	0.213	-
HCM Control Delay (s)	48.5	-	-	14.2	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	2	-	-	0.8	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	1	7	43	84	64
Future Volume (vph)	11	1	7	43	84	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.941	
Flt Protected	0.956			0.993		
Satd. Flow (prot)	1704	0	0	1805	1582	0
Flt Permitted	0.956			0.993		
Satd. Flow (perm)	1704	0	0	1805	1582	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Adj. Flow (vph)	13	1	9	52	102	78
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	61	180	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	1	7	43	84	64
Future Vol, veh/h	11	1	7	43	84	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	13	1	9	52	102	78

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	211	141	180	0	-	0
Stage 1	141	-	-	-	-	-
Stage 2	70	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	746	898	1408	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	741	898	1408	-	-	-
Mov Cap-2 Maneuver	741	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	943	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	1.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1408	-	752	-	-
HCM Lane V/C Ratio	0.006	-	0.019	-	-
HCM Control Delay (s)	7.6	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	30	30	891	45	55
Future Volume (vph)	495	30	30	891	45	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.926	
Flt Protected			0.950		0.978	
Satd. Flow (prot)	1819	0	1681	1817	1700	0
Flt Permitted			0.950		0.978	
Satd. Flow (perm)	1819	0	1681	1817	1700	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	538	33	33	968	49	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	571	0	33	968	109	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other

Control Type: Unsignalized

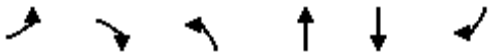
Intersection	
Int Delay, s/veh	2.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	30	30	891	45	55
Future Vol, veh/h	495	30	30	891	45	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	5	0
Mvmt Flow	538	33	33	968	49	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	571	0	1589	555
Stage 1	-	-	-	-	555	-
Stage 2	-	-	-	-	1034	-
Critical Hdwy	-	-	4.1	-	6.05	6
Critical Hdwy Stg 1	-	-	-	-	5.05	-
Critical Hdwy Stg 2	-	-	-	-	5.05	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1012	-	139	552
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	380	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1012	-	134	552
Mov Cap-2 Maneuver	-	-	-	-	134	-
Stage 1	-	-	-	-	585	-
Stage 2	-	-	-	-	380	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	33.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	230	-	-	1012	-
HCM Lane V/C Ratio	0.473	-	-	0.032	-
HCM Control Delay (s)	33.9	-	-	8.7	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	2.3	-	-	0.1	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	53	6	1	47	50	10
Future Volume (vph)	53	6	1	47	50	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.985				0.977	
Flt Protected	0.957			0.999		
Satd. Flow (prot)	1697	0	0	1764	1689	0
Flt Permitted	0.957			0.999		
Satd. Flow (perm)	1697	0	0	1764	1689	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	58	7	1	51	54	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	65	0	0	52	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	53	6	1	47	50	10
Future Vol, veh/h	53	6	1	47	50	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	58	7	1	51	54	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	113	60	65	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	866	1004	1550	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	963	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	865	1004	1550	-	-	-
Mov Cap-2 Maneuver	865	-	-	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	963	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1550	-	877	-	-
HCM Lane V/C Ratio	0.001	-	0.073	-	-
HCM Control Delay (s)	7.3	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1053	44	52	262	22	55
Future Volume (vph)	1053	44	52	262	22	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	1803	0	1601	1782	1710	0
Flt Permitted			0.950		0.986	
Satd. Flow (perm)	1803	0	1601	1782	1710	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	6%	5%	3%	0%	0%
Adj. Flow (vph)	1284	54	63	320	27	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1338	0	63	320	94	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

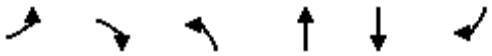
Intersection	
Int Delay, s/veh	3.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1053	44	52	262	22	55
Future Vol, veh/h	1053	44	52	262	22	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	1	6	5	3	0	0
Mvmt Flow	1284	54	63	320	27	67

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1338	0	1757	1311
Stage 1	-	-	-	-	1311	-
Stage 2	-	-	-	-	446	-
Critical Hdwy	-	-	4.15	-	6	6
Critical Hdwy Stg 1	-	-	-	-	5	-
Critical Hdwy Stg 2	-	-	-	-	5	-
Follow-up Hdwy	-	-	2.245	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	506	-	115	211
Stage 1	-	-	-	-	295	-
Stage 2	-	-	-	-	682	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	506	-	101	211
Mov Cap-2 Maneuver	-	-	-	-	101	-
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	682	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	54.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	161	-	-	506	-
HCM Lane V/C Ratio	0.583	-	-	0.125	-
HCM Control Delay (s)	54.7	-	-	13.1	-
HCM Lane LOS	F	-	-	B	-
HCM 95th %tile Q(veh)	3.1	-	-	0.4	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	4	1	43	84	12
Future Volume (vph)	34	4	1	43	84	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.985				0.983	
Flt Protected	0.957			0.999		
Satd. Flow (prot)	1697	0	0	1816	1629	0
Flt Permitted	0.957			0.999		
Satd. Flow (perm)	1697	0	0	1816	1629	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Adj. Flow (vph)	41	5	1	52	102	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	53	117	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	4	1	43	84	12
Future Vol, veh/h	34	4	1	43	84	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	41	5	1	52	102	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	164	110	117	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	802	937	1484	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	801	937	1484	-	-	-
Mov Cap-2 Maneuver	801	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1484	-	813	-	-
HCM Lane V/C Ratio	0.001	-	0.057	-	-
HCM Control Delay (s)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	38	46	891	34	34
Future Volume (vph)	495	38	46	891	34	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.932	
Flt Protected			0.950		0.976	
Satd. Flow (prot)	1815	0	1681	1817	1703	0
Flt Permitted			0.950		0.976	
Satd. Flow (perm)	1815	0	1681	1817	1703	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	538	41	50	968	37	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	579	0	50	968	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

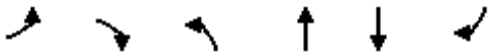
Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	495	38	46	891	34	34
Future Vol, veh/h	495	38	46	891	34	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	120	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	7	-	-	-7	-2	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	1	5	0
Mvmt Flow	538	41	50	968	37	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	579	0	1627	559
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	1068	-
Critical Hdwy	-	-	4.1	-	6.05	6
Critical Hdwy Stg 1	-	-	-	-	5.05	-
Critical Hdwy Stg 2	-	-	-	-	5.05	-
Follow-up Hdwy	-	-	2.2	-	3.545	3.3
Pot Cap-1 Maneuver	-	-	1005	-	132	549
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	367	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	125	549
Mov Cap-2 Maneuver	-	-	-	-	125	-
Stage 1	-	-	-	-	573	-
Stage 2	-	-	-	-	367	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	32.3
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	204	-	-	1005	-
HCM Lane V/C Ratio	0.362	-	-	0.05	-
HCM Control Delay (s)	32.3	-	-	8.8	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.6	-	-	0.2	-



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	3	4	47	50	34
Future Volume (vph)	21	3	4	47	50	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.945	
Flt Protected	0.958			0.996		
Satd. Flow (prot)	1697	0	0	1761	1634	0
Flt Permitted	0.958			0.996		
Satd. Flow (perm)	1697	0	0	1761	1634	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	23	3	4	51	54	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	55	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	3	4	47	50	34
Future Vol, veh/h	21	3	4	47	50	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	23	3	4	51	54	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	132	73	91	0	-	0
Stage 1	73	-	-	-	-	-
Stage 2	59	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	842	987	1517	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	839	987	1517	-	-	-
Mov Cap-2 Maneuver	839	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	956	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1517	-	855	-	-
HCM Lane V/C Ratio	0.003	-	0.031	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1053	44	52	262	22	55
Future Volume (vph)	1053	44	52	262	22	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.995				0.904	
Flt Protected			0.950		0.986	
Satd. Flow (prot)	1803	0	1601	1782	1710	0
Flt Permitted			0.087		0.986	
Satd. Flow (perm)	1803	0	147	1782	1710	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9				67	
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	6%	5%	3%	0%	0%
Adj. Flow (vph)	1284	54	63	320	27	67
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1338	0	63	320	94	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	2	
Detector Template						
Leading Detector (ft)	6		6	6	63	
Trailing Detector (ft)	0		0	0	-5	
Detector 1 Position(ft)	0		0	0	-5	
Detector 1 Size(ft)	6		6	6	30	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)					33	
Detector 2 Size(ft)					30	
Detector 2 Type					Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)					0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	5.0	
Minimum Split (s)	38.0		21.0	21.0	11.0	
Total Split (s)	49.0		49.0	49.0	11.0	
Total Split (%)	81.7%		81.7%	81.7%	18.3%	
Maximum Green (s)	43.0		43.0	43.0	5.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0					
Flash Dont Walk (s)	25.0					
Pedestrian Calls (#/hr)	2					
Act Effct Green (s)	47.0		47.0	47.0	5.0	
Actuated g/C Ratio	0.77		0.77	0.77	0.08	
v/c Ratio	0.96		0.56	0.23	0.47	
Control Delay	27.9		30.6	3.2	19.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	27.9		30.6	3.2	19.8	
LOS	C		C	A	B	
Approach Delay	27.9			7.7	19.8	
Approach LOS	C			A	B	
Queue Length 50th (ft)	~464		8	30	9	
Queue Length 95th (ft)	#651		#63	46	41	
Internal Link Dist (ft)	364			465	356	
Turn Bay Length (ft)			120			
Base Capacity (vph)	1396		113	1378	201	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.96		0.56	0.23	0.47	

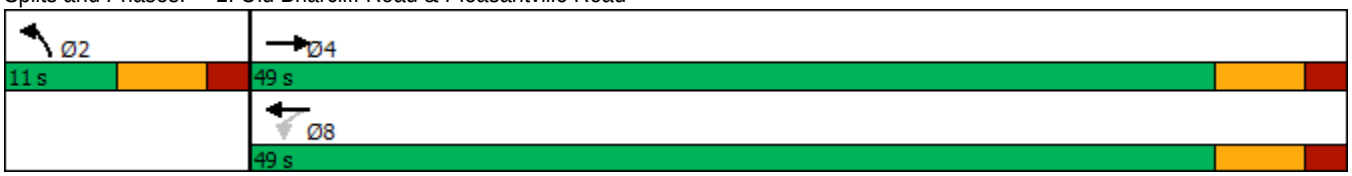
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 60.8			
Natural Cycle: 80			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 23.2		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	

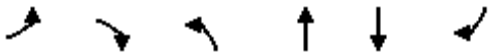
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Old Briarcliff Road & Pleasantville Road





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	4	1	43	84	12
Future Volume (vph)	34	4	1	43	84	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.985				0.983	
Flt Protected	0.957			0.999		
Satd. Flow (prot)	1697	0	0	1816	1629	0
Flt Permitted	0.957			0.999		
Satd. Flow (perm)	1697	0	0	1816	1629	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	5%	0%
Adj. Flow (vph)	41	5	1	52	102	15
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	53	117	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	4	1	43	84	12
Future Vol, veh/h	34	4	1	43	84	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	0	0	0	0	5	0
Mvmt Flow	41	5	1	52	102	15

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	164	110	117	0	-	0
Stage 1	110	-	-	-	-	-
Stage 2	54	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	802	937	1484	-	-	-
Stage 1	897	-	-	-	-	-
Stage 2	962	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	801	937	1484	-	-	-
Mov Cap-2 Maneuver	801	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	962	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1484	-	813	-	-
HCM Lane V/C Ratio	0.001	-	0.057	-	-
HCM Control Delay (s)	7.4	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	495	38	46	891	34	34
Future Volume (vph)	495	38	46	891	34	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	9	10	12	12
Grade (%)	7%			-7%	-2%	
Storage Length (ft)		0	120		0	0
Storage Lanes		0	1		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.990				0.932	
Flt Protected			0.950		0.976	
Satd. Flow (prot)	1815	0	1681	1817	1703	0
Flt Permitted			0.427		0.976	
Satd. Flow (perm)	1815	0	756	1817	1703	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	13				37	
Link Speed (mph)	30			30	30	
Link Distance (ft)	444			545	436	
Travel Time (s)	10.1			12.4	9.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	1%	5%	0%
Adj. Flow (vph)	538	41	50	968	37	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	579	0	50	968	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	9			9	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.05	1.05	1.10	1.05	0.99	0.99
Turning Speed (mph)		9	15		15	9
Number of Detectors	1		1	1	2	
Detector Template						
Leading Detector (ft)	6		6	6	63	
Trailing Detector (ft)	0		0	0	-5	
Detector 1 Position(ft)	0		0	0	-5	
Detector 1 Size(ft)	6		6	6	30	
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(ft)					33	
Detector 2 Size(ft)					30	
Detector 2 Type					Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)					0.0	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Perm	NA	Prot	
Protected Phases	4			8	2	
Permitted Phases			8			
Detector Phase	4		8	8	2	
Switch Phase						
Minimum Initial (s)	15.0		15.0	15.0	5.0	
Minimum Split (s)	38.0		21.0	21.0	11.0	
Total Split (s)	45.0		45.0	45.0	15.0	
Total Split (%)	75.0%		75.0%	75.0%	25.0%	
Maximum Green (s)	39.0		39.0	39.0	9.0	
Yellow Time (s)	4.0		4.0	4.0	4.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.0	6.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		Max	Max	None	
Walk Time (s)	7.0					
Flash Dont Walk (s)	25.0					
Pedestrian Calls (#/hr)	2					
Act Effct Green (s)	47.4		47.4	47.4	7.0	
Actuated g/C Ratio	0.80		0.80	0.80	0.12	
v/c Ratio	0.40		0.08	0.67	0.32	
Control Delay	4.8		3.9	9.5	17.8	
Queue Delay	0.0		0.0	0.0	0.0	
Total Delay	4.8		3.9	9.5	17.8	
LOS	A		A	A	B	
Approach Delay	4.8			9.2	17.8	
Approach LOS	A			A	B	
Queue Length 50th (ft)	73		5	185	12	
Queue Length 95th (ft)	145		16	#496	44	
Internal Link Dist (ft)	364			465	356	
Turn Bay Length (ft)			120			
Base Capacity (vph)	1449		602	1448	289	
Starvation Cap Reductn	0		0	0	0	
Spillback Cap Reductn	0		0	0	0	
Storage Cap Reductn	0		0	0	0	
Reduced v/c Ratio	0.40		0.08	0.67	0.26	

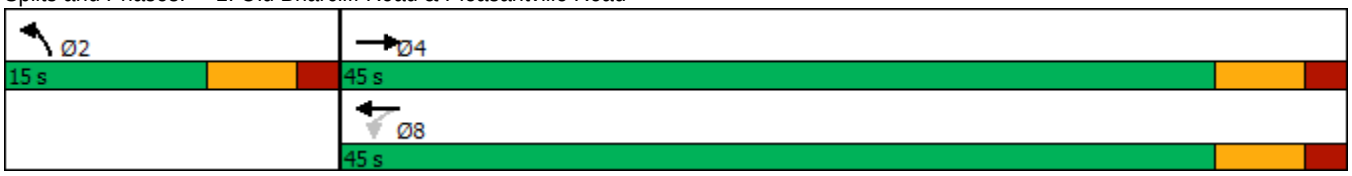
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 8.0		Intersection LOS: A	
Intersection Capacity Utilization 61.1%		ICU Level of Service B	

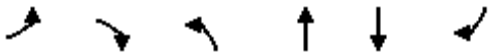
Analysis Period (min) 15

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Old Briarcliff Road & Pleasantville Road





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	3	4	47	50	34
Future Volume (vph)	21	3	4	47	50	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	10	10	10	10
Grade (%)	4%			-5%	5%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984				0.945	
Flt Protected	0.958			0.996		
Satd. Flow (prot)	1697	0	0	1761	1634	0
Flt Permitted	0.958			0.996		
Satd. Flow (perm)	1697	0	0	1761	1634	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	243			387	352	
Travel Time (s)	5.5			8.8	8.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	23	3	4	51	54	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	0	55	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	11			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.06	1.06	1.13	1.13
Turning Speed (mph)	15	9	15			9
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 15.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	3	4	47	50	34
Future Vol, veh/h	21	3	4	47	50	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	4	-	-	-5	5	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	3	0	0
Mvmt Flow	23	3	4	51	54	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	132	73	91	0	-	0
Stage 1	73	-	-	-	-	-
Stage 2	59	-	-	-	-	-
Critical Hdwy	7.2	6.6	4.1	-	-	-
Critical Hdwy Stg 1	6.2	-	-	-	-	-
Critical Hdwy Stg 2	6.2	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	842	987	1517	-	-	-
Stage 1	940	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	839	987	1517	-	-	-
Mov Cap-2 Maneuver	839	-	-	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	956	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1517	-	855	-	-
HCM Lane V/C Ratio	0.003	-	0.031	-	-
HCM Control Delay (s)	7.4	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

APPENDIX C

"PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN", DATED OCTOBER 10, 2018

PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

Applicant/Operator/ Owner:

Canoe Brook
75 Eisenhower Parkway
Suite 180
Roseland, NJ 07068

Prepared by:

JMC Project 15245

Draft: 10/10/2018

TABLE OF CONTENTS

APPENDICES

I. INTRODUCTION

This Preliminary Stormwater Pollution Prevention Plan has been prepared for the 16.3 acre Residential Development site, located in the Village of Briarcliff Manor, New York (hereinafter referred to as the "Site"). The site is bordered by Old Briarcliff Road to the east, and residential properties to the north, south and west. The development has been designed in accordance with the following:

The project includes the redevelopment of the property, currently developed with two vacant office buildings and associated parking areas. The site will be redeveloped to construct a three story building residential building with 142 rental units since the area of disturbance to the site is grater than 1 acre the site design must comply with:

- Requirements of the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002, effective January 29, 2015, last modified November 23, 2016.

II. STORMWATER MANAGEMENT PLANNING

In order to be eligible for coverage under the NYSDEC SPDES General Permit No. GP-0-15-002 for Stormwater Discharges from Construction Activities, the Stormwater Pollution Prevention Plan (SWPPP) includes stormwater management practices (SMP's) from the publication "New York State Stormwater Management Design Manual," last revised January 2015.

A Stormwater Pollution Prevention Plan is required for this project because it is a construction activity that involves:

- Soil disturbances of one or more acres of land.

The proposed stormwater facilities will be designed such that the quantity and quality of stormwater runoff during and after construction are not adversely altered or are enhanced when compared to pre-development conditions.

Based on the GIS information provided by the website of the New York State Office of Parks, Recreation and Historic Places, the site does not contain, nor is it immediately adjacent to any properties listed on the State or National Register of Historic Places.

The Six Step Process for Stormwater Site Planning and Practice Selection

Stormwater management using green infrastructure is summarized in the six step process described below. The six step process was adhered to when developing this SWPPP. Information is provided in this SWPPP which documents compliance with the required process as follows:

Step 1: Site Planning

Implement planning practices that protect natural resources and utilize the hydrology of the site. Strong consideration must be given to reducing impervious cover to aid in the preservation of natural resources including protecting natural areas, avoiding sensitive areas and minimizing grading and soil disturbance.

Step 2: Determine Water Quality Treatment Volume (WQv)

Determine the required WQv for the site based on the site layout, impervious areas and sub-catchments. This initial calculation of WQv will have to be revised after green infrastructure techniques are applied. The following method has been used to calculate the WQv.

- **90% Rule -** According to the New York State Stormwater Design Manual, Section 4.1, the water quality volume is determined from the 90% rule. The method is based on 90% of the average annual stormwater runoff volume which must be provided due to

impervious surfaces. The Water Quality Volume (denoted as the WQv) is designed to improve water quality sizing to capture and treat 90% of the average annual stormwater runoff volume. The WQv is directly related to the amount of impervious cover created at a site. The average rainfall storm depth for 90% of storms in New York State in one year is used to calculate a volume of runoff. The rainfall depth depends on the location of the site within the state. From this depth of rainfall, the required water quality volume is calculated.

The project is a redevelopment and therefore will comply with the strategies outlined within Chapter 9: Redevelopment Projects of the Design Manual. There are different options to control water quality depending on the redevelopment.

Since the redevelopment results in the creation of additional impervious area, Water Quality Treatment Option II will be utilized which requires treatment for 25% of the existing impervious area, plus 100% of the additional, new impervious area.

The plan proposes that a minimum of 25% of the water quality volume (WQv) from the disturbed area is captured and treated by the implementation of standard practices. When utilizing structural stormwater management practices, these practices should be targeted to treat areas with the greatest pollutant generation potential (e.g. parking areas, service stations, etc).

The NYSDEC Redevelopment Standards include specific criteria for the implementation of surface water quality improvements. A combination of standard and non-standard practices are proposed and all facilities will treat the required water quality volume from the entire contributing area. Therefore, Water Quality Treatment Options II & III will be utilized. According to Option III of the Redevelopment Standards, alternative or non-standard practices such as manufactured treatment devices are acceptable if they treat 75% of the water quality volume from the disturbed areas as well as any additional runoff directed to the practice. According to Option II, standard practices such as subsurface infiltration systems can be sized to treat the water quality volume generated from 25% of the existing impervious area plus 100% of the new impervious area. Green practices such as green roofs and porous pavement can be used

towards credit in meeting the water quality volume requirements.

Proposed standard SMP's will effectively treat 100% of the 1 year storm for all existing and new impervious areas and the proposed alternative SMP's will also treat 100% of the 1 year storm for all existing impervious areas which is above and beyond the water quality requirements for Redevelopment Projects.

Step 3: Runoff Reduction Volumes (RRv) by Applying Green Infrastructure Techniques and Standard SMP's

RRv is required for this project since it is a combination of both new development and redevelopment.

Green infrastructure techniques or standard SMP's with RRv capacity can potentially reduce the required WQv by incorporating combinations of green infrastructure techniques and standard SMP's within each drainage area on the site.

Green infrastructure techniques are grouped into two categories:

- Practices resulting in a reduction of contributing area such as preservation/restoration of conservation areas, vegetated channels, etc.
- Practices resulting in a reduction of contributing volume such as green roofs, stormwater planters, and rain gardens.

Apply a combination of green infrastructure techniques and standard SMPs with RRv capacity to provide 100% of the WQv calculated in Step 2. If the RRv calculated in this step is greater than or equal to the WQv in Step 2, the RRv requirement has been met and Step 4 can be skipped. If the RRv provided cannot meet or exceed 100% of the WQv, the project 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).

The Minimum RRv capacity required must be provided by green infrastructure techniques to verify that the RRv requirement has been met. The RRv that is provided by the green infrastructure techniques can then be subtracted from the Total Required WQv that must be provided by the SMP's.

Step 4: Determine the minimum RRv Required

The minimum RRv is calculated similar to the WQV. However, it is determined using only the new impervious cover and accounts for the hydrologic soil group present. In no case shall the runoff reduction achieved from the newly constructed impervious area be less than the minimum runoff reduction volume (RRv_{min}).

Step 5: Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume

Apply the standard SMP's to meet additional water quality volume requirements that cannot be addressed by applying the green infrastructure techniques. The standard SMP's with RRv capacity must be implemented to verify that the RRv requirement has been met.

- **Infiltration Practices –** A subsurface infiltration system is proposed to treat and retain runoff from the lower portion of the site. This practice is located in an area where the existing grade is being slightly raised and the groundwater elevation is acceptable to provide the required separation. According to Section 3.6 of the Design Manual, 90% of the WQv provided by an Infiltration Practice can be applied towards meeting the RRv criteria.

Step 6: Apply Volume and Peak Rate Control Practices to Meet Water Quantity Requirements

The Channel Protection Volume (CPv), Overbank Flood Control (Qp) and Extreme Flood Control (Qf) must be met for the plan to be completed. This is accomplished by using practices

such as infiltration basins, dry detention basins, etc. to meet water quantity requirements. The following standards must be met:

1. **Stream Channel Protection (CPv)**

   - CPv is not required because reduction of the entire CPv volume is achieved at a site through green infrastructure or infiltration systems.

2. **Overbank Flood (Qp) which is the 10 year storm.**

   Overbank control requires storage to attenuate the post development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates.

3. **Extreme Storm (Qf) which is the 100 year storm.**

   100 Year Control requires storage to attenuate the post development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates.

Based on the foregoing, this project is eligible for coverage under NYSDEC SPDES General Permit No. GP-0-15-002.

III. STUDY METHODOLOGY

Runoff rates were calculated based upon the standards set forth by the United States Department of Agriculture Natural Resources Conservation Service Technical Release 55, Urban Hydrology for Small Watersheds (TR-55), dated June 1986. The methodology set forth in TR-55 considers a multitude of characteristics for watershed areas including soil types, soil permeability, vegetative cover, time of concentration, topography, rainfall intensity, ponding areas, etc.

The 1, 10, 25, year storm recurrence intervals were reviewed in the design of the stormwater management facilities.

Anticipated drainage conditions were analyzed taking into account the rate of runoff which will result from the construction of buildings, parking areas and other impervious surfaces associated with the site development.

Base Data and Design Criteria

For the stormwater management analysis, the following base information and methodology were used:

1. The site drainage patterns and outfall facilities were reviewed by JMC personnel for the purpose of gathering background data and confirming existing mapping of the watershed areas.

2. A Natural Resource and Existing Drainage Area Map was developed from the topographical survey. The drainage area map reflects the existing conditions within and around the project area.

3. A Proposed Drainage Area Map was developed from the proposed grading design superimposed over the topographical survey. The drainage area map reflects the proposed conditions within the project area and the existing conditions to remain in the surrounding area.

4. The United States Department of Agriculture (USDA) Web Soil Survey of the site available on its website at http://websoilsurvey.nrcd.usda.gov.

5. The United States Department of Agriculture Natural Resources Conservation Service National Engineering Handbook, Section 4 - Hydrology", dated March 1985.

6. The United States Department of Agriculture Natural Resources Conservation Service Technical Report No. 55, Urban Hydrology for Small Watersheds (TR-55), dated June 1986.

7. United States Department of Commerce Weather Bureau Technical Release No. 40 Rainfall Frequency Atlas of the United States.

The time of concentration was calculated using the methods described in Chapter 3 of TR-55, Second Edition, June 1986. Manning's kinematics wave equation was used to determine the travel time of sheet flow. The 2-year 24 hour precipitation amount of **3.5** inches was used in the equation for all storm events. The travel time for shallow concentrated flow was computed using Figure 3-1 and Table 3-1 of TR-55. Manning's Equation was used to determine the travel time for channel reaches.

8. All hydrologic calculations were performed with the Bentley PondPack software package version 10.0.

9. The New York State Stormwater Management Design Manual, revised January 2015.

10. New York Standards and Specifications for Erosion and Sediment Control, November 2016.

11. The storm flows for the 1, 10, 100 year recurrence interval storms will be analyzed for the total watershed areas. The Type III distribution design storm for a 24 hour duration will be used and the mass rainfall for each design storm was taken from the Extreme Precipitation in New York & New England developed by the Natural Resource Conservation Service (NRCS) and the Northeast Regional Climate Center (NRCC) as follows:

24 Hour Rainfall Amounts

Design Storm Recurrence Interval	Inches of Rainfall
1 Year	2.8
10 Year	5.5
100 Year	8.25

IV. EXISTING CONDITIONS

The existing conditions of the project site consist of two vacant office buildings, parking areas and surround undeveloped areas. The site is located within the drainage basin of the Hudson River. Stormwater runoff is collected on site and is conveyed to via the existing stormwater infrastructure to the existing storm basin on Old Briarcliff Road at the east end of the property.

The following natural features, conservation areas, resource areas and drainage patters of the project site have been identified and utilized to develop Drawing DA-1 "Natural Resources and Existing Drainage Area Map" which is included in Appendix B:

- Wetlands (jurisdictional, wetland of special concern)
- Waterways (major, perennial, intermittent, springs)
- Buffers (stream, wetland, forest, etc.)
- Forest, vegetative cover
- Topography (contour lines, existing flow paths, steep slopes, etc.)
- Soil (hydrologic soil groups, highly erodible soils, etc.)

Based on the USDA WEB soil survey, all on-site soils are moderately drained to well drained and belong to hydrological group(s) B, C, D. The soil types, boundaries and drainage areas/designations are depicted on Drawing DA-1 within Appendix A.

Three separate Design Points (1 through 3) were identified for comparing peak rates of runoff in existing and proposed conditions. Similarly, three separate drainage areas were identified in

existing conditions based on the existing drainage divides at the site. The numbers included in the name of each drainage area correspond to the Design Point they drain towards.

V. PROPOSED CONDITIONS

The proposed improvements consist of the construction of the three story residential building with a total of 142 apartment units, lower level parking garage and associated parking area. The proposed redevelopment will create an overall disturbance of 5.6 acres. In comparison with the existing condition the proposed improvements will increase the overall impervious areas by 43,931 s.f. The proposed on-site stormwater runoff from the impervious surfaces including roadways, parking areas, driveways and sidewalks will be collected and conveyed by swales, catch basins, underdrains to a network of high density polyethylene (HDPE) drain pipe installed underground with discharge to water quality structures. Runoff from building rooftops will be collected and roof drains will discharge into stormwater planters which will infiltrate stormwater prior to discharging to the underground storm drainage system. Runoff from the lower driveway and parking lots will discharge to the subsurface StormTech chamber system which will infiltrate and detain the stormwater runoff. Catch basins are placed at strategic locations and the site is graded to direct runoff into these basins.

Stormwater runoff to Design Point #1, which includes the majority of the increase in impervious area, will be routed to the underground infiltration system. The subsurface water elevation will be controlled by the outlet control structure to reduce the overall volume of water and peak rates of runoff leaving the project.

Design Point #2 and #3 drainage area under proposed conditions have been reduced in size as compared to the existing conditions. The volume of runoff for these design points and the peak runoff rates have therefore been reduced.

VI. SOIL EROSION & SEDIMENT CONTROL

A potential impact of the proposed development on any soils or slopes will be that of erosion and transport of sediment during construction. An Erosion and Sediment Control Management Program will be established for the proposed development, beginning at the start of construction and continuing throughout its course, as outlined in the "New York State Standards and Specifications for Erosion and Sediment Control," November 2016. A continuing maintenance program will be implemented for the control of sediment transport and erosion control after construction and throughout the useful life of the project.

The Operator shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify that the appropriate erosion and sediment controls, as shown on the Sediment & Erosion Control Plans, have been adequately installed to ensure overall preparedness of the site for the commencement of construction. In addition, the Operator shall have a qualified professional conduct one site inspection at least every seven calendar days and at least two site inspections every seven calendar days when greater than five acres of soil is disturbed at any one time.

Prior to the commencement of construction activity, the owner or operator must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The owner or operator shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the trained contractor. The owner or operator shall ensure that at least one trained contractor is on site on a daily basis when soil disturbance activities are being performed.
The owner or operator shall have each of the contractors and subcontractors identified above sign a copy of the certification statement before they commence any construction activity.

Soil Description

As provided by the United States Department of Agriculture, Soil Conservation Service "Web Soil Survey," soil classifications which exist on the subject site are described below.

Soils are placed into four hydrologic groups: A, B, C, and D. In the definitions of the classes, infiltration rate is the rate at which water enters the soil at the surface and is controlled by the surface conditions. Transmission rate is the rate at which water moves in the soil and is controlled by soil properties. Definitions of the classes are as follows:

A. (Low runoff potential). The soils have a high infiltration rate even when thoroughly wetted. They chiefly consist of deep, well drained to excessively drained sands or gravels. They have a high rate of water transmission.

B. The soils have a moderate infiltration rate when thoroughly wetted. They chiefly are moderately deep to deep, moderately well drained to well drained soils that have moderately fine to moderately coarse textures. They have a moderate rate of water transmission.

C. The soils have a slow infiltration rate when thoroughly wetted. They chiefly have a layer that impedes downward movement of water or have moderately fine to fine texture. They have a slow rate of water transmission.

D. (High runoff potential). The soils have a very slow infiltration rate when thoroughly wetted. They chiefly consist of clay soils that have a high swelling potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. They have a very slow rate of water transmission.

A soil's tendency to erode is also described in the USDA web soil survey. The ratings in this interpretation indicate the hazard of soil loss from unsurfaced areas. The ratings are based on

soil erosion factor K, slope, and content of rock fragments. The hazard is described as "slight," "moderate," or "SEVERE." A rating of "slight" indicates that little or no erosion is likely; "moderate" indicates that some erosion is likely, that the temporarily unsurfaced / unstabilized during construction may require occasional maintenance, and that simple erosion-control measures are needed; and "SEVERE" indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that erosion-control measures are needed.

Per the Soil Survey, the following soils listed below are present at the site. Following this list is a detailed description of each soil type found on the property:

SOIL TYPE TABLE		
DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
ChE	B	Charlton Loam, 25 to 35 percent slopes
CrC	B	Charlton-Chatfield Complex, 0 to 15 percent slopes, very rocky
CsD	B	Chatfield-Charlton Complex, 15 to 35 percent slopes, very rocky
HrF	D	Hollis-Rock Outcrop Complex, 35 to 60 percent slopes
LcB	A/D	Leicester Loam, 3 to 8 percent slopes, stony
Ra	C/D	Raynham Silt Loam
WdB	C/D	Woodbridge Loam, 3 to 8 percent slopes

<u>On-Site Pollution Prevention</u>

There are temporary pollution prevention measures used to control litter and construction debris on site, such as:

- Temporary Riser and Anti-Vortex Device
- Silt Fence
- Silt Sack

- Stone Check Dam
- Excavated Drop Inlet Protection
- Stone & Block Drop Inlet Protection

There will be inlet protection provided for all storm drains and inlets with the use of curb gutter inlet protection structures and stone & block drop inlet protection, which keep silt, sediment and construction litter and debris out of the on-site stormwater drainage system.

Temporary Control Measures

Temporary control measures and facilities will include silt fences, interceptor swales, stabilized construction entrances, temporary seeding, mulching and sediment traps with temporary riser and anti-vortex devices.

Throughout the construction of the proposed redevelopment, temporary control facilities will be implemented to control on-site erosion and sediment transfer. Interceptor swales, if required, will be used to direct stormwater runoff to temporary sediment traps for settlement. The sediment traps will be constructed as part of this project will serve as temporary sediment basins to remove sediment and pollutants from the stormwater runoff produced during construction. Descriptions of the temporary sediment & erosion controls that will be used during the development of the site including silt fence, stabilized construction entrance, seeding, mulching and inlet protection are as follows:

1. Silt Fence is constructed using a geotextile fabric. The fence will be either 18 inches or 30 inches high. The height of the fence can be increased in the event of placing these devices on uncompacted fills or extremely loose undisturbed soils. The fences will not be placed in areas which receive concentrated flows such as ditches, swales and channels nor will the filter fabric material be placed across the entrance to pipes, culverts, spillway structures, sediment traps or basins.

2. Stabilized Construction Entrance consists of AASHTO No. 1 rock. The rock entrance will be a minimum of 50 feet in length by 20 feet in width by 8 inches in depth.

3. Seeding will be used to create a vegetative surface to stabilize disturbed earth until at least 70% of the disturbed area has a perennial vegetative cover. This amount is required to adequately function as a sediment and erosion control facility. Grass lining will also be used to line temporary channels and the surrounding disturbed areas.

4. Mulching is used as an anchor for seeding and disturbed areas to reduce soil loss due to storm events. These areas will be mulched with straw at a rate of 3 tons per acre such that the mulch forms a continuous blanket. Mulch must be placed after seeding or within 48 hours after seeding is completed.

5. Inlet Protection will be provided for all stormwater basins and inlets with the use of curb & gutter inlet protection and stone & block inlet protection structures, which will keep silt, sediment and construction debris out of the storm system. Existing structures within existing paved areas will be protected using "Silt Sacks" inside the structures.

6. Sediments Traps will be used with the permanent SMP's until their contributing areas drainage are stabilized. Once stabilized, the temporary risers will be removed and final grading/planting of the basins will be completed for permanent use as Stormwater Management basins.

7. Stone Check Dams are small barriers of crushed stone which will be laid across the grass swales which are approximately 12 inches high, located every one foot of elevation change along the swales so that the crest elevation of the downstream dam is at the same elevation of the toe of the upstream dam.

8. Sediment Sump Pits are temporary excavations constructed to capture and filter runoff and accumulated water for pumping to stabilized areas or catch basins.

The contractor shall be responsible for maintaining the temporary sediment and erosion control measures throughout construction. This maintenance will include, but not be limited to, the following tasks:

1. For dust control purposes, moisten all exposed graded areas with water at least twice a day in those areas where soil is exposed and cannot be planted with a temporary cover due to construction operations or the season (December through March).

2. Inspection of erosion and sediment control measures shall be performed at the end of each construction day and immediately following each rainfall event. All required repairs shall be immediately executed by the contractor.

3. Sediment deposits shall be removed when they reach approximately ⅓ the height of the silt fence. All such sediment shall be properly disposed of in fill areas on the site, as directed by the Owner's Field Representative. Fill shall be protected following disposal with mulch, temporary and/or permanent vegetation and be completely circumscribed on the downhill side by silt fence.

4. Rake all exposed areas parallel to the slope during earthwork operations.

5. Following final grading, the disturbed area shall be stabilized with a permanent surface treatment (i.e. turf grass, pavement or sidewalk). During rough grading, areas which are not to be disturbed for fourteen or more days shall be stabilized with the temporary seed mixture, as defined on the plans. Seed all piles of dirt in exposed soil areas that will not receive a permanent surface treatment.

<u>Concrete Material and Equipment Management</u>

Concrete washouts shall be used to contain concrete and liquids when the chutes of concrete mixers and hoppers of concrete pumps are rinsed out after delivery. The washout facilities consolidate solid for easier disposal and prevent runoff of liquids. The wash water is alkaline and contains high levels of chromium, which can leach into the ground and contaminate groundwater. It can also migrate to a storm drain, which can increase the pH of area waters and harm aquatic life. Solids that are improperly disposed of can clog storm drain pipes and cause flooding.

Installing concrete washout facilities not only prevents pollution but also is a matter of good housekeeping at your construction site.

Prefabricated concrete washout containers can be delivered to the site to provide maintenance and disposal of materials. Regular pick-ups of solid and liquid waste materials will be necessary. To prevent leaks on the job site, ensure that prefabricated washout containers are watertight. A self installed concrete washout facility can be utilized although they are much less reliable than prefabricated containers and are prone to leaks. There are many design options for the washout, but they are preferably built below-grade to prevent breaches and reduce the likelihood of runoff. Above-grade structures can also be used if they are sized and constructed correctly and are diligently maintained. One of the most common problems with self-installed concrete washout facilities is that they can leak or be breached as a result of constant use, therefore the contractor shall be sure to use quality materials and inspect the facilities on a daily basis.

Washouts must be sized to handle solids, wash water, and rainfall to prevent overflow. Concrete Washout Systems, Inc. estimates that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump truck.

For larger sites, a below-grade washout should be at least 10 feet wide and sized to contain all liquid and solid waste expected to be generated in between cleanout periods. A minimum of 12-inches of freeboard must be provided. The pit must be lined with plastic sheeting of at least 10-mil thickness without holes or tears to prevent leaching of liquids into the ground. Concrete wash water should never be placed in a pit that is connected to the storm drain system or that drains to nearby waterways.

An above-grade washout can be constructed at least 10 feet wide by 10 feet long and sized to contain all liquid and solid waste expected to be generated in between cleanout periods. A minimum of 4-inches of freeboard must be provided. The washout structures can be constructed with staked straw bales or sandbags double-or triple lined with plastic sheeting of at least 10-mil thickness without holes or tears.

Concrete washout facilities shall not be located within 50 feet of storm drains, open ditches, or water bodies and should be placed in locations that allow for convenient access for concrete trucks. The contractor shall check all concrete washout facilities daily to determine if they have been filled to 75 percent capacity, which is when materials need to be removed. Both above-and below-ground self-installed washouts should be inspected daily to ensure that plastic linings are intact and sidewalls have not been damaged by construction activities. Prefabricated washout containers should be inspected daily as well as to ensure the container is not leaking or nearing 75 percent capacity. Inspectors should also note whether the facilities are being used regularly. Additional signage for washouts may be needed in more convenient locations if concrete truck operators are not utilizing them.

The washout structures must be drained or covered prior to predicted rainstorms to prevent overflows. Hardened solids either whole or broken must be removed and then they may be reused onsite or hauled away for recycling.

Once materials are removed from the concrete washout, a new structure must be built or excavated, or if the previous structure is still intact, inspect it for signs of weakening or damage and make any necessary repairs. Line the structure with new plastic that is free of holes or tears and replace signage if necessary. It is very important that new plastic be used after every cleaning because pumps and concrete removal equipment can damage the existing liner.

Construction Site Chemical Control

The purpose of this management measure is to prevent the generation of nonpoint source pollution from construction sites due to improper handling and usage of nutrients and toxic substances, and to prevent the movement of toxic substances from the construction site.

Many potential pollutants other than sediment are associated with construction activities. These pollutants include pesticides; fertilizers used for vegetative stabilization; petrochemicals;

construction chemicals such as concrete products, sealers, and paints; wash water associated with these products; paper; wood; garbage; and sanitary waste.

Disposal of excess pesticides and pesticide-related wastes should conform to registered label directions for the disposal and storage of pesticides and pesticide containers set forth in applicable Federal, State and local regulations that govern their usage, handling, storage, and disposal.

Pesticides should be disposed of through either a licensed waste management firm or a treatment, storage and disposal (TSD) facility. Containers should be triple-rinsed before disposal, and rinse waters should be reused as product.
Other practices include setting aside a locked storage area, tightly closing lids, storing in a cool, dry place, checking containers periodically for leaks or deterioration, maintaining a list of products in storage, using plastic sheeting to line the storage areas, and notifying neighboring property owners prior to spraying.

When storing petroleum products, follow these guidelines:

- Create a shelter around the area with cover and wind protection;
- Line the storage area with a double layer of plastic sheeting or similar material;
- Create an impervious berm around the perimeter with a capacity of 110 percent greater than that of the largest container;
- Clearly label all products;
- Keep tanks off the ground; and
- Keep lids securely fastened.

Post spill procedure information and have persons trained in spill handling on site or on call at all times. Materials for cleaning up spills should be kept on site and easily available. Spills should be cleaned up immediately and the contaminated material properly disposed of. Maintain and wash equipment and machinery in confined areas specifically designed to control runoff.

Thinners or solvents should not be discharged into sanitary or storm systems when cleaning machinery. Use alternative methods for cleaning larger equipment parts, such as high-pressure, high-temperature water washes, or steam cleaning. Equipment-washing detergents can be used, and wash water may be discharged into sanitary sewers if solids are removed from the solution first. (This practice should be verified with the local sewer authority.) Small parts can be cleaned with degreasing solvents, which can then be reused or recycled.

Solid Waste Management and Portable Sanitary Management

The purpose of this management measure is to prevent the potential for solid waste such as construction debris, trash, etc. from construction sites due to improper handling and storage. Debris and litter should be removed periodically from the BMP's and surrounding areas to prevent clogging of pipes and structures. All construction material shall be stored in designated staging areas. Roll-off containers shall be placed on site and all empty containers, construction debris and litter shall be placed in the containers.

Portable sanitary units may be utilized on-site or bathrooms will be provided within construction trailers. A sanitation removal company will be hired to pump/remove any sanitary waste. In the event that portable sanitary units are used and then cleaned after being emptied, the rinse water may not be disposed of to the storm drain system. It shall be contained for later disposal if it can't be disposed of on-site. Remove paper and trash before cleaning the portable sanitary units. The portable sanitary units shall be located away from the storm drain system if possible. Provide over head cover for wash areas if possible. Maintain spill response material and equipment on site to eliminate the potential for contaminants and wash water from entering the storm drain system.

Permanent Control Measures and Facilities for Long Term Protection

Towards the completion of construction, permanent sediment and erosion control measures will be developed for long term erosion protection. The following permanent control measures and facilities have been proposed to be implemented for the project:

1. Stormwater Planters are proposed at various locations around the proposed buildings to collect and infiltrate runoff from portions of the building rooftops. Small drainage areas, less than 15,000 square feet will be collected by gutters and roof drain leaders and discharged into stormwater planters that will infiltrate the smaller storms and then discharge the higher storms through risers/standpipes directly into the underground storm pipes to the proposed stormwater management basins. Stormwater Planters act as small basins that treat stormwater as it flows through plant material and a soil matrix and is discharged to the storm drain system. These practices are elevated above the existing grade, surrounded by a concrete wall and consist of a reservoir with a depth of 12 inches, grass/landscaping with a layer of mulch, 12 inches of sandy loam topsoil and a sand/gravel layer a minimum of 24 inches wide that extends down to the native soil. infiltration through these layers will enable removal of pollutants and sediment generated by the rooftop and other small impervious areas.

2. CDS Water Quality Structure will be used to provide pretreatment of the water quality flow rate for separating sediment, debris, floatables, etc. from the runoff prior to discharge to the SMP's.

3. Infiltration System (I-2) which is a standard SMP that will be used to treat the runoff volume generated from a portion of the developed area and provide additional water quality and runoff volume reduction. The smaller storms will be retained and the higher storms will be released gradually.

   The StormTech MC-3500 Recharge Chambers are domed shaped fully opened bottom corrugated chambers with perforated side walls. Chambers allow stormwater to be stored within the dome void until it can infiltrate into the ground. They are able to be used for residential, commercial or industrial applications and provide an easy way to treat and dispose of stormwater runoff underground. Water is infiltrated into the ground through the chambers and surrounding crushed stone and will replenish the groundwater as a natural condition.

4. Catch Basins will be used to remove some of the coarse sand and grit sediment before entering the drainage system. Each catch basin will be constructed with an 18 inch deep sump.

5. Rip-Rap Energy Dissipators At discharge points from the stormwater drainage system into the stormwater management basins, rip-rap pads consisting of angular rocks will be placed to dissipate velocity and reduce the risk of erosion. The rip-rap pads will be 10 feet wide by 10 feet long.

6. Seeding of at least 70% perennial vegetative cover will be used to produce a permanent uniform erosion resistant surface. The seeded areas will be mulched with straw at a rate of 2 tons per acre such that the mulch forms a continuous blanket.

Specifications for Soil Restoration

Prior to the final stabilization of the disturbed areas, soil restoration will be required for all vegetated areas to recover the original properties and porosity of the soil. Soil Restoration Requirements are provided on Table 7 below:

Table 7

Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only – no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	Clearing and grubbing
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially) in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area.
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per "Deep Ripping and De-compaction, DEC 2008."

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following full soil restoration steps applied:

1. Apply 3 inches of compost over subsoil.

2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller, mixing, and circulating air and compost into subsoils.

3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.

Specifications for Final Stabilization of Graded Areas

Final stabilization of graded areas consists of the placement of topsoil and installation of landscaping (unless the area is to be paved, or a building is to be constructed in the location). Topsoil is to be spread as soon as grading operations are completed. Topsoil is to be placed to a minimum depth of six inches on all embankments, planting areas and seeding/sod areas. The subgrade is to be scarified to a depth of two inches to provide a bond of the topsoil with the subsoil. Topsoil is to be raked to an even surface and cleared of all debris, roots, stones and other unsatisfactory material.

Planting operations shall be conducted under favorable weather conditions as follows:

- Permanent Lawns - April 15 (provided soil is frost-free and not excessively moist) to May 15; August 15 to October 15.
- Temporary Lawn Seeding - if outside of the time periods noted above, the areas shall be seeded immediately on completion of topsoil operations with annual ryegrass (Italian rye) at a rate of six pounds per 1,000 square feet. Temporary lawn installation is permitted provided the soil is frost-free and not excessively moist. The permanent lawn is to be installed the next planting season.

On slopes with a grade of 3 horizontal to 1 vertical or greater, and in swales, a geotextile netting or mat shall be installed for stabilization purposes as shown on the Plans. Seeded areas are to be mulched with straw or hay at an application rate of 70-90 pounds per 1,000 s.f. Straw or hay mulch must be spread uniformly and anchored immediately after spreading to prevent wind blowing. Mulches must be inspected periodically and in particular after rainstorms to check for erosion. If erosion is observed, additional mulch must be applied. Netting shall be inspected after rainstorms for dislocation or failure; any damage shall be repaired immediately.

All denuded surfaces which will be exposed for a period of over two months or more shall be temporarily hydroseeded with (a) perennial ryegrass at a rate of 40 lbs per acre (1.0 lb per 1000 square feet); (b) Certified "Aroostook" winter rye (cereal rye) @ 100 lb per acre (2.5 lb/1000 s.f.) to be used in the months of October and November.

Permanent turfgrass cover is to consist of a seed mixture as follows:

(a) Sunny sites

Kentucky Bluegrass	2.0-2.6 pounds/1000 square feet
Perennial Ryegrass	0.6-0.7 pounds/1000 square feet
Fine Fescue	0.4-0.6 pounds/1000 square feet

(b) Shady sites

Kentucky Bluegrass	0.8-1.0 pounds/1000 square feet
Perennial Ryegrass	0.6-0.7 pounds/1000 square feet
Fine Fescue	2.6-3.3 pounds/1000 square feet

All plant materials shall comply with the standards of the American Association Of Nurserymen with respect to height and caliper as described in its publication American Standard for Nursery Stock, latest edition.

VII. CONSTRUCTION PHASE AND POST-CONSTRUCTION MAINTENANCE

During the construction phase and following construction of the project, a number of maintenance measures will be taken with respect to the site maintenance. Measures to be taken included the following:

1. During Construction

A comprehensive sediment and erosion control plan will be in place during the construction period. Maintenance measures for sediment and erosion controls will include:

A qualified professional acceptable to the municipality will be hired by the owner or operator to monitor the installation and maintenance of the sediment and erosion control plans. The qualified professional shall report directly to the Engineering Consultant and shall be responsible for ensuring compliance with the design of the sediment and erosion control plans.

The qualified professional so hired will inspect all sediment and erosion control measures at least every seven calendar days. In the event that there has been a variance with the design of the sediment and erosion control measures so that the ability of the measures to adequately perform the intended function is lessened or compromised and/or the facilities are not adequately maintained, the qualified professional shall be required to report such variance to the Engineering Consultant within 48 hours and shall be empowered to order immediate repairs to the sediment and erosion control measures.

The qualified professional will also be responsible for observing the adequacy of the vegetation growth (trees, shrubs, groundcovers and turfgrasses) in newly graded areas and for ordering additional plantings in the event that the established plant materials do not adequately protect the ground surface from erosion.

2. Following Construction

Site maintenance activities on the property will include:

- Grounds maintenance, including mowing of lawns;
- Planting of trees, shrubs and groundcovers; pruning of trees and shrubs;
- Application of fertilizer and herbicides;
- Maintenance of stormwater management area;

Grounds maintenance on the site will be performed by landscaping contractor.

Fertilizer is typically applied twice in the year - once in the spring and once in the fall. The application of fertilizer is usually necessary to maintain healthy lawn growth due to competition for nutrients with trees and shrubs and since the clippings are often removed. It is not recommended that fertilizer be applied during the summer. It is at this time that lawns are typically dormant.

Fertilizers come in three basic types: (1) Organic; (2) Soluble synthetic and (3) Slow release.

Organic fertilizers are derived from plant or animal waste. Since they are heavier and bulkier than other fertilizers, it is necessary to apply a much greater amount at one time. Soluble synthetic fertilizers are predictable with determining the exact impact on a lawn. However more applications are necessary since their effect is often short term. Slow release fertilizers have a high percentage of nitrogen so quantities that need be handled at one time are smaller. Slow release fertilizers will be utilized by the project.

A complete fertilizer contains all three of the primary nutrients - nitrogen (N), phosphorus (P) and potassium in the form of potash (K). Typically, a 3-1-2 ratio of nutrients (N-P-K) is used for lawn applications.

Fertilizer shall be applied by the landscape contractor in accordance with the manufacturer's instructions. The application of fertilizer does require some skill on the part of the operator. Should there be a spill of fertilizer, the landscape contractor shall be required to scrape or vacuum it up. The area will then be watered in accordance with the manufacturer's instructions to ensure that the fertilizer becomes soluble and available to plants and does not run off.

Owner will be responsible for the long-term operation and maintenance of the permanent stormwater management practices. The permanent stormwater management practices shall be maintained in accordance with the Maintenance Inspection Checklists provided in Appendix.

VIII. CONCLUSION

The final Stormwater Pollution Prevention Plan will be prepared to describe the project's pre and post-development stormwater management improvements and its sediment and erosion control improvements to be utilized during construction. The proposed permanent improvements and the interim improvements to be utilized during construction will be designed in accordance with the requirements of the:

- New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002, effective January 29, 2015, last modified November 23, 2016.
- New York State Stormwater Management Design Manual

The project will employ a variety of practices to enhance stormwater quality and reduce peak rates of runoff associated with the proposed improvements.

Based on the foregoing, it is our professional opinion that the proposed improvements will provide water quantity and quality enhancements which exceed the above mentioned requirements and are not anticipated to have any adverse impacts to the site or any surrounding areas.

APPENDIX A

SOIL REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Westchester County, New York

October 3, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:5,470 if printed on B landscape (17" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 14, Sep 3, 2018

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

Date(s) aerial images were photographed: Mar 26, 2011—Feb 26, 2017

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ce	Catden muck, 0 to 2 percent slopes	3.0	1.0%
ChB	Charlton fine sandy loam, 3 to 8 percent slopes	4.7	1.5%
ChE	Charlton loam, 25 to 35 percent slopes	2.4	0.8%
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	87.3	27.9%
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	45.3	14.5%
HrF	Hollis-Rock outcrop complex, 35 to 60 percent slopes	18.3	5.8%
LcB	Leicester loam, 3 to 8 percent slopes, stony	3.8	1.2%
NcA	Natchaug muck, 0 to 2 percent slopes	0.0	0.0%
PnB	Paxton fine sandy loam, 3 to 8 percent slopes	34.2	10.9%
PnC	Paxton fine sandy loam, 8 to 15 percent slopes	37.1	11.8%
Ra	Raynham silt loam	4.1	1.3%
Sh	Sun loam	1.4	0.4%
UlC	Urban land-Charlton-Chatfield complex, rolling, very rocky	24.2	7.7%
UpB	Urban land-Paxton complex, 3 to 8 percent slopes	1.5	0.5%
UpC	Urban land-Paxton complex, 8 to 15 percent slopes	7.8	2.5%
UwB	Urban land-Woodbridge complex, 3 to 8 percent slopes	1.9	0.6%
W	Water	2.3	0.7%
WdA	Woodbridge loam, 0 to 3 percent slopes	6.0	1.9%
WdB	Woodbridge loam, 3 to 8 percent slopes	27.7	8.8%
Totals for Area of Interest		**313.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Westchester County, New York

Ce—Catden muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2t2qk
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Catden and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Catden

Setting

Landform: Depressions, marshes, kettles, depressions, fens, depressions, swamps, bogs
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed herbaceous organic material and/or highly decomposed woody organic material

Typical profile

Oa1 - 0 to 2 inches: muck
Oa2 - 2 to 79 inches: muck

Properties and qualities

Slope: 0 to 1 percent
Percent of area covered with surface fragments: 0.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 26.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Alden

Percent of map unit: 5 percent

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Natchaug

Percent of map unit: 5 percent
Landform: Depressions, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Timakwa

Percent of map unit: 5 percent
Landform: Swamps
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

ChB—Charlton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2wh0n
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Charlton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills, ground moraines, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: gravelly fine sandy loam
C - 22 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Sutton

Percent of map unit: 8 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Leicester

Percent of map unit: 1 percent

Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Chatfield

Percent of map unit: 1 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

ChE—Charlton loam, 25 to 35 percent slopes

Map Unit Setting

National map unit symbol: bd87
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills, ridges, till plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy till derived mainly from schist, gneiss, or granite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy loam
H3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 25 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Chatfield
Percent of map unit: 5 percent
Hydric soil rating: No

Paxton
Percent of map unit: 5 percent
Hydric soil rating: No

Charlton, very stony
Percent of map unit: 3 percent
Hydric soil rating: No

Knickerbocker
Percent of map unit: 2 percent
Hydric soil rating: No

Riverhead
Percent of map unit: 2 percent
Hydric soil rating: No

Sutton
Percent of map unit: 2 percent
Hydric soil rating: No

Hollis
Percent of map unit: 1 percent
Hydric soil rating: No

CrC—Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky

Map Unit Setting
National map unit symbol: 2w698
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Charlton, very stony, and similar soils: 50 percent
Chatfield, very stony, and similar soils: 30 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent

Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

Sutton, very stony

Percent of map unit: 5 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Hollis, very stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

CsD—Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 2w69k
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 45 percent
Charlton, very stony, and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Charlton, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Leicester, very stony

Percent of map unit: 6 percent
Landform: Depressions, drainageways, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hollis, very stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, nose slope, crest

Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Landform: Hills, ridges
Hydric soil rating: No

Sutton, very stony
Percent of map unit: 4 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

HrF—Hollis-Rock outcrop complex, 35 to 60 percent slopes

Map Unit Setting
National map unit symbol: 2w69q
Elevation: 0 to 1,540 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Hollis, very stony, and similar soils: 60 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hollis, Very Stony

Setting
Landform: Hills, ridges
Landform position (two-dimensional): Shoulder, summit, backslope
Landform position (three-dimensional): Nose slope, crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile
Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, ridges
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 35 to 60 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Chatfield, very stony

Percent of map unit: 10 percent
Landform: Hills, ridges
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 5 percent
Landform: Hills, ridges

Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Leicester, very stony

Percent of map unit: 4 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave
Hydric soil rating: Yes

Sutton, very stony

Percent of map unit: 1 percent
Landform: Ground moraines, hills
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

LcB—Leicester loam, 3 to 8 percent slopes, stony

Map Unit Setting

National map unit symbol: bd8w
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Leicester, somewhat poorly drained, and similar soils: 50 percent
Leicester, poorly drained, and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Leicester, Somewhat Poorly Drained

Setting

Landform: Hills, ridges, till plains
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy acid till derived mostly from schist and gneiss

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: sandy loam
C - 26 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Hydric soil rating: No

Description of Leicester, Poorly Drained

Setting

Landform: Till plains, hills, ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy acid till derived mostly from schist and gneiss

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: sandy loam
C - 26 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 8 percent
Percent of area covered with surface fragments: 0.1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Sun
Percent of map unit: 7 percent
Landform: Depressions
Hydric soil rating: Yes

Sutton
Percent of map unit: 5 percent
Hydric soil rating: No

Leicester, very stony
Percent of map unit: 3 percent
Hydric soil rating: No

NcA—Natchaug muck, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 2w68z
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Natchaug and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Natchaug

Setting
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile
Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 31 inches: muck
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Very high (about 17.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Catden
Percent of map unit: 8 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Limerick
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sun
Percent of map unit: 4 percent
Landform: Hills, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Halsey
Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

PnB—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2qp
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Hills, drumlins, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Hills, ground moraines, depressions, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

PnC—Paxton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w66y
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 6 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Footslope, summit, backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 2 percent
Landform: Depressions, drainageways, drumlins, hills, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Ra—Raynham silt loam

Map Unit Setting

National map unit symbol: bd99
Elevation: 50 to 500 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Raynham and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raynham

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Glaciolacustrine, eolian, or old alluvial deposits, comprised mainly of silt and very fine sand

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 32 inches: silt loam
H3 - 32 to 60 inches: very fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 11.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Unadilla
Percent of map unit: 5 percent
Hydric soil rating: No

Sun
Percent of map unit: 4 percent
Landform: Depressions
Hydric soil rating: Yes

Leicester
Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils, occasionally flooded
Percent of map unit: 2 percent
Hydric soil rating: Yes

Sh—Sun loam

Map Unit Setting
National map unit symbol: bd9q
Elevation: 600 to 1,800 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Sun and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sun

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till derived primarily from limestone and sandstone, with a component of schist, shale, or granitic rocks in some areas

Typical profile
H1 - 0 to 9 inches: loam
H2 - 9 to 27 inches: loam
H3 - 27 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components

Ridgebury

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Leicester

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 3 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Sun, stony

Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

UIC—Urban land-Charlton-Chatfield complex, rolling, very rocky

Map Unit Setting

National map unit symbol: bd7n
Elevation: 100 to 1,000 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 40 percent
Charlton and similar soils: 20 percent
Chatfield and similar soils: 15 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton

Setting

Landform: Hills, ridges, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Acid loamy till derived mainly from schist, gneiss, or granite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 24 inches: sandy loam
H3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.5 inches)

Description of Chatfield

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from granite, gneiss, or schist

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 24 inches: flaggy silt loam
H3 - 24 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 3.2 inches)

Minor Components

Leicester
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: No

Sutton
Percent of map unit: 5 percent
Hydric soil rating: No

Udorthents
Percent of map unit: 5 percent
Hydric soil rating: No

Rock outcrop
Percent of map unit: 5 percent
Hydric soil rating: Unranked

Hollis
Percent of map unit: 2 percent
Hydric soil rating: No

Sun
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Palms
Percent of map unit: 1 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

UpB—Urban land-Paxton complex, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2w67p
Elevation: 0 to 930 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 50 percent
Paxton and similar soils: 25 percent
Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Description of Paxton

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge
Percent of map unit: 9 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, footslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton
Percent of map unit: 6 percent
Landform: Hills
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury
Percent of map unit: 5 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Linear, concave
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Udorthents
Percent of map unit: 5 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

UpC—Urban land-Paxton complex, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2w67t
Elevation: 10 to 880 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 40 percent
Paxton and similar soils: 35 percent
Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Description of Paxton

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 10 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 5 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Udorthents

Percent of map unit: 5 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Woodbridge

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

UwB—Urban land-Woodbridge complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w68c
Elevation: 0 to 920 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 50 percent
Woodbridge and similar soils: 25 percent
Minor components: 25 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Description of Woodbridge

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 10 percent
Landform: Ground moraines, depressions, drumlins, drainageways, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

Paxton

Percent of map unit: 5 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Udorthents

Percent of map unit: 5 percent
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Sutton

Percent of map unit: 5 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: bd7z
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

WdA—Woodbridge loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w68t
Elevation: 0 to 770 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, loam, and similar soils: 86 percent
Minor components: 14 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Loam

Setting

Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 18 inches: gravelly loam
Bw2 - 18 to 29 inches: gravelly loam
Cd - 29 to 65 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Drainageways, hills, ground moraines, depressions, drumlins
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 5 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

WdB—Woodbridge loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w688
Elevation: 0 to 1,280 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, loam, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Loam

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope, crest

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 6 inches: loam
Bw1 - 6 to 18 inches: gravelly loam
Bw2 - 18 to 29 inches: gravelly loam
Cd - 29 to 65 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Ridgebury

Percent of map unit: 7 percent
Landform: Drumlins, drainageways, hills, ground moraines, depressions
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Paxton

Percent of map unit: 7 percent
Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Sutton

Percent of map unit: 1 percent
Landform: Hills, ground moraines
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX B

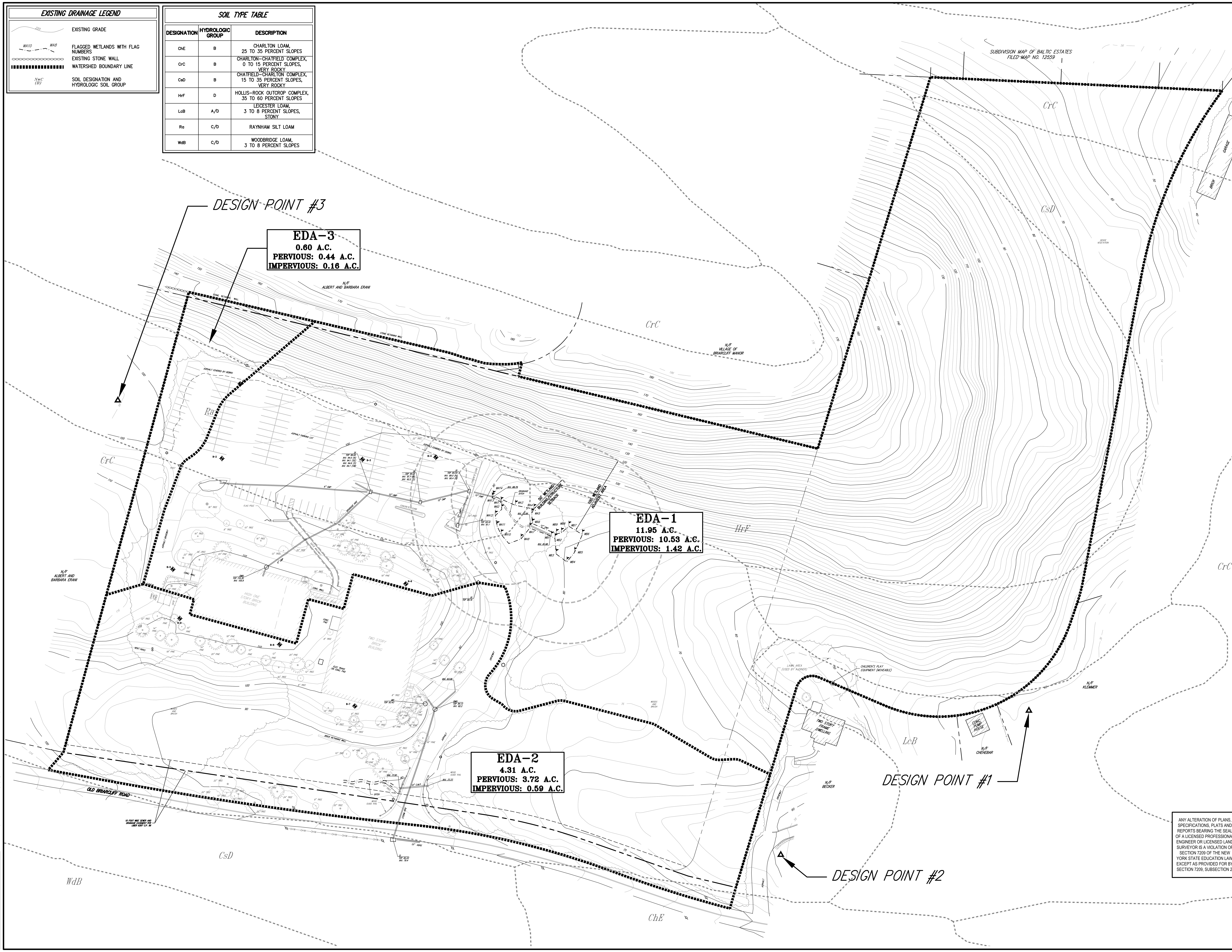
DRAWINGS

EXISTING DRAINAGE LEGEND

180	EXISTING GRADE
WA10 — WA8	FLAGGED WETLANDS WITH FLAG NUMBERS
	EXISTING STONE WALL
	WATERSHED BOUNDARY LINE
NwC (B)	SOIL DESIGNATION AND HYDROLOGIC SOIL GROUP

SOIL TYPE TABLE

DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
ChE	B	CHARLTON LOAM, 25 TO 35 PERCENT SLOPES
CrC	B	CHARLTON–CHATFIELD COMPLEX, 0 TO 15 PERCENT SLOPES, VERY ROCKY
CsD	B	CHATFIELD–CHARLTON COMPLEX, 15 TO 35 PERCENT SLOPES, VERY ROCKY
HrF	D	HOLLIS–ROCK OUTCROP COMPLEX, 35 TO 60 PERCENT SLOPES
LcB	A/D	LEICESTER LOAM, 3 TO 8 PERCENT SLOPES, STONY
Ra	C/D	RAYNHAM SILT LOAM
WdB	C/D	WOODBRIDGE LOAM, 3 TO 8 PERCENT SLOPES



NOT FOR CONSTRUCTION

APPLICANT/OWNER:
CANOE BROOK
75 EISENHOWER PARKWAY, SUITE 180
ROSELAND, NJ 07068

ARCHITECT:
LESSARD DESIGN INC. P.C.
8521 LEESBURG PIKE, SUITE 700
VIENNA, VA 22182

JMC Planning, Engineering, Landscape Architecture & Land Surveying, PLLC
JMC Site Development Consultants, LLC
John Meyer Consulting, Inc.
120 BEDFORD ROAD • ARMONK, NY 10504
voice 914.273.5225 • fax 914.273.2102
www.jmcpllc.com

EXISTING DRAINAGE AREA MAP

RESIDENTIAL DEVELOPMENT
320 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

ANY ALTERATION OF PLANS, SPECIFICATIONS, PLATS AND REPORTS BEARING THE SEAL OF A LICENSED PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW, EXCEPT AS PROVIDED FOR BY SECTION 7209, SUBSECTION 2.

Drawn: BMS	Approved: RJP
Scale: 1" = 40'	
Date: 10/05/2018	
Project No: 15245	

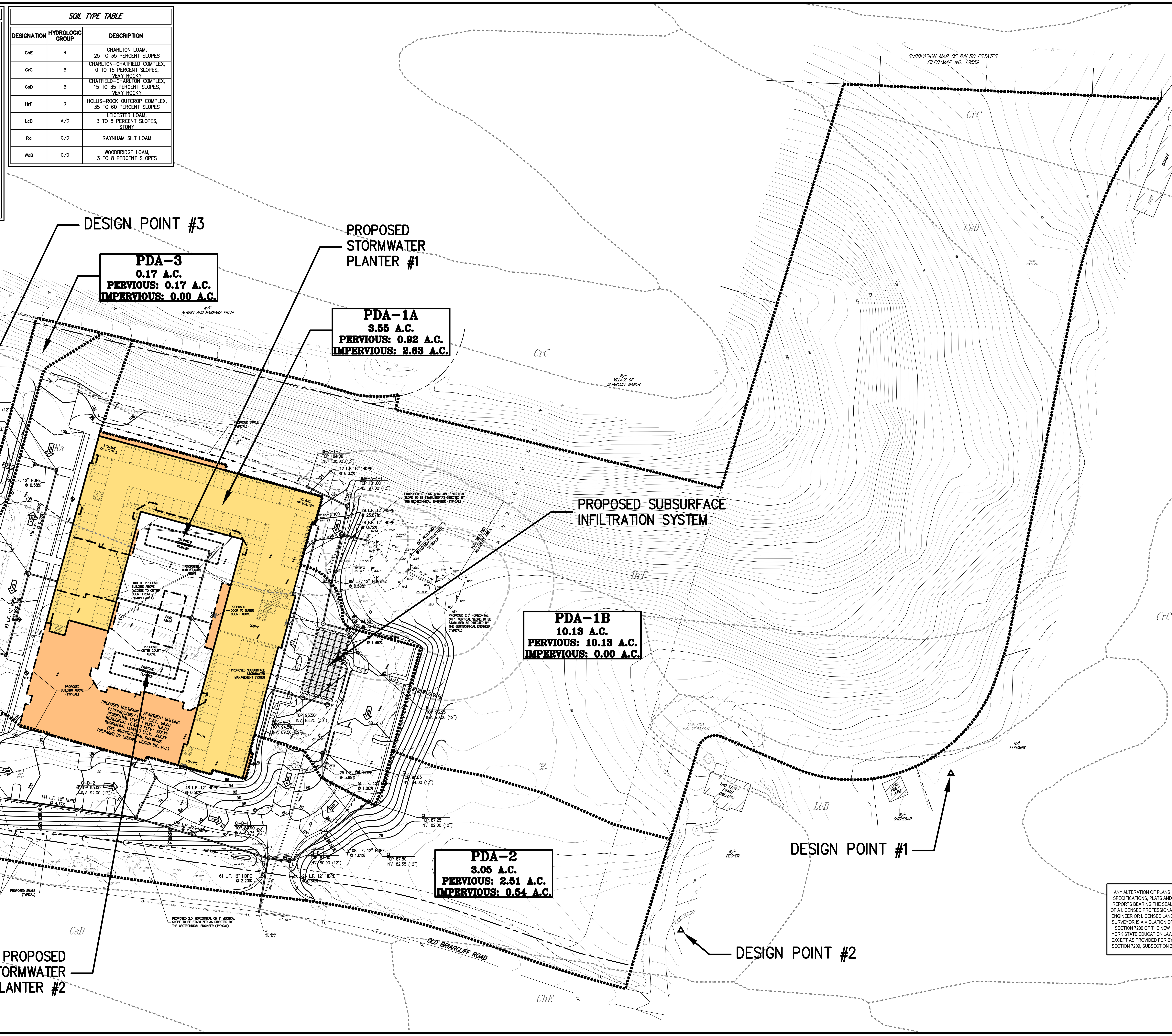
DA-1

PROPOSED DRAINAGE LEGEND

- EXISTING GRADE
- PROPOSED FINISHED GRADE
- FLAGGED WETLANDS WITH FLAG NUMBERS
- PROPOSED DITCH OR SWALE
- EXISTING STONE WALL
- WATERSHED BOUNDARY LINE
- LIMIT OF SOIL GROUPS LINE
- PROPOSED BUILDING LINE
- PROPOSED CONCRETE CURB
- PROPOSED MANHOLE (MH)
- EXISTING DRAIN INLET
- PROPOSED DRAIN INLET (DI)
- PROPOSED COMBINATION INLET (CI)
- PROPOSED OUTLET CONTROL STRUCTURE
- PROPOSED WATER QUALITY STRUCTURE
- RIP RAP ENERGY DISSIPATOR
- SOIL DESIGNATION AND HYDROLOGIC SOIL GROUP

SOIL TYPE TABLE

DESIGNATION	HYDROLOGIC GROUP	DESCRIPTION
ChE	B	CHARLTON LOAM, 25 TO 35 PERCENT SLOPES
CrC	B	CHARLTON–CHATFIELD COMPLEX, 0 TO 15 PERCENT SLOPES, VERY ROCKY
CsD	B	CHATFIELD–CHARLTON COMPLEX, 15 TO 35 PERCENT SLOPES, VERY ROCKY
HrF	D	HOLLIS–ROCK OUTCROP COMPLEX, 35 TO 60 PERCENT SLOPES
LcB	A/D	LEICESTER LOAM, 3 TO 8 PERCENT SLOPES, STONY
Ra	C/D	RAYNHAM SILT LOAM
WdB	C/D	WOODBRIDGE LOAM, 3 TO 8 PERCENT SLOPES



ANY ALTERATION OF PLANS, SPECIFICATIONS, PLATS AND REPORTS BEARING THE SEAL OF A LICENSED PROFESSIONAL ENGINEER OR LICENSED LAND SURVEYOR IS A VIOLATION OF SECTION 7209 OF THE NEW YORK STATE EDUCATION LAW, EXCEPT AS PROVIDED FOR BY SECTION 7209, SUBSECTION 2.

NOT FOR CONSTRUCTION

No.	Revision	Date	By

Previous Editions Obsolete

APPLICANT/OWNER: CANOE BROOK
75 EISENHOWER PARKWAY, SUITE 180
ROSELAND, NJ 07068

ARCHITECT: LESSARD DESIGN INC. P.C.
8521 LEESBURG PIKE, SUITE 700
VIENNA, VA 22182

JMC Planning, Engineering, Landscape Architecture & Land Surveying, PLLC
JMC Site Development Consultants, LLC
John Meyer Consulting, Inc.
120 BEDFORD ROAD • ARMONK, NY 10504
voice 914.273.5225 • fax 914.273.2102
www.jmcpllc.com

PROPOSED DRAINAGE AREA MAP

RESIDENTIAL DEVELOPMENT
320 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

Drawn:	BMS
Approved:	RJP
Scale:	1" = 40'
Date:	10/05/2018
Project No:	15245
Drawing No:	DA–2

APPENDIX D

"SCHOOL CHILDREN AND TAX ANALYSIS" DATED OCTOBER 5, 2018

SCHOOL CHILDREN AND TAX ANALYSIS

RESIDENTIAL DEVELOPMENT

320 OLD BRIARCLIFF ROAD
VILLAGE OF BRIARCLIFF MANOR, NEW YORK

Prepared for: **Canoe Brook**
75 Eisenhower Parkway
Suite 180
Roseland, NJ 07068

Prepared by:

JMC Project **15245**

Date: October 5, 2018

This tax and school children analysis has been prepared for the proposed 142 residential apartment development at 320 Old Briarcliff Road, consisting of 53 1-bedroom and 89 2-bedroom units. The analysis is summarized below.

A. School Children Analysis

In order to estimate the number of school children from a proposed development, demographic multipliers are utilized. Standard industry published multipliers for common configurations of standard housing types are a conventional planning resource that are used for estimating population and school children resulting from a new housing development.

For the purpose of this analysis, the number of public school children anticipated to be generated by the potential development has been based upon the Rutgers University Center for Urban Policy Research (CUPR) Residential Demographic Multipliers, NY, June 2006, which is a standard industry source. Rutgers multipliers are based on the type of residential unit (such as single family detached, multifamily buildings with 5+ units, etc.), whether the unit is owned or rented, and the rental cost, in broad categories. Multipliers for rental units of 5+ units have been used for this analysis.

The subject site is situated within the Ossining Union Free School District. The school district has four elementary schools (Park School with pre-kindergarten and kindergarten; Brookside Elementary with 1st and 2nd grade; Claremont Elementary with 3rd and 4th grade; and Roosevelt Elementary with 5th grade.) There is one Middle School (Dorner Middle School) with grades 6th through 8th; and Ossining High School with grades 9 through 12. Total student enrollment in the district is 4,773 in the 2017/2018 school year.

As illustrated in Table 1, overall district enrollment has been increasing in recent years, up until the 2017/2018 school year.

Table 1

District Enrollment Trends

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
# of Students	4,416	4,467	4,614	4,693	4,773	4,773
% Change	+2.7%	+1.2%	+3.3%	+1.7%	+1.7%	±0%
Number of Additional Students	+115	+51	+147	+79	+80	0

Source: New York State Education Department Website.

Table 2 below, analyzes the number of school children anticipated to be generated by the development, which would be comprised of 142 apartments, with 53 one-bedroom and 89 two-bedroom units.

Table 2

Number of Public School Children

Utilizing Standard Industry Source

Number of Apartments	Number of Bedrooms Per Apartment	Public School Children per Apartment Multiplier	New Public School Children
53	1	0.07[(1)]	3-4
89	2	0.16[(1)]	14-15
142 Total	**--**	**--**	**17-19 Total**

(1) Rutgers University Center for Urban Policy Research (CUPR), Residential Demographic Multipliers, (NY), June 2006. Public school children, rentals more than $1,000/mo. for 1-bedroom units, and more than $1,100 for 2-bedroom units.

A total of 17-19 public school children would be anticipated to be generated by the proposed project. 17-19 students represent an increase of 0.4% in the total 4,773 enrollment of the school district.

This indicates that there would likely be no significant adverse impact to the School District's ability to accommodate the 17-19 students from the proposed project, since they represent such a relatively small percentage of the total district enrollment. Each grade level would be estimated to have an additional approximately 1-2 students.

B. Taxes

In order to understand, evaluate, and compare the impacts of the potential development on the Town of Ossining tax rolls, it is important to include information regarding the assessed value of the subject site under the existing and proposed conditions. The following summary is provided accordingly:

1. Existing Property Tax Conditions

The subject site contains two tax parcels with tax lot 98.05-1-9 containing an abandoned office building, and tax lot 90.17-1-45 is undeveloped and is proposed to remain vacant. Table 3 below provides the assessed value for each of the two tax lots. The two lots have a combined assessed value of $6,616,600.00

Table 3

Existing Tax Parcels

Tax Lot ID	Assessed Acreage	Property Class	Market Value and Assessed Value[(1)]	Existing Taxes
98.05-1-9	±9.93	464 Office Bldg.	$5,118,600	$186,612
90.17-1-45	±6.43	330 Vacant Comm.	$1,498,000	$53,224
Total	±16.36	--	$6,616,600	$239,836

Notes:

(1) In the Town of Ossining, the market value and assessed value are equal.

Source: Town of Ossining 2018 Tentative Assessment Roll.

2. Post Development Assessed Value

The future development of the subject site would be assessed by the Town of Ossining Assessor upon completion of construction. For purposes of this analysis, it has been assumed that the entire project will be on one consolidated property, with taxes paid on one lot assuming the merger of the two existing parcels. In the Town of Ossining, the assessed value is the same as the market value. Accordingly, this analysis is based on the estimated future market value of the project, which has been provided by the developer. It is anticipated that the market value of the property will be $33,796,671.00.

As illustrated below in Table 4, this future assessed value will generate total property taxes of $1,225,052.00 resulting from the development.

Table 4
Estimated Future Taxes Generated by
Proposed Project

Tax Levy Description	2018 Tax Rate (per $1,000 of Assessed Value)	Estimated Future Taxes	Existing Taxes of Property	Difference Future vs. Existing
Ossining School District	25.8311	$873,005	$170,914	+$702,091
Town General	0.75371	$25,473	$4,987	+$20,486
Westchester County Tax	3.21958	$108,811	$21,303	+$87,508
Westchester County Solid Waste	0.28281	$9,558	$1,871	+$7,687
Ossining Sewer	0.66552	$22,492	$4,403	+$18,089
Village Tax	5.494999	$185,713	$36,358	+$149,355
Total	--	**$1,225,052**	**$239,836**	**+$985,216**

Source: Town of Ossining; Ossining Union Free School District

3. School Taxes

According to the Ossining Union Free School District, the 2017/2018 school budget was $125,675,900. Of this total, $97,328,261 is generated by property taxes, or approximately 77% of the total school budget. Therefore, the tax levy per student would be $20,391 ($97,328,261/4,773 students). State aid makes up the majority of the remainder of the budget.

While analysis of the per pupil tax levy assists in determining the allocation of tax levies based on projected enrollment, it is the marginal expense for new students that must be analyzed when calculating the true impact of the development. Simply using the per pupil tax levy as a basis for estimating the total cost of additional students generated overestimates the marginal cost of educating an additional student. The marginal cost is defined as all of the actual costs of educating these additional students. There are many items in the school budget that are fixed and would not be affected by a modest increase of additional students. These fixed items include administrative services such as district clerk, district meetings, central administration, business administration, auditing and treasurer, public information, data processing, curriculum development and supervision.

The 2017/2018 school budget noted above includes $63,670,000 for instructional costs, which are more reflective of the marginal cost of educating the new students. Therefore, based on a student population of 4,773, the instruction costs per pupil are approximately $13,340, of which 77% or $10,272 is paid by local tax levy.

With the proposed project estimated to generate $873,005 in school taxes, $45,948 to $51,353 would be generated by the project for each of the estimated 17-19 new students. This represents a surplus of approximately $35,676 to $41,081 in school taxes per student above the marginal cost of educating each of the students, for a total surplus of $677,844 to $698,377 for the school district.

The proposed project may also generate fewer public school students, as the Rutgers multipliers may be higher than those of comparable developments within the area.

4. Conclusion

While the proposed project results in 17 – 19 more school children, this is not a significant increase, particularly considering the amount of taxes that will be generated. The proposed project results in a substantial increase of $985,216 in property taxes, or 4.1 times the $239,836 in property taxes currently paid by the property. This includes an increase of $702,091 paid to the Ossining Union Free School District. The project also results in a substantial increase of $149,355 to be paid in Village taxes above the $36,358 currently paid. Accordingly, the proposed project results in a substantial net tax benefit to all the taxing jurisdictions.

APPENDIX E

"WETLAND INVESTIGATION AND REGULATORY ASSESSMENT", DATED OCTOBER 10, 2018

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

October 10, 2018

Mr. Jack Tycher
Canoe Brook
75 Eisenhower Parkway, Suite 180
Roseland, New Jersey 07068

Re: Wetland Investigation & Regulatory Assessment
320 Old Briarcliff Road
Briarcliff Manor, Westchester County, New York

Dear Mr. Tycher:

In accordance with your authorization, EcolSciences, Inc. conducted a wetlands investigation of the above-referenced 9.9 acre property. The southern part of the site is developed with an unoccupied commercial building and an associated parking lot and access drive. The property fronts on Old Briarcliff Road and is bordered to the north and south by residential development and to the west by forested land.

The purpose of the investigation was to determine the extent of wetlands or other water features regulated in accordance with the New York State Department of Environmental Conservation (NYSDEC) or the U.S. Army Corps of Engineers (ACOE). An assessment of the potential regulatory impact of these environmental constraints upon the development potential of the site was also performed. The results of these investigations are discussed below.

Wetlands

The presence and extent of wetlands on the site was determined utilizing the procedures detailed within the Federal Manual for Identifying and Delineating Jurisdictional Wetlands (Federal Interagency Committee for Wetland Delineation, 1987). This approach generally requires a coincidence of hydric soils, positive hydrological indicators and a prevalence of hydrophytic vegetation for a determination that an area is a wetland. Areas identified as wetlands consistently exhibited all three parameters.

Review of NYSDEC wetland mapping indicated that no NYSDEC mapped wetlands occur on the site. During a field investigation on April 26, 2016, freshwater emergent wetlands (PEM) were identified on the site. The wetlands consist of two small depressional features located north of the existing parking area that are separated by a berm with a metal culvert that connects them. Please see Attachments 2 and 3 for color photographs and wetland data sheets documenting the field investigation. The wetlands were delineated and the approximate extent of these wetlands

75 Fleetwood Drive ☐ Suite 250 ☐ Rockaway, New Jersey 07866 ☐ 973/366-9500 ☐ FAX: 973/366-9593
www.EcolSciences.com

is shown on the enclosed aerial photograph (Figure 1). The delineated wetlands boundary was also surveyed and is shown on the project plans prepared by JMC.

A meeting with the Village of Briarcliff Manor was held in July 2016, at which a Village representative mentioned that wetlands were previously mapped on the maintained lawn area located at the eastern border of the property adjacent to Old Briarcliff Road. The area in question was investigated during the site visit and consists of an upland swale that conveys stormwater from the lawn after storm events via a culvert under the driveway. Upland vegetation including turf grasses, dandelion, white clover, and common bugle characterizes this area. No hydrophytic vegetation was observed. No hydric soils or other signs of wetland hydrology were observed. Therefore, this area does not meet the criteria required to be classified as a wetland. See photographs 7 and 8 in Attachment 2 for photographic documentation of this upland swale.

The majority of the water in the identified wetlands appears to originate from the paved parking lot located south of the wetlands. The water is conveyed from the parking lot and is discharged to the wetlands area via a metal culvert. The wetlands drain to the north via a combination of intermittent erosional features, underground conveyance, and ditches. The water feature ultimately flows into the Ossining Reservoir, a municipal water supply.

A review of the Westchester County Soil Survey Mapping indicates that the connection between the on-site wetlands and the Ossining Reservoir was historically a natural surface drainage feature. The connection to a municipal water supply reservoir via a historic surface drainage feature is typically considered to be a significant nexus under ACOE guidance and confirms that the ACOE has regulatory authority over the identified wetlands. Activities in ACOE regulated wetlands require authorization from the ACOE. The ACOE regulations do not impose a wetland transition area or buffer.

Lastly, a review of The Freshwater Wetlands section of the Village Code (Chapter 131, adopted by the Board of Trustees of the Village of Briarcliff Manor 1-21-2015 by L.L. No. 2-2015, included as Attachment 1 to this letter) indicates that the Village also regulates certain activities in freshwater wetlands and in a 100-foot area adjacent to the wetland. The following regulatory assessment summarizes how the applicable wetland regulations affect the proposed project.

Regulatory Assessment

The project as currently proposed is to redevelop the site, demolishing the existing building and constructing a three-story residential building with ground floor and surface parking. Details are provided on the Preliminary Layout and Preliminary Grading Plans prepared by JMC. No construction impacts are proposed within the identified wetlands and therefore, no ACOE approval is required for the project.

Because no activities are proposed within the wetlands, the following is a summary of proposed activities within the 100-foot wetland adjacent area regulated by the Village of Briarcliff Manor. The Village wetland regulations make a distinction between what is allowed in the inner 50 feet and the outer 50 feet of the adjacent area. The project plans prepared by JMC show and identify the inner and outer zones of the wetland adjacent area. Because this is a redevelopment project, it is important to note that there is existing disturbance and impervious cover within the wetland adjacent areas to be disturbed for the project.

0 – 50 Feet from Wetland Boundary

Per the Village code, no buildings and structures are allowed within 50 feet of the wetland boundary. Project plans prepared by JMC show that no buildings or structures, as defined by the Village code, are proposed within 50 feet of the wetlands. There is existing impervious cover including the access road and paved parking located within 50 feet of the wetlands. Proposed activities within 50 feet of the wetlands include grading for the reconfigured access road and parking, portions of the emergency access constructed of pervious grass pavers, and some minor clearing and grading. The existing impervious cover within 50 feet of the wetland will be removed as part of the access road reconfiguration and emergency access construction.

These activities are allowed and require approval from the Village Planning Board and a Village permit. All of the existing impervious cover within 50 feet of the wetland, 2,565 square feet, will be removed as part of the project.

50 to 100 Feet from Wetland Boundary

Buildings and structures are allowed within 50 to 100 feet of the wetland boundary per Village code. As for the 0-50 foot adjacent area, there is existing impervious cover including the access road and paved parking located within 50 to 100 feet of the wetlands. Project plans show portions of the proposed building, the reconfigured access and parking, and portions of the emergency access of pervious grass pavers within 50 to 100 feet of the wetlands.

These activities are allowed and require approval from the Village Planning Board and a Village permit. The total existing impervious cover between 50 feet and 100 feet of the wetland is 8,161 square feet. The proposed impervious cover in this area is 9,906 square feet, for an increase in impervious cover of 1,745 square feet in this portion of the adjacent area. Overall, within the entire 100-foot wetland adjacent area there is a proposed net reduction of 820 square feet of impervious cover.

Summary

EcolSciences identified freshwater wetlands on the site. The wetlands are regulated by the ACOE and the Village of Briarcliff Manor but are not mapped as NYSDEC wetlands. The

Village also regulates activities with a 100-foot area adjacent to the wetland boundary. The proposed project is to redevelop the formerly commercial site for residential use. No project activities are proposed in the wetlands. Regulated activities are proposed in the 100 foot wetland adjacent area, however, overall there will be a reduction in impervious cover within the wetland adjacent area compared with existing conditions. These regulated activities will require Planning Board approval and a permit from the Village of Briarcliff Manor.

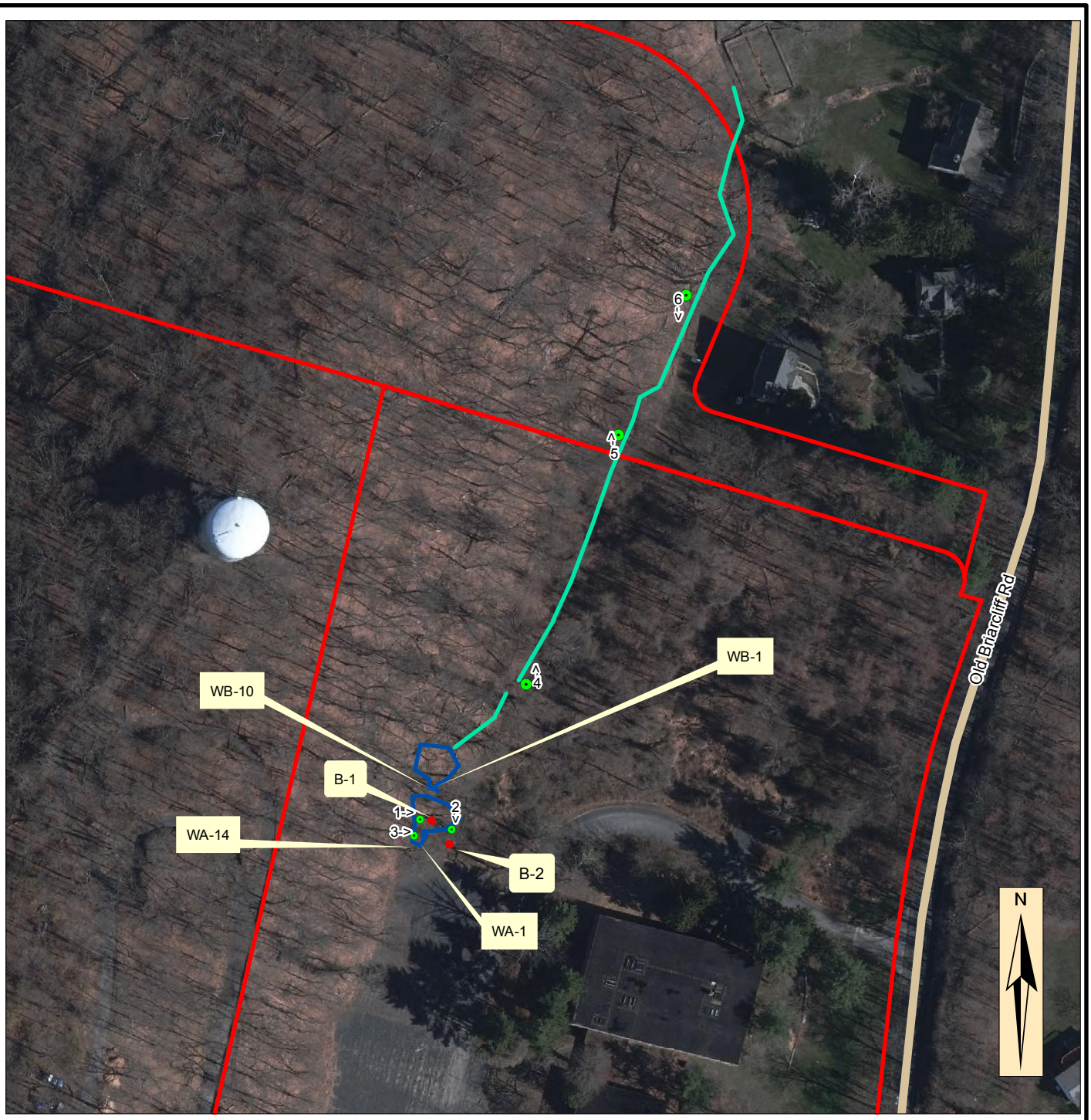
I trust this information is suitable for your needs. Please do not hesitate to contact me if you have any questions.

Very truly yours,

EcolSciences, Inc.

Thomas Auffenorde
Vice President

TA/ae
Attachments



Legend

= Site Boundary

WA-1 = Approximate Location of Representative Wetland Flags

= Approximate Wetland Location

= Approximate Location of Drainage Feature

= Approximate Location of Sampling Point

= Approximate Location of Photograph

0 200 400 Feet

FIGURE 1: Wetland Delineation

320 Old Briarcliff Road
Township of Briarcliff Manor
Westchester County, New York

Source: NY DHSES. NY Statewide Digital Orthoimagery Program.

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

Date: 5/5/16

Scale 1:1,587

F:\JOBS16\HW16-056\Wetlands\GIS\Wetlands_Aerial_NY.mxd

ATTACHMENT 1

Village of Briarcliff Manor
Freshwater Wetlands Code Chapter 131

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

Chapter 131

FRESHWATER WETLANDS

§ 131-1. Short title.

This chapter shall be known as the "Freshwater Wetlands Protection Law of the Village of Briarcliff Manor."

§ 131-2. Declaration of policy.

It is declared to be the public policy of Village of Briarcliff Manor to preserve, protect and conserve freshwater wetlands and the benefits derived therefrom, to prevent the despoliation and destruction of freshwater wetlands, and to regulate the development of such wetlands in order to secure the natural benefits of freshwater wetlands, consistent with the general welfare and beneficial economic, social and agricultural development of the Village. It is further declared to be the policy of the Village of Briarcliff Manor to exercise its authority pursuant to Article 24 of the State Environmental Conservation Law as such law may from time to time be amended.

§ 131-3. Statement of findings.

A. The freshwater wetlands located in the Village of Briarcliff Manor are invaluable resources for flood protection, wildlife habitat, open space and water resources.

B. Freshwater wetlands in the Village have been lost, despoiled or impaired by draining, dredging, filling, excavating, building, pollution or other acts inconsistent with the natural uses of such areas. Remaining freshwater wetlands should be regulated to preserve their value to the Village.

C. Recurrent flooding aggravated or caused by the loss of freshwater wetlands has serious effects upon natural ecosystems.

D. Freshwater wetlands conservation is a matter of Village concern.

E. Any loss of freshwater wetlands deprives the people of the Village of Briarcliff Manor of the many and multiple benefits to be derived from wetlands, to wit:

   (1) Flood and storm control by the hydrologic absorption and storage capacity of freshwater wetlands;

   (2) Wildlife habitat by providing breeding, nesting and feeding grounds and cover for many forms of wildlife, wildfowl and shorebirds, including migratory wildfowl rare species;

   (3) Protection of subsurface water resources and provision for valuable watersheds and recharging groundwater supplies;

(4) Recreation by providing areas for fishing, boating, hiking, bird watching, photography, camping and other uses;

(5) Pollution treatment by serving as biological and chemical oxidation basins;

(6) Erosion control by serving as sedimentation areas and filtering basins, absorbing silt and organic matter and protecting channels and harbors;

(7) Education and scientific research by providing readily accessible outdoor biophysical laboratories, living classrooms and training and education resources;

(8) Open space and aesthetic appreciation; and

(9) Sources of nutrients in freshwater food cycles and nursery grounds and sanctuaries for freshwater fish.

§ 131-4. Definitions.

The following terms, phrases, words and their derivatives shall have the meanings given herein:

ADJACENT AREA — Any land in the Village of Briarcliff Manor immediately adjacent to a freshwater wetland lying within 100 feet measured horizontally from the boundary of a freshwater wetland.

APPLICANT — Any person or authorized agent who files an application for any permit issued pursuant to this chapter, and includes the agent of the owner or a contract vendee.

BOARD — The Freshwater Wetlands Appeals Board established by Article 24 of the State Environmental Conservation Law.

BOUNDARIES OF A FRESHWATER WETLAND — The outer limit of the vegetation specified in Subsections A and B of the definition of "freshwater wetlands."

CONSERVATION ADVISORY COUNCIL — The Conservation Advisory Council of the Village of Briarcliff Manor.

FRESHWATER WETLANDS —

A. Any lands and waters lying within the boundaries of the Village of Briarcliff Manor, including any natural water body or watercourse such as a pond, reservoir, lake, stream or brook containing any or all of the following criteria, together with any lands and waters as shown on the Freshwater Wetlands Map and also containing any or all of the following criteria:

(1) Lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semiaquatic vegetation of the following vegetative types:

(a) Wetland trees, which depend upon seasonal or permanent flooding or sufficiently waterlogged soils to give them a competitive advantage over other trees; including, among others, red maple (Acer rubrum), willows (Salix spp.), black spruce (Picea mariana), swamp white oak (Quercus bicolor), red ash (Fraxinus pennsylvanica), American elm (Ulmus americana), and larch (Larix laricina);

(b) Wetland shrubs, which depend upon seasonal or permanent flooding or sufficiently waterlogged soils to give them a competitive advantage over other shrubs; including, among others, alder (Alnus spp.), buttonbush (Cephalanthus occidentalis), bog rosemary (Andromeda glaucophylla), and leatherleaf (Chamaedaphne calyculata);

(c) Emergent vegetation; including, among others, cattails (Typha spp.), pickerelweed (Pontederia cordata), bulrushes (Scirpus spp.), arrow-arum (Peltandra virginica), arrowheads (Sagittaria spp.), reed (Phragmites communis), wildrice (Zizania aquatica), bur-reeds (Sparganium spp.), purple loosestrife (Lythrum salicaria), swamp loosestrife (Decodon verticillatus), and water plantain (Alisma plantago-aquatica);

(d) Rooted, floating-leaved vegetation; including, among others, water-lily (Nymphaea odorata), watershield (Brasenia Schreberi), and spatterdock (Nuphar spp.);

(e) Free-floating vegetation; including, among others, duckweed (Lemma spp.), big duckweed (Spirodela polyrhiza), and watermeal (Wolffia spp.);

(f) Wet meadow vegetation, which depends upon seasonal or permanent flooding or sufficiently waterlogged soils to give it a competitive advantage over other open land vegetation; including, among others, sedges (Carex spp.), rushes (Juncus spp.), cattails (Typha spp.), rice cut-grass (Leersia oryzoides), reed canary grass (Phalaris arundinacea), swamp loosestrife (Decodon verticillatus), and spikerush (Eleocharis spp.);

(g) Bog mat vegetation; including among others, sphagnum mosses (Sphagnum spp.), bog rosemary (Andromeda glaucophylla), leatherleaf (Chamaedaphne calyculata), pitcher plant (Sarracenia purpurea), and cranberries (Vaccinium macrocarpon and V. oxycoccos);

(h) Submergent vegetation; including, among others, pondweeds (Potamogeton spp.), naiads (Najas spp.), bladderworts (Utricularia spp.), wild celery (Vallisneria americana), coontail (Ceratophyllum demersum), water milfoils (Myriophyllum spp.), muskgrass (Chara spp.), stonewort (Nitella spp.), waterweeds (Elodea spp.), and water smartweed (Polygonum amphibium);

B. Man-made or created freshwater wetlands with a surface area less than 4,000 square feet at overflow level are exempt from the provisions of this chapter with the exception of freshwater wetlands created as compensation or mitigation as a result of disturbance to an existing wetland or adjacent area.

FRESHWATER WETLANDS MAP — A map on which are indicated the boundaries of any freshwater wetland and which has been filed with the Clerk of the Village of Briarcliff Manor by the State Department of Environmental Conservation pursuant to § 24-0301 of the State Environmental Conservation Law as such law may from time to time be amended.

LOCAL GOVERNMENT — A city, county, town or village.

MAN-MADE OR CREATED FRESHWATER WETLANDS — Aquatic areas for which no existing permit or approval is on file with the Village, or which are not shown on an approved site plan or subdivision plat or on a survey or map 20 years old or less and having one or more of the following characteristics:

A. Artificially irrigated areas that would revert to upland should irrigation cease;

B. Artificial lakes or ponds created by excavating and/or diking dry land;

C. Artificial reflecting pools or swimming pools created by excavating and/or diking dry land;

D. Ornamental waters created by excavating and/or diking dry land for primarily aesthetic reasons;

E. Water-filled depressions created incidental to construction activity; and

F. Groundwater drained through subsurface drainage systems and erosional features (gullies and rills), and swales and ditches that are not tributaries or wetlands.

PARTY IN INTEREST — The applicant, the Planning Board, the State Department of Environmental Conservation, each local government in which the regulated activity or any part thereof is located, and any person who appears and wishes to be a party in interest at the public hearing held pursuant to § 131-7 of this chapter.

PERSON — Any corporation, firm, partnership, association, trust, estate, one or more individuals, and any unit of government or agency or subdivision thereof.

PLANNING BOARD — The Planning Board of the Village of Briarcliff Manor.

POLLUTION — The presence in the environment of human-induced conditions or contaminants in quantities or characteristics which are or may be injurious to humans, plants, animals or property.

PROJECT — Any action which may result in direct or indirect physical impact on a freshwater wetland, including but not limited to, any regulated activity.

REGULATED ACTIVITY — Any form of draining, dredging, excavation, removal of soil, mud, sand, shells, gravel or other aggregate from any freshwater wetland, including adjacent area, either directly or indirectly; any form of dumping, filling, or depositing of any soil, stones, sand, gravel, mud, rubbish or fill of any kind, either directly or indirectly; erecting any structures or roads, the driving of pilings, or placing of any other obstructions, whether or not changing the ebb and flow of the water; any form of pollution, including, but not limited to, installing a septic tank, running a sewer outfall, discharging sewage treatment effluent or other liquid wastes directly into or so as to drain into a freshwater wetland; that portion of any subdivision of land that involves any land in any freshwater wetland or adjacent area; and any other activity which substantially impairs any of the several functions served by freshwater wetlands or the benefits derived therefrom which are set forth in § 131-3 of this chapter.

SELECTIVE CUTTING — The annual or periodic removal of trees, individually or in small groups, in order to realize the yield and establish a new crop and to improve the forest, which removal does not involve the total elimination of one or more particular species of trees.

STATE — The State of New York.

STATE AGENCY — Any state department, bureau, commission, board or other agency, public authority or public benefit corporation.

STORMWATER MANAGEMENT — Retention or detention areas/ponds constructed as part of an overall plan to control runoff and erosion control and retain stormwater that are not designed as a wetlands. These are exempt from freshwater wetlands regulation and shall be regulated under Village Code Chapter 184, Stormwater, Drainage, Erosion and Water Pollution Control.

VILLAGE — The Village of Briarcliff Manor, New York.

VILLAGE ENGINEER — The Village Engineer of the Village of Briarcliff Manor.

§ 131-5. Prohibited activities.

Except as provided in § 131-6 of this chapter, the following activities shall be prohibited and unlawful: to construct or permit to be constructed any building or structure of any kind in or upon a wetland or an adjacent area within 50 feet measured from the boundary of a freshwater wetland.

§ 131-6. Permitted activities.

A. Activities permitted by right. The following regulated activities are permitted, by right, in or upon a freshwater wetland or an adjacent area thereto, except where the Planning Board submits written notification to the property owner that it is assuming jurisdiction over the activity for the purpose of assuring that the intent of this chapter is not violated:

(1) Outdoor recreation, including play and sporting areas; field trails for nature study, hiking or horseback riding; and swimming, skin diving, boating, trapping, or fishing where otherwise legally permitted.

(2) Maintenance of lawns, grazing, farming, gardening and harvesting of crops where otherwise legally permitted, except for use of chemicals as provided for in § 131-6B(1)(d).

(3) The activities of farmers and other land owners in grazing and watering livestock, making reasonable use of water resources, harvesting natural products of wetlands or adjacent areas, selective cutting of timber, draining land or wetlands for growing agricultural products. Each farmer or other landowner who intends to conduct an otherwise regulated activity under this exemption shall notify the Planning Board prior to the activity of his or her intention to engage in such activity, stating the methods to be used and the uses to be made of the land. Such notice shall also include the approximate acreage to be affected, the type and location of the activity; provided, however, that the filing of a soil and water conservation plan prepared by a Soil and Water Conservation District shall satisfy this notification requirement.

(4) Operation and maintenance of such dams, retaining walls, terraces, sluices, culverts or other water control structures or devices as were in existence on the effective date of this chapter, or are hereafter approved pursuant to the procedures provided for in this chapter.

(5) Incidental removal of brush and trees which would result in no appreciable effect upon the runoff or drainage into any river, wetland, water body or watercourse.

(6) Public health activities, orders and regulations of the State Department of Health, County Department of Health, City Department of Health or other, as applicable, undertaken in compliance with § 24-0701, Subdivision 5, of the State Environmental Conservation Law.

(7) Activities subject to the review jurisdiction of the State Public Service Commission or the New York State Board on Electric Generation Siting and the Environment under Article VII or Article VIII of the State Public Service Law, respectively. The standards and restrictions of this chapter will be applied by said bodies in determining whether to issue a certificate of environmental compatibility and public need under such articles.

(8) The deposition or removal of the natural products of freshwater wetlands and adjacent areas by recreational or commercial fishing, shellfishing, agriculture, or trapping, where otherwise legally permitted and regulated.

(9) To construct or permit to be constructed any building, structure or regulated activity without a permit within an adjacent area 50 feet to 100 feet from the boundary of a freshwater wetland.

(10) Restoring land elevations that have been altered by erosion or storm damage.

B. Activities requiring Engineer approval.

(1) The following regulated activities are permitted in or upon a freshwater wetland or an adjacent area only if conducted after application to and pursuant to terms and conditions approved and a permit issued by the Village Engineer, except that Village Engineer approval shall not be required where the activity is conducted pursuant to terms and conditions of an application approved by the Planning Board.

(a) Removing water-deposited silt, sand or other to restore the preexisting land elevations, provided the total quantity removed does not exceed 25 cubic yards of material.

(b) The construction, expansion or improvement of private recreation facilities, as otherwise legally permitted, provided the amount of material deposited, removed or regraded does not exceed 50 cubic yards.

(c) The construction of driveways where alternative means of access are proven to be impractical, provided the amount of material to be deposited or regraded in connection with such construction does not exceed 100 cubic yards and there is no restriction of flood flows unless access location has been established as part of a Planning Board application.

(d) The use of chemicals, dyes, fertilizers, herbicides or other similar materials, provided that approval shall be given only after consultation with or pursuant to the guidelines of the NYSDEC.

(e) Any activity requiring Planning Board approval by the terms of this chapter which the Planning Board refers to the Village Engineer for disposition.

(2) No well, regardless of its proximity to a freshwater wetland, shall be drilled without receiving the approval of the Village Engineer as to its location.

C. Activities requiring Planning Board approval.

(1) The following regulated activities are permitted in or upon a freshwater wetland or an adjacent area only after application to, approval by and subject to the terms and conditions and mitigation specified by the Planning Board as a part of a subdivision application, a site development plan application, or an application

for permit submitted pursuant to the procedure set forth in § 131-6 of this chapter. Such Planning Board approval, terms and conditions are to be given and imposed so as to enhance or cause the least possible damage, encroachment or interference with the natural resources or functions of the freshwater wetlands and consistent with the purposes of this chapter.

(a) Any activity listed in § 131-6B but involving a scale of operation beyond that which is approvable by the Village Engineer.

(b) Any activity normally permitted by right or normally requiring Village Engineer approval as set forth in § 131-6A and B where the Planning Board notifies the property owner in writing of the Board's intent to assume jurisdiction in furtherance of the purposes of this chapter.

(c) The construction of roads, where alternative means of access are proven to be impractical, provided they do not impede flood flows.

(d) The construction of municipal or utility uses as water supply facilities, park and recreation facilities, sewage treatment facilities or other installations which involve any alteration of existing natural conditions.

(e) Construction of utility lines.

(f) The construction of any building(s) or structure(s) within an adjacent area that is beyond the first 50 feet as measured from the boundary of a freshwater wetland.

(2) Regardless of the proximity of the land involved to any freshwater wetlands, all proposed destruction of trees and other plant life other than that referred to in § 131-6A(3) and (5) shall be subject to review and approval by the Planning Board to prevent substantial alteration of runoff conditions.

§ 131-7. Permits.

A. Applications. Applications for permits to conduct any regulated activities under § 131-6B or C shall be submitted in duplicate to the Village Engineer for approval or for referral to the Planning Board and shall include the following information:

(1) Name and address of applicant or applicant's agent, if any, and whether applicant is owner, lessee, licensee, etc. If applicant is not the owner of record, the written consent of the owner must be attached.

(2) Statement of the specific purpose, nature and scope of the activity proposed.

(3) Any topographical and perimeter surveys, hydrological computations, engineering studies and other factual or scientific data and reports as deemed reasonably necessary by the approving authority (Planning Board or Village Engineer) to permit it to arrive at a proper determination.

(4) Applications affecting water retention capability, water flow or other drainage characteristics of any wetland, water body or watercourse shall include a statement of the area of upstream and downstream watersheds, impact analysis and information as to rainfall intensity in the vicinity for not less than ten-year return frequency, together with approximate runoff coefficients to determine the capacity and size of any channel sections, pipes or waterway openings, together with plans for necessary bridges, culverts, stormwater or pipe drains that, in the opinion of the approving authority, are needed to arrive at a proper determination on the application, consistent with the purposes of this chapter.

(5) A stormwater pollution prevention plan (SWPPP) consistent with the requirements of Chapter 184, Article I, Stormwater Management and Erosion and Sediment Control, shall be required for any wetlands permit approval that qualifies as or authorizes a land development activity as defined in Chapter 184, Article I. The SWPPP shall meet the performance and design criteria and standards in Chapter 184, Article I. The approved wetlands permit shall be consistent with the provisions of Chapter 184, Article I.

B. Referral to Conservation Advisory Council. The Planning Board or Village Engineer may refer any application submitted pursuant to this chapter to the Conservation Advisory Council for review and report. The Conservation Advisory Council shall report back to the Planning Board or to the Village Engineer, as the case may be, within 30 days of the date of referral or within such other period as may be specified by the Planning Board at the time of referral. Failure to reply within the specified time period may be interpreted by the Planning Board (or Village Engineer) as indicating no objection to the application.

C. Public hearings and time periods.

(1) The time period for consideration of, and requirements for public hearings to be conducted in connection with, any application for permission to carry on any regulated activity under § 131-6B and C of this chapter which is made in conjunction with a subdivision application or site development plan application shall be the same as the time period for consideration of and requirements for public hearing of the subdivision, or site development plan application with which it is associated, provided that such public hearing shall be held no later than 60 days after the Planning Board meeting at which a completed application is received by the Planning Board.

(2) The Planning Board shall advertise and conduct a public hearing on any application for approval of a regulated activity submitted pursuant to this chapter which is not associated with a subdivision or site development plan application. Within 60 days of the date of the Planning Board meeting at which a completed application made pursuant to § 131-7A is received by the Planning Board, or within 45 days of the date of any public hearing which may be conducted on said application, whichever period is shorter, the Planning Board shall render a decision to approve, approve with modifications, or disapprove the issuance of a permit for the proposed activity.

D. Conditions and time limit. In approving any application submitted pursuant to the requirements of this chapter, the approving authority may impose such conditions on the proposed activity as it determines necessary to ensure compliance with the intent of this chapter. The approving authority may fix a reasonable time within which any operations must be completed and may also require the filing with the Village Board of a cash or surety company performance bond in such amount and form as determined necessary by the approving authority to ensure compliance with the approved permit. Any decision to grant, deny, place conditions upon, require a bond for, revoke or suspend any permit must be supported by written findings and reasons.

E. Disposition by Village Engineer. The Planning Board, at its discretion, may waive its power of review and approval in cases where the Board determines that the proposed nature or scope of activity is such that the application should be handled administratively by the Village Engineer. In such cases, the Board shall direct the Village Engineer to decide the matter in accordance with the normal administrative procedures for applications submitted pursuant to the requirements of § 131-6B of this chapter.

§ 131-8. Planning Board authority.

A. The Planning Board is hereby authorized to vary the strict application of the provisions of § 131-6 and to review, upon request of the applicant, the determinations made by the Village Engineer under § 131-6B, where the Planning Board finds there are special circumstances or conditions applying to the land or activity for which approval is sought or the circumstances or conditions are such that strict application of the provisions of this chapter could reasonably be waived or varied and still maintain the purpose of this chapter, or would create a hardship; provided, however, that any such approval which is not in strict compliance with the provisions of this chapter shall be the minimum variance from the chapter that will accomplish the object of the activity involved and shall be in harmony with the general purpose and intent of this chapter as set forth in §§ 131-1 and 131-2 and any land use regulations as may be applicable pursuant to § 24-0903 of the State Environmental Conservation Law.

B. A duly filed notice in writing to the Planning Board that the State of New York or any agency or subdivision thereof is in the process of acquiring any affected freshwater wetland by condemnation or negotiation shall be sufficient basis for denying a permit for an activity proposed to be located on such wetland or adjacent area thereto.

C. The Planning Board may, with the approval of the Board of Trustees, issue such guidelines as it deems appropriate for the use of the Village Engineer and the Planning Board in carrying out their responsibilities under § 131-6B and C of this chapter.

§ 131-9. through § 131-10. (Reserved)

§ 131-11. Fees.

After a permit shall have been granted by the Planning Board or the Village Engineer, as the case may be, and as a condition for the issuance thereof, the applicant shall pay a fee as shall be set forth by resolution of the Village Board of Trustees in the Master Fee Schedule, which may be amended, to said Board. No fee shall be required for permits issued by the Village Engineer in accordance with the requirements of this chapter.

§ 131-12. Suspension or revocation of permits.

A. The Planning Board or Village Engineer may suspend or revoke a permit issued pursuant to this chapter where it finds that the permittee has not complied with any or all terms of such permit, has exceeded the authority granted in the permit, or has failed to undertake the project in the manner set forth in the application.

B. The Planning Board or Village Engineer shall set forth in writing in the file it keeps regarding a permit application its findings and reasons for revoking or suspending a permit pursuant to this section.

§ 131-13. Penalties for offenses.

A. Any person who undertakes any regulated activity within a wetlands or wetlands buffer without a permit or who violates, disobeys or disregards any provision of this chapter shall be liable for a civil penalty not to exceed $3,000 for every such violation. Each consecutive day of the violation will be considered a separate offense. Before assessment of the civil penalty, the alleged violator shall be afforded a hearing or opportunity to be heard before the Planning Board upon due notice and with rights to specification of the charges and representation by counsel. Such civil penalty may be recovered in an action brought by the Village in any court of competent jurisdiction. Such civil penalty may be released or compromised by the Village, and any action commenced to recover the same may be settled and discontinued by the Village.

B. The Planning Board shall also have the power, following a hearing, to direct a violator to cease violation of this chapter and, under the Board's supervision, to restore satisfactorily the affected freshwater wetlands or watercourse to its condition prior to the violation, insofar as that is possible, within a reasonable time. Exercising of such power may be with or without the imposition of a fine or civil penalty under Subsections A and D hereof.

C. Any civil penalty or order issued by the Planning Board shall be reviewable pursuant to Article 78 of the Civil Practice Law and Rules within 30 days of the filing of the decision in the office of the Village Clerk of the Village of Briarcliff Manor.

D. In addition to the above civil penalty, any person who violates any provision of this chapter shall be guilty of a violation punishable by a fine of not less than $500 nor more than $1,000. For a second and each subsequent offense, the violator shall be guilty of a violation punishable by a fine of not less than $1,000 nor more than $2,000 or a term of imprisonment of not more than 15 days, or both. Each offense shall be a separate and distinct offense and, in the case of a continuing offense, each day's continuance thereof shall be deemed a separate and distinct offense. In addition to these punishments, any offender may be punishable by being ordered by the court to restore the affected freshwater wetlands to its condition prior to the offense, insofar as that is possible. The court shall specify a reasonable time for the completion of such restoration, which shall be effected under the supervision of the Wetlands Inspector.

E. The Village shall have the right to seek equitable relief to restrain any violation or threatened violation of any provision of this chapter and to compel the restoration of the affected wetlands or wetlands buffer to its condition prior to the violation of the provisions of this chapter.

F. The Village Engineer and Building Inspectors are hereby authorized to issue appearance tickets and summonses for violations of this chapter.

§ 131-14. through § 131-15. (Reserved)

§ 131-16. Repealer.

Local Law No. 1-1973, enacted February 8, 1973, is hereby repealed.

ATTACHMENT 2

Annotated Color Photographs

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

1

Photograph of the wetland documented by Wetland Data Sheet B-1, looking east.

2

Photograph of the upland documented by Wetland Data Sheet B-2, looking south.

3

Photograph of the culverted area at the southernmost border of the wetland. Facing southeast.

4

Photograph of on-site erosional feature connecting flagged wetlands to off-site intermittent drainage feature. Facing north.

5

Photograph of intermittent drainage feature in residential area. Facing south.

6

Photograph of drainage swale in residential area north of Photo #5.

7

Photograph of the upland lawn area. Facing south from the driveway.

8

Photograph of the upland lawn area. Facing north toward the culvert.

ATTACHMENT 3

Wetland Data Sheets

EcolSciences, Inc.
Environmental Management & Regulatory Compliance

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Briarcliff Manor City/County: Briarcliff Manor/Westchester Sampling Date: 4/26/2016

Applicant/Owner: Canoe Brook State: NY Sampling Point: B-1

Investigator(s): Ann Ertman Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): concave Slope (%): <10

Subregion (LRR or MLRA): 144A Lat: 41.158961 Long: -73.843632 Datum:

Soil Map Unit Name CrC NWI classification: PEM

Are climatic/hydrologic conditions on the site typical for this time of year ? Yes X No (If no, explain in Remarks)

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present ? Yes X No ____

Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic ? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present ?	Yes X	No ____	Is the Sampled Area within a Wetland ?	Yes X	No ____
Hydric Soil Present ?	Yes X	No ____	If yes, optional Wetland Site ID:		
Wetland Hydrology Present ?	Yes X	No ____			

Remarks: (Explain alternative procedures here or in a separate report).

Near Flag # WA-3

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one is required: check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizoshperes on Living Roots (C3)
- ___ Resence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present ?	Yes X	No ____	Depth (inches): 0
Water Table Present ?	Yes X	No ____	Depth (inches): Surface
Saturation Present ? (includes capillary fringe)	Yes X	No ____	Depth (inches): Surface

Wetland Hydrology Present ? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections) if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: B-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species ?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
		= Total Cover	

Sapling/Shrub Stratum (Plot size: occular estimte)			
1. Multiflora rose *Rosa multiflora*	10	N	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	

Herb Stratum (Plot size: occular estimate)			
1. Sedge sp.	40	Y	?
2. Jewelweed *Impatiens capensis*	15	N	FACW
3. Poison ivy *Toxicodendron radicans*	5	N	FAC
4. Water horehound *Lycopus uniflorus*	2	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	57	= Total Cover	

Woody Vine Stratum (Plot size:)			
1. N/A			
2.			
3.			
4.			
		= Total Cover	

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % of Cover of		Multiply by:	
OBL species	2	x 1 =	2
FACW species	15	x 2 =	30
FAC species	5	x 3 =	15
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals	32 (A)		87 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

X 3 - Prevalence Index is $\leq 3.0^1$

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and wood plants less than 3.28 ft. tall

Woody vines - All woody vines greater than 3.28 ft in height

Hydrophytic Vegetation Present ? Yes X No __

Remarks: (include photo numbers here or on a separate sheet)

Near Flag WA-3
Photo Number 1

SOIL

Sampling Point: **B-1**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR 4/1	99	10 YR 4/4	1	C	M	Clay loam	
10+	refusal							

[1]**Type: C=Concentration D=Depletion RM=Reduced Matrix MS=Masked Sand Grains**

[2]**Location: PL=Pore Lining M=Matrix**

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR, K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TAG) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]**Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic**

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present ? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Briarcliff Manor City/County: Briarcliff Manor/Westchester Sampling Date: 4/26/2016

Applicant/Owner: Canoe Brook State: NY Sampling Point: B-2

Investigator(s): Ann Ertman Section, Township, Range: N/A

Landform (hillslope, terrace, etc.): Gradual slope Local relief (concave, convex, none): none Slope (%): <10

Subregion (LRR or MLRA): 144A Lat: 41.158801 Long: -73.843522 Datum:

Soil Map Unit Name CrC NWI classification:

Are climatic/hydrologic conditions on the site typical for this time of year ? Yes X No (If no, explain in Remarks)

Are Vegetation ____ Soil ____ or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present ? Yes X No

Are Vegetation ____ Soil ____ or Hydrology ____ naturally problematic ? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present ?	Yes	No X	Is the Sampled Area within a Wetland ?	Yes	No X
Hydric Soil Present ?	Yes	No X	If yes, optional Wetland Site ID:		
Wetland Hydrology Present ?	Yes	No X			

Remarks: (Explain alternative procedures here or in a separate report).

Near Flag # WA-3

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one is required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizoshperes on Living Roots (C3)
- ___ Resence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present ?	Yes	No X	Depth (inches):
Water Table Present ?	Yes	No X	Depth (inches):
Saturation Present ? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present ? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections) if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: B-2

Tree Stratum (Plot size:)		Absolute % Cover	Dominant Species ?	Indicator Status
1. N/A				
2.				
3.				
4.				
5.				
6.				
7.				
			= Total Cover	

Sapling/Shrub Stratum (Plot size: occular estimate)					
1.	Black cherry	*Prunus serotina*	10	N	FACU
2.	Japanese honeysuckle	*Lonicera japonica*	5	N	FACU
3.	Multiflora rose	*Rosa mulitflora*	40	Y	FACU
4.	Japanese barberry	*Bergeris thinbergii*	5	N	FACU
5.	Norway maple	*Acer plantanoides*	1	N	UPL
6.	Wineberry	*Rubus phoenicolasius*	5	N	FACU
7.					
			66	= Total Cover	

Herb Stratum (Plot size: occular estimate)					
1.	Field garlic	*Allium vineale*	10	Y	NL
2.	Japanese stiltgrass	*Microstegium vimineum*	10	Y	FAC
3.	Violet sp.		5	N	?
4.	Garlic mustard	*Alliaria petiolata*	2	N	FACU
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
			27	= Total Cover	

Woody Vine Stratum (Plot size:)				
1. N/A				
2.				
3.				
4.				
			= Total Cover	

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % of Cover of		Multiply by:	
OBL species	0	x 1 =	
FACW species	0	x 2 =	
FAC species	10	x 3 =	30
FACU species	67	x 4 =	268
UPL species	1	x 5 =	5
Column Totals	78 (A)		303 (B)
Prevalence Index = B/A =			3.9

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is $\leq 3.0^1$
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft. (1 m) tall

Herb - All herbaceous (non-woody) plants, regardless of size, and wood plants less than 3.28 ft. tall

Woody vines - All woody vines greater than 3.28 ft in height

Hydrophytic Vegetation Present ? Yes _____ No X

Remarks: (include photo numbers here or on a separate sheet)

Near Flag WA-3
Photo Number 2

SOIL

Sampling Point: **B-2**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/2						Loam	
1-14	10 YR 3/3						Loam	
14+	refusal							

[1]**Type: C=Concentration D=Depletion RM=Reduced Matrix MS=Masked Sand Grains** [2]**Location: PL=Pore Lining M=Matrix**

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR, K, L, M)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TAG) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]**Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic**

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present ? Yes _____ No X

Remarks: