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TOWN OF LEWISBORO
Westchester County, New York

Planning Board
PO Box 725
Cross River, New York 10518

Tel: (914) 763-5592
Fax: (914) 763-3637
Email: planning@lewisborogov.com

AGENDA

Tuesday, May 17, 2016

Cross River Plaza, Cross River

Note: Meeting will start at 7:30 p.m. and end at or before 11:30 P.M.

I. DECISION

Cal# 3-09PB
Homeland Towers - 377 Smith Ridge Road, South Salem, NY, Sheet 50A, Block 9834, Lots 84, 88, and 94 (Vista Fire District, owner of record) – Release of Wetland Mitigation Bond.

II. PROJECT REVIEW

Cal# 3-13PB, 03-16WP
"Silvermine Preserve," Silvermine Drive & Lockwood Road, South Salem, NY, Sheet 48, Block 10057, Lot 15 (Ridgeview Designer Builders, Inc & Daniel Higgins, owners of record)- Applications for Subdivision, Wetland Activity and Stormwater Permits for the construction of a 12-lot subdivision.

Cal #11-15PB, Cal#04-16 SW, Cal#09-16 WP
Elegant Banquets, 1410 Route 35, South Salem, NY 10590, Sheet 39, Block 10549, Lot 17 (South Salem Owners, LLC, owner of record) – Application for Site Plan Review, Wetland Activity Permit and Stormwater Permit in connection with an addition to the existing building and modification to the existing site.

III. SKETCH PLAN REVIEW

Cal #10-15 PB
Wilder Balter Partners, NY State Route 22, Goldens Bridge, NY 10526, Sheet 5, Block 10776, Lots 19, 20 & 21 (Property Group Partners, LLC, owner of record) – Application for a 46 unit MF development on a ±35.4 acre parcel.

Cal#1-15PB, Cal# 25-15WP, Cal# 6-15SW
Copia Home and Garden Center, 469 & 475 Smith Ridge Road and 5 East Street, South Salem, NY 10590, Sheet 0053, Block 09834, Lots 35, 36 and 48 (Organic Choice, Inc., owner of record) - Application for Waiver of Site Development Plan; proposed Site Development Plan Amendment.

Cal #03-16 PB
Oakridge Commons (outdoor seating and bank drive through), 450 Oakridge Common, South Salem, NY 10590, Sheet 49D, Block 9829, Lot 10 (Smith Ridge Associates, owner of record) - Application for Site Plan Review for outdoor seating at Teatro's Café and the Willows plus bank drive through.

Cal# 6-02PB
Oakridge Gardens aka Laurel Ridge, 450 Oakridge Common, South Salem, NY 10590, Sheet 49D, Block 9830, Lots 279 & 325 (Smith Ridge Housing, LLC, owner of record) – Proposed Amendment to the resolution dated October 12, 2010, last amended July 15, 2012.

IV. CORRESPONDENCE AND GENERAL BUSINESS

Trail at Falcon Ridge

Site Visit Reports – Elegant Banquets and Lichtman residence

Wetland Violations

V. MINUTES OF March 15, 2016, MINUTES OF April 19, 2016 and MINUTES OF May 4, 2016

HOMELAND TOWERS

Homeland Towers, LLC

22 Shelter Rock Lane
Building C
Danbury CT 06810
Phone 203-297-6345
Fax 203-797-1137

April 21, 2016

Ms. Ciorsdan Conran, Planning Board Secretary
Town of Lewisboro
20 North Salem Road
Cross River Shopping Center at Orchard Square
Suite L, Lower Level
Cross River, NY 10518

Re: NY145 Vista – Request for Release of Bond – Cal# 3-09PB

Dear Ciorsdan,

Homeland Towers has completed the final annual submittal of wetland mitigation monitoring reports in accordance with Condition #30 of the Planning Board's December 15, 2009 Resolution and maintained plantings with greater than 85% survival rate.

We respectfully request release of our $16,261 Wetlands Mitigation Bond and the remainder of Escrow Funds and look forward to receipt of same.

Please do not hesitate to contact our office with any questions.

Thank you.

Sincerely,

Eileen Tavolacci
et@homelandtowers.us

KELLARD SESSIONS
CONSULTING, P.C.

John Kellard, P.E.
David Sessions, RLA, AICP

MEMORANDUM

TO: Chairman Jerome Kerner, AIA and
Members of Lewisboro Planning Board

CC: Ciorsdan Conran
Judson Siebert, Esq.

FROM: Jan K. Johannessen, AICP
Joseph M. Cermele, P.E., CFM
David J. Sessions, RLA, AICP
Town Consulting Professionals

DATE: May 11, 2016

RE: Silvermine Preserve Subdivision
Lockwood Road
Sheet 48, Block 10057, Lot 15

Project Description

The applicant, Silvermine Group, is proposing a 12-lot subdivision on ±55.9 acres of land located between Silvermine and Lockwood Roads and within the R-2A Zoning District.

The Planning Board has concluded its review of the conventional subdivision plan and has determined that the proposed subdivision could yield a maximum of 12 lots. The applicant has submitted a 12-lot cluster subdivision plan, which includes a 1,200 l.f. cul-de-sac extending off of Lockwood Road and over 40 acres of open space.

SEQRA

The proposed action has been preliminarily identified as an Unlisted Action under the State Environmental Quality Review Act (SEQRA). The Planning Board is conducting a coordinated review and declared itself Lead Agency on June 11, 2013.

Required Approvals

1. Preliminary and Final Subdivision Plat Approval, a Wetland Activity Permit and a Town Stormwater Permit is required from the Planning Board.

2. A public hearing is required to be held on the Preliminary Plat and Wetland Activity Permit.

3. Open Development Area Approval is required from the Town Board.

4. Town Board approval is required for those lots that do not meet the dimensional zoning requirements of the R-1A Zoning District.

5. Construction within the right-of-way of Lockwood Road will require approval from the Town Highway Superintendent.

6. Realty subdivision approval is required from the Westchester County Department of Health (WCDH).

7. An Article 24 Freshwater Wetland Permit is required from the New York State Department of Environmental Conservation (NYSDEC).

8. Coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002) will be required.

Comments:

1. The applicant has satisfactorily addressed our SEQRA-related comments and this office has no objections to the scheduling of a public hearing and the subsequent issuance of a Negative Declaration of Significance and Conditional Preliminary Subdivision Plat Approval. Any of our outstanding technical comments could be made conditions of Preliminary Subdivision Plat approval.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

Plans Reviewed, prepared by Bibbo Associates, LLP and dated (last revised) March 16, 2016:

- Existing Conditions Map - Conservation Subdivision (EX-1)
- Preliminary Plat - Conservation Subdivision (PP-1)

- Zoning Conformance (ZON)
- Construction Plan I (CP-1)
- Construction Plan II (CP-2)
- Erosion Control Plan (EC-1)
- Phasing Plan (PH-1)
- Profiles and Details (RP-1)
- Miscellaneous Details (D-1)
- Additional Details (D-2)
- Stormwater Management (SW-1 and SW-2)

Plan Reviewed, prepared by Evans Associates Environmental Consulting:

- Proposed Stormwater Management Practice for Silvermine Road (ST-1)

Documents Reviewed:

- Letter, prepared by Bibbo Associates, LLP, dated March 31, 2016
- Letter, prepared by Evans Associates, dated April 22, 2016
- *Stormwater Pollution Prevention Plan*, prepared by Bibbo Associates, LLP, dated (last revised) March 16, 2016

JKJ/JMC/DJS/dc

T:\Lewisboro\Correspondence\LW2041JJ-LWPB-SilvermineSubd-Review-Memo-5-11-16.docx

TO: Town of Lewisboro Planning Board
FROM: Lewisboro Conservation Advisory Council
SUBJECT: Silvermine Preserve Subdivision
Silvermine Drive & Lockwood Road, South Salem, NY
Sheet 48, Block 10057, Lot 15
Cal # 3-13PB, #3-16 WP
DATE: May 10, 2016

The Conservation Advisory Council (CAC) reviewed the applicant's plans and accompanying documents for the subdivision, wetland, and stormwater permits at our May 2, 2016 meeting.

The CAC understands that the applicant has proposed an additional stormwater practice as part of its wetland mitigation. The applicant has subsequently reduced planting. We are concerned that the planting may remain required to screen the new development from the existing homes on Silvermine. We would also like to see the mitigation to wetland buffer disturbance ratio for this development.

The CAC also understands that WLT has expressed an interest in the open space portion of the property. We feel that it is important to ensure that WLT will establish a trail for continued community access to this open space, perhaps in coordination with the Town's OSPAC committee.

In addition, the CAC remains concerned about the requirement for maintenance of the stormwater practices that will be installed on the open space parcel. This requires ongoing management and continuing expenses. In accord with the requirements of the Town's MS4 and the requirements of the permit GP-0-15-003, we believe that the various stormwater facilities must become part of the Lewisboro MS4 inventory of stormwater practices, and that the responsible party must provide the Town with an annual report of the inspections in accord with the NYS Stormwater Design Manual. We encourage the applicant to commit that the maintenance inspection checklists from Appendix G of the design manual will be provided to the town annually.

April 22, 2016

Mr. Jerome Kerner, Chairman
Lewisboro Planning Board
P.O. Box 725
20 North Salem Road, Suite L
Cross River, NY 10518

Evans Associates
Environmental Consulting, Incorporated

RE: Silvermine Preserve Subdivision

Dear Chairman Kerner and Members of the Planning Board:

Pursuant to your comments at the last appearance before your Board in January, we have made several revisions to the proposed subdivision that we would like to bring to your attention. First, Bibbo Associates has revised the Preliminary Construction Plans and the Stormwater Pollution Prevention Plan (both dated last revised 3-16-2016) in accordance with the Kellard Sessions memo dated January 20, 2016. Those materials were submitted under separate cover.

We also met with the Town Highway Superintendent and the Town Consultants to discuss the drainage situation to the end of the Silvermine Road cul-de-sac, and our office has designed a Stormwater Management Plan to address the ongoing impacts to Wetland E. It is our intent that this mitigation will take the place of much of the proposed planting behind Lots 1 through 6, where we will substitute the installation of a split rail fence to demarcate the westerly property lines. The open space monuments will also be installed along the same property lines.

Finally, in response to the concerns raised by the CAC in their January 15, 2016 memo and also by several Planning Board members regarding the future disposition of the open space areas, we met with the Westchester Land Trust (WLT) on February 24, 2016 to discuss the possible transfer of the open space parcel to the WLT. The WLT has had an interest in this property since 2010, and was very interested in the parcel. David Emerson, Land Project Manager for WLT walked the property with me on March 31, 2016, and will present the proposed layout to the Land and Executive Committees of the WLT Board for endorsement later this month.

We trust that these revisions are sufficient to allow the Board to schedule a Public Hearing on this application. We look forward to discussing this application with you at the next available Planning Board meeting.

Respectfully submitted,

Beth Evans

Beth Evans, PWS

205 Amity Road
Bethany, CT 06524
Tel: 203.393.0690
Fax: 203.393.0196

DATE: 02/22/2016

REVISION

Silvermine Road

EX HOUSE

EX HOUSE

EX HOUSE

DRAINAGE AREA TO PROPOSED CATCH BASIN CB-1 = 18,435 SQ FEET

PROPOSED CB-1
GRATE 598.0+/-
INV. 594.5 (12" ST.)
SUMP 591.5

25 L.F. 12" ST. PIPE @ 24.6%

ACCESS ROUTE FOR MAINTENANCE PURPOSES

PROPOSED STORM DIVERSION STRUCTURE
GRATE 591.0+/-
INV. TO BIORETENTION FACILITY 589.5
INV. IN 588.5 (12")
INV. OUT 586.0 (12")
OVERFLOW WEIR 590.0

4" PERF. PVC UNDERDRAIN
INV. UPPER 585.0
INV. LOWER 584.5

54 L.F. 12" ST. PIPE @ 7.55%

END SECTION ES-1
INV. 582.0

PROPOSED BIORETENTION FACILITY FOR TREATMENT OF RUNOFF FROM SILVERMINE ROAD
WQv OF DRAINAGE AREA = 1,241 C.F.
2015 NYS SMDM REQUIRES 75% OF WQv IN FILTERING PRACTICE = 931 C.F.
RUNOFF CAPTURE IN BIORETENTION FACILITY = 949 C.F.

Wetland Limits

Wetland Flag (Typ.)

150' WETLAND BUFFER

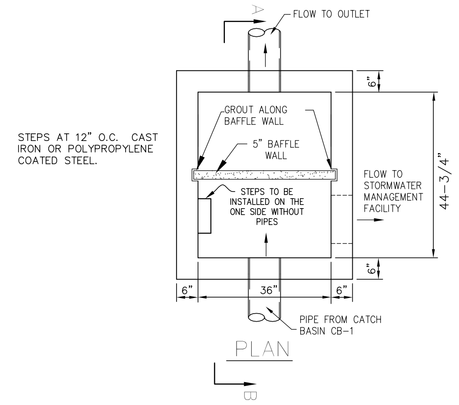
E1-17 E2 E3 E4 E5 E6 E7 E8 E8' E9=F30 E10=F1 E10=F1 E11 E12 E13 E14 E15 E16 F2 F3 F4 F6 F7 F8 F9 F10 F11 F12 F23 F24 F25 F26 F27 F28 F29

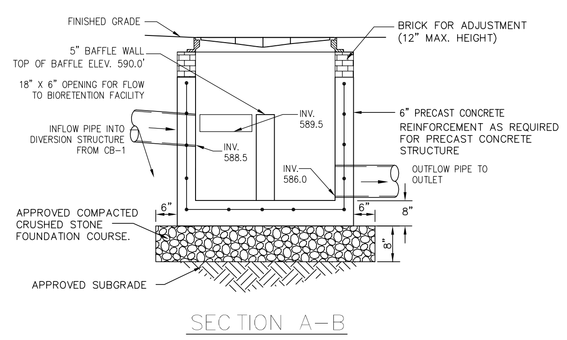
GRAPHIC SCALE
(IN FEET)
1 inch = 20 ft.

DRAFT PLAN FOR PROPOSED STORMWATER MANAGEMENT PRACTICE FOR SILVERMINE ROAD
DATE: 02/22/2016

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209(2) OF THE NEW YORK STATE EDUCATION LAW.

General Off-Line Diversion Structure (1)





ENGINEERING CONSULTANT:
BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MILL POND OFFICES
253 ROUTE 100, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-3685

STATE OF NEW YORK · TIMOTHY S. ALLEN · LICENSED PROFESSIONAL ENGINEER · 071720

TIMOTHY S. ALLEN, P.E.

ENVIRONMENTAL CONSULTANT:
EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
22 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:
PROPOSED STORMWATER MANAGEMENT PRACTICE FOR SILVERMINE ROAD

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:	alp
Checked by:	
Doc. ID:	WCGIS base map
EAEC Proj. No.:	809
DWG. NO.:	ST-1

SHEET 1 OF 1

BIBBO ASSOCIATES, L.L.P.
Consulting Engineers

Joseph J. Buschynski, P.E.
Timothy S. Allen, P.E.
Sabri Barisser, P.E.

March 31, 2016

Town of Lewisboro Planning Board
P.O. Box 725
20 North Salem Road, Suite L
Cross River, NY 10518

ATTN: Mr. Jerome Kerner, R.A.; Chairman

RE: Silvermine Preserve Subdivision

Dear Members of the Board:

On behalf of our client, please find enclosed the following in support of subdivision approval:

- 9 copies – 4 sets (30" x 42") & 5 sets (11" x 17") of Preliminary Construction Plans, last revised 3-16-2016
- 3 copies of the Stormwater Pollution Prevention Plan, last revised 3-16-2016
- 1 CD containing full submittal

The plans have been revised in response to comments from the Town Consultants in a memorandum dated January 20, 2016. We offer the following in response, keyed to their memo:

Planning and Engineering Review Comments:

1. Existing trees to be protected are now identified on the plans in the 'Site Legend'.
2. Comment noted.
3. Sight line profiles have been provided on the Profile and Details Plan. Sight easements have been added to the Plat and Plans.
4. The Vista Fire Department has been contacted and provided plans. We must assume after 6 months of review and no comment that the plans are satisfactory for fire safety.
5. Comment noted.
6. The Mitigation Plan prepared by Evans Associates Environmental Consulting shows a significant amount of trees along the proposed road.
7. Comment noted.
8. A Monument Detail has been provided in the plans.
9. Pool Drawdown Calculations have been provided in the SWPPP in Appendix C. The Construction Plans contain the note mentioned.

Wetland Review Comments:

1. A Stormwater Management Plan has been prepared by Evans Associates in regard to mitigation for Silvermine Road and Wetland 'E'.
2. Comment noted.

SWPPP Review Comments:

1. The units have been updated and all calculations revised.
2. The two pipes mentioned showing no flow have been provided to show adequate capacity for the 25-year storm event.
3. The SWPPP has been revised to reference GP-0-15-002.
4. The revisions were made to the Plans to match the SWPPP.

We respectfully request this matter be placed on your next available agenda for consideration of a Public Hearing and a referral to the Town Board.

Very truly yours,

Timothy S. Allen, P.E.

TSA/neh
Enclosures
cc: Kellard Sessions Consulting P.C. (w/encls)
G. Tortorella, Esq.
E. Moss
D. Higgins

Stormwater Pollution Prevention Plan

Silvermine Preserve Subdivision

A Conservation Subdivision

Lockwood Road
Lewisboro (T)

Prepared By:

March 16, 2016
December 11, 2015
July 22, 2015
February 17, 2015
November 10, 2014
Rev: September 1, 2012
Date: June 16, 2011 (Conservation Plan)

Timothy S. Allen, P.E.
N.Y.S. License #: 073434

Project Information:

Project Title:	Silvermine Preserve Subdivision
Project Address:	Silvermine Drive and Lockwood Road
Tax Map Number:	48-10057-95
Project Area:	55.9 ac. +/-

Owner Information:
Ridgeview Designer Builders & D. Higgins
45 Bender Way
Pound Ridge, NY 10576

Contract Vendee / Applicant Information:
D. Higgins, S. Haft and E. Moss
dba SILVERMINE GROUP
45 Bender Way
Pound Ridge, NY 10576

Engineer Information:
Timothy S. Allen, P.E.
Bibbo Associates, LLP
293 Rt. 100, Suite 203
Somers, N.Y. 10589
914-277-5805 x11
914-277-8210
tallen@bibboassociates.com

Short-Term Responsible Party for SWPPP Implementation:
D. Higgins, S. Haft and E. Moss
dba SILVERMINE GROUP
45 Bender Way
Pound Ridge, NY 10576

Long-Term Responsible Party for SWPPP Implementation:
All Homeowners (for Private Road, Common Driveway and All Stormwater facilities provided)

Potential Party Responsible for Inspections as Required Under SPDES Permit:
Timothy S. Allen, P.E.
Bibbo Associates, LLP
293 Rt. 100, Suite 203
Somers, N.Y. 10589
Tel: 914-277-5805
tallen@bibboassociates.com

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6.0 Conclusion ***Page 22***

Appendix A: Stormwater Quantity Analysis (HydroCAD Output)
Appendix B: Water Quality Volume and Runoff Reduction Volume Calculations
Appendix C: Infiltration Practice Sizing Calculations
Appendix D: Temporary Sediment Basin Sizing Calculations
Appendix E: Drainage Pipe Sizing Calculations (for 25-year storm)
Appendix F: Contech CDS Pretreatment Chamber Information
Appendix G Rock Outlet Protection and Level Spreader Sizing Calculations
Appendix H: Soil Testing Results
Appendix I: Map of Historic Places in Vicinity of Project
Appendix J: New York State Stormwater Management Design Manual Inspection Checklist
Appendix K: NYSDEC Construction Duration Inspection Form
Appendix L: Contractor Certification Document

Figure 1: Pre-development Drainage Basin Plan
Figure 2: Post-development Drainage Basin Plan

1.0 ***Introduction:***

The Applicant is proposing to subdivide the existing parcel and create 12 new residential building lots for single family homes. The proposed project is located on Lockwood Road in the Town of Lewisboro.

1.1 ***Project Description:***

The subject property consists of 55.9 Ac located on the north side of Lockwood Road in the Town of Lewisboro, NY. The property lies within the R-2A Zoning District (2 Ac. residential). After lengthy review of plans and alternate schemes, (all of which had varying degrees of impact to wetland areas: State, Local or both) the Lewisboro Planning Board established a lot count and has authorized the Applicant to proceed with a Conservation Subdivision Plan. It is proposed to constructed a new Private Road (1200 LF), taking access from Lockwood Road. A preliminary plat, which proposes 12 building lots of reduced size and which sets aside over 40 Ac. in Open Space, has been prepared and submitted. It is *this* plan that forms the basis for the following analysis.

The total area of disturbance for the project is approximately 13.9 acres. Drainage Systems designed in accordance with New York State Department of Environmental Conservation (NYSDEC) are proposed to treat stormwater runoff generated by the proposed improvements. The project will not affect any property listed on the State or National Register of Historic Places. A map showing historic places in the vicinity of the project can be found in Appendix "H".

Assuming a timely permitting process, construction is anticipated to begin in the spring of 2015. Ultimate build out will take will take approximately two years.

The following is a list permits that must be obtained prior to construction:

- Town of Lewisboro Subdivision Approval
- Town of Lewisboro Wetlands Permit Approval
- NYSDEC – Wetland Permit Approval
- NYSDEC – Coverage under SPDES General Permit (GP-0-15-002)
- Westchester County Health Department Approval

1.2 ***Existing Site Conditions:***

Approximately 40% property consists of generally easterly sloping land with slopes under 10%. Only 9.3% of the site has land with slopes that exceed 25%. The Town of Lewisboro restricts development on slopes greater than 25%.

There are wetlands on the property. The eastern portion of the property drains generally towards the Silvermine River. In addition to a few intermittent watercourses, there are several additional wetland pockets on the eastern portion of the property varying in size from under 2,000 SF to 35,000 SF. The Silvermine River drains into Browne Reservoir which flow into New Canaan, CT.

Separated from the major portion of the site by a ridgeline running north south, there is a 6.2 Ac portion of State Wetland D-6 that occupies the western portion of the site. About 30% of this wetland drains to the north and ultimately into the Silvermine River northeast of the property. The remainder drains to the south, through a culvert under Lockwood Road and eventually to the outlet streams from Brown Reservoir.

The New York State Department of Conservation requires Wetland permits for activities within its 100' Adjacent Area. The Town of Lewisboro requires Wetland Permits for activities within 150' of wetlands.

The subject property is the remainder of a 16-lot subdivision for North American Development Group, which was approved in 1988 but never developed. (I lot [TM# 48-10057-45] was sold to or retained by others.) The NRCS soil boundaries identified onsite and within the boundaries of the analysis can be found on the "Existing Conditions" plan in the associated construction plan set.

1.3 ***Proposed Site Conditions:***

Approximately 13.9 ac. of land will be disturbed to construct the proposed new residential structures and supporting access, drainage facilities and utilities. This development will create approximately 2.5 acres of new impervious surfaces.

As per the New York State Stormwater Management Design Manual the site planning for the project is required to employ techniques (listed on Table 3.1 of the Manual) which will achieve the preservation of natural resources. Silvermine Preserve is in substantial conformance with the practices listed as follows:

a) Preservation of Undisturbed Areas

The project plans have identified all natural resource areas and drainage patterns existing on the property. A substantial area of the eastern portion of the property (about 20 acres) containing steep slopes as well as natural wetlands and protective buffer areas is designated for open space preservation. In addition, as noted previously the westerly portion of the site also has steep slopes and State regulated wetlands which, for the most part, have also been designated for open space preservation.

b) Preservation of Buffers

As noted above, the eastern portion of the property contains 2 Town regulated wetland area and watercourses. These resource areas and their 150 foot buffers are to remain undisturbed by the project layout. Since access to the property will be from Lockwood Road, it is unavoidable that a portion of the State (about 0.87 acres) and Local (about 1.25 acres) wetland buffer areas located in the western portion of the site. The remaining 11+ acres of wetlands and wetland buffers are to remain undisturbed.

c) Reduction of Clearing and Grading

Plans for development on each lot include only those amenities necessary for residential use: dwelling, driveway, SSTS, well, lawn area. No unnecessary clearing and grading for these purposes are proposed on any lot.

d) Locating Development in Less Sensitive Areas

The project layout avoids the sensitive areas of wetlands and watercourses to thye greatest extent possible and is located on the portion of property with predominantly suitable slope.

e) Open Space Design

The property is located in an area of the Town considered environmentally sensitive. The project has therefore been designed to reduce the footprint of the proposed development in such a manner to establish open space, protect existing trees within stone wall areas, reduce impervious surfaces and protect water resources. All of the proposed lots are considerably less than 2 acres in size with the smallest being about 40,000 SF. The sensitive areas associated with steep slope, wetland/watercourses and buffers are avoided to the greatest extent possible. With Planning Board endorsement, road width and cul-de-sac diameter

will be reduced. The Developer is proposing homes with modest footprint coverage. Existing stone walls will be designated as lot lines where feasible. As noted previously, some 40 acres are set aside as Open Space. The area of lots and road will be about 16 acres. Proposed impervious area based on homes, driveway, pools, and roads is 2.5 acres.

2.0 *Stormwater Management:*

Stormwater runoff will be directed, via roadside grass swales, in-ground drainage collection systems, and overland flow to several stormwater practices for treatment and detention of stormwater. The proposed stormwater management systems for this site will include three infiltration basins (Design I-2) and two underground infiltration system (Design I-4).

The underground infiltration systems will consist of Cultec Recharger infiltration chambers situated in gravel beds. Infiltration system #1 and #2 shall use the 330XLHD Cultec model. Required pretreatment preceding the infiltration systems, as well as SB-4, will be accomplished using a subsurface Contech CDS hydrodynamic separator unit. Pretreatment for SB-2 and SB-3 will be provided by fore bays sized to capture 50% and 25%, respectively, of the 1-year design storm.

Additionally, an existing pocket wetland located adjacent to station 4+00 of the proposed roadway has been utilized to capture and control stormwater runoff. A Contech CDS hydrodynamic separator unit shall be installed prior to the existing wetland to provide stormwater treatment before the runoff enters the wetland area. A proposed outlet structure shall be installed in the existing wetland in order to control the stormwater runoff before it is discharged to the larger NYSDEC wetland area located on the east side of the proposed roadway. Details regarding the improvements to existing wetland improvements can be found on the plans.

The design is based on a conservative approach treating and attenuating all flow from the site on the subject property. The stormwater management systems meet the required separation distance to groundwater or bedrock layer as verified by test pits witnessed by Bibbo Associates, LLP and Kellard Sessions Consulting on November 21, 2013. The results of the field testing can be found in Appendix "G". Percolation tests were performed by Bibbo Associates, LLP on June 20,

2014 and those rates were used for the design of the proposed infiltration practices.

Pool drawdown will be accommodated in a variety of ways for the 6" pool drawdown volume for winterization purposes. The proposed pool on Lot 12 shall be discharged over land into stormwater basin 4. The proposed pools on Lots 8 and 9 shall be discharged over land into the vegetative swales that flow into stormwater basin 3 and 2, respectively. Prior to discharge of drawdown water from pools to the stormwater basins chlorine levels shall be allowed to fully dissipate. The proposed pool drawdown areas on Lots 6 and 7 have been sized for the entire drawdown volume of 400 cubic feet of water. Sizing calculations for the infiltration systems can be found in Appendix "C". There shall be no discharge from the proposed swimming pool filter backwash.

A Stormwater Analysis, described below, has been performed to evaluate the effectiveness of the aforementioned practices. The Eastern portion of the site, which drains toward the Silvermine River has been divided into 3 watershed areas terminating at the easterly property line: Watershed I drains to a single point (DP-I) on a watercourse associated with a small local wetland in the northeasterly portion of the site. Watershed III also drains to a single point (DP-II) on a watercourse associated with another small local wetland (in the southeasterly portion of the site. Watershed II drains generally overland from DP I to DP III and flows are characterized along Design Line DL-II. Watershed IV, located in the western portion of the property, drains south toward a small culvert under Lockwood Drive. The outlet of this culver is designated DP-IV.

HydroCAD v. 8.5, a computer-modeling program based upon TR-20, was used to generate peak flows from the subcatchments. In the program, the user inputs various characteristics for each subcatchment including a curve number and time of concentration. These two parameters relate runoff to the specific land characteristics of the subcatchment. Based upon the inputted data, peak flows are generated for the 1, 10, and 100-year storm events for the pre-development and post-development subcatchments.

The stormwater systems are proposed for the qualitative and quantitative management of stormwater runoff from the site. As the site falls under the requirements of the State SPDES program, all stormwater facilities employed for

this site have been designed to meet NYSDEC for water quality volume, stream channel protection volume, overbank flood control, and extreme flood control.

2.1 NYSDEC Requirements:

2.1.1 Water Quality Volume:

The Silvermine Subdivision is governed by the Town of Lewisboro stormwater requirements and therefore post construction stormwater management practices must conform to the New York State Stormwater Management Design Manual (NYSSMDM). In order to improve water quality, the best management practices employed have been sized using a 90% design storm rainfall of 1.3 inches within a 24 hour period. Calculations for the required water quality volumes for each practice can be found in the Appendix "B" of this report.

The infiltration practices must be able to fully capture and dewater the WQv requirement through the bottom of the practice within 48 hours. Each practice is capable of achieving this goal, and meets the minimum infiltration rate as specified in the NYSSMDM.

A summary table illustrating the required water quality volume versus provided water quality volume for each best management practice is provided below. Calculations for the required water quality volume can be found in the Appendix "B" of this report. The 90% storm event (1.3 inches) was calculated using formulation specified in Chapter 4 of the NYSSMDM.

Stormwater Practice #	WQv Required (ft^3)	WQv Provided (ft^3)
Infiltration System #1	2,318	2,492
Stormwater Basin #2	2,935	4,789
Stormwater Basin #3	1,700	3,051
Stormwater Basin #4	5,019	5,459
Infiltration System #2	1,259	1,802

2.1.2 Runoff Reduction Volume:

The water quality volume (WQv) also forms a target for the runoff reduction volume (RRv). The goal is to capture the runoff at the source and treat the stormwater runoff onsite with green infrastructure techniques, upstream of the

end of line practice. The RRv calculations for the project are based on areas of new impervious cover and the calculations are provided for the areas tributary to the stormwater management practices.

The project design includes the several infiltration practices which are considered volume reduction practices when calculating RRv. The proposed infiltration practices have been utilized as green practices to treat the new impervious cover created on site where feasible.

A summary table illustrating the required water quality volume versus provided runoff reduction volume is provided below. The table also includes a column for the Minimum RRv. When it can be shown that 100% of the WQv cannot be reduced in green infrastructure practices, it must be shown that at least the Minimum RRv is reduced by the green practices proposed. The Minimum RRv is based on the impervious area introduced by the project and a Hydrologic Soil Group Specific Reduction Factor. Calculations for RRv and the derivation of Minimum RRv are included in the drainage calculations found in the Appendix "B" of this report.

Runoff Reduction Summary

Design Point	Watershed Area (ac.)	WQv (cu.ft.)	Minimum RRv by Specific Reduction Factor (cu.ft.)	Green Practice Vol. Reduction (cu.ft.)	% WQv Reduction
I	13.85	13,071	2,492	12,266	93.8%
II	15.59	14,715	1,270	13,987	95.0%
III	No New Impervious Cover Proposed Within Watershed				
IV	12.59	11,880	892	9,881	83.2%

The goal of treating the entire WQv onsite in green practices was not fully achieved, but the Minimum RRv has been obtained for the site. Since the infiltration practices are the only stormwater treatment practices prior to the stormwater leaving the site and they treat the entire WQv, there is no additional end of line practice required to treat the remaining RRv.

In the project design, there are various green techniques which are *not*, in general, adaptable to this project:

- Sheet flow to riparian buffers will exist on land adjoining wetland buffer but not within the slope limitations for riparian buffer design.
- Vegetative swales will be employed along roadsides and elsewhere but often due to grade limitations no credit can be applied to runoff volume reduction. Credit is applied where swale slopes allow.
- Area reduction in WQv calculation is available for Tree Preservation on the site provided specific qualifications such as distance to impervious surfaces, tree size, and tree species are met. New trees meeting specific qualifications are also credited with modest area reduction. While the project will realize benefits of existing and new trees, a commitment to the exact positioning of proposed trees and existing trees to be preserved cannot be made in this stage of the design process. Although there can then be no area reduction credit applied, the total area derived from trees preserved and added along roads is presumed to be minimal at best.
- Rooftop Disconnection: Rooftop disconnects could not be used for the residences because of the design limitations of small contributing area and the requirement to discharge to a pervious area with an average slope less than five (5) percent.
- There are presently no piped segments of watercourse on the property for which stream daylighting could be applied.
- Rain gardens have not been applied as runoff reduction practices primarily due to the contributing area limitation of 1,000 sq. ft. as well as limiting distances to wells and SSTA's on these smaller, more compact building lots.
- The homes proposed on the property will be constructed to traditional wood frame standards which cannot accommodate Green Roof practices.
- Stormwater planters are not included in the list of practices proposed for the project. Although the soil is suitable for infiltration, the separation requirements from planters to SSTA's and wells do not allow use of the infiltration feature in the planters. The planters would inevitably be constructed as flow-through systems with minimum credit for runoff reduction.

- Rain Water Tank/Cisterns are a very practical technique for runoff capture in residential settings. During the growing season, it is presumed that at least half of homeowners in a project would use the supply for the watering of plants and landscaped planting beds. However to obtain credit for runoff reduction, it is required that a mechanism be in place to ensure that rain barrels and cisterns be emptied in preparation for subsequent rainfall. In a single family residential setting, the enforcement of this requirement is not practical to establish. Therefore, while a number of homeowners would be expected to install rain barrels, their use as a credit for runoff reduction has *not* been applied in the calculations herein.
- Porous Pavement is available for runoff reduction in portions of individual driveways. The main limitation in the instance of the subject project is driveway grades. The grades are generally not flat enough to create any significant area for infiltration beneath the pavement. Further, driveways typically provide access to house sites during construction and are subject to compaction which cannot be avoided. Given these limitations, the use of porous pavement on the site has been dismissed.

2.1.3 Overbank & Extreme Flood Control:

Overbank Flood Control is intended to mitigate the frequency and magnitude of out-of-bank flooding due to new development. Overbank Flood Control is achieved though the attenuation of the post-development 24-hour peak discharge from the 10-year storm to predevelopment rates. The post-development peak flows have remained unchanged or have been reduced to below predevelopment levels thus achieving Overbank Flood Control.

Extreme Flood Control is achieved through the attenuation of the post-development 24-hour peak discharge from the 100-year storm to predevelopment rates. The purpose of Extreme Flood Control is to prevent the risk of flood damage from large storm events, maintain the predevelopment 100-year flood plain boundary, and to physically protect the stormwater management practices at the site. Extreme Flood Control has been achieved for the site. A summary of the 1-year, 10-year, and 100-year pre-development and post-development peak flows can be found in the table below.

Design Point	1 year storm event			10 year storm event			100 year storm event		
	Pre (cfs)	Post (cfs)	% Change	Pre (cfs)	Post (cfs)	% Change	Pre (cfs)	Post (cfs)	% Change
I	0.78	0.42	-46.2%	9.87	6.87	-30.4%	26.93	26.26	-2.5%
II	0.45	0.33	-26.7%	8.44	6.25	-25.9%	24.60	18.37	-25.3%
III	0.30	0.31	3.3%	4.59	3.98	-13.3%	12.89	10.76	-16.5%
IV	0.77	0.81	5.2%	3.87	3.73	-3.6%	8.80	8.34	-5.2%

*See Appendix "A" for HydroCAD Reports for each storm.

3.0 *Erosion & Sediment Control:*

The plans provide for specific erosion and sediment controls to be employed during construction. It is the intent to provide effective erosion control by minimizing land disturbance at one given time, containing sediment from disturbed areas, treating runoff where possible, and stabilizing disturbed soils as soon as possible. "Construction Phasing" and the "Sequence of Construction" will be integral parts of the overall erosion control plan and are described in detail in the following sections of this report.

The directives specified on the plans and in this report serve as a minimum for erosion and sediment control. Further practices and measures may be required pursuant to onsite inspections in conformance with the requirements of the SPDES GP-0-15-002 permit. All erosion and sediment control practices specified for this site shall be in conformance with the New York Standards & Specifications for Erosion & Sediment Control.

Construction Phasing:

The State of New York requires that, except in exceptional circumstances, construction must be limited to 5 acres of disturbance at any given time. The 5 ac limit is designed to insure that erosion and sedimentation controls not be overloaded. *Since 13.9 acres will ultimately be disturbed, a planned phasing of construction activities is required.*

The initial Phase 1 will include creation of a staging area, construction of the proposed road, roadway embankments and supporting drainage improvements

and sedimentation basins (SB-2, SB-3, and SB-4). The remaining phases involve construction on individual lots, development of which is subject to market conditions.

It should be noted that lots 1, 2 and 3 are to be served by a common driveway, which must be constructed prior to any lot construction. Nevertheless, it appears that the development proposed for lots 1 through 6, which includes the common driveway, will disturb about 4.7 acres. Therefore, for planning purposes, it is reasonable to identify this area as Phase 2. Once this area is stabilized with appropriate vegetation and paving where required, SB-4 can be converted from a temporary sediment basin to an infiltration basin.

Phase 3, which would therefore involve the development of the remaining lots, will create approximately 4.8 acres of disturbance. SB-2 and SB-3 shall remain sediment basins until development on lots 7-9 and 10-11 respectively, has been completed. A Phasing Plan has been included in the plan set which graphically shows the limits and total area of each construction phase. A detailed construction sequence has been provided below.

Construction Sequence:

Phase One - Road & Related Improvements:

1. Prior to the start of construction, a meeting in the field shall be held with the Contractor, Engineer and Town Consultant to discuss the process of construction.

2. Centerline of the proposed road with offsets to be staked out by Licensed Surveyor. Clearing Limits associated with the road, road grading, stormwater areas and drainage facilities as well as areas designated for Construction Staging (Lot 7) and silt traps shall also be staked out.

3. Install stabilized construction entrance for new road. Install silt fencing where shown on plans.

4. All trees, except as otherwise designated, within the Clearing Limits shall be removed, including stumps. No on-site burial of stumps shall be permitted.

5. Provide orange construction fencing around future infiltration areas and sewage treatment areas (on lots 6 and 7) adjacent to roadway construction in order to restrict construction traffic within these areas.

6. Establish temporary silt traps and sediment basins where indicated on plans. SB-2, SB-3, and SB-4 shall be used as temporary sediment basins during construction however, the basins must not be excavated to the final bottom elevation. Only excavate to the temporary bottom elevation as shown on sheet "SW-1". Vegetative swales located on Lots 8 – 11 should be constructed in conjunction with SB-2 and SB-3. (Note: These practices shall remain in place and be maintained in proper function until all of the tributary areas have been stabilized. In addition, infiltration systems shall be kept off-line and all construction equipment shall be kept "off- limits" until then.)

7. Topsoil from all areas to be disturbed shall be stockpileD as indicated on the Erosion Control Plan and details.

8. Roadway and embankments shall be brought to subgrade. Provide water breaks as shown on the Erosion Control Plans to direct surface runoff to silt traps / sediment basins.

9. Excess subsoil shall also be stockpiled as appropriate. Stabilize embankments with topsoil, seed and mulch within 7 days of exposure.

10. Install roadway drainage piping and structures as shown on plans. Provide inlet protection for structures as shown on the Erosion Control Plan and details. (Note: The outlet of CB #6 shall be plugged in order to keep the area designated SB-1 be kept off-line until the tributary area has been stabilized. At that time the plug may be removed as directed by the engineer.)

11. Install 30,000 gallon fire storage tank, hydrant and piping as shown on Plan and Details.

12. Install roadway base and asphalt binder courses. Install curbing as indicated on binder. Topsoil, seed and mulch behind curbing. Install roadway grass swales where indicated. Inlet protection, water breaks and silt traps shall be removed prior.

13. Once suitable vegetative cover has been established, infiltration basins (SB-2, SB-3, and SB-4) shall be installed and Infiltration System #2 shall be completed in accordance with the approved plans and details. In addition, the vegetative swales serving SB-2 and SB-3 shall be installed and stabilized.

14. Remaining erosion controls shall be removed only as directed by Town Consultants.

Phase Two - Individual Lots 1-6:

1. Location of driveway, proposed dwelling and sewage treatment area, as well as limits of construction, shall be staked by a licensed surveyor.

2. Prior to the start of construction, a meeting in the field shall be held with the Contractor, Engineer and Building Inspector to discuss the process of construction.

3. Install stabilized construction entrance for driveway. Install silt fencing where shown on plans.

4. All trees, except as otherwise designated, within the clearing limits shall be removed, including stumps. No on-site burial of stumps shall be permitted.

5. Provide orange construction fencing around future infiltration area (lot 1) and sewage treatment areas.

6. Topsoil from all areas to be disturbed shall be stockpiled as indicated on the Erosion Control Plans.

7. Commence site grading, installation of building foundation and bring driveway to subgrade. Install Infiltration System #1 on Lot #1 as per the plans and details. Do not bring the infiltration system "on-line" at this time.

8. Install sewage treatment system and individual drilled well as approved by the Westchester County Department of Health.

9. Complete construction of dwelling. Complete installation of driveway pavement. Stabilize with topsoil, seed and mulch all areas disturbed during the construction process. Once all tributary areas have been stabilized, bring infiltration system #1 "on-line".

10. Once suitable vegetative cover has been established, remaining erosion controls shall be removed as directed by the Town Consultants.

Phase Three - Individual Lots 7-12:

1. Location of driveway, proposed dwelling and sewage treatment area, as well as limits of construction, shall be staked by a licensed surveyor.

2. Prior to the start of construction, a meeting in the field shall be held with the Contractor, Engineer and Building Inspector to discuss the process of construction.

3. Install stabilized construction entrance for driveway. Install silt fencing where shown on plans.

4. All trees, except as otherwise designated, within the clearing limits shall be removed, including stumps. No on-site burial of stumps shall be permitted.

5. Provide orange construction fencing around future sewage treatment areas.

6. Topsoil from all areas to be disturbed shall be stockpiled as indicated on the Erosion Control Plans.

7. Commence site grading, installation of building foundation and bring driveway to subgrade.

8. Install sewage treatment system and individual drilled well as approved by the Westchester County Department of Health.

9. Complete construction of dwelling. Complete installation of driveway pavement. Stabilize with topsoil, seed and mulch all areas disturbed during the construction process. Once lots 7, 8, and 9 have been developed and stabilized, convert sb-2 into an infiltration basin as per the plans and details. Once lots 10 and 11 have been developed and stabilized, convert sb-3 into an infiltration basin as per the plans and details.

10. Install top course of asphalts as directed throughout the private road.

11. Once suitable vegetative cover has been established, remaining erosion controls shall be removed as directed by the Town Consultants.

3.1 Temporary Erosion & Sediment Control Practices:

Listed below are the Temporary Erosion & Sediment Control Practices specified on the Erosion Control Plan. All practices shall be installed and maintained in conformance with the New York Standards & Specifications for Erosion & Sediment Control:

- Stabilized Construction Entrance
- Silt Fence
- Drop Inlet Protection
- Soil Stockpiles
- Water Breaks
- Level Spreader
- Temporary Silt Traps
- Temporary Sediment Basins

A stabilized construction entrance should be installed at the driveway entrance. The construction entrance is designed to prevent outgoing trucks from tracking soil onto the road. Construction details specifying installation requirements can be found on the plan. On a daily basis, the project superintendent shall check for the need to clean mud tracked onto Lockwood Road. Street sweeping shall be conducted as required.

Construction debris, such as sheet metal and wood scrap, paper and insulation products, styrofoam cups and paper wrappers which could become windblown litter over and off the site if neglected. Suitable and ample refuse containers shall be provided on the site and emptied when full. Any scattered debris shall be picked up and placed in containers on a continuous basis.

Silt fence for the site will consist of a geotextile fabric installed at the toe of all disturbed slopes, and parallel to the contours. The silt fence is intended to reduce runoff velocity, and intercept sediment-laden runoff. Construction details specifying the proposed installation and type of permissible silt fence can be found on the plans.

Drop inlet protect for the site will consist of silt fencing surrounding the catch basins. The purpose of the staked silt fence is to prevent water with large amounts of sediment to enter the drainage system through the inlets.

Soil stockpiles are to be stabilized with vegetation and surrounded with silt fencing. This will ensure the topsoil that is stripped from the site during construction will be protected for use during final grading and that no sediment from the stockpiles will be deposited downstream.

Water breaks are to be used to temporarily divert surface runoff to reduce its erosive potential on disturbed sites.

A level spreader is proposed at the outfall of the tennis court stormwater treatment practice. The purpose of the level spreader is to convert a concentrated flow and disperse it uniformly across a slope. In accordance with the New York Standards & Specifications for Erosion & Sediment Control and Town of Pound Ridge stormwater requirements, the proposed level spreader has been sized to accommodate the peak flows generated by the 100 year storm event. The 100 year peak flow which discharges to the level spreader is 0.32cfs and therefore a

minimum 10 foot length is required for the level spreader. Details of the level spreader have been provided on the plans.

Temporary silt traps are proposed to control sediment laden runoff and store the accumulated sediment for proper disposal. The sediment traps have been designed to meet the standards of the New York Standards & Specifications for Erosion & Sediment Control. Construction details specifying installation and sizing requirements can be found on the plan.

Each of the three infiltration basins will be initially constructed to serve as Temporary Sediment Basins. The outlet structures of the sediment basins will consist of modified version of the permanent outlet structure designed in accordance with the New York State Standards and Specifications for Erosion & Sediment Control. Sediment shall be removed from the basin prior to reaching 50% of the height of the permanent pool elevation shown on the plans. Sizing calculations as well as routings demonstrating the modified outlet structures compliance with design requirements can be found in Appendix "D".

3.2 Permanent Erosion & Sediment Control Practices:

The intent of the permanent erosion and sediment control practices is to permanently stabilize the ground surface via vegetative and structural practices, while controlling and reducing runoff velocities.

The following permanent erosion & sediment, control practices are proposed for the site:

- Rock Outlet Protection
- Land Grading
- Vegetation

Rock outlet protection is proposed at the outfalls of the stormwater basins and treatment practices. The intent of the rock outlet protection is to reduce the depth, velocity, and energy of water to prevent downstream erosion. The rock outlet protection was designed in accordance with the New York Standards & Specifications for Erosion & Sediment Control. Details specifying the dimensions of the rock outlet protection areas have been included on the plans

and sizing calculations for the rock outlet protection areas can be found in Appendix "F" of this report.

Land grading is the reshaping of the existing land surface in accordance with the grading plan. Proper land grading is an essential component of the erosion control plan, as well as the stormwater pollution prevention plan. Proper grading will ensure the intended drainage areas are directed to the stormwater management practices.

Vegetation will be provided on all disturbed soils not covered by the proposed building, driveway, or parking area. Permanent vegetation will reduce runoff velocities, filter stormwater runoff, and minimize soil erosion. Optimum times for planting are the early spring and fall; however, plantings can be started in the summer provided adequate mulch and moisture is supplied.

4.0 ***Maintenance & Inspection Requirements:***

Maintenance and inspections are required in order to ensure the stormwater and erosion & sediment control practices are acting as designed. Inspections are to be performed by a "Qualified Inspector" on a weekly basis, consistent with the SPDES General Permit. A copy of the "NYSDEC Construction Duration Inspection Form" has been included in Appendix "J" of this report and shall be used as a template for the weekly site inspection reports. Upon completion of construction and the subsequent filing of the Notice of Termination, maintenance and inspections are expected to be minimal. Temporary and permanent maintenance and inspection requirements are further discussed below. Proper maintenance and inspections will ensure the longevity and effectiveness of the stormwater pollution prevention plan, and erosion and sediment control plan.

4.1 ***Short Term Maintenance and Inspection Requirements:***

Inspections preformed during construction should verify all practices are functioning properly, correctly maintained, and accumulated sediment is removed from all control structures. The inspector must also examine the site for any evidence of soil erosion, the potential for pollutants to enter the storm drain

system, turbid discharge at all outfalls, and the potential for soil and mud to be transported on the public roadway at the site entrance. In addition to these general guidelines, the project plans will provide more specific erosion control guidelines, as well as a construction sequence to guide the contractor through the construction process. Discussed below are specific maintenance and inspection requirements for the temporary practices to be employed at the site.

During construction, the silt fence should be inspected to ensure correct installation. In addition, any accumulated sediment resulting in "bulges" in the silt fence should be removed and mixed with onsite soil. Any damaged or torn silt fence should be replaced.

The construction entrance should be checked to ensure no sediment is being deposited onto the public roadway. Should sediment be observed, it should be removed from the street, and the stone in the construction entrance replaced.

4.2 Long Term Maintenance and Inspection Requirements:

Once final stabilization is achieved, and construction complete maintenance and inspections will be limited to the two infiltration systems. A copy of the Maintenance & Inspection Checklist from Appendix G of the New York State Stormwater Management Design Manual has been included in Appendix "I" of this report to serve as a guide for maintaining and inspecting the infiltration practices.

Inspections of the following items should be performed at a minimum annually and following significant rainstorm events:

1. Inspection of Stormwater Treatment Basins

Inspections will be required on an annual basis as a minimum and following major storm events to check for:

a. Evidence of clogging of the outlet structures
b. Accumulation of sediment at inlets and around the outlet structures
c. Erosion of the berm, slope and other areas contributing to the basin
d. Condition of the emergency spillway

2. Mowing

The berm crest and slopes, as well as the basin bottom should be mowed at least twice a year to discourage woody growth.

3. Debris and Litter Control

Removal of debris and litter should be undertaken during the mowing operation. Particular attention should be given to removal of debris and branches around the outlet structure.

4. Erosion Control

Eroding soil on the berm, slope, or other contributory areas noted during inspections should be stabilized immediately with topsoil replacement, seeding and mulching. Any riprap dislodged on the emergency spillway should be repositioned.

5. Sediment Removal

Sediment deposition in the temporary sediment trap will need to be removed in order to maintain the necessary capacity for capturing sediment. The need for sediment removal should be determined during routine inspections and the appropriate equipment and manpower scheduled for the task.

6. Catch Basin Clean Out

Sediment deposition in the basin can be reduced by regular clean out of catch basin sumps located in the common driveway. More frequent clean out will be necessary during home construction along the common driveway. It will be the developer's responsibility to monitor the accumulation in the sumps and clean out sediment as required.

7. Level Spreader

Inspect level spreader. Replace any rocks that have been dislodged. Remove any debris that may have accumulated along the surface of the level spreader. Repair any areas along the level spreader that show signs of scouring.

8. Infiltrators

Inspection of the infiltrator units to ensure accumulated water is infiltrating into the soil, and debris has not entered the infiltration units. Any debris should be removed. Once debris is removed, if stormwater is still not infiltrating contact a professional engineer licensed in the State of New York to examine the system. Inspection of the outlet of the overflow pipe to ensure it is not plugged or

clogged. Inspect rock outlet protection pad. Replace any rocks that have been displaced by scour.

9. Contech CDS Chambers

Inspect the precast pretreatment chambers. Remove accumulated sediment collected in the Contech CDS pretreatment chamber prior to the infiltrators. Please see Appendix "E" of this report for more information regarding the pretreatment chambers.

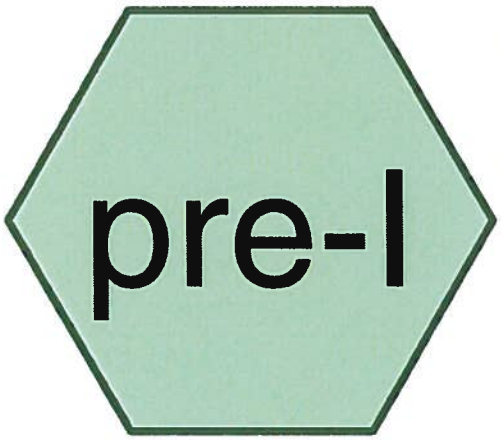
5.0 *Outstanding Violations or Enforcement Actions:*

There are no known outstanding violations or enforcement actions against this property, the owner or the applicant.

6.0 *Conclusion:*

The Applicant is proposing to construct 12 new single family homes and a new private roadway on an existing 55.9 acre parcel. As part of the construction, green infrastructure practices and stormwater management systems will be installed to treat the runoff from the proposed impervious surfaces. The stormwater management system was designed in accordance with the New York State Stormwater Management Design Manual, and shall result in improved stormwater quality as well as decreased discharge rates.

Appendix A:
Stormwater Quantity Analysis
(HydroCAD Output)



Routing Diagram for PRE silvermine
Prepared by Bibbo Associates, LLP, Printed 12/8/2015
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment pre-I:

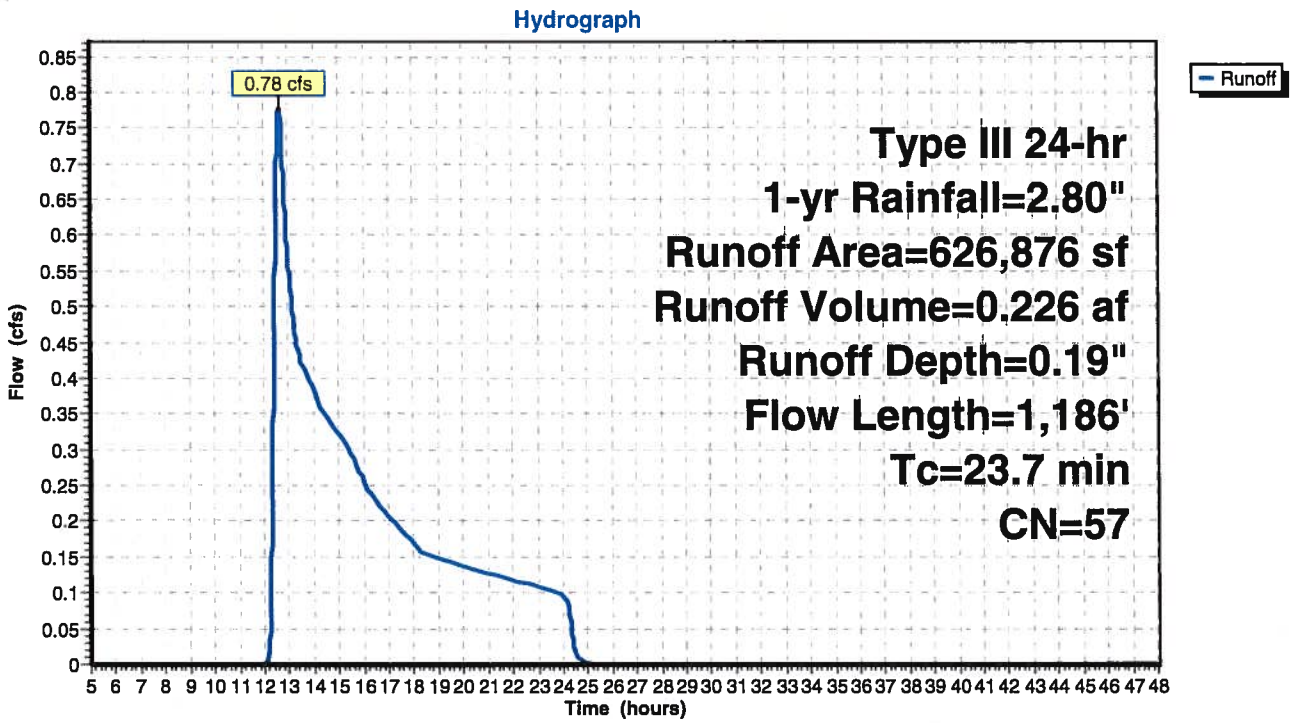
Runoff = 0.78 cfs @ 12.62 hrs, Volume= 0.226 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
14,400	98	Paved parking & roofs
8,000	61	>75% Grass cover, Good, HSG B
581,883	55	Woods, Good, HSG B
22,593	70	Woods, Good, HSG C
626,876	57	Weighted Average
612,476		97.70% Pervious Area
14,400		2.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.5	1,086	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	1,186	Total			

Subcatchment pre-I:



Summary for Subcatchment pre-I:

Runoff = 9.87 cfs @ 12.40 hrs, Volume= 1.325 af, Depth= 1.10"

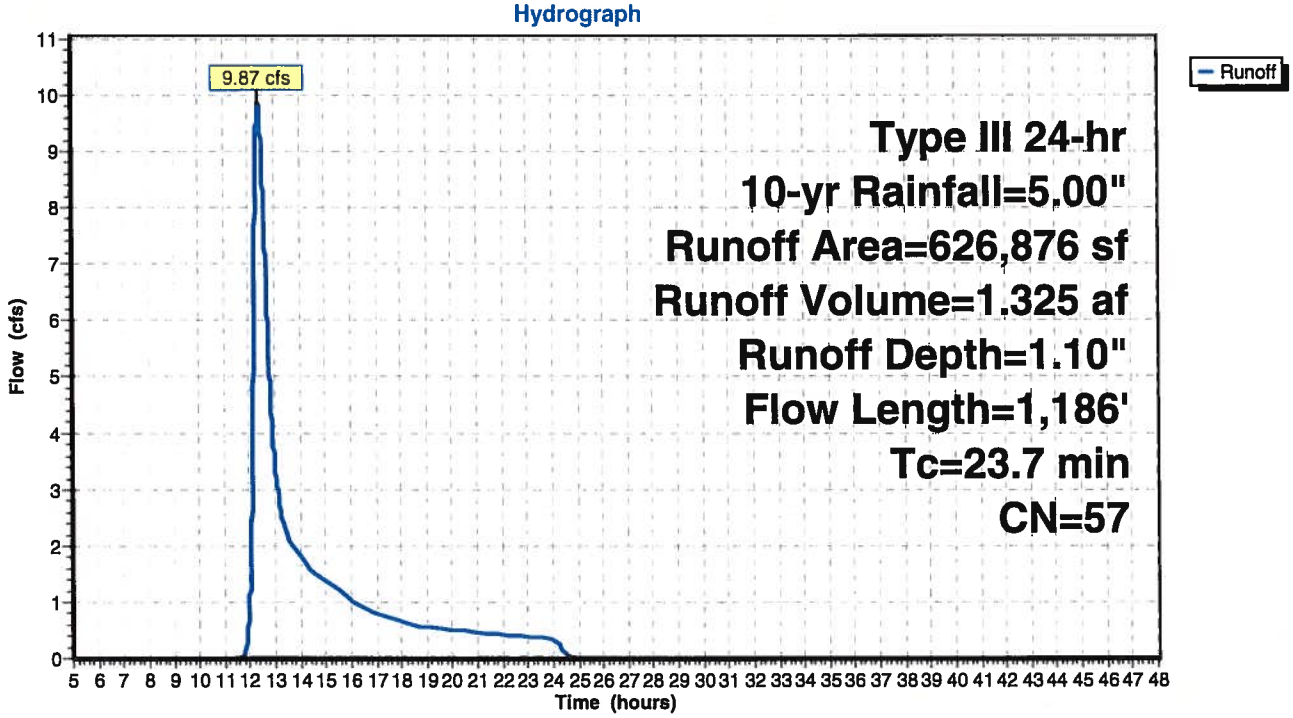
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
14,400	98	Paved parking & roofs
8,000	61	>75% Grass cover, Good, HSG B
581,883	55	Woods, Good, HSG B
22,593	70	Woods, Good, HSG C
626,876	57	Weighted Average
612,476		97.70% Pervious Area
14,400		2.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.5	1,086	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	1,186	Total			

Subcatchment pre-I:

Hydrograph



Summary for Subcatchment pre-I:

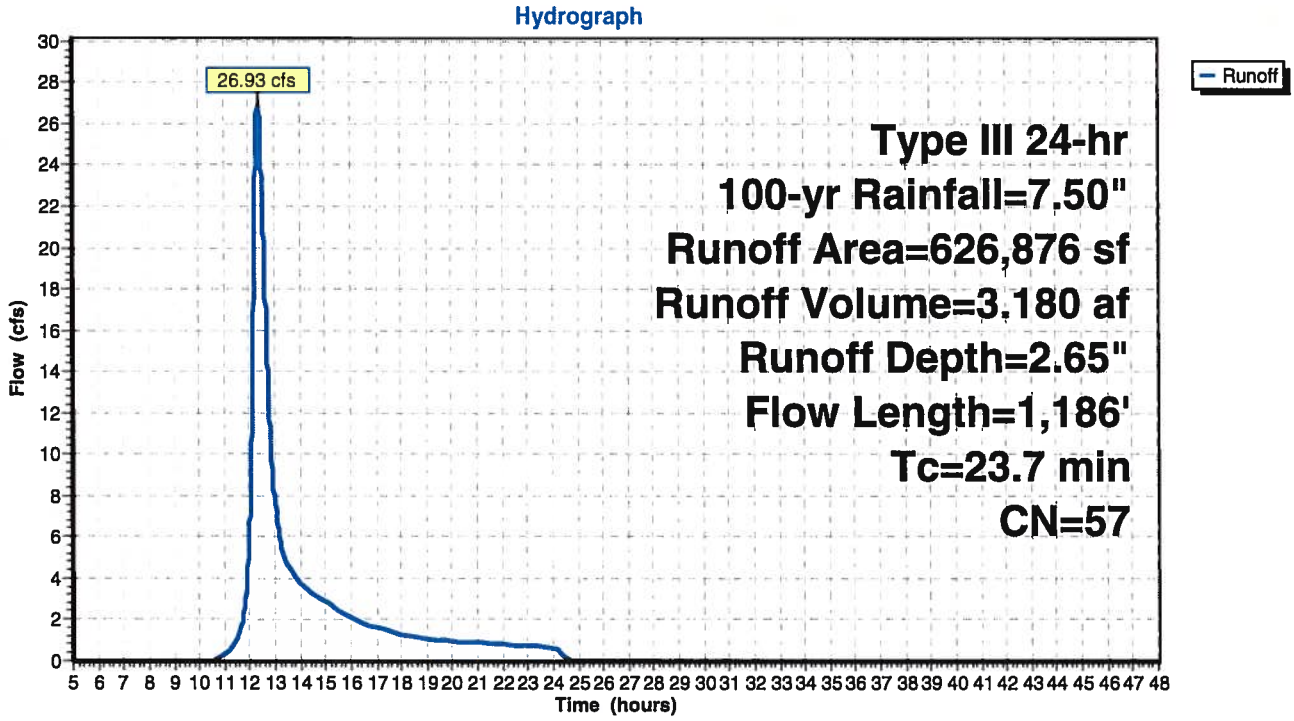
Runoff = 26.93 cfs @ 12.35 hrs, Volume= 3.180 af, Depth= 2.65"

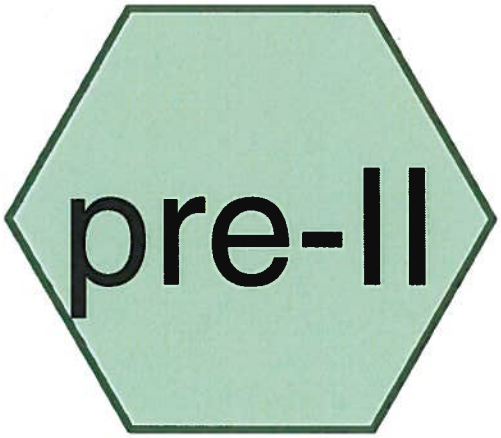
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

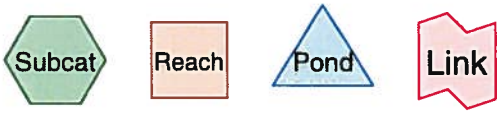
Area (sf)	CN	Description
14,400	98	Paved parking & roofs
8,000	61	>75% Grass cover, Good, HSG B
581,883	55	Woods, Good, HSG B
22,593	70	Woods, Good, HSG C
626,876	57	Weighted Average
612,476		97.70% Pervious Area
14,400		2.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.5	1,086	0.1200	1.73		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.7	1,186	Total			

Subcatchment pre-I:







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Summary for Subcatchment pre-II:

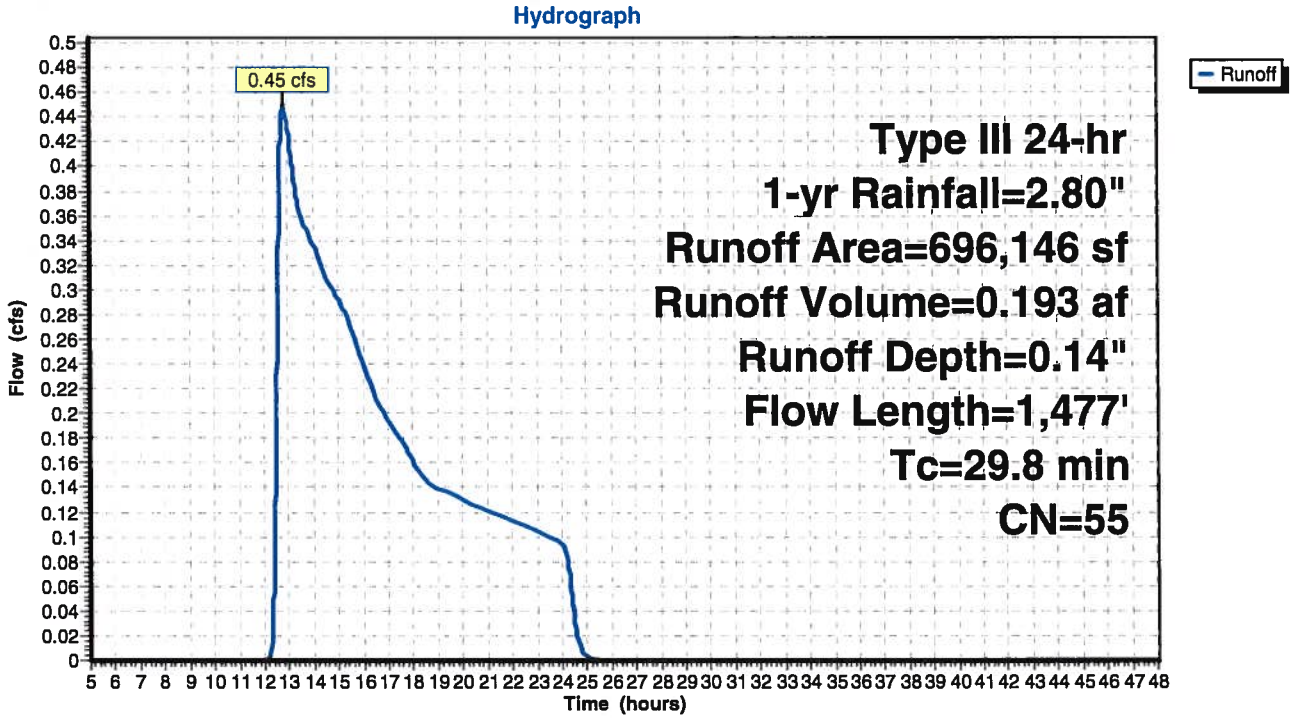
Runoff = 0.45 cfs @ 12.81 hrs, Volume= 0.193 af, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
696,146	55	Woods, Good, HSG B
696,146		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.6	1,377	0.0871	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.8	1,477	Total			

Subcatchment pre-II:



Summary for Subcatchment pre-II:

Runoff = 8.44 cfs @ 12.51 hrs, Volume= 1.305 af, Depth= 0.98"

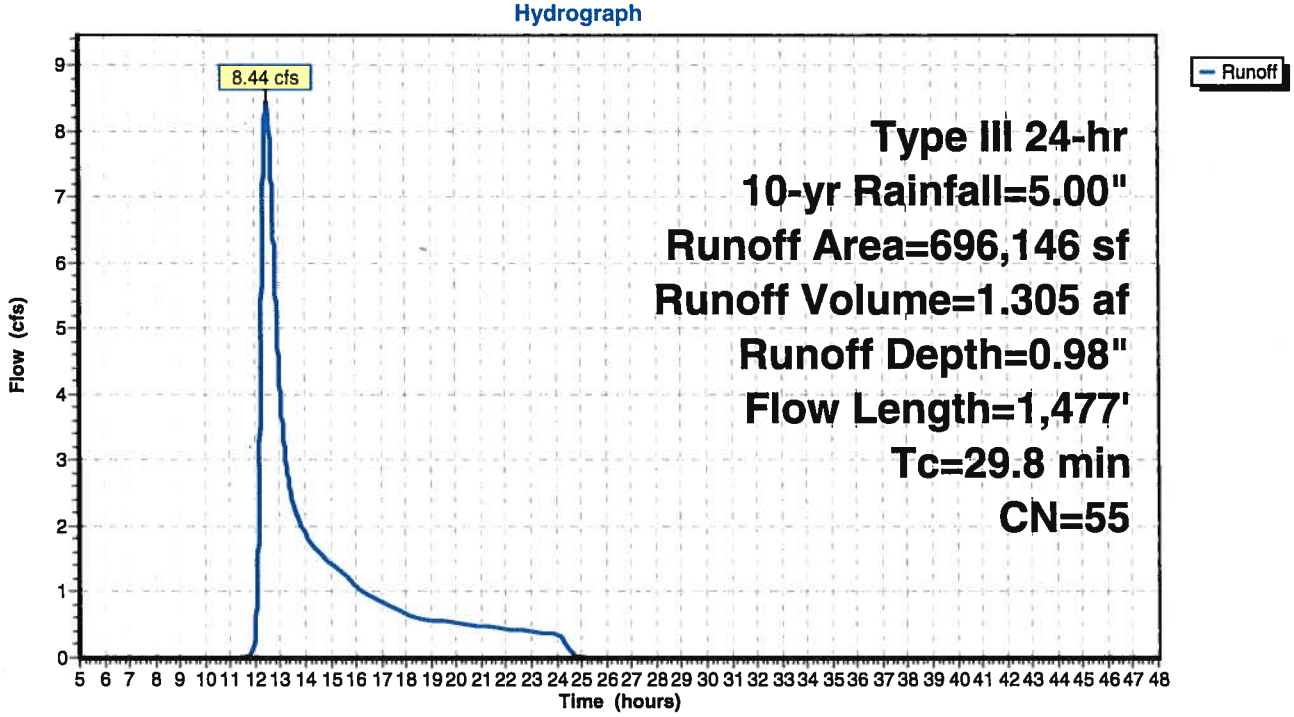
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
696,146	55	Woods, Good, HSG B
696,146		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.6	1,377	0.0871	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.8	1,477	Total			

Subcatchment pre-II:

Hydrograph



Summary for Subcatchment pre-II:

Runoff = 24.60 cfs @ 12.45 hrs, Volume= 3.260 af, Depth= 2.45"

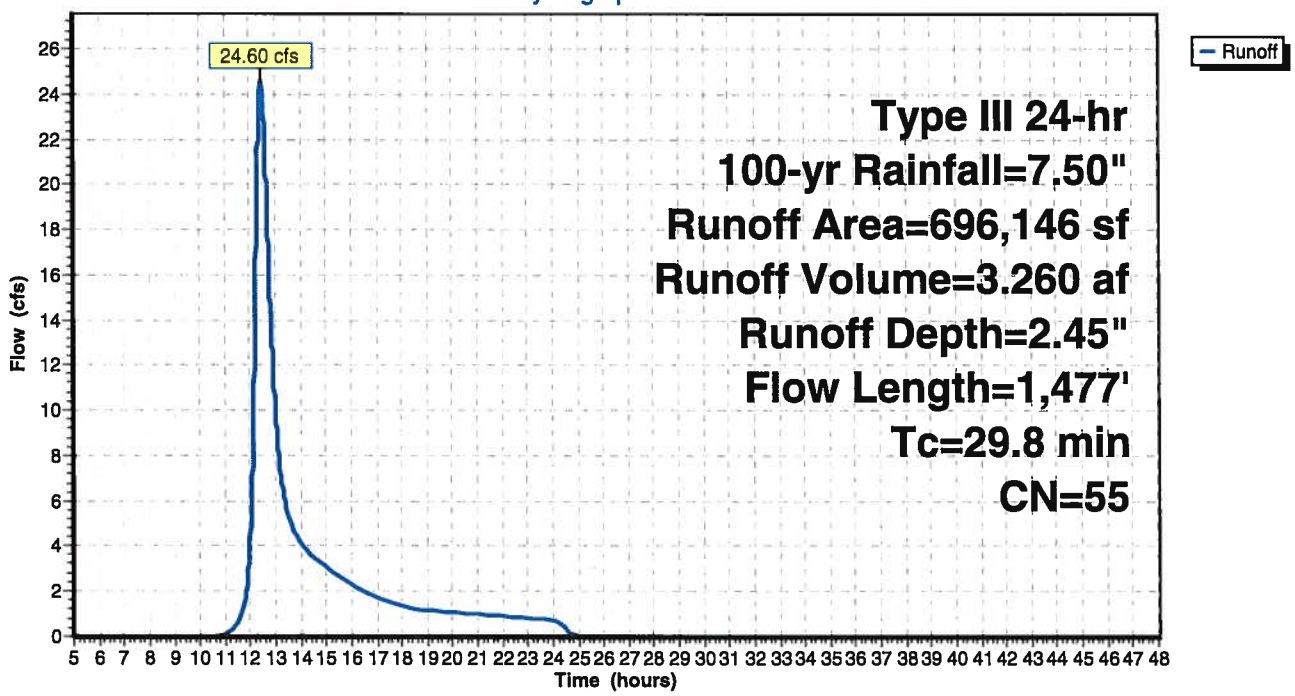
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
696,146	55	Woods, Good, HSG B
696,146		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
15.6	1,377	0.0871	1.48		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.8	1,477	Total			

Subcatchment pre-II:

Hydrograph



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Summary for Subcatchment pre-III:

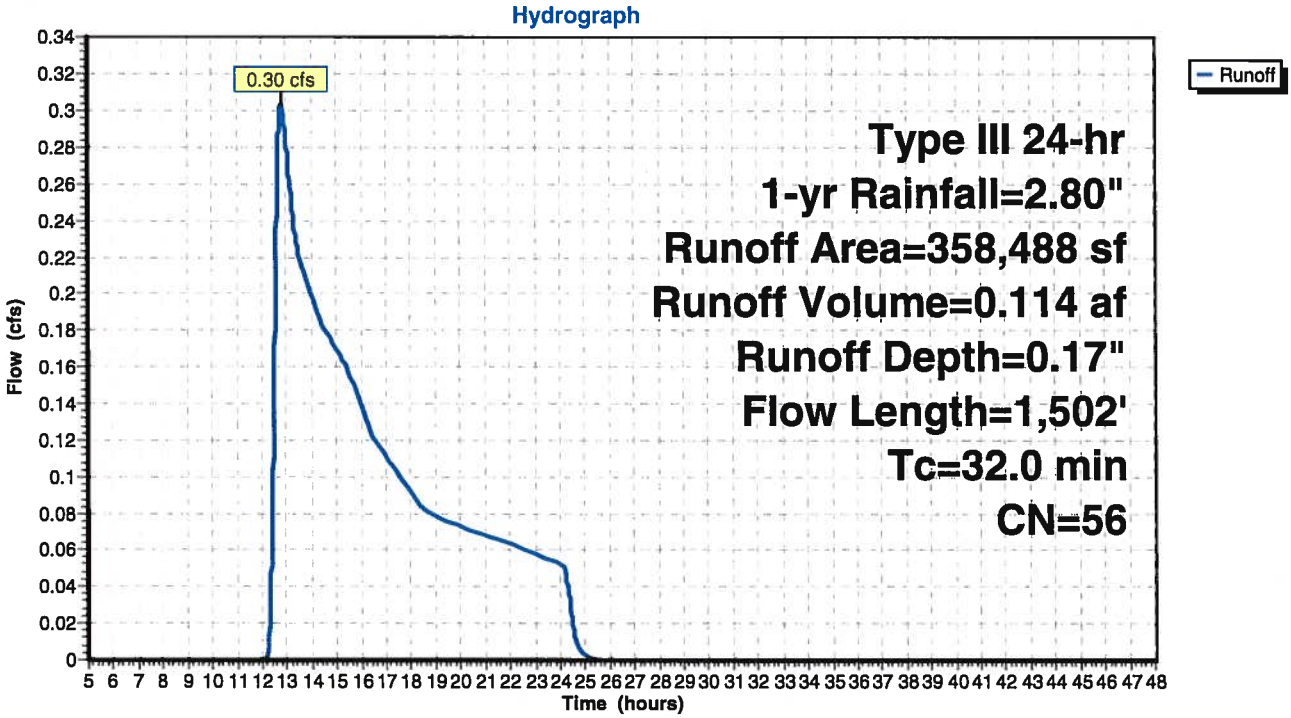
Runoff = 0.30 cfs @ 12.80 hrs, Volume= 0.114 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
331,946	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
358,488	56	Weighted Average
358,488		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.4	1,402	0.0814	1.43		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.0	1,502	Total			

Subcatchment pre-III:



Summary for Subcatchment pre-III:

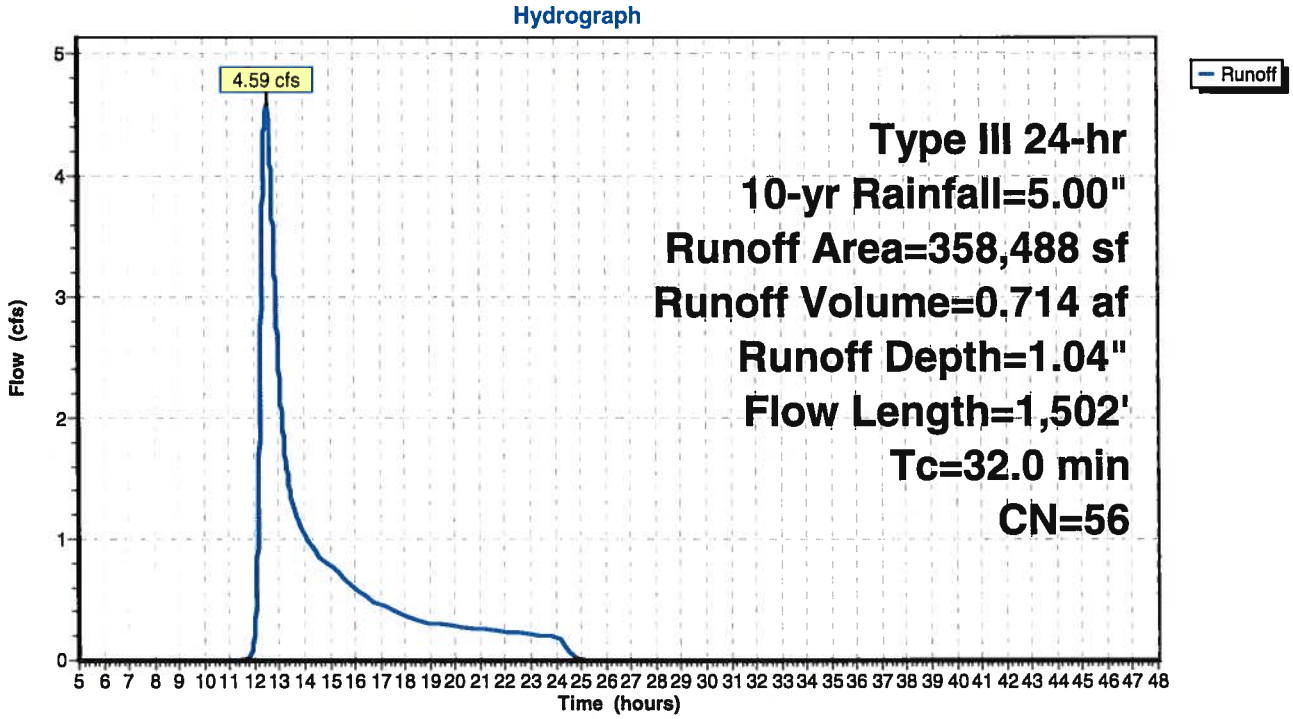
Runoff = 4.59 cfs @ 12.54 hrs, Volume= 0.714 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
331,946	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
358,488	56	Weighted Average
358,488		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.4	1,402	0.0814	1.43		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.0	1,502	Total			

Subcatchment pre-III:



Summary for Subcatchment pre-III:

Runoff = 12.89 cfs @ 12.48 hrs, Volume= 1.749 af, Depth= 2.55"

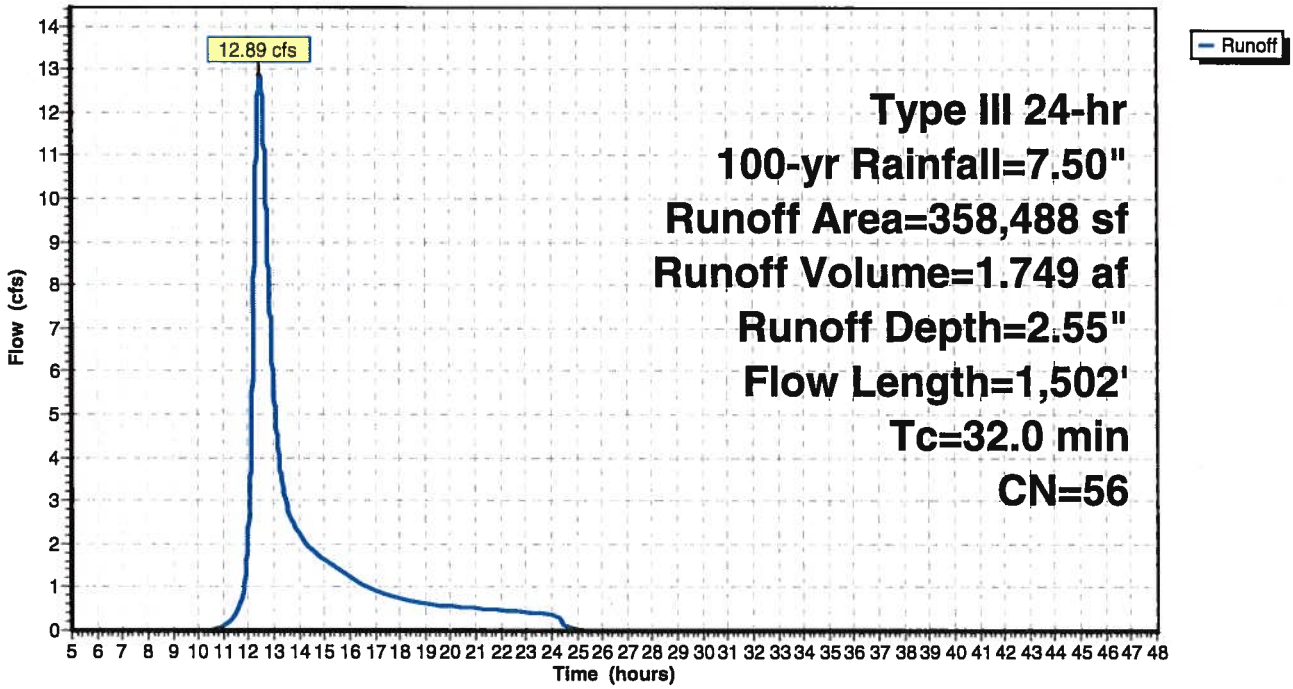
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

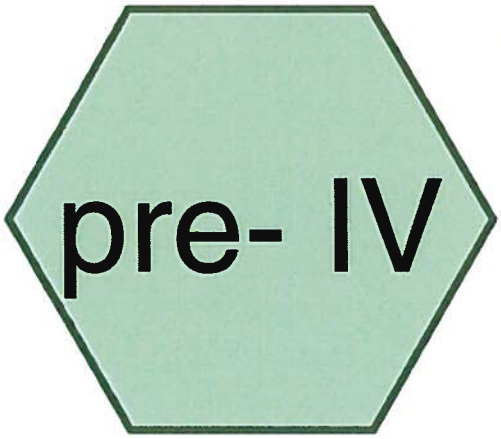
Area (sf)	CN	Description
331,946	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
358,488	56	Weighted Average
358,488		100.00% Pervious Area

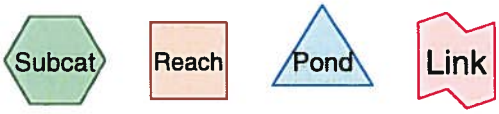
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.4	1,402	0.0814	1.43		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
32.0	1,502	Total			

Subcatchment pre-III:

Hydrograph







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Summary for Subcatchment pre- IV:

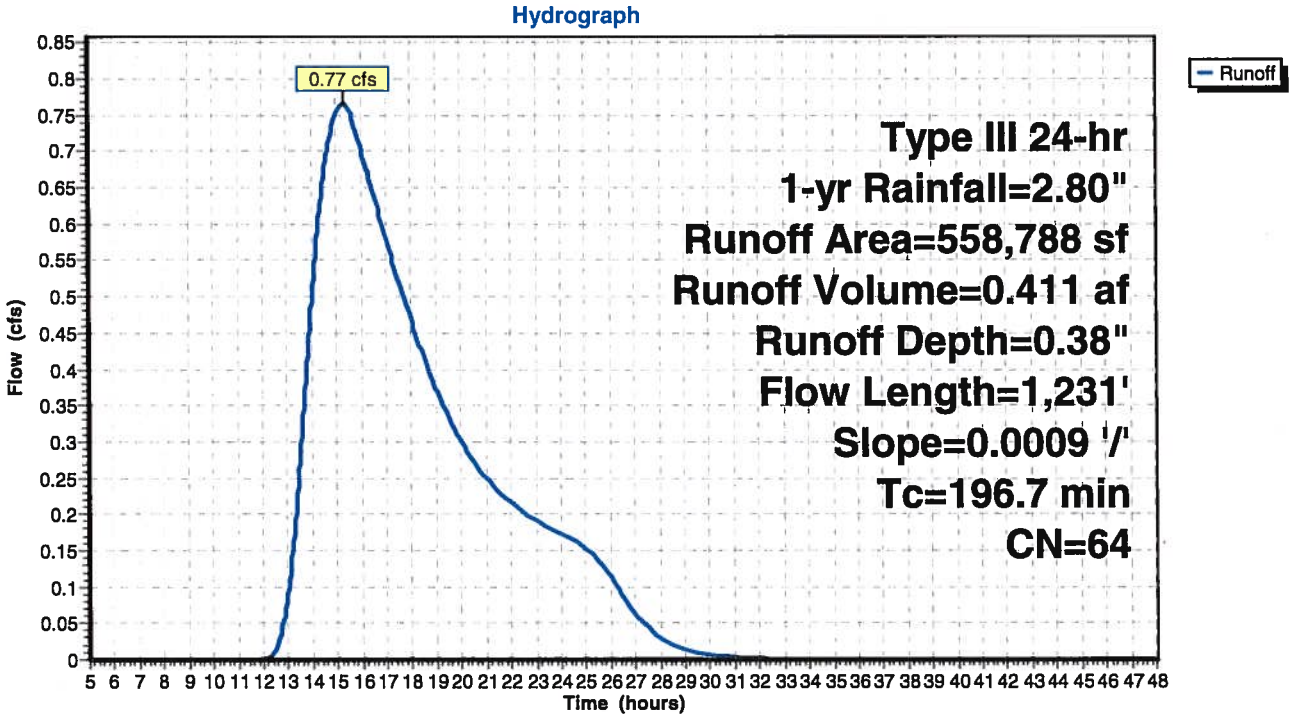
Runoff = 0.77 cfs @ 15.30 hrs, Volume= 0.411 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
61,546	70	Woods, Good, HSG C
315,348	55	Woods, Good, HSG B
558,788	64	Weighted Average
558,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment pre- IV:



Summary for Subcatchment pre- IV:

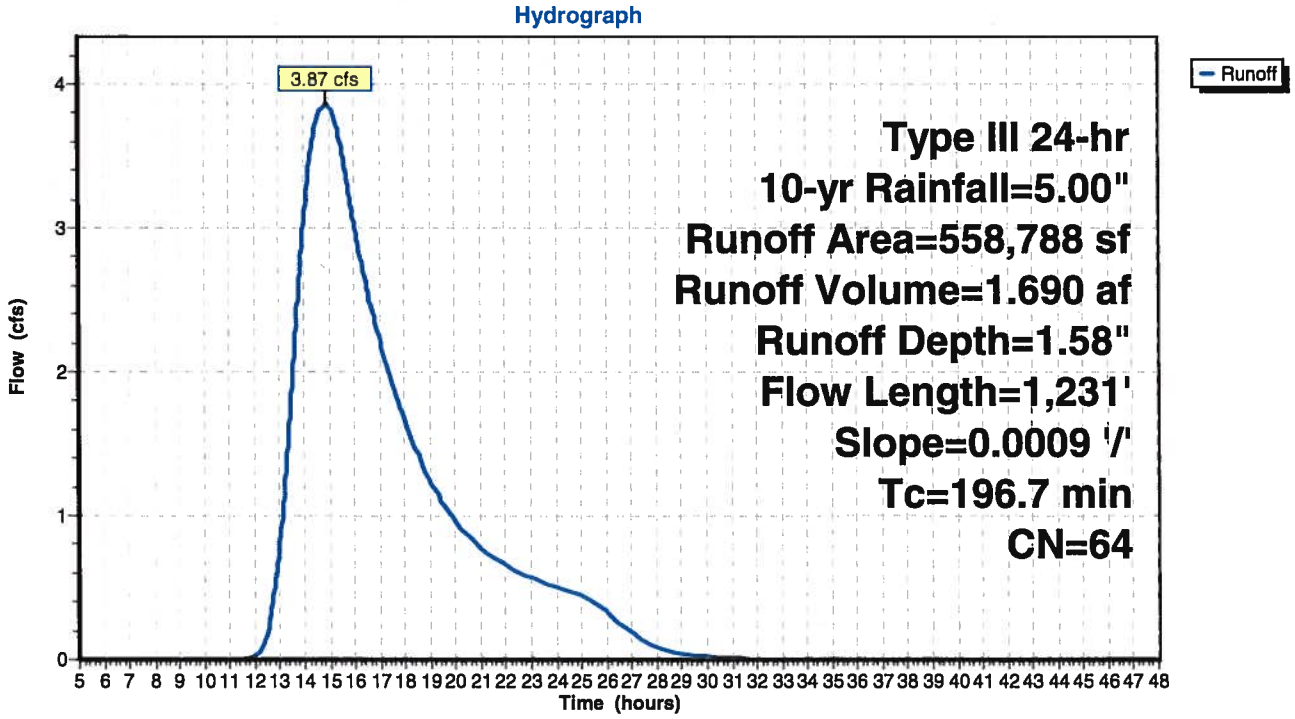
Runoff = 3.87 cfs @ 14.86 hrs, Volume= 1.690 af, Depth= 1.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
61,546	70	Woods, Good, HSG C
315,348	55	Woods, Good, HSG B
558,788	64	Weighted Average
558,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment pre- IV:



Summary for Subcatchment pre- IV:

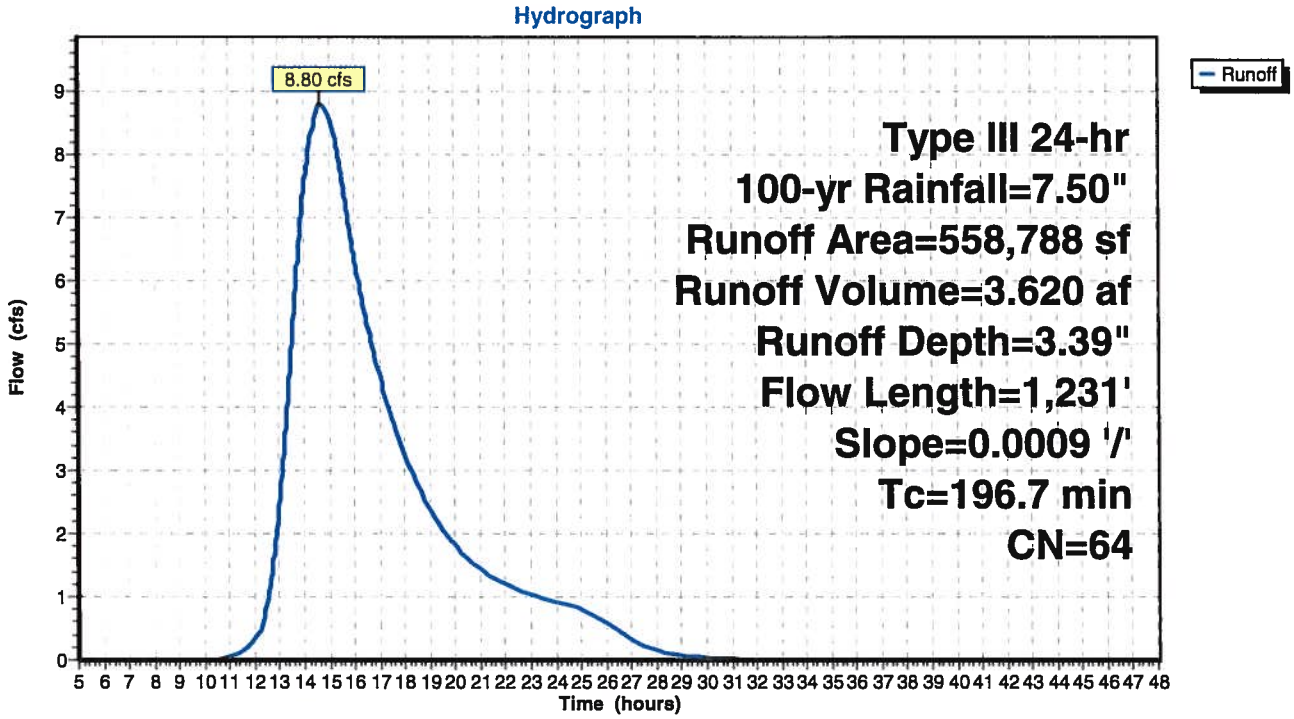
Runoff = 8.80 cfs @ 14.65 hrs, Volume= 3.620 af, Depth= 3.39"

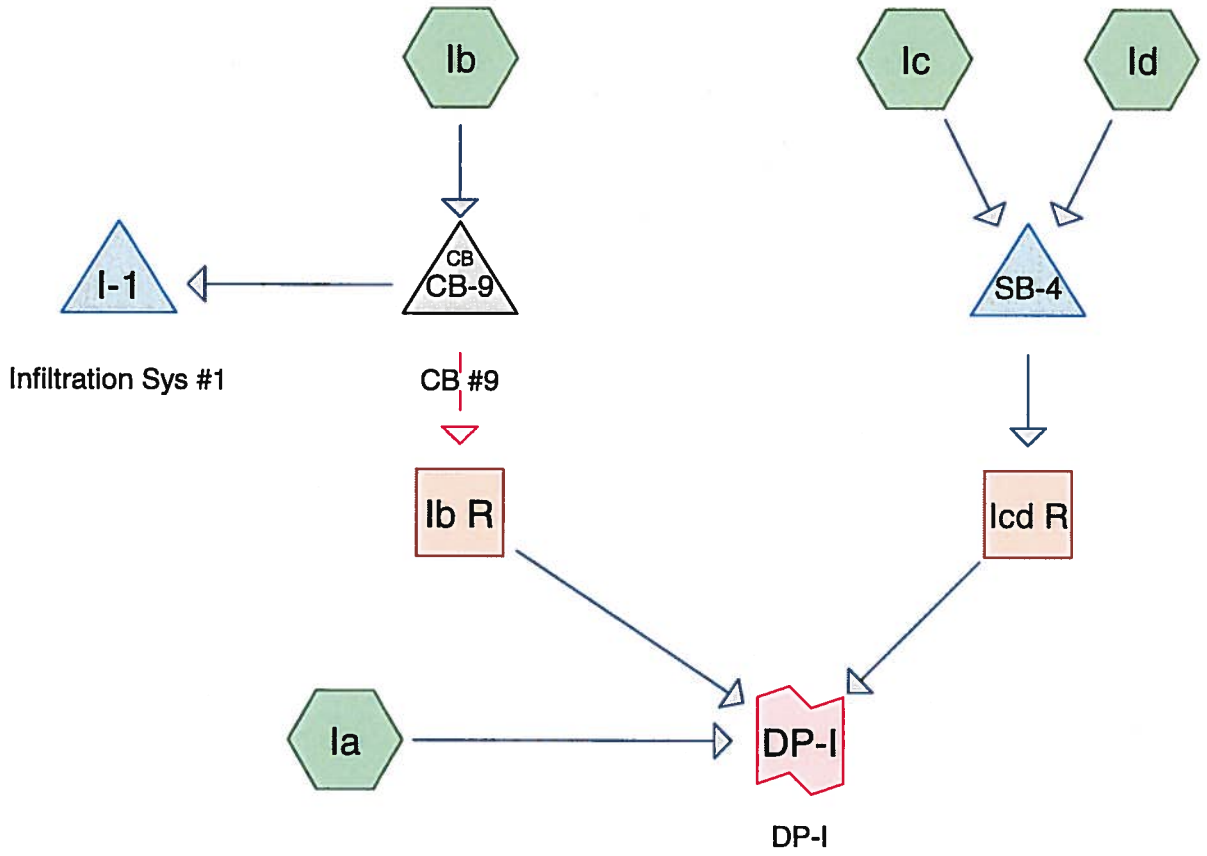
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
61,546	70	Woods, Good, HSG C
315,348	55	Woods, Good, HSG B
558,788	64	Weighted Average
558,788		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment pre- IV:





Routing Diagram for POST watershed I
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Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
188,932	61	>75% Grass cover, Good, HSG B (Ia, Ib, Ic, Id)
60,534	98	Paved parking & roofs (Ib, Ic, Id)
330,795	55	Woods, Good, HSG B (Ia, Ib, Ic, Id)
23,000	70	Woods, Good, HSG C (Ia)
603,261	**62**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
519,727	HSG B	Ia, Ib, Ic, Id
23,000	HSG C	Ia
0	HSG D	
60,534	Other	Ib, Ic, Id
603,261		**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	Ic	0.00	0.00	214.0	0.0420	0.013	10.0	0.0	0.0
2	CB-9	620.00	619.50	36.0	0.0139	0.013	15.0	0.0	0.0
3	CB-9	621.50	621.00	38.0	0.0132	0.013	18.0	0.0	0.0
4	SB-4	583.50	583.00	21.0	0.0238	0.013	15.0	0.0	0.0

Summary for Subcatchment Ia:

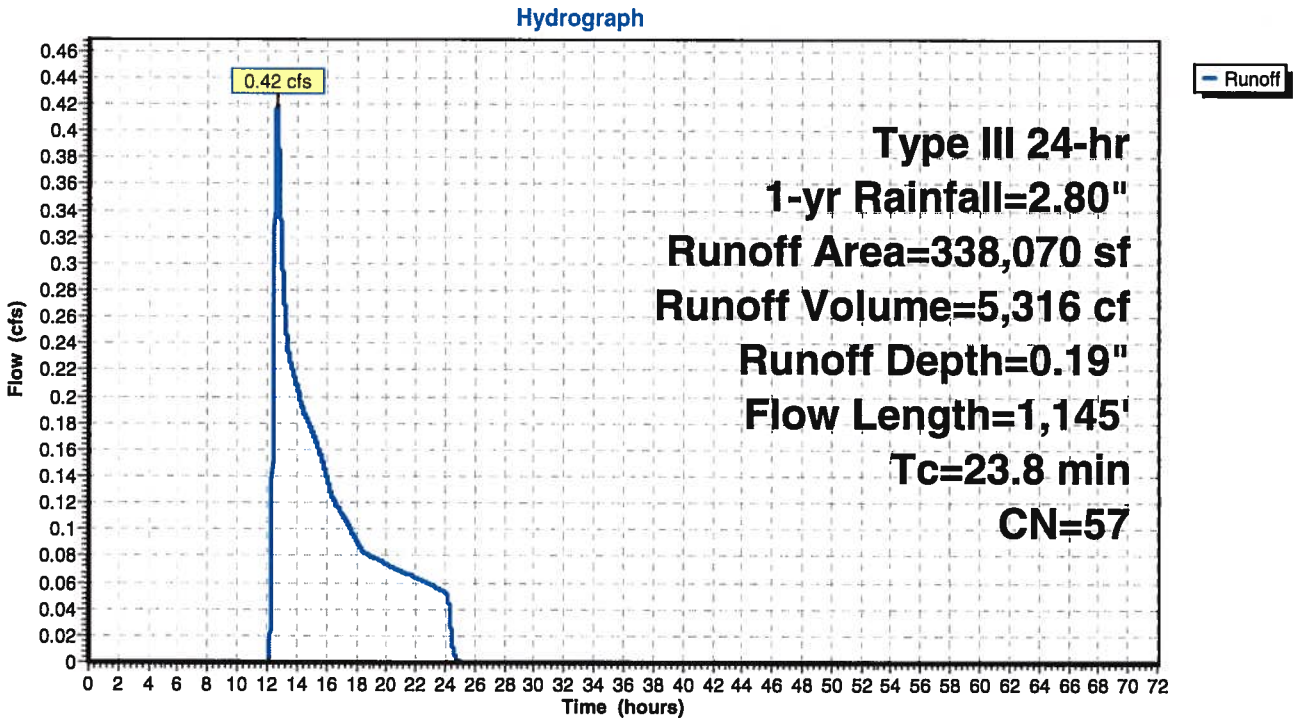
Runoff = 0.42 cfs @ 12.62 hrs, Volume= 5,316 cf, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
42,602	61	>75% Grass cover, Good, HSG B
272,468	55	Woods, Good, HSG B
23,000	70	Woods, Good, HSG C
338,070	57	Weighted Average
338,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
10.3	60	0.0400	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	1,045	0.1187	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	1,145	Total			

Subcatchment Ia:



Summary for Subcatchment Ib:

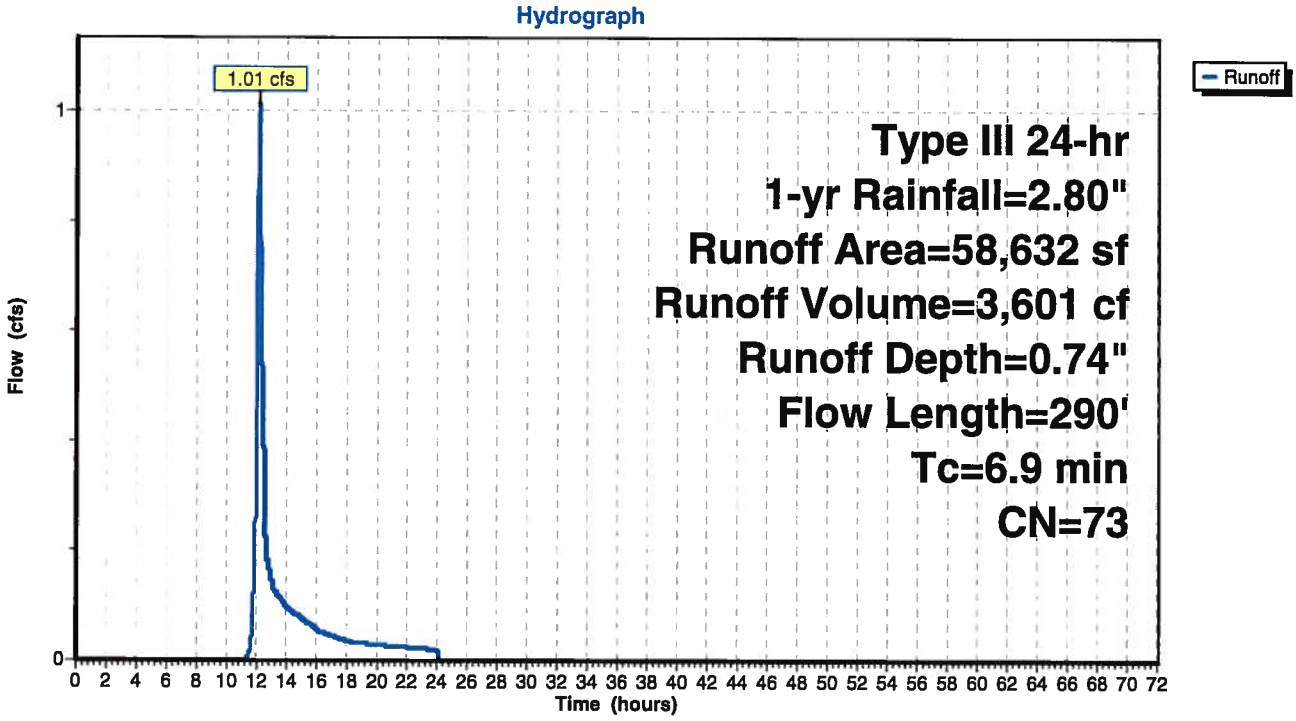
Runoff = 1.01 cfs @ 12.11 hrs, Volume= 3,601 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
20,518	98	Paved parking & roofs
31,014	61	>75% Grass cover, Good, HSG B
7,100	55	Woods, Good, HSG B
58,632	73	Weighted Average
38,114		65.01% Pervious Area
20,518		34.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	36	0.0600	3.94		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	154	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.9	290	Total			

Subcatchment Ib:



Summary for Subcatchment Ic:

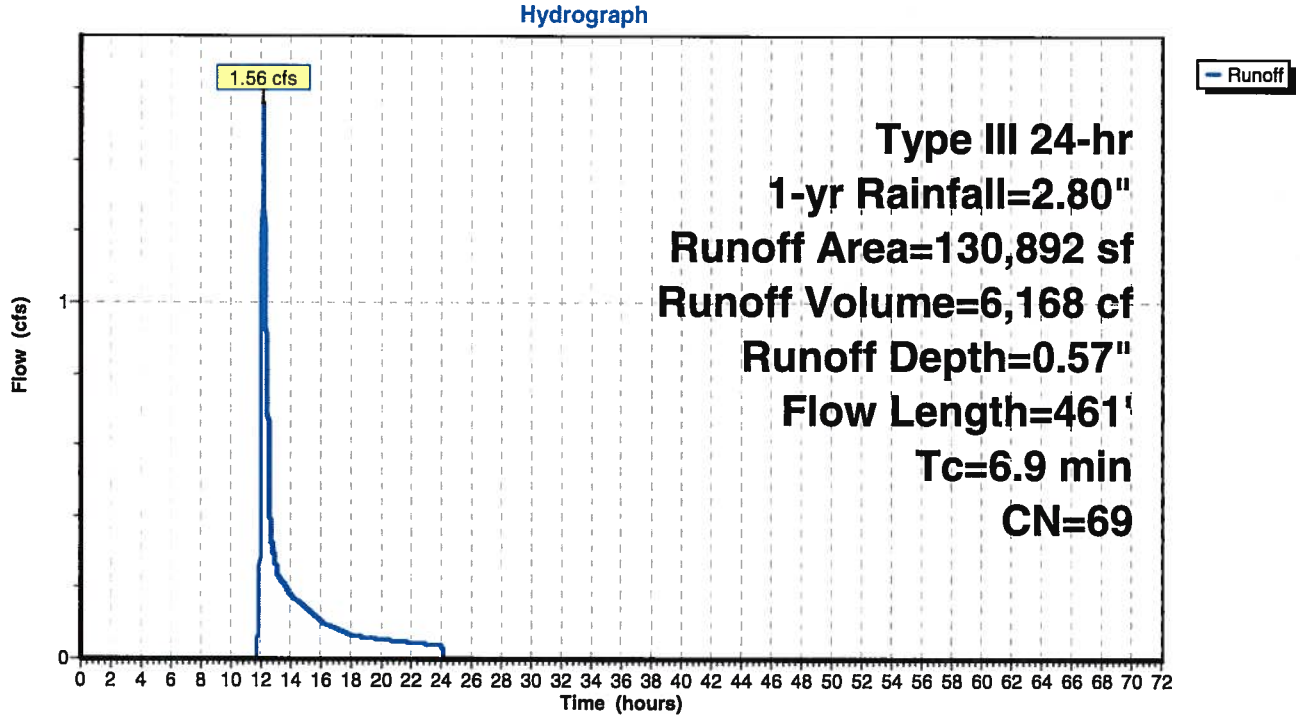
Runoff = 1.56 cfs @ 12.12 hrs, Volume= 6,168 cf, Depth= 0.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
30,280	98	Paved parking & roofs
81,208	61	>75% Grass cover, Good, HSG B
19,404	55	Woods, Good, HSG B
130,892	69	Weighted Average
100,612		76.87% Pervious Area
30,280		23.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	27	0.1800	2.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	214	0.0420	8.23	4.49	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
6.9	461	Total			

Subcatchment Ic:



Summary for Subcatchment Id:

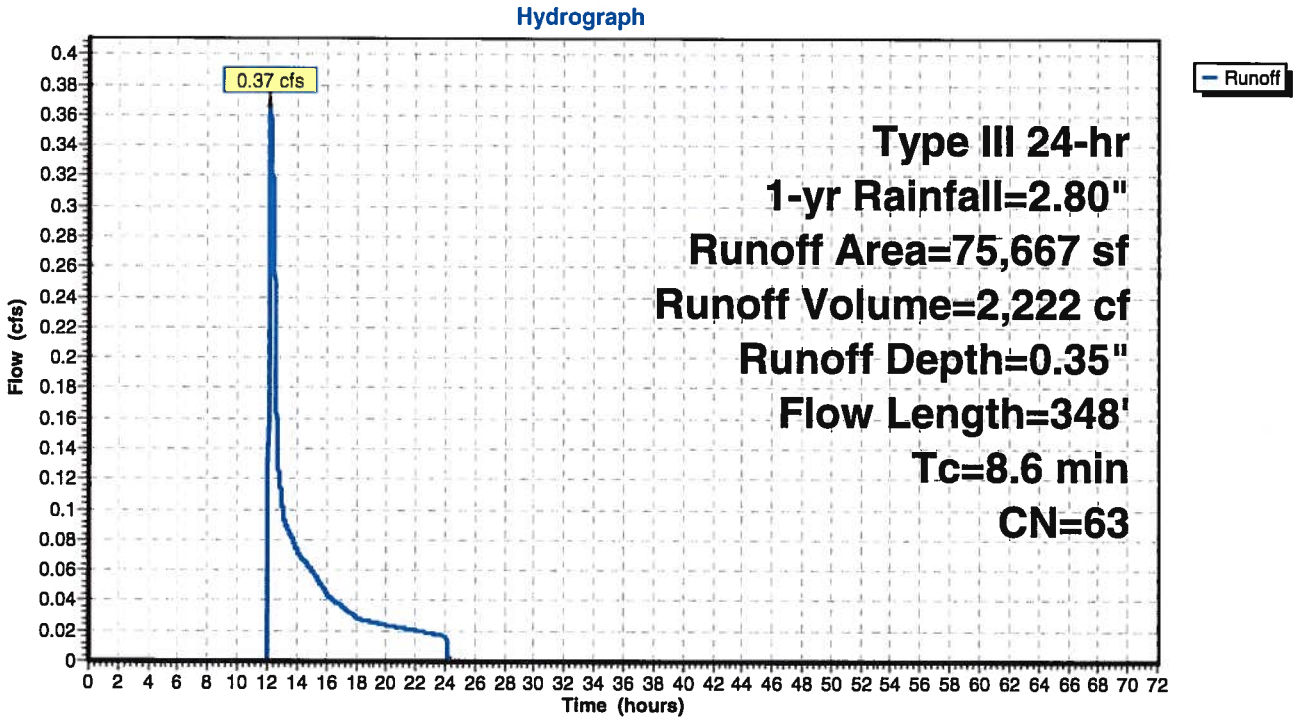
Runoff = 0.37 cfs @ 12.17 hrs, Volume= 2,222 cf, Depth= 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
9,736	98	Paved parking & roofs
34,108	61	>75% Grass cover, Good, HSG B
31,823	55	Woods, Good, HSG B
75,667	63	Weighted Average
65,931		87.13% Pervious Area
9,736		12.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0500	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	248	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.6	348	Total			

Subcatchment Id:



Summary for Reach Ib R:

Inflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf
Outflow	=	0.00 cfs @	0.00 hrs,	Volume=	0 cf, Atten= 0%, Lag= 0.0 min

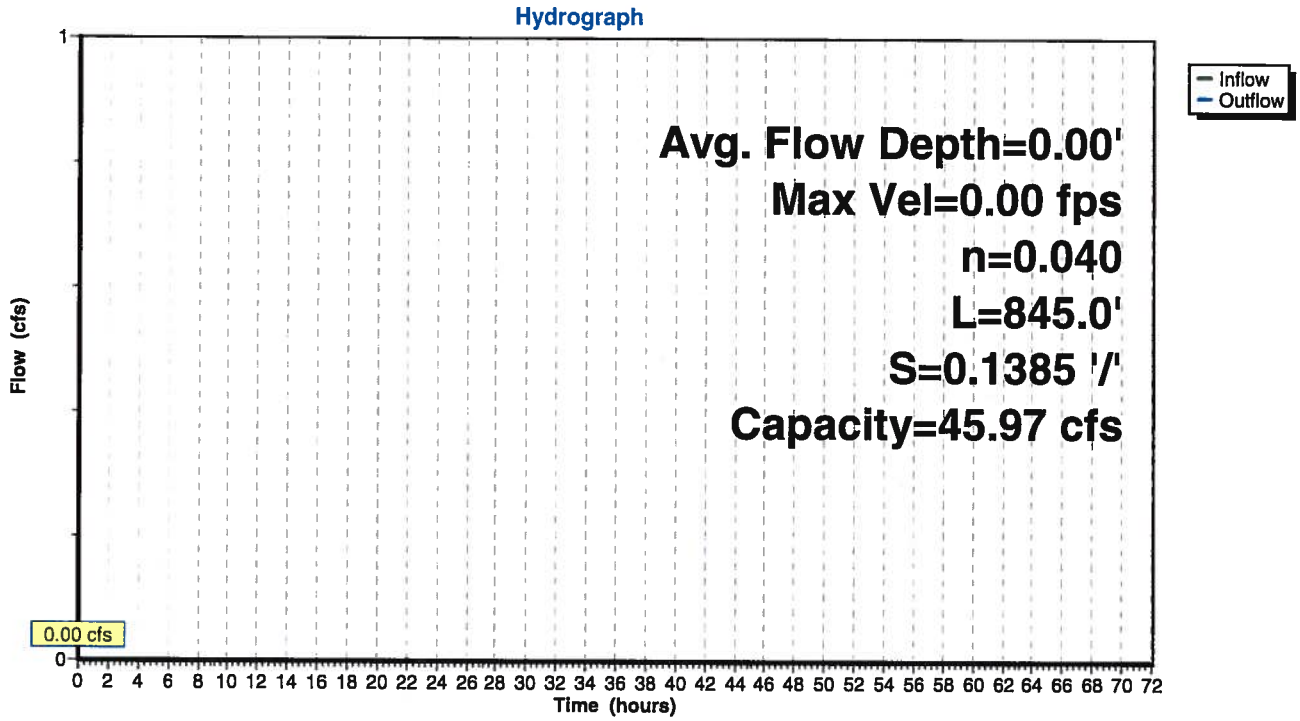
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 45.97 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 845.0' Slope= 0.1385 '/'
Inlet Invert= 621.00', Outlet Invert= 504.00'

‡

Reach Ib R:



Summary for Reach Icd R:

Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

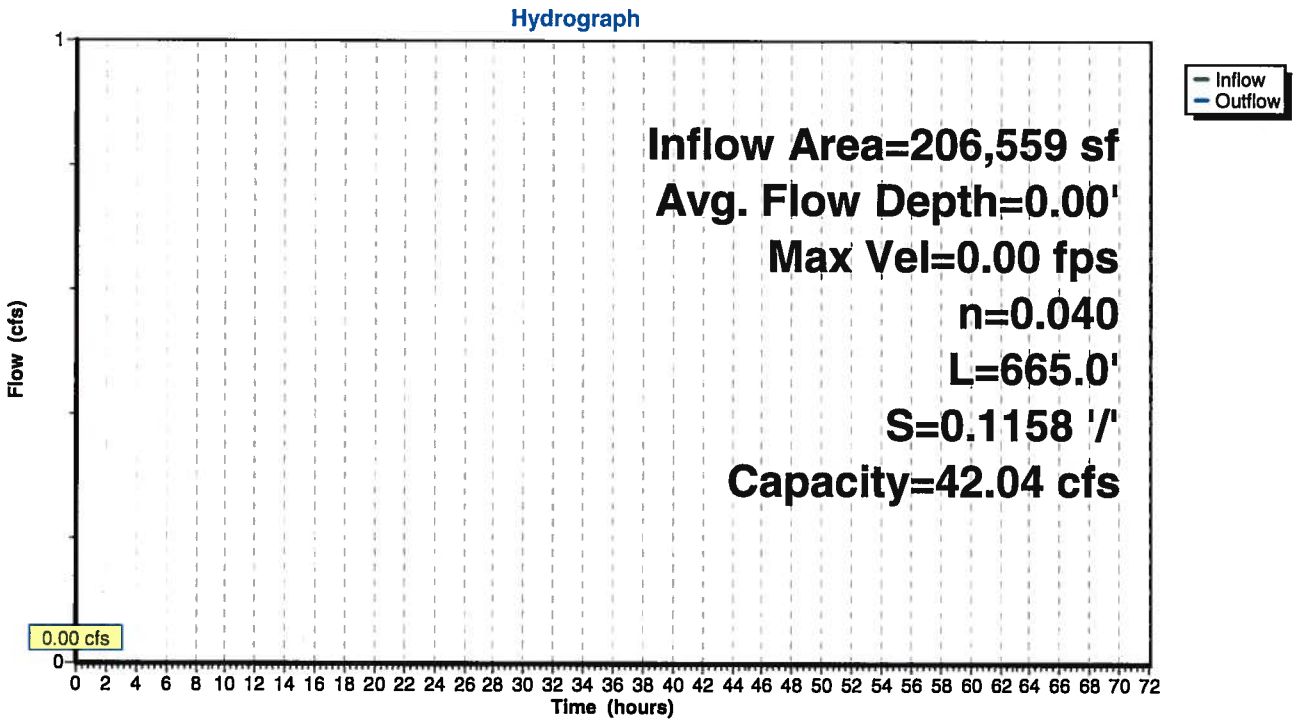
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.04 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 665.0' Slope= 0.1158 '/'
Inlet Invert= 581.00', Outlet Invert= 504.00'

‡

Reach Icd R:



Summary for Pond CB-9: CB #9

Inflow Area =	58,632 sf, 34.99% Impervious, Inflow Depth = 0.74" for 1-yr event				
Inflow =	1.01 cfs @	12.11 hrs,	Volume=	3,601 cf	
Outflow =	1.01 cfs @	12.12 hrs,	Volume=	3,601 cf,	Atten= 0%, Lag= 0.6 min
Primary =	1.01 cfs @	12.12 hrs,	Volume=	3,601 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

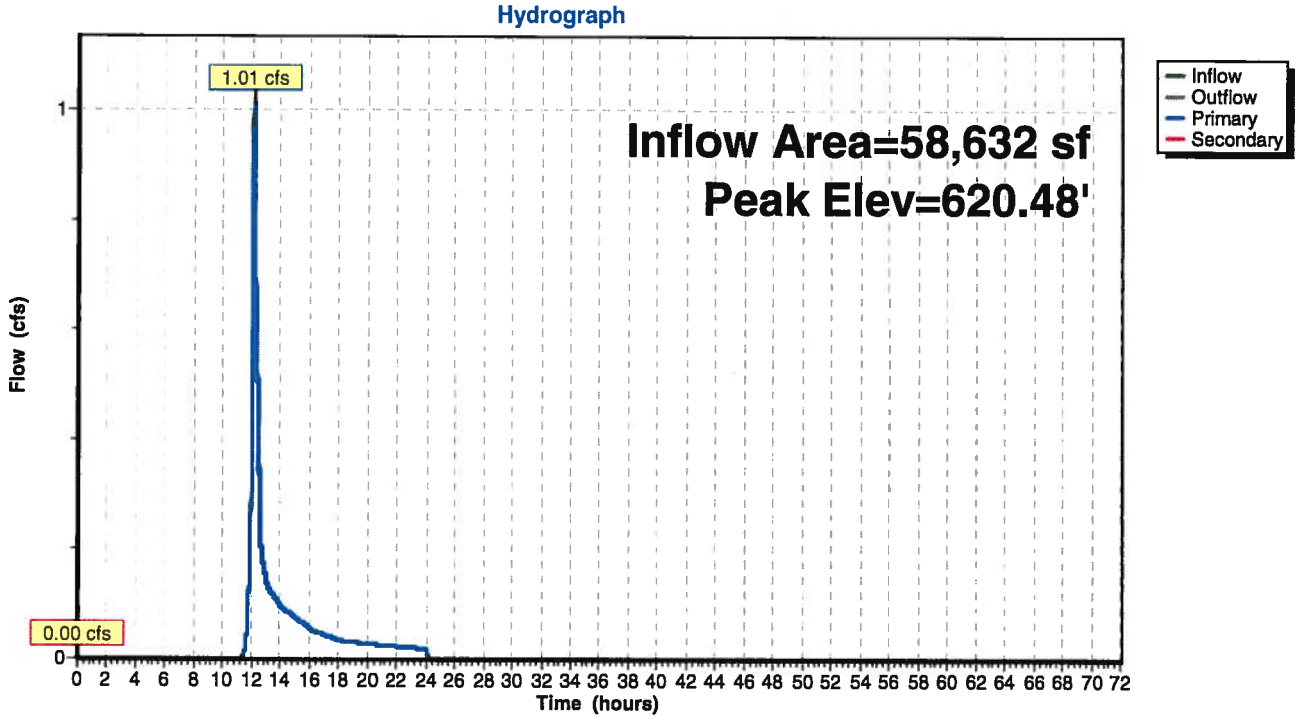
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 620.48' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	620.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 620.00' / 619.50' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	621.50'	**18.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.50' / 621.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.01 cfs @ 12.12 hrs HW=620.48' TW=619.57' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.01 cfs @ 2.35 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=620.00' TW=621.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)

Pond CB-9: CB #9



Summary for Pond I-1: Infiltration Sys #1

Inflow Area = 58,632 sf, 34.99% Impervious, Inflow Depth = 0.74" for 1-yr event
Inflow = 1.01 cfs @ 12.12 hrs, Volume= 3,601 cf
Outflow = 0.16 cfs @ 11.20 hrs, Volume= 5,203 cf, Atten= 84%, Lag= 0.0 min
Discarded = 0.16 cfs @ 11.20 hrs, Volume= 5,203 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 620.46' @ 12.91 hrs Surf.Area= 1,155 sf Storage= 997 cf

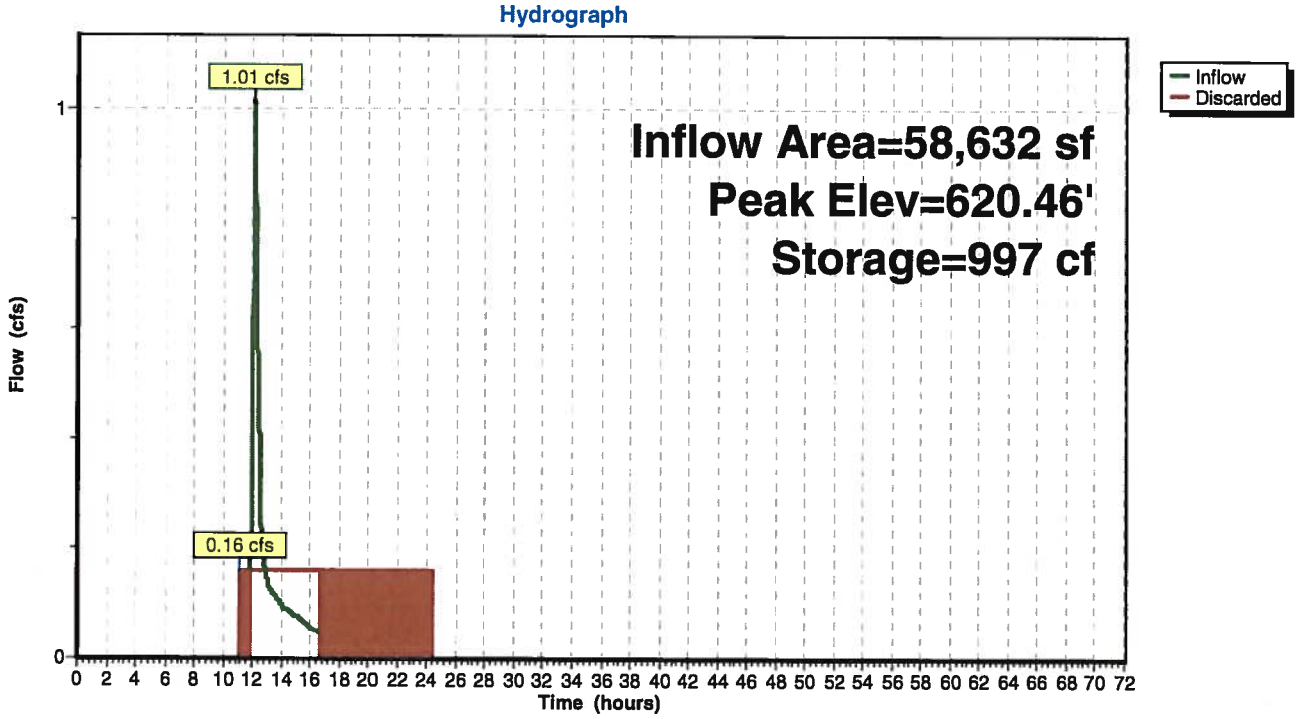
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.2 min (1,011.3 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1	619.50'	1,095 cf	**Cultec R-330XLHD** x 21 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	619.00'	1,410 cf	**21.00'W x 55.00'L x 4.00'H Prismatoid** 4,620 cf Overall - 1,095 cf Embedded = 3,525 cf x 40.0% Voids
		2,505 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	619.00'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.16 cfs @ 11.20 hrs HW=619.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Pond I-1: Infiltration Sys #1



Summary for Pond SB-4:

Inflow Area =	206,559 sf,	19.37% Impervious,	Inflow Depth =	0.49"	for 1-yr event
Inflow =	1.88 cfs @	12.13 hrs, Volume=	8,389 cf		
Outflow =	0.20 cfs @	15.03 hrs, Volume=	8,425 cf,	Atten= 89%,	Lag= 174.1 min
Discarded =	0.20 cfs @	15.03 hrs, Volume=	8,425 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 583.24' @ 15.03 hrs Surf.Area= 2,896 sf Storage= 3,129 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 179.2 min (1,079.4 - 900.1)

Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	25,857 cf	**Custom Stage Data (Irregular)** Listed below

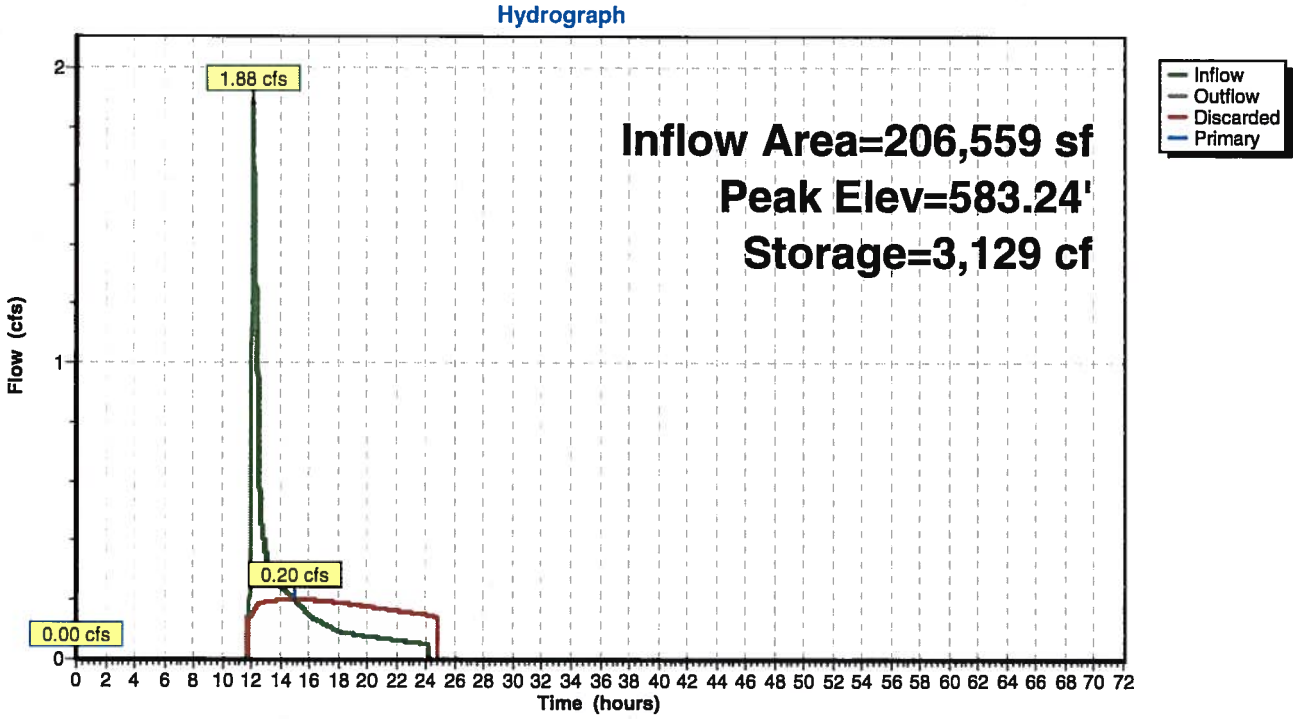
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
582.00	2,062	209.2	0	0	2,062
583.00	2,722	230.8	2,384	2,384	2,850
584.00	3,442	250.5	3,075	5,459	3,642
585.00	4,224	270.4	3,826	9,286	4,507
586.00	5,063	289.3	4,637	13,923	5,394
587.00	5,959	308.3	5,505	19,428	6,345
588.00	6,912	327.4	6,430	25,857	7,363

Device	Routing	Invert	Outlet Devices
#1	Primary	583.50'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.50' / 583.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	584.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	587.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	582.00'	**3.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.20 cfs @ 15.03 hrs HW=583.24' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.20 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=582.00' TW=581.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-4:



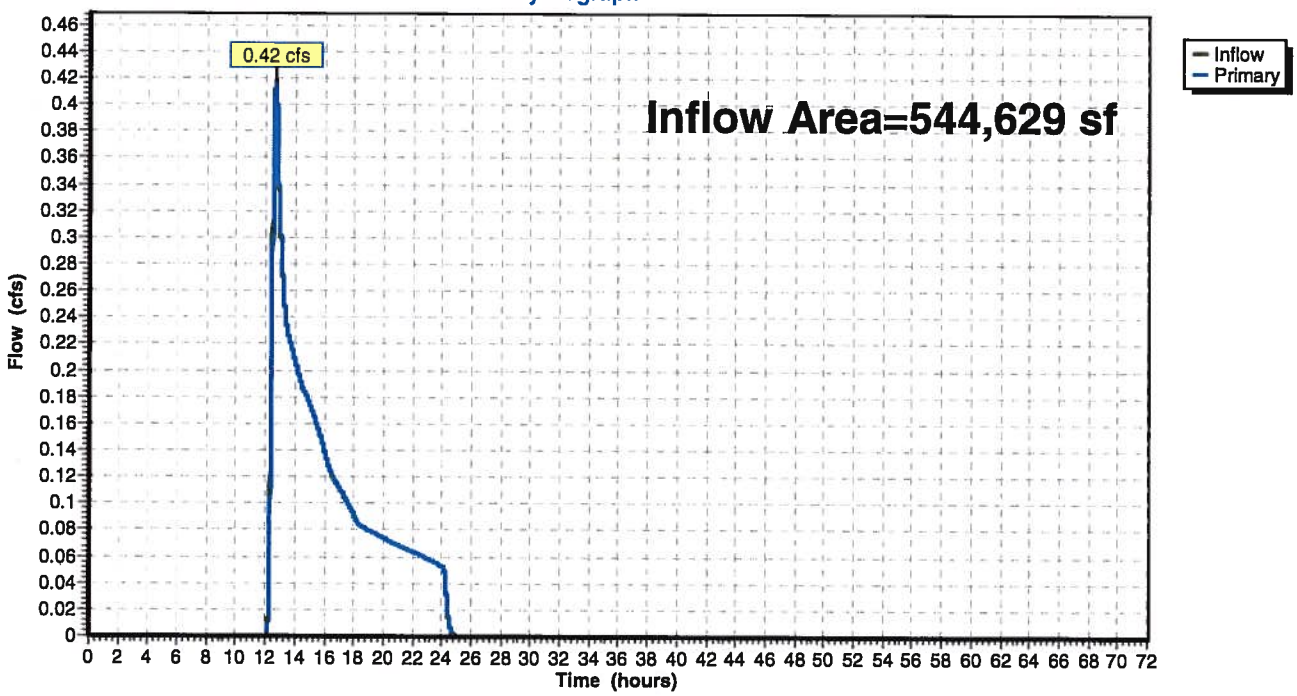
Summary for Link DP-I: DP-I

Inflow Area = 544,629 sf, 7.35% Impervious, Inflow Depth = 0.12" for 1-yr event
Inflow = 0.42 cfs @ 12.62 hrs, Volume= 5,316 cf
Primary = 0.42 cfs @ 12.63 hrs, Volume= 5,316 cf, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-I: DP-I

Hydrograph



Summary for Subcatchment Ia:

Runoff = 5.32 cfs @ 12.40 hrs, Volume= 31,118 cf, Depth= 1.10"

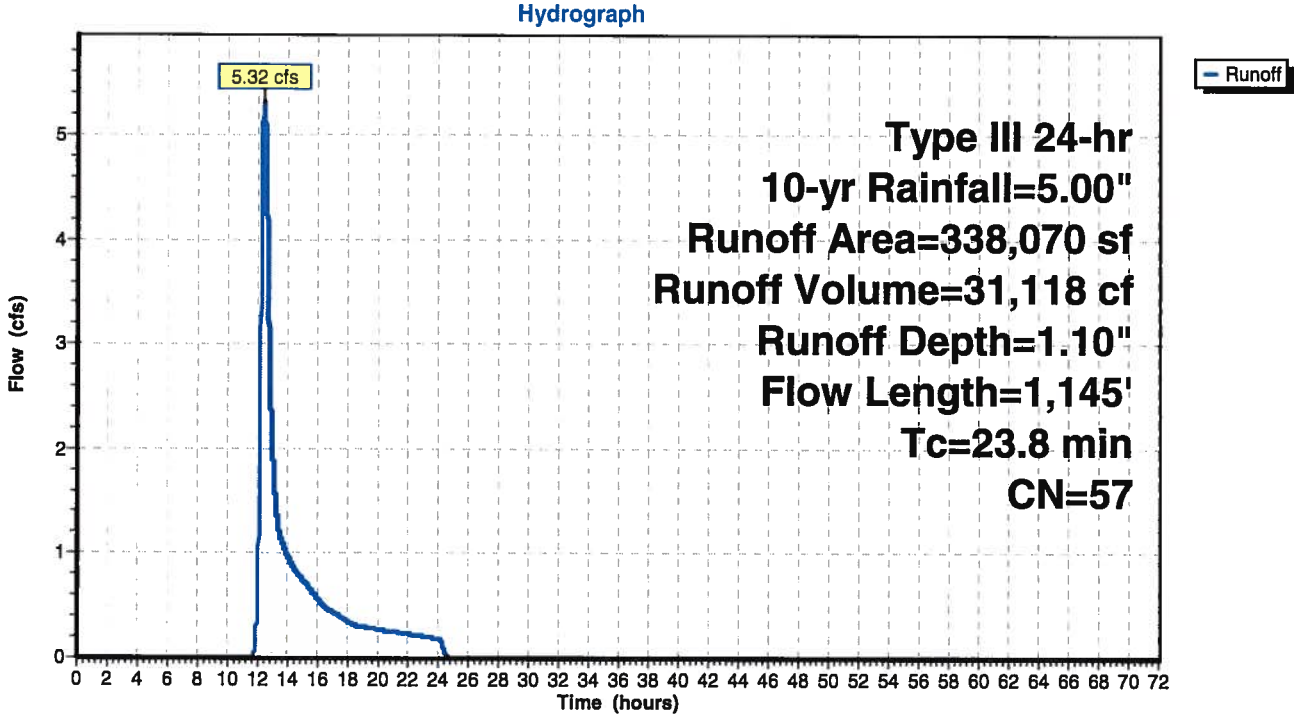
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
42,602	61	>75% Grass cover, Good, HSG B
272,468	55	Woods, Good, HSG B
23,000	70	Woods, Good, HSG C
338,070	57	Weighted Average
338,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
10.3	60	0.0400	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	1,045	0.1187	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	1,145	Total			

Subcatchment Ia:

Hydrograph



Summary for Subcatchment Ib:

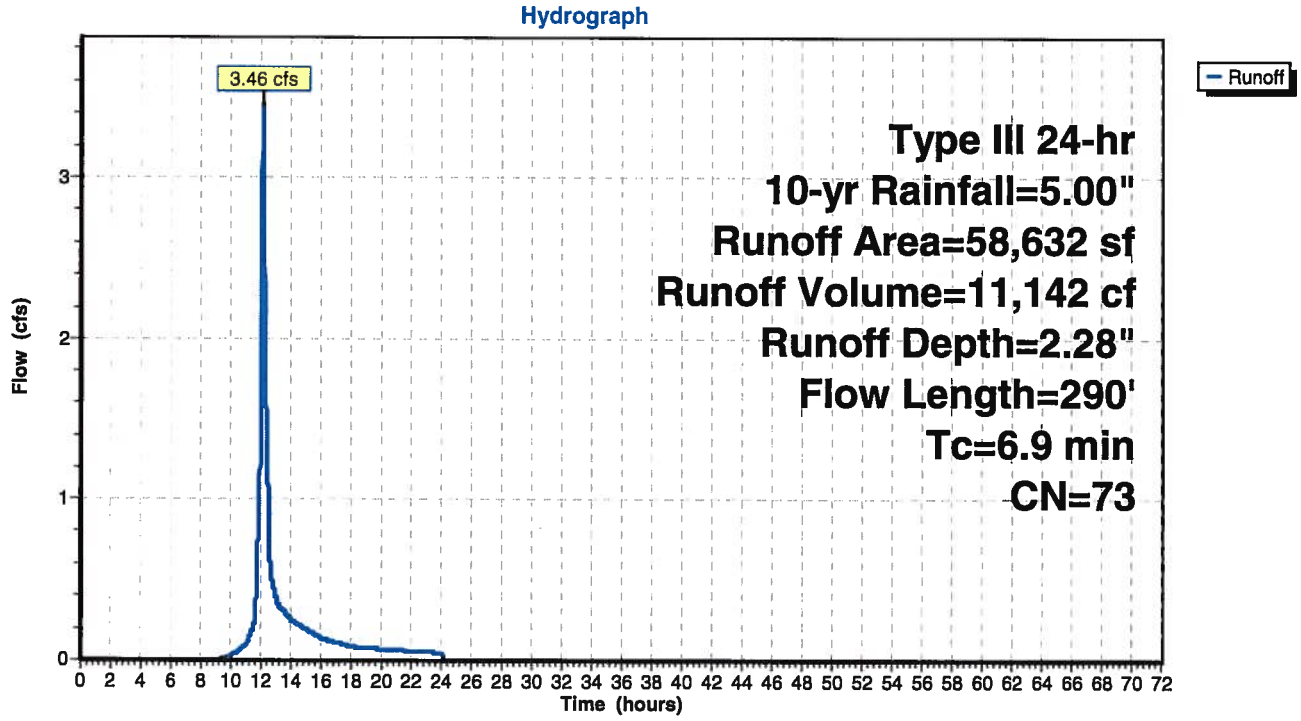
Runoff = 3.46 cfs @ 12.10 hrs, Volume= 11,142 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
20,518	98	Paved parking & roofs
31,014	61	>75% Grass cover, Good, HSG B
7,100	55	Woods, Good, HSG B
58,632	73	Weighted Average
38,114		65.01% Pervious Area
20,518		34.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	36	0.0600	3.94		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	154	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.9	290	Total			

Subcatchment Ib:



Summary for Subcatchment Ic:

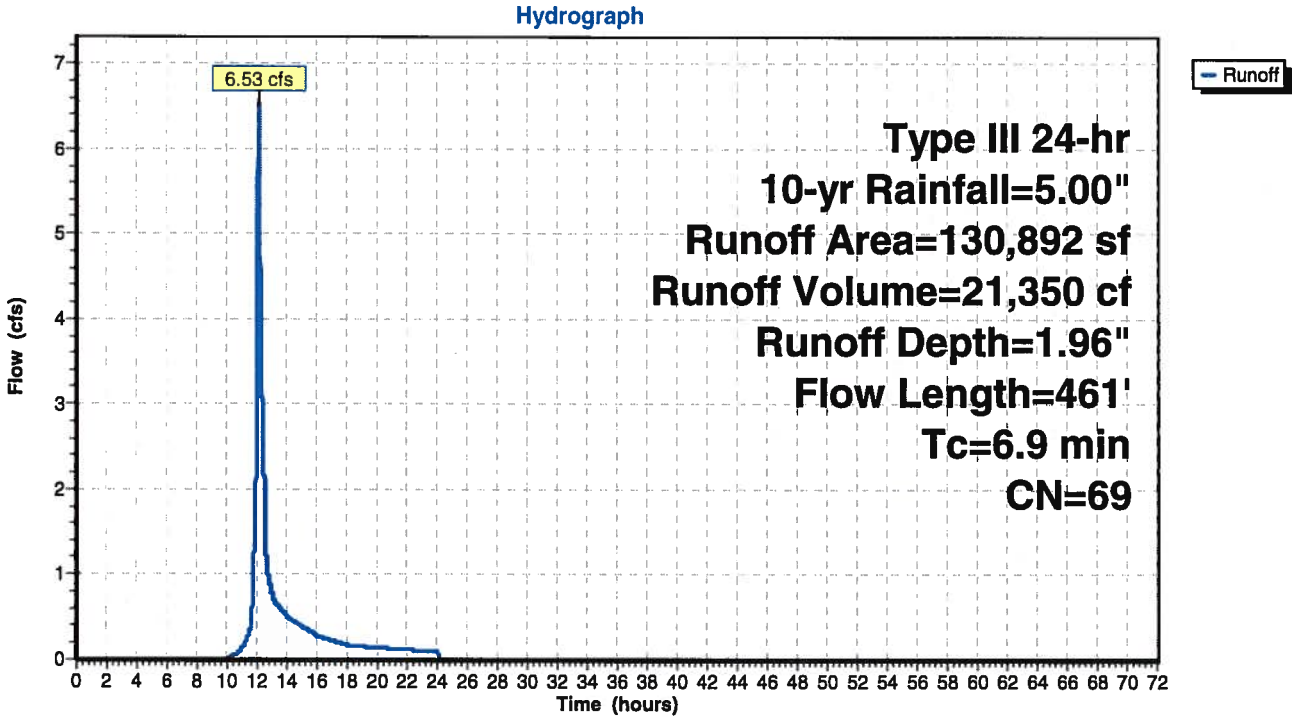
Runoff = 6.53 cfs @ 12.11 hrs, Volume= 21,350 cf, Depth= 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
30,280	98	Paved parking & roofs
81,208	61	>75% Grass cover, Good, HSG B
19,404	55	Woods, Good, HSG B
130,892	69	Weighted Average
100,612		76.87% Pervious Area
30,280		23.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	27	0.1800	2.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	214	0.0420	8.23	4.49	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
6.9	461	Total			

Subcatchment Ic:



Summary for Subcatchment Id:

Runoff = 2.61 cfs @ 12.13 hrs, Volume= 9,514 cf, Depth= 1.51"

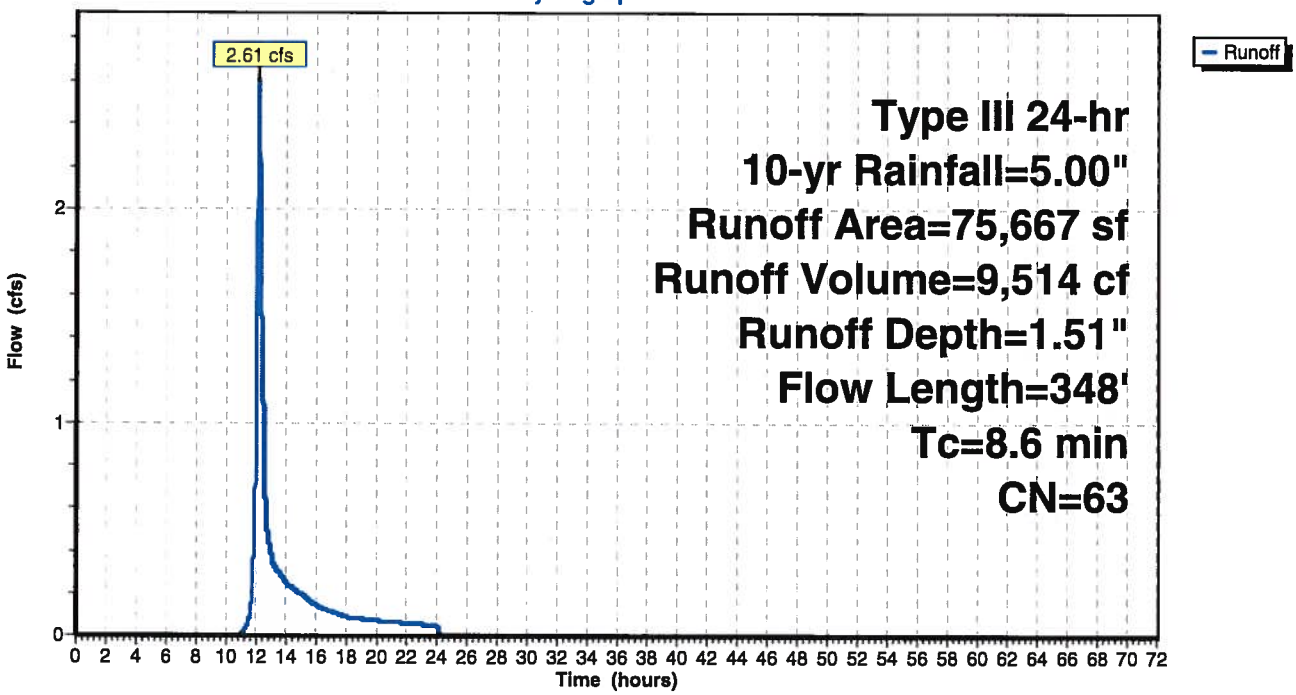
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
9,736	98	Paved parking & roofs
34,108	61	>75% Grass cover, Good, HSG B
31,823	55	Woods, Good, HSG B
75,667	63	Weighted Average
65,931		87.13% Pervious Area
9,736		12.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0500	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	248	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.6	348	Total			

Subcatchment Id:

Hydrograph



Summary for Reach Ib R:

Inflow	=	2.89 cfs @	12.17 hrs,	Volume=	4,080 cf
Outflow	=	1.58 cfs @	12.35 hrs,	Volume=	4,080 cf, Atten= 45%, Lag= 10.7 min

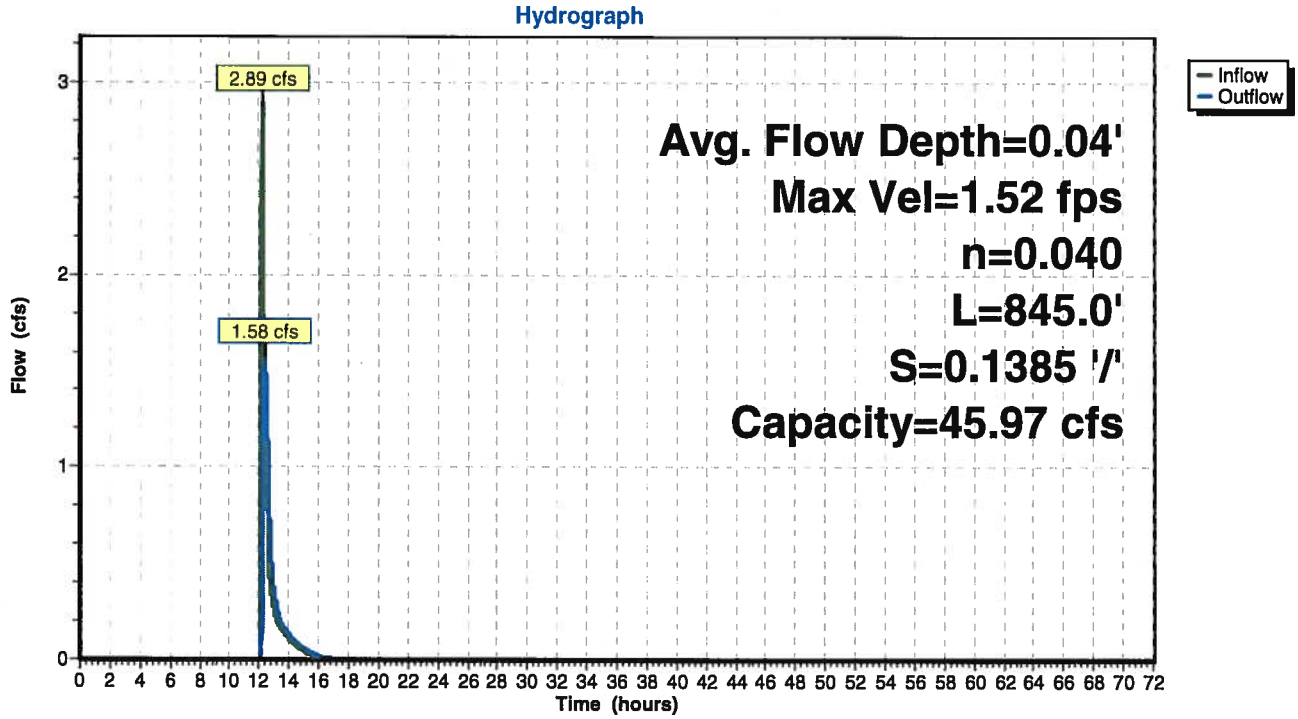
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.52 fps, Min. Travel Time= 9.3 min
Avg. Velocity = 0.05 fps, Avg. Travel Time= 304.8 min

Peak Storage= 878 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 45.97 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 845.0' Slope= 0.1385 '/'
Inlet Invert= 621.00', Outlet Invert= 504.00'

‡

Reach Ib R:



Summary for Reach lcd R:

Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 0.13" for 10-yr event
Inflow = 0.04 cfs @ 15.94 hrs, Volume= 2,172 cf
Outflow = 0.04 cfs @ 16.25 hrs, Volume= 2,172 cf, Atten= 0%, Lag= 19.0 min

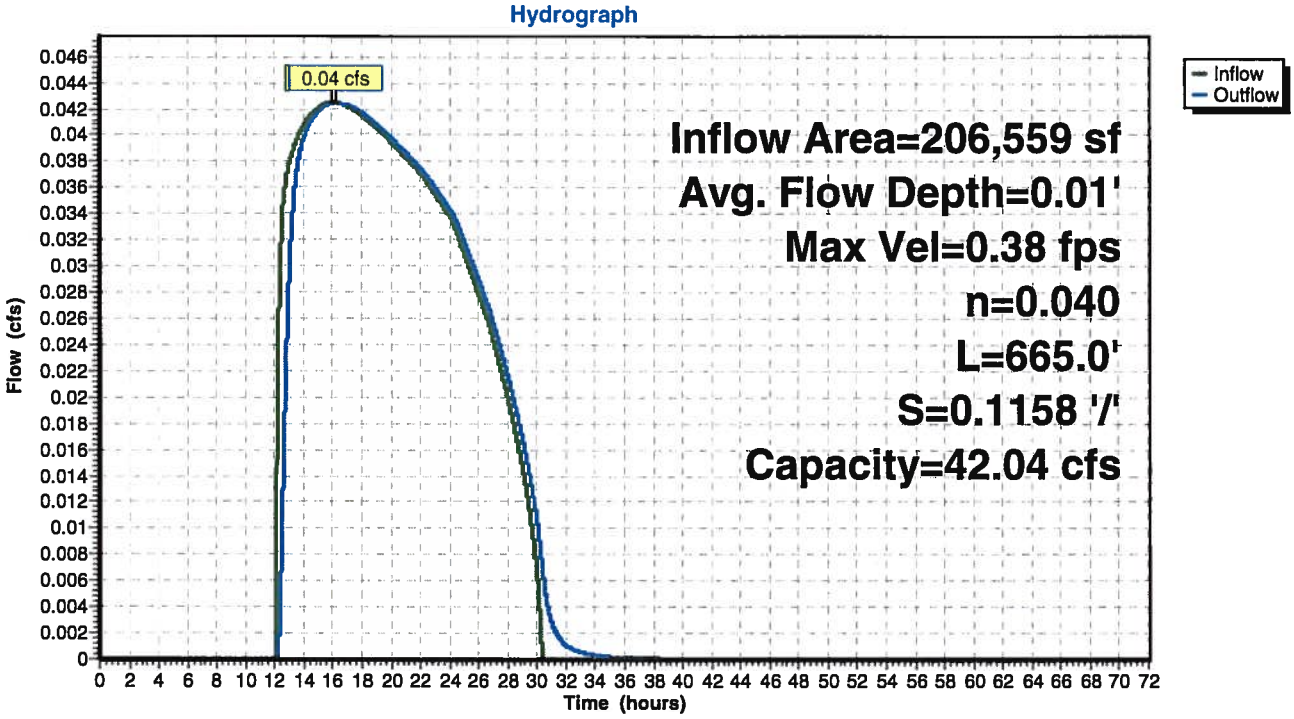
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.38 fps, Min. Travel Time= 29.0 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 140.8 min

Peak Storage= 74 cf @ 16.25 hrs
Average Depth at Peak Storage= 0.01'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.04 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 665.0' Slope= 0.1158 '/'
Inlet Invert= 581.00', Outlet Invert= 504.00'

‡

Reach lcd R:



Summary for Pond CB-9: CB #9

Inflow Area =	58,632 sf, 34.99% Impervious, Inflow Depth = 2.28" for 10-yr event				
Inflow =	3.46 cfs @	12.10 hrs,	Volume=	11,142 cf	
Outflow =	3.46 cfs @	12.11 hrs,	Volume=	11,142 cf,	Atten= 0%, Lag= 0.6 min
Primary =	3.39 cfs @	12.10 hrs,	Volume=	7,063 cf	
Secondary =	2.89 cfs @	12.17 hrs,	Volume=	4,080 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 622.30' @ 12.17 hrs

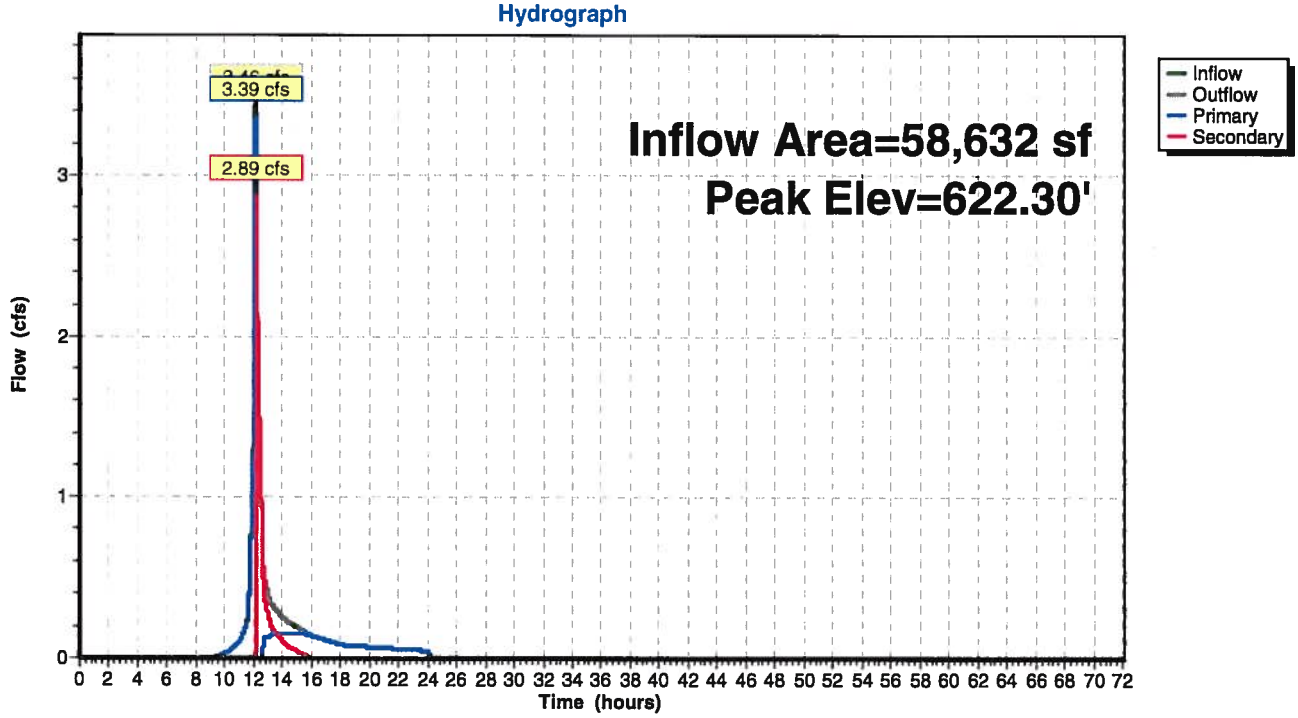
Device	Routing	Invert	Outlet Devices
#1	Primary	620.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 620.00' / 619.50' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	621.50'	**18.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.50' / 621.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.37 cfs @ 12.10 hrs HW=621.54' TW=621.38' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.37 cfs @ 1.93 fps)

Secondary OutFlow Max=2.88 cfs @ 12.17 hrs HW=622.30' TW=621.02' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 2.88 cfs @ 4.37 fps)

Pond CB-9: CB #9

Hydrograph



Summary for Pond I-1: Infiltration Sys #1

Inflow Area = 58,632 sf, 34.99% Impervious, Inflow Depth = 1.45" for 10-yr event
Inflow = 3.39 cfs @ 12.10 hrs, Volume= 7,063 cf
Outflow = 0.16 cfs @ 9.08 hrs, Volume= 7,675 cf, Atten= 95%, Lag= 0.0 min
Discarded = 0.16 cfs @ 9.08 hrs, Volume= 7,675 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 622.35' @ 12.17 hrs Surf.Area= 1,155 sf Storage= 2,205 cf

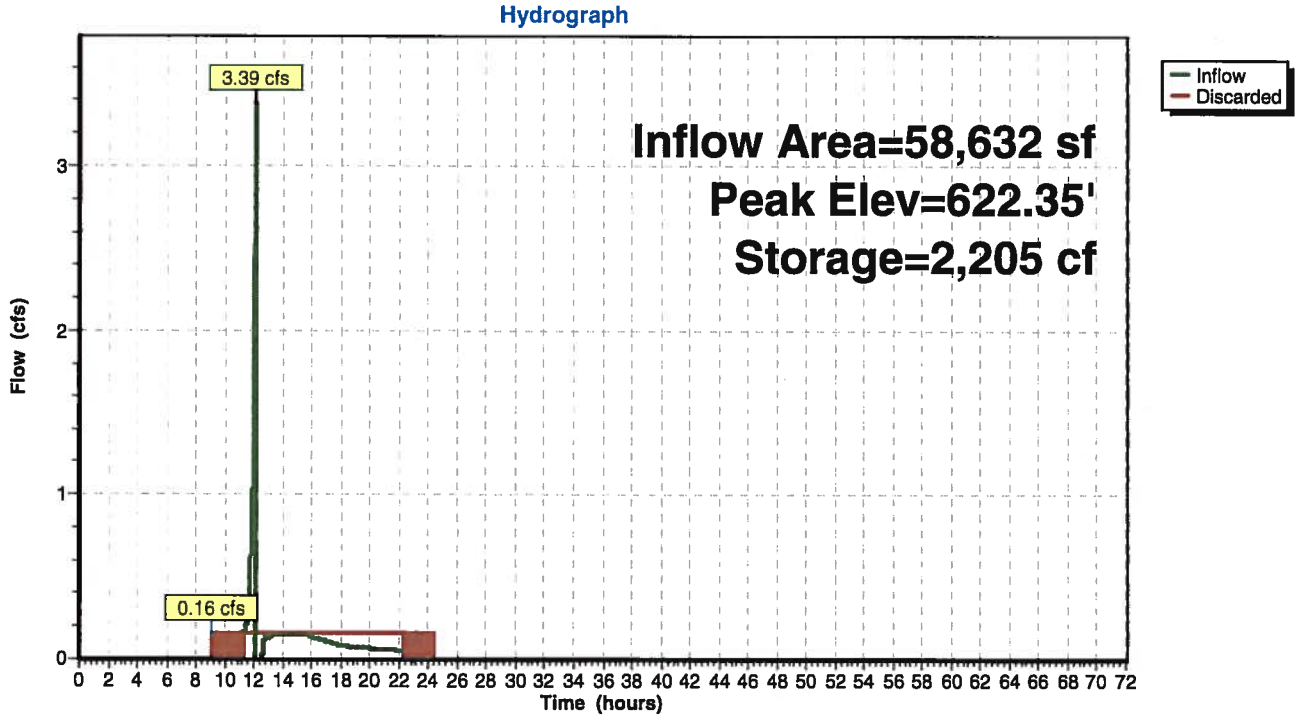
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 116.1 min (1,002.9 - 886.8)

Volume	Invert	Avail.Storage	Storage Description
#1	619.50'	1,095 cf	**Cultec R-330XLHD** x 21 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	619.00'	1,410 cf	**21.00'W x 55.00'L x 4.00'H Prismatoid** 4,620 cf Overall - 1,095 cf Embedded = 3,525 cf x 40.0% Voids
		2,505 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	619.00'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.16 cfs @ 9.08 hrs HW=619.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Pond I-1: Infiltration Sys #1



Summary for Pond SB-4:

Inflow Area =	206,559 sf, 19.37% Impervious, Inflow Depth = 1.79" for 10-yr event				
Inflow =	9.06 cfs @ 12.11 hrs, Volume=	30,864 cf			
Outflow =	0.43 cfs @ 15.94 hrs, Volume=	31,006 cf, Atten= 95%, Lag= 229.6 min			
Discarded =	0.39 cfs @ 15.94 hrs, Volume=	28,834 cf			
Primary =	0.04 cfs @ 15.94 hrs, Volume=	2,172 cf			

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 586.66' @ 15.94 hrs Surf.Area= 5,651 sf Storage= 17,537 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 504.6 min (1,361.1 - 856.6)

Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	25,857 cf	**Custom Stage Data (Irregular)** Listed below

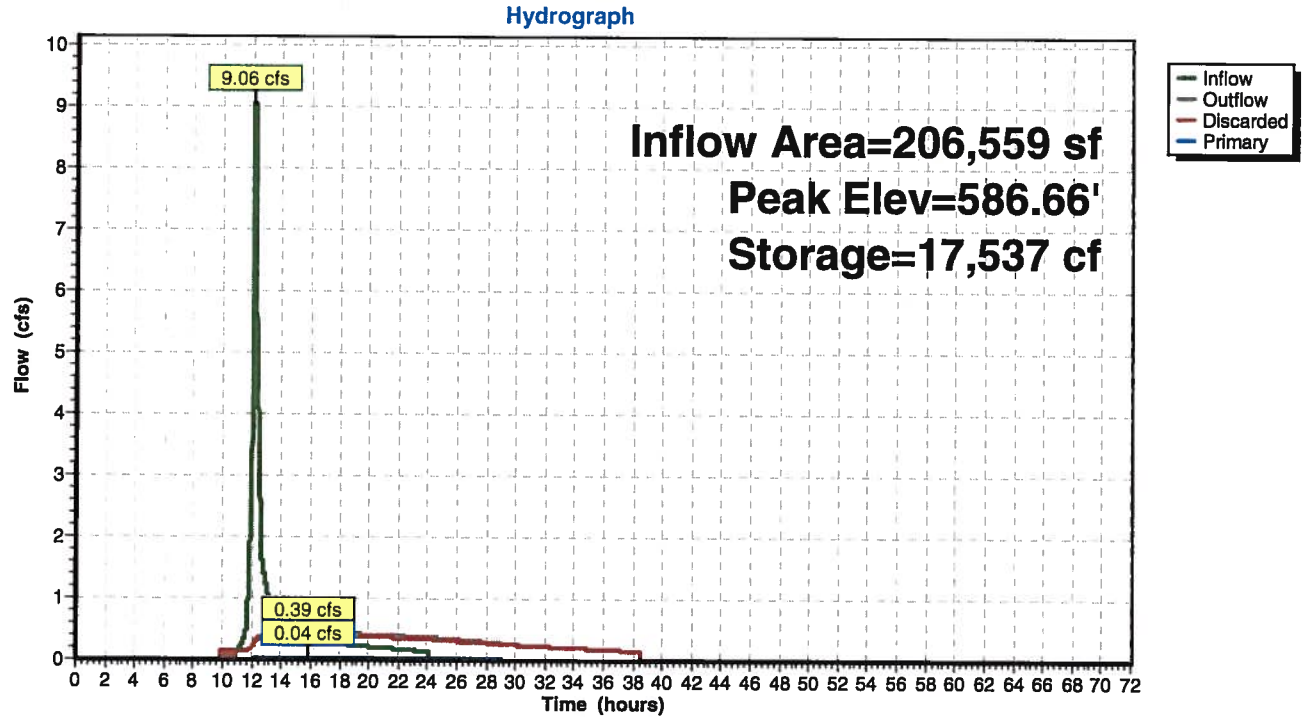
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
582.00	2,062	209.2	0	0	2,062
583.00	2,722	230.8	2,384	2,384	2,850
584.00	3,442	250.5	3,075	5,459	3,642
585.00	4,224	270.4	3,826	9,286	4,507
586.00	5,063	289.3	4,637	13,923	5,394
587.00	5,959	308.3	5,505	19,428	6,345
588.00	6,912	327.4	6,430	25,857	7,363

Device	Routing	Invert	Outlet Devices
#1	Primary	583.50'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.50' / 583.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	584.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	587.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	582.00'	**3.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.39 cfs @ 15.94 hrs HW=586.66' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.39 cfs)

Primary OutFlow Max=0.04 cfs @ 15.94 hrs HW=586.66' TW=581.01' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.04 cfs of 9.40 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 7.79 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-4:



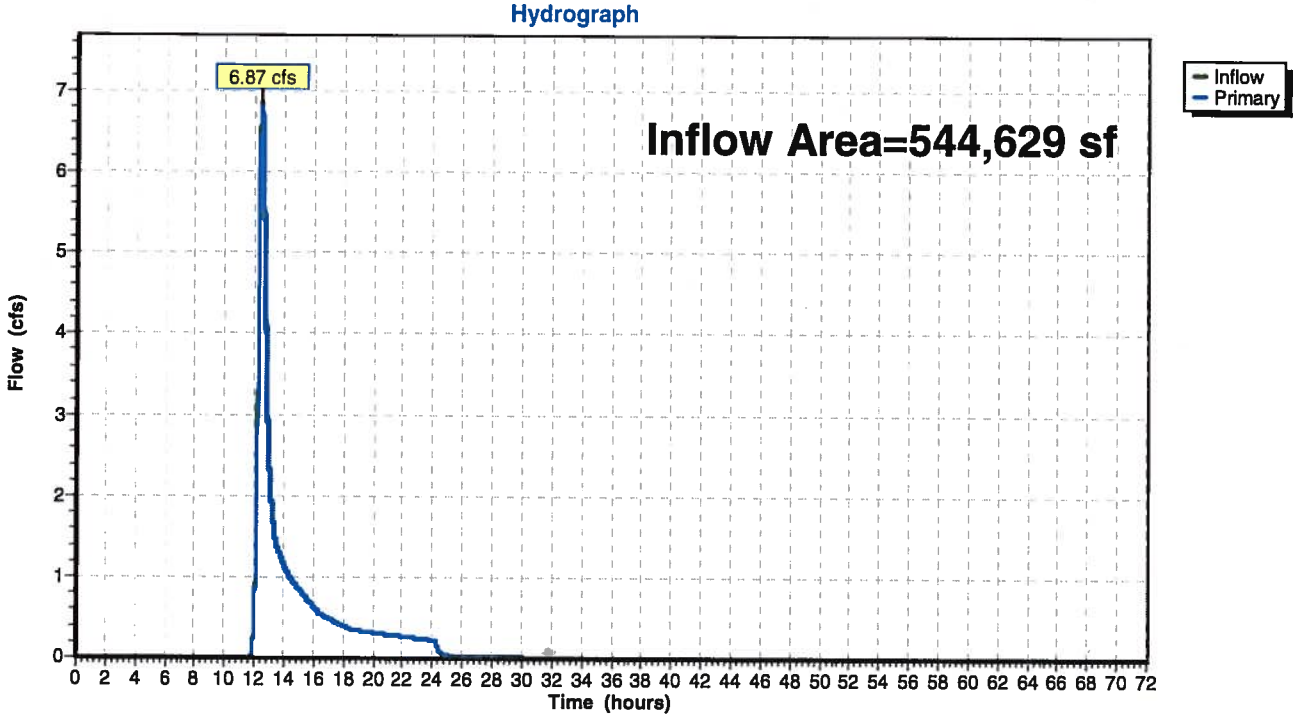
Summary for Link DP-I: DP-I

Inflow Area =	544,629 sf,	7.35% Impervious,	Inflow Depth =	0.82"	for	10-yr event
Inflow =	6.87 cfs @	12.38 hrs,	Volume=	37,369 cf		
Primary =	6.87 cfs @	12.39 hrs,	Volume=	37,369 cf,	Atten= 0%,	Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-I: DP-I

Hydrograph



Summary for Subcatchment Ia:

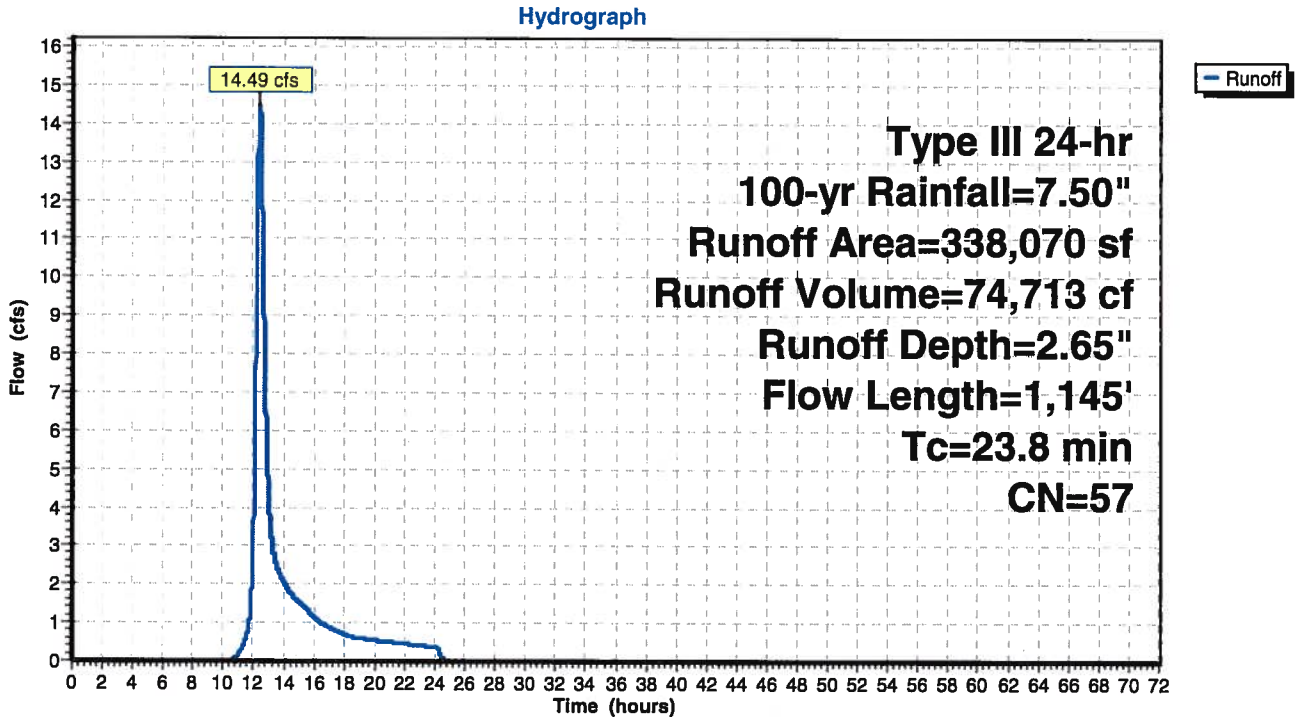
Runoff = 14.49 cfs @ 12.35 hrs, Volume= 74,713 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
42,602	61	>75% Grass cover, Good, HSG B
272,468	55	Woods, Good, HSG B
23,000	70	Woods, Good, HSG C
338,070	57	Weighted Average
338,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
10.3	60	0.0400	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	1,045	0.1187	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	1,145	Total			

Subcatchment Ia:



Summary for Subcatchment Ib:

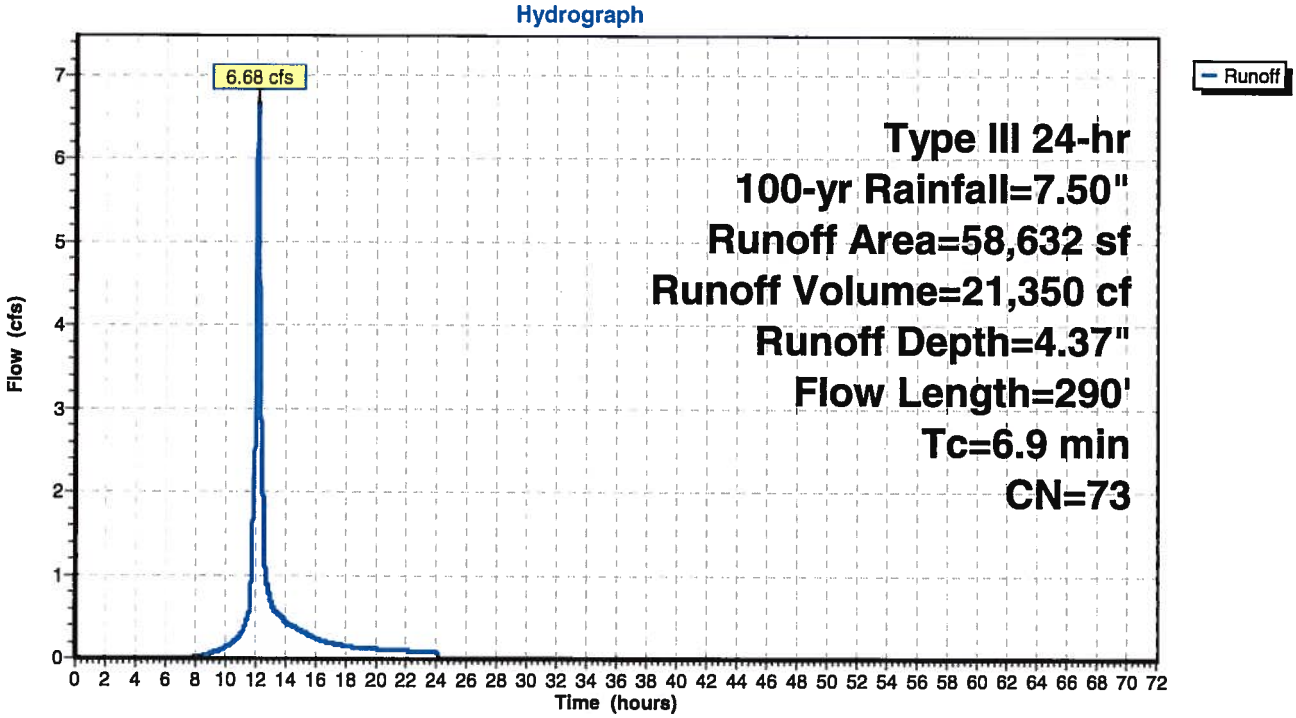
Runoff = 6.68 cfs @ 12.10 hrs, Volume= 21,350 cf, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
20,518	98	Paved parking & roofs
31,014	61	>75% Grass cover, Good, HSG B
7,100	55	Woods, Good, HSG B
58,632	73	Weighted Average
38,114		65.01% Pervious Area
20,518		34.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	36	0.0600	3.94		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	154	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.9	290	Total			

Subcatchment Ib:



Summary for Subcatchment Ic:

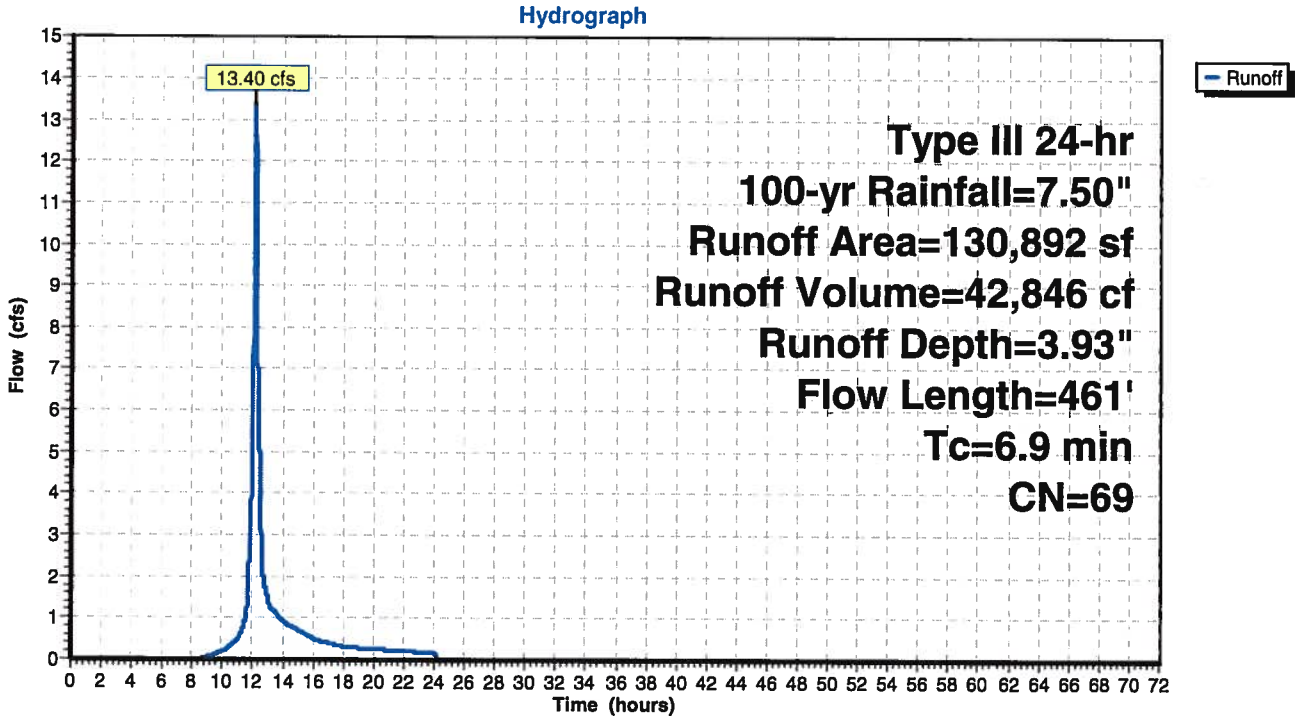
Runoff = 13.40 cfs @ 12.10 hrs, Volume= 42,846 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
30,280	98	Paved parking & roofs
81,208	61	>75% Grass cover, Good, HSG B
19,404	55	Woods, Good, HSG B
130,892	69	Weighted Average
100,612		76.87% Pervious Area
30,280		23.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	27	0.1800	2.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	214	0.0420	8.23	4.49	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
6.9	461	Total			

Subcatchment Ic:



Summary for Subcatchment Id:

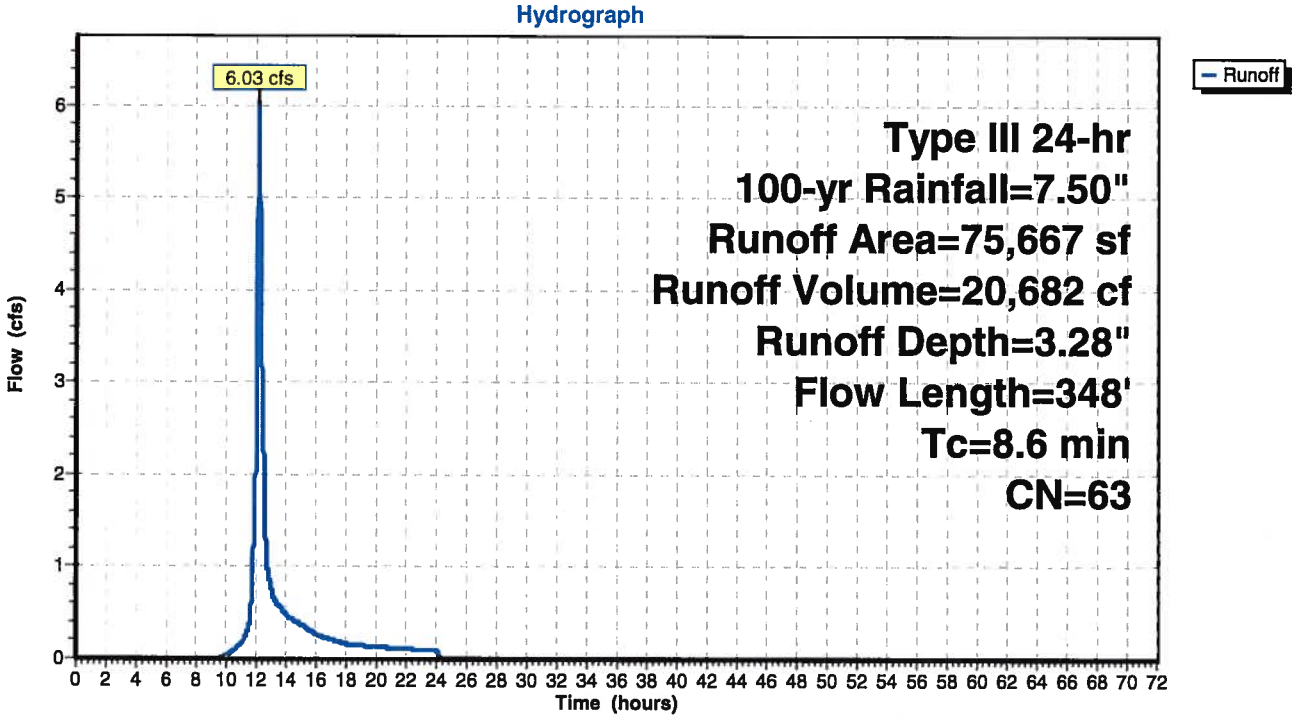
Runoff = 6.03 cfs @ 12.13 hrs, Volume= 20,682 cf, Depth= 3.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
9,736	98	Paved parking & roofs
34,108	61	>75% Grass cover, Good, HSG B
31,823	55	Woods, Good, HSG B
75,667	63	Weighted Average
65,931		87.13% Pervious Area
9,736		12.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0500	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	248	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.6	348	Total			

Subcatchment Id:



Summary for Reach Ib R:

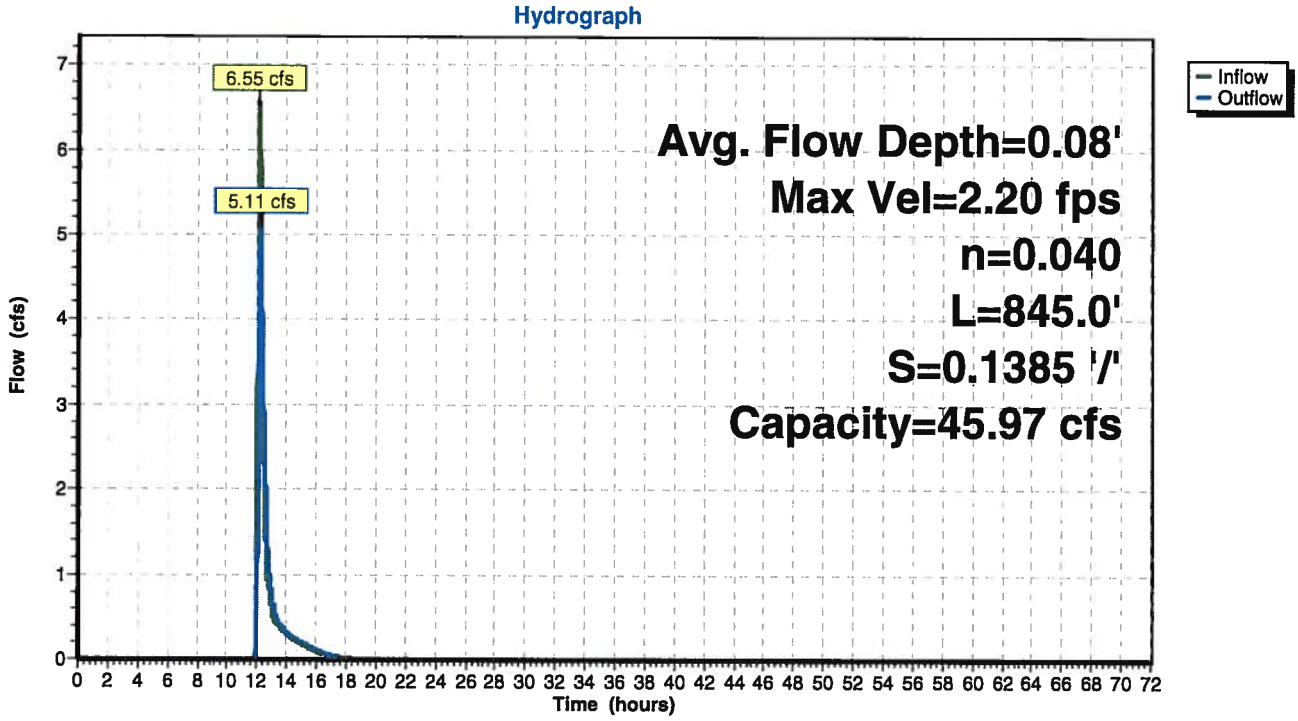
Inflow	=	6.55 cfs @	12.12 hrs,	Volume=	12,168 cf
Outflow	=	5.11 cfs @	12.19 hrs,	Volume=	12,168 cf, Atten= 22%, Lag= 3.8 min

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.20 fps, Min. Travel Time= 6.4 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 201.1 min

Peak Storage= 1,960 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 45.97 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 845.0' Slope= 0.1385 '/'
Inlet Invert= 621.00', Outlet Invert= 504.00'

Reach Ib R:



Summary for Reach Icd R:

Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 1.60" for 100-yr event
Inflow = 9.67 cfs @ 12.30 hrs, Volume= 27,607 cf
Outflow = 8.49 cfs @ 12.39 hrs, Volume= 27,607 cf, Atten= 12%, Lag= 5.4 min

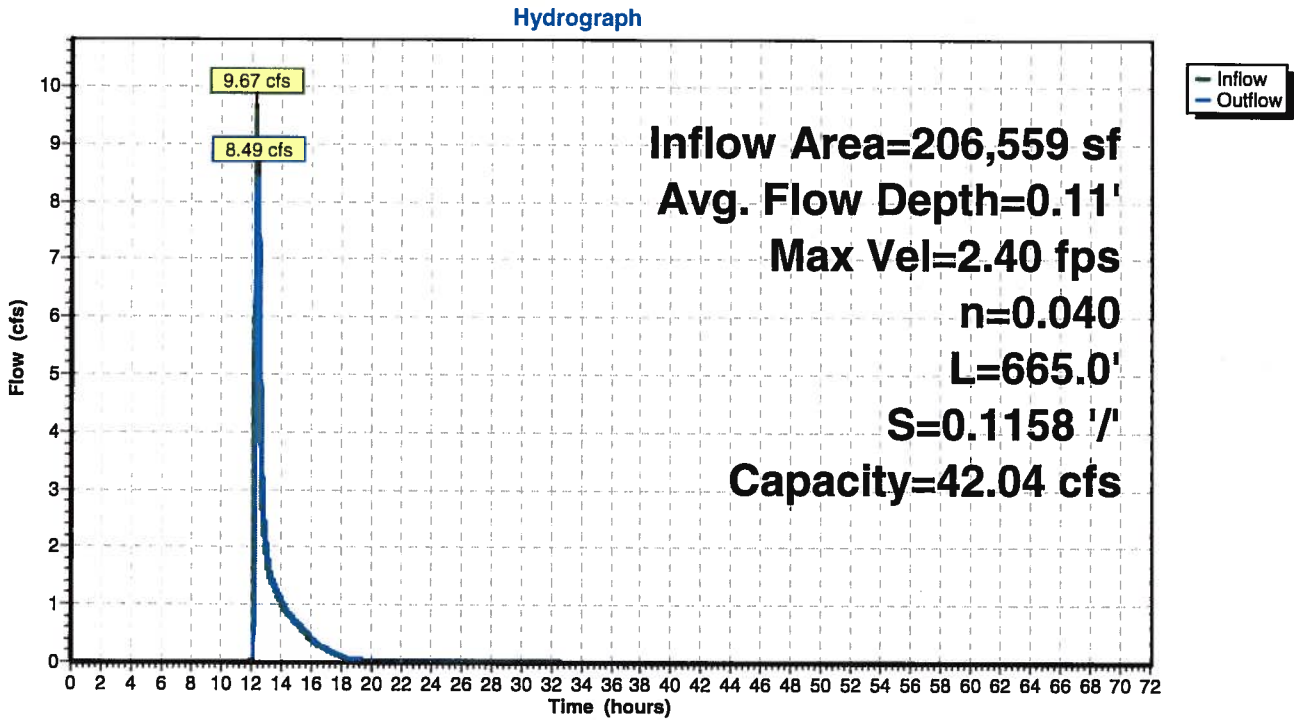
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.40 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 80.4 min

Peak Storage= 2,347 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.04 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 665.0' Slope= 0.1158 '/'
Inlet Invert= 581.00', Outlet Invert= 504.00'

‡

Reach Icd R:



Summary for Pond CB-9: CB #9

Inflow Area =	58,632 sf, 34.99% Impervious, Inflow Depth = 4.37" for 100-yr event				
Inflow =	6.68 cfs @	12.10 hrs,	Volume=	21,350 cf	
Outflow =	6.68 cfs @	12.11 hrs,	Volume=	21,350 cf,	Atten= 0%, Lag= 0.6 min
Primary =	2.04 cfs @	11.88 hrs,	Volume=	9,182 cf	
Secondary =	6.55 cfs @	12.12 hrs,	Volume=	12,168 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 622.86' @ 12.12 hrs

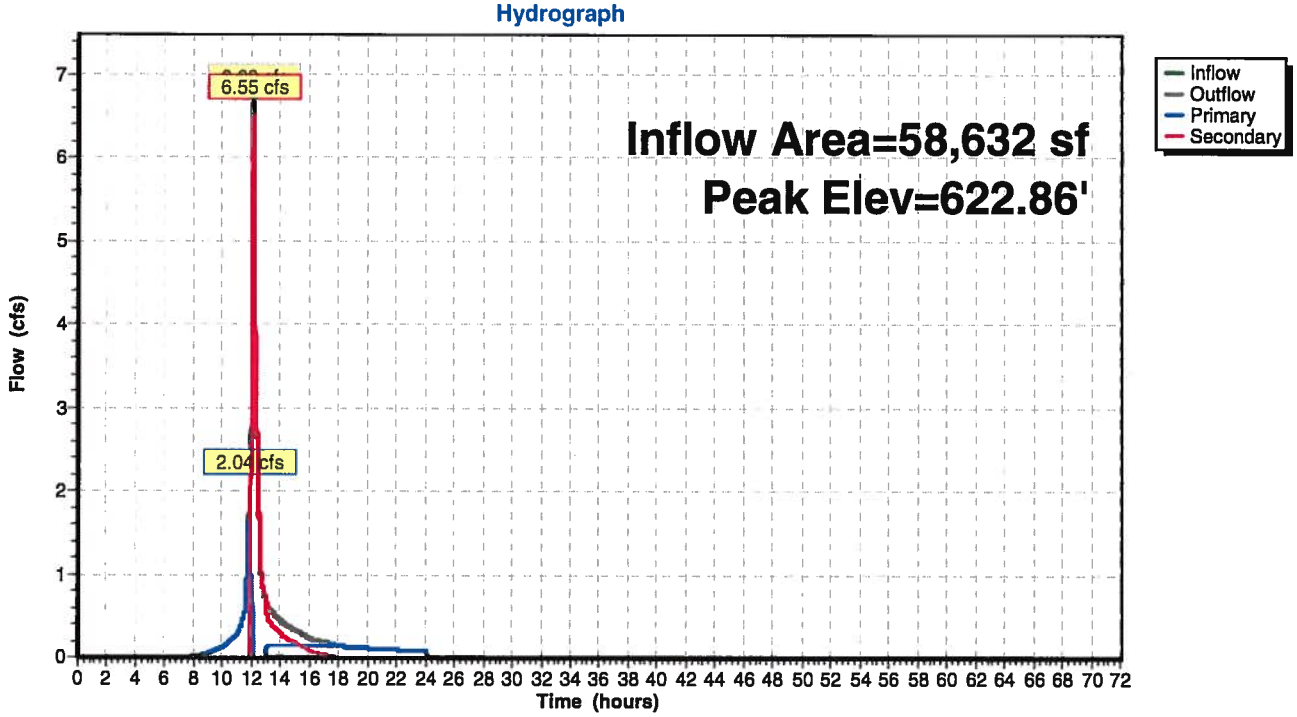
Device	Routing	Invert	Outlet Devices
#1	Primary	620.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 620.00' / 619.50' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	621.50'	**18.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.50' / 621.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.80 cfs @ 11.88 hrs HW=621.56' TW=621.54' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.80 cfs @ 0.65 fps)

Secondary OutFlow Max=6.52 cfs @ 12.12 hrs HW=622.86' TW=621.07' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 6.52 cfs @ 5.12 fps)

Pond CB-9: CB #9

Hydrograph



Summary for Pond I-1: Infiltration Sys #1

Inflow Area =	58,632 sf,	34.99% Impervious,	Inflow Depth =	1.88"	for 100-yr event
Inflow =	2.04 cfs @	11.88 hrs, Volume=	9,182 cf		
Outflow =	0.16 cfs @	7.40 hrs, Volume=	9,563 cf,	Atten= 92%,	Lag= 0.0 min
Discarded =	0.16 cfs @	7.40 hrs, Volume=	9,563 cf		

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 622.87' @ 12.12 hrs Surf.Area= 1,155 sf Storage= 2,445 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 113.5 min (1,009.2 - 895.7)

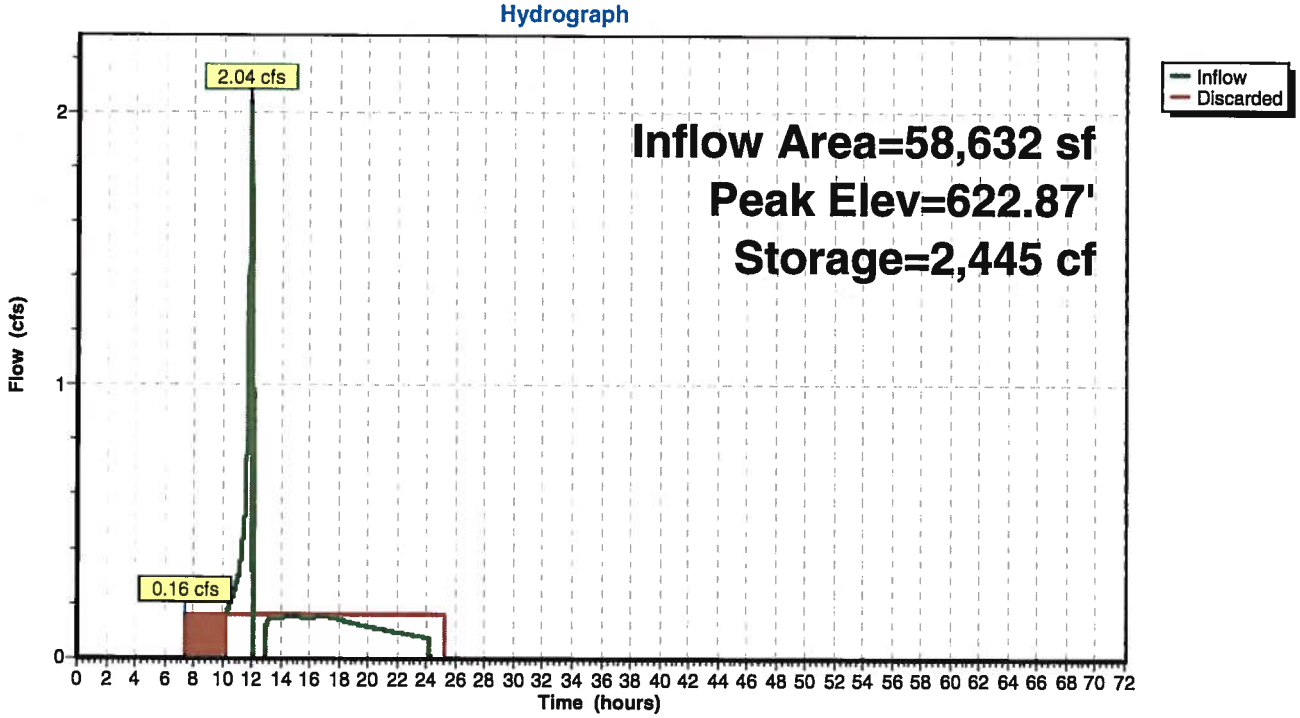
Volume	Invert	Avail.Storage	Storage Description
#1	619.50'	1,095 cf	**Cultec R-330XLHD** x 21 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	619.00'	1,410 cf	**21.00'W x 55.00'L x 4.00'H Prismatoid** 4,620 cf Overall - 1,095 cf Embedded = 3,525 cf x 40.0% Voids
		2,505 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	619.00'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.16 cfs @ 7.40 hrs HW=619.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Pond I-1: Infiltration Sys #1

Hydrograph



Summary for Pond SB-4:

Inflow Area =	206,559 sf,	19.37% Impervious,	Inflow Depth =	3.69"	for 100-yr event
Inflow =	19.29 cfs @	12.11 hrs,	Volume=	63,529 cf	
Outflow =	10.10 cfs @	12.30 hrs,	Volume=	63,684 cf,	Atten= 48%, Lag= 11.2 min
Discarded =	0.44 cfs @	12.30 hrs,	Volume=	36,077 cf	
Primary =	9.67 cfs @	12.30 hrs,	Volume=	27,607 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 587.35' @ 12.30 hrs Surf.Area= 6,296 sf Storage= 21,700 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 338.9 min (1,174.3 - 835.4)

Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	25,857 cf	**Custom Stage Data (Irregular)** Listed below

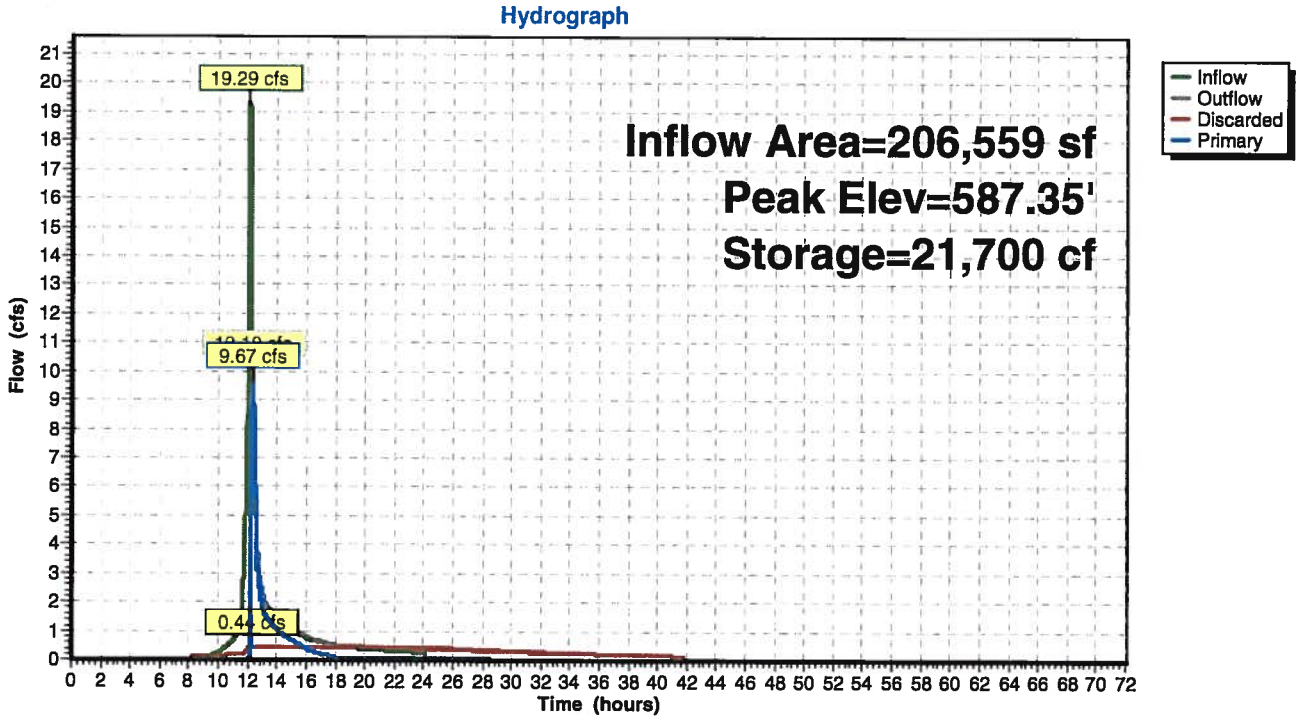
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
582.00	2,062	209.2	0	0	2,062
583.00	2,722	230.8	2,384	2,384	2,850
584.00	3,442	250.5	3,075	5,459	3,642
585.00	4,224	270.4	3,826	9,286	4,507
586.00	5,063	289.3	4,637	13,923	5,394
587.00	5,959	308.3	5,505	19,428	6,345
588.00	6,912	327.4	6,430	25,857	7,363

Device	Routing	Invert	Outlet Devices
#1	Primary	583.50'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.50' / 583.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	584.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	587.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	582.00'	**3.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.44 cfs @ 12.30 hrs HW=587.35' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.44 cfs)

Primary OutFlow Max=9.66 cfs @ 12.30 hrs HW=587.35' TW=581.09' (Dynamic Tailwater)
└**1=Culvert** (Passes 9.66 cfs of 10.62 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.76 fps)
└**3=Orifice/Grate** (Weir Controls 9.61 cfs @ 1.94 fps)

Pond SB-4:



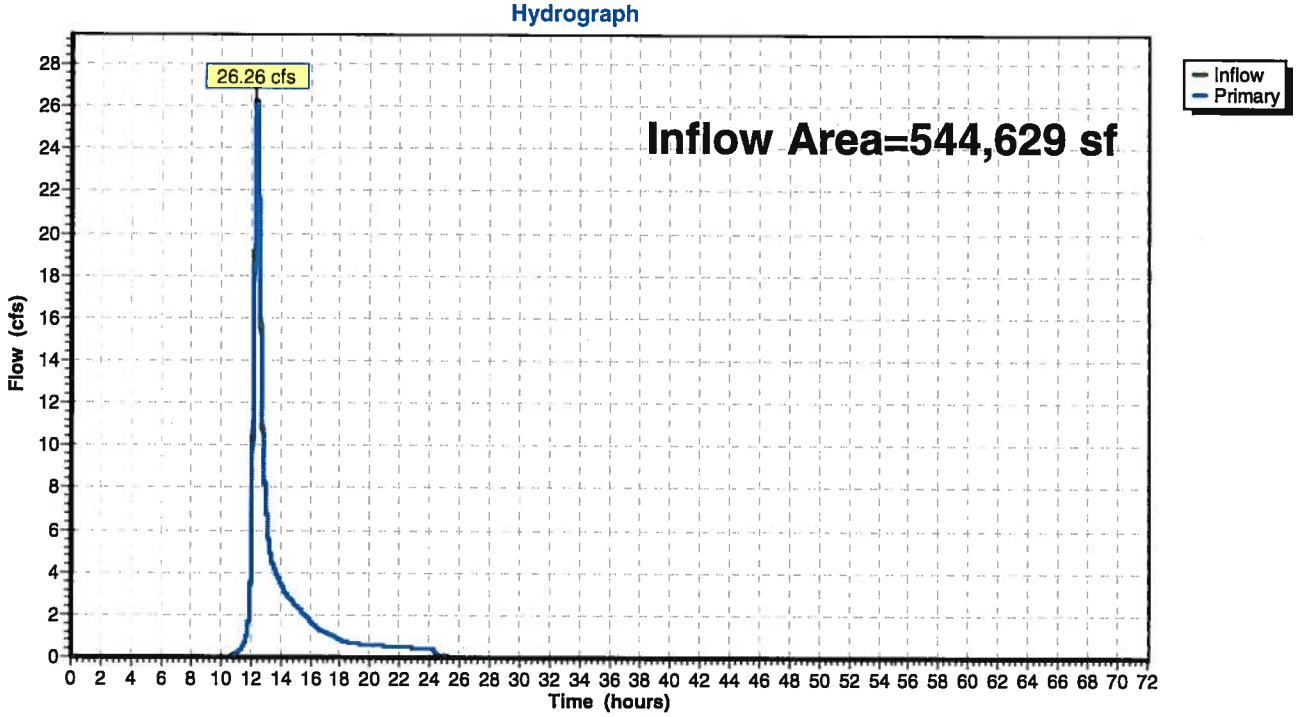
Summary for Link DP-I: DP-I

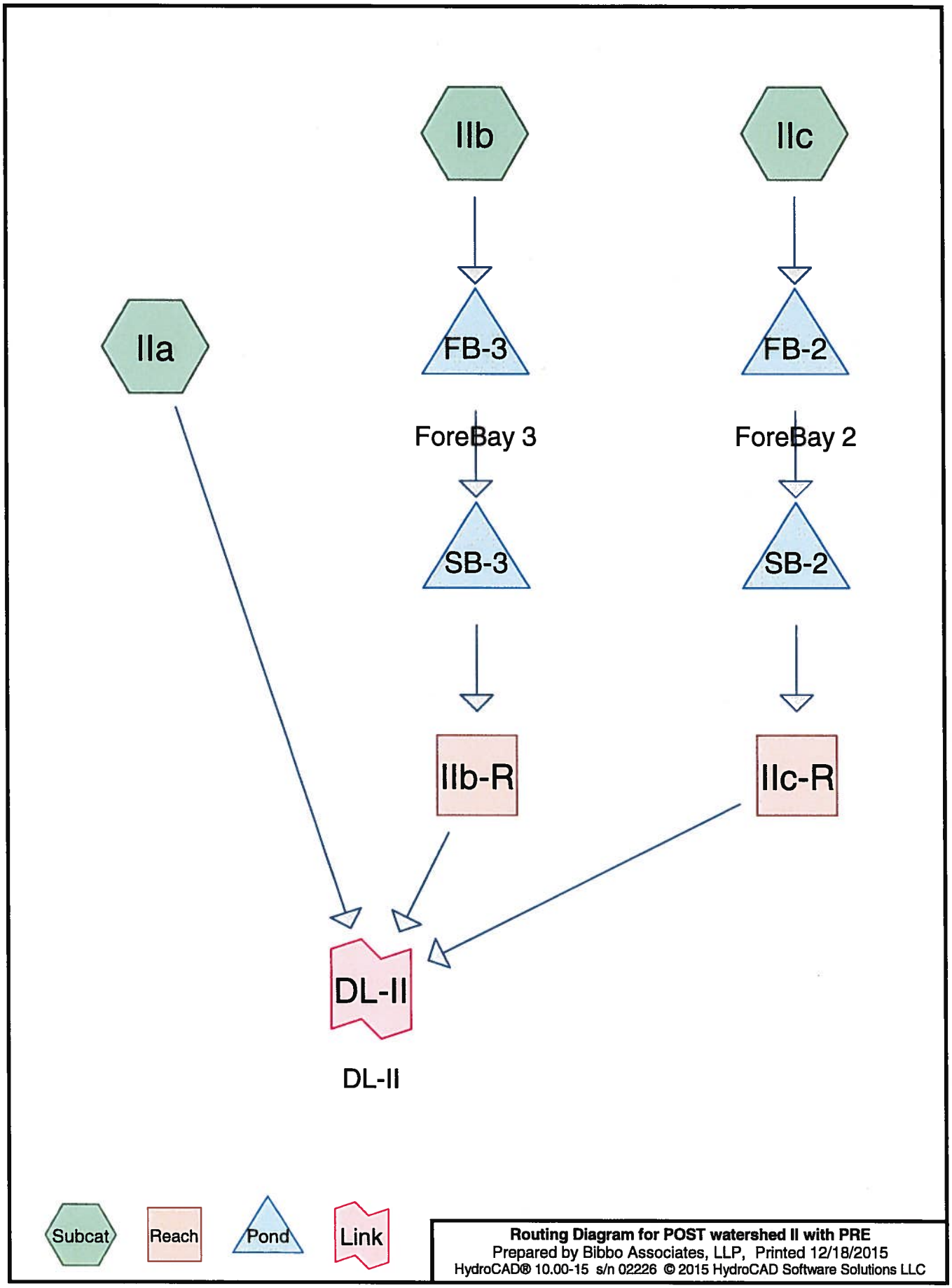
Inflow Area = 544,629 sf, 7.35% Impervious, Inflow Depth = 2.52" for 100-yr event
Inflow = 26.26 cfs @ 12.36 hrs, Volume= 114,488 cf
Primary = 26.26 cfs @ 12.37 hrs, Volume= 114,488 cf, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-I: DP-I

Hydrograph





Routing Diagram for POST watershed II with PRE
Prepared by Bibbo Associates, LLP, Printed 12/18/2015
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	SB-2	596.00	595.00	74.0	0.0135	0.013	12.0	0.0	0.0
2	SB-3	596.00	595.50	37.0	0.0135	0.013	12.0	0.0	0.0

Summary for Subcatchment IIa:

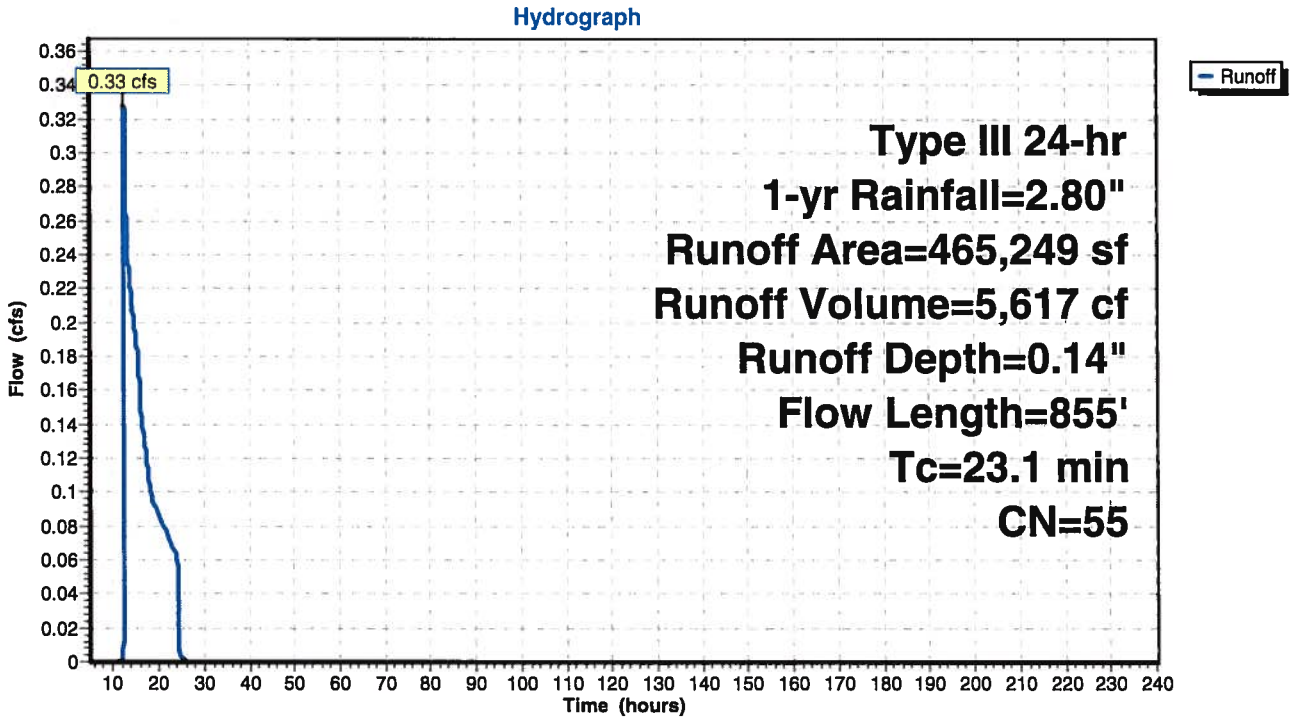
Runoff = 0.33 cfs @ 12.69 hrs, Volume= 5,617 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
16,460	61	>75% Grass cover, Good, HSG B
448,789	55	Woods, Good, HSG B
465,249	55	Weighted Average
465,249		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	755	0.1126	1.68		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	855	Total			

Subcatchment IIa:



Summary for Subcatchment IIb:

Runoff = 0.67 cfs @ 12.12 hrs, Volume= 2,958 cf, Depth= 0.45"

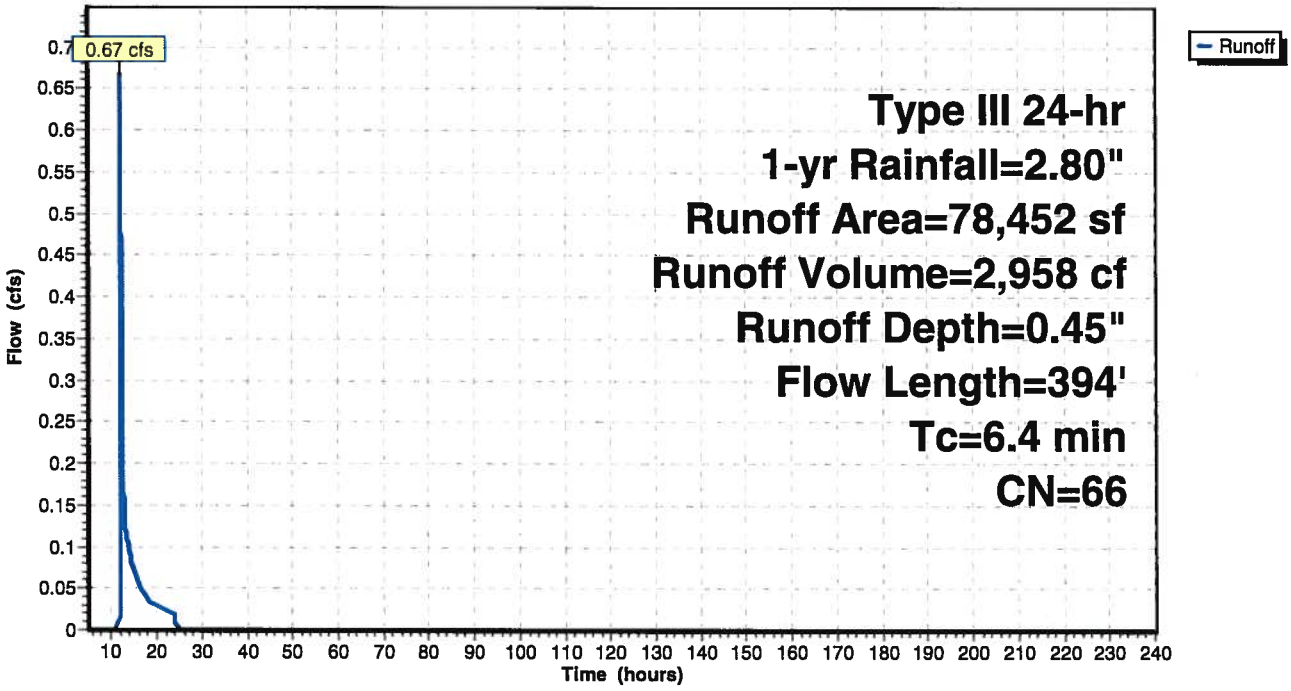
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
11,791	98	Paved parking & roofs
4,211	55	Woods, Good, HSG B
62,450	61	>75% Grass cover, Good, HSG B
78,452	66	Weighted Average
66,661		84.97% Pervious Area
11,791		15.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.1000	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.5	294	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.4	394	Total			

Subcatchment IIb:

Hydrograph



Summary for Subcatchment IIc:

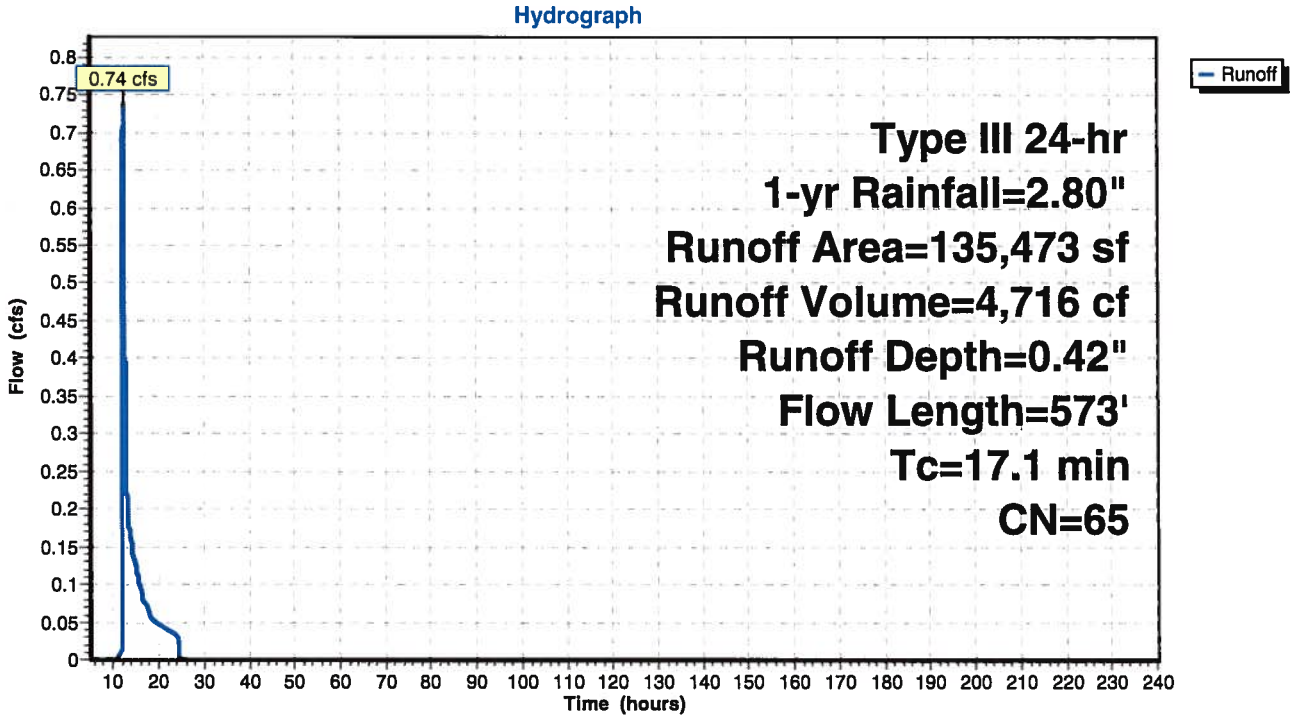
Runoff = 0.74 cfs @ 12.33 hrs, Volume= 4,716 cf, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
98,316	61	>75% Grass cover, Good, HSG B
19,056	98	Paved parking & roofs
18,101	55	Woods, Good, HSG B
135,473	65	Weighted Average
116,417		85.93% Pervious Area
19,056		14.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	290	0.0827	2.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	183	0.0270	5.79	28.97	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Stream, clean & straight
17.1	573	Total			

Subcatchment IIc:



Summary for Reach IIb-R:

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

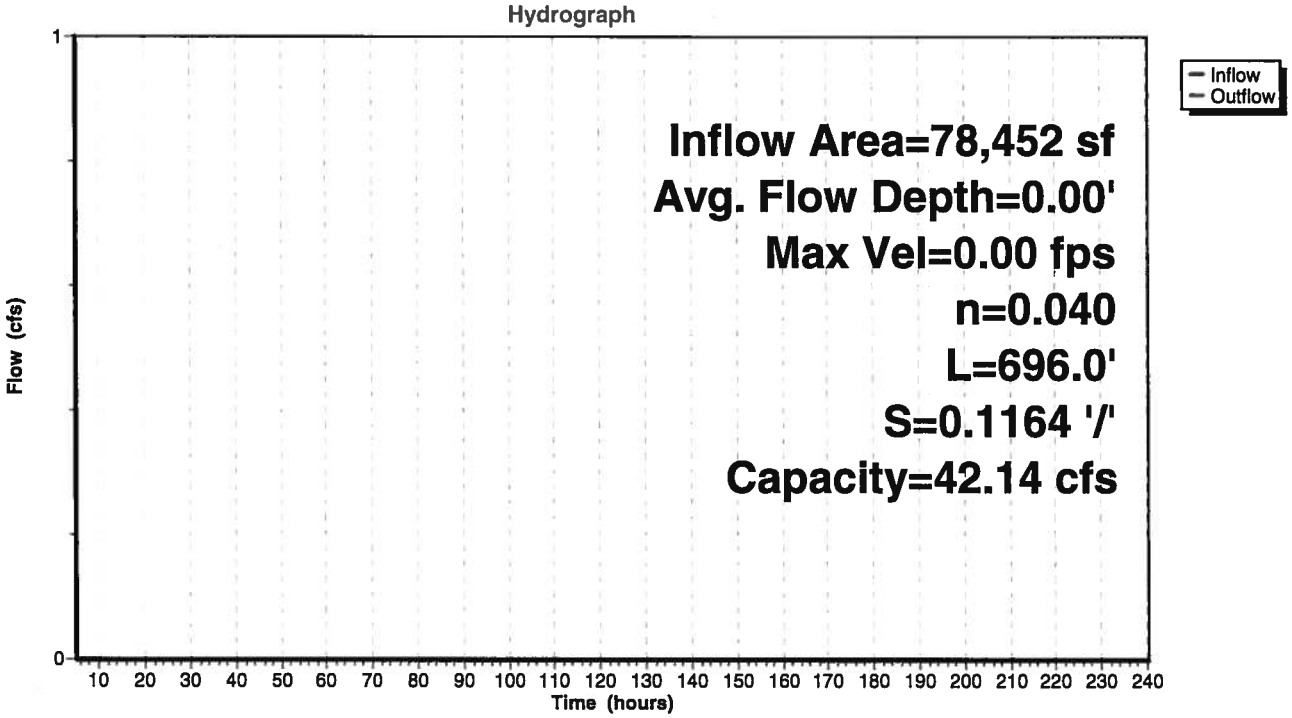
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.14 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 696.0' Slope= 0.1164 '/'
Inlet Invert= 596.00', Outlet Invert= 515.00'

‡

Reach IIb-R:



Summary for Reach IIc-R:

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

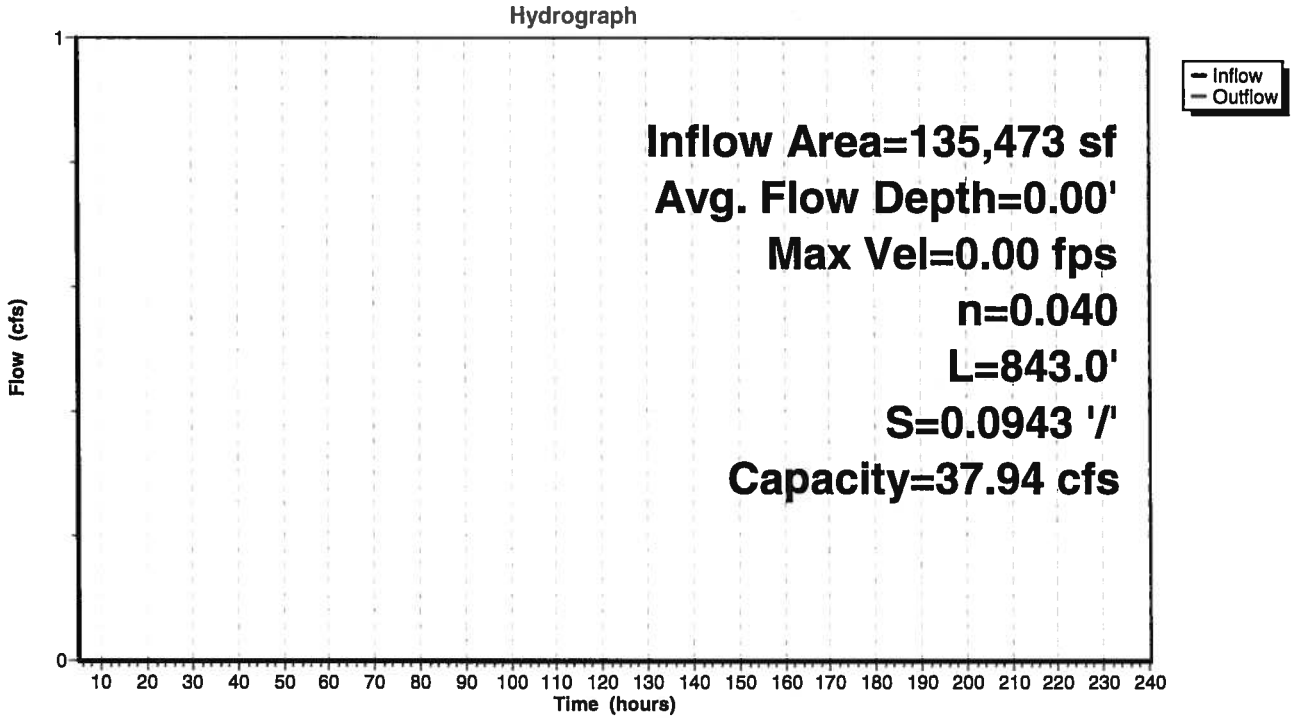
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 37.94 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 843.0' Slope= 0.0943 '/'
Inlet Invert= 594.50', Outlet Invert= 515.00'

‡

Reach IIc-R:



Summary for Pond FB-2: ForeBay 2

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 0.74 cfs @ 12.33 hrs, Volume= 4,716 cf
Outflow = 0.74 cfs @ 12.33 hrs, Volume= 4,716 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.74 cfs @ 12.33 hrs, Volume= 4,716 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 1,323 sf Storage= 2,536 cf
Peak Elev= 598.05' @ 12.33 hrs Surf.Area= 1,323 sf Storage= 2,536 cf

Plug-Flow detention time= 328.0 min calculated for 2,180 cf (46% of inflow)
Center-of-Mass det. time= 0.0 min (920.3 - 920.3)

Volume	Invert	Avail.Storage	Storage Description
#1	594.00'	2,536 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

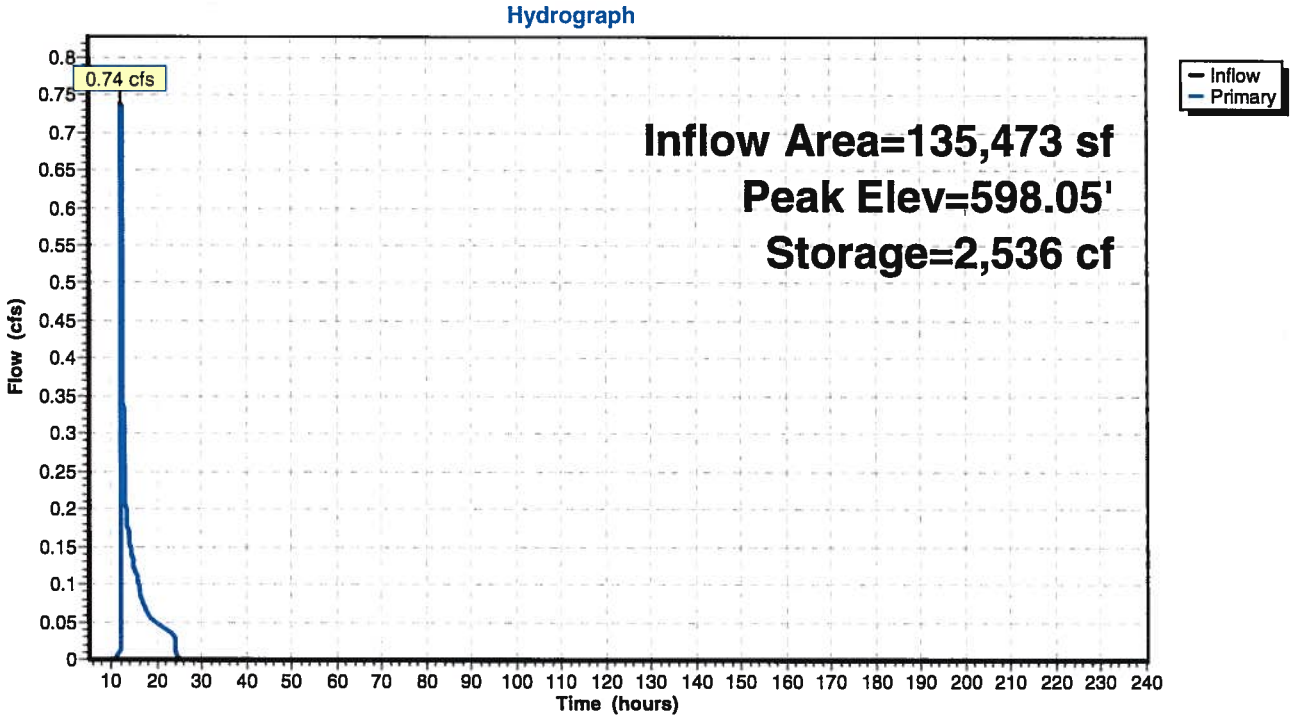
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
594.00	136	50.5	0	0	136
595.00	325	75.0	224	224	389
596.00	586	99.3	449	673	737
597.00	921	124.0	747	1,420	1,190
598.00	1,323	144.0	1,116	2,536	1,637

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**30.5' long x 6.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.74 cfs @ 12.33 hrs HW=598.05' TW=596.28' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.74 cfs @ 0.51 fps)

Pond FB-2: ForeBay 2



Summary for Pond FB-3: ForeBay 3

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 0.45" for 1-yr event
Inflow = 0.67 cfs @ 12.12 hrs, Volume= 2,958 cf
Outflow = 0.67 cfs @ 12.12 hrs, Volume= 2,958 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.67 cfs @ 12.12 hrs, Volume= 2,958 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 784 sf Storage= 1,097 cf
Peak Elev= 598.03' @ 12.12 hrs Surf.Area= 784 sf Storage= 1,097 cf

Plug-Flow detention time= 225.4 min calculated for 1,861 cf (63% of inflow)
Center-of-Mass det. time= 0.0 min (905.2 - 905.2)

Volume	Invert	Avail.Storage	Storage Description
#1	595.00'	1,097 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

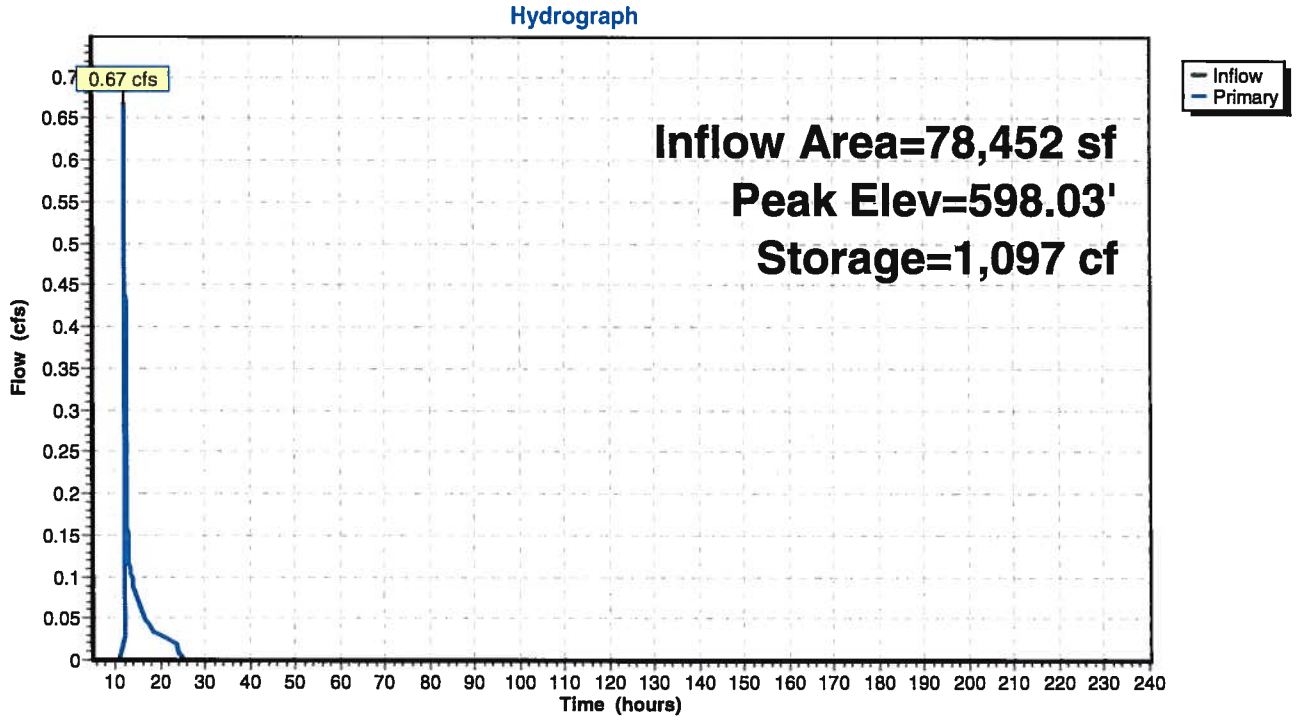
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
595.00	55	45.0	0	0	55
596.00	228	70.0	132	132	291
597.00	473	93.0	343	475	600
598.00	784	114.0	622	1,097	961

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**46.0' long x 6.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.67 cfs @ 12.12 hrs HW=598.03' TW=596.14' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 0.67 cfs @ 0.43 fps)

Pond FB-3: ForeBay 3



Summary for Pond SB-2:

Inflow Area =	135,473 sf,	14.07% Impervious,	Inflow Depth =	0.42"	for 1-yr event
Inflow =	0.74 cfs @	12.33 hrs, Volume=	4,716 cf		
Outflow =	0.12 cfs @	15.15 hrs, Volume=	4,716 cf,	Atten= 84%,	Lag= 169.1 min
Discarded =	0.12 cfs @	15.15 hrs, Volume=	4,716 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 597.00' @ 15.15 hrs Surf.Area= 1,851 sf Storage= 1,591 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 151.8 min (1,072.1 - 920.3)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	26,019 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

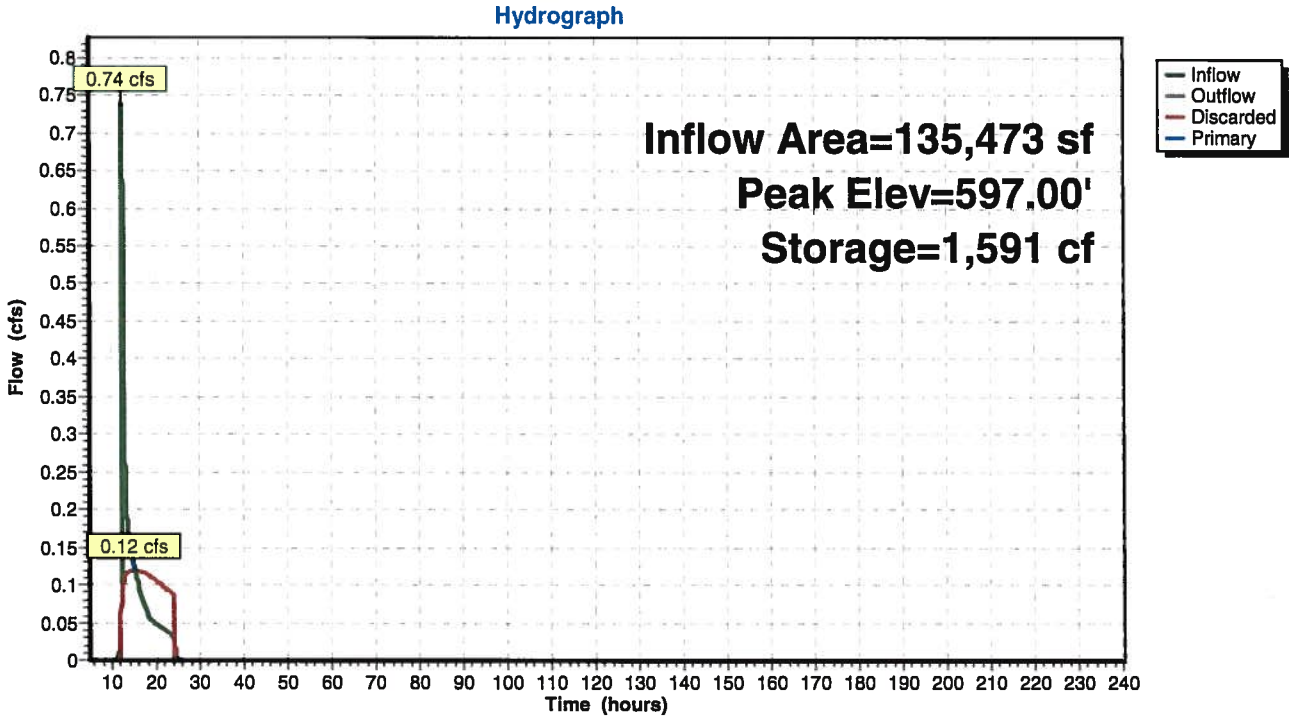
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,330	163.0	0	0	1,330
597.00	1,848	182.0	1,582	1,582	1,879
598.00	2,436	202.0	2,135	3,717	2,520
600.00	6,022	332.0	8,192	11,909	8,070
601.00	7,047	351.0	6,528	18,437	9,158
602.00	8,129	370.0	7,582	26,019	10,306

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	598.40'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	600.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**2.800 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.12 cfs @ 15.15 hrs HW=597.00' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=596.00' TW=594.50' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
  └**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-2:



Summary for Pond SB-3:

Inflow Area =	78,452 sf,	15.03% Impervious,	Inflow Depth =	0.45"	for 1-yr event
Inflow =	0.67 cfs @	12.12 hrs, Volume=	2,958 cf		
Outflow =	0.05 cfs @	16.87 hrs, Volume=	2,959 cf,	Atten= 93%,	Lag= 284.9 min
Discarded =	0.05 cfs @	16.87 hrs, Volume=	2,959 cf		
Primary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 596.87' @ 16.87 hrs Surf.Area= 1,949 sf Storage= 1,452 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 386.8 min (1,292.0 - 905.2)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	25,081 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

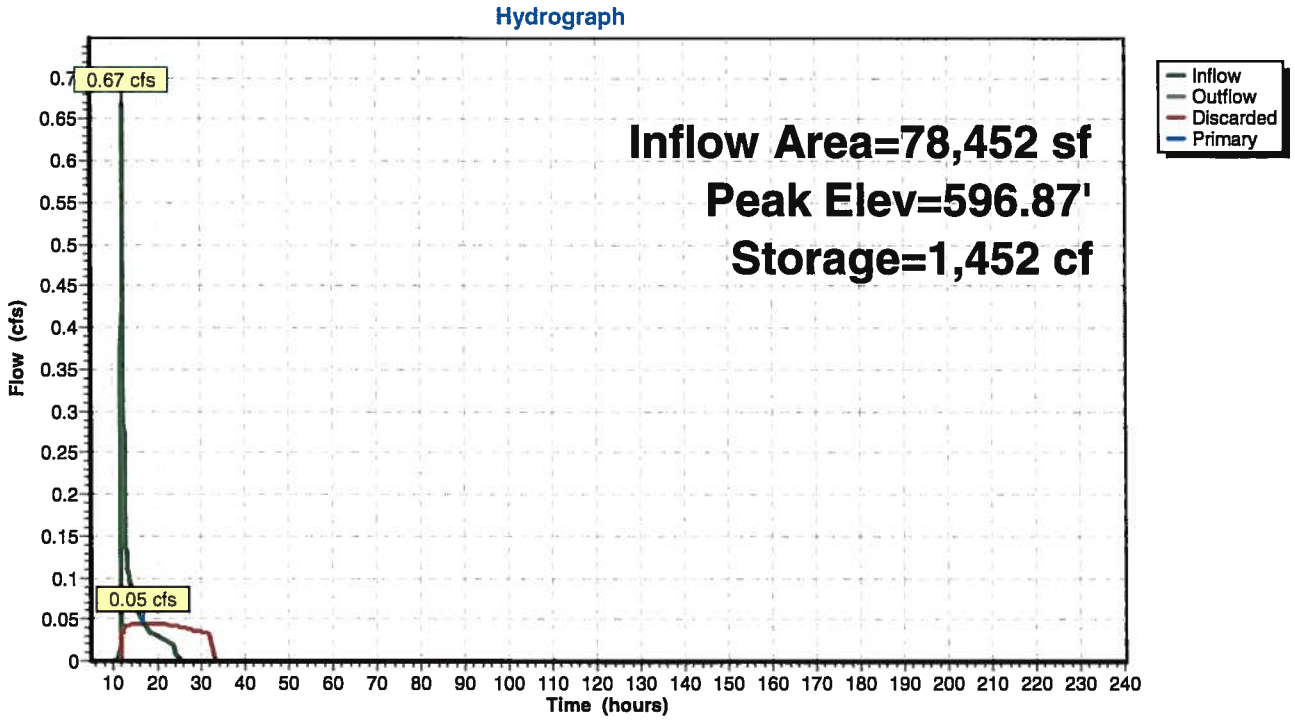
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,406	200.0	0	0	1,406
597.00	2,039	221.0	1,713	1,713	2,140
598.00	2,703	239.8	2,363	4,076	2,867
600.00	5,534	300.0	8,070	12,146	5,509
601.00	6,463	314.0	5,992	18,138	6,259
602.00	7,433	338.0	6,942	25,081	7,546

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.50' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	597.80'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Device 1	601.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.05 cfs @ 16.87 hrs HW=596.87' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=596.00' TW=596.00' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-3:



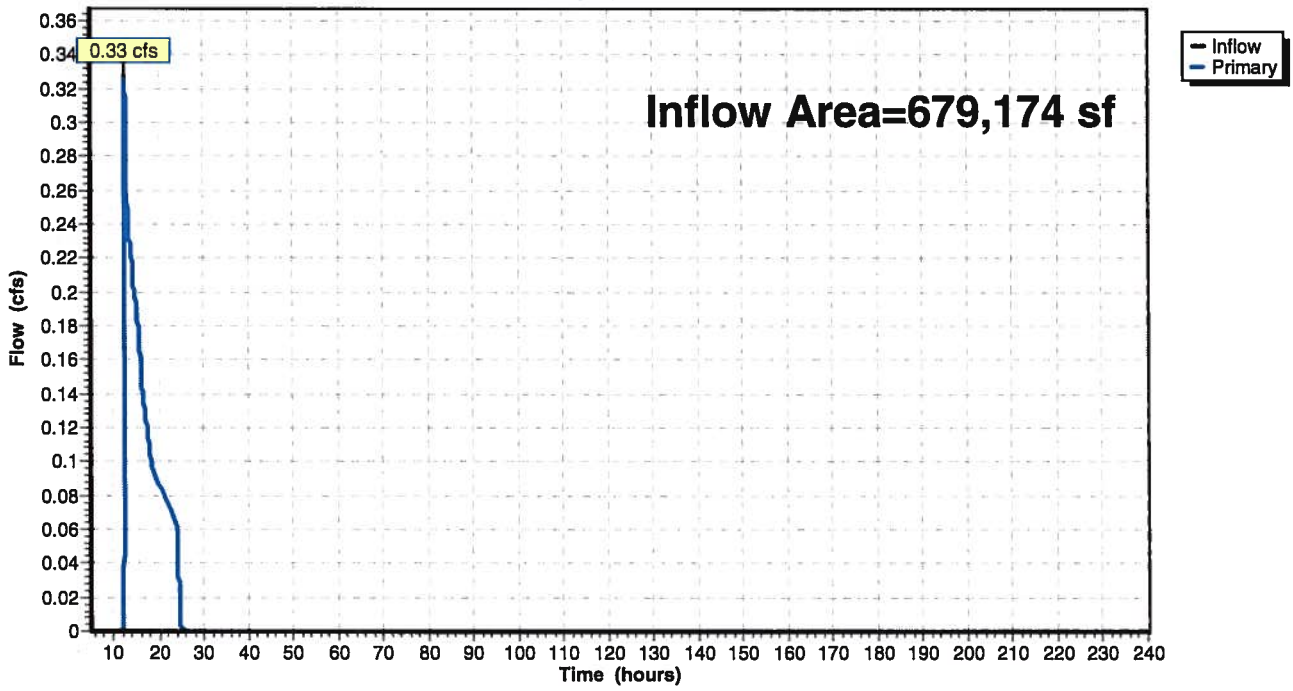
Summary for Link DL-II: DL-II

Inflow Area = 679,174 sf, 4.54% Impervious, Inflow Depth = 0.10" for 1-yr event
Inflow = 0.33 cfs @ 12.69 hrs, Volume= 5,617 cf
Primary = 0.33 cfs @ 12.69 hrs, Volume= 5,617 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DL-II: DL-II

Hydrograph



Summary for Subcatchment IIa:

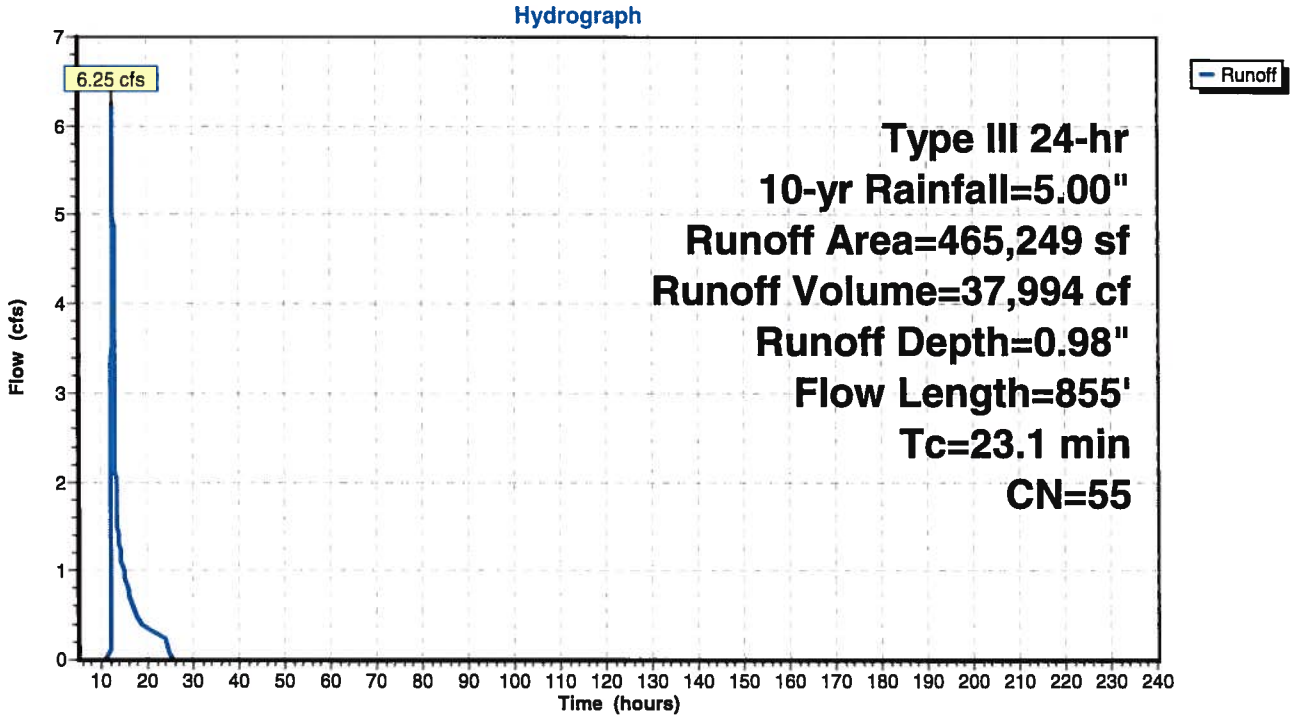
Runoff = 6.25 cfs @ 12.40 hrs, Volume= 37,994 cf, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
16,460	61	>75% Grass cover, Good, HSG B
448,789	55	Woods, Good, HSG B
465,249	55	Weighted Average
465,249		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	755	0.1126	1.68		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	855	Total			

Subcatchment IIa:



Summary for Subcatchment IIb:

Runoff = 3.45 cfs @ 12.10 hrs, Volume= 11,295 cf, Depth= 1.73"

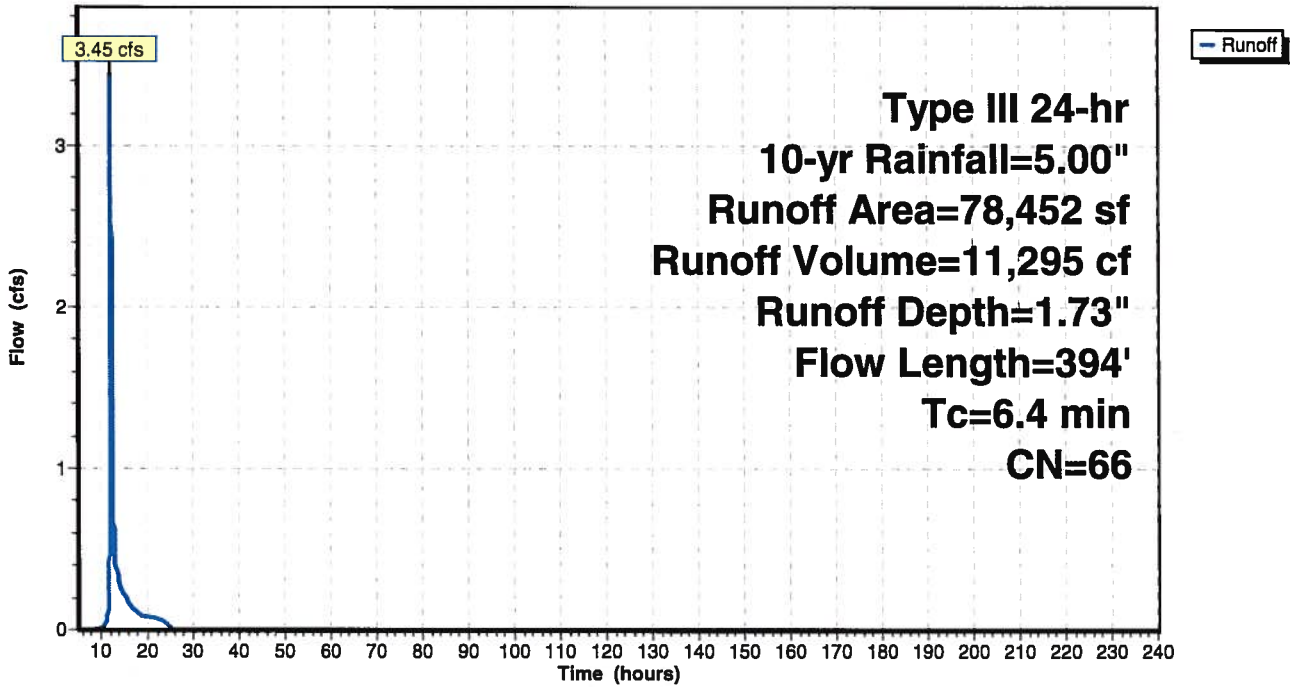
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
11,791	98	Paved parking & roofs
4,211	55	Woods, Good, HSG B
62,450	61	>75% Grass cover, Good, HSG B
78,452	66	Weighted Average
66,661		84.97% Pervious Area
11,791		15.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.1000	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.5	294	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.4	394	Total			

Subcatchment IIb:

Hydrograph



Summary for Subcatchment IIc:

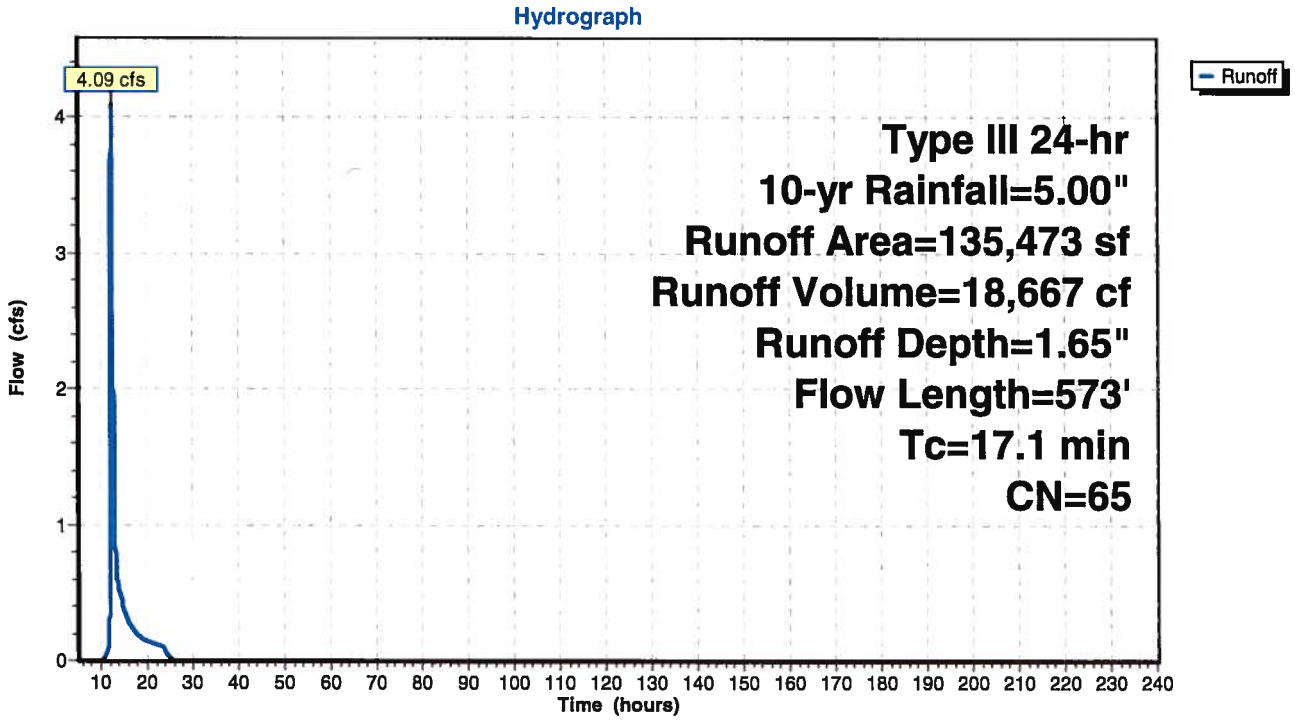
Runoff = 4.09 cfs @ 12.25 hrs, Volume= 18,667 cf, Depth= 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
98,316	61	>75% Grass cover, Good, HSG B
19,056	98	Paved parking & roofs
18,101	55	Woods, Good, HSG B
135,473	65	Weighted Average
116,417		85.93% Pervious Area
19,056		14.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	290	0.0827	2.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	183	0.0270	5.79	28.97	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Stream, clean & straight
17.1	573	Total			

Subcatchment IIc:



Summary for Reach IIb-R:

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 0.17" for 10-yr event
Inflow = 0.02 cfs @ 17.57 hrs, Volume= 1,109 cf
Outflow = 0.02 cfs @ 17.97 hrs, Volume= 1,109 cf, Atten= 0%, Lag= 23.9 min

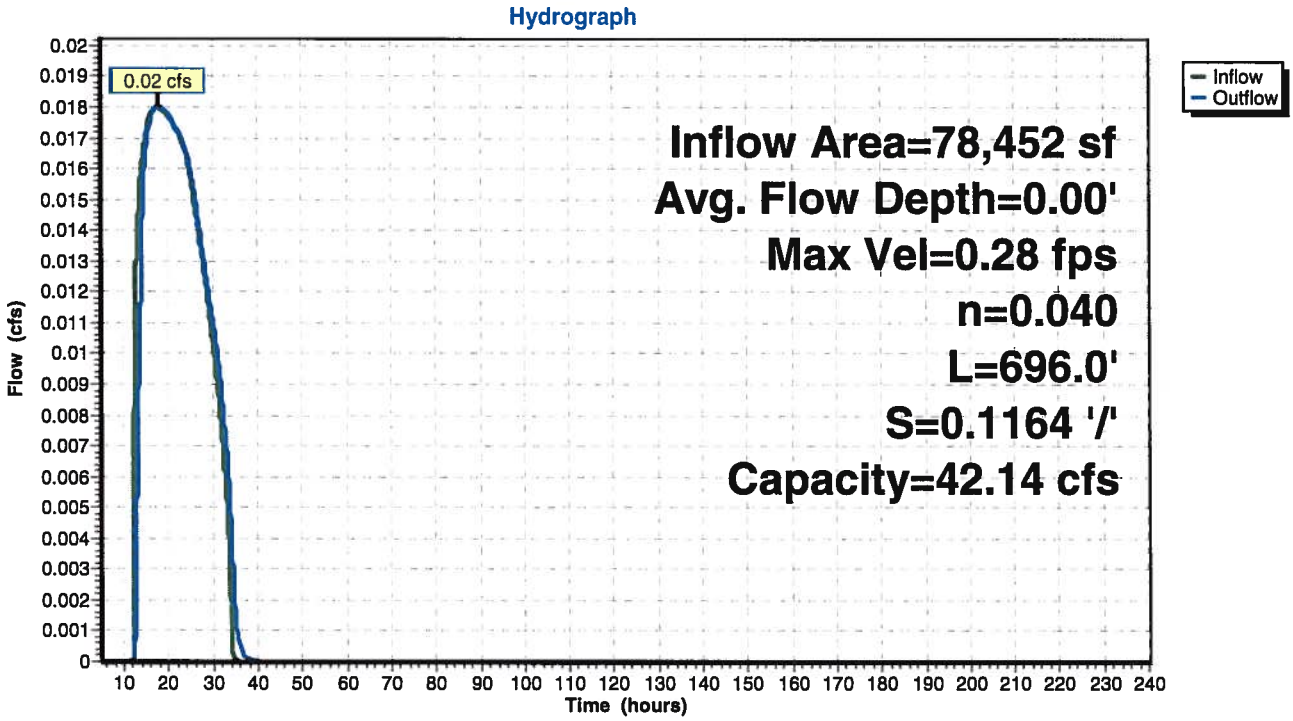
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 40.8 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 45.5 min

Peak Storage= 44 cf @ 17.97 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.14 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 696.0' Slope= 0.1164 '/'
Inlet Invert= 596.00', Outlet Invert= 515.00'

‡

Reach IIb-R:



Summary for Reach IIc-R:

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 0.08" for 10-yr event
Inflow = 0.03 cfs @ 15.26 hrs, Volume= 925 cf
Outflow = 0.03 cfs @ 15.95 hrs, Volume= 925 cf, Atten= 1%, Lag= 41.4 min

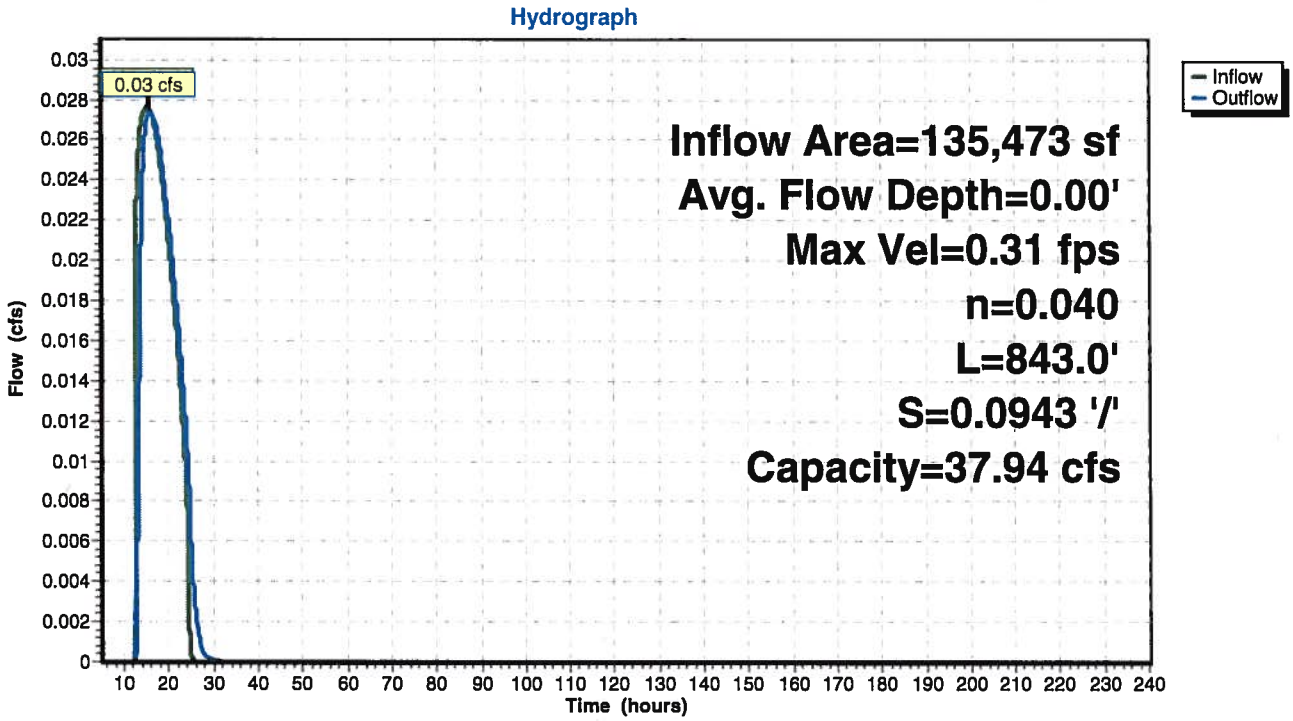
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.31 fps, Min. Travel Time= 45.3 min
Avg. Velocity = 0.25 fps, Avg. Travel Time= 55.8 min

Peak Storage= 75 cf @ 15.95 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 37.94 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 843.0' Slope= 0.0943 '/'
Inlet Invert= 594.50', Outlet Invert= 515.00'

‡

Reach IIc-R:



Summary for Pond FB-2: ForeBay 2

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 1.65" for 10-yr event
Inflow = 4.09 cfs @ 12.25 hrs, Volume= 18,667 cf
Outflow = 4.09 cfs @ 12.25 hrs, Volume= 18,588 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.09 cfs @ 12.25 hrs, Volume= 18,588 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 1,323 sf Storage= 2,536 cf
Peak Elev= 599.54' @ 15.21 hrs Surf.Area= 1,323 sf Storage= 2,536 cf

Plug-Flow detention time= 87.3 min calculated for 16,051 cf (86% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

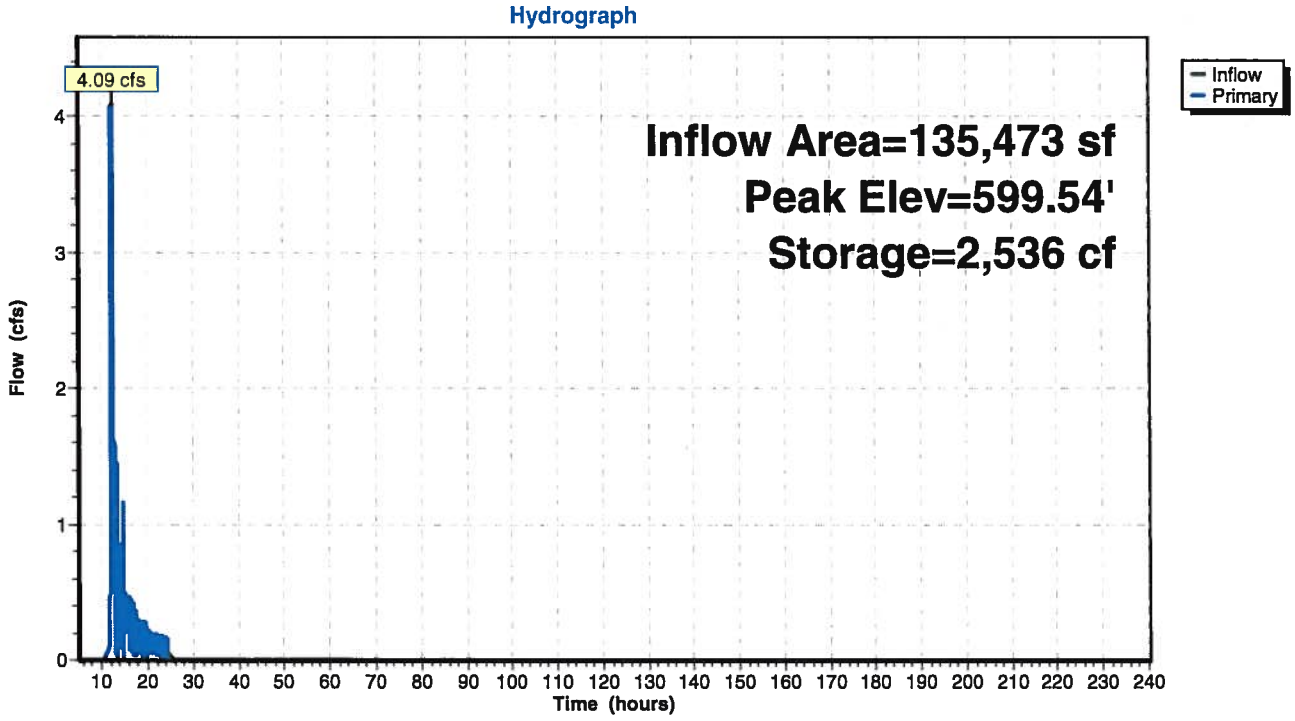
Volume	Invert	Avail.Storage	Storage Description
#1	594.00'	2,536 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
594.00	136	50.5	0	0	136
595.00	325	75.0	224	224	389
596.00	586	99.3	449	673	737
597.00	921	124.0	747	1,420	1,190
598.00	1,323	144.0	1,116	2,536	1,637

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**30.5' long x 6.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=4.09 cfs @ 12.25 hrs HW=598.15' TW=597.74' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 4.09 cfs @ 0.91 fps)

Pond FB-2: ForeBay 2



Summary for Pond FB-3: ForeBay 3

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 1.73" for 10-yr event
Inflow = 3.45 cfs @ 12.10 hrs, Volume= 11,295 cf
Outflow = 3.45 cfs @ 12.10 hrs, Volume= 11,268 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.45 cfs @ 12.10 hrs, Volume= 11,268 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 784 sf Storage= 1,097 cf
Peak Elev= 598.97' @ 17.54 hrs Surf.Area= 784 sf Storage= 1,097 cf

Plug-Flow detention time= 65.3 min calculated for 10,171 cf (90% of inflow)
Center-of-Mass det. time= 0.0 min (858.6 - 858.5)

Volume	Invert	Avail.Storage	Storage Description
#1	595.00'	1,097 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

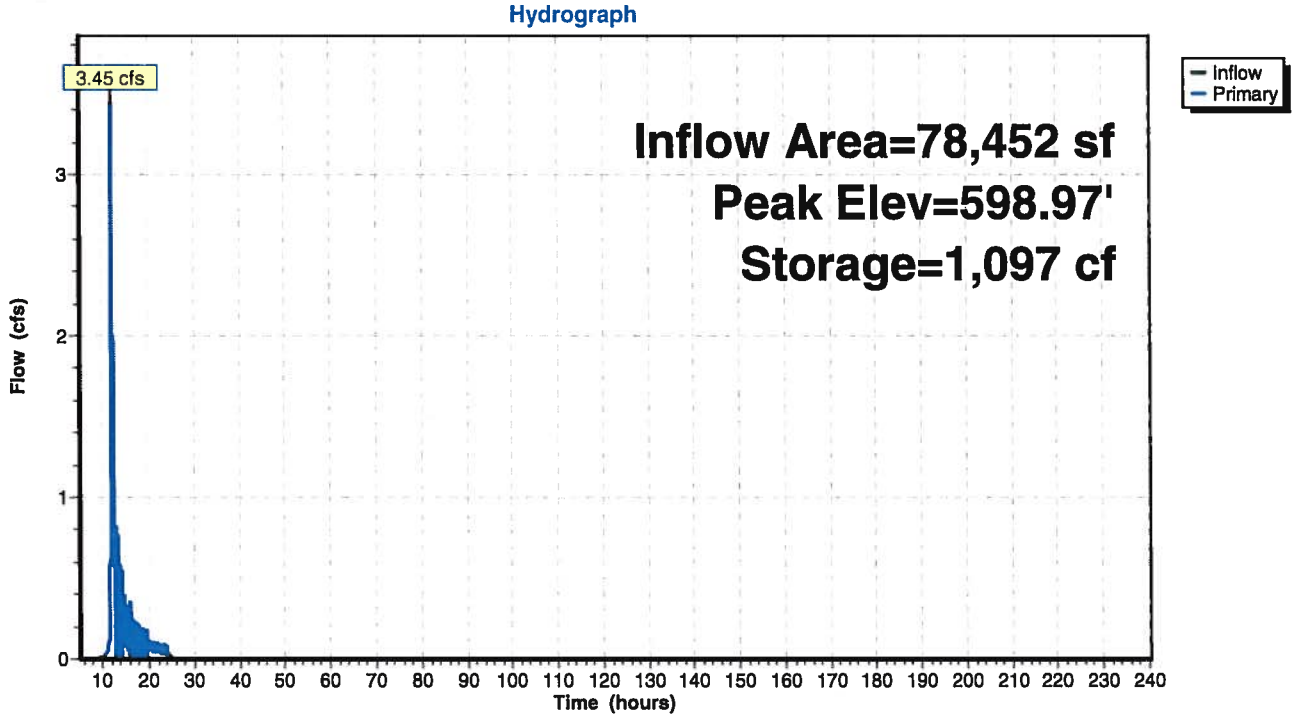
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
595.00	55	45.0	0	0	55
596.00	228	70.0	132	132	291
597.00	473	93.0	343	475	600
598.00	784	114.0	622	1,097	961

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**46.0' long x 6.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.45 cfs @ 12.10 hrs HW=598.10' TW=597.15' (Dynamic Tailwater)
└─**1=Broad-Crested Rectangular Weir** (Weir Controls 3.45 cfs @ 0.75 fps)

Pond FB-3: ForeBay 3



Summary for Pond SB-2:

Inflow Area =	135,473 sf,	14.07% Impervious,	Inflow Depth =	1.65"	for 10-yr event
Inflow =	4.09 cfs @	12.25 hrs, Volume=	18,588 cf		
Outflow =	0.36 cfs @	15.26 hrs, Volume=	18,589 cf,	Atten= 91%,	Lag= 180.2 min
Discarded =	0.33 cfs @	15.26 hrs, Volume=	17,664 cf		
Primary =	0.03 cfs @	15.26 hrs, Volume=	925 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 599.55' @ 15.26 hrs Surf.Area= 5,084 sf Storage= 9,435 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 375.4 min (1,246.2 - 870.8)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	26,019 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

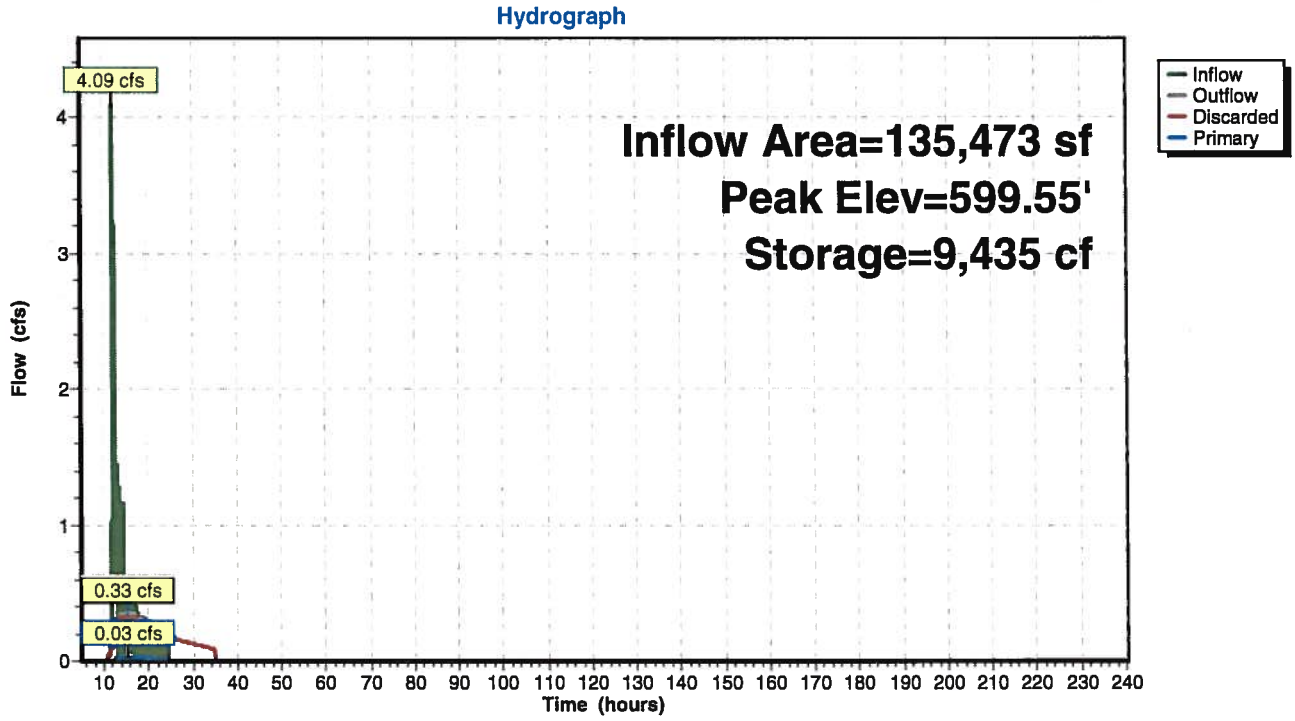
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,330	163.0	0	0	1,330
597.00	1,848	182.0	1,582	1,582	1,879
598.00	2,436	202.0	2,135	3,717	2,520
600.00	6,022	332.0	8,192	11,909	8,070
601.00	7,047	351.0	6,528	18,437	9,158
602.00	8,129	370.0	7,582	26,019	10,306

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	598.40'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	600.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**2.800 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.33 cfs @ 15.26 hrs HW=599.55' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.03 cfs @ 15.26 hrs HW=599.55' TW=594.50' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.03 cfs of 6.08 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.08 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-2:



Summary for Pond SB-3:

Inflow Area =	78,452 sf,	15.03% Impervious,	Inflow Depth =	1.72"	for 10-yr event
Inflow =	3.45 cfs @	12.10 hrs, Volume=	11,268 cf		
Outflow =	0.11 cfs @	17.57 hrs, Volume=	11,268 cf,	Atten= 97%,	Lag= 328.3 min
Discarded =	0.09 cfs @	17.57 hrs, Volume=	10,160 cf		
Primary =	0.02 cfs @	17.57 hrs, Volume=	1,109 cf		

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 598.99' @ 17.57 hrs Surf.Area= 3,975 sf Storage= 7,352 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 894.1 min (1,752.6 - 858.6)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	25,081 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

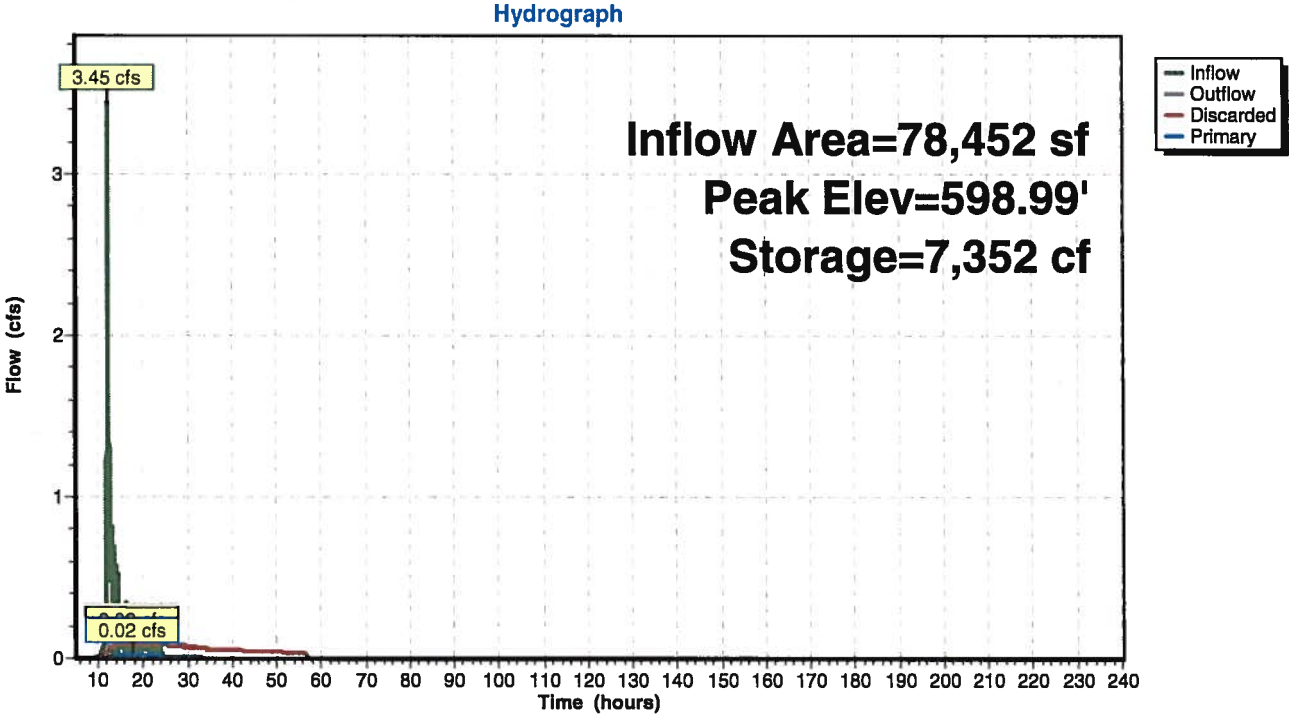
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,406	200.0	0	0	1,406
597.00	2,039	221.0	1,713	1,713	2,140
598.00	2,703	239.8	2,363	4,076	2,867
600.00	5,534	300.0	8,070	12,146	5,509
601.00	6,463	314.0	5,992	18,138	6,259
602.00	7,433	338.0	6,942	25,081	7,546

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.50' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	597.80'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Device 1	601.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 17.57 hrs HW=598.99' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.02 cfs @ 17.57 hrs HW=598.99' TW=596.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.02 cfs of 5.96 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 5.17 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-3:



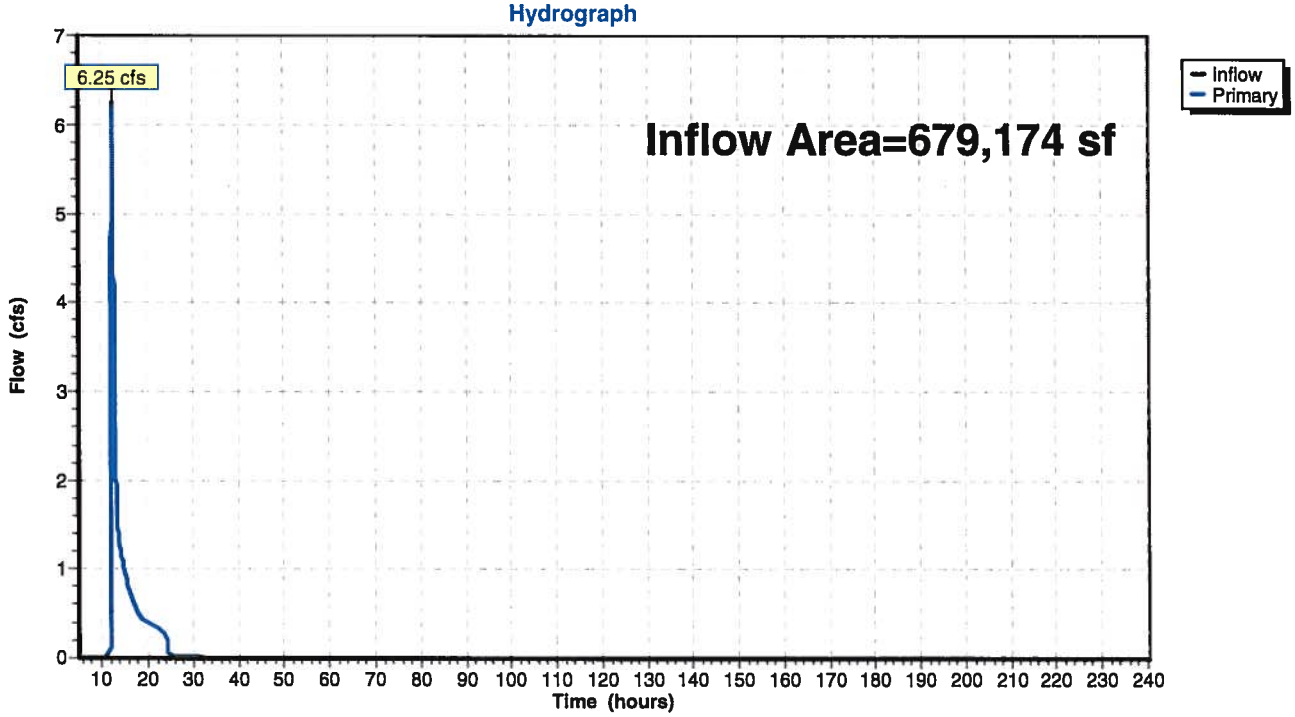
Summary for Link DL-II: DL-II

Inflow Area = 679,174 sf, 4.54% Impervious, Inflow Depth = 0.71" for 10-yr event
Inflow = 6.25 cfs @ 12.40 hrs, Volume= 40,027 cf
Primary = 6.25 cfs @ 12.40 hrs, Volume= 40,027 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DL-II: DL-II

Hydrograph



Summary for Subcatchment IIa:

Runoff = 18.36 cfs @ 12.35 hrs, Volume= 94,908 cf, Depth= 2.45"

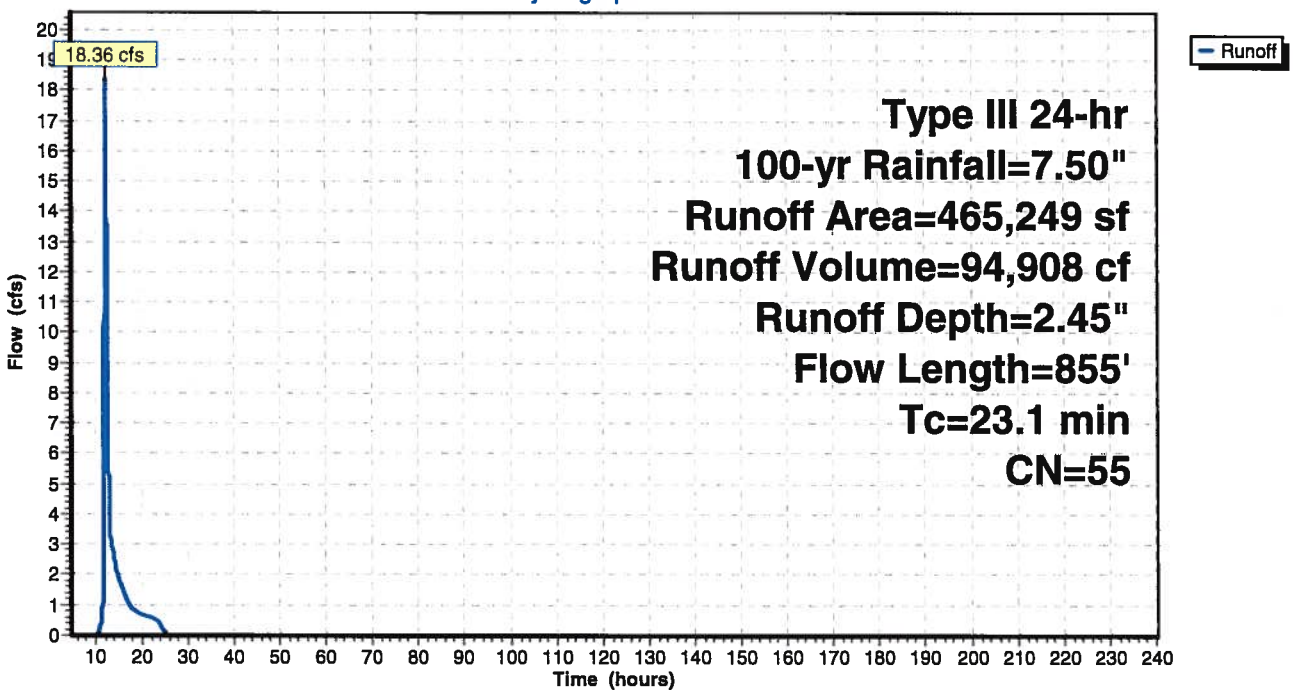
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
16,460	61	>75% Grass cover, Good, HSG B
448,789	55	Woods, Good, HSG B
465,249	55	Weighted Average
465,249		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	755	0.1126	1.68		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	855	Total			

Subcatchment IIa:

Hydrograph



Summary for Subcatchment IIb:

Runoff = 7.47 cfs @ 12.10 hrs, Volume= 23,547 cf, Depth= 3.60"

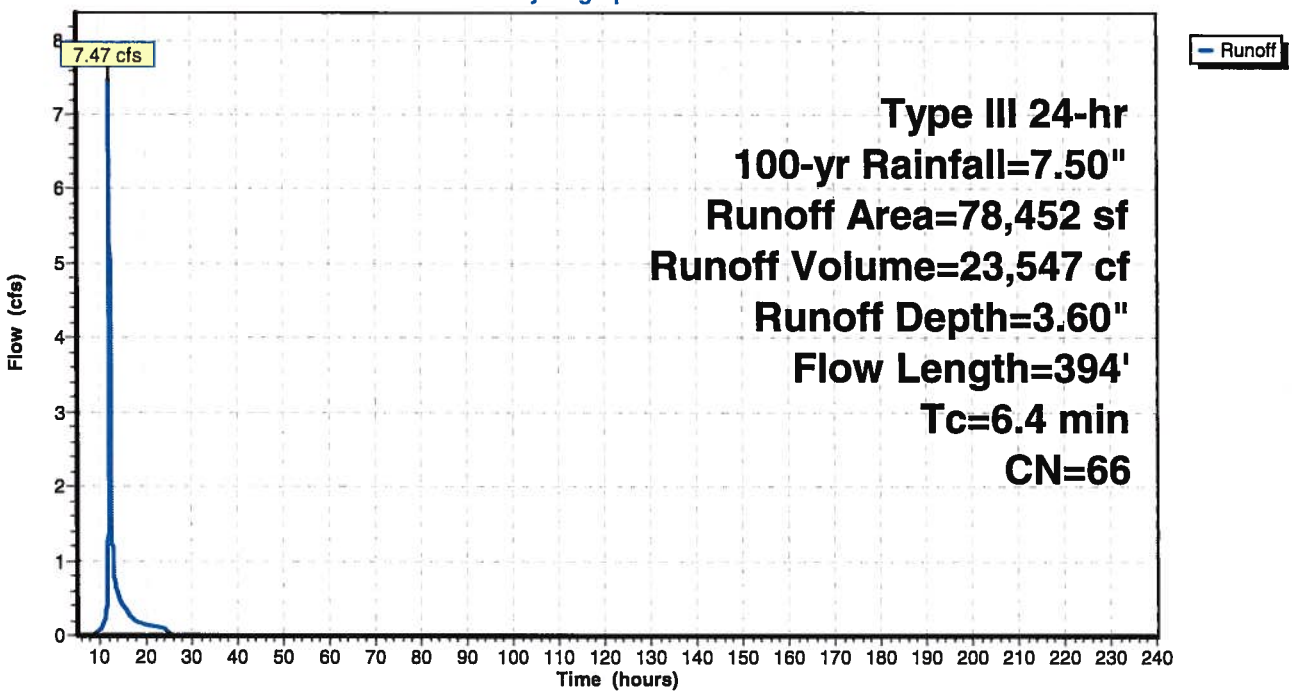
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
11,791	98	Paved parking & roofs
4,211	55	Woods, Good, HSG B
62,450	61	>75% Grass cover, Good, HSG B
78,452	66	Weighted Average
66,661		84.97% Pervious Area
11,791		15.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.1000	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.5	294	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.4	394	Total			

Subcatchment IIb:

Hydrograph



Summary for Subcatchment IIc:

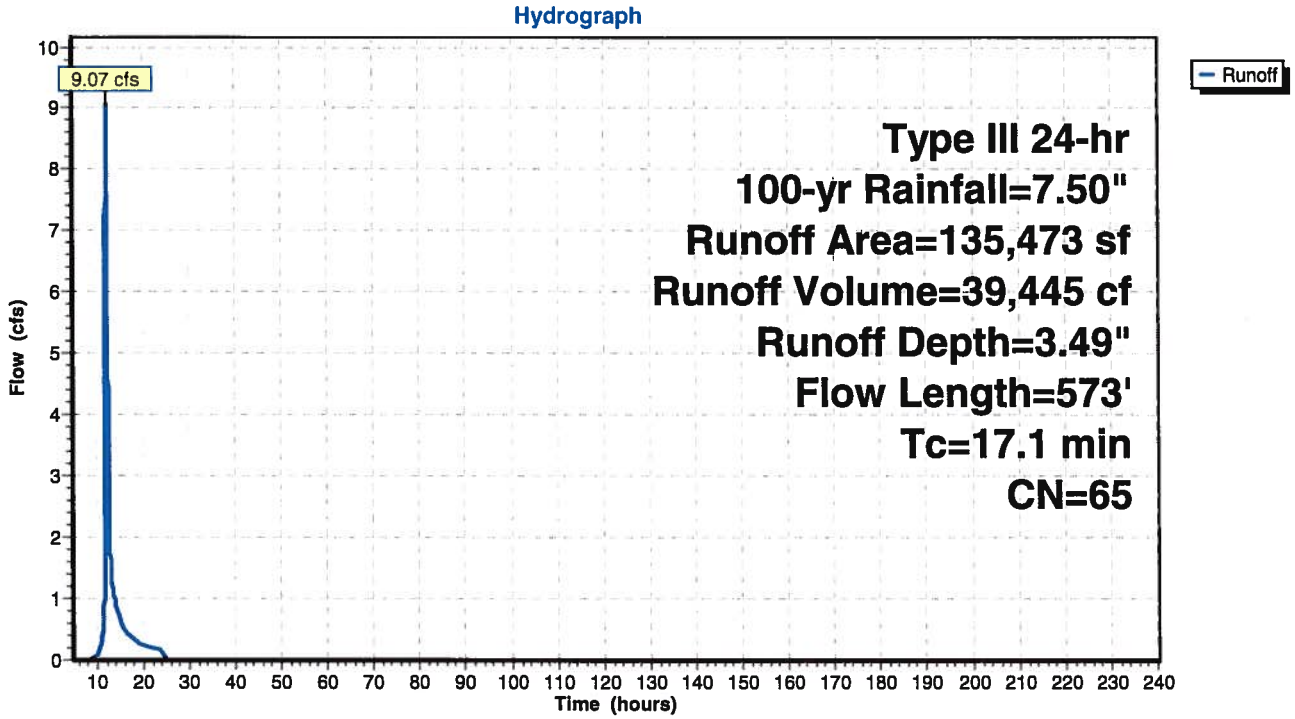
Runoff = 9.07 cfs @ 12.24 hrs, Volume= 39,445 cf, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
98,316	61	>75% Grass cover, Good, HSG B
19,056	98	Paved parking & roofs
18,101	55	Woods, Good, HSG B
135,473	65	Weighted Average
116,417		85.93% Pervious Area
19,056		14.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	290	0.0827	2.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	183	0.0270	5.79	28.97	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Stream, clean & straight
17.1	573	Total			

Subcatchment IIc:



Summary for Reach IIb-R:

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 0.47" for 100-yr event
Inflow = 0.03 cfs @ 18.05 hrs, Volume= 3,104 cf
Outflow = 0.03 cfs @ 18.60 hrs, Volume= 3,104 cf, Atten= 0%, Lag= 32.7 min

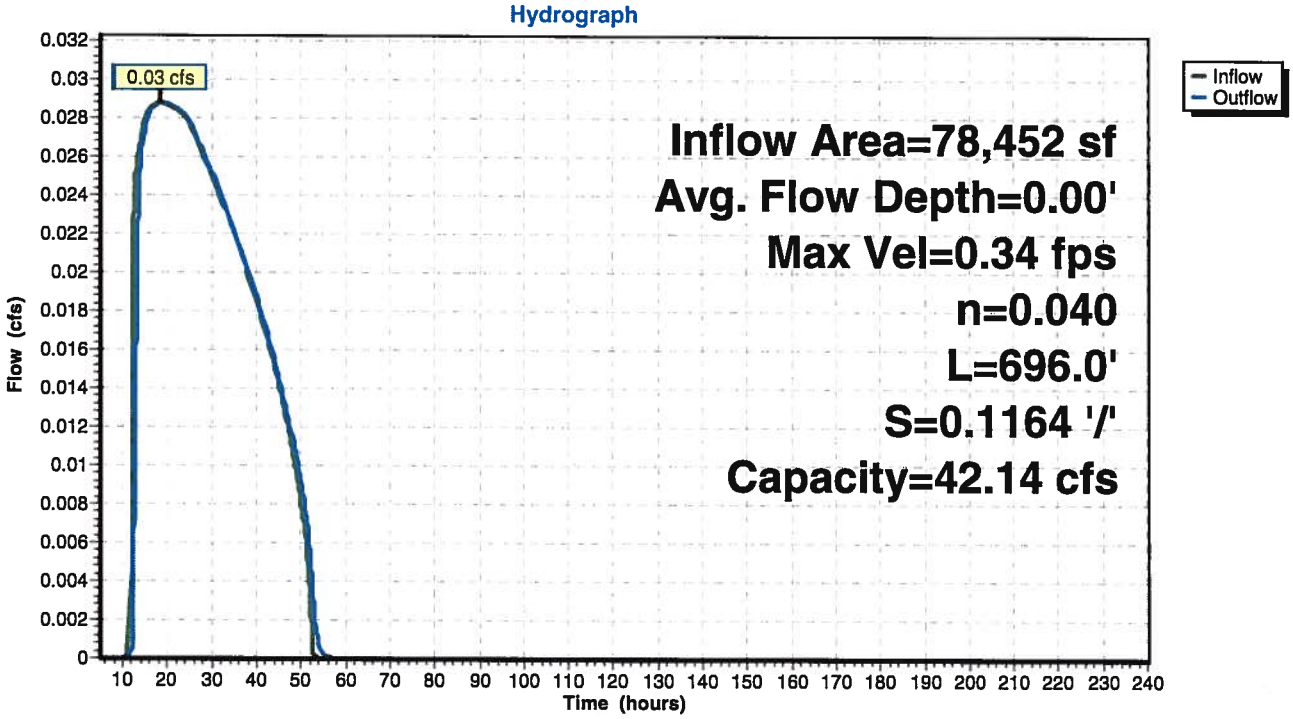
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.34 fps, Min. Travel Time= 34.3 min
Avg. Velocity = 0.29 fps, Avg. Travel Time= 39.6 min

Peak Storage= 59 cf @ 18.60 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.14 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 696.0' Slope= 0.1164 '/'
Inlet Invert= 596.00', Outlet Invert= 515.00'

‡

Reach IIb-R:



Summary for Reach IIc-R:

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 1.26" for 100-yr event
Inflow = 5.08 cfs @ 12.50 hrs, Volume= 14,238 cf
Outflow = 4.07 cfs @ 12.63 hrs, Volume= 14,238 cf, Atten= 20%, Lag= 7.7 min

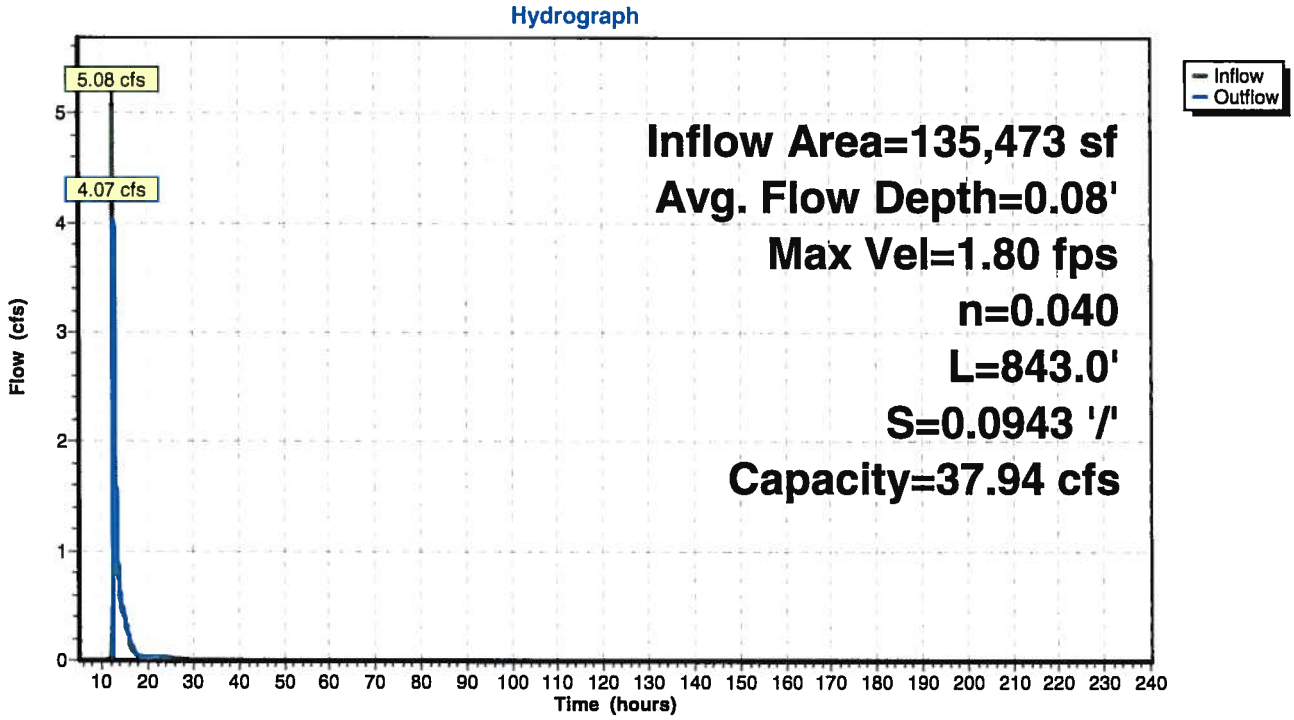
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.80 fps, Min. Travel Time= 7.8 min
Avg. Velocity = 0.40 fps, Avg. Travel Time= 35.1 min

Peak Storage= 1,908 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 37.94 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 843.0' Slope= 0.0943 '/'
Inlet Invert= 594.50', Outlet Invert= 515.00'

‡

Reach IIc-R:



Summary for Pond FB-2: ForeBay 2

Inflow Area = 135,473 sf, 14.07% Impervious, Inflow Depth = 3.49" for 100-yr event
Inflow = 9.07 cfs @ 12.24 hrs, Volume= 39,445 cf
Outflow = 9.07 cfs @ 12.24 hrs, Volume= 39,270 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.07 cfs @ 12.24 hrs, Volume= 39,270 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 1,323 sf Storage= 2,536 cf
Peak Elev= 600.25' @ 12.51 hrs Surf.Area= 1,323 sf Storage= 2,536 cf

Plug-Flow detention time= 47.8 min calculated for 36,734 cf (93% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	594.00'	2,536 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

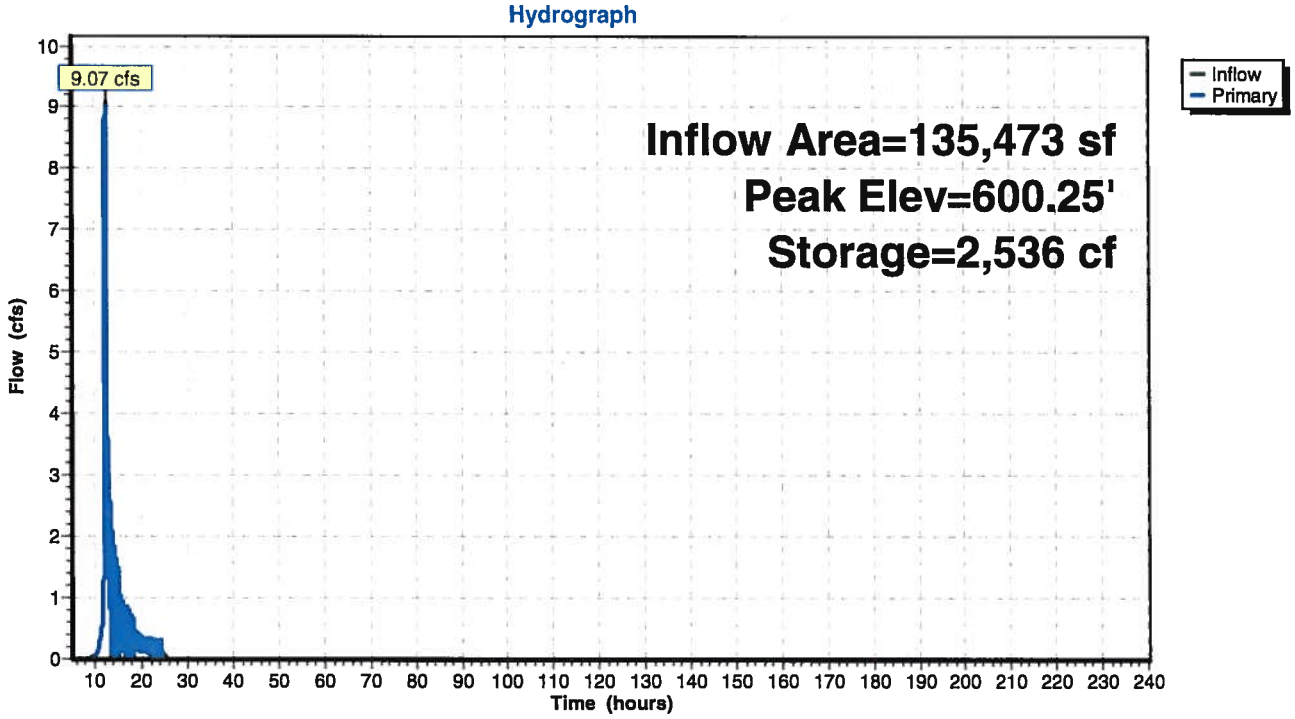
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
594.00	136	50.5	0	0	136
595.00	325	75.0	224	224	389
596.00	586	99.3	449	673	737
597.00	921	124.0	747	1,420	1,190
598.00	1,323	144.0	1,116	2,536	1,637

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**30.5' long x 6.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 12.24 hrs HW=599.36' TW=599.43' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond FB-2: ForeBay 2



Summary for Pond FB-3: ForeBay 3

Inflow Area = 78,452 sf, 15.03% Impervious, Inflow Depth = 3.60" for 100-yr event
Inflow = 7.47 cfs @ 12.10 hrs, Volume= 23,547 cf
Outflow = 7.47 cfs @ 12.10 hrs, Volume= 23,446 cf, Atten= 0%, Lag= 0.0 min
Primary = 7.47 cfs @ 12.10 hrs, Volume= 23,446 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Starting Elev= 598.00' Surf.Area= 784 sf Storage= 1,097 cf
Peak Elev= 600.76' @ 17.74 hrs Surf.Area= 784 sf Storage= 1,097 cf

Plug-Flow detention time= 37.5 min calculated for 22,349 cf (95% of inflow)
Center-of-Mass det. time= 0.3 min (837.0 - 836.7)

Volume	Invert	Avail.Storage	Storage Description
#1	595.00'	1,097 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

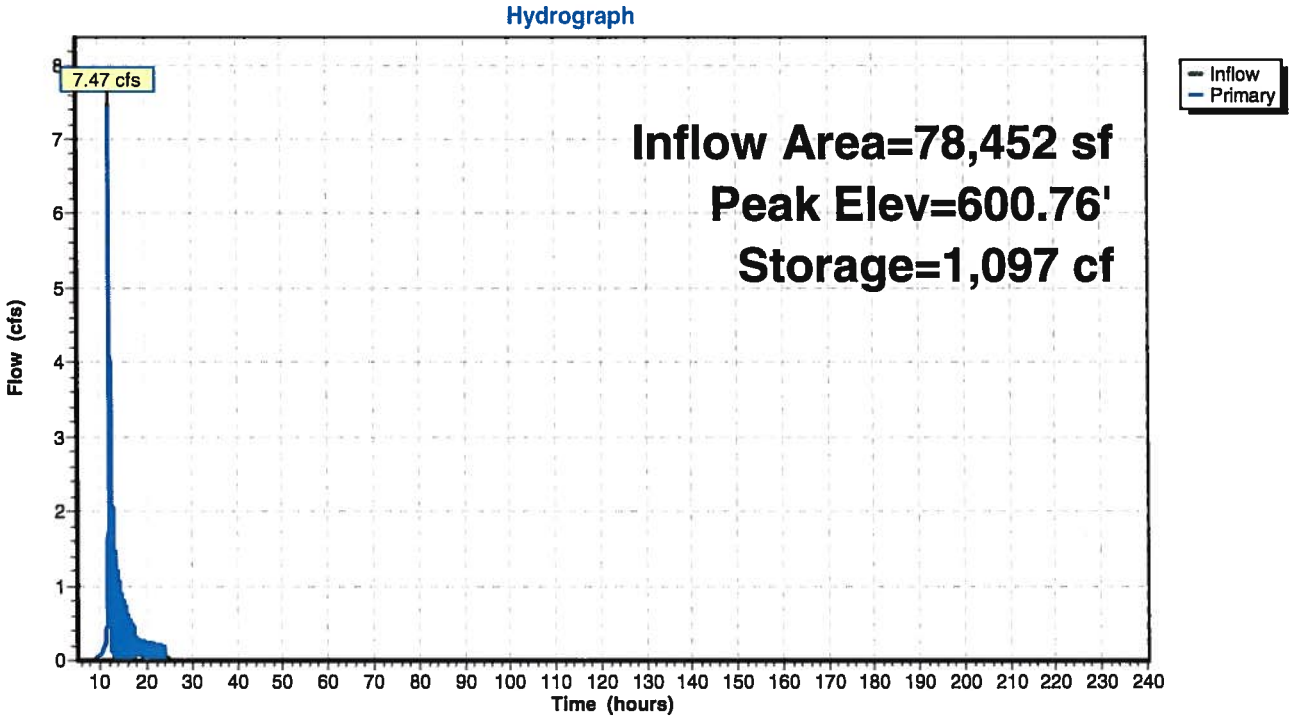
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
595.00	55	45.0	0	0	55
596.00	228	70.0	132	132	291
597.00	473	93.0	343	475	600
598.00	784	114.0	622	1,097	961

Device	Routing	Invert	Outlet Devices
#1	Primary	598.00'	**46.0' long x 6.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=598.48' TW=598.55' (Dynamic Tailwater)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond FB-3: ForeBay 3



Summary for Pond SB-2:

Inflow Area =	135,473 sf,	14.07% Impervious,	Inflow Depth =	3.48"	for 100-yr event
Inflow =	9.07 cfs @	12.24 hrs,	Volume=	39,270 cf	
Outflow =	5.49 cfs @	12.50 hrs,	Volume=	39,272 cf,	Atten= 39%, Lag= 15.6 min
Discarded =	0.41 cfs @	12.50 hrs,	Volume=	25,033 cf	
Primary =	5.08 cfs @	12.50 hrs,	Volume=	14,238 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 600.25' @ 12.50 hrs Surf.Area= 6,276 sf Storage= 13,476 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 276.8 min (1,125.2 - 848.5)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	26,019 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

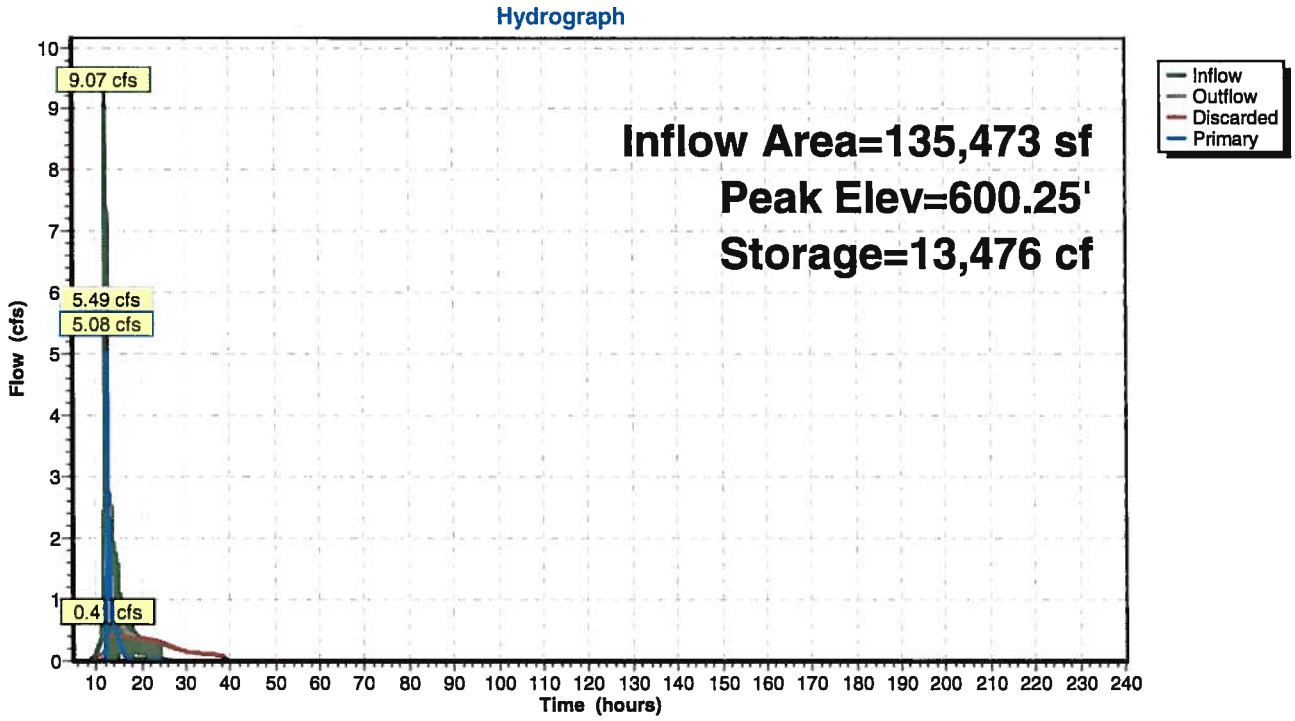
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,330	163.0	0	0	1,330
597.00	1,848	182.0	1,582	1,582	1,879
598.00	2,436	202.0	2,135	3,717	2,520
600.00	6,022	332.0	8,192	11,909	8,070
601.00	7,047	351.0	6,528	18,437	9,158
602.00	8,129	370.0	7,582	26,019	10,306

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	598.40'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	600.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**2.800 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.41 cfs @ 12.50 hrs HW=600.25' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=5.08 cfs @ 12.50 hrs HW=600.25' TW=594.56' (Dynamic Tailwater)
└**1=Culvert** (Passes 5.08 cfs of 6.65 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.48 fps)
  └**3=Orifice/Grate** (Weir Controls 5.05 cfs @ 1.65 fps)

Pond SB-2:



Summary for Pond SB-3:

Inflow Area =	78,452 sf,	15.03% Impervious,	Inflow Depth =	3.59"	for 100-yr event
Inflow =	7.47 cfs @	12.10 hrs,	Volume=	23,446 cf	
Outflow =	0.17 cfs @	18.05 hrs,	Volume=	23,446 cf,	Atten= 98%, Lag= 357.4 min
Discarded =	0.14 cfs @	18.05 hrs,	Volume=	20,342 cf	
Primary =	0.03 cfs @	18.05 hrs,	Volume=	3,104 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 600.77' @ 18.05 hrs Surf.Area= 6,243 sf Storage= 16,678 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,213.3 min (2,050.3 - 837.0)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	25,081 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

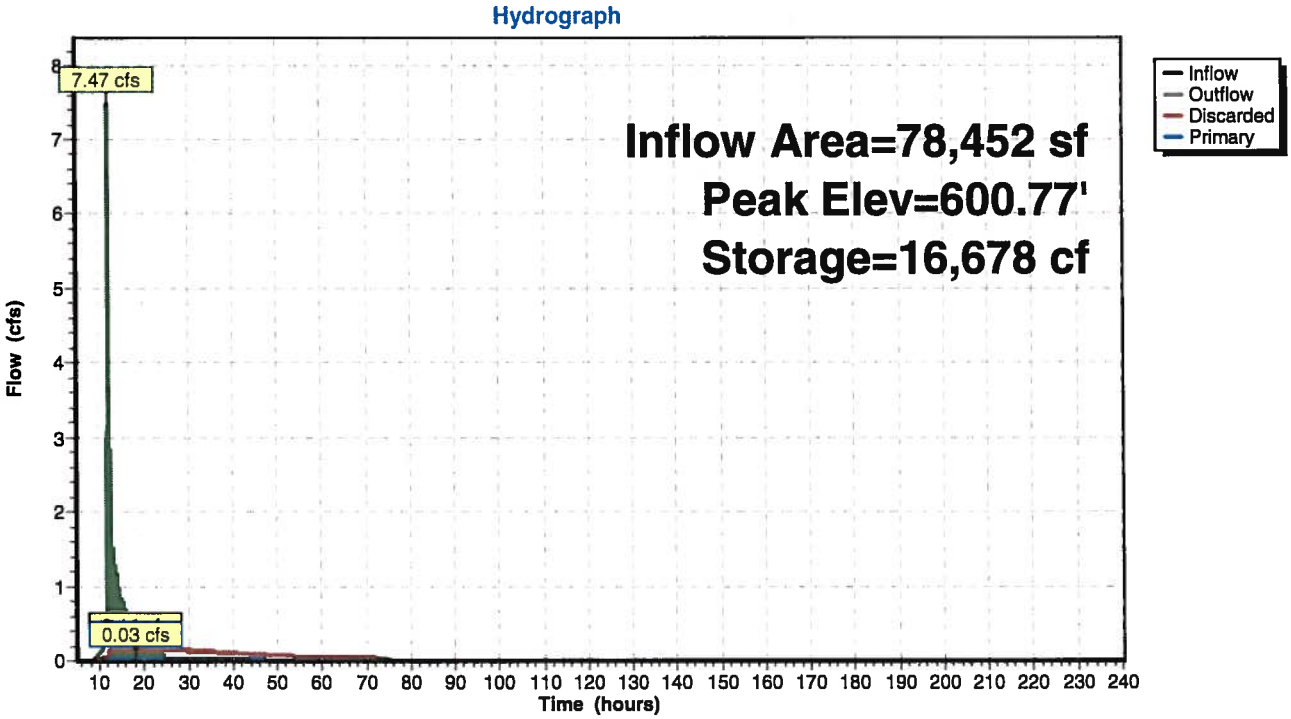
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,406	200.0	0	0	1,406
597.00	2,039	221.0	1,713	1,713	2,140
598.00	2,703	239.8	2,363	4,076	2,867
600.00	5,534	300.0	8,070	12,146	5,509
601.00	6,463	314.0	5,992	18,138	6,259
602.00	7,433	338.0	6,942	25,081	7,546

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.50' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	597.80'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Device 1	601.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.14 cfs @ 18.05 hrs HW=600.77' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.03 cfs @ 18.05 hrs HW=600.77' TW=596.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.03 cfs of 7.81 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 8.25 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-3:



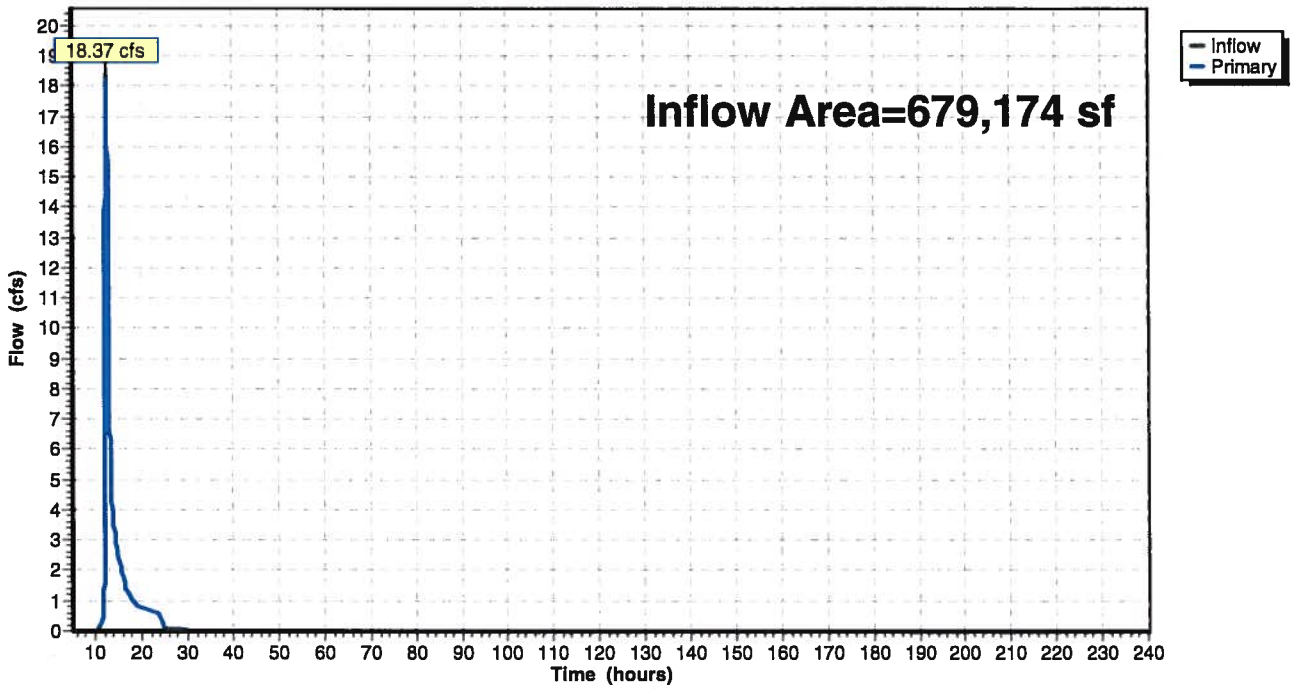
Summary for Link DL-II: DL-II

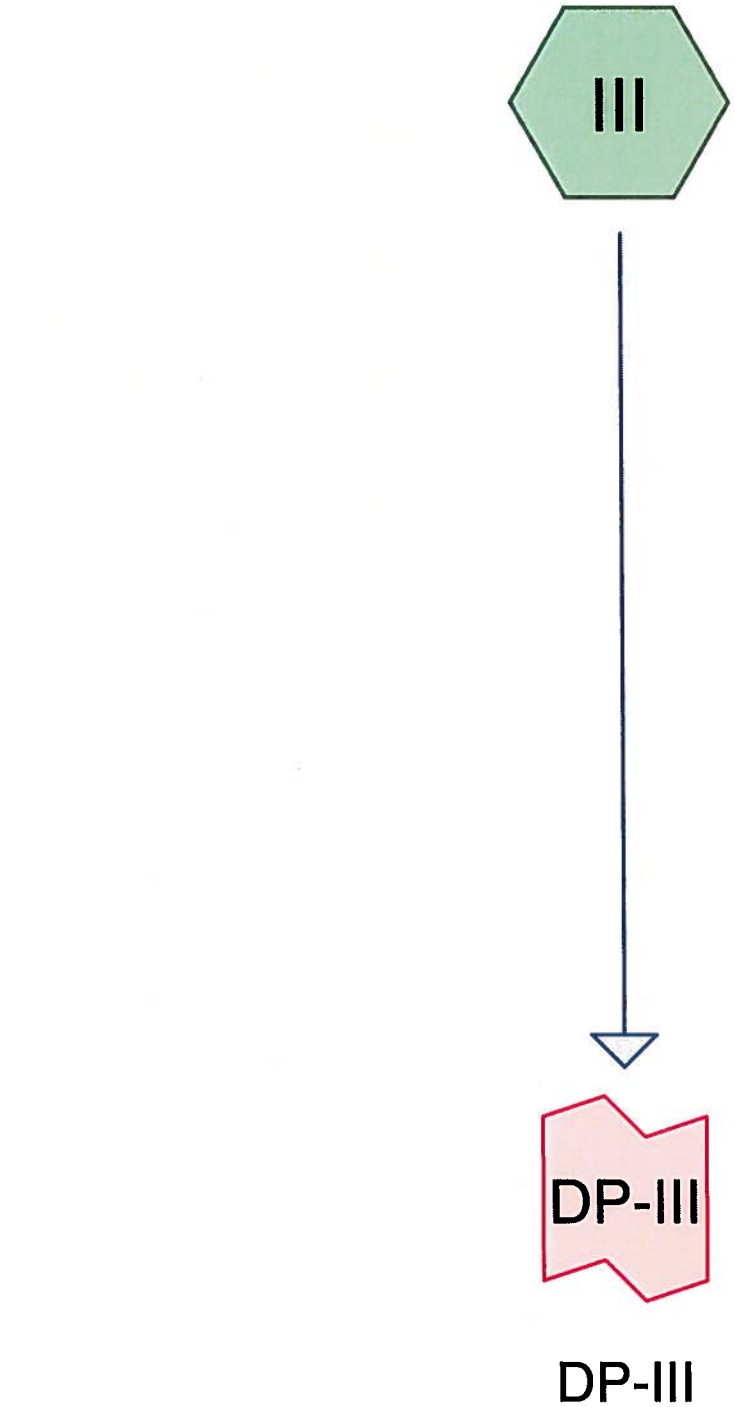
Inflow Area = 679,174 sf, 4.54% Impervious, Inflow Depth = 1.98" for 100-yr event
Inflow = 18.37 cfs @ 12.35 hrs, Volume= 112,251 cf
Primary = 18.37 cfs @ 12.35 hrs, Volume= 112,251 cf, Atten= 0%, Lag= 0.0 min

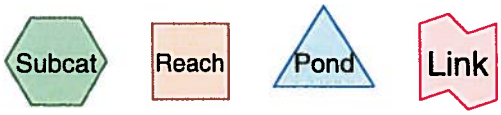
Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DL-II: DL-II

Hydrograph







Routing Diagram for POST watershed III
Prepared by Bibbo Associates, LLP, Printed 12/8/2015
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment III:

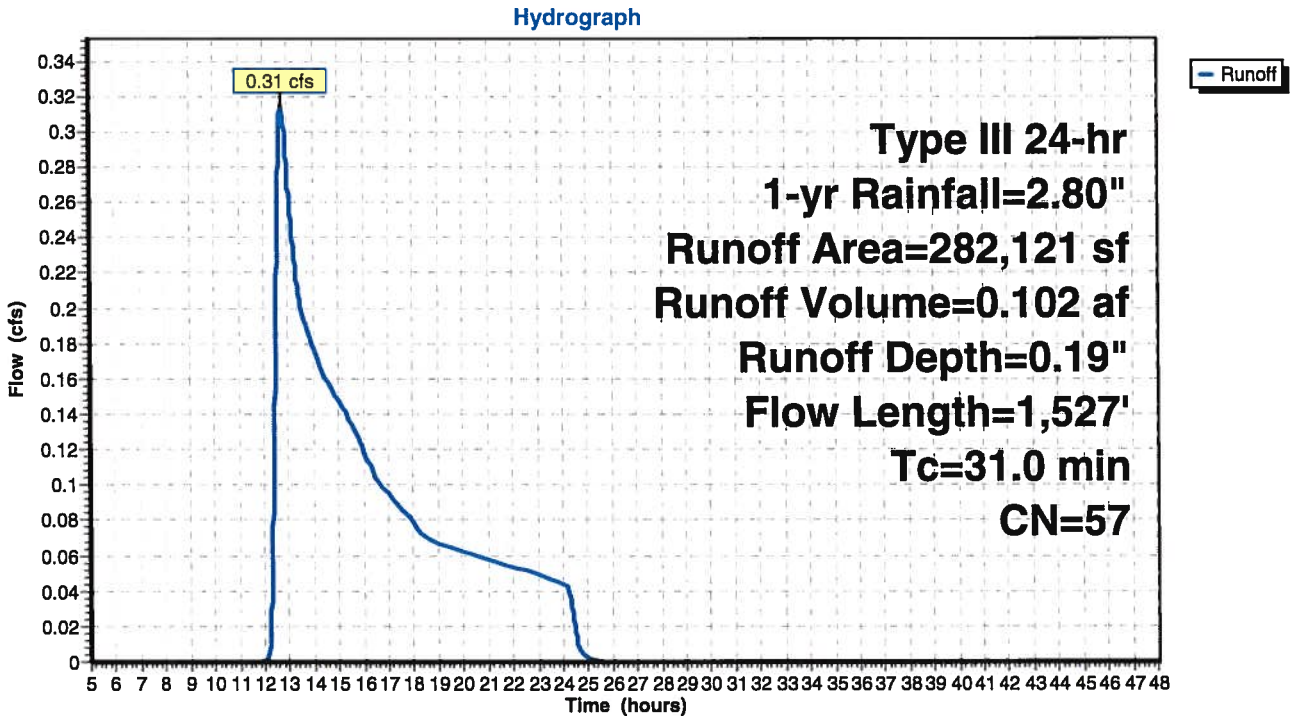
Runoff = 0.31 cfs @ 12.74 hrs, Volume= 0.102 af, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
18,541	61	>75% Grass cover, Good, HSG B
237,038	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
282,121	57	Weighted Average
282,121		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	1,427	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.0	1,527	Total			

Subcatchment III:



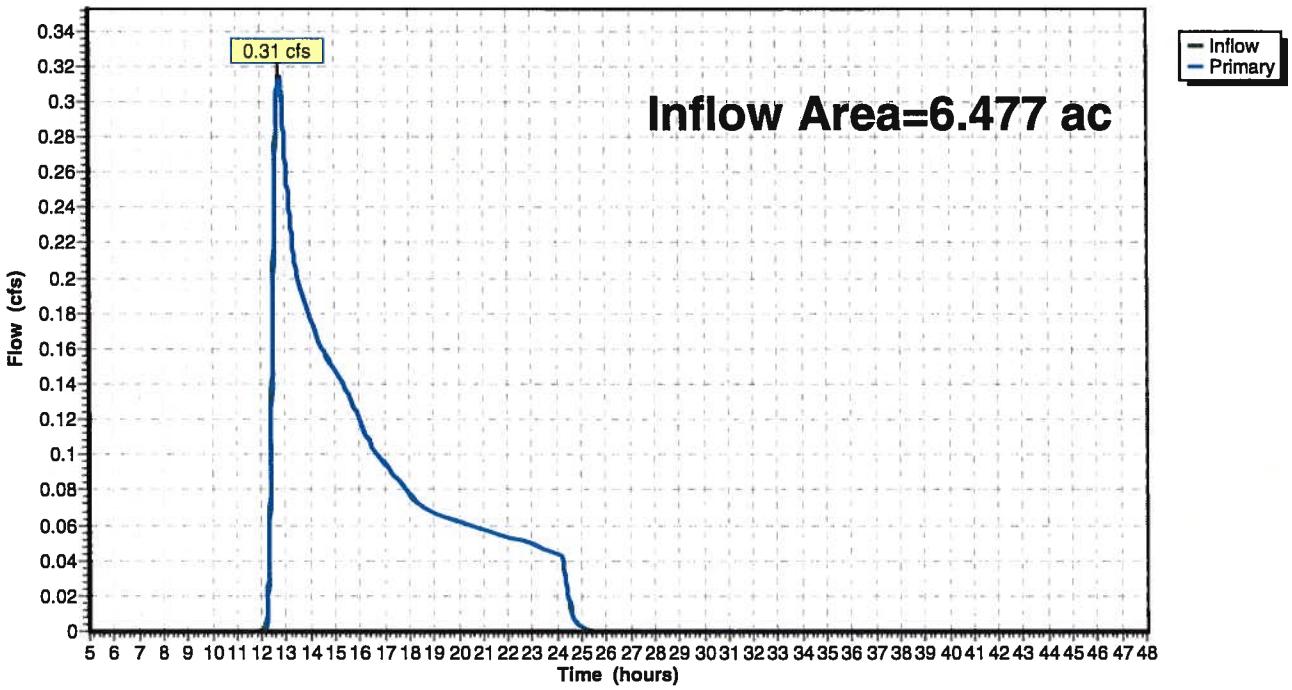
Summary for Link DP-III: DP-III

Inflow Area =	6.477 ac,	0.00% Impervious,	Inflow Depth =	0.19"	for 1-yr event
Inflow =	0.31 cfs @	12.74 hrs, Volume=	0.102 af		
Primary =	0.31 cfs @	12.75 hrs, Volume=	0.102 af,	Atten= 0%,	Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-III: DP-III

Hydrograph



Summary for Subcatchment III:

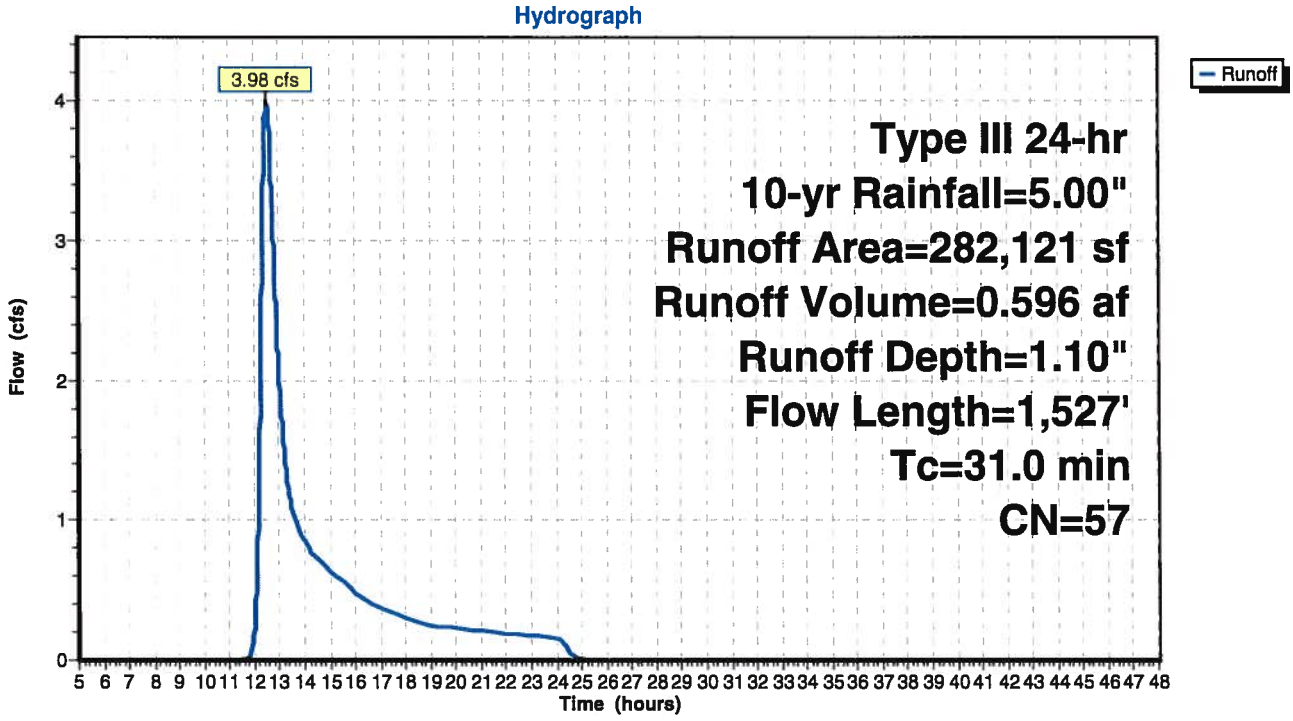
Runoff = 3.98 cfs @ 12.50 hrs, Volume= 0.596 af, Depth= 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
18,541	61	>75% Grass cover, Good, HSG B
237,038	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
282,121	57	Weighted Average
282,121		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	1,427	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.0	1,527	Total			

Subcatchment III:

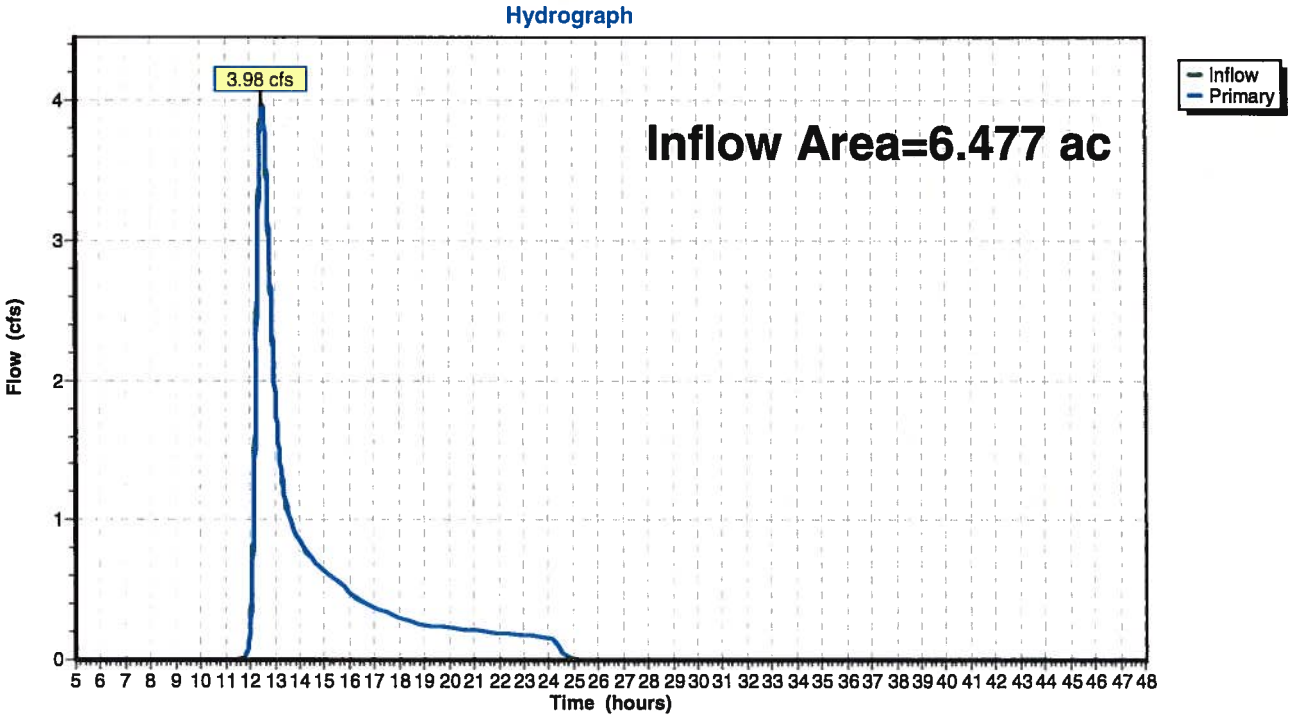


Summary for Link DP-III: DP-III

Inflow Area =	6.477 ac,	0.00% Impervious,	Inflow Depth =	1.10"	for	10-yr event
Inflow =	3.98 cfs @	12.50 hrs,	Volume=	0.596 af		
Primary =	3.98 cfs @	12.51 hrs,	Volume=	0.596 af,	Atten= 0%,	Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-III: DP-III



Summary for Subcatchment III:

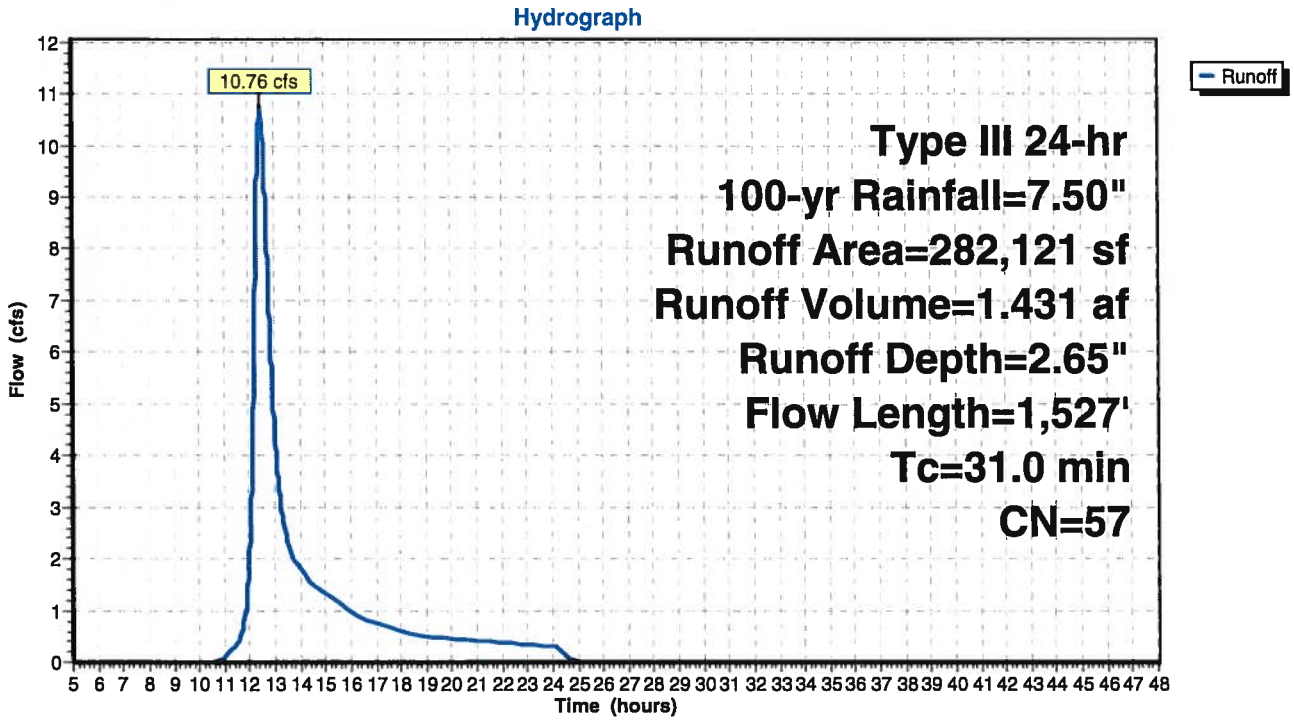
Runoff = 10.76 cfs @ 12.47 hrs, Volume= 1.431 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
18,541	61	>75% Grass cover, Good, HSG B
237,038	55	Woods, Good, HSG B
26,542	70	Woods, Good, HSG C
282,121	57	Weighted Average
282,121		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
16.8	1,427	0.0800	1.41		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
31.0	1,527	Total			

Subcatchment III:

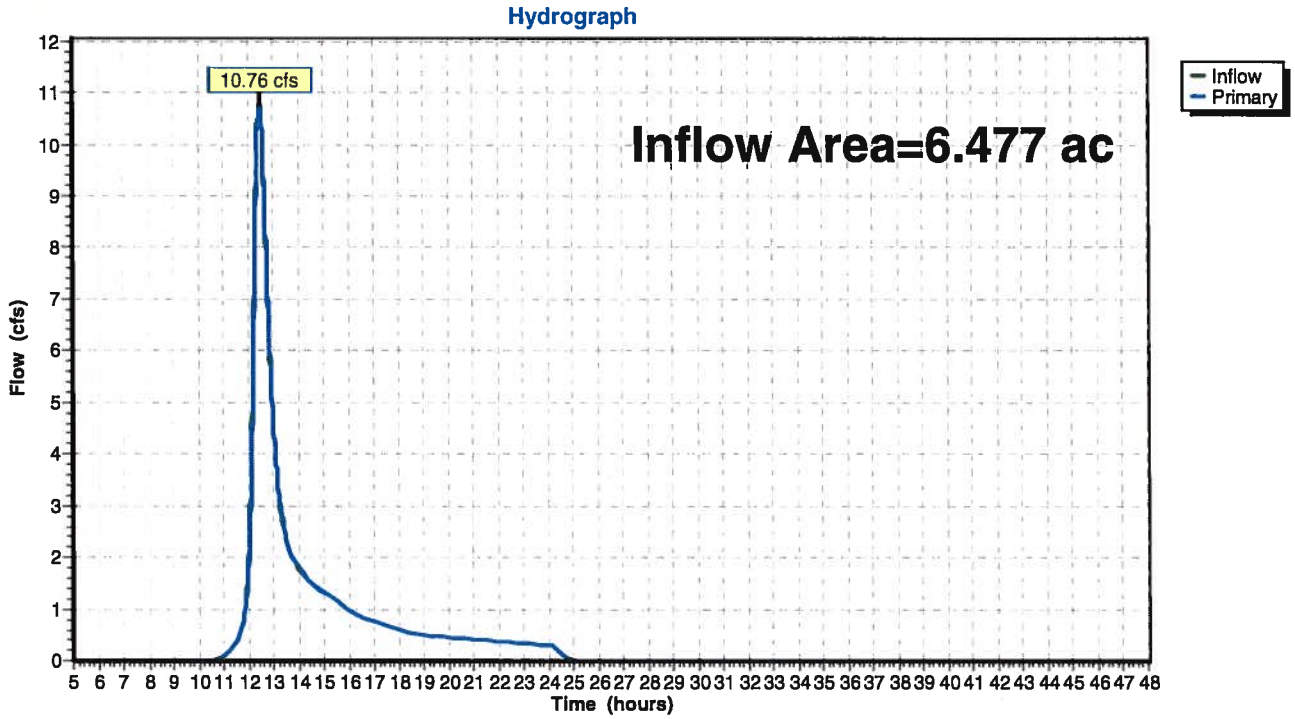


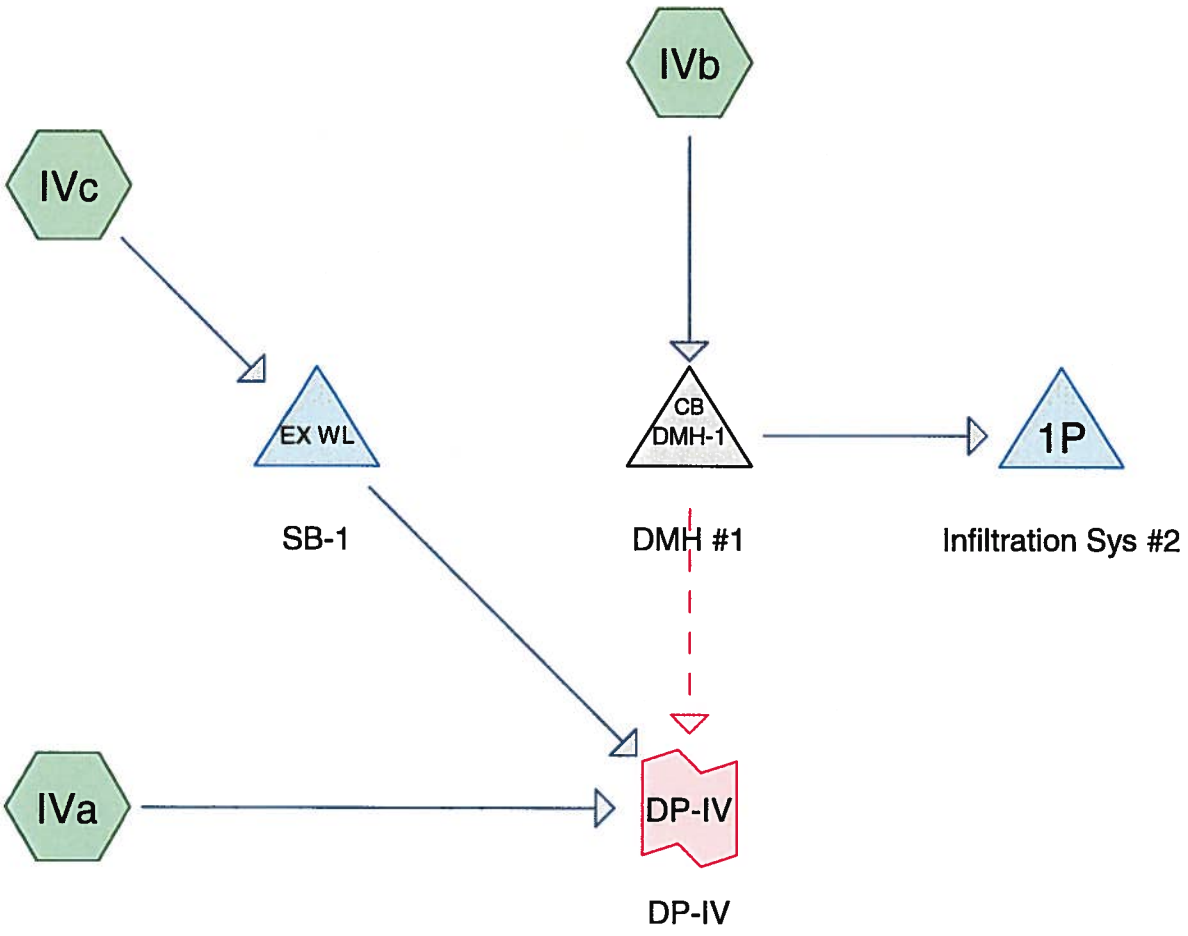
Summary for Link DP-III: DP-III

Inflow Area =	6.477 ac,	0.00% Impervious,	Inflow Depth =	2.65"	for 100-yr event
Inflow =	10.76 cfs @	12.47 hrs,	Volume=	1.431 af	
Primary =	10.76 cfs @	12.48 hrs,	Volume=	1.431 af,	Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-III: DP-III





Routing Diagram for POST watershed IV
Prepared by Bibbo Associates, LLP, Printed 3/15/2016
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
65,018	61	>75% Grass cover, Good, HSG B (IVa, IVb, IVc)
16,860	98	Paved parking & roofs (IVb, IVc)
4,802	98	Paved roads w/curbs & sewers (IVa)
218,211	55	Woods, Good, HSG B (IVa, IVb, IVc)
58,775	70	Woods, Good, HSG C (IVa)
181,894	77	Woods, Good, HSG D (IVa)
2,770	76	Woods/grass comb., Fair, HSG C (IVc)
548,330	**66**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
283,229	HSG B	IVa, IVb, IVc
61,545	HSG C	IVa, IVc
181,894	HSG D	IVa
21,662	Other	IVa, IVb, IVc
548,330		**TOTAL AREA**

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	IVb	0.00	0.00	207.0	0.0167	0.013	12.0	0.0	0.0
2	DMH-1	607.50	607.00	7.0	0.0714	0.013	12.0	0.0	0.0
3	DMH-1	609.00	607.00	67.0	0.0299	0.013	18.0	0.0	0.0
4	EX WL	613.50	611.00	63.0	0.0397	0.013	15.0	0.0	0.0

Summary for Subcatchment IVa:

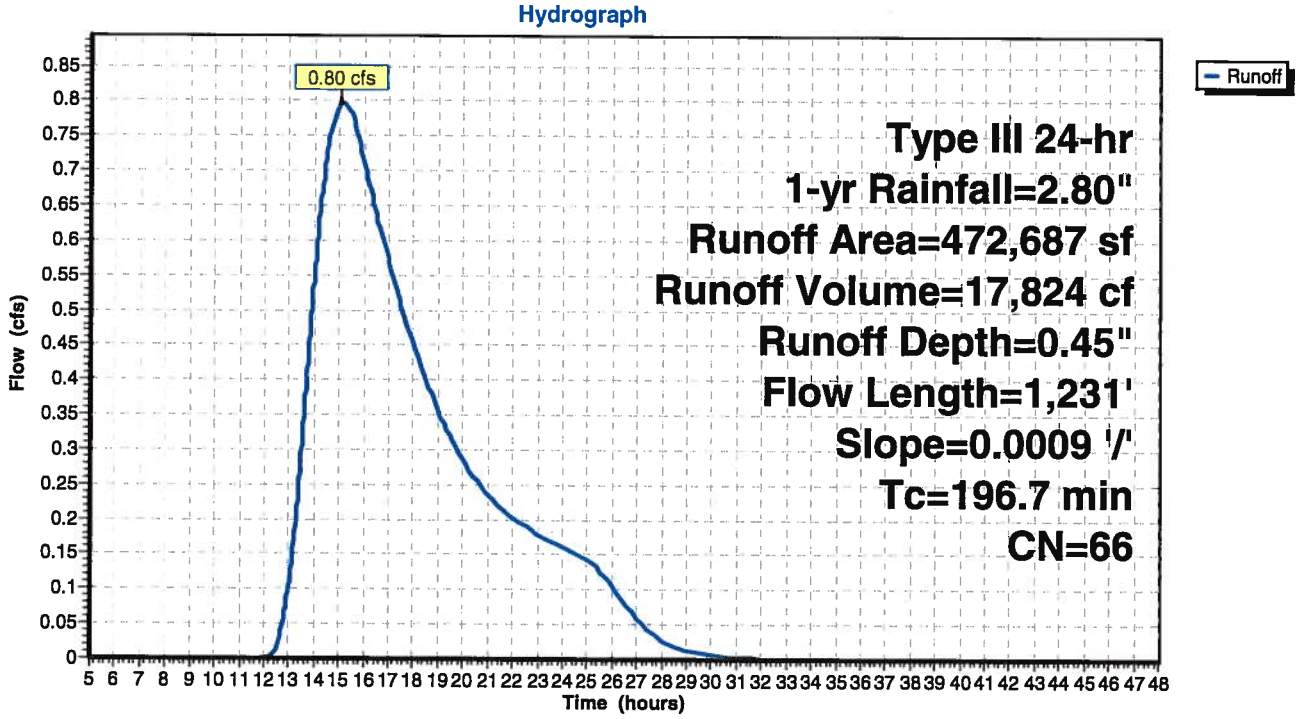
Runoff = 0.80 cfs @ 15.09 hrs, Volume= 17,824 cf, Depth= 0.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
58,775	70	Woods, Good, HSG C
181,536	55	Woods, Good, HSG B
45,680	61	>75% Grass cover, Good, HSG B
4,802	98	Paved roads w/curbs & sewers
472,687	66	Weighted Average
467,885		98.98% Pervious Area
4,802		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment IVa:



Summary for Subcatchment IVb:

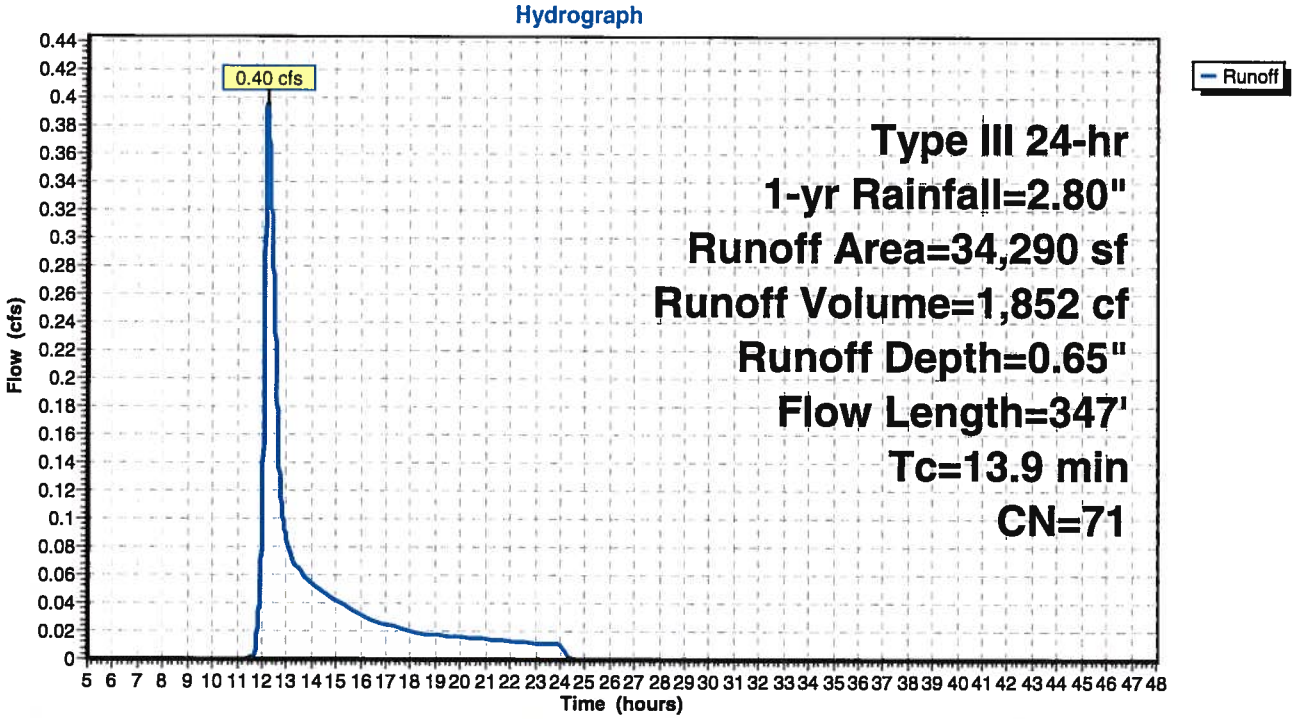
Runoff = 0.40 cfs @ 12.22 hrs, Volume= 1,852 cf, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
11,000	98	Paved parking & roofs
13,000	55	Woods, Good, HSG B
10,290	61	>75% Grass cover, Good, HSG B
34,290	71	Weighted Average
23,290		67.92% Pervious Area
11,000		32.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	207	0.0167	5.86	4.60	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
13.9	347	Total			

Subcatchment IVb:



Summary for Subcatchment IVc:

Runoff = 0.20 cfs @ 12.30 hrs, Volume= 1,324 cf, Depth= 0.38"

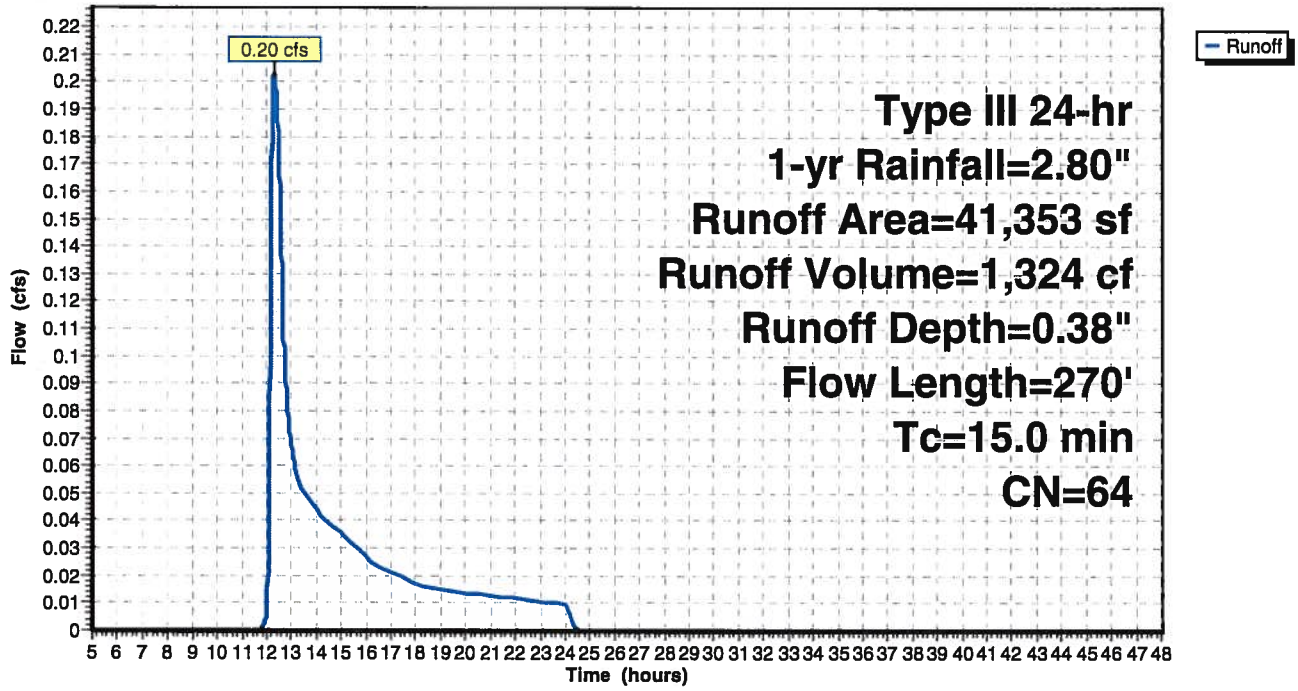
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.80"

Area (sf)	CN	Description
23,675	55	Woods, Good, HSG B
2,770	76	Woods/grass comb., Fair, HSG C
5,860	98	Paved parking & roofs
9,048	61	>75% Grass cover, Good, HSG B
41,353	64	Weighted Average
35,493		85.83% Pervious Area
5,860		14.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.2	170	0.0647	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	270	Total			

Subcatchment IVc:

Hydrograph



Summary for Pond 1P: Infiltration Sys #2

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	0.65"	for 1-yr event
Inflow =	0.40 cfs @	12.23 hrs,	Volume=	1,852 cf	
Outflow =	0.09 cfs @	11.48 hrs,	Volume=	2,859 cf,	Atten= 77%, Lag= 0.0 min
Discarded =	0.09 cfs @	11.48 hrs,	Volume=	2,859 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 606.98' @ 12.95 hrs Surf.Area= 840 sf Storage= 450 cf

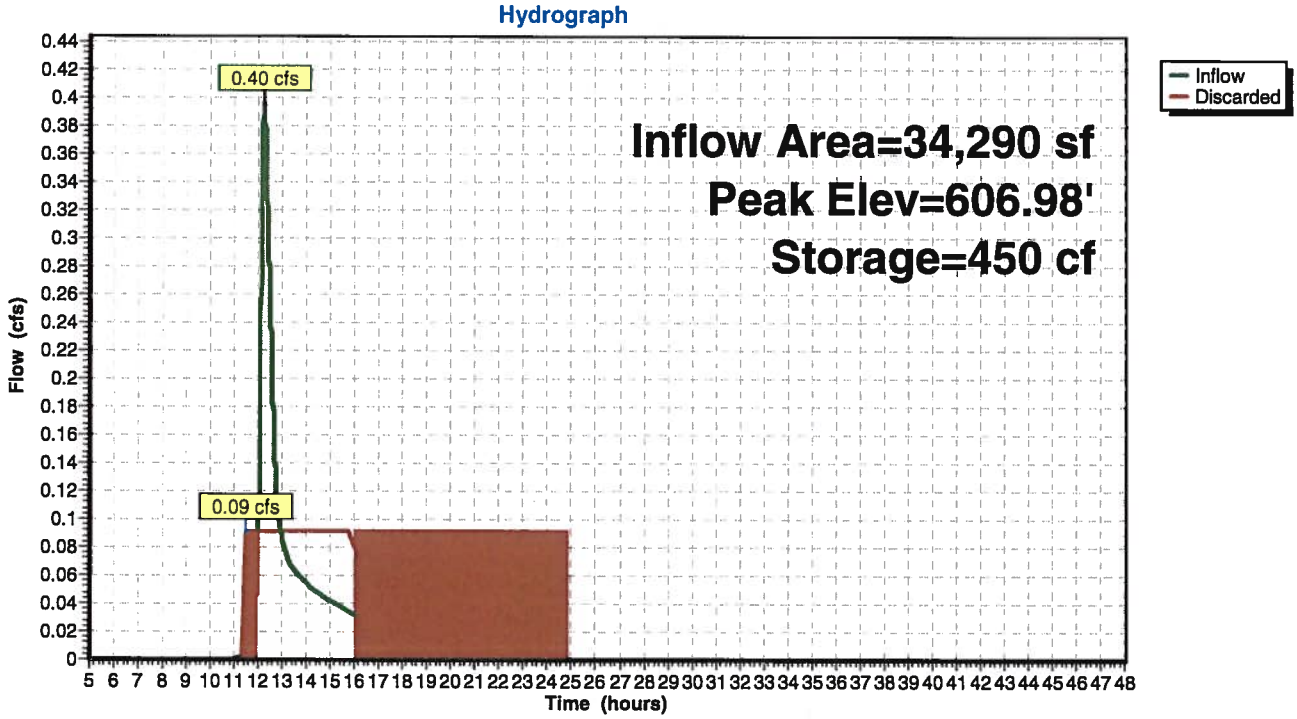
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 139.7 min (1,030.1 - 890.4)

Volume	Invert	Avail.Storage	Storage Description
#1	606.50'	782 cf	**Cultec R-330XLHD** x 15 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	606.00'	1,031 cf	**21.00'W x 40.00'L x 4.00'H Prismatoid** 3,360 cf Overall - 782 cf Embedded = 2,578 cf x 40.0% Voids
		1,813 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	606.00'	**4.700 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 11.48 hrs HW=606.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 1P: Infiltration Sys #2



Summary for Pond DMH-1: DMH #1

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	0.65"	for 1-yr event
Inflow =	0.40 cfs @	12.22 hrs, Volume=	1,852 cf		
Outflow =	0.40 cfs @	12.23 hrs, Volume=	1,852 cf,	Atten= 0%,	Lag= 0.6 min
Primary =	0.40 cfs @	12.23 hrs, Volume=	1,852 cf		
Secondary =	0.00 cfs @	0.00 hrs, Volume=	0 cf		

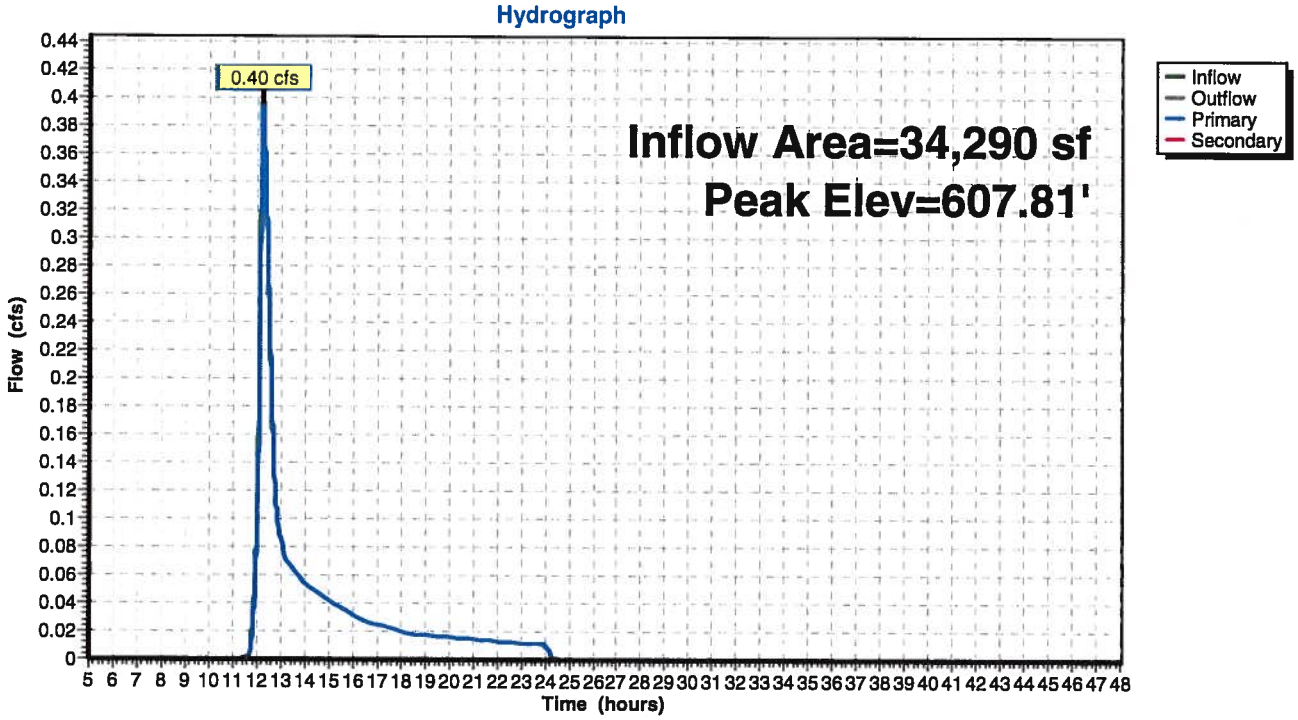
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 607.81' @ 12.23 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	607.50'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.50' / 607.00' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	609.00'	**18.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.00' / 607.00' S= 0.0299 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.40 cfs @ 12.23 hrs HW=607.81' TW=606.38' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.40 cfs @ 1.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=607.50' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Controls 0.00 cfs)

Pond DMH-1: DMH #1



Summary for Pond EX WL: SB-1

Inflow Area = 41,353 sf, 14.17% Impervious, Inflow Depth = 0.38" for 1-yr event
Inflow = 0.20 cfs @ 12.30 hrs, Volume= 1,324 cf
Outflow = 0.01 cfs @ 21.06 hrs, Volume= 907 cf, Atten= 94%, Lag= 525.7 min
Primary = 0.01 cfs @ 21.06 hrs, Volume= 907 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 614.27' @ 21.06 hrs Surf.Area= 1,794 sf Storage= 890 cf
Flood Elev= 617.00' Surf.Area= 4,584 sf Storage= 8,305 cf

Plug-Flow detention time= 822.5 min calculated for 907 cf (69% of inflow)
Center-of-Mass det. time= 706.3 min (1,630.1 - 923.8)

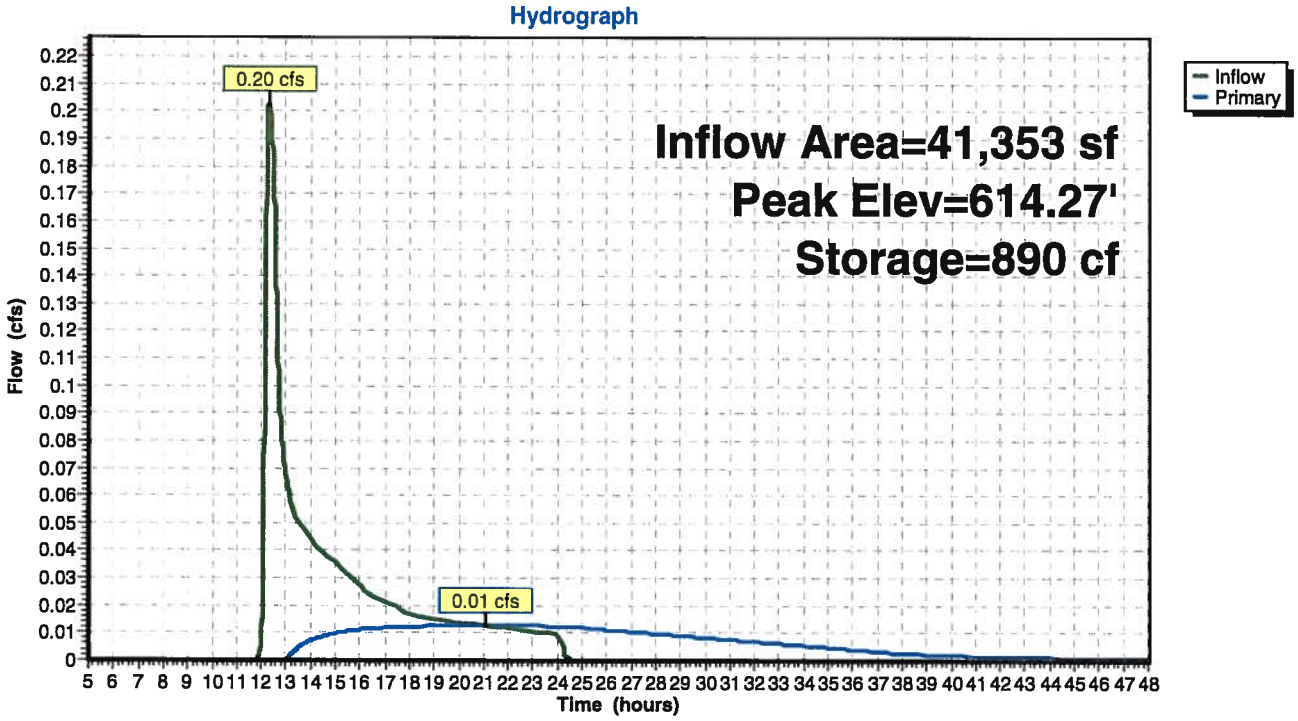
Volume	Invert	Avail.Storage	Storage Description
#1	613.50'	8,305 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
613.50	218	60.3	0	0	218
614.00	1,670	148.2	415	415	1,677
616.00	2,673	186.0	4,304	4,719	2,737
617.00	4,584	243.3	3,586	8,305	4,706

Device	Routing	Invert	Outlet Devices
#1	Primary	613.50'	**15.0" Round Culvert** L= 63.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.50' / 611.00' S= 0.0397 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	614.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	615.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.01 cfs @ 21.06 hrs HW=614.27' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.01 cfs of 2.39 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.01 cfs @ 2.32 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond EX WL: SB-1



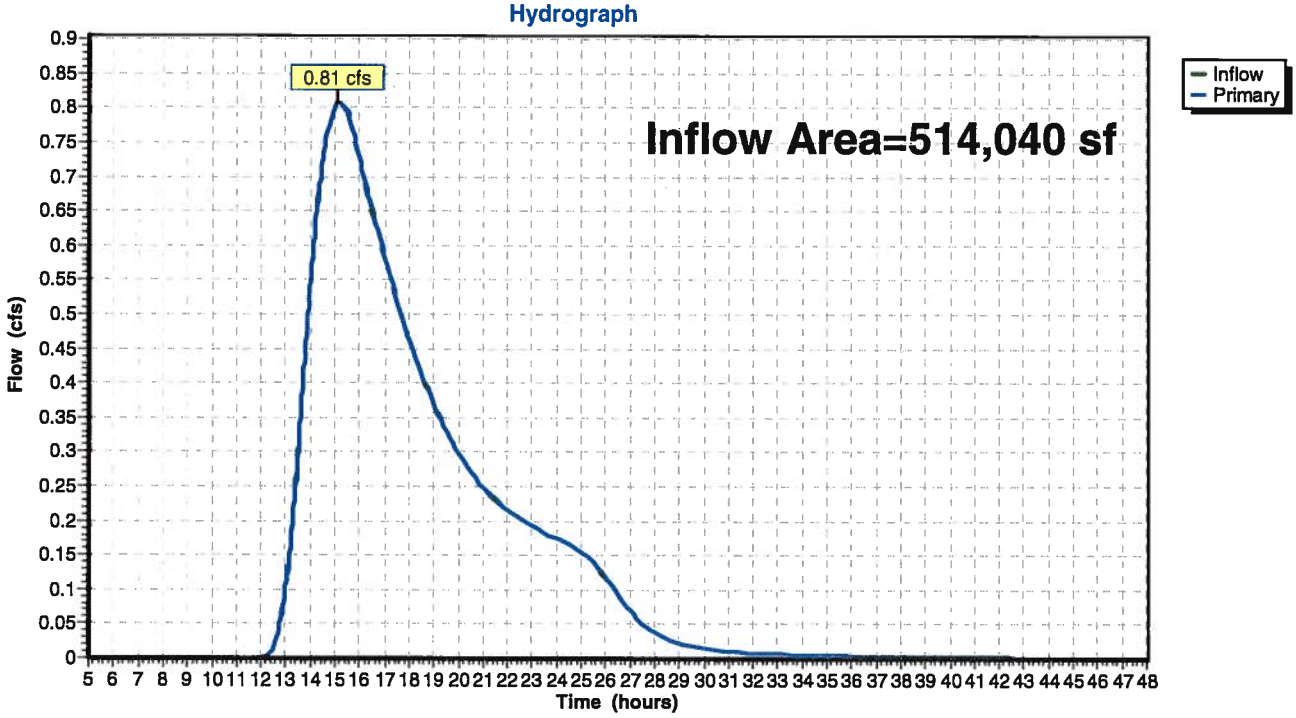
Summary for Link DP-IV: DP-IV

Inflow Area = 514,040 sf, 2.07% Impervious, Inflow Depth = 0.44" for 1-yr event
Inflow = 0.81 cfs @ 15.09 hrs, Volume= 18,731 cf
Primary = 0.81 cfs @ 15.10 hrs, Volume= 18,731 cf, Atten= 0%, Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-IV: DP-IV

Hydrograph



Summary for Subcatchment IVa:

Runoff = 3.63 cfs @ 14.85 hrs, Volume= 68,054 cf, Depth= 1.73"

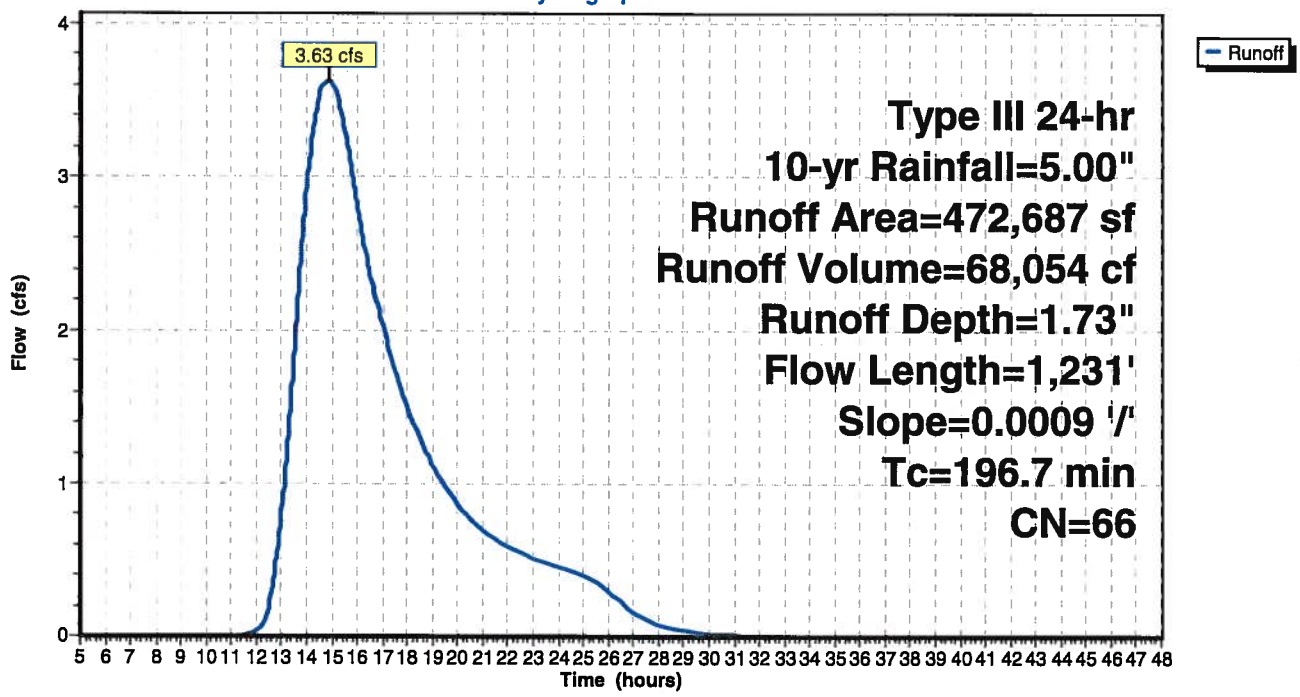
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
58,775	70	Woods, Good, HSG C
181,536	55	Woods, Good, HSG B
45,680	61	>75% Grass cover, Good, HSG B
4,802	98	Paved roads w/curbs & sewers
472,687	66	Weighted Average
467,885		98.98% Pervious Area
4,802		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment IVa:

Hydrograph



Summary for Subcatchment IVb:

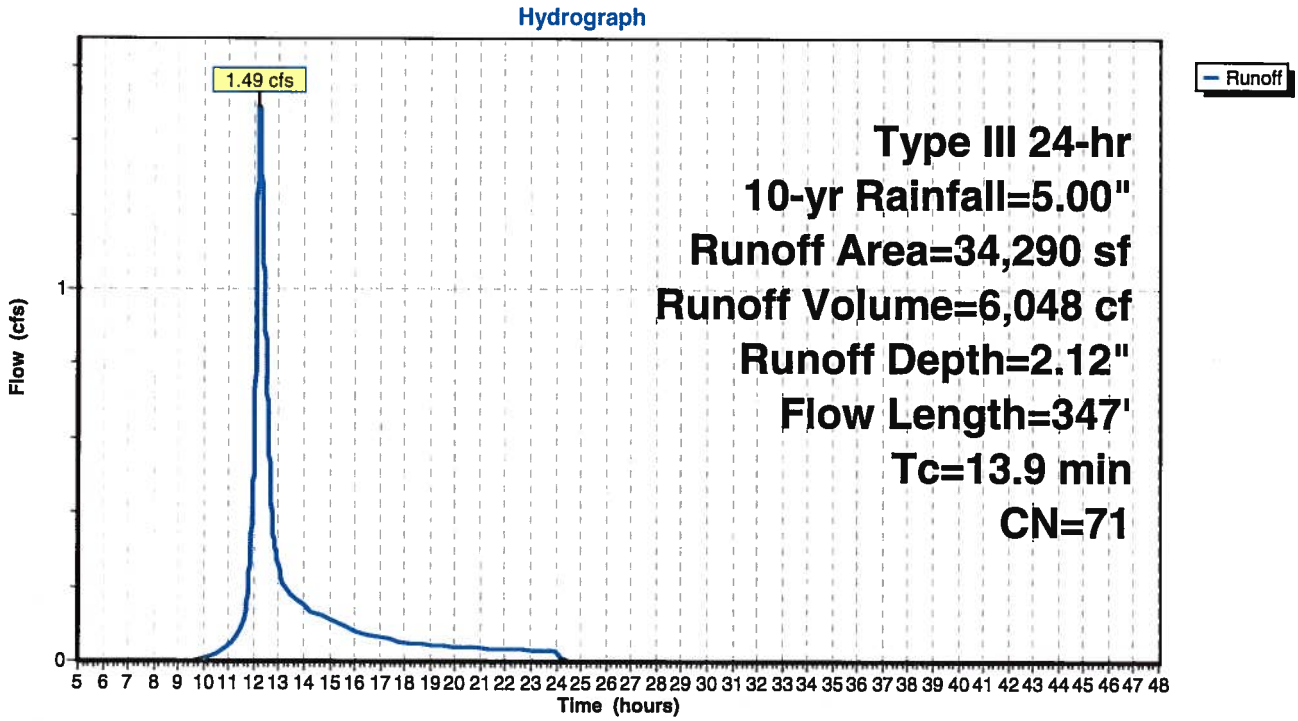
Runoff = 1.49 cfs @ 12.20 hrs, Volume= 6,048 cf, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
11,000	98	Paved parking & roofs
13,000	55	Woods, Good, HSG B
10,290	61	>75% Grass cover, Good, HSG B
34,290	71	Weighted Average
23,290		67.92% Pervious Area
11,000		32.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	207	0.0167	5.86	4.60	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
13.9	347	Total			

Subcatchment IVb:



Summary for Subcatchment IVc:

Runoff = 1.24 cfs @ 12.22 hrs, Volume= 5,447 cf, Depth= 1.58"

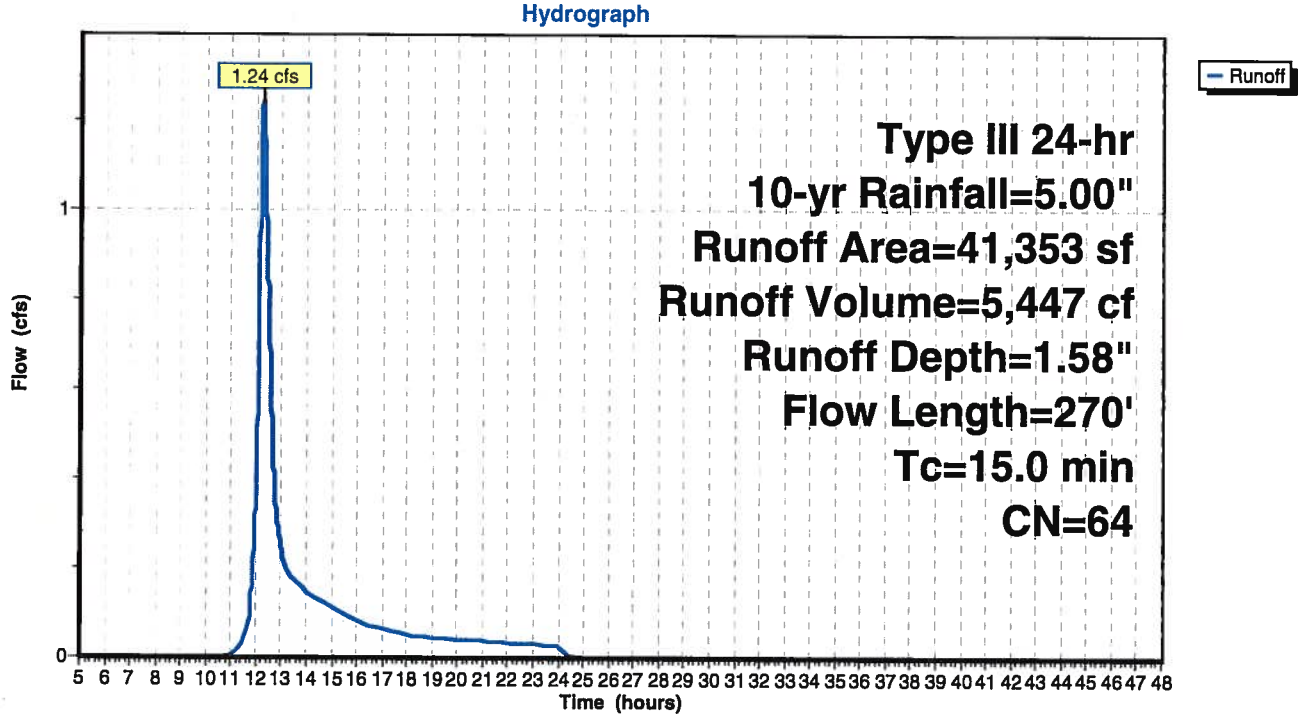
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
23,675	55	Woods, Good, HSG B
2,770	76	Woods/grass comb., Fair, HSG C
5,860	98	Paved parking & roofs
9,048	61	>75% Grass cover, Good, HSG B
41,353	64	Weighted Average
35,493		85.83% Pervious Area
5,860		14.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.2	170	0.0647	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	270	Total			

Subcatchment IVc:

Hydrograph



Summary for Pond 1P: Infiltration Sys #2

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	1.54"	for 10-yr event
Inflow =	1.49 cfs @	12.21 hrs,	Volume=	4,411 cf	
Outflow =	0.09 cfs @	9.47 hrs,	Volume=	4,665 cf,	Atten= 94%, Lag= 0.0 min
Discarded =	0.09 cfs @	9.47 hrs,	Volume=	4,665 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 609.45' @ 12.39 hrs Surf.Area= 840 sf Storage= 1,630 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 166.3 min (1,046.8 - 880.5)

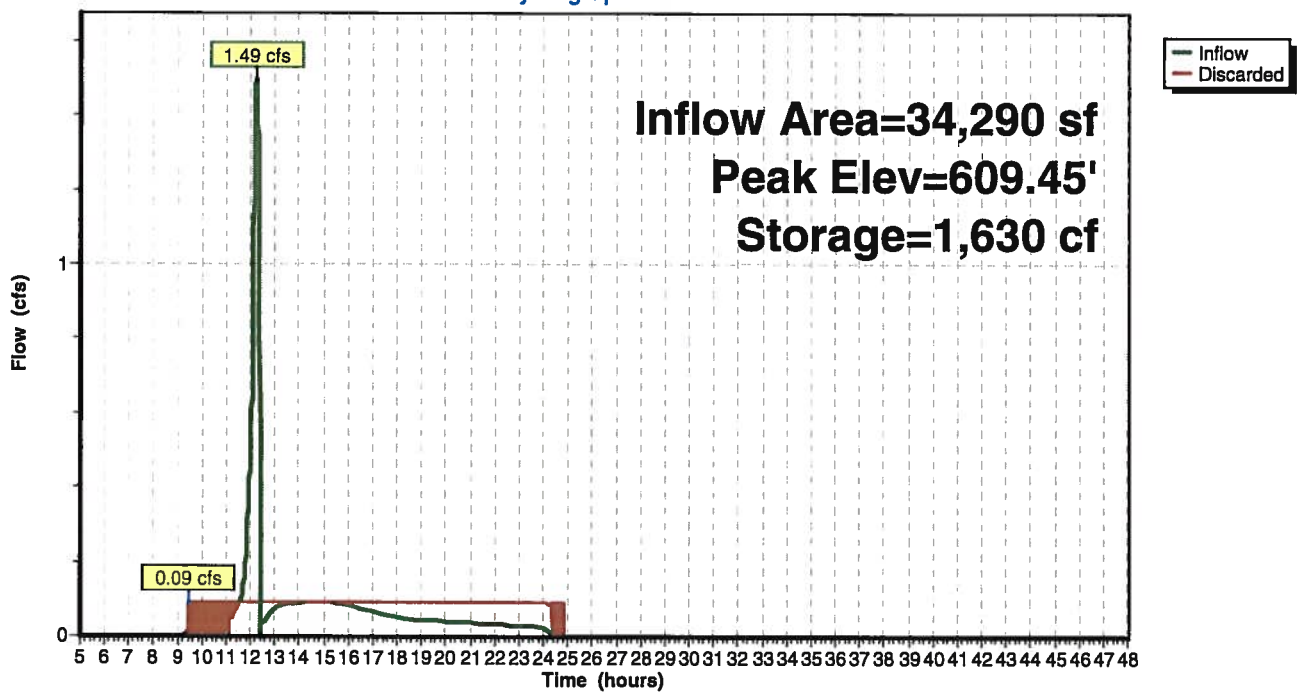
Volume	Invert	Avail.Storage	Storage Description
#1	606.50'	782 cf	**Cultec R-330XLHD** x 15 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	606.00'	1,031 cf	**21.00'W x 40.00'L x 4.00'H Prismatoid** 3,360 cf Overall - 782 cf Embedded = 2,578 cf x 40.0% Voids
		1,813 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	606.00'	**4.700 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 9.47 hrs HW=606.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 1P: Infiltration Sys #2

Hydrograph



Summary for Pond DMH-1: DMH #1

Inflow Area =	34,290 sf, 32.08% Impervious, Inflow Depth = 2.12" for 10-yr event				
Inflow =	1.49 cfs @	12.20 hrs,	Volume=	6,048 cf	
Outflow =	1.49 cfs @	12.21 hrs,	Volume=	6,048 cf,	Atten= 0%, Lag= 0.6 min
Primary =	1.49 cfs @	12.21 hrs,	Volume=	4,411 cf	
Secondary =	1.03 cfs @	12.39 hrs,	Volume=	1,637 cf	

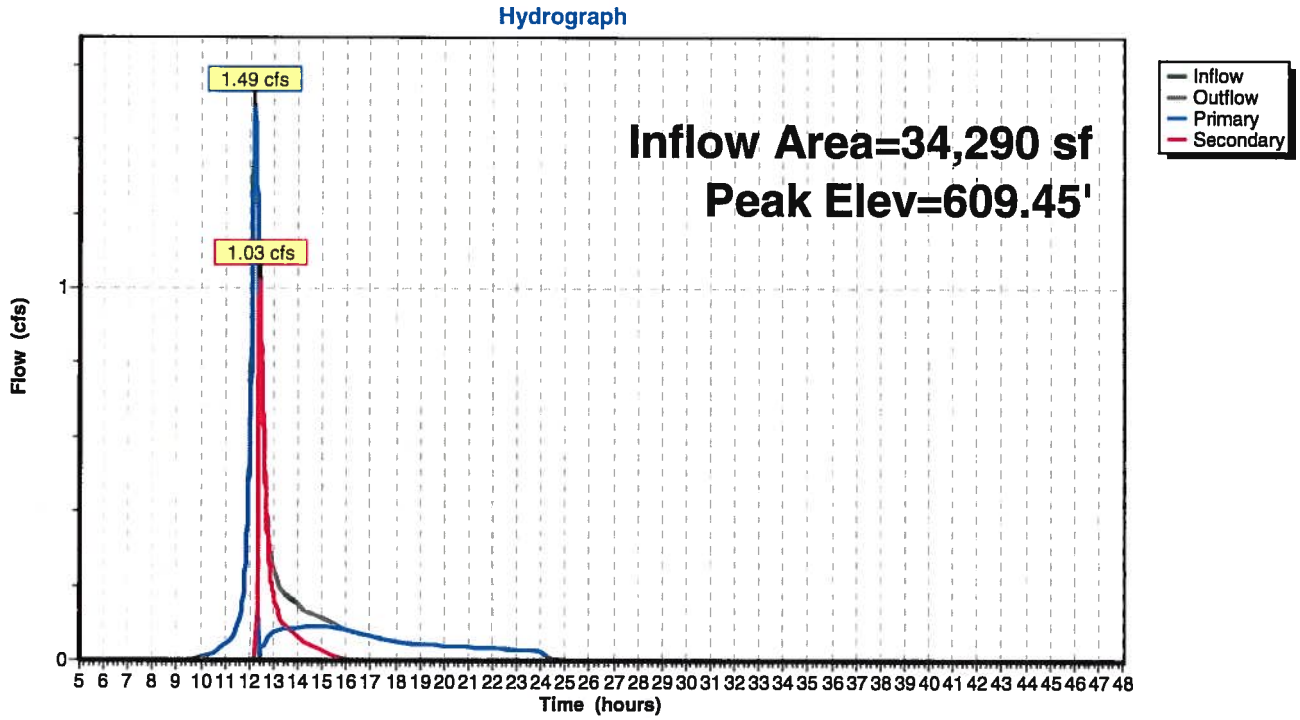
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 609.45' @ 12.39 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	607.50'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.50' / 607.00' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	609.00'	**18.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.00' / 607.00' S= 0.0299 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.36 cfs @ 12.21 hrs HW=608.16' TW=607.83' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 1.36 cfs @ 3.50 fps)

Secondary OutFlow Max=1.01 cfs @ 12.39 hrs HW=609.45' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 1.01 cfs @ 2.28 fps)

Pond DMH-1: DMH #1



Summary for Pond EX WL: SB-1

Inflow Area = 41,353 sf, 14.17% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 1.24 cfs @ 12.22 hrs, Volume= 5,447 cf
Outflow = 0.11 cfs @ 15.14 hrs, Volume= 5,030 cf, Atten= 91%, Lag= 175.1 min
Primary = 0.11 cfs @ 15.14 hrs, Volume= 5,030 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 615.51' @ 15.14 hrs Surf.Area= 2,408 sf Storage= 3,485 cf
Flood Elev= 617.00' Surf.Area= 4,584 sf Storage= 8,305 cf

Plug-Flow detention time= 1,113.2 min calculated for 5,029 cf (92% of inflow)
Center-of-Mass det. time= 1,074.9 min (1,946.9 - 872.0)

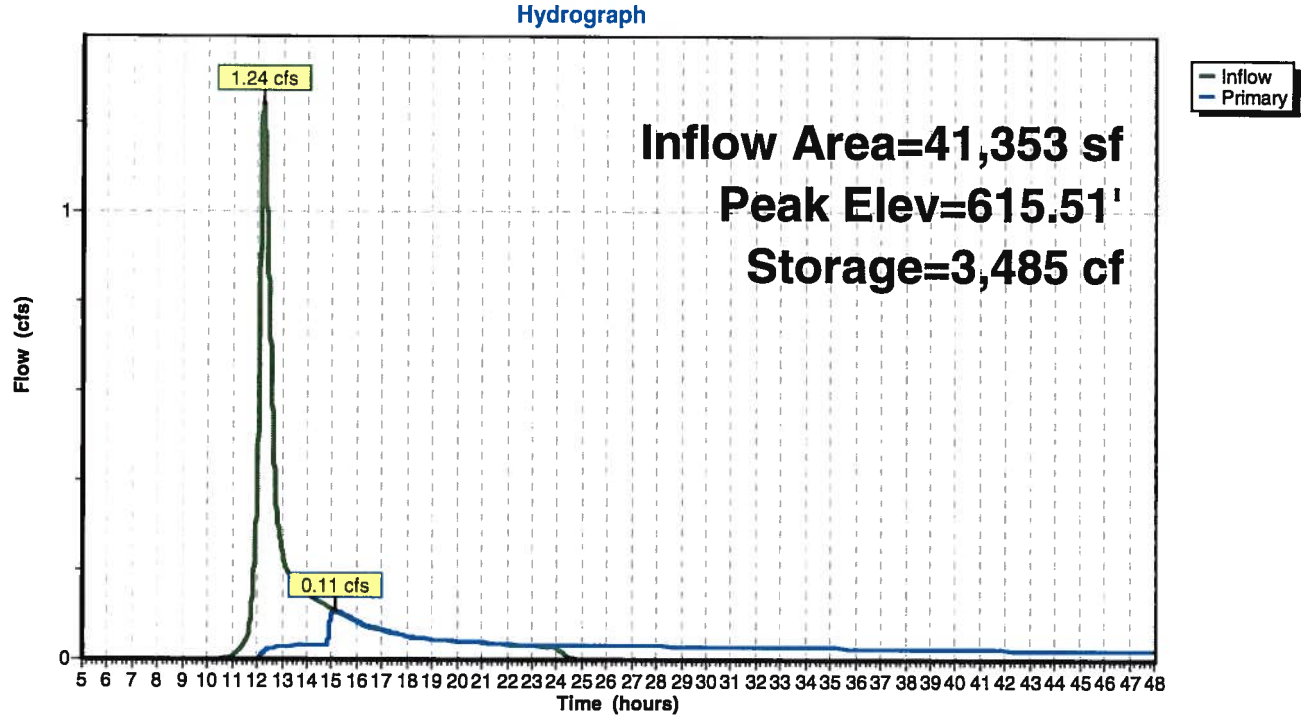
Volume	Invert	Avail.Storage	Storage Description
#1	613.50'	8,305 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
613.50	218	60.3	0	0	218
614.00	1,670	148.2	415	415	1,677
616.00	2,673	186.0	4,304	4,719	2,737
617.00	4,584	243.3	3,586	8,305	4,706

Device	Routing	Invert	Outlet Devices
#1	Primary	613.50'	**15.0" Round Culvert** L= 63.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.50' / 611.00' S= 0.0397 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	614.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	615.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.11 cfs @ 15.14 hrs HW=615.51' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.11 cfs of 6.96 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.84 fps)
└─**3=Orifice/Grate** (Weir Controls 0.08 cfs @ 0.39 fps)

Pond EX WL: SB-1



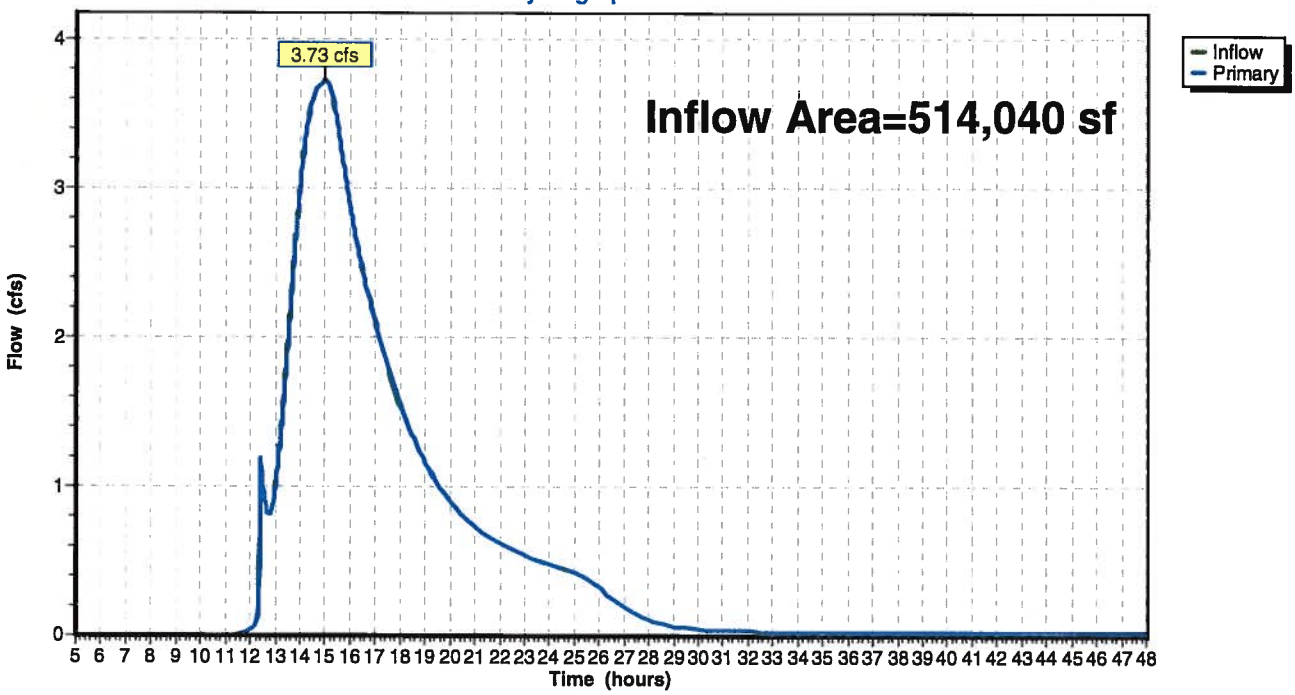
Summary for Link DP-IV: DP-IV

Inflow Area =	514,040 sf,	2.07% Impervious,	Inflow Depth =	1.74"	for	10-yr event
Inflow =	3.73 cfs @	14.96 hrs,	Volume=	74,720 cf		
Primary =	3.73 cfs @	14.97 hrs,	Volume=	74,720 cf,	Atten= 0%,	Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-IV: DP-IV

Hydrograph



Summary for Subcatchment IVa:

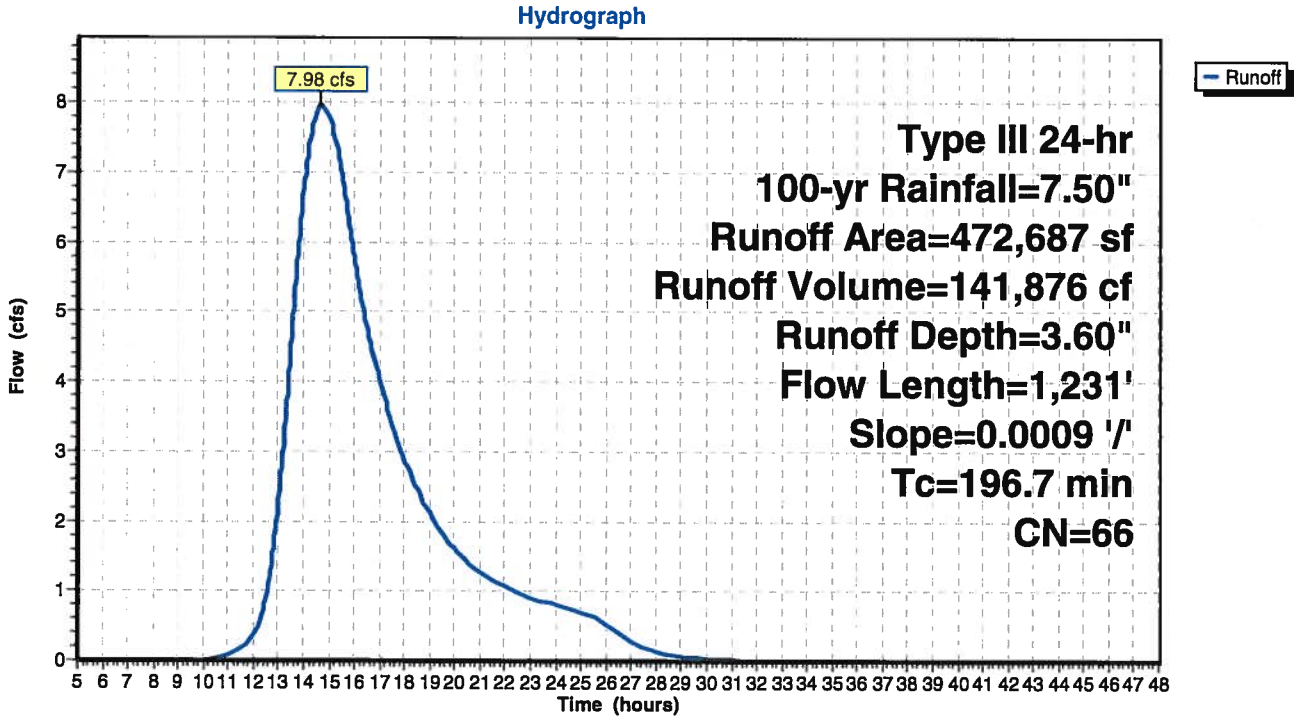
Runoff = 7.98 cfs @ 14.64 hrs, Volume= 141,876 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
58,775	70	Woods, Good, HSG C
181,536	55	Woods, Good, HSG B
45,680	61	>75% Grass cover, Good, HSG B
4,802	98	Paved roads w/curbs & sewers
472,687	66	Weighted Average
467,885		98.98% Pervious Area
4,802		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment IVa:



Summary for Subcatchment IVb:

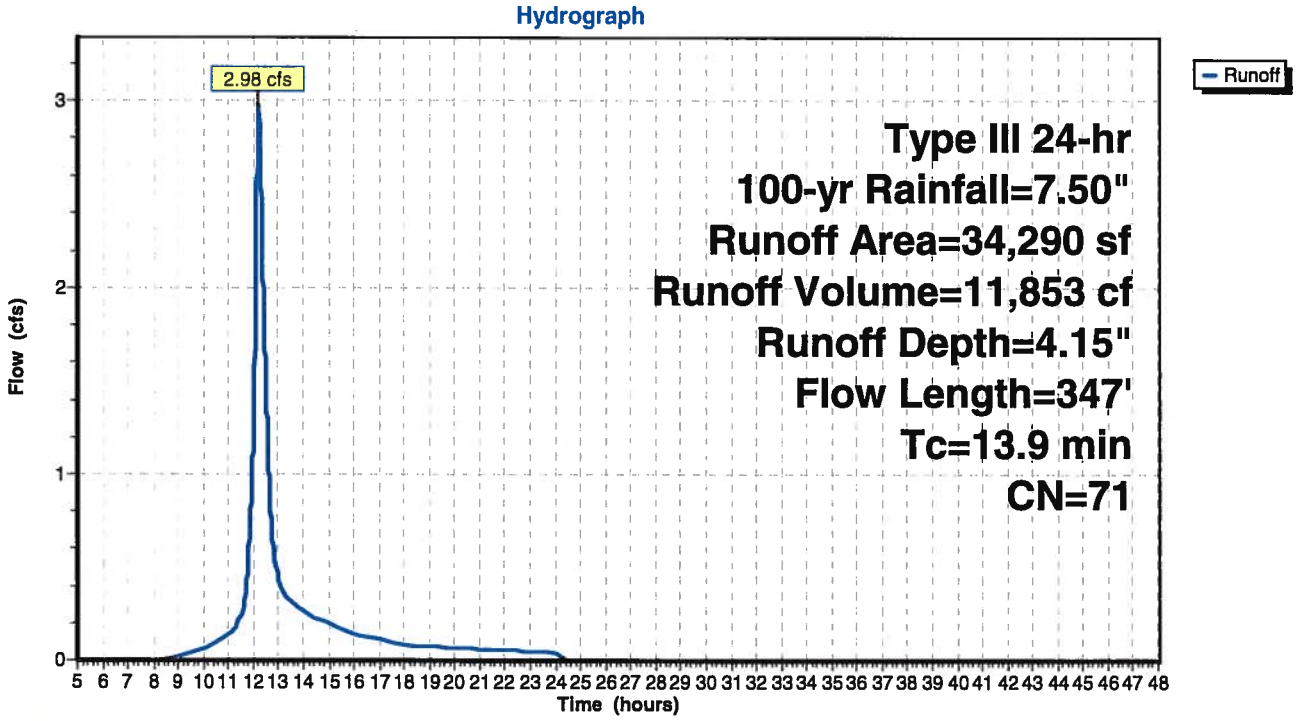
Runoff = 2.98 cfs @ 12.19 hrs, Volume= 11,853 cf, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
11,000	98	Paved parking & roofs
13,000	55	Woods, Good, HSG B
10,290	61	>75% Grass cover, Good, HSG B
34,290	71	Weighted Average
23,290		67.92% Pervious Area
11,000		32.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	207	0.0167	5.86	4.60	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
13.9	347	Total			

Subcatchment IVb:



Summary for Subcatchment IVc:

Runoff = 2.82 cfs @ 12.21 hrs, Volume= 11,671 cf, Depth= 3.39"

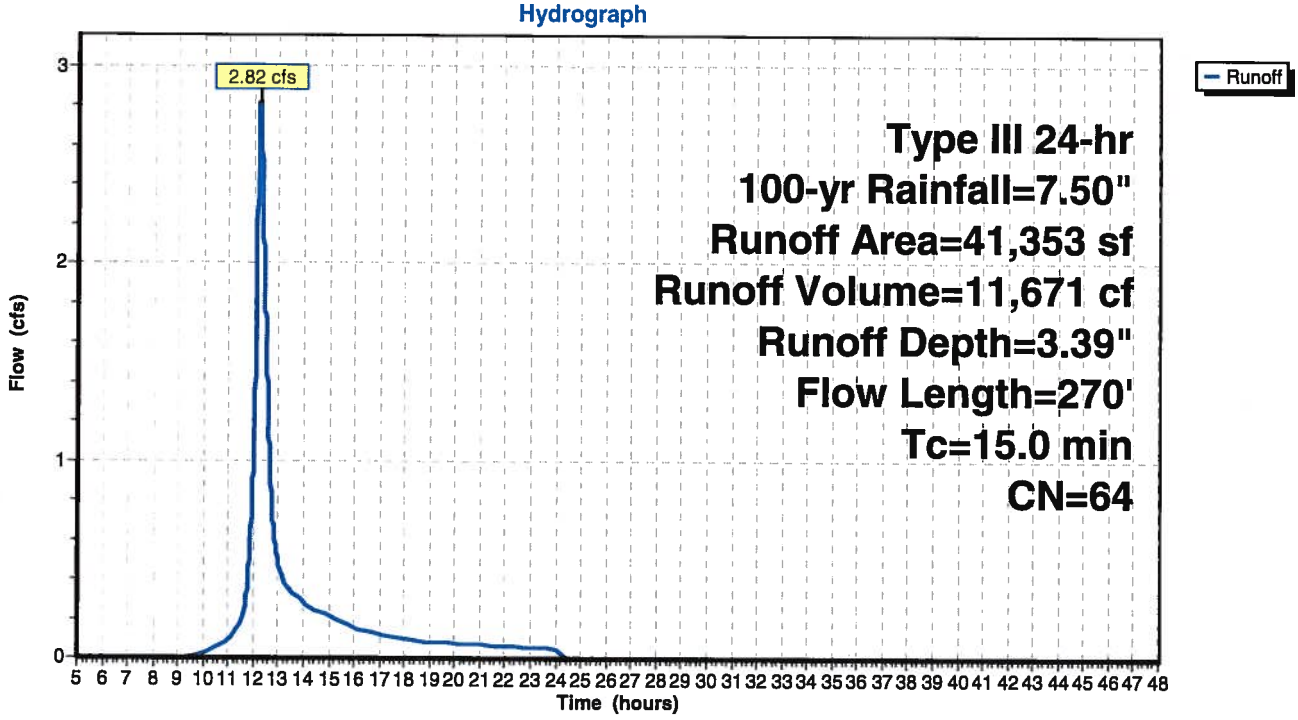
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.50"

Area (sf)	CN	Description
23,675	55	Woods, Good, HSG B
2,770	76	Woods/grass comb., Fair, HSG C
5,860	98	Paved parking & roofs
9,048	61	>75% Grass cover, Good, HSG B
41,353	64	Weighted Average
35,493		85.83% Pervious Area
5,860		14.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.2	170	0.0647	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	270	Total			

Subcatchment IVc:

Hydrograph



Summary for Pond 1P: Infiltration Sys #2

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	1.97"	for 100-yr event
Inflow =	2.01 cfs @	12.09 hrs,	Volume=	5,626 cf	
Outflow =	0.09 cfs @	7.84 hrs,	Volume=	5,836 cf,	Atten= 95%, Lag= 0.0 min
Discarded =	0.09 cfs @	7.84 hrs,	Volume=	5,836 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 609.80' @ 12.22 hrs Surf.Area= 840 sf Storage= 1,747 cf

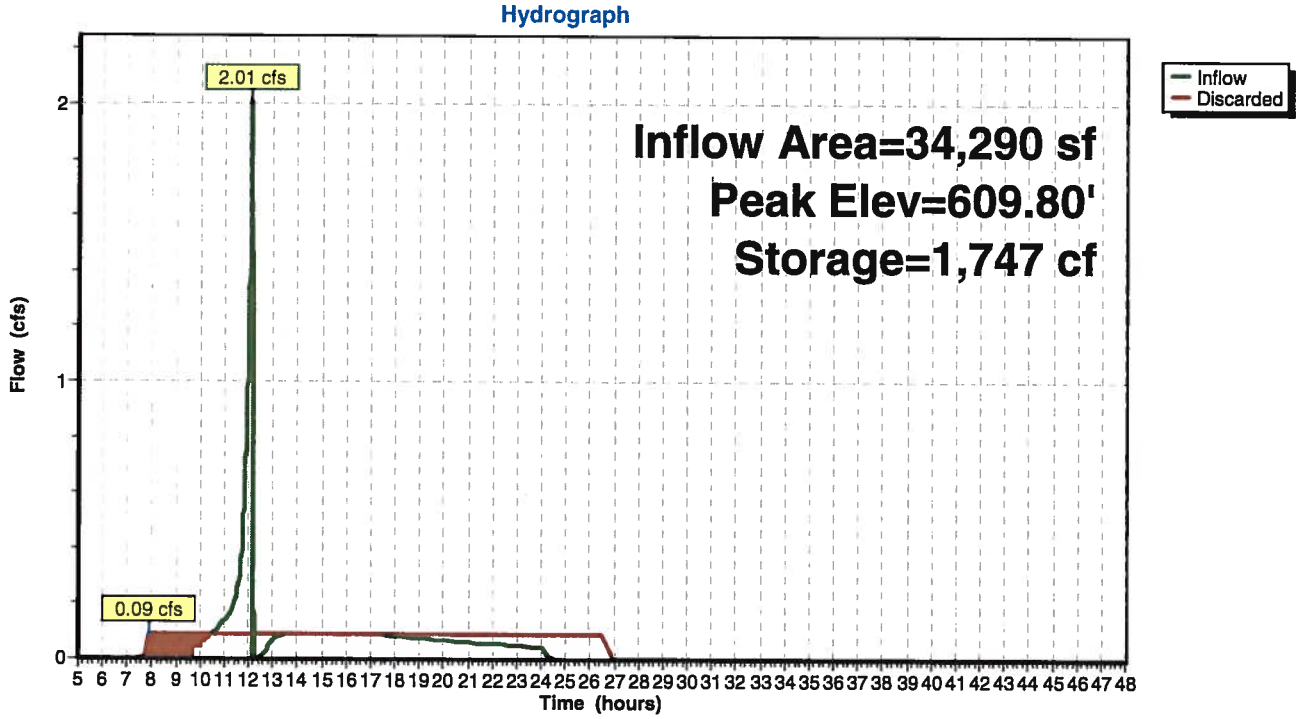
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 172.4 min (1,067.3 - 894.9)

Volume	Invert	Avail.Storage	Storage Description
#1	606.50'	782 cf	**Cultec R-330XLHD** x 15 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	606.00'	1,031 cf	**21.00'W x 40.00'L x 4.00'H Prismatoid** 3,360 cf Overall - 782 cf Embedded = 2,578 cf x 40.0% Voids
		1,813 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	606.00'	**4.700 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 7.84 hrs HW=606.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Pond 1P: Infiltration Sys #2



Summary for Pond DMH-1: DMH #1

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	4.15"	for 100-yr event
Inflow =	2.98 cfs @	12.19 hrs,	Volume=	11,853 cf	
Outflow =	2.98 cfs @	12.20 hrs,	Volume=	11,853 cf,	Atten= 0%, Lag= 0.6 min
Primary =	2.01 cfs @	12.09 hrs,	Volume=	5,626 cf	
Secondary =	2.92 cfs @	12.23 hrs,	Volume=	6,227 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 609.80' @ 12.23 hrs

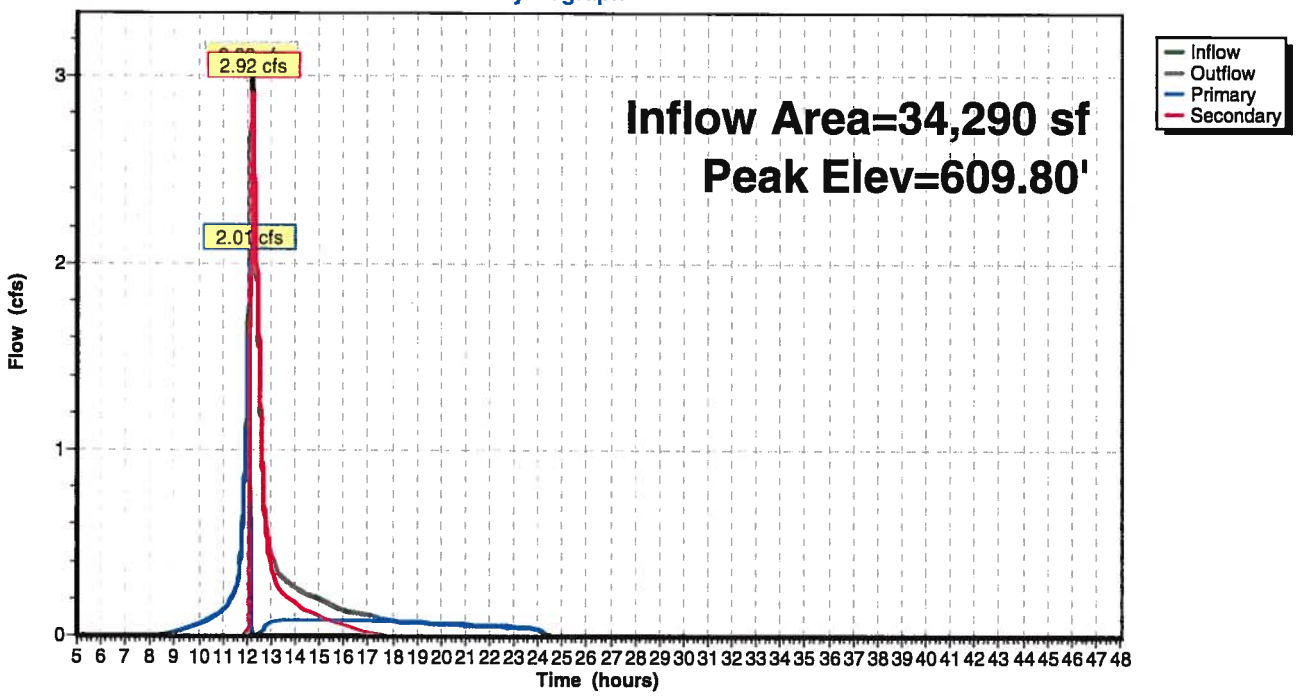
Device	Routing	Invert	Outlet Devices
#1	Primary	607.50'	**12.0" Round Culvert** L= 7.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.50' / 607.00' S= 0.0714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	609.00'	**18.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.00' / 607.00' S= 0.0299 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.23 cfs @ 12.09 hrs HW=609.07' TW=608.96' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.23 cfs @ 1.57 fps)

Secondary OutFlow Max=2.92 cfs @ 12.23 hrs HW=609.80' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Inlet Controls 2.92 cfs @ 3.04 fps)

Pond DMH-1: DMH #1

Hydrograph



Summary for Pond EX WL: SB-1

Inflow Area = 41,353 sf, 14.17% Impervious, Inflow Depth = 3.39" for 100-yr event
Inflow = 2.82 cfs @ 12.21 hrs, Volume= 11,671 cf
Outflow = 2.11 cfs @ 12.37 hrs, Volume= 11,254 cf, Atten= 25%, Lag= 9.4 min
Primary = 2.11 cfs @ 12.37 hrs, Volume= 11,254 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 615.63' @ 12.37 hrs Surf.Area= 2,468 sf Storage= 3,761 cf
Flood Elev= 617.00' Surf.Area= 4,584 sf Storage= 8,305 cf

Plug-Flow detention time= 519.5 min calculated for 11,254 cf (96% of inflow)
Center-of-Mass det. time= 499.6 min (1,348.6 - 849.0)

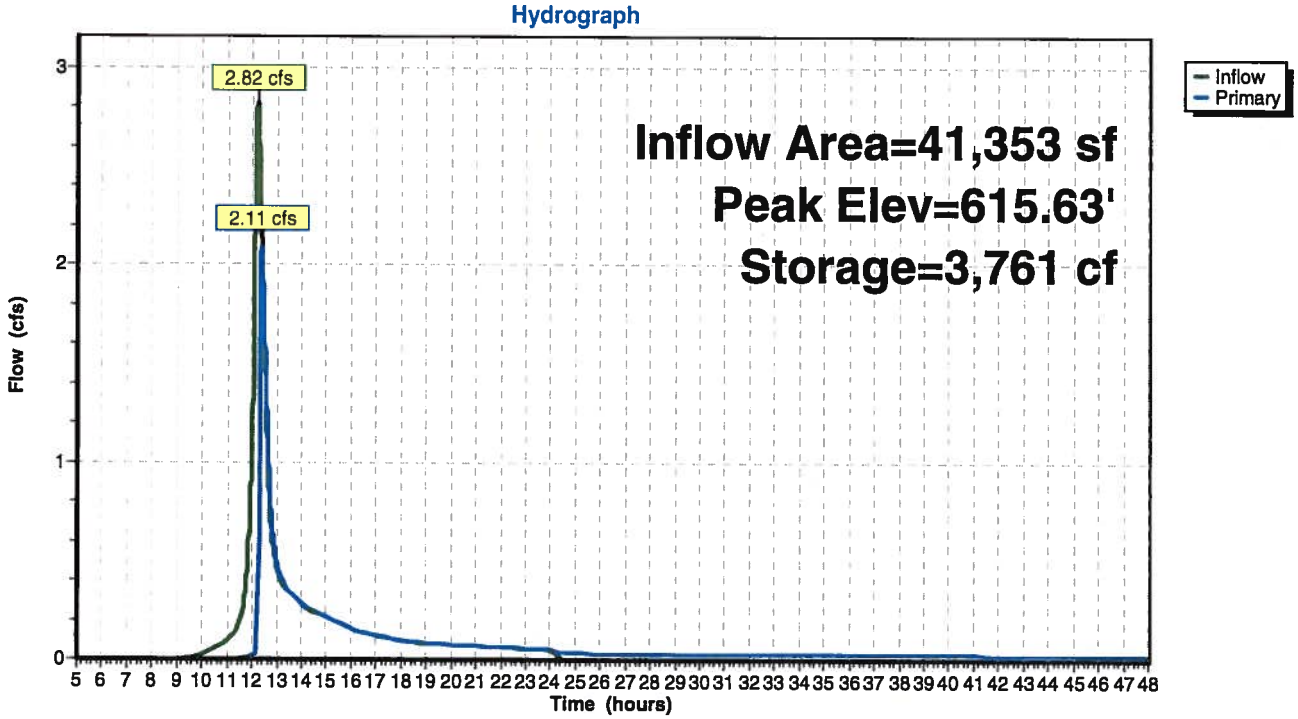
Volume	Invert	Avail.Storage	Storage Description
#1	613.50'	8,305 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
613.50	218	60.3	0	0	218
614.00	1,670	148.2	415	415	1,677
616.00	2,673	186.0	4,304	4,719	2,737
617.00	4,584	243.3	3,586	8,305	4,706

Device	Routing	Invert	Outlet Devices
#1	Primary	613.50'	**15.0" Round Culvert** L= 63.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.50' / 611.00' S= 0.0397 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	614.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	615.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.11 cfs @ 12.37 hrs HW=615.63' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.11 cfs of 7.24 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.06 fps)
  └─**3=Orifice/Grate** (Weir Controls 2.08 cfs @ 1.17 fps)

Pond EX WL: SB-1



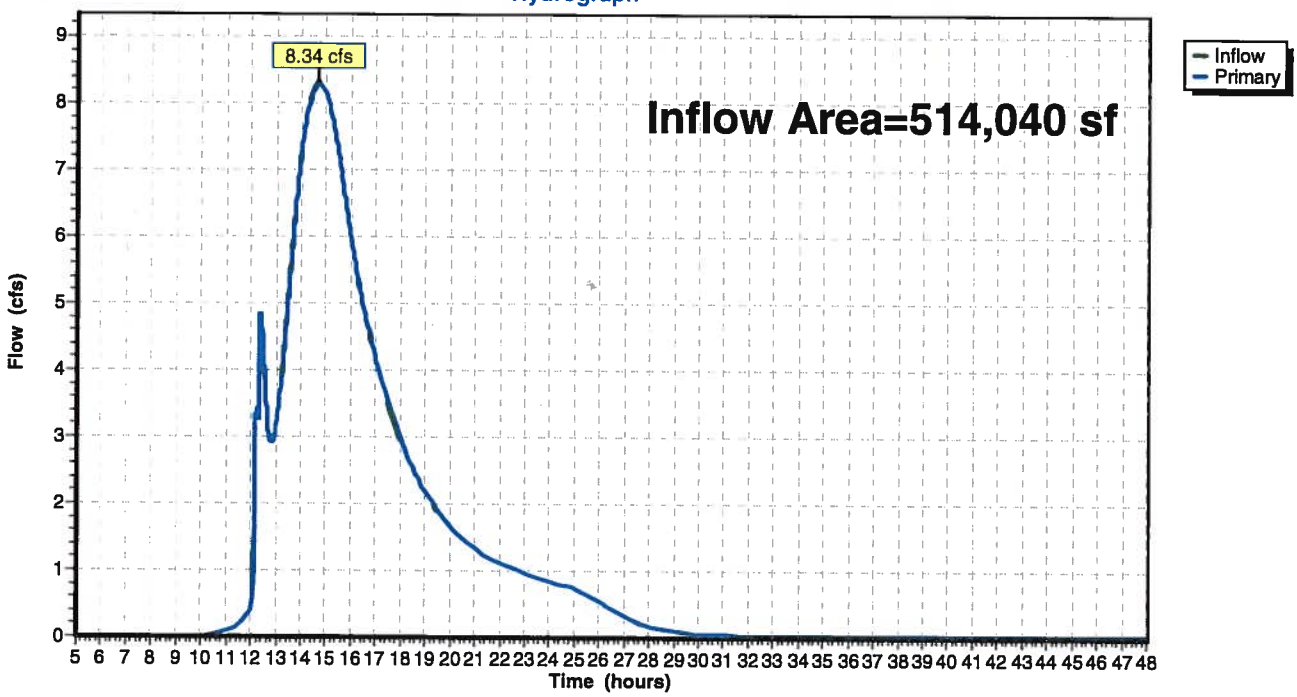
Summary for Link DP-IV: DP-IV

Inflow Area =	514,040 sf,	2.07% Impervious,	Inflow Depth =	3.72"	for	100-yr event
Inflow =	8.34 cfs @	14.64 hrs,	Volume=	159,357 cf		
Primary =	8.34 cfs @	14.65 hrs,	Volume=	159,357 cf,	Atten= 0%,	Lag= 0.6 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-IV: DP-IV

Hydrograph



Appendix B:
Water Quality Volume and
Runoff Reduction Volume Calculations

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Water Quality Volume (WQv) Calculation

Basin ID: **Watershed I**

Original WQv:	Subcatchment Area (A):	603,261	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	60,534	sq.ft. *	
	Percent Imperviousness(I):	10.03	%	
	Rv = .05 + .009(I)	0.14031		
	Rv =	0.2	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	13,071	cu.ft.	
		or		
		0.3001	ac.ft.	
Area Reduced WQv:	Subcatchment Area (A):	278,304	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	60,534	sq.ft.	
	Percent Imperviousness(I):	21.75	%	
	Rv = .05 + .009(I)	0.24576		
	Rv =	0.2457593	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	7,410	cu.ft.	
		or		
		0.1701	ac.ft.	

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Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **Watershed I** HSG: **B**

P = Rainfall (inches)	1.3 in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95
Aic = Total area of new impervious cover	60,534 ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.40

HSG A = 0.55 HSG C = 0.30
HSG B = 0.40 HSG D = 0.20

Ai = (S)(Aic)	24,214 ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	1.3	0.95	24,214	/ 12	=	**2,492 cu-ft**
						0.0572 ac-ft

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Area Reduction Practices

Basin ID: **Watershed I**

		Total Area		**Area of Impervious (AI)**
Original Drainage Area (DA):		603,261 sq.ft.		60,534 sq.ft.
Conservation of Natural Areas:	-	324,957 sq.ft.	-	0 sq.ft.
Riparian Buffers / Filter Strips:	-	0 sq.ft.	-	0 sq.ft.
Tree Planting / Tree Preservation:	-	0 sq.ft.	-	0 sq.ft.
Total Area Reduction:	=	324,957 sq.ft.		
Total AI Reduction:	=			0 sq.ft.
Remaining DA:		**278,304 sq.ft.**		-
Remaining AI:		-		**60,534 sq.ft.**
	or	**6.3890 ac.ft.**		**1.3897 ac.ft.**

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Project Silvermine Preserve Subdivision

Roof Top Disconnect

Basin ID: **Watershed I**

Total Area:

Total Area of Roof To Be Disconnected: 0 sq.ft.

Recalculate WQv:

Subcatchment Area (A):	278,304	sq.ft.
Rainfall (P):	3.1	in.
Impervious Area	60,534	sq.ft.
Percent Imperviousness(I):	21.75	%
Rv = .05 + .009(I)	0.24576	
Rv =	0.2457593	** ** Minimum Rv = 0.2
WQv = (P) (Rv) (A) / 12	17,669	cu.ft.
	or	
	0.4056	ac.ft.

Project Silvermine Preserve Subdivision

Source Control Practices

Basin ID: **Infiltrator System #1 (Watershed I-b)** HSG: B

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	58,632 sq.ft.
AI to Practice(s):	20,518 sq.ft.

Subcatchment Area (A):	58,632	sq.ft.
Rainfall (P):	1.3	in.
Impervious Area	20,518	sq.ft.
Percent Imperviousness(I):	34.99	%
Rv = .05 + .009(I)	0.36495	
Rv =	0.36495 **	** Minimum Rv = 0.2
WQv = (P)(Rv)(A)/12 =	2,318	**cu.ft.**
	or	
	0.0532	**ac.ft.**

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B

Allowable runoff reduction volume for Infiltration in B soil = 90% of WQv

2,318 x 0.90 = **2,086 cu.ft.**
or
0.0479 ac.ft.

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Project Silvermine Preserve Subdivision

Source Control Practices

Basin ID: **Stormwater Basin #4 (Watershed I-c & I-d)** HSG: B

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	206,559 sq.ft.
AI to Practice(s):	40,016 sq.ft.

Subcatchment Area (A):	206,559	sq.ft.
Rainfall (P):	1.3	in.
Impervious Area	40,016	sq.ft.
Percent Imperviousness(I):	19.37	%
Rv = .05 + .009(I)	0.22435	
Rv =	0.22435	** ** Minimum Rv = 0.2
WQv = (P)(Rv)(A)/12 =	5,020	**cu.ft.**
	or	
	0.1153	**ac.ft.**

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B

Allowable runoff reduction volume for Infiltration in B soil = 90% of WQv

5,020 x 0.90 = **4,518 cu.ft.**
or
0.1037 ac.ft.

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Total Runoff Reduction Volume

Basin ID: **Watershed I**

Total RRv provided:

				RRv	
Original WQv - Area Reduced WQv:	13,071	-	7,410	=	5,661 cu.ft.
Roof Top Disconnection:					0 cu.ft.
Source Control WQv Treatment Practices:					
Basin:					
Infiltrator System #1 (Watershed I-b)				=	2,086 cu.ft.
Stormwater Basin #4 (Watershed I-c & I-d)				=	4,518 cu.ft.

Total RRv provided: **12,266 cu.ft.**
or
0.282 ac.ft.

Is RRv provided	0.282 ac. ft.	≥ Original WQv	0.300 ac. ft.	
			No	
Is RRv provided	0.282 ac. ft.	≥ S-RRv (min. RRv)	0.057 ac. ft.	
			Yes	

Total drainage area treated with runoff reduction / source control practices:

Area Reduction Practices:	324,957 sq.ft.	or	**7.460 Acres**
Source Control Practices:	17,798 sq.ft.	or	**0.409 Acres**
		Total:	**7.869 Acres**

Total impervious area treated with runoff reduction / source control practices:

Area Reduction Practices:	0 sq.ft.	or	**0.000 Acres**
Source Control Practices:	8,017 sq.ft.	or	**0.184 Acres**
		Total:	**0.184 Acres**

Project **Silvermine Preserve Subdivision**

Water Quality Volume (WQv) Calculation

Basin ID: **Watershed II**

Original WQv:	Subcatchment Area (A):	679,174	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	30,847	sq.ft. *	
	Percent Imperviousness(I):	4.54	%	
	Rv = .05 + .009(I)	0.09088		
	Rv =	0.2	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	14,715	cu.ft.	
		or		
		0.3378	ac.ft.	
Area Reduced WQv:	Subcatchment Area (A):	226,150	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	30,847	sq.ft.	
	Percent Imperviousness(I):	13.64	%	
	Rv = .05 + .009(I)	0.17276		
	Rv =	0.2	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	4,900	cu.ft.	
		or		
		0.1125	ac.ft.	

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Project **Silvermine Preserve Subdivision**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **Watershed II** HSG: **B**

P = Rainfall (inches)	1.3 in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95
Aic = Total area of new impervious cover	30,847 ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.40

HSG A = 0.55 HSG C = 0.30
HSG B = 0.40 HSG D = 0.20

Ai = (S)(Aic)	12,339 ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	1.3	0.95	12,339	/ 12	=	**1,270 cu-ft**
						0.0292 ac-ft

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Project Silvermine Preserve Subdivision

Area Reduction Practices

Basin ID: **Watershed II**

		Total Area			**Area of Impervious (AI)**	
Original Drainage Area (DA):		679,174	sq.ft.		30,847	sq.ft.
Conservation of Natural Areas:	-	453,024	sq.ft.	-	0	sq.ft.
Riparian Buffers / Filter Strips:	-	0	sq.ft.	-	0	sq.ft.
Tree Planting / Tree Preservation:	-	0	sq.ft.	-	0	sq.ft.
Total Area Reduction:	=	453,024	sq.ft.			
Total AI Reduction:	=				0	sq.ft.
Remaining DA:		**226,150**	**sq.ft.**		-	
Remaining AI:		-			**30,847**	**sq.ft.**
	or	**5.1917**	**ac.ft.**		**0.7081**	**ac.ft.**

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Project Silvermine Preserve Subdivision

Roof Top Disconnect

Basin ID: **Watershed II**

Total Area:

Total Area of Roof To Be Disconnected: 0 sq.ft.

Recalculate WQv:

Subcatchment Area (A):	226,150	sq.ft.
Rainfall (P):	3.1	in.
Impervious Area	30,847	sq.ft.
Percent Imperviousness(I):	13.64	%
Rv = .05 + .009(I)	0.17276	
Rv =	0.2	** ** Minimum Rv = 0.2
WQv = (P) (Rv) (A) / 12	11,684	cu.ft.
	or	
	0.2682	ac.ft.

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Project Silvermine Preserve Subdivision

Source Control Practices

Basin ID: **Stormwater Basin #2 (Watershed II-c)** HSG: B

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	135,473 sq.ft.
AI to Practice(s):	19,056 sq.ft.

Subcatchment Area (A):	135,473	sq.ft.
Rainfall (P):	1.3	in.
Impervious Area	19,056	sq.ft.
Percent Imperviousness(I):	14.07	%
Rv = .05 + .009(I)	0.17660	
Rv =	0.2 **	** Minimum Rv = 0.2
WQv = (P)(Rv)(A)/12 =	2,935	**cu.ft.**
	or	
	0.0674	**ac.ft.**

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B

Allowable runoff reduction volume for Infiltration in B soil = 90% of WQv

2,935 x 0.90 = **2,642 cu.ft.**
or
0.0606 ac.ft.

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Project Silvermine Preserve Subdivision

Source Control Practices

Basin ID: **Stormwater Basin #3 (Watershed II-b)** HSG: B

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	78,452 sq.ft.
AI to Practice(s):	11,791 sq.ft.

Subcatchment Area (A):	78,452	sq.ft.
Rainfall (P):	1.3	in.
Impervious Area	11,791	sq.ft.
Percent Imperviousness(I):	15.03	%
Rv = .05 + .009(I)	0.18527	
Rv =	0.2 **	** Minimum Rv = 0.2
WQv = (P)(Rv)(A)/12 =	1,700	**cu.ft.**
	or	
	0.0390	**ac.ft.**

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B

Allowable runoff reduction volume for Infiltration in B soil = 90% of WQv

1,700 x 0.90 = **1,530 cu.ft.**
or
0.0351 ac.ft.

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Project Silvermine Preserve Subdivision

Total Runoff Reduction Volume

Basin ID: **Watershed II**

Total RRv provided:

				RRv
Original WQv - Area Reduced WQv:	14,715	-	4,900 =	9,816 cu.ft.
Roof Top Disconnection:				0 cu.ft.
Source Control WQv Treatment Practices:				
Basin:				
Stormwater Basin #2 (Watershed II-c)			=	2,642 cu.ft.
Stormwater Basin #3 (Watershed II-b)			=	1,530 cu.ft.

Total RRv provided: **13,987 cu.ft.**
or
0.321 ac.ft.

Is RRv provided	0.321 ac. ft.	≥ Original WQv	0.338 ac. ft.	
			No	
Is RRv provided	0.321 ac. ft.	≥ S-RRv (min. RRv)	0.029 ac. ft.	
			Yes	

Total drainage area treated with runoff reduction / source control practices:

Area Reduction Practices:	453,024 sq.ft.	or	**10.400 Acres**
Source Control Practices:	17,798 sq.ft.	or	**0.409 Acres**
		Total:	**10.809 Acres**

Total impervious area treated with runoff reduction / source control practices:

Area Reduction Practices:	0 sq.ft.	or	**0.000 Acres**
Source Control Practices:	8,017 sq.ft.	or	**0.184 Acres**
		Total:	**0.184 Acres**

Project **Silvermine Preserve Subdivision**

Water Quality Volume (WQv) Calculation

Basin ID: **Watershed IV**

Original WQv:	Subcatchment Area (A):	548,330	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	21,662	sq.ft. *	
	Percent Imperviousness(I):	3.95	%	
	Rv = .05 + .009(I)	0.08555		
	Rv =	0.2	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	11,880	cu.ft.	
		or		
		0.2727	ac.ft.	
Area Reduced WQv:	Subcatchment Area (A):	144,529	sq.ft.	
	Rainfall (P):	1.3	in.	
	Impervious Area	21,662	sq.ft.	
	Percent Imperviousness(I):	14.99	%	
	Rv = .05 + .009(I)	0.18489		
	Rv =	0.2	**	** Minimum Rv = 0.2
	WQv = (P)(Rv)(A)/12 =	3,131	cu.ft.	
		or		
		0.0719	ac.ft.	

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Project **Silvermine Preserve Subdivision**

Specified Runoff Reduction Volume (S-RRv)

RRv (in acre-feet of storage) = [(P)(Rv)(Ai)] /12

Basin ID: **Watershed IV** HSG: **B**

P = Rainfall (inches)	1.3	in
Rv = 0.05+0.009(I) where I is 100% impervious	0.95	
Aic = Total area of new impervious cover	21,662	ft²
S = Hydrologic Soil Group (HSG) Specific Reduction Factor (S)	0.40	

HSG A = 0.55 HSG C = 0.30
HSG B = 0.40 HSG D = 0.20

Ai = (S)(Aic)	8,665	ft²

Ai = impervious cover targeted for runoff reduction

therefore:

RRv =	[(P)	(Rv)	(Ai)]	/ 12		
	1.3	0.95	8,665	/ 12	=	**892 cu-ft**
						0.0205 ac-ft

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Project Silvermine Preserve Subdivision

Area Reduction Practices

Basin ID: **Watershed IV**

		Total Area			Area of Impervious (AI)	
Original Drainage Area (DA):		548,330	sq.ft.		21,662	sq.ft.
Conservation of Natural Areas:	-	403,801	sq.ft.	-	0	sq.ft.
Riparian Buffers / Filter Strips:	-	0	sq.ft.	-	0	sq.ft.
Tree Planting / Tree Preservation:	-	0	sq.ft.	-	0	sq.ft.
Total Area Reduction:	=	403,801	sq.ft.			
Total AI Reduction:	=				0	sq.ft.
Remaining DA:		**144,529**	**sq.ft.**		-	
Remaining AI:		-			**21,662**	**sq.ft.**
	or	**3.3179**	**ac.ft.**		**0.4973**	**ac.ft.**

Project Silvermine Preserve Subdivision

Roof Top Disconnect

Basin ID: **Watershed IV**

	Total Area:
Total Area of Roof To Be Disconnected:	0 sq.ft.

Recalculate WQv:

Subcatchment Area (A):	144,529	sq.ft.
Rainfall (P):	3.1	in.
Impervious Area	21,662	sq.ft.
Percent Imperviousness(I):	14.99	%
Rv = .05 + .009(I)	0.18489	
Rv =	0.2	** ** Minimum Rv = 0.2
WQv = (P) (Rv) (A) / 12	7,467	cu.ft.
	or	
	0.1714	ac.ft.

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Project Silvermine Preserve Subdivision

Source Control Practices

Basin ID: **Infiltrator System #2 (Watershed IV-b)** HSG: B

Practice Type: I = Infiltration

(I)=Infiltration, (B)=Bioretention, (D)=Dry Swale, (V)=Vegetated Swale, (G)=Green Roof, (R)=Rain Garden, (S)=Stormwater Planters, (C)=Cisterns/Rain Barrels, (P)=Porous Pavement

	Total Area:
DA Tributary to Practice(s):	34,290 sq.ft.
AI to Practice(s):	11,000 sq.ft.

Subcatchment Area (A):	34,290	sq.ft.
Rainfall (P):	1.3	in.
Impervious Area	11,000	sq.ft.
Percent Imperviousness(I):	32.08	%
Rv = .05 + .009(I)	0.33871	
Rv =	0.33871 **	** Minimum Rv = 0.2
WQv = (P)(Rv)(A)/12 =	1,258	**cu.ft.**
	or	
	0.0289	**ac.ft.**

Allowable Runoff Reduction Volume (RRv)

Practice Type: I = Infiltration **HSG:** B

Allowable runoff reduction volume for Infiltration in B soil = 90% of WQv

1,258 x 0.90 = **1,132 cu.ft.**
or
0.0260 ac.ft.

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Project Silvermine Preserve Subdivision

Total Runoff Reduction Volume

Basin ID: **Watershed IV**

Total RRv provided:

				RRv	
Original WQv - Area Reduced WQv:	11,880	-	3,131	=	8,749 cu.ft.
Roof Top Disconnection:					0 cu.ft.
Source Control WQv Treatment Practices:					
Basin:					
Infiltrator System #2 (Watershed IV-b)				=	1,132 cu.ft.
				=	cu.ft.

Total RRv provided: **9,881 cu.ft.**
or
0.227 ac.ft.

Is RRv provided	0.227 ac. ft.	≥ Original WQv	0.273 ac. ft.	
			No	
Is RRv provided	0.227 ac. ft.	≥ S-RRv (min. RRv)	0.020 ac. ft.	
			Yes	

Total drainage area treated with runoff reduction / source control practices:

Area Reduction Practices:	403,801 sq.ft.	or	**9.270 Acres**
Source Control Practices:	17,798 sq.ft.	or	**0.409 Acres**
		Total:	**9.679 Acres**

Total impervious area treated with runoff reduction / source control practices:

Area Reduction Practices:	0 sq.ft.	or	**0.000 Acres**
Source Control Practices:	8,017 sq.ft.	or	**0.184 Acres**
		Total:	**0.184 Acres**

Appendix C:
Infiltration Practice Sizing Calculations

INFILTRATION SIZING CALCULATIONS
Silvermine Preservation Subdivision – Lockwood Road

DETERMINATION OF STORMWATER QUALITY VOLUME:
The required stormwater quality volume will be determined using "New York State Stormwater Management Design Manual" Unified Stormwater Sizing Criteria.

Subsurface Infiltration System #1
Contributing Watershed Areas: Post Ib
Water Quality Volume (WQv):
WQv = [(P)(Rv)(A)]/12
Rv = 0.05 + 0.009(I)
I = Impervious Cover (percent)
Minimum Rv = 0.2
P = 90% Rainfall Event - (P = 1.30")
A= Site area in acres
Total area treated = 58,632 SF = 1.346 Ac
I = [20,518/58,632] = 0.350 = 35.0%
Rv = 0.05 + 0.009 (35.0) = .365
WQv = [(1.3)(.365)(1.346)]/12 = 0.0532 acre-feet = **2,318 CF**

The treatment practice has been designed as an "Underground Infiltration System (I-4)". The "Underground Infiltration System" has been sized to capture and store 100% of the required WQv per Chapter 6 of the NYSDEC Code. The following calculations detail the specific areas and the volumes provided on the proposed plans.

Required Pretreatment
Infiltration Rate = 6.0 inches/hour (100% of WQv pretreatment required)

*Pretreatment shall be provided in a precast concrete hydrodynamic separator unit. Model of unit shall be Contech CDS-2020 based on the one year storm peak flow from the contributing area as generated by HydroCad.

Provided Volume
Available Storage Volume = **2,505 CF**

*Please see attached HydroCAD Report on the following page for available storage information.

Summary for Pond I-1: Infiltration Sys #1

Inflow Area =	58,632 sf, 34.99% Impervious,	Inflow Depth =	0.74"	for	1-yr event
Inflow =	1.01 cfs @ 12.12 hrs, Volume=	3,601 cf			
Outflow =	0.16 cfs @ 11.20 hrs, Volume=	5,203 cf,	Atten= 84%,	Lag= 0.0 min	
Discarded =	0.16 cfs @ 11.20 hrs, Volume=	5,203 cf			

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 620.46' @ 12.91 hrs Surf.Area= 1,155 sf Storage= 997 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.2 min (1,011.3 - 876.1)

Volume	Invert	Avail.Storage	Storage Description
#1	619.50'	1,095 cf	**Cultec R-330XLHD** x 21 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	619.00'	1,410 cf	**21.00'W x 55.00'L x 4.00'H Prismatoid** 4,620 cf Overall - 1,095 cf Embedded = 3,525 cf x 40.0% Voids
		2,505 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	619.00'	**6.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.16 cfs @ 11.20 hrs HW=619.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

<u>Stormwater Basin #2</u>
Contributing Watershed Areas: Post IIc
Water Quality Volume (WQv):
WQv = [(P)(Rv)(A)]/12
Rv = 0.05 + 0.009(I)
I = Impervious Cover (percent)
Minimum Rv = 0.2
P = 90% Rainfall Event - (P = 1.30")
A= Site area in acres
Total area treated = 135,473 SF = 3.110 Ac
I = [19,056/135,473] = 0.141 = 14.1%
Rv = 0.05 + 0.009 (14.1) = .1769 *(Use min 0.2 Rv)*
WQv = [(1.3)(.2)(3.110)]/12 = 0.0674 acre-feet = **2,935 CF**

The treatment basin has been designed as an "Infiltration Basin (I-2)". The "Infiltration Basin" has been sized to capture and store 100% of the required WQv per Chapter 6 of the NYSDEC Code. The following calculations detail the specific areas and the volumes provided on the proposed plans.

Required Pretreatment
Infiltration Rate = 2.8 inches/hour (50% of WQv pretreatment required)
WQv (0.50) = (2,935)(0.50) = 1,468 CF

Pretreatment is provided by a forebay prior to the infiltration basin.

Bottom Area of Basin
Required Area of Basin (A) = V_w/d_b = 2,935/2.0 = 1,468 SF
Provided Area of Basin = 1,330 SF

Provided Volume
Available Storage Volume = **4,789 CF**

*Please see attached HydroCAD Report on the following page for available storage information.

Stage-Area-Storage for Pond SB-2:

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
596.00	1,330	1,330	0
596.04	1,349	1,349	54
596.08	1,368	1,368	108
596.12	1,388	1,388	163
596.16	1,407	1,407	219
596.20	1,427	1,427	276
596.24	1,447	1,447	333
596.28	1,466	1,466	391
596.32	1,487	1,487	450
596.36	1,507	1,507	510
596.40	1,527	1,527	571
596.44	1,547	1,547	632
596.48	1,568	1,568	695
596.52	1,589	1,589	758
596.56	1,610	1,610	822
596.60	1,631	1,631	887
596.64	1,652	1,652	952
596.68	1,673	1,673	1,019
596.72	1,694	1,694	1,086
596.76	1,716	1,716	1,154
596.80	1,738	1,738	1,223
596.84	1,759	1,759	1,293
596.88	1,781	1,781	1,364
596.92	1,803	1,803	1,436
596.96	1,826	1,826	1,508
597.00	1,848	1,848	1,582
597.04	1,870	1,870	1,656
597.08	1,892	1,892	1,732
597.12	1,914	1,914	1,808
597.16	1,937	1,937	1,885
597.20	1,959	1,959	1,963
597.24	1,982	1,982	2,041
597.28	2,004	2,004	2,121
597.32	2,027	2,027	2,202
597.36	2,050	2,050	2,283
597.40	2,073	2,073	2,366
597.44	2,097	2,097	2,449
597.48	2,120	2,120	2,534
597.52	2,144	2,144	2,619
597.56	2,167	2,167	2,705
597.60	2,191	2,191	2,792
597.64	2,215	2,215	2,880
597.68	2,239	2,239	2,969
597.72	2,263	2,263	3,059
597.76	2,287	2,287	3,150
597.80	2,312	2,312	3,242
597.84	2,336	2,336	3,335
597.88	2,361	2,361	3,429
597.92	2,386	2,386	3,524
597.96	2,411	2,411	3,620
598.00	2,436	2,436	3,717
598.04	2,483	2,483	3,816
598.08	2,531	2,531	3,916
598.12	2,579	2,579	4,018
598.16	2,628	2,628	4,122
598.20	2,677	2,677	4,228
598.24	2,726	2,726	4,336
598.28	2,776	2,776	4,446
598.32	2,826	2,826	4,558
598.36	2,877	2,877	4,672
➡ 598.40	2,928	2,928	4,789
598.44	2,980	2,980	4,907
598.48	3,032	3,032	5,027
598.52	3,085	3,085	5,149
598.56	3,138	3,138	5,274
598.60	3,192	3,192	5,400
598.64	3,246	3,246	5,529
598.68	3,300	3,300	5,660
598.72	3,355	3,355	5,793
598.76	3,410	3,410	5,928
598.80	3,466	3,466	6,066
598.84	3,522	3,522	6,206
598.88	3,579	3,579	6,348
598.92	3,636	3,636	6,492
598.96	3,694	3,694	6,639
599.00	3,752	3,752	6,788
599.04	3,810	3,810	6,939
599.08	3,869	3,869	7,092
599.12	3,929	3,929	7,248
599.16	3,989	3,989	7,407
599.20	4,049	4,049	7,567
599.24	4,110	4,110	7,731
599.28	4,171	4,171	7,896
599.32	4,233	4,233	8,064
599.36	4,295	4,295	8,235
599.40	4,358	4,358	8,408
599.44	4,421	4,421	8,584
599.48	4,484	4,484	8,762
599.52	4,548	4,548	8,942
599.56	4,613	4,613	9,125
599.60	4,677	4,677	9,311
599.64	4,743	4,743	9,500
599.68	4,809	4,809	9,691
599.72	4,875	4,875	9,884
599.76	4,941	4,941	10,081
599.80	5,009	5,009	10,280
599.84	5,076	5,076	10,481
599.88	5,144	5,144	10,686
599.92	5,213	5,213	10,893
599.96	5,282	5,282	11,103
600.00	5,351	5,351	11,315
600.04	5,389	5,389	11,530
600.08	5,427	5,427	11,747
600.12	5,465	5,465	11,964
600.16	5,503	5,503	12,184
600.20	5,542	5,542	12,405
600.24	5,580	5,580	12,627
600.28	5,619	5,619	12,851
600.32	5,658	5,658	13,077
600.36	5,697	5,697	13,304
600.40	5,736	5,736	13,532
600.44	5,775	5,775	13,763
600.48	5,815	5,815	13,994
600.52	5,854	5,854	14,228
600.56	5,894	5,894	14,463
600.60	5,934	5,934	14,699
600.64	5,974	5,974	14,938
600.68	6,014	6,014	15,177
600.72	6,054	6,054	15,419
600.76	6,094	6,094	15,662
600.80	6,135	6,135	15,906
600.84	6,175	6,175	16,152
600.88	6,216	6,216	16,400
600.92	6,257	6,257	16,650
600.96	6,298	6,298	16,901
601.00	6,339	6,339	17,153
601.04	6,375	6,375	17,408
601.08	6,411	6,411	17,663
601.12	6,448	6,448	17,921
601.16	6,484	6,484	18,179
601.20	6,521	6,521	18,439
601.24	6,558	6,558	18,701
601.28	6,594	6,594	18,964
601.32	6,631	6,631	19,229
601.36	6,668	6,668	19,495
601.40	6,705	6,705	19,762
601.44	6,742	6,742	20,031
601.48	6,780	6,780	20,301
601.52	6,817	6,817	20,573
601.56	6,855	6,855	20,847
601.60	6,892	6,892	21,122
601.64	6,930	6,930	21,398
601.68	6,968	6,968	21,676
601.72	7,006	7,006	21,956
601.76	7,044	7,044	22,237
601.80	7,082	7,082	22,519
601.84	7,120	7,120	22,803
601.88	7,158	7,158	23,089
601.92	7,197	7,197	23,376
601.96	7,235	7,235	23,664
602.00	7,274	7,274	23,955

<u>Stormwater Basin #3</u>
Contributing Watershed Areas: Post IIb
Water Quality Volume (WQv):
WQv = [(P)(Rv)(A)]/12
Rv = 0.05 + 0.009(I)
I = Impervious Cover (percent)
Minimum Rv = 0.2
P = 90% Rainfall Event - (P = 1.30")
A= Site area in acres
Total area treated = 78,452 SF = 1.801 Ac
I = [11,791/78,452] = 0.150 = 15.0%
Rv = 0.05 + 0.009 (15.0) = .1850 *(Use min 0.2 Rv)*
WQv = [(1.3)(.2)(1.801)]/12 = 0.0390 acre-feet = **1,700 CF**

The treatment basin has been designed as an "Infiltration Basin (I-2)". The "Infiltration Basin" has been sized to capture and store 100% of the required WQv per Chapter 6 of the NYSDEC Code. The following calculations detail the specific areas and the volumes provided on the proposed plans.

Required Pretreatment
Infiltration Rate = 1.0 inches/hour (25% of WQv pretreatment required)
WQv (0.25) = (1,700)(0.25) = 425 CF

Pretreatment is provided by a forebay prior to the infiltration basin.

Bottom Area of Basin
Required Area of Basin (A) = V_w/d_b = 1,700/2.0 = 850 SF
Provided Area of Basin = 1,406 SF

Provided Volume
Available Storage Volume = **3,051 CF**

*Please see attached HydroCAD Report on the following page for available storage information.

Stage-Area-Storage for Pond SB-3:

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
596.00	1,406	1,406	0
596.04	1,429	1,429	57
596.08	1,452	1,452	114
596.12	1,476	1,476	173
596.16	1,499	1,499	232
596.20	1,523	1,523	293
596.24	1,547	1,547	354
596.28	1,571	1,571	417
596.32	1,596	1,596	480
596.36	1,620	1,620	544
596.40	1,645	1,645	610
596.44	1,670	1,670	676
596.48	1,695	1,695	743
596.52	1,721	1,721	812
596.56	1,746	1,746	881
596.60	1,772	1,772	951
596.64	1,798	1,798	1,023
596.68	1,824	1,824	1,095
596.72	1,850	1,850	1,168
596.76	1,876	1,876	1,243
596.80	1,903	1,903	1,319
596.84	1,930	1,930	1,395
596.88	1,957	1,957	1,473
596.92	1,984	1,984	1,552
596.96	2,011	2,011	1,632
597.00	2,039	2,039	1,713
597.04	2,064	2,064	1,795
597.08	2,089	2,089	1,878
597.12	2,114	2,114	1,962
597.16	2,139	2,139	2,047
597.20	2,164	2,164	2,133
597.24	2,190	2,190	2,220
597.28	2,216	2,216	2,308
597.32	2,241	2,241	2,397
597.36	2,267	2,267	2,487
597.40	2,293	2,293	2,579
597.44	2,320	2,320	2,671
597.48	2,346	2,346	2,764
597.52	2,373	2,373	2,859
597.56	2,399	2,399	2,954
*597.60	2,426	2,426	3,051
597.64	2,453	2,453	3,148
597.68	2,480	2,480	3,247
597.72	2,508	2,508	3,347
597.76	2,535	2,535	3,447
597.80	2,563	2,563	3,549
597.84	2,590	2,590	3,652
597.88	2,618	2,618	3,757
597.92	2,646	2,646	3,862
597.96	2,675	2,675	3,968
598.00	2,703	2,703	4,076
598.04	2,741	2,741	4,185
598.08	2,780	2,780	4,295
598.12	2,819	2,819	4,407
598.16	2,858	2,858	4,521
598.20	2,897	2,897	4,636
598.24	2,937	2,937	4,752
598.28	2,976	2,976	4,871
598.32	3,017	3,017	4,991
598.36	3,057	3,057	5,112
598.40	3,098	3,098	5,235
598.44	3,139	3,139	5,360
598.48	3,180	3,180	5,486
598.52	3,221	3,221	5,614
598.56	3,263	3,263	5,744
598.60	3,305	3,305	5,875
598.64	3,347	3,347	6,008
598.68	3,390	3,390	6,143
598.72	3,433	3,433	6,280
598.76	3,476	3,476	6,418
598.80	3,519	3,519	6,558
598.84	3,563	3,563	6,699
598.88	3,607	3,607	6,843
598.92	3,651	3,651	6,988
598.96	3,695	3,695	7,135
599.00	3,740	3,740	7,283
599.04	3,785	3,785	7,434
599.08	3,830	3,830	7,586
599.12	3,876	3,876	7,740
599.16	3,922	3,922	7,896
599.20	3,968	3,968	8,054
599.24	4,014	4,014	8,214
599.28	4,060	4,060	8,375
599.32	4,107	4,107	8,539
599.36	4,154	4,154	8,704
599.40	4,202	4,202	8,871
599.44	4,250	4,250	9,040
599.48	4,297	4,297	9,211
599.52	4,346	4,346	9,384
599.56	4,394	4,394	9,559
599.60	4,443	4,443	9,735
599.64	4,492	4,492	9,914
599.68	4,541	4,541	10,095
599.72	4,591	4,591	10,277
599.76	4,640	4,640	10,462
599.80	4,691	4,691	10,648
599.84	4,741	4,741	10,837
599.88	4,792	4,792	11,028
599.92	4,842	4,842	11,220
599.96	4,894	4,894	11,415
600.00	4,945	4,945	11,612
600.04	4,979	4,979	11,810
600.08	5,014	5,014	12,010
600.12	5,049	5,049	12,212
600.16	5,083	5,083	12,414
600.20	5,118	5,118	12,618
600.24	5,153	5,153	12,824
600.28	5,188	5,188	13,030
600.32	5,224	5,224	13,239
600.36	5,259	5,259	13,448
600.40	5,294	5,294	13,659
600.44	5,330	5,330	13,872
600.48	5,366	5,366	14,086
600.52	5,402	5,402	14,301
600.56	5,438	5,438	14,518
600.60	5,474	5,474	14,736
600.64	5,510	5,510	14,956
600.68	5,546	5,546	15,177
600.72	5,583	5,583	15,400
600.76	5,619	5,619	15,624
600.80	5,656	5,656	15,849
600.84	5,693	5,693	16,076
600.88	5,730	5,730	16,305
600.92	5,767	5,767	16,534
600.96	5,804	5,804	16,766
601.00	5,841	5,841	16,999
601.04	5,876	5,876	17,233
601.08	5,911	5,911	17,469
601.12	5,946	5,946	17,706
601.16	5,981	5,981	17,944
601.20	6,017	6,017	18,184
601.24	6,052	6,052	18,426
601.28	6,088	6,088	18,669
601.32	6,124	6,124	18,913
601.36	6,159	6,159	19,159
601.40	6,195	6,195	19,406
601.44	6,231	6,231	19,654
601.48	6,267	6,267	19,904
601.52	6,303	6,303	20,156
601.56	6,340	6,340	20,408
601.60	6,376	6,376	20,663
601.64	6,413	6,413	20,918
601.68	6,449	6,449	21,176
601.72	6,486	6,486	21,434
601.76	6,523	6,523	21,695
601.80	6,560	6,560	21,956
601.84	6,597	6,597	22,219
601.88	6,634	6,634	22,484
601.92	6,671	6,671	22,750
601.96	6,709	6,709	23,018
602.00	6,746	6,746	23,287

<u>Stormwater Basin #4</u>
Contributing Watershed Areas: Post Ic & Id
Water Quality Volume (WQv):
WQv = [(P)(Rv)(A)]/12
Rv = 0.05 + 0.009(I)
I = Impervious Cover (percent)
Minimum Rv = 0.2
P = 90% Rainfall Event - (P = 1.30")
A= Site area in acres
Total area treated = 206,559 SF = 4.742 Ac
I = [40,016/206,559] = 0.150 = 19.37%
Rv = 0.05 + 0.009 (19.37) = .2243
WQv = [(1.3)(.2243)(4.742)]/12 = 0.1152 acre-feet = **5,019 CF**

The treatment basin has been designed as an "Infiltration Basin (I-2)". The "Infiltration Basin" has been sized to capture and store 100% of the required WQv per Chapter 6 of the NYSDEC Code. The following calculations detail the specific areas and the volumes provided on the proposed plans.

Required Pretreatment
Infiltration Rate = 3.0 inches/hour (50% of WQv pretreatment required)
WQv (0.50) = (5,019)(0.50) = 2,509 CF

*Pretreatment shall be provided in a precast concrete hydrodynamic separator unit. Model of unit shall be Contech CDS-2020 based on the one year peak flow from the contributing area as generated by HydroCad.

Bottom Area of Basin
Required Area of Basin (A) = V_w/d_b = 5,019/2.5 = 2,008 SF
Provided Area of Basin = 2,062 SF

Provided Volume
Available Storage Volume = **5,459 CF**

*Please see attached HydroCAD Report on the following page for available storage information.

Stage-Area-Storage for Pond SB-4:

Elevation (feet)	Surface (sq-ft)	Horizontal (sq-ft)	Storage (cubic-feet)
582.00	2,062	2,062	0
582.20	2,187	2,187	425
582.40	2,315	2,315	875
582.60	2,447	2,447	1,351
582.80	2,583	2,583	1,854
583.00	2,722	2,722	2,384
583.20	2,859	2,859	2,942
583.40	3,000	3,000	3,528
583.60	3,144	3,144	4,143
583.80	3,291	3,291	4,786
584.00	3,442	3,442	5,459
584.20	3,592	3,592	6,163
584.40	3,745	3,745	6,896
584.60	3,902	3,902	7,661
584.80	4,061	4,061	8,457
585.00	4,224	4,224	9,286
585.20	4,386	4,386	10,147
585.40	4,550	4,550	11,040
585.60	4,718	4,718	11,967
585.80	4,889	4,889	12,928
586.00	5,063	5,063	13,923
586.20	5,236	5,236	14,953
586.40	5,413	5,413	16,018
586.60	5,592	5,592	17,118
586.80	5,774	5,774	18,255
587.00	5,959	5,959	19,428
587.20	6,144	6,144	20,638
587.40	6,332	6,332	21,886
587.60	6,522	6,522	23,171
587.80	6,716	6,716	24,495
588.00	**6,912**	**6,912**	**25,857**

<u>Subsurface Infiltration System #2</u>
Contributing Watershed Areas: Post IVb
Water Quality Volume (WQv):
WQv = [(P)(Rv)(A)]/12
Rv = 0.05 + 0.009(I)
I = Impervious Cover (percent)
Minimum Rv = 0.2
P = 90% Rainfall Event - (P = 1.30")
A= Site area in acres
Total area treated = 34,290 SF = 0.787 Ac
I = [11,000/34,290] = 0.3208 = 32.08%
Rv = 0.05 + 0.009 (32.08) = .3387
WQv = [(1.3)(.3387)(0.787)]/12 = 0.0289 acre-feet = **1,259 CF**

The treatment practice has been designed as an "Underground Infiltration System (I-4)". The "Underground Infiltration System" has been sized to capture and store 100% of the required WQv per Chapter 6 of the NYSDEC Code. The following calculations detail the specific areas and the volumes provided on the proposed plans.

Required Pretreatment
Infiltration Rate = 1.0 inches/hour (25% of WQv pretreatment required)
WQv (0.25) = (1,259)(0.25) = 315 CF

*Pretreatment shall be provided in a precast concrete hydrodynamic separator unit. Model of unit shall be Contech CDS-2020 based on the one year storm peak flow from the contributing area as generated by HydroCad.

Provided Volume
Available Storage Volume = **1,813 CF**

*Please see attached HydroCAD Report on the following page for available storage information.

Summary for Pond 1P: Infiltration Sys #2

Inflow Area =	34,290 sf,	32.08% Impervious,	Inflow Depth =	0.65"	for 1-yr event
Inflow =	0.40 cfs @	12.23 hrs, Volume=	1,852 cf		
Outflow =	0.09 cfs @	11.48 hrs, Volume=	2,859 cf,	Atten= 77%,	Lag= 0.0 min
Discarded =	0.09 cfs @	11.48 hrs, Volume=	2,859 cf		

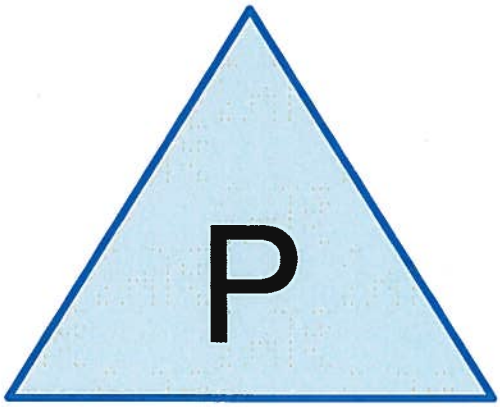
Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 606.98' @ 12.95 hrs Surf.Area= 840 sf Storage= 450 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 139.7 min (1,030.1 - 890.4)

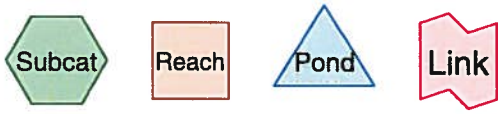
Volume	Invert	Avail.Storage	Storage Description
#1	606.50'	782 cf	**Cultec R-330XLHD** x 15 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	606.00'	1,031 cf	**21.00'W x 40.00'L x 4.00'H Prismatoid** 3,360 cf Overall - 782 cf Embedded = 2,578 cf x 40.0% Voids
		1,813 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	606.00'	**4.700 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.09 cfs @ 11.48 hrs HW=606.00' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)



Infiltration Sys. for Pools



Routing Diagram for POST watershed IV (pipe sizing)
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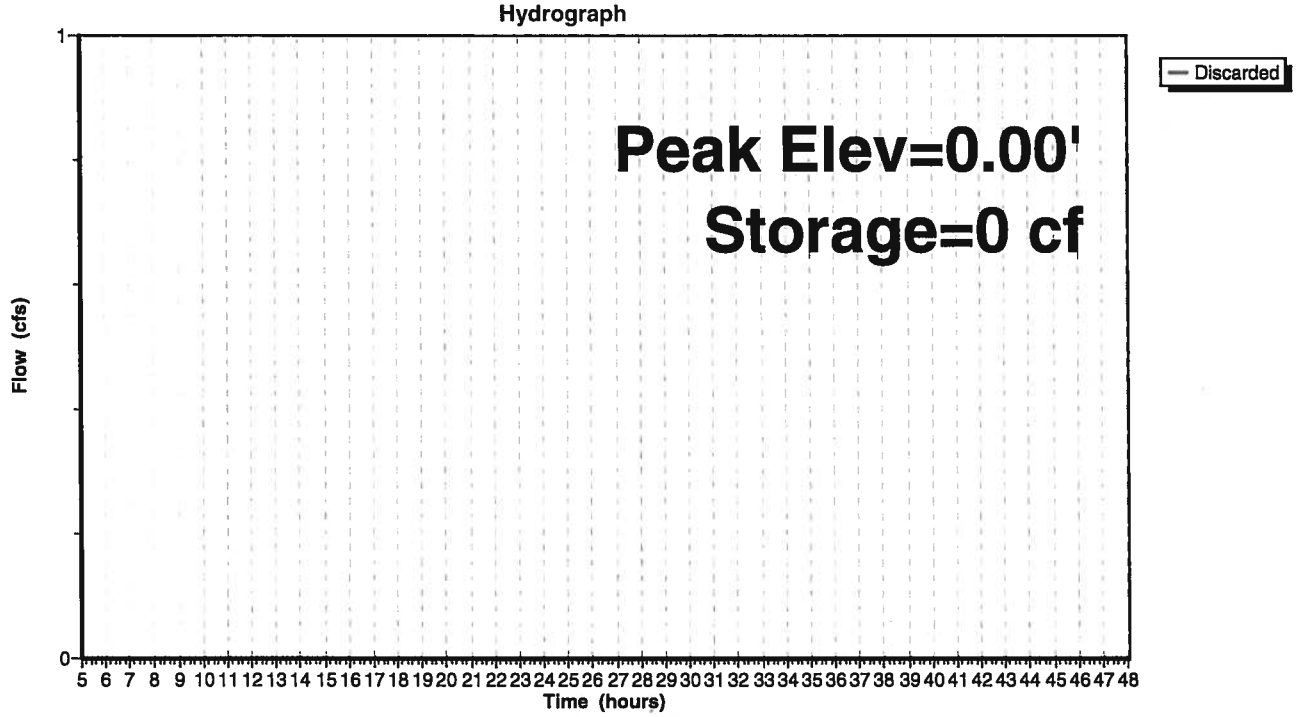
Summary for Pond P: Infiltration Sys. for Pools

Volume	Invert	Avail.Storage	Storage Description
#1	0.50'	209 cf	**Cultec R-330XLHD** x 4 Inside #2 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap
#2	0.00'	200 cf	**32.00'W x 6.33'L x 3.50'H Prismatoid** 709 cf Overall - 209 cf Embedded = 500 cf x 40.0% Voids
		409 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
└**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)

Pond P: Infiltration Sys. for Pools

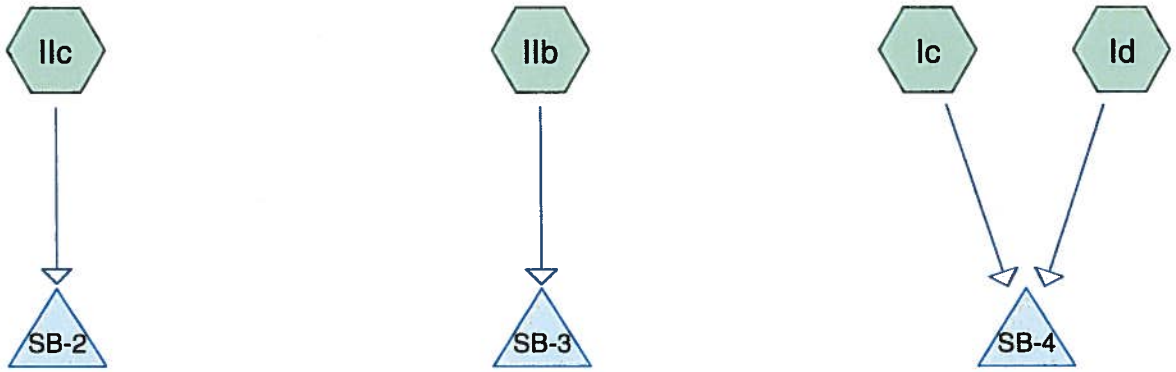


Appendix D:
Temporary Sediment Basin
Design Calculations

SEDIMENT BASIN DESIGN (*)

PARAMETER	Basin SB-2	SB-3	SB-4
Drainage Area (D.A.) in Ac.	3.11	1.8	4.73
Storage Volume Required (3600 x D.A.) in C.F.	11196	6480	17028
Storage Volume Provided (in C.F.)	11315	18138	17028
Elev. @ Storage Volume in Ft.	600.25	599.25	587.0
Surface Area (As) @ Storage Volume El. in S.F.	6221	3900	5959
Min. Required Surface Area (0.015 x D.A.) in S.F.	2032	1176	3091
Min. Perm. Pool Volume Req'd (1/2 Stor. Vol.) in C.F.	5658	3240	8514
Perm. Pool Surface El. Provided (starting water el.)	599.0	598.25	585.4
Orifice invert	598.4	597.8	584.0
Elevation at Bottom of Permanent Pool in Ft.	597.0	597.0	583.0
Permanent Pool Depth in Ft.	2.0	1.25	2.4
Permanent Pool Volume Provided in C.F.	6917	4640	8656
Drawdown Vol. Provided (DV) (~1/2 Stor. Vol.) in C.F.	4398	13498	8372
DV height (h) = head above Orifice in Ft.	1.25	1.00	1.6
Area of Dewatering Orifice in S.F. ($Ao = As \times (2h)^{.5} / 122{,}568$)	0.0803	0.0450	0.0883
Orifice Diameter in Inches	3.8	2.9	4.0

(*) Refer to Criteria established in the New York Standards and Specifications for Erosion and Sediment Controls, pp 5A.49 thru 57



Sediment Basin SB-2

Sediment Basin SB-3

Sediment Basin SB-4

Routing Diagram for SEDIMENT BASIN DESIGN
Prepared by Bibbo Associates, LLP, Printed 12/18/2015
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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	Ic	0.00	0.00	214.0	0.0420	0.013	10.0	0.0	0.0
2	SB-2	596.00	595.00	74.0	0.0135	0.013	12.0	0.0	0.0
3	SB-3	596.00	595.50	37.0	0.0135	0.013	12.0	0.0	0.0
4	SB-4	583.50	583.00	21.0	0.0238	0.013	18.0	0.0	0.0

Summary for Subcatchment Ic:

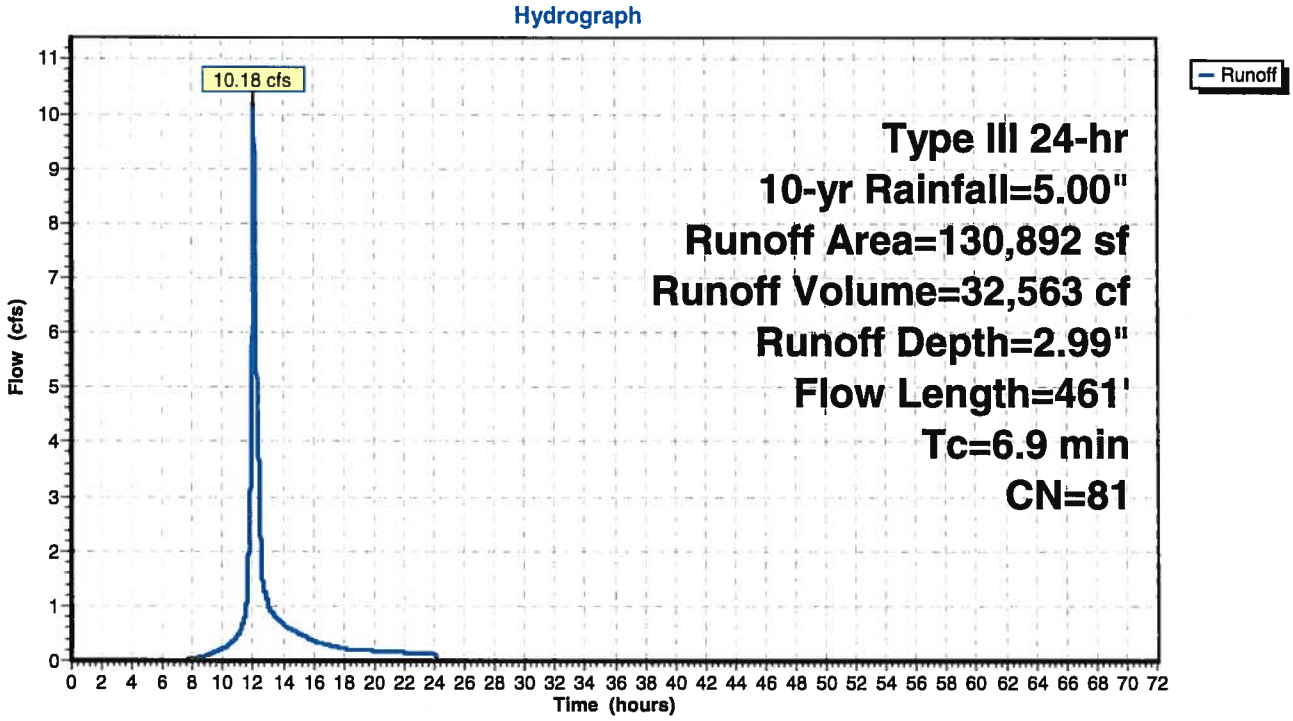
Runoff = 10.18 cfs @ 12.10 hrs, Volume= 32,563 cf, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
30,280	86	Newly graded area, HSG B
81,208	86	Newly graded area, HSG B
19,404	55	Woods, Good, HSG B
130,892	81	Weighted Average
130,892		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0800	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	27	0.1800	2.97		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	120	0.0200	2.12		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.4	214	0.0420	8.23	4.49	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
6.9	461	Total			

Subcatchment Ic:



Summary for Subcatchment Id:

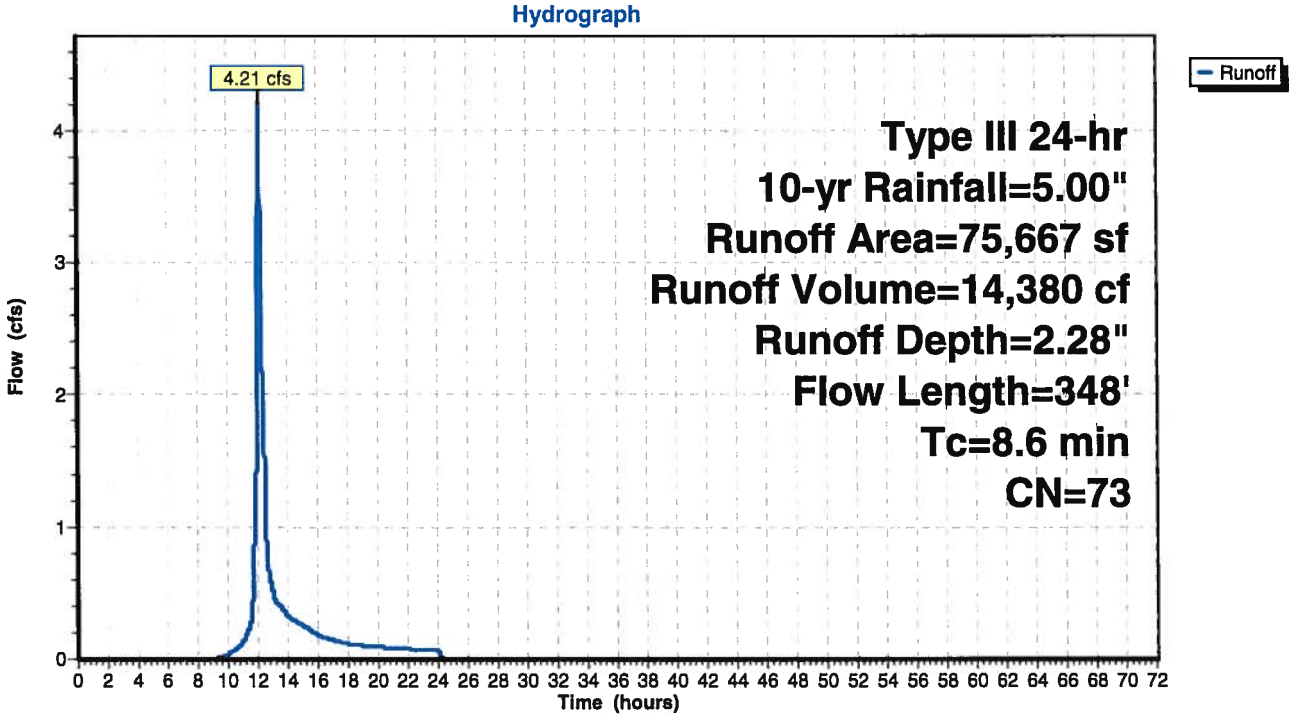
Runoff = 4.21 cfs @ 12.13 hrs, Volume= 14,380 cf, Depth= 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
9,736	86	Newly graded area, HSG B
34,108	86	Newly graded area, HSG B
31,823	55	Woods, Good, HSG B
75,667	73	Weighted Average
75,667		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0500	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	248	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.6	348	Total			

Subcatchment Id:



Summary for Subcatchment IIb:

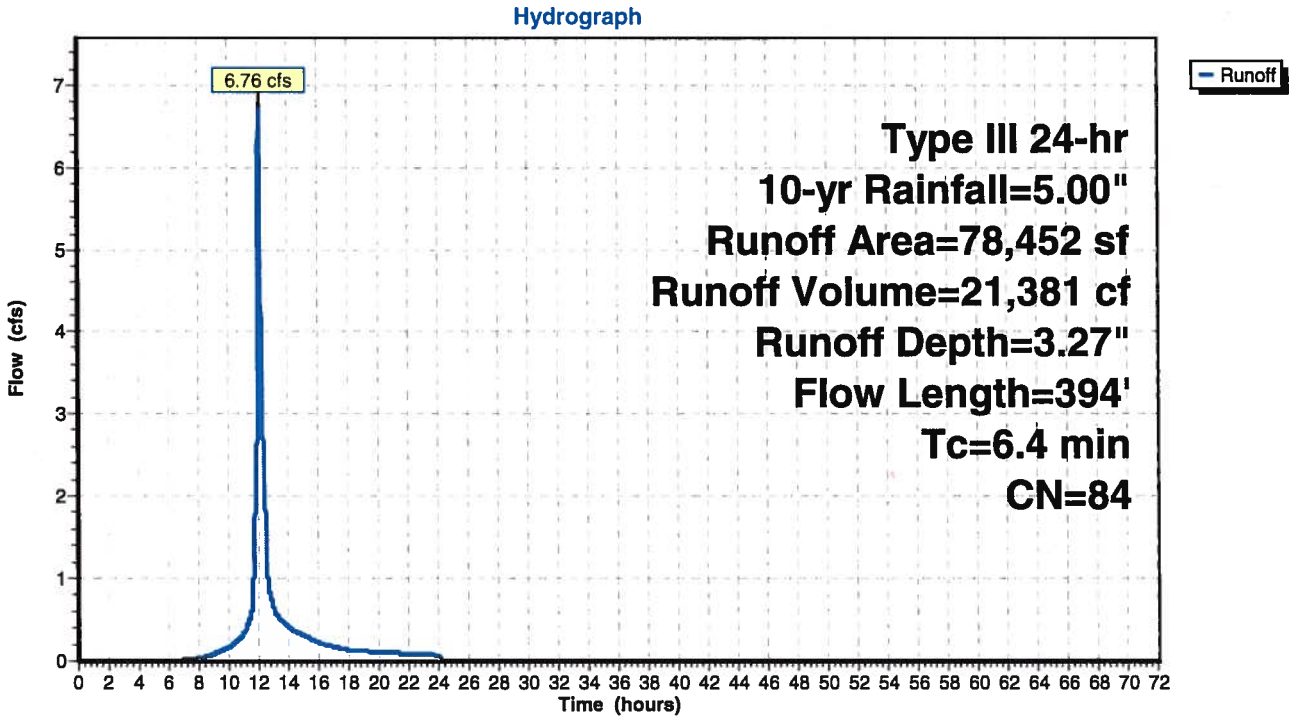
Runoff = 6.76 cfs @ 12.09 hrs, Volume= 21,381 cf, Depth= 3.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
11,791	86	Newly graded area, HSG B
4,211	55	Woods, Good, HSG B
62,450	86	Newly graded area, HSG B
78,452	84	Weighted Average
78,452		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.1000	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.5	294	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.4	394	Total			

Subcatchment IIb:



Summary for Subcatchment IIc:

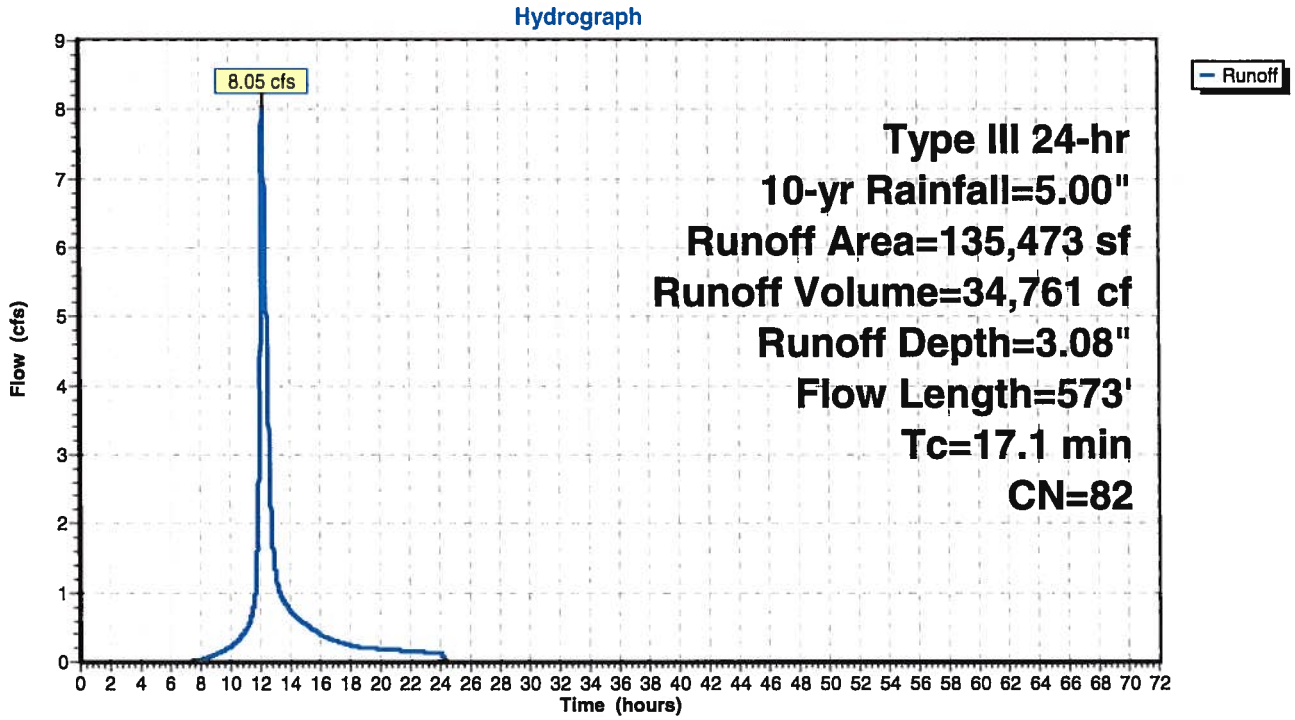
Runoff = 8.05 cfs @ 12.23 hrs, Volume= 34,761 cf, Depth= 3.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.00"

Area (sf)	CN	Description
98,316	86	Newly graded area, HSG B
19,056	86	Newly graded area, HSG B
18,101	55	Woods, Good, HSG B
135,473	82	Weighted Average
135,473		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	290	0.0827	2.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	183	0.0270	5.79	28.97	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Stream, clean & straight
17.1	573	Total			

Subcatchment IIc:



Summary for Pond SB-2: Sediment Basin SB-2

Inflow Area =	135,473 sf,	0.00% Impervious,	Inflow Depth =	3.08"	for 10-yr event
Inflow =	8.05 cfs @	12.23 hrs,	Volume=	34,761 cf	
Outflow =	4.75 cfs @	12.49 hrs,	Volume=	34,902 cf,	Atten= 41%, Lag= 15.9 min
Discarded =	0.41 cfs @	12.49 hrs,	Volume=	24,119 cf	
Primary =	4.35 cfs @	12.49 hrs,	Volume=	10,783 cf	

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 600.23' @ 12.49 hrs Surf.Area= 6,250 sf Storage= 13,317 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 287.8 min (1,114.3 - 826.6)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	26,019 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

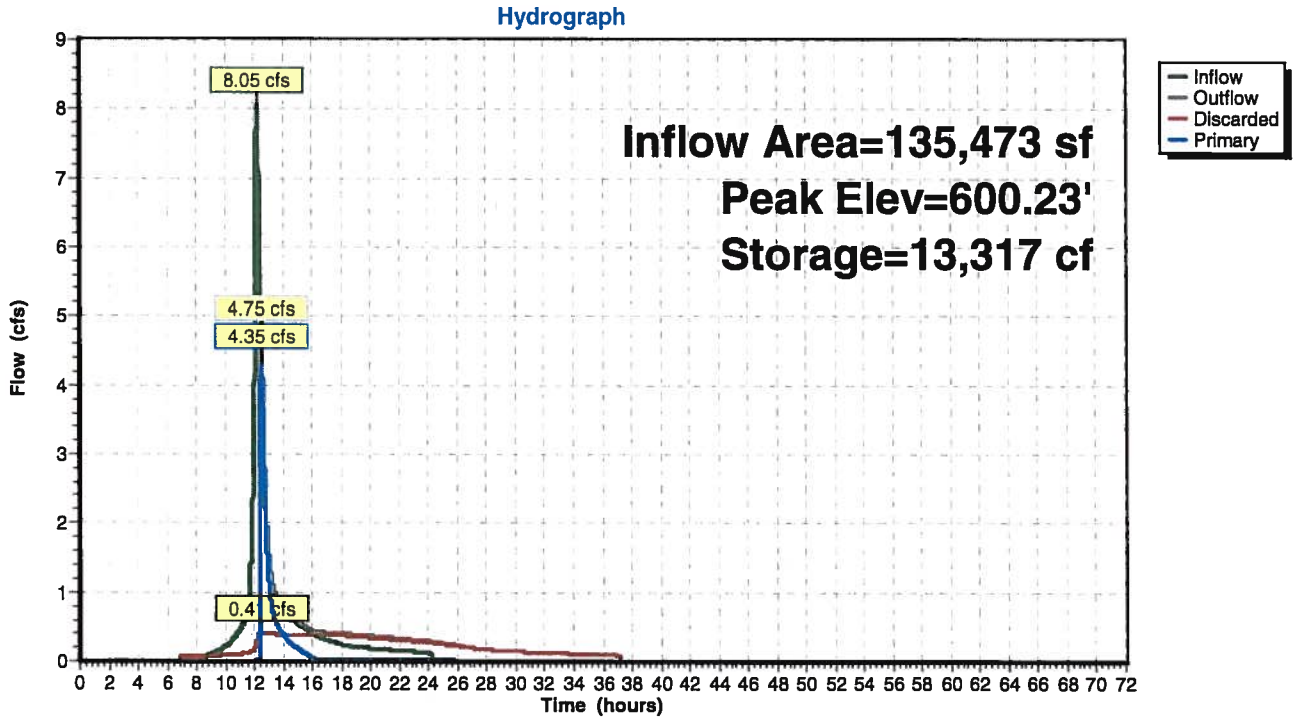
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,330	163.0	0	0	1,330
597.00	1,848	182.0	1,582	1,582	1,879
598.00	2,436	202.0	2,135	3,717	2,520
600.00	6,022	332.0	8,192	11,909	8,070
601.00	7,047	351.0	6,528	18,437	9,158
602.00	8,129	370.0	7,582	26,019	10,306

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	598.40'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	600.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**2.800 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.41 cfs @ 12.49 hrs HW=600.23' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=4.34 cfs @ 12.49 hrs HW=600.23' (Free Discharge)
└**1=Culvert** (Passes 4.34 cfs of 6.63 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 6.44 fps)
└**3=Orifice/Grate** (Weir Controls 4.31 cfs @ 1.57 fps)

Pond SB-2: Sediment Basin SB-2



Summary for Pond SB-3: Sediment Basin SB-3

Inflow Area =	78,452 sf,	0.00% Impervious,	Inflow Depth =	3.27"	for 10-yr event
Inflow =	6.76 cfs @	12.09 hrs, Volume=	21,381 cf		
Outflow =	0.17 cfs @	17.24 hrs, Volume=	21,417 cf,	Atten= 98%,	Lag= 308.7 min
Discarded =	0.14 cfs @	17.24 hrs, Volume=	18,704 cf		
Primary =	0.03 cfs @	17.24 hrs, Volume=	2,713 cf		

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 600.52' @ 17.24 hrs Surf.Area= 6,005 sf Storage= 15,126 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,140.5 min (1,951.4 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	25,081 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

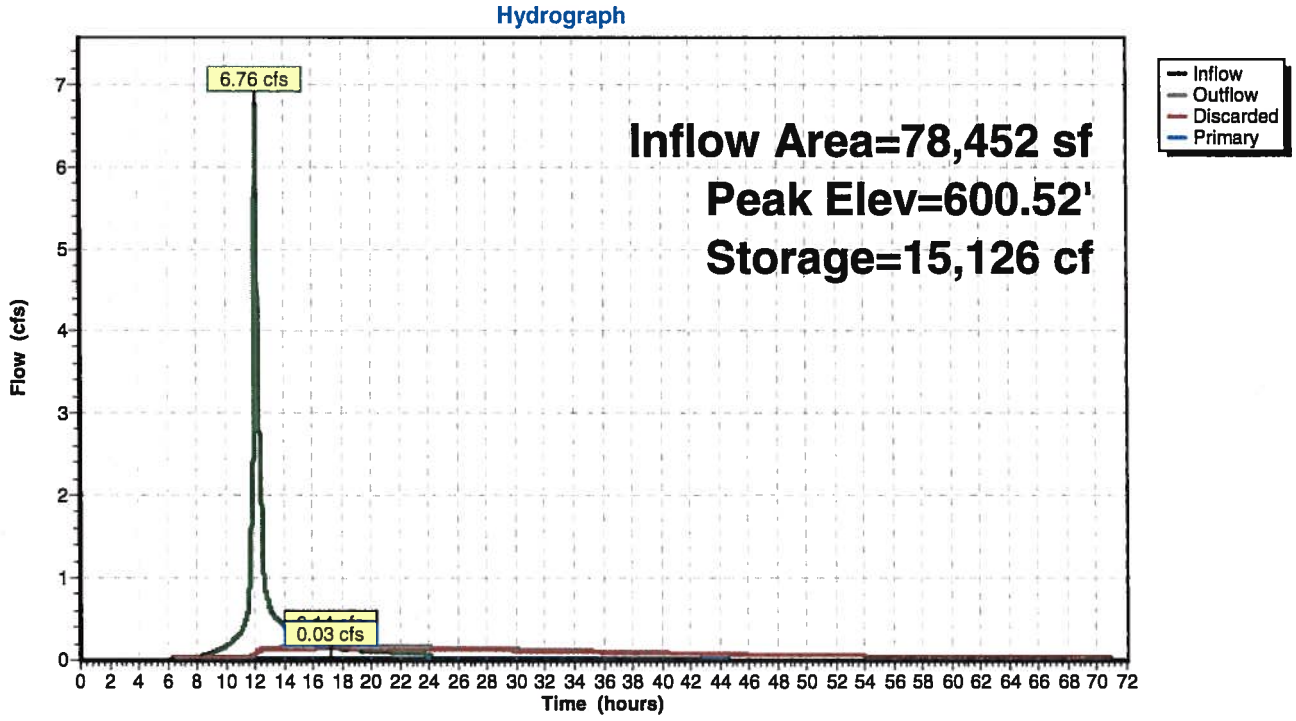
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,406	200.0	0	0	1,406
597.00	2,039	221.0	1,713	1,713	2,140
598.00	2,703	239.8	2,363	4,076	2,867
600.00	5,534	300.0	8,070	12,146	5,509
601.00	6,463	314.0	5,992	18,138	6,259
602.00	7,433	338.0	6,942	25,081	7,546

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.50' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	597.80'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Device 1	601.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.14 cfs @ 17.24 hrs HW=600.52' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.03 cfs @ 17.24 hrs HW=600.52' (Free Discharge)
└**1=Culvert** (Passes 0.03 cfs of 7.58 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 7.89 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-3: Sediment Basin SB-3



Summary for Pond SB-4: Sediment Basin SB-4

Inflow Area = 206,559 sf, 0.00% Impervious, Inflow Depth = 2.73" for 10-yr event
Inflow = 14.28 cfs @ 12.11 hrs, Volume= 46,943 cf
Outflow = 7.12 cfs @ 12.30 hrs, Volume= 38,280 cf, Atten= 50%, Lag= 11.9 min
Primary = 7.12 cfs @ 12.30 hrs, Volume= 38,280 cf

Routing by Sim-Route method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 587.27' @ 12.30 hrs Surf.Area= 6,213 sf Storage= 18,711 cf

Plug-Flow detention time= 272.4 min calculated for 38,279 cf (82% of inflow)
Center-of-Mass det. time= 198.6 min (1,025.4 - 826.8)

Volume	Invert	Avail.Storage	Storage Description
#1	583.00'	23,473 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

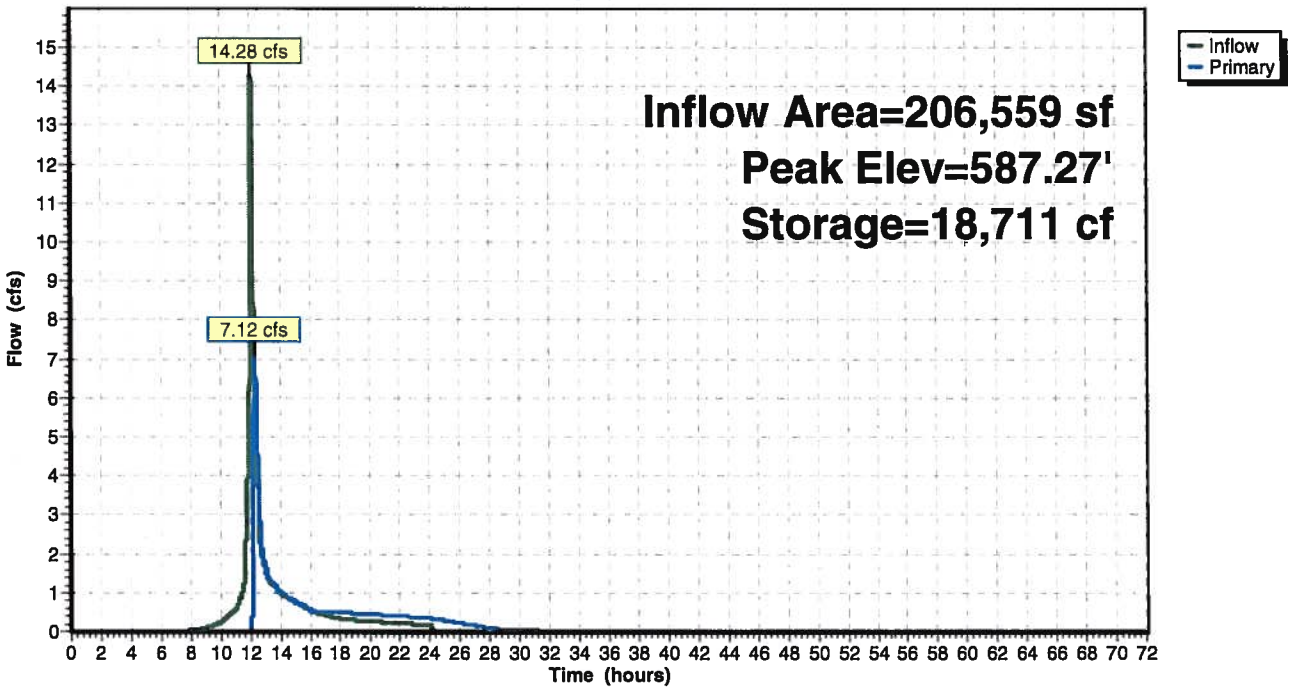
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
583.00	2,722	230.8	0	0	2,722
584.00	3,442	250.5	3,075	3,075	3,514
585.00	4,224	270.4	3,826	6,901	4,379
586.00	5,063	289.3	4,637	11,538	5,266
587.00	5,959	308.3	5,505	17,043	6,218
588.00	6,912	327.4	6,430	23,473	7,235

Device	Routing	Invert	Outlet Devices
#1	Primary	583.50'	**18.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.50' / 583.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	585.40'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	587.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

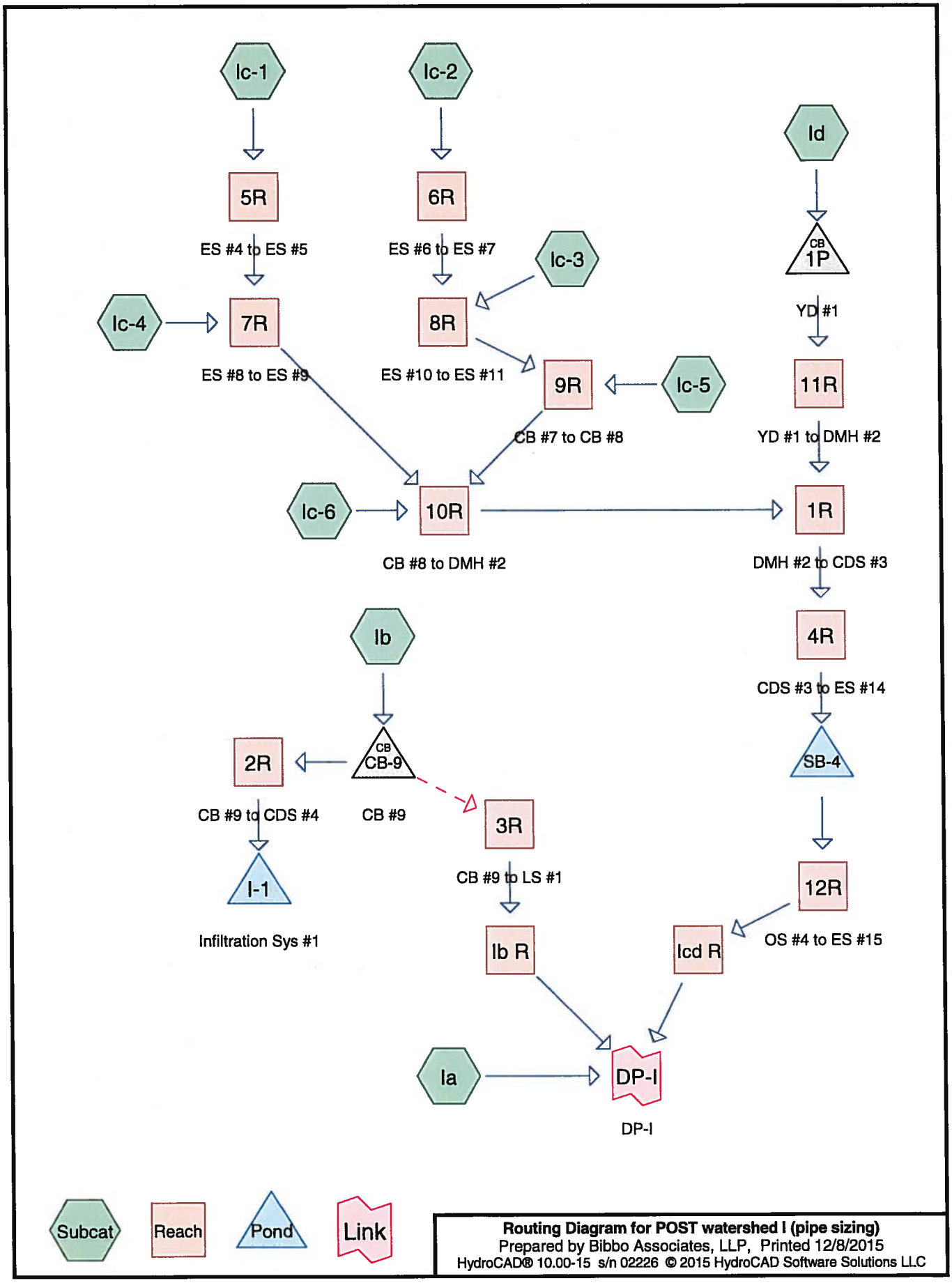
Primary OutFlow Max=7.11 cfs @ 12.30 hrs HW=587.27' (Free Discharge)
└─**1=Culvert** (Passes 7.11 cfs of 14.80 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.55 cfs @ 6.29 fps)
  └─**3=Orifice/Grate** (Weir Controls 6.56 cfs @ 1.71 fps)

Pond SB-4: Sediment Basin SB-4

Hydrograph



Appendix E:
Drainage Pipe Sizing Calculations
(for 25-year storm)



Routing Diagram for POST watershed I (pipe sizing)
Prepared by Bibbo Associates, LLP, Printed 12/8/2015
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Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1R	596.50	591.50	58.0	0.0862	0.013	15.0	0.0	0.0
2	2R	620.00	619.75	24.0	0.0104	0.013	15.0	0.0	0.0
3	3R	621.50	621.00	38.0	0.0132	0.013	18.0	0.0	0.0
4	4R	591.50	584.00	29.0	0.2586	0.013	15.0	0.0	0.0
5	5R	625.00	624.20	29.0	0.0276	0.013	12.0	0.0	0.0
6	6R	626.50	626.00	35.0	0.0143	0.013	12.0	0.0	0.0
7	7R	619.50	618.50	42.0	0.0238	0.013	12.0	0.0	0.0
8	8R	620.50	618.50	90.0	0.0222	0.013	12.0	0.0	0.0
9	9R	612.50	612.00	69.0	0.0072	0.013	12.0	0.0	0.0
10	10R	612.00	596.50	289.0	0.0536	0.013	15.0	0.0	0.0
11	11R	597.50	596.50	54.0	0.0185	0.013	12.0	0.0	0.0
12	12R	583.50	583.00	21.0	0.0238	0.013	15.0	0.0	0.0
13	1P	597.50	597.50	1.0	0.0000	0.013	12.0	0.0	0.0
14	CB-9	620.00	619.50	36.0	0.0139	0.013	15.0	0.0	0.0
15	CB-9	621.50	621.00	38.0	0.0132	0.013	18.0	0.0	0.0
16	I-1	619.75	619.50	8.6	0.0291	0.013	15.0	0.0	0.0
17	SB-4	583.50	583.00	21.0	0.0238	0.013	15.0	0.0	0.0

Summary for Subcatchment Ia:

Runoff = 8.69 cfs @ 12.37 hrs, Volume= 47,218 cf, Depth= 1.68"

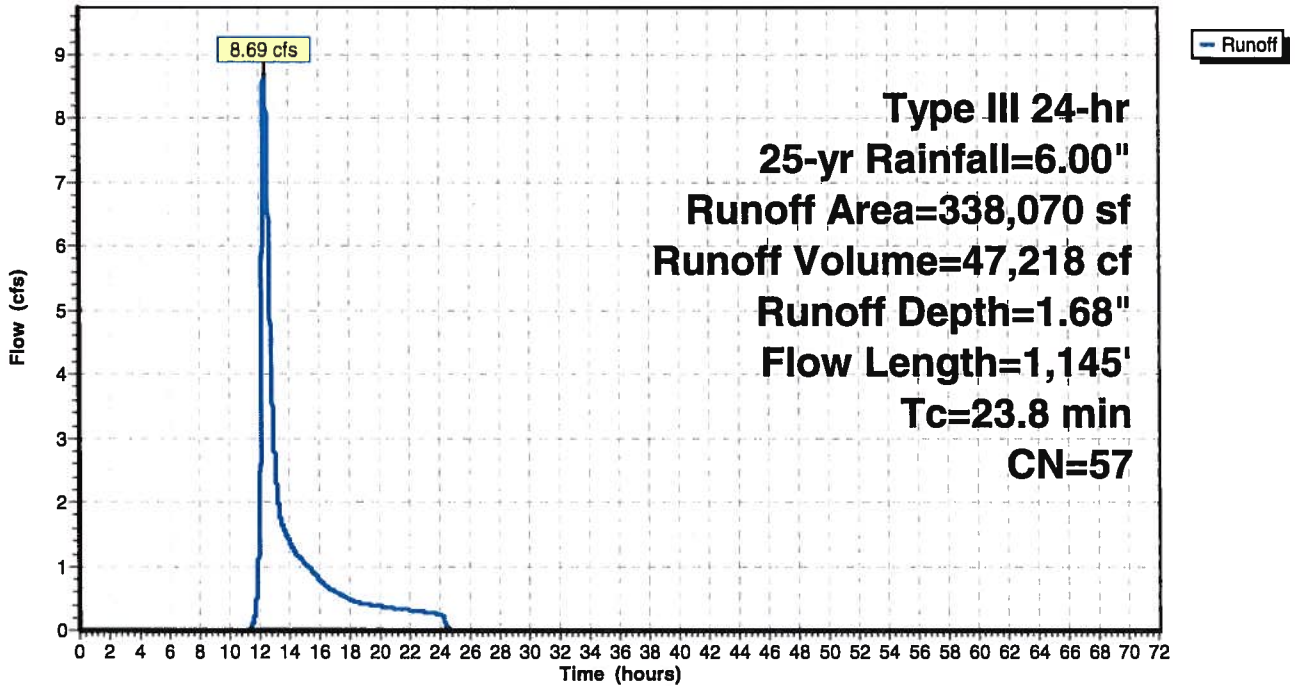
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
42,602	61	>75% Grass cover, Good, HSG B
272,468	55	Woods, Good, HSG B
23,000	70	Woods, Good, HSG C
338,070	57	Weighted Average
338,070		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	40	0.0400	0.20		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
10.3	60	0.0400	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
10.1	1,045	0.1187	1.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	1,145	Total			

Subcatchment Ia:

Hydrograph



Summary for Subcatchment Ib:

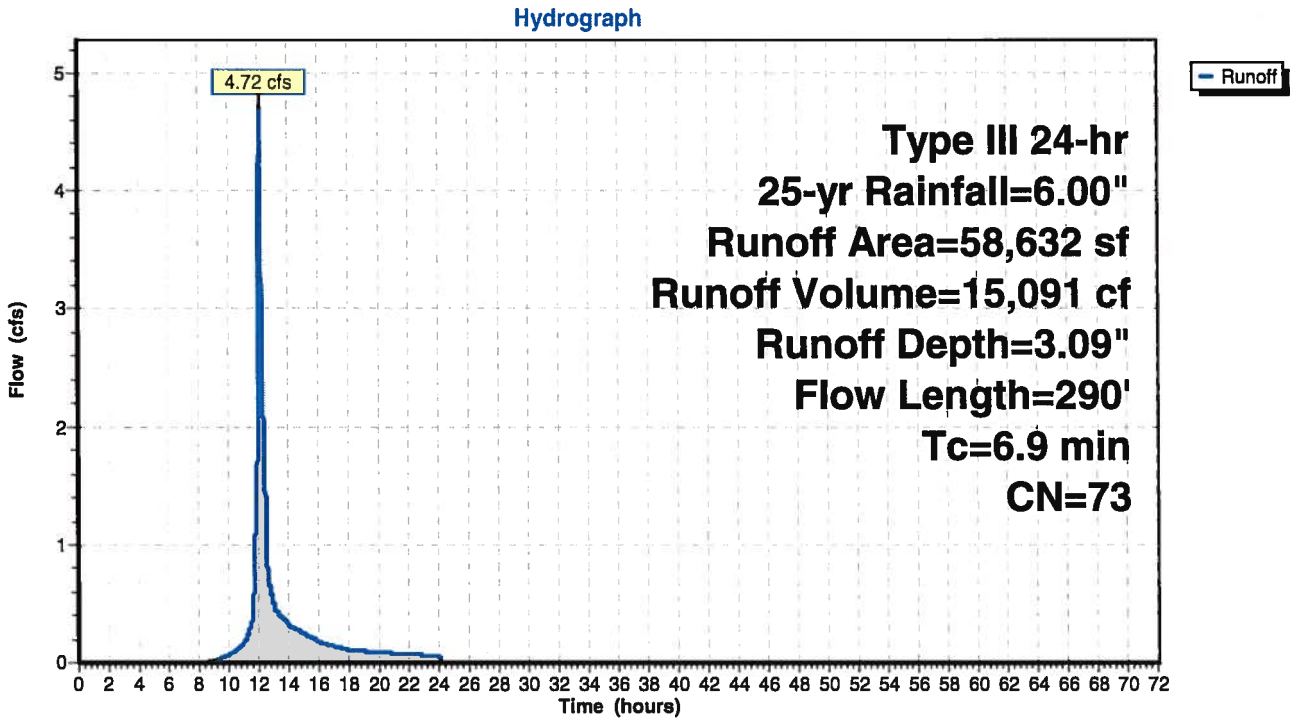
Runoff = 4.72 cfs @ 12.10 hrs, Volume= 15,091 cf, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
20,518	98	Paved parking & roofs
31,014	61	>75% Grass cover, Good, HSG B
7,100	55	Woods, Good, HSG B
58,632	73	Weighted Average
38,114		65.01% Pervious Area
20,518		34.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0600	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
0.2	36	0.0600	3.94		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.7	154	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.9	290	Total			

Subcatchment Ib:



Summary for Subcatchment Ic-2:

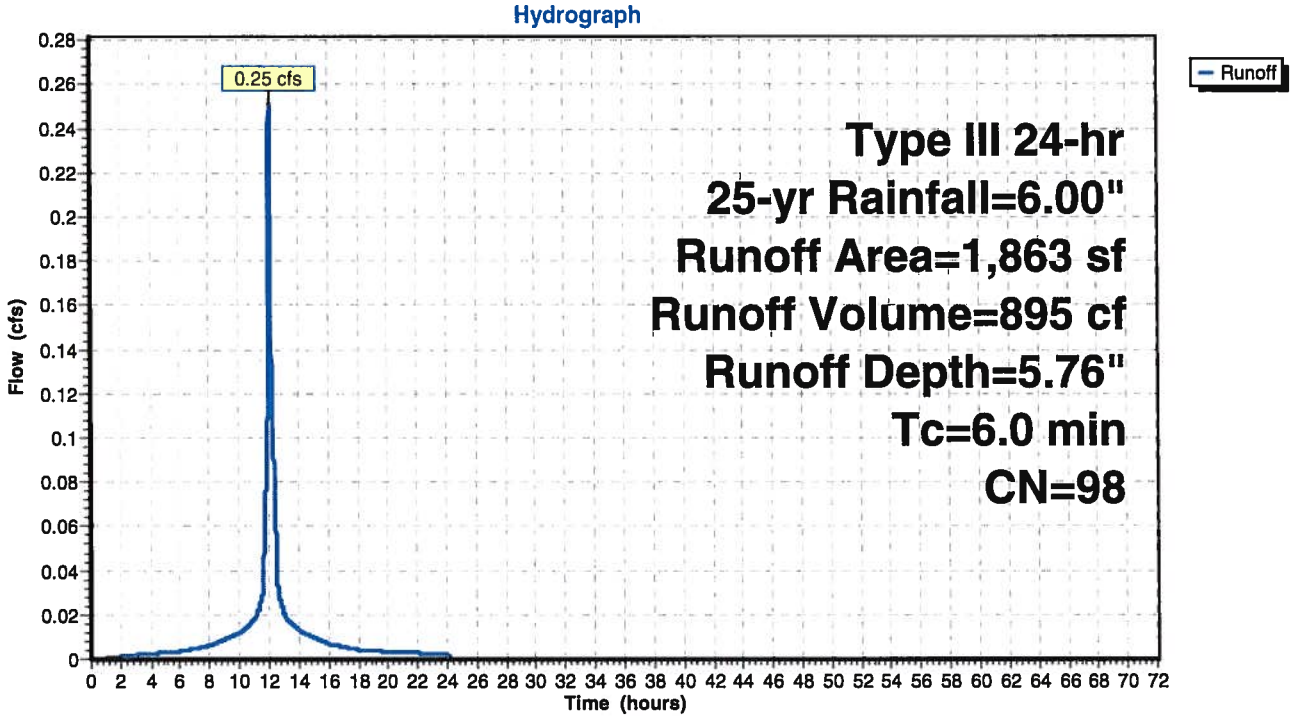
Runoff = 0.25 cfs @ 12.08 hrs, Volume= 895 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
1,863	98	Paved parking & roofs
1,863		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Default

Subcatchment Ic-2:



Summary for Subcatchment Ic-4:

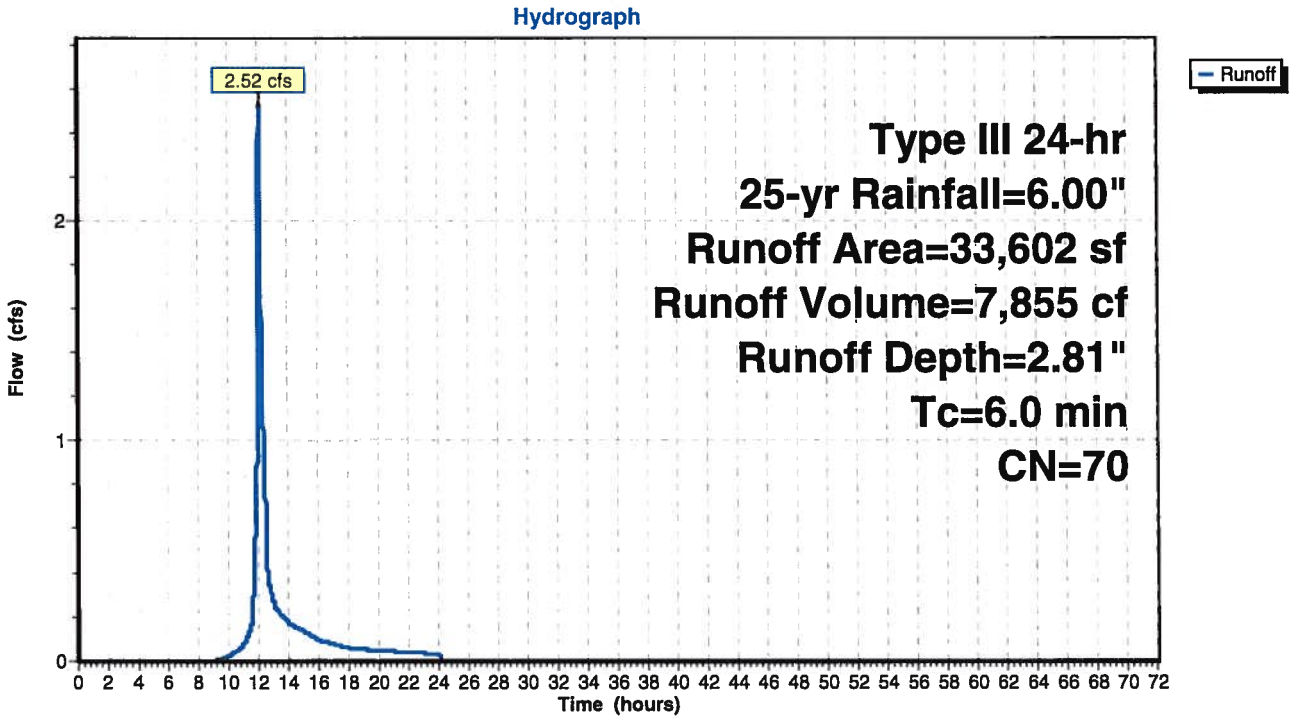
Runoff = 2.52 cfs @ 12.09 hrs, Volume= 7,855 cf, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
7,792	98	Paved parking & roofs
25,810	61	>75% Grass cover, Good, HSG B
33,602	70	Weighted Average
25,810		76.81% Pervious Area
7,792		23.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Default**

Subcatchment Ic-4:



Summary for Subcatchment Id:

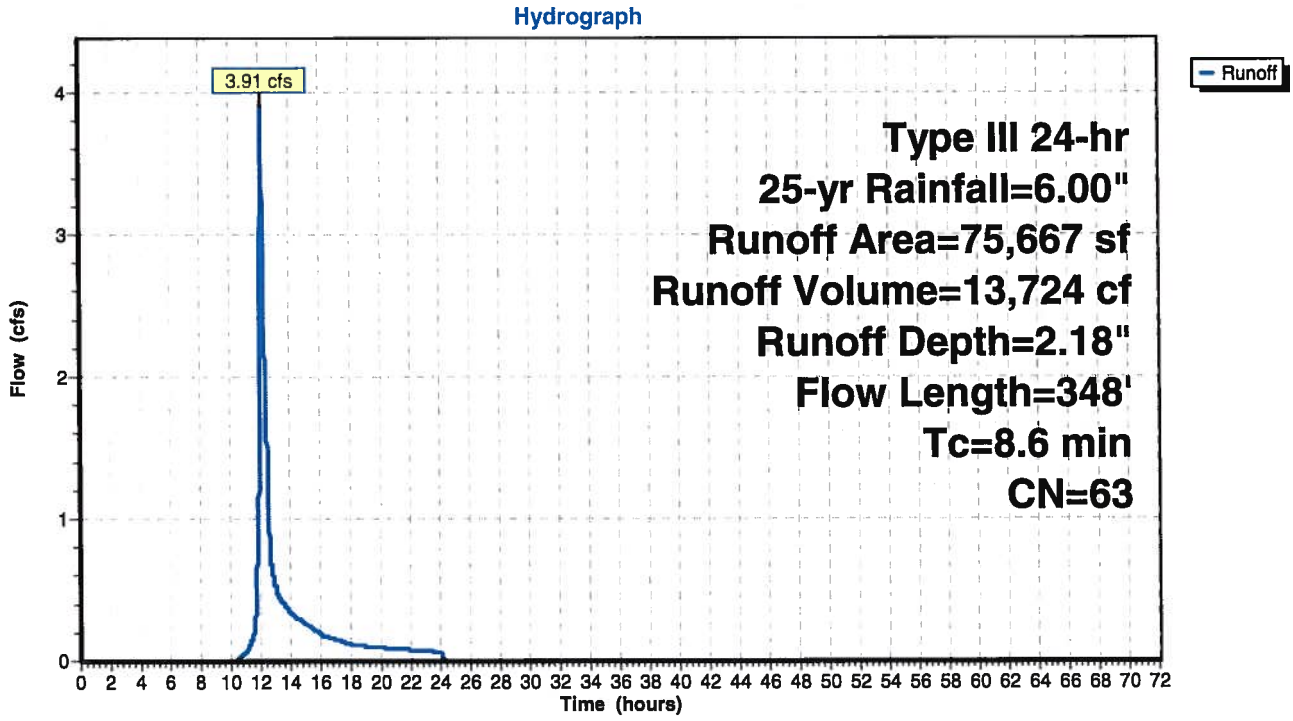
Runoff = 3.91 cfs @ 12.13 hrs, Volume= 13,724 cf, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
9,736	98	Paved parking & roofs
34,108	61	>75% Grass cover, Good, HSG B
31,823	55	Woods, Good, HSG B
75,667	63	Weighted Average
65,931		87.13% Pervious Area
9,736		12.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.5	100	0.0500	0.26		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
2.1	248	0.0770	1.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.6	348	Total			

Subcatchment Id:



Summary for Subcatchment Ic-1:

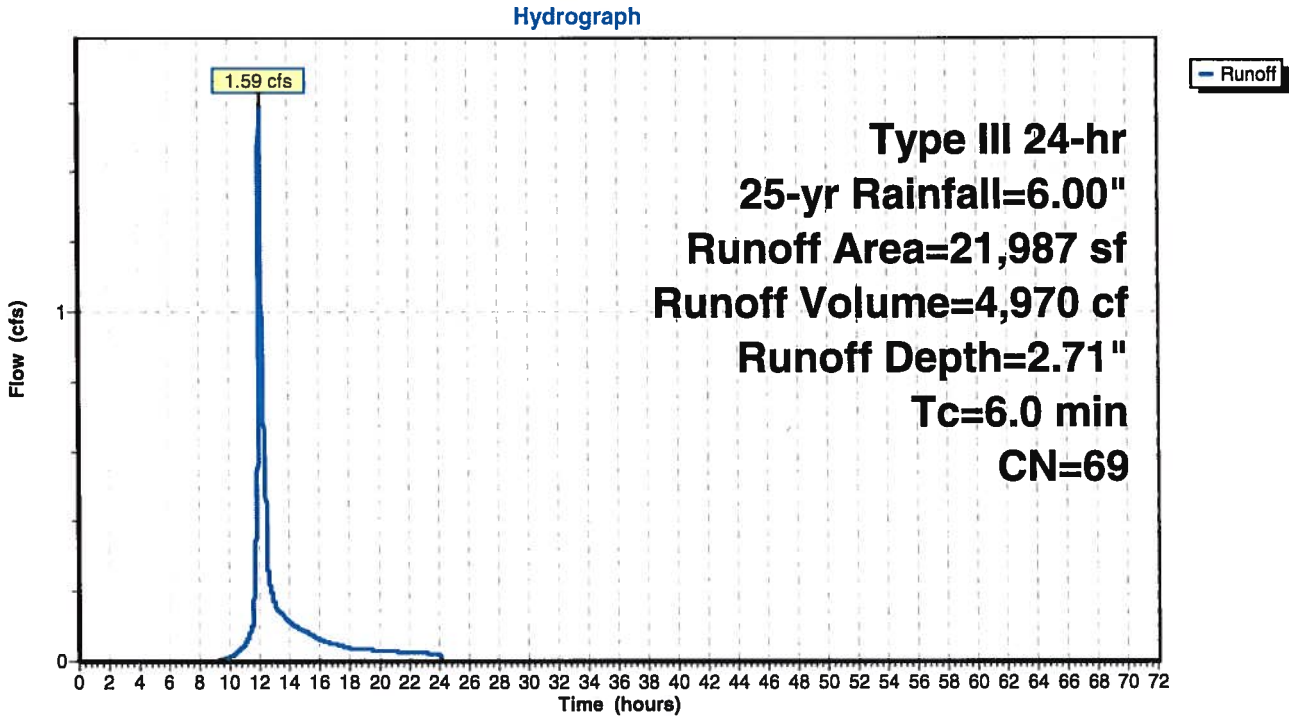
Runoff = 1.59 cfs @ 12.09 hrs, Volume= 4,970 cf, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
4,637	98	Paved parking & roofs
17,350	61	>75% Grass cover, Good, HSG B
21,987	69	Weighted Average
17,350		78.91% Pervious Area
4,637		21.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Default**

Subcatchment Ic-1:



Summary for Subcatchment Ic-3:

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 711 cf, Depth= 5.76"

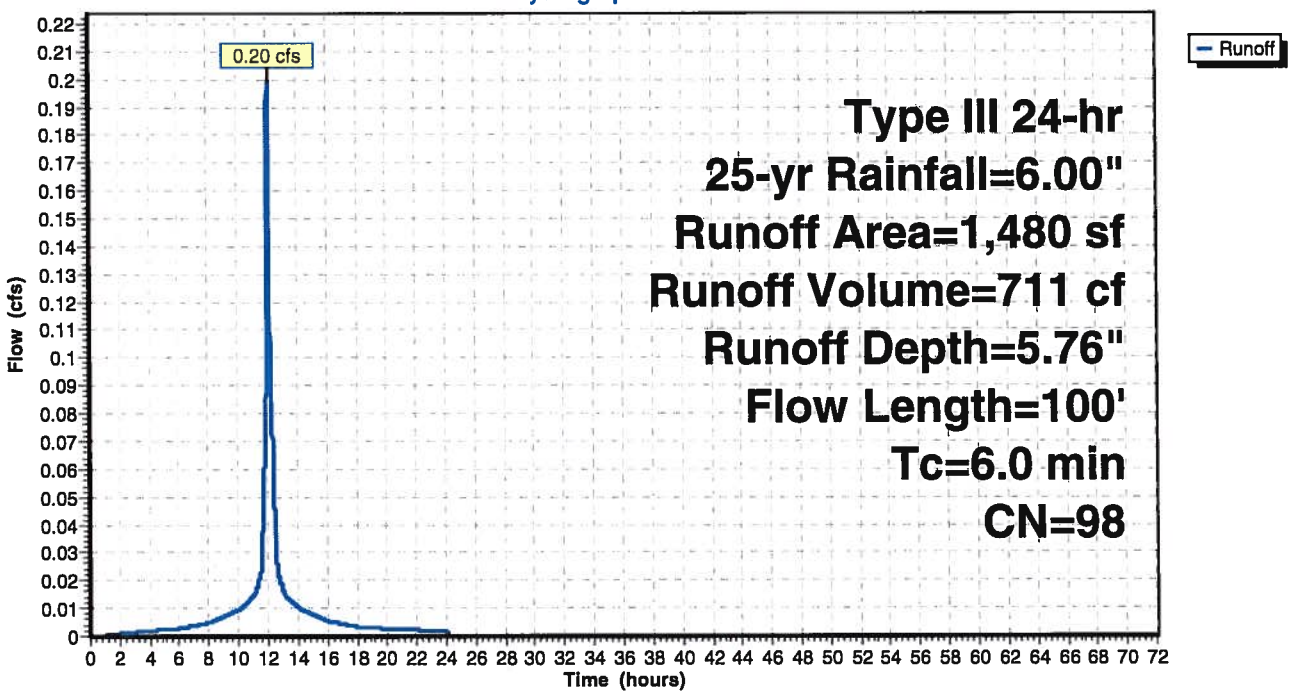
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
1,480	98	Paved parking & roofs
1,480		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100		0.28		**Direct Entry, Default**

Subcatchment Ic-3:

Hydrograph



Summary for Subcatchment Ic-5:

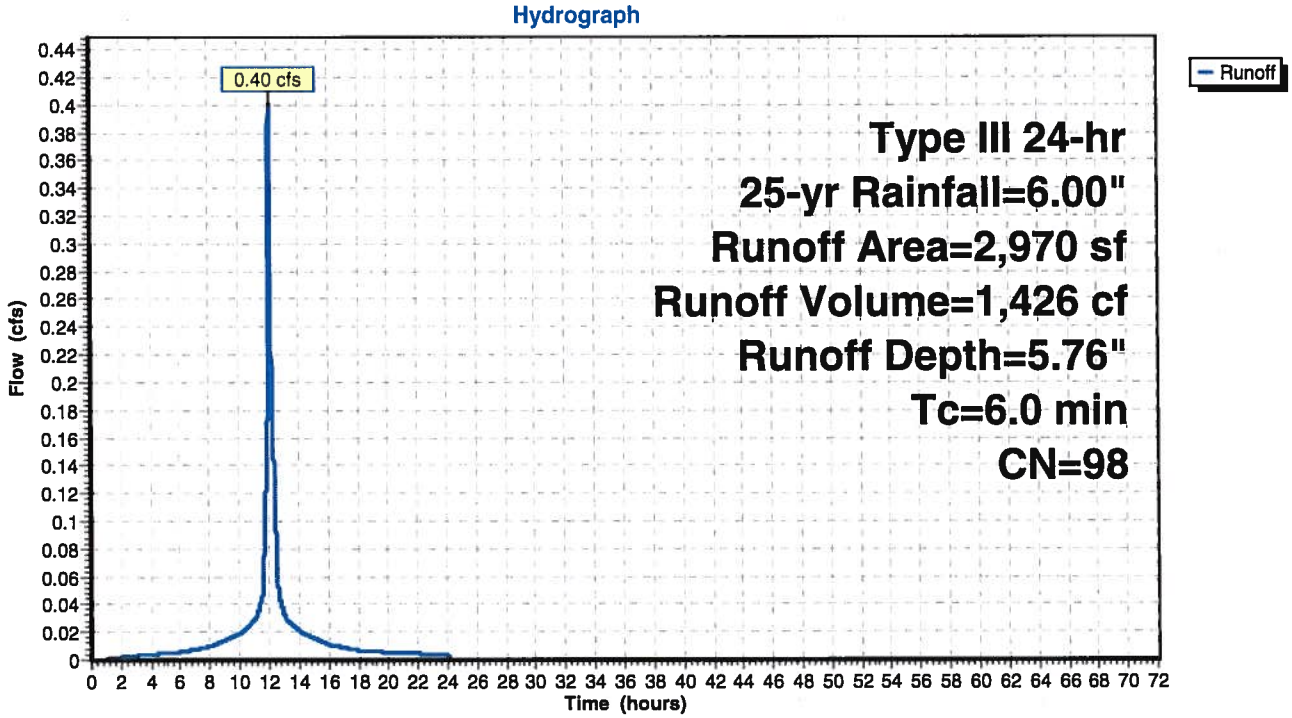
Runoff = 0.40 cfs @ 12.08 hrs, Volume= 1,426 cf, Depth= 5.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
2,970	98	Paved parking & roofs
2,970		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Default**

Subcatchment Ic-5:



Summary for Subcatchment Ic-6:

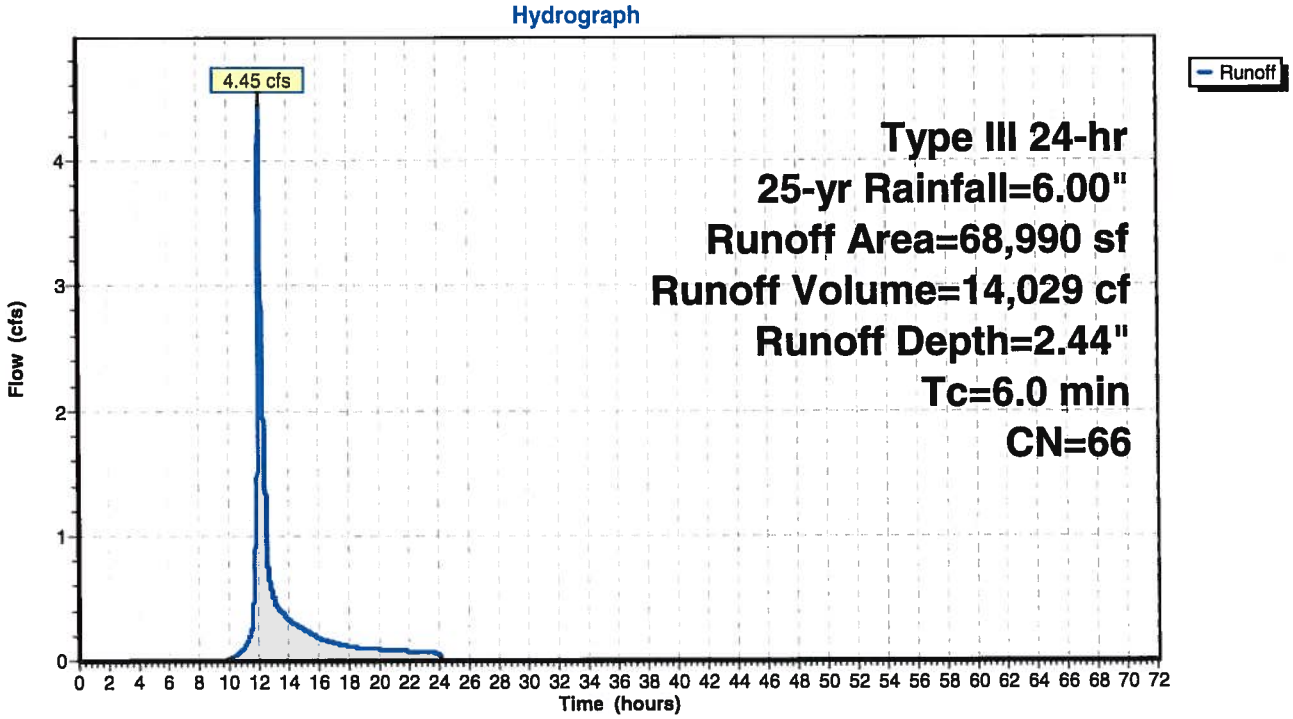
Runoff = 4.45 cfs @ 12.09 hrs, Volume= 14,029 cf, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
11,538	98	Paved parking & roofs
38,048	61	>75% Grass cover, Good, HSG B
19,404	55	Woods, Good, HSG B
68,990	66	Weighted Average
57,452		83.28% Pervious Area
11,538		16.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Default**

Subcatchment Ic-6:



Summary for Reach 1R: DMH #2 to CDS #3

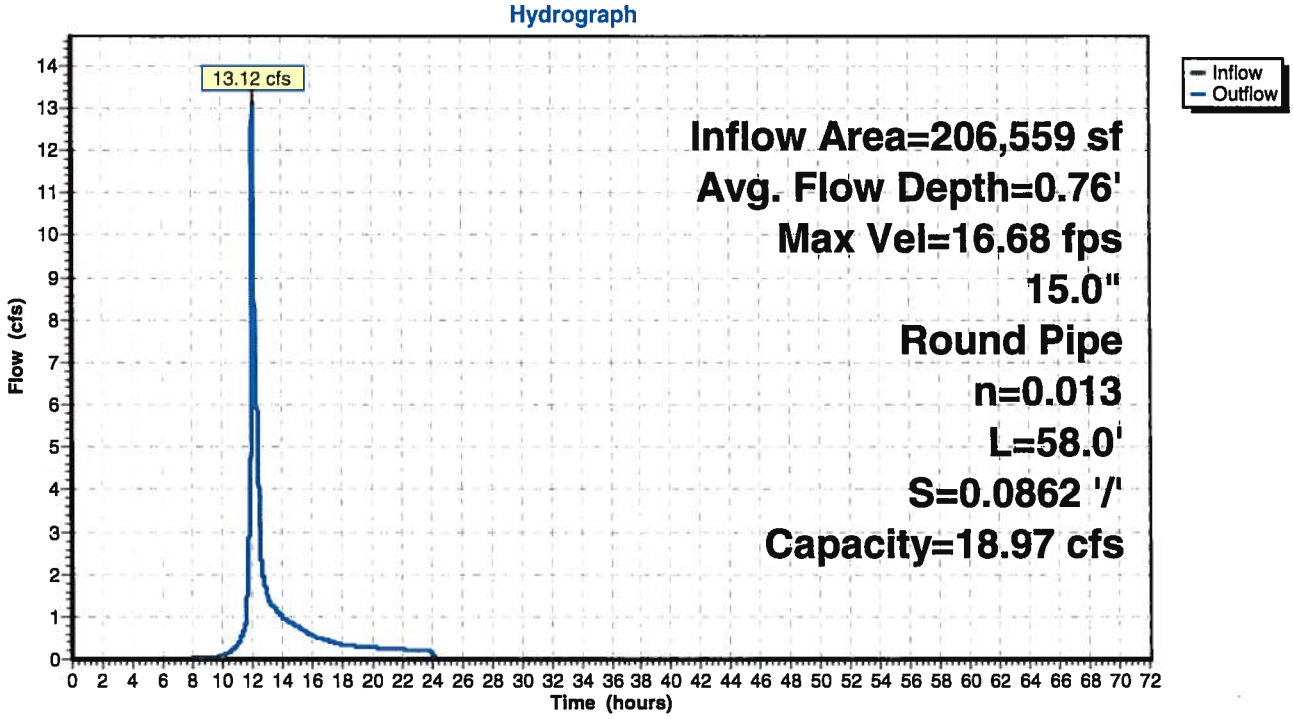
Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 2.53" for 25-yr event
Inflow = 13.12 cfs @ 12.11 hrs, Volume= 43,609 cf
Outflow = 13.12 cfs @ 12.11 hrs, Volume= 43,609 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 16.68 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.93 fps, Avg. Travel Time= 0.2 min

Peak Storage= 46 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 18.97 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 58.0' Slope= 0.0862 '/'
Inlet Invert= 596.50', Outlet Invert= 591.50'

Reach 1R: DMH #2 to CDS #3



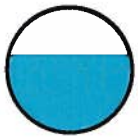
Summary for Reach 2R: CB #9 to CDS #4

Inflow Area = 58,632 sf, 34.99% Impervious, Inflow Depth = 3.09" for 25-yr event
Inflow = 4.72 cfs @ 12.10 hrs, Volume= 15,091 cf
Outflow = 4.72 cfs @ 12.10 hrs, Volume= 15,091 cf, Atten= 0%, Lag= 0.1 min

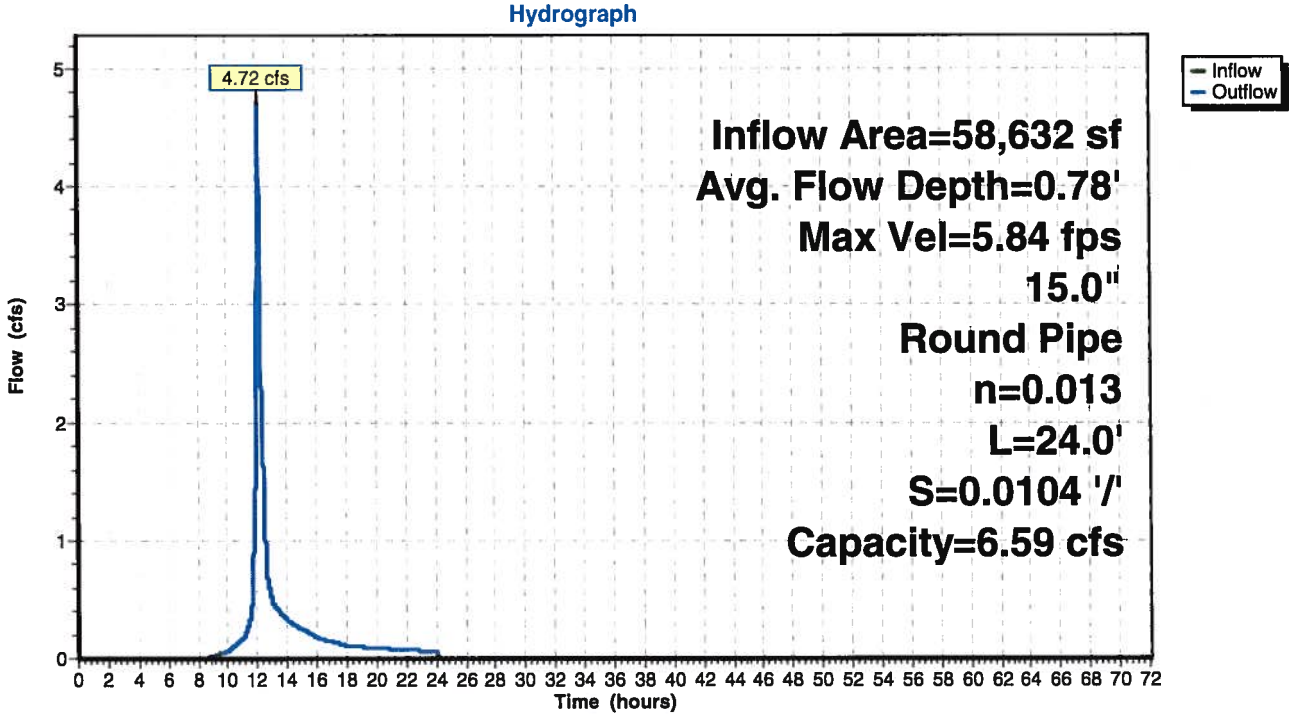
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.20 fps, Avg. Travel Time= 0.2 min

Peak Storage= 19 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.78'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 6.59 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 24.0' Slope= 0.0104 '/'
Inlet Invert= 620.00', Outlet Invert= 619.75'



Reach 2R: CB #9 to CDS #4



Summary for Reach 3R: CB #9 to LS #1

Inflow Area = 58,632 sf, 34.99% Impervious, Inflow Depth = 3.09" for 25-yr event
Inflow = 4.72 cfs @ 12.10 hrs, Volume= 15,091 cf
Outflow = 4.72 cfs @ 12.10 hrs, Volume= 15,091 cf, Atten= 0%, Lag= 0.1 min

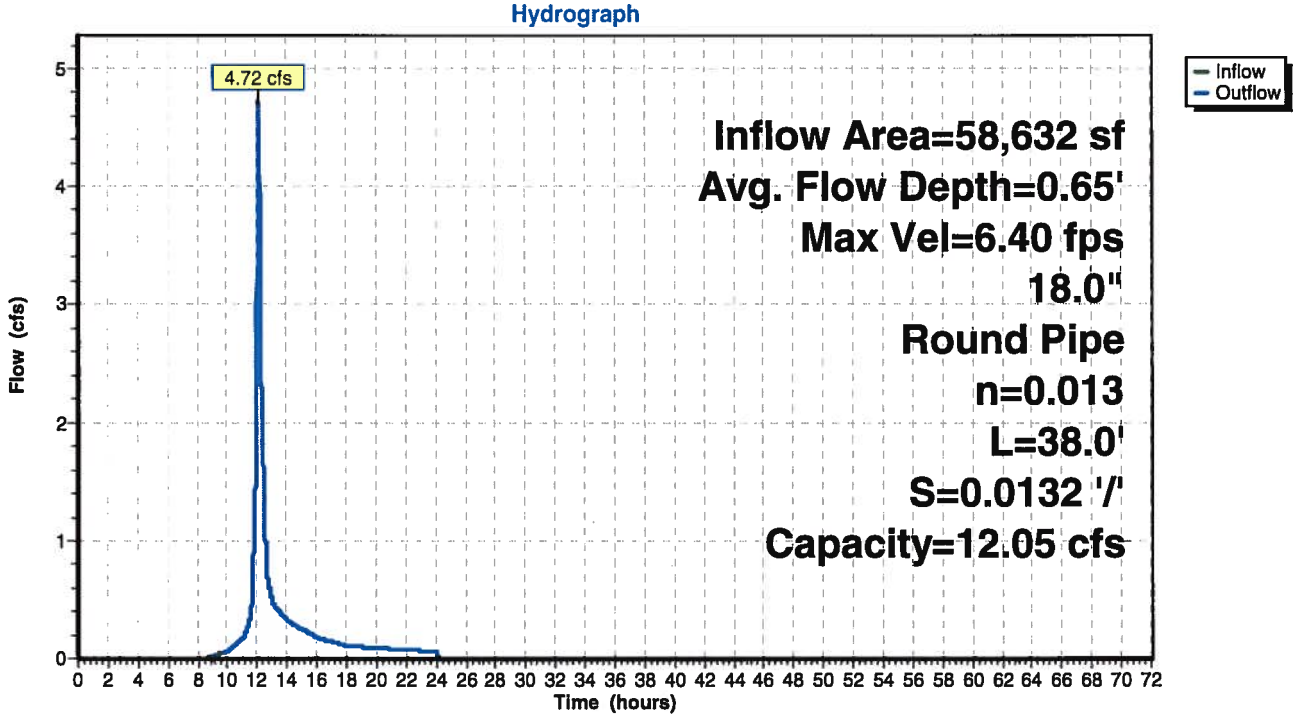
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.40 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.34 fps, Avg. Travel Time= 0.3 min

Peak Storage= 28 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 12.05 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 38.0' Slope= 0.0132 '/'
Inlet Invert= 621.50', Outlet Invert= 621.00'

Reach 3R: CB #9 to LS #1

Hydrograph



Summary for Reach 4R: CDS #3 to ES #14

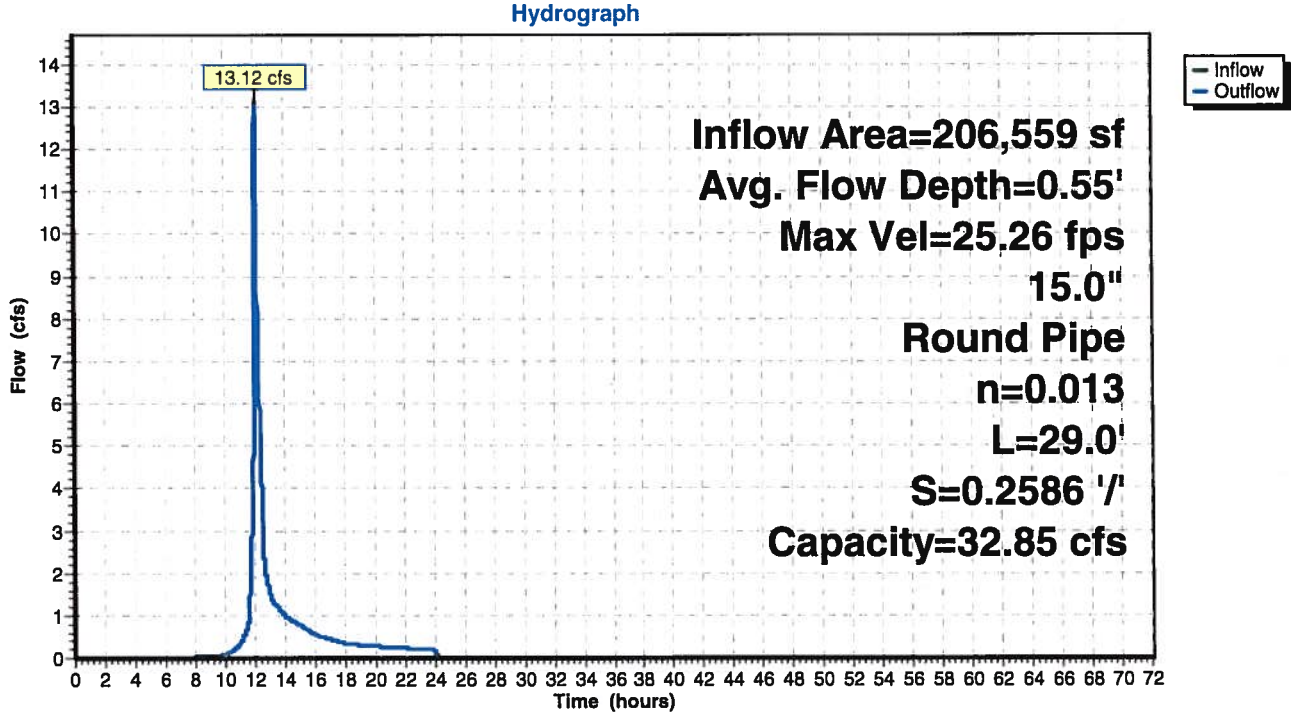
Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 2.53" for 25-yr event
Inflow = 13.12 cfs @ 12.11 hrs, Volume= 43,609 cf
Outflow = 13.12 cfs @ 12.11 hrs, Volume= 43,609 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 25.26 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 7.28 fps, Avg. Travel Time= 0.1 min

Peak Storage= 15 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 32.85 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 29.0' Slope= 0.2586 '/'
Inlet Invert= 591.50', Outlet Invert= 584.00'

Reach 4R: CDS #3 to ES #14



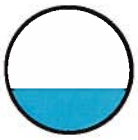
Summary for Reach 5R: ES #4 to ES #5

Inflow Area = 21,987 sf, 21.09% Impervious, Inflow Depth = 2.71" for 25-yr event
Inflow = 1.59 cfs @ 12.09 hrs, Volume= 4,970 cf
Outflow = 1.59 cfs @ 12.09 hrs, Volume= 4,970 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.39 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 0.2 min

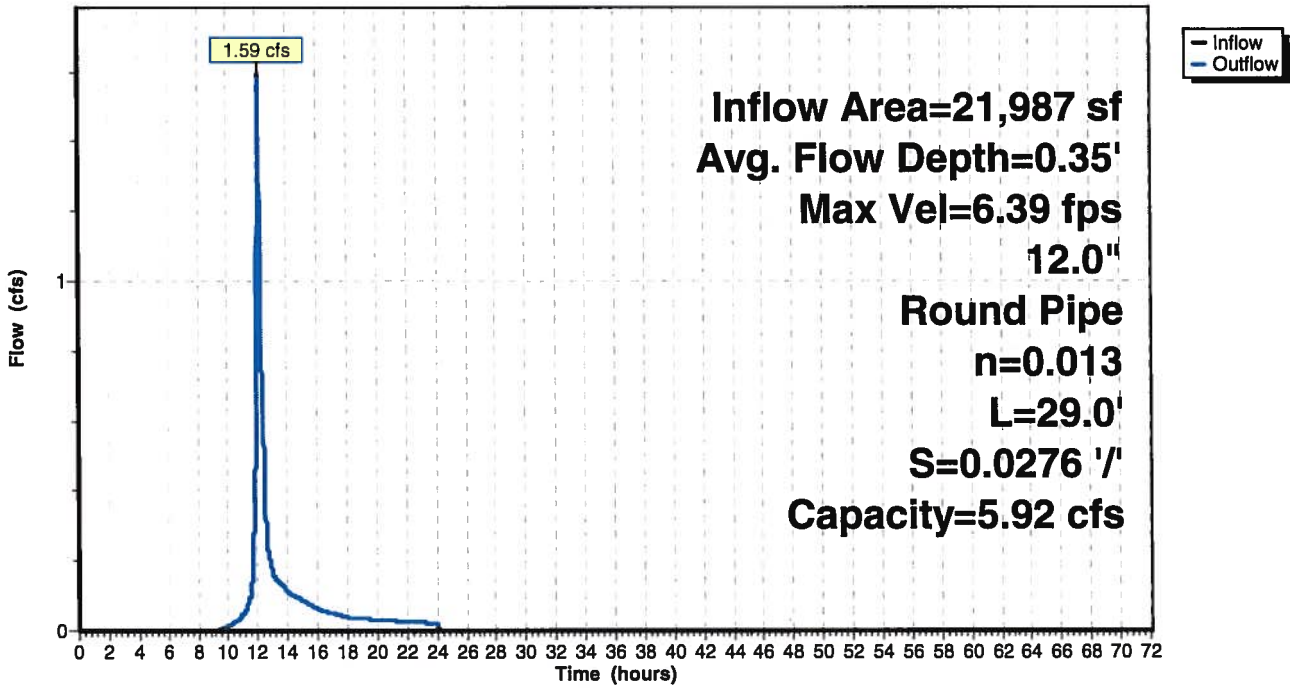
Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.92 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 29.0' Slope= 0.0276 '/'
Inlet Invert= 625.00', Outlet Invert= 624.20'



Reach 5R: ES #4 to ES #5

Hydrograph



Summary for Reach 6R: ES #6 to ES #7

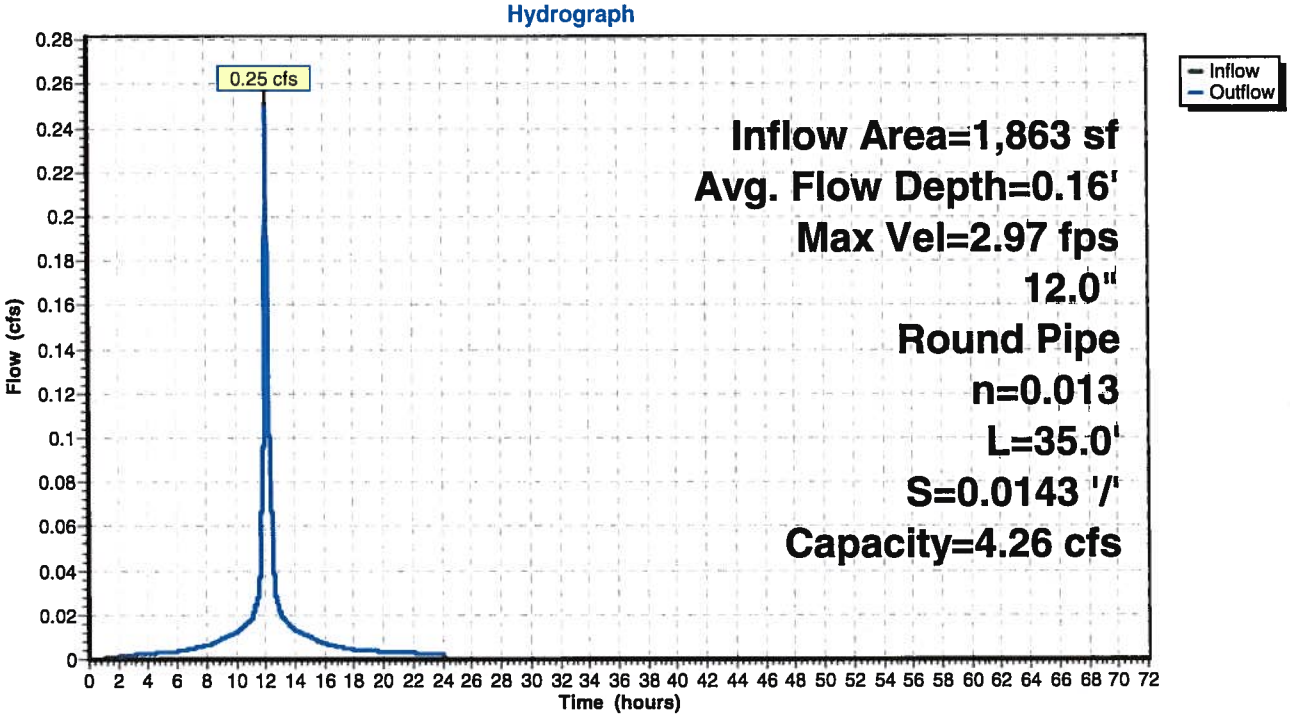
Inflow Area = 1,863 sf,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.25 cfs @ 12.08 hrs, Volume= 895 cf
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 895 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 0.6 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.26 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 35.0' Slope= 0.0143 '/'
Inlet Invert= 626.50', Outlet Invert= 626.00'

Reach 6R: ES #6 to ES #7



Summary for Reach 7R: ES #8 to ES #9

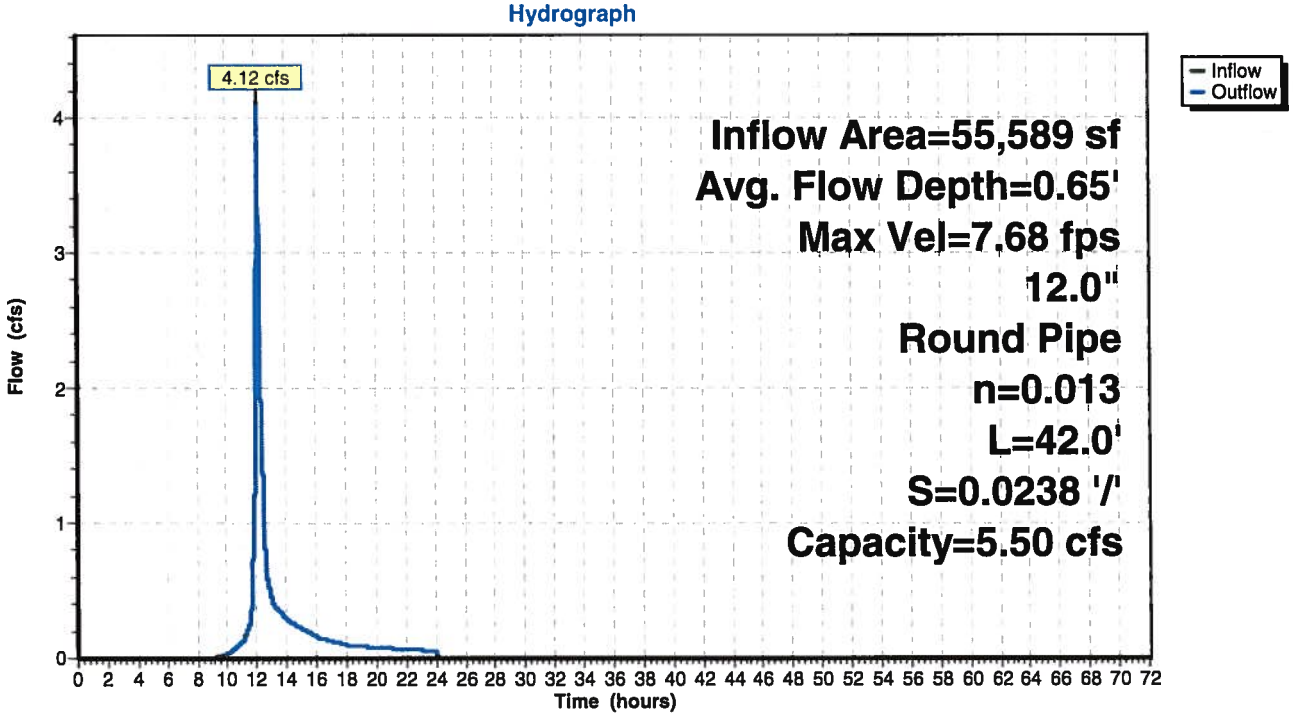
Inflow Area = 55,589 sf, 22.36% Impervious, Inflow Depth = 2.77" for 25-yr event
Inflow = 4.12 cfs @ 12.09 hrs, Volume= 12,825 cf
Outflow = 4.12 cfs @ 12.09 hrs, Volume= 12,825 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.68 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.93 fps, Avg. Travel Time= 0.2 min

Peak Storage= 23 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.50 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 42.0' Slope= 0.0238 '/'
Inlet Invert= 619.50', Outlet Invert= 618.50'

Reach 7R: ES #8 to ES #9



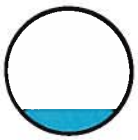
Summary for Reach 8R: ES #10 to ES #11

Inflow Area = 3,343 sf,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.45 cfs @ 12.08 hrs, Volume= 1,605 cf
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 1,605 cf, Atten= 0%, Lag= 0.3 min

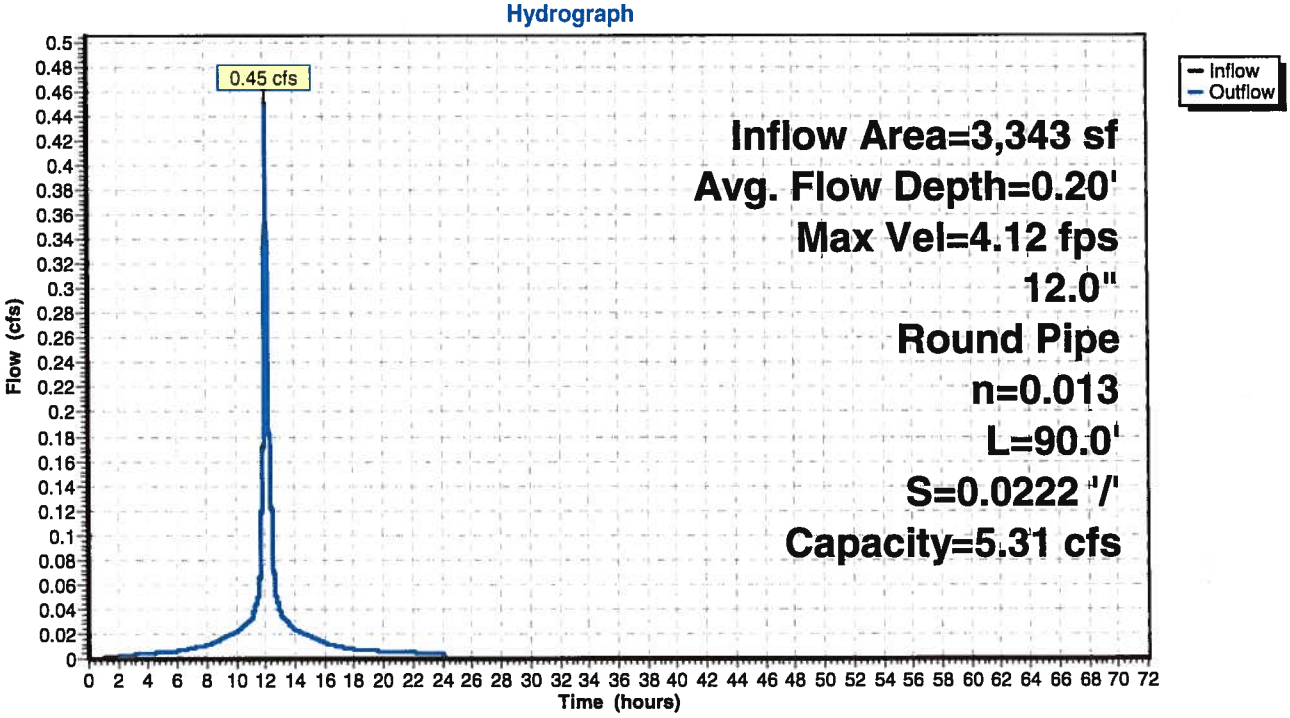
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.12 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 1.1 min

Peak Storage= 10 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.31 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 90.0' Slope= 0.0222 '/'
Inlet Invert= 620.50', Outlet Invert= 618.50'



Reach 8R: ES #10 to ES #11



Summary for Reach 9R: CB #7 to CB #8

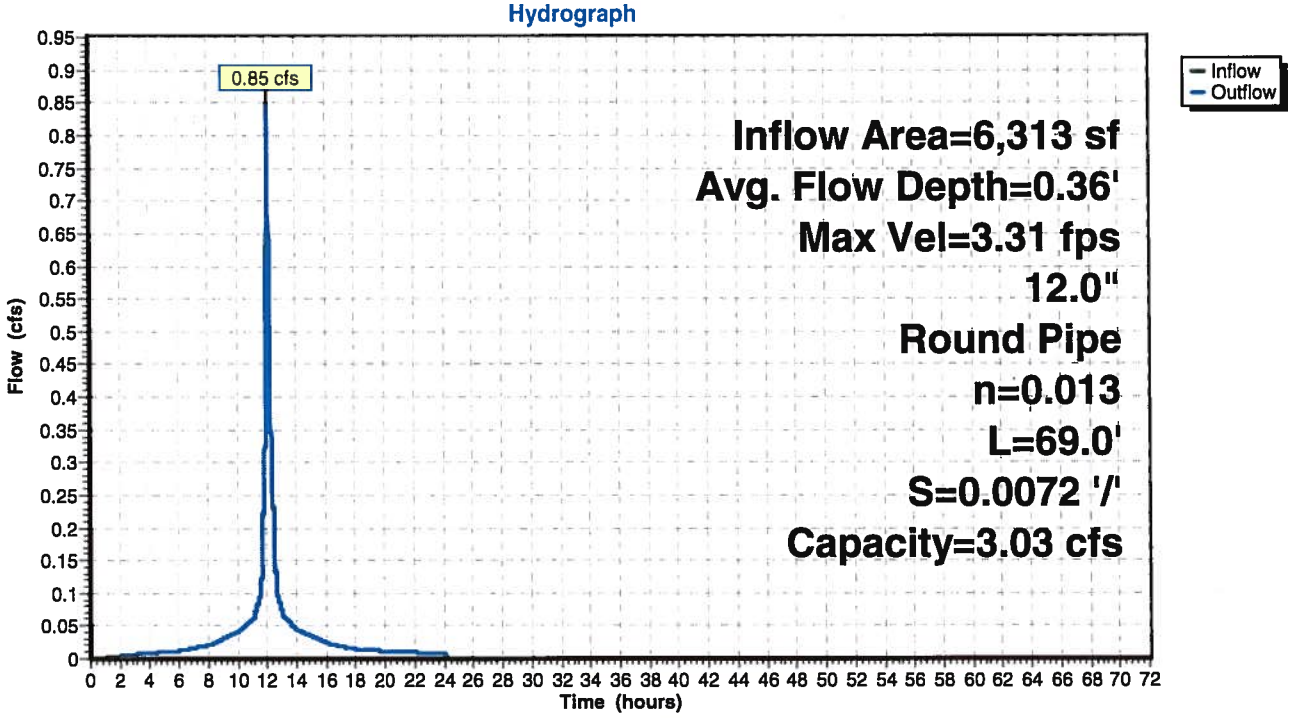
Inflow Area = 6,313 sf,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.85 cfs @ 12.09 hrs, Volume= 3,031 cf
Outflow = 0.85 cfs @ 12.09 hrs, Volume= 3,031 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.31 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 1.0 min

Peak Storage= 18 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.03 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 69.0' Slope= 0.0072 '/'
Inlet Invert= 612.50', Outlet Invert= 612.00'

Reach 9R: CB #7 to CB #8



Summary for Reach 10R: CB #8 to DMH #2

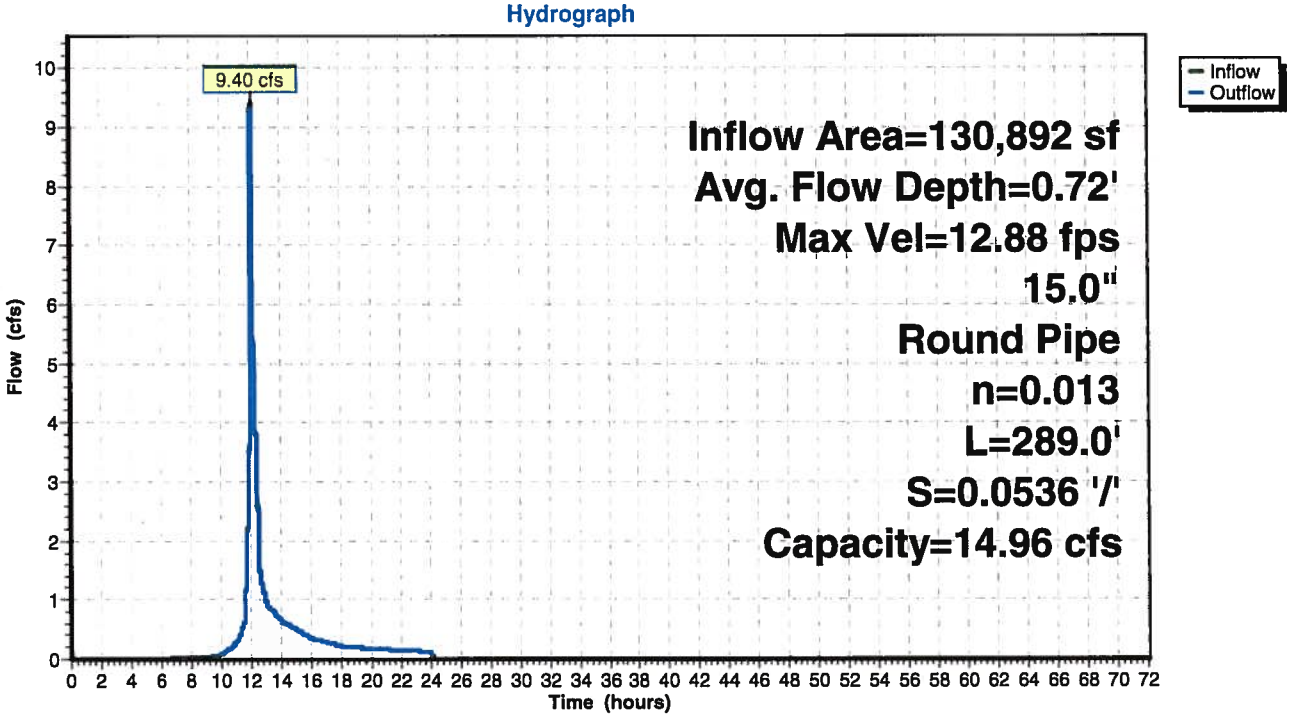
Inflow Area = 130,892 sf, 23.13% Impervious, Inflow Depth = 2.74" for 25-yr event
Inflow = 9.42 cfs @ 12.09 hrs, Volume= 29,885 cf
Outflow = 9.40 cfs @ 12.10 hrs, Volume= 29,885 cf, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 12.88 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 3.79 fps, Avg. Travel Time= 1.3 min

Peak Storage= 211 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.72'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 14.96 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 289.0' Slope= 0.0536 '/'
Inlet Invert= 612.00', Outlet Invert= 596.50'

Reach 10R: CB #8 to DMH #2



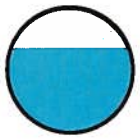
Summary for Reach 11R: YD #1 to DMH #2

Inflow Area = 75,667 sf, 12.87% Impervious, Inflow Depth = 2.18" for 25-yr event
Inflow = 3.91 cfs @ 12.13 hrs, Volume= 13,724 cf
Outflow = 3.91 cfs @ 12.13 hrs, Volume= 13,724 cf, Atten= 0%, Lag= 0.1 min

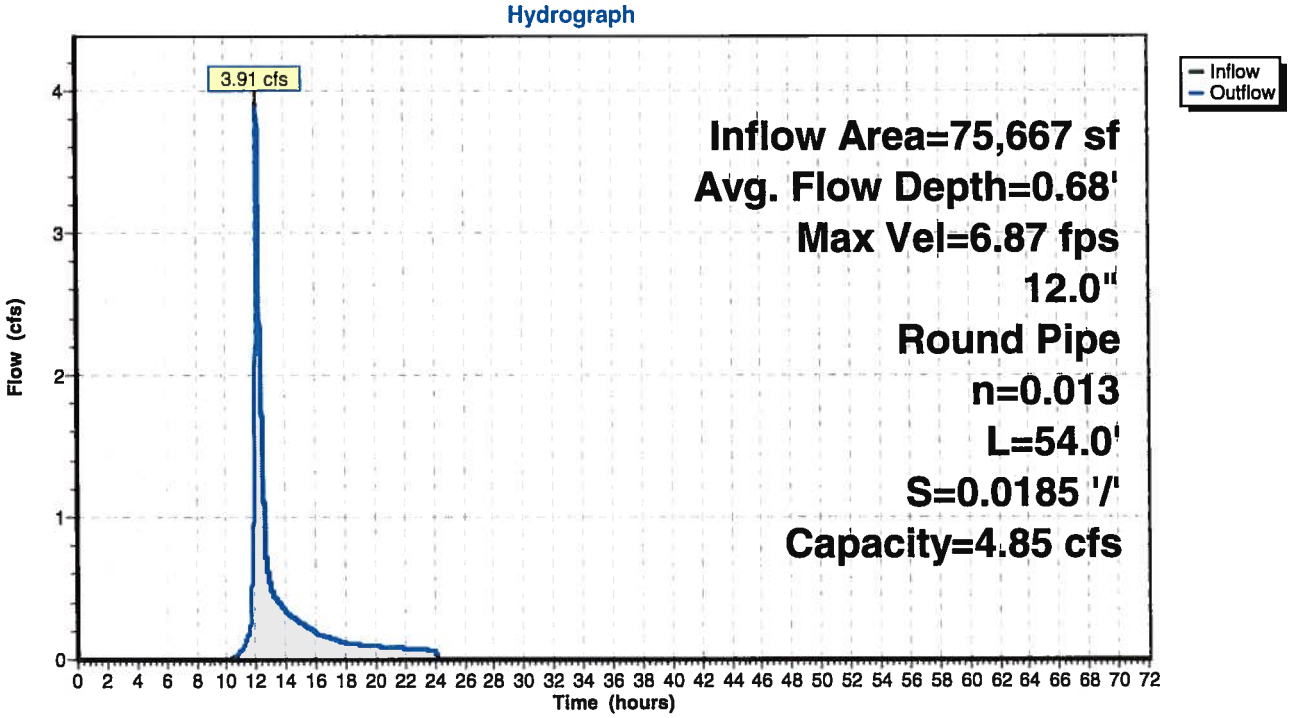
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.87 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.83 fps, Avg. Travel Time= 0.3 min

Peak Storage= 31 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.85 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 54.0' Slope= 0.0185 '/'
Inlet Invert= 597.50', Outlet Invert= 596.50'



Reach 11R: YD #1 to DMH #2



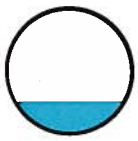
Summary for Reach 12R: OS #4 to ES #15

Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 0.58" for 25-yr event
Inflow = 1.44 cfs @ 12.81 hrs, Volume= 10,013 cf
Outflow = 1.44 cfs @ 12.81 hrs, Volume= 10,013 cf, Atten= 0%, Lag= 0.0 min

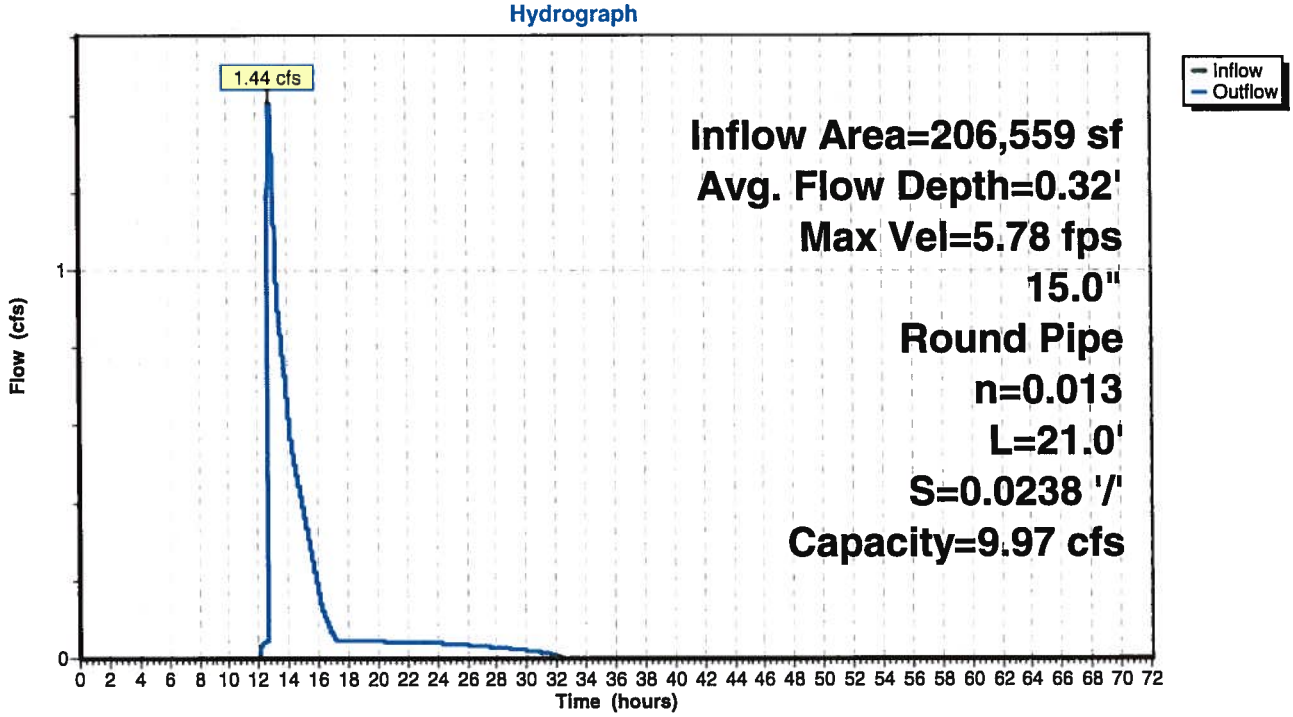
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.78 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 0.2 min

Peak Storage= 5 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.97 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 21.0' Slope= 0.0238 '/'
Inlet Invert= 583.50', Outlet Invert= 583.00'



Reach 12R: OS #4 to ES #15



Summary for Reach Ib R:

Inflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf	
Outflow	=	0.00 cfs @	0.00 hrs, Volume=	0 cf, Atten= 0%, Lag= 0.0 min	

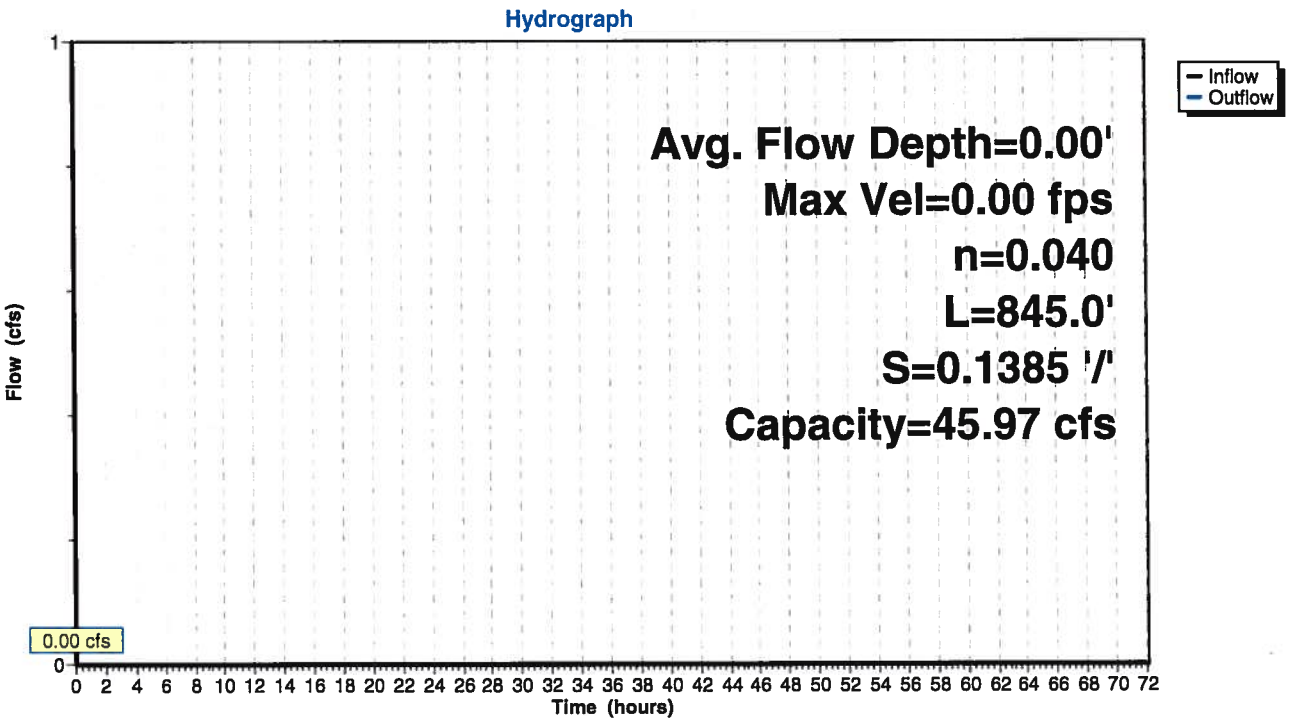
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 45.97 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 845.0' Slope= 0.1385 '/'
Inlet Invert= 621.00', Outlet Invert= 504.00'

‡

Reach Ib R:



Summary for Reach Icd R:

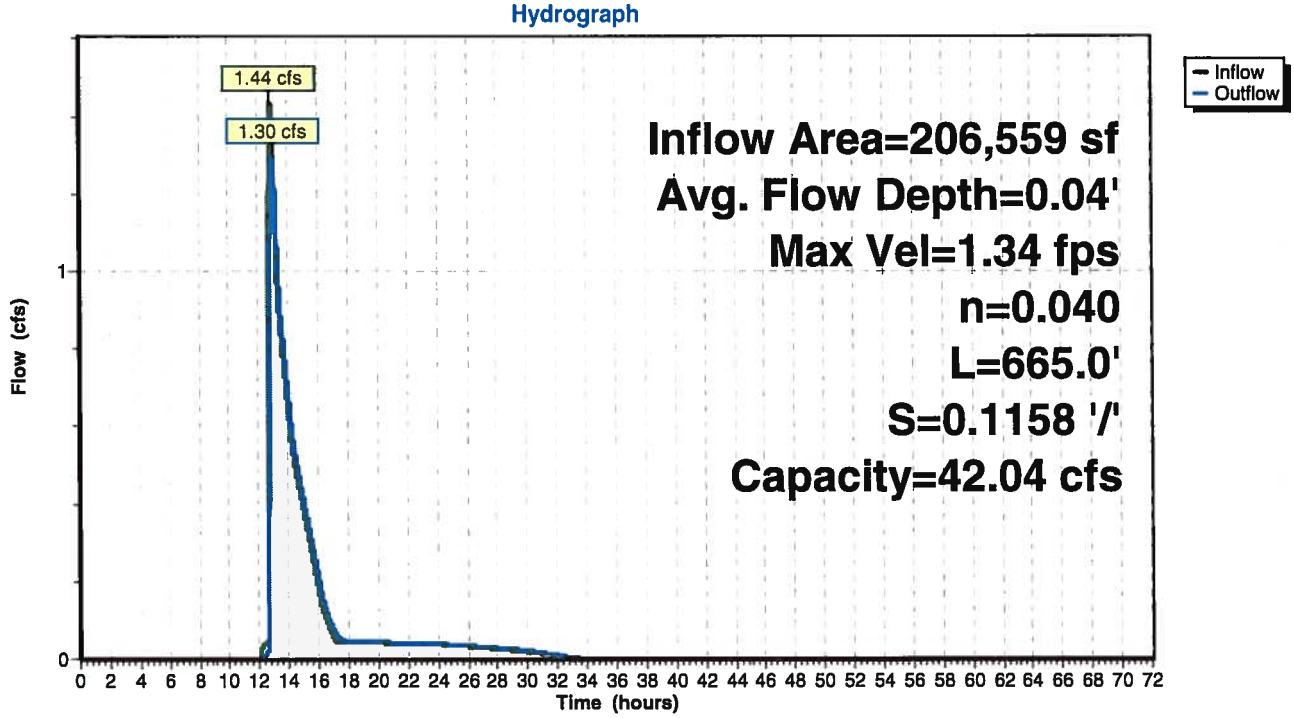
Inflow Area = 206,559 sf, 19.37% Impervious, Inflow Depth = 0.58" for 25-yr event
Inflow = 1.44 cfs @ 12.81 hrs, Volume= 10,013 cf
Outflow = 1.30 cfs @ 12.96 hrs, Volume= 10,013 cf, Atten= 9%, Lag= 9.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.34 fps, Min. Travel Time= 8.3 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 26.0 min

Peak Storage= 646 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.04 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 665.0' Slope= 0.1158 '/'
Inlet Invert= 581.00', Outlet Invert= 504.00'

Reach Icd R:



Summary for Pond 1P: YD #1

[57] Hint: Peaked at 599.25' (Flood elevation advised)

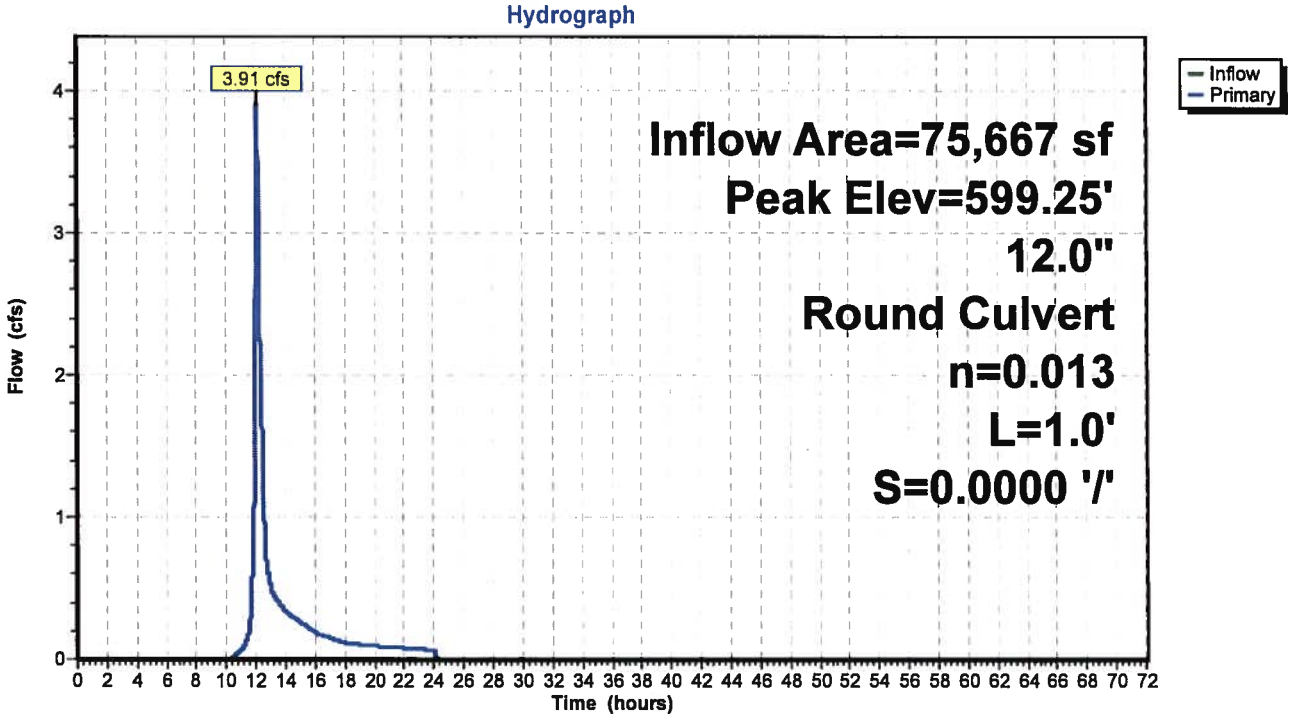
Inflow Area =	75,667 sf,	12.87% Impervious,	Inflow Depth =	2.18"	for 25-yr event
Inflow =	3.91 cfs @	12.13 hrs,	Volume=	13,724 cf	
Outflow =	3.91 cfs @	12.13 hrs,	Volume=	13,724 cf,	Atten= 0%, Lag= 0.0 min
Primary =	3.91 cfs @	12.13 hrs,	Volume=	13,724 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 599.25' @ 12.13 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	597.50'	**12.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 597.50' / 597.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.90 cfs @ 12.13 hrs HW=599.24' TW=598.18' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.90 cfs @ 4.97 fps)

Pond 1P: YD #1



Summary for Pond CB-9: CB #9

Inflow Area =	58,632 sf, 34.99% Impervious, Inflow Depth = 3.09" for 25-yr event				
Inflow =	4.72 cfs @	12.10 hrs,	Volume=	15,091 cf	
Outflow =	4.72 cfs @	12.10 hrs,	Volume=	15,091 cf,	Atten= 0%, Lag= 0.0 min
Primary =	4.72 cfs @	12.10 hrs,	Volume=	15,091 cf	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0 cf	

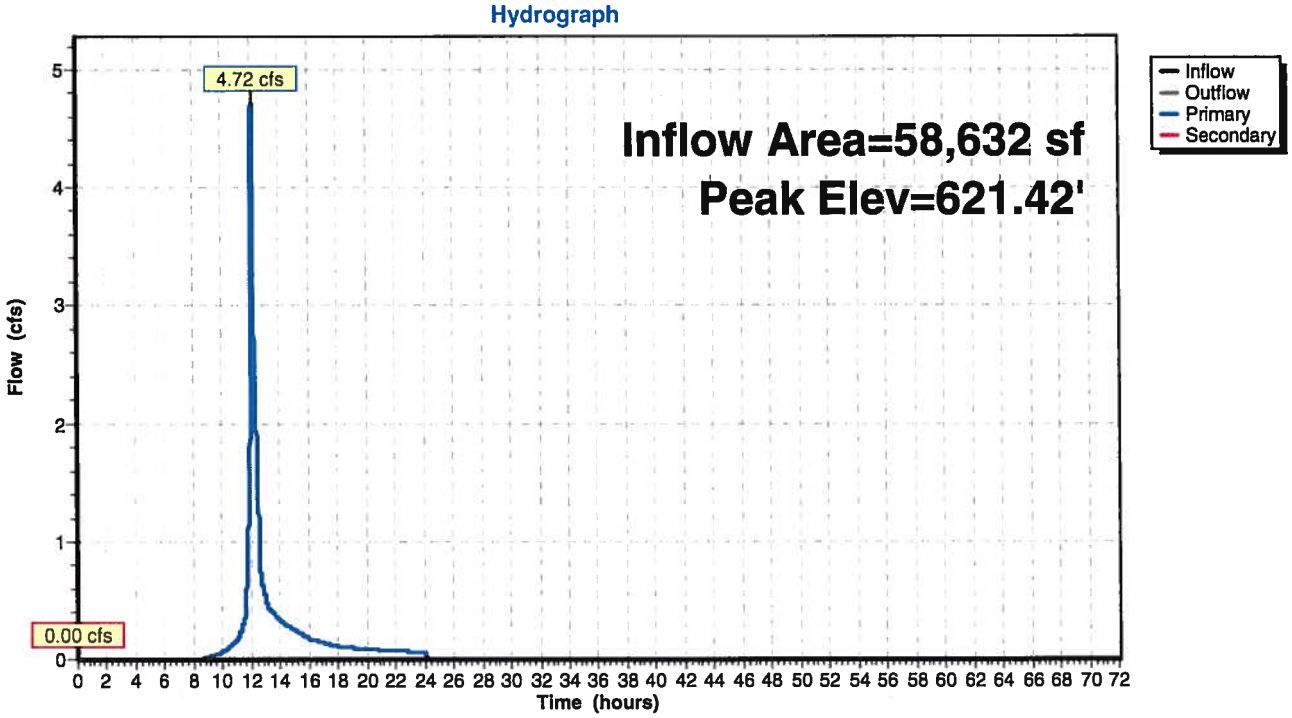
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 621.42' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	620.00'	**15.0" Round Culvert** L= 36.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 620.00' / 619.50' S= 0.0139 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	621.50'	**18.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.50' / 621.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.70 cfs @ 12.10 hrs HW=621.41' TW=620.78' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.70 cfs @ 3.83 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=620.00' TW=621.50' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond CB-9: CB #9



Summary for Pond I-1: Infiltration Sys #1

Inflow Area =	58,632 sf, 34.99% Impervious, Inflow Depth = 3.09" for 25-yr event				
Inflow =	4.72 cfs @	12.10 hrs,	Volume=	15,091 cf	
Outflow =	4.32 cfs @	12.14 hrs,	Volume=	15,091 cf,	Atten= 9%, Lag= 2.3 min
Discarded =	0.15 cfs @	11.08 hrs,	Volume=	6,366 cf	
Primary =	4.17 cfs @	12.14 hrs,	Volume=	8,725 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 620.91' @ 12.14 hrs Surf.Area= 1,045 sf Storage= 1,363 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 17.1 min (849.2 - 832.1)

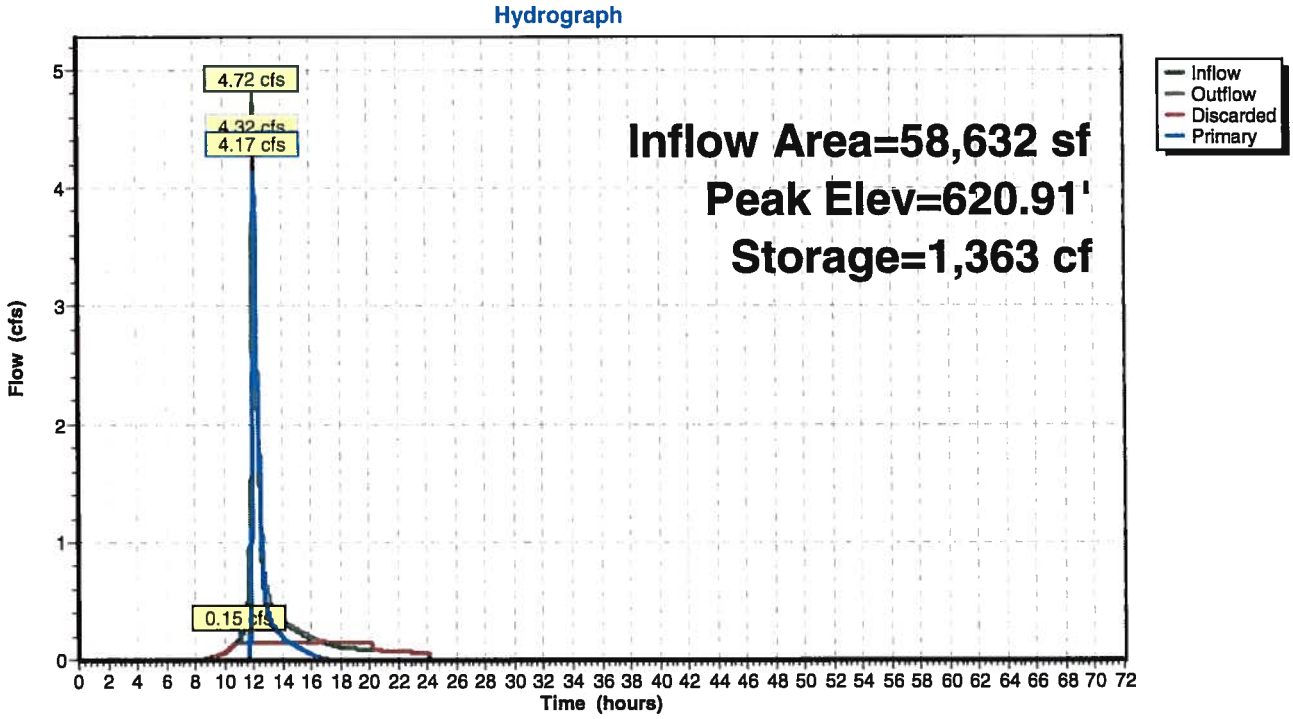
Volume	Invert	Avail.Storage	Storage Description
#1	619.50'	1,366 cf	**Cultec R-V8HD** x 21 Inside #2 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap
#2	619.00'	1,125 cf	**19.00'W x 55.00'L x 4.00'H Prismatoid** 4,180 cf Overall - 1,366 cf Embedded = 2,814 cf x 40.0% Voids
		2,492 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	619.00'	**6.000 in/hr Exfiltration over Horizontal area**
#2	Primary	619.75'	**15.0" Round Culvert** L= 8.6' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 619.75' / 619.50' S= 0.0291 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Discarded OutFlow Max=0.15 cfs @ 11.08 hrs HW=619.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.15 cfs)

Primary OutFlow Max=4.17 cfs @ 12.14 hrs HW=620.91' (Free Discharge)
└**2=Culvert** (Barrel Controls 4.17 cfs @ 4.58 fps)

Pond I-1: Infiltration Sys #1



Summary for Pond SB-4:

Inflow Area =	206,559 sf,	19.37% Impervious,	Inflow Depth =	2.53"	for 25-yr event
Inflow =	13.12 cfs @	12.11 hrs,	Volume=	43,609 cf	
Outflow =	1.86 cfs @	12.81 hrs,	Volume=	43,611 cf,	Atten= 86%, Lag= 42.1 min
Discarded =	0.42 cfs @	12.81 hrs,	Volume=	33,598 cf	
Primary =	1.44 cfs @	12.81 hrs,	Volume=	10,013 cf	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 587.10' @ 12.81 hrs Surf.Area= 6,052 sf Storage= 20,054 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 448.9 min (1,290.9 - 842.0)

Volume	Invert	Avail.Storage	Storage Description
#1	582.00'	25,857 cf	**Custom Stage Data (Irregular)** Listed below

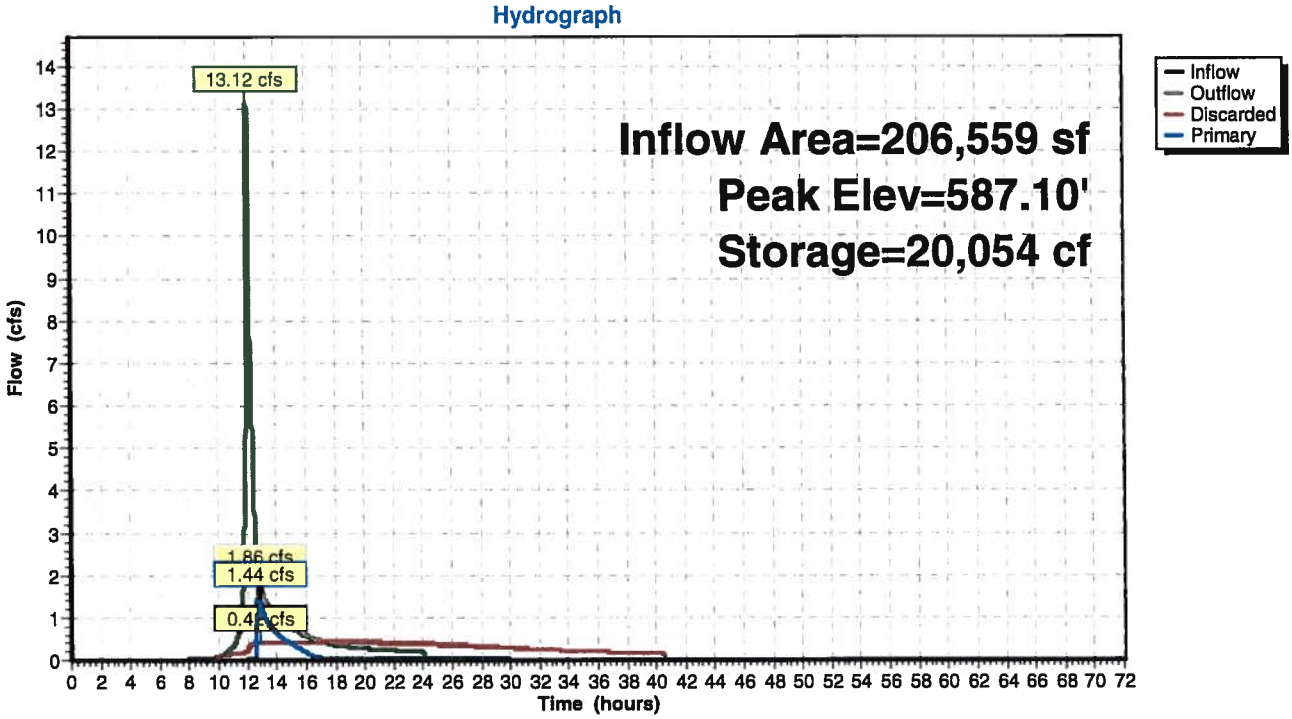
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
582.00	2,062	209.2	0	0	2,062
583.00	2,722	230.8	2,384	2,384	2,850
584.00	3,442	250.5	3,075	5,459	3,642
585.00	4,224	270.4	3,826	9,286	4,507
586.00	5,063	289.3	4,637	13,923	5,394
587.00	5,959	308.3	5,505	19,428	6,345
588.00	6,912	327.4	6,430	25,857	7,363

Device	Routing	Invert	Outlet Devices
#1	Primary	583.50'	**15.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 583.50' / 583.00' S= 0.0238 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	584.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	587.00'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	582.00'	**3.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.42 cfs @ 12.81 hrs HW=587.10' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.42 cfs)

Primary OutFlow Max=1.44 cfs @ 12.81 hrs HW=587.10' TW=583.82' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.44 cfs of 10.19 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.42 fps)
└**3=Orifice/Grate** (Weir Controls 1.39 cfs @ 1.02 fps)

Pond SB-4:



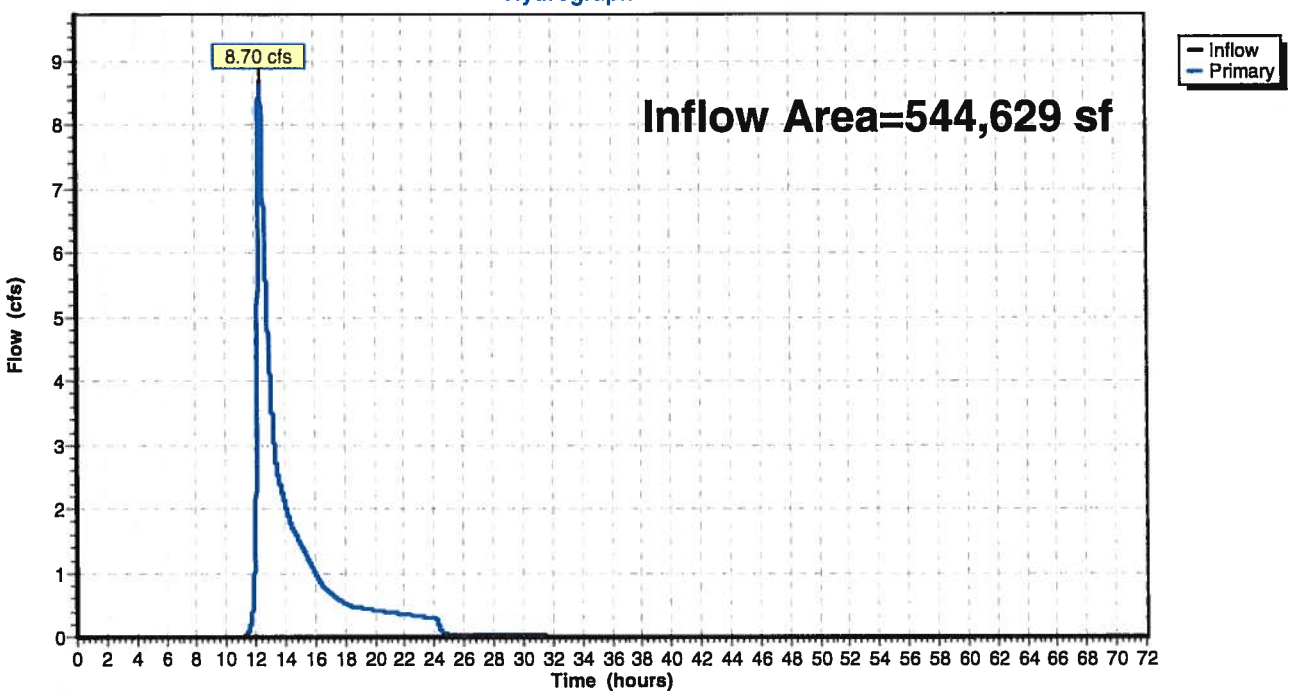
Summary for Link DP-I: DP-I

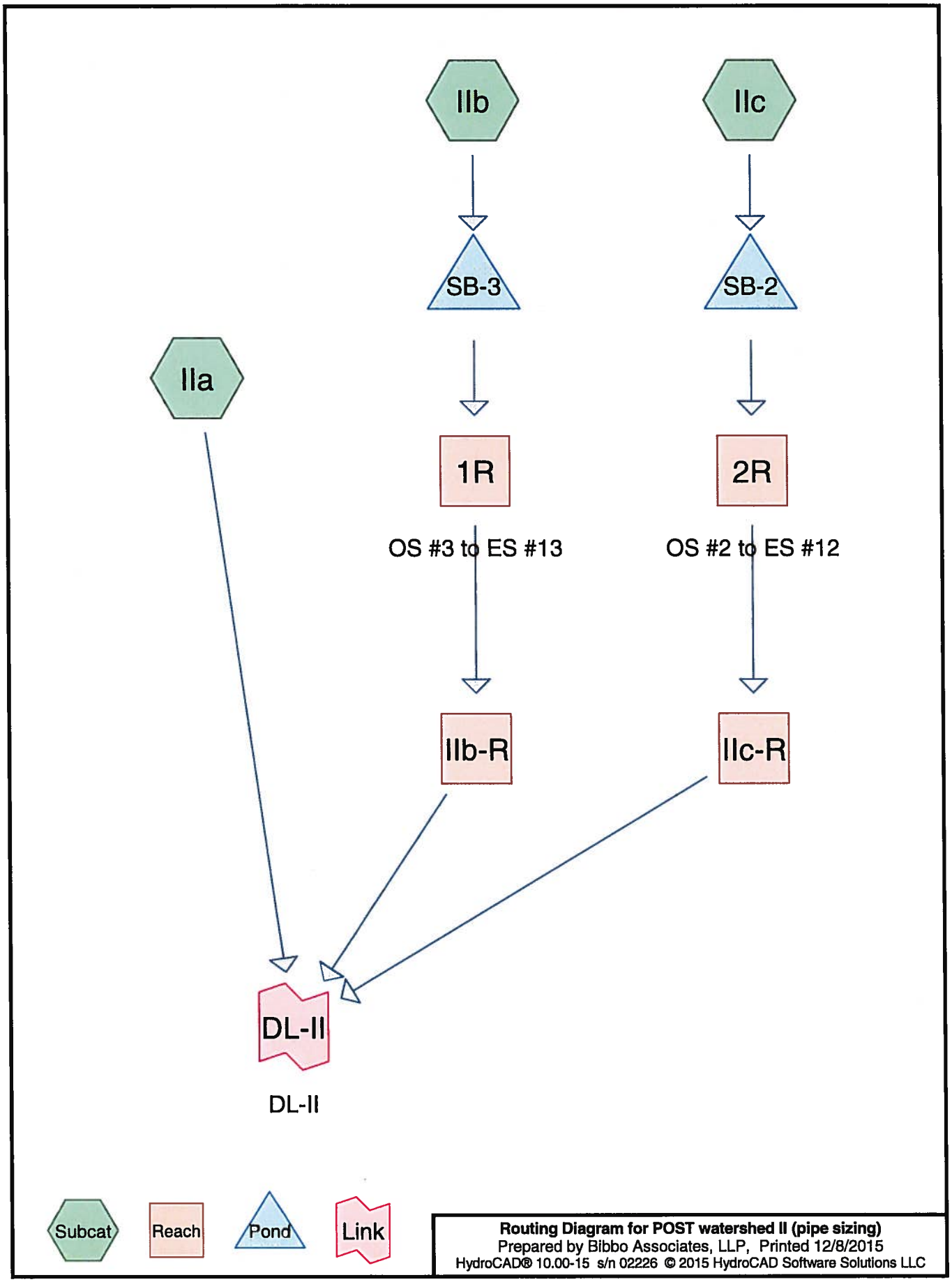
Inflow Area =	544,629 sf,	7.35% Impervious,	Inflow Depth =	1.26"	for 25-yr event
Inflow =	8.70 cfs @	12.37 hrs, Volume=	57,231 cf		
Primary =	8.70 cfs @	12.37 hrs, Volume=	57,231 cf,	Atten= 0%,	Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-I: DP-I

Hydrograph





Routing Diagram for POST watershed II (pipe sizing)
Prepared by Bibbo Associates, LLP, Printed 12/8/2015
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1R	596.00	595.50	37.0	0.0135	0.013	12.0	0.0	0.0
2	2R	596.00	595.00	74.0	0.0135	0.013	12.0	0.0	0.0
3	SB-2	596.00	595.00	74.0	0.0135	0.013	12.0	0.0	0.0
4	SB-3	596.00	595.50	37.0	0.0135	0.013	12.0	0.0	0.0

Summary for Subcatchment IIa:

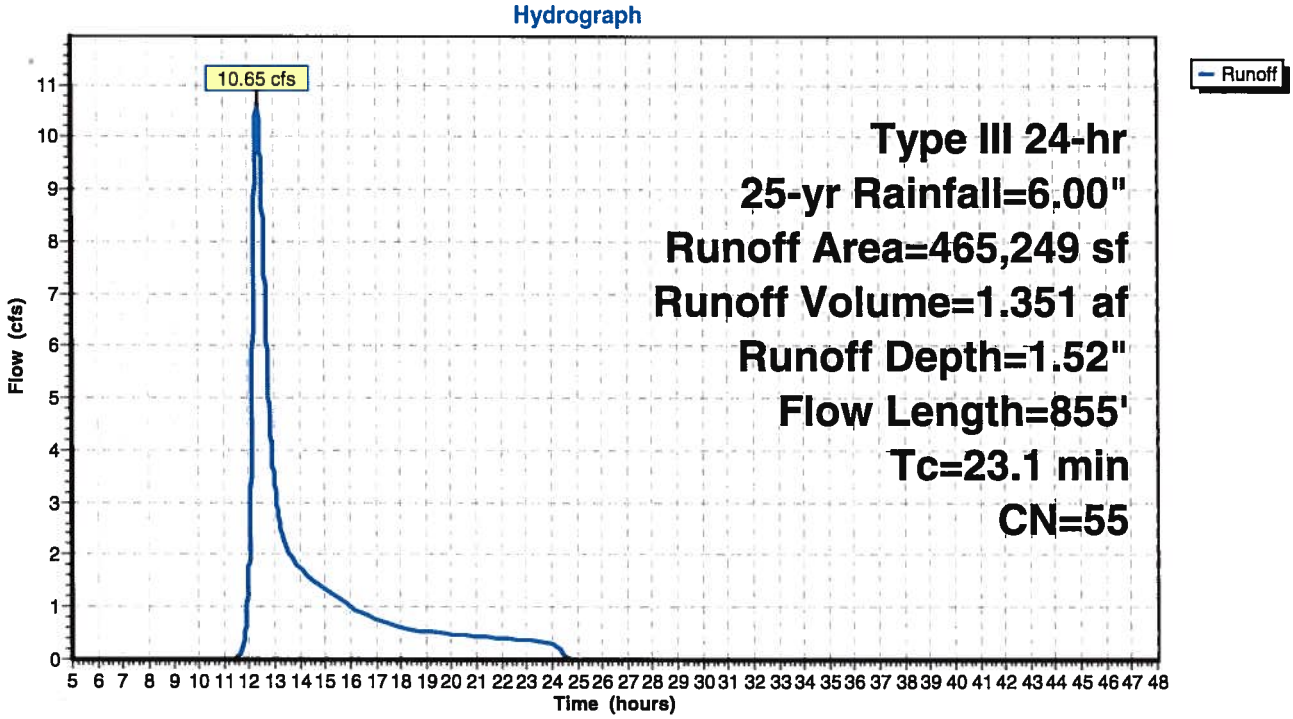
Runoff = 10.65 cfs @ 12.37 hrs, Volume= 1.351 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
16,460	61	>75% Grass cover, Good, HSG B
448,789	55	Woods, Good, HSG B
465,249	55	Weighted Average
465,249		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.6	100	0.0400	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
7.5	755	0.1126	1.68		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.1	855	Total			

Subcatchment IIa:



Summary for Subcatchment IIb:

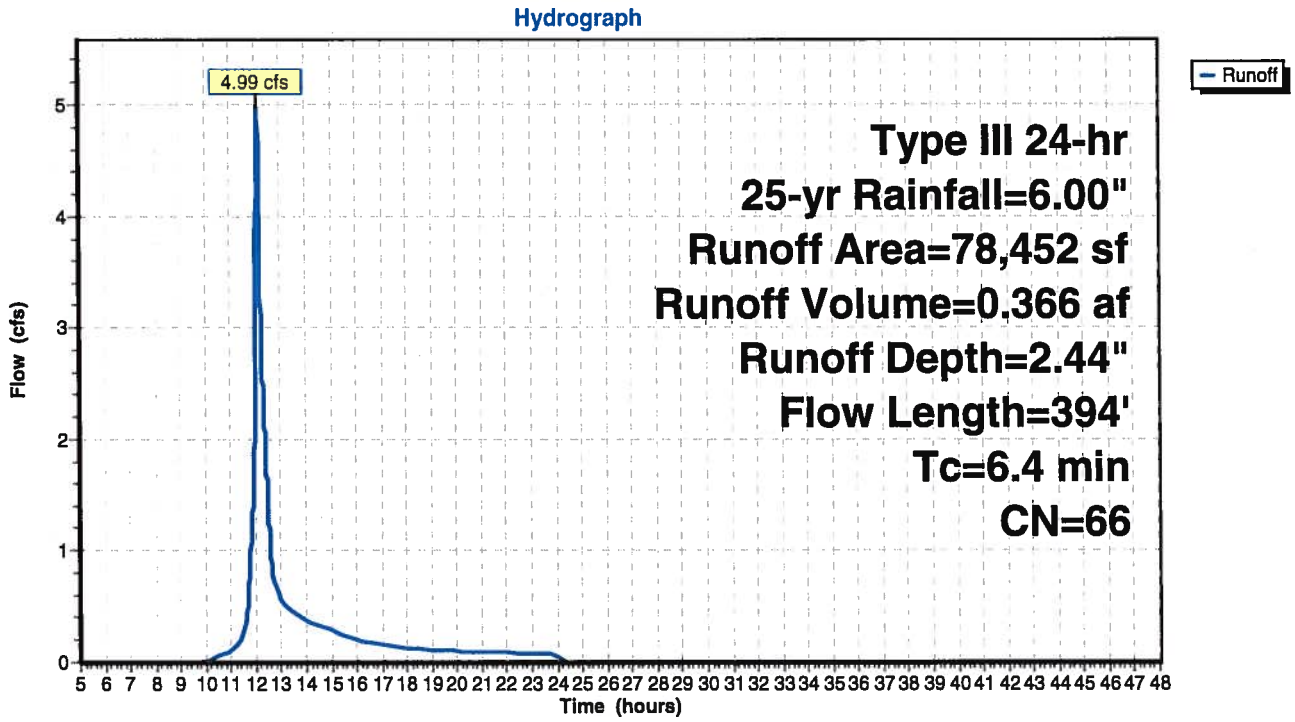
Runoff = 4.99 cfs @ 12.10 hrs, Volume= 0.366 af, Depth= 2.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
11,791	98	Paved parking & roofs
4,211	55	Woods, Good, HSG B
62,450	61	>75% Grass cover, Good, HSG B
78,452	66	Weighted Average
66,661		84.97% Pervious Area
11,791		15.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	100	0.1000	0.34		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.5	294	0.0400	3.22		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.4	394	Total			

Subcatchment IIb:



Summary for Subcatchment IIc:

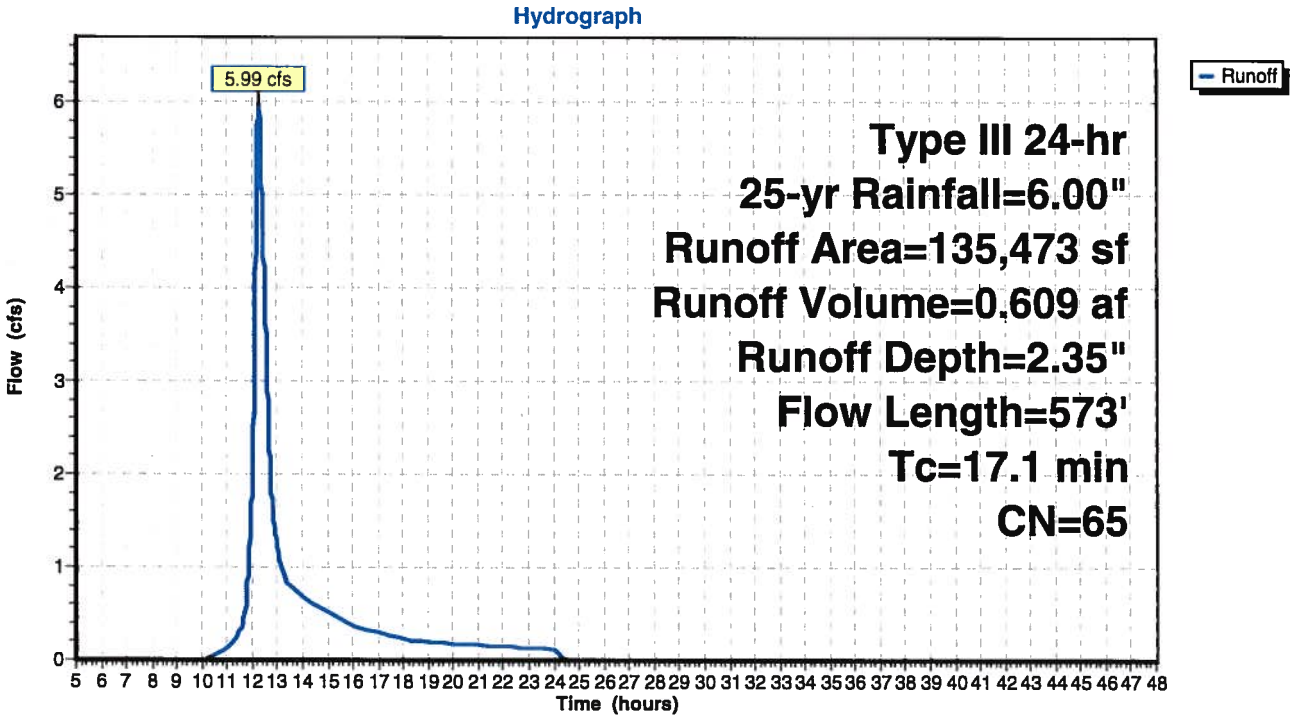
Runoff = 5.99 cfs @ 12.25 hrs, Volume= 0.609 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
98,316	61	>75% Grass cover, Good, HSG B
19,056	98	Paved parking & roofs
18,101	55	Woods, Good, HSG B
135,473	65	Weighted Average
116,417		85.93% Pervious Area
19,056		14.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.2	100	0.0500	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.4	290	0.0827	2.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	183	0.0270	5.79	28.97	**Trap/Vee/Rect Channel Flow,** Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.030 Stream, clean & straight
17.1	573	Total			

Subcatchment IIc:



Summary for Reach 1R: OS #3 to ES #13

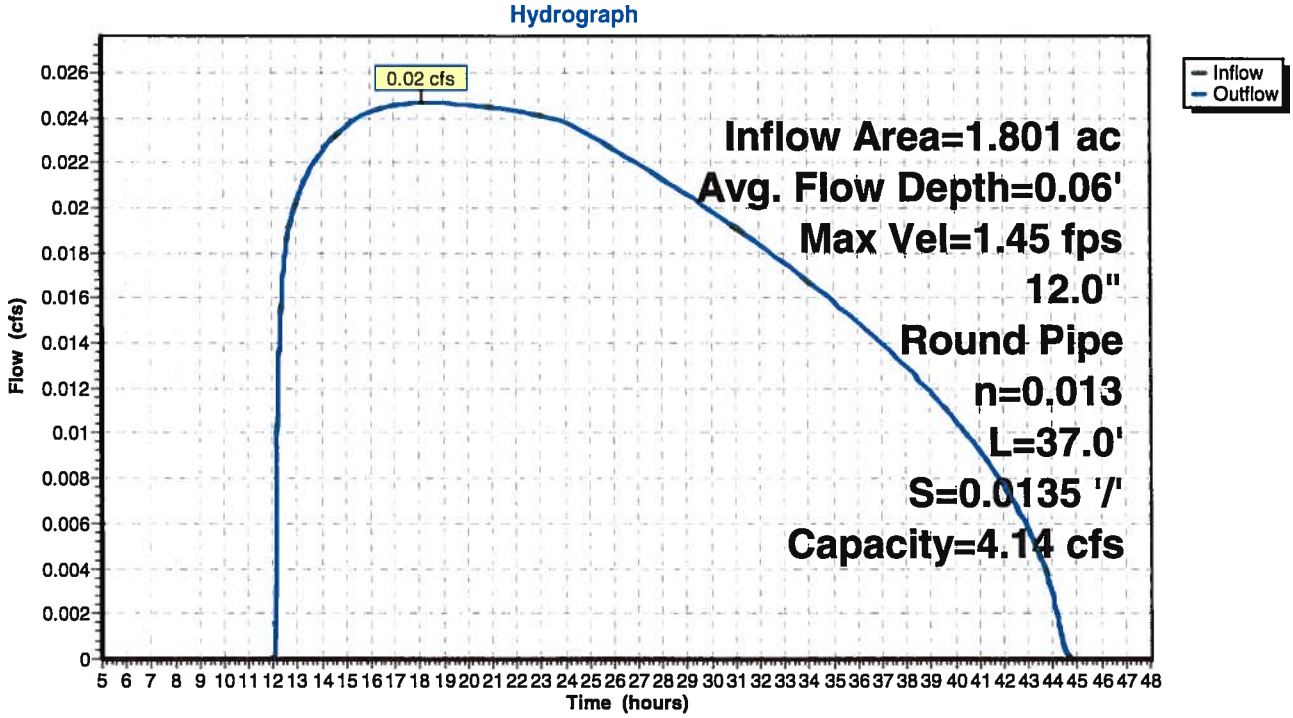
Inflow Area = 1.801 ac, 15.03% Impervious, Inflow Depth = 0.33" for 25-yr event
Inflow = 0.02 cfs @ 18.12 hrs, Volume= 0.049 af
Outflow = 0.02 cfs @ 18.13 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.45 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 18.13 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.14 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 37.0' Slope= 0.0135 '/'
Inlet Invert= 596.00', Outlet Invert= 595.50'

Reach 1R: OS #3 to ES #13



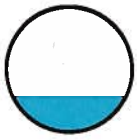
Summary for Reach 2R: OS #2 to ES #12

Inflow Area = 3.110 ac, 14.07% Impervious, Inflow Depth = 0.45" for 25-yr event
Inflow = 0.77 cfs @ 13.08 hrs, Volume= 0.118 af
Outflow = 0.77 cfs @ 13.09 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.2 min

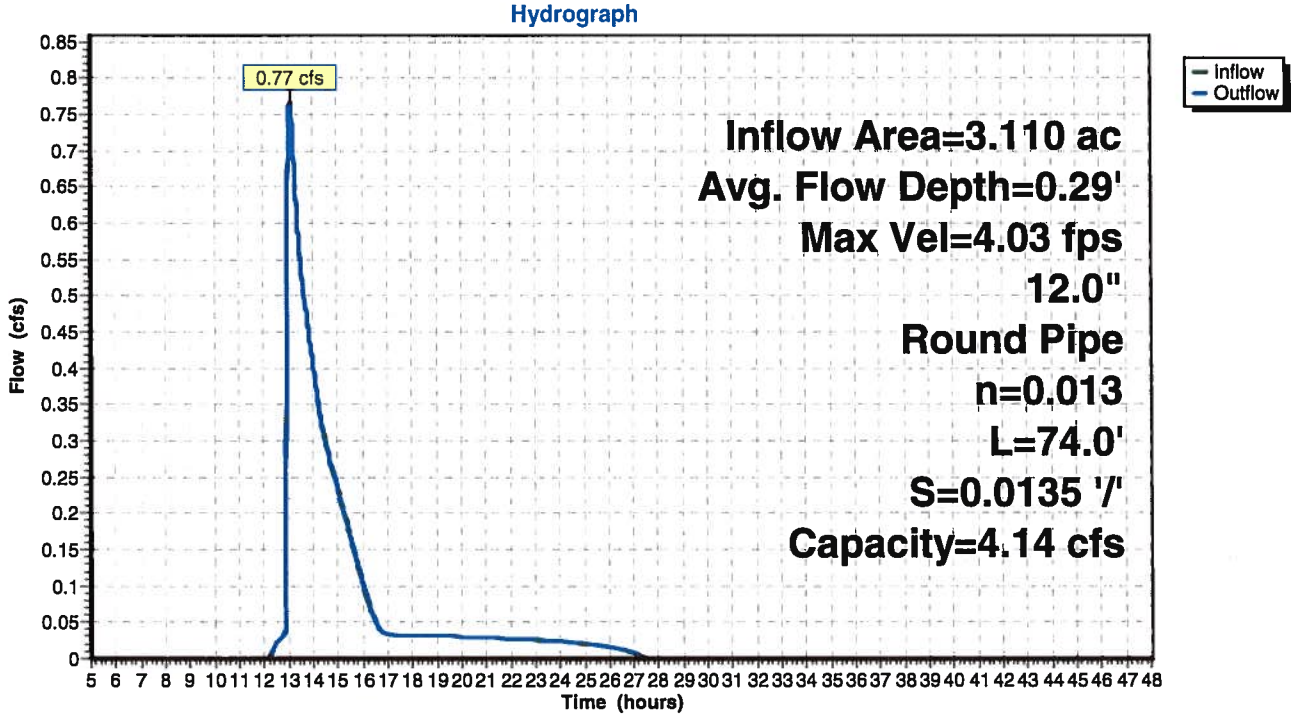
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.79 fps, Avg. Travel Time= 0.7 min

Peak Storage= 14 cf @ 13.09 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.14 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 74.0' Slope= 0.0135 '/'
Inlet Invert= 596.00', Outlet Invert= 595.00'



Reach 2R: OS #2 to ES #12



Summary for Reach IIb-R:

Inflow Area = 1.801 ac, 15.03% Impervious, Inflow Depth = 0.33" for 25-yr event
Inflow = 0.02 cfs @ 18.13 hrs, Volume= 0.049 af
Outflow = 0.02 cfs @ 18.71 hrs, Volume= 0.049 af, Atten= 0%, Lag= 34.9 min

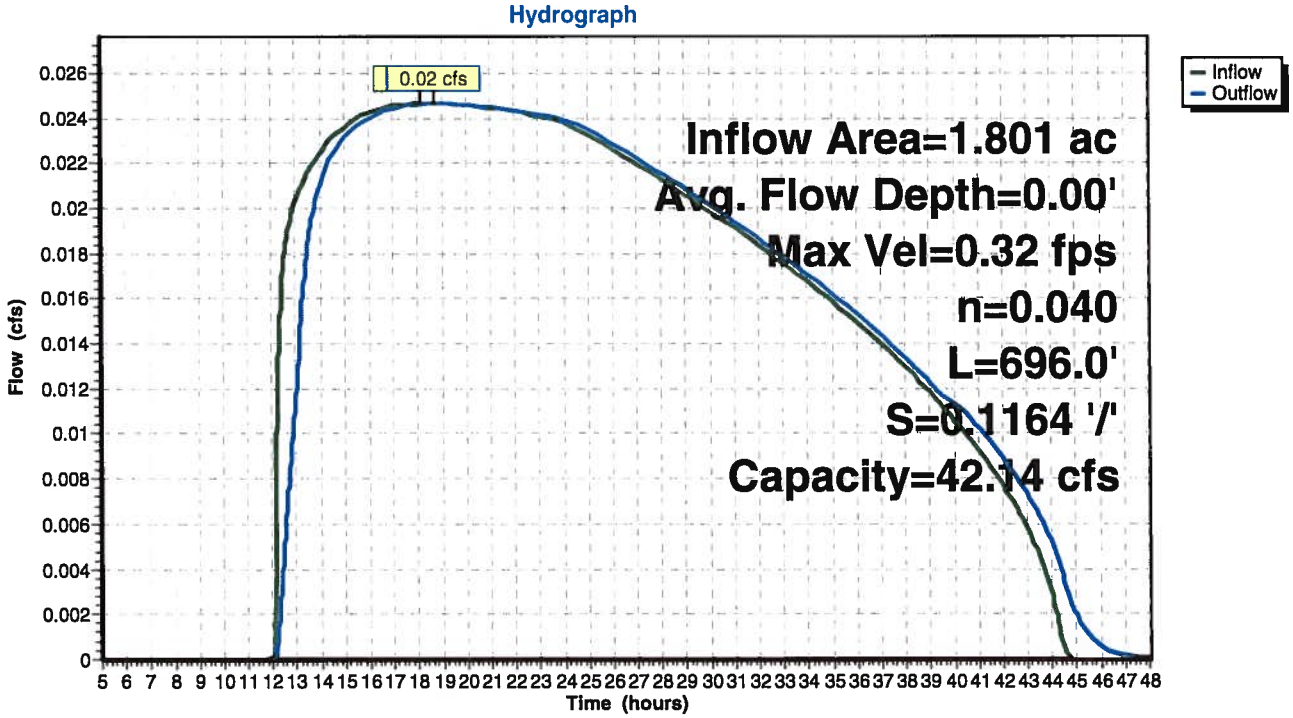
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 36.1 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 41.5 min

Peak Storage= 53 cf @ 18.71 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 42.14 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 696.0' Slope= 0.1164 '/'
Inlet Invert= 596.00', Outlet Invert= 515.00'

‡

Reach IIb-R:



Summary for Reach IIc-R:

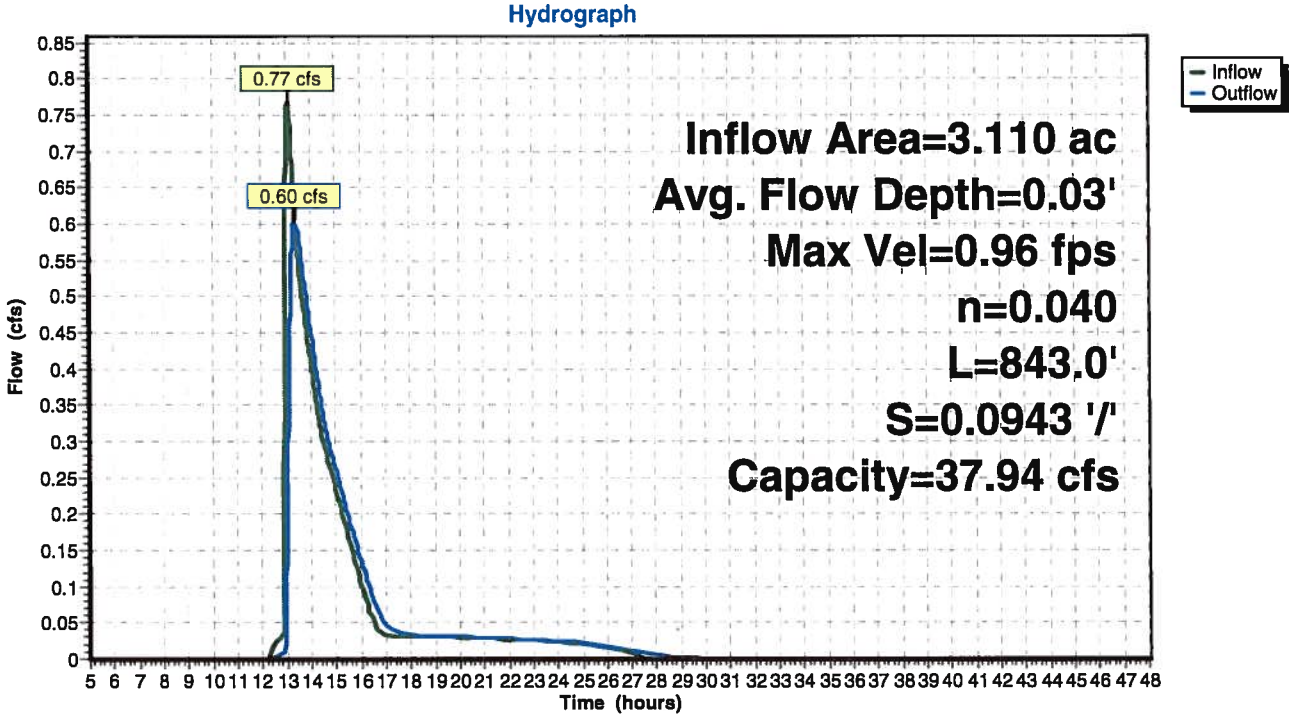
Inflow Area = 3.110 ac, 14.07% Impervious, Inflow Depth = 0.45" for 25-yr event
Inflow = 0.77 cfs @ 13.09 hrs, Volume= 0.118 af
Outflow = 0.60 cfs @ 13.36 hrs, Volume= 0.118 af, Atten= 21%, Lag= 16.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.96 fps, Min. Travel Time= 14.6 min
Avg. Velocity = 0.34 fps, Avg. Travel Time= 41.0 min

Peak Storage= 528 cf @ 13.36 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 0.25' Flow Area= 11.3 sf, Capacity= 37.94 cfs

20.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 100.0 '/' Top Width= 70.00'
Length= 843.0' Slope= 0.0943 '/'
Inlet Invert= 594.50', Outlet Invert= 515.00'

Reach IIc-R:



Summary for Pond SB-2:

Inflow Area =	3.110 ac, 14.07% Impervious, Inflow Depth = 2.35" for 25-yr event				
Inflow =	5.99 cfs @ 12.25 hrs, Volume=	0.609 af			
Outflow =	1.06 cfs @ 13.08 hrs, Volume=	0.609 af, Atten= 82%, Lag= 50.1 min			
Discarded =	0.30 cfs @ 13.08 hrs, Volume=	0.492 af			
Primary =	0.77 cfs @ 13.08 hrs, Volume=	0.118 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 600.07' @ 13.08 hrs Surf.Area= 4,577 sf Storage= 12,332 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 415.6 min (1,276.1 - 860.5)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	22,784 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

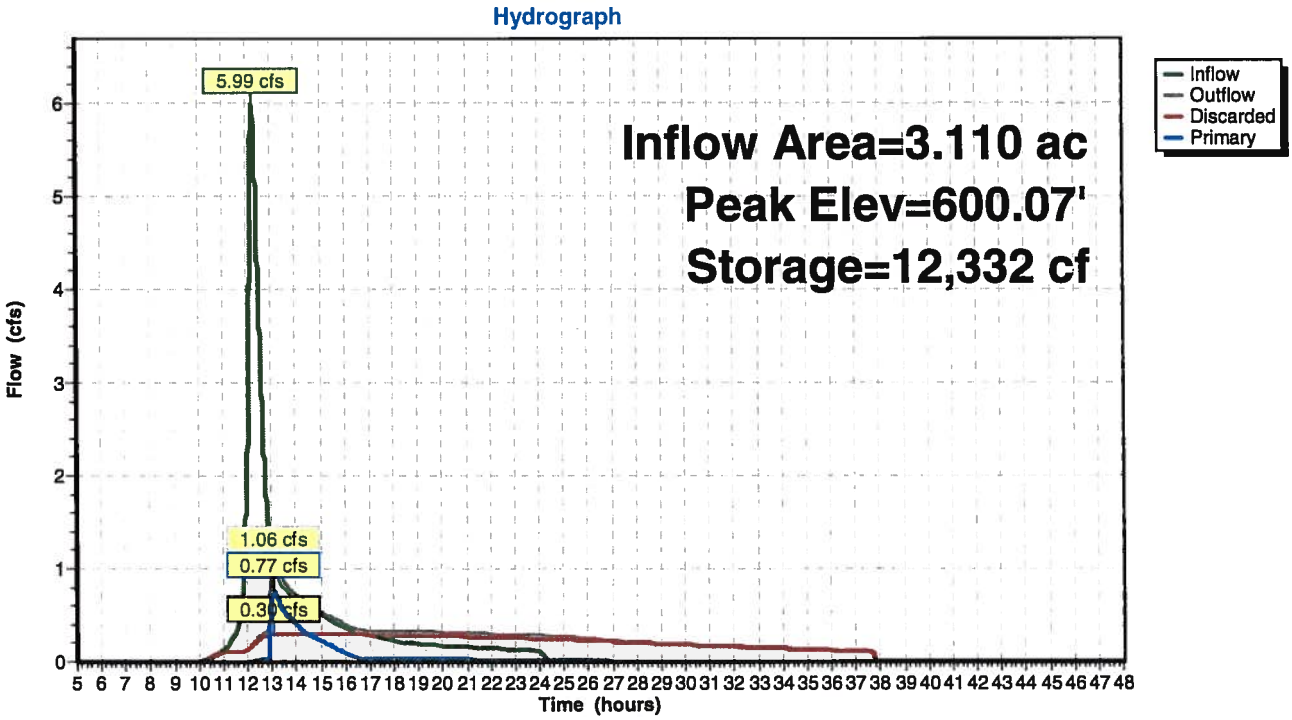
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,651	200.0	0	0	1,651
597.00	2,282	220.8	1,958	1,958	2,379
598.00	2,970	239.1	2,618	4,576	3,087
600.00	4,519	277.0	7,435	12,011	4,727
601.00	5,378	295.9	4,942	16,954	5,635
602.00	6,294	314.8	5,830	22,784	6,603

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 74.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.00' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	598.40'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	600.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**2.800 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.30 cfs @ 13.08 hrs HW=600.07' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.30 cfs)

Primary OutFlow Max=0.77 cfs @ 13.08 hrs HW=600.07' TW=596.29' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.77 cfs of 6.27 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 6.14 fps)
  └**3=Orifice/Grate** (Weir Controls 0.73 cfs @ 0.87 fps)

Pond SB-2:



Summary for Pond SB-3:

Inflow Area =	1.801 ac,	15.03% Impervious,	Inflow Depth =	2.44"	for 25-yr event
Inflow =	4.99 cfs @	12.10 hrs,	Volume=	0.366 af	
Outflow =	0.13 cfs @	18.12 hrs,	Volume=	0.366 af,	Atten= 97%, Lag= 361.5 min
Discarded =	0.10 cfs @	18.12 hrs,	Volume=	0.317 af	
Primary =	0.02 cfs @	18.12 hrs,	Volume=	0.049 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 599.79' @ 18.12 hrs Surf.Area= 4,338 sf Storage= 11,064 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,095.2 min (1,943.3 - 848.1)

Volume	Invert	Avail.Storage	Storage Description
#1	596.00'	22,784 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

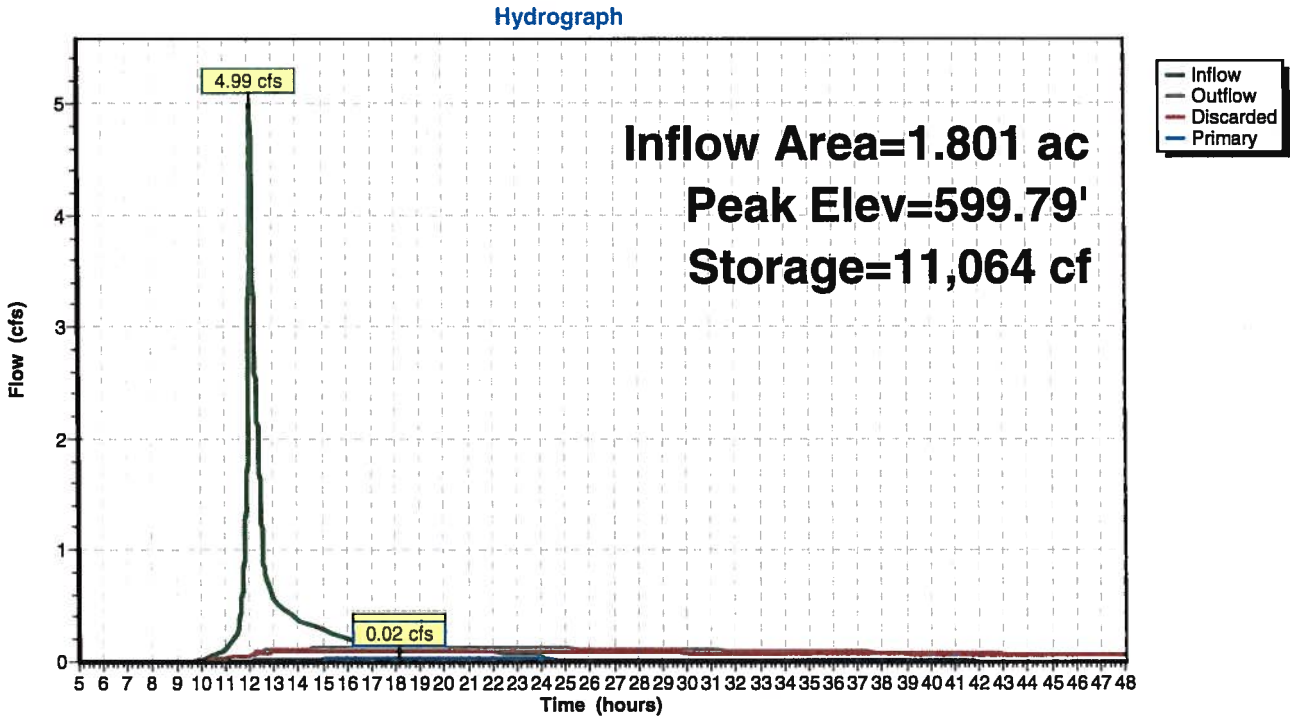
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
596.00	1,651	200.0	0	0	1,651
597.00	2,282	220.8	1,958	1,958	2,379
598.00	2,970	239.1	2,618	4,576	3,087
600.00	4,519	277.0	7,435	12,011	4,727
601.00	5,378	295.9	4,942	16,954	5,635
602.00	6,294	314.8	5,830	22,784	6,603

Device	Routing	Invert	Outlet Devices
#1	Primary	596.00'	**12.0" Round Culvert** L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 596.00' / 595.50' S= 0.0135 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	597.60'	**0.8" Vert. Orifice/Grate** C= 0.600
#3	Device 1	601.00'	**30.0" x 42.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	596.00'	**1.000 in/hr Exfiltration over Horizontal area**

Discarded OutFlow Max=0.10 cfs @ 18.12 hrs HW=599.79' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.10 cfs)

Primary OutFlow Max=0.02 cfs @ 18.12 hrs HW=599.79' TW=596.06' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.02 cfs of 6.86 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.02 cfs @ 7.06 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond SB-3:



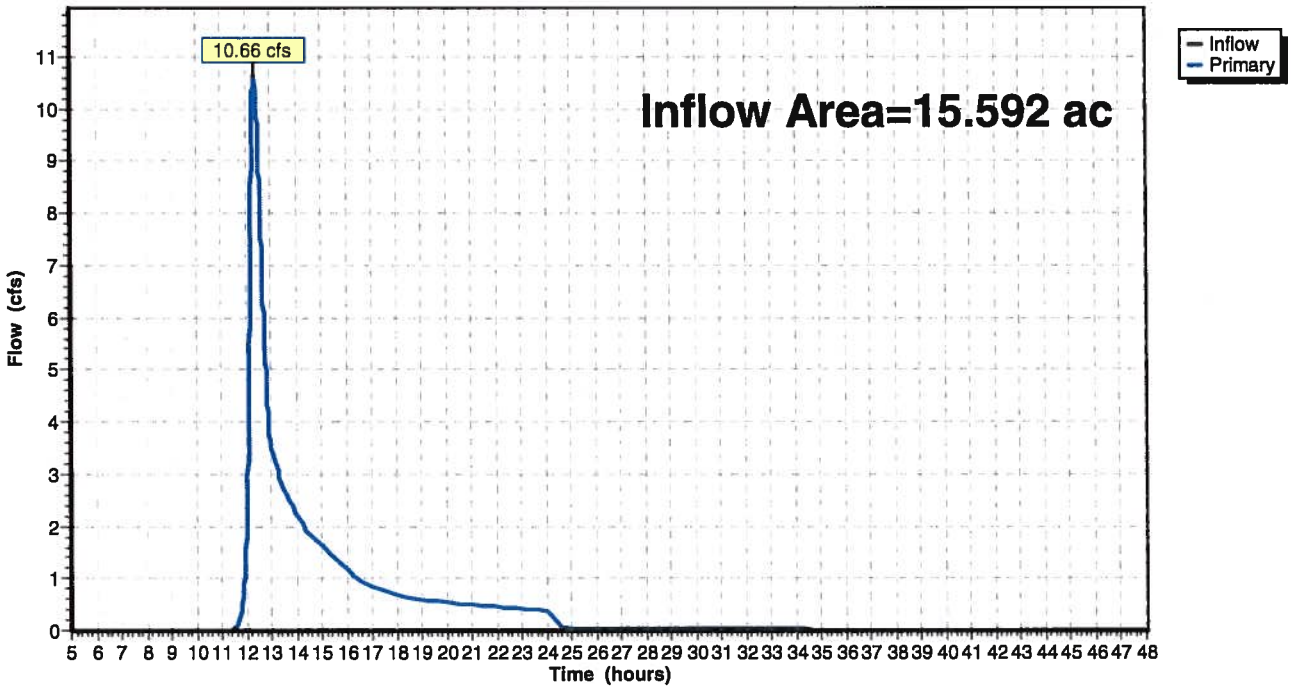
Summary for Link DL-II: DL-II

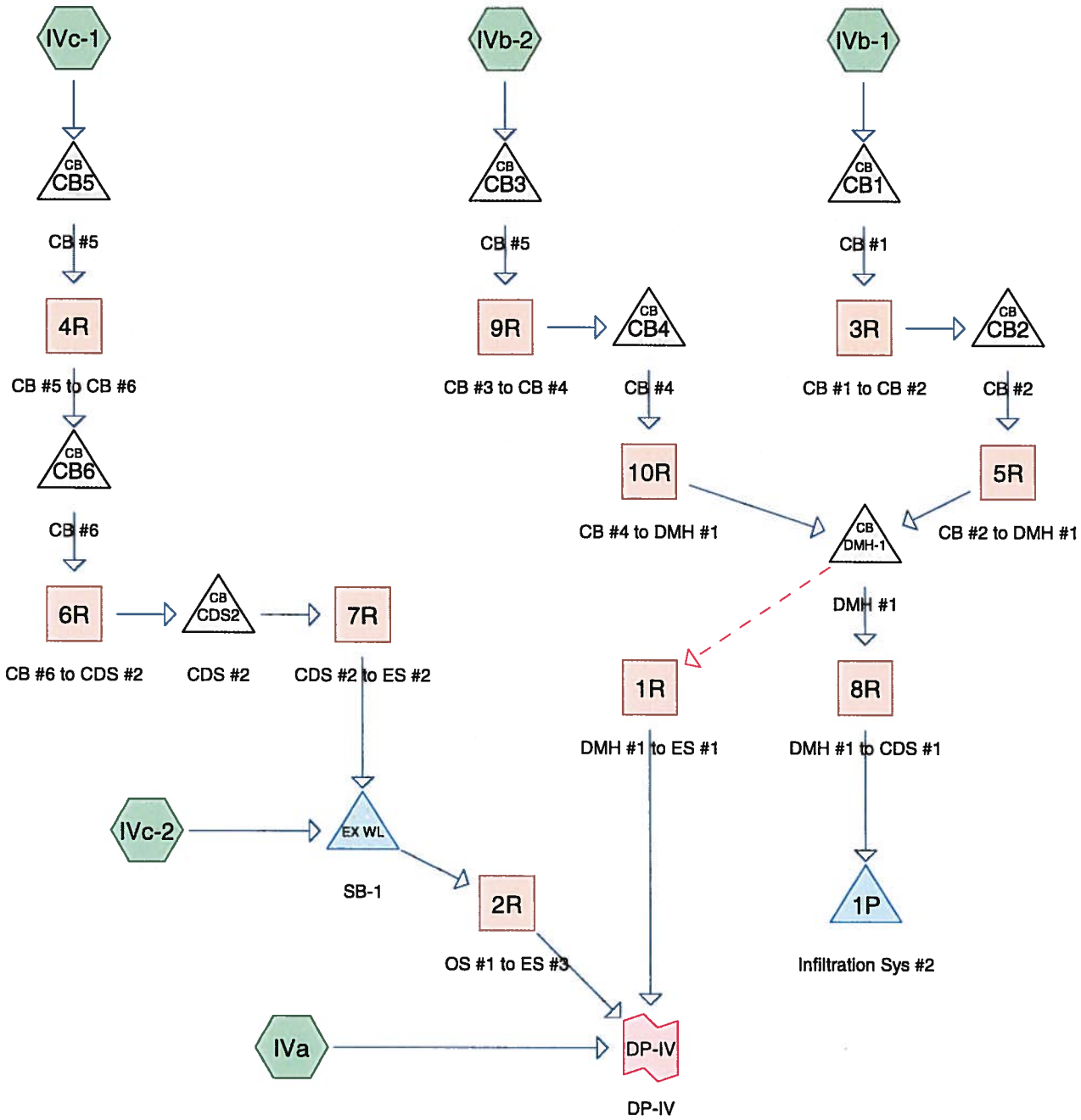
Inflow Area = 15.592 ac, 4.54% Impervious, Inflow Depth = 1.17" for 25-yr event
Inflow = 10.66 cfs @ 12.37 hrs, Volume= 1.518 af
Primary = 10.66 cfs @ 12.37 hrs, Volume= 1.518 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DL-II: DL-II

Hydrograph





Subcat Reach Pond Link

Routing Diagram for POST watershed IV (pipe sizing)
Prepared by Bibbo Associates, LLP, Printed 12/8/2015
HydroCAD® 10.00-15 s/n 02226 © 2015 HydroCAD Software Solutions LLC

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	IVb-1	0.00	0.00	207.0	0.0167	0.013	12.0	0.0	0.0
2	IVb-2	0.00	0.00	207.0	0.0167	0.013	12.0	0.0	0.0
3	1R	609.00	607.00	67.0	0.0299	0.013	18.0	0.0	0.0
4	2R	613.50	611.00	63.0	0.0397	0.013	15.0	0.0	0.0
5	3R	609.40	609.00	15.0	0.0267	0.013	12.0	0.0	0.0
6	4R	619.50	619.00	14.0	0.0357	0.013	12.0	0.0	0.0
7	5R	609.00	607.50	65.0	0.0231	0.013	12.0	0.0	0.0
8	6R	619.00	618.00	6.0	0.1667	0.013	12.0	0.0	0.0
9	7R	618.00	616.00	17.0	0.1176	0.013	15.0	0.0	0.0
10	8R	607.50	607.00	7.0	0.0714	0.013	12.0	0.0	0.0
11	9R	610.12	609.62	14.0	0.0357	0.013	12.0	0.0	0.0
12	10R	609.62	607.50	204.0	0.0104	0.013	12.0	0.0	0.0
13	1P	607.50	607.50	3.8	0.0000	0.013	12.0	0.0	0.0
14	CB1	609.40	609.40	1.0	0.0000	0.013	12.0	0.0	0.0
15	CB2	609.00	609.00	1.0	0.0000	0.013	12.0	0.0	0.0
16	CB3	610.12	610.12	1.0	0.0000	0.013	12.0	0.0	0.0
17	CB4	609.62	609.62	1.0	0.0000	0.013	12.0	0.0	0.0
18	CB5	619.50	619.50	1.0	0.0000	0.013	12.0	0.0	0.0
19	CB6	619.00	619.00	1.0	0.0000	0.013	12.0	0.0	0.0
20	CDS2	618.00	618.00	1.0	0.0000	0.013	15.0	0.0	0.0
21	DMH-1	607.50	606.50	18.5	0.0541	0.013	12.0	0.0	0.0
22	DMH-1	609.00	607.00	67.0	0.0299	0.013	18.0	0.0	0.0
23	EX WL	613.50	612.00	52.5	0.0286	0.013	15.0	0.0	0.0

Summary for Subcatchment IVa:

Runoff = 5.28 cfs @ 14.65 hrs, Volume= 2.207 af, Depth= 2.44"

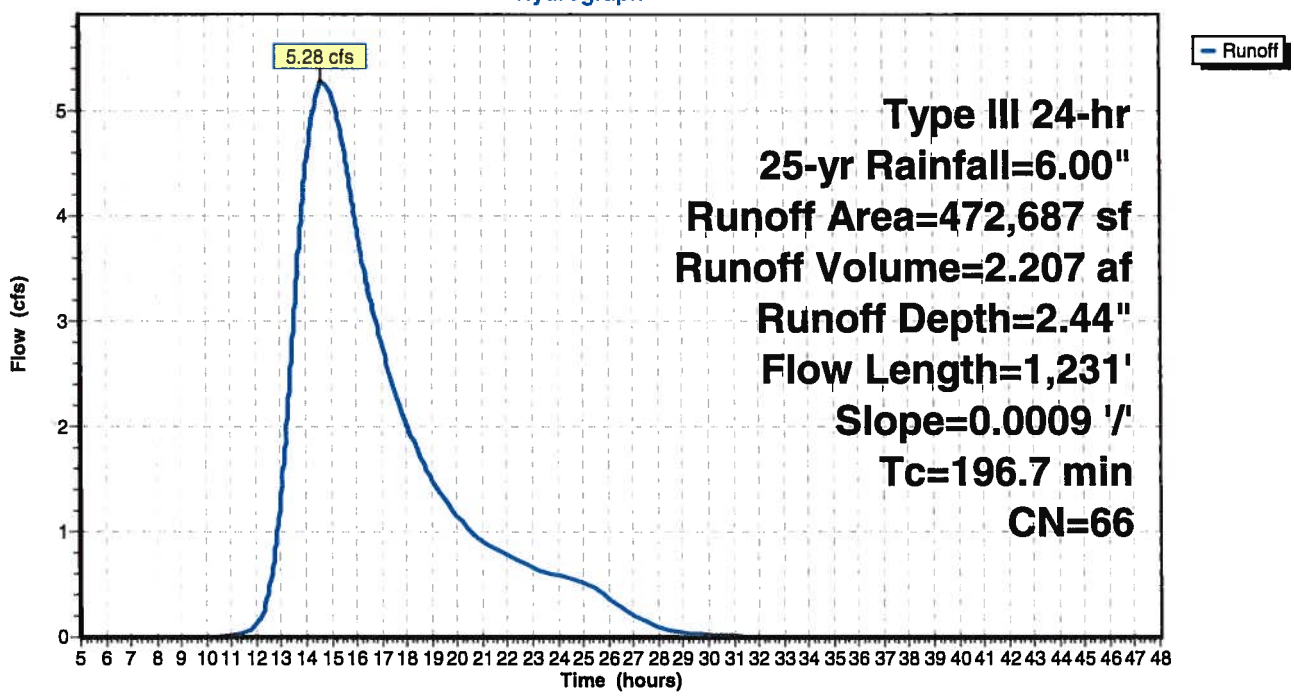
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
181,894	77	Woods, Good, HSG D
58,775	70	Woods, Good, HSG C
181,536	55	Woods, Good, HSG B
45,680	61	>75% Grass cover, Good, HSG B
4,802	98	Paved roads w/curbs & sewers
472,687	66	Weighted Average
467,885		98.98% Pervious Area
4,802		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.0	100	0.0009	0.02		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
125.7	1,131	0.0009	0.15		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
196.7	1,231	Total			

Subcatchment IVa:

Hydrograph



Summary for Subcatchment IVb-1:

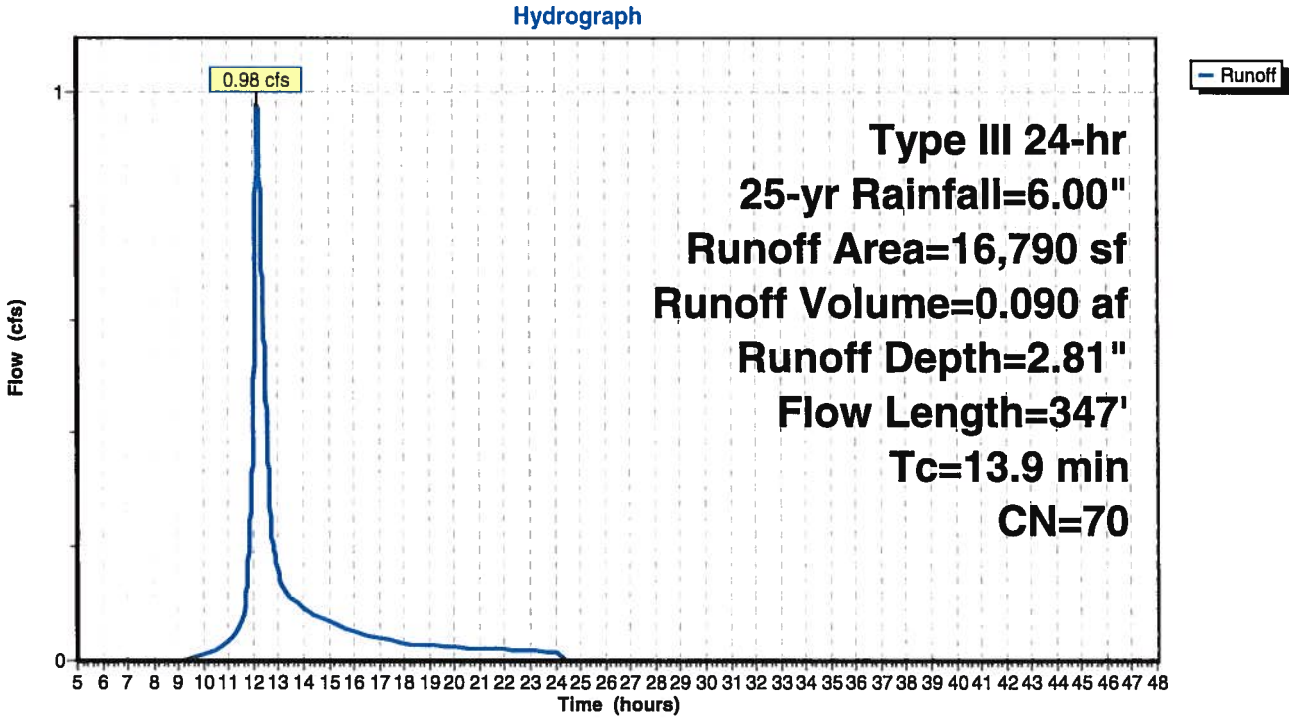
Runoff = 0.98 cfs @ 12.19 hrs, Volume= 0.090 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
5,000	98	Paved parking & roofs
6,500	55	Woods, Good, HSG B
5,290	61	>75% Grass cover, Good, HSG B
16,790	70	Weighted Average
11,790		70.22% Pervious Area
5,000		29.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	207	0.0167	5.86	4.60	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
13.9	347	Total			

Subcatchment IVb-1:



Summary for Subcatchment IVb-2:

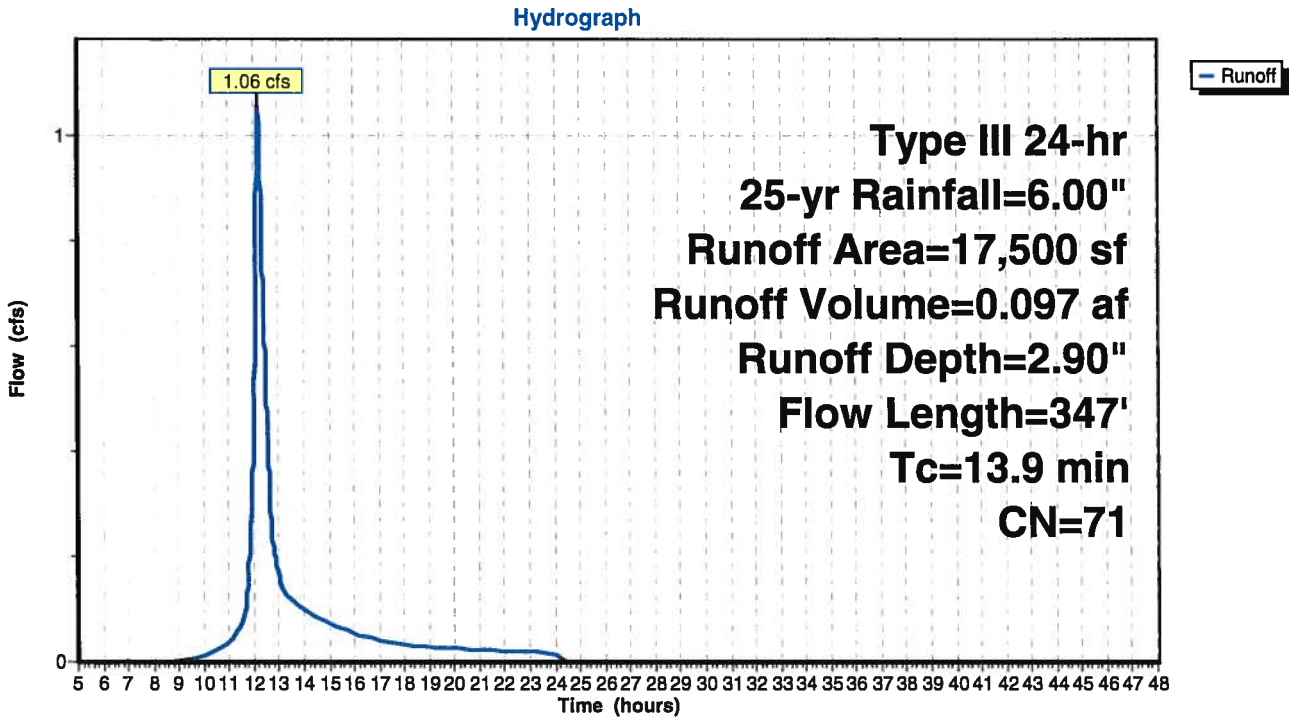
Runoff = 1.06 cfs @ 12.19 hrs, Volume= 0.097 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
6,000	98	Paved parking & roofs
6,500	55	Woods, Good, HSG B
5,000	61	>75% Grass cover, Good, HSG B
17,500	71	Weighted Average
11,500		65.71% Pervious Area
6,000		34.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0600	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.1	40	0.1000	5.09		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.6	207	0.0167	5.86	4.60	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
13.9	347	Total			

Subcatchment IVb-2:



Summary for Subcatchment IVc-1:

Runoff = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af, Depth= 5.76"

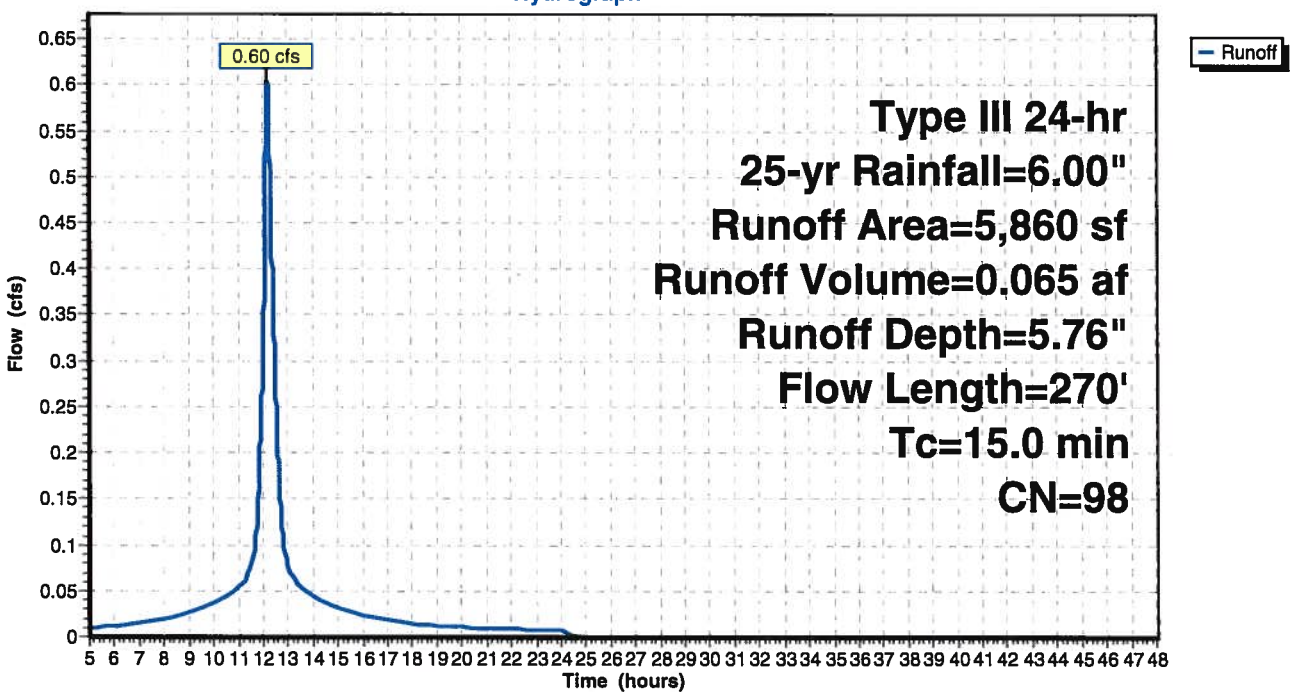
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
5,860	98	Paved parking & roofs
5,860		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.2	170	0.0647	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	270	Total			

Subcatchment IVc-1:

Hydrograph



Summary for Subcatchment IVc-2:

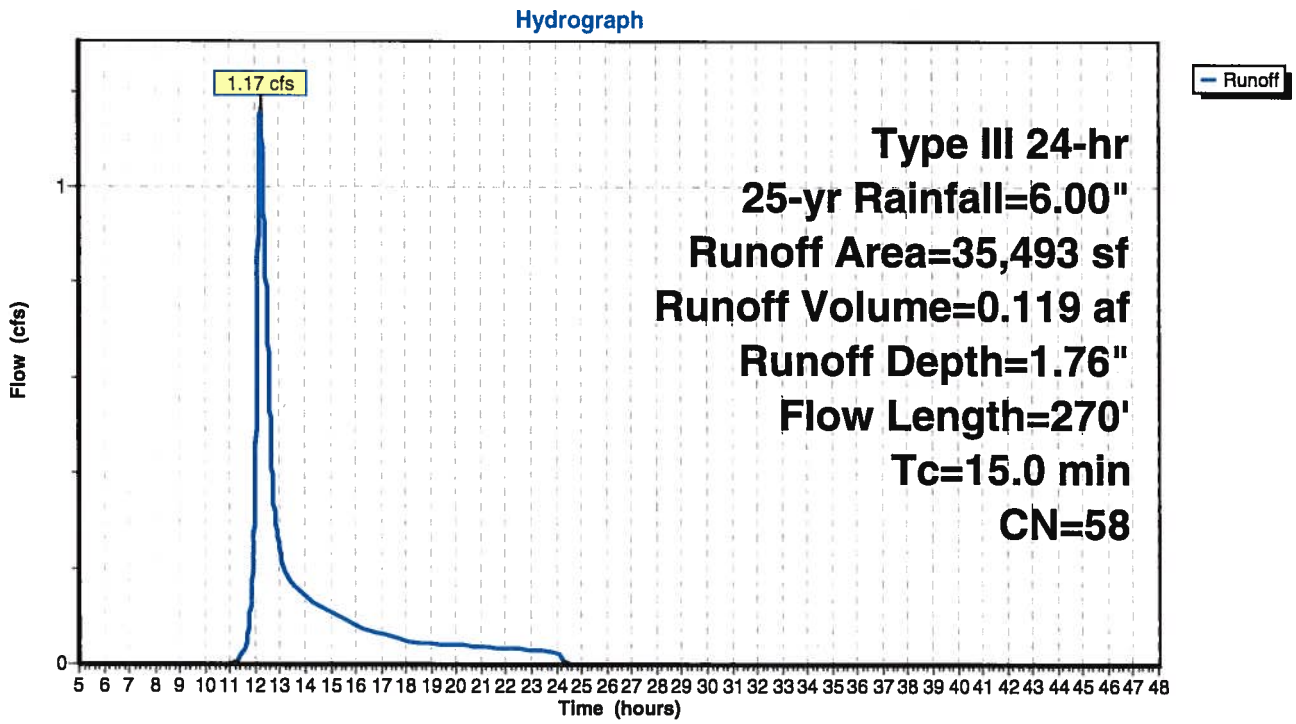
Runoff = 1.17 cfs @ 12.22 hrs, Volume= 0.119 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=6.00"

Area (sf)	CN	Description
23,675	55	Woods, Good, HSG B
2,770	76	Woods/grass comb., Fair, HSG C
9,048	61	>75% Grass cover, Good, HSG B
35,493	58	Weighted Average
35,493		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0650	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
2.2	170	0.0647	1.27		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.0	270	Total			

Subcatchment IVc-2:



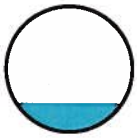
Summary for Reach 1R: DMH #1 to ES #1

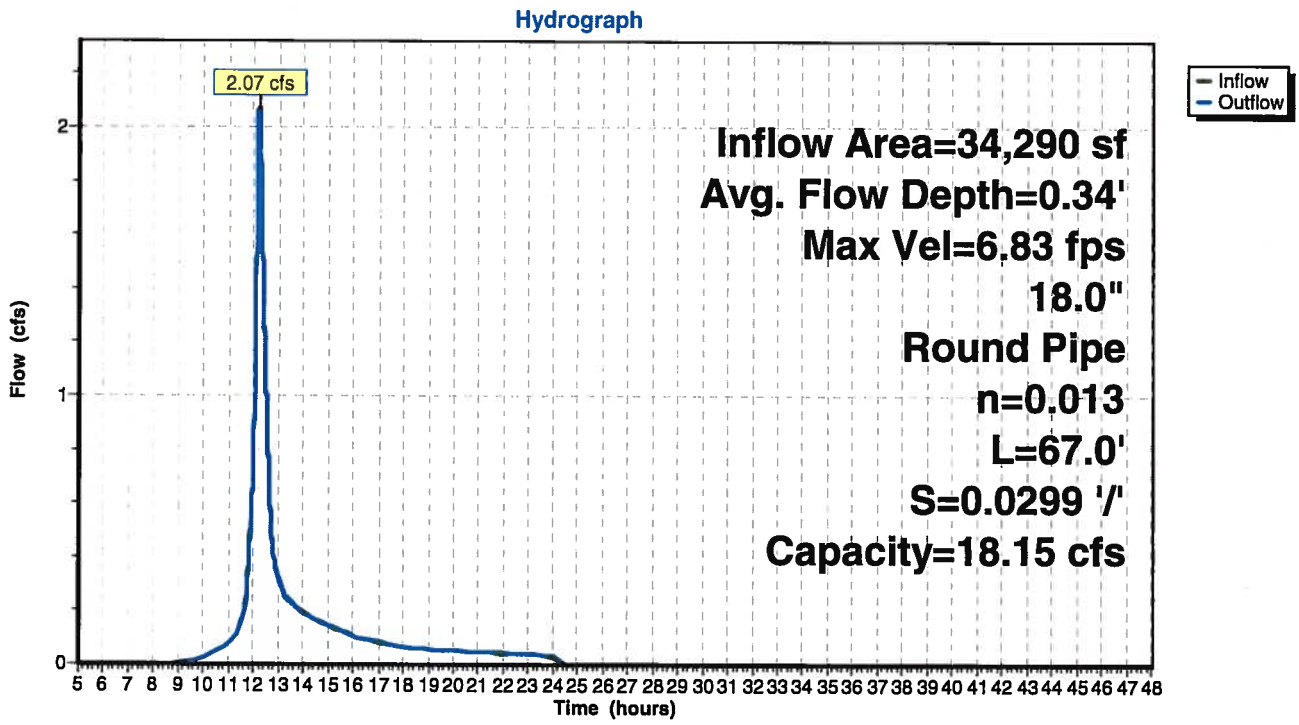
Inflow Area = 34,290 sf, 32.08% Impervious, Inflow Depth = 2.90" for 25-yr event
Inflow = 2.07 cfs @ 12.19 hrs, Volume= 8,283 cf
Outflow = 2.07 cfs @ 12.19 hrs, Volume= 8,283 cf, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.83 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.4 min

Peak Storage= 20 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 18.15 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 67.0' Slope= 0.0299 '/'
Inlet Invert= 609.00', Outlet Invert= 607.00'





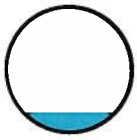
Summary for Reach 2R: OS #1 to ES #3

Inflow Area = 0.949 ac, 14.17% Impervious, Inflow Depth = 2.20" for 25-yr event
Inflow = 0.73 cfs @ 12.60 hrs, Volume= 0.174 af
Outflow = 0.73 cfs @ 12.60 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.1 min

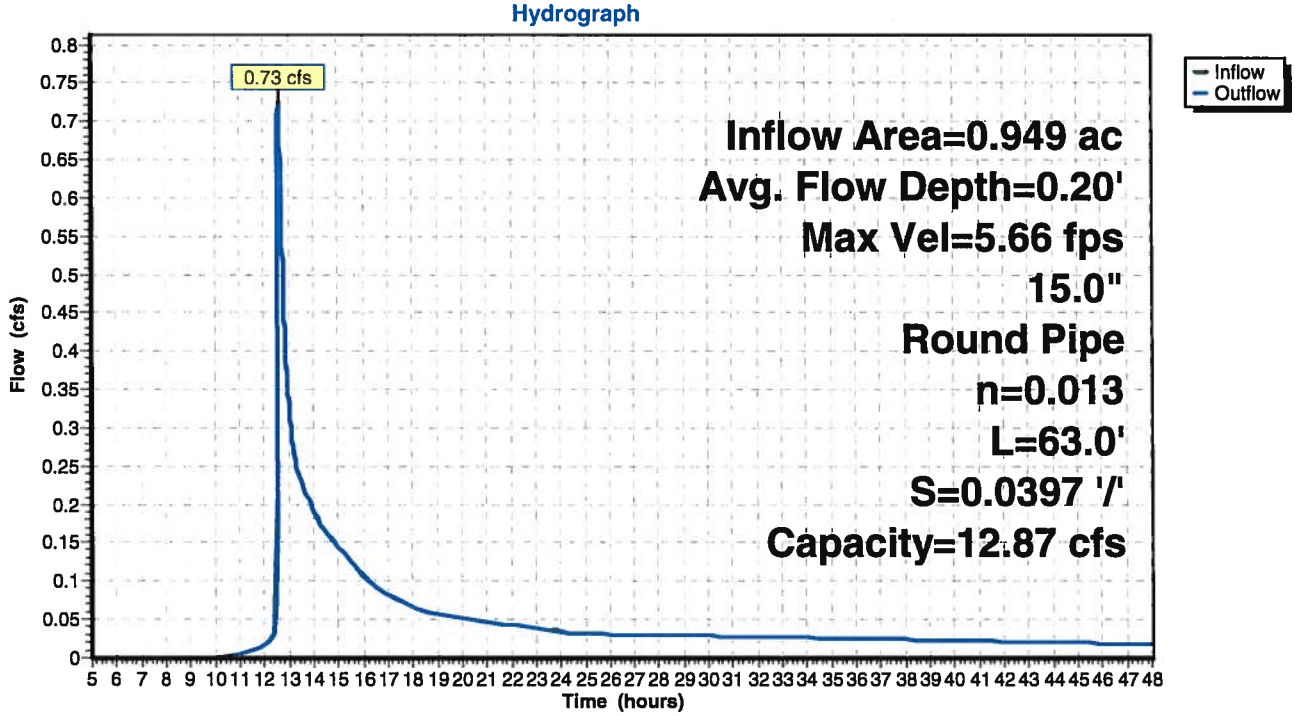
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.66 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.61 fps, Avg. Travel Time= 0.7 min

Peak Storage= 8 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 12.87 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 63.0' Slope= 0.0397 '/'
Inlet Invert= 613.50', Outlet Invert= 611.00'



Reach 2R: OS #1 to ES #3



Summary for Reach 3R: CB #1 to CB #2

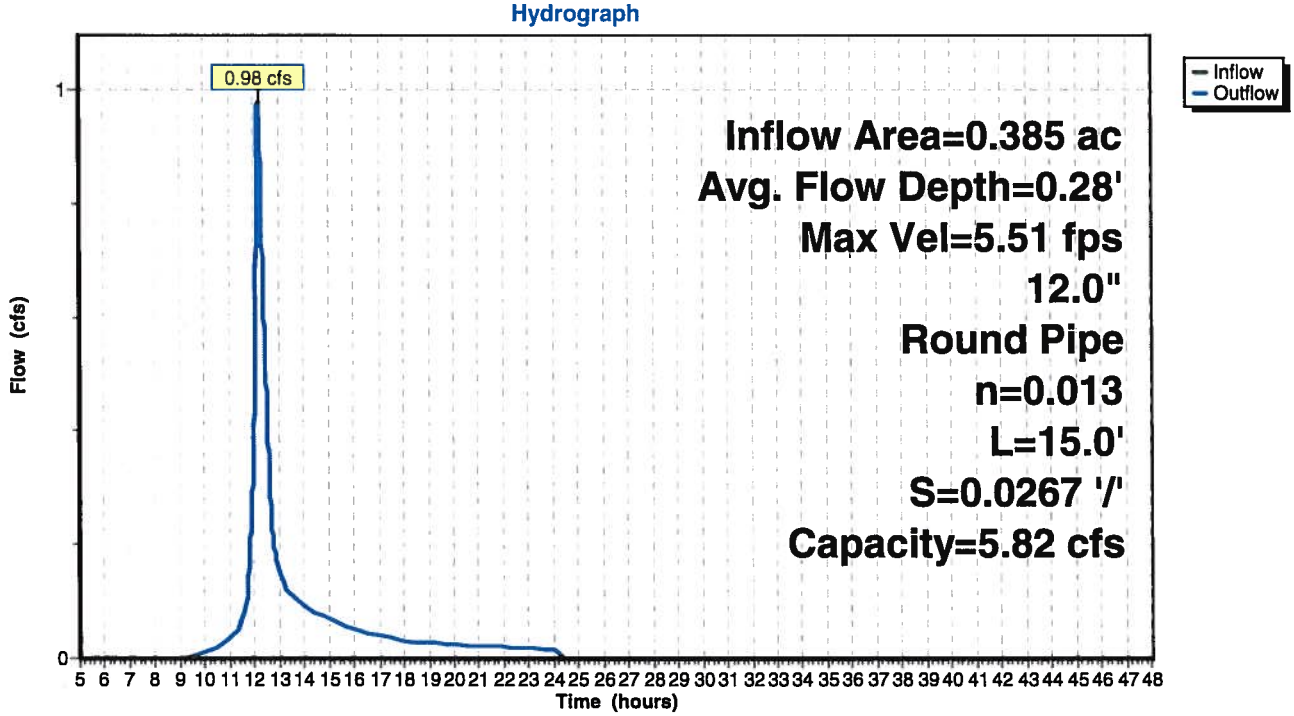
Inflow Area = 0.385 ac, 29.78% Impervious, Inflow Depth = 2.81" for 25-yr event
Inflow = 0.98 cfs @ 12.19 hrs, Volume= 0.090 af
Outflow = 0.98 cfs @ 12.19 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.51 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.82 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 15.0' Slope= 0.0267 '/'
Inlet Invert= 609.40', Outlet Invert= 609.00'

Reach 3R: CB #1 to CB #2



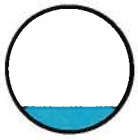
Summary for Reach 4R: CB #5 to CB #6

Inflow Area = 0.135 ac,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af
Outflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.31 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 0.1 min

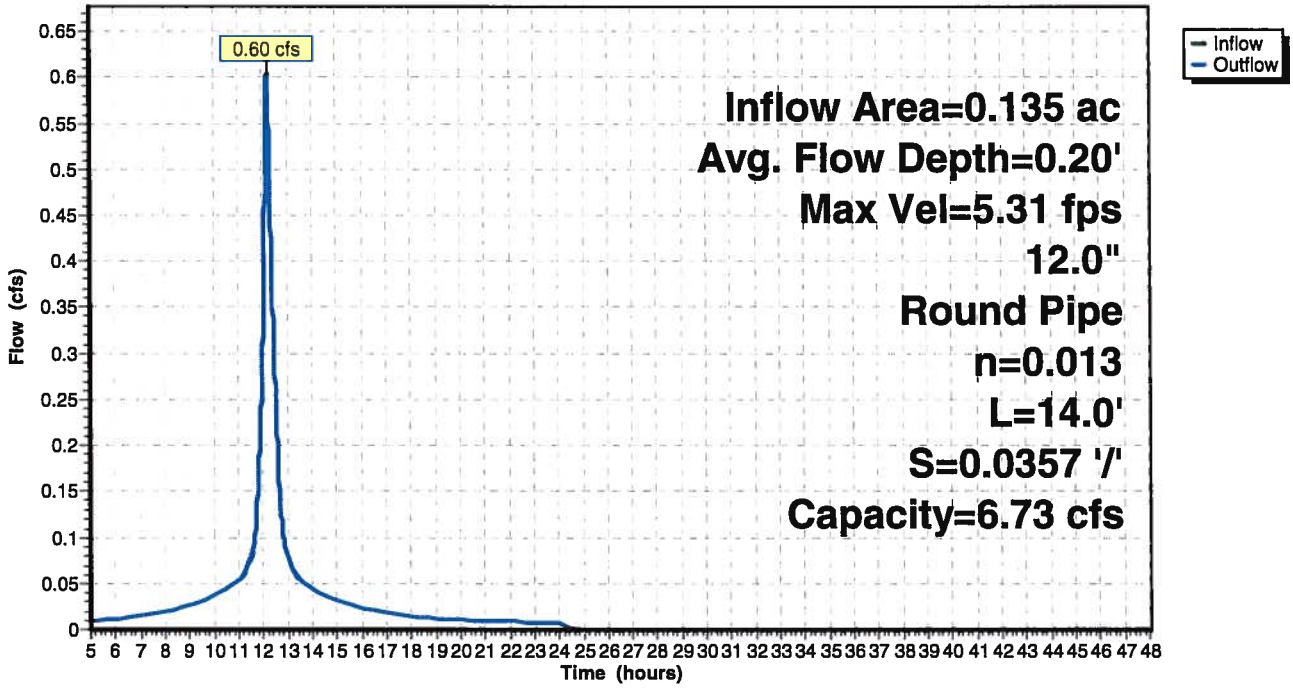
Peak Storage= 2 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.73 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 14.0' Slope= 0.0357 '/'
Inlet Invert= 619.50', Outlet Invert= 619.00'



Reach 4R: CB #5 to CB #6

Hydrograph



Summary for Reach 5R: CB #2 to DMH #1

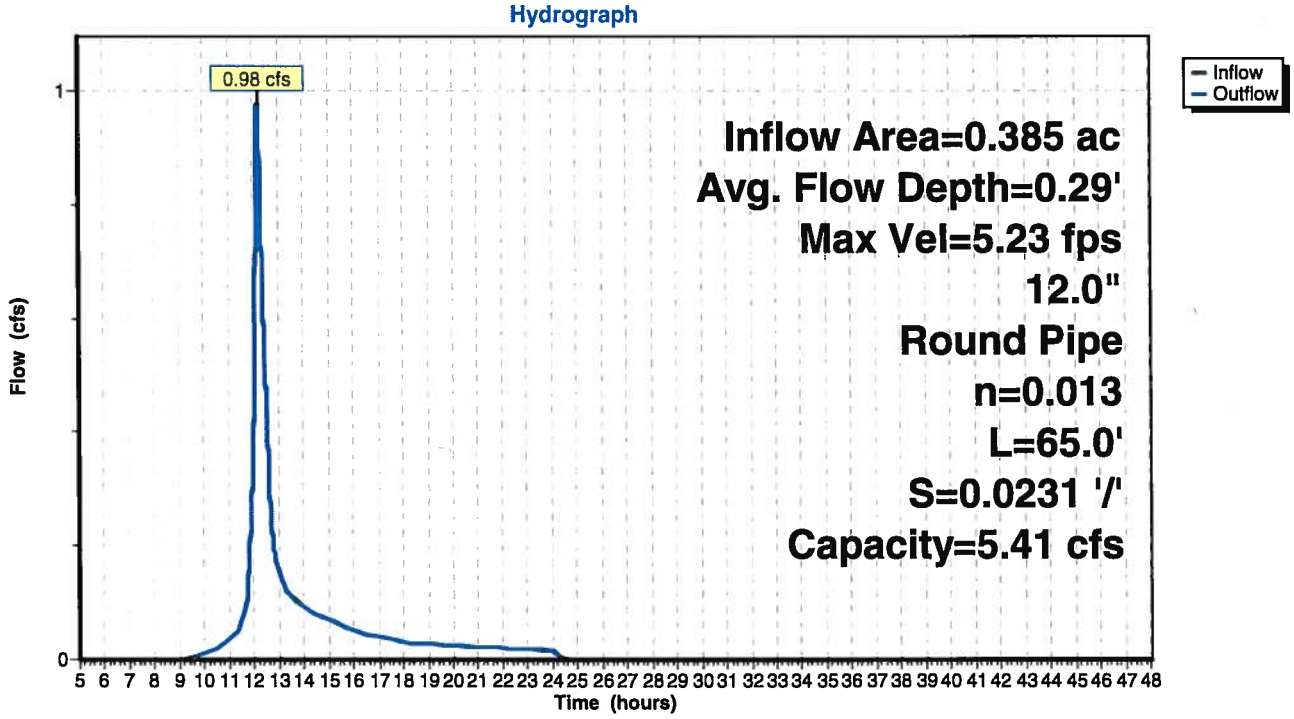
Inflow Area = 0.385 ac, 29.78% Impervious, Inflow Depth = 2.81" for 25-yr event
Inflow = 0.98 cfs @ 12.19 hrs, Volume= 0.090 af
Outflow = 0.98 cfs @ 12.20 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.23 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.03 fps, Avg. Travel Time= 0.5 min

Peak Storage= 12 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.41 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 65.0' Slope= 0.0231 '/'
Inlet Invert= 609.00', Outlet Invert= 607.50'

Reach 5R: CB #2 to DMH #1



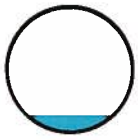
Summary for Reach 6R: CB #6 to CDS #2

Inflow Area = 0.135 ac,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af
Outflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.13 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.25 fps, Avg. Travel Time= 0.0 min

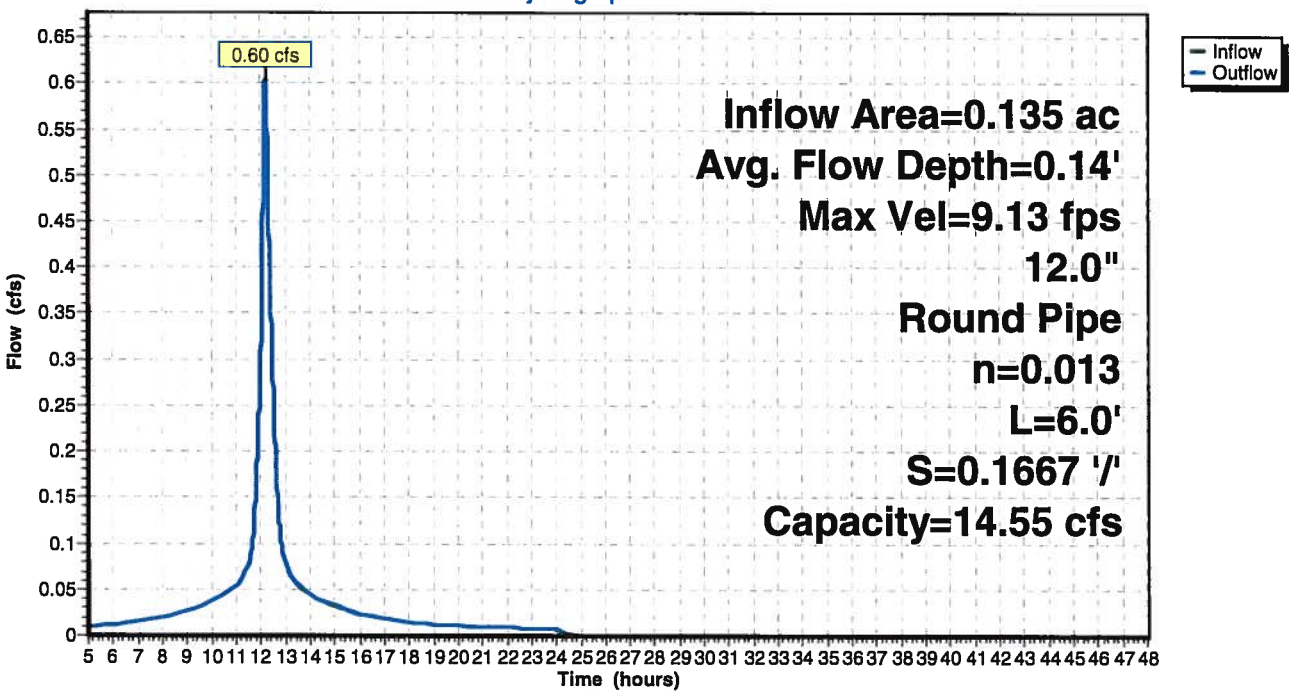
Peak Storage= 0 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 14.55 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 6.0' Slope= 0.1667 '/'
Inlet Invert= 619.00', Outlet Invert= 618.00'



Reach 6R: CB #6 to CDS #2

Hydrograph



Summary for Reach 7R: CDS #2 to ES #2

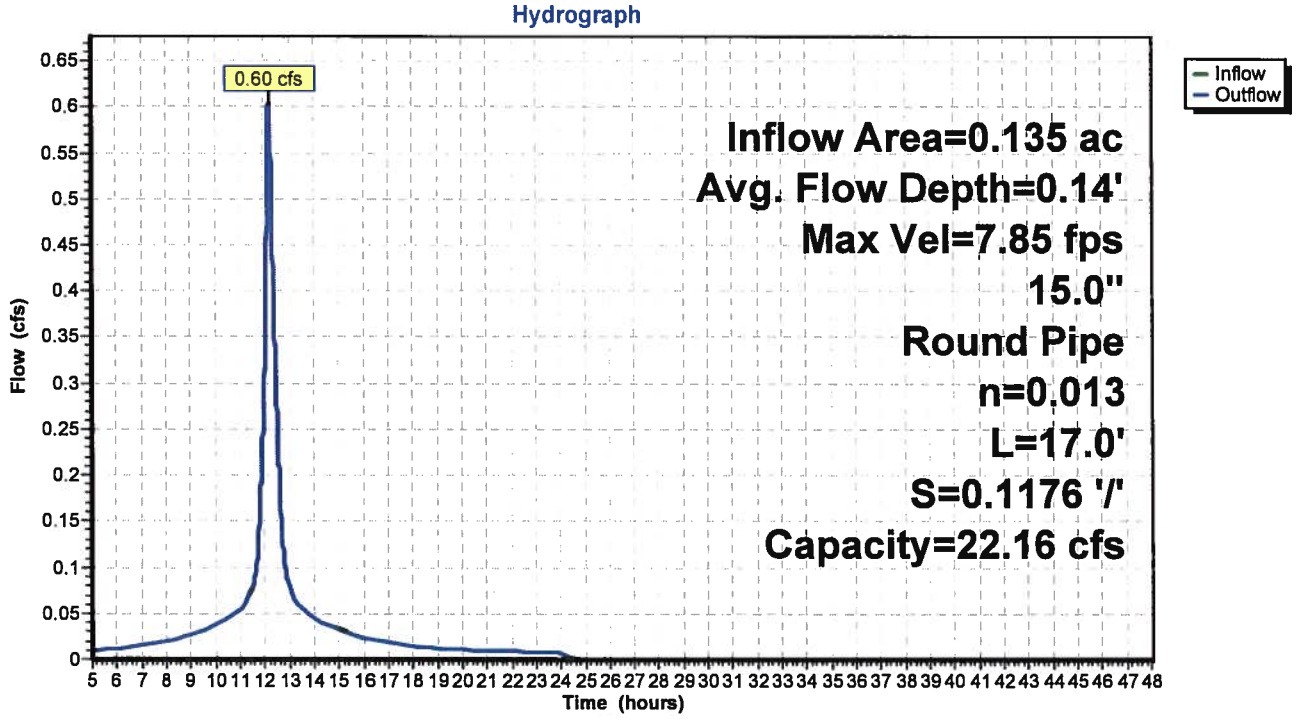
Inflow Area = 0.135 ac,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event
Inflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af
Outflow = 0.60 cfs @ 12.19 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.85 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.82 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 22.16 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 17.0' Slope= 0.1176 '/'
Inlet Invert= 618.00', Outlet Invert= 616.00'

Reach 7R: CDS #2 to ES #2



Summary for Reach 8R: DMH #1 to CDS #1

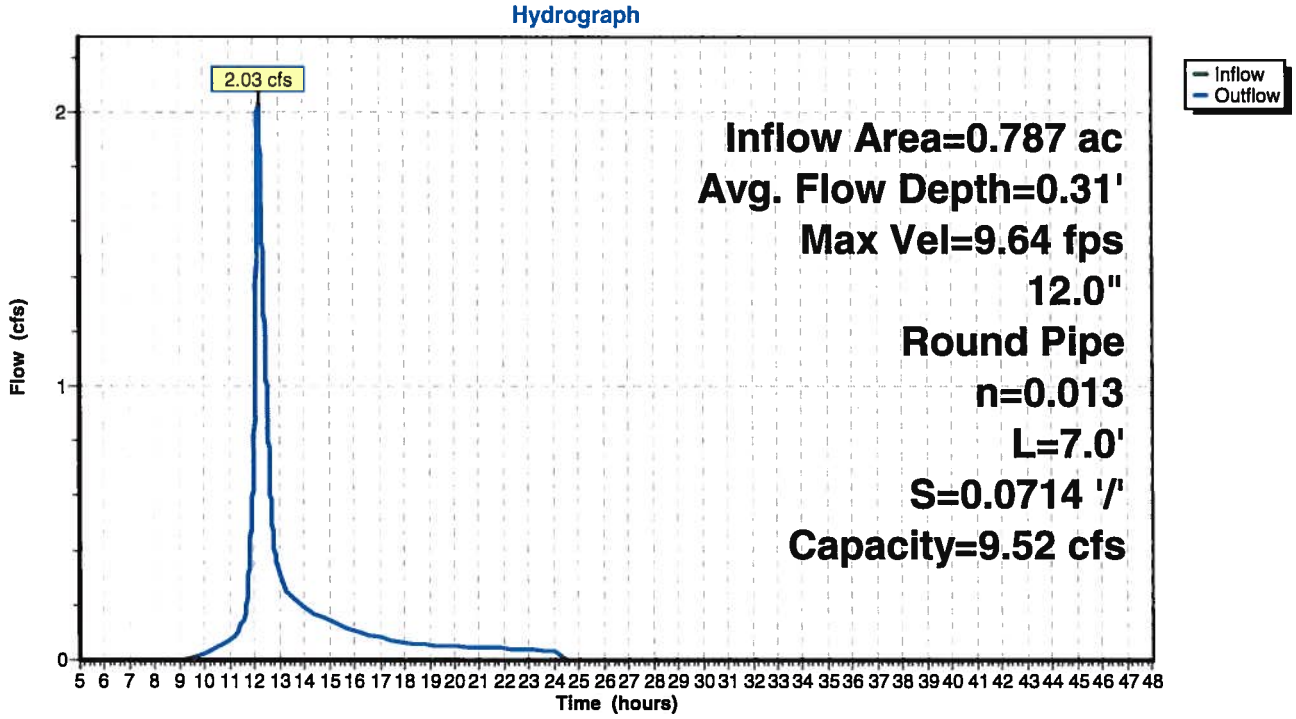
Inflow Area = 0.787 ac, 32.08% Impervious, Inflow Depth = 2.85" for 25-yr event
Inflow = 2.03 cfs @ 12.20 hrs, Volume= 0.187 af
Outflow = 2.03 cfs @ 12.20 hrs, Volume= 0.187 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.64 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.71 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 9.52 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 7.0' Slope= 0.0714 '/'
Inlet Invert= 607.50', Outlet Invert= 607.00'

Reach 8R: DMH #1 to CDS #1



Summary for Reach 9R: CB #3 to CB #4

Inflow Area = 0.402 ac, 34.29% Impervious, Inflow Depth = 2.90" for 25-yr event
Inflow = 1.06 cfs @ 12.19 hrs, Volume= 0.097 af
Outflow = 1.06 cfs @ 12.19 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

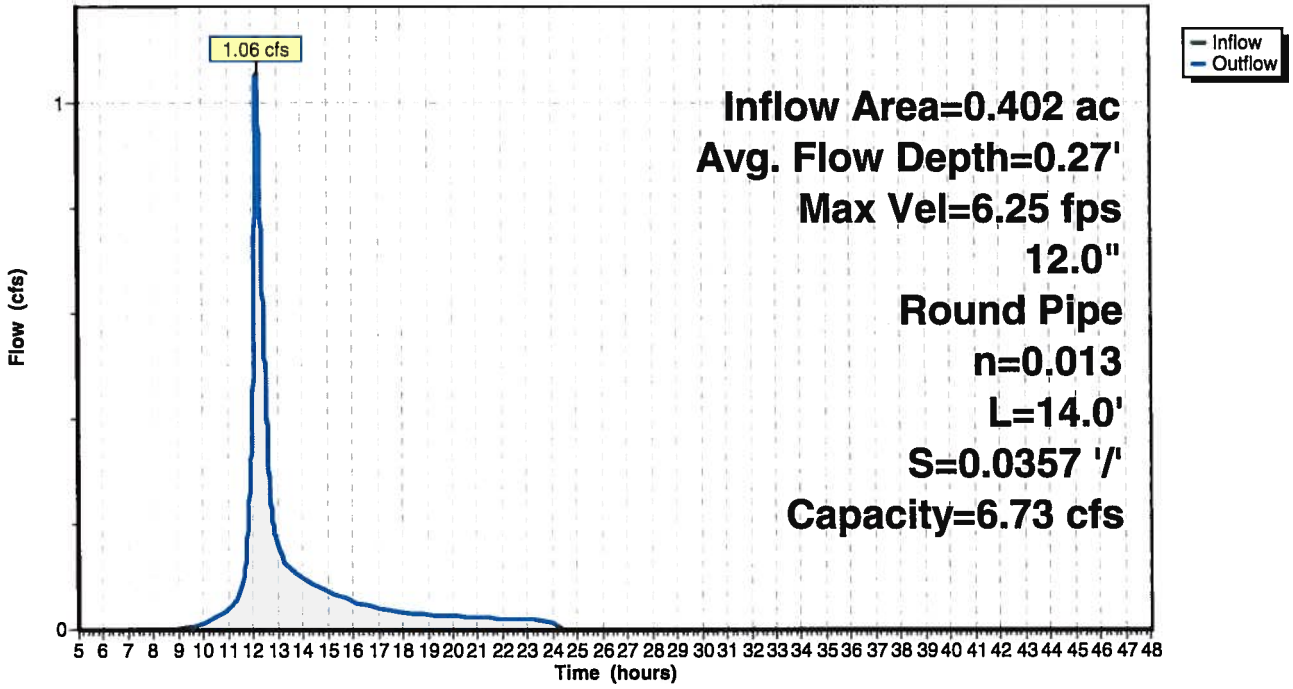
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.25 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.41 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 6.73 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 14.0' Slope= 0.0357 '/'
Inlet Invert= 610.12', Outlet Invert= 609.62'

Reach 9R: CB #3 to CB #4

Hydrograph



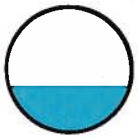
Summary for Reach 10R: CB #4 to DMH #1

Inflow Area = 0.402 ac, 34.29% Impervious, Inflow Depth = 2.90" for 25-yr event
Inflow = 1.06 cfs @ 12.19 hrs, Volume= 0.097 af
Outflow = 1.05 cfs @ 12.20 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.7 min

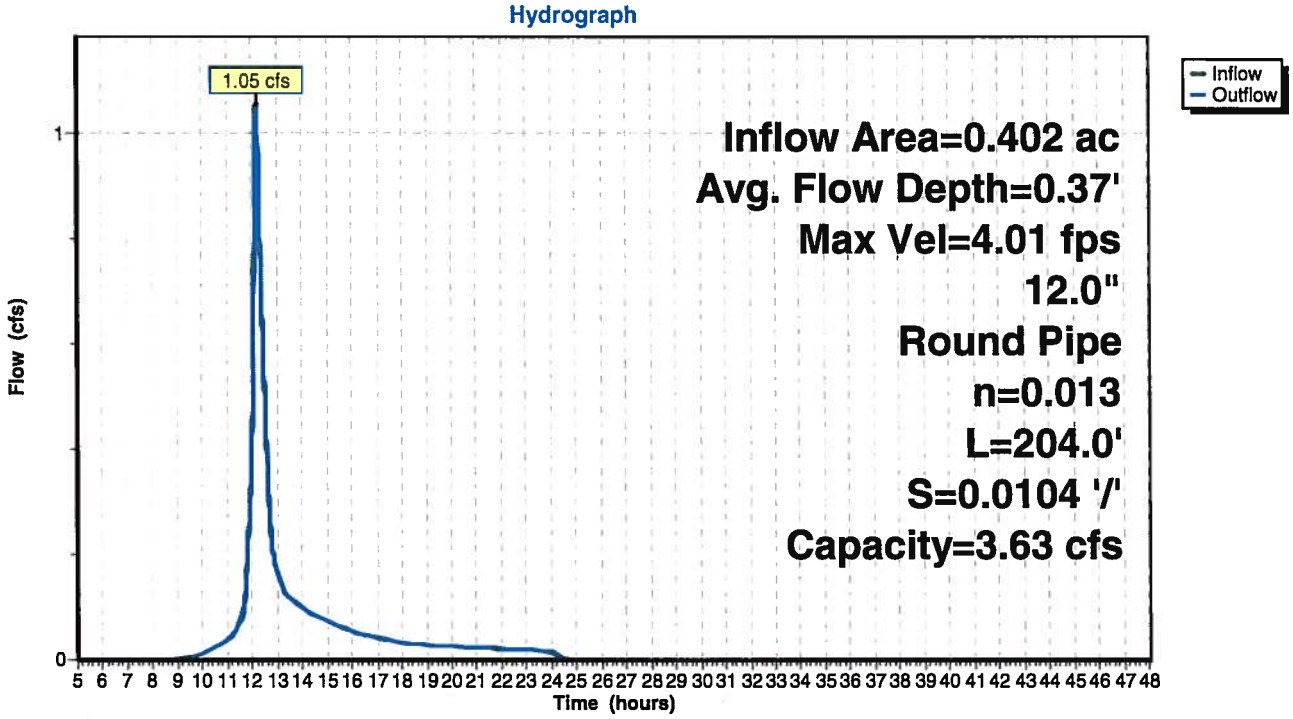
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.01 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.54 fps, Avg. Travel Time= 2.2 min

Peak Storage= 54 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.63 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 204.0' Slope= 0.0104 '/'
Inlet Invert= 609.62', Outlet Invert= 607.50'



Reach 10R: CB #4 to DMH #1



Summary for Pond 1P: Infiltration Sys #2

Inflow Area =	0.787 ac,	32.08% Impervious,	Inflow Depth =	2.85"	for 25-yr event
Inflow =	2.03 cfs @	12.20 hrs,	Volume=	0.187 af	
Outflow =	1.86 cfs @	12.27 hrs,	Volume=	0.187 af,	Atten= 8%, Lag= 3.9 min
Discarded =	0.08 cfs @	11.38 hrs,	Volume=	0.093 af	
Primary =	1.78 cfs @	12.27 hrs,	Volume=	0.094 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 608.43' @ 12.27 hrs Surf.Area= 760 sf Storage= 1,253 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 56.8 min (902.2 - 845.4)

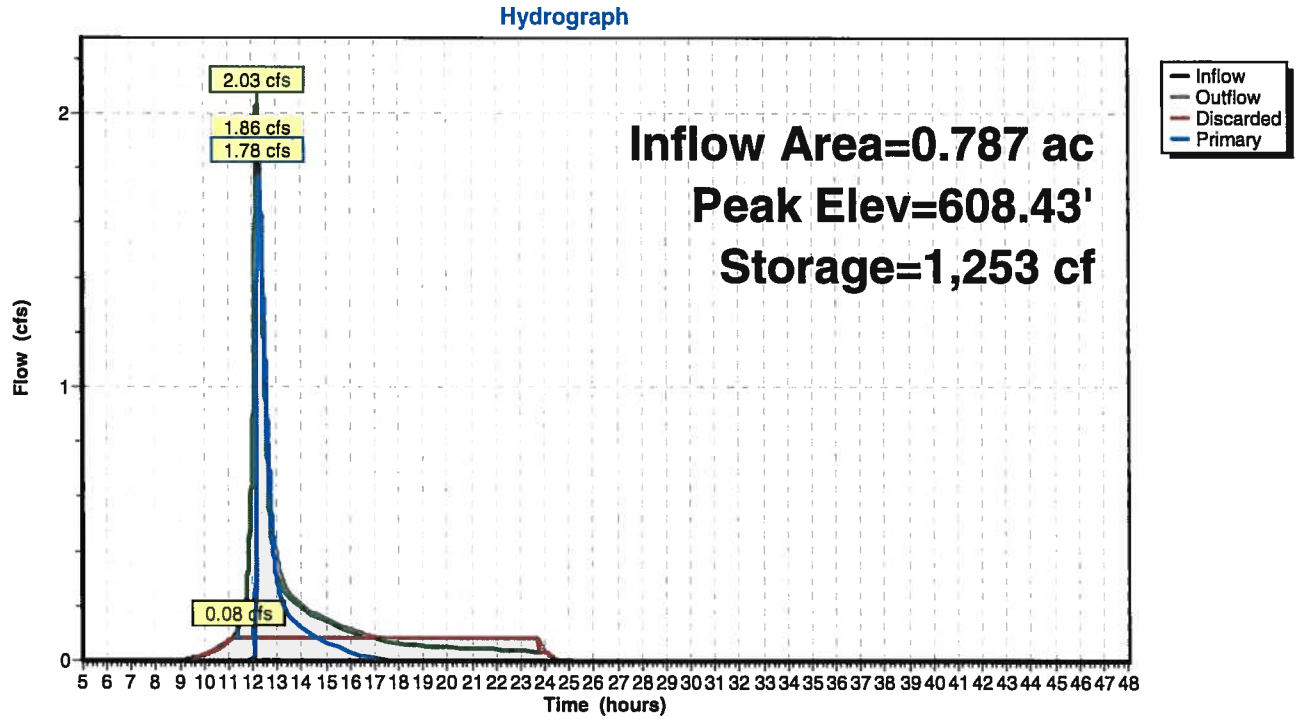
Volume	Invert	Avail.Storage	Storage Description
#1	606.50'	976 cf	**Cultec R-V8HD** x 15 Inside #2 Effective Size= 55.2"W x 32.0"H => 8.68 sf x 7.50'L = 65.1 cf Overall Size= 60.0"W x 32.0"H x 8.00'L with 0.50' Overlap
#2	606.00'	826 cf	**19.00'W x 40.00'L x 4.00'H Prismatoid** 3,040 cf Overall - 976 cf Embedded = 2,064 cf x 40.0% Voids
		1,802 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	606.00'	**4.700 in/hr Exfiltration over Horizontal area**
#2	Primary	607.50'	**12.0" Round Culvert** L= 3.8' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.50' / 607.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.08 cfs @ 11.38 hrs HW=606.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=1.78 cfs @ 12.27 hrs HW=608.42' (Free Discharge)
└**2=Culvert** (Barrel Controls 1.78 cfs @ 3.06 fps)

Pond 1P: Infiltration Sys #2



Summary for Pond CB1: CB #1

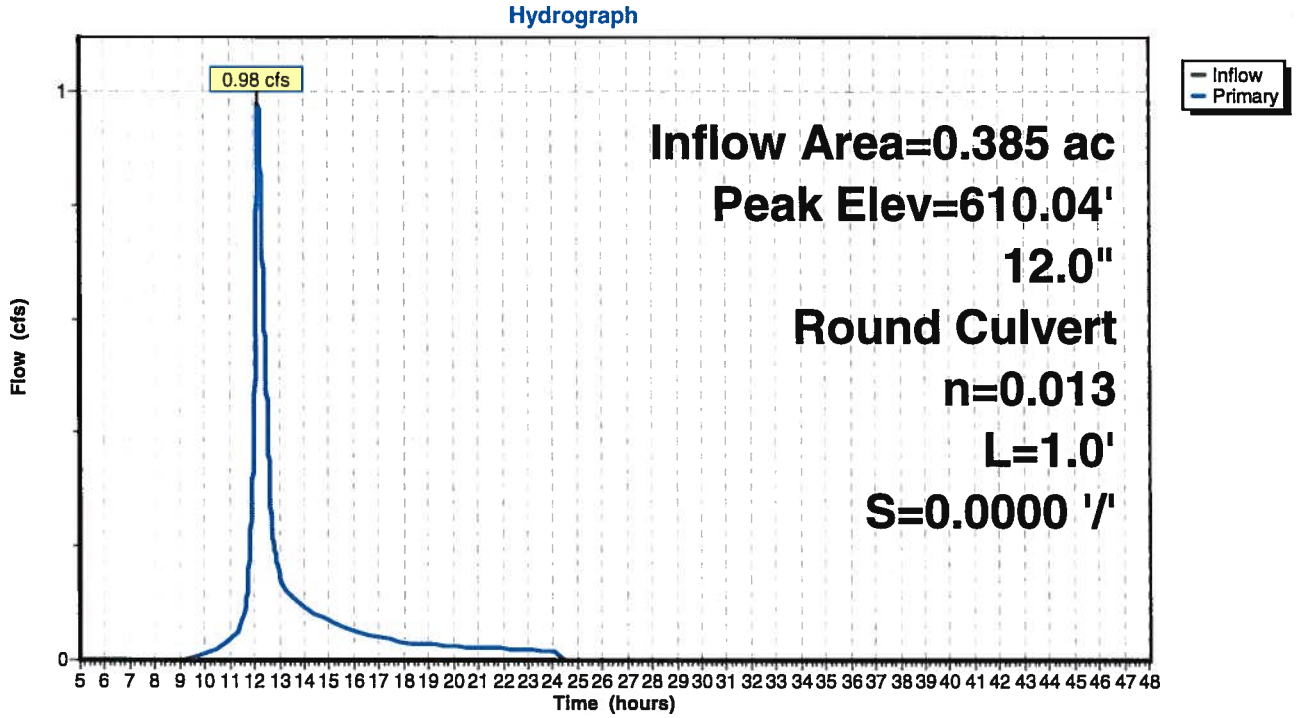
Inflow Area =	0.385 ac,	29.78% Impervious,	Inflow Depth =	2.81"	for 25-yr event
Inflow =	0.98 cfs @	12.19 hrs,	Volume=	0.090 af	
Outflow =	0.98 cfs @	12.19 hrs,	Volume=	0.090 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.98 cfs @	12.19 hrs,	Volume=	0.090 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 610.04' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	609.40'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.40' / 609.40' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.98 cfs @ 12.19 hrs HW=610.04' TW=609.68' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.98 cfs @ 2.60 fps)

Pond CB1: CB #1



Summary for Pond CB2: CB #2

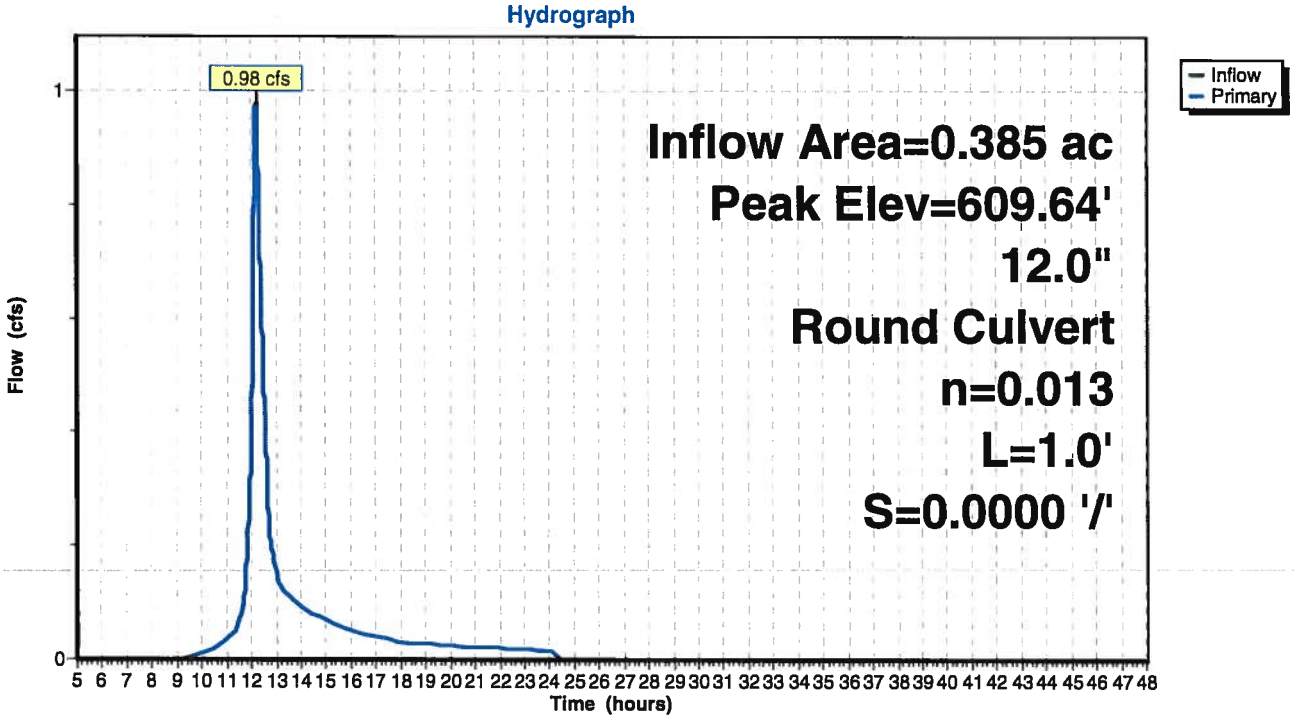
Inflow Area =	0.385 ac, 29.78% Impervious, Inflow Depth = 2.81" for 25-yr event				
Inflow =	0.98 cfs @ 12.19 hrs, Volume=	0.090 af			
Outflow =	0.98 cfs @ 12.19 hrs, Volume=	0.090 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.98 cfs @ 12.19 hrs, Volume=	0.090 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 609.64' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	609.00'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.00' / 609.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.98 cfs @ 12.19 hrs HW=609.64' TW=609.29' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.98 cfs @ 2.60 fps)

Pond CB2: CB #2



Summary for Pond CB3: CB #5

Inflow Area =	0.402 ac, 34.29% Impervious, Inflow Depth = 2.90" for 25-yr event				
Inflow =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af			
Outflow =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af			

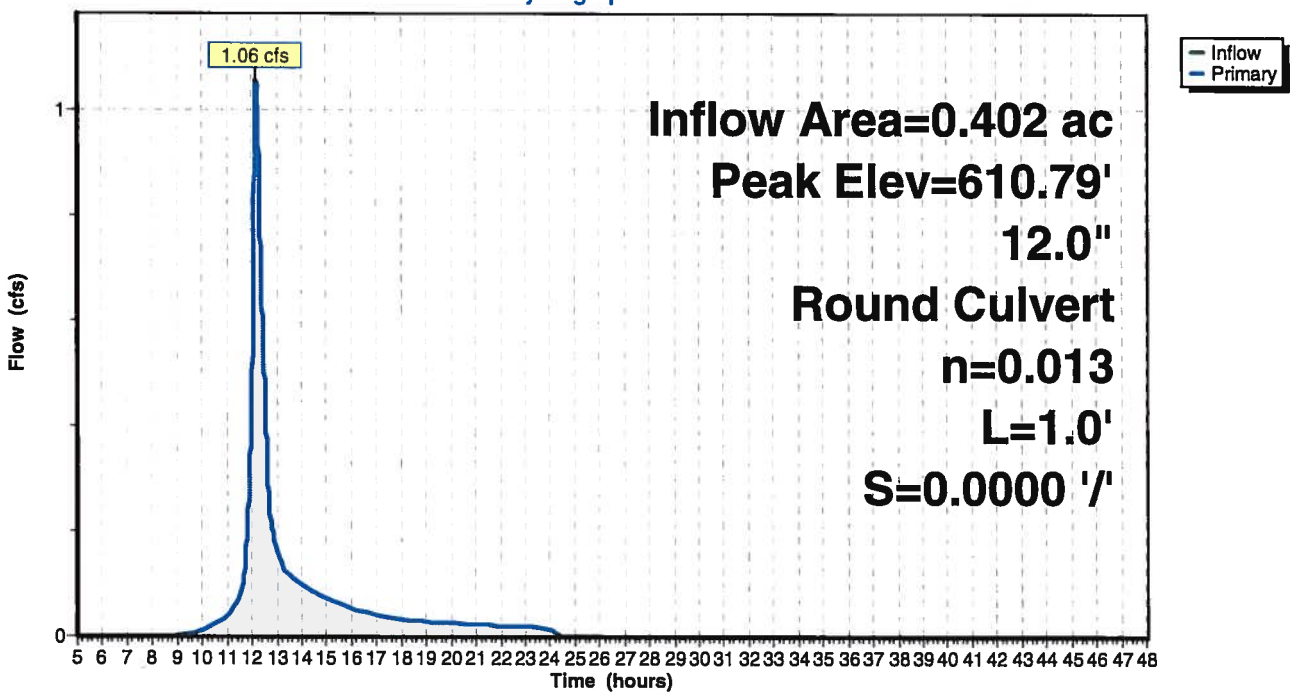
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 610.79' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	610.12'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 610.12' / 610.12' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.19 hrs HW=610.79' TW=610.39' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.06 cfs @ 2.66 fps)

Pond CB3: CB #5

Hydrograph



Summary for Pond CB4: CB #4

Inflow Area =	0.402 ac, 34.29% Impervious, Inflow Depth = 2.90" for 25-yr event				
Inflow =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af			
Outflow =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af, Atten= 0%, Lag= 0.0 min			
Primary =	1.06 cfs @ 12.19 hrs, Volume=	0.097 af			

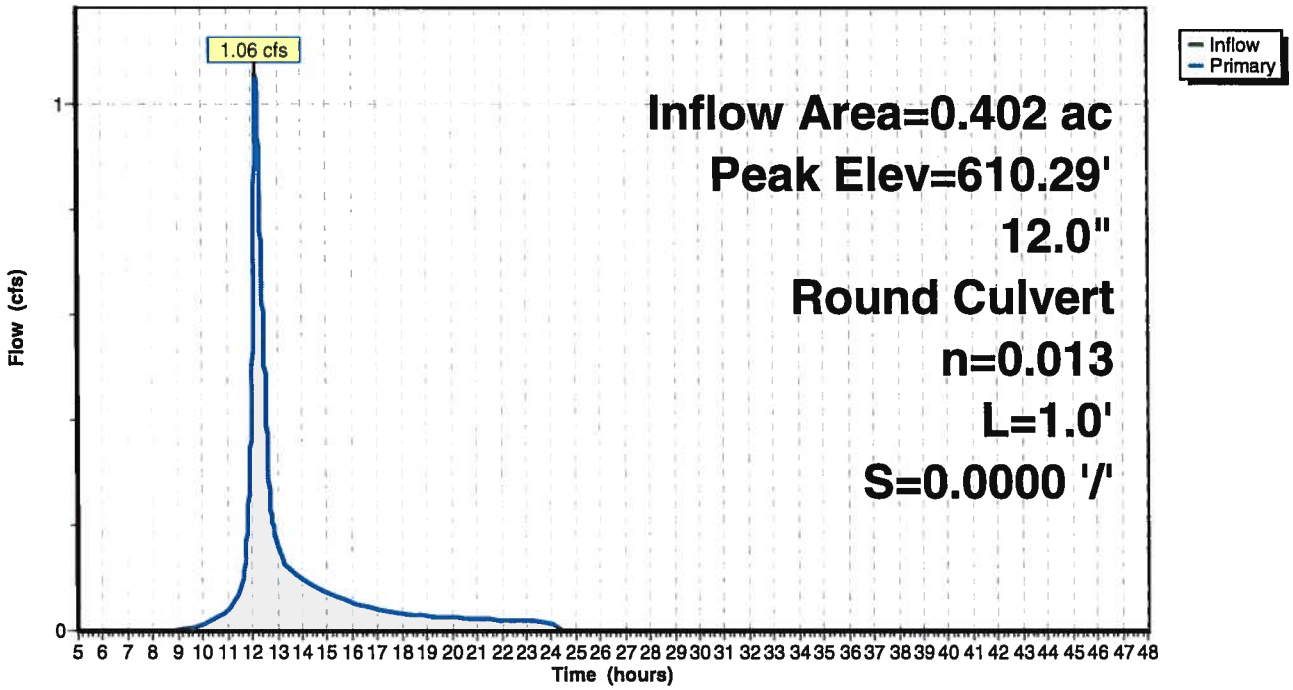
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 610.29' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	609.62'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.62' / 609.62' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.06 cfs @ 12.19 hrs HW=610.29' TW=609.99' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 1.06 cfs @ 2.66 fps)

Pond CB4: CB #4

Hydrograph



Summary for Pond CB5: CB #5

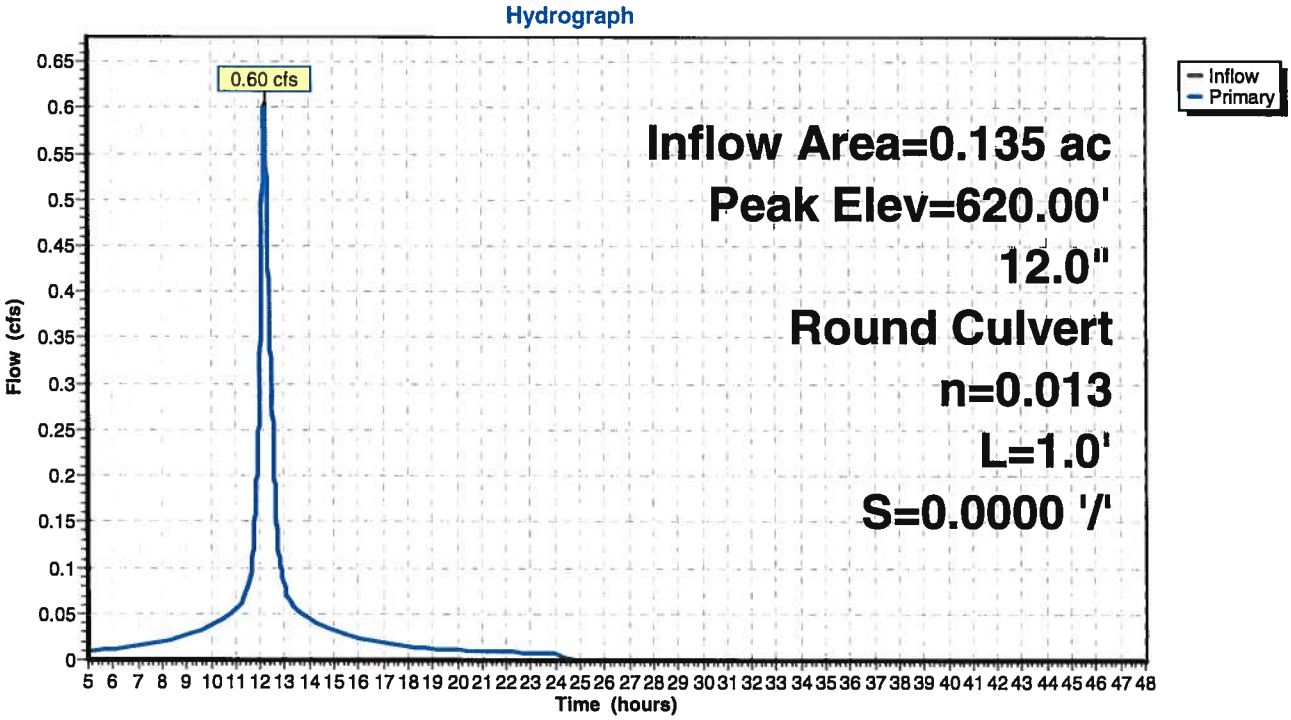
Inflow Area =	0.135 ac,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event				
Inflow =	0.60 cfs @ 12.19 hrs, Volume=	0.065 af			
Outflow =	0.60 cfs @ 12.19 hrs, Volume=	0.065 af, Atten= 0%, Lag= 0.0 min			
Primary =	0.60 cfs @ 12.19 hrs, Volume=	0.065 af			

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 620.00' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	619.50'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 619.50' / 619.50' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.60 cfs @ 12.19 hrs HW=620.00' TW=619.70' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.60 cfs @ 2.27 fps)

Pond CB5: CB #5



Summary for Pond CB6: CB #6

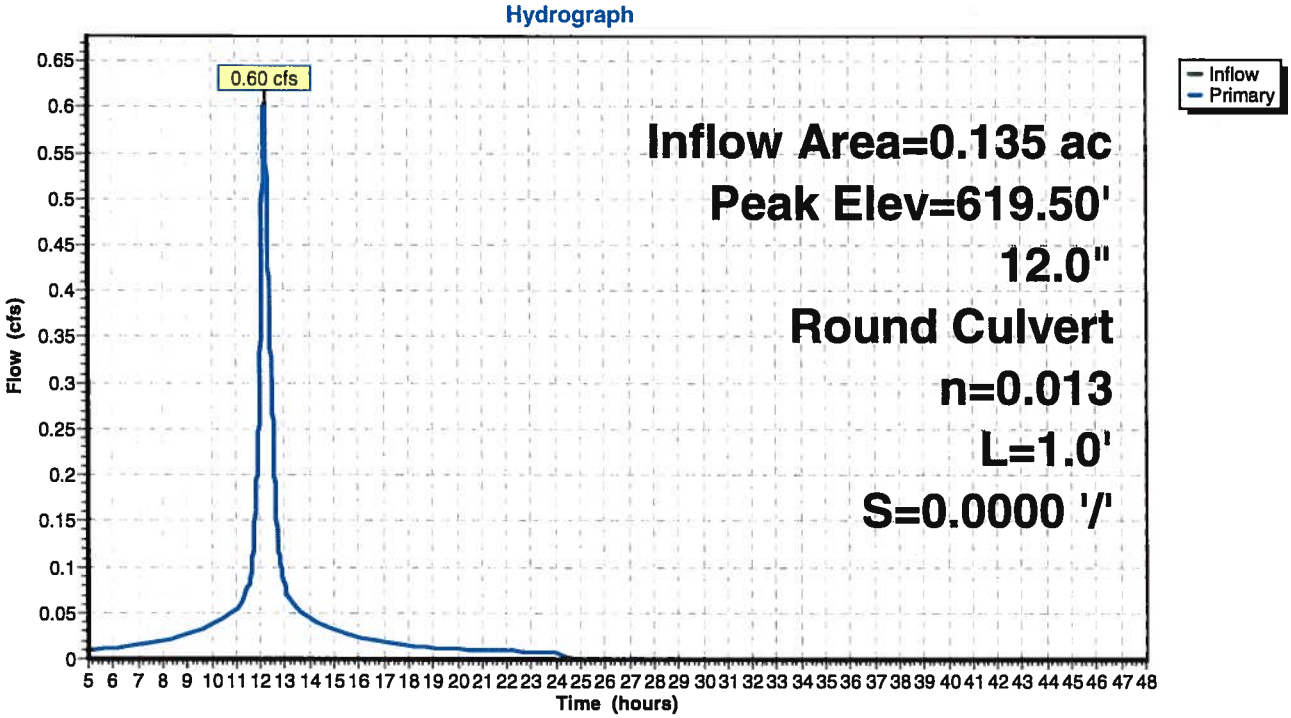
Inflow Area =	0.135 ac,100.00% Impervious,	Inflow Depth =	5.76"	for	25-yr event
Inflow =	0.60 cfs @	12.19 hrs,	Volume=	0.065 af	
Outflow =	0.60 cfs @	12.19 hrs,	Volume=	0.065 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.60 cfs @	12.19 hrs,	Volume=	0.065 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 619.50' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	619.00'	**12.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 619.00' / 619.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.60 cfs @ 12.19 hrs HW=619.50' TW=619.14' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 0.60 cfs @ 2.27 fps)

Pond CB6: CB #6



Summary for Pond CDS2: CDS #2

Inflow Area =	0.135 ac,100.00% Impervious, Inflow Depth = 5.76" for 25-yr event				
Inflow =	0.60 cfs @	12.19 hrs,	Volume=	0.065 af	
Outflow =	0.62 cfs @	12.19 hrs,	Volume=	0.065 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.62 cfs @	12.19 hrs,	Volume=	0.065 af	

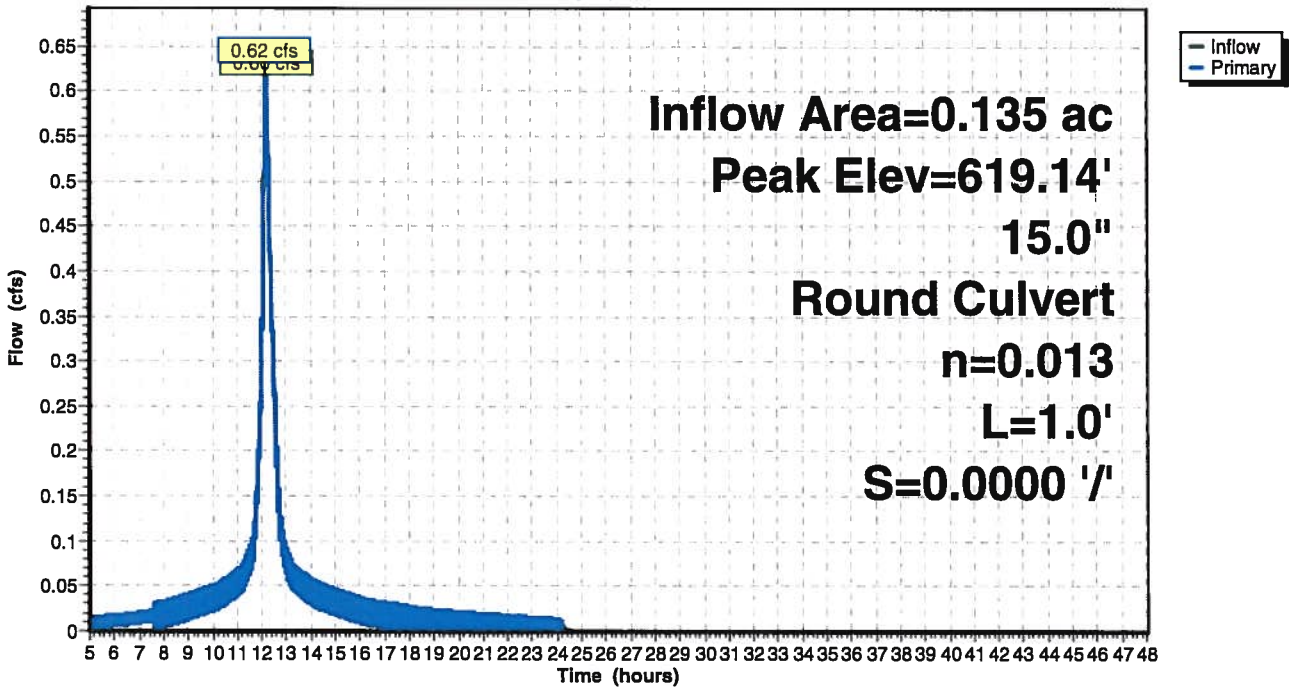
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 619.14' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	618.00'	**15.0" Round Culvert** L= 1.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 618.00' / 618.00' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.61 cfs @ 12.19 hrs HW=619.14' TW=619.13' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 0.61 cfs @ 0.52 fps)

Pond CDS2: CDS #2

Hydrograph



Summary for Pond DMH-1: DMH #1

Inflow Area =	0.787 ac,	32.08% Impervious,	Inflow Depth =	2.85"	for 25-yr event
Inflow =	2.03 cfs @	12.20 hrs,	Volume=	0.187 af	
Outflow =	2.03 cfs @	12.20 hrs,	Volume=	0.187 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.03 cfs @	12.20 hrs,	Volume=	0.187 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

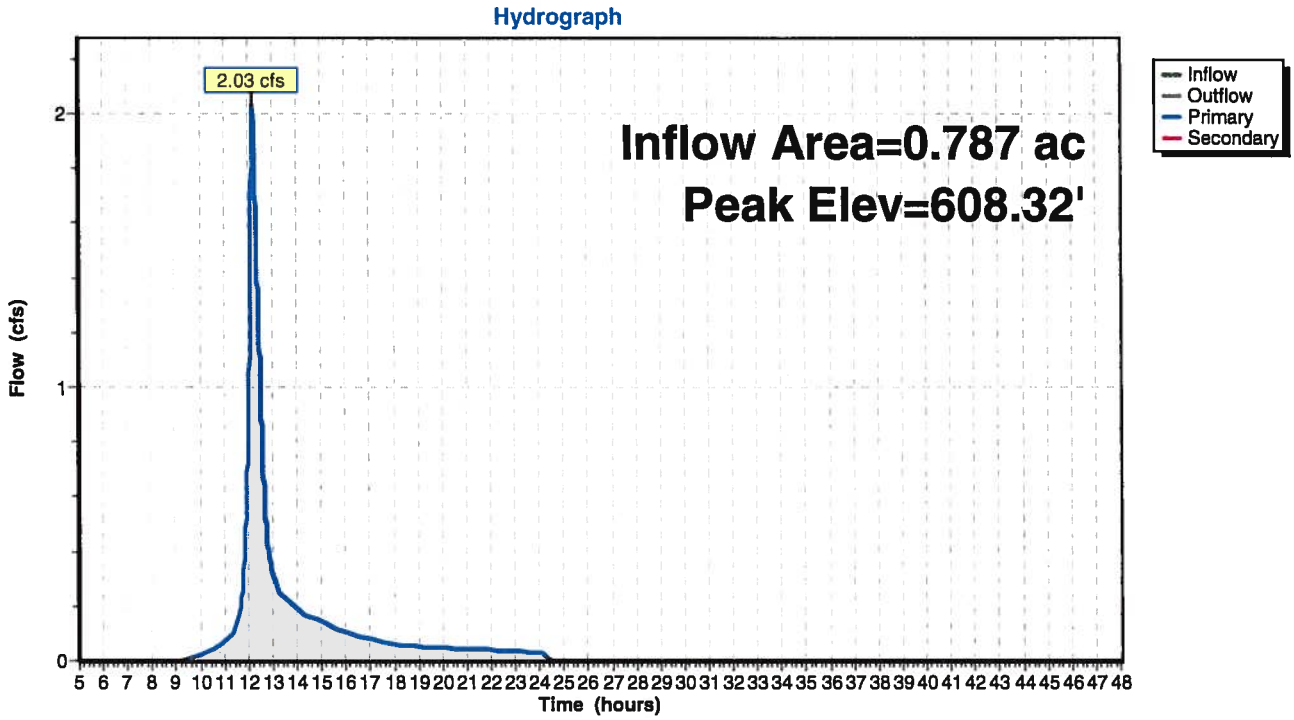
Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 608.32' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	607.50'	**12.0" Round Culvert** L= 18.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 607.50' / 606.50' S= 0.0541 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	609.00'	**18.0" Round Culvert** L= 67.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 609.00' / 607.00' S= 0.0299 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.03 cfs @ 12.20 hrs HW=608.32' TW=607.81' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 2.03 cfs @ 4.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=607.50' TW=609.00' (Dynamic Tailwater)
└─**2=Culvert** (Controls 0.00 cfs)

Pond DMH-1: DMH #1



Summary for Pond EX WL: SB-1

Inflow Area = 0.949 ac, 14.17% Impervious, Inflow Depth = 2.32" for 25-yr event
Inflow = 1.76 cfs @ 12.22 hrs, Volume= 0.184 af
Outflow = 0.73 cfs @ 12.60 hrs, Volume= 0.174 af, Atten= 59%, Lag= 23.1 min
Primary = 0.73 cfs @ 12.60 hrs, Volume= 0.174 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs
Peak Elev= 615.56' @ 12.60 hrs Surf.Area= 2,433 sf Storage= 3,599 cf

Plug-Flow detention time= 777.0 min calculated for 0.174 af (95% of inflow)
Center-of-Mass det. time= 748.0 min (1,581.5 - 833.5)

Volume	Invert	Avail.Storage	Storage Description
#1	613.50'	8,305 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

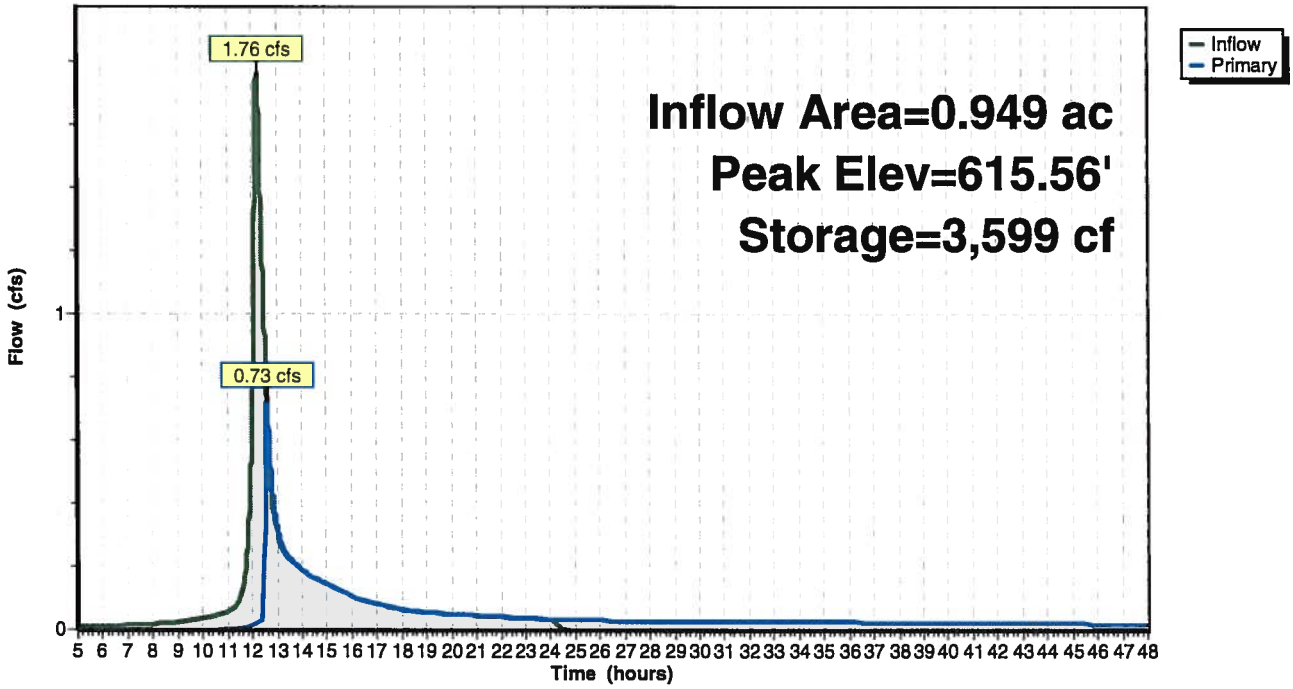
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
613.50	218	60.3	0	0	218
614.00	1,670	148.2	415	415	1,677
616.00	2,673	186.0	4,304	4,719	2,737
617.00	4,584	243.3	3,586	8,305	4,706

Device	Routing	Invert	Outlet Devices
#1	Primary	613.50'	**15.0" Round Culvert** L= 52.5' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 613.50' / 612.00' S= 0.0286 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	614.00'	**1.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	615.50'	**36.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.73 cfs @ 12.60 hrs HW=615.56' TW=613.70' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.73 cfs of 7.08 cfs potential flow)
├─**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.94 fps)
└─**3=Orifice/Grate** (Weir Controls 0.69 cfs @ 0.81 fps)

Pond EX WL: SB-1

Hydrograph



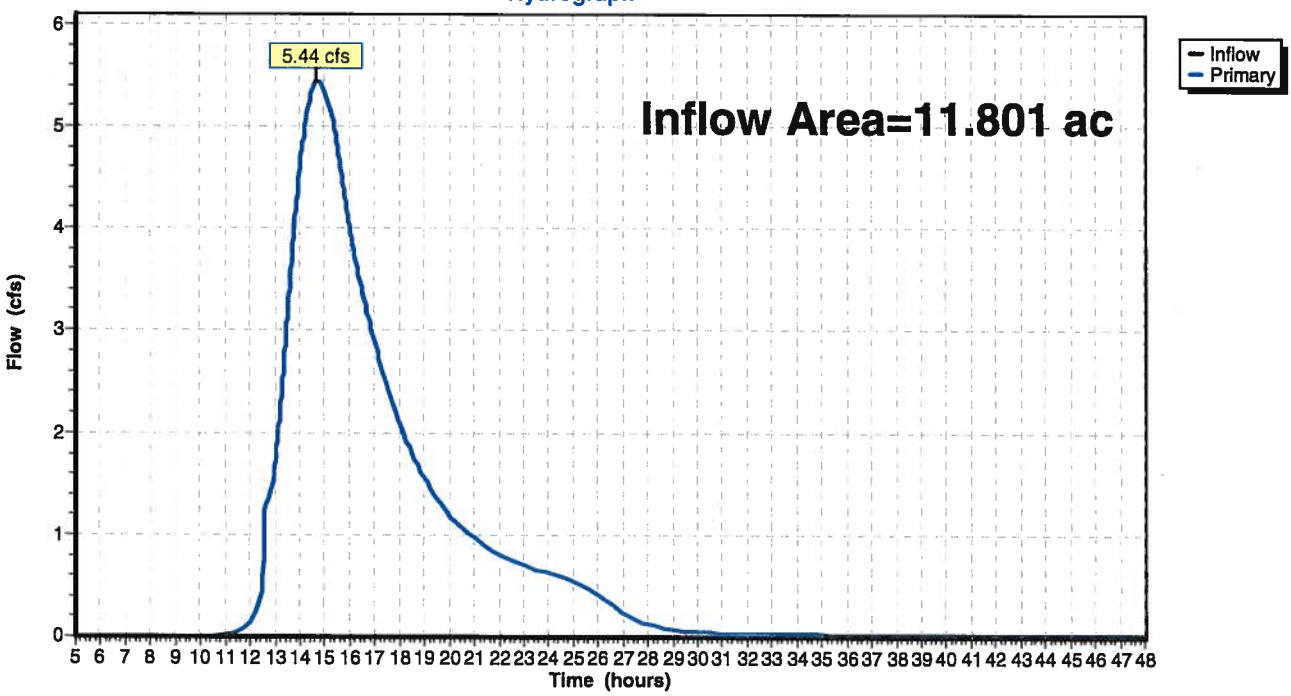
Summary for Link DP-IV: DP-IV

Inflow Area = 11.801 ac, 2.07% Impervious, Inflow Depth = 2.42" for 25-yr event
Inflow = 5.44 cfs @ 14.65 hrs, Volume= 2.381 af
Primary = 5.44 cfs @ 14.65 hrs, Volume= 2.381 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-360.00 hrs, dt= 0.01 hrs

Link DP-IV: DP-IV

Hydrograph



Appendix F:
Contech CDS Pretreatment
Chamber Information

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Nonpoint Pollution Control
Division of Water Quality
Post Office Box 029
Trenton, New Jersey 08625-029
609-633-7021 Fax: 609-984-2147
http://www.state.nj.us/dep/dwq/bnpc_home.htm

BOB MARTIN
Acting Commissioner

Derek Berg
Regulatory Manager – Stormwater
CONTECH Engineered Solutions
200 Enterprise Drive
Scarborough, ME 04074

Re: Final Certification
Continuous Deflective Separator (CDS) by CONTECH Engineered Solutions LLC

Expiration Date: December 1, 2016
TSS Removal Rate: 50%

Dear Mr. Berg:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). CONTECH Engineered Solutions LLC has requested a Final Certification for the Continuous Deflective Separator (CDS) Stormwater Treatment System.

This project falls under the July 15, 2011 "Transition for Manufactured Treatment Devices," under *C. Manufactured Treatment Devices Seeking Final Certification – In Process* which are MTDs that have commenced field testing on or before August 1, 2011.

NJDEP received the required information and signed statements by the NJCAT Technical Director and the manufacturer indicating that the requirements of the Field Testing Protocols in place at the initiation of testing have been met or exceeded. The NJCAT letter also includes a recommended certified TSS removal rate and the required maintenance plan.

The NJDEP certifies the use of the CONTECH Engineered Solutions LLC CDS Stormwater Treatment System at a TSS removal rate of 50%, subject to the following conditions:

1. The various models and associated water quality flow capacities shall be sized for the peak flow of the New Jersey Water Quality Design Storm per N.J.A.C. 7:8-5, as shown in Table 1 below.

New Jersey Treatment Rates for CDS Models Based on a Surface Area Secific Loading Rate of 25.16gpm/ft^2		
CDS Model	Manhole Diameter (ft)	Treatment Flow Rate (cfs)
CDS-4	4	0.7
CDS-5	5	1.1
CDS-6	6	1.6
CDS-8	8	2.8
CDS-10	10	4.4
CDS-12	12	6.3

2. The CDS Stormwater Treatment System can be used on-line or off-line.

3. A hydrodynamic separator, such as the CDS Stormwater Treatment System, cannot be used in series with another hydrodynamic separator to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.

4. The maintenance plan for the sites using this device shall incorporate at a minimum, the maintenance requirements for the CDS Stormwater Treatment System shown attached.

In addition to the attached, the detailed maintenance plan must include all of the items identified in Chapter 8: Maintenance of the New Jersey Stormwater Best Management Manual. Such items include, but are not limited to, the list of inspection and maintenance equipment and tools, specific corrective and preventative maintenance tasks, indication of problems in the system, and training of maintenance personnel.

Additional information regarding the implementation of the Stormwater Management rules N.J.A.C. 7:8 are available at www.njstormwater.org. Please contact Sandra Blick of my office at (609) 633-7021 if you have any questions.

Sincerely,

James J. Murphy, Chief
Bureau of Nonpoint Pollution Control

c: Chron File
Richard Magee, NJCAT
Mark Pedersen, DLUR
Elizabeth Dragon, BNPC

CONTECH
ENGINEERED SOLUTIONS

TABLE 1
Storm Water Treatment Device
Hydraulic and Storage Capacities

CDS Model	Treatment Capacity (cfs)/(L/s)	Minimum Sump Storage Capacity (yd^3)/ (m^3)	Minimum Oil Storage Capacity (gal)/(L)
CDS2015-4-C	0.7 (19.8)	0.9 (0.7)	61 (232)
CDS2015-5-C	0.7 (19.8)	1.5 (1.1)	83 (313)
CDS2020-C	1.1 (31.2)	1.5 (1.1)	99 (376)
CDS2025-C	1.6 (45.3)	1.5 (1.1)	116 (439)
CDS3020-C	2.0 (56.6)	2.1 (1.6)	184 (696)
CDS3025-C	2.4 (68.0)	2.1 (1.6)	210 (795)
CDS3030-C	3.0 (85.0)	2.1 (1.6)	236 (895)
CDS3035-C	3.8 (106.2)	2.1 (1.6)	263 (994)
CDS4030-C	4.5 (127.4)	5.6 (4.3)	426 (1612)
CDS4040-C	6.0 (169.9)	5.6 (4.3)	520 (1970)
CDS4045-C	7.5 (212.4)	5.6 (4.3)	568 (2149)
CDS5640-C	9.0 (254.9)	8.7 (6.7)	758 (2869)
CDS5653-C	14.0 (396.5)	8.7 (6.7)	965 (3652)
CDS5668-C	19.0 (538.1)	8.7 (6.7)	1172 (4435)
CDS5678-C	25.0 (708)	8.7 (6.7)	1309 (4956)
CDS2015-5-F	0.7 (19.8)	1.5 (1.1)	109 (413)
CDS2020-5-F	1.1 (31.2)	1.5 (1.1)	142 (538)
CDS2025-5-F	1.6 (45.3)	1.5 (1.1)	153 (579)
CDS3020-6-F	2.0 (56.6)	2.1 (1.6)	202 (765)
CDS3030-6-F	3.0 (85.0)	2.1 (1.6)	288 (1089)
CDS3035-6-F	3.8 (106.2)	2.1 (1.6)	327 (1236)
CDS4030-7-F	4.5 (127.4)	4.3 (3.3)	402 (1522)
CDS4040-7-F	6.0 (169.9)	4.3 (3.3)	500 (1892)
CDS4045-7-F	7.5 (212.4)	4.3 (3.3)	543 (2056)
CDS5640-8-F	9.0 (254.9)	5.6 (4.3)	554 (2098)
CDS5653-8-F	14.0 (396.5)	5.6 (4.3)	720 (2727)
CDS5668-8-F	19.0 (538.1)	5.6 (4.3)	859 (3252)
CDS5678-8-F	25.0 (708)	5.6 (4.3)	1081 (4091)
CDS3030-V	3.0 (85.0)	1.5 (1.1)	N/A
CDS5042-V	9.0 (254.9)	1.6 (1.2)	N/A
CDS5050-V	11.0 (311.5)	1.6 (1.2)	N/A
CDS7070-V	26.0 (736.3)	3.3 (2.5)	N/A
CDS10060-V	30.0 (849.6)	7.1 (5.4)	N/A
CDS10080-V	50.0 (1416.0)	7.1 (5.4)	N/A
CDS100100-V	64.0 (1812.5)	7.1 (5.4)	N/A

* Note that all "-C" systems can be fitted with a grated inlet if necessary

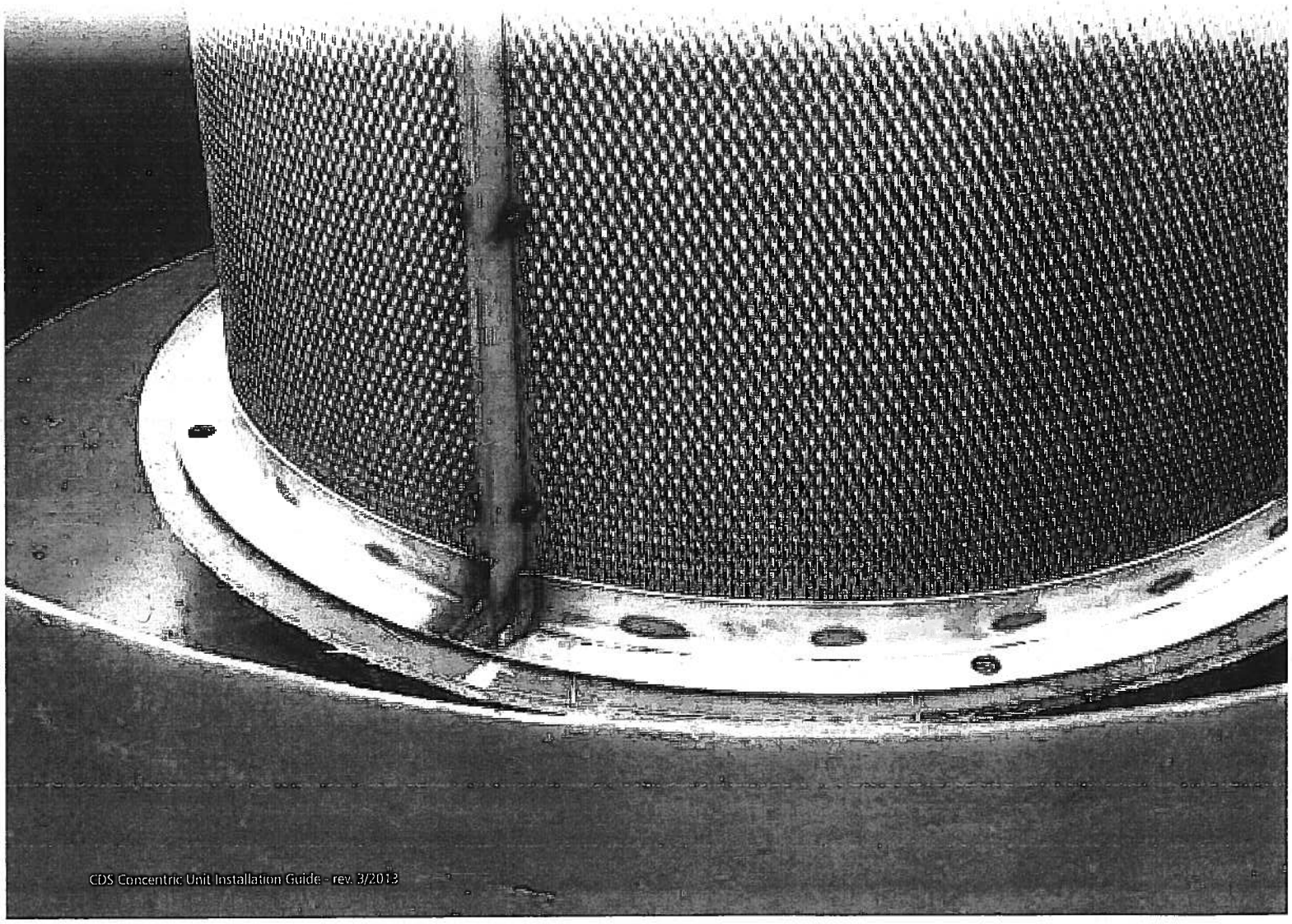
* Note that system internals for the "-C" and "-F" models can be put in larger manholes to accommodate site demands which may change standard capacities listed above

END OF SECTION

CONTECH®
ENGINEERED SOLUTIONS

CDS® Concentric Unit

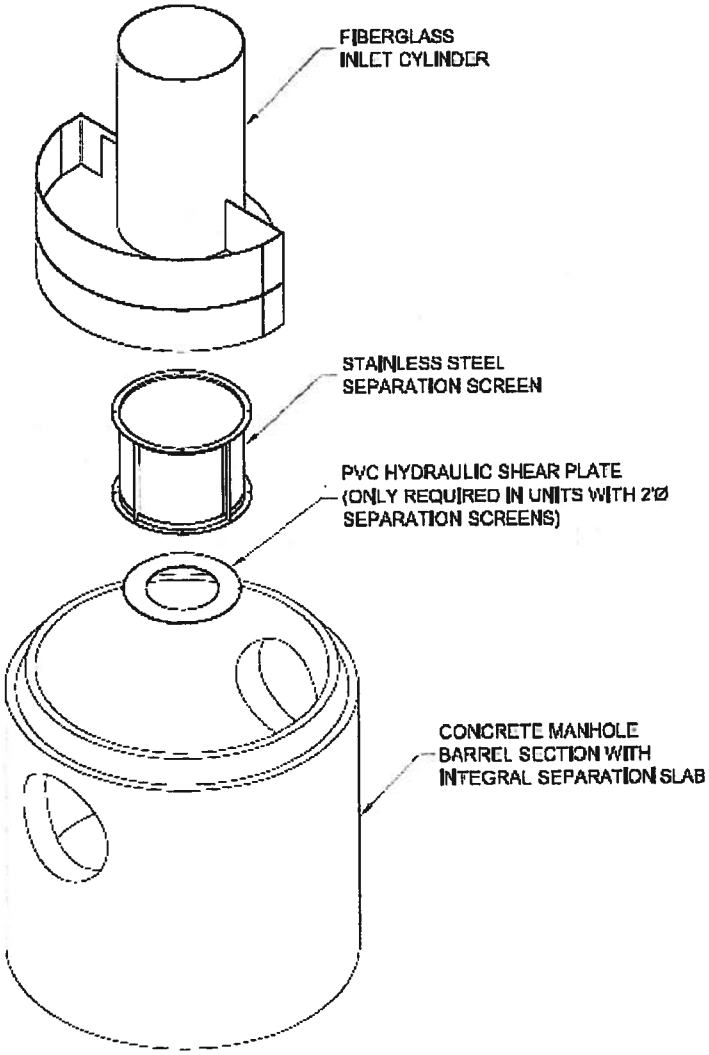
Internal Component Assembly and Installation Guide



Overview

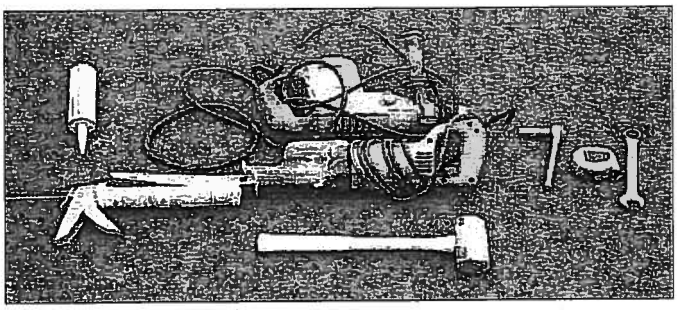
The CDS® installation will consist of three primary components, the fiberglass inlet cylinder, stainless steel separation screen, and concrete manhole barrel section with integral separation slab. If the CDS® unit has a 2′ inside diameter separation screen, the unit will also have a PVC hydraulic shear plate.

Before starting installation, be sure you have all the components, tools, and supplies necessary to complete the work. Contech will ship the fiberglass inlet cylinder, SS separation screen, PVC hydraulic shear plate, and all needed hardware to you prior to the installation date. These internals will typically arrive on two shipping pallets, one with inlet cylinder and the other with the SS separation screen, box of stainless steel hardware, and PVC shear plate if required.



Tools Recommended For A Successful Installation

1. Small rotary hammer drill
2. Hand drill with ½″ chuck
3. 3/8″ diameter masonry bit that will drill a hole at least 3″ deep
4. ½″ diameter wood bit for drilling fiberglass
5. Hammer
6. Reciprocating saw
7. Long blade for saw
8. Tape measure
9. Marker or grease pencil for marking fiberglass
10. Sealant gun
11. Sealant, equivalent to Sikaflex 1a
12. 9/16″ deep socket with ratchet drive for tightening 3/8″ concrete anchors
13. 3/4″ end wrench and 3/4″ socket for tightening 1/2″ bolts and nuts



Inlet Cylinder & Separation Screen Component Assembly

Remove fiberglass inlet cylinder from the shipping pallet and turn it upside down so it is standing on the cylinder with the horizontal flange facing up (Fig 1). Unbolt separation screen from shipping pallet and place it on top of the inlet cylinder with the **GREEN** painted flange facing the fiberglass flange and center screen over the cylinder opening (Fig 2).

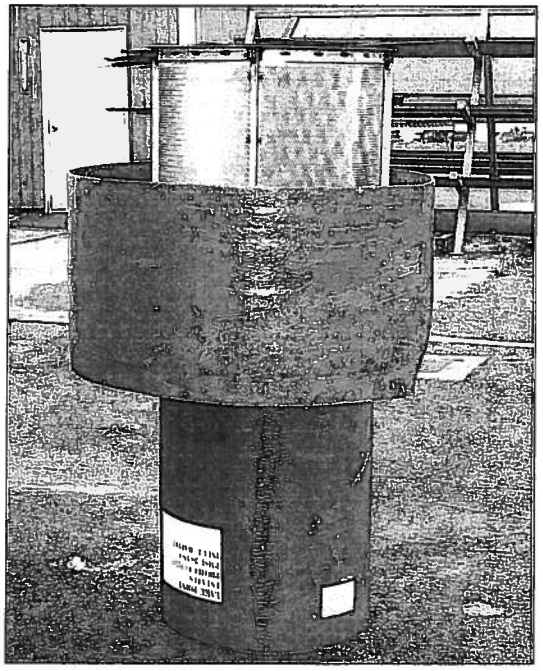


Fig 1. Upside down inlet and screen.

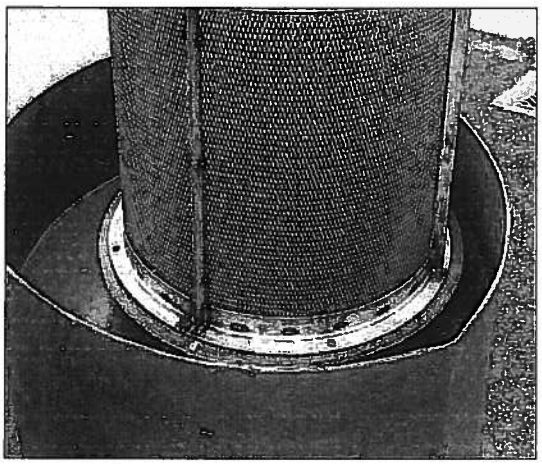


Fig 2. Screen centered over inlet cylinder opening.

Using the hand drill with 1/2" wood bit match drill the holes from the screen flange into the horizontal flange on the fiberglass inlet (Fig 3). Drill just one hole at a time and install 1/2" diameter 316 stainless steel bolts with washers to hold screen centered before moving to the next hole (Fig 4). Once all holes are drilled and bolts installed use 3/4" end wrench and 3/4" socket to tighten until split washer is flat.

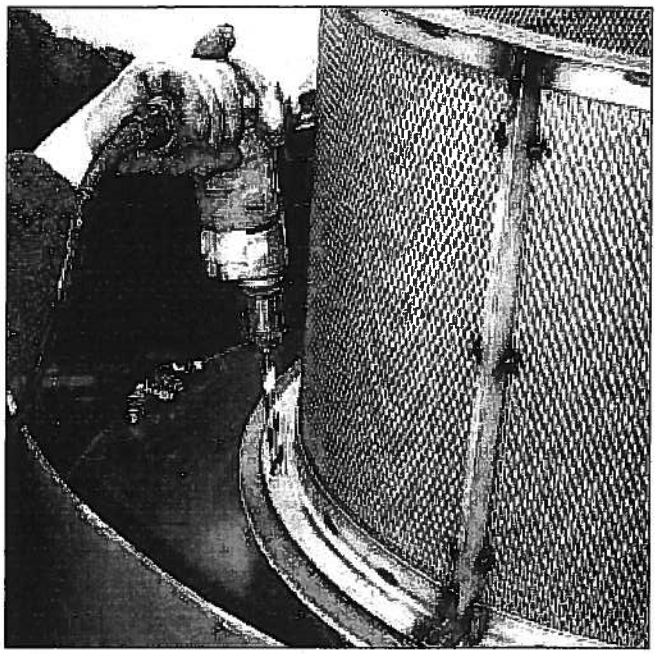


Fig 3. Match drill holes from screen flange.

Fig 4. Attach screen to inlet with 1/2" bolts

Depending on the internal height of the CDS® unit the fiberglass inlet cylinder may need to be cut down from the standard 4′ height. The correct cylinder height will be located on the fabrication drawings provided by Contech (Fig 5). Using the tape measure and marker or grease pencil mark the cylinder at the height to be cut and remove top of cylinder with reciprocating saw or other cutting tool (Fig 6).

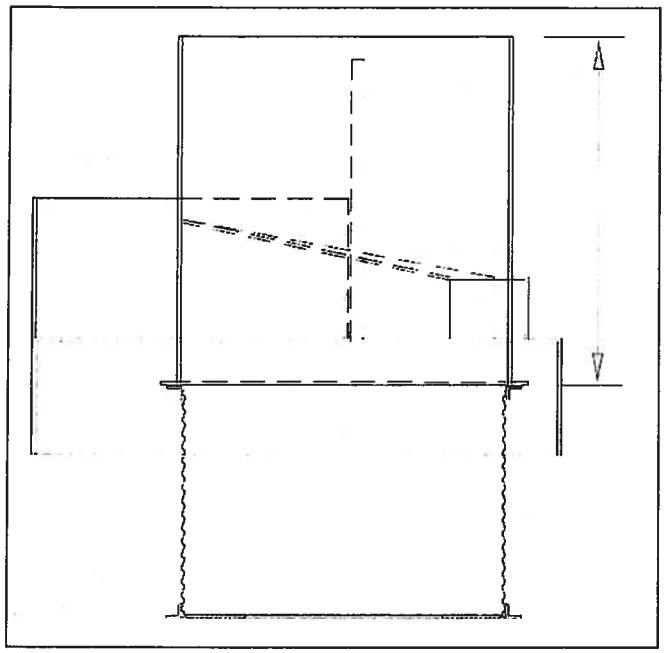


Fig 5. Cylinder height shown on fabrication drawings

Fig 6. Removing top of inlet cylinder.

Component Assembly Installation

Lift inlet and screen assembly into manhole barrel section centering the cylinder over the sump access hole in separation slab floor (Fig 7). See Contech fabrication drawings for rotation angle of the fiberglass inlet (Fig 8). Coring for inlet pipe must fall within inlet trough and coring for outlet pipe must be outside of inlet trough. If unit has multiple inlet pipes all inlet coring must fall within inlet trough.

Fig 7. Lift inlet and screen assembly into manhole.

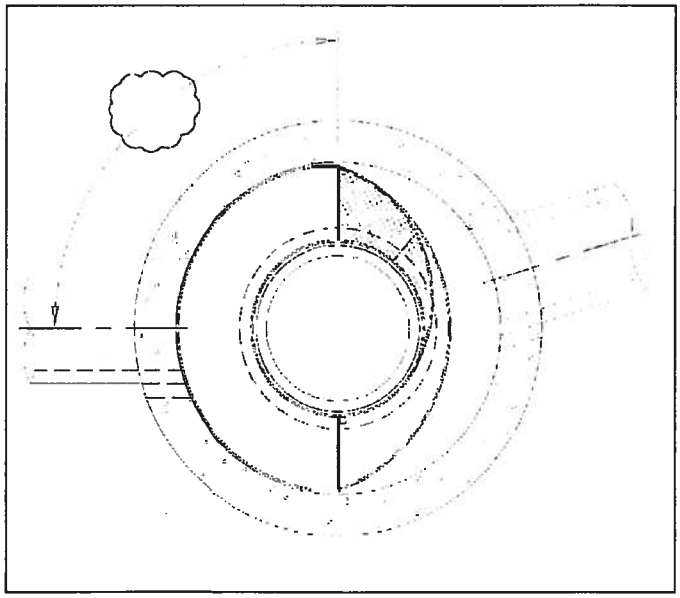


Fig 8. Inlet rotation shown on fabrication drawings.

Using marker or grease pencil, outline the sides of inlet coring down to the trough floor (Fig 9). Next rotate inlet just enough to drill two 1/2" holes on each side of the outline, about 12" apart and 4" outside of outline (Fig 10). Rotate the inlet trough and cylinder back to center so your outline mark is aligned with the inlet core.

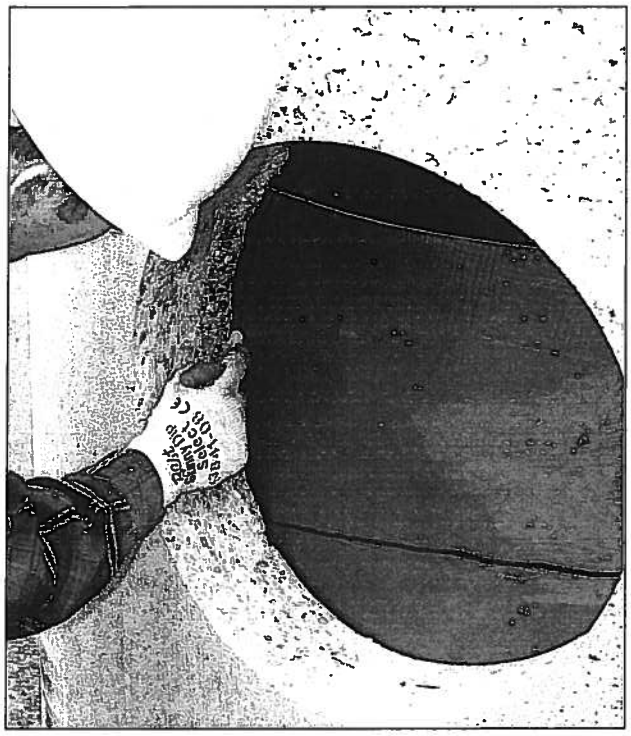


Fig 9. Outline inlet coring on inlet trough flange.

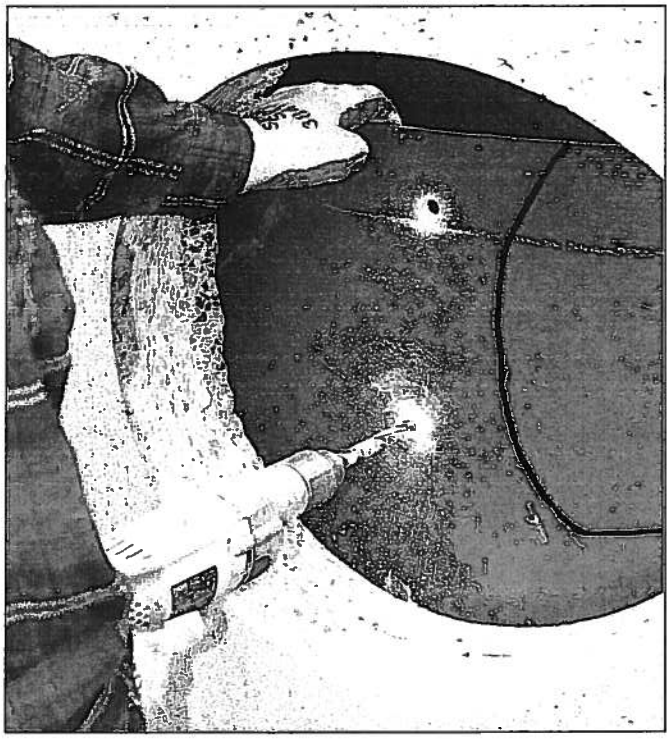


Fig 10. Drill two holes on both sides of coring outline.

Using a small rotary hammer with a 3/8" diameter masonry bit, drill a 3" deep hole into the manhole wall at one of the 1/2" holes you just drilled through the trough flange (Fig 11). You may need to angle the drill to fit between the fiberglass cylinder and the trough flange. Next place one of the provided 3/8" diameter 316 stainless steel wedge anchors into the hole and set it using a large hammer (Fig 12). Repeat steps to set anchors at all four 1/2" holes and snug down anchor nut with 9/16" deep socket.

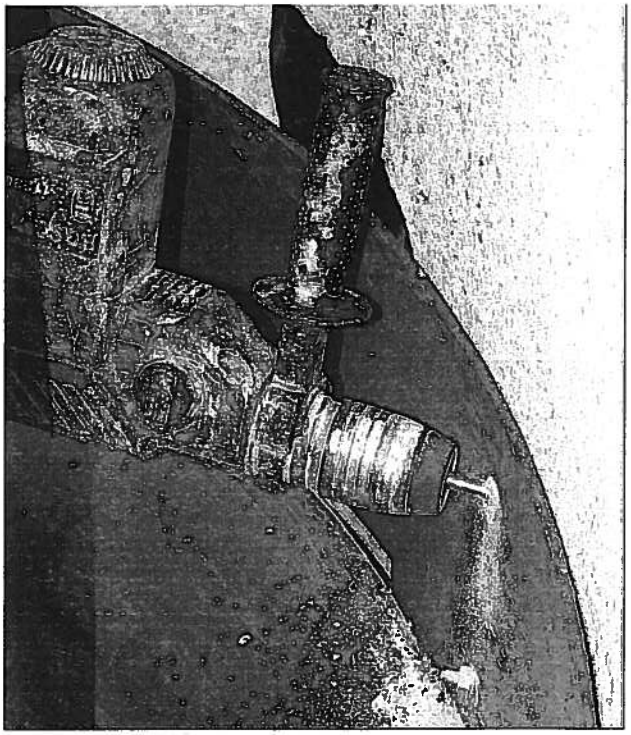


Fig 11. Drill concrete manhole for wedge anchors.

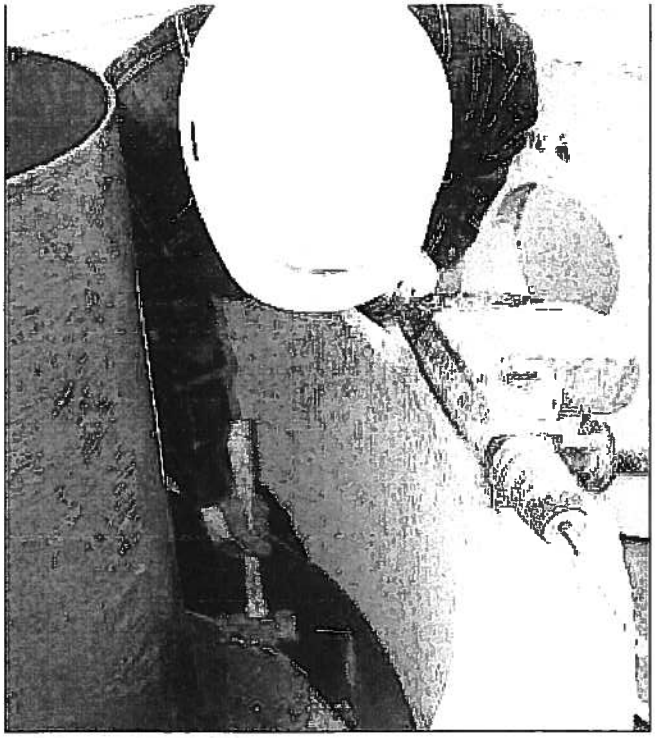


Fig 12. Use hammer to set wedge anchors.

Using a reciprocating saw cut the trough flange to remove the fiberglass inside of the inlet outline you marked, being careful not to cut into the trough floor (Fig 13) (Fig 14).

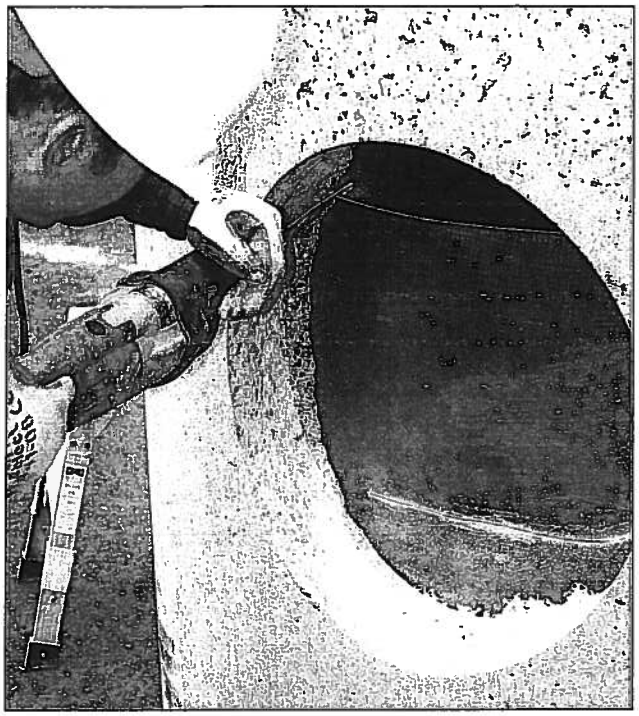


Fig 13. Remove trough flange blocking inlet coring.

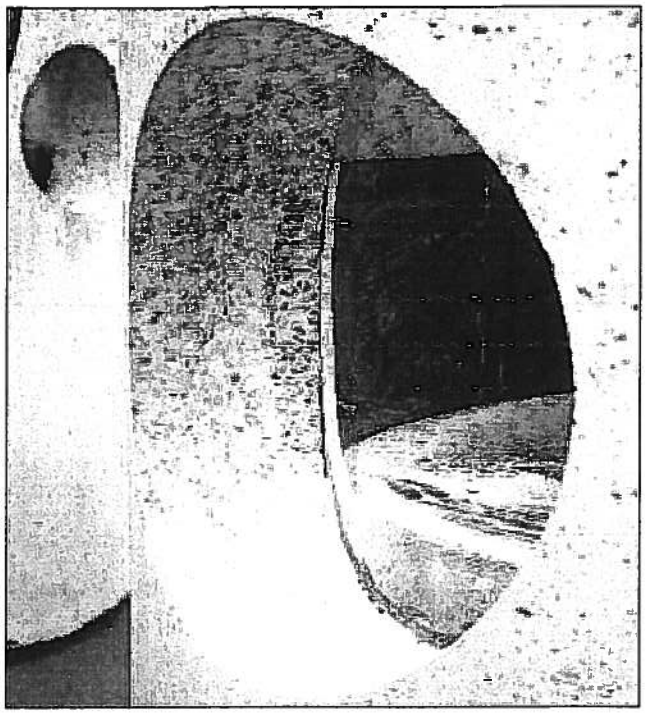


Fig 14. Inlet coring with trough flange removed.

With a sealant gun apply a bead of polyurethane elastomeric sealant, equivalent to Sikaflex 1a, down the sides and along bottom of inlet coring to seal any gap between fiberglass and manhole wall (Fig 15). If a gap exists that is to large to be filled with sealant you can fill with butyl mastic and apply sealant over the top.

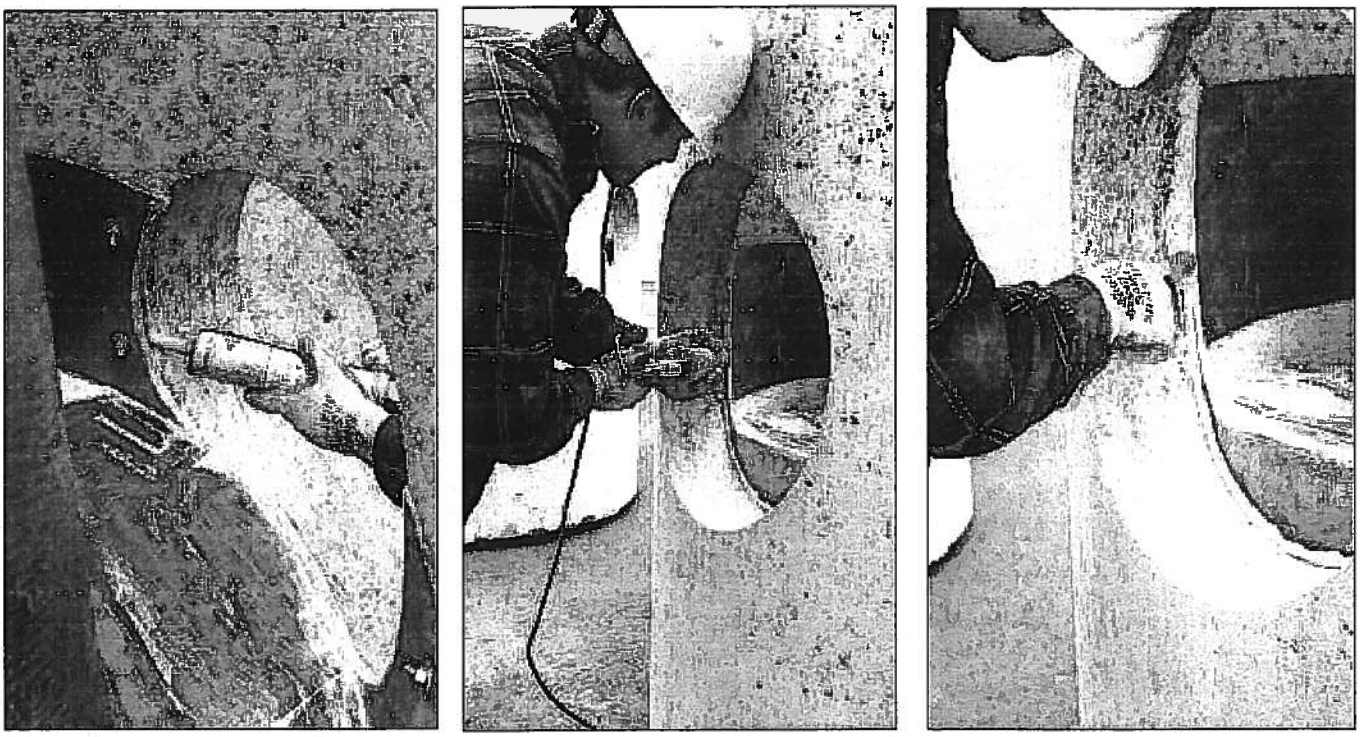


Fig 15. Seal inlet trough down the sides and along bottom of inlet coring with Sikaflex 1a sealant or equivalent.

If the unit has a 2′ inside diameter separation screen Contech will provide a PVC hydraulic shear plate. This shear plate will need to be installed inside of the separation screen so that it rests on the separation slab floor. To install, drop the shear plate down through the fiberglass cylinder keeping it flat (Fig 16). Do not fasten shear plate to floor it must remain removable (Fig 17).

Fig 16. Installing PVC hydraulic shear plate.

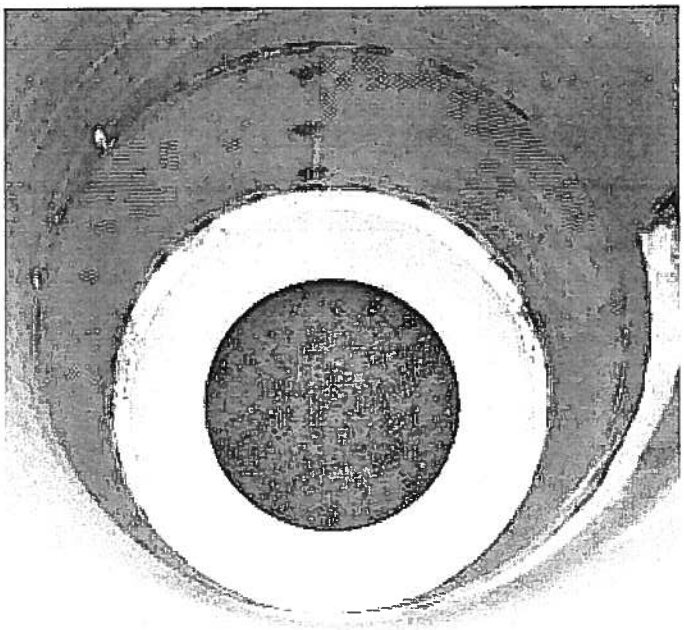
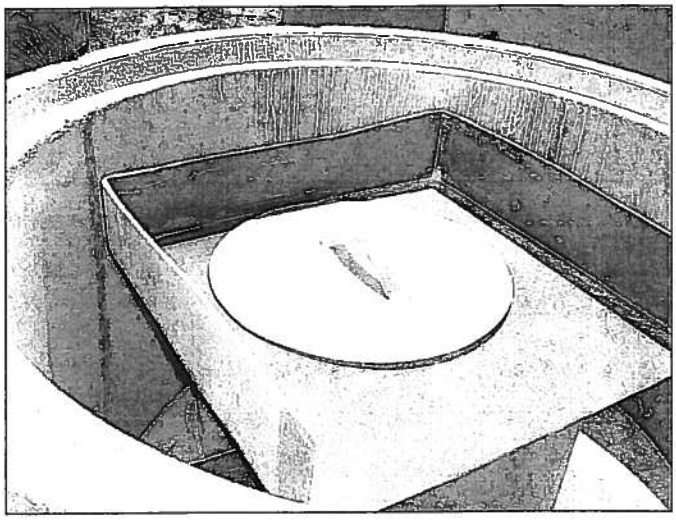


Fig 17. PVC hydraulic shear plate resting on floor.

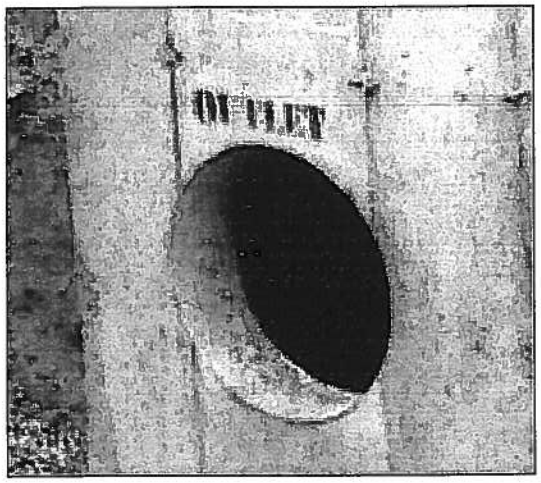
If the unit has a grated top inlet, Contech will provide a fiberglass deflector pan and cover. This deflector pan will need to be installed on top of the fiberglass cylinder with the open end over the inlet trough. See Contech fabrication drawings for correct location. Do not fasten cover to pan it must remain removable (Fig 18).

Fig 18. Deflector pan installed on top of cylinder.



Stencil manhole barrel section to mark inlet and outlet coring (Fig 18). Be sure that all manhole lifting points are accessible and not blocked by the internal components. If they are, new lift points will need to be provided.

Fig 19. Stencil inlet and outlet coring.



CONTECH®
CONSTRUCTION PRODUCTS INC.

CDS® Inspection and Maintenance Guide

CDS TECHNOLOGIES

Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

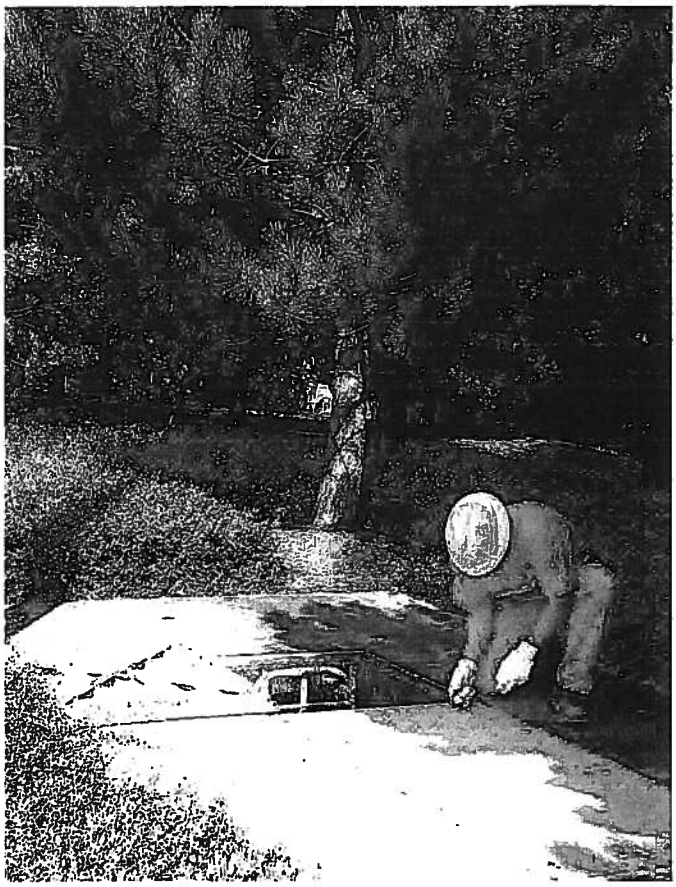
The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

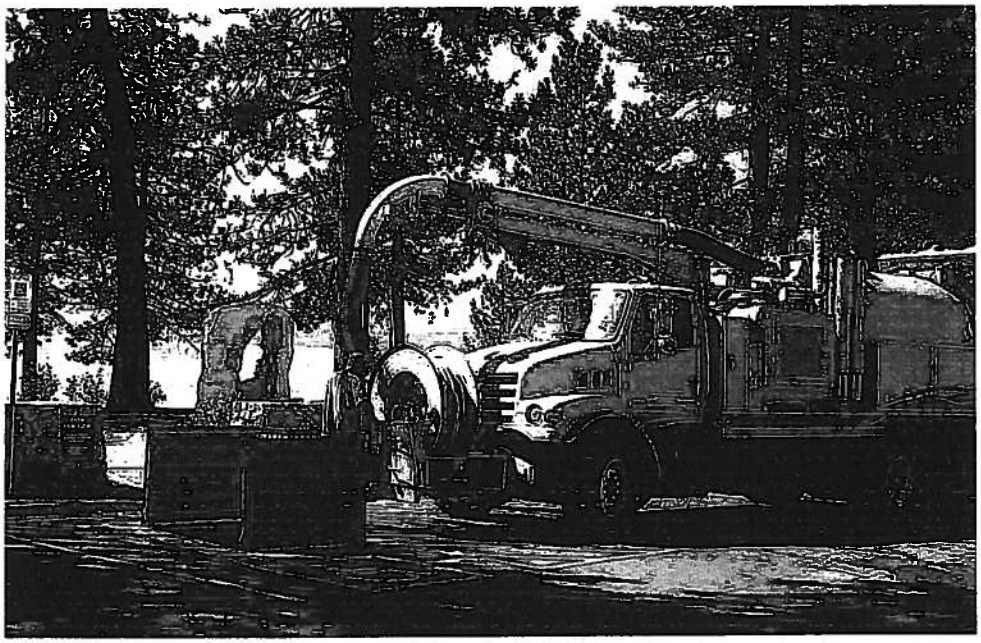
In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.



CDS Model	Diameter		Distance from Water Surface to Top of Sediment Pile		Sediment Storage Capacity	
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.5	0.4
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities



Support

- Drawings and specifications are available at www.contechstormwater.com
- Site-specific design support is available from our engineers

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CONTECH CONSTRUCTION PRODUCTS INC.
800.925.5240
contechstormwater.com

CDS Inspection & Maintenance Log

CDS Model: _____ Location: _____

Date	Water depth to sediment[1]	Floatable Layer Thickness[2]	Describe Maintenance Performed	Maintenance Personnel	Comments

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than eighteen inches the system should be cleaned out. **Note: To avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.**

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

Appendix G:
Rock Outlet Protection
and Level Spreader Sizing Calculations

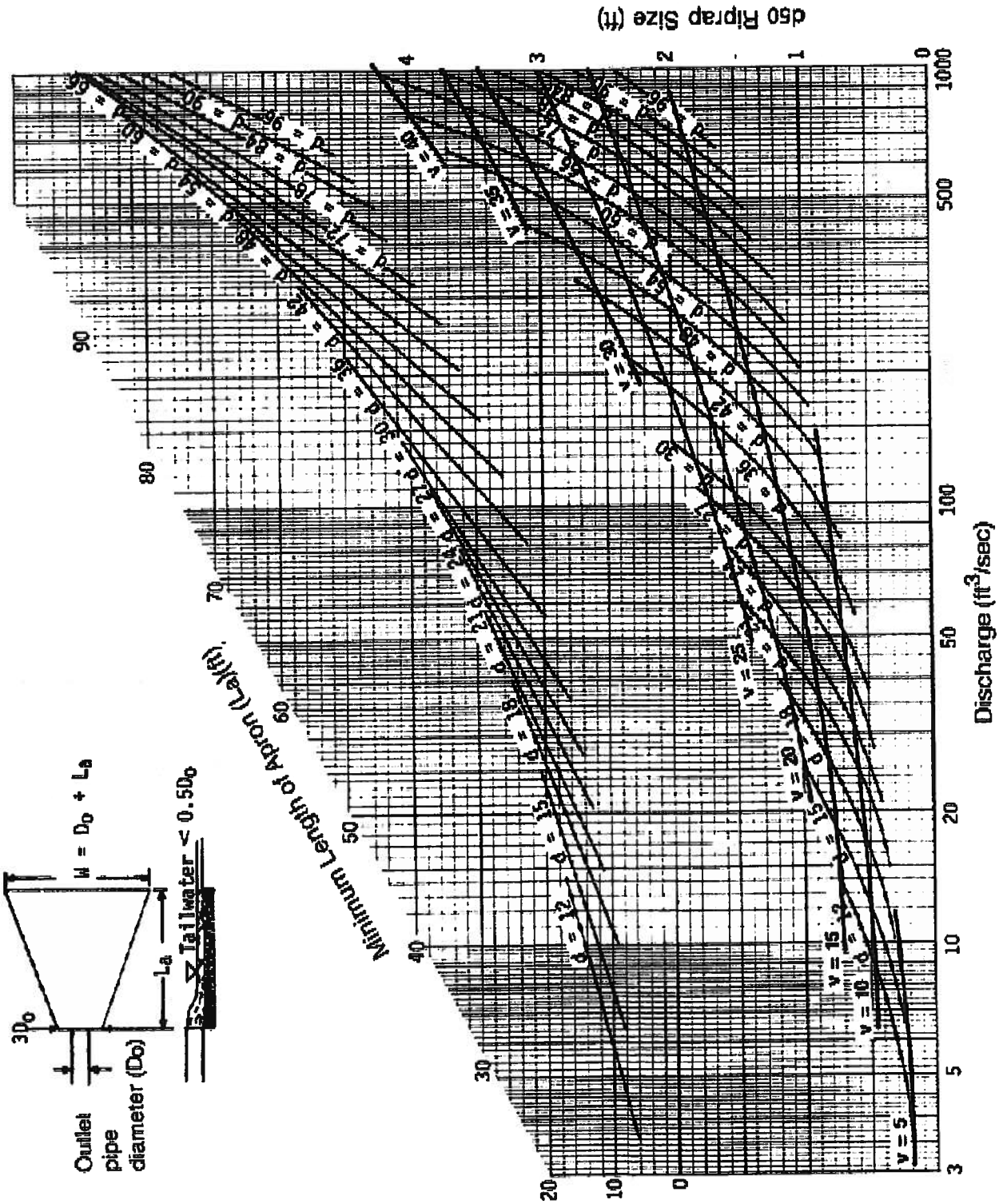
Rock Outlet Protection Sizing Calculations

Design Storm: 25 yr

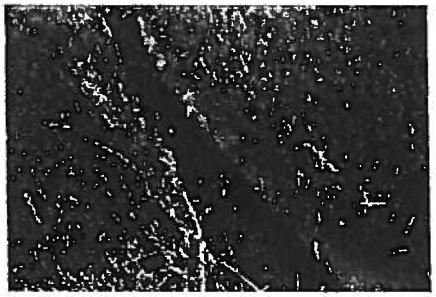
Descp.	Q 25 (cfs)	d50 (in) (See Chart)	dmax (in) d50 x 1.5	La (See Chart)	Diameter of Pipe (Do) (ft)	3 x Diameter of Pipe	W = Do + La	Thickness (in) 1.5 x dmax Calc.	Use	Stone Size (in)
ES #1	2.07	4.0	6	10	1.50	4.50	11.5	9.0	6.0	4"-6"
ES #2	1.84	4.0	6	10	1.00	3.00	11	9.0	6.0	4"-6"
ES #3	0.49	4.0	6	10	1.00	3.00	11	9.0	6.0	4"-6"
ES #12	0.03	4.0	6	10	1.00	3.00	11	9.0	6.0	4"-6"
ES #13	0.02	4.0	6	10	1.00	3.00	11	9.0	6.0	4"-6"
ES #14	12.99	4.0	6	10	1.00	3.00	11	9.0	6.0	4"-6"
ES #15	1.5	4.0	6	10	1.50	4.50	11.5	9.0	6.0	4"-6"

Note: Due to the low discharge rate and relatively small pipe diameter, a 10 foot minimum apron length and a 4 inch d50 Riprap Size have been used for the basis of the calculations.

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR LEVEL SPREADER



Definition

A temporary non-erosive outlet for concentrated runoff, constructed to disperse flow uniformly across a slope.

Purpose

To convert concentrated flow to sheet flow and release it uniformly over a stabilized area.

Conditions Where Practice Applies

Where sediment-free storm runoff can be released in sheet flow down a stabilized slope without causing erosion; where a level lip can be constructed without filling; where the area below the level lip is uniform with a slope of 10% or less and the runoff will not re-concentrate after release; and where no traffic will be allowed over spreader.

Design Criteria

The design capacity shall be determined by estimating the peak flow from the 10-year storm. The drainage area shall be restricted to limit the maximum flows into the spreader to 30 cfs. The level spreader shall have the following minimum dimension:

Design Flow (cfs)	Minimum Entrance Width (ft.)	Depth (ft.)	End Width (ft.)	Length (ft.)
0-10	10	0.5	3	10
10-20	16	0.6	3	20
20-30	24	0.7	3	30

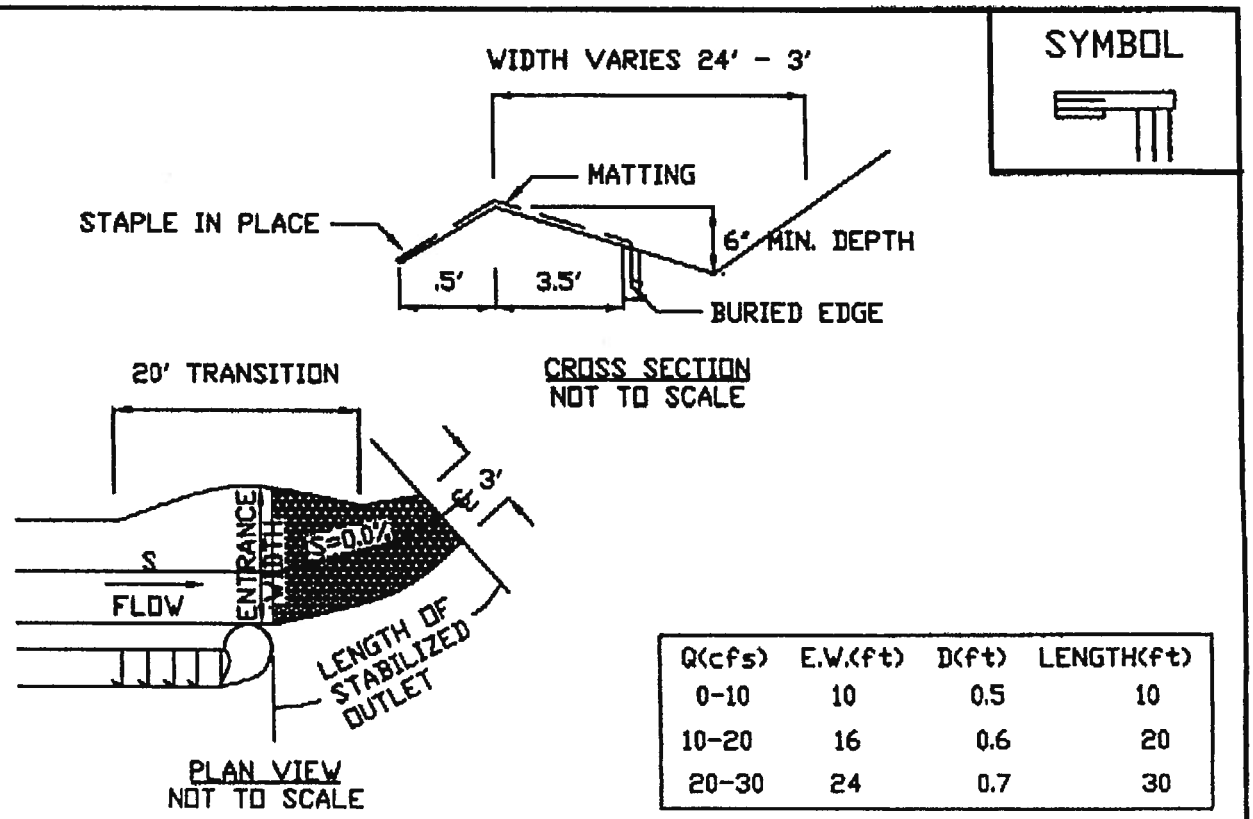
A transition section 20 feet in length shall be constructed from the width of the diversion or channel to the width of the spreader to ensure uniform outflow. This last transition section will blend the diversion grade to zero grade at the beginning of the spreader.

Construct the level lip in undisturbed soil to a uniform height and zeros grade over the length of the spreader. Protect the lip with an erosion resistant material or mat to prevent erosion and allow vegetation to become established.

The outlet area should be a generally smooth, well-vegetated areas no steeper than 10 percent.

See Figure 5A.5 on page 5A.14 for details.

Figure 5A.5
Level Spreader



Q(cfs)	E.W.(ft)	D(ft)	LENGTH(ft)
0-10	10	0.5	10
10-20	16	0.6	20
20-30	24	0.7	30

CONSTRUCTION SPECIFICATIONS

1. THE MATTING SHOULD BE A MINIMUM OF 4FT. WIDE EXTENDING 6 INCHES OVER THE LIP AND BURIED 6 INCHES DEEP IN A VERTICAL TRENCH ON THE LOWER EDGE. THE UPPER EDGE SHOULD BUTT AGAINST SMOOTHLY CUT SOD AND BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY DUTY WIRE STAPLES AT LEAST 12 INCHES IN LENGTH.
2. ENSURE THAT THE LIP IS LEVEL TO UNIFORMLY SPREAD DISCHARGE.
3. THE LIP SHALL BE CONSTRUCTED ON UNDISTURBED SOIL NOT FILL.
4. A 20 FOOT TRANSITION SECTION WILL BE CONSTRUCTED FROM THE DIVERSION CHANNEL TO THE SPREADER TO SMOOTHLY BLEND THE DIFFERENT DIMENSION AND GRADES.
5. THE RUNOFF DISCHARGE WILL BE OUTLETED ONTO A STABILIZED VEGETATED SLOPE NOT EXCEEDING 10%.
6. SEED AND MULCH THE DISTURBED AREA IMMEDIATELY AFTER CONSTRUCTION.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE	LEVEL SPREADER

Appendix H:
Soil Testing Results

BIBBO ASSOCIATES, LLP

Consulting Engineers - Planners

Sheet: 1 of 2

Project: Moss - Silvermine

Recorded By: Ed Delaney

Feature: Deep Test Results

Witnessed By: Kellard Engineering -

Date: November 21, 2013

Hole ID:	TP SB-1	Hole ID:	TP SB-2
Depth:	Description:	Depth:	Description:
0 - 48"	Sandy Loam	0 - 48"	Sandy Loam
48"-120"	Med. Fine Sandy Loam	48"-132"	Med. Fine Sands
120"-132"	Water		
			No Mot., Ledge, or Water

Hole ID:	TP SB-3	Hole ID:	TP SB-4
Depth:	Description:	Depth:	Description:
0 - 54"	Sandy Loam	0 - 48"	Sandy Loam
54"-144"	Med. Sands	48"-132"	Med. Fine Sands
	No Mot., Ledge, or Water		No Mot., Ledge, or Water

BIBBO ASSOCIATES, LLP

Consulting Engineers - Planners

Sheet: 2 of 2

Project: Moss - Silvermine

Recorded By: Ed Delaney

Feature: Deep Test Results

Witnessed By: Kellard Engineering -

Date: November 21, 2013

Hole ID: TP INF-1		Hole ID: TP INF-2	
Depth:	Description:	Depth:	Description:
0 - 36"	Sandy Loam	0 - 48"	Sandy Loam
36"-132"	Med. Fine Sands	48"-126"	Med. Fine Sands
	No Mot., Ledge, or Water		No Mot., Ledge, or Water
Hole ID:		Hole ID:	
Depth:	Description:	Depth:	Description:

BIBBO ASSOCIATES, LLP

Consulting Engineers - Planners

Sheet: 1 of 1

Project: Moss - Silvermine

Recorded By: Nick Hawvermale

Feature: Percolation Test Results

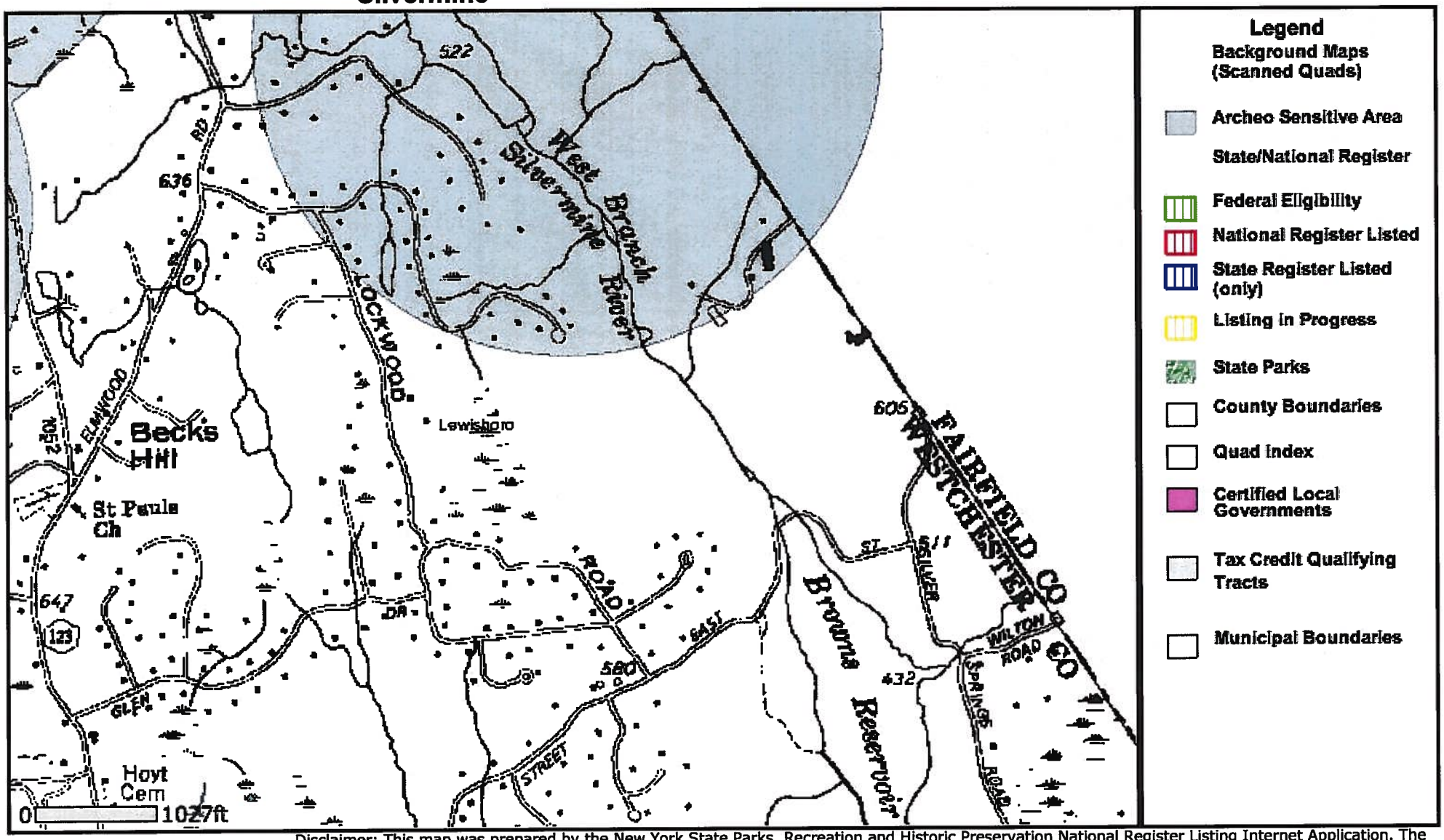
Witnessed By: Kellard Engineering - Vinnie

Date: June 20, 2014

Hole ID:	Run #	Time Start (Min.)	Time Stop (Min.)	Depth to Water From Ground Surface From (In.)	To (In.)	Time (Min.)	Drop (In.)	Rate (Min. / In.)	Inches per Hour
SB-2	1	9:53 AM	10:48 AM	56.00	59.00	55	3.00	18.33	3.30
	2	10:49 AM	11:50 AM	56.00	59.00	61	3.00	20.33	2.90
	3	11:51 AM	12:55 PM	56.00	59.00	64	3.00	21.33	2.80
SB-3	1	10:11 AM	11:11 AM	52.00	53.00	60	1.00	60.00	1.00
	2	11:14 AM	12:14 PM	52.00	53.00	60	1.00	60.00	1.00
	3	12:20 PM	1:20 PM	52.00	53.00	60	1.00	60.00	1.00
SB-4	1	11:39 AM	12:05 PM	58.00	61.00	26	3.00	8.67	6.90
	2	12:11 PM	12:41 PM	58.00	60.00	30	2.00	15.00	4.00
	3	12:42 PM	1:12 PM	58.00	59.50	30	1.50	20.00	3.00
INF-2	1	10:22 AM	10:41 AM	56.00	59.00	19	3.00	6.33	9.50
	2	10:42 AM	11:14 AM	56.00	59.00	30	3.00	10.00	6.00
	3	11:15 AM	11:53 AM	56.00	59.00	38	3.00	12.67	4.70
INF-1	1	11:30 AM	11:47 AM	60.00	63.00	17	3.00	5.67	10.60
	2	11:48 AM	12:16 PM	60.00	63.00	28	3.00	9.33	6.40
	3	12:17 PM	12:47 PM	60.00	63.00	30	3.00	10.00	6.00

Appendix I:
Map of Historic Places in Vicinity of Project

Silvermine



November 14, 2014

Disclaimer: This map was prepared by the New York State Parks, Recreation and Historic Preservation National Register Listing Internet Application. The information was compiled using the most current data available. It is deemed accurate, but is not guaranteed.

Appendix J:
NYS Stormwater Management Design Manual
Maintenance & Inspection Checklist

Stormwater Pond/Wetland Operation, Maintenance and Management Inspection Checklist

Project _____
Location: _____
Site Status: _____

Date: _____
Time: _____

Inspector: _____

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
1. Embankment and emergency spillway (Annual, After Major Storms)		
1. Vegetation and ground cover adequate		
2. Embankment erosion		
3. Animal burrows		
4. Unauthorized planting		
5. Cracking, bulging, or sliding of dam		
a. Upstream face		
b. Downstream face		
c. At or beyond toe		
downstream		
upstream		
d. Emergency spillway		
6.Pond, toe & chimney drains clear and functioning		
7.Seeps/leaks on downstream face		
8.Slope protection or riprap failure		
9. Vertical/horizontal alignment of top of dam "As-Built"		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
10. Emergency spillway clear of obstructions and debris		
11. Other (specify)		
2. Riser and principal spillway (Annual)		
Type: Reinforced concrete _____ Corrugated pipe _____ Masonry _____ 1. Low flow orifice obstructed		
2. Low flow trash rack. a. Debris removal necessary		
b. Corrosion control		
3. Weir trash rack maintenance a. Debris removal necessary		
b. corrosion control		
4. Excessive sediment accumulation insider riser		
5. Concrete/masonry condition riser and barrels a. cracks or displacement		
b. Minor spalling (<1")		
c. Major spalling (rebars exposed)		
d. Joint failures		
e. Water tightness		
6. Metal pipe condition		
7. Control valve a. Operational/exercised		
b. Chained and locked		
8. Pond drain valve a. Operational/exercised		
b. Chained and locked		
9. Outfall channels functioning		
10. Other (specify)		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
3. Permanent Pool (Wet Ponds) (monthly)		
1. Undesirable vegetative growth		
2. Floating or floatable debris removal required		
3. Visible pollution		
4. Shoreline problem		
5. Other (specify)		
4. Sediment Forebays		
1.Sedimentation noted		
2. Sediment cleanout when depth < 50% design depth		
5. Dry Pond Areas		
1. Vegetation adequate		
2. Undesirable vegetative growth		
3. Undesirable woody vegetation		
4. Low flow channels clear of obstructions		
5. Standing water or wet spots		
6. Sediment and / or trash accumulation		
7. Other (specify)		
6. Condition of Outfalls (Annual , After Major Storms)		
1. Riprap failures		
2. Slope erosion		
3. Storm drain pipes		
4.Endwalls / Headwalls		
5. Other (specify)		
7. Other (Monthly)		
1. Encroachment on pond, wetland or easement area		

Maintenance Item	Satisfactory/ Unsatisfactory	Comments
2. Complaints from residents		
3.Aesthetics a. Grass growing required		
b. Graffiti removal needed		
c. Other (specify)		
4. Conditions of maintenance access routes.		
5. Signs of hydrocarbon build-up		
6. Any public hazards (specify)		
8. Wetland Vegetation (Annual)		
1. Vegetation healthy and growing Wetland maintaining 50% surface area coverage of wetland plants after the second growing season. (If unsatisfactory, reinforcement plantings needed)		
2. Dominant wetland plants: Survival of desired wetland plant species Distribution according to landscaping plan?		
3. Evidence of invasive species		
4. Maintenance of adequate water depths for desired wetland plant species		
5. Harvesting of emergent plantings needed		
6. Have sediment accumulations reduced pool volume significantly or are plants "choked" with sediment		
7. Eutrophication level of the wetland.		
8. Other (specify)		

Comments:

Actions to be Taken:

_____

_____

_____

_____

Infiltration Trench Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Trench surface clear of debris		
Inflow pipes clear of debris		
Overflow spillway clear of debris		
Inlet area clear of debris		
2. Sediment Traps or Forebays (Annual)		
Obviously trapping sediment		
Greater than 50% of storage volume remaining		
3. Dewatering (Monthly)		
Trench dewaters between storms		
4. Sediment Cleanout of Trench (Annual)		
No evidence of sedimentation in trench		
Sediment accumulation doesn't yet require cleanout		
5. Inlets (Annual)		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Good condition		
No evidence of erosion		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repair		
No evidence of erosion		
7. Aggregate Repairs (Annual)		
Surface of aggregate clean		
Top layer of stone does not need replacement		
Trench does not need rehabilitation		

Comments:

_____

_____

_____

_____

_____

_____

Actions to be Taken:

_____

_____

_____

_____

_____

_____

Open Channel Operation, Maintenance, and Management Inspection Checklist

Project:
Location:
Site Status:

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Contributing areas clean of debris		
2. Check Dams or Energy Dissipators (Annual, After Major Storms)		
No evidence of flow going around structures		
No evidence of erosion at downstream toe		
Soil permeability		
Groundwater / bedrock		
3. Vegetation (Monthly)		
Mowing done when needed		
Minimum mowing depth not exceeded		
No evidence of erosion		
Fertilized per specification		
4. Dewatering (Monthly)		
Dewaters between storms		

MAINTENANCE ITEM	SATISFACTORY/ UNSATISFACTORY	COMMENTS
5. Sediment deposition (Annual)		
Clean of sediment		
6. Outlet/Overflow Spillway (Annual)		
Good condition, no need for repairs		
No evidence of erosion		

Comments:

Actions to be Taken:

Appendix K:
NYSDEC Construction Duration Inspection Form

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)
Yes No NA
[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap
Yes No NA
[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin
Yes No NA
[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

Appendix L:
Contractor Certification Document

CONTRACTOR'S CERTIFICATION

PROJECT NAME: **SILVERMINE PRESERVE SUBDIVISION**

PROJECT ADDRESS: **LOCKWOOD ROAD, LEWISBORO, NY**

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

Name: _____

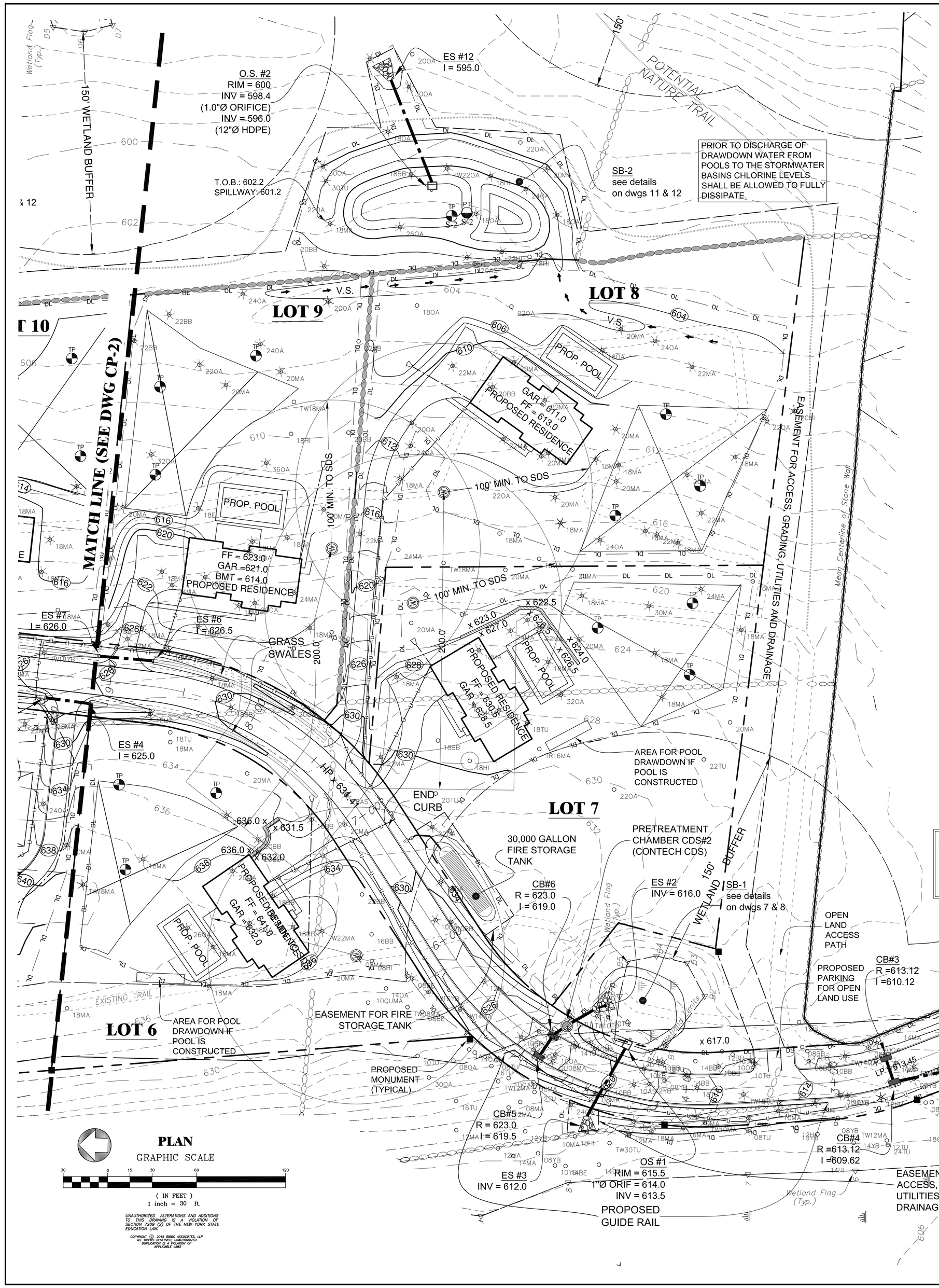
Business: _____

Address: _____

Phone: _____

_____ _____
Contractor Signature Date

_____ _____
Trained Contractor Signature Date



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DRAINAGE STRUCTURE & PIPE SCHEDULE

STRUCTURE						PIPE		
FROM	TO	TYPE	RIM EL.	SIDE INLET	INV OUT / INV IN	LENGTH	SLOPE	DIA
CB #1	-	CL	612.4	-	609.4	15'	2.7%	12" HDPE
-	CB #2	CL	612.2	-	609.0			
CB #2	-	CL	612.2	-	609.0	65'	2.3%	12" HDPE
-	DMH #1	DIV MH	612.0	-	607.5			
DMH #1	-	DIV MH	612.0	-	607.5	7'	7.1%	12" HDPE
-	CDS #1	HDS	612.0	-	607.0			
DMH #1	-	DIV MH	612.0	-	609.0	67'	3.0%	18" HDPE
-	ES #1	ES	-	-	607.0			
CB #3	-	CL	613.12	-	610.12	14'	3.6%	12" HDPE
-	CB #4	CL	613.12	-	609.62			
CB #4	-	CL	613.12	-	609.62	204'	1.0%	12" HDPE
-	DMH #1	DIV MH	612.0	-	607.5			
CB #5	-	CL	623.0	-	619.5	14'	3.6%	12" HDPE
-	CB #6	CL	623.0	-	619.0			
CB #6	-	CL	623.0	-	619.0	6'	16.7%	12" HDPE
-	CDS #2	HDS	622.0	-	618.0			
CDS #2	-	HDS	622.0	-	618.0	17'	11.8%	15" HDPE
-	ES #2	ES	-	-	616.0			
OS #1	-	OS	615.5	-	613.5	63'	4.0%	15" HDPE
-	ES #3	ES	-	-	611.0			
ES #4	-	ES	-	-	625.0	29'	2.8%	12" HDPE
-	ES #5	ES	-	-	624.2			
ES #6	-	ES	-	-	626.5	35'	1.4%	12" HDPE
-	ES #7	ES	-	-	626.0			
ES #8	-	ES	-	-	619.5	42'	2.4%	12" HDPE
-	ES #9	ES	-	-	618.5			
ES #10	-	ES	-	-	620.5	90'	2.2%	12" HDPE
-	ES #11	ES	-	-	618.5			
CB #7	-	SI	617.0	616.0	612.5	69'	0.7%	12" HDPE
-	CB #8	SI	617.0	616.0	612.0			
CB #8	-	SI	617.0	616.0	612.0	289'	5.4%	15" HDPE
-	DMH #2	DMH	603.0	-	596.5			
YD #1	-	YD	600.5	-	597.5	54'	1.9%	12" HDPE
-	DMH #2	DMH	603.0	-	596.5			
DMH #2	-	DMH	603.0	-	596.5	58'	8.6%	15" HDPE
-	CDS #3	HDS	595.0	-	591.5			
CDS #3	-	HDS	595.0	-	591.5	29'	25.9%	15" HDPE
-	ES #14	ES	-	-	584.0			
CB #9	-	CL	625.0	-	620.0	24'	1.0%	15" HDPE
-	CDS #4	HDS	626.0	-	619.75			
CB #9	-	CL	625.0	-	621.5	38'	1.3%	18" HDPE
-	LS #1	LS	-	-	621.0			
OS #2	-	OS	600.0	-	596.0	74'	1.4%	12" HDPE
-	ES #12	ES	-	-	595.0			
OS #3	-	OS	601.0	-	596.0	37'	1.4%	12" HDPE
-	ES #13	ES	-	-	595.5			
OS #4	-	OS	587.0	-	583.5	21'	2.4%	15" HDPE
-	ES #15	ES	-	-	583.0			

SI = SIDE INLET CATCH BASIN
CL = FLAT TOP CATCH BASIN
YD = YARD DRAIN (2' x 2' INSIDE DIMENSIONS)
DMH = DRAIN MANHOLE
ES = END SECTION
HDS = HYDRODYNAMIC SEPARATOR
DIV MH = DIVERSION MANHOLE
INF = INFILTRATION CHAMBERS
OS = OUTLET STRUCTURE

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

DATE: 05-09-05

REVISIONS:

06-16-11	Conservation Plan
09-15-11	Review / Response
10-31-11	DEC Review:
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

SITE LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- 150' WETLAND SETBACK
- 100' STATE WETLAND ADJACENT AREA
- WETLAND BOUNDARY (STATE AND LOCAL) (FLAGGED BY TIM MILLER ASSOCIATES) RECONFIRMED BY EVANS ASSOCIATES, 2010
- EXISTING STONE WALL TO REMAIN
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- LIMIT OF DISTURBANCE TOTAL ESTIMATED DISTURBANCE = 13.9 Ac ±
- DRAINAGE, UTILITY AND ACCESS EASEMENT
- GUIDE RAIL
- VEGETATED SWALE
- PROPOSED ROOF & FOOTINGS DRAIN
- PROPOSED CATCH BASIN & DRAINAGE PIPING
- PROPOSED STORMWATER BASIN (SEE PLAN)
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- PROP. PROPERTY LINE
- PROPOSED DWELLING AND DRIVEWAY
- PROPOSED S. D. S.
- PROPOSED WELL WITH WELL SETBACK
- DEEP TEST HOLE
- PROPOSED UNDERGROUND UTILITY LINES

BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MILL POND OFFICES
270 KISCO AVENUE, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-5905
TIMOTHY S. ALLEN, P.E.

ENVIRONMENTAL CONSULTANT:
EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
205 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:
CONSTRUCTION PLAN I
with 3-way stop intersection

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:	
Checked by:	
Doc. ID:	
EAEC Proj. No.:	809
DWG. NO.:	

CP-1
SHEET 4 OF 12

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DRAINAGE STRUCTURE & PIPE SCHEDULE

STRUCTURE						PIPE		
FROM	TO	TYPE	RIM EL.	SIDE INLET	INV OUT INV IN	LENGTH	SLOPE	DIA
CB #1	-	CL	612.4	-	609.4	15'	2.7%	12" HDPE
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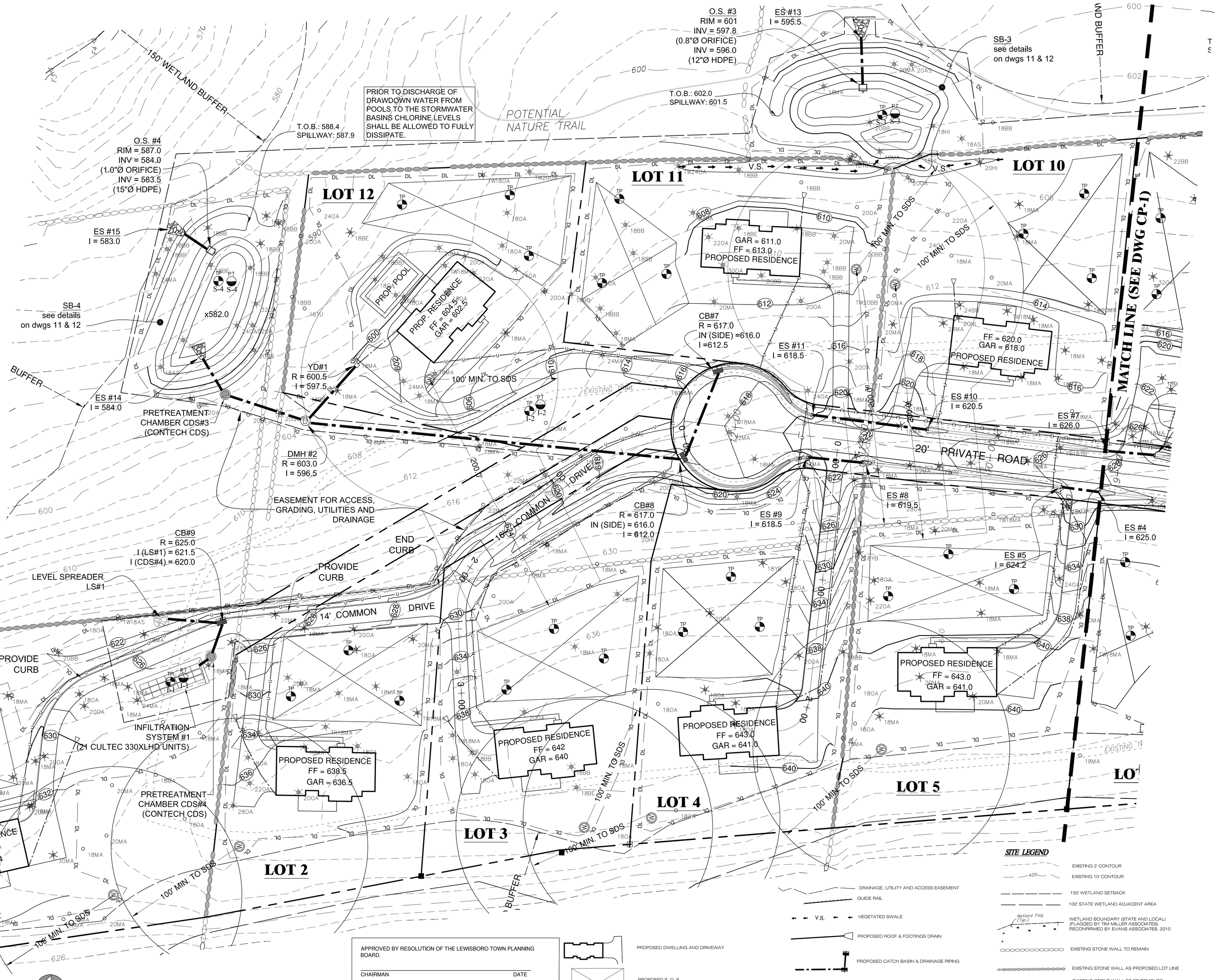

PLAN
GRAPHIC SCALE
30 0 15 30 60 120
(IN FEET)
1 inch = 30 ft.

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DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

PROPOSED DWELLING AND DRIVEWAY
PROPOSED S. D. S.
PROPOSED WELL WITH WELL SETBACK
100' MIN
DEEP TEST HOLE

SITE LEGEND

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TOTAL ESTIMATED DISTURBANCE = 13.9 Ac ±

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12-10-15	Review / Response
3-16-16	Review / Response

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EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
185 Post Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:
CONSTRUCTION PLAN II
with 3-way stop intersection

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

CP-2
SHEET 5 OF 12

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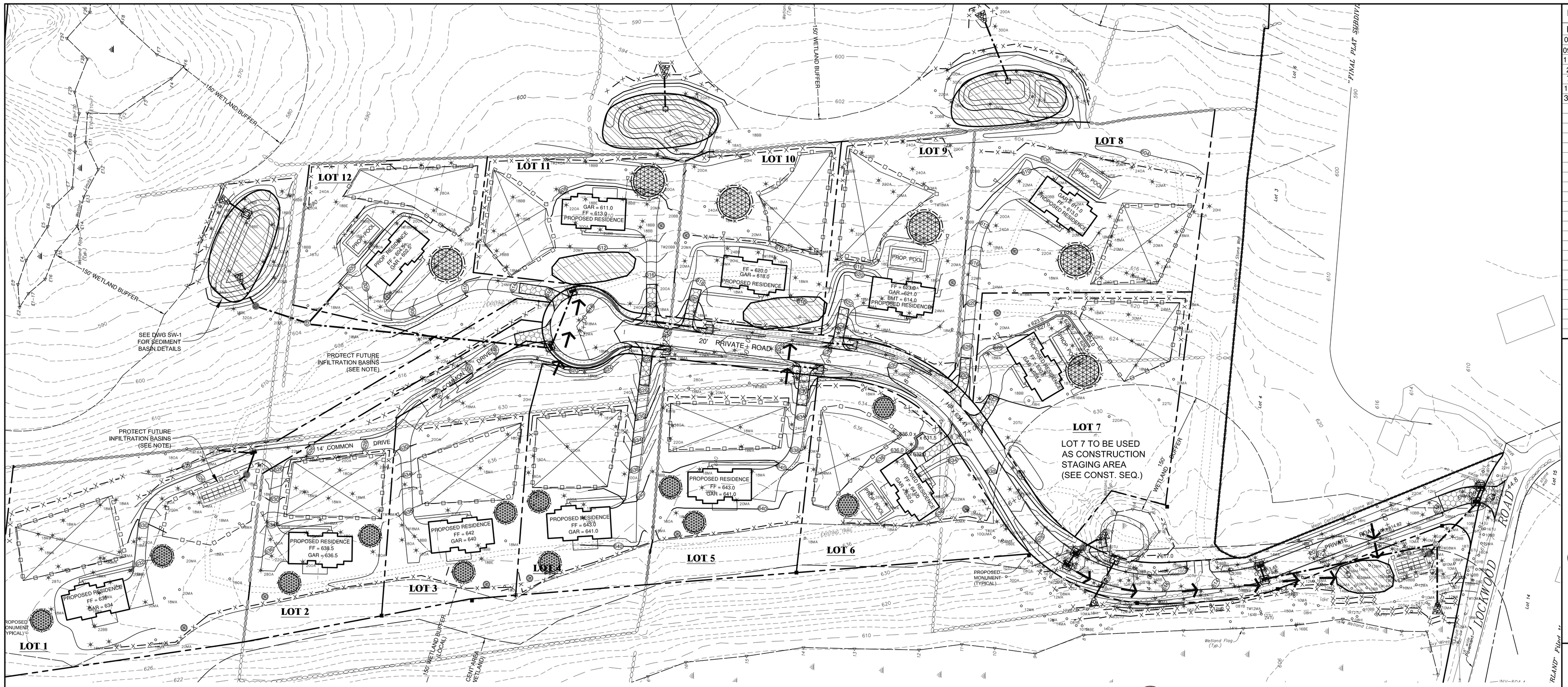

GENERAL EROSION CONTROL PROGRAM

NOTE: THESE GUIDELINES ARE PROVIDED AS A GENERIC AID TO THE CONTRACTOR IN THE PROPER IMPLEMENTATION OF EROSION AND SEDIMENTATION CONTROLS. WHERE SITE-SPECIFIC MEASURES AND PROCEDURES HAVE BE ESTABLISHED (REFER TO "GENERALIZED CONSTRUCTION SEQUENCE" ON IPP-1 AND "SITE SPECIFIC EROSION CONTROLS AND SEQUENCING" ON EC-3) SUCH MEASURES AND PROCEDURES TAKE PRECEDENCE.

PURPOSE

ALL CONSTRUCTION ACTIVITIES INVOLVING THE REMOVAL OR DEPOSITION OF SOILS ARE TO BE PROVIDED WITH APPROPRIATE PROTECTIVE MEASURES TO INHIBIT EROSION AND TO CONTAIN SEDIMENT DEPOSITION WITHIN THE AREA UNDER DEVELOPMENT. THOSE METHODS DEEMED HIGHLY EFFECTIVE ARE DESCRIBED BELOW AND SHOWN ON THIS DRAWING.

REQUIRED PROCEDURES

1. PRIOR TO START OF SITE CONSTRUCTION: ALL CONSTRUCTION ENTRANCES TO SITE SHALL BE INSTALLED AND STABILIZED. ALL TEMPORARY SILTATION BASINS AND/OR OTHER APPROVED SEDIMENT CONTROL MEASURES SHALL BE IN PLACE WHERE MOST EFFECTIVE.

2. ALL TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL REMAIN IN PLACE, MAINTAINED REGULARLY IN PROPER FUNCTIONING CONDITION, UNTIL ALL AREAS EXPOSED DURING SITE CONSTRUCTION HAVE BEEN SUITABLY STABILIZED WITH PAVEMENT, PERMANENT STRUCTURES AND/OR FINAL VEGETATION COVER.

CONSTRUCTION GUIDELINES

A. WHEREVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED (BY FLAGGING OR OTHER EFFECTIVE MEANS).

B ONLY THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING CONSTRUCTION.

C SITE CONSTRUCTION ACTIVITIES SHALL START WHENEVER POSSIBLE AT THE NEAREST POINT UPSTREAM OF THESE SILT TRAPS AND PROCEED TO ACTIVITIES FURTHER UPSTREAM.

D. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE PERIOD OF EXPOSURE SHALL BE KEPT TO A MINIMUM, INSTALLING PERMANENT AND FINAL VEGETATION, PAVING, STRUCTURES, ETC., AT THE EARLIEST POSSIBLE OPPORTUNITY.

E. CONSTRUCTION EQUIPMENT SHALL NOT UNNECESSARILY CROSS LIVE STREAMS EXCEPT BY MEANS OF BRIDGES, CULVERTS OR OTHER APPROVED MEANS.

F. SEDIMENT CONTROL MEASURES INSTALLED IN LIVE STREAMS SHOULD GENERALLY BE MADE OF STONE AND MUST BE SPECIFICALLY DESIGNED, TAKING INTO ACCOUNT THE SIZE OF DRAINAGE BASIN ANTICIPATED STREAM FLOWS AND STREAM VELOCITIES.

G. NO CONSTRUCTION ACTIVITIES WITHIN OR NEAR LIVE STREAMS (CREATION OF PONDS, REALIGNMENT OF STREAM CHANNELS, INSTALLATION OF LARGE CULVERTS, ETC.) SHALL BEGIN UNTIL APPROPRIATE MEASURES FOR TEMPORARILY DIVERTING STREAM FLOW PAST THE WORK SECTION AND REQUIRED DOWNSTREAM SEDIMENT CONTROLS ARE IN PLACE. IN GENERAL THESE SEDIMENT CONTROLS ARE TO BE REMOVED ONLY WHEN ALL CONSTRUCTION ACTIVITY UPSTREAM HAS BEEN SATISFACTORILY COMPLETED AND THE STREAM FLOWS CLEAR.

H. NOTES ON SITE STABILIZATION

1. ALL TOPSOIL TO BE STRIPPED FROM THE AREA BEING DEVELOPED, SHALL BE STOCKPILED NOT LESS THAN 50 FEET FROM ANY BODY OF SURFACE WATER AND SHALL BE IMMEDIATELY SEEDED WITH MANHATTAN RYE GRASS.

2. ON ALL EMBANKMENT FILL SLOPES, TOPSOIL SHALL BE STRIPPED AT LEAST FIVE (5) FEET WIDER THAN REQUIRED FOR THE EMBANKMENT TOE OF SLOPE, A PROTECTIVE BERM OF TOPSOIL SHALL BE LEFT IN THIS AREA, RUNNING PARALLEL TO THE CONTOURS FOR THE PURPOSE OF RESTRICTING DRAINAGE RUNOFF. THE TOPSOIL BERM SHALL BE SEEDED AS REQUIRED FOR STOCKPILES.

3. IN ADDITION TO THE ABOVE, FURTHER EROSION AND SILTATION CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO SLIT TRENCH SILT TRAPS, STAKED HAYBALES OR BRUSH CHECKDAMS, SHALL ALSO BE EMPLOYED WHERE

4. ALL CUT SLOPES AND EMBANKMENTS FILLS ARE TO BE IMMEDIATELY LAID BACK AND STABILIZED AS FOLLOWS:

A. GRADED TO FINISHED SLOPES

B. SCARIFIED

C. TOPSOILED WITH NOT LESS THAN FOUR (4) INCHES OF SUITABLE TOPSOIL MATERIAL

D. SEEDED WITH FOLLOWING GRASS MIXTURE (BY WEIGHT) OR APPROVED EQUAL:

45 % KENTUCKY BLUE GRASS
45 % CREEPING RED FESCUE
10 % PERENNIAL RYE GRASS

SEED SHALL BE APPLIED AT THE RATE OF NOT LESS THAN TWO (2) POUNDS PER 1000 SQUARE FEET

E. MULCHED WITH NOT LESS THAN ONE (1) INCH AND NOT MORE THAN THREE (3) INCHES OF STRAW AT TWO (2) TONS/ACRE AND ANCHORED IN A SUITABLE MANNER. WHERE SLOPES EXCEED 1:3, SUITABLY ANCHORED NETTING SUCH AS TENEX N030 OR APPROVED EQUAL SHALL BE UTILIZED.

STORMWATER MAINTENANCE PROGRAM

RESPONSIBLE PARTIES

SHORT TERM / DURING CONSTRUCTION

D. HIGGINS, S. HAFT AND E. MOSS
dba SILVERMINE GROUP
45 BENDER WAY
POUND RIDGE, NEW YORK 10576

LONG TERM / AFTER CONSTRUCTION

INDIVIDUAL HOMEOWNERS T.B.D.
HOMEOWNERS ASSOCIATION
(MAINTENANCE OF STORMWATER FACILITIES)

SHORT TERM / CONSTRUCTION MAINTENANCE PROGRAM

1. REFERENCE IS HEREBY MADE TO DRAWINGS EC AND D-1 FOR EROSION CONTROL PROGRAM, NOTES AND DETAILS

2. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED ON A BI-WEEKLY BASIS AND/OR AFTER SIGNIFICANT RAINFALL EVENTS. THE FOLLOWING CHECKLIST SHALL BE USED AS A GUIDELINE FOR INSPECTION AND MAINTENANCE: :

A. ALL STAKED SILT FENCE SHALL BE INSPECTED AND EXCESS SEDIMENTATION REMOVED TO STOCKPILE AREAS. AREAS OF SIGNIFICANT SEDIMENT ENTRAPMENT SHALL BE BACKED-UP WITH A ROW OF STAKED HAYBALES.

B. ALL TEMPORARY SEDIMENT TRAPS, WATER BREAKS, DRAINAGE STRUCTURES AND DETENTION BASINS SHALL BE INSPECTED WEEKLY AND AFTER HEAVY RAINS AND EXCESS SEDIMENTATION REMOVED TO STOCKPILE AREAS. DETENTION BASINS SHALL BE CLEANED TO ORIGINAL DEPTH WHEN SEDIMENT HAS ACCUMULATED UP TO WITHIN 6" OF THE LOW LEVEL OUTLET IN ORDER TO INSURE PROPER HYDRAULIC FUNCTIONING. ALL OTHER DRAINAGE STRUCTURES SHALL BE CLEAN WHEN FILLED TO 1/2 OF INTENDED CAPACITY.

C. IMMEDIATELY PRIOR TO ISSUANCE OF THE FIRST CERTIFICATE OF OCCUPANCY, ALL DRAINAGE STRUCTURES AND FACILITIES SHALL BE BROUGHT TO THEIR PROPER FUNCTION AND USE AND CLEANED TO THE LINE AND GRADES SHOWN ON THESE DRAWINGS.

D. ALL ASPECTS OF THE ROADWAY AND DRAINAGE SYSTEM SHALL BE FULLY BONDED TO ENSURE PROPER COMPLIANCE WITH THE APPROVED PLANS.

LONG TERM/ROADS AND DRAINAGE MAINTENANCE

* : AS RECOMMENDED BY BIBBO ASSOCIATES, LLP, THE ULTIMATE MAINTENANCE AND MAINTENANCE SCHEDULE WILL BE THE RESPONSIBILITY OF THE HOMEOWNERS ASSOCIATION.

1. IT IS RECOMMENDED THAT ALL ASPECTS OF THE DRAINAGE AND ROADWAY SYSTEM BE INSPECTED AND MAINTAINED EVERY SIX MONTHS. INSPECTIONS AND MAINTENANCE SHOULD BE SCHEDULED FOLLOWING THE WINTER MONTHS (MARCH OR APRIL) AND DURING THE FALL (OCTOBER OR NOVEMBER).

2. THE INSPECTION AND MAINTENANCE OF THE FACILITIES SHOULD INCLUDE THE FOLLOWING:

A. INSPECT CATCH BASIN SUMPS AND GRATES; DETENTION SYSTEM CAPACITIES; VELOCITY DISSIPATOR INLETS/OUTLETS; AND ALL ROADWAYS FOR EXCESS SEDIMENT AND DEBRIS. ANY APPRECIABLE SEDIMENT WHICH ADVERSELY AFFECTS THE FUNCTION OF A DRAIN STRUCTURE SHOULD BE REMOVED TO AN APPROVED DISPOSAL AREA FOR POSSIBLE RECLAMATION. SAID INSPECTIONS AND PROPOSED MAINTENANCE WORK SHOULD BE MADE IN THE PRESENCE AND IN CONSULTATION WITH THE TOWN ENGINEER. ANY NOTED AREAS OF CHRONIC SEDIMENTATION OR EROSION SHALL BE BROUGHT TO THE ATTENTION OF THE TOWN ENGINEER AND DESIGN ENGINEER FOR A LONG TERM DESIGN SOLUTION.

B. DETENTION AREA PLANTINGS SHALL BE INSPECTED ON A YEARLY BASIS (DURING THE SPRING GROWING SEASON) IN THE PRESENCE OF THE TOWN ENGINEER. THE PLANT HEALTH AND MORTALITY RATE SHALL BE CLOSELY MONITORED AND PLANTING SHOULD BE REPLACED AND/OR SUPPLEMENTED AS NECESSARY.

PLAN

GRAPHIC SCALE

0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

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SITE LEGEND

- PROPOSED 2' CONTOUR
- 420 PROPOSED 10' CONTOUR
- PROP. PROPERTY LINE
- PROPOSED DWELLING AND DRIVEWAY
- PROPOSED S. D. S.
- W PROPOSED WELL
- EXISTING TREE TO BE PROTECTED
- EXISTING TREE TO BE REMOVED
- EXISTING 2' CONTOUR
- 420 EXISTING 10' CONTOUR
- 150' WETLAND SETBACK
- 100' STATE WETLAND ADJACENT AREA
- Wetland Flag (Typ.) WETLAND BOUNDARY (STATE AND LOCAL) (FLAGGED BY TIM MILLER ASSOCIATES) RECONFIRMED BY EVANS ASSOCIATES, 2010
- PROPOSED CATCH BASIN & DRAINAGE PIPING
- PROPOSED STORMWATER BASIN OR INFILTRATION BASIN (SEE PLAN)

EROSION CONTROL LEGEND

- X—X—X—X—X STAKED SILT FENCE
- CONSTRUCTION ENTRANCE
- TOPSOIL STOCKPILE
- WATER BREAK (TEMPORARY DIVERSION)
- DRAIN INLET SEDIMENT FILTER
- TEMPORARY SILT TRAP / SEDIMENT BASINS
- ORANGE CONSTRUCTION FENCING

NOTE: AREAS DESIGNATED FOR SEWAGE TREATMENT AND STORMWATER INFILTRATION ARE TO BE PROTECTED FROM CONSTRUCTION TRAFFIC

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

DATE: 05-09-05

REVISION	
06-16-11	Conservation Plan
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

ENGINEERING CONSULTANT:
BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MILL POND OFFICES
299 ROUTE 100, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-0805
TIMOTHY S. ALLEN, P.E.

ENVIRONMENTAL CONSULTANT:
EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
285 Main Street
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE: EROSION CONTROL PLAN

PROJECT NAME: SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

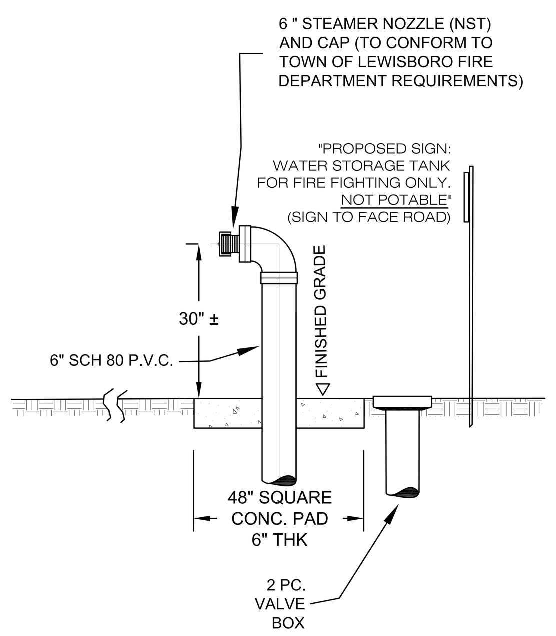
Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

EC-1

SHEET 6 OF 12

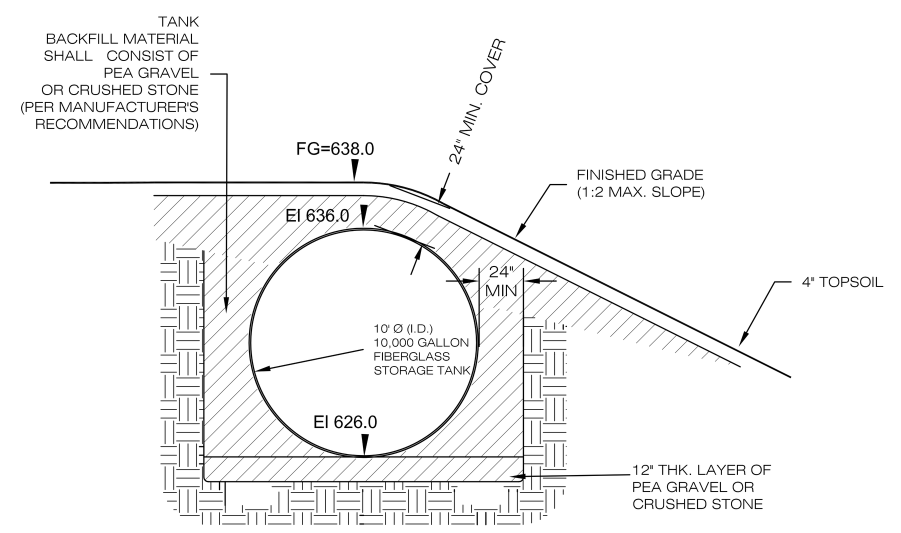
P:\Projects\MOSS-SILVER\dwg\Moss-Silvermine Subd 2-11-16.dwg, E C PLAN, 3/31/2016 11:45:05 AM, NHaverstraile, 1:1

P:\Projects\MOSS-SILVER\dwg\Moss-Silvermine Subd 2-11-16.dwg, EC DETAILS, 3/31/2016 11:49:13 AM, NHawvermale, 1:1



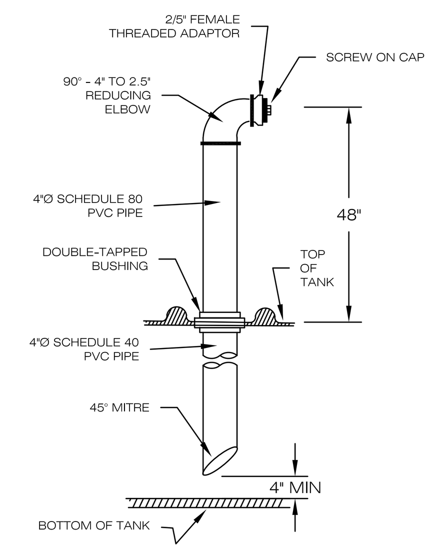
POST HYDRANT DETAIL

NO SCALE



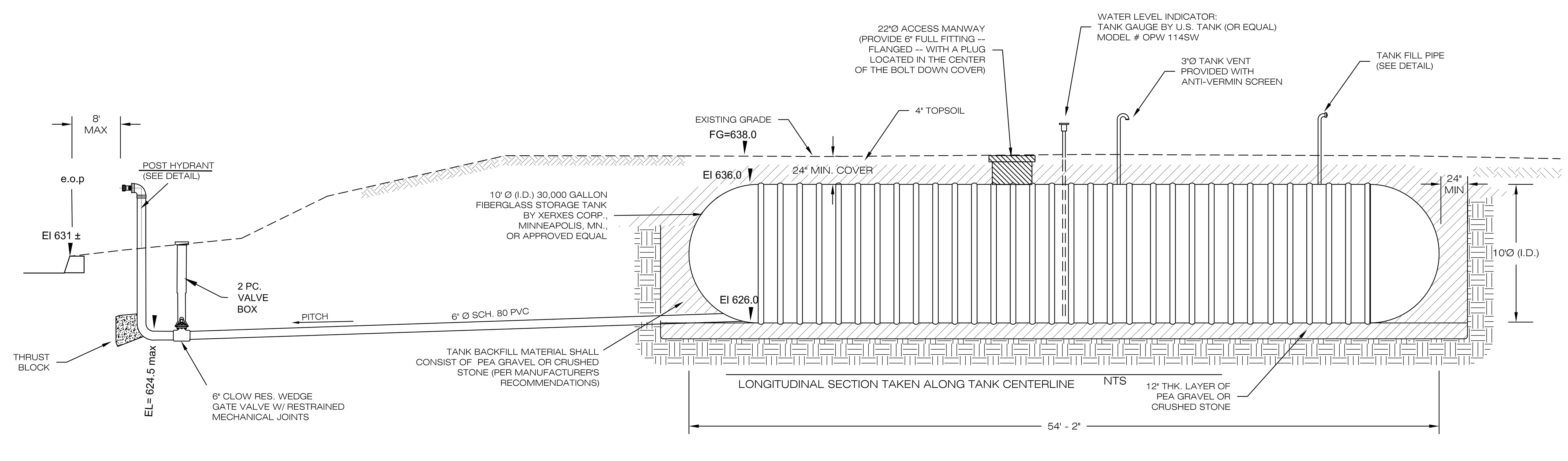
WATER STORAGE TANK INSTALLATION

CROSS SECTION TAKEN AT CENTERLINE OF TANK
NTS



TANK FILL DETAIL

NO SCALE

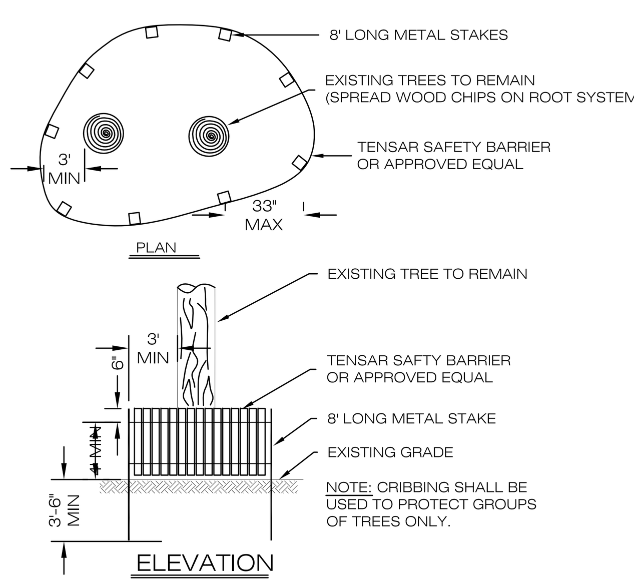


WATER STORAGE TANK INSTALLATION

LONGITUDINAL SECTION ALONG TANK TO HYDRANT
NTS

30,000 GALLON WATER STORAGE TANK INSTALLATION

SEE CONSTRUCTION PLAN FOR LOCATION AND GRADING
NTS

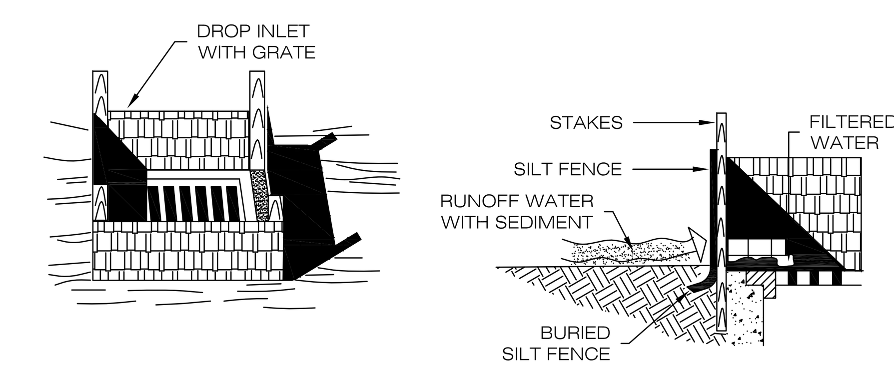


CRIBBING- EXISTING TREE PROTECTION

N.T.S.

TREE PROTECTION SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITY.

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.	
CHAIRMAN	DATE
SECRETARY	DATE
TOWN ENGINEER	DATE
APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS	
DANIEL HIGGINS, OWNER RIDGEVIEW DESIGNER BUILDERS, INC.	DATE



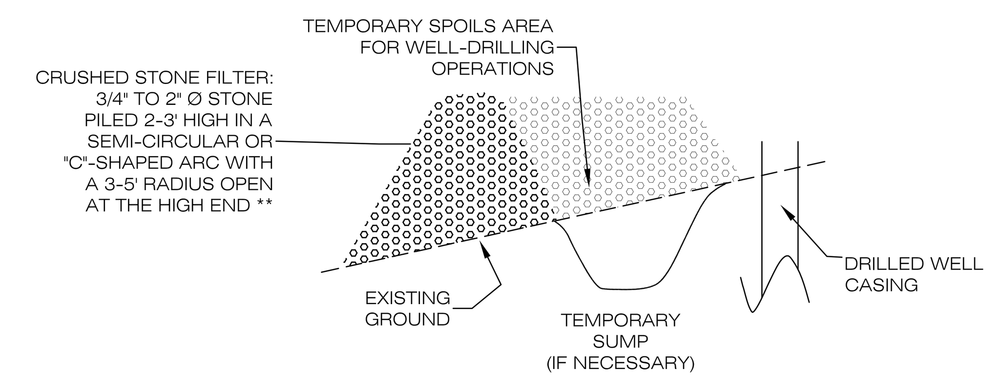
SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLCABLE WHERE THE INLET DRAINS A RELATIVELY FLAT AREA (SLOPES NO GREATER THAN 5 % WHERE SHEET OR OVERLAND FLOWS (NOT EXCEEDING 0.5 c.f.s.) ARE TYPICAL. WHERE SLOPES OF FLOWS ARE GREATER OR WHERE CONCENTRATED FLOWS ARE ANTICIPATED, USE HORIZONTAL BRACES ACROSS STAKES AND SURROUND SILT FENCE WITH CRUSHED STONE.

DRAIN INLET SEDIMENT FILTER

N.T.S.

MAINTENANCE: DRAIN INLET SEDIMENT FILTERS SHALL BE INSPECTED AFTER MAJOR RAIN EVENTS TO INSURE PROPER FUNCTIONING. REPAIR OR REPLACE AS NECESSARY UNTIL DIRECTED TO BE REMOVED.



CRUSHED STONE FILTER DAM

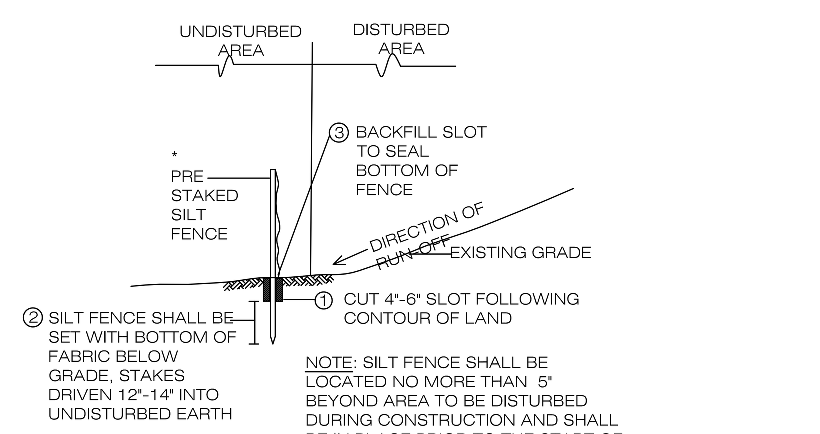
N.T.S.

** IF FILTER DAM IS TO BE USED TO PROVIDE TEMPORARY PROTECTION FOR OUTLET STRUCTURES OF S.T.B.'s, STONE SHALL BE PLACED IN A "U" SHAPE AT LEAST 3 TO 5' FROM OUTLET STRUCTURE AND SHALL EXTEND TO THE BASIN EMBANKMENT.

MAINTENANCE:

WHERE THIS PRACTICE IS USED AS TEMPORARY PROTECTION FOR S.T.B. OUTLETS: MONTHLY INSPECTIONS SHALL BE MADE TO INSURE PROPER FUNCTIONING. SEDIMENT BUILD-UP SHALL BE REMOVED WHEN LEVEL REACHES 1/3 HEIGHT OF DAM. EVALUATE FILTER DAMS AND REPLACE, IF NECESSARY.

WHERE THIS PRACTICE IS USED DURING INSTALLATION OF DRILLED WELL, THIS PRACTICE MAY BE REMOVED ONCE THE DRILLING OPERATION HAS BEEN COMPLETED. ALL COLLECTED SPOILS SHALL BE REMOVED TO APPROPRIATE TEMPORARY STOCKPILE AREA.

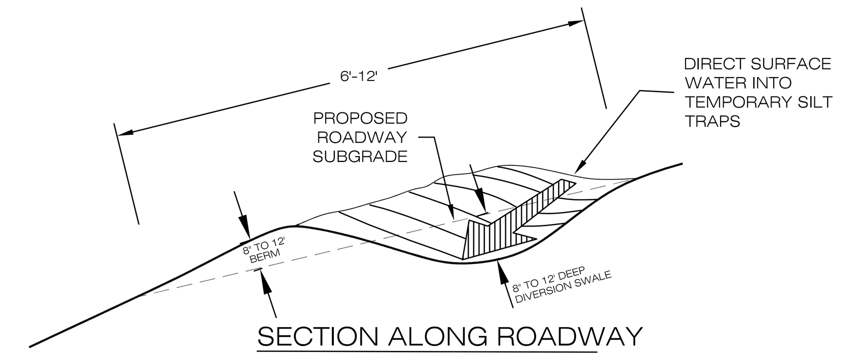


TYPICAL SILT FENCE INSTALLATION

N.T.S.

* USE "KONTROL FENCE " AS MANUFACTURED BY NKOLON (OR APPROVED EQUAL)

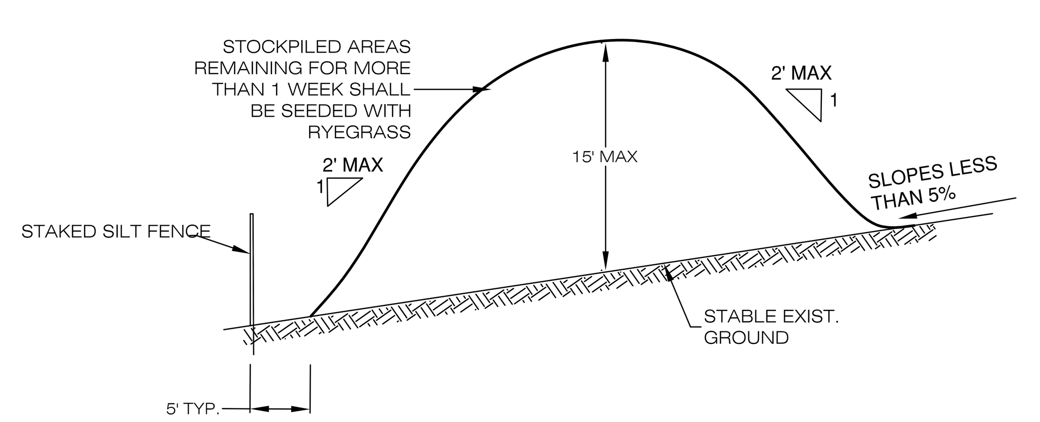
MAINTENANCE: SILT FENCE SHALL BE INSPECTED AT REGULAR INTERVALS (MONTHLY) AND AFTER MAJOR RAIN EVENTS TO INSURE PROPER FUNCTIONING. REMOVE ACCUMULATED SEDIMENT WHEN LEVEL REACHES 1/3 HEIGHT OF FENCE. REPAIR OR REPLACE AS NECESSARY UNTIL DIRECTED TO BE REMOVED.



WATER BREAK

N.T.S.

MAINTENANCE: WATER BREAKS SHALL BE INSPECTED AT REGULAR INTERVALS (MONTHLY) AND AFTER MAJOR RAIN EVENTS TO INSURE PROPER FUNCTIONING. REPAIR AS NECESSARY UNTIL DIRECTED TO BE REMOVED.



TYPICAL SOIL STOCKPILE DETAIL

N.T.S.

MAINTENANCE: STIL FENCING AROUND STOCKPILES SHALL BE INSPECTED AT REGULAR INTERVALS (MONTHLY) AND AFTER MAJOR RAIN EVENTS TO INSURE PROPER FUNCTIONING. REPAIR/REPLACE AS NECESSARY UNTIL DIRECTED TO BE REMOVED.

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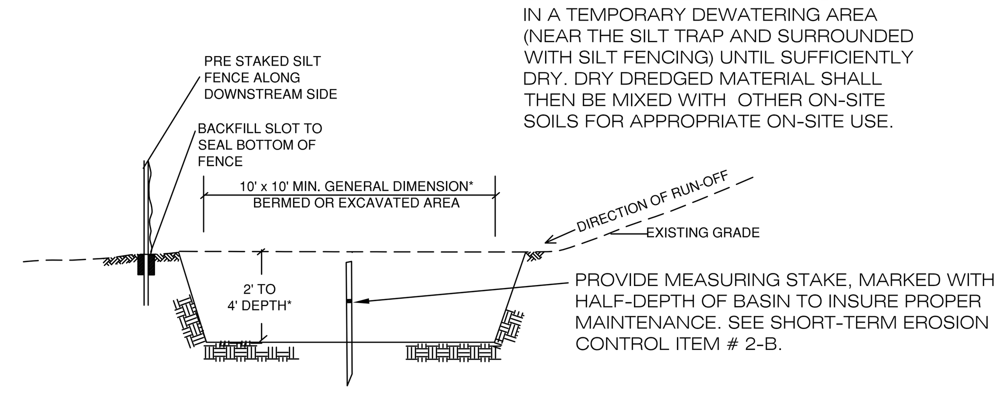


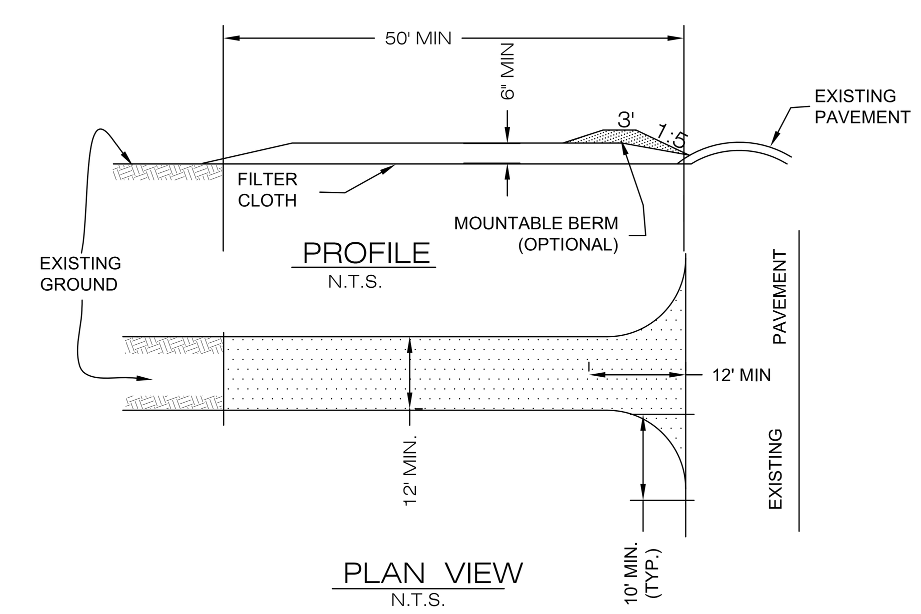
NOTE: MATERIAL REMOVED FROM SILT TRAP AREA SHALL BE DEPOSITED IN A TEMPORARY DEWATERING AREA (NEAR THE SILT TRAP AND SURROUNDED WITH SILT FENCING) UNTIL SUFFICIENTLY DRY. DRY DREDGED MATERIAL SHALL THEN BE MIXED WITH OTHER ON-SITE SOILS FOR APPROPRIATE ON-SITE USE.

PROVIDE MEASURING STAKE, MARKED WITH HALF-DEPTH OF BASIN TO INSURE PROPER MAINTENANCE. SEE SHORT-TERM EROSION CONTROL ITEM # 2-B.

TEMPORARY SILT TRAP

N.T.S.

* NOTE: TEMPORARY SILT TRAP VOLUME SHALL BE 3600 CUBIC FEET PER ACRE OF DISTURBED AREA. ENGINEER SHALL MODIFY DIMENSIONS IN THE FIELD TO ACCOMODATE ANTICIPATED AREA OF DISTURBANCE. CLEAN OUT TRAP TO FULL DEPTH WHEN 1/3 FULL.



CONSTRUCTION SPECIFICATION

1 STONE SIZE- USE 2" STONE, OR RECYCLED CONCRETE EQUIVALENT.

2 LENGTH-NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGHT WOULD APPLY.)

3 THICKNESS- NOT LESS THAN SIX (6) INCHES.

4 WIDTH- TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.

5 FILTER CLOTH- WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.

6 SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRACES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.

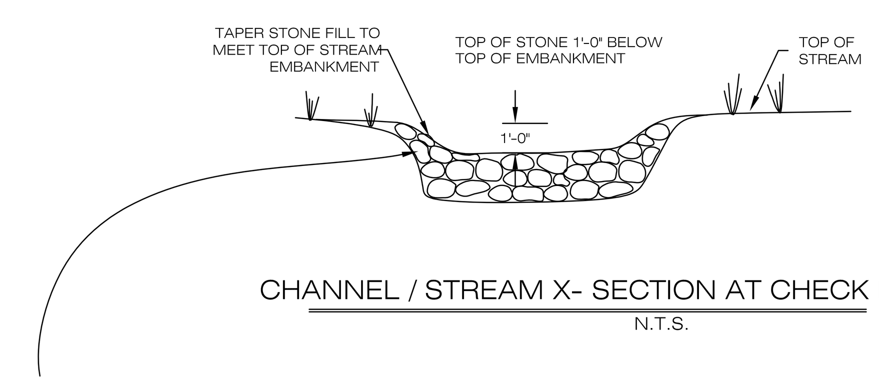
7 MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACTED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.

8 WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE & WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

9 PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

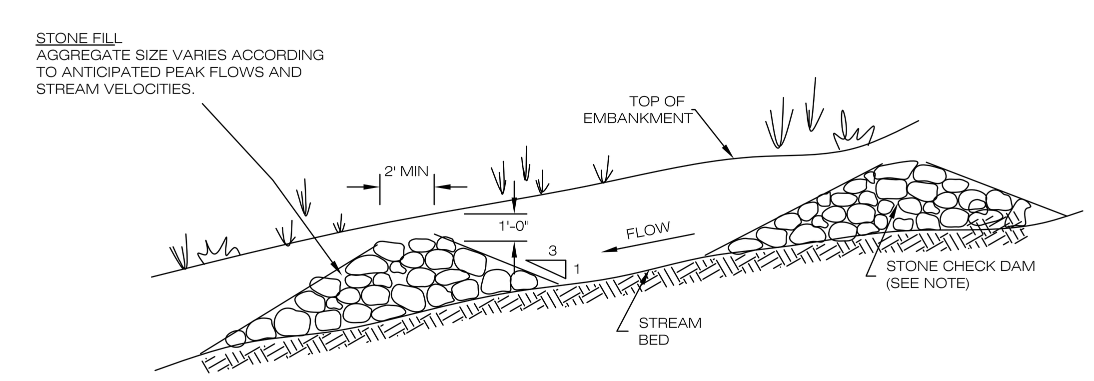
STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S.



CHANNEL / STREAM X- SECTION AT CHECK DAM

N.T.S.



LONGITUDINAL SECTION ALONG STREAM AT CHECKDAM

NOTE
CHECK DAMS SHALL BE SPACED SUCH THAT THE BASE OF ONE SHALL BE ON A LEVEL WITH THE TOP OF THE NEXT ONE DOWN STREAM OF IT.

STONE CHECK-DAMS

N.T.S.

MAINTENANCE: DURING CONSTRUCTION, MONTHLY INSPECTIONS SHALL BE MADE TO INSURE PROPER FUNCTIONING.SEDIMENT BUILD-UP BEHIND CHECK DAMS SHALL BEREMOVED WHEN LEVEL REACHES HALF HEIGHT OF DAM. EVALUATE CHECK DAMS AND REPLACE, IF NECESSARY.

DATE: 05-09-05

REVISION	
06-16-11	Conservation Plan
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

ENGINEERING CONSULTANT:
BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MILL POND OFFICES
293 ROUTE 100, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-5805
STATE OF NEW YORK TIMOTHY S. ALLEN 073434 LICENSED PROFESSIONAL ENGINEER
TIMOTHY S. ALLEN, P.E.

ENVIRONMENTAL CONSULTANT:
EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
205 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:
MISCELLANEOUS DETAILS

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:	
Checked by:	
Doc. ID:	
EAEC Proj. No.:	809
DWG. NO.:	

D-1

SHEET 9 OF 12

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

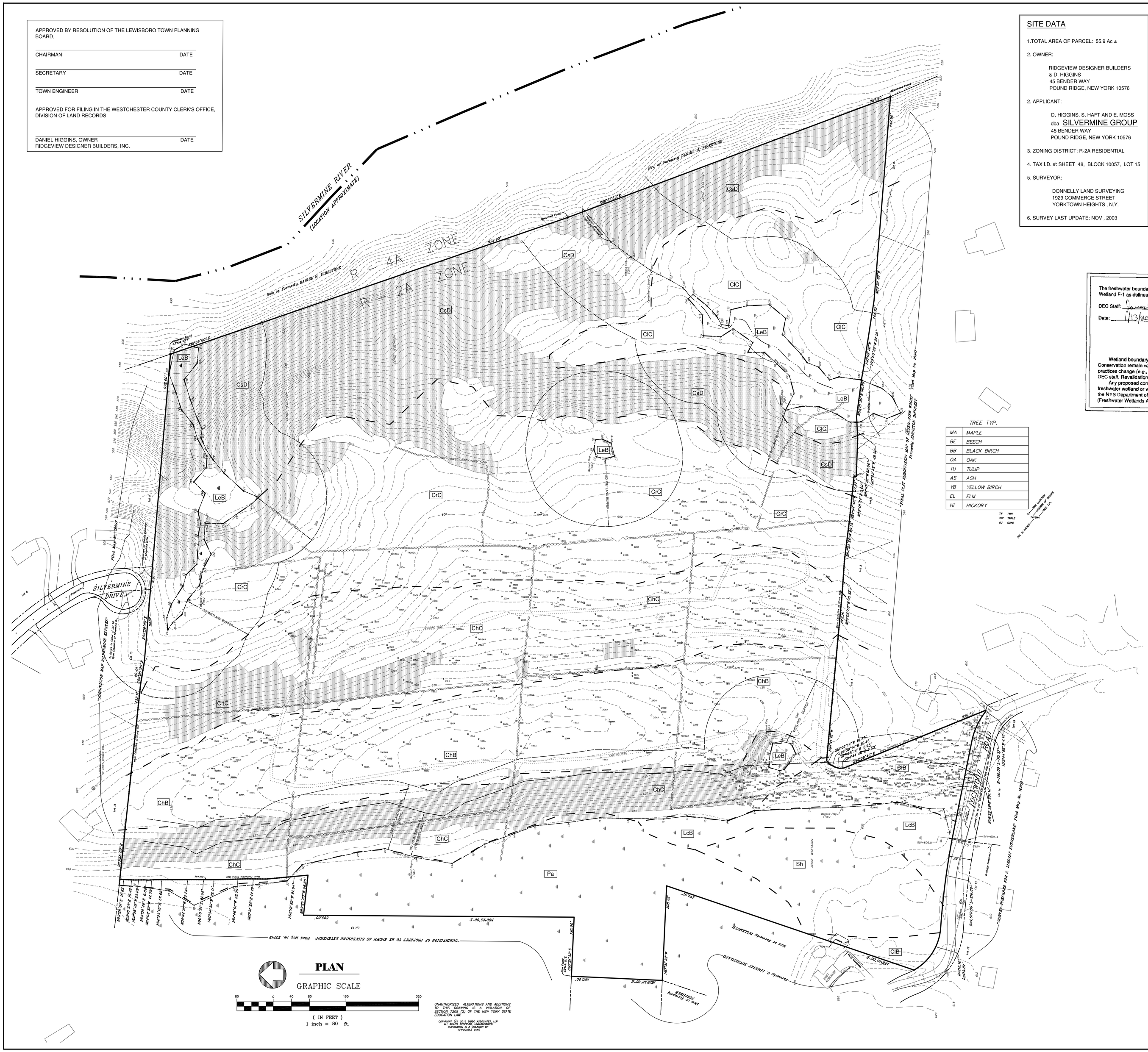
CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.



PLAN

GRAPHIC SCALE

80 0 40 80 160 320

(IN FEET)
1 inch = 80 ft.

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SITE DATA

1.TOTAL AREA OF PARCEL: 55.9 Ac ±

2. OWNER:

RIDGEVIEW DESIGNER BUILDERS
& D. HIGGINS
45 BENDER WAY
POUND RIDGE, NEW YORK 10576

2. APPLICANT:

D. HIGGINS, S. HAFT AND E. MOSS
dba SILVERMINE GROUP
45 BENDER WAY
POUND RIDGE, NEW YORK 10576

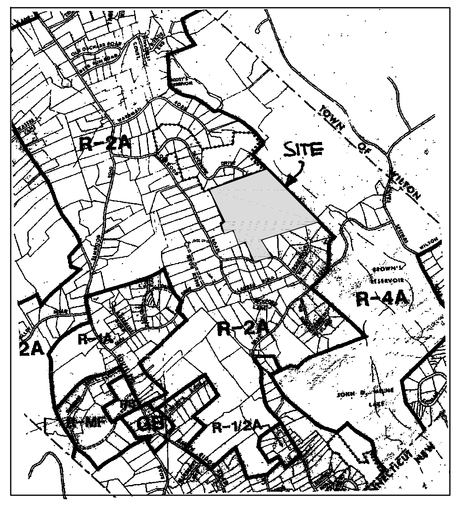
3. ZONING DISTRICT: R-2A RESIDENTIAL

4. TAX I.D. #: SHEET 48, BLOCK 10057, LOT 15

5. SURVEYOR:

DONNELLY LAND SURVEYING
1929 COMMERCE STREET
YORKTOWN HEIGHTS , N.Y.

6. SURVEY LAST UPDATE: NOV , 2003



LOCATION MAP
1" = 2000'

The freshwater boundary as re
Wetland F-1 as delineated by Evans Associates Environmental Consulting Inc. on December 2, 2010

DEC Staff: [signature]
Date: 1/12/2011

Surveyor/Engineer: Timothy S. Allen P.E.
SEAL: STATE OF NEW YORK · TIMOTHY S. ALLEN · 073434 · LICENSED PROFESSIONAL ENGINEER

Wetland boundary delineations as validated by the New York State Department of Environmental Conservation remain valid for 10 years unless existing exempt activities, area hydrology, or land use practices change (e.g., agricultural to residential). After 10 years the boundary must be revalidated by DEC staff. Revalidation may include a new delineation and survey of the wetland boundary.
Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

TREE TYP.

MA	MAPLE
BE	BEECH
BB	BLACK BIRCH
OA	OAK
TU	TULIP
AS	ASH
YB	YELLOW BIRCH
EL	ELM
HI	HICKORY

TW TWIN
TRP TRIPLE
QU QUAD

DIA. IN INCHES
HEIGHT IN FEET
SPECIES

SOIL LEGEND

CrC USDA SOIL CLASSIFICATION

SOIL BOUNDARY

SYMBOL	DESCRIPTION	HYD. SOIL TYPE
ChB	CHARLTON	B
ChC	CHARLTON	B
ClB	CHARLTON STONY	B
CrC	CHARLTON CHATFIELD	B
CsD	CHATFIELD CHARLTON	B
HrF	HOLLIS	C
LcB	LEICESTER	C
LeB	LEICESTER	C
Pa	PALMS MUCK	D
Sh	SUN	D

SITE LEGEND

EXISTING 2' CONTOUR
420 EXISTING 10' CONTOUR

LAND WITH SLOPES > 15%
HAVING A MINIMUM LENGTH
(DOWNSLOPE) OF 25 FEET

EXISTING WETLAND
AS FLAGGED BY: TIM MILLER ASSOCIATES
CONFIRMED BY EVANS ASSOCIATES

150' WETLAND SETBACK

100' STATE WETLAND ADJACENT AREA

EX. PROPERTY LINE

SHEET INDEX

SHT #	DWG #	TITLE
1	EX-1	EXISTING CONDITIONS
2	PP-1	PRELIMINARY PLAT
3	ZON	ZONING CONFORMANCE
4	CP-1	CONSTRUCTION PLAN I
5	CP-2	CONSTRUCTION PLAN II
6	EC-1	EROSION CONTROL PLAN
7	PH-1	PHASING PLAN
8	RP-1	PROFILES AND DETAILS
9	D-1	MISCELLANEOUS DETAILS
10	D-2	ADDITIONAL DETAILS
11	SW-1	STORMWATER MANAGEMENT
12	SW-2	STORMWATER MANAGEMENT
	MP-1	OVERALL WETLAND IMPACT & MITIGATION PLAN
	MP-2	MITIGATION PLANTING PLAN
	MP-3	MITIGATION PLANTING PLAN

DATE: 05-09-05

REVISION

06-16-11	Conservation Plan
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

ENGINEERING CONSULTANT:
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F. (203) 393-0196

DWG. TITLE:
EXISTING CONDITIONS MAP
CONSERVATION SUBDIVISION

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

EX-1

SHEET 1 OF 12

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CONSTRUCTION SEQUENCING

PHASE ONE (DISTURBANCE = 4.4 ACRES)

1. PRIOR TO THE START OF CONSTRUCTION, A MEETING IN THE FIELD SHALL BE HELD WITH THE CONTRACTOR, ENGINEER AND TOWN CONSULTANTS TO DISCUSS THE PROCESS OF CONSTRUCTION.
2. CENTERLINE OF THE PROPOSED ROAD WITH OFFSETS TO BE STAKED OUT BY LICENSED SURVEYOR. CLEARING LIMITS ASSOCIATED WITH THE ROAD, ROAD GRADING, STORMWATER AREAS AND DRAINAGE FACILITIES AS WELL AS AREAS DESIGNATED FOR CONSTRUCTION STAGING (LOT 7) AND SILT TRAPS SHALL ALSO BE STAKED OUT.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE FOR NEW ROAD. INSTALL SILT FENCING WHERE SHOWN ON PLANS.
4. ALL TREES, EXCEPT AS OTHERWISE DESIGNATED, WITHIN THE CLEARING LIMITS SHALL BE REMOVED, INCLUDING STUMPS. NO ON-SITE BURIAL OF STUMPS SHALL BE PERMITTED.
5. PROVIDE ORANGE CONSTRUCTION FENCING AROUND FUTURE INFILTRATION AREAS AND SEWAGE TREATMENT AREAS (ON LOTS 6 AND 7) ADJACENT TO ROADWAY CONSTRUCTION IN ORDER TO RESTRICT CONSTRUCTION TRAFFIC WITHIN THESE AREAS.
6. ESTABLISH TEMPORARY SILT TRAPS AND SEDIMENT BASINS WHERE INDICATED ON PLANS. SB-2, SB-3, AND SB-4 SHALL BE USED AS TEMPORARY SEDIMENT BASINS DURING CONSTRUCTION HOWEVER, THE BASINS MUST NOT BE EXCAVATED TO THE FINAL BOTTOM ELEVATION. ONLY EXCAVATE TO THE TEMPORARY BOTTOM ELEVATION AS SHOWN ON SHEET "SW-1". VEGATATIVE SWALES LOCATED ON LOTS 8-11 SHOULD BE CONSTRUCTED IN CONJUCTION WITH SB-2 AND SB-3. (NOTE: THESE PRACTICES SHALL REMAIN IN PLACE AND BE MAINTAINED IN PROPER FUNCTION UNTIL ALL OF THE TRIBUTARY AREAS HAVE BEEN STABILIZED. IN ADDITION, INFILTRATION SYSTEMS SHALL BE KEPT OFF-LINE AND ALL CONSTRUCTION EQUIPMENT SHALL BE KEPT "OFF-LIMITS" UNTIL THEN.)

PHASE ONE (CONTINUED)

7. TOPSOIL FROM ALL AREAS TO BE DISTURBED SHALL BE STOCKPILED AS INDICATED ON THE EROSION CONTROL PLAN AND DETAILS.
8. ROADWAY AND EMBANKMENTS SHALL BE BROUGHT TO SUBGRADE. PROVIDE WATER BREAKS AS SHOWN ON EROSION CONTROL PLAN TO DIRECT SURFACE RUNOFF TO SILT TRAPS / SEDIMENT BASINS.
9. EXCESS SUBSOIL SHALL ALSO BE STOCKPILED AS APPROPRIATE. STABILIZE EMBANKMENTS WITH TOPSOIL, SEED AND MULCH WITHIN 7 DAYS OF EXPOSURE.
10. INSTALL ROADWAY DRAINAGE PIPING AND STRUCTURES AS SHOWN. PROVIDE INLET PROTECTION FOR STRUCTURES AS SHOWN ON EROSION CONTROL PLAN AND DETAILS. (NOTE: THE OUTLET OF CB #6 SHALL BE PLUGGED IN ORDER TO KEEP THE AREA DESIGNATED SB-1 BE KEPT OFF-LINE UNTIL THE TRIBUTARY AREA HAS BEEN STABILIZED. AT THAT TIME THE PLUG MAY BE REMOVED AS DIRECTED BY THE ENGINEER.)
11. INSTALL 30,000 GALLON FIRE STORAGE TANK, HYDRANT AND PIPING AS SHOWN ON PLAN AND DETAILS.
12. INSTALL ROADWAY BASE AND ASPHALT BINDER COURSES. INSTALL CURBING AS INDICATED ON BINDER. TOPSOIL, SEED AND MULCH BEHIND CURBING. INSTALL ROADSIDE GRASS SWALES WHERE INDICATED. INLET PROTECTION, WATER BREAKS AND SILT TRAPS SHALL BE REMOVED PRIOR.
13. ONCE SUITABLE VEGETATIVE COVER HAS BEEN ESTABLISHED, INFILTRATION BASINS (SB-2, SB-3, AND SB-4) SHALL BE INSTALLED AND INFILTRATION SYSTEM #2 SHALL BE COMPLETED IN ACCORDANCE WITH THE APPROVED PLANS AND DETAILS. IN ADDITION, THE VEGETATIVE SWALES SERVING SB-2 AND SB-3 SHALL BE INSTALLED AND STABILIZED.
14. REMAINING EROSION CONTROLS SHALL BE REMOVED ONLY AS DIRECTED BY TOWN CONSULTANTS.

PHASE TWO (DISTURBANCE = 4.7 ACRES) (CONSTRUCTION OF LOTS 1-6)

1. LOCATION OF DRIVEWAY, PROPOSED DWELLING AND SEWAGE TREATMENT AREA, AS WELL AS LIMITS OF CONSTRUCTION, SHALL BE STAKED BY A LICENSED SURVEYOR.
2. PRIOR TO THE START OF CONSTRUCTION, A MEETING IN THE FIELD SHALL BE HELD WITH THE CONTRACTOR, ENGINEER AND BUILDING INSPECTOR TO DISCUSS THE PROCESS OF CONSTRUCTION.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE FOR DRIVEWAY. INSTALL SILT FENCING WHERE SHOWN ON PLANS.
4. ALL TREES, EXCEPT AS OTHERWISE DESIGNATED, WITHIN THE CLEARING LIMITS SHALL BE REMOVED, INCLUDING STUMPS. NO ON-SITE BURIAL OF STUMPS SHALL BE PERMITTED.
5. PROVIDE ORANGE CONSTRUCTION FENCING AROUND FUTURE INFILTRATION AREA (LOT 1) AND SEWAGE TREATMENT AREAS.
6. TOPSOIL FROM ALL AREAS TO BE DISTURBED SHALL BE STOCKPILED AS INDICATED ON THE EROSION CONTROL PLANS.
7. COMMENCE SITE GRADING, INSTALLATION OF BUILDING FOUNDATION AND BRING DRIVEWAY TO SUBGRADE. INSTALL INFILTRATION SYSTEM #1 ON LOT #1 AS PER THE PLANS AND DETAILS. DO NOT BRING INFILTRATION SYSTEM "ON-LINE" AT THIS TIME.
8. INSTALL SEWAGE TREATMENT SYSTEM AND INDIVIDUAL DRILLED WELL AS APPROVED BY THE WESTCHESTER COUNTY DEPARTMENT OF HEALTH.
9. COMPLETE CONSTRUCTION OF DWELLING. COMPLETE INSTALLATION OF DRIVEWAY PAVEMENT. STABILIZED WITH TOPSOIL, SEED AND MULCH ALL AREAS DISTURBED DURING THE CONSTRUCTION PROCESS. ONCE ALL TRIBUTARY AREAS HAVE BEEN STABILIZED, BRING INFILTRATION SYSTEM #1 "ON-LINE".
10. ONCE SUITABLE VEGETATIVE COVER HAS BEEN ESTABLISHED, REMAINING EROSION CONTROLS SHALL BE REMOVED AS DIRECTED BY TOWN CONSULTANTS.

PHASE THREE (DISTURBANCE = 4.8 ACRES) (CONSTRUCTION OF LOTS 7-12)

1. LOCATION OF DRIVEWAY, PROPOSED DWELLING AND SEWAGE TREATMENT AREA, AS WELL AS LIMITS OF CONSTRUCTION, SHALL BE STAKED BY A LICENSED SURVEYOR.
2. PRIOR TO THE START OF CONSTRUCTION, A MEETING IN THE FIELD SHALL BE HELD WITH THE CONTRACTOR, ENGINEER AND BUILDING INSPECTOR TO DISCUSS THE PROCESS OF CONSTRUCTION.
3. INSTALL STABILIZED CONSTRUCTION ENTRANCE FOR DRIVEWAY. INSTALL SILT FENCING WHERE SHOWN ON PLANS.
4. ALL TREES, EXCEPT AS OTHERWISE DESIGNATED, WITHIN THE CLEARING LIMITS SHALL BE REMOVED, INCLUDING STUMPS. NO ON-SITE BURIAL OF STUMPS SHALL BE PERMITTED.
5. PROVIDE ORANGE CONSTRUCTION FENCING AROUND AND SEWAGE TREATMENT AREAS..
6. TOPSOIL FROM ALL AREAS TO BE DISTURBED SHALL BE STOCKPILED AS INDICATED ON THE EROSION CONTROL PLANS. .
7. COMMENCE SITE GRADING, INSTALLATION OF BUILDING FOUNDATION AND BRING DRIVEWAY TO SUBGRADE.
8. INSTALL SEWAGE TREATMENT SYSTEM AND INDIVIDUAL DRILLED WELL AS APPROVED BY THE WESTCHESTER COUNTY DEPARTMENT OF HEALTH.
9. COMPLETE CONSTRUCTION OF DWELLING. COMPLETE INSTALLATION OF DRIVEWAY PAVEMENT. STABILIZE WITH TOPSOIL, SEED AND MULCH ALL AREAS DISTURBED DURING THE CONSTRUCTION PROCESS. ONCE LOTS 7, 8, AND 9 HAVE BEEN DEVELOPED AND STABILIZED, CONVERT SB-2 INTO AN INFILTRATION BASIN AS PER THE PLANS AND DETAILS. ONCE LOTS 10 AND 11 HAVE BEEN DEVELOPED AND STABILIZED, CONVERT SB-3 INTO AN INFILTRATION BASIN AS PER THE PLANS AND DETAILS.
10. INSTALL TOP COURSE OF ASPHALT AS DIRECTED THROUGHOUT THE PRIVATE ROAD.
11. ONCE SUITABLE VEGETATIVE COVER HAS BEEN ESTABLISHED, REMAINING EROSION CONTROLS SHALL BE REMOVED AS DIRECTED BY TOWN CONSULTANTS.

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

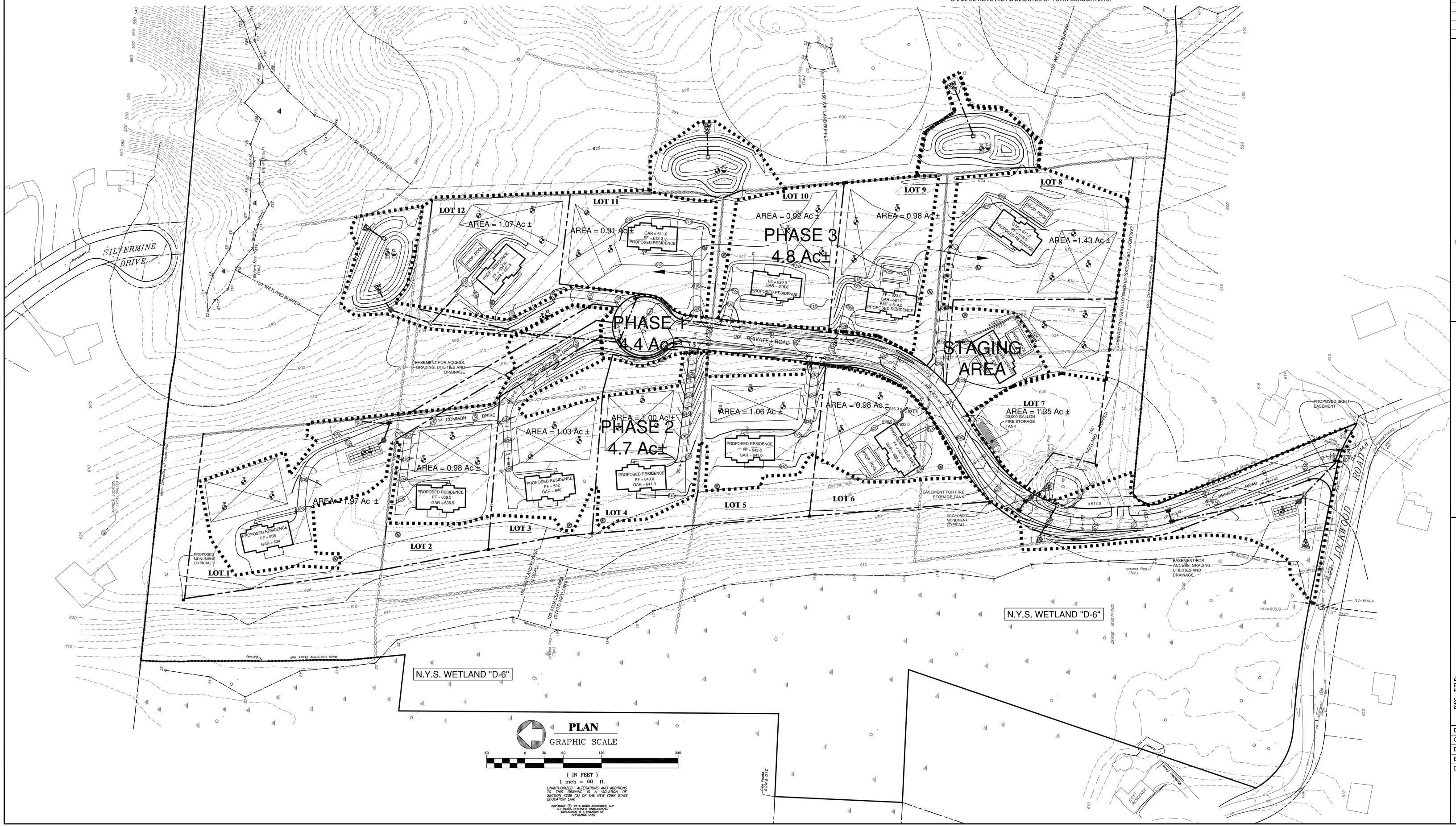
CHAIRMAN — DATE

SECRETARY — DATE

TOWN ENGINEER — DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER — DATE
RIDGEVIEW DESIGNER BUILDERS, INC.



UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

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DATE:	05-09-05
REVISION	
06-16-11	Conservation Plan
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

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DWG. TITLE: **PHASING PLAN**

PROJECT NAME: SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:	
Checked by:	
Doc. ID:	
EAEC Proj. No.:	809
DWG. NO.:	PH-1

SHEET 7 OF 12

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ZONING CONFORMANCE: CONSERVATION SUBDIVISION

	REQUIRED	PROVIDED											
		LOT#1	LOT#2	LOT#3	LOT#4	LOT#5	LOT#6	LOT#7	LOT#8	LOT#9	LOT#10	LOT#11	LOT#12
FRONT YARD + FROM STREET CENTER LINE	65'	n/a	n/a	n/a	n/a	146.4'	76.1'	90.9'	256.4'	65.4'	65.1'	n/a	n/a
+ FROM FRONT LOT LINE	40	606'	338.7'	211.9'	166.2'	121.4'	51.1'	65.9'	231.6'	40.4'	40.0'+	68.2'	163.9'
SIDE YARD	30'	139.5'	40.8'	30.3'	30.0'	37.5'	CORNER LOT	35.5'	71.6'	31.8'	50.3'	65.7'	48.9'
REAR YARD	40'	54.7'	67.4'	56.3'	59.8'	92.0'	50.4'	47.7'	63.0'	166.1'	126.1'	46.5'	82.7'
BUILDING COVERAGE	12 %	3.2 %	6.5%	6.2 %	6.4 %	5.9 %	6.5 %	4.7 %	4.5 %	6.5 %	6.9 %	7.0 %	6.4 %
BUILDING HEIGHT	2.5 STORIES	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	35' MAX.	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'
LOT WIDTH	150' DIA. CIRCLE	150'	150'	150'	150'	150'	150'	150'	150'+	150'+	150' +	150' +	150' +
LOT DEPTH	300' MAX	732'	455.4'	327.1	293'	256.2'	179.8'	219.4'	357.1'	253.1'	212.6'	190.4'	323'
ACTUAL LOT AREA	MIN 1 AC.	1.97 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.03 AC +/- (SEE NOTE 1)	1.0 AC +/-	1.06 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.35 AC +/-	1.43 AC +/-	0.98 AC +/- (SEE NOTE 1)	0.92 AC +/- (SEE NOTE 1)	0.91 AC +/- (SEE NOTE 1)	1.07 AC +/-
MIN LOT AREA REQD.*		2.44 AC +/-	1.52 AC +/-	1.09 AC +/-	1.0 AC +/-	1.0 AC +/-	1.0 AC	1.0 AC	1.19 AC	1.0 AC	1.0 AC	1.0 AC	1.07 AC +/-
MIN LOT AREA PROVIDED **		1.58 AC (SEE NOTE 1)	0.82 AC +/- (SEE NOTE 1)	1.0 AC +/- (SEE NOTE 1)	1.0 AC +/-	1.6 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.35 AC +/-	1.43 AC +/-	0.98 AC +/- (SEE NOTE 1)	0.92 AC +/- (SEE NOTE 1)	0.91 AC +/- (SEE NOTE 1)	1.07 AC +/-
STREET FRONTAGE	25'	25'	26'	52'	110'	185'	354'	205'	41'	165'	183'	110'	52'
CONTIGUOUS BUILDABLE AREA ***	35,000 SFMIN.	68,759 SF +/-	35,840 SF +	39,721 SF +/-	42,362 SF +/-	44,407 SF +/-	39,881 SF +/-	57,097 SF +/-	58,315 SF +/-	41,856 SF +/-	40,075 SF +/-	40,510 SF +/-	43,680 SF+/-

* REQUIRED LOT AREA BASED ON LOT DEPTH §220-25B

** LAND EXCLUDING AREAS WITH LESS THAN 1/3 THE REQUIRED LOT WIDTH

*** LAND EXCLUDING STEEP SLOPES (>15%), WETLANDS PER §220-10E(2)(a) OF THE AMENDED ZONING CODE

The freshwater boundary as represented on these plans accurately depicts the limits of Freshwater Wetland F-1 as delineated by Evans Associates Environmental Consulting Inc. on December 2, 2010

DEC Staff: [signature]

Date: 1/13/2011

Surveyor/Engineer: Timothy S. Allen P.E.

SEAL

Wetland boundary delineations as validated by the New York State Department of Environmental Conservation remain valid for 10 years unless existing exempt activities, area hydrology, or land use practices change (e.g., agricultural to residential). After 10 years the boundary must be revalidated by DEC staff. Revalidation may include a new delineation and survey of the wetland boundary.

Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of the wetland boundary as depicted on this plan requires a permit from the NYS Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

REVIEWED FOR COMPIANCE WITH THE PLANNING BOARD RESOLUTION, DATED____________

JOSEPH M. CERMELE, P.E. ________ DATE:________
KELLARD SESSIONS CONSULTING, P.C.
CONSULTING TOWN ENGINEERS

SITE LEGEND

150' WETLAND SETBACK

100' STATE WETLAND ADJACENT AREA

WETLAND BOUNDARY (STATE AND LOCAL) (FLAGGED BY TIM MILLER ASSOCIATES) RECONFIRMED BY EVANS ASSOCIATES, 2010

PROPOSED LOT LINE

PROPOSED MINIMUM LOT SIZE = 40,000 SF

EX. STONE WALL AS LOT LINE

DRAINAGE, UTILITY AND ACCESS EASEMENT

PROPOSED BUILDING SETBACKS: (BASED ON R-1A) AND "BUILDING ENVELOPE"
FRONT YARD = 40'
SIDE YARD = 30'
REAR YARD = 40'

LIMIT OF DISTURBANCE
TOTAL ESTIMATED DISTURBANCE = 13.9 Ac ±

PROPOSED STORMWATER TREATMENT AREA

PROPOSED DWELLING AND DRIVEWAY

PROPOSED "BUILDING ENVELOPE"

NOTE: THE PROPOSED DWELLING, FUTURE GARAGE, BARN, SHED, OR POOL SHALL BE LOCATED WITHIN THE BUILDING ENVELOPE SHOWN HEREON. THE PURPOSE OF THIS BUILDING ENVELOPE IS TO ALLOW FLEXIBILITY IN THE LOCATION OF THE DWELLING AND ACESSORY STURCTURES AND IMPROVEMENTS. THE LOCATION OF THE PROPOSED DRIVEWAY, SEPTIC SYSTEM, WELL AND STORMWATER STRUCTURES AND FACILITIES SHALL BE LOCATED, AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. ANY DEVIATION SHALL REQUIRE PLANNING BOARD APPROVAL.

PROPOSED UNDERGROUND UTILITY LINES

PROPOSED S.S.T.A

PROPOSED WELL WITH WELL SETBACK

PROPOSED INDIVIDUAL WELL/SEPARATE SEWAGE TREATMENT SYSTEM

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
NEW ROCHELLE, NEW YORK

PROPOSED INDIVIDUAL WELL/SEPARATE SEWAGE TREATMENT SYSTEM

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
NEW ROCHELLE, NEW YORK

APPROVED PURSUANT TO CHAPTER 873, ARTICLE X, SECTIONS 873.951 AND 873.1001 AND ARTICLES VII AND VIII OF THE WESTCHESTER COUNTY SANITARY CODE SUBJECT TO THE PROVISION OF INDIVIDUAL WELL WATER SUPPLY AND SEPARATE SEWAGE TREATMENT FACILITIES TO SERVE EACH HABITABLE BUILDING HEREAFTER CONSTRUCTED. THESE FACILITIES ARE TO BE INSTALLED IN ACCORDANCE WITH LAND IMPROVEMENT PLANS AND SPECIFICATIONS APPROVED BY AND FILED IN THIS OFFICE PRIOR TO THE CONSTRUCTION OF SUCH BUILDING.

EACH PURCHASER OF PROPERTY SHOWN HEREON SHALL BE FURNISHED A TRUE COPY OF THIS PLAT SHOWING THIS ENDORSEMENT. ANY ERASURES, CHANGES, ADDITIONS OR ALTERATIONS OF ANY KIND, EXCEPT THE ADDITION OF SIGNATURES OF OTHER APPROVING AUTHORITY AND THE DATE THEREOF MADE ON THIS PLAN AFTER THIS APPROVAL, SHALL INVALIDATE THIS APPROVAL.

APPROVED BY THE ASSISTANT COMMISSIONER OF HEALTH ON BEHALF OF THE DEPARTMENT OF HEALTH — DATE

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN — DATE

SECRETARY — DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

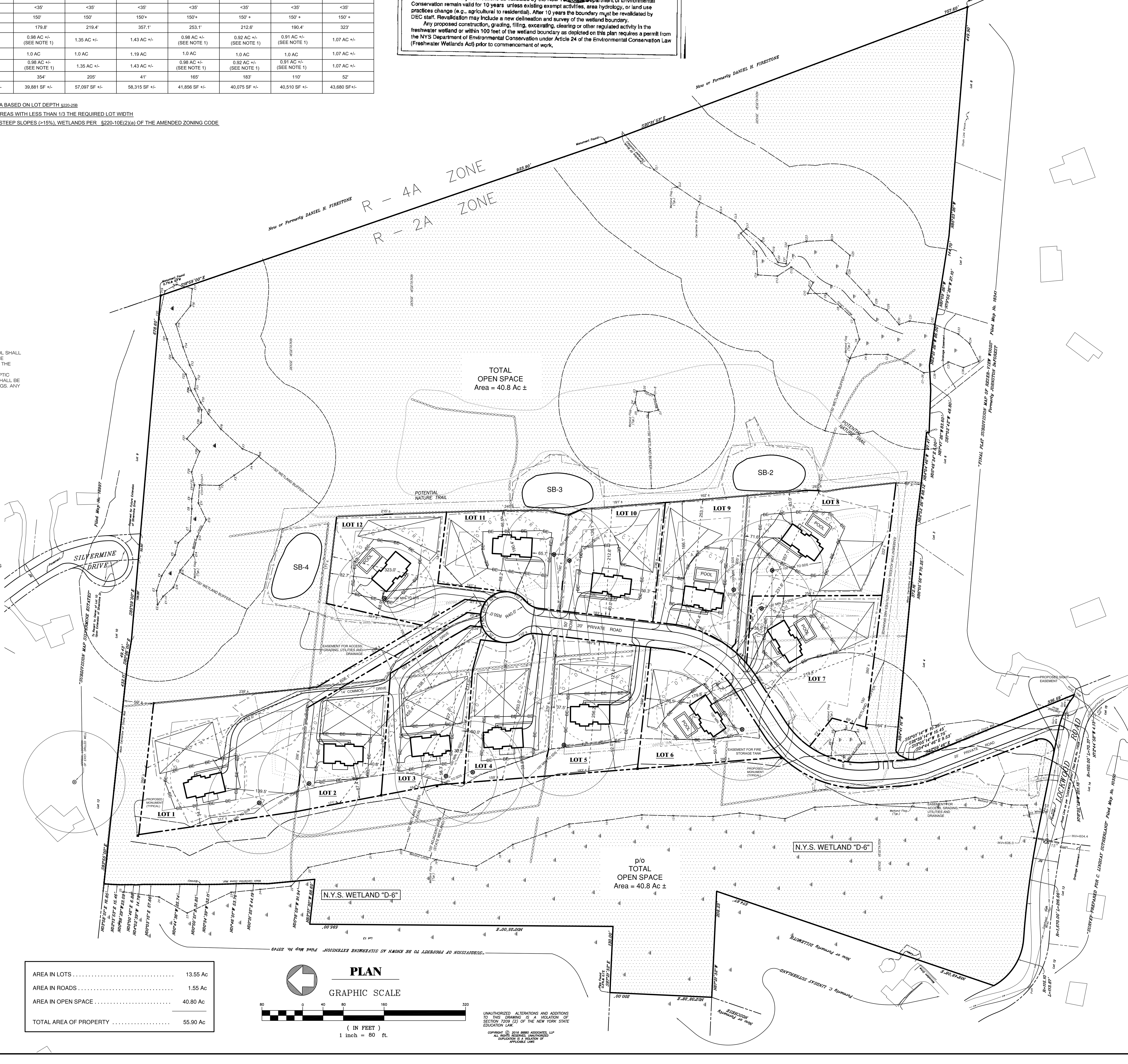
DANIEL HIGGINS, OWNER — DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

NOTES:

1. THERE SHALL BE NO FURTHER SUBDIVISION OF THE LOTS SHOWN ON THIS PLAT.
2. THE DRAINAGE EASEMENTS (OR THE DRAINAGE DISCHARGE POINTS) SHOWN HEREON ESTABLISH THE PERPETUAL RIGHT TO DISCHARGE STORMWATER RUNOFF FROM THE PRIVATE ROAD AND COMMON DRIVE AND FROM THE SURROUNDING AREA ONTO AND OVER THE AFFECTED PREMISES BY MEANS OF PIPES, CULVERTS OR DITCHES, OR A COMBINATION THEREOF, TOGETHER WITH THE RIGHT OF THE HOLDER OF FEE TITLE TO THE PRIVATE ROAD OR COMMON DRIVE, OR HIS REPRESENTATIVES, TO ENTER SAID PREMISES FOR PURPOSES OF MAKING SUCH INSTALLATIONS AND DOING SUCH MAINTENANCE WORK AS SAID HOLDER OF FEE TITLE MAY DEEM NECESSARY TO ADEQUATELY DRAIN THE COMMON DRIVE AND SURROUNDING AREA.
3. ALL PHASES OF THE CONSTRUCTION OF THE NEW ROAD AND COMMON DRIVEWAY AND DRAINAGE IMPROVEMENTS MUST BE INSPECTED BY THE TOWN CONSULTING ENGINEER. THE OWNER IS RESPONSIBLE TO NOTIFY THE TOWN ENGINEER OF THE CONSTRUCTION SCHEDULE AND DATE WHEN INSPECTIONS WILL BE REQUIRED.
4. PRIOR TO THE ISSUANCE OF ANY INDIVIDUAL BUILDING PERMIT, THE NEW ROAD AND COMMON DRIVEWAY AND DRAINAGE IMPROVEMENTS SHALL BE SUBSTANTIALLY COMPLETED TO THE SATISFACTION OF THE TOWN CONSULTING ENGINEER.
5. PRIOR TO THE ISSUANCE OF ANY INDIVIDUAL CERTIFICATE OF OCCUPANCY, AN AS-BUILT PLAN OF THE COMMON DRIVEWAY AND DRAINAGE IMPROVEMENTS SHALL BE PREPARED BY A LICENSED SURVEYOR AND SUBMITTED TO THE TOWN CONSULTING ENGINEER, AND THE COMMON DRIVEWAY AND DRAINAGE IMPROVEMENTS SHALL BE DEEMED "COMPLETE" TO THE SATISFACTION OF THE TOWN CONSULTING ENGINEER.
6. ALL SITE UTILITY FACILITIES AND LINES (ELECTRIC, TELEPHONE, CABLE, SEWER AND WATER) SHALL BE INSTALLED UNDERGROUND.
7. ANY FUTURE OIL STORAGE TANK FACILITIES, IF UTILIZED, SHALL BE RESTRICTED TO THE CONFINES OF THE PRINCIPAL BUILDING BASEMENT, GARAGE OR A FOUNDATION VAULT.
8. NO WORK, INCLUDING, BUT NOT LIMITED TO, REGRADING, DISPOSITION OR EXTRACTION OF MATERIALS OR VEGETATION, OR PHYSICAL ALTERATION IN, UPON, OR WITHIN 150 FEET (AS MAY BE AMENDED FROM TIME TO TIME) OF SITE WETLANDS, WATERCOURSES OR WATER BODIES, EXCEPT AS AUTHORIZED BY A DULY ISSUED WETLAND ACTIVITY PERMIT SHALL BE PERMITTED.
9. PRIOR TO THE COMMENCEMENT OF ANY SITE WORK OR CONSTRUCTION ACTIVITY, EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AND SHALL BE SUBJECT TO CONTINUAL MAINTENANCE AND ADDITIONAL CONTROLS AS MAY BE REQUIRED BY THE BUILDING INSPECTOR, WETLANDS INSPECTOR, TOWN CONSULTING ENGINEER, OR THEIR AUTHORIZED AGENTS. A NEW YORK STATE LICENSED SURVEYOR IS REQUIRED TO LOCATE AND FIELD DELINEATE THE LIMITS OF EASEMENT AREAS AND REGULATED WETLANDS BUFFER AREAS PRIOR TO ANY RELATED SITE CLEARING, DISTURBANCE, EXCAVATION, OR CONSTRUCTION.
10. STORMWATER DRAINAGE SHALL BE CONTROLLED AT ALL TIMES DURING AND AFTER CONSTRUCTION TO PREVENT EROSION OF THE SITE AREA AND TO PREVENT SEDIMENTATION UPON AREAS ADJACENT TO THE CONSTRUCTION SITE, PARTICULARLY OFF-SITE LOCATIONS AND WETLANDS/WATERCOURSES, AND WETLAND BUFFER AREA RESOURCES. SILT FENCING, ANTI-TRACKING APRONS AND ALL OTHER REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REGULARLY INSPECTED AND MAINTAINED IN AN ORDERLY AND FUNCTIONING MANNER. ADDITIONAL SUPPLIES OF SILT FENCING SHALL BE KEPT ON THE SITE DURING CONSTRUCTION FOR USE AS NEEDED.
11. ANY SUBSTANTIAL CHANGE IN THE LOCATION OF HOUSES, DRIVEWAYS AND STORMWATER CONTROL IMPROVEMENTS OR UTILITIES AS SHOWN ON THE FINAL CONSTRUCTION PLANS SHALL REQUIRE THE PRIOR REVIEW AND APPROVAL OF THE PLANNING BOARD.
12. ALL DISTURBED AREAS SHALL BE REGRADED AND COVERED WITH A MINIMUM OF FOUR (4) INCHES OF TOPSOIL, THEN SEEDED OR PLANTED WITH TREES, SHRUBS OR OTHER PERENNIAL GROUNDCOVERS. REGRADED AREAS SHALL NOT EXCEED A SLOPE OF 1:2; AND SAID SLOPES SHALL BE STABILIZED UTILIZING JUTE NETTING (OR EQUIVALENT) OR SHRUB PLANTINGS.
13. REFER TO DRAWING "ZON" FOR NOTATIONS REGARDING "BUILDING ENVOPE".
14. IT IS CURRENTLY PROPOSED THAT THE OPEN SPACE PARCEL SHALL BE OWNED IN COMMON THROUGH A HOME-OWNER'S ASSOCIATION. ACCESS TO THIS OPEN SPACE WILL BE AVAILABLE TO THE PUBLIC, WITH CERTAIN RESTRICTIONS, AT LOCATIONS TO BE DETERMINED BY THE PLAANING BOARD AND DESIGNATED ON THE FINAL PLANS.
15. THE APPLICANT'S ENGINEER, TOWN ENGINEER AND TOWN HIGHWAY SUPERINTENDANT SHALL SURVEY THE EXISTING CONDITIONS OF LOCKWOOD ROAD IN THE AREA ADJACENT TO THE PROPOSED NEW ROAD ENTRANCE. THEIR COMMENTS / RECOMMENDATIONS SHALL BE REVIEWED WITH THE PLANNING BOARD AND, IF REQUIRED BY THE BOARD, NOTATIONS SHALL BE PLACED ON THE FINAL CONSTRUCTION PLANS REGARDING ANY NECESSARY IMPROVEMENTS TO THIS AREA.

SPECIAL NOTES:

1. AS THE PROPOSED ROAD IS TO BE PRIVATELY OWNED AND MAINTAINED, OPEN DEVELOPMENT AREA APPROVAL OF THE TOWN BOARD IS REQUIRED.
2. IN ORDER THAT CERTAIN LOTS (1, 2, 3, 6, 9, 10 & 11) PRESERVE EXISTING STONE WALLS AS LOT LINES, APPROVAL FROM THE TOWN BOARD IS ALSO REQUIRED FOR VARIANCE FROM THE DIMENSIONAL REQUIREMENTS OF § 200 - 88 B AND § 200 - 10E(2)(c) OF TOWN CODE. REFER TO DRAWING "ZON" FOR SPECIFIC INSTANCES WHERE APPROVAL OF NON-CONFORMANCE IS REQUIRED.
3. DURING CONSTRUCTION, SOME EXISTING STONE WALLS WILL BE REMOVED TO MAKE WAY FOR THE PROPOSED SITE IMPROVEMENTS. STONE FROM THEASE WALLS SHALL BE RELOCATED ALONG NEW LOT LINES. ALL EXISTING STONE WALLS SHALL BE PRESERVED AS LOT LINES WHERE INDICATED ON THIS PLAN.



AREA IN LOTS	13.55 Ac
AREA IN ROADS	1.55 Ac
AREA IN OPEN SPACE	40.80 Ac
TOTAL AREA OF PROPERTY	55.90 Ac

PLAN

GRAPHIC SCALE

(IN FEET)
1 inch = 80 ft.

UNAUTHORIZED ALTERATIONS AND ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

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3-16-16	Review / Response

ENGINEERING CONSULTANT:

BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MILL POND OFFICES
293 ROUTE 100, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-5805

TIMOTHY S. ALLEN, P.E.

ENVIRONMENTAL CONSULTANT:

EVANS ASSOCIATES
ENVIRONMENTAL CONSULTING, INC.
205 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

DWG. TITLE:

PRELIMINARY PLAT CONSERVATION SUBDIVISION

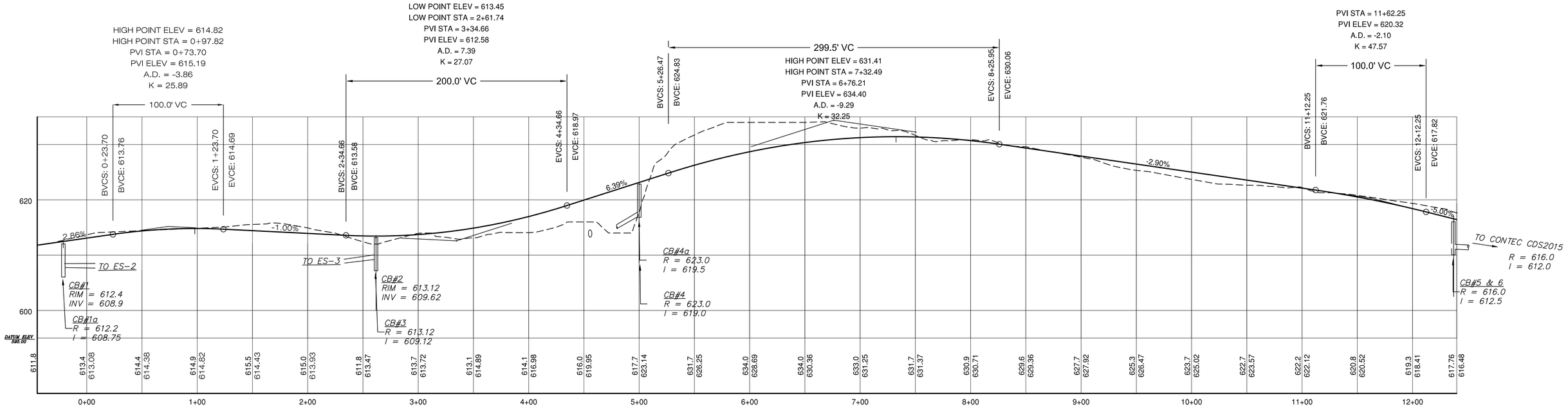
PROJECT NAME:

SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

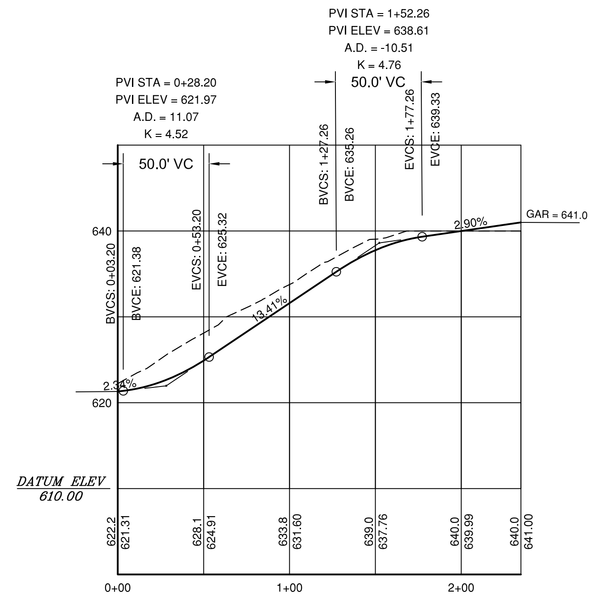
PP-1

SHEET 2 OF 12



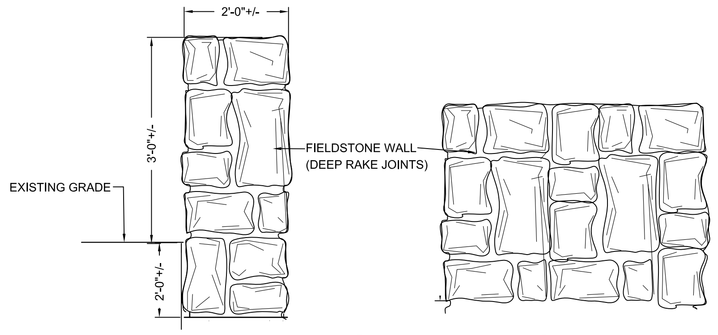
ROAD PROFILE

SCALE HORIZONTAL: 1" = 50'
VERTICAL: 1" = 10'



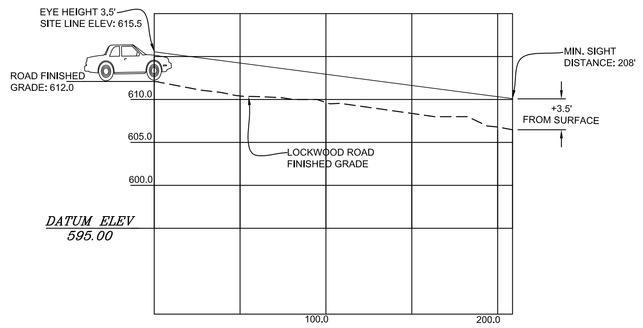
LOT 4 PROFILE

SCALE HORIZONTAL: 1" = 50'
VERTICAL: 1" = 10'



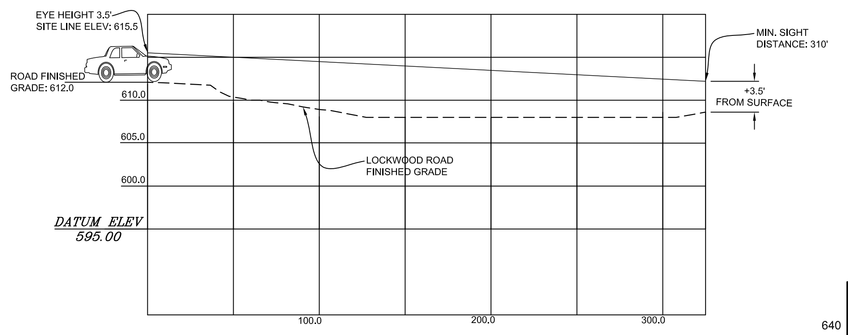
PRIVATE ROAD ENTRANCE LANDSCAPING WALL

N.T.S.



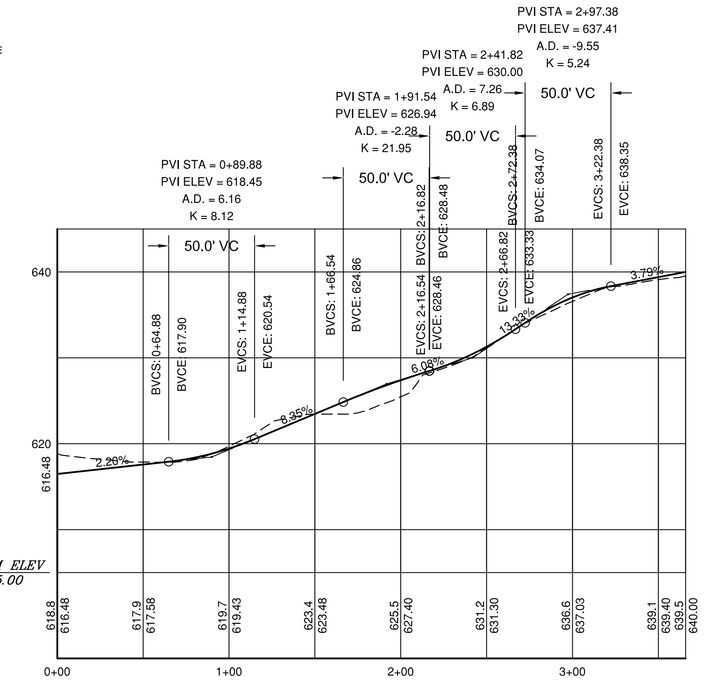
SIGHT DISTANCE PROFILE: LEFT (SOUTH EAST)

SCALE HORIZONTAL: 1" = 50'
VERTICAL: 1" = 10'



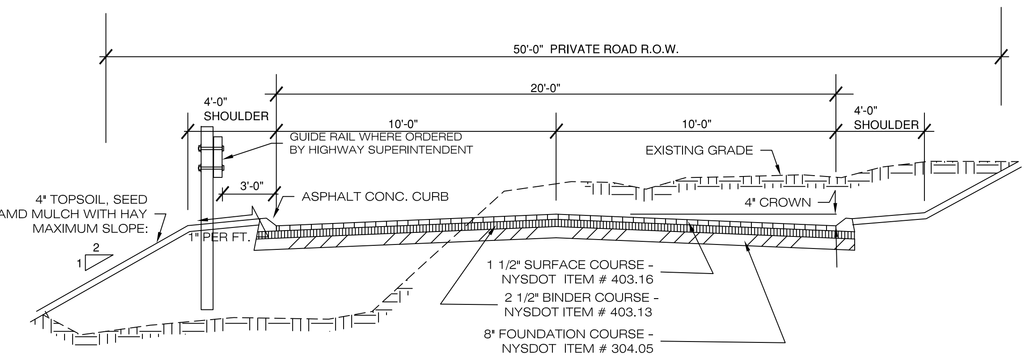
SIGHT DISTANCE PROFILE: RIGHT (WEST)

SCALE HORIZONTAL: 1" = 50'
VERTICAL: 1" = 10'



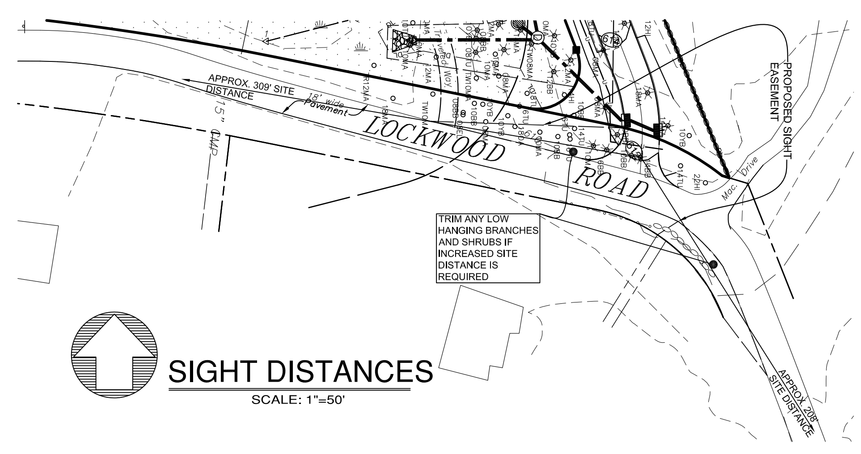
COMMON DRIVE TO LOT 3 PROFILE

SCALE HORIZONTAL: 1" = 50'
VERTICAL: 1" = 10'



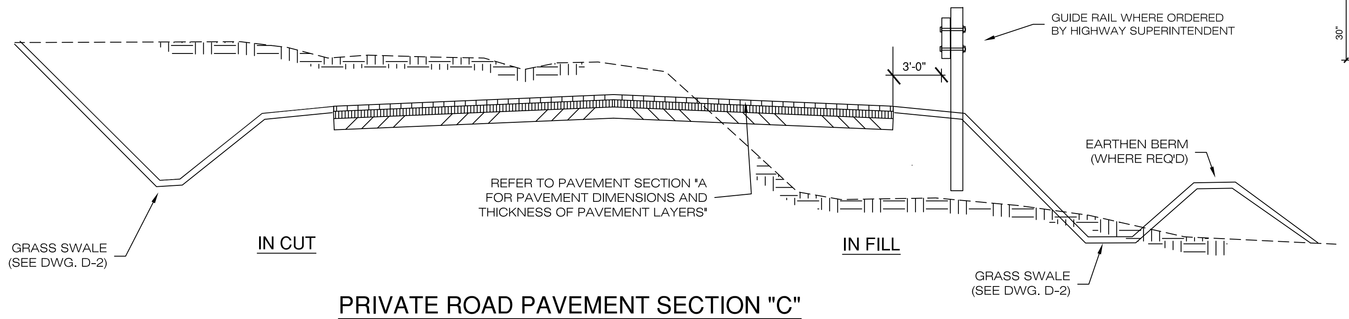
PRIVATE ROAD PAVEMENT SECTION "B"

CROWN WITH CURBING BOTH SIDES OF ROAD N.T.S.



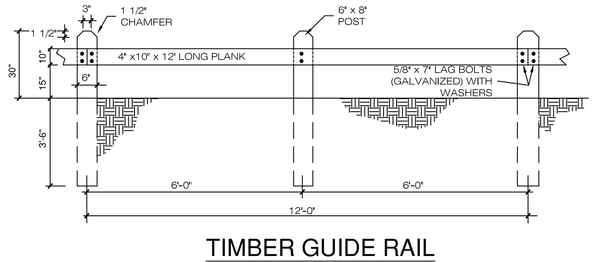
SIGHT DISTANCES

SCALE: 1"=50'



PRIVATE ROAD PAVEMENT SECTION "C"

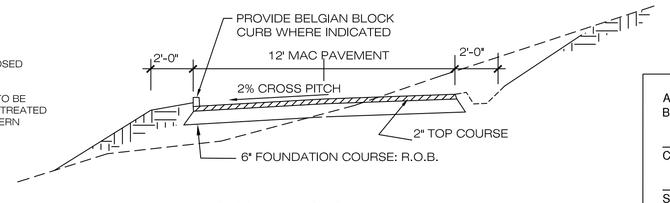
CROWN WITH SWALES ON BOTH SIDES
(NO CURB) N.T.S.



1. SEE PLAN FOR PROPOSED LOCATION
2. POSTS AND PLANKS TO BE "OSMOSE" PRESSURE-TREATED HEMLOCK OR SOUTHERN YELLOW PINE.

TIMBER GUIDE RAIL

N.T.S.



TYPICAL DRIVEWAY

N.T.S.

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

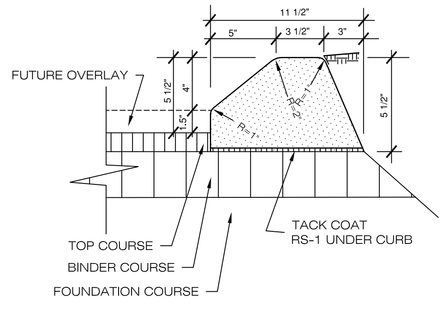
APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

PAVEMENT NOTES:

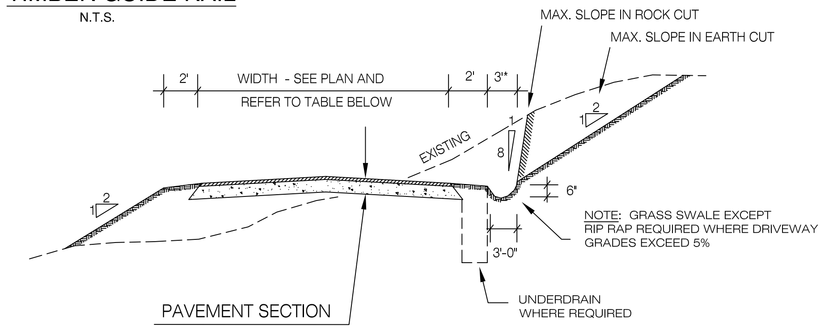
1. ALL ITEMS MUST CONFORM TO N.Y.DS.D.O.T. SPECIFICATIONS.
2.

MAIN ROAD STA. START	MAIN ROAD STA. END	APPLY SECTION
0-37	6+80	"B"
6+80	END	"C"



ASPHALT CURB DETAIL

N.T.S.

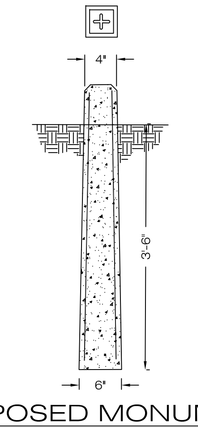


PAVEMENT SECTION

NO . OF LOTS SERVED	WIDTH	PAVING SECTION
1	12'	2" TOP, 6" R.O.B.
2	14'	1 1/2" TOP, 2 1/2" BINDER, 6" R.O.B.
3	16'	1 1/2" TOP, 2 1/2" BINDER, 6" R.O.B.

DRIVEWAY SECTION DETAIL

NOTE: DRIVEWAY MAY BE CROSS-PITCHED. REFER TO CONSTRUCTION PLANS FOR GRADING AND DRAINAGE



PROPOSED MONUMENT

N.T.S.

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205 Amity Road
Bethany, Connecticut 06524
T. (203) 393-0690
F. (203) 393-0196

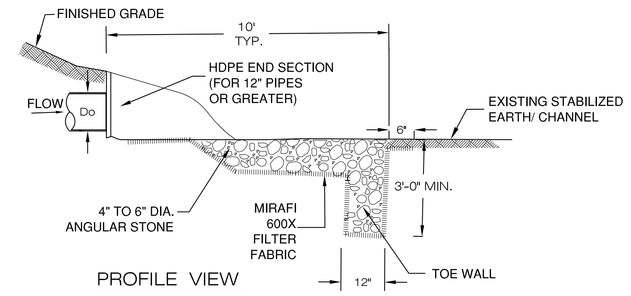
DWG. TITLE: **PROFILES AND DETAILS**

PROJECT NAME: SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

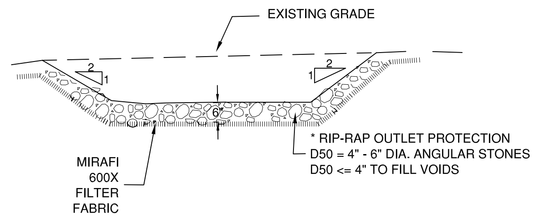
Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

RP-1
SHEET 8 OF 12

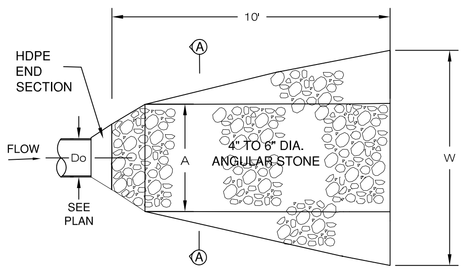
P:\Projects\MOSS-SILVER\dwg\Moss-Silvermine Subd 2-11-16.dwg PROFILES AND DETAILS, 3/31/2016 11:48:41 AM ,Nitsevermatic 1:1



PROFILE VIEW



A-A SECTION



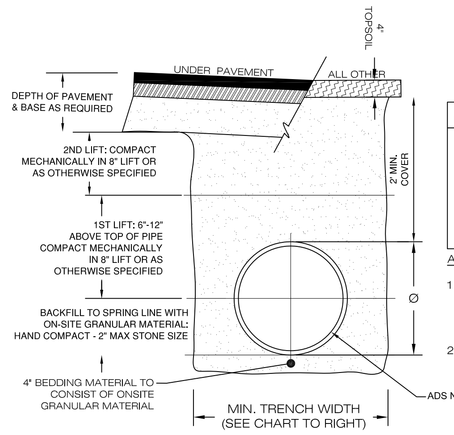
PLAN VIEW

(*) RIP RAP SIZE IS SPECIFIED IN THE TABLE
N.T.S.

STRUCTURE	PIPE DIA. (INCH)	PIPE LENGTH (LF)	PIPE SLOPE (%)	DISCHARGE Q (*) (CFS)	RIP RAP DIA. D_{50} (INCHES)	MIN. APRON LENGTH L (FT)	APRON WIDTH (FT)	
							W	A
ES #1	18"	67	3.0	2.07	4	10 (**)	11.5	4.5
ES #2	15"	17	11.8	1.84	4	10 (**)	11	3
ES #3	15"	63	4.0	0.49	4	10 (**)	11	3
ES #12	12"	74	1.4	0.03	4	10 (**)	11	3
ES #13	12"	37	1.4	0.02	4	10 (**)	11	3
ES #14	15"	29	25.9	12.99	4	10 (**)	11	3
ES #15	15"	21	2.4	1.50	4	10 (**)	11.5	4.5

(*) BASED ON 25 YEAR STORM PEAK FLOWS.
DESIGN IS BASED ON "NYS STANDARDS & SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, APRIL 2005
(**) MINIMUM DIMENSION OF 10 FT. USED

RIP-RAP OUTLET PROTECTION DETAIL
N.T.S.

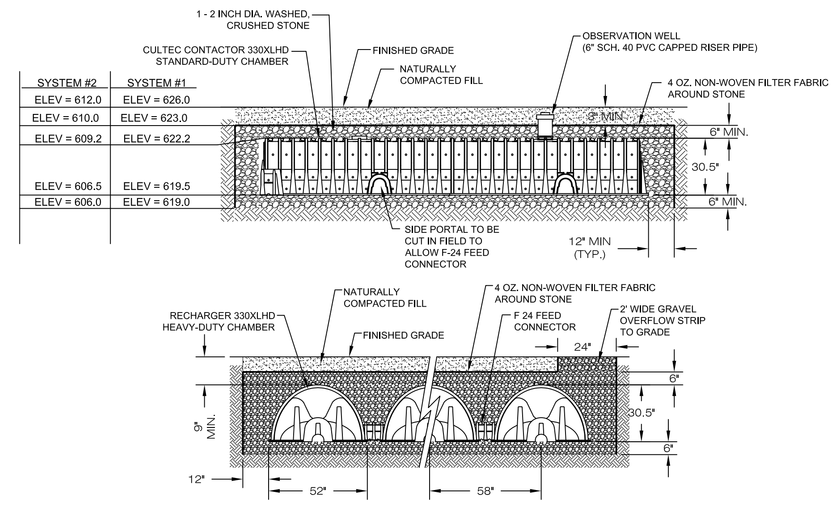


PIPE DIAMETER Ø	TRENCH WIDTH
4"	21"
6"	23"
8"	25"
12"	31"
15"	34"
18"	39"
24"	48"
30"	66"

ADDITIONAL NOTES:

1. ANY ADDITIONAL REQUIREMENTS AND SPECIFICATIONS SET FORTH BY THE PIPE MANUFACTURER MUST BE FOLLOWED FOR BACKFILLING
2. BACK FILL MATERIAL TO BE FREE OF FROST & STONES OVER 8" IN SIZE & COMPACTED AS REQUIRED

DRAINAGE PIPE INSTALLATION
N.T.S.

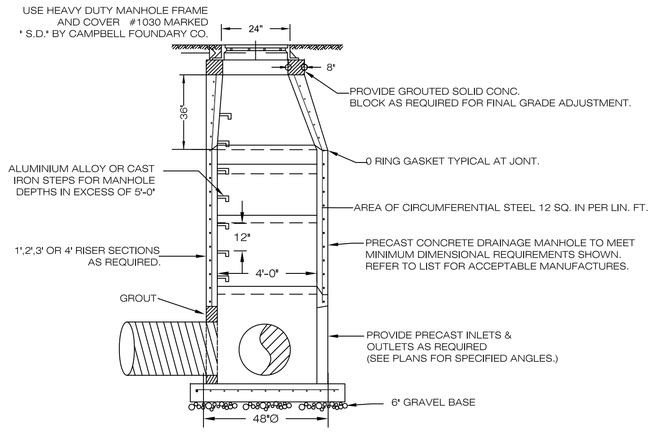


GENERAL NOTES
RECHARGER 330XLHD BY CULTEC, INC. OF BROOKFIELD, CT.
STORAGE PROVIDED = 11.32 CF/FT PER DESIGN UNIT.
INSTALLED LENGTH = 7 FEET
REFER TO CULTEC, INC.'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
USE RECHARGER 330XLHD HEAVY DUTY FOR TRAFFIC AND/OR H20 APPLICATIONS.

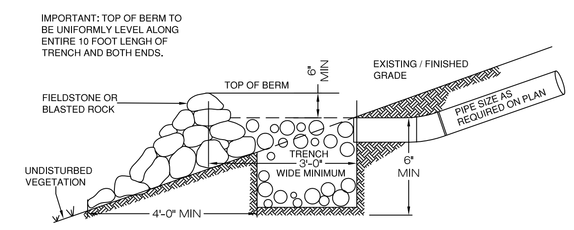
ALL RECHARGER 330XLHD HEAVY DUTY UNITS ARE MARKED WITH A COLOR STRIPE FORMED INTO THE PART ALONG THE LENGTH OF THE CHAMBER.
ALL RECHARGER 330XLHD CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

CULTEC RECHARGER 330XLHD
N.T.S.

MAINTENANCE:
WHERE THIS PRACTICE IS USED AS TEMPORARY PROTECTION FOR S.T.B. OUTLETS: MONTHLY INSPECTIONS SHALL BE MADE TO INSURE PROPER FUNCTIONING. SEDIMENT BUILD-UP SHALL BE REMOVED WHEN LEVEL REACHES 1/3 HEIGHT OF DAM. EVALUATE FILTER DAMS AND REPLACE, IF NECESSARY.



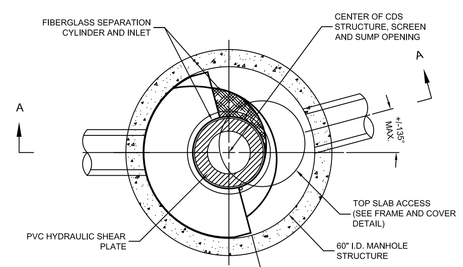
TYPICAL DRAINAGE MANHOLE
N.T.S.
(H20 DESIGN LOADING REQUIRED)



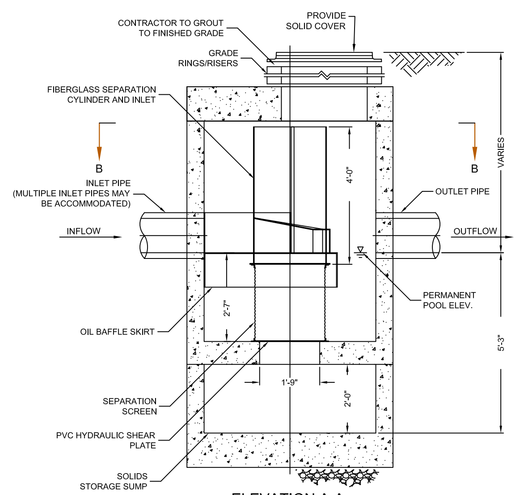
TRENCH SHALL REMAIN UNFILLED (SEE NOTE *) UNTIL COMPLETION OF PAVING AND SITE STABILIZATION WITH SUITABLE VEGETATIVE COVER, AS DIRECTED BY ENGINEER. SILT DEPOSITED DURING CONSTRUCTION SHALL BE REMOVED AND TRENCH FILLED AS SHOWN WITH FIELDSTONE OR TAILNGS - MINIMUM 4" DIA.

* EXCEPT AT PIPE DISCHARGE POINT ; A PILE OF FIELDSTONE SHALL BE PLACED IN TRENCH AS A " SPLASH PLATE " TO MINIMIZE SCOURING.

LEVEL SPREADER
N.T.S.



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

RATED TREATMENT CAPACITY = 1.1 CFS
NOTE: PEAK FLOWS FROM 90% STORM AT ALL PROPOSED CDS UNITS ARE BELOW TREATMENT FLOW CAPACITY AND THEREFORE SHALL USE CDS 2020-C MODEL.

MAXIMUM INTERNAL BYPASS CAPACITY = 14.0 CFS
(INLET PIPE MODEL)

CONTECH STORMWATER SOLUTIONS CDS 2020-C
PRECAST CONCRETE WATER QUALITY SYSTEM DETAIL
N.T.S.

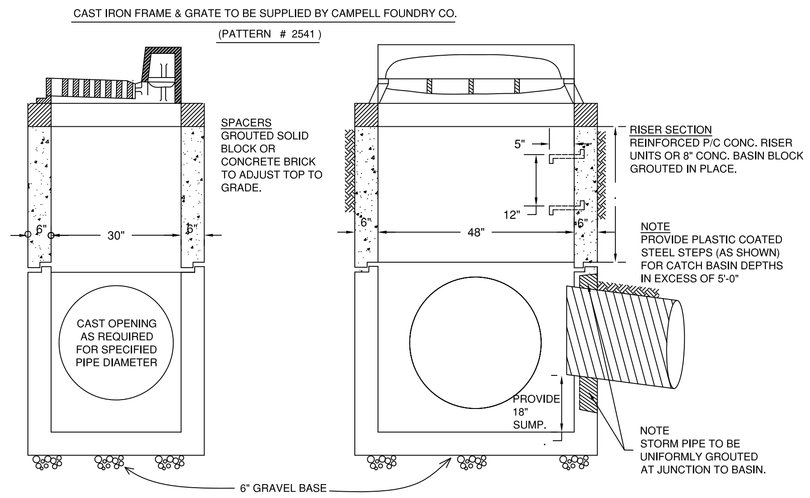
GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS, ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH STORMWATER SOLUTIONS REPRESENTATIVE, www.contechstormwater.com
4. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT OR BELOW OUTLET PIPE INVERT ELEVATION.
ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
6. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER, REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT. HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

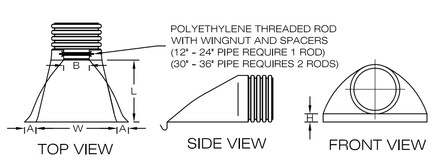
SEED MIXTURE	RATE / 1000 SF
BIRDSFOOT	.2lb
TREFOIL	.5 lb
TALL FESCUE	.1 lb
RED TOP	1 lb/1000 SF LAWN STARTING
FERTILIZER	MIX OF N.P.K.
MULCH:	CURLEX BLANKET BY AMERICAN EXCELSIOR COMPANY INSTALL AND STAPLE PER MANUFACTURER'S INSTRUCTIONS.

GRASS SWALE DETAIL
N.T.S.

CAST IRON FRAME & GRATE TO BE SUPPLIED BY CAMPELL FOUNDRY CO.
(PATTERN # 2541)



TYPICAL CATCH BASIN
N.T.S.



ADS PRODUCT DIMENSIONS						
PART #	PIPE Ø	A	B (MAX)	H	L	W
1210NP	12"	6.5"	10'	6.5'	25'	29'
1510NP	15"	6.5"	10'	6.5'	25'	29'
1810NP	18"	7.5"	15'	6.5'	32'	35'
2410NP	24"	7.5"	18"	6.5'	36'	45'
3012NP	30"	7.5'	1'2"	8.6'	36'	63'
3615NP	36"	7.5'	25'	8.6'	58'	63'

ADS - FLARED END SECTION
OR APPROVED EQUAL
N.T.S.

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN DATE

SECRETARY DATE

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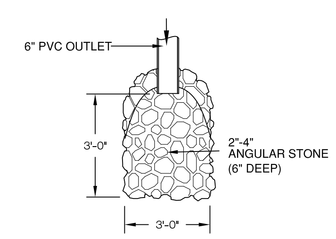
DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.



RIP RAP DRAINAGE OUTLET DETAIL
N.T.S.
(TO BE USED AT THE OUTFALL OF 6" PVC ROOF DRAINS)

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DWG. TITLE: **ADDITIONAL DETAILS**

PROJECT NAME: SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

D-2
SHEET 10 OF 12

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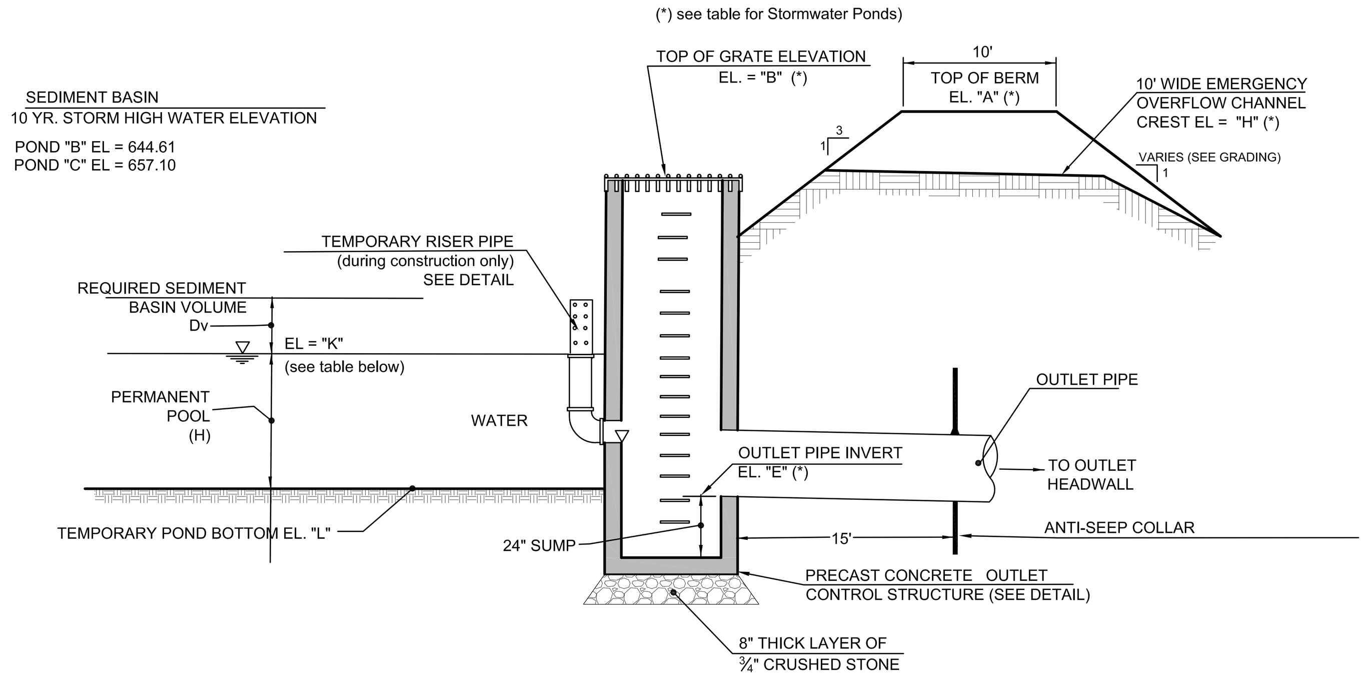
TEMPORARY SEDIMENT BASINS

(*) see table for Stormwater Ponds)

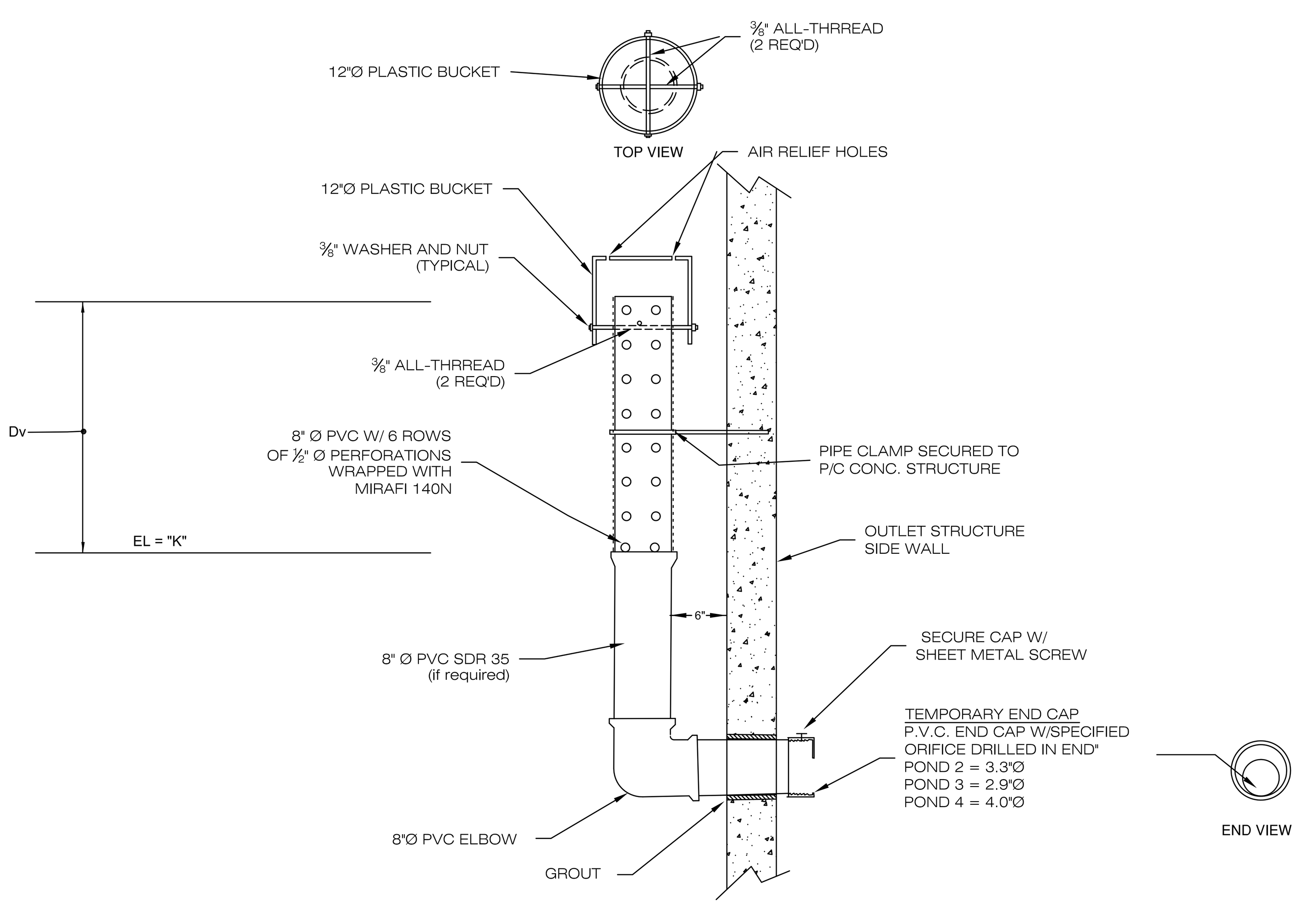


X- SECTIONAL VIEW
N.T.S.

Stormwater Basin as a Sediment Basin	Watershed Area (ac)	Required		Provided			Dv		H	Temporary Bottom El. "L"
		Basin Volume (cf)	Pool Volume (cf)	Basin Volume (cf)	Pool Volume (cf)	Pool El. "K"	ELEV.	HT.		
SB-1 (*)	-	-	-	-	-	-	-	-	-	-
SB-2 (**)	3.11	11,196	5,598	11,315	6,917	599.0	600.25	1.25'	2.0'	597.0
SB-3 (**)	1.80	6,480	3,240	18,138	4,640	598.25	599.25	1.0'	1.25'	597.0
SB-4 (**)	4.73	17,028	8,514	17,043	8,656	585.4	587.0	1.6'	2.4'	583.0

(*) SB-1 (EXISTING WETLAND) **SHALL NOT** BE USED AS SEDIMENT BASIN DURING CONSTRUCTION. USE TEMP. WATER BREAKS TO DIVERT RUNOFF PAST BASIN AND INTO TEMPORARY SILT TRAPS DOWNSTREAM. THE OUTLET FROM CB #6 SHALL BE PLUGGED DURING CONSTRUCTION.

(**) SB-2, SB-3, SB-4 (INFILTRATION BASINS) TO BE EXCAVATED TO 1 FOOT ABOVE FINAL BASIN BOTTOM (EL. "F"). ONCE THE TRIBUTARY AREAS HAVE BEEN STABILIZED; REMOVE ACCUMULATED SEDIMENT, REGRADE BASIN TO FINAL ELEVATIONS, AND ADJUST OUTLET STRUCTURE TO FINAL SPECIFICATIONS AS PER THE PLANS AND DETAILS.



TEMPORARY SEDIMENT BASIN RISER DETAIL
N.T.S.

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

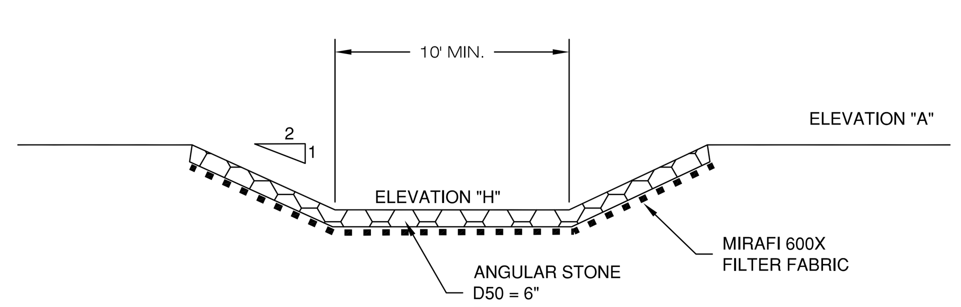
CHAIRMAN ______ DATE

SECRETARY ______ DATE

TOWN ENGINEER ______ DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER ______ DATE
RIDGEVIEW DESIGNER BUILDERS, INC.



EMERGENCY OVERFLOW CHANNEL: RIP RAP LINING DETAIL
N.T.S.

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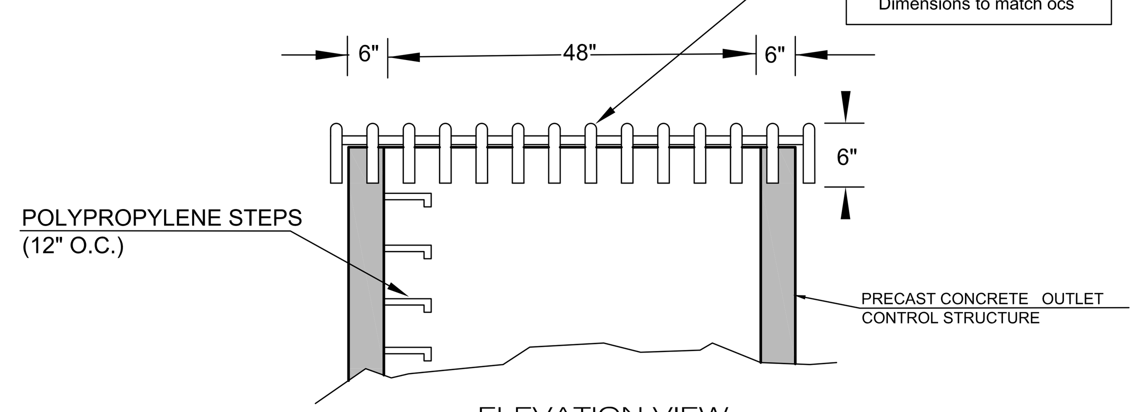
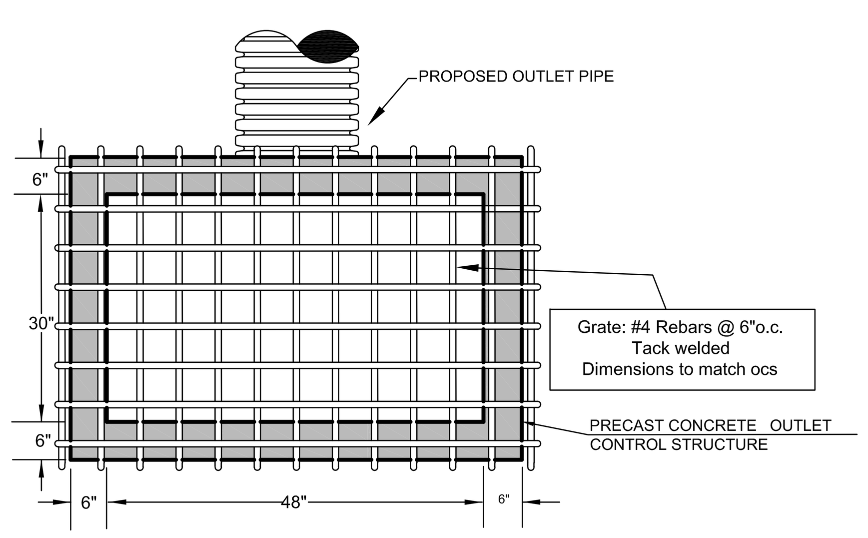


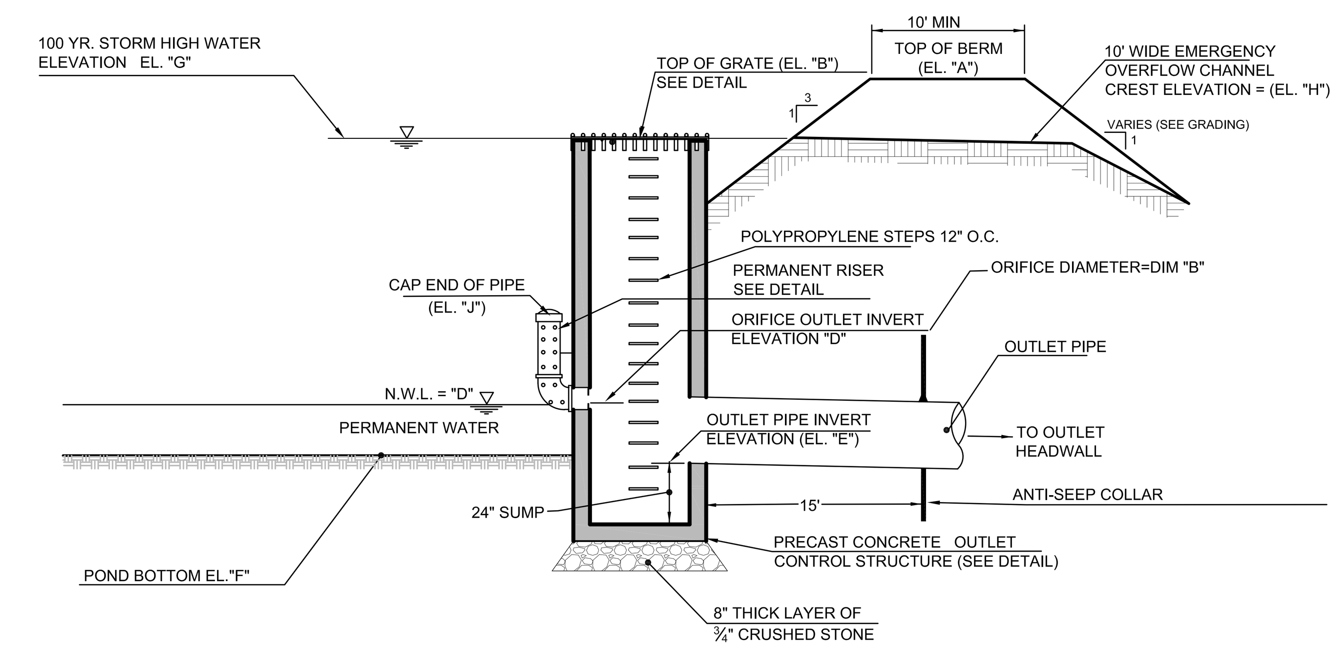
ELEVATION VIEW
N.T.S.



PLAN VIEW

OUTLET CONTROL STRUCTURE AND GRATE DETAIL
N.T.S.

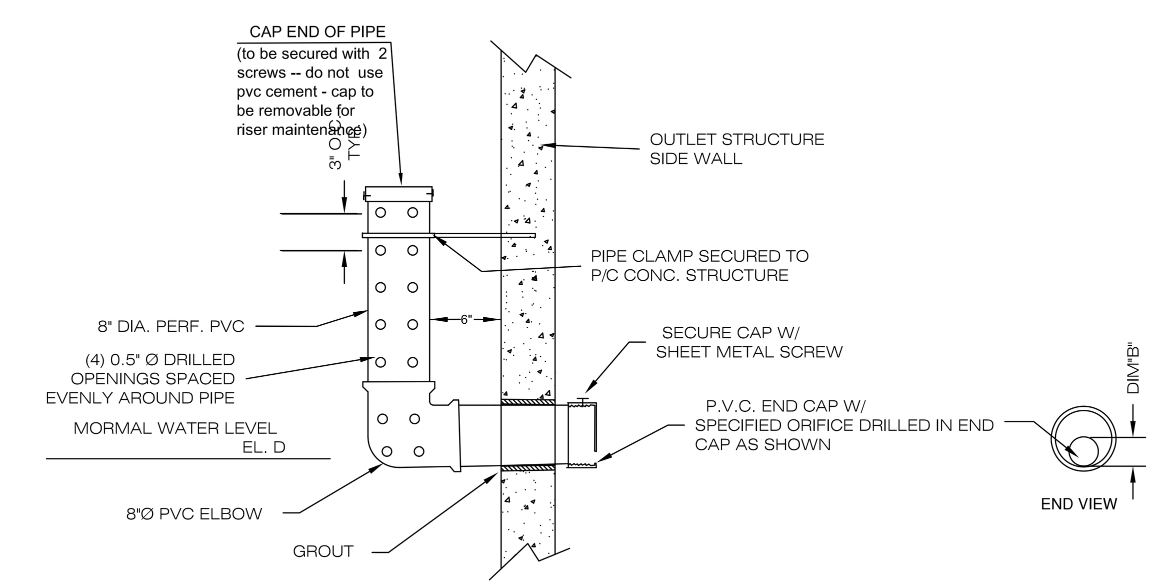
STORMWATER BASINS



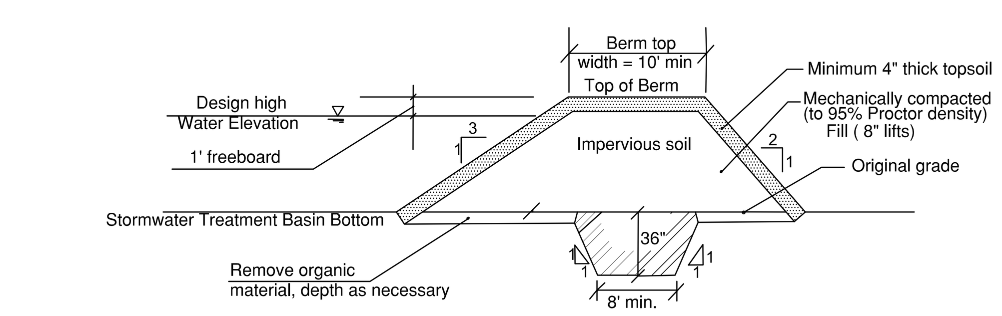
X- SECTIONAL VIEW
N.T.S.

STORMWATER QUALITY BASIN #	DESIGN FUNCTION	ELEVATIONS								DIMENSIONS	OUTLET PIPE		
		EL. "A"	EL. "B"	EL. "D"	EL. "E"	EL. "F"	EL. "G"	EL. "H"	EL. "J"	DIM. "B" (Ø INCH)	DIA./MATERIAL (INCH)	SLOPE	LENGTH
SB-1	EXISTING WETLAND	617.0	615.5	614.0	613.5	613.5	615.63	-	614.5	1.0"	12" HDPE	3.0 %	50'
SB-2	INFILTRATION BASIN (I-2)	602.2	600.0	598.4	596.0	596.0	600.25	601.2	598.4	1.0"	12" HDPE	1.4 %	74'
SB-3	INFILTRATION BASIN (I-2)	602.0	601.0	597.8	596.0	596.0	600.77	601.5	597.8	0.8"	12" HDPE	1.4 %	37'
SB-4	INFILTRATION BASIN (I-2)	588.40	587.0	584.0	583.5	582.0	587.37	587.9	586.0	1.0"	15" HDPE	2.4 %	21'

STORMWATER BASIN
OUTLET CONTROL CONFIGURATION
N.T.S.



PERMANENT STORMWATER POND RISER DETAIL
N.T.S.



STORMWATER BASIN BERM DETAIL
N.T.S.

Whenever a berm is to be constructed on a slope:
The subgrade shall be benched to provide level surfaces for proper operation of compaction equipment.

CONSTRUCTION SPECIFICATIONS

1. " EMBANKMENT MATERIAL SHALL CONSIST OF SELECT GLACIAL TILL COMPRISED OF A MIX OF SILT, SAND, CLAY AND GRAVEL FROM ONSITE EXCAVATION. THE PERCENTAGE OF FINES PASSING THE 200 SIEVE SHALL BE AT LEAST 20% BY WEIGHT BORROW MATERIAL SHALL BE TESTED FOR OPTIMUM MOISTURE CONTENT AND PROCTOR MAXIMUM DRY DENSITY. MATERIAL WITH MOISTURE CONTENT IN EXCESS OF OPTIMUM SHALL BE DRIED TO THE REQUIRED OPTIMUM CONTENT BY SPREADING, HARROWING, BLADING OR OTHER APPROVED MEANS PRIOR TO PLACEMENT IN THE BERM. NO STONES GREATER IN SIZE THAN 6 INCHES IN MAXIMUM DIMENSIONS AND NO ORGANIC MATERIAL SHALL BE ALLOWED IN THE EMBANKMENT.

2. THE GROUND SURFACE UNDER THE EMBANKMENT SHALL BE STRIPPED OF ALL VEGETATION, ROOTS, TOPSOIL AND SUBSOIL TO THE DEPTH INDICATED ON THE DETAIL. AFTER STRIPPING TO SUBGRADE THE EARTH SHALL BE MOISTENED, IF DRY, AND COMPACTED BEFORE PLACEMENT OF THE FIRST LAYER OF EMBANKMENT MATERIAL.

3. THE EMBANKMENT SHALL BE CONSTRUCTED IN EVEN EIGHT(8) INCH LIFTS AND MECHANICALLY COMPACTED TO A MINIMUM DRY DENSITY OF 95% OF MAXIMUM DENSITY AS DETERMINED BY THE STANDARD COMPACTION TEST.

4. COMPACTION EQUIPMENT

   A) EMBANKMENT LIFTS-LIFTS SHALL BE COMPACTED WITH A SMOOTH STEEL WHEEL VIBRATORY ROLLER HAVING A NOMINAL GROSS WEIGHT OF NOT LESS THAN 10 TONS AND EXERT A MINIMUM FORCE OF NOT LESS THAN 300 POUNDS PER INCH OF WIDTH ON THE COMPRESSION ROLL FACES.

   B) SPECIALLY COMPACTED EARTH FILL- WHERE COMPACTION BY MEANS OF THE SPECIFIED ROLLER IS IMPRACTICAL AT SUCH LOCATIONS AS STEEP AND IRREGULAR ABUTMENTS, ROUGH AND IRREGULAR FOUNDATIONS, ADJACENT TO OUTLET WORKS, COMPACTION EQUIPMENT SHALL INCLUDE IMPACT RAMMERS, SMALL DRUM VIBRATORS, OR OTHER APPROVED MECHANICAL TAMPERS. THE MATERIAL, MOISTURE AND DENSITY SHALL BE AS SPECIFIED ABOVE EXCEPT THAT ROCK SIZE SHALL BE LIMITED TO 2 INCHES. LIFT THICKNESS SHALL BE REDUCED IF NECESSARY TO ACHIEVE THE REQUIRED COMPACTION WITH THE EQUIPMENT USED.

5. ANTI-SEEP COLLARS AS SUPPLIED BY SCHEIB DRAINAGE PRODUCTS, OREGON, MO. TO BE INSTALLED ON ALL OUTLET PIPES PENETRATING THE BERM.

DATE: 05-09-05

REVISION

06-16-11	Conservation Plan
09-01-12	Review / Response
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response
3-16-16	Review / Response

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DWG. TITLE:
STORMWATER MANAGEMENT

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
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Doc. ID:
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DWG. NO.:

SW-1
SHEET 11 OF 12

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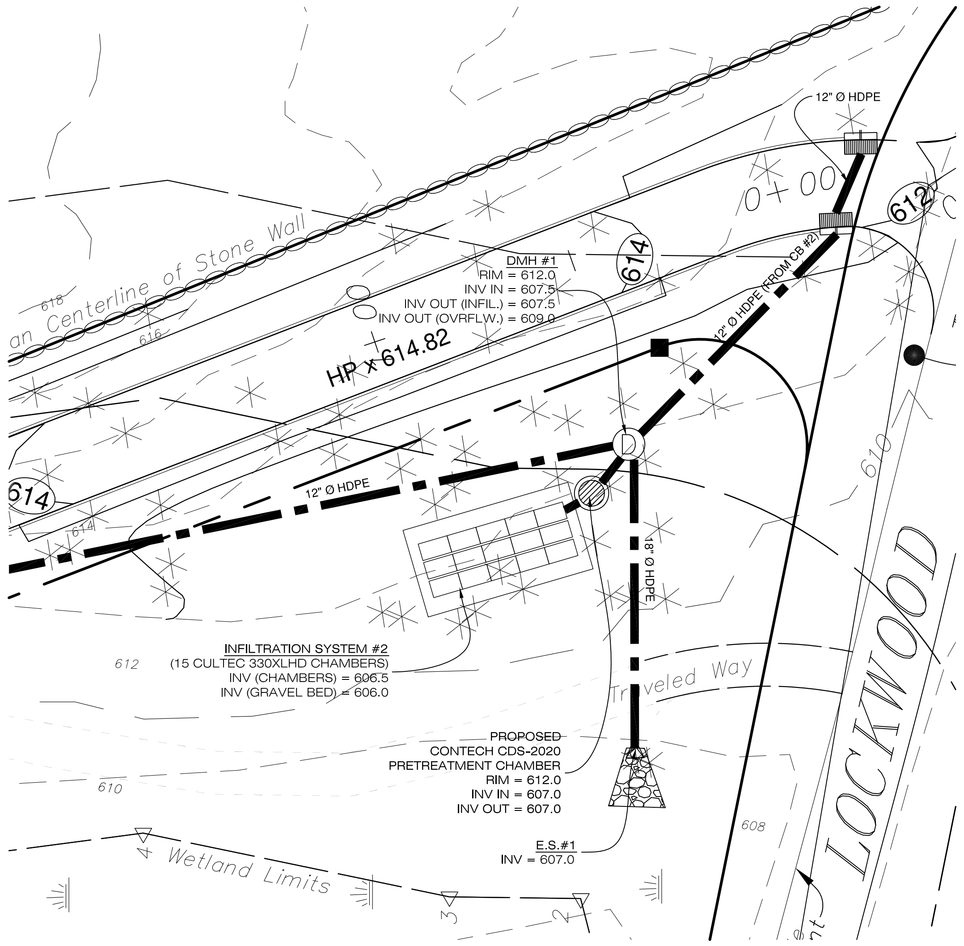
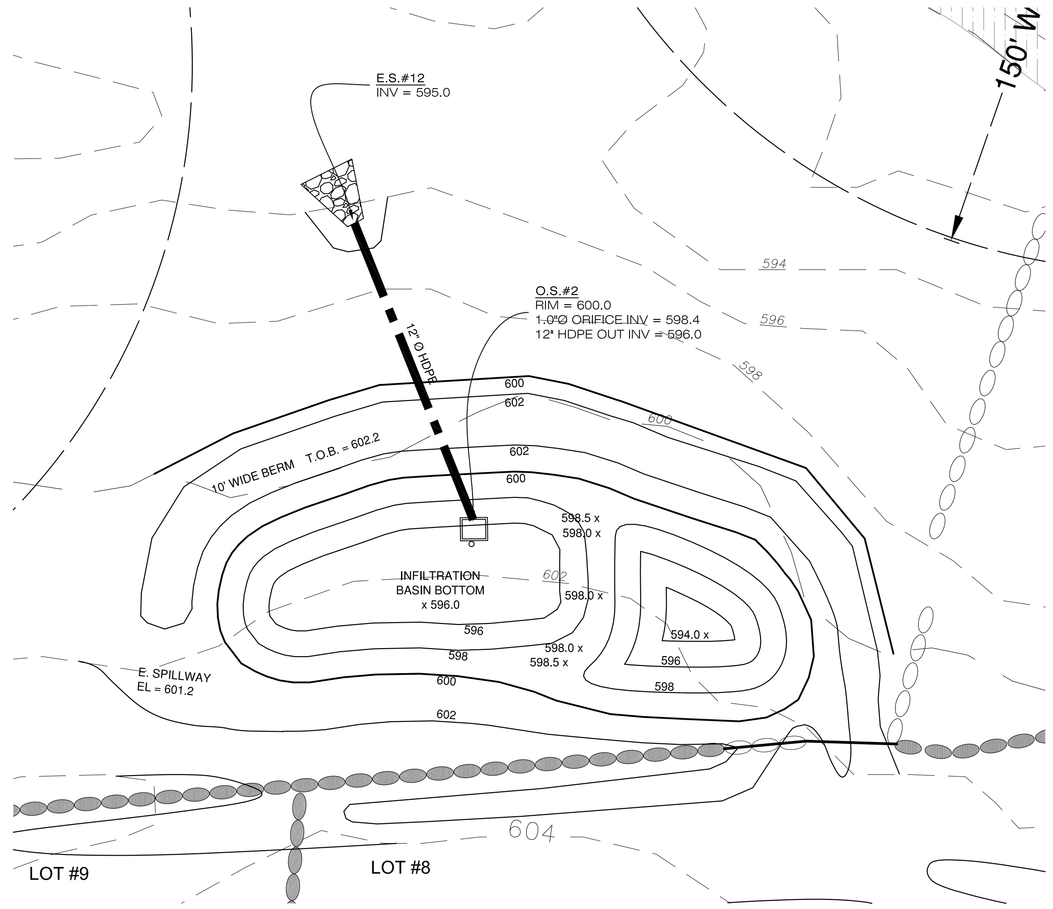


INFILTRATION SYSTEM #2

SCALE 1" = 20'

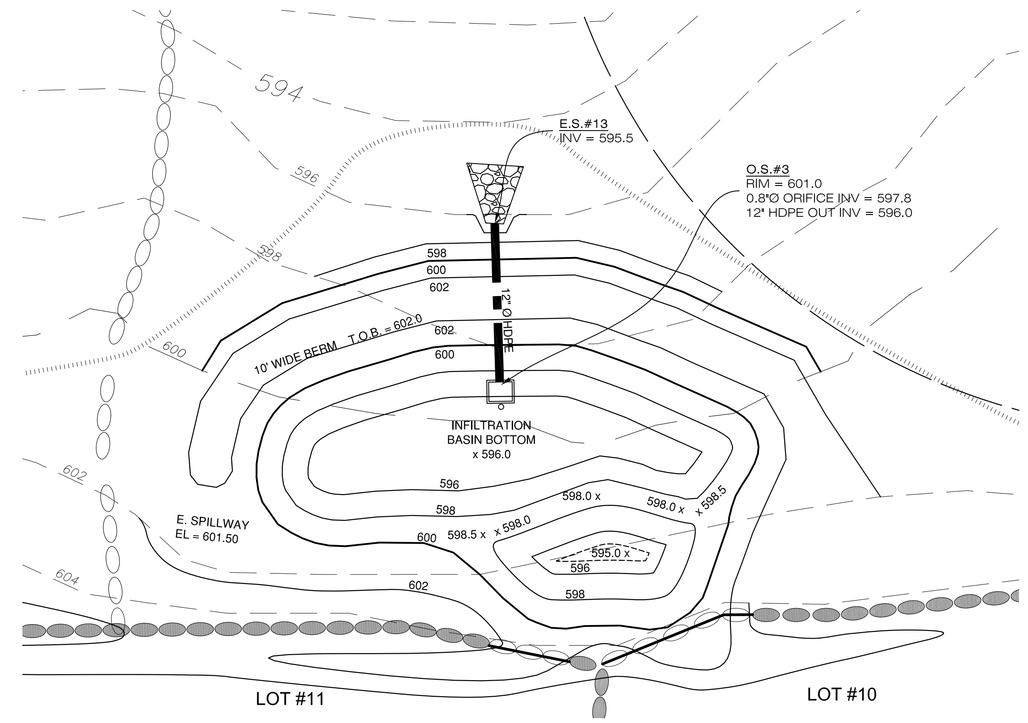


STORMWATER BASIN #2

SCALE 1" = 20'

BASIN DIMENSIONAL REQUIREMENTS:

ELEVATION	AREA	COMMENTS
596.0	1,330 SF	BOTTOM
598.0	2,436 SF	
600.0	6,022 SF	RIM ELEVATION
601.0	7,047 SF	
602.0	8,129 SF	

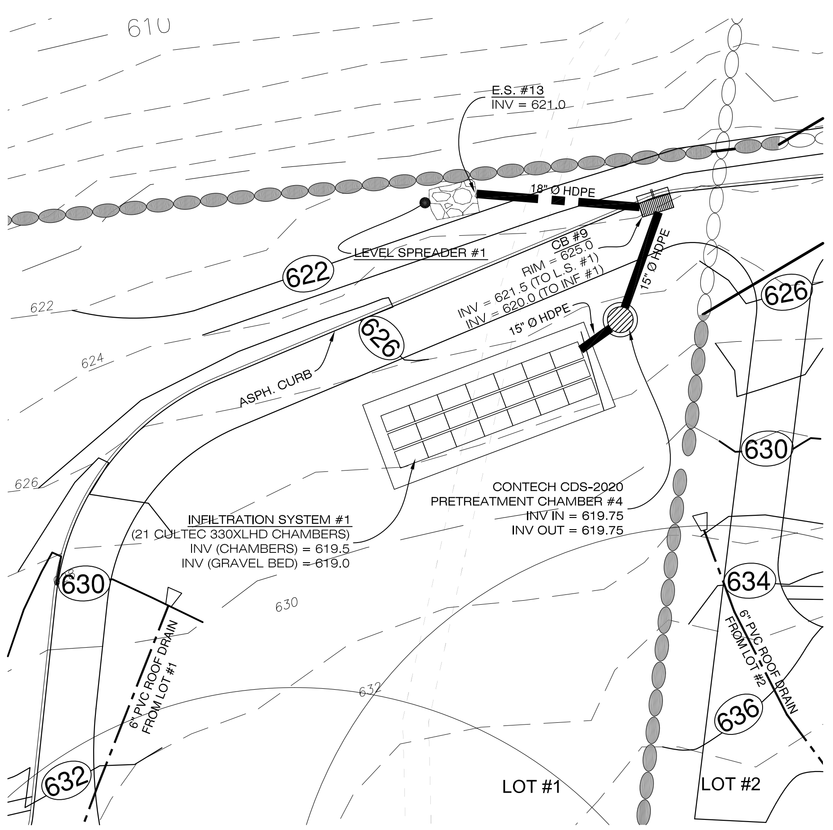


STORMWATER BASIN #3

SCALE 1" = 20'

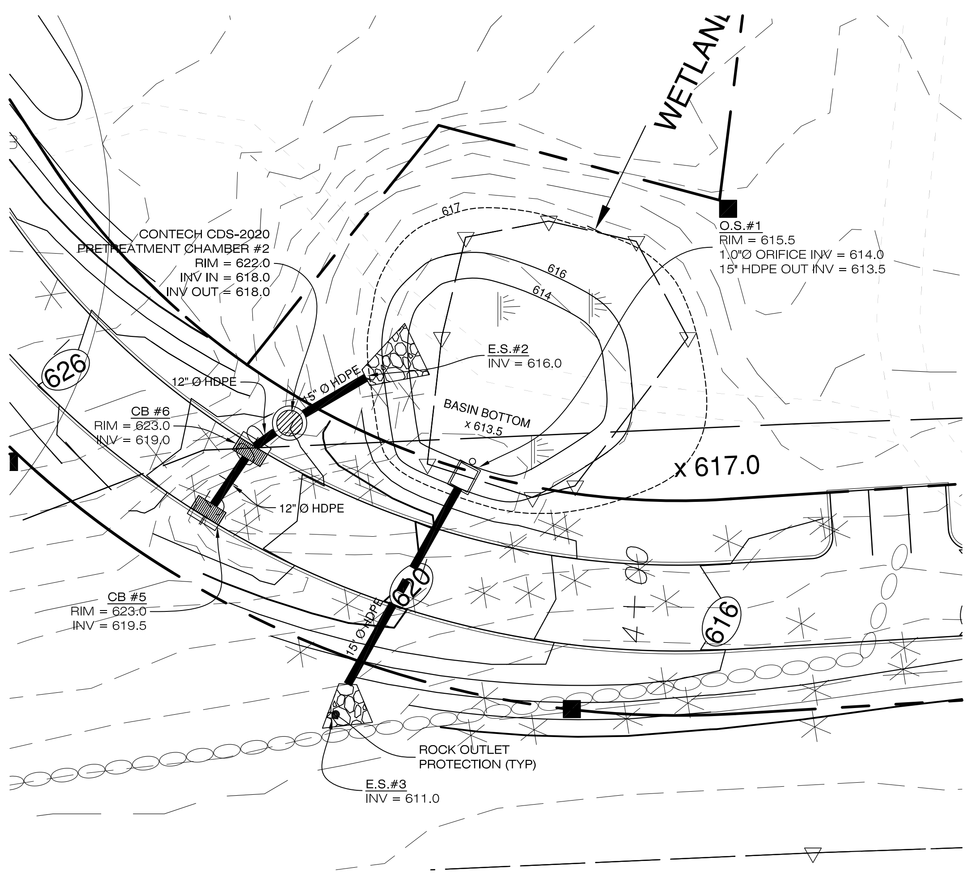
BASIN DIMENSIONAL REQUIREMENTS:

ELEVATION	AREA	COMMENTS
596.0	1,406 SF	BOTTOM
598.0	2,703 SF	
600.0	5,534 SF	
601.0	6,463 SF	RIM ELEVATION
602.0	7,433 SF	BERM ELEVATION



INFILTRATION SYSTEM #1

SCALE 1" = 20'

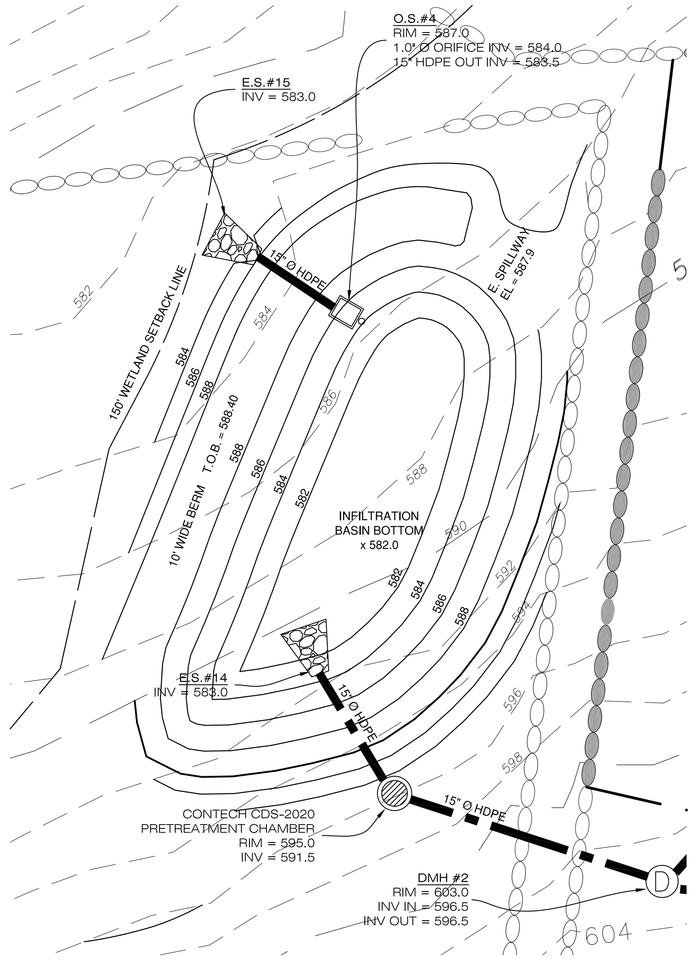


STORMWATER BASIN #1 (EXISTING WETLAND)

SCALE 1" = 20'

BASIN DIMENSIONAL REQUIREMENTS:

ELEVATION	AREA	COMMENTS
613.5	218 SF	BOTTOM OF BASIN
614.0	1,670 SF	
616.0	2,673 SF	
617.0	4,584 SF	



STORMWATER BASIN #4

SCALE 1" = 20'

BASIN DIMENSIONAL REQUIREMENTS:

ELEVATION	AREA	COMMENTS
582.0	2,062 SF	BOTTOM
584.0	3,442 SF	
586.0	5,063 SF	
587.0	5,959 SF	RIM ELEVATION
588.0	6,912 SF	

APPROVED BY RESOLUTION OF THE LEWISBORO TOWN PLANNING BOARD.

CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

APPROVED FOR FILING IN THE WESTCHESTER COUNTY CLERK'S OFFICE, DIVISION OF LAND RECORDS

DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

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DATE: 05-09-05

REVISION	
06-16-11	Conservation Plan
09-01-12	Review / Response
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DWG. TITLE:
STORMWATER MANAGEMENT

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

SW-2

SHEET 12 OF 12

PLAN

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

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CHAIRMAN DATE

SECRETARY DATE

TOWN ENGINEER DATE

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DANIEL HIGGINS, OWNER DATE
RIDGEVIEW DESIGNER BUILDERS, INC.

SITE LEGEND

- 150' WETLAND SETBACK
- 100' STATE WETLAND ADJACENT AREA
- WETLAND BOUNDARY (STATE AND LOCAL) (FLAGGED BY TIM MILLER ASSOCIATES) RECONFIRMED BY EVANS ASSOCIATES, 2010
- SLOPES > 15%
- PROPOSED LOT LINE
  PROPOSED MINIMUM LOT SIZE = 40,000 SF
- EX. STONE WALL AS LOT LINE
- PROPOSED BUILDING SETBACKS: (BASED ON R-1A) AND "BUILDING ENVELOPE"
  FRONT YARD = 40'
  SIDE YARD = 30'
  REAR YARD = 40'

NOTE: THE PROPOSED DWELLING, FUTURE GARAGE, BARN, SHED, OR POOL SHALL BE LOCATED WITHIN THE BUILDING ENVELOPE SHOWN HEREON. THE PURPOSE OF THIS BUILDING ENVELOPE IS TO ALLOW FLEXIBILITY IN THE LOCATION OF THE DWELLING AND ACCESSORY STURCTURES AND IMPROVEMENTS. THE LOCATION OF THE PROPOSED DRIVEWAY, SEPTIC SYSTEM, WELL AND STORMWATER STRUCTURES AND FACILITIES SHALL BE LOCATED, AS SHOWN ON THE APPROVED CONSTRUCTION DRAWINGS. ANY DEVIATION SHALL REQUIRE PLANNING BOARD APPROVAL.

- PROPOSED DWELLING AND DRIVEWAY
- DRAINAGE, UTILITY AND ACCESS EASEMENT
- BE BE BE PROPOSED "BUILDING ENVELOPE"
- PROPOSED MONUMENT

ZONING CONFORMANCE: CONSERVATION SUBDIVISION

	REQUIRED	PROVIDED											
		LOT#1	LOT#2	LOT#3	LOT#4	LOT#5	LOT#6	LOT#7	LOT#8	LOT#9	LOT#10	LOT#11	LOT#12
FRONT YARD + FROM STREET CENTER LINE	65'	n/a	n/a	n/a	n/a	146.4'	76.1'	90.9'	256.4'	65.4'	65.1'	n/a	n/a
+ FROM FRONT LOT LINE	40	606'	338.7'	211.9'	166.2'	121.4'	51.1'	65.9'	231.6'	40.4'	40.0'+	68.2'	163.9'
SIDE YARD	30'	139.5'	40.8'	30.3'	30.0'	37.5'	CORNER LOT	35.5'	71.6'	31.8'	50.3'	65.7'	48.9'
REAR YARD	40'	54.7'	67.4'	56.3'	59.8'	92.0'	50.4'	47.7'	63.0'	166.1'	126.1'	46.5'	82.7'
BUILDING COVERAGE	12 %	3.2 %	6.5%	6.2 %	6.4 %	5.9 %	6.5 %	4.7 %	4.5 %	6.5 %	6.9 %	7.0 %	6.4 %
BUILDING HEIGHT	2.5 STORIES	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	35' MAX.	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'	<35'
LOT WIDTH	150' DIA. CIRCLE	150'	150'	150'	150'	150'	150'	150'	150'+	150'+	150' +	150' +	150' +
LOT DEPTH	300' MAX	732'	455.4'	327.1	293'	256.2'	179.8'	219.4'	357.1'	253.1'	212.6'	190.4'	323'
ACTUAL LOT AREA	MIN 1 AC.	1.97 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.03 AC +/- (SEE NOTE 1)	1.0 AC +/-	1.06 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.35 AC +/-	1.43 AC +/-	0.98 AC +/- (SEE NOTE 1)	0.92 AC +/- (SEE NOTE 1)	0.91 AC +/- (SEE NOTE 1)	1.07 AC +/-
MIN LOT AREA REQ'D.*		2.44 AC +/-	1.52 AC +/-	1.09 AC +/-	1.0 AC +/-	1.0 AC +/-	1.0 AC	1.0 AC	1.19 AC	1.0 AC	1.0 AC	1.0 AC	1.07 AC +/-
MIN LOT AREA PROVIDED **		1.58 AC (SEE NOTE 1)	0.82 AC +/- (SEE NOTE 1)	1.0 AC +/- (SEE NOTE 1)	1.0 AC +/-	1.6 AC +/-	0.98 AC +/- (SEE NOTE 1)	1.35 AC +/-	1.43 AC +/-	0.98 AC +/- (SEE NOTE 1)	0.92 AC +/- (SEE NOTE 1)	0.91 AC +/- (SEE NOTE 1)	1.07 AC +/-
STREET FRONTAGE	25'	25'	26'	52'	110'	185'	354'	205'	41'	165'	183'	110'	52'
CONTIGUOUS BUILDABLE AREA ***	35,000 SFMIN.	68,759 SF +/-	35,840 SF +	39,721 SF +/-	42,362 SF +/-	44,407 SF +/-	39,881 SF +/-	57,097 SF +/-	58,315 SF +/-	41,856 SF +/-	40,075 SF +/-	40,510 SF +/-	43,680 SF+/-

* REQUIRED LOT AREA BASED ON LOT DEPTH §220-25B

** LAND EXCLUDING AREAS WITH LESS THAN 1/3 THE REQUIRED LOT WIDTH

*** LAND EXCLUDING STEEP SLOPES (>15%), WETLANDS PER §220-10E(2)(a) OF THE AMENDED ZONING CODE

NOTE 1: IN ORDER TO PRESERVE EXISTING STONE WALLS AND MINIMIZE INCURSION WITHIN WETLAND BUFFERS, VARIANCE FROM LOT SHAPE AND DIMENSIONAL REQUIREMENTS OF THE R-1A DISTRICT IS SOUGHT FROM THE LEWISBORO TOWN BOARD

DATE: 05-09-05

REVISION	
06-16-11	Conservation Plan
09-01-12	Review / Response
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3-16-16	Review / Response

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SHEET 3 OF 12

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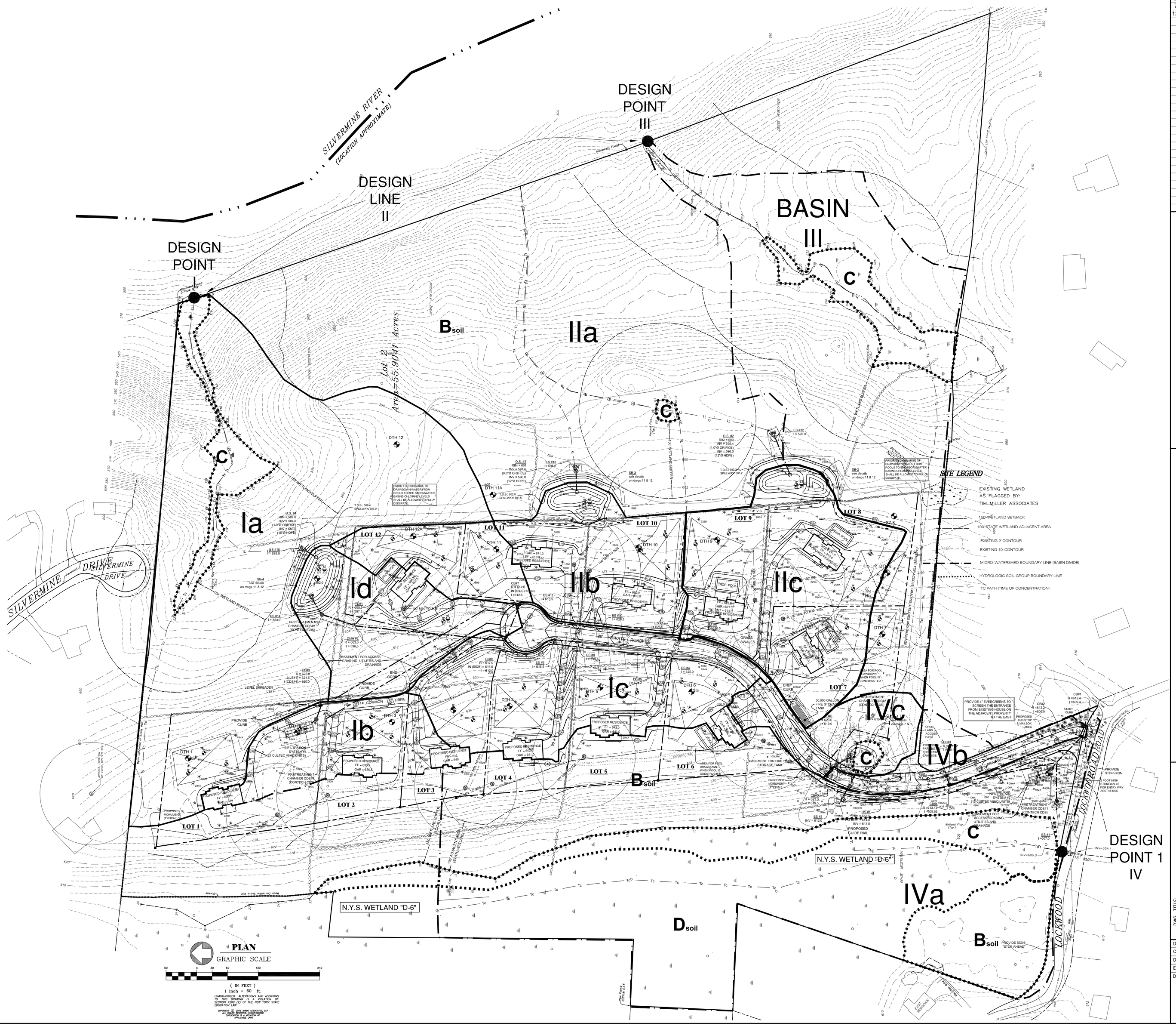

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DWG. TITLE:
POST-DEVELOPMENT DRAINAGE & SOILS MAP

PROJECT NAME:
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SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
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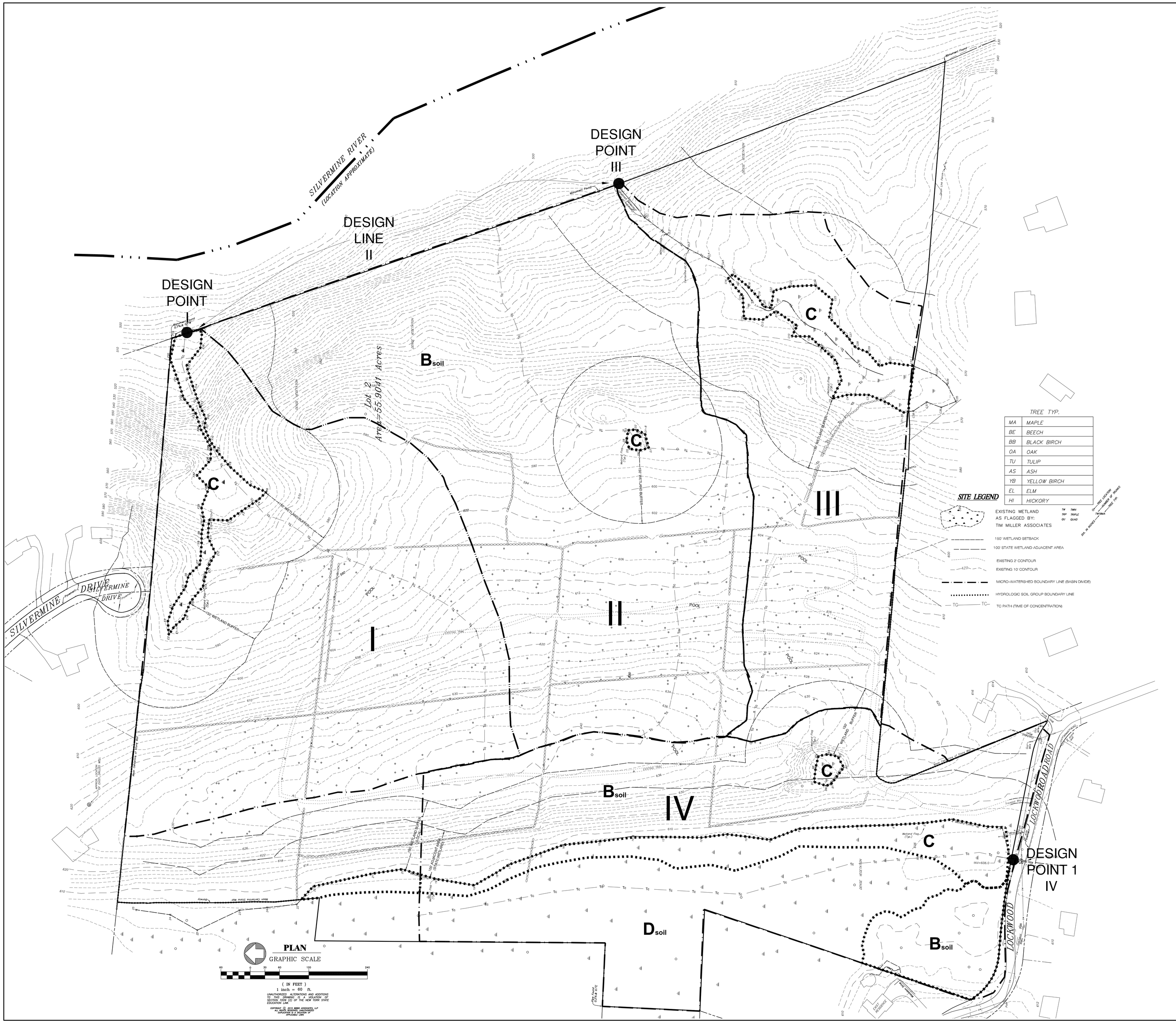
POST
APPENDIX D–2



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DATE: 05-09-05

REVISION

06-16-11	Cons. Plan SWPPP
11-10-14	Review / Response
2-17-15	Review / Response
7-20-15	Review / Response
12-10-15	Review / Response

ENGINEERING CONSULTANT:
BIBBO ASSOCIATES, L.L.P.
CONSULTING ENGINEERS AND PLANNERS
MAP LAYOUT BY:
293 ROUTE 100, SUITE 203
SOMERS, NEW YORK
TEL (914) 277-5805
TIMOTHY S. ALLEN, P.E.

DWG. TITLE:
PRE-DEVELOPMENT DRAINAGE & SOILS MAP

PROJECT NAME:
SILVERMINE PRESERVE
SILVERMINE DRIVE & LOCKWOOD ROAD
TOWN OF LEWISBORO, NEW YORK

Dwn. by:
Checked by:
Doc. ID:
EAEC Proj. No.: 809
DWG. NO.:

PRE
APPENDIX D-1

P:\Projects\MOSS-SILVER\dwg\Moss-Silvermine Solid 12-10-15.dwg, PRE-DEV, 12/31/2015 10:48:36 AM, hitaswermak, 1:1

KELLARD SESSIONS
CONSULTING, P.C.

John Kellard, P.E.
David Sessions, RLA, AICP

MEMORANDUM

TO: Chairman Jerome Kerner, AIA and
Members of Lewisboro Planning Board

CC: Ciorsdan Conran
Judson Siebert, Esq.

FROM: Jan K. Johannessen, AICP
Joseph M. Cermele, P.E., CFM
David J. Sessions, RLA, AICP
Town Consulting Professionals

DATE: May 11, 2016

RE: Le Chateau Banquet Hall Addition (Elegant Banquets)
1410 NYS Route 35
Sheet 39, Block 10549, Lot 17

Project Description

The subject property consists of ±24.2 acres of land and is located on NYS Route 35 within the R-4A Zoning District. The site contains a former restaurant and banquet hall use known as "Le Chateau" which is now out of business. The applicant is proposing a banquet hall addition, along with additional parking, landscape improvements, lighting, stormwater management facilities, etc. It is our understanding that the former restaurant/banquet hall is being considered an existing legal nonconforming use.

SEQRA

The proposed action is an Unlisted Action under the State Environmental Quality Review Act (SEQRA) and a coordinated review is not required. Prior to making a decision on this pending application, the Planning Board must issue a Determination of Significance.

Required Approvals/Referrals

1. Site Development Plan Approval, a Wetland Permit and a Town Stormwater Permit is required from the Planning Board; a public hearing is required to be held on the Wetland Permit.

2. The applicant is proposing the expansion of an existing nonconforming use and a variance and/or approval from the Zoning Board of Appeals is required.

3. The application must be referred to the Architecture and Community Appearance Review Council (ACARC) for review and recommendations; all signage must be approved by the ACARC.

4. The proposed addition and use expansion must be approved by the Westchester County Department of Health (WCDH).

5. The proposed action exceeds land disturbance thresholds and the applicant will require coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-15-002).

6. The application must be referred to the Westchester County Planning Board in accordance with Section 239-m of the General Municipal Law; the Planning Board Secretary will coordinate this referral.

EAF Review

1.12: Please provide a letter from the State Historic Preservation Office regarding the potential for impact to historic or archeological resources; we note that this is also a requirement of the Stormwater Pollution Prevention Plan (SWPPP) and filing of the NYSDEC Notice of Intent.

Plan Comments

1. As previously identified, it is recommended that the Building Inspector review the proposed plans for zoning compliance; a report from the Building Inspector should be provided to the Planning Board.

2. As previously requested, the applicant shall provide correspondence from the WCDH and New York City Department of Environmental Protection (NYCDEP) identifying their extent of jurisdiction and approvals required.

3. As previously identified, the applicant must develop a fully engineered site plan, including grading, drainage, utilities, erosion and sediment controls, traffic related signage, construction details, etc. Further, as discussed, the applicant must develop a Full Stormwater Pollution Prevention Plan (SWPPP) compliant with Town and State standards and provided confirmation as to whether or not approval of the SWPPP by the NYCDEP will be required. Any soil testing for stormwater practices (deep and percolation tests) must be witnessed by this office. It is understood that this material is forthcoming.

4. As discussed when the applicant last appeared before the Planning Board, the proposed use (banquet hall) is not a listed use within the Town's schedule of off-street parking requirements (Section 220-56D). Section 220-56E of the Zoning Code allows the Planning Board to specify reasonable and appropriate off-street parking requirements for unspecified land uses. As discussed, it is recommended that the applicant's traffic engineer propose a parking formula for the proposed use based upon the parking data collected to date, other like businesses, and centered around the number of attendees, staff, and fleet vehicles. The "required" column found within the applicant parking table should be left blank until the Planning Board approves the parking formula.

5. The maximum capacity/maximum number of guests should be determined; this will likely be defined, in part, by septic capacity, building code, and the number of parking spaces to be provided. We note that, according to the applicant, the former Le Chateau restaurant and banquet hall had an established maximum capacity of 175 guests.

6. The plans have been revised to indicate that the parking lot grade will not exceed the maximum permitted 5% slope. However, one handicap accessible parking space opposite the new addition remains shown with a slope greater than the allowable 2%. The applicant shall re-grade this area as necessary to be compliant.

7. The plans indicate that all areas of existing paved parking lots and drives are to be re-paved. Proposed grading should be shown to improve current conditions and provide

proper pitch, cross-slope, crowns and gutters as necessary for re-paved, widened and proposed paved areas.

8. We note that Section 220-55D(2) of the Zoning Code provides a maximum driveway grade of 12%; a portion of the main driveway (proximate to Sta. 4+50) is specified as being ±14%; a portion of the driveway connecting Parking Areas #2 and #4 (proximate to Sta. 14+50) is specified as being ±16%; and a portion of the driveway connecting Parking Areas #4 and #5 (proximate to Sta. 18+00) is specified as being 12.5%. Unless revised, these conditions will require variances from the Zoning Board of Appeals.

9. The road profiles should illustrate existing and proposed grades and be provided for the main driveway loop, as well as for Parking Area #3. The profiles will need to include stormwater systems as the plan progresses.

10. We note that the Zoning Code requires that all access driveways be a minimum of 20 feet wide. This width has been provided for the main drive through Parking Area #2. The driveway connecting Parking Areas #2 through #5 is shown as one-way circulation to be widened to 15 feet. The Town Code is silent regarding width of one-way circulation, except that access to smaller lots (less than 15 spaces) may be accommodated with one, 16 foot wide lane. The Planning Board should discuss whether 15 feet, as proposed, is adequate.

11. Locations of existing and proposed curbing shall be clearly illustrated on the plans.

12. As previously requested, proposed sight distance profiles (both directions) onto NYS Route 35 should be provided on the plan. Existing sight profiles have been included in the Traffic & Parking Evaluation, prepared by Maser Consulting, P.A. The sight profiles indicate that improvements within the right-of-way of NYS Route 35 will be necessary in both directions to provide adequate sight lines, including clearing/pruning of vegetation, removal of a portion of the existing entry wall and relocation of an existing sign. It is noted that sight lines to the existing traffic signal to the east can be achieved, however, the recommended sight distance beyond that will remain limited by an existing off-site embankment.

13. The Site Development (Sheet SP-3.2) refers to entrance improvements by Maser Consulting, P.A. These plans should be submitted for review.

14. We note that the previously submitted photometric plan was not incorporated into the plan set. As previously noted, the average illuminance levels proposed within the five (5) parking areas range between 0.18 – 0.74 f.c.; typically, illuminance levels in parking areas

are higher and average 2.5 f.c. As previously requested, the applicant should ensure that proposed illuminance levels are sufficient and revise the photometric plan accordingly.

15. As previously noted, the applicant may wish to consider installing bollard lighting along the walkway linking Parking Areas #2 and #3.

16. Regarding the location of proposed pole lights in relationship to parking spaces, it is recommended that pole lights located less than 2-feet behind the curb or edge of pavement/gravel be located on an exposed foundation (24 inches above grade), so as to protect the pole from damage. Provide detail. Additionally, the plan proposes a pole light within the entrance to Parking Area #5. The location should be revised and coordinated with the site plan.

17. As previously requested, the hours of operation of all exterior lighting shall be noted on the plan.

18. As previously noted, the landscaping plan is not compliant with Sections 220-55E(3) and (5) of the Zoning Code, which specify the percentage of the parking areas to include landscape islands (10%) and the minimum number of proposed shade trees (1 shade tree per every 10 required spaces). The plan should be revised as necessary to accommodate this requirement.

19. As previously identified, all on-site trees with a diameter of 8" dbh or greater must be survey-located and illustrated on the site plan. It appears that only larger diameter trees have been surveyed.

20. As previously requested, additional information is required pertaining to the "selective tree thinning areas"; if tree removal is proposed, trees within these areas shall also be surveyed and shown on the plan.

21. Notes on the landscaping plan refer to planting along the main access driveway and entrance off of NYS Route 35. As previously requested, the landscaping plan must specify the plant material proposed within these locations.

22. As previously requested, the plans should identify the diameter and specie type of each tree surveyed, as well as indicate trees to be removed and/or protected during construction and tree protection methods. Notes and details should also be provided as applicable.

23. Regarding the wetland report, it does not appear that Wetland C is included or described. Further, the report does not appear to address all items required under Section 217-7A(5) and (6) of the Wetland Ordinance.

24. The Limits of Disturbance Table on Sheet SP-3.1 should be revised to add a row identifying disturbance proposed outside of the wetland buffer and total area of disturbance (site-wide). The table notes that only Wetland Area "A" was considered in determining buffer disturbance. This should be revised to include Wetland Area "C" as well. Further, the limit of disturbance should be adjusted to include areas of stormwater mitigation, landscaping and realistic limits for construction access.

25. As previously requested, a wetland mitigation plan, prepared in conformance with Appendix B-Part II of the Wetland Ordinance, must be submitted for review. We note that the Wetland Ordinance strives for a 1:1 mitigation ratio and a no-net-loss of wetlands and buffers.

26. It is recommended that the project plans be referred to the Fire Department for review and comment. Written comment from the Fire Department should be requested.

27. The existing site driveway is shared with a neighboring property; please submit the existing easement and maintenance agreement. If such a document does not exist, a formal agreement between the two property owners should be established.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

Plans Reviewed, prepared by KG & D Architects and dated (last revised) April 28, 2016:

- Cover Sheet
- Architectural Site Plan (A0.1)
- Lower Floor Plan (A2.1)
- Main Floor Plan (A2.2)
- Roof Plan (A2.3)
- Front and Rear Elevations (A3.1)
- Right and Left Elevations (A3.2)
- Building Sections (A3.3)

Plans Reviewed, prepared by Wesley Stout Associates and dated (last revised) April 27, 2016:

- Overall Planting Plan (LP-1.1)
- Planting Plan Enlargement (LP-1.2)
- Planting Details Legend, Notes (LP-1.3)
- Landscape Lighting Plan (LP-2.0)

Plans Reviewed, prepared by Cronin Engineering and dated (last revised) April 27, 2016:

- Existing Conditions (EX-1.1)
- Layout, Zoning, Coverage, Demo and Parking Plan (L-2.1)
- Site Development Plan (SP-3.1, SP-3.2)
- Road Profiles (SP-4.1)

Documents Reviewed:

- Short Environmental Assessment Form & Appendices, prepared by Cronin Engineering, dated (last revised) April 27, 2016
- NYCDEP Watercourse Confirmation Letter and Signed Map, dated April 12, 2016
- Traffic and Parking Evaluation, prepared by Maser Consulting, P.A., dated April 26, 2016

JKJ/JMC/DJS/dc

T:\Lewisboro\Correspondence\LW2101JJ-LWPB-LeChateau-Review-Memo-5-11-16.docx

RECEIVED
APR 26 REC'D
TOWN CLERK
TOWN OF LEWISBORO
2016

RESOLUTION
TOWN OF LEWISBORO
ZONING BOARD OF APPEALS

IN THE MATTER OF THE APPLICATION OF
1410 Route 35, LLC (Elegant Banquets, LLC)
FOR A VARIANCE OF
ARTICLE III §220-9A, 220-9C (1) & 220-9E (1) & (3)
of the Lewisboro Zoning Ordinance
CAL. NO. 06-16-BZ

INTRODUCED BY: **Board Member Mandelker**

SECONDED BY: **Board Member Rendo**

DATE OF CONSIDERATION/ADOPTION: **March 30, 2016**

WHEREAS, 1410 Route 35, LLC [Elegant Banquets, LLC) ("the applicant"), [South Salem Owners, LLC, owner of record] has made application to the Lewisboro Zoning Board of Appeals (the "ZBA") for a variance of Article III § 220-9A, 220-9C (1) & 220-9E (1) & (3) of the Lewisboro Town Code in the matter of the proposed improvements to and the increase of a non-conforming banquet hall structure and use on the subject premises located on the northerly side of (#1410) Route 35, South Salem, New York, Tax Map Sheet 39, Block 10549, Lot 17 ("the property"); and

WHEREAS, this application for an area variance constitutes a Type II action under 6 NYCRR Part 617, and therefore, requires no further review under the State Environmental Quality Review Act (SEQRA), and

WHEREAS, a public hearing was held at the Town Offices at Orchard Square, 20 Cross River Shopping Plaza, Lower Level, 20 North Salem Road, Cross River, New York in this matter on March 30, 2016 and a site walk was conducted on March 19, 2016 to consider the application, after which a vote was taken with regard to the variance as forth above, and

WHEREAS, The Lewisboro Zoning Board of Appeals has given careful consideration to the facts presented in the application at the public hearing based upon the criteria set forth in Section 220-9E (3) of the Lewisboro Town Code and Section 267-b(3)(b) of the Town Law of the State of New York, and finds as follows:

1. The property is an approximate 24.23 acre parcel in the R-4A zoning district owned by South Salem Owners, LLC and is improved with an 11,464 s.f. restaurant, trophy building and detached garage.
2. The applicant, 1410 Route 35, LLC, wishes to construct a 6,300 s.f. banquet hall addition to the existing restaurant building, enlarge the kitchen and demolish the trophy building and the detached garage.

3. There will be no undesirable change in the character of the neighborhood or detriment to nearby properties. The restaurant/banquet hall use has been in existence since the early 1970's.
4. There is no practical alternative to the requested variances.
5. The requested variances are substantial, however the proposal fits the property and will not impact the neighboring property owners.
6. There is no adverse effect or impact to the physical or environmental conditions of the neighborhood. The Zoning Board of Appeals has conditioned this approval requiring the installation of screening along the parking areas to buffer the neighboring residential properties.
7. The proposed action will not result in an increase in any nonconforming aspect of the property or use, including scale of operation, physical construction and impact on surrounding properties and is consistent with the criteria in Section 220-9E. This application is currently the subject of a site plan review by the Lewisboro Planning Board. The approval of these variances are contingent on the site plan approval.
8. The proposed use as a catering/wedding banquet hall is more appropriate to the district.
9. The proposed alteration, improvement, reconstruction or changes to this nonconforming use is not inconsistent with the purposes of Chapter 220-9 and would not have a detrimental impact on the surrounding properties occupied by conforming uses.
10. All conditions and safeguards identified by the Board of Appeals are to be implemented and incorporated into the Planning Board approval.

NOW, THEREFORE BE IT RESOLVED, that the Lewisboro Zoning Board of Appeals hereby grants the variance of Article III § 220-9A, 220-9C (1) & 220-9E (1) & (3) of the Lewisboro Town Code, in order to permit the construction of a 6300 s.f. banquet hall and kitchen improvements, which is located in the R-4A zoning district and hereby imposes the following conditions pursuant to Section 267-b(4) of the Town Law: of the State of New York:

1. Appropriate screening shall be installed along the parking areas providing a buffer to the adjacent residential properties.

VOTE:

Board Member Krellenstein	-	Abstain
Board Member Rendo	-	In Favor
Board Member Mandelker	-	In Favor
Chairman Price	-	In Favor
Board Member Casper	-	Abstain

VOTE: Resolution carried by a vote of 3 to 0.

Robin Price, Jr., Chairman

Dated in South Salem, New York
This 25 day of April, 2016

Expiration: The variance shall deemed to authorize only the particular use or uses specified in the decision, and unless other provisions are set forth by the Zoning Board of Appeals in connection with its decision, shall expire if work is not initiated pursuant thereto within one (1) year of the date said decision is filed with the Office of the Town Clerk or if said use or uses shall cease for more than one (1) year. Applicants wishing to seek an extension are advised to make application therefore to the Zoning Board of Appeals sufficiently in advance of expiration so as to allow their request for extension to be calendared and heard by the Zoning Board of Appeals prior to the date of expiration. Any such application must include a chronological listing of work (which may include efforts to obtain other regulatory approvals) initiated pursuant to the variance.

STATE OF NEW YORK)
) **ss.:**
COUNTY OF WESTCHESTER

I, Aimee M. Hodges, Secretary of the Zoning Board of Appeals, do hereby certify that the above is an excerpt/summary/fair representation of the Resolution adopted by the Zoning Board of Appeals of the Town of Lewisboro at a meeting of said Board on March 30, 2016

Dated: 4/25/16

Aimee M. Hodges
Secretary Zoning Board of Appeals

Environmental Protection

Emily Lloyd
Commissioner

Paul V. Rush, P.E.
Deputy Commissioner
prush@dep.nyc.gov

465 Columbus Ave.
Valhalla, New York 10595

Tel. (845) 340-7800
Fax (845) 334-7175

RECEIVED
APR 27
Lewisboro
Planning Board

April 12, 2016

Ms. Beth Evans, PWS
Principal
Evans Associates Environmental Consulting, Inc.
205 Amity Road
Bethany, CT 06524

Re: Elegant Banquets - Watercourse Confirmation
1410 Route 35
(T) Lewisboro, (C) Westchester
DEP Log# 1998-CR-0607.OT.1

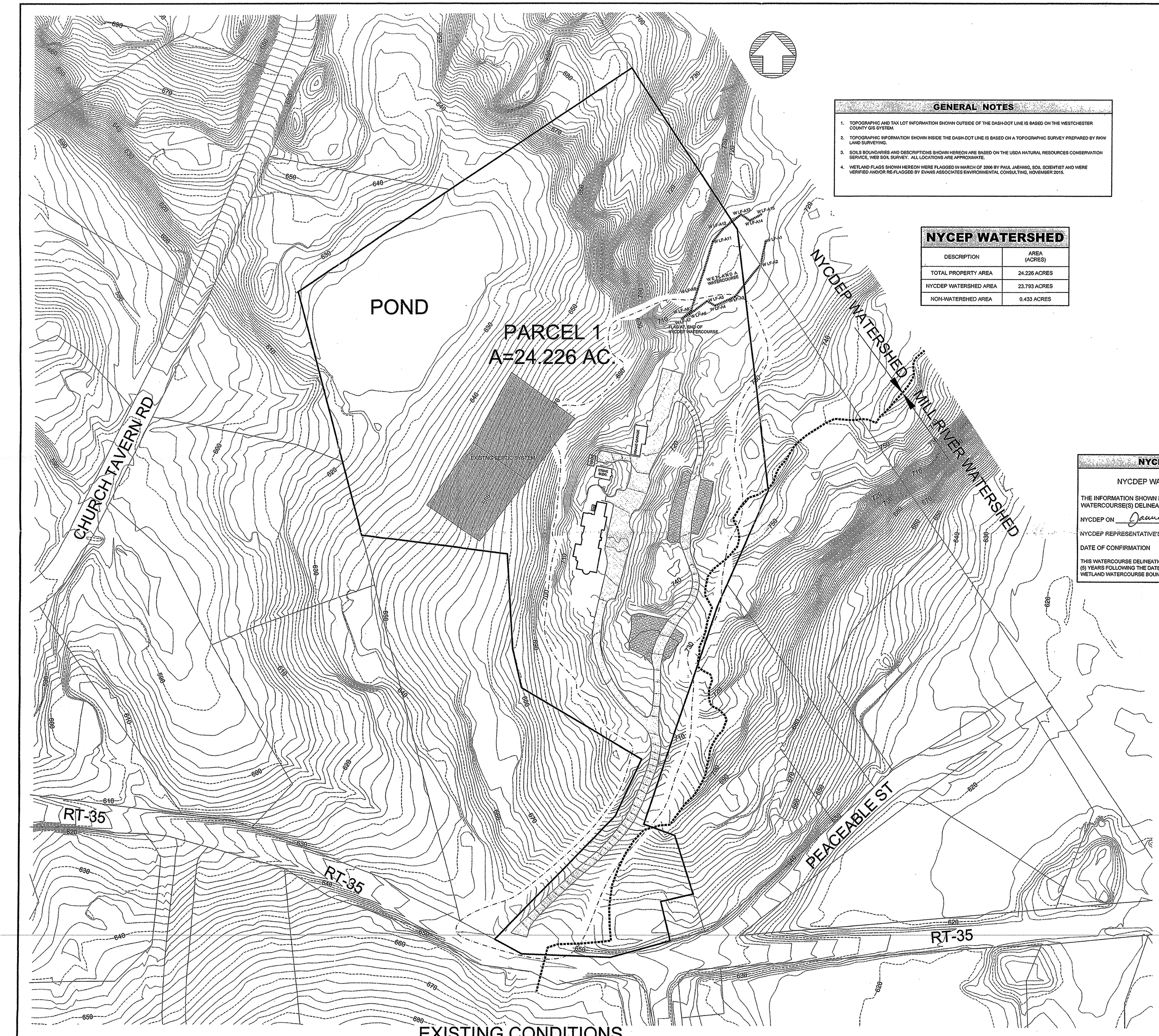
Dear Ms. Evans:

Enclosed please find three (3) copies of the Drawing WC-1.1 entitled "Existing Conditions - NYCDEP Watercourse Confirmation" prepared for the above referenced project, dated April 4, 2016, and signed by DEP staff on April 12, 2016. The copies have been confirmed and signed by the New York City Department of Environmental Protection (DEP) per Section 18-23 (b)(5) Of the "Rules and Regulations for the Protection From Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources" (Regulations). The signed maps confirm watercourse delineations conducted on January 4, 2016 and are valid until April 12, 2021.

If you have any questions regarding this letter, please do not hesitate to call me at (914) 773–4411.

Sincerely,

Andreea A. Oncioiu
Associate Project Manager II
Regulatory & Engineering Programs



EXISTING CONDITIONS

SCALE: 1" = 80'

GENERAL NOTES

1. TOPOGRAPHIC AND TAX LOT INFORMATION SHOWN OUTSIDE OF THE DASH-DOT LINE IS BASED ON THE WESTCHESTER COUNTY GIS SYSTEM.
2. TOPOGRAPHIC INFORMATION SHOWN INSIDE THE DASH-DOT LINE IS BASED ON A TOPOGRAPHIC SURVEY PREPARED BY RKW LAND SURVEYING.
3. SOILS BOUNDARIES AND DESCRIPTIONS SHOWN HEREON ARE BASED ON THE USDA NATURAL RESOURCES CONSERVATION SERVICE, WEB SOIL SURVEY. ALL LOCATIONS ARE APPROXIMATE.
4. WETLAND FLAGS SHOWN HEREON WERE FLAGGED IN MARCH OF 2006 BY PAUL JAEHNIG, SOIL SCIENTIST AND WERE VERIFIED AND/OR RE-FLAGGED BY EVANS ASSOCIATES ENVIRONMENTAL CONSULTING, NOVEMBER 2015.

NYCEP WATERSHED

DESCRIPTION	AREA (ACRES)
TOTAL PROPERTY AREA	24.226 ACRES
NYCDEP WATERSHED AREA	23.793 ACRES
NON-WATERSHED AREA	0.433 ACRES

NYCDEP WATERCOURSE

NYCDEP WATERCOURSE CONFIRMATION

THE INFORMATION SHOWN HEREON ACCURATELY DEPICTS THE WATERCOURSE(S) DELINEATED BY:

NYCDEP ON January 4th, 2016

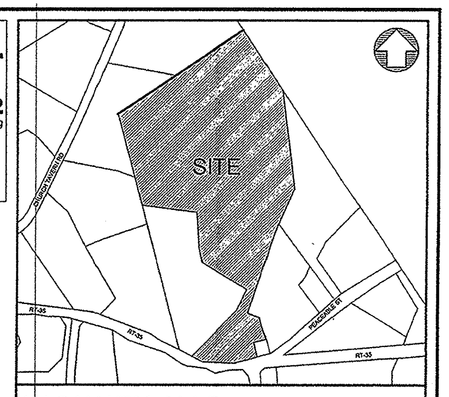
NYCDEP REPRESENTATIVE'S SIGNATURE

DATE OF CONFIRMATION April 12, 2016

THIS WATERCOURSE DELINEATION MAP SHALL BE BINDING UPON THE NYCDEP FOR FIVE (5) YEARS FOLLOWING THE DATE OF CONFIRMATION. THE NYCDEP CONFIRMED THE WETLAND WATERCOURSE BOUNDARY ON JANUARY 04, 2016.

Dig Safely. New York
800-962-7962
www.digsafelynewyork.org

- ☐ Call Before You Dig
- ☐ Wait The Required Time
- ☐ Confirm Utility Response
- ☐ Respect the Marks
- ☐ Dig With Care



VICINITY MAP SCALE: 1" = 500'

80 0 40 80

SCALE: 1" = 80 FT.

LANDSCAPE ARCHITECT
WESLEY STOUT ASSOCIATES, LLC
C/O JAN GOLDFLUSS
96 MAIN STREET
NEW CANAAN, CT 06840

SURVEYOR
RKW LAND SURVEYING
C/O FRANK WALSH
PO BOX 788, 22 EAST AVENUE
NEW CANAAN, CT 06840

ENVIRONMENTAL CONSULTANT
EVANS ASSOCIATES
C/O BETH EVANS
205 AMITY ROAD
BETHANY, CT 06524

ATTORNEY
MICHAEL FULLER SIRIGNANO, ESQ.
OLD POST ROAD PROFESSIONAL BUILDING
892 ROUTE 35, PO BOX 784
CROSS RIVER, NY 10518

ARCHITECT
KG&D ARCHITECTS & ENGINEERS, PC
C/O RUSSELL DAVIDSON
285 MAIN STREET
MT KISCO, NY 10549

OWNER/APPLICANT
ELEGANT BANQUETS, LLC
C/O SIMON CURTIS
506 CANDLEWOOD LAKE ROAD
BROOKFIELD, CT 06804

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REVISIONS

#	REASON	DATE
1		

MUNICIPAL TAX IDENTIFICATION:

SECTION:	55.01
BLOCK:	2
LOT:	6
SUBLOT:	----
DRAWN BY:	KCS
CHECKED:	KCS/TC3
PROJECT:	CURTIS-LE CHATEAU
DATE:	APRIL 04, 2016
JOB #:	150504

STATE OF NEW YORK · TIMOTHY L. CRONIN III · 62950 · LICENSED PROFESSIONAL ENGINEER

TIMOTHY L. CRONIN III, P.E.
LICENSE #062950

CRONIN ENGINEERING
PROFESSIONAL ENGINEERING & CONSULTING
(914) 736-3664

39 Arlo Lane
Cortlandt Manor, New York 10567

EXISTING CONDITIONS
NYCDEP WATERCOURSE CONFIRMATION

SITE DEVELOPMENT PLAN FOR LE CHATEAU

LOCATION:
1410 ROUTE 35
TOWN OF LEWISBORO, NEW YORK

SHEET 1 OF 1 | WC-1.1

617.20
Appendix B
Short Environmental Assessment Form

I C

I . T **.** 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.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

S I

Elegant Banquets, LLC

Name of Action or Project:
Amended Site Development Plan for Le Chateau

Project Location (describe, and attach a location map):
1410 Route 35, South Salem NY 10590 (Town of Lewisboro)

Brief Description of Proposed Action:
Reference is made to the Project Description attached to this document.

Name of Applicant or Sponsor:	Telephone: 203-770-3762
Elegant Banquets, LLC c/o Simon Curtis	E-Mail: sc@westnav.com

Address:
506 Candlewood Lake Road, Brookfield CT 06804

City/PO:	State:	Zip Code:
South Salem (Town of Lewisboro)	NY	10590

	NO	ES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval: **Town of Lewisboro- Amended Site Plan, Wetland Permit, Stormwater, Zoning Board of Appeals for variances, ACARC for architecture; NYSDEC Stormwater**	☐	☑

3.a. Total acreage of the site of the proposed action? 24.226 acres
b. Total acreage to be physically disturbed? +-1.6 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 24.226 acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☑ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☑ Residential (suburban)
☑ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____
☐ Parkland

	NO	ES	N A
5. Is the proposed action, a. A permitted use under the zoning regulations? **Expansion of an existing non-conforming use requires a variance.**	✓		
b. Consistent with the adopted comprehensive plan?	✓		

	NO	ES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?		✓
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: **See attached.**	✓	
8. a. Will the proposed action result in a substantial increase in traffic above present levels? **To be confirmed, Traffic Study pending.**	✓	
b. Are public transportation service(s) available at or near the site of the proposed action?	✓	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	✓	
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies:		✓
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: **Potable water on site via existing drilled well.**	✓	
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: **Existing wastewater treatment system in place for both primary and expansion systems**	✓	
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places? **Response pending**	✓	
b. Is the proposed action located in an archeological sensitive area?		✓
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?		✓
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: **Proposed parking areas located inside the 150 foot Town of Lewisboro wetland buffer area**	✓	

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☑ Forest ☐ Agricultural/grasslands ☑ Early mid-successional
☑ Wetland ☐ Urban ☐ Suburban

	NO	ES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered? **See attached letter**	✓	
16. Is the project site located in the 100 year flood plain?	✓	
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☐ NO ☑ YES		✓
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☐ NO ☑ YES **Stormwater runoff will be directed to existing drainage paths and conveyances as is practicable.**		

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size:	✓	
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe:	✓	
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe:	✓	

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Cronin Engineering P.E. P.C. / Keith Staudohar Date: 02-25-16, rev 04-27-16

Signature:

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?		✓
2. Will the proposed action result in a change in the use or intensity of use of land?	✓	
3. Will the proposed action impair the character or quality of the existing community?	✓	
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	✓	
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	✓	
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	✓	
7. Will the proposed action impact existing: a. public / private water supplies?	✓	
b. public / private wastewater treatment utilities?	✓	
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	✓	
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?		✓

	N ,	M
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems? **Stormwater Pollution Prevention Plan to be prepared in accrodance with Town Code**	☑	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☑	☐

. T L A . For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

Part 2.1-
This impact may be considered important in that the project site is located in an R-4A single family residential Zoning District and the proposed project is for the expansion of a pre-existing non-conforming use, i.e. the re-use of the existing building and new addition thereto for private catered affairs, typically weddings. However, historically, the use of the site has been for a restaurant and catering facility. The renovation will eliminate the restaurant and will have a primary function for wedding receptions, which will take place in the new addition. Additionally, since there will not be a restaurant associated with this project, any impacts would be limited to typical wedding reception days such as Saturdays, Sundays and an occasional Friday night. Typically, there would not be any activity on the site during the week except for landscaping, general maintenance and deliveries as would be realized if there was still a restaurant component.

It is believed that this impact would be considered a small impact, with limited effects on environmental resources, no impacts to rare or unusual species, habitats or other resources. The project is for the re-development of an existing site with minimal land disturbance, approximately only 1.64 acres. The project site is 24.2 acres in size and the existing building and addition are generally located central on the site and generally as far from neighboring residences as can be. The view sheds from neighboring houses to the existing building and the addition are all generally screened and buffered with the existing trees and vegetation and the same is expected after construction.

Part 2.9-
This impact may considered important as there are natural resources on site such as locally regulated wetlands, a pond, trees and other vegetative covers. The NYSDEC has indicated that there are no rare or unusual species, habitats or other resources on the project site. In addition, the majority of the land disturbance occurs in and around existing developed portions of the site and only amounts to approximately 1.64 acres over the total 24.2 acre site or approximately 8% of the site.

While there will be some tree removal, mitigation for the tree loss will be provided in the form of new landscaped areas, particularly around the existing building, the proposed addition, around the parking areas and along the existing roadways. A stormwater management program will ensure that stormwater is treated for water quality and attenuated to pre-development rates prior to release for all of the disturbed and new impervious areas created.

There is approximately 0.1 acres of disturbance within the Town regulated wetland for the extension of a parking area and the creation of a new parking area. These small intrusions into the buffer will be mitigated with a Wetland Mitigation Plan that includes indigenous plantings and invasive species removal. Other measures to protect and mitigate the natural resources on site include an erosion and sediment control plan to be implemented during construction, limited tree removal and the limited disturbance boundary.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

Town of Lewisboro Planning Board	**02-25-16, rev 04-27-16**
Name of Lead Agency	Date
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (if different from Responsible Officer)

PRINT

Kellard Session 3/9/16 Memo

EAF Review:

1.0 A more detailed and elaborate project description should be provided, please include a thorough description of the existing and proposed addition.

Response:

The Applicant proposes to add a new 6,375 sq. ft. banquet hall, new rear lounge and connecting hallway, modern bathrooms and handicapped access to the existing Le Chateau Restaurant/Banquet Hall structure. The details of the proposed banquet use of the property are contained in the Project Description (copy annexed hereto).

The three existing structures consist of a total of 9,508 sq. ft. The Trophy House will be demolished and the proposed new banquet hall addition will occupy that space. The existing garage will also be demolished and replaced with parking spaces. The proposed new addition will consist of 7,730 sq. ft. and the final total building areas will be 17,238 sq. ft.

There are ±96 existing parking spaces. Additional parking is proposed by expanding/improving three existing parking areas and by adding a new paved parking area (#3) containing 22 spaces. Applicant proposes to construct and/or put into use a total of 135 parking spaces.

The driveways will be zoning compliant with the exception of +12% grades in three existing sections of the driveways. Variances are being sought to allow continued use of the driveways which have been used commercially since the 1970s. The building and parking areas as expanded/improved will meet all zoning setbacks, height, coverage and area requirements.

Elegant Banquets LLC

Project: Le Chateau, South Salem NY

Background

Elegant Banquets LLC (EB) currently owns/operates (through affiliates) 4 upscale banquet facilities in Connecticut: The Fox Hill Inn, Brookfield (opened 1986); The Candlewood Inn, Brookfield (Opened 1998); The Waterview, Monroe (Opened 2004); and The Riverview, Simsbury (Opened 2008). The first 2 facilities were purchased as existing buildings, and subsequently upgraded by EB, the last 2 were custom designed/built by EB.
As such we believe that we are eminently qualified to develop, restore and operate Le Chateau – which will be operated in exactly the same manner as our existing 4 facilities.
We will be keeping the name 'Le Chateau' – we believe that it is a name that is a well known Lewisboro dining destination and associated with prestigious events throughout the local area.

Expansion and Updates to Le Chateau

These are covered more extensively in our submissions to the Planning Board – but briefly, we propose to expand the existing building with the addition of a ball room, modern bathrooms and handicap access. The existing structure will be refreshed and upgraded internally to a high standard. Site modifications will include landscaping and parking/access improvements.

Business Plan

Focus on Weddings: We say that we are in the 'wedding business' – and we really are – some 85-90% of our business is made up wedding receptions – another 5-10% consists of other social events (bat/bar mitzvahs, milestone events, etc). The remaining 5-10% consists of what we term 'corporate social' (as distinguished from corporate meetings/seminars, etc) such as employee recognition events, holiday parties, and, during the off-season (January-March) charitable fund raising gala's.
All of this business, almost exclusively, takes place on weekends – we are able to schedule events on Friday evenings, Saturday afternoon and evening; and Sunday – for a total of 4 events per weekend. Each event typically last 5 hours.
The 'wedding season' runs from April – October, with March and November/December considered as the shoulder season.

One Event at a Time: At Le Chateau, the building is being designed / upgraded in such a manner that we will only hold one event at a time.
For guidance:- our existing facilities (which some board members may be familiar with) located in Monroe and Simsbury are much larger than Le Chateau and are custom designed to be able to hold 2 events at the same time. Le Chateau is a very special place – and we firmly believe that the building is best suited for (and that clientele will demand and deserve) the exclusive use by one bride at a time.

We do not intend to operate as a restaurant, either in conjunction with or weddings or as a standalone.

We do not intend to offer overnight accommodation.

How much business do we anticipate at Le Chateau? : Based on our own study and view of the local market and its demographics we have concluded that the volume of business conducted at Le Chateau will, once maturity is reached – say 24 months after opening day, be very similar to our existing Candlewood Inn.
Candlewood Inn 10 year historical data shows a (fairly stable) annual average of 160 events per year, with an average attendance of 150 guests. 87% of these events had attendance of 200 attendees or less. 7% of events had 200-225 attendees and 5% between 225 and 250. The largest event had 283 attendees.
On Saturday's, when 2 events are typically held, the afternoon event is always smaller (in the 100-125 range), whilst the evening event is a grander affair in the 150-200 guest range.

Hours of Operation:– Friday evening weddings are typically scheduled from 6-11pm. Saturday weddings are typically scheduled Noon-5pm and 6-11pm. Sunday weddings are typically scheduled 2-7pm. The building will open on weekdays for sales, maintenance and kitchen prep work.

Staffing – This unit will have a full time staff of 6. All events will be staffed on an as required basis – typical staffing level for a 200 person event would be 20.

Parking – At social events guests will normally arrive with 2 per car – but many are out of town guests who will be staying over at local hotels and will arrive in larger groups by coach, minibus or limousine. Our historical data demonstrates that a typical 200 person event results in 70-80 cars in the parking lot.
Adding staff parking to guest parking would result in an anticipated need for 106 spaces for a 200 person event.
At larger, and potentially more upscale events, valet parking will be provided or coach / minibus transportation will be pre-arranged as needed.

Outdoor Use – We propose to upgrade the existing ornamental garden on the south side of the building so as to be able to offer our customers the ability to hold their wedding ceremony on site in this garden - when the weather permits (during inclement weather ceremony would be held indoors). The seating for this event would be set up just prior to the ceremony and removed thereafter. Customers typically arrange for musical accompaniment for their ceremonies – but this is typically suited to solemnity of the occasion.
We will also set up some occasional seating/tables in this area so that customers may enjoy the garden and cocktails outside. We expect this to be very limited, since wedding guests will be attired in their 'Sunday best' which naturally leads them to air-conditioning.
We also propose to upgrade the semi-circular west facing garden – and there will be a few discreet seating arrangements in this area – we anticipate that this area will primarily be used for by brides for the wedding photographs.
But essentially, outdoor use is very limited. The windows in the building do/will not open, so any sound will be contained.

Philosophy:– Our business depends upon our reputation – and we have worked hard over the years to build a 'brand' – which is what we are known for. To that end we plan to operate Le Chateau in a manner that supports our 'brand'. We will not be 'cutting corners' during this project – everything has

to work to perfection – the parking, the access, the bathrooms, etc. A negative customer experience in any one of these elements can have a huge negative impact on the brand – and hence the success of the business. Customer experience and satisfaction is a key element of our business.

Prior Use:- Due to the circumstances of the departure of the previous restaurant operators there are no records of the business conducted at Le Chateau. However, there is plenty of anecdotal evidence that suggests that there were regularly 4-5 wedding receptions held at Le Chateau most weekends (during the season) – AND additionally the restaurant was open. We have learnt that (not surprisingly) the size of the events was capped at 175 – which of course meant they were able to accommodate some 80-85% of the wedding events that we will host. And there was a restaurant open to the public throughout the week.
Thus, we believe our proposed use for the (expanded and upgraded) building might actually be less than the volume of business that was conducted in the past.

Supporting data is attached.

Candlewood Inn

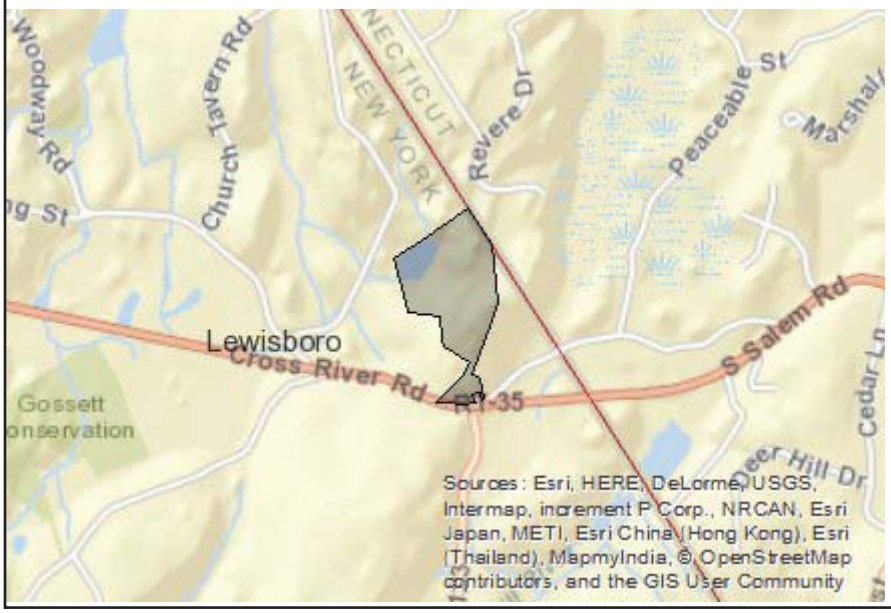
Customer Car Count

August 2015 Date/Time	Guest Count	Cars in Parking Lot
2/1400	100	44
7/1800	211	85
8/1130	135	58
8/1800	225	91
9/1630	125	55
14/1900	239	100
15/1130	107	40
15/1800	150	61
16/1600	151	60
18/1800	125	55
21/1800	133	60
22/1800	204	80
29/1800	150	58
30/1600	125	55
September 2015		
5/1830	100	43
6/1830	167	65
11/1630	100	41
12/1200	106	44
12/1800	197	81
13/1600	173	75
18/1700	130	50
19/1100	110	38
19/1800	188	90
24/1630	127	51
25/1730	230	102
26/1100	113	41
26/1600	202	94
27/1600	151	68
October 2015		
2/1800	160	71
3/1130	107	37
3/1800	150	62
4/1600	133	45
9/1730	128	47
10/1130	102	38
10/1800	176	61
11/1700	199	88
16/1630	140	62
17/1200	163	66
17/1800	150	71
18/1630	179	70
21/1600	100	42
23/1730	125	45
24/1130	104	41
24/1800	150	70
25/1430	180	91
30/1700	150	70
Average		2.40

YEAR	EVENTS	GUESTS COUNT	REVENUE	AV SALES PRICE	AVERAGE ATTENDENCE
2005	182	28,024	$ 2,604,402	$ 92.93	153.98
2006	188	29,538	$ 2,871,451	$ 97.21	157.12
2007	172	26,332	$ 2,673,253	$ 101.52	153.09
2008	163	24,646	$ 2,674,119	$ 108.50	151.20
2009	142	21,374	$ 2,226,553	$ 104.17	150.52
2010	169	25,635	$ 2,603,319	$ 101.55	151.69
2011	166	24,145	$ 2,346,691	$ 97.19	145.45
2012	170	25,754	$ 2,790,327	$ 108.35	151.49
2013	156	23,218	$ 2,737,481	$ 117.90	148.83
2014	145	20,434	$ 2,487,724	$ 121.74	140.92
2015	127	18,976	$ 2,397,538	$ 126.35	149.42
10 Year Averages	**161.82**				**150.60**

EAF Mapper Summary Report

Tuesday, February 23, 2016 3:13 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.

Part 1 / Question 7 [Critical Environmental Area]	No
Part 1 / Question 12a [National Register of Historic Places]	No
Part 1 / Question 12b [Archeological Sites]	Yes
Part 1 / Question 13a [Wetlands or Other Regulated Waterbodies]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
Part 1 / Question 15 [Threatened or Endangered Animal]	No
Part 1 / Question 16 [100 Year Flood Plain]	No
Part 1 / Question 20 [Remediation Site]	No

NEW YORK STATE - DEPARTMENT OF
ENVIRONMENTAL CONSERVATION

Environmental Resource Mapper

Search | Layers & Legend | Tell Me More...
Need a Permit? | Contacts | Help

Map Layers & Legend

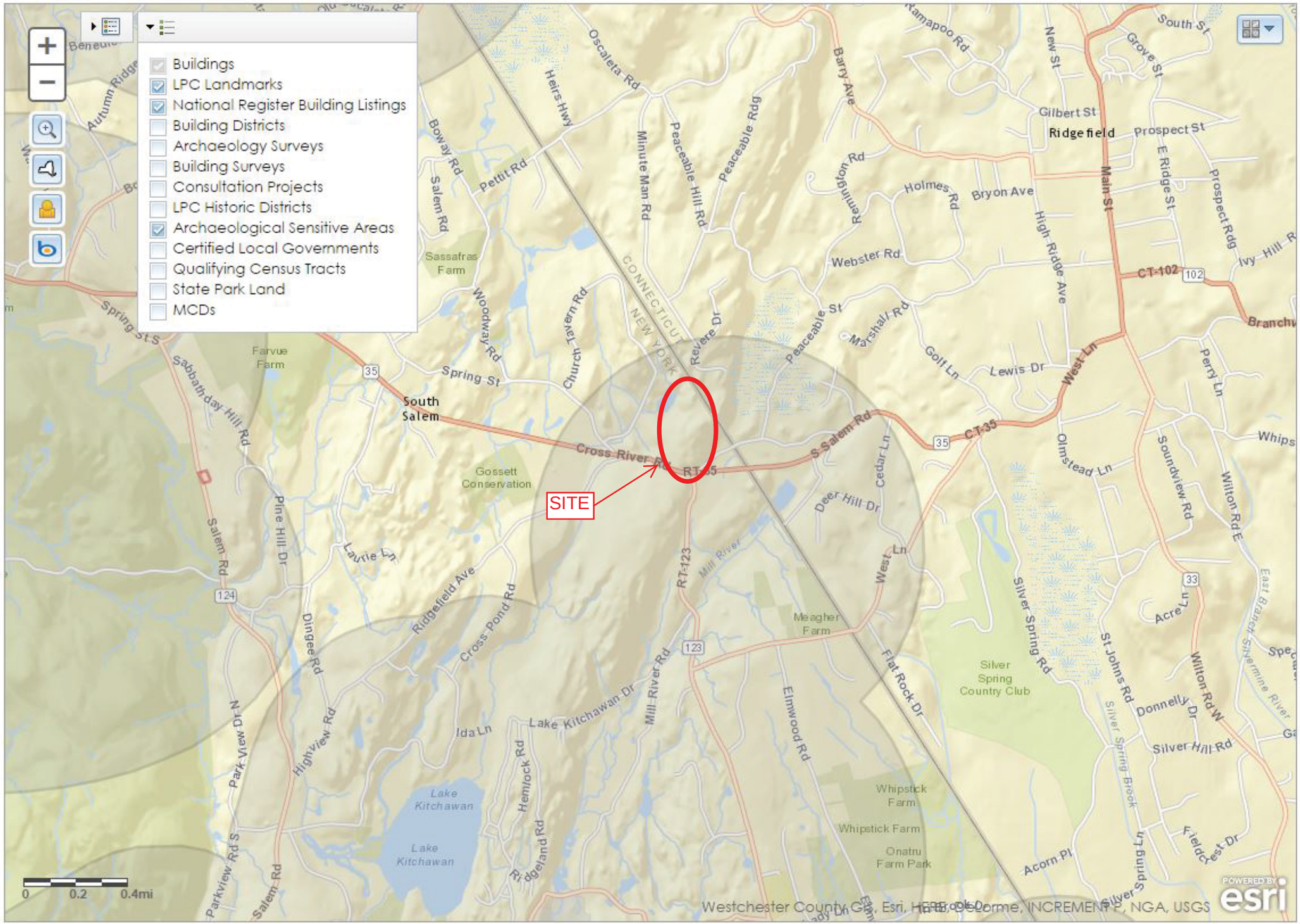
More layers appear as you zoom in.

- [x] Classified Water Bodies
- [x] Unique Geological Features
- [x] Classified Water Bodies
- [x] State-Regulated Freshwater Wetlands
- Wetland Checkzone ?
- [x] Rare Plants and Rare Animals
- [x] Significant Natural Communities
- Natural Communities Vicinity ?
- [x] Background Map
- [x] Adirondack Park Boundary
- [x] Counties

Click "Refresh Layers" to activate and deactivate layers.

Refresh Layers

Disclaimer: This map does not show all natural resources regulated by NYS DEC, or for which permits from NYS DEC may be required. Please contact your DEC Regional office for more information.


Buildings
LPC Landmarks
National Register Building Listings
Building Districts
Archaeology Surveys
Building Surveys
Consultation Projects
LPC Historic Districts
Archaeological Sensitive Areas
Certified Local Governments
Qualifying Census Tracts
State Park Land
MCDs
SITE
South Salem
Ridgefield
Cross River Rd
RT-35
S Salem Rd
CT-35
CT-102
Main St
West Ln
Spring St
Sassafras Farm
Farvue Farm
Gossett Conservation
Meagher Farm
Silver Spring Country Club
Whipstick Farm
Onatru Farm Park
Lake Kitchawan
Mill River
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Westchester County GIS, Esri, HERE, DeLorme, INCREMENT P, NGA, USGS
esri

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Critical Environmental Areas in Westchester County

Critical Environmental Areas in Westchester County

Designating Agency:	Critical Environmental Area	Recorded Date	Effective Date	Reason for Designation
Westchester, County of	Westchester County Airport 60 Ldn Noise Contour (PDF) (39 KB)	1-2-90	1-31-90	exceptional or unique character
	Croton Point Park (PDF) (337 KB)	1-2-90	1-31-90	exceptional or unique character
	Byram Lake (PDF) (269 KB)	1-2-90	1-31-90	exceptional or unique character
	Tarrytown Lakes Reservoirs (PDF) (267 KB)	1-2-90	1-31-90	exceptional or unique character
	Long Island Sound (PDF) (143 KB)	1-2-90	1-31-90	exceptional or unique character
	County and State Park Lands (PDF) (274 KB)	1-2-90	1-31-90	exceptional or unique character
	Mianus River (PDF) (315 KB)	1-2-90	1-31-90	exceptional or unique character
	Mianus Gorge Preserve (PDF) (211 KB)	1-2-90	1-31-90	exceptional or unique character
	Indian Brook Reservoir (PDF) (286 KB)	1-2-90	1-31-90	exceptional or unique character
	Larchmont Reservoir & J.G. Johnson Jr. Conservancy (PDF) (233 KB)	1-2-90	1-31-90	exceptional or unique character
	Poncantico Lakes & Watershed Property (PDF) (259 KB)	1-2-90	1-31-90	exceptional or unique character
	Hudson River (PDF) (280 KB)	1-2-90	1-31-90	exceptional or unique character
	Peekskill Hollow Brook (PDF) (217 KB)	1-2-90	1-31-90	exceptional or unique character
	All Land 500' Peripheral to Amawalk Reservoir Boundary (PDF) (284 KB)	1-2-90	1-31-90	exceptional or unique character
	County Designated Watershed Properties (PDF) (214 KB)	1-2-90	1-31-90	exceptional or unique character
Bedford, Town of	Geographic Area Overlaying the Aquifer Within Town (PDF) (100 KB)	10-2-84	11-3-84	exceptional or unique character
Dobbs Ferry, Village of	Juhring Estate (PDF) (269 KB) - 76 acre open space owned by Village	12-29-95	1-27-96	drainage and open space resource
Greenburgh, Town of	Freshwater Wetlands (PDF) (74 KB)	10-27-87	11-27-87	Protect Water and Natural Area
	Floodplains (PDF) (125 KB)	10-27-87	11-27-87	Protect Water and Natural Area
	Hilltops at or above 400' elevation (PDF) (123 KB)	6-10-93	7-10-93	preserve open space
Larchmont, Village				

of	East Creek (PDF) (1.34 MB)	1-23-89	2-21-89	protect aesthetic beauty
Mamaroneck, Town of	Larchmont Reservoir Sheldrake Leatherstocking FWW Complex (PDF) (1.49MB)	8-31-89	9-30-89	important coastal fish & wildlife habitat
	Premium River - Pine Brook Wetlands Complex (PDF) (284 KB)	8-31-89	9-30-89	important coastal fish & wildlife habitat
	The Hommocks Salt Marh Complex (PDF) (1.41 MB)	8-16-89	9-16-89	important coastal fish & wildlife habitat
Mamaroneck, Town of	East Creek (PDF, 1.02 MB)	8-16-89	9-16-89	important coastal fish & wildlife habitat
Mamaroneck, Village of	Otter Creek (PDF) (272 KB) (42 acres)	11-24-80	12-25-80	Protect Water and Natural Area
	Guion Creek (PDF) (289 KB) (11 acres)	11-24-80	12-25-80	Protect Water and Natural Area
	Magid Pond (PDF) (272 KB) (5 Acres)	11-24-80	12-25-80	Protect Water and Natural Area
	Van Amringe Mill Pond (PDF) (259 KB) (25 acres)	11-24-80	12-25-80	Protect Water and Natural Area
	Mamaroneck Reservoir (PDF) (207 KB) (315 Acres)	1-4-85	2-2-85	Protect Water and Natural Area
	Hampshire Country Club (PDF) (277 KB) (100 Acres)	1-4-85	2-2-85	Protect Water and Natural Area
	Hommock's Conservation Area (PDF) (270 KB) (Village of Mamaroneck Portion)	1-4-85	2-2-85	Protect Water and Natural Area
Somers, Town of	Baldwin Place Area (PDF) (293 KB)	8-27-90	9-26-90	difficulties with potable water source
Tarrytown, Village of	Tarrytown Lakes Watershed Area (PDF) (1.10 MB)	11-30-83	12-29-83	protect water resources

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

March 30, 2016

Keith Staudohar
Cronin Engineering
39 Arlo Lane
Cortlandt Manor, NY 10567

Re: Le Chateau, 1410 Route 35, South Salem
Town/City: Lewisboro. County: Westchester.

Dear Keith Staudohar:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities at your site or in its immediate vicinity.

The absence of data does not necessarily mean that rare or state-listed species, significant natural communities, or other significant habitats do not exist on or adjacent to the proposed site. Rather, our files currently do not contain information that indicates their presence. For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

This response applies only to known occurrences of rare or state-listed animals and plants, significant natural communities, and other significant habitats maintained in the Natural Heritage database. Your project may require additional review or permits; for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, as listed at www.dec.ny.gov/about/39381.html.

Sincerely,

Andrea Chaloux

Andrea Chaloux
Environmental Review Specialist
New York Natural Heritage Program

Consultation Project Details

Consultation: 16PR01772

Status: Open

Project: Amended Site Development for "Le Chateau"

Overview | Submissions (3) | USNs (1) | Surveys (0) | Agencies (1) | Contacts (2) | Photos (1) | Atts. (3) | Agmts. (0) | Q & A (2) | Corr. (1) | MCDs (1)

Submissions Overview (3)

Submissions

Status	Submission	Type	Date Recv	Date Due	Description	Review Summary
Closed	16PR01772.001	Initial	03/21/2016	04/20/2016	Initial Consultation Submission	Lorraine Weiss (Survey and Evaluation), Complete
Closed	16PR01772.002	Requested	03/21/2016	04/20/2016	We have not evaluated this property before. Please provide photos of the main buildings on the property, and interior views of the main rooms of the former restaurant. Contact Lorraine Weiss with any questions at 518-268-2129 or lorraine.weiss@parks.ny.gov. Thank you.	Lorraine Weiss (Survey and Evaluation), Complete
Open	16PR01772.003	Requested	03/31/2016	04/30/2016	Please provide a site plan and, if possible, a floor plan for the main building. It would be helpful to know what major alterations and additions were made to the original mansion. These can be indicated on the floor plan. Contact Lorraine Weiss with any questions at 518-268-2129 or lorraine.weiss@parks.ny.gov. Thank you.	Lorraine Weiss (Survey and Evaluation), Complete Olivia Brazee (Technical Services), Incomplete Tim Lloyd (Archaeology), Complete

Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING P. A.

TRAFFIC AND PARKING EVALUATION

LE CHATEAU RENOVATION/EXPANSION

NYS Route 35
Town of Lewisboro, New York, Westchester County

April 26, 2016

Prepared For

Mr. Simon Curtis
c/o Elegant Banquets, LLC
506 Candlewood Lake Road
Brookfield, CT 06804

Prepared By

Maser Consulting P.A.
11 Bradhurst Avenue
Hawthorne, NY 10532
914.347.7500

Philip J. Grealy, Ph.D., P.E.
License No. 59858

MC Project No. 16000517A

TA LE O CONTENTS A E NO.

I. INTRO CTION

A. PROJECT DESCRIPTION AND LOCATION (FIGURE NO. 1) 1

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I. INTRO CTION

A. RO ECT ESCRI TION AN LOCATION N .

The Le Chateau is an existing approximately 6,576 s.f. restaurant building, which is proposed to be expanded by approximately 7,250 s.f. of additional space and the facility will be converted into a banquet/catering facility with approximately 135 parking spaces. The site also contains two other separate existing building structures, which will be removed as part of the renovation so the actual net increase in building square footage is actually significantly less. The site is located on the north side of New York State Route 35 in the Town of Lewisboro, New York on a parcel of land located west of the Peaceable Street and NYS Route 123 intersection (See Figure No. 1 in Appendix "A").

The site is currently served by a driveway connection to NYS Route 35, which is planned to be upgraded as part of the expansion. While the expansion and renovation is expected to be completed within the next two (2) years, a Design Year of 2021 has been used in the evaluation herein to reflect future conditions.

. SCO E O ST

This study has been prepared to identify current and future traffic operating conditions on the surrounding roadway network and to assess the potential traffic impacts of the proposed expansion and renovation of the Le Chateau Restaurant to a banquet/catering facility. The scope of the study was identified by the Town Planning Consulting and includes comments from the Town of Lewsisboro Planning Board.

All available traffic count data for the study area intersections were obtained from historical data from the New York State Department of Transportation (NYSDOT). These data were supplemented with new traffic counts collected by representatives of Maser Consulting, P.A. Together these data were utilized to establish the Year 2016 Existing Traffic Volumes representing existing traffic conditions in the vicinity of the site.

The Year 2016 Existing Traffic Volumes were then projected using a growth factor to take into account background traffic growth to obtain the Year 2021 No-Build Traffic Volumes. Note that since the restaurant was not operating at the time of the traffic

counts, estimates of the volumes for the existing facility were made and included in the 2021 No-Build (without expansion) volumes.

Estimates were then made of the potential traffic that the proposed facility would generate during each of the peak hours (see Section III-C for further discussion). The resulting site generated traffic volumes were then added to the roadway system and combined with the Year 2021 No-Build Traffic Volumes resulting in the Year 2021 Build Traffic Volumes.

The Existing, No-Build and Build Traffic Volumes were then compared to roadway capacities based on the procedures in the *2010 ighwa Capacit an al* to determine existing and future Levels of Service and operating conditions. Recommendations for improvements were made where necessary to serve the existing and/or future traffic volumes based on the results of the analysis and field observations.

The site plans were also reviewed relative to parking, access, circulation, roadway widths and grades. Recommendations were made for any improvements necessary to accommodate the proposed use.

II. E ISTIN ROA A AN TRA IC ESCRI TIONS

A. ESCRI TION O E ISTIN ROA A NET OR

Regional access to the site is provided via Interstate Route 684, NYS Route 35 and NYS Route 123. The following is a brief description of these and other roadways serving the site:

. **I R**

Interstate Route 684 is a six lane, divided, limited access highway which originates in the Town of Harrison at an interchange connection with Interstate 287 and the Hutchinson River Parkway. The roadway traverses in a northerly direction throughout Westchester County and into Putnam County where it intersects with Interstate 84. There is an interchange connection with NYS Route 35 (Exit 6) located approximately 9 miles west of the site and provides regional access to the area.

. **N S R**

NYS Route 35 is a major east-west roadway which runs throughout the northern part of Westchester County. It originates to the west in the City of Peekskill and continues east through the Towns of Cortlandt, Yorktown, Somers and into Lewisboro. In the immediate vicinity of the site, NYS Route 35 (also known as Old Post Road) consists of one lane per direction with narrow paved shoulders and a striped double yellow center line. It has a posted speed limit of 55 MPH in the immediate vicinity of the site with some reduced advisory speeds. Also, other speed limits of 45 MPH and 35 MPH are posted on segments of Route 35 to the west and in the vicinity of the NYS Route 121 intersection, respectively. East of the site, it intersects with NYS Route 123 and Peaceable Street at a signalized intersection. The roadway then continues in an easterly direction and into Connecticut.

. **N S R S R R**

NYS Route 123 is a north/south roadway which extends from the signalized intersection with NYS Route 35 and continues south through the Vista hamlet and into Connecticut. NYS Route 123 generally consists of one lane in each direction and little to no paved shoulders. It provides access to the Meadow Pond

Elementary School. The posted speed limit is 40 mph but has advisory speeds due to horizontal alignment changes of between 20 to 35 mph.

. **S**

Peaceable Street originates at a signalized intersection with NYS Route 35 as an offset intersection from NYS Route 123. It has one lane in each direction and traverses in a northeasterly direction from NYS Route 35 and provides access to primarily residential areas. The posted speed limit on this roadway is 30 mph.

. **S S**

Spring Street is a local two lane Town road, which intersects with NYS Route 35 west of the site at an intersection which is offset from Ridgefield Avenue. Also, note that left turns from NYS Route 35 onto Ridgefield Avenue are prohibited between 6AM and 10AM. The intersection is "Stop" sign controlled at NYS Route 35. Sight distance exiting these roadways at NYS Route 35 is currently restricted due to excess vegetation. Spring Street continues north and west providing access to residential areas. It intersects with Church Tavern Road at two locations and also with Woodway Road, Boutonville Road, Boway Road, Lake Shore Drive and reconnects again with NYS Route 35 at a "T' intersection further to the west. It has a posted speed limit of 30MPH and has no centerline striping.

. EAR E ISTIN TRA IC OL MES N . , ,

Available data regarding existing traffic volumes and any planned improvements in the area were collected from the NYS Department of Transportation. In addition to the above information, representatives of Maser Consulting, P.A. conducted field surveys during March and April of 2016. During these surveys information was collected regarding traffic control, roadway geometrics and traffic flow characteristics.

In order to establish the existing traffic volumes on the area roadways, manual turning movement traffic counts were conducted at several intersections in the area on Friday, March 4, 2016 and Saturday, March 5, 2016 and on April 14th and 16th. The traffic volumes were counted during the weekday PM and Saturday Peak periods for the following locations:

1. NYS Route 35 and Existing Site Driveway
2. NYS Route 35 and Peaceable Street/NYS Route 123
3. NYS Route 35 and Spring Street/Ridgefield Avenue

Automatic Traffic Records (ATR's) were also used to conduct machine counts for the time period between March 8, 2016 and March 14, 2016. These counts were used to collect traffic data, including vehicle volumes, classifications and speeds.

Based upon a review of the traffic counts taken and the traffic generating characteristics of the proposed expansion, the following peak hours were identified as being critical time periods for the adjacent roadway system and/or times of peak activity at the banquet facility:

Peak Weekday PM Highway Hour	5:00 to 6:00 PM
Peak Weekday Event Exit Hour	9:30 to 10:30 PM
Peak Saturday Highway Hour	1:00 to 2:00 PM
Peak Saturday Event Hour	5:00 to 6:00 PM

It should be noted that during the PM Peak Hours, the peak referenced above is the overall roadway peak, however Weekday Evening Events typically occur after that hour. In fact, it should be noted that after 7:00 PM on weekdays, the volumes on NYS Route 35 are reduced significantly. Also, on Saturday afternoon volumes are fairly consistent with the 1:00 to 2:00 PM time being the highest. After 6 PM on Saturday, the volumes are reduced substantially (see Appendix "E") and below.

TA LE T
NYS ROUTE 35 HOURLY TRAFFIC VARIATIONS

HOUR OF DAY	FRIDAY			SATURDAY			SUNDAY		
	EB	WB	TOTAL	EB	WB	TOTAL	EB	WB	TOTAL
TIME	TRIPS			TRIPS			TRIPS		
12PM – 1PM	327	324	651	409	398	807	284	338	622
1PM – 2PM	338	295	633	401	357	758	378	305	683
2PM – 3PM	380	351	731	397	349	746	344	340	684
3PM – 4PM	592	416	1008	360	332	692	354	300	654
4PM – 5PM	647	441	1088	365	368	733	321	352	673
5PM – 6PM	778	480	1258	332	367	699	294	298	592
6PM – 7PM	657	408	1065	320	268	588	276	231	507
7PM – 8PM	376	246	622	244	199	443	241	220	461
8PM – 9PM	231	159	390	186	157	343	177	161	338
9PM – 10PM	179	150	329	164	111	275	135	90	225
10PM – 11PM	143	134	277	188	142	330	80	40	120

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The counts were also compared with traffic volume information obtained from the NYS Department of Transportation for consistency and to account for seasonal variations. The resulting volumes for the existing Peak Hour Traffic Volumes for the weekday, PM Peak Highway and Evening Event Exit Hour and Saturday Peak Hours are shown on Figures No. 2, 3, 4 and 5 in Appendix "A" of this report.

C. ACCI ENT ATA T A A

Available accident data for the section of NYS Route 35 from Boutonville Road to east of the Route 123 intersection for the latest available five (5) year period were obtained from the NYSDOT and were summarized according to type, contributing factors, weather conditions and other details. The accident data are summarized in Table A contained in Appendix "F".

The primary factors contributing to the accidents were unsafe speed, failure to yield, and driver inattention and/or following too closely. There was a recorded accident in January of 2015, which resulted in a fatality, which was primarily the result of unsafe speed and alcohol involvement.

III. E AL ATION O T RE TRA IC CON ITIONS

A. EAR NO IL TRA IC OL MES N .

Traffic volumes on the roadways surrounding the site were counted and compared to other available count data to determine the 2016 Existing Traffic Volumes. The 2016 Existing Traffic Volumes were then projected to the 2021 Design Year using a background growth factor of 0.5% per year or a total of 2.5%. The projected traffic volumes for the PM Highway Hour, PM Evening Event Exit Hour and Saturday Peak Hours are shown on Figures No. 6, 7, 8 and 9. The re-occupancy of the existing restaurant traffic volumes were also identified based on available data and are shown in Table No. 1. These volumes were added to the driveway and intersections to reflect future conditions with the reoccupancy of the restaurant and are shown on Figures No. 10, 11, 12 and 13. The resulting 2021 No-Build Traffic Volumes were analyzed to determine future traffic conditions with the restaurant but without the proposed expansion. The 2021 No-Build Traffic Volumes for the Peak PM Highway Hour, Peak PM Event Exit Evening Hour and the Peak Saturday Hours are shown on Figures No. 14, 15, 16 and 17 respectively, which are located in Appendix "A" of this report.

. SITE ENERATE TRA IC OL MES T N . T

The Site Generated Traffic Volumes for the proposed expansion and renovation as a catering facility were developed from data published by the Institute of Transportation Engineers (ITE) as contained in the report entitled "Trip Generation", 9th Edition, 2012 as well as data provided by the applicant based on their other existing catering facilities. Since the existing restaurant was closed at the time of the traffic counts, it was necessary to estimate the amount of traffic that would be generated if the existing restaurant was reopened. The Hourly Trip Generation Rates utilized and the anticipated amount of traffic for reopening of the restaurant as well as the new traffic that will be added to the adjoining roadway network as a result of the facility expansion/renovation are summarized on Table No. 1-T for Typical Conditions and 1-P for Peak Occupancy Conditions. Both tables are located in Appendix "B" of this study.

Based on the Applicant's historical data, the typical Friday and Saturday event occupancies are 125 and 150 people, respectively, for which the trip generation is represented in Table 1-T. Table 1-P was prepared to reflect the traffic for the maximum building occupancy of 280 people, which is a function of the septic system capacity.

Note that the volumes shown also represent the net additional increase in volumes generated as a result of the renovation/expansion of the existing facility compared to just reopening. See Section III-G for consideration of peak event conditions.

C. ARRI AL E ART RE ISTRI TION N . , A A

The Arrival/Departure Distribution pattern of site generated traffic was developed based upon a review the existing traffic distributions on the supplemented with data on the population centers in the area. Note that due to the nature of the facility and the fact that the origins of patrons could vary significantly, two sets of distributions were developed. The Arrival/Departure Distributions of the site generated traffic for the development are shown on Figures No. 18, 19, 18A and 19A. Note that Figures No. 18 and 19 are for an event with primary arrivals to and from the west on NYS Route 35 while Figures No. 18A and 19A reflect an event with primary arrivals to and from the east and southeast.

. EAR IL TRA IC OL MES N . A A

The Site Generated Traffic Volumes as assigned to the roadway network via the two Arrival/Departure Distributions are shown on Figures No. 20, 21, 22, 23 and 20A, 21A, 22A and 23A.

These site generated traffic volumes for each scenario were added to the 2021 No-Build Traffic Volumes to obtain the 2021 Build Traffic Volumes. These volumes are shown on Figures No. 24, 25, 26 and 27 for the PM Peak Highway Hour, PM Evening Event Exit Hour and corresponding Saturday Peak Hours, respectively. The Site Generated Traffic Volumes for the alternate scenario (i.e., with primary arrivals/departures to and from the east and southeast) were added to the 2021 No-Build Traffic Volumes to obtain the 2021 Build Traffic Volumes. These volumes are shown on Figures No. 24A, 25A, 26A and 27A for the alternate distribution for each of the peak periods. These figures are all located in Appendix “A”.

E. ESCRI TION O ANAL SIS ROCE RES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis
  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the *2010 ighwa Capacit an al*, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis
  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the *2010 ighwa Capacit an al*. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "C" of this report.

. TRA IC IM ACT ANAL SIS T N .

Using the above procedures together with the SYNCHRO Software program, a capacity analysis was performed for each of the intersections using the 2016 Existing, 2021 No-Build and 2021 Build Traffic Volumes. Table No. 2 summarizes the results of the analyses, which are described below:

1. NYS Route 35 and Le Chateau Site Driveway
   The existing Le Chateau driveway intersects with NYS Route 35 at an uncontrolled "T" intersection. All approaches to the intersection consist of one lane. The capacity analysis conducted at the intersection during the PM Highway, PM Evening Event Exit and Saturday Peak Hours indicates that a Level of Service "C" or better will be experienced during the peak periods. It should also be noted that this intersection benefits from the gaps in the westbound traffic stream created by the traffic signal

located at the intersection of NYS Route 35 and NYS Route 123/Peaceable Street. Under existing conditions, sight distances for entering and exiting traffic are somewhat limited due to excess vegetation along the site frontage and within the right-of-way of NYS Route 35. It is recommended that appropriate clearing and some grading be completed within the right-of-way to improve these sight distances to meet current standards. Also, the width of the driveway once you enter the property is limited by the existing stone wall. It is recommended that as part of the entrance improvement, that the impervious stone wall be taken out on the east side of the driveway and replaced with a pavement widening to accommodate turning vehicles entering the site more efficiently, including any larger vans or buses. Some resurfacing of this area and on the shoulder of NYS Route 35 on either side of the driveway will also be necessary. Also, the existing driveway lights at the intersection with NYS Route 35 appear to not be functional and these should be replaced in order to provide an illuminated entrance location. A more detailed description of this work is provided in Section IV below.

2. NYS Route 35 and NYS Route 123/Peaceable Street

   NYS Route 123 and Peaceable Street intersect with NYS Route 35 at a signalized offset intersection. All approaches to the intersection consist of one lane. The traffic signal controls movements on NYS Route 35 as well as with individual phases for Peaceable Street and NYS Route 123.

   Capacity analysis conducted at this intersection during existing peak periods indicates an overall Level of Service “D” or better during the peak hours with some movements at Levels of Service “E” during the PM Peak Highway Hour. The intersection was re-analyzed utilizing the 2021 No-Build Traffic Volumes. A review of these analyses indicates a Level of Service “D” or better will be maintained. The intersection was re-analyzed for the both the distribution scenarios for Build condition and was found to also operate at an overall Level of Service “D” or better. Some minor signal timing adjustments have been identified for this location to reduce the delays for the northbound and southbound approaches. These should be completed to better accommodate the overall intersection volumes regardless of the project.

3. NYS Route 35 and Spring Street/Ridgefield Avenue

   Spring Street and Ridgefield Avenue intersect NYS Route 35 at offset “T” shaped intersections separated by approximately 175 ft. center to center. All approaches to the intersection consist of one lane and Spring Street and Ridgefield Avenue are both “Stop” sign controlled. It should also be noted that left turns from NYS Route 35

westbound onto Ridgefield Avenue southbound are prohibited between 6:00 AM and 10:00 AM.

Under existing conditions, sight distance for exiting vehicles from these roadways is somewhat restricted due to the presence of excess vegetation, which should be pruned/cleared to accommodate current conditions. The capacity analysis for the intersections indicates Levels of Service "D" or better for exiting vehicles at these intersections. The left turn exiting Spring Street is projected to experience a Level of Service "E" under future No-Build and Build conditions during the PM Peak Highway Hour. This is not unusual for an unsignalized intersection during peak periods.

. CONSI ERATION O EA E ENT CON ITIONS T N .

As indicated previously, the typical events anticipated based on experience of the Applicant at their other existing facilities will have average occupancies of approximately 125 persons on a Weekday Friday Evening and 150 persons on a Saturday, which have been analyzed as described above. However, since the occupancy could be as many as 280 people, a separate analysis of that possible occurrence was also completed. Based on this level of occupancy, as many as 116 vehicles could enter the site prior to the event with a similar number once the event is over. The results of this analysis for this potential peak event condition are shown in Table No. 2P.

I . SITE LAN RE IE AN RECOMEN ATIONS

A. SITE ACCESS RE IE A

As previously indicated, the existing Le Chateau driveway intersects with NYS Route 35 at an uncontrolled "T" intersection and all approaches to the intersection consist of one lane. There is also an existing single family residence that has a driveway connection to the Le Chateau driveway. Access easement from Le Chateau is proposed to be provided to this residence as part of the project. The Le Chateau driveway is also proposed to be widened and resurfaced in the vicinity of the NYS Route 35 intersection and the driveway to the neighboring property. The stone wall will also be removed to better accommodate turning vehicles.

Sight distances at the existing access driveway intersection with NYS Route 35 were reviewed based on the criteria provided by the American Association of State Highway and Transportation Officials (AASHTO) as contained in their publication *olic on eometric esign of ighwa s and Streets* 6th Edition dated 2011. Travel speed data on NYS Route 35 in the vicinity of the site access driveway was collected as part of the ATR machine data previously mentioned. This information indicates that the 85th percentile travel speeds in this area are approximately 50 MPH in each direction. It should be noted that the posted speed limit in this area is 55 MPH however the travel speeds were found to be lower in the vicinity of the Le Chateau driveway likely due to the proximity to the traffic signal at the NYS Route 123/Peaceable Street intersection as well as the result of the horizontal curves along the roadway west of the access location. Accordingly, the sight distance analysis uses the 50 MPH travel speeds along NYS Route 35.

Utilizing the 50 MPH travel speeds on NYS Route 35, AASHTO requires a minimum stopping sight distance of 425 feet for the safe operation of an intersection and recommends an intersection sight distance of 555 feet for a vehicle turning left from the driveway approach. The intersection sight distance provides for the efficient operation of an intersection without requiring the through traffic along a major roadway to significantly reduce their speed as result of entering traffic into the traffic stream from the minor roadway. Sight distance profiles have been prepared for the existing sight distances looking both left and right from the intersection. Sheet No. SD-1 contained in Appendix "F" identifies the proposed sight lines at the driveway intersection while the sightline profiles are provided on Sheet Nos. SD-2 and SD-3. As shown on Sheet No. SD-2, looking to the right (west) from the driveway a sight distance of approximately 500 feet can be obtained with some pruning of tree limbs and clearing of underbrush

vegetation. Beyond this distance, the sight distance is limited by the vertical alignment along NYS Route 35. This 500 ft. sight distance exceeds the AASHTO stopping sight distance required for the safe operation of the intersection and provides intersection sight distances for between 45 mph and 50 mph. Looking to the left (east) the sight distance is limited both by existing trees and brush as well as the existing embankment east of the site access driveway on the north side of NYS Route 35 as shown on Sheet No. SD-2. However, the traffic signal at the NYS Route 123/Peaceable Street intersection, which is approximately 325 feet east of the site driveway, will be visible by an exiting vehicle once the pruning is completed. Sheet No. SD-3 shows the sightline profile looking to the east towards the traffic signal. Some pruning of trees and clearing of underbrush east of the site access driveway and some grading of the slope along the property frontage in this area should be completed to maximize this sight distance. There is also an existing sign on the NYS Route 35 westbound approach, which identifies the "New Croton Watershed". This sign should also be relocated slightly to remove it from the sightline for the driveway. The exiting sightline will then have the ability to see this traffic signal which will assist vehicles to safely exit the Le Cheteau driveway as gaps in the traffic flow are provided from the traffic signal. This work will be completed under a NYSDOT Work Highway Permit after the site plan approvals are obtained.

. SITE ROA A I T AN RA ES

The site access driveway from the NYS Route 35 intersection continuing north to the internal driveway "Y" split has existing pavement widths varying between 17 to 21 feet and roadway grades of 10-12% with the exception of a short segment of approximately 13.5% just prior to the "Y". Continuing from this intersection northwest towards the Le Chateau building, the roadway narrows somewhat with varying pavement widths of 16 ft. to 18 ft. and was generally level roadway grades. Through the existing building frontage, the pavement width is in excess of 30 ft. with varying pavement widths continuing towards the hook roadway that leads to additional parking areas and back to the main site driveway. The roadway in this vicinity has varying grades of 4-7%. The hook portion of the roadway currently is as narrow as 13 ft. and with roadway grades in excess of 16% in some short sections.

The Town of Lewisboro Code requires a minimum driveway width of 20 ft. As part of the proposed development, the existing main access driveway from the NYS Route 35 intersection to the Le Chateau building will be improved and widened to a minimum pavement width of 20 ft. In the parking areas in the vicinity of the building the roadway/parking aisle width will be a minimum of 24 ft. while in the area of the building entrance approximately 48 ft. of pavement width will be provided. With these

modifications, the main driveway from NYS Route 35 continuing to the Le Chateau building and through Parking Area 2 will safely accommodate two-way traffic.

The "Hook" roadway is proposed to accommodate one-way traffic only in a clockwise direction from Parking Area 2 and continuing to Areas 3, 4 and 5 and back towards the main driveway. This roadway will provide access to these additional parking areas and also function as a secondary egress. It is now proposed to be improved and widened to a minimum width of 15 ft. consistent with AASHTO criteria for local roadways (copies provided in Appendix "G"). As indicated that for a one-lane one-way operation with no provision for passing a stalled vehicle with curve radii in excess of 150 ft. a minimum roadway width of 15 ft. is acceptable. The existing curve radii along the "Hook" roadway are all in excess of 150 ft. AASHTO indicates that this width can accommodate single unit trucks, buses and some combination vehicles and therefore could also accommodate fire trucks if necessary. Although this is unlikely due to the width of the pavement in the main parking area, it is likely that they will elect to turn around and exit via the main driveway. It should be noted that some areas south of the "Hook" roadway will be in excess of 15 ft. wide and up to 27 ft. in the areas of proposed parking.

AASHTO also indicates that local roadways can have maximum grades of up to 17% for low speed roadways in rolling to mountainous terrain. The sections of roadway with the 16% grade along the Hook roadway are relatively short distance sections (less than 200 ft.) and will primarily accommodate passenger cars and some buses, but could accommodate larger vehicles, including emergency vehicles, if necessary.

It is recommended that "One Way" and "Do Not Enter" signs be installed on the eastern spur driveway where it intersects with the main driveway.

C. AR IN CONSI ERATIONS T

A review of the parking proposed for the expanded facility was completed using available published data together with historical data provided by the project applicant, which is based on observations at one of their other existing catering facilities.

The typical range of car occupancies for a quality restaurant, such as the former use of the site, range from 1.75 to 2 people per vehicle. For banquet hall/catering facilities and events of that nature, the range is typically range between 2.0 and 2.7 persons per vehicle, with the majority of data indicating occupancies between 2.2 and 2.4. Information compiled by the Applicant at the other existing facilities, a summary of which is presented in Table P-1, shows an average occupancy for events of 2.4 persons per vehicle

and a 95th percentile ratio of 2.15. This table also provides an indication of the typical attendance at these events.

Based on typical conditions, the parking required for the expanded site would be in the order of 75 to 85 spaces including staff. For a larger event, the peak parking could range up to approximately 135 vehicles including staff. The current trend has been to further reduce parking requirements due to the use of jitneys and shuttle buses for these larger events, especially weddings, etc., where guests are transported in a large groups. This tends to further reduce the actual parking demand.

Based upon a review of the Site Plan, there is a proposal for approximately 135 spaces proposed. These include spaces for larger vehicles. Based on a review of historical data including the 95th percentile data, this would accommodate the parking demand for a peak event at the site.

It should also be noted that at these larger events, it may also be desirable to provide some valet parking, which allows a more efficient use of space and can provide additional parking buffer, if needed. The staff Parking Area 5 could be used for this purpose.

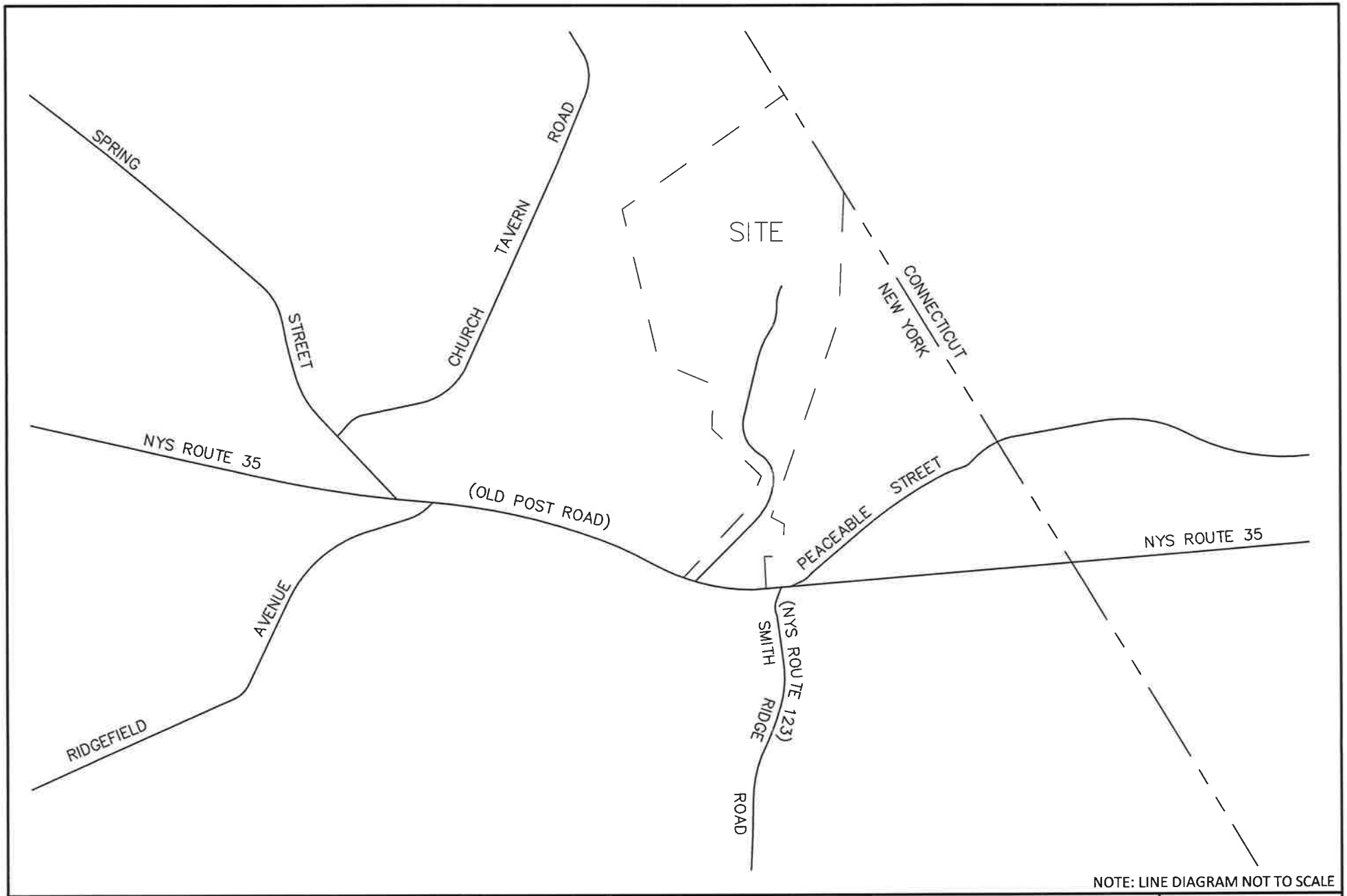
. S MMAR AN CONCL SION

The results of the field investigation and capacity analysis indicate that the proposed expansion renovation of the existing restaurant to operate as a banquet/catering facility will require several access related improvements including sight distance improvements and some “on site” roadway modifications. Based on the analysis, the project will not have a significant negative impact on other external intersections with only minor increases in average vehicle delay provided at these locations. The future traffic conditions either with or without the project can be improved by implementing some minor timing changes. The improvements outlined in Section III-F should be implemented including internal circulation and on the driveway that serve the site as noted above.

LE CHATEAU

APPENDIX A

FIGURES



NOTE: LINE DIAGRAM NOT TO SCALE

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Consulting, Municipal & Environmental Engineers
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State of N.Y. Certificate of Authorization: 0008671

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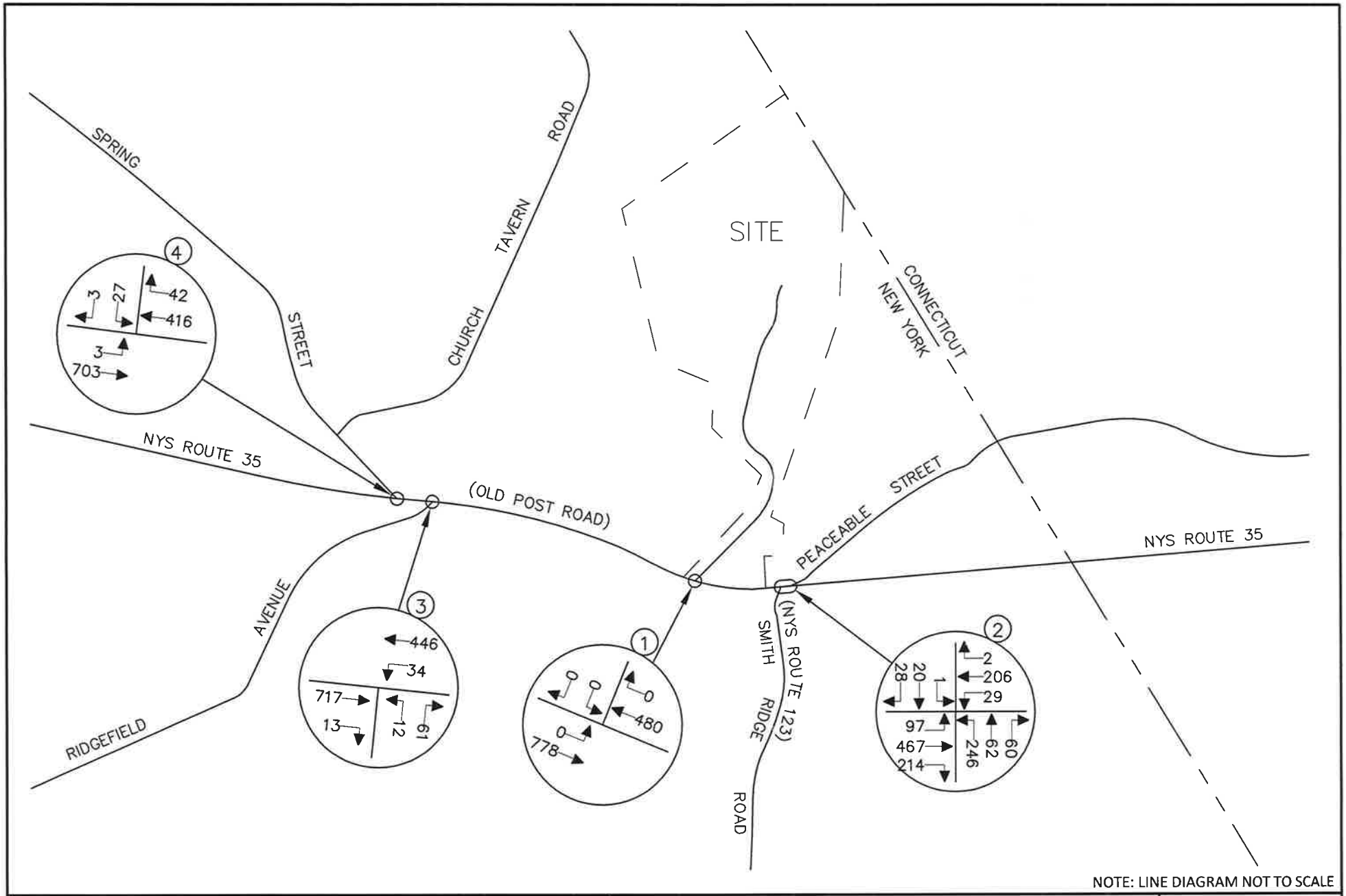
LE CHATEAU
LEWISBORO, NEW YORK

SITE LOCATION MAP

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
1	



NOTE: LINE DIAGRAM NOT TO SCALE

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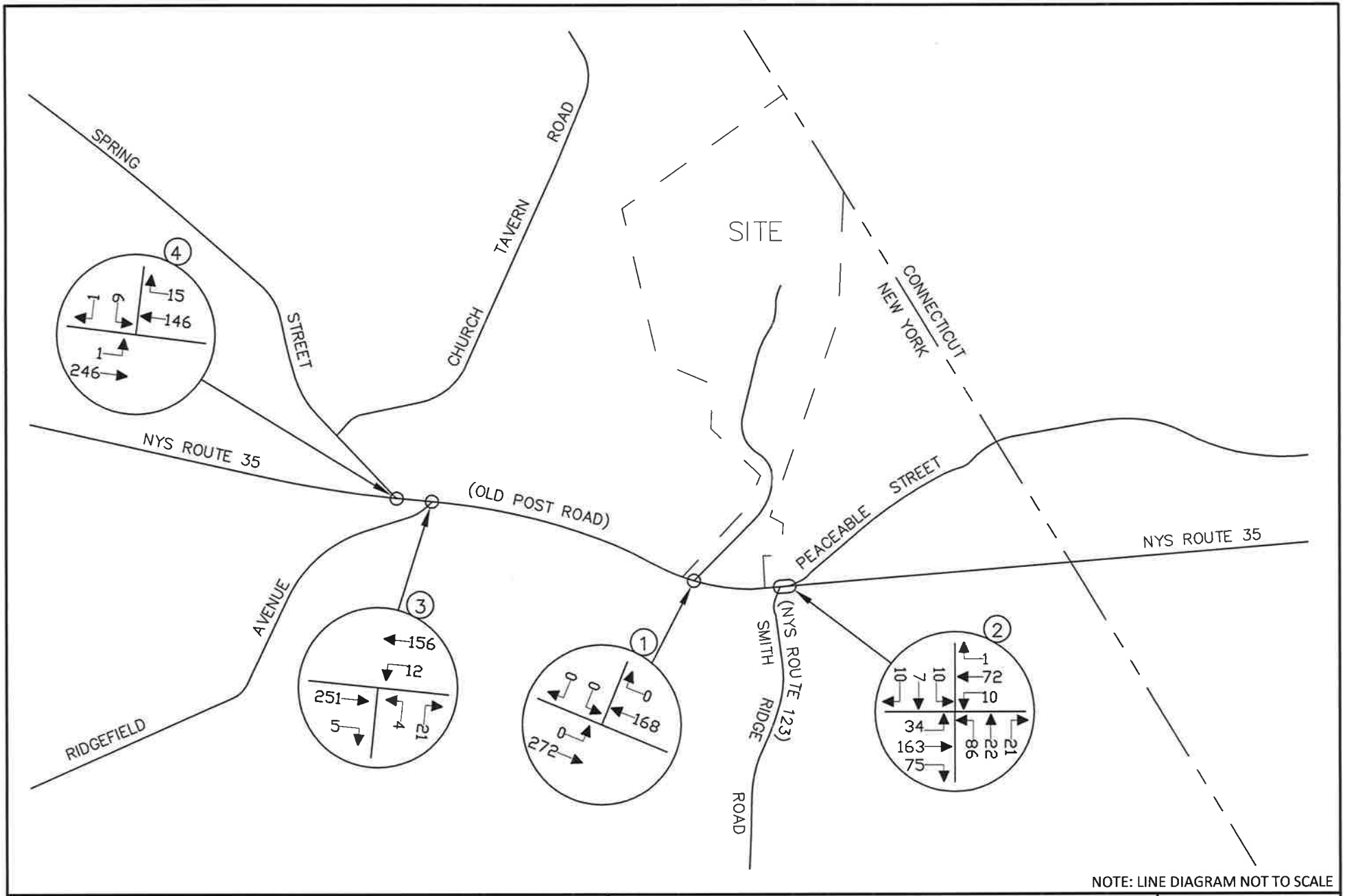
LE CHATEAU
LEWISBORO, NEW YORK

2016 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
2	



NOTE: LINE DIAGRAM NOT TO SCALE

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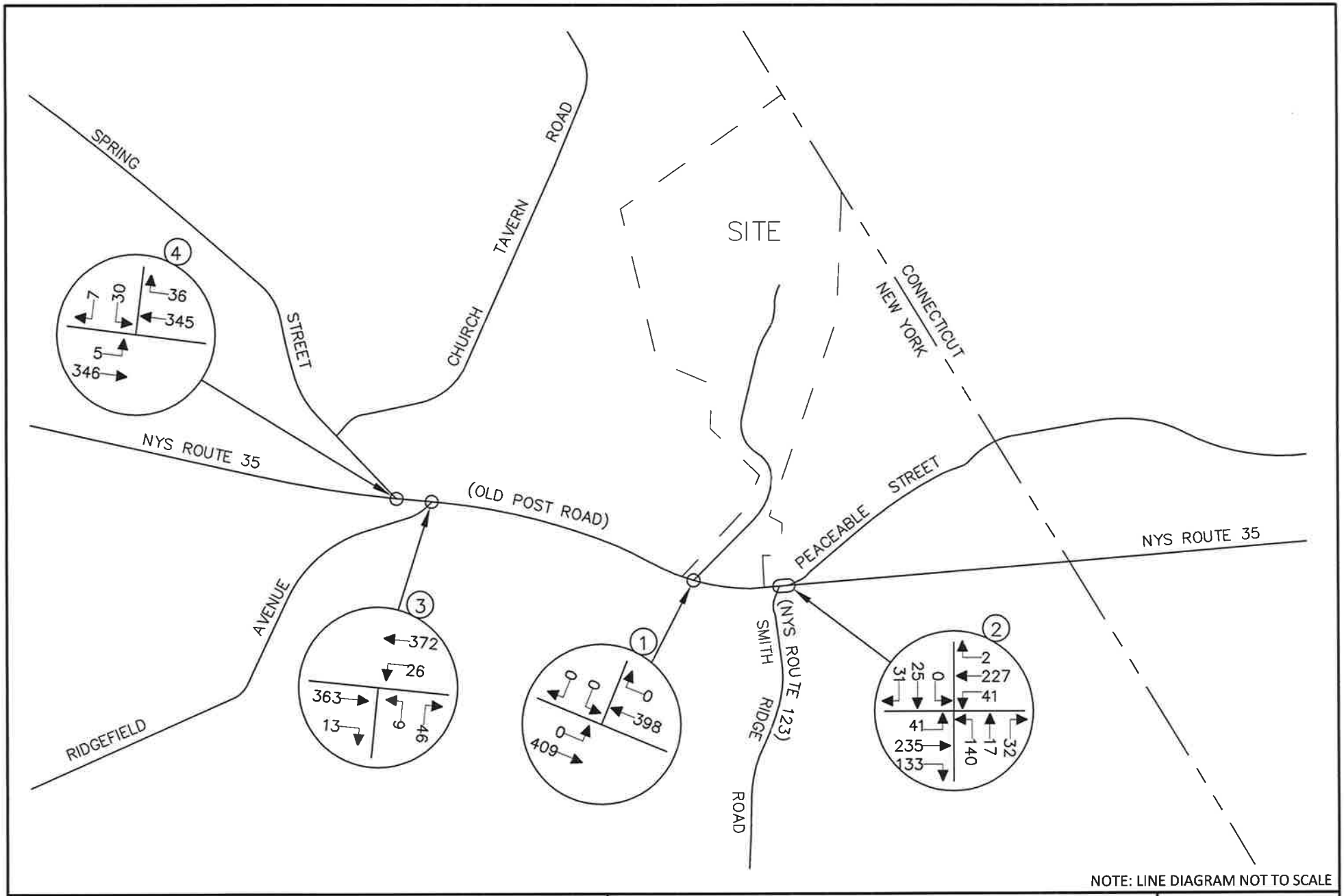
LE CHATEAU
LEWISBORO, NEW YORK

2016 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
3	



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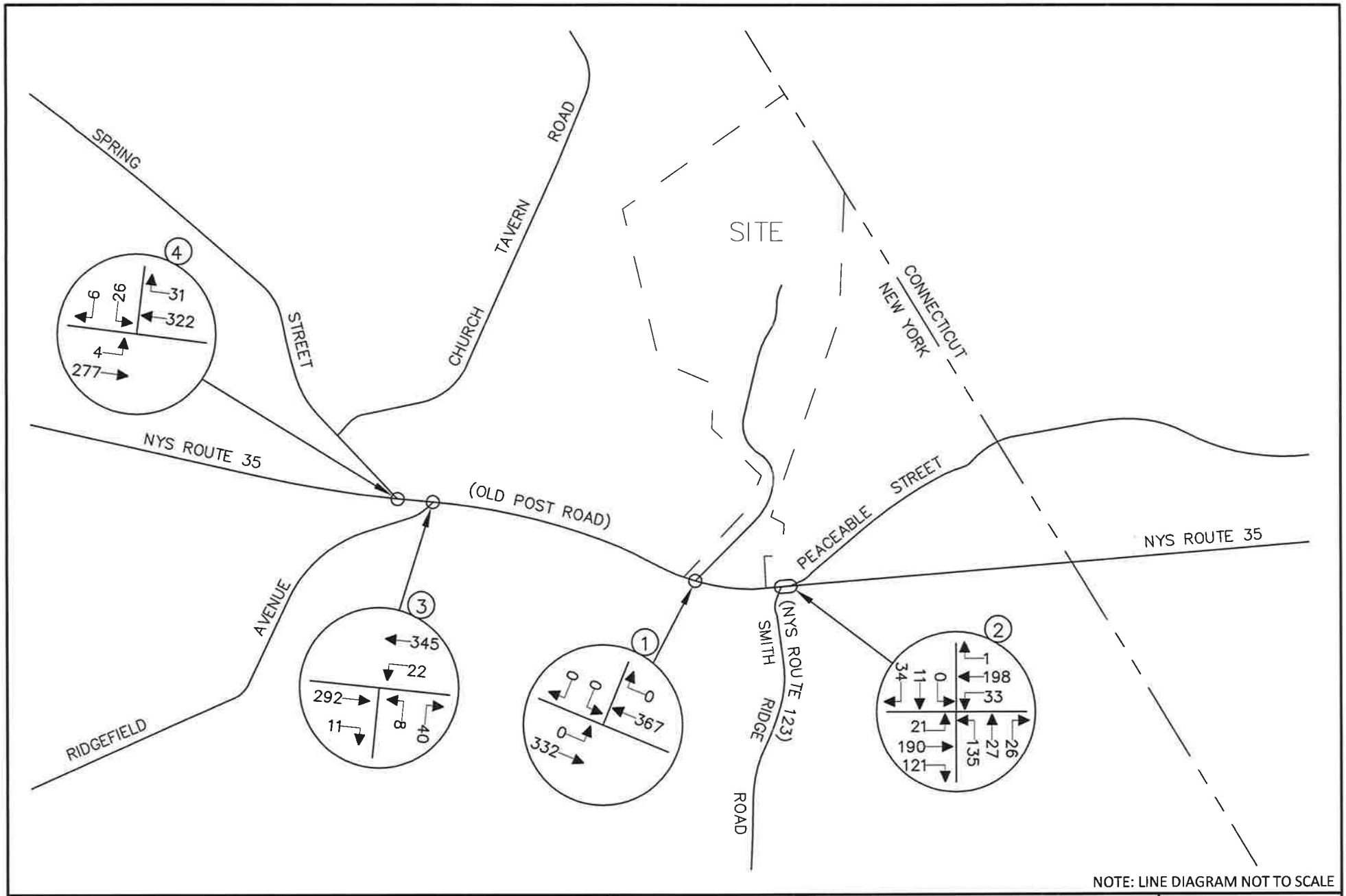
2016 EXISTING TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
4	



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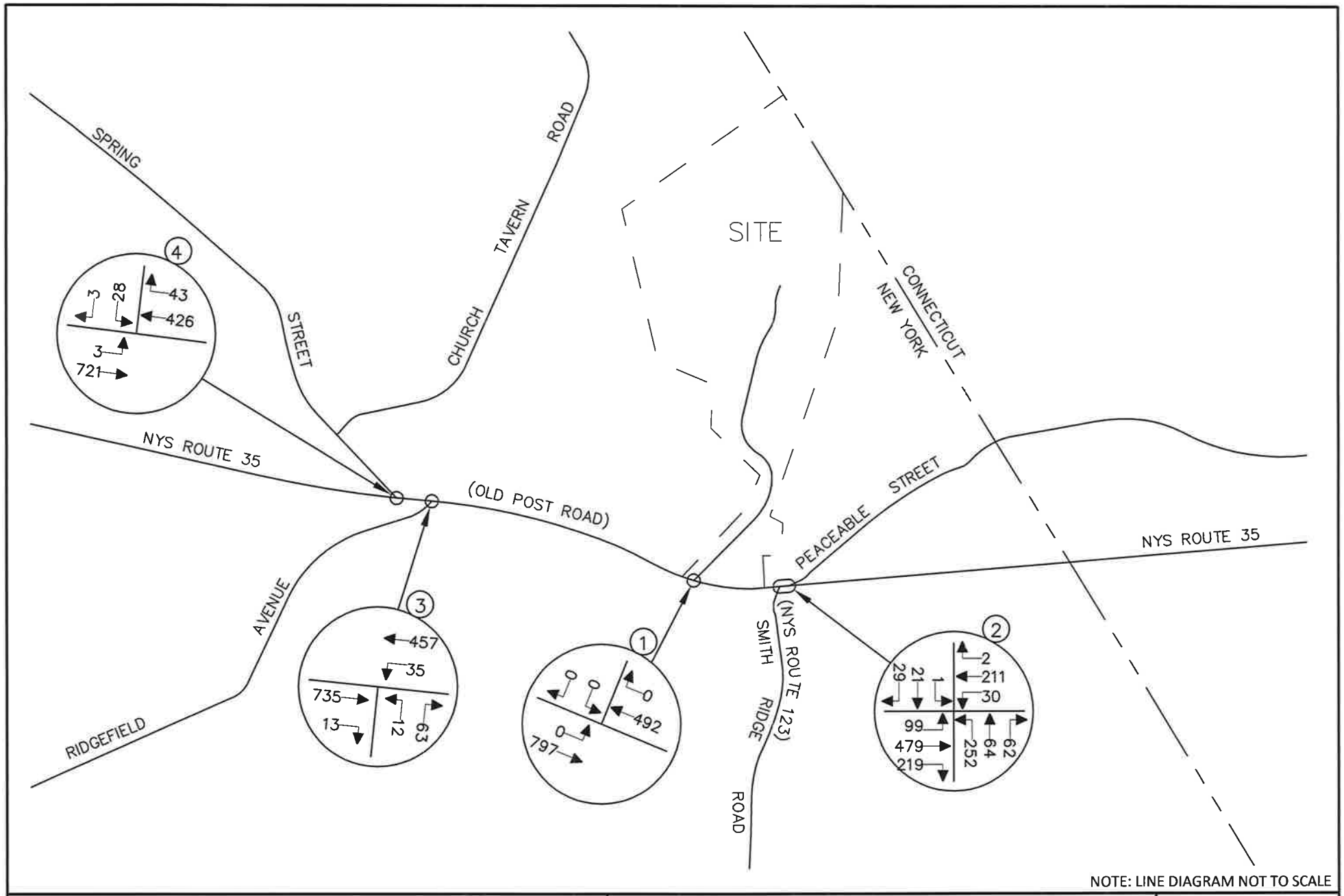
2016 EXISTING TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016

FIGURE NUMBER:
5



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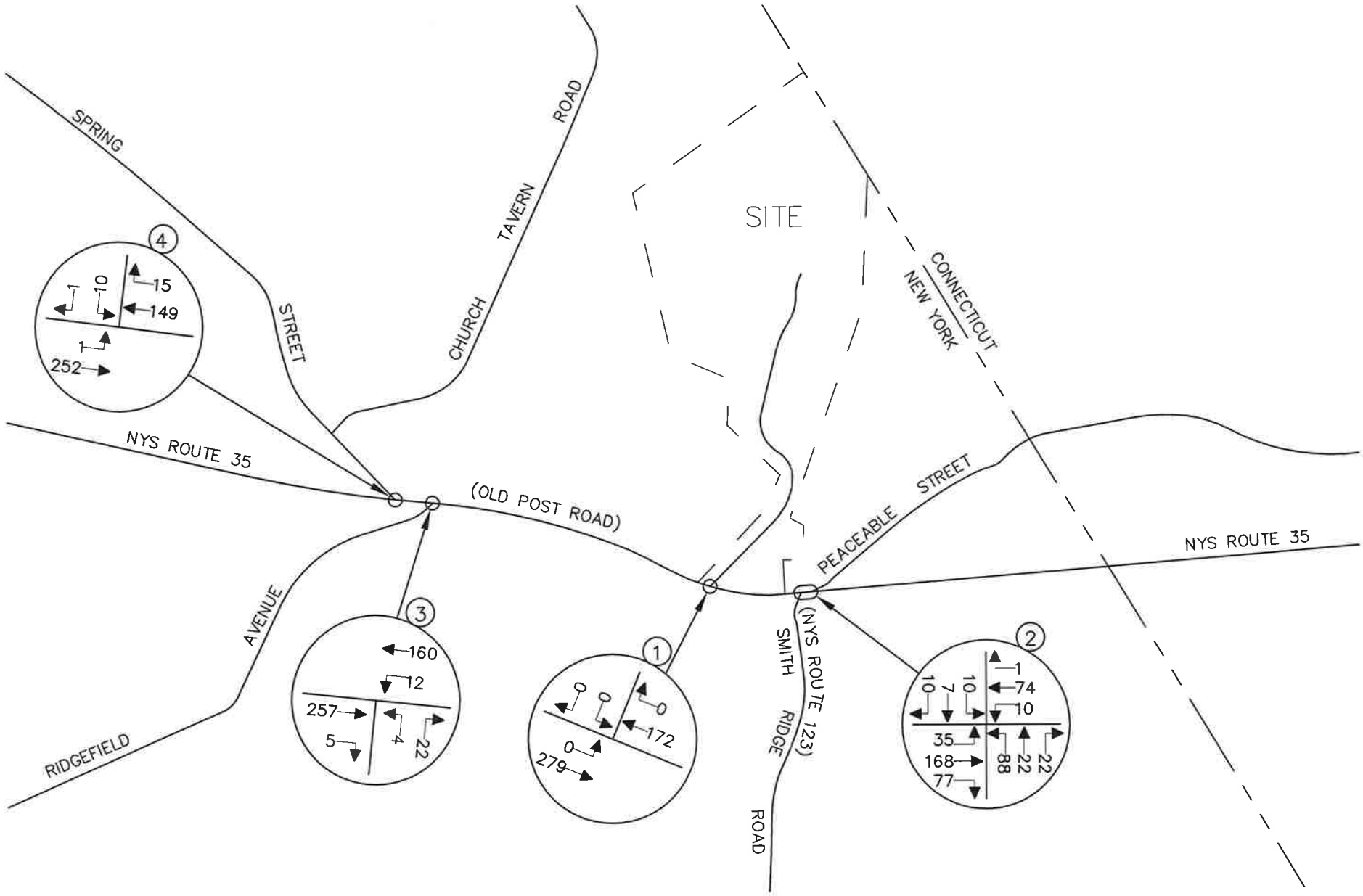
2021 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
6	



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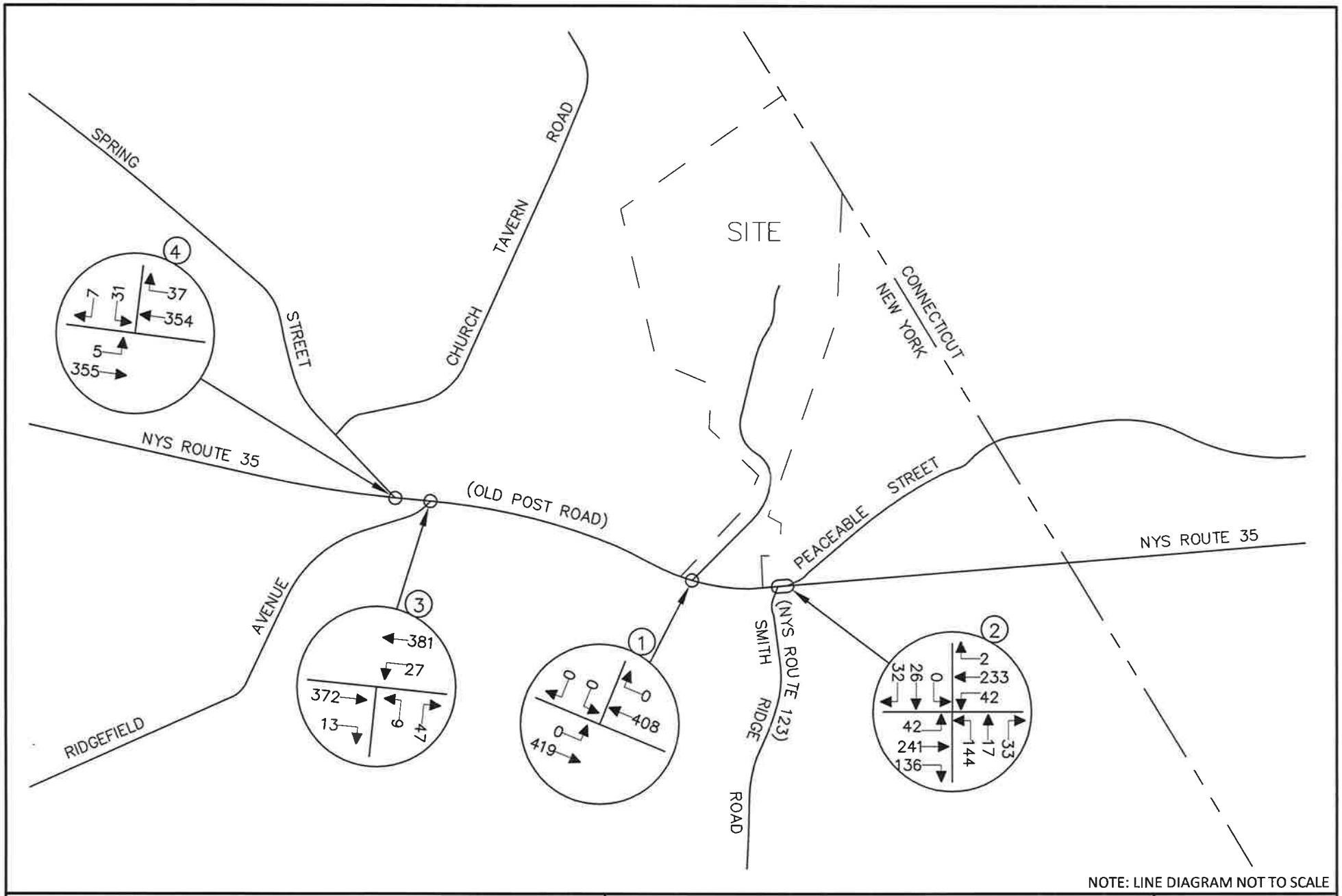
2021 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
7	



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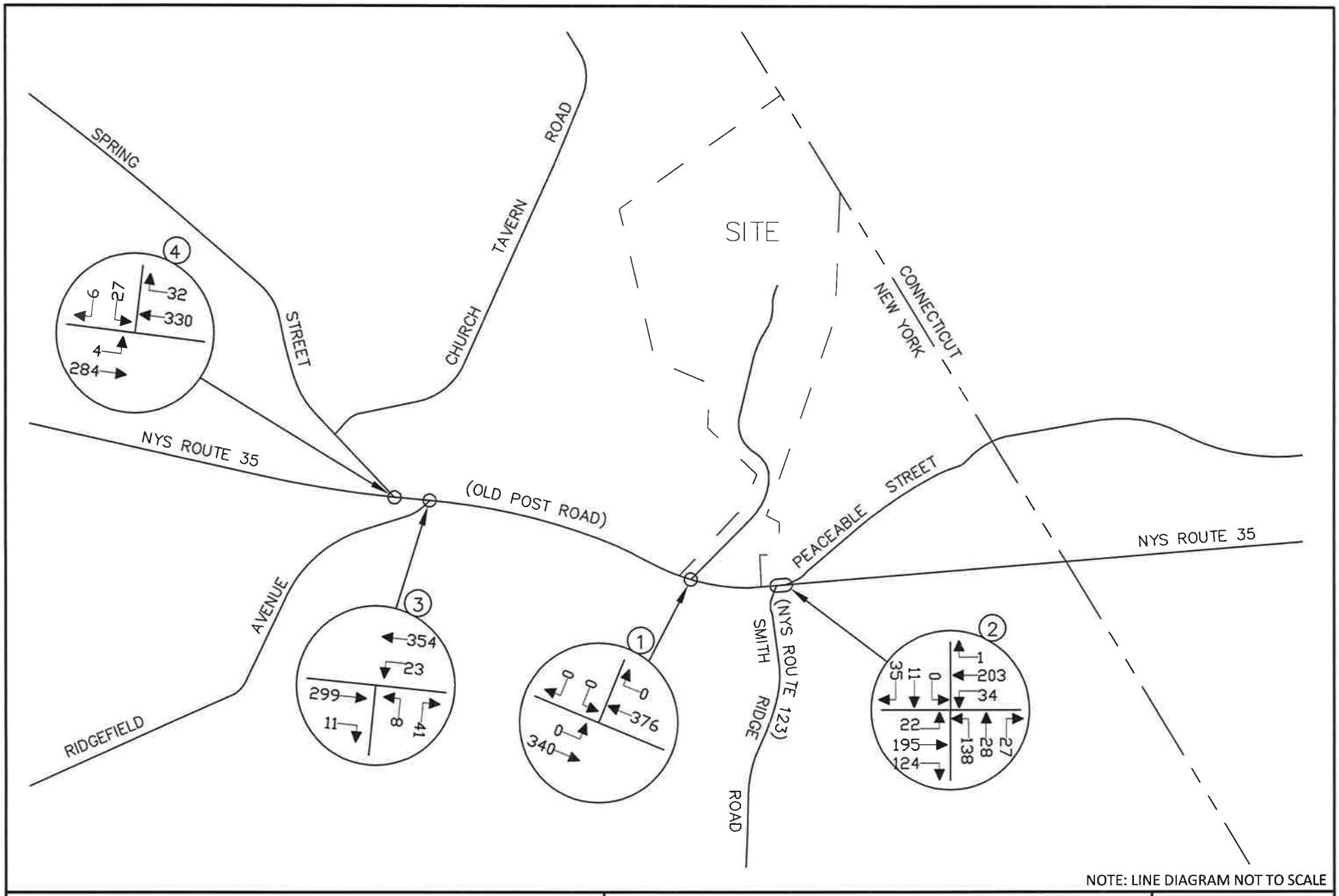
2021 PROJECTED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
8	



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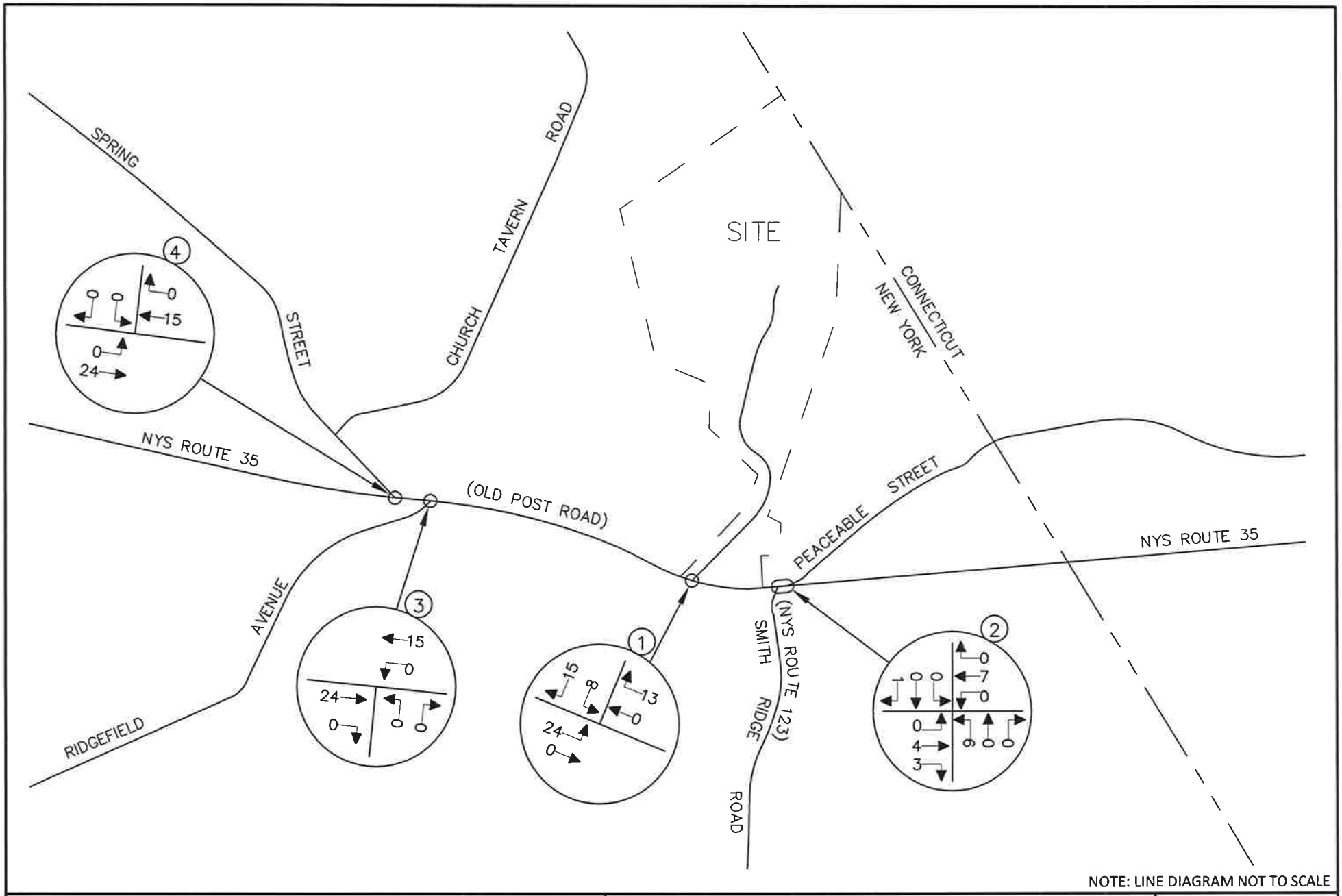
2021 PROJECTED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
9	



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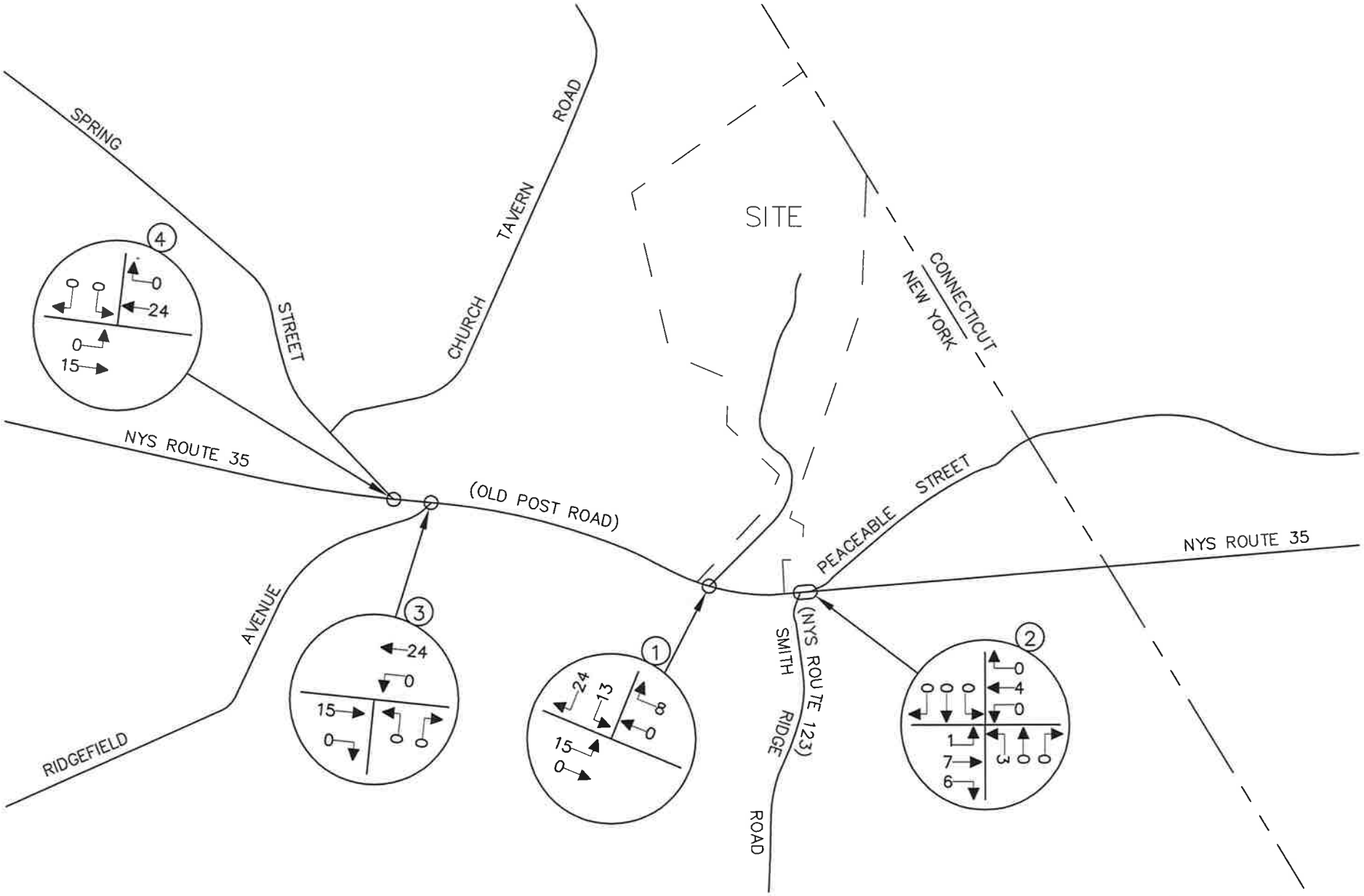
RE-OCCUPANCY OF EXISTING RESTAURANT TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
10	



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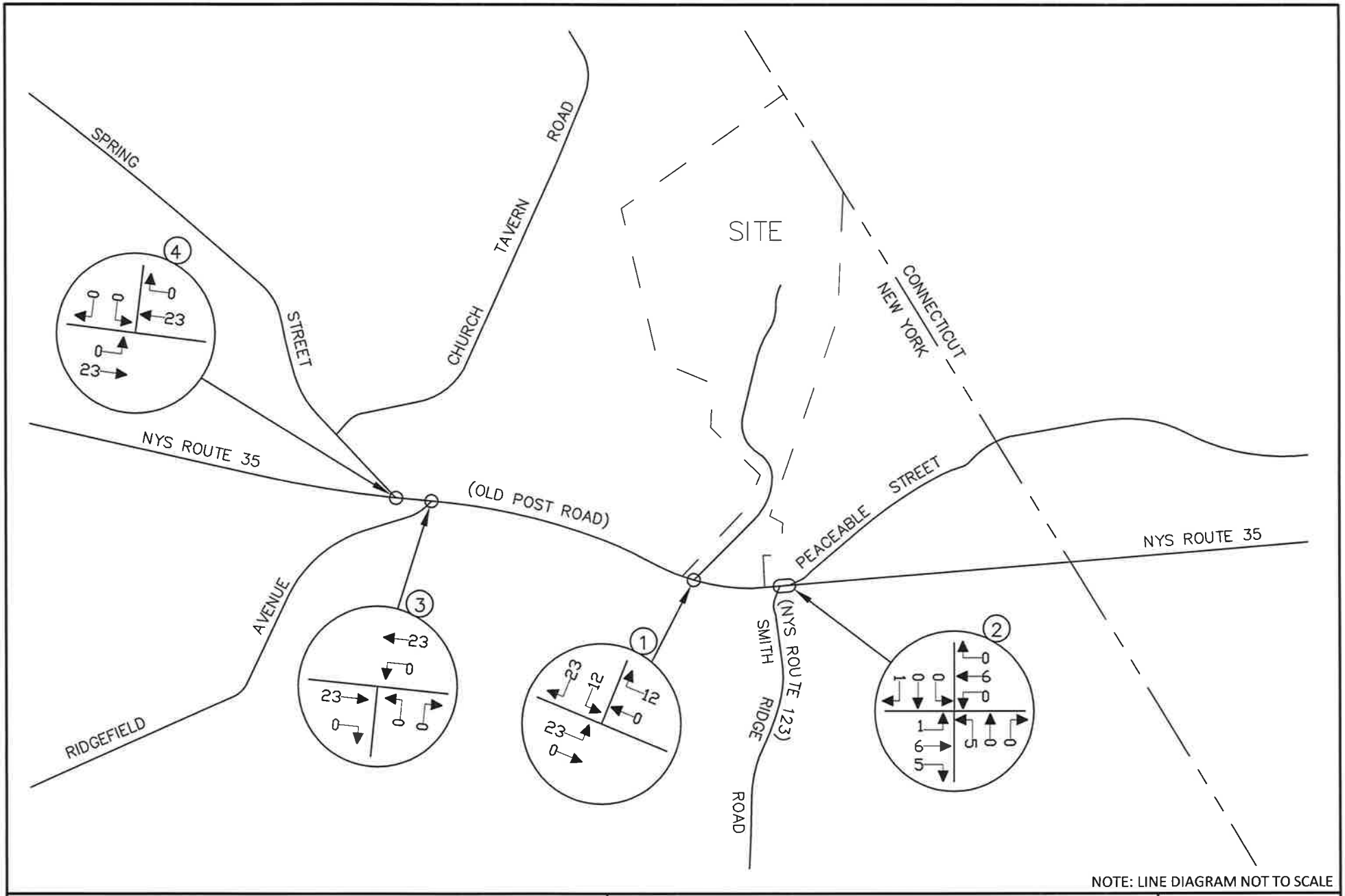
RE-OCCUPANCY OF EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
11	



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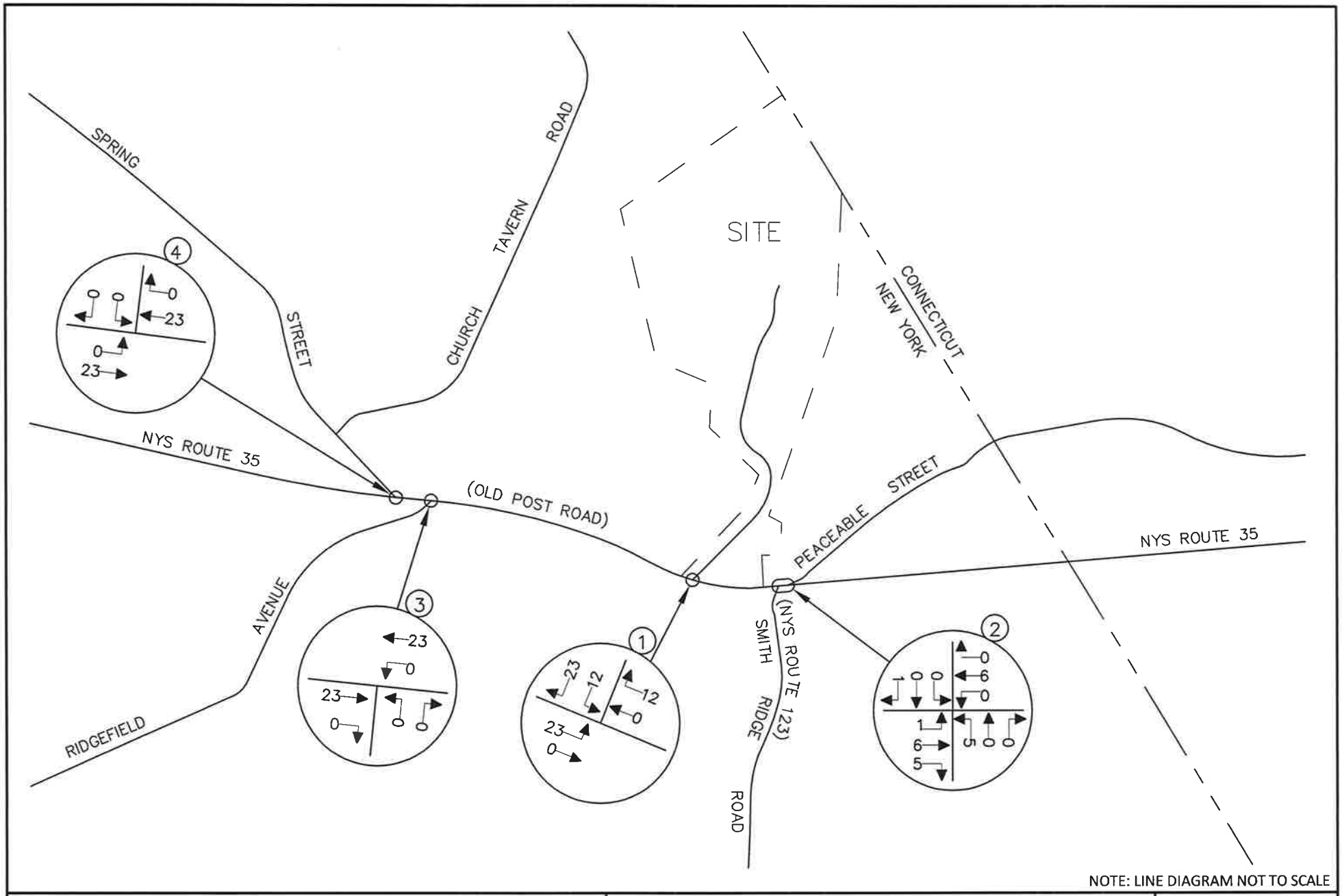
RE-OCCUPANCY OF EXISTING TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
12	



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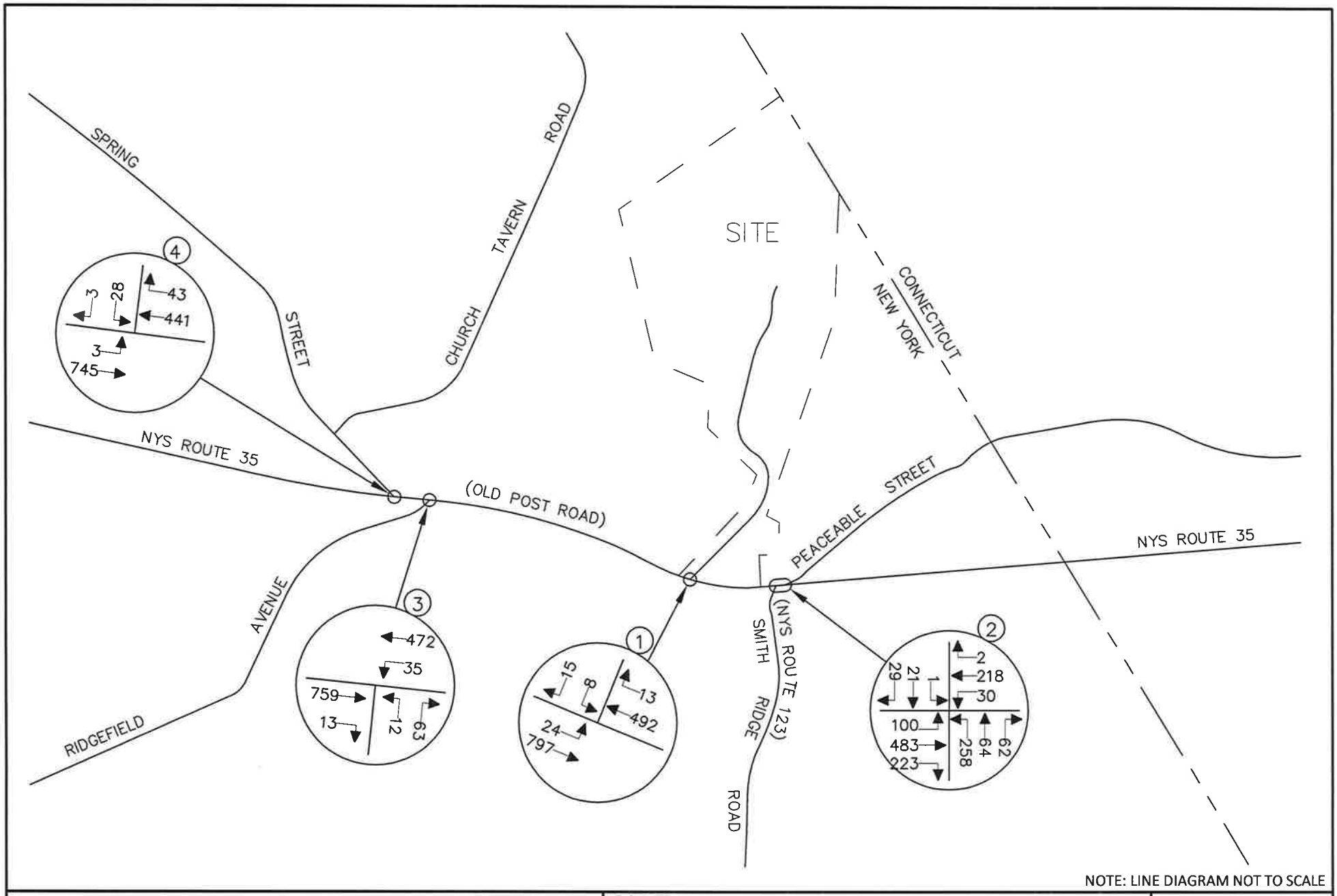
RE-OCCUPANCY OF EXISTING TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
13	



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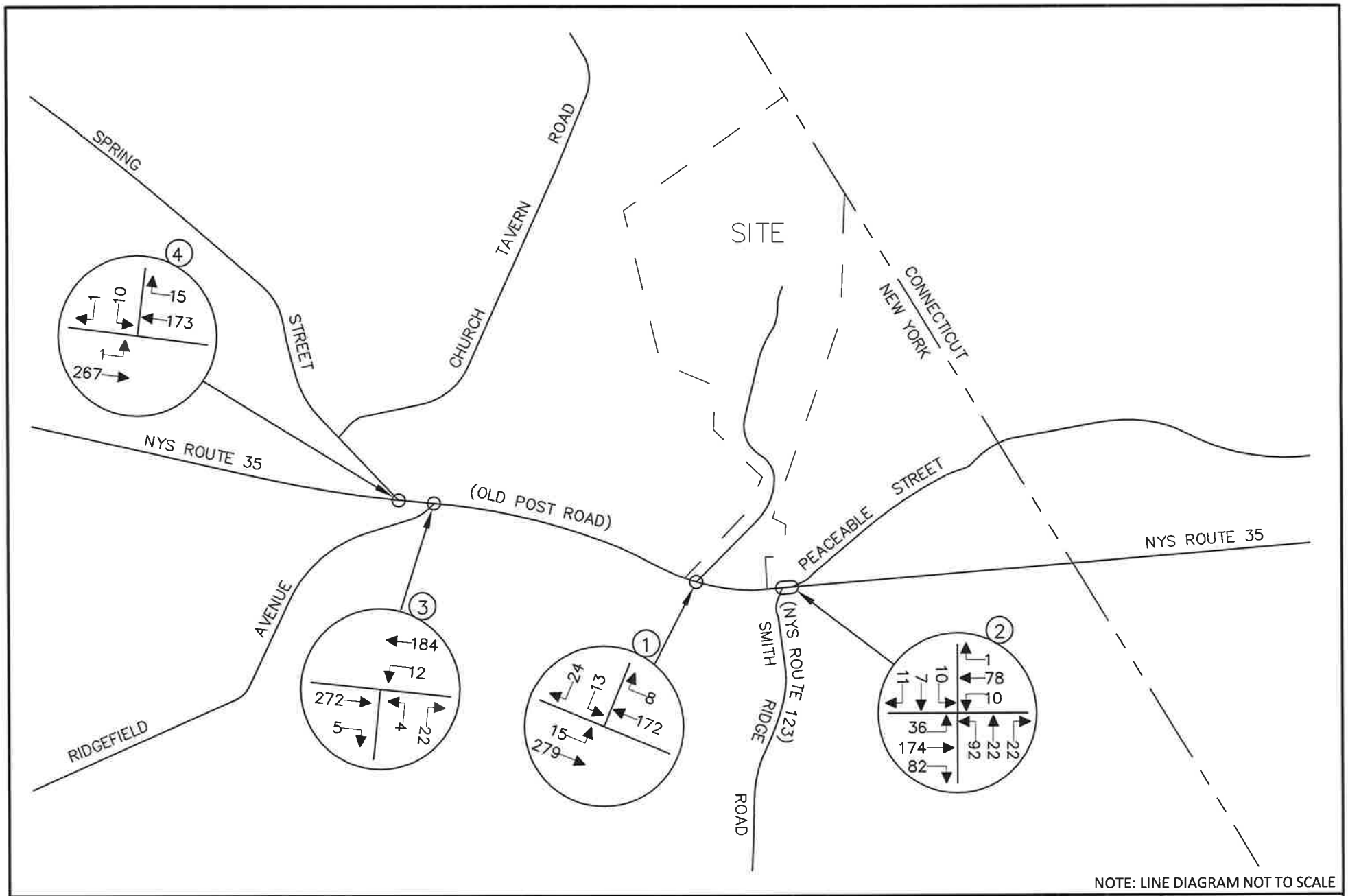
2021 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
14	



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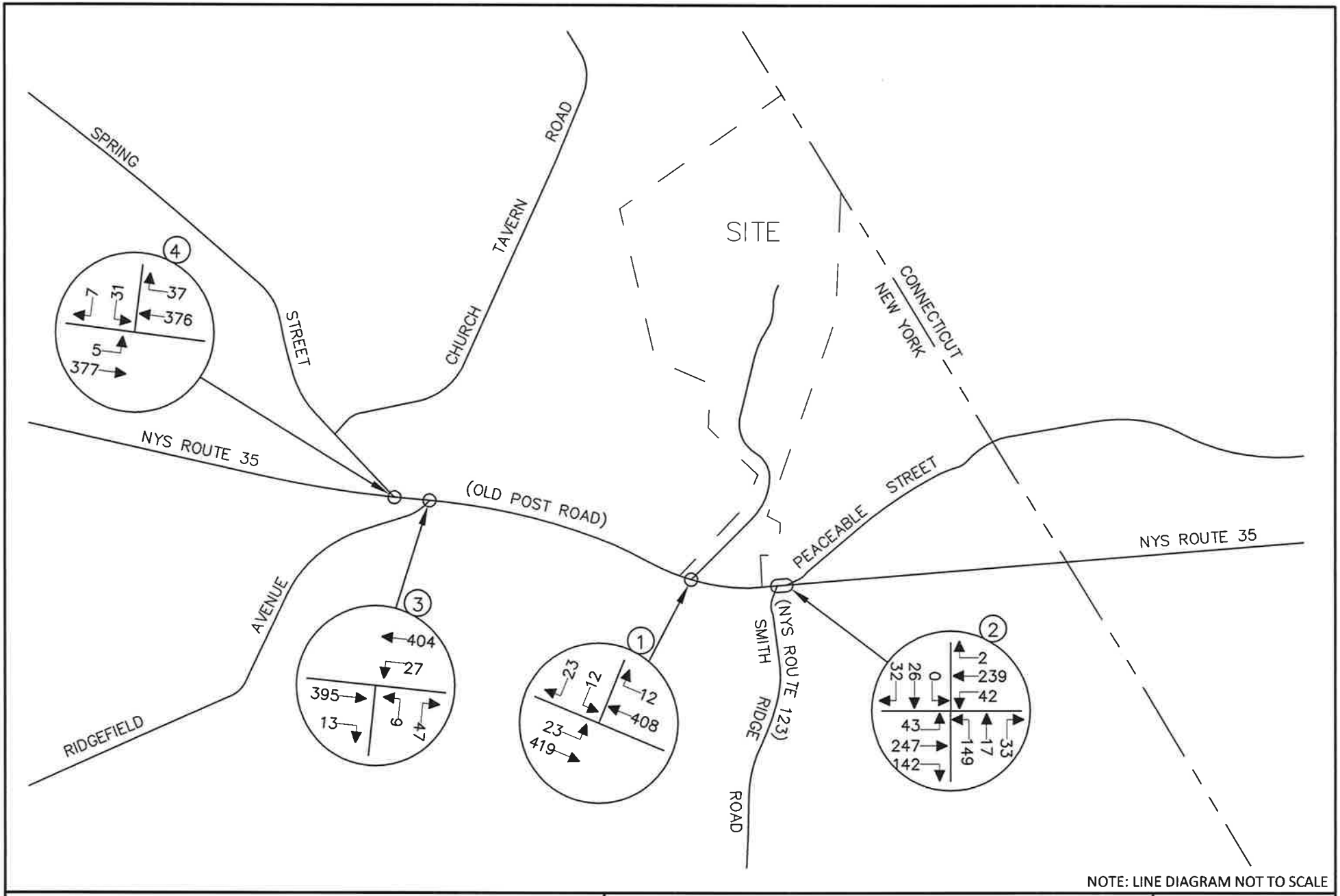
2021 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
15	



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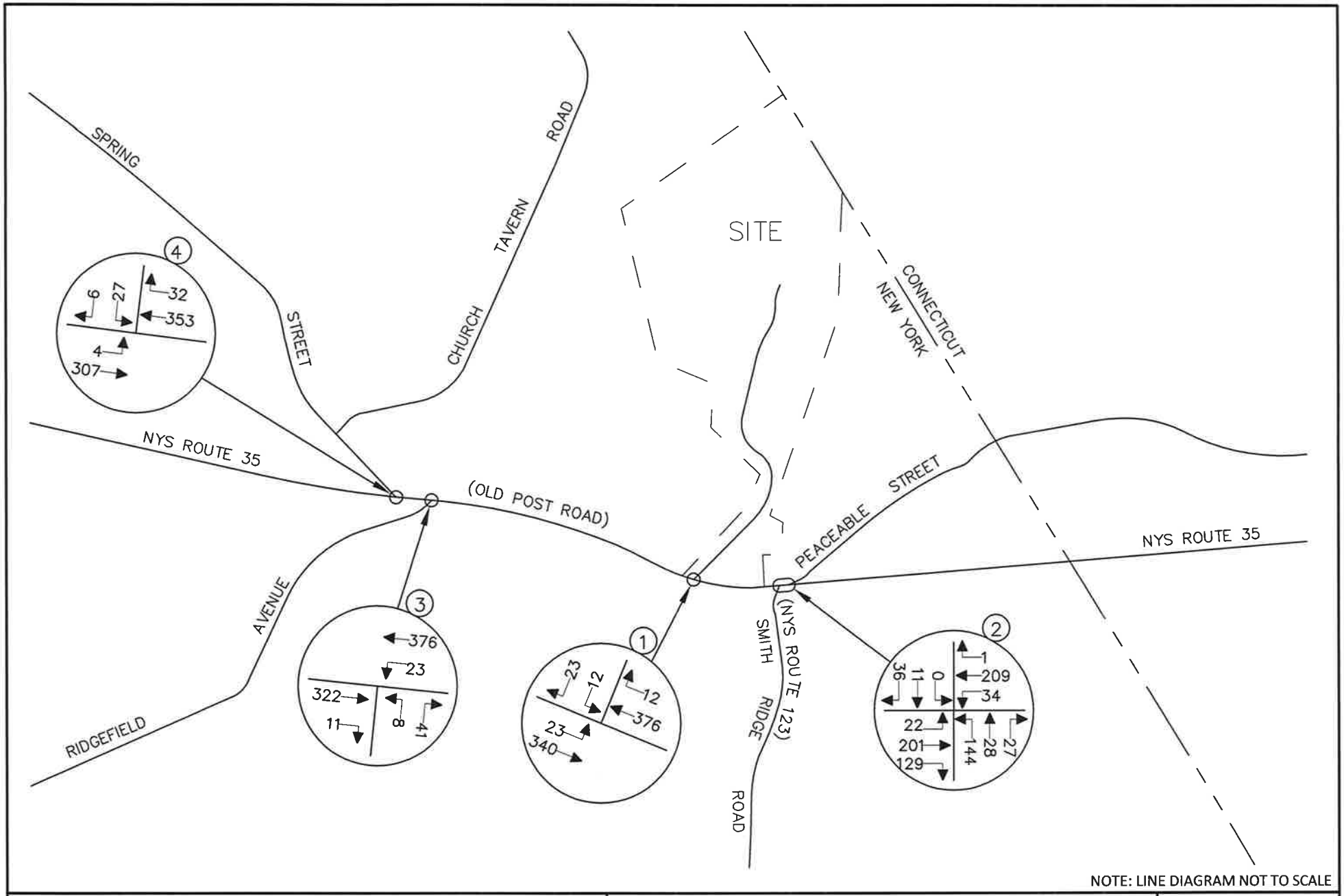
2021 NO-BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
16	



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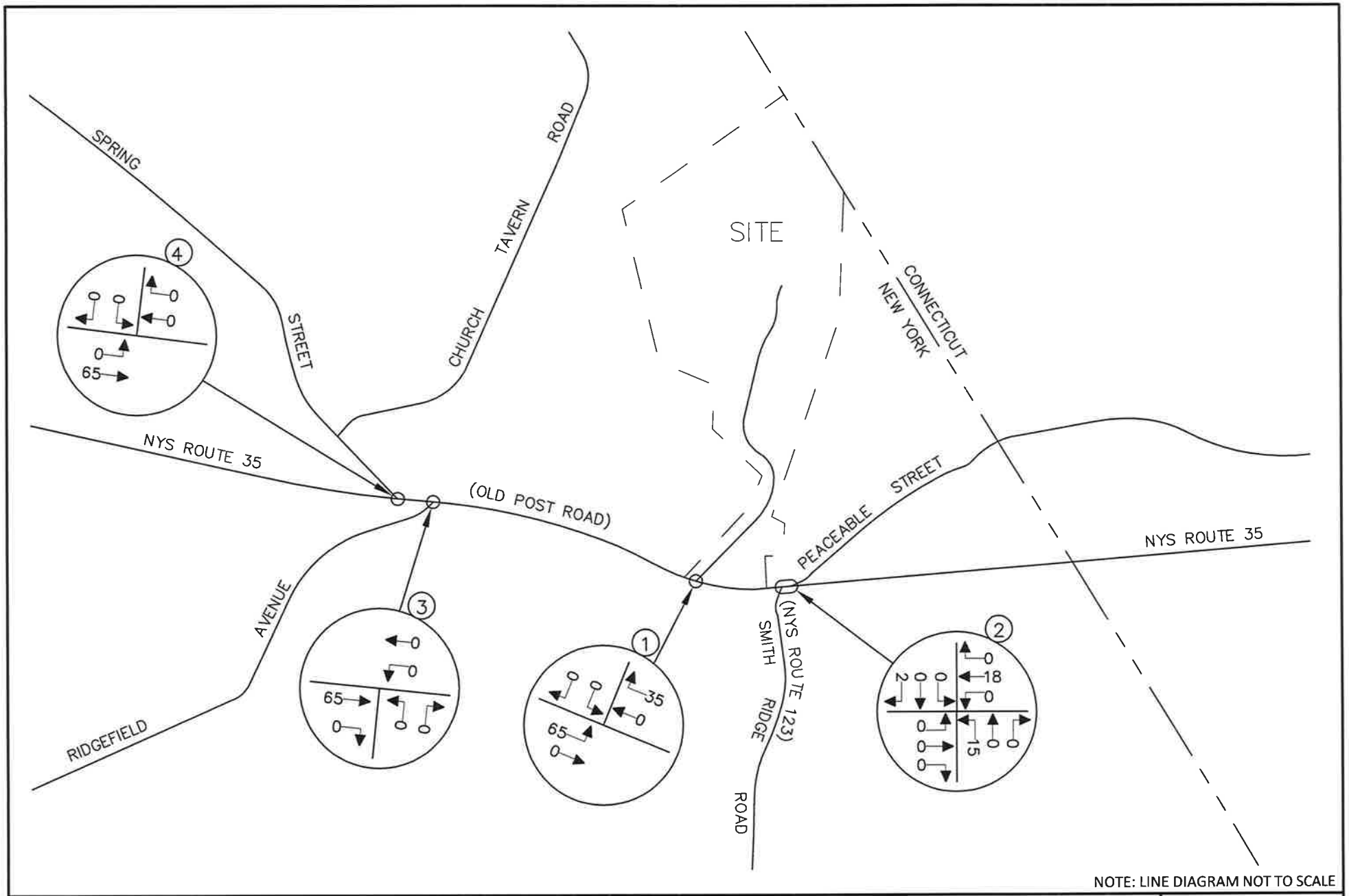
2021 NO-BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
17	



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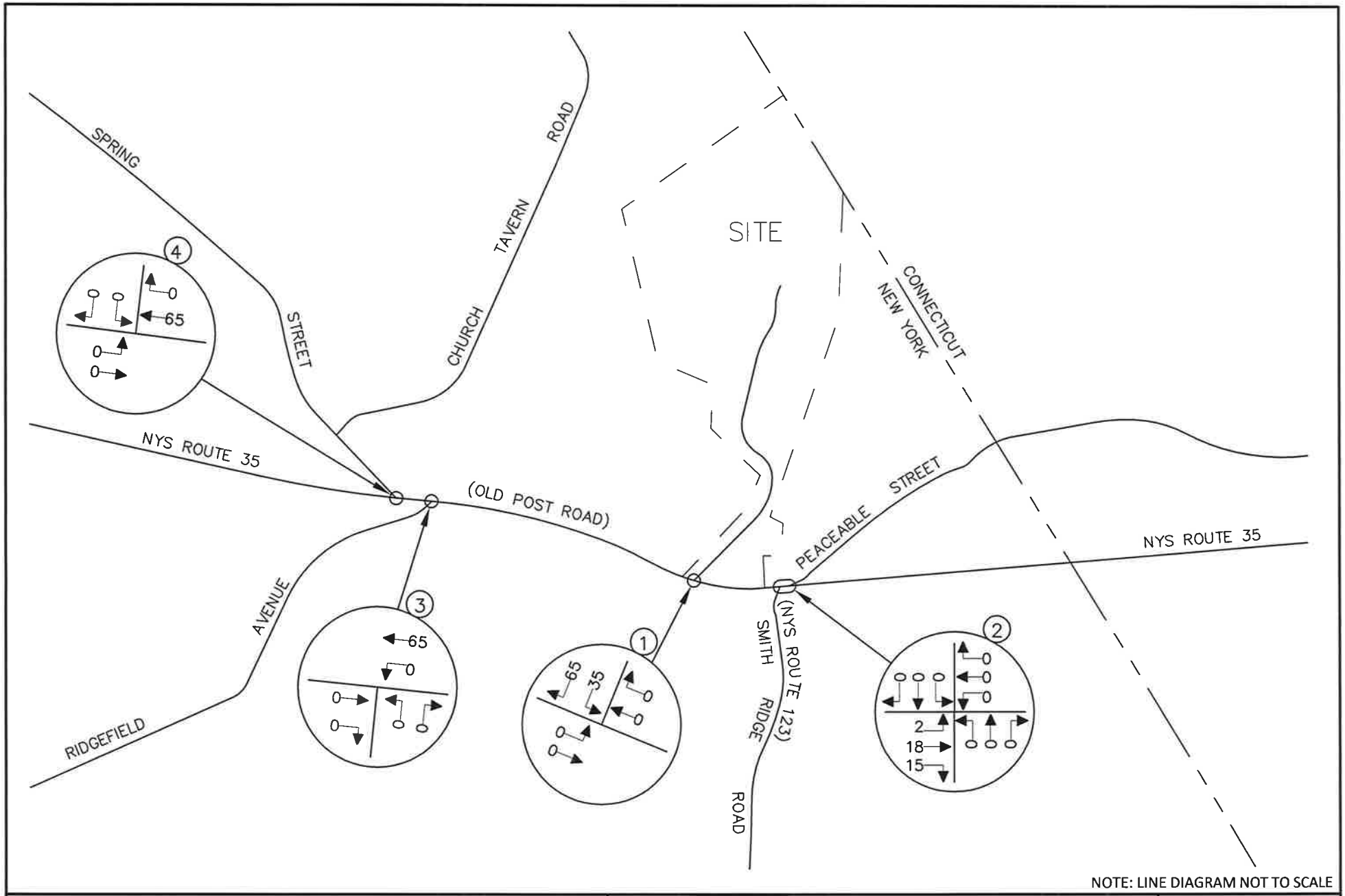
NEW YORK ARRIVAL DISTRIBUTION
(EXPRESS AS A %)

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
18	



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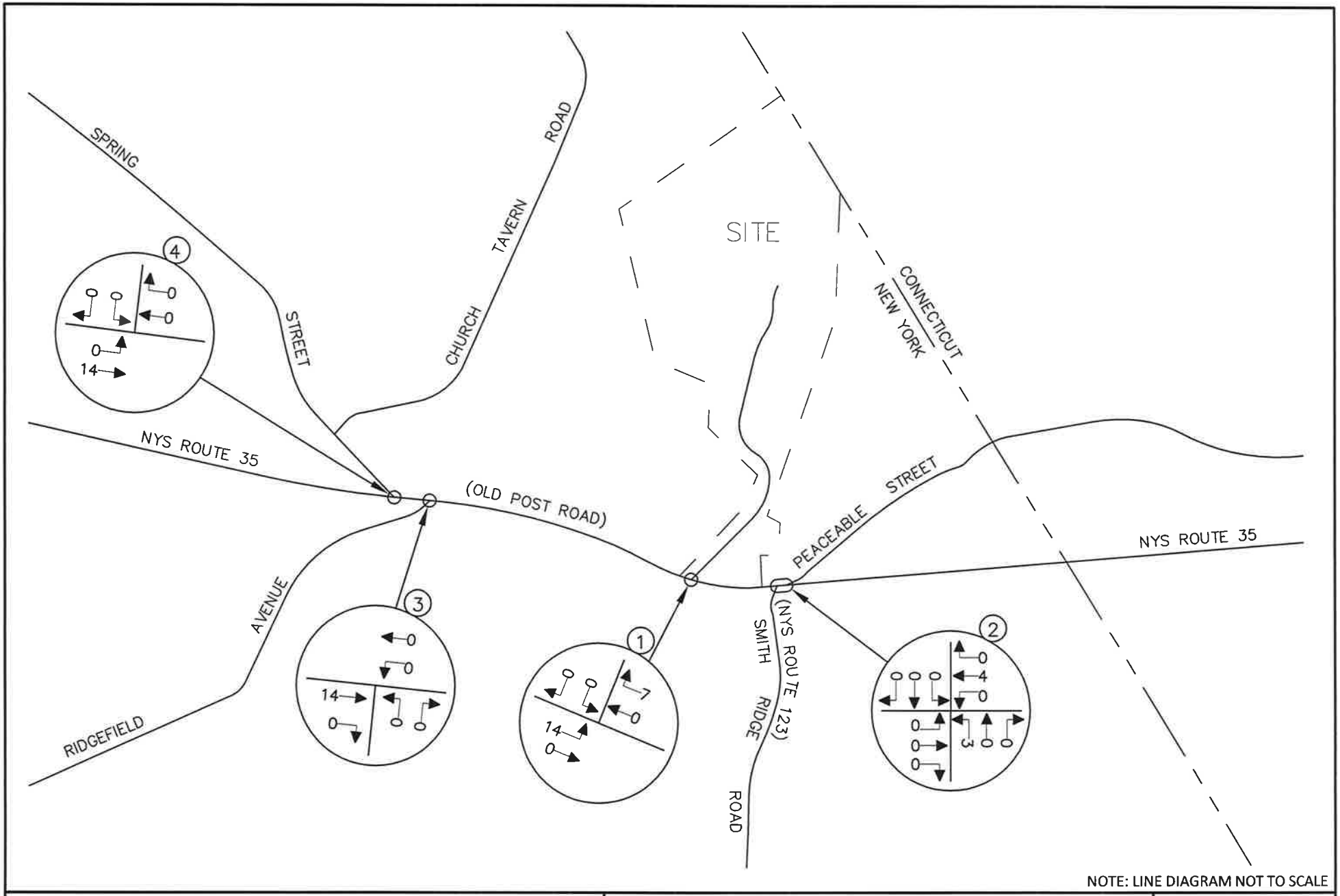
NEW YORK DEPARTURE DISTRIBUTION
(EXPRESS AS A %)

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
19	



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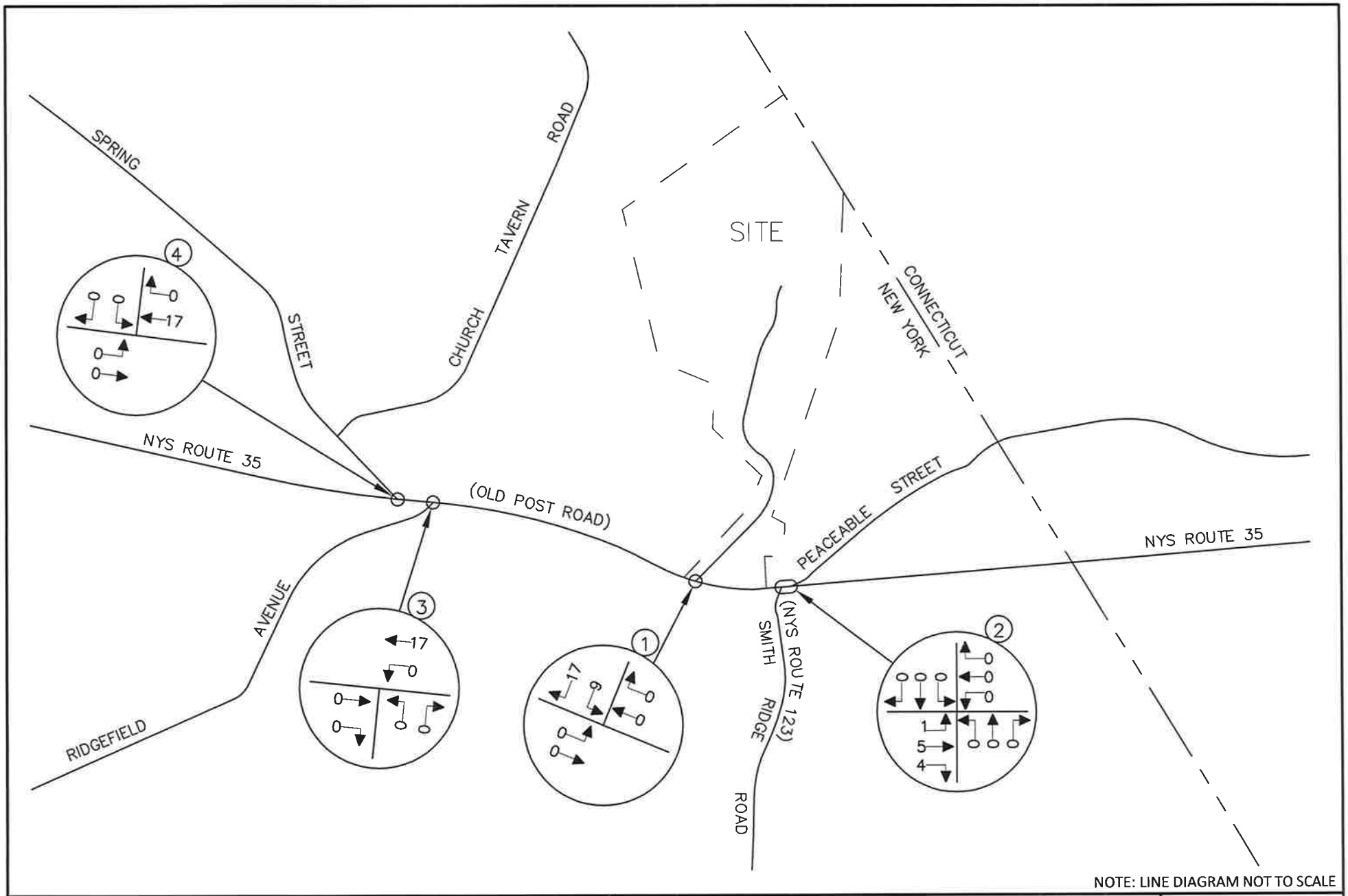
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
20	



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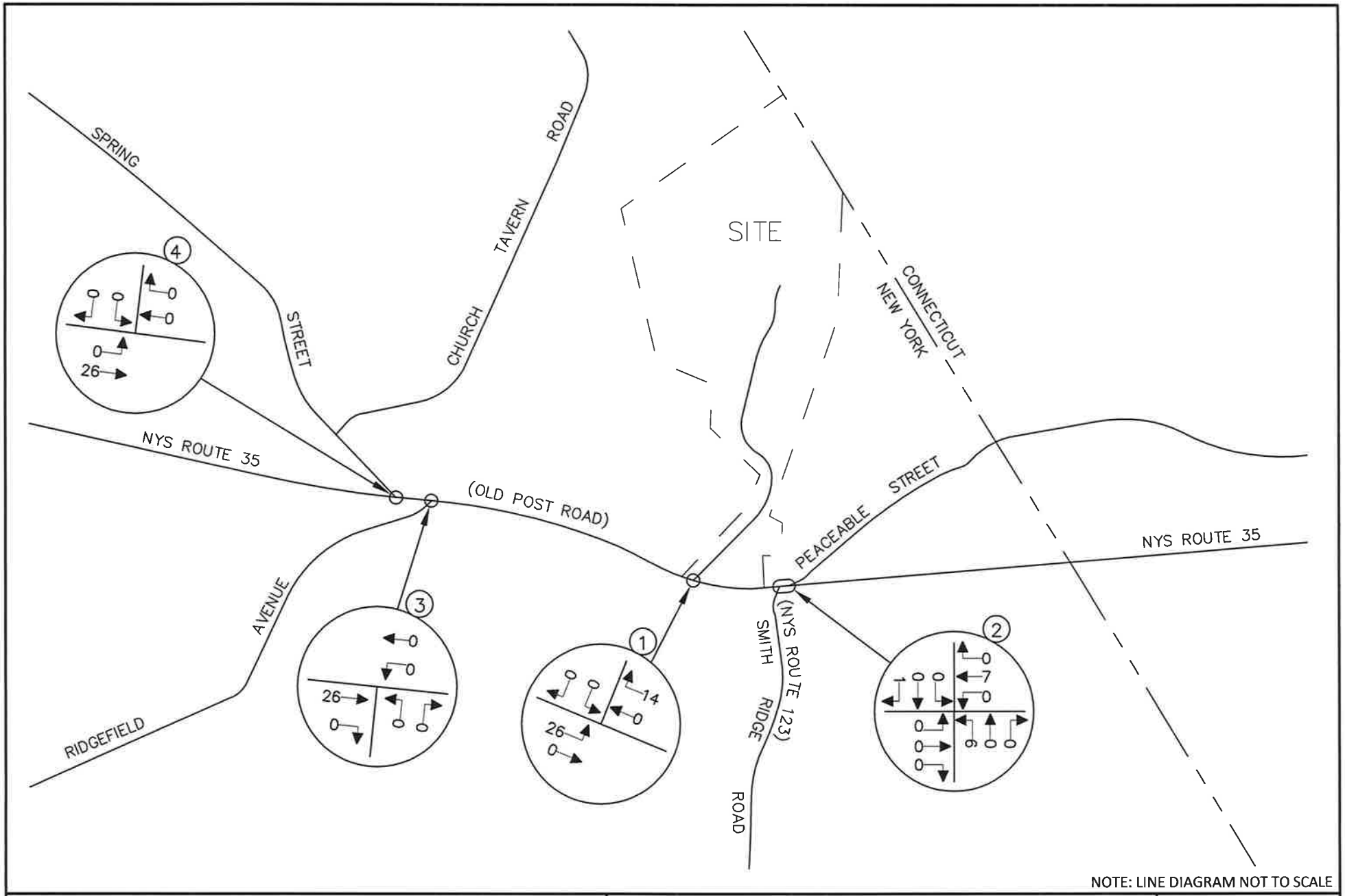
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
21	



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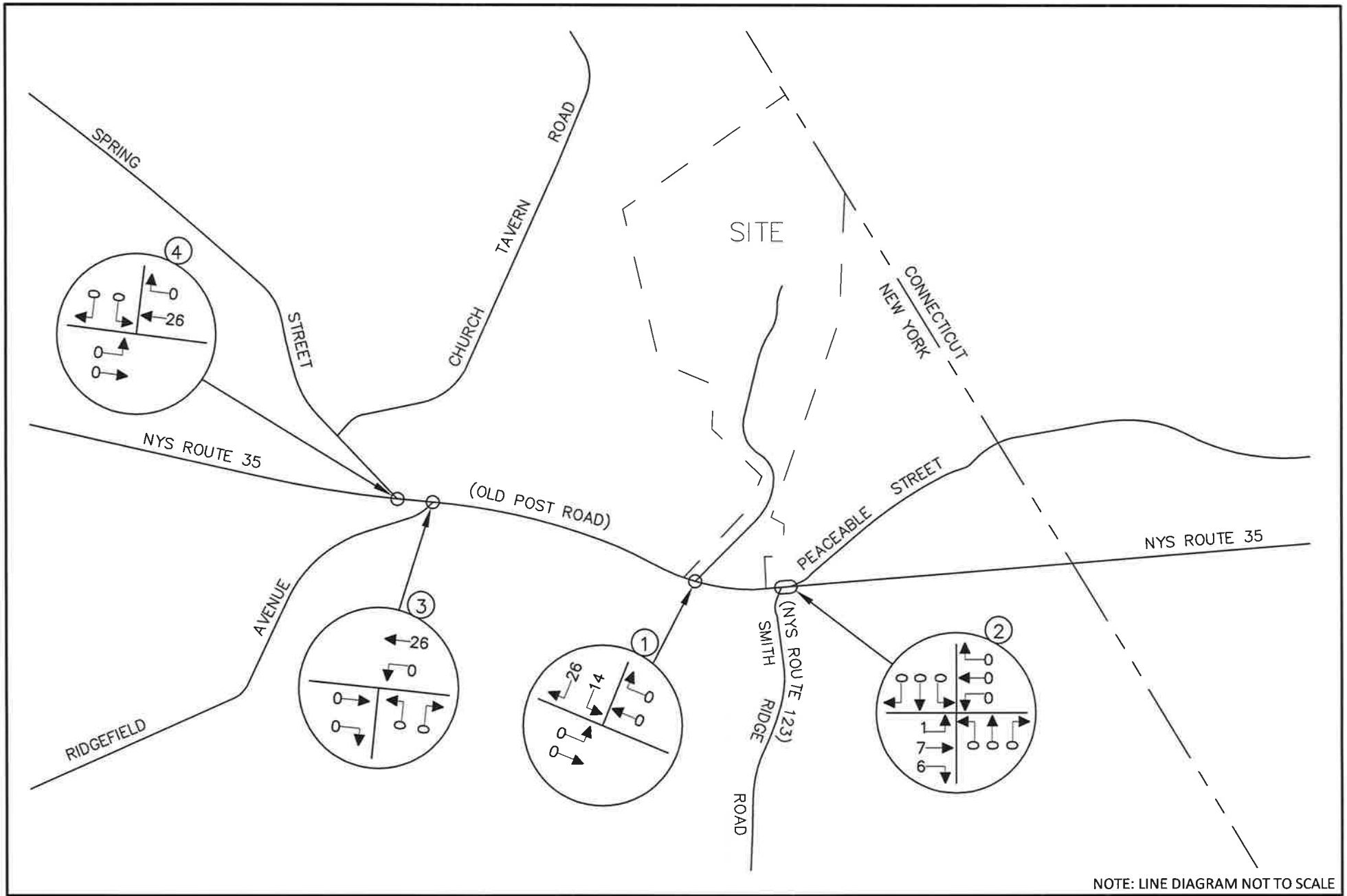
SITE GENERATED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
22	



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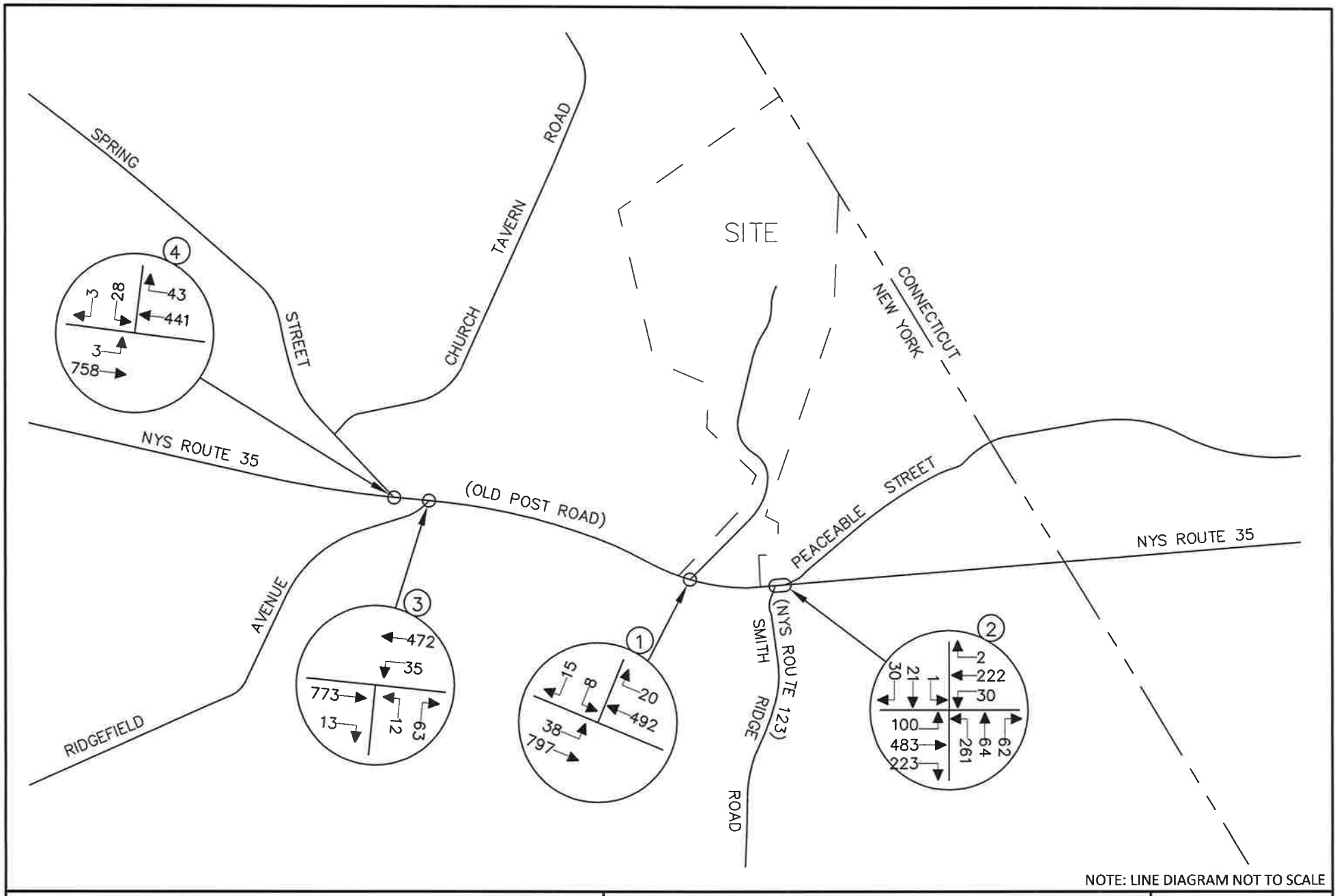
SITE GENERATED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
23	



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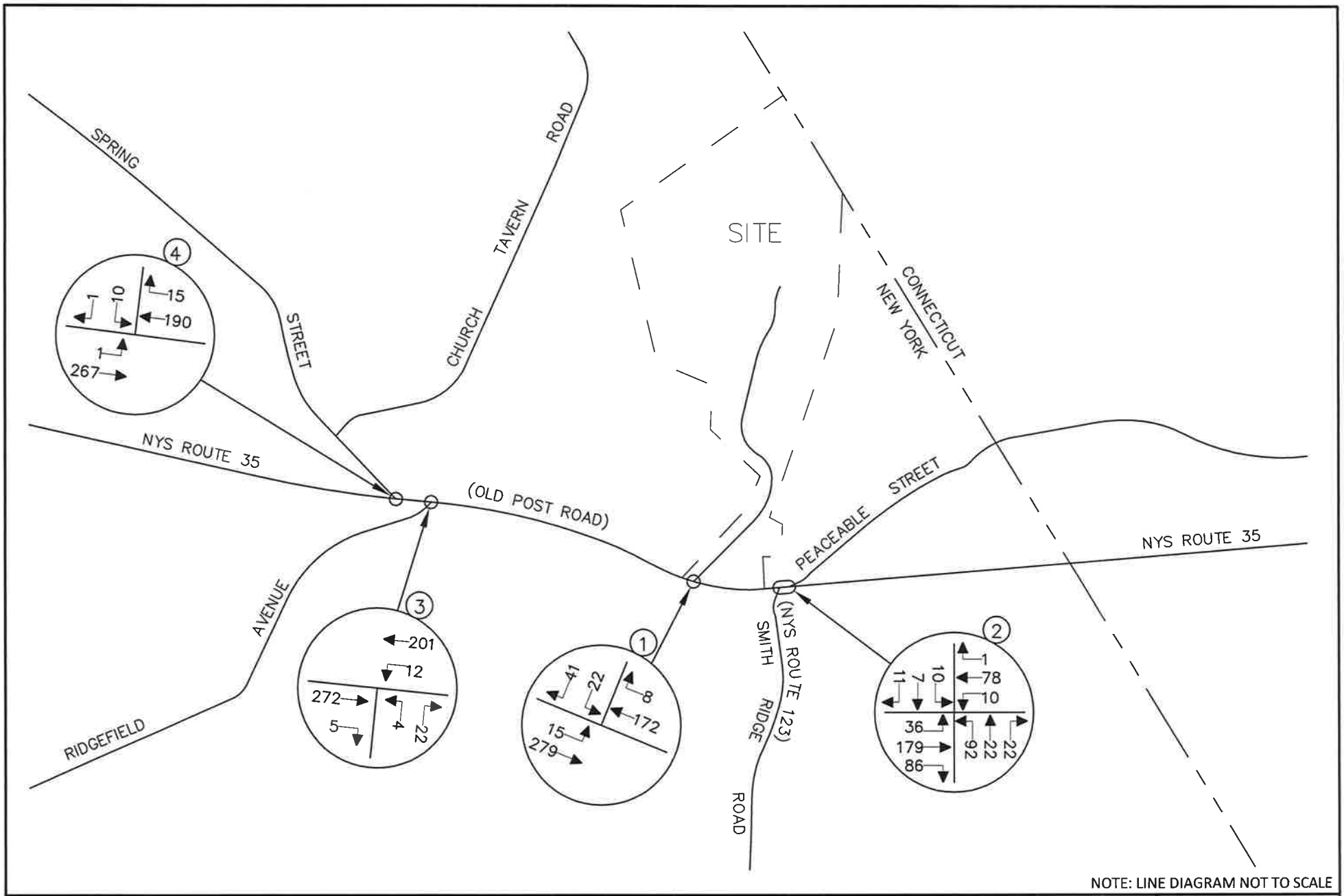
2021 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
24	



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WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
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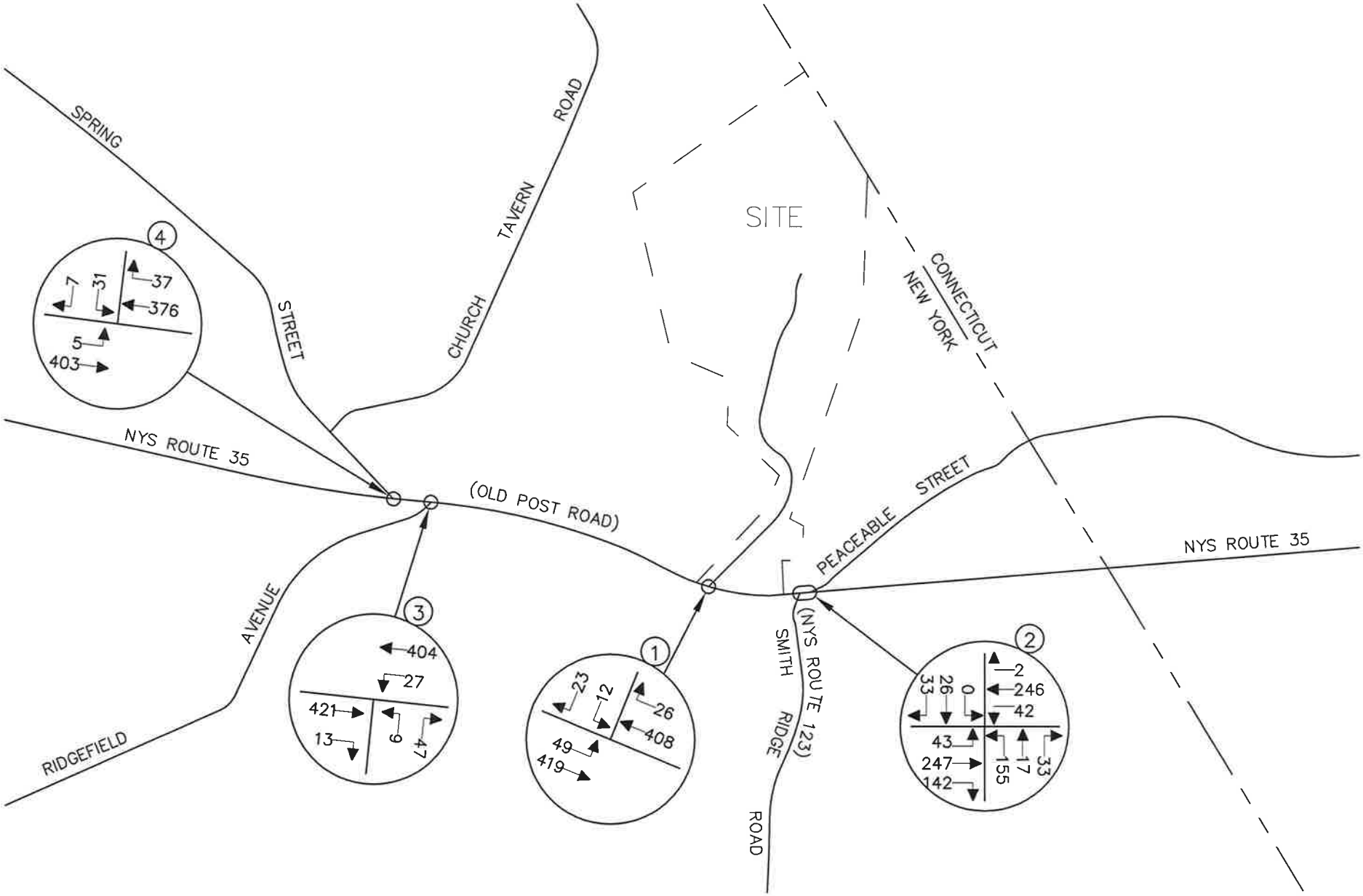
FIGURE NUMBER:	
25	



NOTE: LINE DIAGRAM NOT TO SCALE

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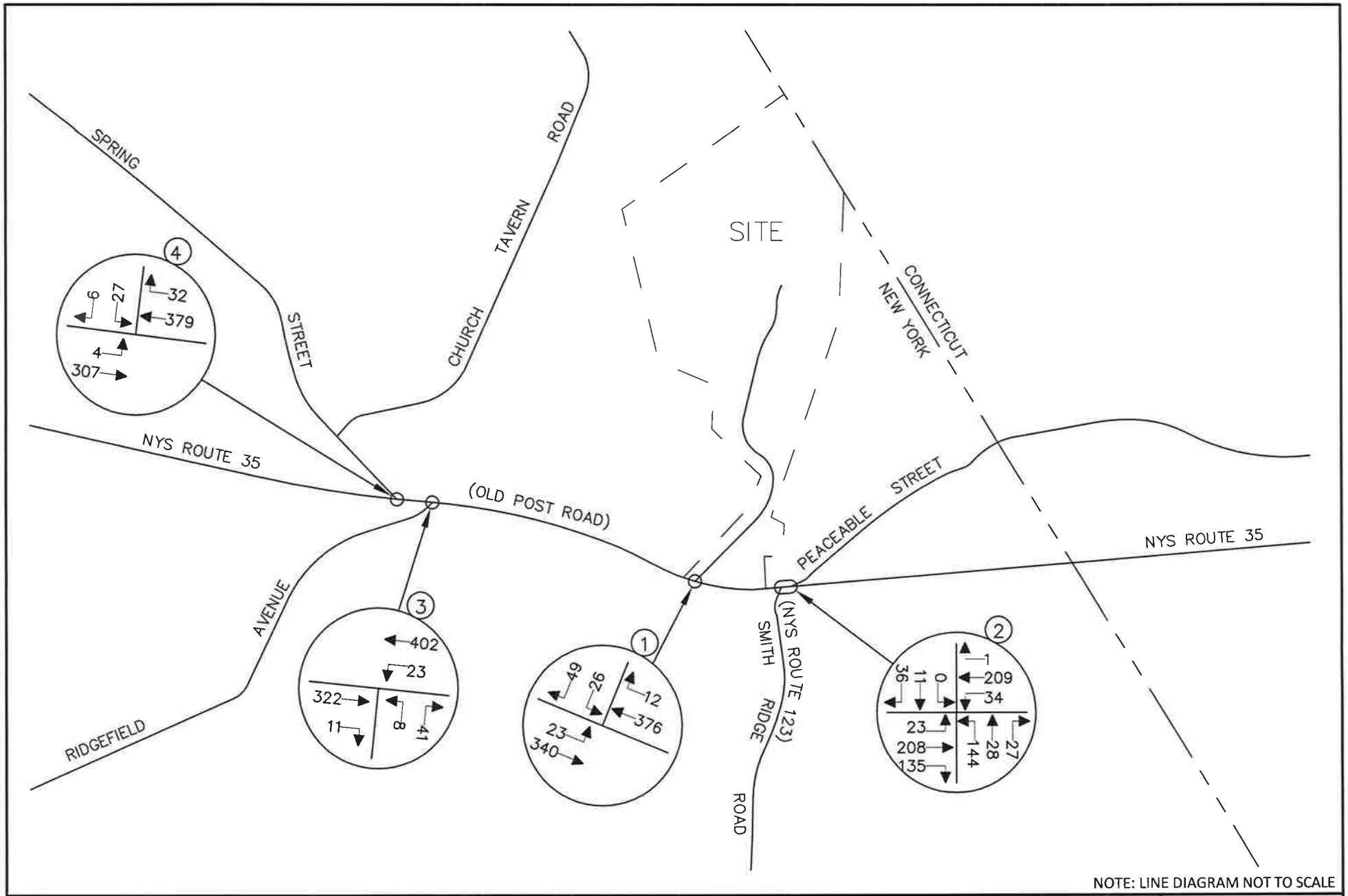
2021 BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
26	



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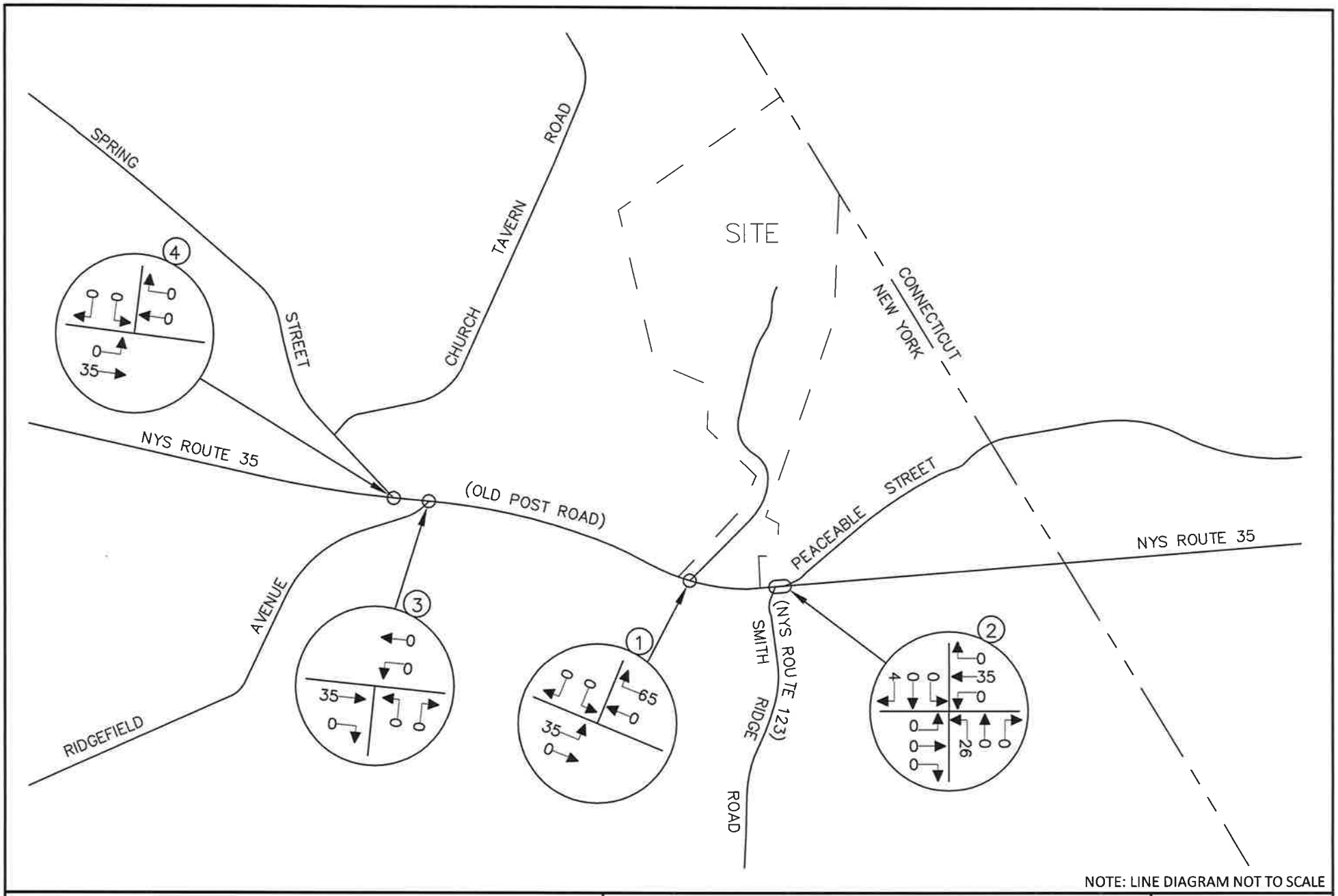
2021 BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
27	



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CONNECTICUT ARRIVAL DISTRIBUTION
(EXPRESS AS A %)

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
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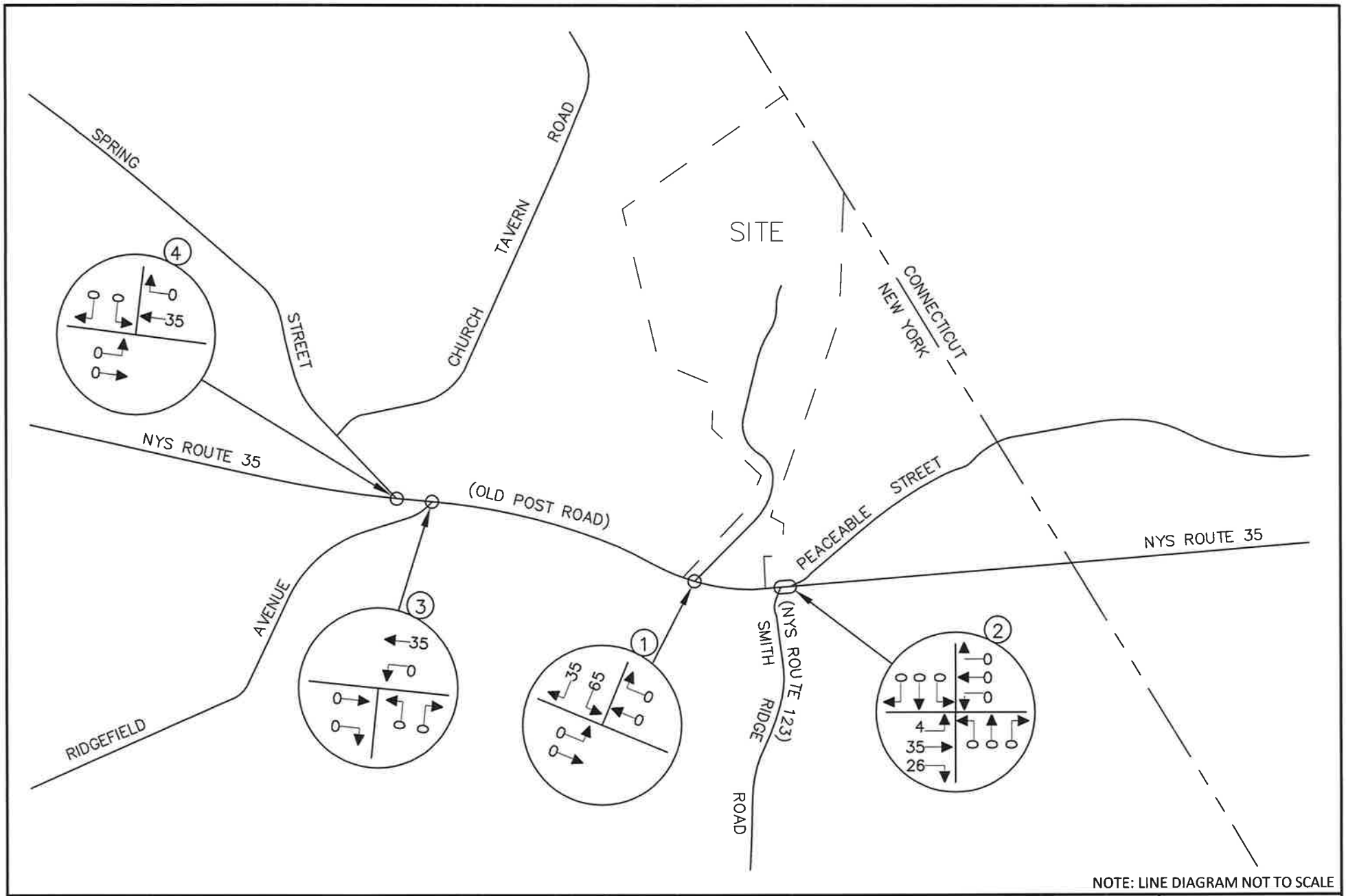

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CONNECTICUT DEPARTURE DISTRIBUTION
(EXPRESS AS A %)

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
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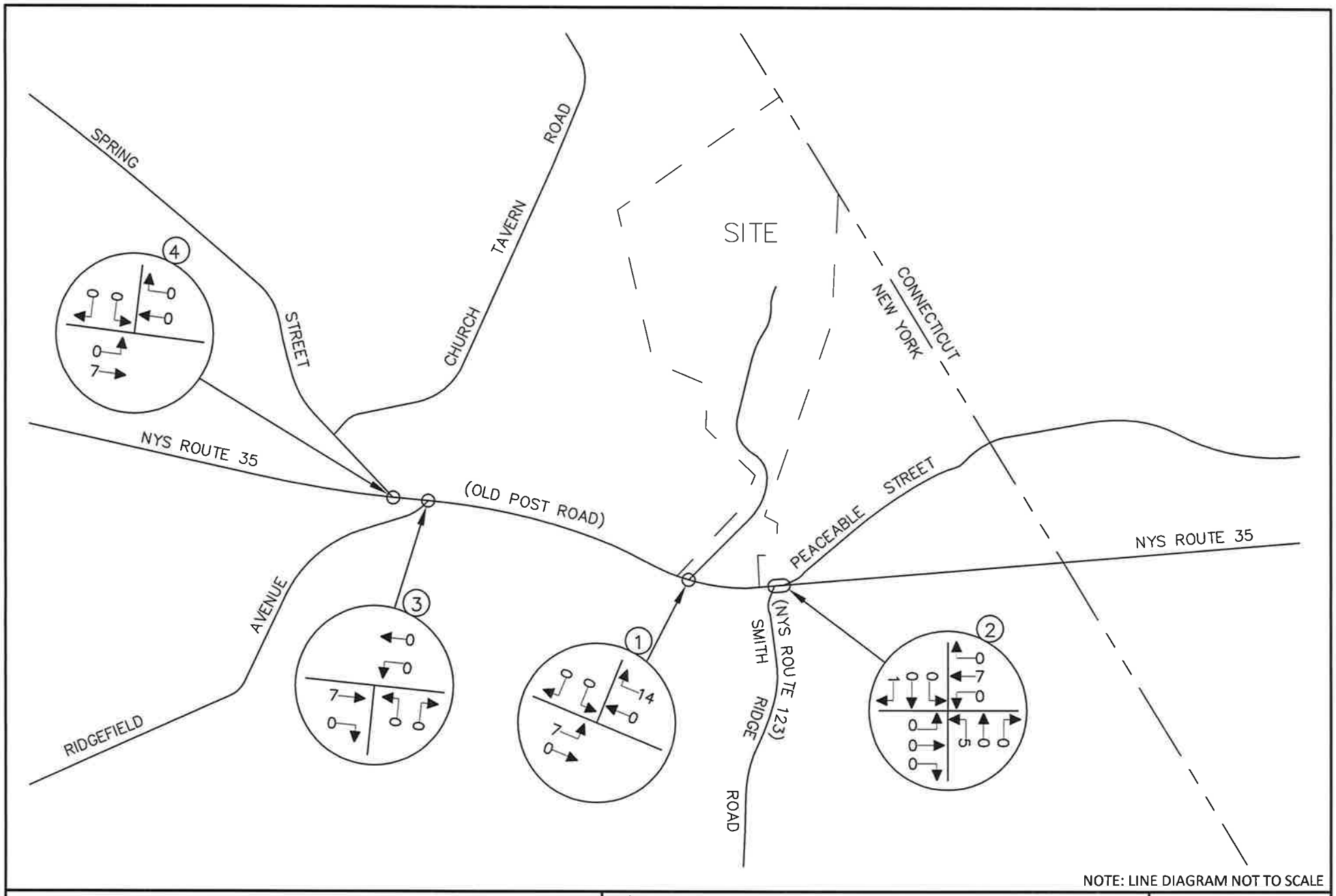

NOTE: LINE DIAGRAM NOT TO SCALE

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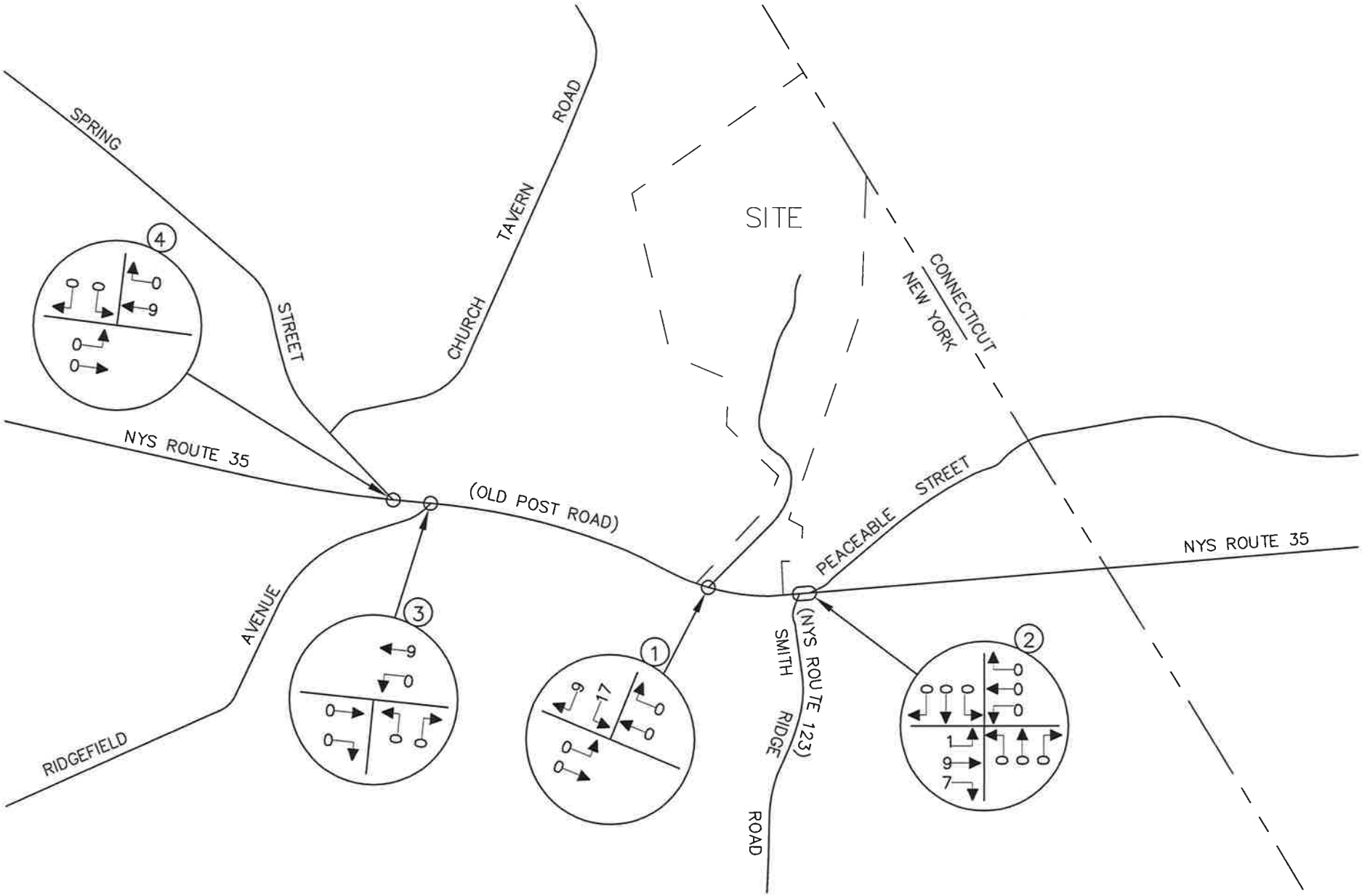
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
20A	



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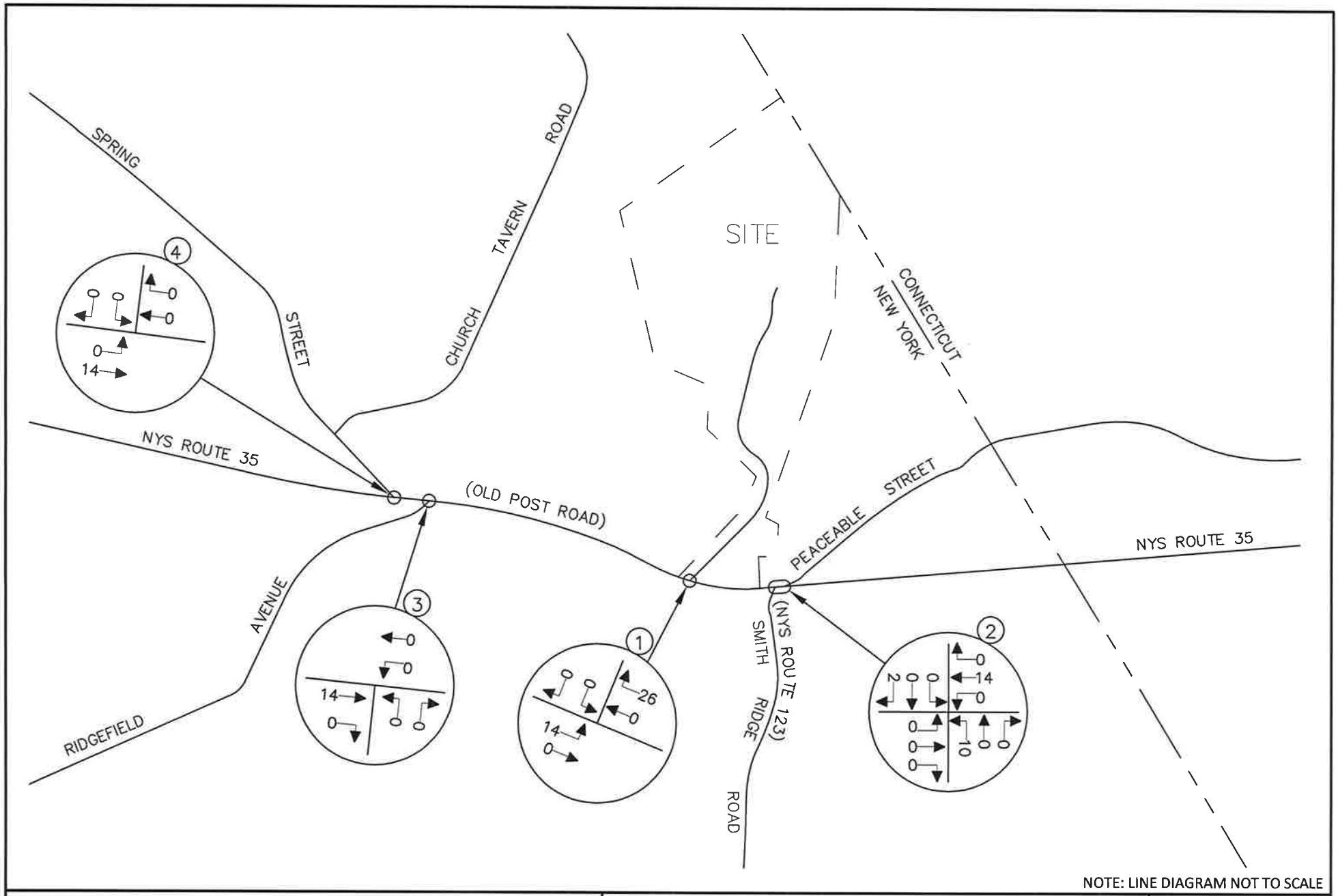
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
21A	



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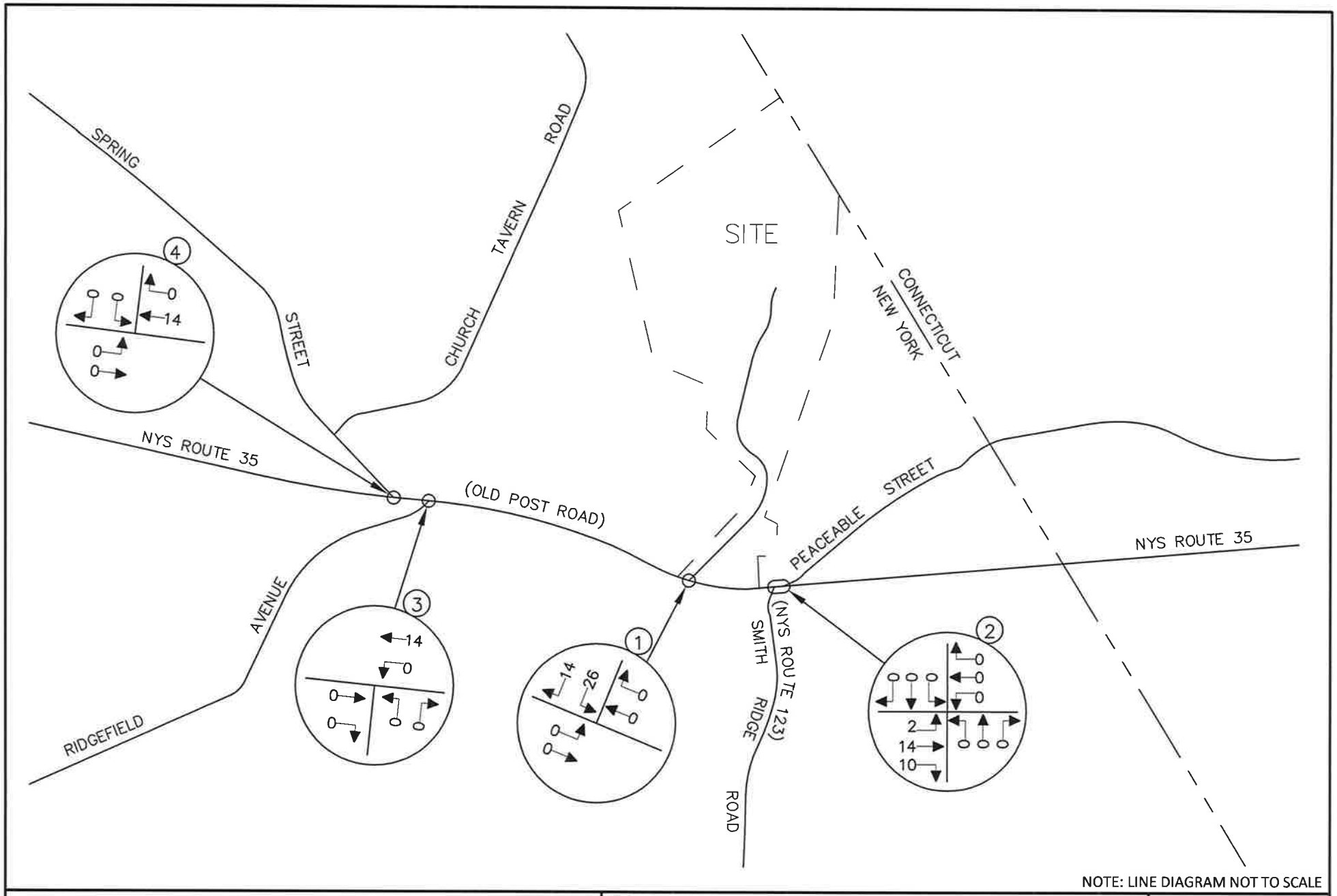
SITE GENERATED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
22A	



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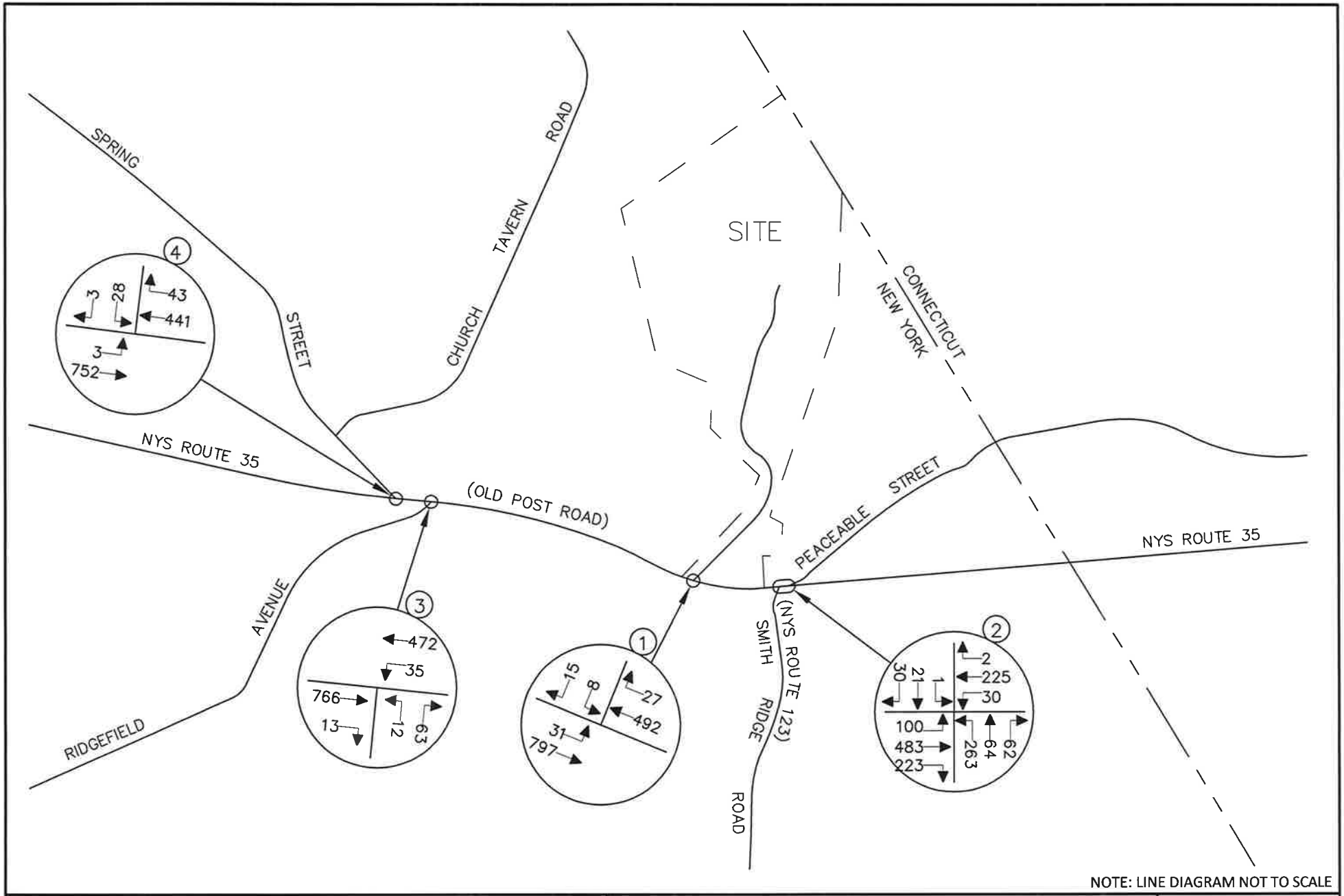
SITE GENERATED TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
23A	



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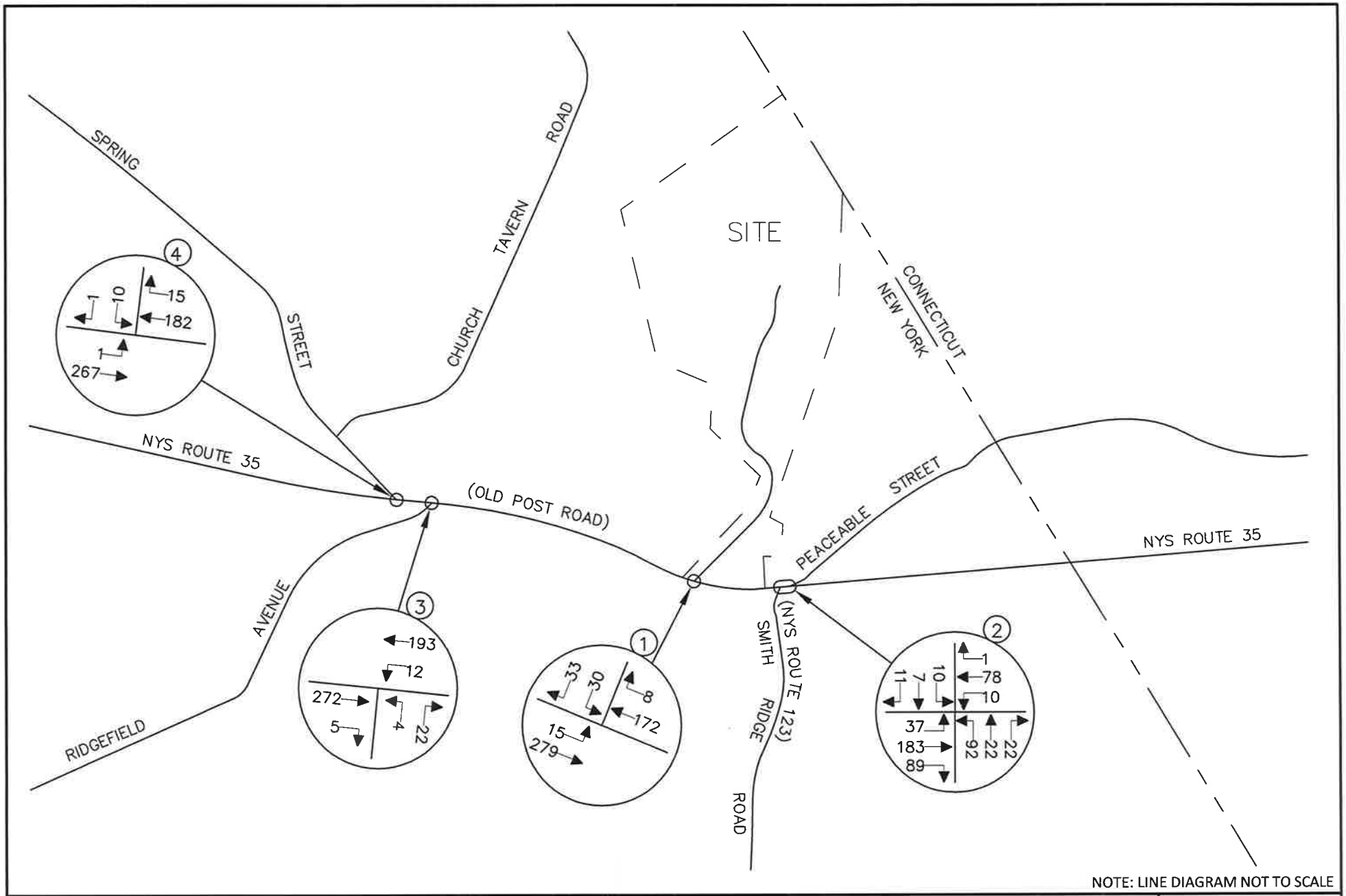
2021 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
24A	



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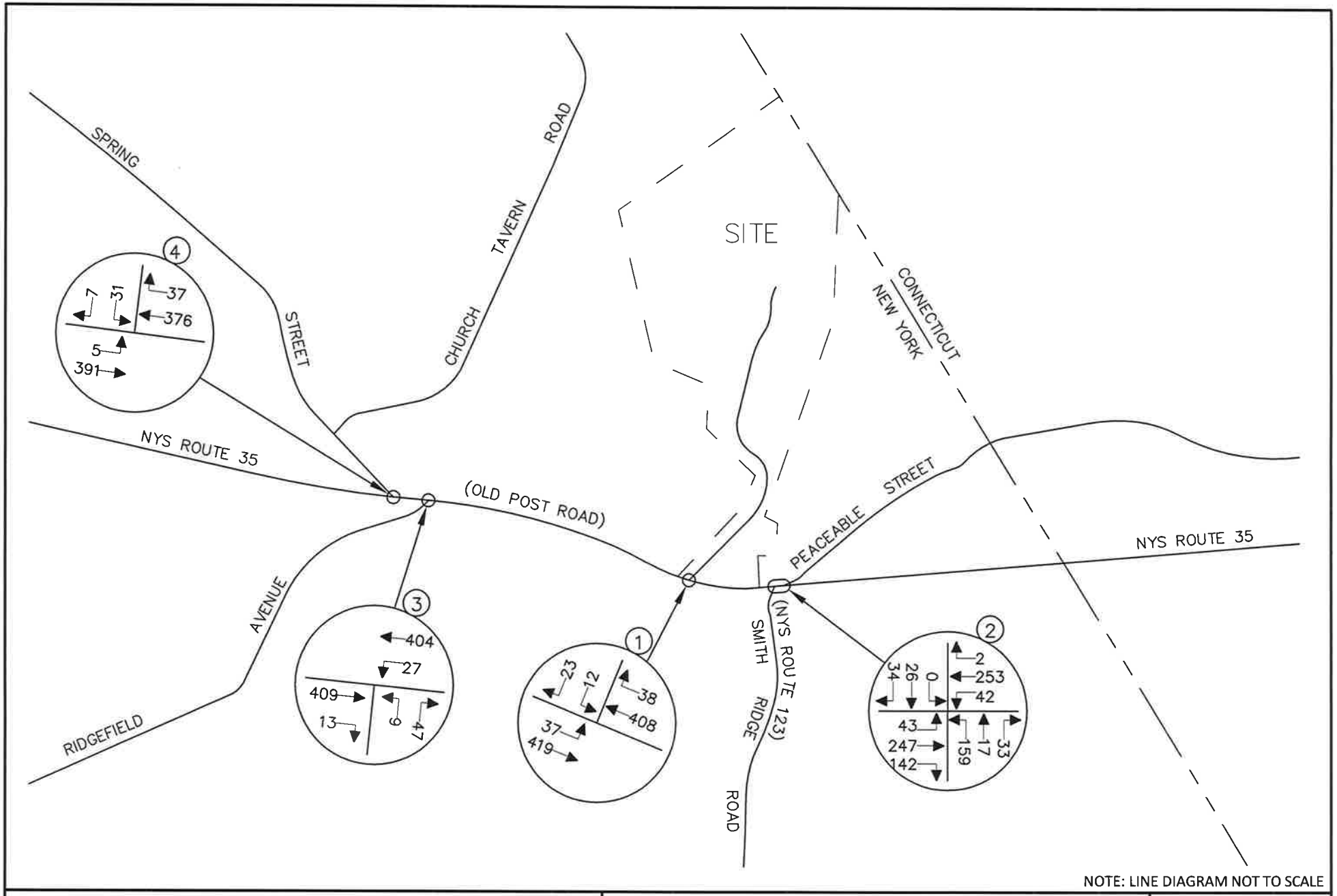
2021 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM EVENING EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
25A	



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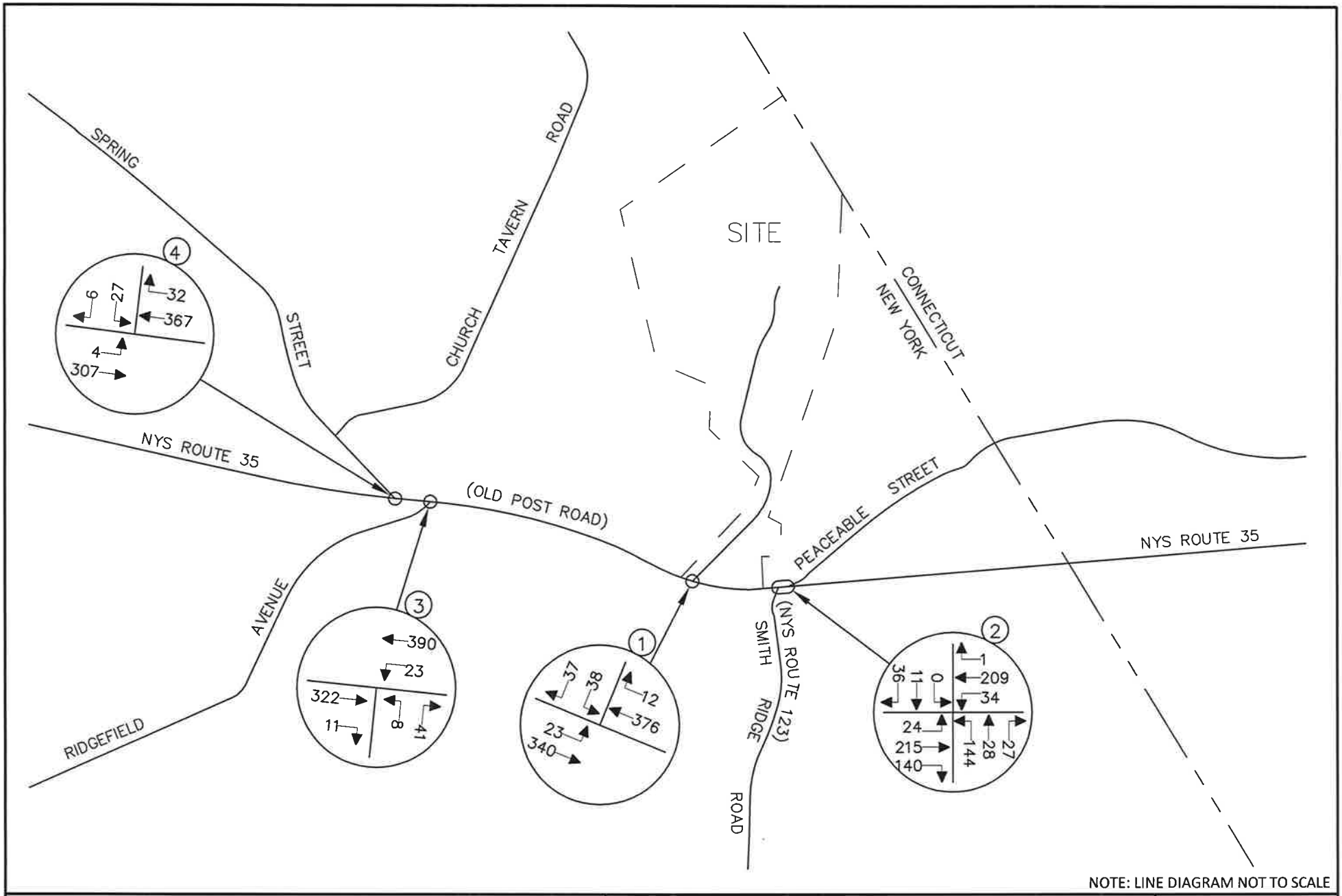
2021 BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY HIGHWAY HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
26A	



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2021 BUILD TRAFFIC VOLUMES
WEEKEND PEAK SATURDAY EVENT HOUR

JOB NUMBER:	DATE:
16000517A	4/22/2016
FIGURE NUMBER:	
27A	

LE CHATEAU

APPENDIX B

TABLES

TABLE 1-T

ANTICIPATED SITE GENERATED TRAFFIC VOLUMES
(TYPICAL CONDITIONS)

LE CHATEAU LEWISBORO, NY	ENTRY VOLUME	EXIT VOLUME
RE-OCCUPANCY OF EXISTING RESTAURANT (6,576 S.F.)		
PEAK WEEKDAY PM HIGHWAY HOUR	37	23
PEAK WEEKDAY PM ENTRY HOUR	37	23
PEAK WEEKDAY PM EVENING EXIT HOUR	23	37
PEAK SATURDAY MID-DAY HOUR	35	35
PEAK SATURDAY EXIT HOUR	35	35
BUILD CONDITION W/ CATERING FACILITY (13,826 S.F.)		
PEAK WEEKDAY PM HIGHWAY HOUR	58	5
PEAK WEEKDAY PM ENTRY HOUR	75	8
PEAK WEEKDAY PM EVENING EXIT HOUR	6	63
PEAK SATURDAY MID-DAY HOUR	75	7
PEAK SATURDAY EXIT HOUR	8	75
NET ADDITIONAL TRIPS FOR EXPANDED CATERING FACILITY (7,250 S.F.)		
PEAK WEEKDAY PM HIGHWAY HOUR	21	(2)
PEAK WEEKDAY PM ENTRY HOUR	38	(2)
PEAK WEEKDAY PM EVENING EXIT HOUR	(2)	26
PEAK SATURDAY MID-DAY HOUR	40	(2)
PEAK SATURDAY EXIT HOUR	(2)	40

NOTES:

1) TRIPS ESTIMATES ARE FOR LAND USE 931 - QUALITY RESTAURANT; BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) PUBLICATION ENTITLED "TRIP GENERATION", 9TH EDITION, 2012. CATERING FACILITY TRIP ESTIMATES ARE BASED ON THE RESULTS OF SURVEYS OF OTHER EXISTING FACILITIES AND THE EXPECTED SEATING OCCUPANCY OF THE FACILTY.

2) NO NET VOLUME INCREASE EXPECTED ABOVE EXISTING REOCCUPANCY CONDITION.

TABLE 1-P

ANTICIPATED SITE GENERATED TRAFFIC VOLUMES
(PEAK EVENT CONDITIONS)

LE CHATEAU LEWISBORO, NY	ENTRY VOLUME	EXIT VOLUME
RE-OCCUPANCY OF EXISTING RESTAURANT (6,576 S.F.)		
PEAK EVENT ENTRY HOUR	35	35
PEAK EVENT EXIT HOUR	23	37
BUILD CONDITION W/ CATERING FACILITY (13,826 S.F.)		
PEAK EVENT ENTRY HOUR	116	11
PEAK EVENT EXIT HOUR	11	116
NET ADDITIONAL TRIPS FOR EXPANDED CATERING FACILITY (7,250 S.F.)		
PEAK EVENT ENTRY HOUR	81	(2)
PEAK EVENT EXIT HOUR	(2)	81

NOTES:

1) TRIPS ESTIMATES ARE FOR LAND USE 931 - QUALITY RESTAURANT; BASED ON THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) PUBLICATION ENTITLED "TRIP GENERATION", 9TH EDITION, 2012. CATERING FACILITY TRIP ESTIMATES ARE BASED ON THE RESULTS OF SURVEYS OF OTHER EXISTING FACILITIES AND THE MAXIMUM SEATING CAPACITY OF 280 PEOPLE AT THE FACILITY.

2) NO NET VOLUME INCREASE EXPECTED ABOVE EXISTING REOCCUPANCY CONDITION.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE
(TYPICAL CONDITIONS)

			2016 EXISTING				2021 NO-BUILD				2021 BUILD				2021 BUILD ALTERNATE			
			PM	PM EXIT	SAT	SAT EXIT	PM	PM EXIT	SAT	SAT EXIT	PM	PM EXIT	SAT	SAT EXIT	PM	PM EXIT	SAT	SAT EXIT
1	NYS ROUTE 35 & SITE ACCESS DRIVEWAY	**UNSIGNALIZED**																
		EB	-	-	-	-	A[8.6]	A[7.7]	A[8.4]	A[8.2]	A[8.7]	A[7.7]	A[8.5]	A[8.2]	A[8.7]	A[7.7]	A[8.5]	A[8.2]
		SB	-	-	-	-	B[13.3]	A[9.9]	B[11.6]	B[11.1]	B[13.6]	B[10.1]	B[11.9]	B[11.6]	B[13.5]	B[10.3]	B[11.8]	B[12.0]
2	NYS ROUTE 35 & SMITH RIDGE ROAD/ PEACEABLE STREET	**SIGNALIZED**																
		EB	C[26.9]	A[6.8]	B[11.2]	A[9.0]	C[31.0]	A[7.2]	B[12.1]	A[9.5]	C[31.6]	A[7.3]	B[12.4]	A[9.6]	C[31.8]	A[7.4]	B[12.6]	A[9.8]
		WB	B[12.9]	A[5.6]	A[9.8]	A[8.3]	B[13.8]	A[5.9]	B[10.4]	A[8.7]	B[14.0]	A[5.9]	B[10.7]	A[8.7]	B[14.1]	A[5.9]	B[11.0]	A[8.7]
		NB	E[55.7]	D[36.8]	D[38.0]	D[37.4]	E[58.4]	D[36.8]	D[38.1]	D[37.4]	E[59.2]	D[36.8]	D[38.2]	D[37.4]	E[59.5]	D[36.8]	D[38.3]	D[37.4]
		SB	D[52.3]	D[54.3]	D[45.7]	D[48.1]	D[52.5]	D[53.9]	D[45.7]	D[48.4]	D[52.4]	D[53.9]	D[45.9]	D[48.4]	D[52.5]	D[53.9]	D[45.9]	D[48.4]
		OVERALL	C[32.8]	B[16.8]	B[18.4]	B[17.9]	D[35.9]	B[16.8]	B[19.0]	B[18.2]	D[36.4]	B[16.7]	B[19.3]	B[18.1]	D[36.6]	B[16.6]	B[19.6]	B[18.0]
	WITH SIGNAL TIMING IMPROVEMENTS	EB	-	-	-	-	C[32.1]	-	-	-	C[32.7]	-	-	-	C[32.9]	-	-	-
		WB	-	-	-	-	B[13.9]	-	-	-	B[14.1]	-	-	-	B[14.2]	-	-	-
		NB	-	-	-	-	D[52.1]	-	-	-	D[52.8]	-	-	-	D[53.1]	-	-	-
		SB	-	-	-	-	D[51.3]	-	-	-	D[51.3]	-	-	-	D[51.4]	-	-	-
		OVERALL	-	-	-	-	C[34.8]	-	-	-	D[35.3]	-	-	-	D[35.5]	-	-	-
3	NYS ROUTE 35 & RIDGEFIELD AVENUE	**UNSIGNALIZED**																
		WB	A[9.7]	A[7.9]	A[8.2]	A[8.0]	A[9.9]	A[8.0]	A[8.1]	A[8.1]	B[10.0]	A[8.0]	A[8.4]	A[8.1]	B[10.0]	A[8.0]	A[8.4]	A[8.1]
		NB	C[20.1]	B[10.3]	B[12.1]	B[11.1]	C[21.8]	B[10.6]	B[11.5]	B[11.5]	C[22.3]	B[10.6]	B[12.9]	B[11.6]	C[22.0]	B[10.6]	B[12.8]	B[11.5]
4	NYS ROUTE 35 & SPRING STREET	**UNSIGNALIZED**																
		EB	A[8.5]	A[7.6]	A[8.2]	A[8.1]	A[8.5]	A[7.7]	A[8.2]	A[8.2]	A[8.5]	A[7.7]	A[8.3]	A[8.3]	A[8.5]	A[7.7]	A[8.3]	A[8.2]
		SB	D[32.6]	B[11.9]	C[16.5]	B[14.5]	E[37.0]	B[12.5]	C[15.5]	C[15.5]	E[38.2]	B[12.8]	C[18.4]	C[16.0]	E[37.9]	B[12.7]	C[18.2]	C[15.8]

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS.

2) SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

3) PRESENCE OF THE TRAFFIC SIGNAL AT NYS ROUTE 35 & NYS ROUTE 123/PEACEABLE ROAD WOULD PROVIDE ADDITIONAL GAP IN THE TRAFFIC STREAM WHICH WILL RESULT IN SLIGHTLY LOWER DELAYS AT SPRING STREET, RIDGEFIELD AVENUE, AND SITE ACCESS THAN THOSE INDICATED ABOVE.

TABLE NO. 2P

LEVEL OF SERVICE SUMMARY TABLE
(PEAK EVENT CONDITIONS)

			2016 EXISTING		2021 NO-BUILD		2021 BUILD		2021 BUILD ALTERNATE	
			SAT	SAT EXIT	SAT	SAT EXIT	SAT	SAT EXIT	SAT	SAT EXIT
1	NYS ROUTE 35 & SITE ACCESS DRIVEWAY	**UNSIGNALIZED**								
		EB	-	-	A[8.4]	A[8.2]	A[8.7]	A[8.2]	A[8.7]	A[8.2]
		SB	-	-	B[11.6]	B[11.0]	B[12.3]	B[12.1]	B[12.1]	B[12.7]
2	NYS ROUTE 35 & SMITH RIDGE ROAD/ PEACEABLE STREET	**SIGNALIZED**								
		EB	B[11.2]	A[9.0]	B[12.1]	A[9.4]	B[12.7]	A[9.7]	B[13.2]	B[10.1]
		WB	A[9.8]	A[8.3]	B[10.4]	A[8.5]	B[11.1]	A[8.5]	B[11.7]	A[8.6]
		NB	D[38.0]	D[37.4]	D[38.1]	D[37.3]	D[38.3]	D[37.3]	D[40.2]	D[37.4]
		SB	D[45.7]	D[48.1]	D[45.7]	D[48.9]	D[46.0]	D[48.9]	D[46.2]	D[48.4]
		OVERALL	B[18.4]	B[17.9]	B[19.0]	B[18.0]	B[19.7]	B[17.8]	C[20.5]	B[17.8]
3	NYS ROUTE 35 & RIDGEFIELD AVENUE	**UNSIGNALIZED**								
		WB	A[8.2]	A[8.0]	A[8.3]	A[8.1]	A[8.5]	A[8.1]	A[8.4]	A[8.1]
		NB	B[12.1]	B[11.1]	B[12.6]	B[11.4]	B[13.2]	B[11.6]	B[12.9]	B[11.5]
4	NYS ROUTE 35 & SPRING STREET	**UNSIGNALIZED**								
		EB	A[8.2]	A[8.1]	A[8.3]	A[8.2]	A[8.3]	A[8.3]	A[8.3]	A[8.3]
		SB	C[16.5]	B[14.5]	C[17.9]	C[15.4]	C[19.1]	C[16.5]	C[18.5]	C[15.9]

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS.

2) SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

3) PRESENCE OF THE TRAFFIC SIGNAL AT NYS ROUTE 35 & NYS ROUTE 123/PEACEABLE ROAD WOULD PROVIDE ADDITIONAL GAP IN THE TRAFFIC STREAM WHICH WILL RESULT IN SLIGHTLY LOWER DELAYS AT SPRING STREET, RIDGEFIELD AVENUE, AND SITE ACCESS THAN THOSE INDICATED ABOVE.

TABLE NO. P-1
CANDLEWOOD INNC
SUMMARY OF OBSERVED PARKING AND OCCUPANCY DATA

Customer Car Count

Date/Time August 2015	Guest Count	Cars in Parking Lot	Parking Ratio
2/1400	100	44	2.27
7/1800	211	85	2.48
8/1130	135	58	2.33
8/1800	225	91	2.47
9/1630	125	55	2.27
14/1900	239	100	2.39
15/1130	107	40	2.68
15/1800	150	61	2.46
16/1600	151	60	2.52
18/1800	125	55	2.27
21/1800	133	60	2.22
22/1800	204	80	2.55
29/1800	150	58	2.59
30/1600	125	55	2.27
September 2015			
5/1830	100	43	2.33
6/1830	167	65	2.57
11/1630	100	41	2.44
12/1200	106	44	2.41
12/1800	197	81	2.43
13/1600	173	75	2.31
18/1700	130	50	2.60
19/1100	110	38	2.89
19/1800	188	90	2.09
24/1630	127	51	2.49
25/1730	230	102	2.25
26/1100	113	41	2.76
26/1600	202	94	2.15
27/1600	151	68	2.22
October 2015			
2/1800	160	71	2.25
3/1130	107	37	2.89
3/1800	150	62	2.42
4/1600	133	45	2.96
9/1730	128	47	2.72
10/1130	102	38	2.68
10/1800	176	61	2.89
11/1700	199	88	2.26
16/1630	140	62	2.26
17/1200	163	66	2.47
17/1800	150	71	2.11
18/1630	179	70	2.56
21/1600	100	42	2.38
23/1730	125	45	2.78
24/1130	104	41	2.54
24/1800	150	70	2.14
25/1430	180	91	1.98
30/1700	150	70	2.14
Average Occupancy Ratio		**2.40**	

1) Data obtained from elequant Banquets, as collected at their existing Candlewood Inn Catering facility.

TABLE NO. A

NYS Route 35 - Town of Lewisboro, Westchester County, New York

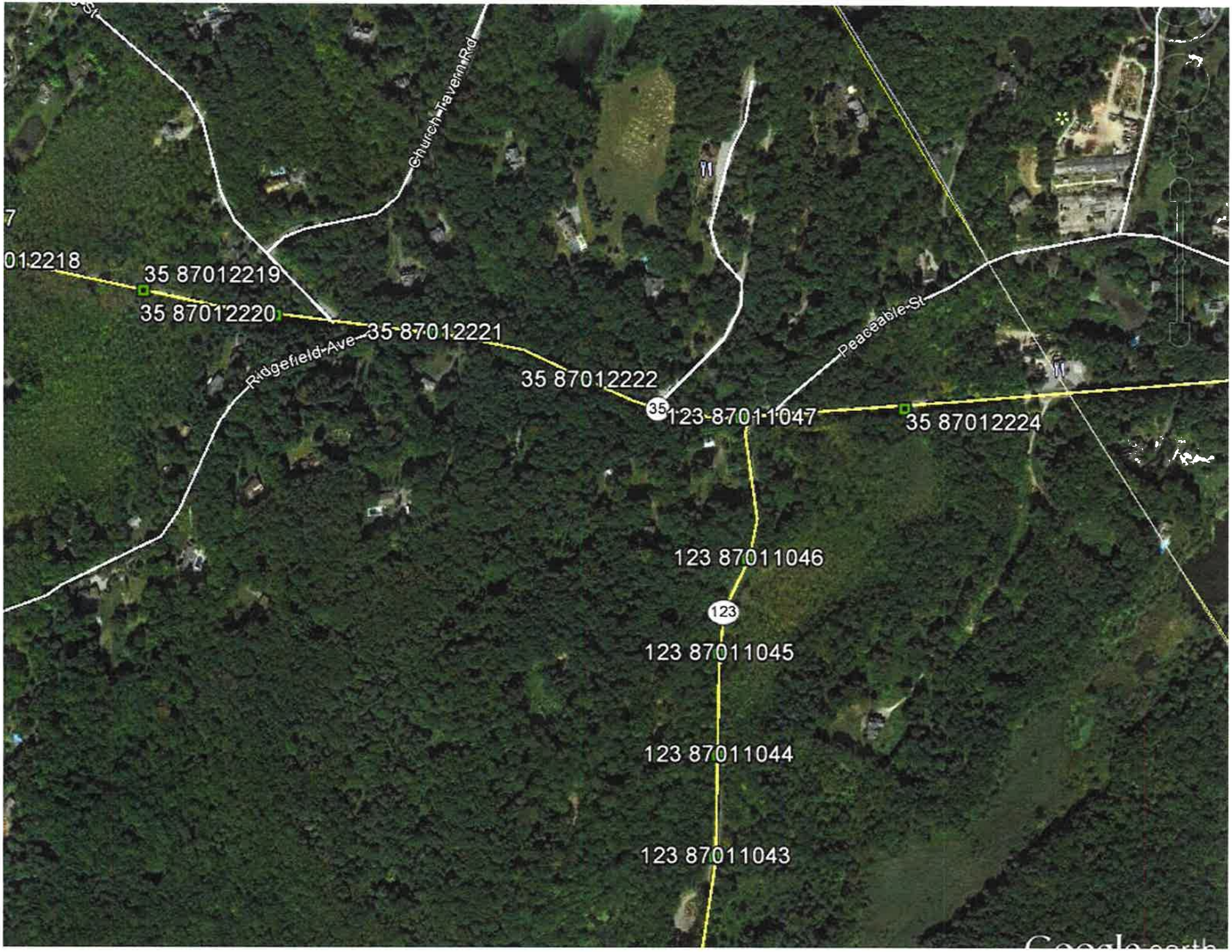
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
35 8701 2219	Non-Intersection Accidents	09/19/11	7:34 PM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
	Intersection Accidents										
35 8701 2219	Boutonville Road	06/08/11	5:52 AM	None	PDO	2-0	Dawn	Dry	Cloudy	Unknown	Failure to Keep Right,Reaction to other Uninvolved Veh
35 8701 2219	Boutonville Road	11/20/11	2:00 AM	Unknown	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Unknown
35 8701 2219	Boutonville Road	12/14/11	8:30 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Glare
35 8701 2219	Boutonville Road	05/20/12	2:33 PM	None	PDO	2-0	Daylight	Dry	Clear	Other	Reaction to other Uninvolved vehicle,Failure to Yield ROW
35 8701 2219	Boutonville Road	11/03/14	3:00 PM	Unknown	PDO	1-0	Unknown	Unknown	Uknown	Other	N/A
35 8701 2219	Boutonville Road	11/19/14	8:05 AM	None	PDO	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention
35 8701 2220	Non-Intersection Accidents	01/28/12	1:30 PM	None	PDO	2-0	Daylight	Dry	Clear	Unknown	Failure to Keep Right,Turning Improper
35 8701 2220	Non-Intersection Accidents	05/16/12	6:03 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2220	Non-Intersection Accidents	05/31/12	10:54 AM	None	I	1-1	Daylight	Dry	Clear	Other	Failure to Yield Right of Way,Failure to Keep Right
35 8701 2220	Non-Intersection Accidents	07/25/12	10:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Unknown	Failure to Yield Right of Way
35 8701 2220	Non-Intersection Accidents	12/14/12	6:54 PM	No Passing Zone	PDO	2-0	Dark-Road Unlighted	Dry	Clear	Sideswipe	Alcohol Involvement,Passing or Lane Usage Improperly
35 8701 2220	Non-Intersection Accidents	07/10/14	6:30 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2220	Non-Intersection Accidents	07/17/14	2:08 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
35 8701 2221	Non-Intersection Accidents	09/24/13	6:20 AM	None	N/R	1-0	Dawn	Dry	Clear	Other	Animal's Action
35 8701 2221	Non-Intersection Accidents	11/11/14	5:30 PM	No Passing Zone	N/R	2-0	Dark-Road Unlighted	Dry	Clear	Rear End	Following too Closely
35 8701 2222	Non-Intersection Accidents	03/15/11	6:45 AM	Police/Fire Emergency	N/R	2-0	Dawn	Snow/Ice	Cloudy	Rear End	Unsafe Speed,Pavement Slippery
35 8701 2222	Non-Intersection Accidents	03/15/11	4:43 AM	None	I	1-1	Dark-Road Unlighted	Snow/Ice	Clear	Other	Unsafe Speed,Pavement Slippery
35 8701 2222	Non-Intersection Accidents	07/24/12	10:25 AM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention
35 8701 2222	Non-Intersection Accidents	12/13/14	6:50 PM	None	PDO & I	2-1	Dark-Road Unlighted	Dry	Cloudy	Rear End	Alcohol Involvement,Failure to Keep Right
35 8701 2222	Non-Intersection Accidents	04/06/15	6:00 PM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2222	Non-Intersection Accidents	08/08/15	11:10 PM	No Passing Zone	PDO	2-0	Dark-Road Unlighted	Dry	Cloudy	Rear End	Following too Closely
35 8701 2223	Non-Intersection Accidents	03/05/12	8:50 AM	Traffic Signal	PDO & I	3-1	Daylight	Dry	Clear	Other	Driver Inattention
35 8701 2223	Non-Intersection Accidents	03/29/14	2:10 PM	None	PDO	1-0	Daylight	Wet	Rain	Other	Obstruction/Debris
35 8701 2223	Non-Intersection Accidents	05/18/14	3:15 PM	Traffic Signal	PDO	2-0	Daylight	Dry	Cloudy	Overtaking	Passing or Lane Usage Improperly,Failure to Yield ROW
35 8701 2223	Non-Intersection Accidents	12/23/14	4:20 AM	Traffic Signal	N/R	1-0	Dark-Road Unlighted	Wet	Rain	Other	Alcohol Involvement,Pavement Slippery
35 8701 2223	Non-Intersection Accidents	01/16/15	10:49 PM	Traffic Signal	F	2-1-1	Dark-Road Unlighted	Dry	Clear	Rear End	Following too Closely,Unsafe Speed
35 8701 2223	Non-Intersection Accidents	02/25/15	11:09 AM	Traffic Signal	N/R	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2223	Non-Intersection Accidents	05/05/15	6:55 PM	Traffic Signal	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way,Turning Improper
35 8701 2225	Non-Intersection Accidents	07/22/15	7:50 AM	Traffic Signal	N/R	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) THE INTERSECTION OF NYS ROUTE 35 AND NYS ROUTE 123 IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE


Church Tavern Rd
7
012218
35 87012219
35 87012220
35 87012221
Ridgefield Ave
35 87012222
35
123 87011047
Peaceable St
35 87012224
123 87011046
123
123 87011045
123 87011044
123 87011043

LE CHATEAU

APPENDIX C

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 18-4

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
≤0	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

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

LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 19-1

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

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 for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 20-2

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

LE CHATEAU

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APPENDIX E

MACHINE TRAFFIC COUNT DATA

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Maser Consulting

11 Bradhurst Avenue
Hawthorne, NY 10532

Customer Loyalty through Client Satisfaction

Site Code: 160005170444
ROUTE 35 - MILE MARKER 87 8701 2221(EAST OF RIDGEFIELD AVE & WEST OF SMITH RIDGE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Daylight Savings

Start	07-Mar-16		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	*	*	11	32	12	36	12	34	12	34	19	54	63	98
01:00	*	*	*	*	2	12	4	18	12	11	6	14	10	35	24	37
02:00	*	*	*	*	3	4	9	6	8	7	7	6	7	14	12	21
03:00	*	*	*	*	6	3	7	5	14	10	9	6	8	13	8	7
04:00	*	*	*	*	32	10	24	8	17	12	24	10	11	7	25	8
05:00	*	*	*	*	130	22	109	26	118	26	119	25	38	20	45	25
06:00	*	*	*	*	339	139	355	142	287	134	327	138	75	49	88	55
07:00	*	*	*	*	756	301	**797**	317	**732**	301	**762**	306	174	113	151	106
08:00	*	*	*	*	**778**	**435**	763	**421**	691	**397**	744	**418**	280	210	238	207
09:00	*	*	*	*	460	357	467	400	420	367	449	375	334	263	263	208
10:00	*	*	*	*	314	240	292	260	307	262	304	254	344	327	316	283
11:00	*	*	**284**	**240**	271	275	292	273	323	321	292	277	**406**	**373**	**338**	**284**
12:00 PM	*	*	276	285	298	289	302	326	324	327	300	307	**398**	**409**	305	**378**
01:00	*	*	270	247	267	267	306	305	295	338	284	289	357	401	340	344
02:00	*	*	322	317	335	357	318	333	351	380	332	347	349	397	300	354
03:00	*	*	342	481	379	506	351	555	416	592	372	534	332	360	**352**	321
04:00	*	*	385	562	375	561	408	571	441	647	402	585	368	365	298	294
05:00	*	*	**451**	**733**	**463**	**734**	**446**	**718**	**480**	**778**	**460**	**741**	367	332	231	276
06:00	*	*	340	677	351	688	359	708	408	657	364	682	268	320	220	241
07:00	*	*	232	433	228	428	212	425	246	376	230	416	199	244	161	177
08:00	*	*	136	241	141	249	168	260	159	231	151	245	157	186	90	135
09:00	*	*	108	198	111	158	127	194	150	179	124	182	111	164	40	80
10:00	*	*	65	108	63	114	70	136	134	143	83	125	142	188	30	53
11:00	*	*	29	67	27	64	42	78	64	101	40	78	95	108	11	19
Total	0	0	3240	4589	6140	6245	6240	6521	6409	6631	6197	6394	4849	4952	3949	4011
Day	0		7829		12385		12761		13040		12591		9801		7960	
AM Peak	-	-	11:00	11:00	08:00	08:00	07:00	08:00	07:00	08:00	07:00	08:00	11:00	11:00	11:00	11:00
Vol.	-	-	284	240	778	435	797	421	732	397	762	418	406	373	338	284
PM Peak	-	-	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	12:00	12:00	15:00	12:00
Vol.	-	-	451	733	463	734	446	718	480	778	460	741	398	409	352	378

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Maser Consulting
11 Bradhurst Avenue
Hawthorne, NY 10532
Customer Loyalty through Client Satisfaction

Site Code: 160005170444
ROUTE 35 - MILE MARKER 87 8701 2221(EAST
OF RIDGEFIELD AVE & WEST OF SMITH RIDGE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start	14-Mar-16		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	7	3	*	*	*	*	*	*	*	*	7	3	*	*	*	*
01:00	4	1	*	*	*	*	*	*	*	*	4	1	*	*	*	*
02:00	6	6	*	*	*	*	*	*	*	*	6	6	*	*	*	*
03:00	36	14	*	*	*	*	*	*	*	*	36	14	*	*	*	*
04:00	131	29	*	*	*	*	*	*	*	*	131	29	*	*	*	*
05:00	342	127	*	*	*	*	*	*	*	*	342	127	*	*	*	*
06:00	730	279	*	*	*	*	*	*	*	*	730	279	*	*	*	*
07:00	**744**	**419**	*	*	*	*	*	*	*	*	**744**	**419**	*	*	*	*
08:00	468	370	*	*	*	*	*	*	*	*	468	370	*	*	*	*
09:00	265	231	*	*	*	*	*	*	*	*	265	231	*	*	*	*
10:00	256	264	*	*	*	*	*	*	*	*	256	264	*	*	*	*
11:00	286	243	*	*	*	*	*	*	*	*	286	243	*	*	*	*
12:00 PM	**7**	**2**	*	*	*	*	*	*	*	*	**7**	**2**	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	3282	1988	0	0	0	0	0	0	0	0	3282	1988	0	0	0	0
Day	5270		0		0		0		0		5270		0		0	
AM Peak	07:00	07:00	-	-	-	-	-	-	-	-	07:00	07:00	-	-	-	-
Vol.	744	419	-	-	-	-	-	-	-	-	744	419	-	-	-	-
PM Peak	12:00	12:00	-	-	-	-	-	-	-	-	12:00	12:00	-	-	-	-
Vol.	7	2	-	-	-	-	-	-	-	-	7	2	-	-	-	-

Comb. Total	5270	7829	12385	12761	13040	17861	9801	7960

ADT ADT 11,314 AADT 11,314

Maser Consulting

11 Bradhurst Avenue
Hawthorne, NY 10532

Customer Loyalty through Client Satisfaction

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Site Code: 160005170444
ROUTE 35 - MILE MARKER 87 8701 2221(EAST
OF RIDGEFIELD AVE & WEST OF SMITH RIDGE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

EB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
03/14/16	0	0	0	0	0	1	0	0	1	1	0	0	0	0	3	49-58	2
01:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	39-48	1
02:00	0	0	0	0	0	1	0	3	1	1	0	0	0	0	6	46-55	4
03:00	0	0	0	0	1	2	2	2	5	0	**2**	0	0	0	14	46-55	7
04:00	2	2	3	1	1	2	3	7	5	2	1	0	0	0	29	46-55	12
05:00	12	2	7	14	8	12	34	31	4	2	1	0	0	0	127	41-50	65
06:00	29	1	17	13	10	45	84	67	11	1	1	0	0	0	279	41-50	151
07:00	**30**	**8**	23	**46**	**40**	63	**101**	**78**	24	5	1	0	0	0	**419**	41-50	179
08:00	27	2	**24**	31	29	**86**	97	53	19	1	0	0	0	**1**	370	36-45	183
09:00	18	1	5	11	20	25	63	61	24	3	0	0	0	0	231	41-50	124
10:00	11	2	16	14	24	29	66	71	25	6	0	0	0	0	264	41-50	137
11:00	17	1	11	14	11	14	75	67	**26**	**7**	0	0	0	0	243	41-50	142
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	146	19	106	144	144	280	525	441	145	29	6	0	0	1	1986		
Percent	7.4%	1.0%	5.3%	7.3%	7.3%	14.1%	26.4%	22.2%	7.3%	1.5%	0.3%	0.0%	0.0%	0.1%			
AM Peak	07:00	07:00	08:00	07:00	07:00	08:00	07:00	07:00	11:00	11:00	03:00			08:00	07:00		
Vol.	30	8	24	46	40	86	101	78	26	7	2			1	419		
PM Peak																	
Vol.																	
Total	1991	237	1609	1997	2345	4815	9420	8487	3330	579	97	14	7	7	34935		
Percent	5.7%	0.7%	4.6%	5.7%	6.7%	13.8%	27.0%	24.3%	9.5%	1.7%	0.3%	0.0%	0.0%	0.0%			

	15th Percentile :	28 MPH
	50th Percentile :	42 MPH
	85th Percentile :	49 MPH
	95th Percentile :	53 MPH
Stats	10 MPH Pace Speed :	41-50 MPH
	Number in Pace :	17907
	Percent in Pace :	51.3%
	Number of Vehicles > 55 MPH :	704
	Percent of Vehicles > 55 MPH :	2.0%
	Mean Speed(Average) :	40 MPH

Maser Consulting

11 Bradhurst Avenue
Hawthorne, NY 10532

Customer Loyalty through Client Satisfaction

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Site Code: 160005170444
ROUTE 35 - MILE MARKER 87 8701 2221(EAST OF RIDGEFIELD AVE & WEST OF SMITH RIDGE
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

WB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	Pace Speed	Number in Pace
03/14/16	0	0	0	0	1	0	2	2	1	1	0	0	0	0	7	41-50	4
01:00	0	0	0	0	0	0	0	1	2	1	0	0	0	0	4	45-54	3
02:00	0	0	0	0	0	1	0	3	1	1	0	0	0	0	6	46-55	4
03:00	1	0	0	0	1	2	2	12	10	4	3	1	0	0	36	46-55	22
04:00	1	1	1	3	2	4	17	32	37	**26**	**5**	**2**	0	0	131	46-55	69
05:00	7	0	2	5	8	34	111	108	46	18	3	0	0	0	342	41-50	219
06:00	9	0	0	6	20	77	**321**	**243**	48	6	0	0	0	0	730	41-50	564
07:00	21	**9**	**16**	**18**	**44**	**114**	251	200	**66**	4	1	0	0	0	**744**	41-50	451
08:00	**24**	3	9	7	20	52	147	150	46	8	1	1	0	0	468	41-50	297
09:00	11	2	11	9	19	29	73	72	33	5	1	0	0	0	265	41-50	145
10:00	8	1	1	7	14	24	51	99	41	8	1	1	0	0	256	41-50	150
11:00	7	5	7	9	11	16	73	102	41	10	3	1	**1**	0	286	41-50	175
12 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
21:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
22:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
23:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	89	21	47	64	140	353	1048	1024	372	92	18	6	1	0	3275		
Percent	2.7%	0.6%	1.4%	2.0%	4.3%	10.8%	32.0%	31.3%	11.4%	2.8%	0.5%	0.2%	0.0%	0.0%			
AM Peak	08:00	07:00	07:00	07:00	07:00	07:00	06:00	06:00	07:00	04:00	04:00	04:00	11:00		07:00		
Vol.	24	9	16	18	44	114	321	243	66	26	5	2	1		744		
PM Peak Vol.																	
Total	1472	304	698	1184	1587	3089	8535	10791	5109	1082	203	37	9	2	34102		
Percent	4.3%	0.9%	2.0%	3.5%	4.7%	9.1%	25.0%	31.6%	15.0%	3.2%	0.6%	0.1%	0.0%	0.0%			

15th Percentile :	34 MPH
50th Percentile :	45 MPH
85th Percentile :	51 MPH
95th Percentile :	54 MPH

Stats

10 MPH Pace Speed :	41-50 MPH
Number in Pace :	19326
Percent in Pace :	56.7%
Number of Vehicles > 55 MPH :	1333
Percent of Vehicles > 55 MPH :	3.9%
Mean Speed(Average) :	43 MPH

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Maser Consulting

11 Bradhurst Avenue
Hawthorne, NY 10532

Customer Loyalty through Client Satisfaction

Site Code: 160005170222
SMITH RIDGE ROAD (NORTH OF MILL RIVER ROAD & SOUTH OF ROUTE 35)
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Daylight Savings

Start	07-Mar-16		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	*	*	4	9	4	13	10	13	6	12	6	16	27	38
01:00	*	*	*	*	2	5	3	6	5	3	3	5	4	8	18	12
02:00	*	*	*	*	1	1	6	1	4	2	4	1	7	3	8	12
03:00	*	*	*	*	2	1	2	2	6	6	3	3	2	3	1	4
04:00	*	*	*	*	10	7	10	9	11	12	10	9	4	7	5	3
05:00	*	*	*	*	36	27	32	25	29	24	32	25	16	14	17	12
06:00	*	*	*	*	121	151	124	152	118	147	121	150	36	51	38	28
07:00	*	*	*	*	**259**	318	**254**	333	**250**	316	**254**	322	94	94	110	58
08:00	*	*	*	*	231	**424**	221	**381**	198	**371**	217	**392**	172	119	126	118
09:00	*	*	*	*	188	232	203	245	210	217	200	231	196	156	151	108
10:00	*	*	*	*	177	160	155	151	170	146	167	152	182	162	172	142
11:00	*	*	*	*	153	141	155	146	181	188	163	158	**209**	**189**	**177**	**168**
12:00 PM	*	*	133	184	179	167	181	198	166	166	165	179	**227**	189	170	187
01:00	*	*	185	130	159	158	192	151	196	186	183	156	185	198	**181**	174
02:00	*	*	206	171	214	207	207	223	220	211	212	203	185	198	161	**188**
03:00	*	*	251	**257**	267	**243**	282	**258**	306	269	276	**257**	176	187	170	165
04:00	*	*	302	239	281	238	279	223	328	233	298	233	171	**201**	139	152
05:00	*	*	**351**	257	**349**	226	**351**	239	**351**	**277**	**350**	250	153	174	87	149
06:00	*	*	255	218	259	230	284	221	278	183	269	213	136	136	88	113
07:00	*	*	141	122	135	155	129	138	118	134	131	137	93	102	52	58
08:00	*	*	80	98	80	89	82	106	70	106	78	100	66	97	46	70
09:00	*	*	55	83	55	62	57	111	56	98	56	88	61	94	21	31
10:00	*	*	37	39	39	40	35	52	55	76	42	52	74	97	11	22
11:00	*	*	13	17	17	12	12	27	32	36	18	23	45	52	3	8
Total	0	0	2009	1815	3218	3303	3260	3411	3368	3420	3258	3351	2500	2547	1979	2020
Day	0		3824		6521		6671		6788		6609		5047		3999	
AM Peak	-	-	-	-	07:00	08:00	07:00	08:00	07:00	08:00	07:00	08:00	11:00	11:00	11:00	11:00
Vol.	-	-	-	-	259	424	254	381	250	371	254	392	209	189	177	168
PM Peak	-	-	17:00	15:00	17:00	15:00	17:00	15:00	17:00	17:00	17:00	15:00	12:00	16:00	13:00	14:00
Vol.	-	-	351	257	349	243	351	258	351	277	350	257	227	201	181	188

Project: LE CHATEAU
Location: LEWISBORO, NY
MC Job No. 16000517A

Maser Consulting
11 Bradhurst Avenue
Hawthorne, NY 10532
Customer Loyalty through Client Satisfaction

Site Code: 160005170222
SMITH RIDGE ROAD (NORTH OF MILL RIVER ROAD & SOUTH OF ROUTE 35)
Latitude: 0' 0.0000 Undefined
Longitude: 0' 0.0000 Undefined

Start	14-Mar-16		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	2	2	*	*	*	*	*	*	*	*	2	2	*	*	*	*
01:00	1	1	*	*	*	*	*	*	*	*	1	1	*	*	*	*
02:00	6	3	*	*	*	*	*	*	*	*	6	3	*	*	*	*
03:00	11	10	*	*	*	*	*	*	*	*	11	10	*	*	*	*
04:00	39	28	*	*	*	*	*	*	*	*	39	28	*	*	*	*
05:00	125	121	*	*	*	*	*	*	*	*	125	121	*	*	*	*
06:00	**241**	290	*	*	*	*	*	*	*	*	**241**	290	*	*	*	*
07:00	204	**399**	*	*	*	*	*	*	*	*	204	**399**	*	*	*	*
08:00	197	209	*	*	*	*	*	*	*	*	197	209	*	*	*	*
09:00	119	159	*	*	*	*	*	*	*	*	119	159	*	*	*	*
10:00	160	151	*	*	*	*	*	*	*	*	160	151	*	*	*	*
11:00	109	91	*	*	*	*	*	*	*	*	109	91	*	*	*	*
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
01:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
02:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
03:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
04:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
05:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
06:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
07:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
08:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
09:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11:00	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Total	1214	1464	0	0	0	0	0	0	0	0	1214	1464	0	0	0	0
Day	2678		0		0		0		0		2678		0		0	
AM Peak	06:00	07:00	-	-	-	-	-	-	-	-	06:00	07:00	-	-	-	-
Vol.	241	399	-	-	-	-	-	-	-	-	241	399	-	-	-	-
PM Peak	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Comb. Total	2678	3824	6521	6671	6788	9287	5047	3999

ADT ADT 5,921 AADT 5,921

STATION: **870268**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: **NY 35** ROAD NAME:
DIRECTION: Eastbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: EB Travel Lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: ---

FROM: **RT 124**
REC. SERIAL #: 0020
PLACEMENT: 0.43 mi W of Ridgefield Ave.
@ REF MARKER: 35 87012216
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: **RT 123**
FUNC. CLASS: 16
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25aVol

COUNTY: **Westchester**
TOWN: **LEWISBORO**
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M															382	388	501	734	785	413	215	184	112	73			
14	T	47	19	6	6	12	30	132	271	385	361	251	237	332	284	373	400	452	691	849	471	293	182	116	82	6282	849	18
15	W	47	20	14	6	8	39	110	300	392	323	210	295	304	300	331	452	482	822	773	424	309	201	138	92	6392	822	17
16	T	47	23	10	8	11	31	136	298	395	332	268	334	305	348	379	460	514	823	774	424	310	230	137	94	6691	823	17
17	F	56	31	21	6	10	28	94	255	347																		
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

48	23	13	6	10	32	116	277	374	334	239	285	309	306	361	419	480	756	783	427	278	196	124	84	ADT 6280

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
5	91	5	91	783	12%	0.985	1.105	AADT 5683

STATION: **870268**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: **NY 35** ROAD NAME:
DIRECTION: Westbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 24
DATE OF COUNT: 06/13/2011
NOTES LANE 1: WB Travel Lane

COUNT TAKEN BY: ORG CODE: TST INITIALS: ---

FROM: **RT 124**
REC. SERIAL #: 0020
PLACEMENT: 0.43 mi W of Ridgefield Ave.
@ REF MARKER: 35 87012216
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: **RT 123**
FUNC. CLASS: 16
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: DOT-R08CWW25aVol

COUNTY: **Westchester**
TOWN: **LEWISBORO**
LION#:
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	W																											
2	T																											
3	F																											
4	S																											
5	S																											
6	M																											
7	T																											
8	W																											
9	T																											
10	F																											
11	S																											
12	S																											
13	M															271	319	367	387	324	233	182	94	62	27			
14	T	17	7	5	7	44	159	393	828	692	510	287	280	282	251	256	327	352	371	318	215	152	117	79	51	6000	828	7
15	W	24	8	3	6	34	134	429	804	708	451	319	268	264	236	289	334	362	410	307	233	186	150	97	50	6106	804	7
16	T	23	12	9	8	29	129	400	877	702	438	306	301	310	288	334	343	372	427	342	253	182	204	91	56	6436	877	7
17	F	32	19	5	5	32	97	334	674	576																		
18	S																											
19	S																											
20	M																											
21	T																											
22	W																											
23	T																											
24	F																											
25	S																											
26	S																											
27	M																											
28	T																											
29	W																											
30	T																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

24	12	6	6	34	128	383	784	660	459	299	279	281	254	284	326	358	393	318	230	173	139	81	45	ADT 5956

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
5	91	5	91	784	13%	0.985	1.105	**AADT 5390**

STATION: 870269

New York State Department of Transportation
Roadway Traffic Count Hourly Report

ROUTE/ROAD:	NY35	FROM: RT 123		TO: CONNECTICUT STATE LINE		REGION-COUNTY: 8-WESTCHESTER	
FED DIR CODE:	3, 7	REF. MARKER:	3587012225	FUNC. CLASS:	16 - U Minor Arterial	MUNI: Lewisboro-Town-0463	
ST DIR CODE:	1, 2	END MILEPOST:	24.64	FACTOR GROUP:	30	BIN:	
DOT ID:	100318	LANES BY DIR:	1 East 1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	4/15/2013	WEEK OF YEAR:	15	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	870269	PLACEMENT:	0.2 Mile E of Pealcable St	JURISDICTION:	01-NYSDOT	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Axle
TAKEN BY:	TST-BEK	PROCESSED BY:	DOT-jh	BATCH ID:	DOT-R08CWW16B	SPEED LIMIT:	55

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
4/15, Mon												258	321	303	377	384	511	594	589	329	187	146	73	45	4117		
4/16, Tue	26	8	14	11	19	115	315	620	609	462	334	389	359	341	413	499	466	643	578	333	207	175	96	55	7087	643	17-18
4/17, Wed	23	6	11	9	19	110	301	631	617	487	377	362	393	353	400	395	551	625	615	389	250	176	119	66	7285	631	07-08
4/18, Thu	36	12	2	13	23	97	317	589	619	440	378	378	345	357	417	429	505	692	618	387	258	186	94	53	7245	692	17-18
4/19, Fri	44	12	11	9	13	89	266	499	563	455	399	386	364	403	414	506	595	675	590	322	246	159	155	85	7260	675	17-18
4/20, Sat	48	33	24	10	12	36	91	157	246	374	417	464	476	460	458	437	459	450	356	301	267	216	189	159	6140	476	12-13
4/21, Sun	83	44	17	10	16	23	64	146	199	285	338	440	454	437	436	434	372	412	300	261	203	133	69	38	5214	454	12-13
4/22, Mon	21	16	6	6	29	136	377	710	749	474															2524		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									AWDT		
	32	9	9	10	18	101	310	600	621	456	366	349	349	333	395	420	500	628	590	354	222	168	94	54	6990		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
7	167	4	101	628	9	418	11.8	444	12.9	6906	3513	3393

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
4	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98

STATION: 870269

New York State Department of Transportation
EB Traffic Count Hourly Report

ROUTE/ROAD:	NY35	FROM: RT 123		TO: CONNECTICUT STATE LINE		REGION-COUNTY: 8-WESTCHESTER	
FED DIR CODE:	3	REF. MARKER:	3587012225	FUNC. CLASS:	16 - U Minor Arterial	MUNI: Lewisboro-Town-0463	
ST DIR CODE:	1, 2	END MILEPOST:	24.64	FACTOR GROUP:	30	BIN:	
DOT ID:	100318	LANES BY DIR:	1 East	CC STN:		RR CROSSING:	
BEGIN DATE:	4/15/2013	WEEK OF YEAR:	15	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	870269	PLACEMENT:	0.2 Mile E of Pealcable St	JURISDICTION:	01-NYSDOT	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Axle
TAKEN BY:	TST-BEK	PROCESSED BY:	DOT-jh	BATCH ID:	DOT-R08CWW16B	SPEED LIMIT:	55

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
4/15, Mon												140	157	141	212	227	321	408	416	223	117	91	40	33	2526		
4/16, Tue	13	5	6	3	1	29	69	178	203	203	163	183	203	183	208	287	280	433	400	222	139	101	71	42	3625	433	17-18
4/17, Wed	14	6	7	6	4	20	67	156	193	208	164	162	191	182	220	236	358	410	439	263	166	105	72	39	3688	439	18-19
4/18, Thu	28	11	2	4	4	24	69	171	188	174	172	178	191	184	212	269	313	448	432	274	165	107	65	36	3721	448	17-18
4/19, Fri	31	9	8	5	2	25	69	119	182	185	180	201	194	212	232	295	406	448	417	214	160	76	74	64	3808	448	17-18
4/20, Sat	38	23	19	6	5	14	37	65	110	196	212	247	235	246	243	232	232	212	200	179	141	108	103	100	3203	247	11-12
4/21, Sun	64	29	11	8	4	8	32	54	84	125	159	250	231	219	239	210	192	216	158	142	111	73	46	27	2692	250	11-12
4/22, Mon	15	13	4	3	7	33	76	170	234	191															746		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)	22	8	6	4	3	24	69	156	197	189	167	170	183	170	210	251	313	418	415	242	144	99	61	37	AWDT 3556		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day	ESTIMATED AADT Roadway	East	West
7	167	4	101	628	9	418	11.8	444	12.9	6906	3513	3393

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
4	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98

STATION: 870269

New York State Department of Transportation
WB Traffic Count Hourly Report

ROUTE/ROAD:	NY35	FROM:	RT 123	TO:	CONNECTICUT STATE LINE	REGION-COUNTY:	8-WESTCHESTER
FED DIR CODE:	7	REF. MARKER:	3587012225	FUNC. CLASS:	16 - U Minor Arterial	MUNI:	Lewisboro-Town-0463
ST DIR CODE:	1, 2	END MILEPOST:	24.64	FACTOR GROUP:	30	BIN:	
DOT ID:	100318	LANES BY DIR:	1 West	CC STN:		RR CROSSING:	
BEGIN DATE:	4/15/2013	WEEK OF YEAR:	15	ADDL DATA:		HPMS SAMPLE:	
NOTES 1:	870269	PLACEMENT:	0.2 Mile E of Pealcable St	JURISDICTION:	01-NYSDOT	1 WAY CODE:	
NOTES 2:						COUNT TYPE:	Axle
TAKEN BY:	TST-BEK	PROCESSED BY:	DOT-jh	BATCH ID:	DOT-R08CWW16B	SPEED LIMIT:	55

DATE	00-01	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	DAILY TOTAL	HIGH COUNT	HIGH HOUR
4/15, Mon												118	164	162	165	157	190	186	173	106	70	55	33	12	1591		
4/16, Tue	13	3	8	8	18	86	246	442	406	259	171	206	156	158	205	212	186	210	178	111	68	74	25	13	3462	442	07-08
4/17, Wed	9	0	4	3	15	90	234	475	424	279	213	200	202	171	180	159	193	215	176	126	84	71	47	27	3597	475	07-08
4/18, Thu	8	1	0	9	19	73	248	418	431	266	206	200	154	173	205	160	192	244	186	113	93	79	29	17	3524	431	08-09
4/19, Fri	13	3	3	4	11	64	197	380	381	270	219	185	170	191	182	211	189	227	173	108	86	83	81	21	3452	381	08-09
4/20, Sat	10	10	5	4	7	22	54	92	136	178	205	217	241	214	215	205	227	238	156	122	126	108	86	59	2937	241	12-13
4/21, Sun	19	15	6	2	12	15	32	92	115	160	179	190	223	218	197	224	180	196	142	119	92	60	23	11	2522	224	15-16
4/22, Mon	6	3	2	3	22	103	301	540	515	283															1778		
AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6 AM to Fri Noon)																									AWDT		
	11	2	4	6	15	77	241	444	424	267	199	179	166	163	186	169	187	210	175	112	77	69	33	17	3435		

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY Roadway High Hour	Roadway % of day	East High Hour	East % of day	West High Hour	West % of day
7	167	4	101	628	9	418	11.8	444	12.9

ESTIMATED AADT Roadway	East	West
6906	3513	3393

FACTOR

Month	Seasonal	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Axl
4	1.01	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98

STATION: **870443**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: **NY 123** ROAD NAME: **123**
DIRECTION: Northbound FACTOR GROUP: 30
STATE DIR CODE: 1 WK OF YR: 11
DATE OF COUNT: 03/11/2008
NOTES LANE 1: Week 11-Nb

COUNT TAKEN BY: ORG CODE: TST INITIALS: JSV

FROM: **CONN STATE LINE**
REC. SERIAL #: 0338
PLACEMENT: 2.5 N of Conn. State Line
@ REF MARKER: 123 87011024
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: **RT 35 END 123**
FUNC. CLASS: 16
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: R08-R08Cww11

COUNTY: **Westchester**
TOWN: **LEWISBORO**
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T															248	358	381	493	458	224	123	122	56	23			
12	W	11	8	1	1	9	16	92	200	250	203	166	196	179	185	256	296	382	486	427	221	107	80	47	26	3845	486	17
13	T	14	7	4	3	4	16	78	209	260	197	158	238	230	212	236	281	417	476	380	223	132	95	78	33	3981	476	17
14	F	14	7	4	6	1	19	67	216	233	222	197	217	195	212	268	348	382	578	387	230	117	94	100	59	4173	578	17
15	S	31	19	8	3	4	8	20	63	118	185	223	225	264	233	209	196	215	196	222	108	85	85	94	72	2886	264	12
16	S	41	13	18	7	3	6	15	31	81	133	112	157	162	203	185	165	156	143	130	80	80	50	39	32	2042	203	13
17	M	12	7	6	3	8	17	111	198	258	198	160	166	181														
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																											
25	T																											
26	W																											
27	T																											
28	F																											
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

13	7	3	3	5	17	86	202	246	202	167	201	194	195	243	307	386	477	415	219	119	97	59	27	ADT 3890

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
7	143	4	77	477	12%	0.983	1.003	**AADT 3878**

New York State Department of Transportation
Traffic Count Hourly Report

ROUTE #: **NY 123** ROAD NAME: **123**
DIRECTION: Southbound FACTOR GROUP: 30
STATE DIR CODE: 2 WK OF YR: 11
DATE OF COUNT: 03/11/2008
NOTES LANE 1: Week 11-Sb

COUNT TAKEN BY: ORG CODE: TST INITIALS: JSV

FROM: **CONN STATE LINE**
REC. SERIAL #: 0338
PLACEMENT: 2.5 N of Conn. State Line
@ REF MARKER: 123 87011024
ADDL DATA:
COUNT TYPE: AXLE PAIRS
PROCESSED BY: ORG CODE: DOT INITIALS: jh

TO: **RT 35 END 123**
FUNC. CLASS: 16
NHS: no
JURIS: NYSDOT
CC Stn:
BATCH ID: R08-R08Cww11

COUNTY: **Westchester**
TOWN: **LEWISBORO**
BIN:
RR CROSSING:
HPMS SAMPLE:

DATE	DAY	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAILY TOTAL	DAILY HIGH COUNT	DAILY HIGH HOUR
		AM												PM														
1	S																											
2	S																											
3	M																											
4	T																											
5	W																											
6	T																											
7	F																											
8	S																											
9	S																											
10	M																											
11	T															180	224	249	251	212	169	95	77	53	33			
12	W	11	1	0	1	9	49	236	524	641	347	218	209	171	182	221	230	245	252	193	113	111	66	52	11	4093	641	8
13	T	6	3	1	2	8	55	203	529	634	358	219	244	224	181	184	247	241	242	207	159	96	75	46	15	4179	634	8
14	F	7	6	6	0	9	46	229	494	630	331	232	214	233	154	226	235	252	238	198	186	93	116	75	31	4241	630	8
15	S	25	18	8	2	2	10	45	103	183	188	209	225	250	232	224	200	215	182	167	122	79	80	75	70	2914	250	12
16	S	49	9	5	4	1	6	18	36	65	125	134	176	220	208	199	164	174	149	111	85	76	47	41	14	2116	220	12
17	M	11	1	1	1	12	46	222	520	647	338	203	194	170														
18	T																											
19	W																											
20	T																											
21	F																											
22	S																											
23	S																											
24	M																											
25	T																											
26	W																											
27	T																											
28	F																											
29	S																											
30	S																											
31	M																											

AVERAGE WEEKDAY HOURS (Axle Factored, Mon 6AM to Fri Noon)

8	3	2	1	9	49	218	508	627	338	214	211	185	179	192	230	241	244	201	145	99	72	49	20	ADT 4045

DAYS Counted	HOURS Counted	WEEKDAYS Counted	WEEKDAY Hours	AVERAGE WEEKDAY High Hour	AVERAGE WEEKDAY % of day	Axle Adj. Factor	Seasonal/Weekday Adjustment Factor	ESTIMATED (one way)
7	143	4	77	627	16%	0.983	1.003	AADT 4033

LE CHATEAU

APPENDIX F

ACCIDENT DATA

TABLE NO. A

NYS Route 35 - Town of Lewisboro, Westchester County, New York

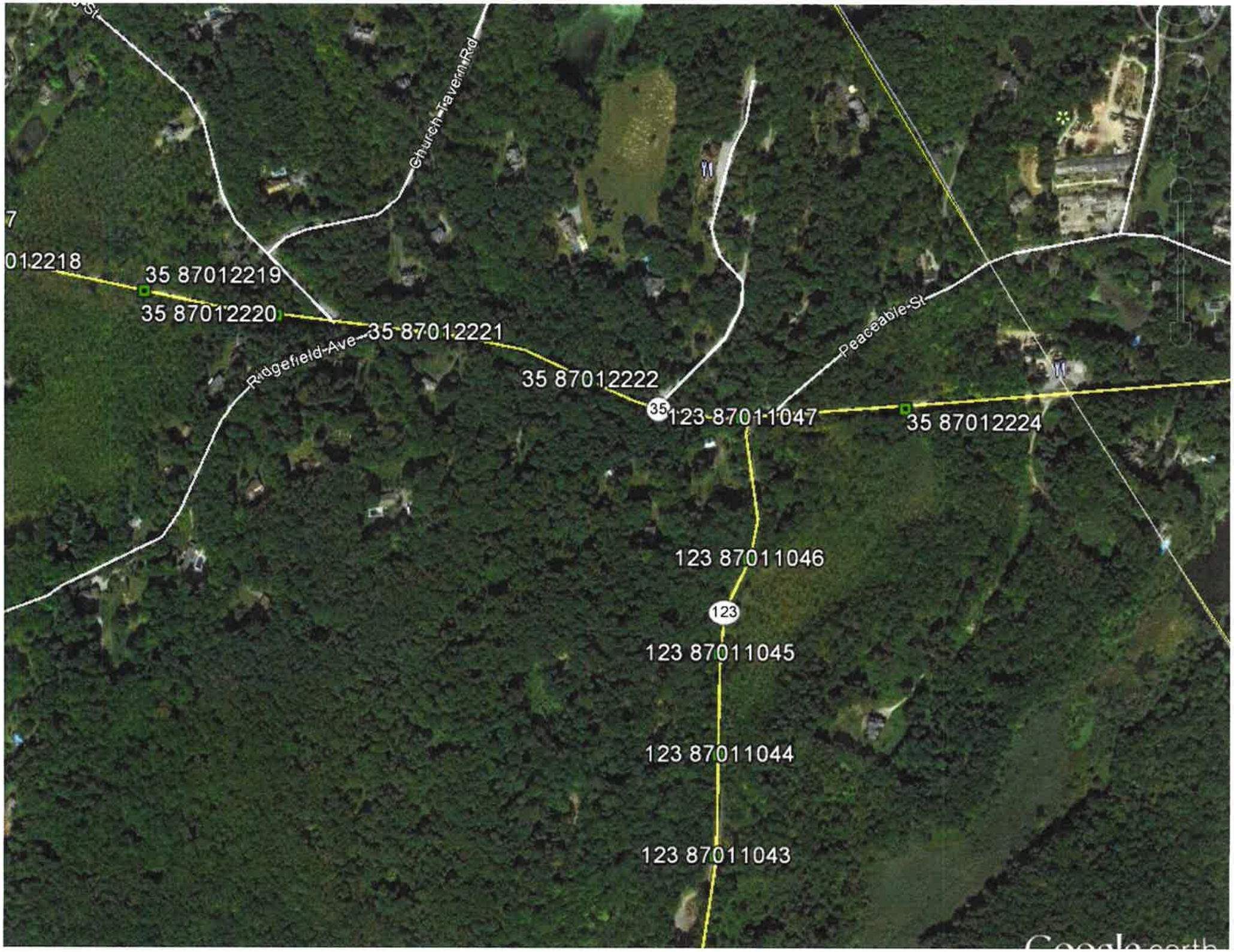
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
35 8701 2219	Non-Intersection Accidents	09/19/11	7:34 PM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
	Intersection Accidents										
35 8701 2219	Boutonville Road	06/08/11	5:52 AM	None	PDO	2-0	Dawn	Dry	Cloudy	Unknown	Failure to Keep Right,Reaction to other Uninvolved Veh
35 8701 2219	Boutonville Road	11/20/11	2:00 AM	Unknown	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Unknown
35 8701 2219	Boutonville Road	12/14/11	8:30 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Glare
35 8701 2219	Boutonville Road	05/20/12	2:33 PM	None	PDO	2-0	Daylight	Dry	Clear	Other	Reaction to other Uninvolved vehicle,Failure to Yield ROW
35 8701 2219	Boutonville Road	11/03/14	3:00 PM	Unknown	PDO	1-0	Unknown	Unknown	Uknown	Other	N/A
35 8701 2219	Boutonville Road	11/19/14	8:05 AM	None	PDO	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention
35 8701 2220	Non-Intersection Accidents	01/28/12	1:30 PM	None	PDO	2-0	Daylight	Dry	Clear	Unknown	Failure to Keep Right,Turning Improper
35 8701 2220	Non-Intersection Accidents	05/16/12	6:03 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2220	Non-Intersection Accidents	05/31/12	10:54 AM	None	I	1-1	Daylight	Dry	Clear	Other	Failure to Yield Right of Way,Failure to Keep Right
35 8701 2220	Non-Intersection Accidents	07/25/12	10:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Unknown	Failure to Yield Right of Way
35 8701 2220	Non-Intersection Accidents	12/14/12	6:54 PM	No Passing Zone	PDO	2-0	Dark-Road Unlighted	Dry	Clear	Sideswipe	Alcohol Involvement,Passing or Lane Usage Improperly
35 8701 2220	Non-Intersection Accidents	07/10/14	6:30 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2220	Non-Intersection Accidents	07/17/14	2:08 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
35 8701 2221	Non-Intersection Accidents	09/24/13	6:20 AM	None	N/R	1-0	Dawn	Dry	Clear	Other	Animal's Action
35 8701 2221	Non-Intersection Accidents	11/11/14	5:30 PM	No Passing Zone	N/R	2-0	Dark-Road Unlighted	Dry	Clear	Rear End	Following too Closely
35 8701 2222	Non-Intersection Accidents	03/15/11	6:45 AM	Police/Fire Emergency	N/R	2-0	Dawn	Snow/Ice	Cloudy	Rear End	Unsafe Speed,Pavement Slippery
35 8701 2222	Non-Intersection Accidents	03/15/11	4:43 AM	None	I	1-1	Dark-Road Unlighted	Snow/Ice	Clear	Other	Unsafe Speed,Pavement Slippery
35 8701 2222	Non-Intersection Accidents	07/24/12	10:25 AM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention
35 8701 2222	Non-Intersection Accidents	12/13/14	6:50 PM	None	PDO & I	2-1	Dark-Road Unlighted	Dry	Cloudy	Rear End	Alcohol Involvement,Failure to Keep Right
35 8701 2222	Non-Intersection Accidents	04/06/15	6:00 PM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2222	Non-Intersection Accidents	08/08/15	11:10 PM	No Passing Zone	PDO	2-0	Dark-Road Unlighted	Dry	Cloudy	Rear End	Following too Closely
35 8701 2223	Non-Intersection Accidents	03/05/12	8:50 AM	Traffic Signal	PDO & I	3-1	Daylight	Dry	Clear	Other	Driver Inattention
35 8701 2223	Non-Intersection Accidents	03/29/14	2:10 PM	None	PDO	1-0	Daylight	Wet	Rain	Other	Obstruction/Debris
35 8701 2223	Non-Intersection Accidents	05/18/14	3:15 PM	Traffic Signal	PDO	2-0	Daylight	Dry	Cloudy	Overtaking	Passing or Lane Usage Improperly,Failure to Yield ROW
35 8701 2223	Non-Intersection Accidents	12/23/14	4:20 AM	Traffic Signal	N/R	1-0	Dark-Road Unlighted	Wet	Rain	Other	Alcohol Involvement,Pavement Slippery
35 8701 2223	Non-Intersection Accidents	01/16/15	10:49 PM	Traffic Signal	F	2-1-1	Dark-Road Unlighted	Dry	Clear	Rear End	Following too Closely,Unsafe Speed
35 8701 2223	Non-Intersection Accidents	02/25/15	11:09 AM	Traffic Signal	N/R	2-0	Daylight	Dry	Clear	Rear End	Following too Closely
35 8701 2223	Non-Intersection Accidents	05/05/15	6:55 PM	Traffic Signal	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way,Turning Improper
35 8701 2225	Non-Intersection Accidents	07/22/15	7:50 AM	Traffic Signal	N/R	2-0	Daylight	Dry	Clear	Rear End	Driver Inattention

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) THE INTERSECTION OF NYS ROUTE 35 AND NYS ROUTE 123 IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE


Church Tavern Rd
7
012218
35 87012219
35 87012220
35 87012221
Ridgefield Ave
35 87012222
35
123 87011047
Peaceable St
35 87012224
123 87011046
123
123 87011045
123 87011044
123 87011043

Program: sass1701

Date: 03/31/16 08:52

NYSDOT Safety Information Management System

Accident Severity Summary

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228

Dates: 01-NOV-2010 thru 31-OCT-2015 Traffic Volume: 10,130

Total of Fatal Accd	Total of Injury Accd	Total of PDO Accd	Total of Non-Reportable	Total Number of Accidents	Accident Rate
1	5	17	7	30	1.62

Accident rate for linear section is accidents per million vehicle miles.

Program: sass1704

NYSDOT Safety Information Management System
Summary Report By Segment And/Or Intersection
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Date: 03/31/16 08:56

ROUTE: 35 HIGHWAY LOCATION: 35 87012219 - 35 87012228 DATES: 01-NOV-2010 - 31-OCT-2015

REFERENCE	INT.	DESCRIPTION	NUMBER OF ACCIDENTS TOTAL	FTL	INJ	PDO	N/R	WET ROAD **	FIXED OBJ **	PED& BIKE **	TRUCK *** **	LIGHT CONDITION DWN/DSK **	DAY **	NIGHT **
35 8701 2219			1	0	0	1	0	0	0	0	0	0	0	1
35 8701 2219	80	BOUTONVILLE RD	6	0	0	6	0	0	2	0	0	1	3	1
35 8701 2220			7	0	1	6	0	0	0	1	1	0	6	1
35 8701 2221			2	0	0	0	2	0	0	0	0	1	0	1
35 8701 2222			6	0	2	2	2	0	1	0	2	1	2	3
35 8701 2223			7	1	2	2	2	2	1	0	0	0	5	2
35 8701 2225			1	0	0	0	1	0	0	0	0	0	1	0
		ROUTE TOTAL EXCLUDES 999 RMS	30	1	5	17	7	2	4	1	3	3	17	9

** EXCLUDES PARTIALLY CODED NON-REPORTABLES *** EXCLUDES PICKUPS & VANS

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2219 NON-INTERSECTION ACCIDENTS ***

SEP-19-2011 MON 07:34 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34057012
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: SC
Num of Occupants: 2 Drivers Age: 74 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION UNKNOWN

*** Ref Mrkr: 35 8701 2219 INTERSECTION ACCIDENTS - BOUTONVILLE RD ***

JUN-08-2011 WED 05:52 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33948185
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NONE
Manner of Collision: UNKNOWN Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3842 State of Registration: NY
Num of Occupants: 1 Drivers Age: 19 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: YES School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FAILURE TO KEEP RIGHT REACTION TO OTHER UNINVOLVED VEHICL

Veh: 2 MOTORCYCLE Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: UNKNOWN Public Property Damage: YES School Bus Involved: NO
Pre-Accd Action: PARKED
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

NOV-20-2011 SUN 02:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34136015
Accident Class: PROPERTY DAMAGE Police Agency:NOT ENTERED Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: UNKNOWN
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3126 State of Registration: NY
Num of Occupants: 1 Drivers Age: 26 Sex: MALE Citation Issued: NO

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2219 INTERSECTION ACCIDENTS - BOUTONVILLE RD *** (Continued)

Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

DEC-14-2011 WED 08:30 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34158073
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3492 State of Registration: NY
Num of Occupants: 1 Drivers Age: 63 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: GLARE UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 48 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

MAY-20-2012 SUN 02:33 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34416121
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 OTHER Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 64 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: REACTION TO OTHER UNINVOLVED VEHICL NOT ENTERED

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2624 State of Registration: NY
Num of Occupants: 1 Drivers Age: 56 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT ENTERED

NOV-03-2014 MON 03:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35578404

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2219 INTERSECTION ACCIDENTS - BOUTONVILLE RD *** (Continued)

Accident Class: PROPERTY DAMAGE Police Agency: Num of Veh: 1
Type of Accident: OTHER NON-COLLISION Traffic Control: UNKNOWN
Manner of Collision: OTHER Weather: UNKNOWN
Road Surface Collision: UNKNOWN Road Char: UNKNOWN Light Condition: UNKNOWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3349 State of Registration: NY
Num of Occupants: 1 Drivers Age: 17 Sex: FEMALE Citation Issued: NO
Direction of Travel: UNKNOWN Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: UNKNOWN
Apparent Factors: NOT ENTERED NOT ENTERED

NOV-19-2014 WED 08:05 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35506661
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 BUS Registered Weight: 53 State of Registration: NY
Num of Occupants: 15 Drivers Age: 62 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: YES
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors: NOT APPLICABLE NOT APPLICABLE
Truck/Bus Clsf: NOT ENTERED

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2543 State of Registration: NY
Num of Occupants: 1 Drivers Age: 17 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: DRIVER INATTENTION NOT APPLICABLE

*** Ref Mrkr: 35 8701 2220 NON-INTERSECTION ACCIDENTS ***

JAN-28-2012 SAT 01:30 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34268411
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: UNKNOWN Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 3 Drivers Age: 17 Sex: FEMALE Citation Issued: NO

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2220 NON-INTERSECTION ACCIDENTS *** (Continued)

Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: FAILURE TO KEEP RIGHT TURNING IMPROPER

Veh: 2 TRUCK Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 75 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors: NOT APPLICABLE UNKNOWN
Truck/Bus Clsf: NOT ENTERED

MAY-16-2012 WED 06:03 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34416119
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 41 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: NOT ENTERED NOT ENTERED

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 60 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STARTING IN TRAFFIC
Apparent Factors: FOLLOWING TOO CLOSELY NOT ENTERED

MAY-31-2012 THU 10:54 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: B Case: 2012-34391047
Accident Class: INJURY Police Agency:CROTON ON HUDSON VILLAGE PD Num of Veh: 1
Type of Accident: COLLISION WITH BICYCLIST Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: PED/BICYCLIST AT INTERSECTION Action of Ped/Bicycle: ALONG HIGHWAY WITH TRAFFIC

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2864 State of Registration: NY
Num of Occupants: 1 Drivers Age: 76 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2220 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 2 BICYCLE Registered Weight: UNKNOWN State of Registration: -3
Num of Occupants: N/A Bicyclist Age: 57 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY FAILURE TO KEEP RIGHT

JUL-25-2012 WED 10:10 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34496909
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: UNKNOWN Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3215 State of Registration: NY
Num of Occupants: 1 Drivers Age: 86 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT ENTERED

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 58 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

DEC-14-2012 FRI 06:54 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34572378
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: SIDESWIPE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2895 State of Registration: NY
Num of Occupants: 1 Drivers Age: 50 Sex: FEMALE Citation Issued: YES
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ALCOHOL INVOLVEMENT PASSING OR LANE USAGE IMPROPERLY

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 51 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

JUL-10-2014 THU 06:30 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35321979
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 21 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STARTING IN TRAFFIC
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 2 Drivers Age: 31 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

JUL-17-2014 THU 02:08 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35377958
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3445 State of Registration: NY
Num of Occupants: 4 Drivers Age: 17 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: OTHER (VEHICLE) NOT ENTERED

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2409 State of Registration: NY
Num of Occupants: 1 Drivers Age: 81 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT ENTERED

*** Ref Mrkr: 35 8701 2221 NON-INTERSECTION ACCIDENTS ***

SEP-24-2013 TUE 06:20 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34948343
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2221 NON-INTERSECTION ACCIDENTS *** (Continued)

Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 57 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

NOV-11-2014 TUE 05:30 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35567066
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 31 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 68 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 35 8701 2222 NON-INTERSECTION ACCIDENTS ***

MAR-15-2011 TUE 06:45 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33817296
Accident Class: NON-REPORTABLE Police Agency:NYSP CORTLANDT Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: POLICE/FIRE EMERGENCY
Manner of Collision: REAR END Weather: CLOUDY
Road Surface Collision: SNOW/ICE Road Char: CURVE AND GRADE Light Condition: DAWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 OTHER Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 3 Drivers Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: PARKED
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2222 NON-INTERSECTION ACCIDENTS *** (Continued)

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    Veh: 2  CAR/VAN/PICKUP                          Registered Weight: UNKNOWN                 State of Registration: CT
            Num of Occupants: 1                           Drivers Age: 23         Sex: MALE          Citation Issued: NO
            Direction of Travel: WEST             Public Property Damage: NO                       School Bus Involved: NO
            Pre-Accd Action: SLOWED OR STOPPING
            Apparent Factors: UNSAFE SPEED                      PAVEMENT SLIPPERY

MAR-15-2011 TUE 04:43 AM  Persons Killed:  0   Persons Injured:  1       Extent of Injuries: A                  Case: 2011-33808019
            Accident Class: INJURY                        Police Agency:NYSP SOMERS                              Num of Veh:  1
            Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH          Traffic Control: NONE
            Manner of Collision: OTHER                                          Weather: CLEAR
            Road Surface Collision: SNOW/ICE        Road Char: CURVE AND LEVEL          Light Condition: DARK-ROAD UNLIGHTED
            Loc. of Ped/Bicycle: NOT APPLICABLE                     Action of Ped/Bicycle: NOT APPLICABLE

    Veh: 1  TRUCK                                   Registered Weight: UNKNOWN                 State of Registration: CT
            Num of Occupants: 1                           Drivers Age: 39         Sex: FEMALE        Citation Issued: NO
            Direction of Travel: WEST             Public Property Damage: YES                      School Bus Involved: NO
            Pre-Accd Action: GOING STRAIGHT AHEAD
            Apparent Factors: UNSAFE SPEED                      PAVEMENT SLIPPERY
            Truck/Bus Clsf: NOT ENTERED

JUL-24-2012 TUE 10:25 AM  Persons Killed:  0   Persons Injured:  0       Extent of Injuries:                    Case: 2012-34496910
            Accident Class: PROPERTY DAMAGE               Police Agency:LEWISBORO TOWN PD                        Num of Veh:  2
            Type of Accident: COLLISION WITH MOTOR VEHICLE               Traffic Control: NO PASSING ZONE
            Manner of Collision: REAR END                                       Weather: CLEAR
            Road Surface Collision: DRY             Road Char: STRAIGHT AND LEVEL       Light Condition: DAYLIGHT
            Loc. of Ped/Bicycle: NOT APPLICABLE                     Action of Ped/Bicycle: NOT APPLICABLE

    Veh: 1  OTHER                                   Registered Weight: UNKNOWN                 State of Registration: CT
            Num of Occupants: 1                           Drivers Age: 32         Sex: MALE          Citation Issued: NO
            Direction of Travel: WEST             Public Property Damage: NO                       School Bus Involved: NO
            Pre-Accd Action: MAKING RIGHT TURN
            Apparent Factors: NOT ENTERED                       NOT ENTERED

    Veh: 2  CAR/VAN/PICKUP                          Registered Weight: 2687                    State of Registration: NY
            Num of Occupants: 1                           Drivers Age: 28         Sex: FEMALE        Citation Issued: NO
            Direction of Travel: NORTH-WEST       Public Property Damage: NO                       School Bus Involved: NO
            Pre-Accd Action: GOING STRAIGHT AHEAD
            Apparent Factors: DRIVER INATTENTION                NOT ENTERED

DEC-13-2014 SAT 06:50 PM  Persons Killed:  0   Persons Injured:  1       Extent of Injuries: C                  Case: 2014-35515725
            Accident Class: PROPERTY DAMAGE AND INJURY    Police Agency:NYSP LEWISBORO SATELLITE                 Num of Veh:  2
            Type of Accident: COLLISION WITH MOTOR VEHICLE               Traffic Control: NONE
            Manner of Collision: HEAD ON                                        Weather: CLOUDY
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Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2222 NON-INTERSECTION ACCIDENTS *** (Continued)

Road Surface Collision: DRY Road Char: CURVE AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3630 State of Registration: NY
Num of Occupants: 1 Drivers Age: 30 Sex: MALE Citation Issued: YES
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ALCOHOL INVOLVEMENT FAILURE TO KEEP RIGHT

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2698 State of Registration: NY
Num of Occupants: 1 Drivers Age: 44 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

APR-06-2015 MON 06:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35679809
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 55 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 46 Sex: FEMALE Citation Issued: YES
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

AUG-08-2015 SAT 11:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35837751
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: REAR END Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3581 State of Registration: NY
Num of Occupants: 2 Drivers Age: 62 Sex: MALE Citation Issued: NO

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2222 NON-INTERSECTION ACCIDENTS *** (Continued)

Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 TRUCK Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 71 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE
Truck/Bus Clsf: NOT ENTERED

*** Ref Mrkr: 35 8701 2223 NON-INTERSECTION ACCIDENTS ***

MAR-05-2012 MON 08:50 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: B Case: 2012-34326692
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:BEDFORD TOWN PD Num of Veh: 3
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 45 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

Veh: 3 CAR/VAN/PICKUP Registered Weight: 3300 State of Registration: NY
Num of Occupants: 1 Drivers Age: 49 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: DRIVER INATTENTION UNKNOWN

MAR-29-2014 SAT 02:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35216998
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: OTHER NON-COLLISION Traffic Control: NONE
Manner of Collision: OTHER Weather: RAIN
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2223 NON-INTERSECTION ACCIDENTS *** (Continued)

Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2970 State of Registration: NY
Num of Occupants: 1 Drivers Age: 53 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: OBSTRUCTION/DEBRIS NOT ENTERED

MAY-18-2014 SUN 03:15 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35264314
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: OVERTAKING Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 5605 State of Registration: NY
Num of Occupants: 1 Drivers Age: 38 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: PASSING OR LANE USAGE IMPROPERLY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3493 State of Registration: NY
Num of Occupants: 1 Drivers Age: 49 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STARTING IN TRAFFIC
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

DEC-23-2014 TUE 04:20 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35538640
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: TRAFFIC SIGNAL
Manner of Collision: OTHER Weather: RAIN
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 36 Sex: MALE Citation Issued: YES
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ALCOHOL INVOLVEMENT PAVEMENT SLIPPERY

JAN-16-2015 FRI 10:49 PM Persons Killed: 1 Persons Injured: 1 Extent of Injuries: KA Case: 2015-35599844
Accident Class: FATAL Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2223 NON-INTERSECTION ACCIDENTS *** (Continued)

Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4372 State of Registration: NY
Num of Occupants: 1 Drivers Age: 48 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY UNSAFE SPEED

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 2 Drivers Age: 31 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

FEB-25-2015 WED 11:09 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35630732
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 2 Drivers Age: 41 Sex: FEMALE Citation Issued: YES
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STARTING IN TRAFFIC
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 47 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

MAY-05-2015 TUE 06:55 PM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: BC Case: 2015-35710156
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 35 Highway Location Ref Mrkr Range: 35 87012219 - 35 87012228 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 35 8701 2223 NON-INTERSECTION ACCIDENTS *** (Continued)

Num of Occupants: 1 Drivers Age: 47 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TURNING IMPROPER

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3000 State of Registration: NY
Num of Occupants: 1 Drivers Age: 58 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 35 8701 2225 NON-INTERSECTION ACCIDENTS ***

JUL-22-2015 WED 07:50 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35811413
Accident Class: NON-REPORTABLE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: TRAFFIC SIGNAL
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 37 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 22 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: SLOWED OR STOPPING
Apparent Factors: DRIVER INATTENTION NOT APPLICABLE

TOTAL NUMBER OF ACCIDENTS PRINTED: 30

ABSENCE OF REFERENCE MARKERS OR INTERSECTION WITHIN A SPECIFIED ROADWAY SECTION & TIME PERIOD INDICATES NO ACCIDENTS FOUND

*** END OF REPORT ***

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APPENDIX G

SIGHT DISTANCE PROFILES

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NYS ROUTE 35

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WESTCHESTER COUNTY
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Fax: 914.347.7266

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PROJECT NUMBER: 16000517A		DRAWING NAME: R-SGHT	

SHEET TITLE:
CONCEPTUAL ACCESS MODIFICATION PLAN

SHEET NUMBER:
AM-1

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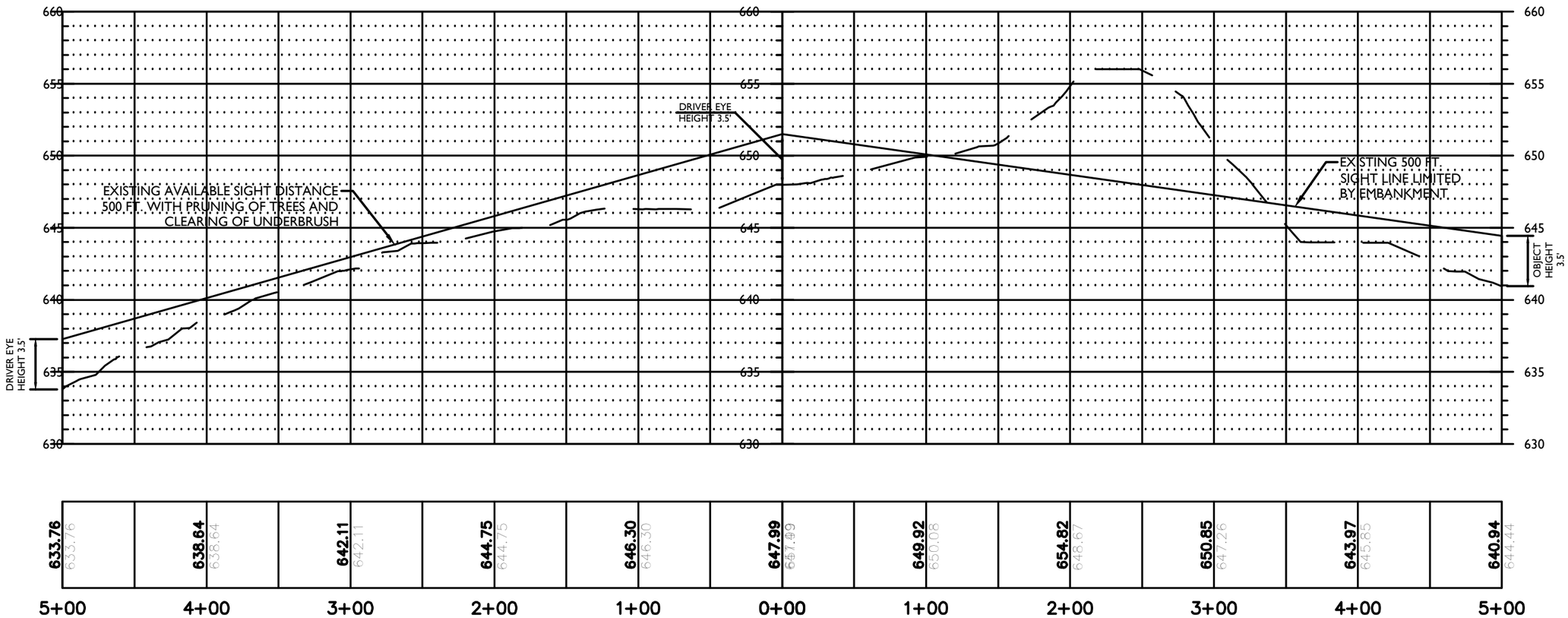
16000517A	R-SGHT

SHEET TITLE:

SIGHT DISTANCE PLAN

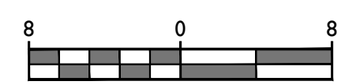
SHEET NUMBER:

SD-1

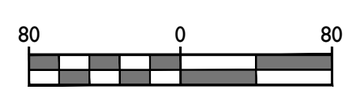


PROFILE OF SIGHT LINE LOOKING RIGHT (WEST)
1" = 80' HORIZ. / 1" = 8' VERT.

PROFILE OF SIGHT LINE LOOKING LEFT (EAST)
1" = 80' HORIZ. / 1" = 8' VERT.



SCALE : 1" = 8'
VERTICAL



SCALE : 1" = 80'

NOTE:

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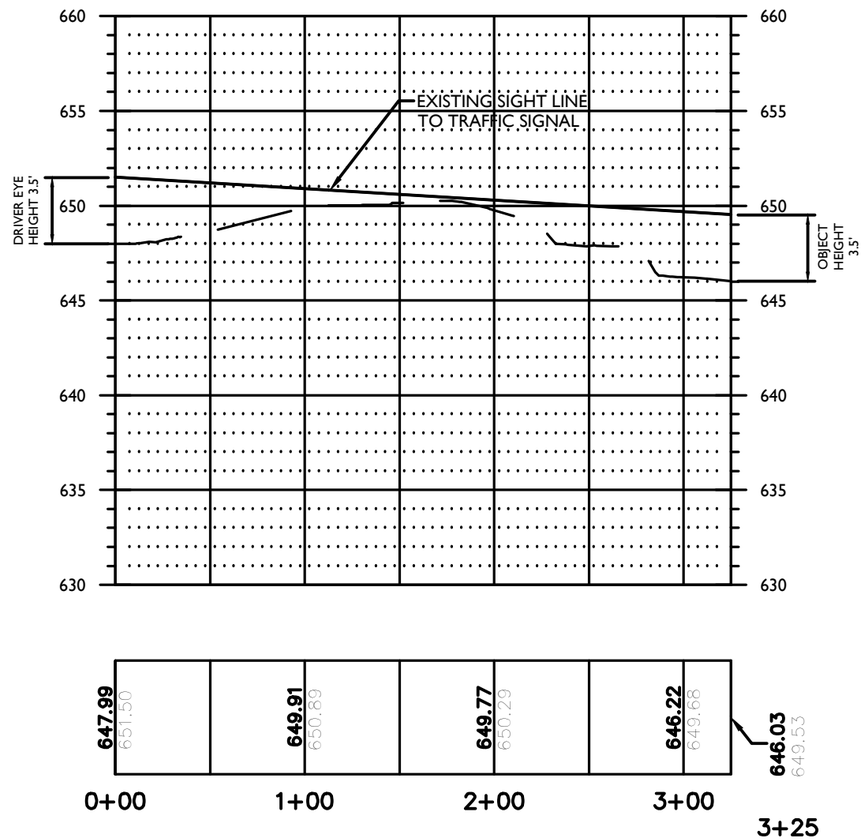
PROJECT NUMBER: 16000517A
DRAWING NAME: R-SGHT

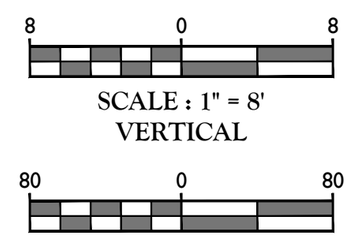
SHEET TITLE:
SIGHT DISTANCE PROFILES

SHEET NUMBER:
SD-2



PROFILE OF SIGHT LINE LOOKING LEFT (EAST) TO INTERSECTION

1" = 80' HORIZ. / 1" = 8' VERT.



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PROJECT NUMBER: 16000517A	DRAWING NAME: R-SGHT		

SHEET TITLE: SIGHT DISTANCE PROFILES

SHEET NUMBER: SD-3

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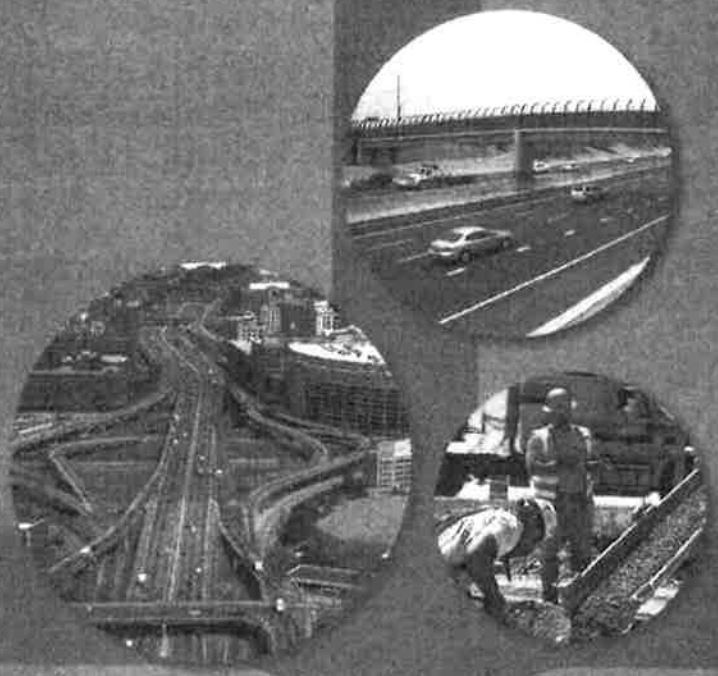
APPENDIX H

AASHTO CRITERIA FOR LOCAL ROADWAYS

A Policy on Geometric Design of Highways and Streets

2011
6th Edition



American Association of State Highway and Transportation Officials
AASHTO
The Voice of Transportation

The width W_c is calculated by the equation:

Metric	U.S. Customary
$W_c = N(U+C)+(N-1)F_A+Z$	$W_c = N(U+C)+(N-1)F_A+Z$ (3-35)
where:	where:
W_c = width of traveled way on curve, m	W_c = width of traveled way on curve, ft
N = number of lanes	N = number of lanes
U = track width of design vehicle (out-to-out tires) on curves, m	U = track width of design vehicle (out-to-out tires) on curves, ft
C = lateral clearance, m	C = lateral clearance, ft
F_A = width of front overhang of inner-lane vehicle, m	F_A = width of front overhang of inner-lane vehicle, ft
Z = extra width allowance, m	Z = extra width allowance, ft

- From the standpoints of usefulness and appearance, the edge of the traveled way through the widening transition should be a smooth, graceful curve. A tangent transition edge should be avoided. On minor highways or in cases where plan details are not available, a curved transition staked by eye generally is satisfactory and better than a tangent transition. In any event, the transition ends should avoid an angular break at the pavement edge.

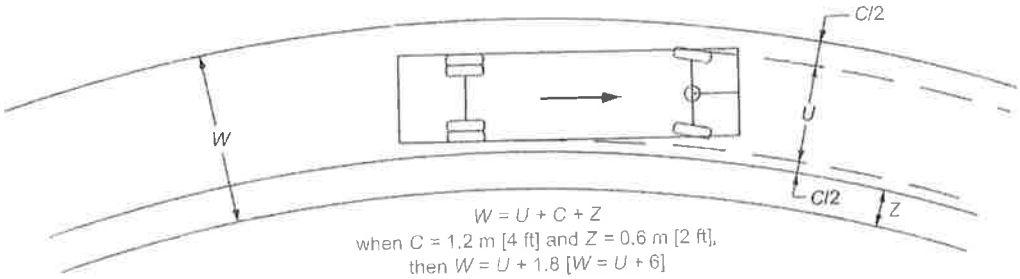
- On highway alignment without spirals, smooth and fitting alignment results from attaining widening with one-half to two-thirds of the transition length along the tangent and the balance along the curve. This is consistent with a common method for attaining superelevation. The inside edge of the traveled way may be designed as a modified spiral, with control points determined by either the width/length ratio of a triangular wedge, by calculated values based on a parabolic or cubic curve, or by a larger radius (compound) curve. Otherwise, it may be aligned by eye in the field. On highway alignment with spiral curves, the increase in width is usually distributed along the length of the spiral.

- Widening areas can be fully detailed on construction plans. Alternatively, general controls can be cited on construction or standard plans with final details left to the field engineer.

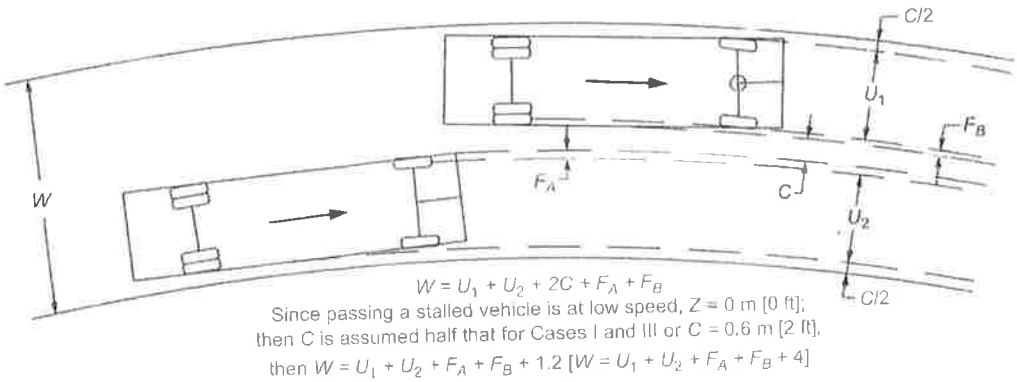
3.3.11 Widths for Turning Roadways at Intersections

The widths of turning roadways at intersections are governed by the types of vehicles to be accommodated, the radius of curvature, and the expected speed. Turning roadways may be designed for one- or two-way operation, depending on the geometric pattern of the intersection.

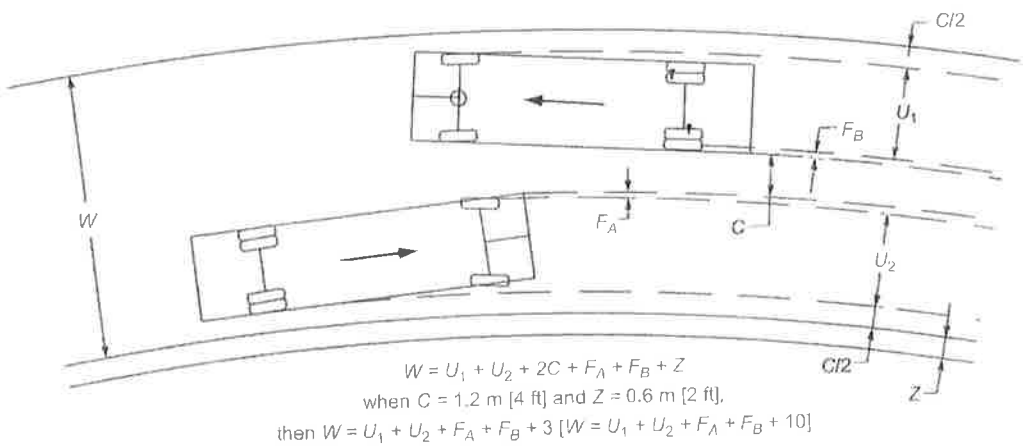
Selection of an appropriate design vehicle should be based on the size and frequency of vehicle types using or expected to use the facility. The radius of curvature in combination with the track width of the design vehicle determine the width of a turning roadway. The width elements for the turning vehicle, shown diagrammatically in Figure 3-21, are explained in "Derivation of Design Values for Widening on Horizontal Curves" of Section 3.3.9. They ignore the effects of insufficient superelevation and of surfaces with low friction that tend to cause the rear wheels of vehicles traveling at other than low speed to swing outward, developing the appropriate slip angles.



CASE I
One-Lane One-Way Operation — No Passing



CASE II
One-Lane One-Way Operation Provision for Passing Stalled Vehicle



CASE III
Two-Lane Operation — One or Two Way

U = Track Width of Vehicle (Out-to-Out Tires), m [ft]
F_A = Width of Front Overhang, m [ft]
F_B = Width of Rear Overhang, m [ft]
C = Total Lateral Clearance per Vehicle, m [ft]
Z = Extra Width Allowance Due to Difficulty of Driving on Curves, m [ft]

Figure 3-21. Derivation of Turning Roadway Widths on Curves at Intersections

Turning roadways are classified for operational purposes as one-lane operation, with or without opportunity for passing a stalled vehicle, and two-lane operation, either one-way or two-way. Three cases are commonly considered in design:

Case I—One-lane, one-way operation with no provision for passing a stalled vehicle is usually appropriate for minor turning movements and moderate turning volumes where the connecting roadway is relatively short. Under these conditions, the chance of a vehicle breakdown is remote, but one of the edges of the traveled way should preferably have a sloping curb or be flush with the shoulder.

Case II—One-lane, one-way operation with provision for passing a stalled vehicle is used to allow operation at low speed and with sufficient clearance so that other vehicles can pass a stalled vehicle. These widths are applicable to all turning movements of moderate to heavy traffic volumes that do not exceed the capacity of a single-lane connection. In the event of a breakdown, traffic flow can be maintained at a somewhat reduced speed. Many ramps and connections at channelized intersections are in this category. However, for Case II, the widths needed for the longer vehicles are very large as shown in Table 3-28. Case I widths for these longer vehicles, including the WB-19, WB-20, WB-30T, and WB-33D [WB-62, WB-65, WB-100T, and WB-109D] design vehicles, may have to be used as the minimum values where they are present in sufficient numbers to be considered the appropriate design vehicle.

Case III—Two-lane operation, either one- or two-way, is applicable where operation is two way or where operation is one way, but two lanes are needed to handle the traffic volume.

Table 3-28b. Derived Pavement Widths for Turning Roadways for Different Design Vehicles

U.S. Customary																				
Radius on Inner Edge of Pavement, *R* (ft)	Case I, One-Lane Operation, No Provision for Passing a Stalled Vehicle																			
	P	SU-30	SU-40	BUS-40	BUS-45	CITY-BUS	S-BUS-36	S-BUS-40	A-BUS-11	WB-40	WB-62	WB-67	WB-67D	WB-92D	WB-100T	WB-109D	MH	P/T	P/B	MH/B
50	13	18	21	22	23	21	19	18	22	23	44	57	29	—	37	—	18	19	18	21
75	13	17	18	19	20	19	17	17	19	20	30	33	23	34	27	43	17	17	17	19
100	13	16	17	18	19	18	16	16	18	18	25	28	21	28	24	34	16	16	16	17
150	12	15	16	17	17	17	16	15	17	17	22	23	19	23	21	27	15	16	15	16
200	12	15	16	16	17	16	15	15	16	16	20	21	18	21	19	23	15	15	15	16
300	12	15	15	16	16	16	15	15	16	15	18	19	17	19	17	20	15	15	15	15
400	12	15	15	15	16	15	15	15	15	15	17	18	16	18	17	19	15	15	14	15
500	12	14	15	15	15	15	14	14	15	15	17	17	16	17	16	18	14	14	14	15
Tangent	12	14	14	15	15	15	14	14	15	14	15	15	15	15	15	15	14	14	14	14
	Case II, One-Lane, One-Way Operation with Provision for Passing a Stalled Vehicle by Another of the Same Type																			
50	20	30	36	39	42	38	31	32	40	39	81	109	50	—	67	—	30	30	28	36
75	19	27	30	32	35	32	27	28	34	32	53	59	39	60	47	79	27	27	26	30
100	18	25	27	30	31	29	25	26	30	29	44	48	34	48	40	60	25	25	24	28
150	18	23	25	27	28	27	23	24	27	26	36	38	29	39	33	45	23	23	23	25
200	17	22	24	25	26	25	23	23	26	24	32	34	27	34	30	39	22	22	22	24
300	17	22	22	24	24	24	22	22	24	23	28	30	25	30	27	33	22	22	21	23
400	17	21	22	23	24	23	21	21	23	22	26	27	24	27	25	30	21	21	21	22
500	17	21	21	23	23	23	21	21	23	22	25	26	23	26	25	28	21	21	21	21
Tangent	17	20	20	21	21	21	20	20	21	20	21	21	21	21	21	21	20	20	20	20
	Case III, Two-Lane Operation, Either One- or Two-Way (Same Type Vehicle in Both Lanes)																			
50	26	36	42	45	48	44	37	38	46	45	87	115	56	—	73	—	36	36	34	42
75	25	33	36	38	41	38	33	34	40	38	59	65	45	66	53	85	33	33	32	36
100	24	31	33	36	37	35	31	32	36	35	50	54	40	54	46	66	31	31	30	34
150	24	29	31	33	34	33	29	30	33	32	42	44	35	45	39	51	29	29	29	31
200	23	28	30	31	32	31	29	29	32	30	38	40	33	40	36	45	28	28	28	30
300	23	28	28	30	30	30	28	28	30	29	34	36	31	36	33	39	28	28	27	29
400	23	27	28	29	30	29	27	27	29	28	32	33	30	33	31	36	27	27	27	28
500	23	27	27	29	29	29	27	27	29	28	31	32	29	32	31	34	27	27	27	27
Tangent	23	26	26	27	27	27	26	26	27	26	27	27	27	27	27	27	26	26	26	26

Design Values

The total width, W, for separate turning roadways at intersections is derived by the summation of the proper width elements. The separate formulas for width and values for lateral clearance, C, and the allowance for difficulty of driving on curves, Z, for each of three cases are shown in Figure 3-21. Values for track width, U, are obtained from Figure 3-17 and values for front overhang, F_A, from Figure 3-18. Values of U and F_A are read from the figure for the turning radius, R_T, which is closely approximated by adding the track width and proper clearances to the radius of the inner edge of the turning roadway.

When determining the width for Case I, a lateral clearance, C, of 1.2 m [4 ft] is considered appropriate. The allowance for difficulty of driving curves, Z, is constant, equal to about 0.6 m [2 ft] for all radii of 150 m [500 ft] or less. In this case, the front overhang, F_A, need not be considered because no passing of another vehicle is involved.

For Case II, the width involves U and C for the stopped vehicle and the U and C for the passing vehicle. To this is added extra width for the front overhang, F_A, of one vehicle and the rear overhang, F_B, (if any) of the other vehicle. The width of rear overhang for a passenger car is considered to be 0.15 m [0.5 ft]. F_B for truck design vehicles is 0. A total clearance of one-half the value of C in the other two cases is assumed (i.e., 0.6 m [2 ft] for the stopped vehicle and 0.6 m [2 ft] for the passing vehicle). Because passing the stalled vehicle is accomplished at low speeds, the extra width allowance, Z, is omitted.

All the width elements apply for Case III. To the values of U and F_A obtained from Figures 3-17 and 3-18, respectively, the lateral clearance, C, of 1.2 m [4 ft]; F_B of 0.15 m [0.5 ft] for passenger cars; and Z of 0.6 m [2 ft] is added to determine the total width.

The derived widths for various radii for each design vehicle are given in Table 3-28. For general design use, the recommended widths given in Table 3-28 seldom apply directly, because the turning roadways usually accommodate more than one type of vehicle. Even parkways designed primarily for P vehicles are used by buses and maintenance trucks. At the other extreme, few if any public highways are designed to fully accommodate the WB-19 [WB-62] or longer design vehicles. Widths needed for some combination of separate design vehicles become the practical design guide for intersecting roadways. Such design widths are given in Table 3-29 for three logical conditions of mixed traffic that are defined below. However, where the larger design vehicles such as the WB-19 or WB-33D [WB-62 or WB-109D] will be using a turning roadway or ramp, the facility should accommodate their turning paths for at least the Case I condition. Therefore, Case I widths for the appropriate design vehicle and radius shown in Table 3-28 should be checked to determine whether they exceed widths shown in Table 3-29. If they do, consideration should be given to using the widths for Case I shown in Table 3-28 as the minimum widths for the turning roadway or ramp.

Traffic conditions for defining turning roadway widths are described in broad terms because data concerning the traffic volume, or the percentage of the total volume, for each type of vehicle are not available to define these traffic conditions precisely.

Traffic Condition A—This traffic condition consists predominantly of P vehicles, but some consideration is also given to SU-9 [SU-30] trucks; the values in Table 3-29 are somewhat higher than those for P vehicles in Table 3-28.

Traffic Condition B—This traffic condition includes sufficient SU-9 [SU-30] trucks to govern design, but some consideration is also given to tractor-semitrailer combination trucks; values in Table 3-29 for Cases I and III are those for SU vehicles in Table 3-28. For Case II, values are reduced as explained later in this section.

Traffic Condition C—This traffic condition includes sufficient tractor-semitrailer combination trucks, WB-12 [WB-40], to govern design; the values in Table 3-29 for Cases I and III are those for the WB-12 [WB-40] truck in Table 3-28. For Case II, values are reduced.

In general, Traffic Condition A may be assumed to have a small volume of trucks or only an occasional large truck; Traffic Condition B, a moderate volume of trucks (e.g., in the range of 5 to 10 percent of the total traffic); and Traffic Condition C, more and larger trucks.

Table 3-29. Design Widths of Pavements for Turning Roadways

Metric

Radius on Inner Edge of Pavement, *R* (m)	Pavement Width (m)								
	Case I One-Lane, One-Way Operation—no provision for passing stalled vehicle			Case II One-Lane, One-Way Operation—with provision for passing stalled vehicle			Case III Two-Lane Operation—either one-way or two-way operation		
	Design Traffic Conditions								
	A	B	C	A	B	C	A	B	C
15	5.4	5.5	7.0	6.0	7.8	9.2	9.4	11.0	13.6
25	4.8	5.0	5.8	5.6	6.9	7.9	8.6	9.7	11.1
30	4.5	4.9	5.5	5.5	6.7	7.6	8.4	9.4	10.6
50	4.2	4.6	5.0	5.3	6.3	7.0	7.9	8.8	9.5
75	3.9	4.5	4.8	5.2	6.1	6.7	7.7	8.5	8.9
100	3.9	4.5	4.8	5.2	5.9	6.5	7.6	8.3	8.7
125	3.9	4.5	4.8	5.1	5.9	6.4	7.6	8.2	8.5
150	3.6	4.5	4.5	5.1	5.8	6.4	7.5	8.2	8.4
Tangent	3.6	4.2	4.2	5.0	5.5	6.1	7.3	7.9	7.9
Width Modification for Edge Conditions									
No stabilized shoulder	None			None			None		
Sloping curb	None			None			None		
Vertical curb:									
one side	Add 0.3 m			None			Add 0.3 m		
two sides	Add 0.6 m			Add 0.3 m			Add 0.6 m		
Stabilized shoulder, one or both sides	Lane width for conditions B & C on tangent may be reduced to 3.6 m where shoulder is 1.2 m or wider			Deduct shoulder width(s); minimum pavement width as under Case I			Deduct 0.6 m where shoulder is 1.2 m or wider		

Note:

A = predominantly P vehicles, but some consideration for SU trucks

B = sufficient SU-9 vehicles to govern design, but some consideration for semitrailer combination trucks

C = sufficient bus and combination-trucks to govern design

U.S. Customary

Radius on Inner Edge of Pavement, *R* (ft)	Pavement Width (ft)								
	Case I One-Lane, One-Way Operation—no provision for passing stalled vehicle			Case II One-Lane, One-Way Operation—with provision for passing stalled vehicle			Case III Two-Lane Operation—either one-way or two-way operation		
	Design Traffic Conditions								
	A	B	C	A	B	C	A	B	C
50	18	18	23	20	26	30	31	36	45
75	16	17	20	19	23	27	29	33	38
100	15	16	18	18	22	25	28	31	35
150	14	15	17	18	21	23	26	29	32
200	13	15	16	17	20	22	26	28	30
300	13	15	15	17	20	22	25	28	29
400	13	15	15	17	19	21	25	27	28
500	12	15	15	17	19	21	25	27	28
Tangent	12	14	14	17	18	20	24	26	26
Width Modification for Edge Conditions									
No stabilized shoulder	None			None			None		
Sloping curb	None			None			None		
Vertical curb:									
one side	Add 1 ft			None			Add 1 ft		
two sides	Add 2 ft			Add 1 ft			Add 2 ft		
Stabilized shoulder, one or both sides	Lane width for conditions B & C on tangent may be reduced to 12 ft where shoulder is 4 ft or wider			Deduct shoulder width(s); minimum pavement width as under Case I			Deduct 2 ft where shoulder is 4 ft or wider		

Note:

A = predominantly P vehicles, but some consideration for SU trucks

B = sufficient SU-30 vehicles to govern design, but some consideration for semitrailer combination trucks

C = sufficient bus and combination-trucks to govern design

In Table 3-29, smaller vehicles in combination are assumed for deriving Case II widths than for deriving Case III widths because passing of stalled vehicles in the former is apt to be very infrequent. Moreover, full offtracking need not be assumed for both the stalled and the passing vehicles. Often the stalled vehicles will be adjacent to the inner edge of roadway, thereby providing additional clearance for the passing vehicle.

The design vehicles or combinations of different design vehicles used in determination of values given in Table 3-29 for the three traffic conditions, assuming full clearance for the design vehicles indicated, are as follows:

	Metric			U.S. Customary		
	Design Traffic Condition			Design Traffic Condition		
Case	A	B	C	A	B	C
I	P	SU-9	WB-12	P	SU-30	WB-40
II	P–P	P–SU-9	SU-9–SU-9	P–P	P–SU-30	SU-30–SU-30
III	P–SU-9	SU-9–SU-9	WB-12–WB-12	P–SU-30	SU-30–SU-30	WB-40–WB-40

The combination of letters, such as P–SU-9 [SU-30] for Case II, means that the design width in this example allows a P design vehicle to pass a stalled SU-9 [SU-30] design truck or vice versa. In assuming full clearance, allowance was made for the values of C as discussed.

In negotiating roadways designed for smaller vehicles, larger vehicles will have less clearance, will need to use lower speeds, and will demand more caution and skill by drivers, but there is a limit to the size of vehicles that can be operated on these narrower roadways. The larger vehicles that can be operated on turning roadways of the widths shown in Table 3-29, but with partial clearance varying from about one-half the total values of *C*, as discussed for the sharper curves, to nearly full values for the flatter curves, are as follows:

	Metric			U.S. Customary		
	Design Traffic Condition			Design Traffic Condition		
Case	A	B	C	A	B	C
I	WB-12	WB-12	WB-19	WB-40	WB-40	WB-62
II	P–SU-9	P–WB-12	SU-9–WB-12	P–SU-30	P–WB-40	SU-30–WB-40
III	SU-9–WB-12	WB-12–WB-12	WB-19–WB-19	SU-30–WB-40	WB-40–WB-40	WB-62–WB-62

The widths in Table 3-29 are subject to some modification with respect to the treatment at the edge, as shown at the bottom of the table. An occasional large vehicle can pass another on a roadway designed for small vehicles if there is space and stability outside the roadway and there is no barrier to prevent its occasional use. In such cases, the width can be a little narrower than the tabulated dimension. Vertical curbs along the edge of a lane give drivers a sense of restriction, and occasional large vehicles have no additional space in which to maneuver; for this reason, such roadways should be a little wider than the values shown in Table 3-29.

When there is an adjacent stabilized shoulder, the widths for Cases II and III and, under certain conditions, for Case I on roadways on tangent may be reduced. Case II values may be reduced by the additional width of stabilized shoulder but not below the widths for Case I. Similarly, Case III values may be reduced by 0.6 m [2 ft]. Case I values for the individual design vehicles are recommended minimums and further reduction is not in order, even with a usable shoulder, except on tangents. When vertical curbs are used on both sides, the tabulated widths should be increased by 0.6 m [2 ft] for Cases I and III, or by 0.3 m [1 ft] for Case II, because stalled vehicles are passed at low speed. Where such a curb is on only one side of the

basis for design. Usually, the design year is about 20 years into the future but may range from the current year to 20 years depending on the nature of the improvement.

Levels of Service

Procedures for estimating the traffic operational performance of particular highway designs are presented in the *Highway Capacity Manual* (HCM) (*16*), which also presents a thorough discussion of the level-of-service concept. Although the choice of an appropriate design level of service is left to the highway agency, designers should strive to provide the highest level of service practical and consistent with anticipated conditions. Level-of-service characteristics are discussed in Section 2.4.5 and summarized in Table 2-4. Since local roads primarily provide access to adjoining properties, a level of service D is acceptable.

Alignment

Alignment between control points should be designed to be as favorable as practical, consistent with the environmental impact, topography, terrain, design traffic volume, and the amount of reasonably obtainable right-of-way. Sudden changes between curves of widely different radii or between long tangents and sharp curves should be avoided. Where practical, the design should include passing opportunities. Where crest vertical curves and horizontal curves occur together, greater-than-minimum sight distance should be provided so that the horizontal curves are visible to approaching drivers.

Grades

Suggested maximum grades for local rural roads are shown in Table 5-2 as a function of type of terrain and design speed.

Table 5-2. Maximum Grades for Local Rural Roads

Type of Terrain	Metric									U.S. Customary								
	Maximum Grade (%) for Specified Design Speed (km/h)									Maximum Grade (%) for Specified Design Speed (mph)								
	20	30	40	50	60	70	80	90	100	15	20	25	30	40	45	50	55	60
Level	9	8	7	7	7	7	6	6	5	9	8	7	7	7	7	6	6	5
Rolling	12	11	11	10	10	9	8	7	6	12	11	11	10	10	9	8	7	6
Mountainous	17	16	15	14	13	12	10	10	—	17	16	15	14	13	12	10	10	—

Cross Slope

Traveled-way cross slope should be adequate to provide proper drainage. Normally, cross slopes range from 1.5 to 2 percent for paved surfaces and 2 to 6 percent for unpaved surfaces.

For unpaved surfaces, such as stabilized or loose gravel, and for stabilized earth surfaces, a 3 percent cross slope is desirable. For further information on pavement and shoulder cross slopes, see Sections 4.2.2 and 4.4.3.

Superelevation

For rural roads with paved surfaces, superelevation should be not more than 12 percent except where snow and ice conditions prevail, in which case the superelevation should be not more than 8 percent. For unpaved roads, superelevation should be not more than 12 percent.

KELLARD SESSIONS
CONSULTING, P.C.

John Kellard, P.E.
David Sessions, RLA, AICP

MEMORANDUM

TO: Chairman Jerome Kerner, AIA and
Members of Lewisboro Planning Board

CC: Ciorsdan Conran
Judson Siebert, Esq.

FROM: Jan K. Johannessen, AICP
Joseph M. Cermele, P.E., CFM
David J. Sessions, RLA, AICP
Town Consulting Professionals

DATE: May 11, 2016

RE: Wilder Balter Partners, Inc.
New York State Route 22
Sheet 5, Block 10776, Lot 19, 20 & 21

Project Description

The subject property is located on the east side of NYS Route 22, proximate to the I-684 northbound exit ramp, consists of three (3) tax parcels totaling ±35.4 acres of land, and is located within the CC-20 Zoning District. The subject property consists of vacant undeveloped land, is predominately wooded, and portions of the property contain wetlands that are jurisdictional to the Town of Lewisboro and the New York State Department of Environmental Conservation (NYSDEC). The applicant is proposing a 46-unit multifamily development comprised of five (5) buildings, a clubhouse, recreational facilities, an access road off of NYS Route 22, parking for 92 vehicles, and stormwater management facilities. The project will be served by on-site potable wells and a septic system. The development is proposed to comply with Westchester County's fair and affordable housing programs and policies and 45 of the units are proposed to be Affordable Affirmatively Furthering Fair Housing (AFFH) Units.

SEQRA

The proposed action has been preliminarily identified as an Unlisted Action under the State Environmental Quality Review Act (SEQRA) and a coordinated review is underway. The Planning Board is serving as SEQRA Lead Agency.

Required Approvals and Referrals

1. Site Plan Approval, a Wetland Activity Permit and a Town Stormwater Permit is required from the Planning Board.

2. A public hearing is required to be held on the Wetland Activity Permit; it is recommended that the public hearing include the proposed Site Plan and Town Stormwater Permit applications.

3. An area variance (parking) is required from the Zoning Board of Appeals.

4. The proposed septic system and potable water well(s) require approval from the Westchester County Department of Health (WCDH).

5. The proposed septic system and Stormwater Pollution Prevention Plan (SWPPP) require approval from the New York City Department of Environmental Protection (NYCDEP).

6. An Article 24 Freshwater Wetland Permit is required from the New York State Department of Environmental Conservation (NYSDEC).

7. Coverage under the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (GP-0-15-002) will be required.

8. Coverage under the NYSDEC General Permit for discharging 1,000 gpd or more of treated sanitary sewage to groundwater is required (GP-0-15-001).

9. Access onto NYS Route 22 requires approval from the New York State Department of Transportation (NYSDOT).

10. The application has been referred to the Westchester County Planning Board in accordance with Section 239-m of the General Municipal Law. The Westchester County Planning Board has provided a comment letter to the Planning Board.

Part 1 EAF Review – Complete

Part 2 EAF Review

The applicant has submitted Part 2 of the EAF for the Planning Board's review. As Part 2 of the EAF is the responsibility of the Lead Agency, it is recommended that the Planning Board review each EAF response and amend the document, as necessary. At its request and on behalf of the Planning Board, this office has modified the Part 2 EAF submitted by the applicant to be consistent with Parts 1 and 3 of the EAF, the submitted Site Development Plans and supplemental reports, and comments provided by the Planning Board. The modified draft Part 2 EAF is attached to this memorandum for the Planning Board's review and consideration.

Part 3 EAF Review

The majority of the Part 3 EAF comments outlined within our April 14, 2016 memorandum have been addressed; however, the Part 3 EAF must evaluate all items marked "Moderate to Large Impact May Occur" within the Part 2 EAF, as ultimately adopted by the Planning Board. To the extent that the Part 3 EAF does not specifically address one (1) or more of these potential impacts, the applicant should revise the Part 3 EAF accordingly. The Planning Board should continue to evaluate the EAF and its supplemental reports for completeness and sufficiency.

Planning and Engineering Comments

The applicant's submission focused on addressing the comments pertaining to the EAF and, therefore, did not include revised site development plans. As the project progresses, the applicant must address the Planning and Engineering Comments outlined in our April 14, 2016 memorandum.

In order to expedite the review of subsequent submissions, the applicant should provide annotated responses to each of the comments outlined herein.

Documents & Plans Reviewed:

- Letter, prepared by Tim Miller Associates, Inc., dated April 28, 2016
- Expanded Environmental Assessment Report, prepared by Tim Miller Associates, Inc., dated (last revised) April 28, 2016
- Letter, prepared by Wilder Balter Partners, Inc., dated October 20, 2015
- Preliminary Stormwater Pollution Prevention Plan, prepared by Insite Engineering, dated February 2, 2016
- Preliminary Engineer's Report, prepared by Insite Engineering, dated February 2, 2016
- Preliminary Wastewater System Report, prepared by Insite Engineering, dated February 2, 2016

- Hydrogeologic Assessment, prepared by Leggette, Brashears & Graham, Inc., dated (last revised) April 26, 2016
- Traffic Impact Study, prepared by Maser Consulting, P.A., dated April 22, 2016
- Blasting Mitigation Plan Narrative
- Wetland Buffer Restoration and Enhancement Plan, prepared by Tim Miller Associates, Inc, dated March 14, 2016
- Wetland/Watercourse Delineation Report and Assessment Narrative

JKJ/JMC/DJS/dc

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Agency Use Only [If applicable]

Project :

Date :

Full Environmental Assessment Form
Part 2 - Identification of Potential Project Impacts

Part 2 is to be completed by the lead agency. Part 2 is designed to help the lead agency inventory all potential resources that could be affected by a proposed project or action. We recognize that the lead agency's reviewer(s) will not necessarily be environmental professionals. So, the questions are designed to walk a reviewer through the assessment process by providing a series of questions that can be answered using the information found in Part 1. To further assist the lead agency in completing Part 2, the form identifies the most relevant questions in Part 1 that will provide the information needed to answer the Part 2 question. When Part 2 is completed, the lead agency will have identified the relevant environmental areas that may be impacted by the proposed activity.

If the lead agency is a state agency **and** the action is in any Coastal Area, complete the Coastal Assessment Form before proceeding with this assessment.

Tips for completing Part 2:

- Review all of the information provided in Part 1.
- Review any application, maps, supporting materials and the Full EAF Workbook.
- Answer each of the 18 questions in Part 2.
- If you answer **"Yes"** to a numbered question, please complete all the questions that follow in that section.
- If you answer **"No"** to a numbered question, move on to the next numbered question.
- Check appropriate column to indicate the anticipated size of the impact.
- Proposed projects that would exceed a numeric threshold contained in a question should result in the reviewing agency checking the box "Moderate to large impact may occur."
- The reviewer is not expected to be an expert in environmental analysis.
- If you are not sure or undecided about the size of an impact, it may help to review the sub-questions for the general question and consult the workbook.
- When answering a question consider all components of the proposed activity, that is, the "whole action".
- Consider the possibility for long-term and cumulative impacts as well as direct impacts.
- Answer the question in a reasonable manner considering the scale and context of the project.

1. Impact on Land
Proposed action may involve construction on, or physical alteration of, the land surface of the proposed site. (See Part 1. D.1)
If "Yes", answer questions a - j. If "No", move on to Section 2.

☐ NO ☑ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may involve construction on land where depth to water table is less than 3 feet.	E2d	☑	☐
b. The proposed action may involve construction on slopes of 15% or greater.	E2f	☑	☒
c. The proposed action may involve construction on land where bedrock is exposed, or generally within 5 feet of existing ground surface.	E2a	☑	☒
d. The proposed action may involve the excavation and removal of more than 1,000 tons of natural material.	D2a	☑	☒
e. The proposed action may involve construction that continues for more than one year or in multiple phases.	D1e	☑	☒
f. The proposed action may result in increased erosion, whether from physical disturbance or vegetation removal (including from treatment by herbicides).	D2e, D2q	☑	☒
g. The proposed action is, or may be, located within a Coastal Erosion hazard area.	B1i	☑	☐
h. Other impacts: Construction will involve temporary disturbance of approximately*9.0 acres prior to stabilization of engineered slopes and permanent landscaped areas.		☑	☒

*Minimum of 10 acres anticipated.

2. Impact on Geological Features

The proposed action may result in the modification or destruction of, or inhibit access to, any unique or unusual land forms on the site (e.g., cliffs, dunes, minerals, fossils, caves). (See Part 1. E.2.g) ☑ NO ☐ YES

If "Yes", answer questions a - c. If "No", move on to Section 3.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Identify the specific land form(s) attached: _____	E2g	☐	☐
b. The proposed action may affect or is adjacent to a geological feature listed as a registered National Natural Landmark. Specific feature: _____	E3c	☐	☐
c. Other impacts: _____		☐	☐

3. Impacts on Surface Water

The proposed action may affect one or more wetlands or other surface water bodies (e.g., streams, rivers, ponds or lakes). (See Part 1. D.2, E.2.h) ☐ NO ☑ YES

If "Yes", answer questions a - l. If "No", move on to Section 4.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may create a new water body.	D2b, D1h	☑	☐
b. The proposed action may result in an increase or decrease of over 10% or more than a 10 acre increase or decrease in the surface area of any body of water.	D2b	☑	☐
c. The proposed action may involve dredging more than 100 cubic yards of material from a wetland or water body.	D2a	☑	☐
d. The proposed action may involve construction within or adjoining a freshwater or tidal wetland, or in the bed or banks of any other water body.	E2h	☑	☒
e. The proposed action may create turbidity in a waterbody, either from upland erosion, runoff or by disturbing bottom sediments.	D2a, D2h	☑	☒
f. The proposed action may include construction of one or more intake(s) for withdrawal of water from surface water.	D2c	☑	☐
g. The proposed action may include construction of one or more outfall(s) for discharge of wastewater to surface water(s).	D2d	☑	☐
h. The proposed action may cause soil erosion, or otherwise create a source of stormwater discharge that may lead to siltation or other degradation of receiving water bodies.	D2e	☑	☒
i. The proposed action may affect the water quality of any water bodies within or downstream of the site of the proposed action.	E2h	☑	☒
j. The proposed action may involve the application of pesticides or herbicides in or around any water body.	D2q, E2h	☑	☒
k. The proposed action may require the construction of new, or expansion of existing, wastewater treatment facilities.	D1a, D2d	☑	☒

l. Other impacts: Construction will disturb Town and NYSDEC wetland buffer. A wetland mitigation plan will be prepared.		☑	☒

4. Impact on groundwater

The proposed action may result in new or additional use of ground water, or may have the potential to introduce contaminants to ground water or an aquifer. (See Part 1. D.2.a, D.2.c, D.2.d, D.2.p, D.2.q, D.2.t) ☐ NO ☑ YES

If "Yes", answer questions a - h. If "No", move on to Section 5.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may require new water supply wells, or create additional demand on supplies from existing water supply wells.	D2c	☑	☒
b. Water supply demand from the proposed action may exceed safe and sustainable withdrawal capacity rate of the local supply or aquifer. Cite Source:	D2c	☑	☒
c. The proposed action may allow or result in residential uses in areas without water and sewer services.	D1a, D2c	☑	☒
d. The proposed action may include or require wastewater discharged to groundwater.	D2d, E2l	☑	☒
e. The proposed action may result in the construction of water supply wells in locations where groundwater is, or is suspected to be, contaminated.	D2c, E1f, E1g, E1h	☑	☐
f. The proposed action may require the bulk storage of petroleum or chemical products over ground water or an aquifer.	D2p, E2l	☑	☒
g. The proposed action may involve the commercial application of pesticides within 100 feet of potable drinking water or irrigation sources.	E2h, D2q, E2l, D2c	☑	☒
h. Other impacts: ~~A Hydrogeologic Assessment was completed for the site.~~		~~☑~~	☐

5. Impact on Flooding

The proposed action may result in development on lands subject to flooding. (See Part 1. E.2) ~~☑~~ NO ☒ YES

If "Yes", answer questions a - g. If "No", move on to Section 6.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in development in a designated floodway.	E2i	☒	☐
b. The proposed action may result in development within a 100 year floodplain.	E2j	☒	☐
c. The proposed action may result in development within a 500 year floodplain.	E2k	☒	☐
d. The proposed action may result in, or require, modification of existing drainage patterns.	D2b, D2e	☐	☒
e. The proposed action may change flood water flows that contribute to flooding.	D2b, E2i, E2j, E2k	☒	☐
f. If there is a dam located on the site of the proposed action, is the dam in need of repair, or upgrade?	E1e	☒	☐

g. Other impacts: _____		☐	☐

6. Impacts on Air

The proposed action may include a state regulated air emission source. (See Part 1. D.2.f., D,2,h, D.2.g) ☑ NO ☐ YES

If "Yes", answer questions a - f. If "No", move on to Section 7.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. If the proposed action requires federal or state air emission permits, the action may also emit one or more greenhouse gases at or above the following levels:			
i. More than 1000 tons/year of carbon dioxide (CO_2)	D2g	☐	☐
ii. More than 3.5 tons/year of nitrous oxide (N_2O)	D2g	☐	☐
iii. More than 1000 tons/year of carbon equivalent of perfluorocarbons (PFCs)	D2g	☐	☐
iv. More than .045 tons/year of sulfur hexafluoride (SF_6)	D2g	☐	☐
v. More than 1000 tons/year of carbon dioxide equivalent of hydrochloroflourocarbons (HFCs) emissions	D2g	☐	☐
vi. 43 tons/year or more of methane	D2h	☐	☐
b. The proposed action may generate 10 tons/year or more of any one designated hazardous air pollutant, or 25 tons/year or more of any combination of such hazardous air pollutants.	D2g	☐	☐
c. The proposed action may require a state air registration, or may produce an emissions rate of total contaminants that may exceed 5 lbs. per hour, or may include a heat source capable of producing more than 10 million BTU's per hour.	D2f, D2g	☐	☐
d. The proposed action may reach 50% of any of the thresholds in "a" through "c", above.	D2g	☐	☐
e. The proposed action may result in the combustion or thermal treatment of more than 1 ton of refuse per hour.	D2s	☐	☐
f. Other impacts: _____		☐	☐

7. Impact on Plants and Animals

The proposed action may result in a loss of flora or fauna. (See Part 1. E.2. m.-q.) ☐ NO ☑ YES

If "Yes", answer questions a - j. If "No", move on to Section 8.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may cause reduction in population or loss of individuals of any threatened or endangered species, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2o	☑	☐
b. The proposed action may result in a reduction or degradation of any habitat used by any rare, threatened or endangered species, as listed by New York State or the federal government.	E2o	☑	☐
c. The proposed action may cause reduction in population, or loss of individuals, of any species of special concern or conservation need, as listed by New York State or the Federal government, that use the site, or are found on, over, or near the site.	E2p	☑	☐
d. The proposed action may result in a reduction or degradation of any habitat used by any species of special concern and conservation need, as listed by New York State or the Federal government.	E2p	☑	☐

e. The proposed action may diminish the capacity of a registered National Natural Landmark to support the biological community it was established to protect.	E3c	☑	☐
f. The proposed action may result in the removal of, or ground disturbance in, any portion of a designated significant natural community. Source: _____	E2n	☑	☒
g. The proposed action may substantially interfere with nesting/breeding, foraging, or over-wintering habitat for the predominant species that occupy or use the project site.	E2m	☑	☒
h. The proposed action requires the conversion of more than 10 acres of forest, grassland or any other regionally or locally important habitat. Habitat type & information source: _____	E1b	☑	☒
i. Proposed action (commercial, industrial or recreational projects, only) involves use of herbicides or pesticides.	D2q	☑	☐
j. Other impacts: The project will result in the loss of approximately *9.0 acres of forest and conversion to developed and landscaped areas.		☑	☒

*Minimum of 10 acres anticipated.

8. Impact on Agricultural Resources

The proposed action may impact agricultural resources. (See Part 1. E.3.a. and b.) ☑ NO ☐ YES

If "Yes", answer questions a - h. If "No", move on to Section 9.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may impact soil classified within soil group 1 through 4 of the NYS Land Classification System.	E2c, E3b	☐	☐
b. The proposed action may sever, cross or otherwise limit access to agricultural land (includes cropland, hayfields, pasture, vineyard, orchard, etc).	E1a, Elb	☐	☐
c. The proposed action may result in the excavation or compaction of the soil profile of active agricultural land.	E3b	☐	☐
d. The proposed action may irreversibly convert agricultural land to non-agricultural uses, either more than 2.5 acres if located in an Agricultural District, or more than 10 acres if not within an Agricultural District.	E1b, E3a	☐	☐
e. The proposed action may disrupt or prevent installation of an agricultural land management system.	El a, E1b	☐	☐
f. The proposed action may result, directly or indirectly, in increased development potential or pressure on farmland.	C2c, C3, D2c, D2d	☐	☐
g. The proposed project is not consistent with the adopted municipal Farmland Protection Plan.	C2c	☐	☐
h. Other impacts: _____		☐	☐

9. Impact on Aesthetic Resources

The land use of the proposed action are obviously different from, or are in sharp contrast to, current land use patterns between the proposed project and a scenic or aesthetic resource. (Part 1. E.1.a, E.1.b, E.3.h.)

☐ NO ☑ YES

If "Yes", answer questions a - g. If "No", go to Section 10.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Proposed action may be visible from any officially designated federal, state, or local scenic or aesthetic resource.	E3h	☑	☒ *
b. The proposed action may result in the obstruction, elimination or significant screening of one or more officially designated scenic views.	E3h, C2b	☑	☒ *
c. The proposed action may be visible from publicly accessible vantage points: i. Seasonally (e.g., screened by summer foliage, but visible during other seasons) ii. Year round	E3h	☑ ☑	☒ ☒
d. The situation or activity in which viewers are engaged while viewing the proposed action is: i. Routine travel by residents, including travel to and from work ii. Recreational or tourism based activities	E3h E2q, E1c	☑ ☑	☒ ☐
e. The proposed action may cause a diminishment of the public enjoyment and appreciation of the designated aesthetic resource.	E3h	☑	☒ *
f. There are similar projects visible within the following distance of the proposed project: 0-1/2 mile ½ -3 mile 3-5 mile 5+ mile	D1a, E1a, D1f, D1g	☑	☐
g. Other impacts: ~~The development will alter the views for drivers on NYS Route 22, but change will not be significant.~~ 684 & Exit 6A		~~☑~~	☒

10. Impact on Historic and Archeological Resources

The proposed action may occur in or adjacent to a historic or archaeological resource. (Part 1. E.3.e, f. and g.)

☑ NO ☐ YES

If "Yes", answer questions a - e. If "No", go to Section 11.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may occur wholly or partially within, or substantially contiguous to, any buildings, 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.	E3e	☐	☐
b. The proposed action may occur wholly or partially within, or substantially contiguous to, an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory.	E3f	☐	☐
c. The proposed action may occur wholly or partially within, or substantially contiguous to, an archaeological site not included on the NY SHPO inventory. Source: _____	E3g	☐	☐

* Requires further discussion with Planning Board

d. Other impacts: _____		☐	☐
e. If any of the above (a-d) are answered "Moderate to large impact may occur", continue with the following questions to help support conclusions in Part 3:			
i. The proposed action may result in the destruction or alteration of all or part of the site or property.	E3e, E3g, E3f	☐	☐
ii. The proposed action may result in the alteration of the property's setting or integrity.	E3e, E3f, E3g, E1a, E1b	☐	☐
iii. The proposed action may result in the introduction of visual elements which are out of character with the site or property, or may alter its setting.	E3e, E3f, E3g, E3h, C2, C3	☐	☐

11. Impact on Open Space and Recreation

The proposed action may result in a loss of recreational opportunities or a reduction of an open space resource as designated in any adopted municipal open space plan.
(See Part 1. C.2.c, E.1.c., E.2.q.)
If "Yes", answer questions a - e. If "No", go to Section 12.

☑ NO ☒ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in an impairment of natural functions, or "ecosystem services", provided by an undeveloped area, including but not limited to stormwater storage, nutrient cycling, wildlife habitat.	D2e, E1b E2h, E2m, E2o, E2n, E2p	☐	☒
b. The proposed action may result in the loss of a current or future recreational resource.	C2a, E1c, C2c, E2q	☐	☐
c. The proposed action may eliminate open space or recreational resource in an area with few such resources.	C2a, C2c E1c, E2q	☒	☐
d. The proposed action may result in loss of an area now used informally by the community as an open space resource.	C2c, E1c	☐	☐ *
e. Other impacts: _____		☐	☐

12. Impact on Critical Environmental Areas

The proposed action may be located within or adjacent to a critical environmental area (CEA). (See Part 1. E.3.d)
If "Yes", answer questions a - c. If "No", go to Section 13.

☑ NO ☐ YES

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may result in a reduction in the quantity of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
b. The proposed action may result in a reduction in the quality of the resource or characteristic which was the basis for designation of the CEA.	E3d	☐	☐
c. Other impacts: _____		☐	☐

* Requires further discussion with Planning Board

13. Impact on Transportation
The proposed action may result in a change to existing transportation systems. (See Part 1. D.2.j) ☐ NO ☑ YES
If "Yes", answer questions a - f. If "No", go to Section 14.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. Projected traffic increase may exceed capacity of existing road network.	D2j	☑	☒
b. The proposed action may result in the construction of paved parking area for 500 or more vehicles.	D2j	☑	☐
c. The proposed action will degrade existing transit access.	D2j	☑	☐
d. The proposed action will degrade existing pedestrian or bicycle accommodations.	D2j	☑	☐
e. The proposed action may alter the present pattern of movement of people or goods.	D2j	☑	☒
f. Other impacts: ~~A traffic study has been completed for the development demonstrating no significant impact.~~		~~☑~~	☐

14. Impact on Energy
The proposed action may cause an increase in the use of any form of energy. (See Part 1. D.2.k) ☐ NO ☑ YES
If "Yes", answer questions a - e. If "No", go to Section 15.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action will require a new, or an upgrade to an existing, substation.	D2k	☑	☐
b. The proposed action will require the creation or extension of an energy transmission or supply system to serve more than 50 single or two-family residences or to serve a commercial or industrial use.	D1f, D1q, D2k	☑	☐
c. The proposed action may utilize more than 2,500 MWhrs per year of electricity.	D2k	☑	☐
d. The proposed action may involve heating and/or cooling of more than 100,000 square feet of building area when completed.	D1g	☑	☐
e. Other Impacts: The residential development will result in ~~minor~~ additional demands for energy.		☑	☒

15. Impact on Noise, Odor, and Light
The proposed action may result in an increase in noise, odors, or outdoor lighting. (See Part 1. D.2.m., n., and o.) ☐ NO ☑ YES
If "Yes", answer questions a - f. If "No", go to Section 16.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may produce sound above noise levels established by local regulation.	D2m	☑	☐
b. The proposed action may result in blasting within 1,500 feet of any residence, hospital, school, licensed day care center, or nursing home.	D2m, E1d	☑	☒
c. The proposed action may result in routine odors for more than one hour per day.	D2o	☑	☐

d. The proposed action may result in light shining onto adjoining properties.	D2n	☑	☒
e. The proposed action may result in lighting creating sky-glow brighter than existing area conditions.	D2n, E1a	☑	☒
f. Other impacts: _____		☐	☐

16. Impact on Human Health

The proposed action may have an impact on human health from exposure to new or existing sources of contaminants. (See Part 1.D.2.q., E.1. d. f. g. and h.) ☑ NO ☐ YES

If "Yes", answer questions a - m. If "No", go to Section 17.

	Relevant Part I Question(s)	No,or small impact may cccur	Moderate to large impact may occur
a. The proposed action is located within 1500 feet of a school, hospital, licensed day care center, group home, nursing home or retirement community.	E1d	☐	☐
b. The site of the proposed action is currently undergoing remediation.	E1g, E1h	☐	☐
c. There is a completed emergency spill remediation, or a completed environmental site remediation on, or adjacent to, the site of the proposed action.	E1g, E1h	☐	☐
d. The site of the action is subject to an institutional control limiting the use of the property (e.g., easement or deed restriction).	E1g, E1h	☐	☐
e. The proposed action may affect institutional control measures that were put in place to ensure that the site remains protective of the environment and human health.	E1g, E1h	☐	☐
f. The proposed action has adequate control measures in place to ensure that future generation, treatment and/or disposal of hazardous wastes will be protective of the environment and human health.	D2t	☐	☐
g. The proposed action involves construction or modification of a solid waste management facility.	D2q, E1f	☐	☐
h. The proposed action may result in the unearthing of solid or hazardous waste.	D2q, E1f	☐	☐
i. The proposed action may result in an increase in the rate of disposal, or processing, of solid waste.	D2r, D2s	☐	☐
j. The proposed action may result in excavation or other disturbance within 2000 feet of a site used for the disposal of solid or hazardous waste.	E1f, E1g E1h	☐	☐
k. The proposed action may result in the migration of explosive gases from a landfill site to adjacent off site structures.	E1f, E1g	☐	☐
l. The proposed action may result in the release of contaminated leachate from the project site.	D2s, E1f, D2r	☐	☐
m. Other impacts: _____			

17. Consistency with Community Plans

The proposed action is not consistent with adopted land use plans. (See Part 1. C.1, C.2. and C.3.) ☐ NO ☑ YES

If "Yes", answer questions a - h. If "No", go to Section 18.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action's land use components may be different from, or in sharp contrast to, current surrounding land use pattern(s).	C2, C3, D1a E1a, E1b	☑	☒
b. The proposed action will cause the permanent population of the city, town or village in which the project is located to grow by more than 5%.	C2	☑	☐
c. The proposed action is inconsistent with local land use plans or zoning regulations.	C2, C2, C3	☑	☐
d. The proposed action is inconsistent with any County plans, or other regional land use plans.	C2, C2	☑	☒ *
e. The proposed action may cause a change in the density of development that is not supported by existing infrastructure or is distant from existing infrastructure.	C3, D1c, D1d, D1f, D1d, Elb	☑	☒
f. The proposed action is located in an area characterized by low density development that will require new or expanded public infrastructure.	C4, D2c, D2d D2j	☑	☒ *
g. The proposed action may induce secondary development impacts (e.g., residential or commercial development not included in the proposed action)	C2a	☑	☐
h. Other: ~~The proposed action is consistent with Town and other land use plans. A zoning code variance is required for parking.~~		~~☑~~	☐

18. Consistency with Community Character

The proposed project is inconsistent with the existing community character. (See Part 1. C.2, C.3, D.2, E.3) ☐ NO ☑ YES

If "Yes", answer questions a - g. If "No", proceed to Part 3.

	Relevant Part I Question(s)	No, or small impact may occur	Moderate to large impact may occur
a. The proposed action may replace or eliminate existing facilities, structures, or areas of historic importance to the community.	E3e, E3f, E3g	☑	☐
b. The proposed action may create a demand for additional community services (e.g. schools, police and fire)	C4	☑	☒
c. The proposed action may displace affordable or low-income housing in an area where there is a shortage of such housing.	C2, C3, D1f D1g, E1a	☑	☐
d. The proposed action may interfere with the use or enjoyment of officially recognized or designated public resources.	C2, E3	☑	☐
e. The proposed action is inconsistent with the predominant architectural scale and character.	C2, C3	☑	☒
f. Proposed action is inconsistent with the character of the existing natural landscape.	C2, C3 E1a, E1b E2g, E2h	☑	☒
g. Other impacts: The proposed action will result in ~~minor~~ demand for additional community services.		☑	☒

PRINT FULL FORM

* Requires further discussion with the Planning Board

TIM
MILLER
ASSOCIATES, INC.
10 North Street, Cold Spring, New York 10516 *Phone (845) 265-4400* *Fax (845) 265-4418*

April 28, 2016

Town of Lewisboro Planning Board
Attn: Chairman Jerome Kerner
20 North Salem Road, Suite L/Lower Level
PO Box 725
Cross River, New York 10518

Re: **Application for Site Development Plan**
Proposed AFFH Multifamily Development
NYS Route 22, Tax map: Sheet 5, Block 10776, Lots 19, 20 & 21
Town of Lewisboro, New York

Dear Chairman Kerner and Members of the Planning Board:

Attached, please find nine (9) copies of revised Expanded Environmental Assessment Form (EAF) text and supplemental information in support of an application for site plan approval for the Wilder Balter Partners, Inc. proposed AFFH multi-family development.

The Expanded EAF has been revised and updated in response to the comments contained in the review Memorandum prepared by Kellard Sessions Consulting, P.C. dated April 14, 2016 and the additional requests for information and/or clarifications made by the various planning board members at the Board's April 19, 2016 meeting.

With this submission, we believe that we have addressed all of the EAF related comments made by your Board and planning consultant necessary to permit the Board to perform and complete its EAF Part 2 review and amend the document as the Board may deem appropriate. With the expanded EAF Part 3 submissions made to date, it is also our opinion that the applicant and its consultants have provided the comprehensive information, in both scope and substance, necessary to allow the Planning Board to make a determination of environmental significance at its next meeting on May 17, 2016.

We appreciate the time and consideration the Board has given this matter. Over the course of the last 6 months, we have worked with the Board and its planning consultants to improve the site plan and believe we have provided the information and studies necessary to permit the Board to fully consider and assess our application. We look forward to the Board's completion, as Lead Agency, of the important and required task of making a determination of environmental significance so that we can begin the detailed engineering work necessary to fully advance and develop the site plans in coordination with your Board and the other involved and interested agencies.

Responses to Part 3 EAF comments are described below.

1. Soils Topography and Geology, Table 3.1-1: The source information reference has been corrected.

2. Soils, Topography and Geology, Page 3.1-3: Proposed phasing is described. The project engineer has provided preliminary cut and fill estimates as requested.

3. Wetlands, Page 3.3-2: A wetland delineation report that includes information required under Section 217-7A(5) and (6) of the Town Wetlands Ordinance is provided as Appendix J.

4. Groundwater: Page 3.4-3: A statement has been added regarding the need for a pumping test and monitoring of existing off-site wells, per the comment 28. Additional information provided by LBG in the letter of March 29, 2016 has been incorporated. The Hydrogeologic Report has been updated accordingly (see Appendix E).

5. Ecology: Section 3.5: The section has been updated per the comment. Site specific flora and fauna surveys have been conducted with multiple date field surveys.

6. Aesthetic Resources, Section 3.6: Additional information has been provided as requested. Information includes additional information on the site sections, a new section from a view-point north of the site, and proposed building information, including photos and elevations.

7. Transportation: Additional information provided by Maser Consulting is summarized in the Section. The traffic report has been revised and is provided. See Appendix G.

8. Schools: Page 3.9-10: A letter from the Katonah-Lewisboro School District regarding the proposed development has been received by the applicant (see Appendix A – Correspondence).

9. Schools: Page 3.9-10. The section describes the determination of marginal costs to the School District. The number was derived by the applicant using the School District Budget (2015-2016) published costs for instruction and transportation.

10. General Comment: A revised Traffic Report and Hydrogeologic Report have been provided.

Comments received at the Planning Board meeting on April 19, 2016 regarding the EAF document are addressed as follows:

1. The closest taxi service to the proposed development is Aero-taxi in Goldens Bridge approximately 0.7 miles from the site (see page 1-1).

2. The Goldens Bridge Post Office is 0.8 miles from the development site (see page 1-1).

3. Page 3.9-4: The reference to the warehouse use has been clarified as Kings Lumber in Goldens Bridge.

4. Pages 1-1, 3.9-1: The statement that the development is in the hamlet of Goldens Bridge has been clarified.

5. Page 1-1: The statement that Lewisboro has "substantially unmet "fair share obligation" to create 239 units of affordable housing" is based upon the County's Affordable Housing Allocation Plan (2000-2015).

6. Page 3.10-1: The reference to Grant's Corners has been removed.

Please advise if you have any questions or require additional information.

Sincerely,

Jon P. Dahlgren
Senior Geologist
TIM MILLER ASSOCIATES, INC.

Cc: J. Bainlardi, Wilder Balter Partners, Inc.
J. Contelmo, Insite Engineering
Enclosure

EXPANDED ENVIRONMENTAL ASSESSMENT

SEQR Full Environmental Assessment Form (EAF) and Supplemental Studies

Application of Wilder Balter Partners, Inc.
for Site Plan, Wetlands Permit and Stormwater Permit

WB Lewisboro Affordable Housing
Route 22
Town of Lewisboro, New York

Applicant:
WILDER BALTER PARTNERS, INC.
570 Taxter Road, Elmsford, New York, 10523
Contact: John Bainlardi
(914) 347-3333

Project Engineer:
INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place,Carmel, New York 10512
Contact: Jeff Contelmo, PE
(845) 225-9690

Environmental Planner:
TIM MILLER ASSOCIATES, INC.
10 North Street, Cold Spring, New York 10516
Contact: Frederick P. Wells, RLA
(845) 265-4400

Revised April 28, 2016

Application of Wilder Balter Partners, Inc.
for Site Plan Approval, Wetlands Permit, Stormwater Permit
to Town of Lewisboro Planning Board

EXPANDED ENVIRONMENTAL ASSESSMENT

SEQR Full Environmental Assessment Form (EAF) and Supplemental Studies

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1.0 INTRODUCTION

Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4 acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The development site is located south of the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station. The location of the site is shown on Figures 2-1 and 2-2. The site is currently vacant wooded land and is not served by public water or sewer service.

This Expanded Environmental Assessment Form (EAF) evaluates a focused scope of potential environmental impacts for the Proposed Action, based upon the evaluation process and questions found in the Full Environmental Assessment Form, and "EAF Workbooks" prepared by the NYSDEC.

This Expanded EAF is prepared in accordance with Section 8-0101 of the New York State Environmental Conservation Law and the regulations promulgated by the New York State Department of Environmental Conservation (NYSDEC) thereunder, which appear at 6NYCRR Part 617 (known as the New York State Environmental Quality Review Act, SEQRA, or SEQR).

This document includes the EAF form Parts 1, 2 and supplemental information as Part 3. Part 1 of the EAF Form provides project details and its environmental setting. Part 2 of the EAF Form identifies potential project impacts by category, such as surface water, aesthetic resources and transportation. The Part 3 evaluations provided in this Expanded EAF provide background information, technical studies and analyses of the potential impact categories as may result from the development. Part 3 also identifies the mitigation measures that are proposed (integral to the project design) to minimize or avoid the identified impacts as relates to the magnitude and importance of potential impacts. The Part 3 sections and evaluations are further described below.

Development Purpose, Needs, and Benefits

The proposed development will provide needed AFFH affordable rental apartments in a portion of the Town where multi-family residential is permitted and in close proximity to mass transit and major transportation routes. The proposed affordable rental community will add to the Town's housing inventory and fill a specific housing need.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.
.
The design of the proposed buildings will be an attractive addition to the neighborhood, set back from NYS Route 22 with appropriately scaled architecture and landscaping that will be compatible with its residential and mixed-use setting. The size, scale and architecture for the proposed residential buildings will be similar to a recently completed and well received multi-family affordable development in North Salem, New York named Bridleside, which community serves as the Applicant's vision for the proposed action.

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The Applicant's proposal intends to accomplish the following:

- To provide affordable rental housing opportunities in an area of the Town zoned for and well suited to support such land use, especially its location in close proximity to mass transportation and shopping opportunities (Goldens Bridge).
- To create an attractive residential development that takes advantage of the recent changes in the Town Code to allow multi-family housing in the CC-20 zoning district, and a development that is compatible with the character of the community and the long-range plans for the area.
- To minimize the environmental impacts of the development by locating the development on the western portion of the property on the most level and suitable areas of the property. The eastern portion of the site (Parcel 40.2-2-5), is proposed to be permanently preserved through the use of restrictive covenants and/or conservation easements.

The Applicant, Wilder Balter Partners, Inc. is a leading developer of award winning new residential developments in the New York metropolitan area. WBP companies have built market rate and affordable communities throughout the Hudson Valley, in Connecticut and in Nassau and Suffolk counties in Long Island for 25 years. WB Residential Communities, Inc. (WBRES) is the property management affiliate of Wilder Balter Partners. This group successfully manages and oversees 32 WBP developed properties with more than 3,200 apartments located in New York, Connecticut and the US Virgin Islands.

Site Location and Environmental Setting

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The development site is located on the east side of NYS Route 22 and immediately east of Interstate 684. The site is located approximately three-quarters of a mile south of Route 138 and the Goldens Bridge Metro North train station. The subject property is bounded on the north and east by vacant land, to the south by low density residential properties and on the west by NYS Route 22. Interstate 684 lies directly west of NYS Route 22 and the highway parallels the Metro North rail line. The Croton Reservoir, part of the New York City water supply system, lies approximately 550 feet west of the site.

The development site is located approximately one mile from the Goldens Bridge train station (as measured from Building 2), and approximately 0.7 miles from the closest taxi service in Goldens Bridge. The Goldens Bridge Post office is approximately 0.8 miles north of the development site and is also located in Goldens Bridge.

Route 22 provides the only road frontage to the subject property. The site is comprised of three tax lots.

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The subject property is located within an area of low density residential development, undeveloped land and transportation uses, as shown in Figure 2-2 Aerial Photo. The land uses in the area are predominantly low density residential, although the western portion of the

property is located in the CC-20 Campus Commercial zoning district. This district is located along the Route 22 corridor, approximately three-quarters mile south of the Goldens Bridge Village Center.

The topographic setting of the property includes an east-west trending rocky hill which slopes towards lower elevations to the north, west, south and east. Elevations on the property range from 208 feet in the wetlands in the southwest portion of the site to 450 feet at the hilltop in the north central portion of the site. Steep slopes, consisting of slopes greater than 15 % are located on the slopes of the hill and many upland portions of the property. Steep slopes comprise approximately 67 percent of the subject site (23.8 acres).

The property is currently undeveloped with the exception of two water supply wells that were installed in the 1980's as part of an earlier proposed development that was never completed. The site is primarily wooded with second growth successional forest on upland portions of the site and mapped wetlands are located in the southeastern portion of the property. A small intermittent stream runs through the middle of the wetland. The wetlands are regulated by the Town of Lewisboro, the NYSDEC (Wetland F-29) and by the U.S. Army Corps of Engineers. Based upon mapping by the NYSDEC the property is not part of or adjacent to any designated significant natural community or state listed Critical Environmental Area.

The site is serviced by electric, telephone and cable service from private utilities on Route 22. No municipal water or sewer services are available to the site.

Development Description, Proposed Uses, and Layout

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The proposed residential development will include five (5) multi-family buildings serviced by a single 24-foot wide access driveway. Development is concentrated in upland areas in the western portion of the property. Each of the five buildings will contain between 8 and 10 residential units and one building (Building 2) will contain a community space (clubhouse). The layout plan is provided as Figure 2-3 and full sized drawings are attached. The buildings were located to minimize grading and site disturbance to the extent necessary on a property that has varied topography and areas of exposed bedrock. The buildings, driveways and parking areas were situated to make use of more level portions of the site and minimize disturbance to slopes.

Parking and driveway access for emergency vehicles is provided at the front of all buildings and additional parking is provided at the west side of Buildings 2 and 3, to take advantage of the difference in elevations from the front to the back of the Buildings. A traffic circle with a full radius of 65 feet is provided between Buildings 4 and 5 to allow for emergency vehicles to circulate through the development. In addition to the community space in Building 2, a children's play area is proposed between Buildings 2 and 3 and a multi-purpose sports court is provided next to Building 5. Sidewalks will link all of the buildings, parking and play areas.

Given the natural slopes on the property, development will require retaining walls south of Buildings 3 and 4 and between Buildings 4 and 5. Two stormwater management basins are located south of the residential development, at lower elevations where stormwater naturally flows. A graded driveway will be provided for maintenance access to the stormwater management basins.

The residential development will be fully landscaped with vegetation that is common to the northeast.

[illegible]

The subject property lies in two Town zoning districts: the two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district. The proposed residential development is proposed for the two westerly lots in the CC-20 district, while the eastern lot is proposed to be permanently preserved through the use of restrictive covenants and/or conservation easements. A portion of the community septic system will need to be constructed on the easterly lot (R-4A district), but no structures or impervious surface. The proposed action will include a lot consolidation to result in a single tax lot for the entire property, replacing the three existing lots.

The site plans developed for this affordable housing application show and tabulate the various zoning requirements of the CC-20 and R-4A districts applicable to the property, including the new reference to the provisions for multi-family dwellings which are found in the R-MF requirements.

Multi-family dwellings are a permitted use in the CC-20 district, subject to the requirements of Section 220-26, Multifamily Residence District (R-MF), of the Zoning Code. The dimension and bulk zoning requirements of the R-MF district replace those of the underlying CC-20 district. The proposed plan meets all of the dimension and bulk requirements of the R-MF district, with the exception of parking.

The Applicant is proposing a total of 92 parking spaces for this facility, whereas 124 spaces are required by zoning based on the proposed bedroom count. The Applicant is requesting a parking variance from the Zoning Board of Appeals, based upon the actual parking usage at similar projects developed and managed by the Applicant.

The Applicant proposes to permanently preserve at least 17 acres of the site through the use of restrictive covenants and/or conservation easements. This preserved area will be located substantially on the R-4A zoned parcel and provide a permanent buffer and open space resource for the benefit of the development's residents and surrounding properties.

[illegible]

The Town Master Plan outlines policies and goals formally adopted by the Town of Lewisboro in 1985[1] as a guide for land use and future development in the Town. In its Plan, the Town identified considerations for preservation of open space resources as well as for development that are generally applicable to the subject proposal today. The Plan does not identify site-specific consistency criteria, but it was intended to provide overall guidance on the local scale for land planning decisions.

The 1985 Town Master Plan speaks of a vision for land use in the I-684/Route 22 corridor that would provide for development of campus commercial land use that would also incorporate the preservation of open space. Campus commercial development was envisioned and planned for in the area bordering Route 22 including the subject site and paved the way for the subsequent rezoning to CC-20. As stated in the Master Plan relative to campus commercial facilities,

[1] Accessed on the Town's website 1/21/16.

adequate buffering between such use and adjacent residential areas would allow the two different types of land use to coexist, and reduce impacts to the natural environment resulting from development.

The Town's Master Plan cites general design principles to guide future public and private development in the Town to support the goals and objectives of the Town. These recommendations refer to landscape buffering of buildings and parking areas, minimization of disturbance on steep slopes where potential for erosion needs to be addressed, and provisions to minimize adverse visual impact on Town character and neighboring uses.

The proposed plan will comply with the requirements of the Town's Zoning, with the exception of a parking variance. The site plan will incorporate various conventional slope protection and wetland protection measures that will minimize the potential for soil erosion and surface water impacts. The plan also will incorporate tree preservation measures (particularly by minimizing the overall area of site disturbance) and proposed landscape plantings that will minimize visual intrusion and create an asset to the community. Moreover, the site plan will preserve a significant area located outside of the limits of disturbance in permanent open space.

The proposed development plan addresses the Town's design principles relative to environmental protection and visual consistency, in the applicant's opinion. The proposed site plan has been laid out such that the buildings and other site features will be substantially surrounded by permanently preserved, wooded open spaces and will not be visually prominent at any time of year. In addition to the proposed landscape plan, natural topographic conditions render the development area of the site largely obscured from view from most offsite locations thereby avoiding potential impact on community character.

d t d M g t

The proposed development will be exclusively used for residential purposes. The Applicant proposes an affordable AFFH development with 45 rental units and a single caretakers unit (46 units total). The rental apartments will meet the requirements of the Westchester County Fair and Affordable Housing Implementation Plan (2000). While the development will be funded utilizing programs provided by Westchester County and NYSHCR, the development will be developed, built, marketed, owned and operated by Wilder Balter Partners, Inc.

The development will include a mix of one, two and three bedroom units as follows:

1 BR – 14 Units
2 BR – 28 Units (including caretakers units)
3 BR – 4 Units

The units will range will in size from approximately 842 square feet (1-BR unit), 1,025 square feet (2-BR unit) and 1,285 square feet (3-BR unit).

The development is proposed as a fair and affordable community subject to maximum income requirements. The units will be available to residents whose household incomes do not exceed 60% of the Area Median Income (AMI), based on family size, as established by the Department of Housing and Urban Development (HUD) on an annual basis. Nine of the units (20 percent) will be set aside for households at or below 50% of the AMI. In 2015, the area median income in Westchester County was established at $105,700 for a 4 person household. Therefore, for a family of 4, 60% of the AMI would be $63,420 and 50% would be $52,850. Further information

on income eligibility, marketing and building occupancy is provided in Section 3.9 Community Facilities and Services and in the January 6, 1016 letter from Wilder Balter Partners, Inc. to the Planning Board (see Appendix A – Correspondence).

The apartments will be marketed by Wilder Balter Partners, Inc. together with a non-profit partner (expected to be the Housing Action Council) to households meeting the income eligibility requirements. Marketing will comply with the Westchester County Affirmative Fair Housing Marketing Plan. A typical application is provided in Appendix A (see January 6, 2016 Wilder Balter Partners, Inc. letter). Applicants will be selected for an interview by public lottery. Interviews will be conducted by trained and experienced management staff. In addition to income and asset information, all applicants will be required to pass established credit and criminal screening processes.

Further information regarding anticipated community demographics is provided in Section 3.9 – Community Facilities and Services. Information provided in the demographics and community services discussion is based, in part, on a recently completed and fully occupied affordable rental community in North Salem managed by Wilder Balter Partners, Inc. named Bridleside at North Salem.

r g tor t r M g t

A preliminary stormwater management plan for the proposed development has been prepared by the project engineer, Insite Engineering, Surveying, & landscape Architecture, P.C. The plan includes a stormwater pollution prevention plan report, or SWPPP and relevant engineering drawings. A copy of the preliminary SWPPP is provided in Appendix B.

The SWPPP is required to meet the regulatory requirements of the Town of Lewisboro, the NYSDEC and the New York City Department of Environmental Conservation (NYCDEP). Once the SWPPP is approved in final form (as part of the final site plan approval after the conclusion of the SEQR process), the document will govern all activities associated with site disturbance for construction and all permanent drainage features required to comply with applicable stormwater management regulations. Section 3.2 provides further description of the proposed stormwater management system.

The site plans call for a stormwater collection system to collect and direct stormwater from developed impervious surface to a single stormwater management practice, given the use of an infiltration practice for treatment. Therefore, the stormwater design consists of a dry pretreatment extended detention basin followed by discharge to an infiltration area (see Drawing SP-2 Conceptual Grading Plan).

The SWPPP also provides for erosion and sediment control during construction and on-going maintenance for stormwater management facilities.

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The development site is not located in an area served by municipal water and sewer service. Water service will be provided by a new community water system supplied by on-site wells and wastewater will be treated by a new community on-site septic system. These systems are being designed by the project engineer, Insite Engineering, Surveying & landscape Architecture, P.C.

The engineer has developed preliminary water and sewer reports for the residential development and they are attached in Appendix C and D. The community water and sewer systems will be designed and constructed in accordance with the standards and subject to the approval of the Westchester County Department of Health (WCDOH) and New York State Department of Environmental Conservation (NYSDEC).

Water demand for the development has been estimated in the Water Facilities Report to be 9,020 gallons per day (gpd) based upon bedroom count. Average daily flow is estimated to be 6 gpm, with peak hourly flow estimated at 60 gpm. Each building will be equipped with sprinklers and the combined peak flow from domestic and fire sprinkler demand will be used to design the water system.

Water will be supplied from two existing wells, but an additional 1 to 2 wells will be required (3 to 4 wells total) to meet the NYSDEC requirements for maximum day demand with the best well out of service. Water supply for the development was evaluated by Leggette Brashears & Graham (see Water Supply Report – Appendix E). Further discussion of groundwater supply is provided in Section 3.4 Groundwater.

The community water system will include on-site water treatment facilities and an estimated 15,000 gallon storage tank.

Wastewater design flow for the residential development is based upon bedroom count and is estimated at 9,020 gallons per day (gpd). Preliminary soil testing for the Subsurface Treatment System (SSTS) areas have been completed by Insite. Suitable soils for the SSTS areas have been identified in the southwestern, northern and eastern portion of the site. Based on the site constraints, preliminary testing and initial assessment indicate that the on-site soils can accommodate a SSTS to support a wastewater design flow of up to 9,020 gpd. The final SSTS capacity will be based on witnessed soil testing with the WCDOH and NYCDEP and the final bedroom count for the development.

Construction

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The duration of the construction is anticipated to be approximately 16 months, beginning in Spring 2017. The residential development will be constructed as one continuous project. Construction activity will occur weekdays from 8:00 AM and Sunset, in conformance with the Town of Lewisboro regulations. No construction activity will occur between Sunset and 8:00 AM or on weekends or holidays.

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The site plan documents for permitting and construction will include detailed erosion and sedimentation control plans, details and notes designed in accordance with Town, NYSDEC and NYCDEP requirements for stormwater management. Erosion and sediment controls will include implementation and maintenance of temporary measures throughout the duration of the construction activities and installation of structural measures for the permanent stabilization of the site. Details of the proposed erosion and sediment controls are specified in the preliminary Stormwater Pollution Prevention Plan (SWPPP) (see Appendix B).

Site excavation will entail excavation and earth removal. Based upon observation and preliminary soil testing, it is anticipated that grading for construction will require rock hammering and blasting. A cut and fill analysis is being completed by the project engineer as the Site Plan is refined. The project engineer will endeavor to bring the earthwork as close to balance as possible in order to minimize import/export. Re-using the on-site rock as construction fill will require on-site rock processing by a rock crusher. Any required blasting and/or rock crushing will be done in compliance with all Town of Lewisboro and New York State regulations and requirements. A Blasting Permit from the Town of Lewisboro is required for the work.

A stabilized gravel construction access pad will be installed at the construction entrance point identified on the erosion control plans to limit soil transport onto the local roadways from trucks leaving the site. The SWPPP will specify measures to stabilize the steep slopes during and after construction and to divert clean runoff water away from the construction area.

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Construction material and staging areas will be maintained on the site. Areas for equipment staging and soil stockpiling within the site will need to be designated prior to commencement of construction activities. Erosion controls will be utilized around all areas selected for material storage and equipment staging. The construction equipment entrance will be stabilized with broken stone and perimeter silt fencing will be installed around all construction areas.

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Construction traffic will arrive at the beginning of the construction period, primarily consisting of trucks delivering equipment and building materials, and daily trips of construction workers. Large construction equipment will include bulldozers, graders, excavators and dump trucks. This equipment is typically brought to the site on tractor trailers and generally is kept at the site for the duration of site preparation activities.

While the construction activity is ongoing, construction materials will be brought in throughout the construction period. Trucks will travel to and from the site to transport construction materials.

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As described, the EAF Part 3 Evaluation provides information and analyses for those potential impact categories that are relevant to the proposed development. The Part 3 sections provide a description of existing conditions, potential impacts and proposed mitigation to avoid and/or minimize potential impacts.

3.1 Impact on Land (Soils, Topography, Geology)
The development will require grading and excavation for project construction. The project has been designed to minimize the limits and extent of grading. Mitigation measures including a Soil Erosion Control Plan are described in the section.

3.2 Impact on Surface Water
Site development, grading and soil erosion have the potential to impact on-site and off-site water quality. Mitigation measures including a Stormwater Pollution Prevention Plan (SWPPP) are described in the section.

3.3 Impact on Wetlands
The subject property contains a wetland regulated by the NYSDEC, the Town of Lewisboro and the US Army Corps of Engineers. The proposed Site Plan requires encroachment into the Town of Lewisboro and NYSDEC designated wetland buffer area (designated wetlands are avoided). Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. Mitigation measures including a wetlands mitigation plan are described.

3.4 Impact on Groundwater
The development site is not located in an area served by municipal water and therefore water service will be provided by a new community water system supplied by on-site wells. A hydrogeologic assessment for the property has been prepared and it is anticipated that on-site wells can meet the estimated water demand of 9,020 gallons per day (gpd), with no significant impact to the nearby private wells.

3.5 Impact on Ecology
The site is primarily wooded with second growth successional forest on upland portions of the site and a mapped wetland is located in the southeastern portion of the property. Grading for site development will alter approximately 9 acres of existing vegetation and habitat. An evaluation of existing vegetation and mitigation measures are provided.

3.6 Impact on Aesthetic Resources
The development will alter the view for drivers on the I-684 exit ramp and on a limited section of NYS Route 22. A visual analysis has been completed and mitigation measures are described. Mitigation will include building design elements such as building materials and colors.

3.7 Impact on Historic and Archeological Resources
On-site grading has the potential to impact archeological resources. Phase 1A and 1B Cultural Resources Surveys have been completed for the project area. The Phase 1B investigation involved soil test pits. Based upon the surveys, the development will have no impacts upon Historic and Archeological resources.

3.8 Impact on Transportation
The proposed development will result in approximately 43 new vehicle trips during the p.m. peak traffic hour. A traffic study has been completed and is described in the section. The development will not result in significant impacts to local traffic.

3.9 Impact on Community Facilities and Services
The new development will result in new demand for municipal services, including the addition of an estimated 17 school children to the Katonah-Lewisboro School District. The potential impacts to the Town of Lewisboro and the School District are evaluated.

3.10 Consistency with Community Character
The subject property lies in two Town zoning districts: the two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district. The proposed residential development is proposed for the two westerly lots in the CC-20 district, while the eastern lot is proposed to be permanently preserved through the use of restrictive covenants and/or conservation easements. A discussion is provided regarding the development's consistency with nearby existing land uses, the Town Zoning Code and the Master Plan.

Approvals, Reviews and Permits

Approvals, reviews and/or permits required for the implementation of this development are listed below by issuing agency. These agencies are called Involved Agencies under SEQRA, and have approval authority over one or more aspects of this application.

Site Plan, Wetlands Permit and Stormwater Permit
Town of Lewisboro Planning Board
20 North Salem Road
Cross River, NY 10518

Variances from Zoning Code
Town of Lewisboro Zoning Board of Appeals
20 North Salem Road
Cross River, NY 10518

Building Permit, Blasting Permit
Town of Lewisboro Building Department
20 North Salem Road
Cross River, NY 10518

Community Septic System, Community Water Supply
Westchester County Department of Health
145 Huguenot Street
New Rochelle, NY 10801

Community Septic System, SWPPP
NYC Department of Environmental Preservation
465 Columbus Avenue
Valhalla, NY 10595

SPDES General Permit for Stormwater, Wetland Permit
NYS Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, NY 12561

Highway Permit
NYS Department of Transportation
4 Burnett, Boulevard
Poughkeepsie, New York 12603

Development Funding
Westchester County Board of Legislators
148 Maritine Avenue
White Plains, New York 10601

Development Funding
New York State Homes & Community Renewal
641 Lexington Avenue
New York, New York 10022

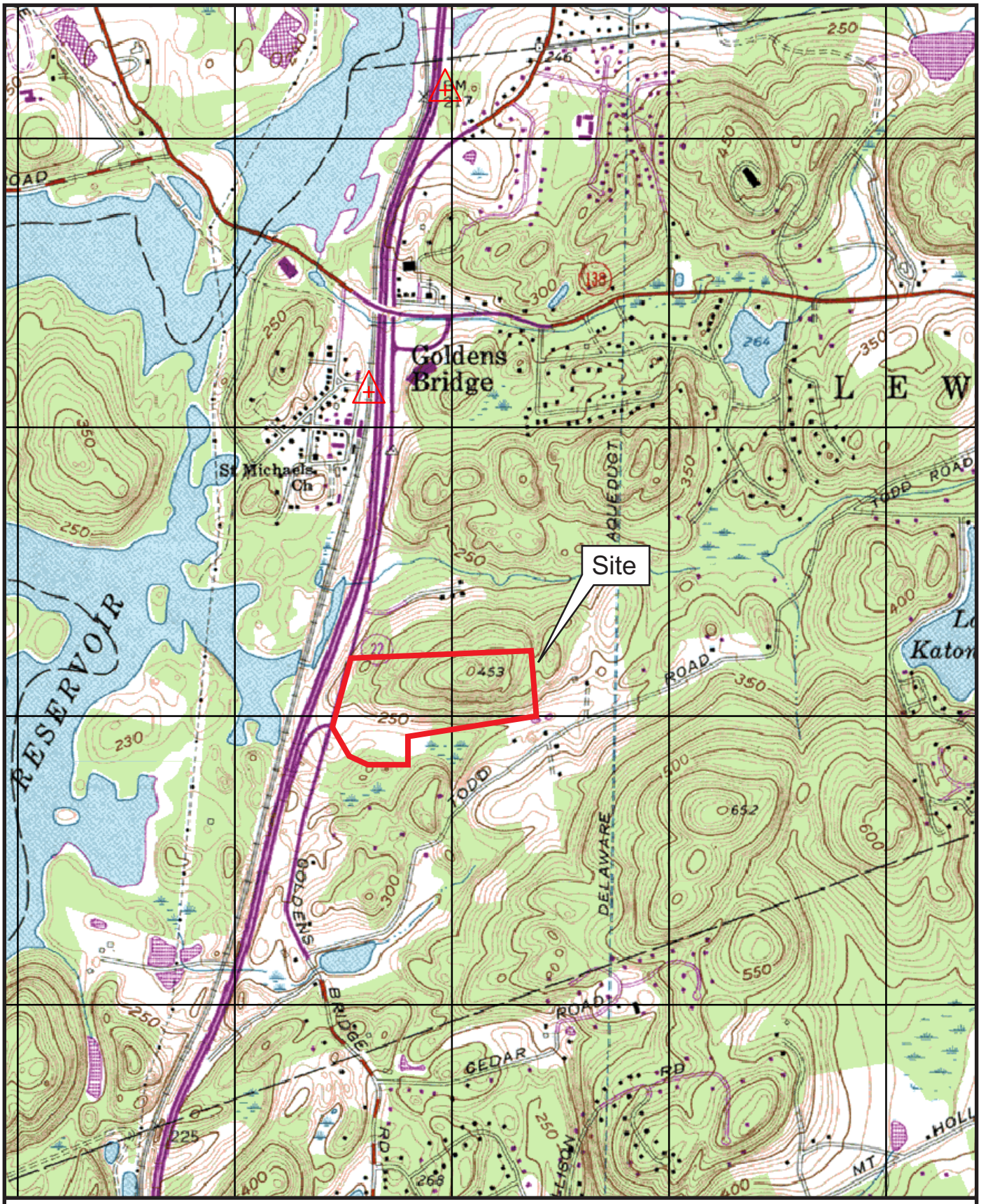

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Figure 1-1: Location Map
WB Lewisboro Affordable Housing
Town of Lewisboro, Westcheter County, New York
Base Map: Terrain Navigator
Approx. Scale: 2.6 inch = 1 mile

File 15038 02/02/16

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Figure 1-2: Aerial Photograph
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: NYS GIS Clearinghouse

File 15038 Fig 1-2 02/02/16

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

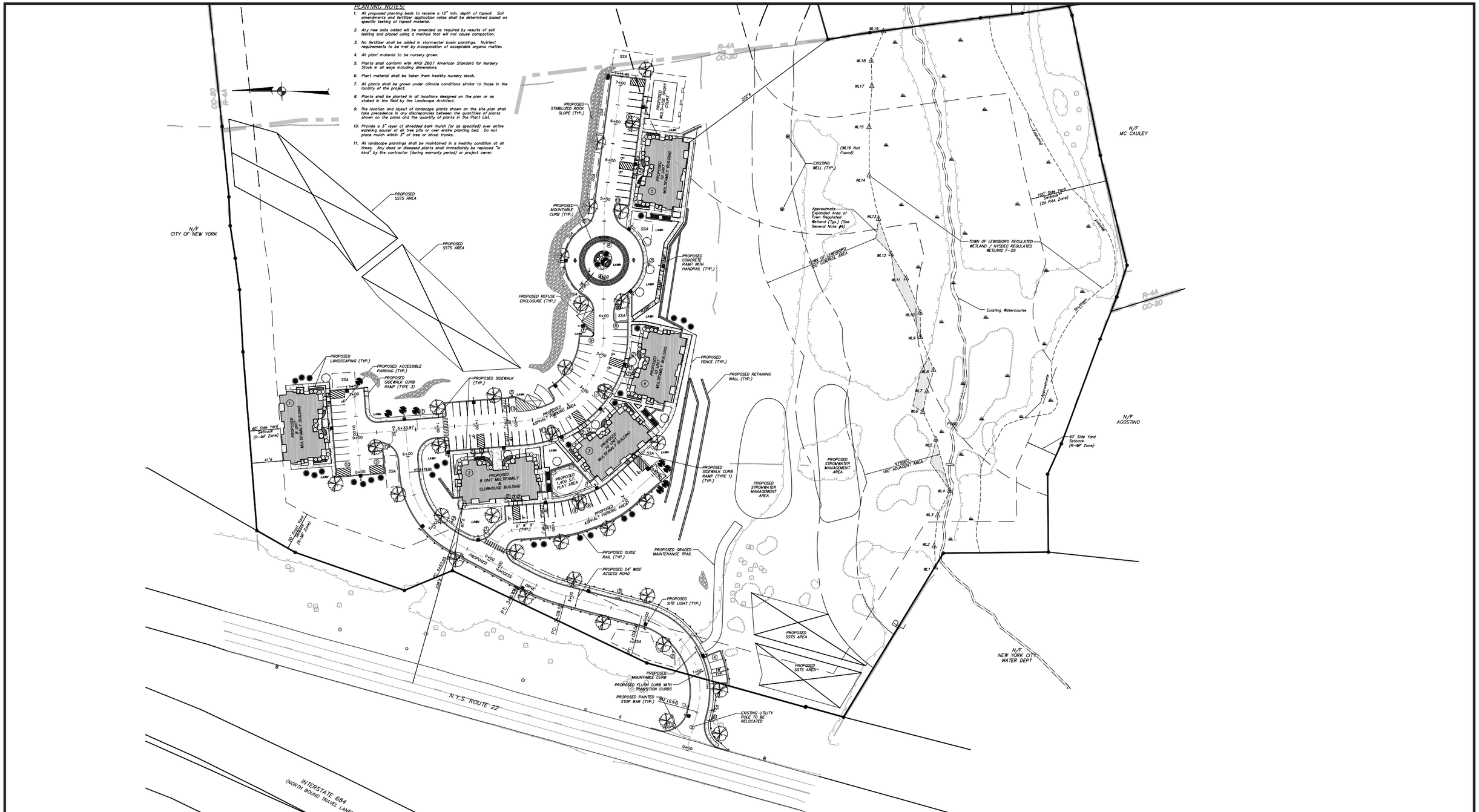

Figure 1-3: Proposed Site Plan
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Insite Engineering, Surveying & Landscape Architecture, P.C.

File 15038 Fig 1-3 03/31/16

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

3.1 SOILS, TOPOGRAPHY and GEOLOGY

Existing Conditions

The soils on the development site have been mapped by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) of Putnam and Westchester County, New York. Soils on the property are varied and are partly controlled by the varied topography and bedrock that is shallow or exposed in portions of the site.

The eight (8) soil types mapped on-site include: Chatfield-Hollis-Rock outcrop complex (CtC and CuD), Hollis-Rock outcrop (HrF), Palms muck (Pa), Riverhead loam (RhB), Leicester loam (LcB), Chatfield-Charlton Complex (CsD), Charlton Loam (ChD), and Charlton-Chatfield Complex (CrC). The location of these soils groups on the site is shown in Figure 3.1-1, Soils Map. A summary of on-site soils, soil characteristics, depth to groundwater and depth to bedrock is provided in Table 3.1-1.

The Chatfield-Hollis-Rock outcrop complex soils (CtC and CuD) are either hilly (CuD) or rolling (CtC) and are moderately to very deep and well drained to excessively drained. Slopes range from 3 to 15 percent (CtC) and 15 to 35 percent (CuD). Depth to water is more than 6 feet throughout the year, permeability is moderate to moderately rapid, and available water capacity is very low to moderate. The depth to bedrock is typically between 10 inches and 40 inches.

The Hollis-Rock outcrop complex soils (HrF) are shallow, very steep and well drained soils with areas of rock outcrop. Slopes will range from 35 to 60 percent. Depth to water is more than 6 feet throughout the year, permeability is moderate or moderately rapid, and the available water capacity is very low. The depth to bedrock is generally between 10 to 20 inches.

The Palms muck soils (Pa) are nearly level, very deep and very poorly drained soils and consists of 16 to 51 inches of organic material. Depth to water is typically 6 inches above to 12 inches below the surface from September through June, and up to 24 inches during dry periods. Permeability is moderately slow to moderately rapid with a high water capacity. Depth to bedrock is typically more than 60 inches.

The Riverhead loam (RhB) soils are gently sloping, very deep and well drained. Slopes range from 3 to 8 percent. Depth to water is more than 6 feet throughout the year. Permeability is moderately rapid with a moderate water capacity. The depth to bedrock is typically more than 60 inches.

The Leicester loam (LcB) soils are gently sloping, very deep and somewhat poorly drained. Slopes range from 3 to 8 percent. Depth to water is typically 1.5 feet in depth from November to May. Permeability is moderate or moderately rapid with a moderate water capacity. Depth the bedrock is greater than 60 inches.

The Chatfield-Charlton complex (CsD) is a soils unit that is very deep and well drained. Slopes range from 15 to 35 percent. Depth to water is generally more than 6 feet throughout the year. Permeability is moderate to moderately rapid with a low water capacity. Depth to bedrock is typically 20 to 40 inches.

The Charlton loam (ChD) soils are moderately steep, very deep and well drained. Slopes range from 15 to 25 percent. Depth to water is 6 feet below the ground surface throughout the year.

Permeability is moderate to moderately rapid with a moderate water capacity. Depth to bedrock is more than 60 inches.

The Charlton-Chatfield complex (CrC) consists of very deep and well drained soils. Slopes range from 2 to 15 percent. Depth to water is typically 6 feet throughout the year. Permeability is moderate to moderately rapid with a low to moderate water capacity. Depth to bedrock is greater than 60 inches.

Table 3-1-1
Soil Characteristics and Limitations

Soil Series	Hydrologic Group[1]	Permeability (in./hr.)	Erosion Factor K[2]	Depth to Bedrock (inches below the ground surface)	Depth to Water (feet below the ground surface)
Chatfield-Hollis-Rock outcrop (CtC & CuD)	B/C/D	0.6-6.0 (0-24" deep)	0.20-0.32	10-40 inches	>6 feet
Hollis-Rock outcrop (HrF)	C/D	0.6-6.0 (0-16" deep)	0.24-0.32	10-20 inches	>6 feet
Palms muck (Pa)	A/D	0.2-6.0 (0-48" deep) 0.2-2.0 (48-60" deep)	0.37	>60 inches	+1-1.0 feet (November thru May)
Riverhead loam (RhB)	B	2.0-6.0 (0-30" deep) >20 (30-60" deep)	0.17-.28	>60 inches	>6 feet
Leicester loam (LcB)	C	0.6-6.0 (0-26" deep) 0.6-20.0 (26-60" deep)	0.24-0.28	>60 inches	0-1.5 feet (November thru May)
Chatfield-Charlton complex (CsD)	B	0.6-6.0 (0-60" deep)	0.20-0.24	20-40 iches	>6 feet
Charlton loam (ChD)	B	0.6-6.0 (0-60" deep)	0.24	>60 inches	>6 feet
Charlton-Chatfield complex (CrC)	B	0.6-6.0 (0-60" deep)	0.20-0.24	>60 inches	>6 feet

[1] Hydrologic groups are used to estimate runoff from precipitation; they range from high infiltration (A) to low infiltration (D).
[2] Erosion Factor K indicates susceptibility to sheet and rill erosion by water measured in tons/acre/year. K values range from 0.05 to 0.69. Higher values indicate greater susceptibility
Source: Soil Survey of Westchester and Putnam Counties, New York, USDA SCS.

The site generally slopes from the north to the south towards the wetland in the southwestern portion or the property. Bedrock underlying the development site consists of Fordham Gneiss and Inwood Marble.

The project engineer has analyzed the existing slopes on the property. As shown in Drawing CM-1 Constraints and Net Lot Area Map, development is proposed on the more level, western

portions of the property. Existing slopes based upon slope categories are shown in Table 3.1-2 Existing Slopes.

Table 3.1-2 Existing Slopes	
0-15 %	11.6 acres
15-20%	4.1 acres
>20%	19.7 acres
Total	35.4 acres
Source: insite Engineering, Surveying, & Landscape Architecture, P.C. March 2016	

Potential Impacts

Grading is required to build the internal road network, install utilities, prepare areas for the proposed residential buildings and parking, and to create the stormwater management facilities located in the southern portion of the site. The conceptual grading is shown in Figure 3.1-2 - Conceptual Grading Plan. The site plan layout is designed to utilize the existing topography thereby minimizing the amount of earthwork necessary. Based on preliminary engineering estimates approximately 9 acres is proposed to be disturbed for the development. Exposed soils, especially in areas of steep slopes has the potential to result in soil erosion and sedimentation into areas of lower topography including wetland buffers and wetlands located in the southwest portion of the site.

Attached is Figure 3-3 showing the mass earthwork for the site improvements depicting the changes between finished grades and existing grades in the developed portion of the site. The earthwork calculations indicate a total cut of 24,000 cubic yards and a total fill of 33,000 cubic yards. This results in a net deficiency of 9,000 cubic yards. This deficiency is likely to be made up by the swell of material excavated and used onsite. As the project design progresses, opportunities to better balance earthwork will be considered as the goal is to balance the onsite earthwork.

Based upon analysis by the project engineer, the development will require some disturbance to slopes greater than 15 percent. Disturbance to slopes by category is provided in Table 3.1-3. Grading on steeper grades increases the potential for soil erosion, if stabilization and erosion control techniques are not properly implemented. An erosion and sediment control plan has been prepared to assure proper management of exposed soils and to minimize erosion, as further described below.

Table 3.1-3 Slope Disturbance	
0-15%	3.9 acres
15-20%	1.4 acres
>20%	3.6 acres
Total	8.9 acres
Source: Insite Engineering, Surveying, & Landscape Architecture, P.C. March 2016	

Bedrock outcrops are more prevalent in the eastern portion of the property and include a topographic ridge. Development on the eastern portion of the property is not proposed, with the possible exception of septic fields. The septic fields, as shown in the plans, would only occur on level portions of the site with sufficient soil cover above the bedrock. All major development is located on the western portion of the property. If bedrock is encountered during construction,

mechanical means (i.e. ripping, chipping) would be employed first to avoid any unnecessary blasting. Based upon observation and preliminary soil testing, it is anticipated that grading for construction will require rock hammering and blasting. In limited circumstances such as improper design or implementation, blasting has the potential to damage off-site foundations. The nearest existing off-site residences are located on Todd Road south of the property and approximately 600 feet from the proposed area of development. Blasting mitigation measures are described below.

A*voidance or Minimization of Potential Impacts* and Mitigation

Soils

As indicated, construction of the development will require the grading of approximately 9 acres of the 35.4 acre property or 25 percent. The project engineer has provided an estimate of the amount of grading required in each slope category, as shown in Table 3.1-3. As shown in the grading plan (Figure 3.1-2), grading on slopes greater than 15 percent is unavoidable, but has been minimized to the extent practical through the layout of the buildings, parking areas, driveways and septic fields.

Engineering measures such as proper design of foundations, subsurface drainage as needed, and proper designs of pavement subbase and excavated slopes can be utilized to overcome any construction limitations of the onsite soils.

A Soil Erosion and Sediment Control Plan (Drawing SP-3) has been prepared for the subject development, as part of the Stormwater Pollution Prevention Plan (SWPPP) to assure proper management of soils to minimize erosion, as further described below.

Blasting

A Blasting Permit will be obtained from the Town of Lewisboro for any required blasting, according to the Building Code (92-18 Blasting Operations).

Any necessary blasting would only be carried out in conformance with an approved Blasting Plan, specific to this project, developed between the Blasting Contractor and the Town. The Blasting Plan would include, but not be limited to the following:

- Determination of a radius of sensitive receptors to the blasting site.
- Notification of property owners within the radius of sensitive receptors. This notification would provide warning that blasting will occur and the dates it is planned to start and finish.
- Conducting pre-blasting inspections for buildings within the radius of sensitive receptors. This will be completed by the Blasting Contractor.
- Conducting post-blasting inspections of the buildings within the specified radius.
- Blasting would only be conducted during specified hours in conformance with the Town of Lewisboro Building Code (7:00 AM to 7:00 PM).

The Blasting Plan would be developed in full conformance with the Town of Lewisboro's Building Code and in accordance with New York State blasting law. A preliminary Blasting Plan is attached as Appendix H. The contractor's Blasting Contract would be based on site specific blasting requirements, and would be submitted to the Town for approval in advance of any site work activity. In accordance with the Town Building Code, the Building Inspector shall not issue

a permit for blasting unless the applicant has filed with the Building Inspector a certificate of insurance evidencing comprehensive general liability insurance.

Potential Erosion

The anticipated development includes the grading and disturbance of 9 forested acres. The area proposed to be disturbed is in the western portion of the site with more level topography minimizing disturbance to steep slopes to the extent practical. During construction, erosion control measures will be implemented to mitigate any steep slope disturbance that may occur.

A Soil Erosion and Sediment Control Plan (Drawing SP-3) has been prepared for the subject development, as part of the Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is provided in Appendix B. The Erosion and Sediment Control Plan shows the limits of disturbance and the placement of silt fencing in locations down-slope from areas of grading. The proposed stabilized construction entrance is also shown in the Plan. Drainage inlets with inlet protection will be installed in conjunction with the stormwater collection drain system.

[illegible]

The SWPPP has been designed to conform to applicable requirements of the New York State Department of Environmental Conservation (NYSDEC), SPDES General Permit GP-0-15-002. The Plan will be completed in accordance with New York State Department of Environmental Conservation best management practices ("BMPs") as further described below.

[illegible]

The principle objectives of the Soil Erosion and Sediment Control Plan include the following:

- divert clean surface water before it reaches the construction area;
- control erosion at its source with temporary and permanent soil protection measures;
- capture sediment-laden runoff from areas of disturbance and filter the runoff prior to discharge; and,
- decelerate and distribute storm water runoff through use of natural vegetative buffers or structural means before discharge to off-site areas.

These objectives will be achieved by utilizing a collective approach to managing runoff, i.e. Best Management Practices (BMPs). Prior to any disturbance, erosion and sediment control measures will be installed in accordance with the specifications of the Erosion Control Plan. The construction contractor will be required to install all sediment and erosion control measures and maintain them throughout the entire construction process.

Based upon the proposed erosion control measures being implemented, construction impacts will be minimized.

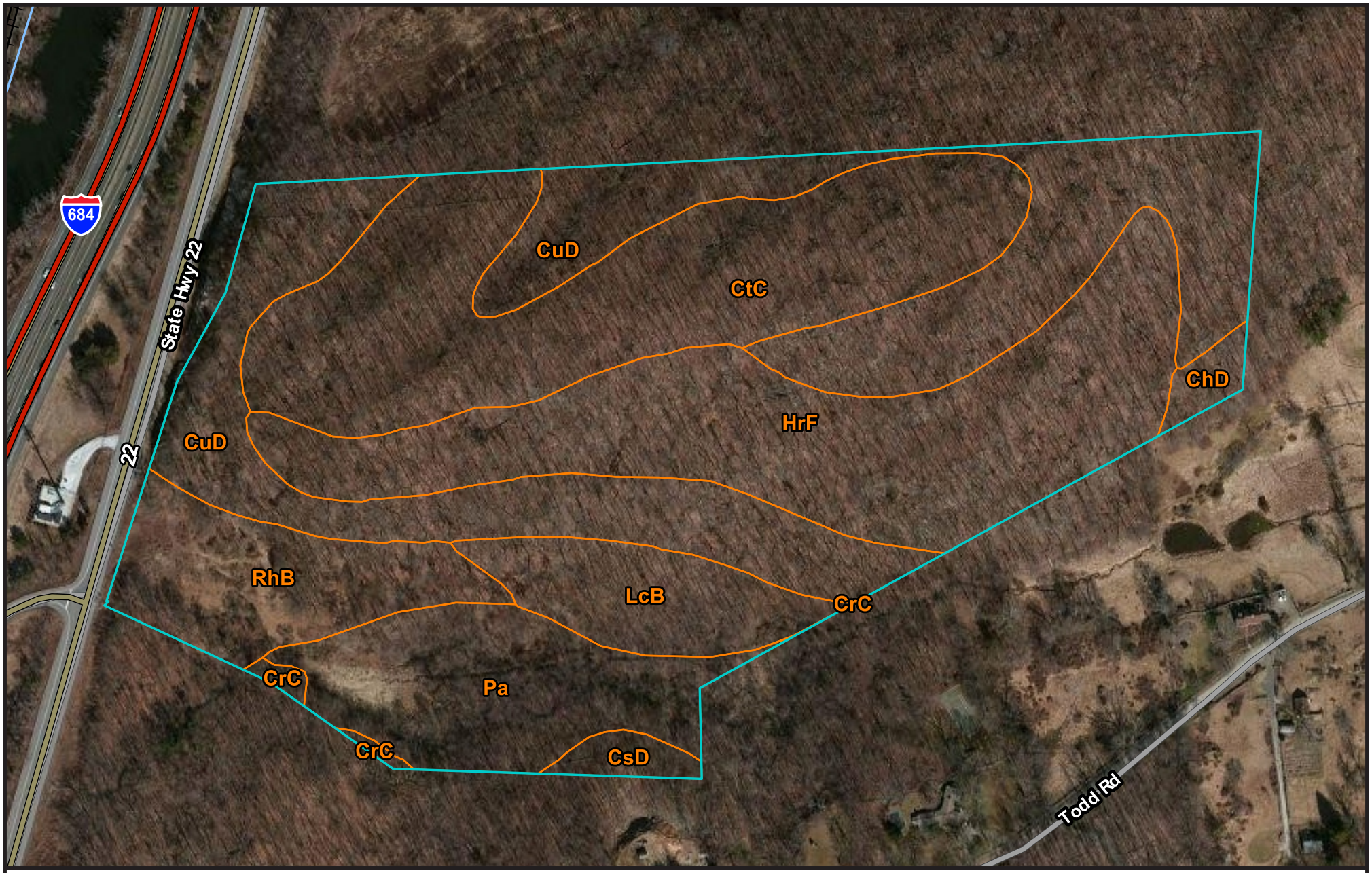

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Figure 3.1-1: Soils Map
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Natural Resources Conservation Service

File 15038 Fig 3.1-1 02/02/16

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

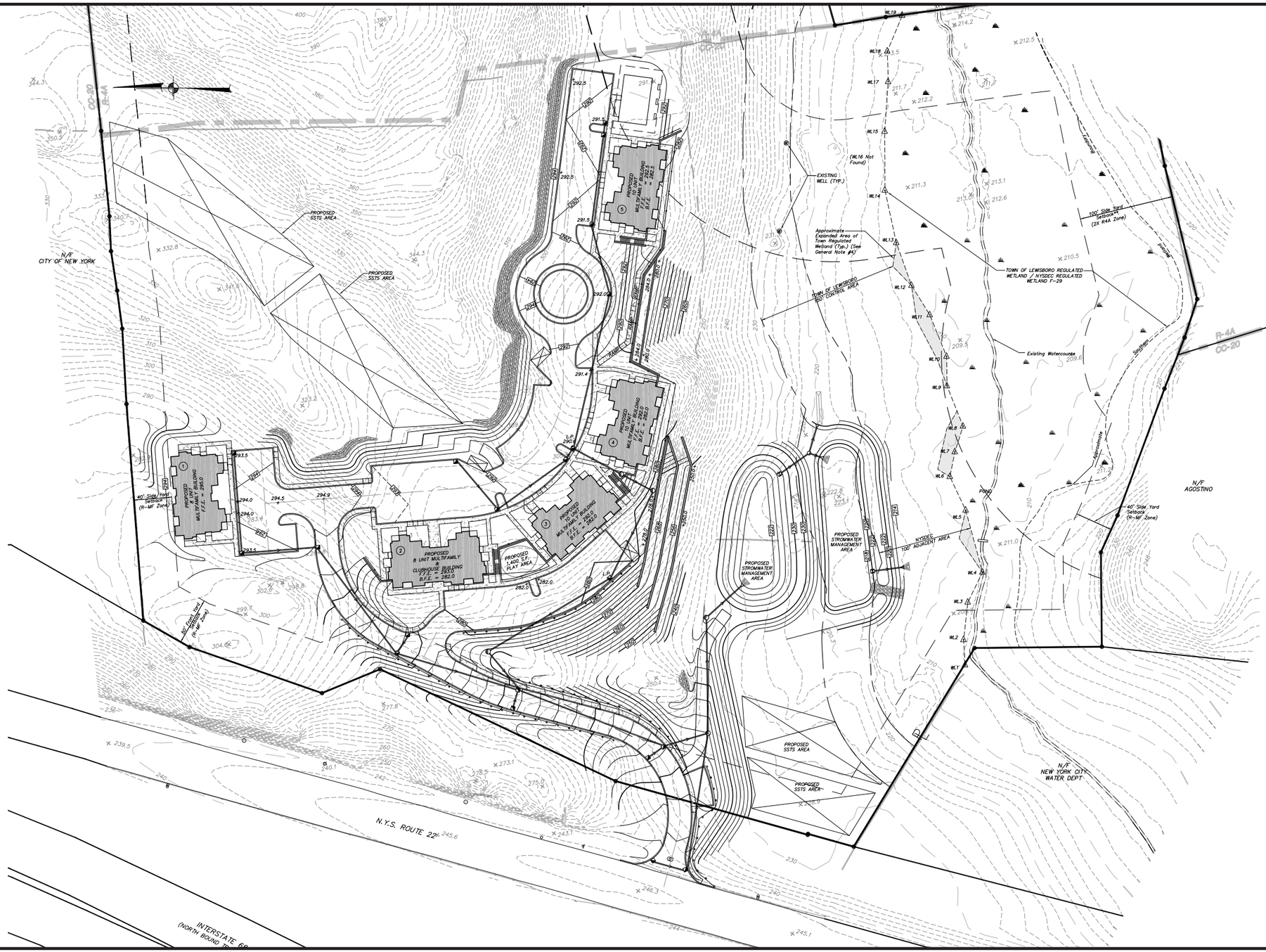

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Figure 3.1-2: Conceptual Grading Plan
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Insite Engineering, Surveying & Landscape Architecture, P.C.

File 15038 Fig 3.1-2 03/31/16

Tim Miller Associates, Inc.,10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

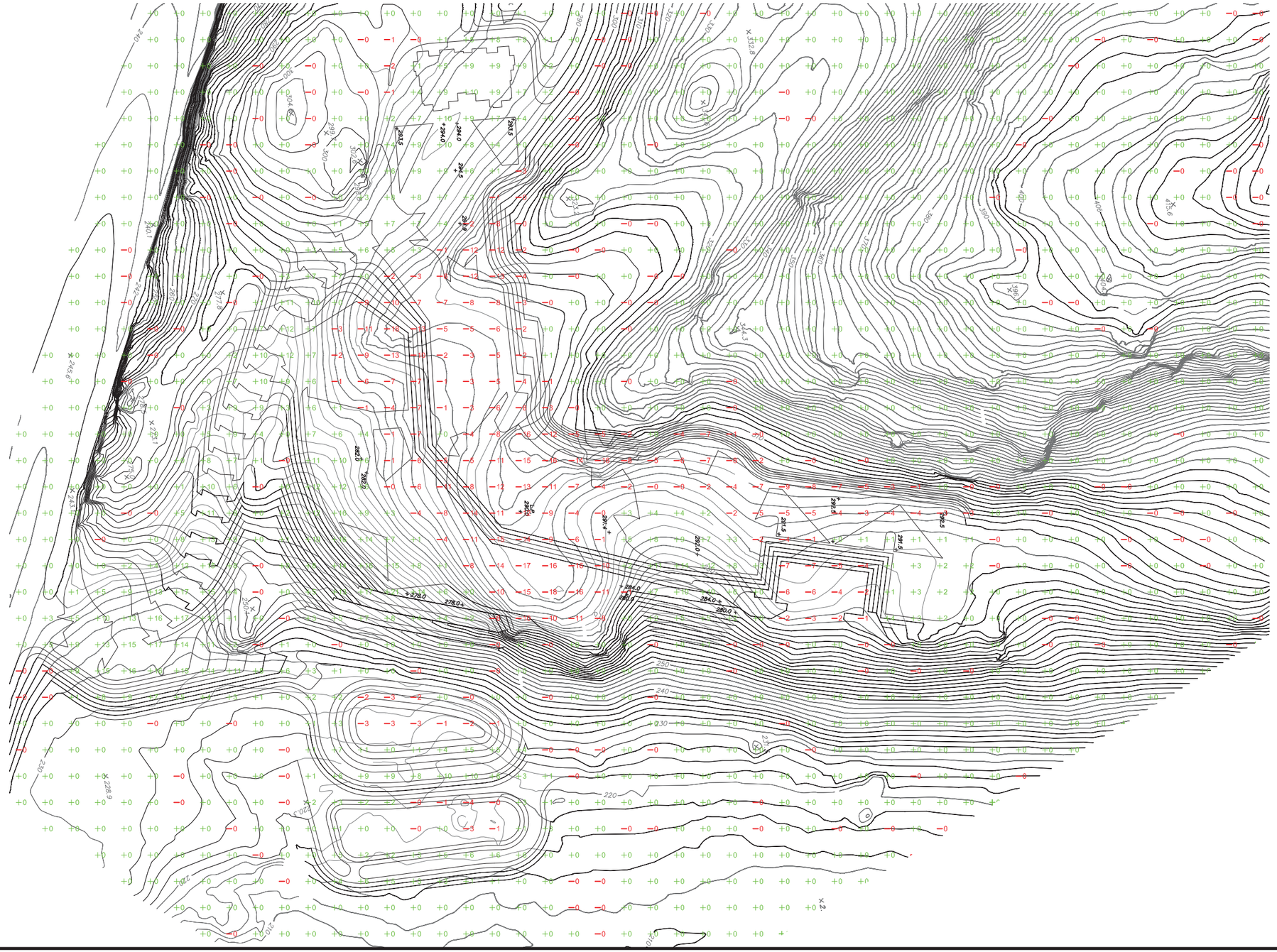

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Figure 3.1-3: Cut and Fill Map
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Insite Engineering, Surveying, & Landscape Architecture, P.C.

File 15038 Fig 3.1-3 TMA 04/27/16

3.2 IMPACT ON WATER RESOURCES

Existing Conditions

The development site is mostly wooded with second growth forest and an area of wetland located in the southwestern portion of the site. Topography on the property is varied and elevations range from about 210 feet to 450 feet. An east-west trending ridge is located in the northern portion of the property, and run-off generally drains from north to south towards the wetland. Surface water drainage flows by sheet flow from higher elevations to lower elevations on the site.

The wetland in the southwest portion of the property is mapped as a NYSDEC regulated wetland (F-29). This wetland is also regulated by the Town of Lewisboro and the US Army Corps of Engineers. According to the NYSDEC on-line database Wetland F-29 is 14.4 acres in size. Approximately 2.3 acres of this wetland is located on the subject property.

An intermittent watercourse is located in the mapped wetland and this watercourse flows towards the west under Route 22 and the eventually drains to the Muscoot Reservior located west of the property. A site walk with the New York City Department of Environmental Protection (NYCDEP) on March 9, 2016 confirmed that the on-site watercourse is not a reservoir stem. This intermittent watercourse is not designated on NYSDEC maps (NYSDEC Environmental Resource Mapper). The property contains no other streams, ponds or lakes.

The development site is in the Muscoot Watershed Basin. This Reservoir is located in the New York City East-of-Hudson Croton Watershed, where the Environmental Protection Agency (EPA) has established a Total Maximum Daily Load (TMDLs) for phosphorus. The burden for reducing current phosphorous loading to achieve the TMDL presently lies with the applicant, Town of Lewisboro and its regional partners. The program for phosphorous reduction has been established in the NYSDEC document entitled *roto t r h d h ho horou M o o t our t t o* (TMDL Implementation Plan) dated January 14, 2009.

Potential Impacts

Stormwater run-off during construction or post-development, has the potential to affect water quality for wetlands and water courses identified on-site and may potentially affect off-site water courses. During construction, stormwater run-off has the potential to transport sediment into wetlands and water courses. The development will result in the introduction of 2.4 acres of new impervious surface to the site. Post-development, stormwater may transport sediment, salt from winter deicing and oil and grease from parking lots and driveways. Effective stormwater management, both during and following the development, will minimize these potential stormwater impacts.

Avoidance or Minimization of Potential Impacts and Mitigation

In connection to the project plans, the project engineer has prepared a preliminary Stormwater Pollution Prevention Plan (SWPPP) for the proposed development. The development will require grading, excavation and the construction of driveways, parking areas and buildings. Approximately 2.4 acres will be converted to impervious surface for the development. Mitigation for the proposed impervious surfaces resulting from the development will be provided by the proposed stormwater management practices (SMP's) described in the SWPPP. The proposed SMP's will be designed to capture and treat runoff from the impervious surfaces associated with

the proposed buildings, parking areas and access drive. A copy of the preliminary SWPPP is attached in Appendix B.

The existing drainage patterns on the site will be maintained to the maximum extent practical in the proposed condition. Stormwater treatment for the subject project will be accomplished with several practices including an extended detention dry stormwater basin, used as pretreatment practice prior to an infiltration basin. The infiltration basin and extended detention pretreatment dry stormwater basin will both be sized to capture and treat the Water Quality Volume from the contributing area of the proposed development. The stormwater runoff from the proposed development will be captured in a collection system and conveyed to the extended detention dry stormwater basin for pretreatment of the stormwater runoff, prior to discharging to the infiltration basin for final treatment.

Given the topography and natural constraints on the subject property, limited practical area was available for stormwater management practices. As shown in Figure 3.1-2 Conceptual Grading Plan, the infiltration basin and extended detention pretreatment dry stormwater basin are located partially within the Town of Lewisboro 150 foot wetland buffer and the NYSDEC 100 foot adjacent area. Approximately 7,000 sf of NYSDEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently occupy this part of the site. In addition the stormwater management facilities will be planted with wetland vegetation, as further described in Section 3.5 - Impact on Ecology.

The proposed stormwater management system for the development has been designed to meet the requirements of local, city, and state stormwater ordinances and guidelines, including but not limited to those of the Town of Lewisboro, the NYSDEC, and the New York City Department of Environmental Protection (NYCDEP). Since the subject development proposes the disturbance of more than one (1) acre, coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002 is required. In order to meet the requirements set forth by this permit, the latest edition of the NYSDEC *or t tor r M g t g M u* (NYSSMDM), including Chapter 10: *h d ho horu o t d rd* (Chapter 10) was referenced for the design of the proposed stormwater management system. Based upon NYCDEP rules and regulations in the watershed, NYCDEP review and approval of a SWPPP Approval is required for this for this project. In the opinion of the applicant, adherence to the NYSDEC, NYCDEP and Town of Lewisboro stormwater regulations and requirements will ensure that stormwater quality from the development will be maintained.

Given the above mitigation measures, it is the applicant's opinion that the proposed action will have no significant impact to on-site or off-site water resources.

3.3 IMPACT ON WETLANDS

Existing Conditions

The 36 acre subject site is a mix of wooded upland slopes and wetland/stream corridor, located between undeveloped lands to the north and east, undeveloped lands and large lot residential development along Todd Road to the south, and Route 22 and I-684 to the west. The site wetland corridor is located along the southern property line, and drains to New York City owned property to the south. The 27 acre undeveloped parcel to the north is also owned by the DEP.

Site observations were conducted by Steve Marino, PWS, of Tim Miller Associates in October and November of 2015 and January of 2016. The following description complies with Section 271-7A(5) and (6) of the Town of Lewisboro Code. A Wetland / Watercourse Delineation Report and Assessment consistent with the Town wetland ordinance is provided in Appendix J.

The site wetlands have been subject to disturbance over the years. Hydrology for the wetland is derived from the steep rocky slopes both north and south of the wetland, with runoff collecting at the bottom of the slopes within a relatively broad flat area. This wetland is identified as DEC Wetland F-29, and is listed as 14.4 acres total (Figure 3.3-1). It is shown as a palustirne scrub-shrub wetland on NWI mapping (Figure 3.3-2)

Soils in the wetland are best described as Palms Muck for the majority of the flatter areas (Figure 3.3-3). As noted above, the soils in the western part of the wetland have been disturbed by previous activities, and exhibit some characteristics of udorthents (i.e., previously disturbed soils). Along the northwestern part of the wetland, the soils transition into Leicester loam as the slope rises, before changing over to the Chatfield Hollis soil group on the rocky steep upland slopes.

In the relatively undisturbed portions of the wetland, the most common species are red maple (FAC), slippery elm (FAC), green ash (FACW) and occasionally pin oak (FACW). A well-developed shrub layer was not observed. Skunk cabbage (OBL), cinnamon fern (FACW), sensitive fern (FACW), Canada goldenrod (FACU) and occasional tussock sedge (OBL) were the most common native herbaceous species. Representative photos of the wetland are provided with this EAF.

However, the majority of the wetland area on site is previously disturbed, resulting in a mix of non-native and invasive species throughout the wetland and the surrounding buffers. Several impenetrable areas of *hr g t u tr* (FACW) were observed. Fox grape (FACU), multifloral rose (FACU), climbing bittersweet (UPL), garlic mustard (FACU), and Japanese barberry (FACU) were observed throughout the wetland and adjacent areas. Occasional morrow honeysuckle (FACU), tartarian honeysuckle (FACU) and brambles (FACU) were also observed. The majority of these introduced species are FACU and UPL, and are an indication of the wetland drying out over time, most likely due to the channelizing of the watercourse through the area.

A watercourse has been created (or channelized) by past site activities, which flows from east to west, then turning south at the southwest property line and onto DEP property. This watercourse derives its hydrology from the rocky, steep slopes to the north, south and east, and becomes channelized on the parcel to the east of the subject property. After leaving the site, the watercourse flows south, and presumably eventually reaches a culvert under Route 684 and to

the Muscoot Reservoir. This could not be verified in the field. The watercourse is not mapped by the DEC.

t d t r our d u r r u t o

Due to its location in the watershed, this wetland functions primarily to capture and treat stormwater runoff from the adjacent rocky hillsides before it makes its way into the stream channel and offsite. Nutrient attenuation by the wetland is high due to it dense vegetation and flat slope, which provides for a long residence time in the wetland. However, the “vegetative diversity” function is relatively low due to the high percentage of non-native species within the wetland corridor. While no wetland dependent wildlife were observed during the site inspections, it is likely that common salamanders (red-backed, slimy and two-lined) live within the wetland and its adjacent areas, and a number of bird species feed on the fruit and seeds of the various herbaceous plants. It is also possible that box turtles may utilize this corridor if they are present in the surrounding woods. The adjacent areas are less densely vegetated, due to the rocky substrate, but do function somewhat as a filter before runoff enters the wetland. Runoff is rapid, due to the rocky soils, but is also aerated as it flows over the rocks down the slope.

Impacts

No direct impacts to Town or DEC regulated wetlands is proposed. One of the two stormwater management areas is proposed to be constructed partially within the 100 DEC adjacent area and entirely within the Town 150 foot control area. Of necessity these basins will be located within DEC and Town of Lewisboro buffer areas. Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. No buildings, parking or other impervious surfaces will be placed within the adjacent area.

In order to minimize site grading and take advantage of site topography, the basins must be located in the flattest portion of the site that is downgradient of the development areas. There is such an area available on the northern side of the flagged wetland, and the project engineer has developed plans that use this area while minimizing disturbance to the adjacent area. The chosen location is part of the previously disturbed buffer area, which is dominated by opportunistic volunteer species (primarily Canada goldenrod and multifloral rose), so that vegetative impacts will be minimized as well.

No grading or other activities will occur within the wetland, but will of necessity be near the wetland. The New York City DEP’s interpretation of the Watershed Rules and Regulations results in a redundant stormwater treatment program, requiring two basins on the current design and sufficient capacity to capture the regulated runoff volumes.

Mitigation

The stormwater management basins will be planted with wetland vegetation (both woody and herbaceous) and overseeded with seed mixes appropriate for the transitional nature of the hydrology associated with storm basins. Additionally, a program of wetland and buffer restoration is proposed for transition areas immediately bordering the stormwater basin construction disturbance area. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently

occupy this part of the site. A detailed plan, showing the areas to be treated, details of the methodology and plants to be installed is included with this EAF (See Appendix I).

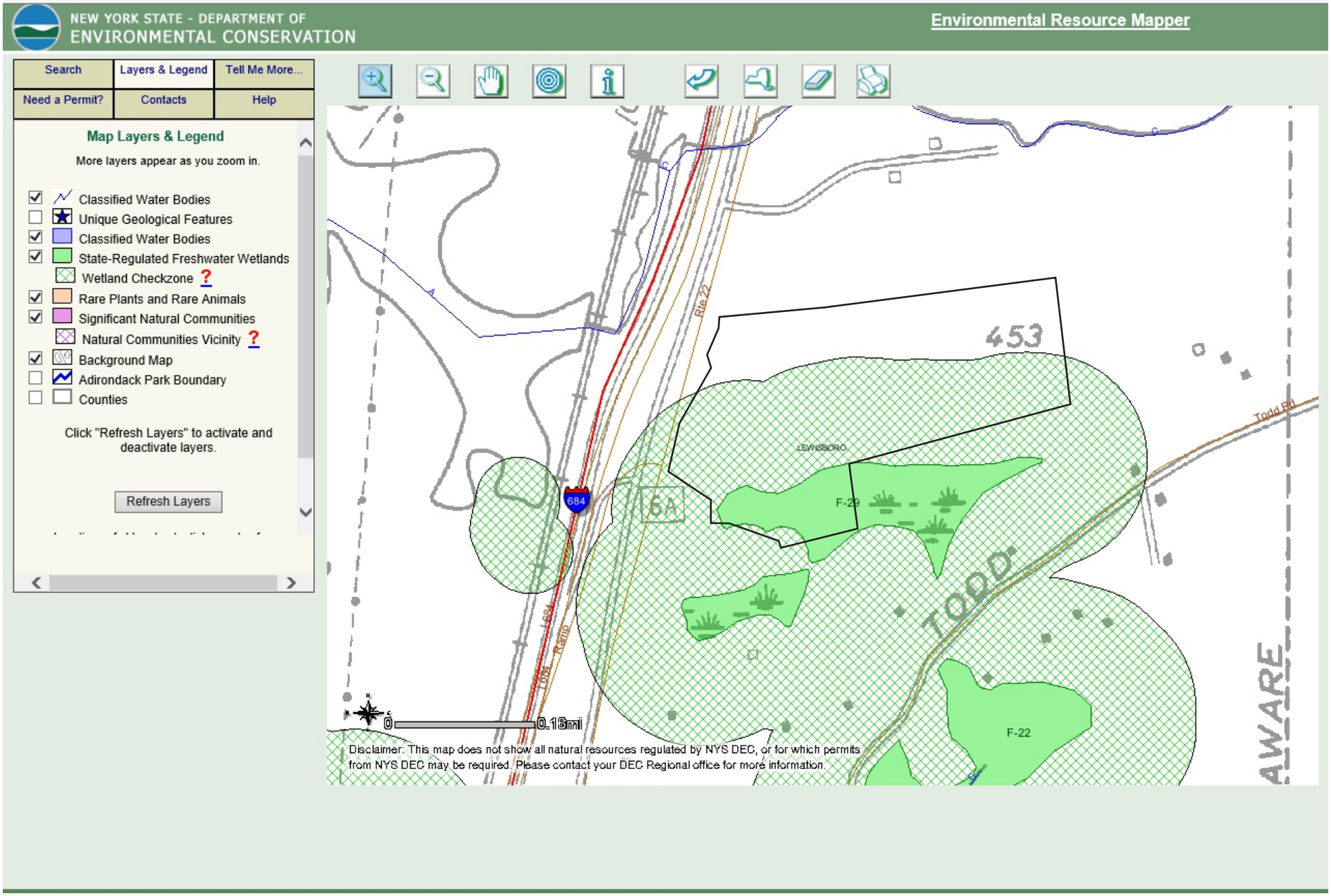


Figure 3.3-1 DEC Mapping
WB Lewisboro Affordable Housing
Source: NYSDEC

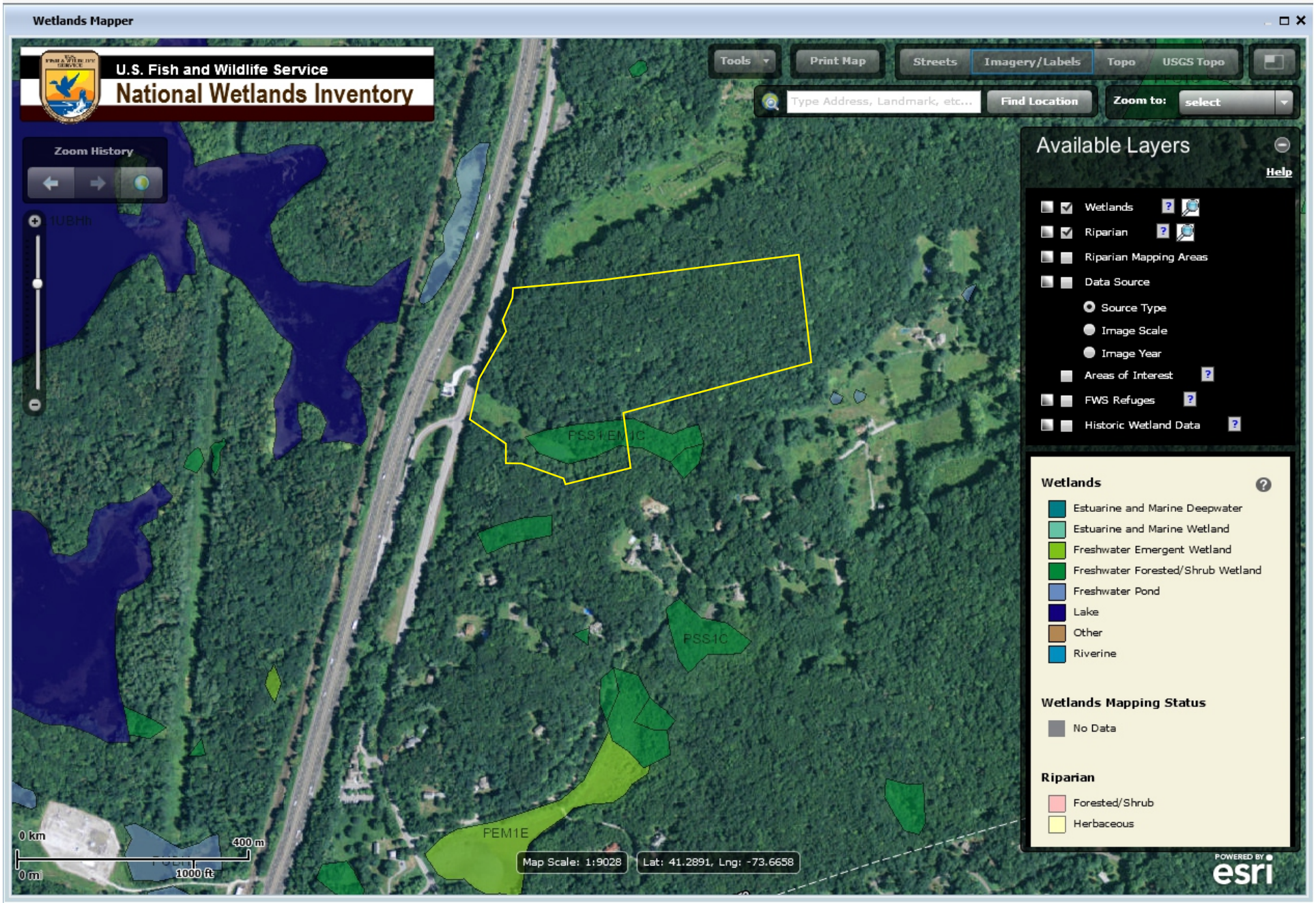
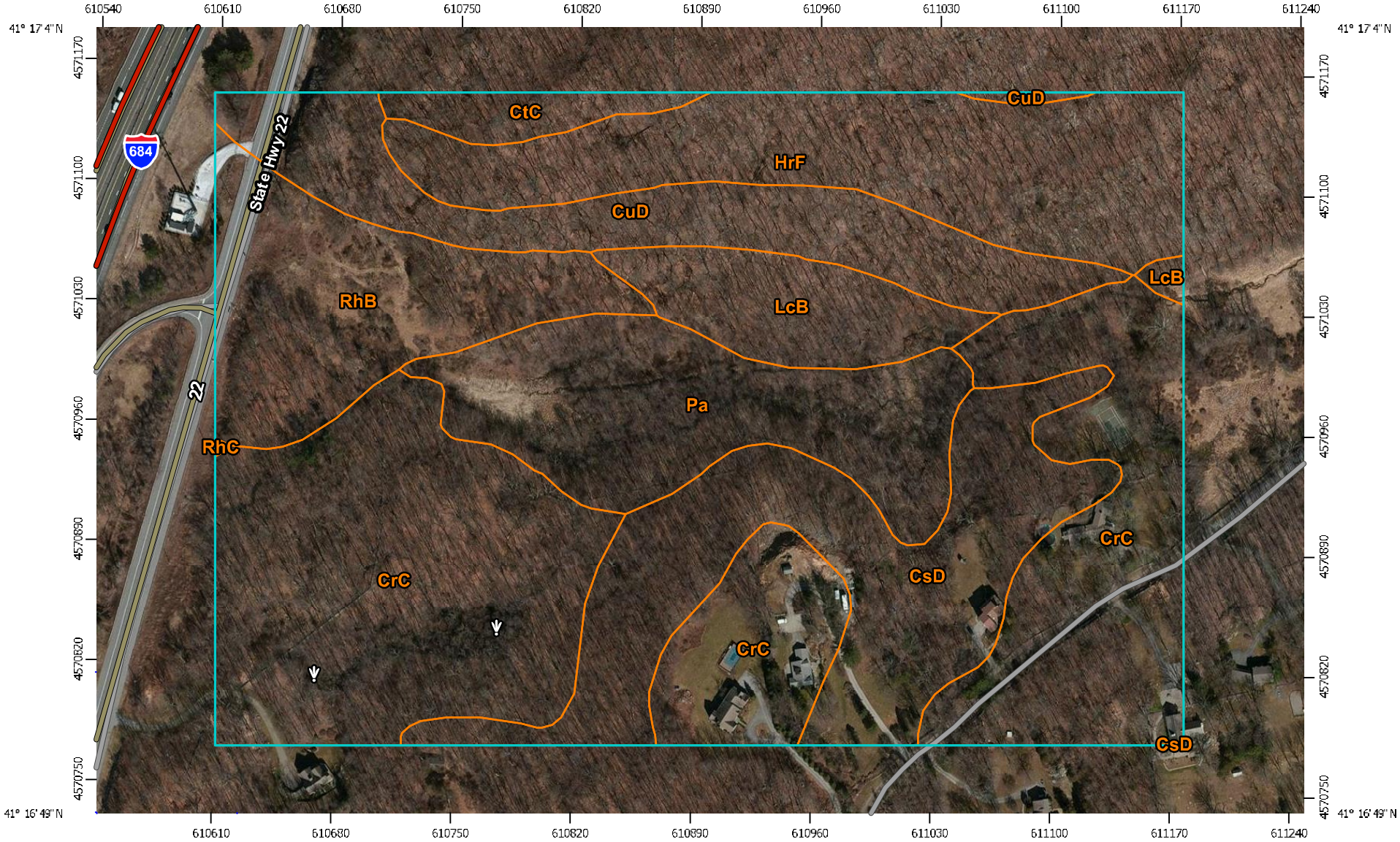


Figure 3.3-2 National Wetland Inventory Mapping
WB Lewisboro Affordable Housing
Source: USFWS

Soil Map—Westchester County, New York



Map Scale: 1:3,220 if printed on A landscape (11" x 8.5") sheet.

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Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

Figure 3.3-3 Soil Survey
WB Lewisboro Affordable Housing
Source: USDA NRCS

3.4 IMPACT ON GROUNDWATER RESOURCES

Existing Conditions

The development site is located in a rural suburban setting with surrounding properties a mix of undeveloped wooded land and low density residential properties. The property is approximately 35.4 acres in size and located on the east side of NYS Route 22 and Interstate 684 which lie directly west of the site.

Topography on the property is varied and elevations range from about 210 feet to 450 feet. A east-west trending ridge is located in the northern portion of the property, and an area of wetland is located in the southwest corner of the site adjacent to Route 22. Approximately 67 percent of the property (23.8 acres) contain steep slopes (15 percent or greater) and bedrock is exposed or near surface in much of the northern portion of the property.

A hydrogeologic assessment has been completed for the property by Leggette Brashears & Graham, Inc. (LBG) and is provided in Appendix E. The technical information provided below summarizes the LBG hydrogeologic assessment.

Surficial Geology

The subject property is underlain by glacial till with areas of bedrock at or near the surface. Glacial till is composed of unsorted and non-stratified sediments deposited by glacial activity. These sediments contain variable proportions of clay, silt, sand, gravel and boulders. Till is usually not suitable for wells and water supply since the unsorted material does not readily transmit water. No sand and gravel deposits are mapped in the vicinity of the property. A map of the surficial material for the study area is provided in Appendix E, Figure 2.

Bedrock Geology

Bedrock underlying the development site is mapped as Inwood Marble on the northern portion and Fordam Gneiss on the central and southern portions. A map showing the distribution of bedrock types is shown in Appendix E - Figure 3. Inwood marble consists of white to whitish grey calcite and dolomite marble. In general, marble formations exhibit similar characteristics to other carbonate rocks, but have fewer solution cavities. Marble bedrock is susceptible to weathering and under deformational stress forms numerous open fractures. Groundwater is contained in the interconnected fractures, joints and secondary openings.

Fordam Gneiss consists of undifferentiated gneiss bedrock units. Gneiss is a metamorphic rock that typically appears layered with light and dark minerals. Gneiss bedrock is highly resistant to weathering and erosion and therefore forms the varied topography and ridges where it is found. Groundwater is found in secondary fractures, joint systems and weathered zones in gneiss bedrock.

A fracture trace analysis was conducted for the study area to identify potential areas that have to potential to develop bedrock wells with higher than average yields. A fracture trace map includes the delineation of faults, fracture trace joint systems, old or buried stream courses. These surface features often identify areas of subsurface fractures and weathering that provided favorable well locations for productive well yields. The fracture trace map is provided in Appendix E, Figure 3.

Precipitation Recharge

A recharge analysis provides a comparison of the natural precipitation recharge for a given property compared to the estimated water demand for proposed development. This analysis can determine if a property is self sufficient with regard to precipitation available to supply groundwater, or whether proposed water demand exceeds the available recharge. If on-site recharge meets or exceeds the proposed demand, the water supply should be reliable and not adversely affect the aquifer in off-site areas. Although recharge analysis or water-budget analysis, is useful in estimating available groundwater, drilling and pump-testing wells is the only definitive indicator of groundwater availability and method to identify potential off-site impacts. Bedrock fractures and the nature of the bedrock underlying a given property greatly affects groundwater availability and potential off-site impacts.

Groundwater recharge is generally related to precipitation, but the amount of rain-fall that reaches the aquifer and becomes groundwater is difficult to measure. Groundwater recharge occurs as a portion of overall precipitation infiltrates soil and bedrock fractures to reach the bedrock aquifer. Records for nearby Westchester County airport, in White Plains, NY report an annual rainfall of 50.45 inches. Approximately one-half of this amount is lost to run-off and the transpiration process. Recharge to till-covered metamorphic bedrock is estimated to be approximately 7 inches annually (Mazzaferro et.al., 1979)[1] or about 520 gpd/acre (gallons per day per acre). This estimate provides approximately 18,300 gpd for the 35.4 acre site, which greatly exceeds the estimated water demand for the development of 1,350 gpd.

Existing Wells

Two wells were drilled on the subject property in March 1987 by P.F. Beal and Sons. Inc. The wells were installed for a previously proposed site plan application for the property that was never developed beyond well installation. Based upon preliminary estimates those wells yield approximately 5 gpm each or 10 gpm total. The combined yield of the two wells would be approximately 14,400 gpd. The existing wells will require testing to confirm actual sustainable yields and any potential impacts to off-site water supplies.

The estimated yields reported on the well driller's logs were obtained by the driller conducting air-lift tests on the wells. The driller inserts the drilling rods into the well down to the bottom and injects air. The continuous overflow from the well is measured as the well yield. This method of measuring a well's yield does not allow for the direct measurement of a pumping water level. Therefore, the driller reports the depth at which the drill rods are set as the pumping water level.

A yield test conducted in accordance with Westchester County Department of Health (WCDH) and New York State Department of Health (NYSDOH) will need to be conducted on any well that is proposed for use to supply potable water to the proposed development. These well tests will assess the stabilized pumping rate and water-level drawdown in the wells, and will determine whether the wells are suitable for use as public water-supply sources. A 72-hour pumping test is further described below.

[1] Mazzaferro, D., E. Handman, and M. Thomas. 1979. Water Resource Inventory of Connecticut, Part 8, Quinnipiac River Basin, CT Water Resource Bulletin, 27.

Potential Impacts

Development Water Demand

The proposed development will require an estimated water demand of approximately 9,000 gallons per day (gpd), or 6.25 gallons per minute (gpm) based upon bedroom counts and engineering estimates (see Appendix C - Engineers Water Report). NYS Department of Health standards require new water supply systems to provide twice the average daily water demand with the best well out of service. To meet this requirement, on-site wells would need to provide a combined rate of 12.5 gpm (18,000 gpd), with the best well out of service.

The table below contains a summary of the water demand calculation for the project along with a breakdown of the unit type and number. The New York State Department of Environmental Conservation's (NYSDEC) March 2014 "Design Standards for Intermediate Sized Wastewater Treatment Systems" water usage values were used to calculate the water demand.

Unit Type	Number of Units	Water Usage Multiplier (gpd)	Total Water Usage (gpd)
1 Bedroom	14	110	1,540
2 Bedroom	28	220	6,160
3 Bedroom	4	330	1,320
		Total Water Demand	9,020

gpd gallons per day

The use of subsurface wastewater disposal would return approximately 85 percent of the withdrawn water back to the groundwater. This would reduce the consumptive water use by the development to 1,350 gpd.

The bedrock groundwater recharge estimate for the 35.4 acre property is 18,330 gallons per day (gpd) under normal precipitation conditions and 13,000 gpd under one-year-in-thirty drought conditions. The estimated recharge under both normal and drought conditions is more than sufficient to support the estimated consumptive demand of 1,350 gpd for the proposed development.

The desk top evaluation of the contributing recharge from the 35.25- acre subject property 18,330 gpd (gallons per day) under average precipitation conditions and 13,000 gpd under extreme drought conditions with a 3.3-percent probability of recurrence. The recharge under both of these scenarios exceeds the calculated water demand of the project of 9,020 gpd. Therefore, the evaluation indicates that the site's water usage does not exceed its recharge contribution to the groundwater system. These calculations are based on the site acreage's contribution to recharge within the whole watershed. Groundwater recharge and groundwater flow will cross the project site boundaries under natural conditions.

Additionally, the project will be utilizing onsite subsurface wastewater discharge. Therefore, approximately 85 percent of the groundwater withdrawal from onsite wells would be returned to the groundwater system through percolation of the wastewater discharge. This results in a consumptive water use of about 1,350 gpd for the project. The calculated recharge under both normal (18,330 gpd) and drought (13,000 gpd) precipitation conditions significantly exceed the project's consumptive water use.

As indicated, the two existing on-site wells have a combined estimated yield of 10 gpm. An additional one to two new wells (three to four wells total) will be necessary to produce the developments water demand of 12.5 gpm with the best well out of service. For the development of a new water supply, the NYS Health Department requires the demonstration of a stabilized yield of 5 gpm or greater, regardless of the development's water demand.

In addition, public water supplies must also comply with minimum separation distances from potential contamination sources identified in Appendix 5-D of the NYSDOH sanitary code. The required minimum separation distance to protect public water supply wells from contamination is 200 feet for absorption fields and for stormwater infiltration basins (treating stormwater from driveways and parking lots).

Based upon LBG's hydrogeologic assessment of the development site and environs, wells drilled at geologically favorable locations (i.e. Fracture trace liniations) will likely yield water in the range of 5 to 10 gpm.

The relatively low average water withdrawal for the proposed development of 9,000 gpd (6.25 gpm) indicates a low likelihood of significant mutual interference between the on-site wells and existing nearby off-site wells. The closest nearby wells are approximately 600 feet from the on-site wells. These include existing homes on Todd Road south and southeast of the subject site. However, the drilling and pump testing of the proposed wells is the only definitive indicator of groundwater availability and any potential impacts to neighboring water supplies.

Avoidance and Minimization of Potential Impacts or Mitigation

As described above, the relatively low average water withdrawal for the development indicates a low likelihood of significant mutual interference between on-site wells and existing nearby off-site wells. The drilling and pump testing of the proposed supply wells will provide definitive information regarding groundwater availability and potential impacts to neighboring wells.

As indicated in the Hydrogeologic Report, a 72-hour pump test will be required by the applicant to be completed prior to approval of the project. Existing on-site and off-site wells located a minimum of 2000 l.f. ("subject area") from the proposed on-site wells will need to be monitored during the 72-hour pump test to determine if the pumping of the new wells will result in drawdown of the static water on any of the existing wells within the subject area.

Once the proposed wells are drilled and pump tested, the applicant shall submit the results of the pump tests and the proposed pump test plan to the Town for review.

In order to address the unlikely event that an impact to a neighboring well occurs that would potentially require mitigation, a draft Complaint Response and Mitigation Plan has been prepared (see Appendix E Hydrogeologic Assessment and Mitigation Plan). The Plan provides a process for off-site well owners to file a complaint to the applicant and for the complaint to be promptly investigated. If the complaint is found to be valid, remedies will be provided to the private well owner, fully paid for by the applicant. Remedies may include lowering a well pump, replacing a well pump, deepening a well, redeveloping a well or replacing a well. The draft Complaint Response and Mitigation Plan will be finalized in consultation with the Planning Board.

3.5 IMPACT ON ECOLOGY

Existing Conditions

The 36 acre subject site is a mix of wooded upland slopes and wetland/stream corridor, located between undeveloped lands to the north and east, undeveloped lands and large lot residential development along Todd Road to the south, and Route 22 and I-684 to the west. The site wetland corridor is located along the southern property line, and drains to New York City owned property to the south. The 27 acre undeveloped parcel to the north is also owned by the DEP.

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Site observations were conducted by Steve Marino, PWS of Tim Miller Associates in October and November of 2015 and January of 2016. Dedicated wildlife and vegetation inventories were conducted on April, 15, April 20 and April 28, 2016. Each inventory date included four hours of time in the field. The investigation employed a series of random/zig-zag transects with observation, listening, and/or ground searches being conducted as site specific features changed along the walking transect route. The random nature of these transects allowed the investigator to observe and actively investigate features of interest along the way. This tactic also allowed data to be collected from a greater variety of micro-habitats. The following conditions were noted.

The site slopes downward from east to west, with steep slopes downward toward the wetland corridor along the southern border of the site. leveling off at the central stream corridor. The upland areas of the project site are predominately wooded with tree and shrub species typical of a mix of oak-tulip forest and successional northern hardwoodforest community in a rocky substrate, as described by NYNHP "Ecological Communities of New York State, second edition (Edinger and Reschke, 2002) (Figure 3.5-1). Vegetation on the site is characterized as second growth woodlands including sugar maple, red oak, white oak, white ash, and various birches. Beech, tulip poplar and black cherry were occasionally observed. The shrub and herbaceous layer are sparse due to heavy deer grazing. Where there are groundcovers Christmas fern and Pennsylvania sedge are the most common.

Historically, the majority of the site has remained wooded since the 1940's, probably due to the rocky topography. Those areas closest to Route 22 are shown as open pasture in the 1947 aerial, and it is likely that some logging occurred through the 1960's. See Figures 3.5-2 and 3.5-3.

The site wetlands have been subject to disturbance over the years, as indicated in the aerial photograph from 1947. That photograph shows hedgerows and rock walls through the wetland area and the wetland cleared of trees. Hydrology for the wetland is derived from the steep slopes both north and south of the wetland, with runoff collecting at the bottom of the slopes within a relatively broad flat area. This wetland is identified as DEC Wetland F-29, and is listed as 14.4 acres total. A watercourse has been created by past site activities, which flows from east to west, then turning south at the southwest property line and onto DEP property.

In the relatively undisturbed portions of the wetland, the most common species are red maple, slippery elm, green ash and occasionally pin oak, and best described as a "red maple hardwood swamp". A well-developed shrub layer was not observed. Skunk cabbage, cinnamon fern, sensitive fern, Canada goldenrod and occasional tussock sedge were the most common native herbaceous species.

However, the majority of the wetland area on site is previously disturbed, resulting in a mix of non-native and invasive species throughout the wetland and the surrounding buffers. Several impenetrable areas of *hr g t u tr* were observed. Fox grape, multifloral rose, climbing bittersweet, garlic mustard, and Japanese barberry were observed throughout the wetland and adjacent areas. Occasional morrow honeysuckle, tartarian honeysuckle and brambles were also observed.

A table of those plant species that were observed on the site is provided below.

Project Site Vegetation	
Common Name (*Scientific name*)	
TREES	**SHRUBS**
Red oak (*u r u ru r*)	Flowering dogwood (*or u or d*)
White oak (*u r u*)	Witch hazel (*rg*)
Chestnut oak (*u r u r u*)	Tartarian honeysuckle (*o r t rt r*)
Pin oak (*u r u u tr*)	Morrow honeysuckle *o r orro*
American beech (*gu gr d o*)	Japanese barberry (*r r thu rg*)
Red maple (*r ru ru*)	Multiflora rose (*o u t or*)
Sugar maple (*r h ru*)	Winged euonymus (*uo u t*)
Pignut hickory (*r g r*)	Privet (*gu tru u g r*)
Shagbark hickory (*r o t*)	**FORBS AND VINES**
Black birch (*tu gr*)	Grape (*t*)
Black locust (*o udo*)	Aster species (*t r* spp.)
Eastern hop-hornbeam (*tr rg*)	Common yarrow (*h o u*)
Black cherry (*ru u rot*)	Mugwort (*rt u g r*)
Sassafras (*r du*)	Garlic mustard (*r t o t*)
Slippery elm *u ru r*	Bittersweet *tru or u tu*
American elm (*u r*)	Skunk cabbage (*o r u o t du*
Eastern red cedar (*u ru rg*)	Dandeliion (*r u o*
Eastern cottonwood (*o u u d to d*)	Trout lily (*r thro u r u*)
Crabapple *M u*	Violet (*o*)
Larch (*r r*)	Yarrow (*h o u*)
	Goldenrod species (*o d go* spp.)
FERNS AND CLUBMOSSES	Bedstraw species (*u* spp.)
New York fern (*r o t r o or*)	Aster species (*t r* spp.)
Sensitive fern (*o*)	
Peat moss *h g u*	**GRASSES AND SEDGES**
	Onion grass *o u ro*
	Common reed (*hr g t u tr*)
	Catail *h*
	Tussock sedge (*r tr t*)
Note: Species observed during site visits - 10/16/2015, 04/15/2016, and 04/20/2016 Note: This list includes many species that could potentially inhabit this site. It is not, however, an exhaustive list. Source: Tim Miller Associates, Inc. 2016	

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The site is part of a large open space corridor located to the east of the Route 22/684 corridor. Several hundred acres of undeveloped properties extend from Route 138 to the north to Todd Road to the south, with additional open space areas located south of Todd Road. In general this corridor is wooded with ridge and valley topography, including steep slopes and rocky substrates. It is likely that the connecting lowlands, with stream corridors running through the center of the valley features, could act as a wildlife corridor for larger animal species in the area.

The sloped upland forests, with little understory or groundcovers for cover, are less likely to support movement of wildlife due to the open exposure to predation.

During the course of the fieldwork for this assessment several species of wildlife and signs were observed. The following is a list of wildlife species that were either observed on site or sign, including tracks or scat, was observed. The wooded slopes on the north part of the site provides habitat for some of the more common species in the area, including white-tailed deer, raccoon, eastern gray squirrel, striped skunk, red fox and opossum. These species are likely to move back and forth through the wetland and upland areas. The overall quality of the wildlife habitat for less common species is compromised by the absence of understory and herbaceous layers and diversity of habitat available. However, undeveloped lands to the north and south do present opportunities for wildlife movement, and it is likely that coyote, rodents, some snake species and a variety of birds move through the area. Significant noise from Route 684 was observed during each of the site visits, and it is likely that the proximity to the highway impacts wildlife use of the site somewhat. The lack of larger numbers of bird species, particularly during the earlier hours of the April site visits, was surprising, and perhaps is attributed to the proximity to Route 684 and the noise associated with that. More birds were found and more song heard further east into the site.

The level of past site disturbance in the wetland is reflected in the habitat potential and number of species that are expected to be observed on these parcels. Green frogs, spring peepers, wood frogs, American toads and other small mobile species may utilize the wetland system. Some of the smaller bird species (wrens, sparrows, bluebirds) likely feed on the seeds of the grasses and wildflowers that are found on the site.

There are no known listed rare or threatened plant species on the site. The NYSDEC Environmental Resource Mapper did not identify the possible existence of a sensitive species in the immediate site vicinity (see attached Figure 3.5-4). However, NYSDEC Natural Heritage did notify the applicant about a record of a bog turtle *t uh rg* being seen south of the site near Todd Road in 1978. Bog turtles are considered to be extirpated from Westchester County, and as Natural Heritage puts it, “there is uncertainty regarding their continued presence” (see attached letter from Natural Heritage Program). However, the bog turtle was unlikely to come from the site wetland, which is generally a wooded wetland and does not meet the typical habitat criteria for this species.

Potential habitat for other species of conservation concern was also evaluated based on the site investigations. Ambystomid salamander species are not likely to be present due to the absence of vernal pools on or near the site. Timber rattlesnakes prefer rocky hilltops with southern sun exposure for over-wintering, which is not available on this site since the entire property is essentially a closed canopy. Winter hibernaculum for the Indiana bat and northern long-eared bat are not available or known on or near the site. The site is a significant distance from known maternity and roosting trees for these species.

Habitat does exist for several listed species of special concern, including box turtle, hog-nosed snake and worm snake. Extensive areas of undisturbed woodlands and adjacent wetlands will remain after site development, and the long term potential for impacts to these species, if they exist on the site, is unlikely.

A table of those animal species that were observed during the spring inventories is provided below.

Project Site Wildlife	
Common Name (*Scientific name*)	
REPTILES	**AMPHIBIANS**
Garter snake (□*h*□□ □*o*□*h*□□□□*rt*□□□)	Green frog (□□□□□□□□*u*□*tr*□□)
BIRDS	**MAMMALS**
chickadee □□□*ru*□□spp□□	Eastern gray squirrel (□□□*uru*□□□□*ro*□□□□□□)
crow □□*or*□*u*□□□*r*□□*h*□*rh*□□□*ho*□□	Eastern chipmunk (□□□ □□□□□*tr*□□*tu*□)
blue jay □□ □□□□*o*□□*tt*□□□*r*□□*t*□□□	Woodchuck (*M*□*r*□ *ot*□□□ *o*□□□□
white-throated sparrow □□*o*□*otr*□□*h*□□ □□□□□*o*□□□□	Raccoon (□*ro*□□*o*□□□*otor*)
wood thrush (□□□*o*□□□*h*□□□□ *u*□*t*□□□□□□	White-tailed deer (□*d*□*o*□□□*u*□□□*rg*□□□□□□
ovenbird □□□□*uru*□□□*uro*□□□□□□□	
downy woodpecker □□*r*□*o*□□*t*□□□□*u*□□□□□□□□	
turkey vulture □□□*th*□*rt*□□□□*ur*□□	

Note: Species observed during site visits - 10/16/2015, 04/15/2016, and 04/20/2016
Note: This list includes many species that could potentially inhabit this site. It is not, however, an exhaustive list.
Source: Tim Miller Associates, Inc. 2016

Potential Impacts

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The current plans call for the disturbance of approximately 9 acres of the 35.4 acre site for the construction of the new residences, parking facilities and stormwater management basins. These activities will occur primarily within the wooded upland areas of the site, in both the successional hardwood forest and the oak-tulip dominated forest (Figure 3.5-5). Most of these structures will be located within the higher elevations of the site, with the exception of the stormwater basins. These will be located out of necessity at the lower elevations closer to the wetland. The location of the stormwater facilities have been laid out at flattest available parts of the hillside slopes and parallel to the topography to the extent practicable. Of necessity (due to site topography) these basins will be located within DEC and Town of Lewisboro buffer areas. Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed.

□ □□*d*□□□□

The site does not contain areas of significant or unusual wildlife habitat that would be impacted by the development project, and the project itself affects only nine of the 35.4 acres available. Approximately nine acres of wooded habitat will be lost as a result of this development, with most of this loss occurring on the western part of the site closest to the Route 684 corridor. Some large trees, primarily oaks, will be cut for this development. Bird and mammal species that depend on these particular trees for habitat and food will be somewhat impacted by this action. A large number of trees of a variety of species, some of a significant size, will be preserved, mitigating this loss.

Figure 3.5-6 shows the extent of the site disturbance in the context of the adjacent open spaces that are available for wildlife habitat. In the context of this larger corridor, the development of the site as proposed, owing largely to its proximity to the western side of the site and the Route 22/684 corridor, is unlikely to impact any existing wildlife corridors that may exist.

The loss of nine acres of upland and wetland buffer habitat is an unavoidable impact to develop the affordable residential community. The development will retain approximately 75 percent of the existing vegetation and wildlife habitat. As noted above, no species of conservation concern were identified on the property or are likely to utilize it, and therefore no impacts to such species is expected.

Avoidance or Minimization of Potential Impacts and Mitigation

With the preservation of the 18 acre eastern parcel as conservation land, and the undisturbed portions of the two western parcels (another eight acres), in the opinion of the applicant the development will not result in adverse environmental impacts to ecologically significant or unusual vegetation.

The proposed plan incorporates a landscape program for all areas disturbed by construction around the perimeter of the buildings and parking lots. Any disturbed side slopes below the development on the south side will be seeded with a restoration mix of quick germinating grass cover crop and herbaceous perennials to establish vegetative stabilization of the soil. Additionally, the mix used for the slopes will include seed for native grass and woody species that produce berries and seeds that will provide a food source for a greater diversity of animal species.

The stormwater management basins, which will serve to capture and treat stormwater runoff before it is discharged to receiving waters downstream of the site, will be planted with wetland vegetation (both woody and herbaceous) and overseeded with seed mixes appropriate for the transitional nature of the hydrology associated with storm basins. Additionally, a program of wetland and buffer restoration is proposed for transition areas immediately bordering the stormwater basin construction disturbance area. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently occupy this part of the site. The wetland mitigation plan is provided in Appendix I.

In the opinion of the applicant, enhancement of the existing wetland and adjacent areas will provide an opportunity for the restoration of a more diverse and native vegetation community to that portion of the site, which will benefit a wider diversity of animal species, particularly birds.

SNH - Successional Northern Hardwoods

OTF/SH - Oak-tulip forest with successional northern hardwoods

SOF - Successional old field

SS - Scrub shrub swamp

RMH - Red maple hardwood swamp

Figure 3.5-1
2013 Aerial Photo - Vegetation
WB Lewisboro Affordable Housing
Source: Westchester County GIS

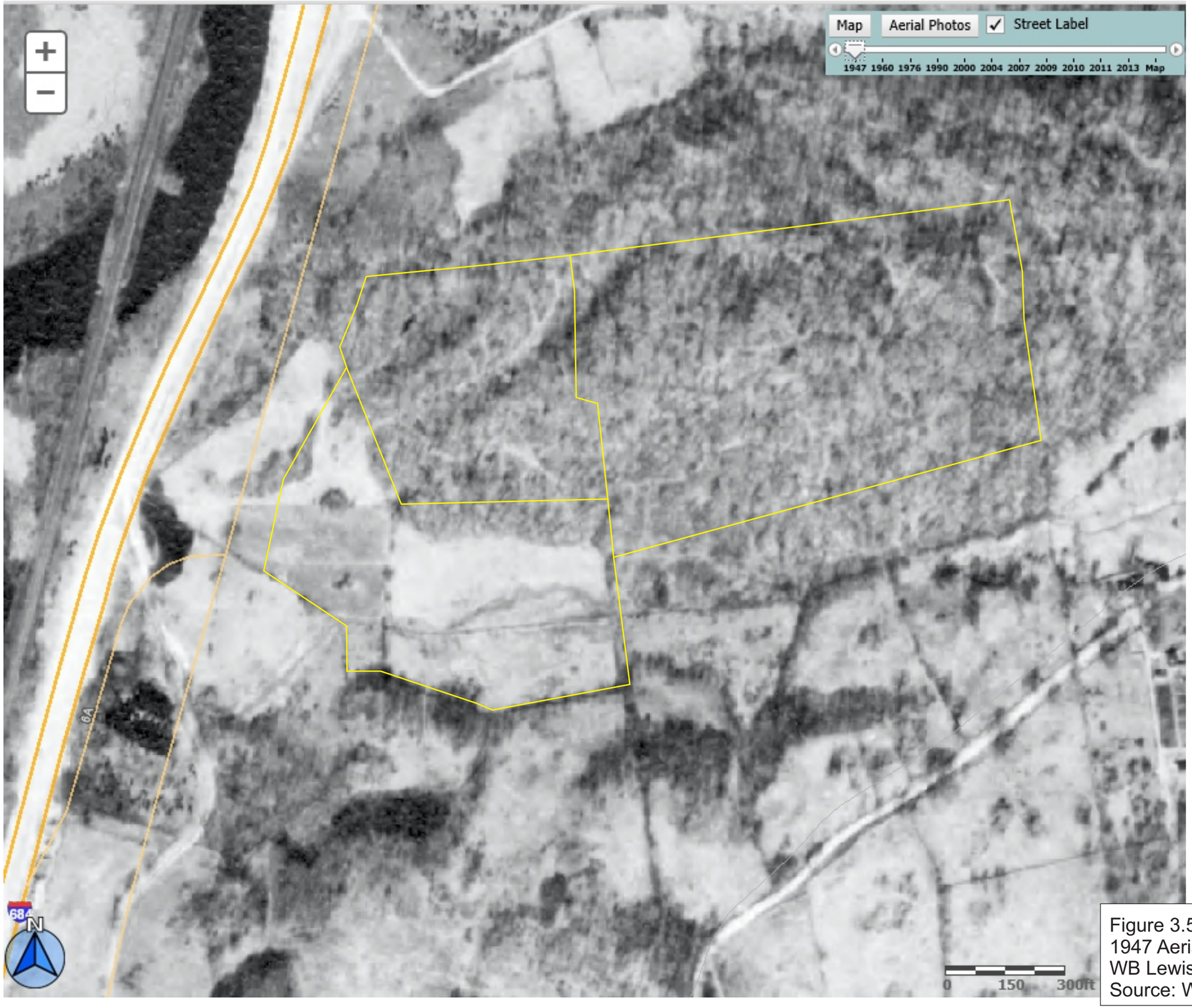


Figure 3.5-2
1947 Aerial Photo
WB Lewisboro Affordable Housing
Source: Westchester County GIS

Figure 3.5-3
1960 Aerial Photo
WB Lewisboro Affordable Housing
Source: Westchester County GIS

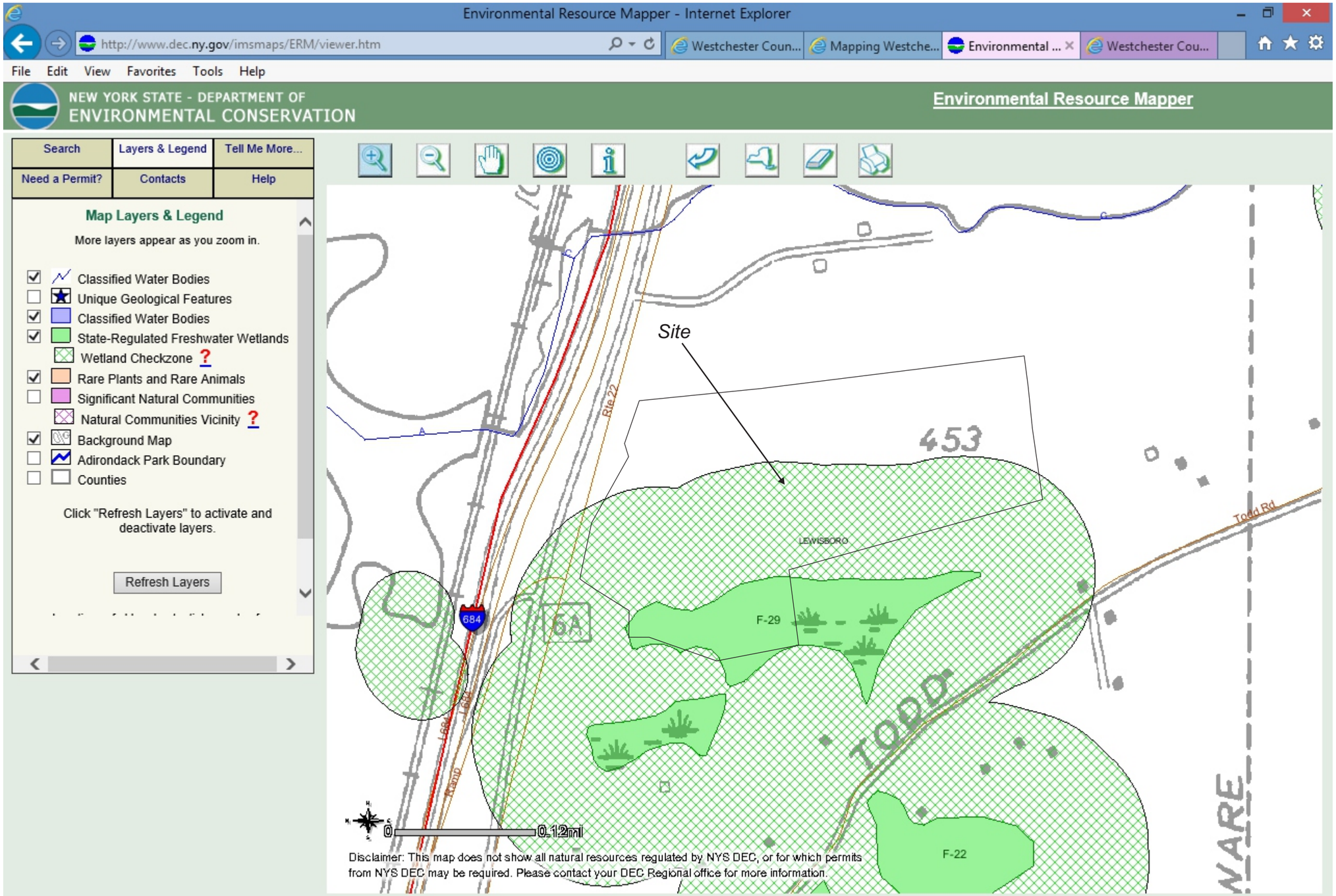


Figure 3.5-4
DEC Environmental Resource Mapper
WB Lewisboro Affordable Housing
Source: NYSDEC

SNH - Successional Northern Hardwoods

OTF/SH - Oak-tulip forest with successional northern hardwoods

SOF - Successional old field

SS - Scrub shrub swamp

RMH - Red maple hardwood swamp

Figure 3.5-5
Areas of Disturbance and
Site Vegetation
WB Lewisboro Affordable Housing
Basemap: Westchester County GIS

Figure 3.5-6
Extent of Site Disturbance Relative to Adjacent Open Space
WB Lewisboro Affordable Housing
Source: Westchester County GIS

3.6 IMPACT ON AESTHETIC RESOURCES

Existing Conditions

[illegible]

The setting in which the development site is situated consists of a mix of land uses -- commercial development to the north (including North County Shopping Center, aka Goldens Bridge Village Center), a major regional transportation corridor immediately to the west (NY State Route 22, Interstate Route 684 and the Metro-North railroad), single family residences on relatively large lots to the south, and wooded, undeveloped land and open water of the Croton reservoir system in much of the surrounding area. Figure 1-2 shows the site vicinity in a recent aerial photograph; Figure 3.6-1 shows the site on a topographic map.

The visual character of the immediate site vicinity is dominated by the Route 22 / I-684 transportation corridor including Exit 6A for Goldens Bridge, which meets Route 22 opposite the site. Route 22 and I-684 follow a winding north/south route in very undulating and irregular topography that has many small hills and narrow valleys and dense woodland cover that characterizes the rural feel of Lewisboro.

The site is a topographic knoll, rising some 200 feet above the road elevation, similar to numerous other knolls in the area. The site is almost entirely wooded with the exception of a rock outcrop exposed by the construction of Route 22. The trees are up to 55+ feet tall, predominantly deciduous, with moderately dense understory vegetation. The sizable rock outcrop provides a visual feature along the property frontage. While not prominent in the landscape of the street corridor, it provides a reminder of the nature of the Lewisboro landscape.

The visual experience for someone traveling in the road corridor in the site vicinity is a mix of single family residential lots, commercial development of varying sizes, and wooded open space. Buildings are visible, in many instances partially obscured, amongst the extensive woodland cover (evident in Figure 1-2), particularly for users of Route 22. In the immediate site area, the corridor is visually dominated by I-684. There are no provisions for pedestrian traffic in the corridor and incidental use by bicyclists was observed on Route 22.

The potential for views of the subject site were reviewed during a site area visit in January 2016. Key study views were identified within approximately one-half mile of the site. Views toward the site from publicly accessible locations are depicted in photographs presented in Figures 3.6-2 through 3.6-6. The limits of the possible view of the site are indicated in the figures. A key to the locations of the view points is shown in Figure 3.6-1. A ±125 foot high cell tower located on the opposite side of Route 22 from the subject property provides a landmark in the photographs. The study area views are:

- The street corridor within about one-half mile, which is primarily experienced by motorists passing the site on I-684 at highway speed or on Route 22 at varying speeds. Views 1A and 1B from southbound and northbound I-684, respectively, were investigated. These views are partially obscured by intervening vegetation and diminished by the speed of travel. These views are further obstructed during the warmer months when leaves are on the trees. Figure 3.6-2 shows existing views 1A and 1B looking toward the subject site from I-684 southbound and northbound. View 1A is interrupted as the driver passes under the bridge and quickly disappears behind intervening vegetation as one travels south. Likewise, the mid-distance

view toward the site (View 1B) for drivers approaching the Goldens Bridge exit quickly disappears behind intervening roadside vegetation.

- Views 2A and 2B from northbound and southbound Route 22, respectively, were found to reveal visibility of the development site for motorists approaching the site. Figure 3.6-3 shows these existing views from Route 22 northbound and southbound. There is roadside vegetation that interrupts or obscures portions of the view as a driver approaches the site from either vantage point.

  Additional photographic images are shown in Figures 3.6-9A, B and C, taken approximately 300 feet apart starting at View point 2A and traveling north on Route 22, toward and passing the subject site. These images, which include brackets indicating the site development area, show the extent of the intervening trees that exist along the roadway that largely obscure views to the development area.

- The Exit 6A ramp from I-684 northbound meets Route 22 opposite the site at a Stop sign. Thus, there is a stationary view (View 3) in close proximity of the site frontage and looking into the western portion of the site, as experienced by drivers while they negotiate a right or left turn onto Route 22. Figure 3.6-4 shows a wide-angle view from this location in winter. The site rises above the road and, being a topographic knoll, much of the site is hidden from view due to the topography and intervening vegetation. During the winter months it is possible to see into the site several hundred feet amongst the tree trunks; when leaves are on the trees views into the site are largely obscured. *[illegible] ro d th gr t t u [illegible] o ur o th t ro [illegible] o th d t d t g o t [illegible]*

- Figure 3.6-5 shows Views 4A and 4B from the ramp from Route 138 to Route 22, looking south, and from the top of the Route 138 ramp onto I-684 southbound, respectively. View 4A may be briefly experienced by drivers while they negotiate the turn onto southbound Route 22. View 4B may be experienced by drivers for a brief moment after they negotiate the turn from Route 138 onto the southbound ramp. The view from this viewpoint quickly vanishes as the driver descends the ramp and enters I-684.

- Views toward the site from Todd Road (south of the site) were investigated. Due to the intervening topography of Todd Road properties, view of the subject site from publicly accessible vantage points on the road is limited to a partial view beyond the intervening trees from one location in the vicinity of #35 Todd Road, the Bedford Audubon Society property. This is identified as View 5. Figure 3.6-6 shows a wide-angle view from this location, looking westward through the intervening trees.

There are no formally designated aesthetic resources or scenic vantage points sensitive to visual change in the viewshed of the subject site. Given the topography and dense tree cover of the site area, there is limited view of the development site from surrounding roads and there is no location in the study area that would afford a view of the entire site, based on site area reconnaissance undertaken in January 2016 along I-684, Route 22, Route 138, and Todd Road and at Goldens Bridge train station.

The Code of the Town of Lewisboro includes mention of aesthetics, most pointedly in §220-1 Zoning, Statement of Purpose: “To preserve the natural beauty of the physiography of the Town; to protect the Town against unsightly, obtrusive and obnoxious land uses and operations; to enhance the aesthetic aspect of the natural and man-made elements of the Town; and to ensure appropriate development with regard to those elements.”

Potential Impacts

To utilize the site in accordance with current zoning and a site-sensitive affordable housing plan, the proposed development will remove trees from the western portion of the site and small pockets in the interior of the site, create an opening in the tree canopy on the middle elevations of the site, and create an opening on Route 22 for a driveway, while preserving the existing tree cover on most of the property. Given its topographic position and the density of woodland cover around it, this clearing is not expected to be startling, visually prominent, nor out of character from the surrounding landscape.

The proposed buildings will be placed along the contour on the southwest-facing slopes of the knoll on the site. The 2-story buildings will be lower in elevation than the existing tree tops that will remain, thereby avoiding any direct or prominent visual exposure of the development from offsite. There will also be four SSTS areas cleared in the rear of the property (located where suitable soils are found), covering small areas of one-quarter to one-half acre in size. These areas are proposed to be replanted with a low growing conservation mix.

Site Profile Figure 3.6-7 shows a profile of the post-development ground line and tree line taken through the site generally in a southwest/northeast orientation. This profile is taken through the center of the proposed development area and one of the SSTS clearings. The profile is drawn to scale, with the height of the existing trees being approximately 50 feet. An enlarged version of this profile is depicted in Figure 3.6-7E. (See Figure 3.6-1 showing the location of the profile line.) The Site Profile figure shows the line of sight for a person in a vehicle stopped on the Exit 6A Stop sign at Route 22, facing the subject property. This is View 3 depicted in the existing condition photograph in Figure 3.6-4. Figure 3.6-14 depicts a rendering of the anticipated view toward the proposed development from the Exit 6A Stop sign at Route 22. As identified above, this vantage point would provide the most visual exposure of the proposed development from any of the identified vantage points.

[illegible] th[illegible] tr[illegible] t[illegible] orr[illegible]dor [illegible] d[illegible] ro[illegible] [illegible] tud[illegible] [illegible] t[illegible] g[illegible] o[illegible] t[illegible]

The development will open a view into the subject property via the new entrance driveway on Route 22. (See the Conceptual Grading Plan, Figure 3.1-2.) Tree clearing will occur where the proposed driveway will access the site and climb the west side of the knoll, leaving a strip of existing trees along the driveway and atop the rock outcrop that faces Route 22. The driveway will be seen from the Exit 6A Stop sign and from vehicles traveling north past the site on Route 22. Vehicles traveling south past the site will see the driveway intersection on Route 22, and the entrance area landscaping. South of the driveway, an SSTS area is proposed in an area that already has low growing vegetation, and further into the site stormwater management basins are proposed. These areas will be situated some 15 to over 20 feet below the elevation of the road, virtually out of sight from the public.

Site Profile Figure 3.6-8 shows a north/south profile of the post-development ground line and tree line taken through the proposed development area of the site -- is drawn to scale, with the height of the existing trees being approximately 50 feet. An enlarged version of this profile is depicted in Figure 3.6-8E. (See Figure 3.6-1 showing the location of the profile line.) The Site Profile figure shows the line of sight for a person in a vehicle traveling south on Route 22, facing the subject property and approximately one-quarter mile away. In this case the potential line of sight is obscured by trees located on the intervening properties north of the site. This is View 2B depicted in the existing condition photograph in Figure 3.6-3.

Mitigation Measures

The streetscape character of the property frontage along Route 22 will not be adversely changed by the development; the proposed driveway entrance will be the only disturbance of existing vegetation on the frontage, which will receive appropriate landscape treatment so that the new development will be compatible with the characteristics of the neighborhood.

The applicant conducted a balloon flight at the property on January 21, 2016, to provide two points of reference for investigating possible views to the proposed development from local area vantage points. Two 3-foot red balloons were raised to the proposed height of the roof peak of buildings 1 and 3. In both locations the balloons were situated well below the tops of the trees.

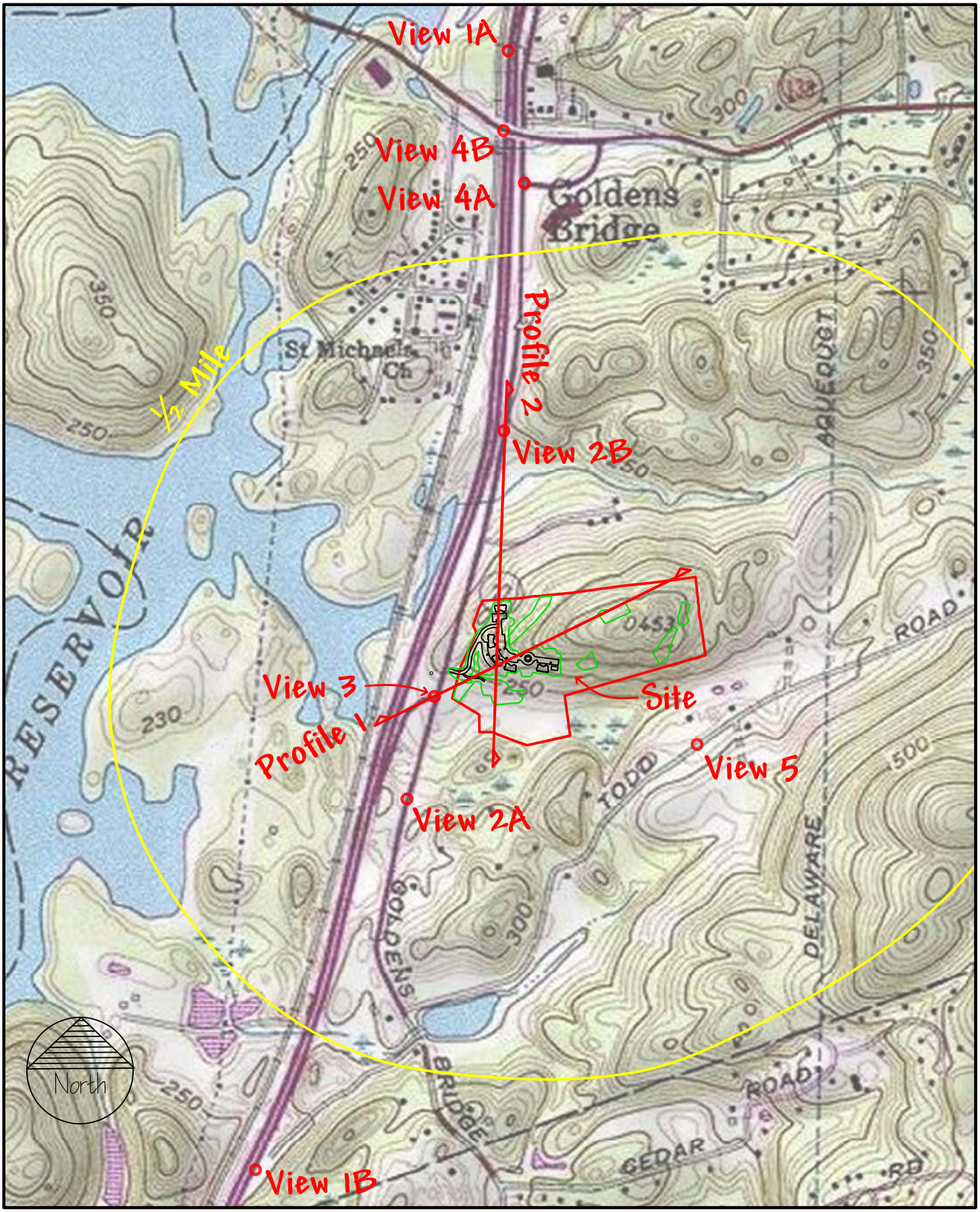
The eight vantage points shown in the accompanying graphics were visited, however only from the Exit 6A Stop sign location could one of the balloons be seen, largely obscured by the trees. Observations while driving the area roads found that the balloons were visible from Route 22 and I-684 in very close proximity to the site (within approximately 800 feet of the proposed development area), demonstrating that the density of the existing tree cover on and off the property can be expected to provide significant buffering of views (mitigation) of the proposed buildings in winter. In summer months, it is likely that there will be no visibility of the buildings from offsite other than from Route 22 between Exit 6A and the site driveway.

All of the proposed buildings will be below the height of the tree line, and, while portions of buildings will likely be visible through the trees from vehicles passing the site, more so in winter than in summer, their presence will be compatible with the characteristics of the neighborhood. From no location will the entire development be visible; the “worst case” view studied in Figure 3.5-7E demonstrates the limited exposure of the development to outside views, and mitigation of partial views will be incorporated into the design plans such that no significant visual impact will result. The documentation provided demonstrates that such visibility would not be considered a significant adverse or unmitigated impact.

In summary, the proposed affordable housing development will create new openings in the tree canopy on portions of the existing wooded knoll, and will place new buildings below the tree line and behind a dense buffer of existing trees, which will have very limited visibility from off-site due to the extent of existing trees and understory vegetation proposed to remain on the site and the surrounding predominance of woodland cover.

Overall, in the applicant’s opinion, the development will have a minimal effect of the wooded, open space character of this area of the Town of Lewisboro and will not have a significant adverse impact on any visual or aesthetic resources. The visual changes which will result from the development, in the applicant’s opinion, will not result in significant impacts to identified aesthetic resources or vantage points with views to the subject site.

Photographs of representative building architecture planned for the WB Lewisboro development are depicted in Figures 3.6-10 and 3.6-11. These images show the Bridleside project recently built by the applicant in North Salem. Figures 3.6-12 and 3.6-13 show architectural elevations of the style of building proposed at WB Lewisboro. The applicant anticipates working directly with the Town during development of the design plans with the intent of purposefully creating a project appearance that will complement the community. Such design elements would include building facade materials and color, roof pitch, materials of the landscape features such as light fixtures, signage and retaining walls, and selection of plant materials. The applicant is committed to designing a housing development that will be an asset to the Town.



4/20/16
Scale: 1" = 1,000'
Base Maps: USGS Topo Quad & Insite Engg.
FS: WBLewisboro\\visual\CAD\visual studies.dwg: keymap

Figure 3.6-1: Key Map to Visual Assessment
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400

1A: I-684 (View Looking South)

1B: I-684 (View Looking North)

Figure 3.6-2: Route I-684 Photos

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Data Source: TMA photos Jan. 2016

03/29/16

15039/*Fig3.5-.eps*

2A: Route 22 (View Looking North)

2B: Route 22 (View Looking South)

Figure 3.6-3: Route 22 Photos

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Data Source: TMA photos Jan. 2016

03/26/16

15039/*Fig3.5-.eps*

Site

3: Exit 6A at Route 22 (View Looking Northeast)

Figure 3.6-4: Exit 6A Photo

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Data Source: TMA photos Jan. 2016

03/29/16

15039/*Fig3.5-.eps*

4A: Route 138 Ramp to Route 22 (View Looking South)

4B: Route 138 Ramp to I-684 (View Looking South)

Figure 3.6-5: Route 138 Photos

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Data Source: TMA photos Jan. 2016

03/29/16

15039/*Fig3.5-.eps*

5: Todd Road (View Looking West)

Figure 3.6-6: Todd Road Photo

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Data Source: TMA photos Jan. 2016

03/29/16

15039/*Fig3.5-.eps*

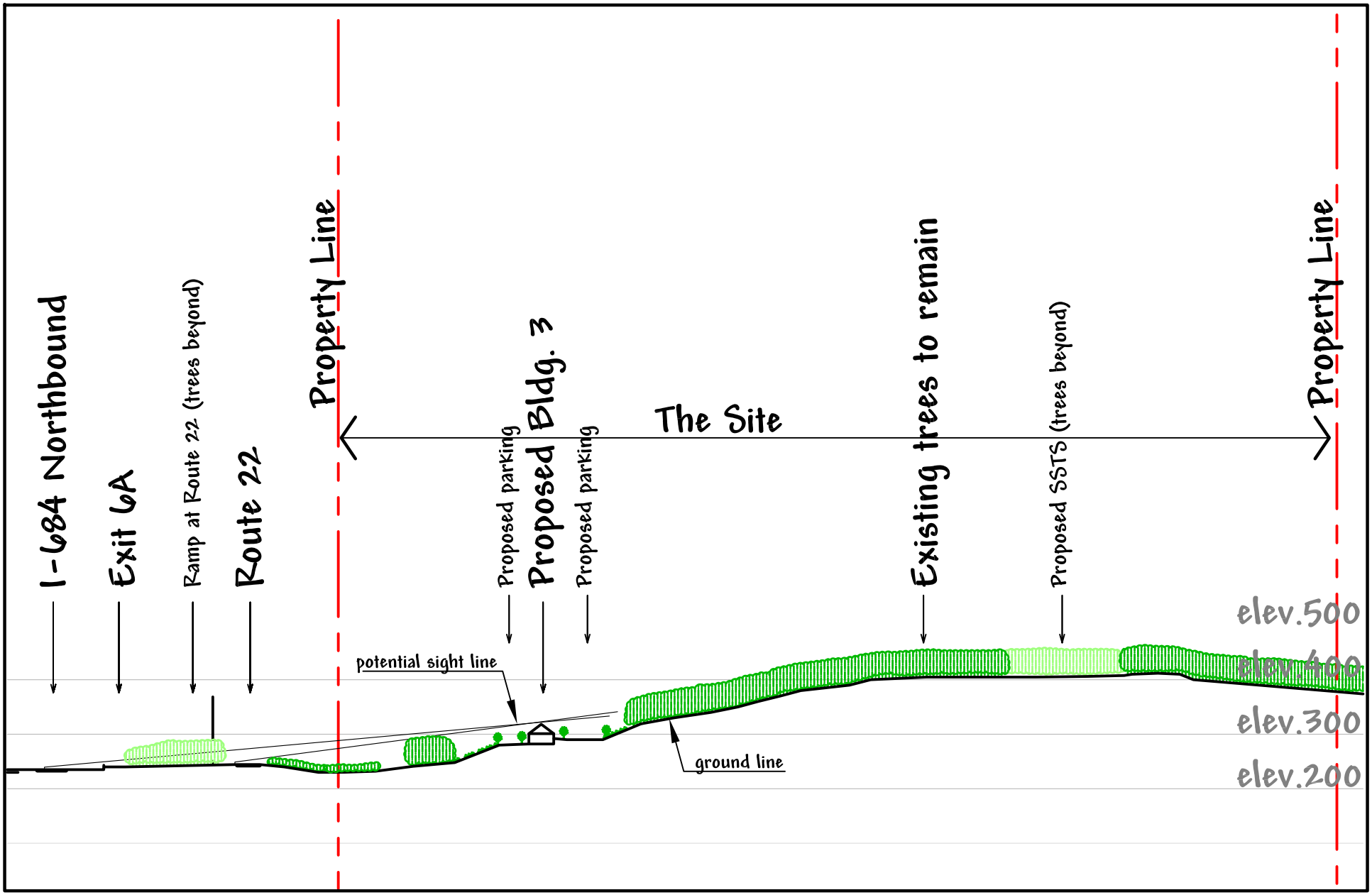


Figure 3.6-7: Site Profile 1 Looking Northwest

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Base Maps: USGS Topo Quad & Insite Engg.

1/26/16

Scale: 1" = 250'

FS: WBLewisboro\\visual\CAD\visual studies.dwg: profile1

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400

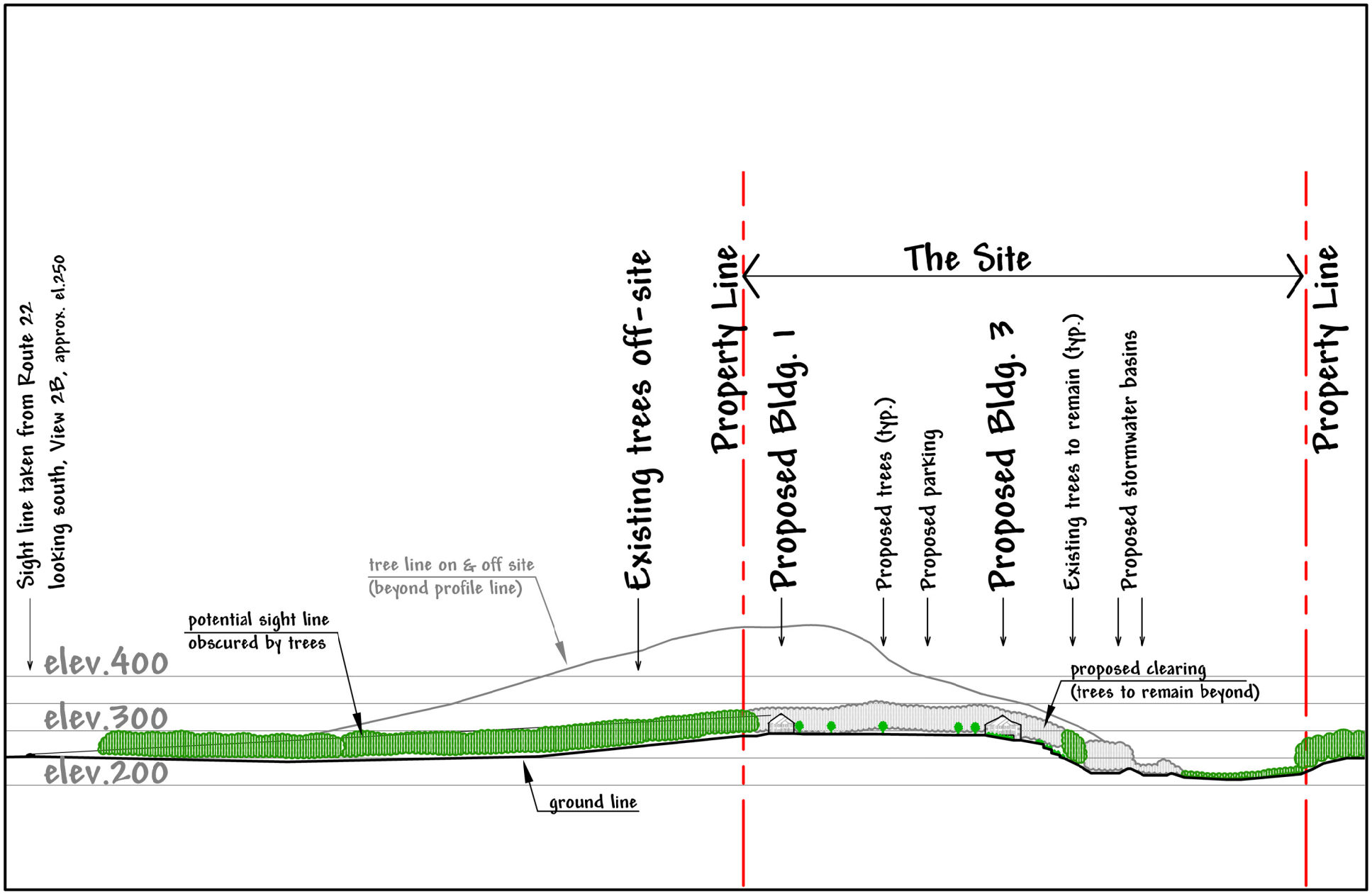


Figure 3.6-8: Site Profile 2 Looking East

WB Lewisboro Affordable Housing

Town of Lewisboro, Westchester County, New York

Base Maps: USGS Topo Quad & Insite Engg.

4/25/16

Scale: 1" = 250' (horiz. & vert.)

FS: WBLewisboro\\visual\CAD\visual studies.dwg: profile2

Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400

2A. Route 22 (View Looking North)

2A+300: Route 22 (View Looking North)

Figure 3.6-9A: Route 22 Photos
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Google images Sept. 2015

4/25/16
15039/

2A+600: Route 22 (View Looking North)

2A+900: Route 22 (View Looking North)

Figure 3.6-9B: Route 22 Photos
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Google images Sept. 2015

4/25/16
15039/

Site

2A+1200: Route 22 (View Looking North)

Site

2A+1500: Route 22 (View Looking North)

Figure 3.6-9C: Route 22 Photos
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: Google images Sept. 2015

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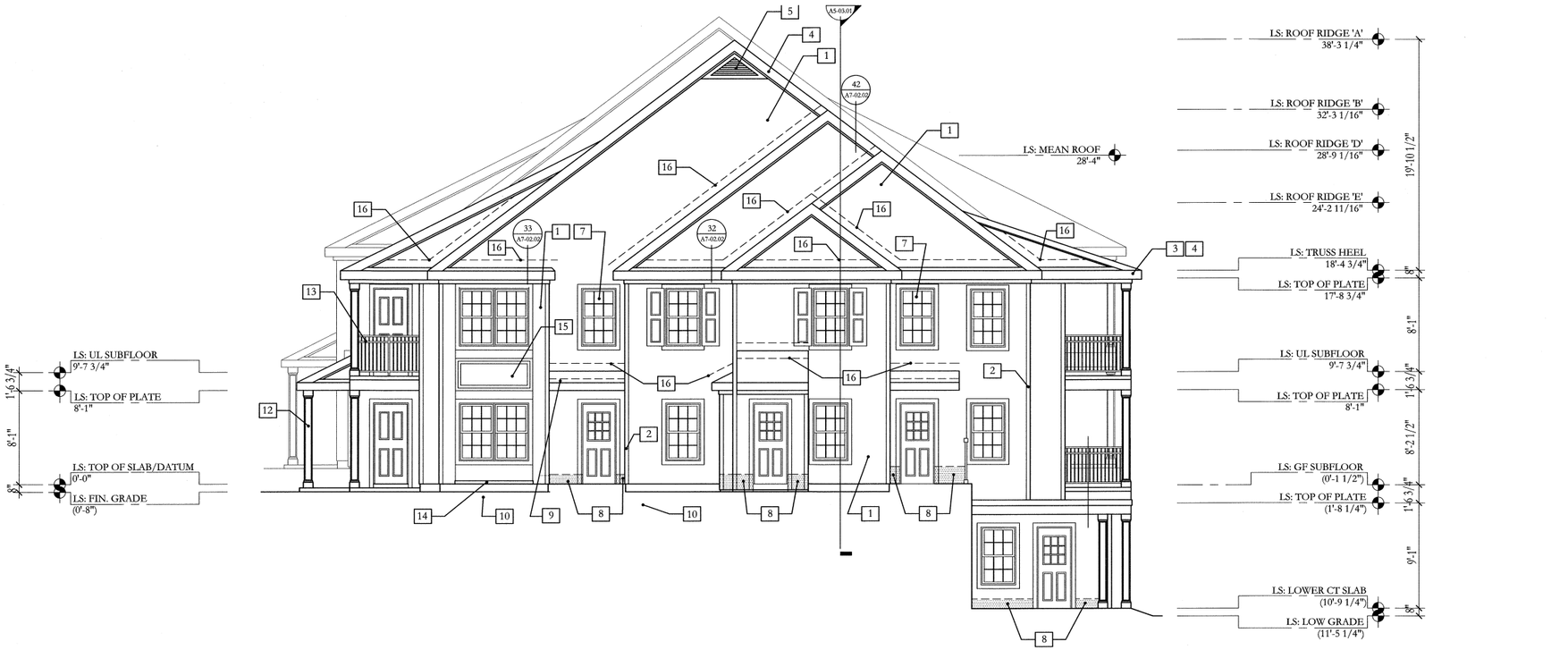
15039/

Figure 3.6-10: Representative Building Architecture
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: WB Photos of Bridleside

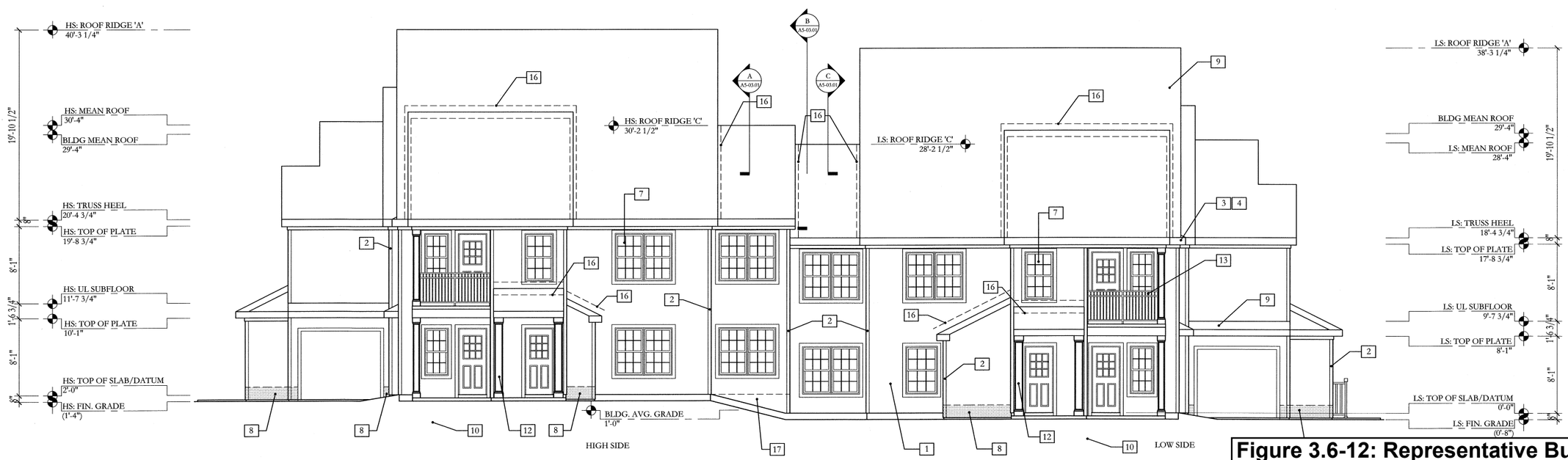
4/25/16
15039/

Figure 3.6-11: Representative Building Architecture
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York
Source: WB Photos of Bridleside

4/25/16
15039/



2 BUILDING TYPE C - RIGHT SIDE ELEVATION
3/16" = 1'-0"



1 BUILDING TYPE C - FRONT ELEVATION
3/16" = 1'-0"

ELEVATION NOTES

1 – VINYL SIDING SYSTEM 4" EXPOSURE MIN. 0.44" THICK - CERTAINTEED "MAINSTREET" CLAPBOARD STYLE OR EQUAL

2 – 6" VINYL EXTERIOR CORNER TRIM - ONE PIECE WITH "J" POCKET, TYP. SEE 11/A7-03.01

3 – 6" ALUMINUM "OGEE" GUTTER SYSTEM

4 – ALUMINUM WRAPPED FASCIA, EAVE & RAKE

5 – SCREEN PROTECTED GABLE VENT - SEE MEP FOR DUCTWORK

6 – 4" x 5" ALUM. DOWNSPOUT TO MATCH GUTTER

7 – INSULATING VINYL WINDOW W/ INTEGRAL VINYL TRIM, TYP.

8 – APPLY W.R. GRACE ICE & WATER SHIELD MEMBRANE TO FACE OF SHEATHING AND CONCRETE FOUNDATION WALL. OVERLAP FOUNDATION WALL MIN. 12". OVERLAP SHEATHING MIN. 12". APPLY FULL WIDTH OF WALL WHERE SHOWN.

9 – GAF TIMBERLINE 30 YEAR ARCHITECTURAL ROOF SHINGLE SYSTEM

10 – CONCRETE FOUNDATION. PROVIDE DAMP-PROOFING SYSTEM FOOTER-FINISH GRADE. SEE CIVIL FOR FINISH GRADE PROFILE. EXTEND SIDING SYSTEM TO 8" ABOVE FINISH GRADE OVER CONCRETE FOUNDATION (NOT SHOWN THIS DRAWING)

11 – ATTACHED PILASTER - SYNTHETIC TRIM TO MATCH COLUMN DESIGN - OVER DRAINAGE PLANE.

12 – SYNTHETIC COLUMN AND PORTICO STRUCTURE. TRIM AS SHOWN.

13 – POWDER-COATED ALUMINUM RAILING SYSTEM 42" ABOVE WALKING SURFACE, TYP.

14 – FLAT SYNTHETIC TRIM 1x4 OVER DRAINAGE PLANE.

15 – FLAT SYNTHETIC PANEL OVER DRAINAGE PLANE.

16 – ICE & WATER SHIELD. ADHERE 50% OF SHEET TO WALL, 50% OF SHEET TO ROOF, FOLDING SHEET AT SEAM (NO CUTTING PERMITTED).

17 – VINYL SIDING SYSTEM OVER CONCRETE FOUNDATION.

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REGISTERED ARCHITECT MICHAEL D. GIARDINO III NO. 026811-1 STATE OF NEW YORK

Architect:
Michael D. Giardino, AIA PP NY 026811-1

CLIENT:
JUNE ROAD DEVELOPMENT, LLC
Wilder Balter Partners
570 Taxter Road
6th Floor
Elmsford, New York 10523

PROJECT TITLE:
BRIDLESIDE
Town of North Salem
Westchester County, NY

11-17-WBP

REVISION #	DATE:	DESCRIPTION
NA	12-09-14	Preliminary Pricing Release
NA	12-10-15	PERMIT LEVEL Documents
NA	12-11-05	Construction Documents

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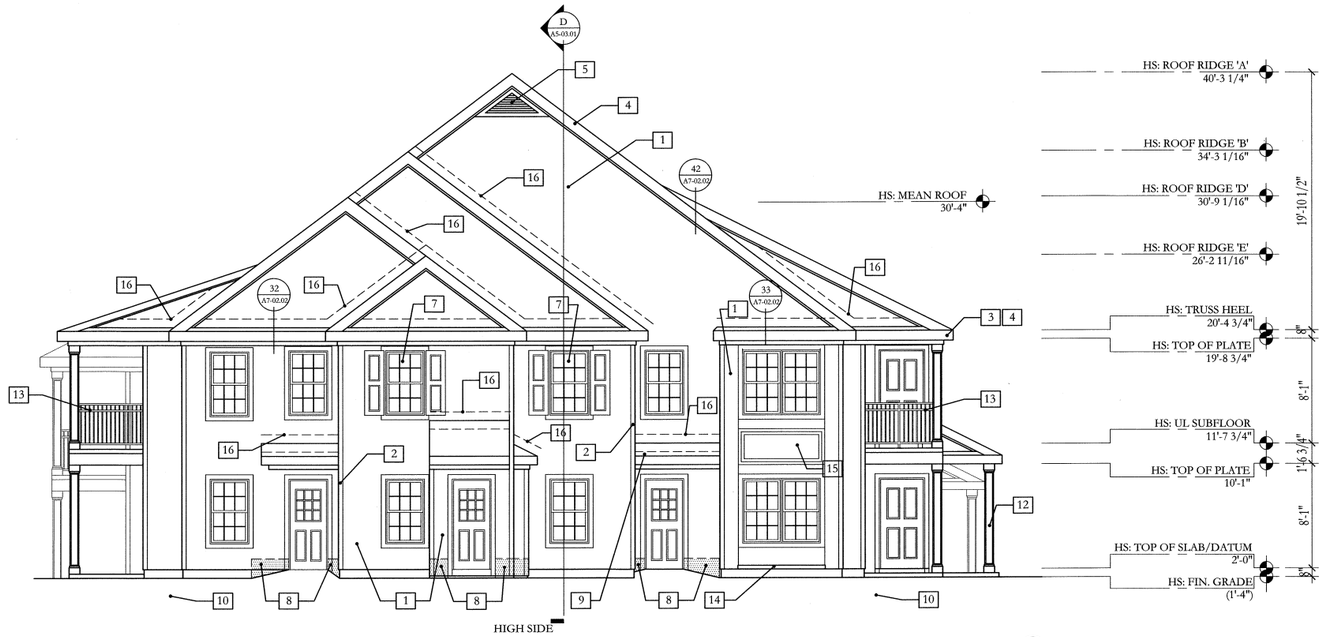
DRAWING TITLE:
BUILDING TYPE C
ELEVATIONS:
FRONT
RIGHT SIDE

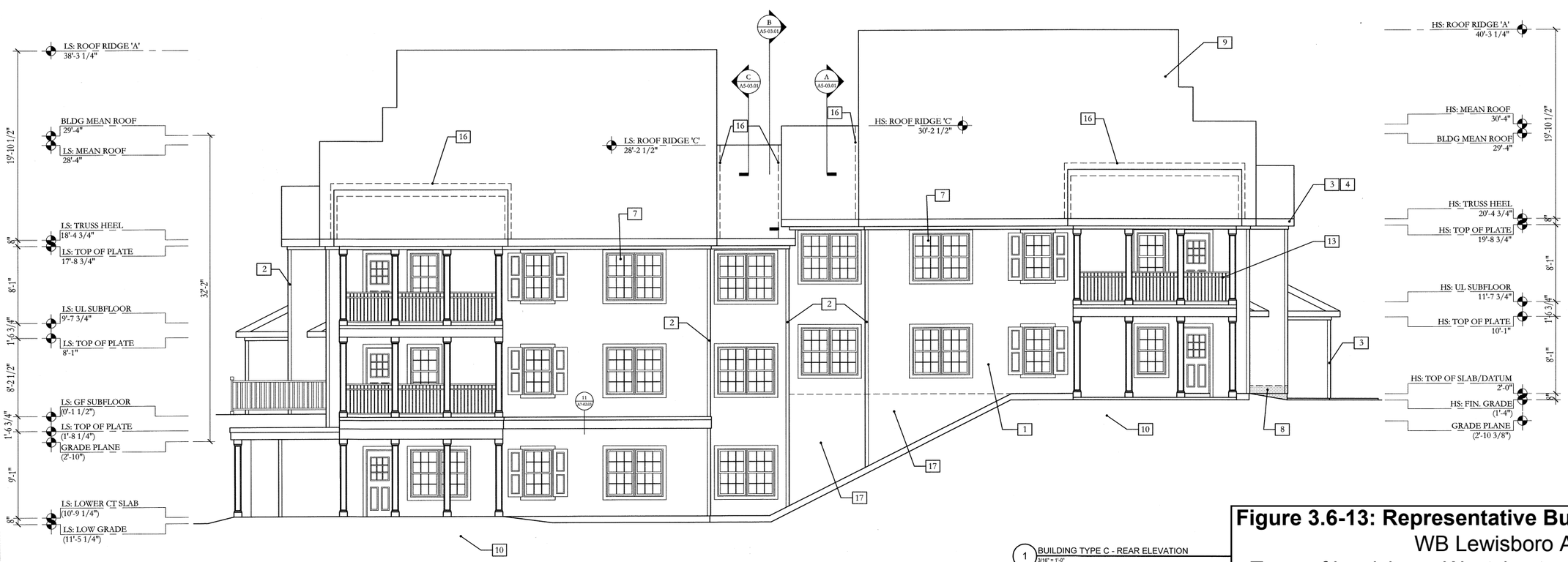
CONSTRUCTION
DOCUMENTS
LEVEL 9

date: 11/5/2012

Figure 3.6-12: Representative Building Elevations
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York



2 BUILDING TYPE C - LEFT SIDE ELEVATION
3/16" = 1'-0"



1 BUILDING TYPE C - REAR ELEVATION
3/16" = 1'-0"

ELEVATION NOTES

1 – VINYL SIDING SYSTEM 4" EXPOSURE MIN. 0.44" THICK - CERTAINTEED "MAINSTREET" CLAPBOARD STYLE OR EQUAL

2 – 6" VINYL EXTERIOR CORNER TRIM - ONE PIECE WITH "J" POCKET, TYP. SEE 11/A7-03.01

3 – 6" ALUMINUM "OGEE" GUTTER SYSTEM

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5 – SCREEN PROTECTED GABLE VENT - SEE MEP FOR DUCTWORK

6 – 4" x 5" ALUM. DOWNSPOUT TO MATCH GUTTER

7 – INSULATING VINYL WINDOW W/ INTEGRAL VINYL TRIM, TYP.

8 – APPLY W.R. GRACE ICE & WATER SHIELD MEMBRANE TO FACE OF SHEATHING AND CONCRETE FOUNDATION WALL. OVERLAP FOUNDATION WALL MIN. 12". OVERLAP SHEATHING MIN. 12". APPLY FULL WIDTH OF WALL WHERE SHOWN.

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11 – ATTACHED PILASTER - SYNTHETIC TRIM TO MATCH COLUMN DESIGN - OVER DRAINAGE PLANE.

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11-17-WBP

REVISION #	DATE	DESCRIPTION
NA	12-09-14	Preliminary Pricing Release
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DRAWING TITLE:

BUILDING TYPE C
ELEVATIONS:
REAR
LEFT SIDE

CONSTRUCTION
DOCUMENTS
LEVEL 9

date: 11/5/2012

Figure 3.6-13: Representative Building Elevations
WB Lewisboro Affordable Housing
Town of Lewisboro, Westchester County, New York

3.7 IMPACT ON HISTORICAL AND ARCHEOLOGICAL RESOURCES

Existing Conditions

As described herein, the 35.4 acre subject site is undeveloped and mostly wooded land. No structures or foundations have been observed on the property. Based upon historical photographs, the majority of the site has remained wooded since the 1940's, probably due to the rocky topography. Those areas closest to Route 22 are shown as open pasture in the 1947 aerial photograph, and it is likely that some logging occurred through the 1960's.

A Phase 1A and Phase 1B Cultural Resource Investigation has recently been conducted on the property. The Phase 1A / 1B investigation is provided in Appendix F. A file search at the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) identified no New York State Museum (NYSM), OPRHP sites or National Register Listed or Eligible properties on or within 500 feet of the subject property. There have been no prior archeological investigations conducted within 500 feet of the subject property.

Potential Impacts

According to the Phase 1A investigation, the subject site is considered to have moderate sensitivity for the presence of prehistoric cultural remains. The location exhibits several characteristics that are known to have been conducive to Native American occupation including the elevated hilltop adjacent to water sources that are themselves tributaries to a larger nearby river system. No rockshelters or usable lithic resources were identified within the proposed area of disturbance indicating that pre-contact sites would likely be limited to small temporary hunting camps rather than larger long-term settlements.

The proposed residential development will involve the grading of approximately 9 acres of relatively undeveloped land. The grading and excavation has the potential to disturb archeological cultural resources, should they be present on the property.

The Phase 1B fieldwork was conducted in December, 2015 at the subject site. The fieldwork consisted of 45 hand-excavated shovel tests across more level portions of the Area of Potential Effect (APE). The Area of Potential Effect is based upon the project plans. The test locations are shown in the Phase 1A/1B Archeological Investigation (Maps 9 and 10). No significant cultural resources were identified and no further archeological work was recommended.

Mitigation Measures

Based on the results of the Phase 1A/1B Cultural Resources investigation, no historic or archeological resources have been identified on or near the subject property and none will be impacted. No mitigation measures are warranted or proposed.

3.8 IMPACTS ON TRANSPORTATION

Existing Conditions

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4-acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The project site is located in the Hamlet of Goldens Bridge approximately ¾ - mile south of Route 138 and the Goldens Bridge train station. The location of the site is shown on maps in Figures 2-1 and 2-2. The site will have a single access slightly north of the northbound Interstate 684 Exit 6A ramp. This section summarizes the detailed transportation report by Maser Consulting P.A. contained in Appendix G.

Interstate 684 is a six lane divided limited access highway and is a major commuter route to Interstate 287 in southern Westchester County. Thus most regional commuter traffic does not use NYS Route 22 that passes by the site and parallels Interstate 684 in this area. The northbound exit ramp (6A) from Interstate 684 is located immediately south of the site and was studied along with the site access to NYS Route 22. NYS Route 22 is a two lane road with posted 40 miles per hour. Peak hour traffic volumes (weekday a.m. and p.m.) were counted in December of 2015 and compared with counts taken in 2014 for the Goldens Bridge Shopping Centre to the north.

Potential Impacts

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Traffic volumes were projected to the design year of 2020 using a background growth of 2.5 percent (0.5 percent per year) based on historical data. Traffic from the proposed Golden Bridge Village Shopping Centre expansion was also added to the future traffic.

utur r th th ro t u d o u

Site generated traffic was estimated for the apartments (Land Use code 220) using the Institute of Transportation Engineers, *r r t o M u*, 9th edition, 2012. In the a.m. peak hour 5 entering and 21 exiting trips were estimated. In the p.m. peak hour 28 entering and 15 exiting trips were projected. Distribution of arrival and departure traffic was based on existing traffic volumes and supplemental data.

The intersections of NYS Route 22 and North Street and of NYS Route 138 and North Street were analyzed *d t rt o th o d rdg ho g t r o h t tud h d o d r d grou d tr gro th h h ou t or th t d o u ro th ro o d u t d o o t o d r g th o r t h gh tr t t u d th tr tud or th ro o d u t hou g ro t th o u u t to t r g d t g h dur g th M hour d t r g d t g h dur g th M hour t out d orth tr t d t orth tr t d out ho th o r u r o th ro t ot h g t t o th o r or h d t th t r to*

u r u r h r r d to d t th existing and proposed trip rate traffic volumes, levels of service, and sight distance summaries *o o o r*

[illegible]

[illegible]

Capacity analysis using SYNCHRO analysis software is based on procedures documented in the *[illegible]* Traffic conditions are defined based on a level of service grade from A the best to F the worst conditions. NYS Route 22 and the site driveway are anticipated to operate at a level of service C or better for all movements.

The Interstate 684 northbound off ramp (Exit 6A) at NYS Route 22 experiences a level of service F in both the a.m. and p.m. peak hours in the Existing Condition and will experience increased delay with future traffic. Although a traffic signal would improve operation to a level of service B or better for all movements, the review of traffic volumes indicates the intersection does not satisfy signal warrants as specified by the *[illegible]*.

"The results of the capacity analysis indicated the proposed residential development will not significantly change the overall Levels of Service at each of the key locations. The intersection of I-684 and Route 22 will continue to experience operating problems during peak periods and should continue to be monitored in the future for a possible traffic signal." (See Appendix G - Page 6 Mr. Grealy letter to Mr. Bainlardi, January 29, 2016).

[illegible]

NYS Route 22 speeds limits are 45 miles per hour entering into the 40 mile per hour speed limit in the section including the site access. Sight distances were observed and summarized with only the intersection sight distance not meeting a 55 mile per hour posted speed looking to the right. Vegetation pruning is recommended to the north of the site access to increase the sight distance to exceed the intersection sight distance. A W2-2 "Intersection Ahead" sign should be posted in advance of the site north and south on NYS Route 22 with a final determination to be made by the New York State Department of Transportation as part of the Highway Work Permit Process.

[illegible]

Construction

[illegible]

o th o tru t o tr to th t ord th t t t d rd d r u r t h d t d rt o th gh or r t

Avoidance or Minimization of Potential Impacts or Mitigation

Based on the transportation report, the proposed residential development will not significantly change the overall levels of service at each of the key locations studied. The applicant will work with the NYS Department of Transportation regarding the entrance driveway and the development's traffic as part of the Highway Work Permit Process. Given the lack of the project's impact on key locations, no mitigation measures are proposed.

3.9 COMMUNITY FACILITIES AND SERVICES

3.9.1 Demographic Resources

Existing Conditions

As discussed, The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4-acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The project site is located south of the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station. The project site is currently vacant.

Potential Impacts

The Applicant proposes to construct 45 units of affordable rental apartments plus one superintendents apartment (46 units total). The rental apartments will meet the requirements of the Westchester County Fair and Affordable Housing Implementation Plan. The proposed development will assist Westchester County in meeting its court mandated obligation to complete 750 affordable AFFH units, with building permits and funding in place, by December 31, 2016. The proposed AFFH apartments will also count toward the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015).

As illustrated in Figure 1-3, the 46 apartments will be located in five buildings of eight to ten units. The buildings will contain a mix of one, two and three bedroom units. The majority (eighty percent) of the units will be affordable to residents whose income does not exceed 60% of the Area Median Income (AMI), based upon family size, as established by the Department of Housing and Urban Development (HUD) on an annual basis. To further meet the affordability guidelines, twenty percent of the rental units will be marketed to residents whose income does not exceed 50% of the (AMI).

For the purpose of this analysis the development is envisioned to include 14 one bedroom units, 24 two bedroom units and 8 three bedroom units. The actual number of units and the proposed bedroom counts will be finalized prior to site plan approval. According to the NYS HCR funding guidelines the units are projected to rent for $988 to $1,643 depending upon number of bedrooms, unit size and affordability criteria.

Demographic multipliers published by the Rutgers University Center for Urban Policy Research (CUPR) were used to project the future population of the proposed affordable 46 unit AFFH multifamily community. Population projections are based upon the geographic region, type of unit, number of bedrooms, and the anticipated rental value. As shown in Table 3.9-1, based upon the nature of this development, the multipliers used to project the population are as follows; three bedroom units house 3.81 persons per unit, two bedroom units are 2.31 persons per unit and a one bedroom unit is 1.67 to 1.99 persons per unit depending upon the rental value. By comparison, 2010 U.S. Census data indicate that the average household size for all housing types in the Town of Lewisboro is 2.78 persons, and the average family size is 3.16 persons.

Based upon the CUPR residential multipliers, approximately 110 persons, including 16 school age children are projected to reside in the anticipated housing.

Table 3.9-1 Population Projections					
Unit Type	**Number of Units**	**Population Multiplier**	**Population**	**School Age Children Multiplier**	**School Age Population**
1-BR 50% AMI	3	1.99	6	0.30	0.9
2-BR 50% AMI	5	2.31	11	0.23	1.15
3-BR 50% AMI	1	3.81	4	1.50	1.5
1-BR 60% AMI	11	1.67	18	0.08	0.88
2-BR 60% AMI	18	2.31	42	0.23	4.14
3-BR 60% AMI	7	3.81	27	1.00	7
2-BR Superintendent Apartment	1	2.31	2	0.23	0.23
TOTAL	**46**		**110**		**16**

Source: Rutgers University Center for Urban Policy Research, June 2006. Table prepared by TMA, 2016. Values are based upon 5+ Unit Structures for Rent at more than $1,000 per month for one, two and Three Bedroom units as noted in the Table above.

3.9.2 Fiscal Resources

Existing Conditions

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The proposed AFFH multifamily community is contained on the following Town Tax Parcels;

- Sheet 5 - Block 10776 - Lot 19
- Sheet 5 - Block 10776 - Lot 20
- Sheet 5 - Block 10776 - Lot 21

The current equalized assessed value of the three undeveloped parcels is $87,300. This represents 9.9 percent of the total market value of the three parcels. According to a review of the 2015 tax bills for the subject parcels, the total annual property taxes paid to the Town of Lewisboro are $1,639 and the municipal taxes paid to the Goldens Bridge Fire Department are $890. The municipal taxes paid to Westchester County are $2,990. Thus, the total municipal taxes paid are $5,520 while the annual property taxes paid to the Katonah Lewisboro School District (KLSD) are $17,061.

Potential Impacts

The New York State Office of Real Property Services (NYSRPS) requires that rental properties are assessed in terms of the value of the income they provide. Based upon the income value of the proposed affordable rental apartments, the total market value of the proposed community is estimated to be $4,717,342. Using the current Town of Lewisboro 2015 equalization rate of 9.9 percent, the total future Assessed Value for this analysis is estimated to be $467,017.

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Table 3.9-2 compares the revenues generated presently by the property to the revenues to be generated after the proposed rental community is complete. Revenues are based on the most current 2015 municipal tax rates (2015-2016 tax rate for the Katonah Lewisboro School District).

According to the Town of Lewisboro budget, the Town's tax rate includes Town governmental services, highway maintenance, justice court, police services, and parks & recreation.

As presented in Table 3.9-2, annual revenues to the Town of Lewisboro are projected to be approximately $8,770. Tax revenues to the Goldens Bridge Fire Department are estimated to be $4,762. The tax revenues to Westchester County would be approximately $15,995 annually, thus the total municipal revenue is estimated to be $29,527.

Table 3.9-2 also indicates the annual revenues to the Katonah Lewisboro School District would be approximately $91,268. The net□□□r□□□□ between the current tax revenues generated by the site and paid to the School District and the total future project-generated revenues to the school district are projected to be approximately $74,207 annually.

As can be seen in Table 3.9-2, overall, the combined tax revenues from each jurisdiction are projected to total more than $120 thousand annually.

Table 3.9-2
Current & Projected Taxes Generated by the 46 Unit AFFH Residential Community

Taxing Authority	Current Tax Rate	Current Taxes ($)	AFFH Projected Taxes Total ($)	Net Increase Between Current & Projected Taxes ($)
Westchester County	$34.2497	$2,990	$15,995	$13,005
Town of Lewisboro	$18.7796	$1,640	$8,771	$7,131
Goldens Bridge Fire District	$10.1963	$890	$4,762	$3,872
Total Town of Lewisboro		$2,530	$13,533	$11,003
Total Municipal	$63.2256	**$5,220**	**$29,258**	**$24,008**
Katonah Lewisboro School District	$195.4287	**$17,061**	**$91,268**	**$74,207**
TOTAL	$258.6543	**$22,581**	**$120,796**	**$98,215**

Notes:
Municipal taxes are based upon Town of Lewisboro 2015 Tax Rates. These rates are in effect 4/1/15 through 4/1/16.
Katonah Lewisboro School District Tax Rates are for the 2015-2016 school year.

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A management company will operate and maintain all common areas, facilities and infrastructure included in the proposed action. All of the community aspects of the project will be privately maintained, including the roadway. There are no aspects of the project which are anticipated to result in an ownership, maintenance or operational responsibility to the Town of Lewisboro, thus reducing municipal costs to the maximum extent practicable.

3.9.3 Police, Fire and Emergency Services

Existing Conditions

Police Protection

The Lewisboro Police Department provides police protection services to properties within the 29 square mile area that comprises the Town of Lewisboro. The police department headquarters is located at 20 North Salem Road, Cross River, NY, approximately 5.5 miles (driving distance) southeast of the project site. The Town of Lewisboro is served by the New York State Police in conjunction with the Lewisboro Town Police. The New York State Police are stationed on Route 100 in Somers, NY.

The Lewisboro police force provides police protection for the Town of Lewisboro including the hamlets of Cross River, Goldens Bridge, South Salem, Waccabuc, Vista and Grants Corner.

The Lewisboro Police Department is led by Police Chief Frank Secret. The Town of Lewisboro has a police force of 12 officers, dispatched by the New York State Police when Lewisboro officers are on duty.[1] Supplemental police coverage is provided by the NYS Police as needed. According to the Police Chief[2], in 2015 the department handled approximately 1,851 calls for service. The population data from the 2010 census indicates there are 12,411 persons residing in the Town of Lewisboro. Based upon these figures, there is approximately one police officer for every 1,000 residents and annual average calls per capita equates to 0.15.

Sworn personnel are involved in various programs including Crime Prevention, Accident Investigation, STOP DWI, Commercial Vehicle Enforcement, Intelligence, and Youth Court.

Based upon location, typical response time to a residence in the proposed community is estimated to be five to ten minutes.

Fire Protection

The proposed development is within the Goldens Bridge Fire District and is served by the Goldens Bridge Fire Department which is a 100% volunteer fire department. The Fire district covers an area of approximately 8 square miles in the hamlet of Goldens Bridge which includes a mix of both business and residential areas, as well as a section of Interstate 684 and the Metro North Railroad. Serving a population of approximately 4,000 residents and countless number of commuters who use both Interstate 684 and Metro-North Railroad, the fire department provides coverage 24 hours a day, 365 days a year. The Goldens Bridge Fire Department typically responds to an average of approximately 275 calls annually. Based upon these figures, annual average calls per capita equates to 0.07.

There are approximately 70 active members who serve the community by providing Fire, Rescue, Disaster Relief and Emergency Medical Services to anyone in need. The Goldens Bridge Fire Department is also dedicated to community service by offering scholarships for community minded youth, supporting Scouting organizations of America and supporting other local charities.

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[1] Source; Lewisborogov.com/police.
[2] Phone conversation with Police Chief Secret on February 1, 2016.

The Goldens Bridge Fire Department currently operates 3 engines, 1 tanker truck, 2 heavy rescue vehicles, 1 brush unit, and 3 Chiefs' vehicles. These units are staffed by 100 volunteer members who respond from a fire station at 254 Waccabuc Road in Goldens Bridge. The station is approximately 1.5 miles (driving distance) from the subject site. In 2015, the department responded to approximately 250 alarms. These alarms consisted of structural fires, motor vehicle accidents (MVA's), automatic alarms, vehicle fires, mutual aid, and various other calls for assistance. The Goldens Bridge Fire Department does not respond to medical emergency calls. This service is provided by the Lewisboro Volunteer Ambulance Corps LVAC.

Lewisboro Volunteer Ambulance Corps

The Lewisboro Volunteer Ambulance Corps (LVAC) provides emergency ambulance service to the project area. Average response time is between five and seven minutes. In 2013, LVAC responded to 416 ambulance calls. According to their records, 320 patients were transported to area hospitals. Based upon these figures, annual average calls per capita equates to 0.04.

Each ambulance response is staffed by a crew chief who is a New York State Certified Emergency Medical Technician, and a driver, who may or may not be an EMT. Most calls have a third crew member, referred to as the first aider, who also may or may not be an EMT. The crew chief is in charge of patient care decisions, including which hospital the patient is transported to.

The Town of Lewisboro is one of several towns in northern Westchester County which are additionally served by a paramedic service, Westchester EMS. There are three paramedic fly cars in service at all times and one is paged out along with LVAC on all calls. If the patient's condition warrants ALS, the paramedic will ride with the LVAC crew and provide advanced life support.

LVAC currently operates 2 ambulances, 67B1 and 67B2, the B standing for basic life support. The Corps also has a first response vehicle, a fully-equipped Chevrolet Tahoe. The Corp. has approximately 40 riding members. All members are trained to use AEDs (Automatic Electronic Defibrillators), and LVAC has 10 Lifepak AEDs. LVAC also participates in the Epipen program to administer epinephrine, is certified to use albuterol for the treatment of asthma, and trained to use glocometry. They have recently added the Lucas device to all vehicles which is used to provide continuous CPR for any patients that require the treatment.

The primary hospital serving the project area is Northern Westchester Hospital in Mt. Kisco. Services offered by this hospital include: emergency services, ambulatory surgery, cardiopulmonary center, diagnostic imaging, mental health unit, MRI center, nutritional services, occupational therapy, pediatrics, physical therapy, prostate cancer treatment, alcohol & substance abuse, speech & hearing, and a wound care center.

According to Northern Westchester Hospital, its physicians represent all of the medical specialties and offer their patients the latest in medical care supported by nursing, clinical, and technical staff. Northern Westchester Hospital also offers various outreach programs that present preventive medicine and wellness subjects.

Although LVAC transports most patients to Northern Westchester Hospital in Mt. Kisco, occasionally patients are transported to Putnam Hospital in Carmel, Westchester Medical Center in Valhalla, and Danbury or Norwalk Hospitals in Connecticut.

Potential Impacts

As shown in Table 3.9-1, development of the proposed residential community is anticipated to result in a population increase of approximately 110 persons. This increase represents less than one percent of the current Town population of 12,411 (2010 Census).

Police Department

Based on planning standards contained in the Development Impact Assessment Handbook published by the Urban Land Institute, model factors for police protection recommend two (2) police personnel per 1,000 persons which further breaks down to 1.5 police personnel per 1,000 persons for residential uses and 0.5 police personnel per 1,000 persons for nonresidential uses. Based on this standard, 110 persons would increase police staffing needs by less than one quarter of a person which is not likely to have an impact on the Town's police personnel ratio of 1.0 officers personnel per 1,000 residents. As discussed earlier, annual average calls per capita equates to 0.15, thus it can be expected that calls for service to the Police Department would increase by approximately 17 calls annually.

Fire Department

Based on planning standards published in the Development Impact Assessment Handbook, approximately 1.65 fire department personnel per 1,000 population is recommended to provide adequate fire protection service. One hundred ten new residents would generate demand for an additional 0.18 fire department personnel. As discussed earlier in this section, the proposed development would generate $4,762 in annual property tax revenues to the fire district to offset any additional demand. The proposed site access roads will be designed in accordance with Town road specifications which are designed to adequately accommodate emergency service vehicles. As discussed earlier, annual average calls per capita equates to 0.07, thus it can be expected that calls for service to the Goldens Bridge Department would increase by approximately 8 calls annually.

Each of the proposed residential buildings will be equipped with fire sprinklers and the water system is designed to meet the combined peak flow for domestic and sprinkler use. Fire hydrants are not proposed given the use of sprinklers. The applicant will provide emergency back-up water supply storage in underground tanks. The applicant will work with the Goldens Bridge Fire Department regarding the final design for emergency back-up water supply.

Emergency Medical Services

Based on planning standards contained in the Development Impact Assessment Handbook, approximately 36.5 calls per 1,000 population are made annually. Based on this standard, the 110 residents would increase EMS calls by approximately four calls annually on average. The Lewisboro Volunteer Ambulance Corp. has sufficient capabilities to handle this increase. As discussed earlier, annual average calls per capita equates to 0.04, thus it can be expected that calls for service to the Lewisboro Volunteer Ambulance Corp. from the proposed development would be approximately 4 calls annually.

Hospital

Based on planning standards contained in the Development Impact Assessment Handbook, four (4.0) hospital beds should be provided per 1,000 persons. Based on this standard, the

projected population increase associated with the proposed residential development has the potential to increase the need for beds in hospitals serving the Northern Westchester County area by less than half of a bed. This is not considered a significant impact.

3.9.4 Comparison to Bridleside, North Salem

New Housing developments are often controversial. Existing residents like the character of their existing neighborhoods and are often attached to the undeveloped parcels which have provided areas of open space. There are also practical considerations like traffic, property values and additional school children, that can be cause for concern. These concerns can be even more exaggerated when the proposal is for affordable housing.

Wilder Balter, the project sponsor, has successfully developed many multifamily communities throughout the Hudson Valley, including a substantially similar affordable housing development in the neighboring Town of North Salem, known as “Bridleside” which provides a vision for the subject proposal. The Bridleside residential development includes 65 units of affordable housing with a similar mix of one, two and three bedroom units as are proposed in the 45 unit WB Lewisboro Affordable Housing Development. The projected funding sources and rental values will be virtually identical in the two developments. The market values of residential real estate is comparable in North Salem and Lewisboro. The tax structure, tax rates and equalization rates are also similar in the two communities. Beyond the projections provided in development models, real life experience with similar development can provide an accurate window into what the future will bring post development.

Table 3.9-3 shown below, provides data on population and relevant demands for community services at the Bridleside project. Data was gathered from the Town of North Salem Police Department, the North Salem Fire Department, the North Salem Volunteer Ambulance Corp. And the North Salem School District. Table 3.9-3 lists the annual calls for service to the North Salem emergency service providers, and compares this data to the projections of demands for community services anticipated from the Lewisboro residential community. Since the proposed Lewisboro development is 45 units compared to the 65 units built in Bridleside, the statistics for Bridleside have been factored by 69% to provide a direct comparison to the Lewisboro projections.

A count of school age children who reside at Bridleside indicates there are a total of 35 students, however of this total 9 students already lived within the North Salem School District, indicating the increase in the school districts enrollment was 26 students as shown in Table 3.9-3.

Table 3.9-3 Impact Comparison Bridleside vs. Lewisboro AFFH			
Area of Concern	***Bridleside North Salem***		***AFFH Lewisboro***
Land Use			
Total Site Area (acres)	40.0		35.4
Total Area of Disturbance (acres)	14.1		9.0
Impervious Surfaces (acres)	3.1		2.4
Community Resources			
	Bridleside Full Value	***Bridleside Factored at 69%***	***AFFH Lewisboro***
Residential Units	65	45	45
Population	137	95	110
School-age Children - New to the District	26	18	16
Police Annual Calls for Service	23	16	17 *
Fire Annual Calls for Service	17	12	8 *
Ambulance Annual Calls for Service	7	5	4 *
Municipal Taxes	$44,588	$30,766	$29,527
School Taxes	$102,076	$70,423	$91,268

Notes: Estimates are approximate.
Source: Insite Engineering; Tim Miller Associates, Inc., 2016
* Based upon existing average annual calls with the current service area.

Minimization of Potential Impacts and Mitigation

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As Table 3.9-3 shows the actual calls for emergency service at Bridleside are consistent with the projection of need from the Lewisboro development. The anticipated calls for emergency services is not anticipated to result in any significant impact to police protection, or fire and emergency service provision in the Town of Lewisboro as a result of the construction of the proposed residential development.

The proposed development will generate tax revenues to balance any potential increases in the cost to various municipal and other district services.

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There are expected to be secondary benefits to the local economy as a result of construction activities and the future spending by the new residents of this project. The spending of residents expected to live at the proposed development will benefit commercial businesses in the local area and the region, both in the Town of Lewisboro and the surrounding region.

3.9.5 Schools

Existing Conditions

The project site is served by the Katonah Lewisboro Union Free School District. The District includes three K-5 elementary schools, one middle school (grades 6, 7 and 8), and one high school. The Katonah Lewisboro Union Free School District geographically includes all of the Town of Lewisboro and the Katonah Hamlet area in the Town of Bedford, and smaller portions of the Town of North Salem and the Town of Pound Ridge.

According to information provided by the School District[3], enrollments have been steadily decreasing over the past 10 years. As of October 2014, 3,204 students were enrolled in the District. Table 3.9-4 below summarizes the 2014-2015 grade distributions and enrollments of the various schools within the District:

Table 3.9-4
Katonah Lewisboro School District (2014-2015 School Year)

School	Grades Served	2014 Enrollment
Increase Miller Elementary School	K-5	479
Katonah Elementary School	K-5	415
Meadow Pond Elementary School	K-5	384
John Jay Middle School	6-8	777
John Jay High School	9-12	1,149
TOTAL		**3,204**

Katonah Lewisboro School District, 2015.

All of the schools in this School District received a rating of “5” from the New York State Public School Report Card of Comprehensive Information with respect to the “district need to resource capacity”. This rating states that “this is a school district with average student needs in relation to district resources capacity”.

Potential Impacts

As shown in Table 3.9-1, based upon demographic multipliers published by the Rutgers University Center for Urban Policy Research, approximately 16 students are projected to reside in the proposed residential development.

According to the Assistant Superintendent for Business, Based upon the geographic location of the project site and the current student distribution among schools in the district, it is likely that students from the proposed residential development would attend the Increase Miller Elementary School, the John Jay Middle School and the John Jay high School. It should be noted that student distribution is reviewed annually and is subject to change.

[3] Katonah Lewisboro Union free School District 2015-2016 General Fund Budget Book, April 2015.

[illegible]

The budget for the 2015-2016 school year for the Katonah Lewisboro Union Free School District totals approximately $108,731,720. The portion of the budget to be raised through taxation is $95,904,695 - approximately 88 percent of the budget is met through the property tax levy. The addition of 16 students to a population of more than 3,200 students represents an increase of less than half of one percent. This deminimus increase in student population will not have a significant impact on administrative or capital needs of the district. Any costs to the District's would be related specifically to instruction and transportation, which are referred to as marginal costs, District wide, these costs total $49,544,464[4]. Since 88 percent of the Budget is to be raised by the tax levy, the portion of these costs to be raised by the tax levy total $43,599,128.

With an enrollment of 3,204 students, the per-student marginal cost to be raised by the tax levy are calculated to be $13,608, ($43,599,128 / 3,204). This cost is likely overstated given the small percentage of new students compared to the existing student population. Projected costs to the school district could be up to $217,728 annually based on an estimated 16 students that would reside in the community.

The proposed residential housing development is estimated to generate $91,268 in property tax revenues annually to the school district. Thus, the overall impact on the district's budget could conservatively result in a cost of up to $126,460. If this cost materializes, it would need to be met by an adjustment to the overall tax rates of the School District of approximately 25 cents per $1,000 of assessed valuation. For a typical home in the Katonah Lewisboro District, this translates into approximately $12.50 per household.

The anticipated cost of education must be balanced with the fact that the WB Lewisboro Affordable Housing Development will be a resource that will provide for affordable housing that will help to advance the Town and County goals for such housing and will help to satisfy local and regional housing needs, truly a mitigation factor that must be given appropriate consideration.

Construction is projected to take 12 to 18 months which is likely to be spread over two school years. The increased student population is also expected to be distributed throughout the grade levels, resulting in an average of less than one student per grade. The multi-year phasing and distribution of students will allow for an additional 16 students to be integrated to the local schools with minimal impact. Conversation with the Business Administrator for the Katonah Lewisboro District[5] indicated absorption of the new students should not present a capacity problem for the school district, particularly in light of the declining enrollment trend the district is experiencing.

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[4] Katonah Lewisboro Union Free School District 2015-2016 General Fund Budget Book, April 2015, page 11.

[5] *[illegible]*

A letter from the School District, dated April 25 states “If the enrollment continues to decline as projected, and if these new students are distributed among all of the different grade levels, we will likely be able to handlle the students without any problem:” The District provides additional detail as to the potential for impact in the unlikely event that all 16 students were to attend the same grade. The letter is included in Appendix B for reference.

Minimization of Potential Impacts and Mitigation

The development plans will be forwarded to the School District for review and comment on transportation safety, bus turning radius and bus stop locations. Since the potential for significant impacts is minimal, no further mitigation is proposed.

3.9.6 Summary

Lewisboro has a responsibility to provide for their share of the regional need for affordable housing. This need was recognized by the Town Board in its adoption of Local Law 7-2015 permitting the development of multi-family housing, including AFFH units, in various zoning districts throughout the Town (including the CC-20 zone in which the subject site exists).

As set forth in the Westchester County Affordable Housing Allocation Plan 2000-2015 (November 9, 2005), 239 units were estimated as Lewisboro’s “fair share obligation” which has been substantially unmet. The WB Lewisboro Affordable Housing Development will provide needed affordable housing opportunities for the Town of Lewisboro. All of the 45 residential units will be designated affordable, in accordance with Westchester County’s eligibility requirements.

Most impacts to be considered in development projects are site specific – traffic, visual, natural resources, etc. But fiscal impacts are not site specific other than whether or not a site has public roads, water, sewer and or sanitation. Fiscal impacts relating to school children are not at all site specific and therefore must be supported by the entire community.

The proposed 45 units in the WB Lewisboro Affordable Housing Development represent less than 25% of the Town’s “fair share obligation” to provide affordable housing. Given the privately owned infrastructure, and the relatively low expected population of school age children, the fiscal impacts of these affordable units could not be any less.

3.10 IMPACT ON THE COMMUNITY

[illegible]

Existing Conditions

The subject property encompasses 35.4 acres of land on three lots located in the Town of Lewisboro, Westchester County, New York. The property is located on the east side of NYS Route 22, proximate to the I-684 northbound Exit 6A ramp and south of the hamlet of Goldens Bridge. The three parcels are located in the following special districts: Katonah-Lewisboro School District and Goldens Bridge Fire District. The two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district.

The site is located approximately three-quarters of a mile south of the hamlet of Goldens Bridge, which includes several community-scale commercial businesses, a post office, a community center and the Goldens Bridge Metro-North train station. Generally within approximately three-quarters of a mile of the site, land uses to the north and west include residential, public uses, warehouse (King's Lumber), commercial, retail, transportation and vacant land. To the south and east, land use is predominantly single family residential, and vacant land.

[illegible]

The Town Master Plan outlines policies and goals formally adopted by the Town of Lewisboro in 1985[1] as a guide for land use and future development in the Town. In its Plan, the Town identified considerations for preservation of open space resources as well as for development that are generally applicable to the subject proposal today. The Plan does not identify site-specific consistency criteria, but it was intended to provide overall guidance on the local scale for land planning decisions. Consistency of the proposed development with policies identified in the Plan, to the extent such policies are defined, is described below.

The 1985 Town Master Plan speaks of a vision for land use in the I-684/Route 22 corridor that would provide for development of campus commercial land use that would also incorporate the preservation of open space. Campus commercial development was envisioned and planned for in the area bordering Route 22 including the subject site and paved the way for the subsequent rezoning to CC-20. As stated in the Master Plan relative to campus commercial facilities, adequate buffering between such use and adjacent residential areas would allow the two different types of land use to coexist, and reduce impacts to the natural environment resulting from development.

[illegible]

A recent amendment to the zoning code adopted by the Town Board in 2015 (LL 7-2015) added provisions that would permit multi-family housing in commercial and business areas. A joint task force composed of members of the Planning Board, Zoning Board of Appeals, Architectural Review Council and Housing Committee had been tasked with exploring ways to enable Lewisboro to comply with the obligations of the Westchester County Housing Settlement, and to facilitate the effort to provide fair and affordable housing in Town. The amended provisions of the code apply to the subject site and is particularly appropriate for this application for affordable housing.

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[1] Accessed on the Town's website 1/21/16.

In her letter of January 25, 2016 to the Chair of the Lewisboro Planning Board, the Chair of the Lewisboro Housing Committee stated:

> The majority of the Housing Committee feels that the proposed Wilder Balter 45-unit development would accomplish the goal for which the Zoning code was amended: providing fair and affordable housing in Lewisboro. The construction of the proposed AFFH housing in Lewisboro would also substantially help Lewisboro and the County in complying with the Settlement, joining other nearby towns such as North Salem, Pound Ridge and Bedford, who have also taken steps in this direction.[2]

Potential Impacts

The site plans developed for this affordable housing application show and tabulate the various zoning requirements of the CC-20 and R-4A districts applicable to the property, including the new reference to the provisions for multi-family dwellings which are found in the R-MF requirements. The plans identify the conformance of the proposed plan to the applicable zoning requirements including the following information:

- Front, side and rear yard setbacks of the R-MF district or double the R-4A district setback, as applicable (these replace the setbacks of the CC-20 district);
- Density transition area of the R-MF district (replaces the perimeter buffer of the CC-20 district);
- Buffer lot with conservation easement (CC-20 district requirement);
- Town wetland control area and State wetland adjacent area; and,
- Tables with the applicable net land area calculations, density unit calculations, parking requirements and recreation requirements.

Multi-family dwellings are a permitted use in the CC-20 district, subject to the requirements of Section 220-26, Multifamily Residence District (R-MF), of the Zoning Code. The dimension and bulk zoning requirements of the R-MF district replace those of the underlying CC-20 district (to be confirmed by the Planning Board Attorney or Building Inspector).

The applicant is proposing a total of 92 parking spaces for this facility (2.0 per unit), whereas 124 spaces are required by zoning based on the proposed bedroom count. The required number of spaces far exceeds the parking needs of the development based upon the applicant's experience with other similar developments owned and managed by the applicant throughout the Hudson Valley. For example, the Bridleside 65-unit affordable rental community in North Salem was approved with 144 parking spaces but a recent three day survey showed that only 76 spaces were being used (53 percent of the requirement or 1.17 cars per dwelling unit). Another example is the 92-unit Roundtop affordable rental community in Montrose which was approved with 141 parking spaces (1.5 parking spaces per unit). The survey for that property showed that only 98 spaces were being used (70 percent or 1.07 cars per dwelling unit). Accordingly, the applicant is requesting a parking variance from the Zoning Board of Appeals.

The applicant proposes to permanently preserve open space on the easternmost part of the property located in the R-4A zoning district. The applicant intends to preserve at least 17 acres

[2] See January 25, 2016 letter to the Chair of the Lewisboro Planning Board from the Chair of the Lewisboro Housing Committee.

of open space through restrictive covenants and/or a conservation easement, thereby providing a permanent buffer to the adjoining lands in the R-4A district.

Mitigation Measures

The Town's Master Plan cites general design principles to guide future public and private development in the Town to support the goals and objectives of the Town. These recommendations refer to landscape buffering of buildings and parking areas, minimization of disturbance on steep slopes where potential for erosion needs to be addressed, and provisions to minimize adverse visual impact on Town character and neighboring uses.

The Master Plan highlights the need for care in site planning of parcels containing steep slopes, wetlands and other open space resources to minimize the potential for impacts to the sensitive qualities of such areas as well as potential visual intrusions into the landscape of Lewisboro. In addressing these concerns, the proposed development plan presents a balance between the environmental goals of open space resource preservation and wise utilization of the land in the applicant's opinion.

The site plan will incorporate various conventional slope protection and wetland protection measures that will minimize the potential for soil erosion and surface water impacts. The plan also will incorporate tree preservation measures (particularly by minimizing the overall area of site disturbance) and proposed landscape plantings that will minimize visual intrusion and create an asset to the community. Moreover, the site plan will preserve a significant area located outside of the limits of disturbance in permanent open space.

Refer to the preceding narratives in this Part 3 on specific subject areas for discussions of environmental concerns relating to particular physical components of the proposed plan that are integral to the design and will effectively avoid or minimize impacts.

The proposed plan, in the applicant's opinion, will be consistent with the Town's Zoning Statement of Purpose (§220-1): "To preserve the natural beauty of the physiography of the Town; to protect the Town against unsightly, obtrusive and obnoxious land uses and operations; to enhance the aesthetic aspect of the natural and man-made elements of the Town; and to ensure appropriate development with regard to those elements."

The proposed plan will also meet the site plan standards set forth in §220-48 which the Planning Board will consider in acting on a site development plan application:

> (1) The proposed number, size, location, height, bulk, use, appearance and architectural features of all structures and facilities.
>
> (a) The overall building and site design shall enhance and protect the character and property values in the surrounding neighborhood.
>
> (b) Development shall be compatible with the architectural style and visual composition of the hamlet area in which it is located.
>
> (c) Development shall have a harmonious relationship with the natural terrain and vegetation on the site and on adjacent properties.

The proposed plan will address a housing need cited in the Town Master Plan. In it's determination of significance at the time that multi-family dwellings was added as a permitted use in the CC-20 district regulations (LL 7-2015), the Town's findings stated the "...definition of

AFFH Unit ... in addition to allowing multifamily housing within the Town's commercial zones, is consistent with the Goal and Policy set forth in the Town Master Plan, which recites that 'opportunities should be provided for a range of housing, including type, cost and character' (Town Master Plan, Goal 1C)."

The Westchester County Department of Planning supports the development of affordable affirmatively furthering fair housing (AFFH) rental units in the Town of Lewisboro.[3] This application is consistent with the Westchester County Planning Board's long-range planning policies set forth in *[illegible]* (adopted 2008 and amended 2010), and its recommended strategies set forth in *[illegible]* (adopted 1995), which calls for increasing the range of housing types in Westchester County.[4]

The applicant is cognizant of the Town's Complete Streets Policy adopted in 2011 and although the policy does not specifically address individual site plans, this development proposal will conform with the policy as it might be applied to the plan.

The proposed affordable housing development plan addresses the Town's design principles relative to environmental protection and visual consistency, in the applicant's opinion. The proposed site plan has been laid out such that the buildings and other site features will be virtually surrounded by wooded open space, will not be visually prominent at any time of year, and will be largely obscured from offsite views when leaves are on the trees.

The development includes a natural landscape buffer to the public roads and nearby uses through the preservation of existing vegetation over much of the property. (These buffers reflect what is depicted for the property in the Town's Master Plan map of 1985.) In addition to the mixture of native and adaptive deciduous and evergreen tree and shrub species proposed on the landscape plan, natural topographic conditions render the development area of the site largely obscured from view from most offsite locations thereby avoiding potential impact on community character.

---

[3] Letter to Jerome Kerner, Chair, Town of Lewisboro Planning Board, from Norma V. Drummond, Deputy Commissioner, Westchester County Department of Planning, dated March 11, 2016.
[4] Letter to Ciorsdan Conrad, Planning Board Secretary, Town of Lewisboro, from Edward Buroughs, AICP, Commissioner, Westchester County Planning Board, dated February 12, 2016.

APPENDIX A

Correspondence

WILDER BALTER PARTNERS, INC.
570 TAXTER ROAD, SIXTH FLOOR, ELMSFORD, NY 10523 • (914) 347-3333 FAX (914) 909-7328

October 20, 2015

VIA HAND DELIVERY

Town of Lewisboro Planning Board
Attn: Chairman Jerome Kerner
20 North Salem Road
Suite L/Lower Level
P.O. Box 725
Cross River, NY 10518

Re: Application for Site Development Plan (Step I – Sketch Plan Review)
Proposed multifamily development consisting of 49 AFFH Units with clubhouse to be constructed on a +/-35.4 acre parcel of vacant land located off NYS Route 22, Goldens Bridge Tax Map: Sheet 5; Block 10776; Lots 19, 20 & 21 (the "Property")

Dear Chairman Kerner and Members of the Planning Board,

In support of the above referenced Application, enclosed please find the following:

1. Application for Site Development Plan (Step I – Sketch Plan Review)
2. Check in the sum of $205.00 for the required Application Fee
3. Affidavit of Ownership
4. Tax Payment Affidavit
5. Map of the Property prepared by Divney Tung & Schwalbe entitled Net Lot Area Calculations
6. Twelve (12) sets of the site development plans (3 sheets) prepared by Insite Engineering dated October 20, 2015
   - OP-1 Overall Site Plan
   - SP-1 Layout Plan
   - SP-2 Grading Plan

The enclosed submission proposes a multifamily community consisting of 49 AFFH Units plus a caretaker's unit, clubhouse and other recreational facilities in compliance with the Town's recently amended zoning code. The proposed site plan has gone through several iterations based on our soil investigation work and grading analysis. The Town's zoning supports the development of up to 31.2 Density Units on the Property, but the availability of adequate soils for stormwater facilities and septic disposal, as well as our goals of (i) permanently preserving at least 50% of the site as open space, (ii) no wetland disturbances (some wetland buffer disturbance will be necessary to accommodate the required stormwater basins), and (iii) limiting steep slope disturbances, resulted in the proposed plan for 24.3 Density Units (22% fewer DU's than the zoning supports on this Property).

Our vision for this development is based upon our very successful and well received AFFH community called "Bridleside" located on June Road in North Salem, which was completed in 2014 and is fully occupied. In this regard, we have included some photographs which show the attractive, small scale architecture of the multifamily buildings constructed at Bridleside.

The proposed plan provides us with the opportunity to permanently preserve at least 50% of the Property through the use of conservation easements in a similar fashion to what we accomplished at Bridleside.

We are looking forward to presenting the plans for sketch plan review at your Board's meeting on November 17, 2015.

Sincerely,

John R. Bainlardi, Vice President

Wilder Balter Partners Inc. is a leading developer of award-winning, new construction homes in the New York metropolitan area. For more than 25 years, WBP companies have built affordable residential communities and luxury homes in Westchester, Nassau, Suffolk and Fairfield County and the Hudson Valley. WB Residential Communities Inc. (WBRES) is the property management affiliate of Wilder Balter Partners. Our team oversees 32 WBP developed properties with more than 3,200 apartments located in New York, Connecticut and the US Virgin Islands. For additional info, please click on this link: http://wbhomes.com

TOWN OF LEWISBORO PLANNING BOARD

PO Box 725, 20 North Salem Road, Cross River, NY 10518 Email: planning@lewisborogov.com Tel: (914) 763-5592

Site Development Plan/Subdivision Plat Application – Check all that apply:

SKETCH PLAN REVIEW

Waiver of Site Development Plan Procedures	☐		
Site Development Plan Approval	Step I ☒	Step II ☐	
Special Use Permit Approval	Step I ☐	Step II ☐	
Subdivision Plat Approval	Step I ☐	Step II ☐	Step III ☐

Project Information

Project Name: TBD

Project Address: Rt 22 - Vacant Land, Goldens Bridge

Gross Parcel Area: 35.4 acres Zoning District: CC-20 R-4A Sheet(s): 5 Block (s): 10776 Lot(s): 19, 20 + 21

Project Description: Proposed development of a multifamily community consisting of 49 AFFH units with clubhouse and caretaker's unit in 6 buildings with appurtenant parking, recreational facilities and permanent open space.

Is the site located within 500 feet of any Town boundary?	YES ☐	NO ☒
Is the site located within the New York City Watershed?	YES ☒	NO ☐
Is the site located on a State or County Highway?	YES ☒	NO ☐

Does the proposed action require any other permits/approvals from other agencies/departments?

Town Board	☐	ZBA	☐	Building Dept.	☒	Town Highway	☐
ACARC	☐	NYSDEC	☒	NYCDEP	☒	WCDH	☒
NYSDOT	☒	Town Wetland	☒	Town Stormwater	☒		

Other _____

Owner's Information

Name: PROPERTY GROUP PARTNERS, LLC Email: jsussman@pgp.us.com

Address: 609 Fifth Ave, 6th Floor, NY, NY 10017 Phone: (212) 490-2626

Attn: Jeffrey I. Sussman, President

Applicant's Information (if different)

Name: WILDER BALTER PARTNERS, INC Email: jbainlardi@wilderbalter.com

Address: 570 Taxter Rd., Suite 673, Elmsford, NY 10523 Phone: (914) 610-3638

Attn: John R. Bainlardi, VP

Authorized Agent's Information

Name: Insite Engineering Email: jcontelmo@insite-eng.com

Address: 3 Garrett Place, Carmel, NY 10512 Phone: (845) 225-9690

Attn: Jeffrey J. Contelmo, P.E.

THE APPLICANT understands that any application is considered complete only when all information and documents required have been submitted and received by the Planning Board. The applicant further understands that the applicant is responsible for the payment of all application and review fees incurred by the Planning Board.

THE UNDERSIGNED WARRANTS the truth of all statements contained herein and in all supporting documents according to the best of his/her knowledge and belief, and authorizes visitation and inspection of the subject property by the Town of Lewisboro and its agents.

APPLICANT'S SIGNATURE By: John R Bainlardi, VP DATE 10/19/2015

OWNER'S SIBNATURE _____, V.P. DATE 10/19/2015

TOWN OF LEWISBORO PLANNING BOARD

PO Box 725, 20 North Salem Road, Cross River, NY 10518
Email: planning@lewisborogov.com
Tel: (914) 763-5592
Fax: (914) 763-3637

Affidavit of Ownership

State of: Connecticut

County of: Fairfield

David Shepherd, being duly sworn, deposes and says that he/she resides at 22 Linda Lane, Darien, CT 06820 in the County of Fairfield, State of Connecticut and that he/she is (check one) ☐ the owner, or ☒ the VICE PRESIDENT (*Title*) of Property Group Partners LLC (*Name of corporation, partnership, or other legal entity*)

which is the owner, in fee of all that certain log, piece or parcel of land situated, lying and being in the Town of Lewisboro, New York, aforesaid and know and designated on the Tax Map in the Town of Lewisboro as:

Block 10776, Lot 19, 20 + 21, on Sheet 5.

Owner's Signature

Sworn to before me this

19th day of October, 2015

L.M. BRACKEN
NOTARY PUBLIC
MY COMMISSION EXPIRES APR. 30, 2016

L. M. Bracken

Notary Public – affix stamp

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

December 14, 2015

Town of Lewisboro Planning Board
Cross River Shopping Center @ Orchard Square
20 North Salem Road, Suite L (Lower Level)
P. O. Box 725
Cross River, New York 10518

RE: Wilder Balter Partners, LLC
Housing Development
NYS Route 22

Dear Chairman Kerner and Members of the Board:

This letter is offered as a summary of our site walk discussions based on the site walk performed on December 5, 2015. The following items were discussed and resulting plan changes have been made as noted.

1. The intersection of the entry drive with NYS Route 22 has been moved to the north to maximize the separation with the I-684 exit ramp to the south. It was noted that Maser Consulting is currently reviewing the traffic conditions in the surrounding area, and will be providing recommendations relative to the overall project traffic impacts. In addition, we will be meeting with the New York State Department of Transportation to review the driveway location, and refine the entrance details in accordance with their Department's requirements.
2. It was noted that the wetland located along the southerly side of the property has been recently delineated, and the project wetland consultant is coordinating review of the delineation with both the Town and New York State Department of Environmental Conservation. These wetland flags have been survey located and are depicted on the updated concept plan.
3. The alignment of the entry drive for the initial several hundred feet was shifted to the east locating it within the existing depression that runs along the western property line. This new alignment is shown on the updated concept plan.
4. The orientation of the northerly building (Building 1) and its parking area have been further studied to minimize impacts to the steep slopes adjacent to this area. The updated concept plan shows an alternate layout, which we believe achieves the goals discussed at the site walk.
5. Building 5 was identified to be in a low depression requiring a significant amount of fill. This building has been moved to the east in the area of more gentle topography. The updated concept plan depicts the new arrangement.

We have enclosed copies of the updated concept plan and look forward to discussing it with the Board at the December 15, 2015 meeting.

3 Garrett Place, Carmel, New York 10512 (845) 225-9690 Fax (845) 225-9717
www.insite-eng.com

Should you have any questions or comments regarding this information, please feel free to contact our office.

Very truly yours,

INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

By: _____
Jeffrey J. Contelmo, PE
Senior Principal Engineer

JJC/amh

Enclosures

cc: John Bainlardi

Insite File No. 15246.100

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

January 6, 2016

Town of Lewisboro Planning Board
Cross River Shopping Center @ Orchard Square
20 North Salem Road, Suite L (Lower Level)
P. O. Box 725
Cross River, New York 10518

RE: Wilder Balter Partners, LLC
Housing Development
NYS Route 22

Dear Chairman Kerner and Members of the Board:

Enclosed please find twelve (12) copies of the following in support of an application for site plan review of the above referenced project:

- Three (3) sheet site plan set, last revised January 6, 2016.
- Drawing CM-1 "Constraints & Net Lot Area Map", dated January 6, 2016.
- Letter to the Planning Board summarizing site walk discussions, prepared by Insite Engineering, Surveying & Landscape Architecture PC., dated December 14, 2015.
- Full EAF Part 1, prepared by Tim Miller Associates, last revised January 6, 2016.
- EAF response letter prepared by Tim Miller Associates, dated January 6, 2016.

As discussed at the December 15, 2015 meeting, the site plans have been modified based on discussions at the site walk on December 5, 2015. In addition to the revisions itemized in the attached December 14, 2015 letter, the following updates have been made to the site plans included in this submission for your consideration and discussion:

1. A new Constraints & Net Lot Area Map (Drawing CM-1) has been prepared with updated topography, slopes analysis and wetland delineation. The Map includes updated net lot area calculations and a 250' Density Transition Area along the neighboring residentially zoned properties.
2. The Development Density Calculations, the bedroom counts, the parking counts and the recreation requirement calculations have been updated in the tables provided on Drawing OP-1.
3. A 200' Perimeter Buffer has been added to the site plans along the neighboring residentially properties.
4. The site plans reflect minor parking space relocation to reduce grading impacts.
5. The circular turn-around and Building 5 have been shifted to the west, and the sport court has been relocated to the east of Building 5, to reduce grading impacts.
6. The play area has been relocated to the south of the recreation building (Building 2).
7. The approximate southern limits of the on-site wetland and the off-site continuation of the watercourse, with the associated buffers, have been updated on the site plans.

8. The stormwater management areas and the graded access drive have been graded out on Drawing SP-2.

We look forward to continued discussion of the project with the Board at the January 26th, 2016 meeting.

Should you have any questions or comments regarding this information, please feel free to contact our office.

Very truly yours,

INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

By:
Jeffrey J. Contelmo, PE
Senior Principal Engineer

JJC/dlm

Enclosures

cc: John Bainlardi
Jon Dahlgren

Insite File No. 15246.100

WILDER BALTER PARTNERS, INC.
570 TAXTER ROAD, SIXTH FLOOR, ELMSFORD, NY 10523 • (914) 347-3333 FAX (914) 909-7328

January 6, 2016

VIA HAND DELIVERY

Town of Lewisboro Planning Board
Attn: Chairman Jerome Kerner
20 North Salem Road
Suite L/Lower Level
P.O. Box 725
Cross River, NY 10518

Re: Application for Site Development Plan
Proposed multifamily development consisting of 45 AFFH Units (revised) with clubhouse, caretaker's unit and recreational facilities to be constructed on a +/35.4 acre parcel of vacant land located off NYS Route 22, Goldens Bridge
Tax Map: Sheet 5; Block 10776; Lots 19, 20 & 21 (the "Property")

Dear Chairman Kerner and Members of the Planning Board,

At the Board's December meeting, a number of requests for information regarding the above referenced application were made by various members of the Board. This letter is intended to provide initial responses to most of those requests for information. Any questions raised by the Board members at the meeting which are not addressed below will be addressed in a future submission. It is expected that the information provided below will be also be expanded upon during the environmental and site plan review processes. As our proposed development is intended to be a smaller and therefore less impactful version of our fully occupied, 65-unit AFFH community named "Bridleside" located in North Salem and completed in 2014, several of the Board's requests were for specific information regarding Bridleside. Accordingly, such information has been provided and/or referenced herein. For presentation purposes, the questions have been paraphrased

The proposed development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development is proposed to be provided by Westchester County and NYSHCR.

Wilder Balter Partners Inc. is a leading developer of award-winning, new construction homes in the New York metropolitan area. For more than 25 years, WBP companies have built affordable residential communities and luxury homes in Westchester, Nassau, Suffolk and Fairfield Counties and the Hudson Valley. WB Residential Communities Inc. (WBRES) is the property management affiliate of Wilder Balter

Partners. Our team oversees 32 WBP developed properties with more than 3,200 apartments located in New York, Connecticut and the US Virgin Islands. For additional info, please visit http://wbhomes.com.

Question 1: **What are the sizes of the proposed units and will there be any occupancy requirements?**

Answer 1: The buildings are proposed to be substantially similar to the buildings constructed at Bridleside with apartments ranging in size from 842 square feet (1-bedroom unit), 1,025 square feet (2-bedroom unit) and 1,285 square feet (3-bedroom unit). Attached is a sheet showing the typical floor plans of the units constructed at Bridleside. In addition to other amenities, each apartment has a private balcony/patio, energy efficient appliances and tenant controlled air conditioning. Heat and hot water will be provided by landlord. The apartments will be subject to the following occupancy requirements:

Apartment Size	Minimum Occupancy Size	Maximum Occupancy Size
1 BR	1	2
2 BR	2	4
3 BR	3	6

Question 2: **What are the expected income qualifications/guidelines and rents for the units?**

Answer 2: The development is proposed as a fair and affordable community subject to maximum income requirements. Units will be available to households at or below 60% of the median income of Westchester County, adjusted by household size. Nine (20%) of the units must be set aside for households at or less than 50% of the area median income. As of 2015, the maximum income for households is as follows:

LIHTC Income Limits

Household Size	60% of median income	50% of median income
1 Person	$44,400	37,000
2 Person	$50,780	42,300
3 Person	$57,120	47,600
4 Person	$63,240	52,850
5 Person	$68,520	57,100
6 Person	$73,620	61,350

GB

The 2015 rents at Bridleside were as follows:

Bedroom Size	Percentage of area median income	Monthly Rent
1	50%	$988
2	50%	$1,183
3	50%	$1,363
1	60%	$1,191
2	60%	$1,426
3	60%	$1,643

Question 3: **Can you provide more information about the expected marketing requirements and the renter's application process?**

Answer 3: While the development will be funded by Westchester County and comply with the settlement between Westchester County and HUD, the development will be developed, built, marketed, owned and operated by Wilder Balter Partners, Inc. Marketing will comply with the Westchester County Affirmative Fair Housing Marketing Plan requirements. All advertising will be consistent with the Fair Housing Advertising Regulations (24 CFR 109) and the Fair Housing Act Regulations at 24 CFR 100.75. The community will be registered with www.NYHousingSearch.gov.

Together with our not-for-profit partner (expected to be Housing Action Council which was also our partner for Bridleside) the community will be affirmatively marketed for a period of 120 days to households whose total incomes are at or below 60% of the area median income adjusted for household size, making special efforts to reach and engage those in the "Outreach and Marketing Area" which will include Westchester, Putnam, Rockland and Fairfield counties, and New York City (Bronx, Queens, Kings, Richmond and New York counties).

Attached is the typical fair and affordable housing application. Applications must be received within the 120 day marketing period mentioned above, after which a public lottery will be held. All of the applications will be drawn in the lottery, creating an ordered list of applications for qualification. Once the lottery is completed, applications will be processed in lottery order by trained and experienced management staff. They will obtain income and asset information from the applicant and identify any other information or documentation that is needed. They will make certain that the applicant understands the nature of the housing arrangements for which they have applied, and will confirm that the applicant wants to pursue the application. If an applicant either withdraws or is deemed ineligible, they will be informed of such by a letter. Persons who submit an application after the lottery is conducted will be added to the end of the lottery list in the order their application is received.

As with any of WBP's other affordable apartment communities, applicants will be required to pass established credit and criminal screening processes. Specifically, prospective

GJB

tenants must demonstrate a clear ability to pay their rental obligation and must maintain a satisfactory credit history demonstrating their ability to pay their bills on time. Applicants will be notified of their application's rejection if any of the following exists:

- Previous housing evictions;
- History of lease violations, involving repeated late payments, failure to pay rent, public disturbances, damage to the living unit or the property of others and/or physical or verbal attacks on others as documented by police report or other reliable evidence;
- Applicants or household members 18 years of age or older convicted of a drug related offence as evidenced by a criminal history check;
- History of criminal offenses or disruptive behavior evidenced by a criminal record, specifically offenses involving but not limited to violence, prostitution, burglary, arson, child pornography and pedophile, substance abuse or drug use and trafficking;
- Failure to respond to request for verification of information or for additional information, within the time specified;
- Deliberate falsification of information on the application or during the initial interview;
- Individual and/or gross annual income in excess of maximum household income limit as established LIHTC requirements as well as those of the state and county regulatory entities;
- Family size is incompatible with available unit size; and
- Poor credit history (indicated by liens, judgments, inability to pay bills on time)

Question 4: **Can you provide some demographic information for Bridleside?**

Answer 4: 20% of the units (13) are occupied by residents who moved to the Bridleside community from the Town North Salem

50% of the units (32) are occupied by residents who moved to the Bridleside community from a Town located in Westchester County other than North Salem

4% of the units (3) are occupied by residents who moved to the Bridleside community from one of the five boroughs (all 3 from the Bronx).

26% of the units (16) are occupied by residents who moved to the Bridleside community from other locations, including the counties of Putnam, Rockland and Fairfield.

35 school aged children reside at Bridleside, of which 9 children were already attending North Salem schools

GJB

Question 5: **Can you provide statistics regarding the impacts, if any, that the Bridleside community has had on emergency services?**

Answer 5: We have reached out to the heads of the North Salem ambulance corps, fire and police and departments and requested emergency call statistical information which will be shared with your Board upon receipt. Initial indications are that the Bridleside Community has had no material adverse impact on the provision of emergency services.

I look forward to reviewing this information with you at the Board's January 26th meeting.

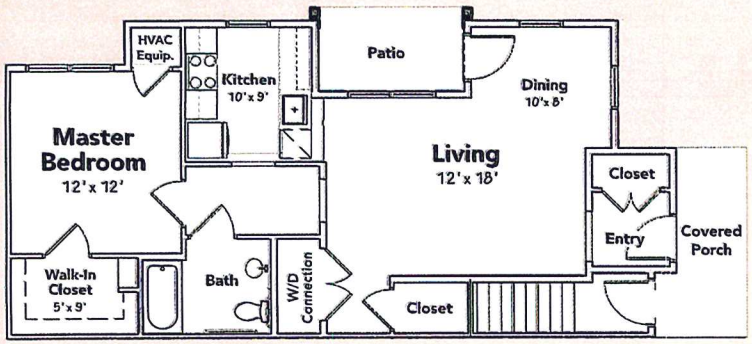
Sincerely,

J R Bainlardi

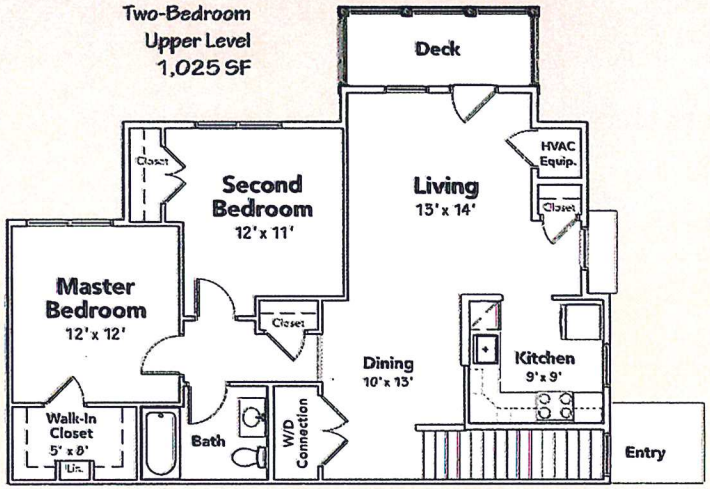
John R. Bainlardi
Director of Development

Floor Plans

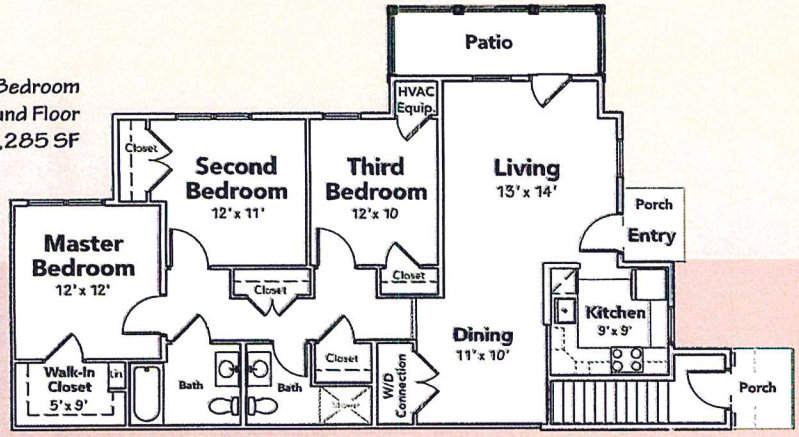
One-Bedroom
Ground Floor
842 SF



Two-Bedroom
Upper Level
1,025 SF



Three-Bedroom
Ground Floor
1,285 SF



BRIDLESIDE
APARTMENTS

Floor plans are for illustrative purposes only

FAIR AND AFFORDABLE HOUSING APPLICATION

APPLICATION FOR BRIDLESIDE APARTMENTS
256-258 June Road, North Salem, NY 10560

1. Mail only one (1) application per household. If your name appears on more than one application you will be disqualified and the application will not be considered.
2. Applications must be signed in all requested places.

Mail or Hand Deliver Completed Application to:
Housing Action Council at 55 South Broadway, Tarrytown, NY 10591
Phone: 914-332-4144

Check whether you are interested in ☐ One Bedroom ☐ Two Bedroom ☐ Three Bedroom

This information is to be filled out by the APPLICANT!

1. APPLICANT INFORMATION:

Name: _____

Address: _____ Apt#: _____

City: _____ State: _____ Zip: _____

Home Phone: _____ Cell Phone: _____ Work Phone: _____

SSN: _____ DOB: _____ Gross Income: _____

Email: _____

2. CO-APPLICANT INFORMATION:

Name: _____

Address: _____ Apt#: _____

City: _____ State: _____ Zip: _____

Home Phone: _____ Cell Phone: _____ Work Phone: _____

SSN: _____ DOB: _____ Gross Income: _____

Email: _____

3. LIST ALL PERSONS WHO WILL LIVE WITH YOU, PLEASE START WITH YOURSELF:

Housing Action Council

EQUAL HOUSING OPPORTUNITY

Wilder Balter PARTNERS INC.

06.27.13

FULL NAME	RELATIONSHIP	DATE OF BIRTH	SEX	ATTENDING SCHOOL
a. _____	____H.O.H____	_____	_____	_____
Social Security #: _____		Occupation: _____		
b. _____	_____	_____	_____	_____
Social Security #: _____		Occupation: _____		
c. _____	_____	_____	_____	_____
Social Security #: _____		Occupation: _____		
d. _____	_____	_____	_____	_____
Social Security #: _____		Occupation: _____		
e. _____	_____	_____	_____	_____
Social Security #: _____		Occupation: _____		
f. _____	_____	_____	_____	_____
Social Security #: _____		Occupation: _____		

g. Do you expect any change (s) in your family size? _____YES _____NO

If ***YES***, EXPLAIN: _____

4. STATISTICAL INFORMATION

a. The following information is required for statistical purposes so that the Department of Housing and Urban Development (HUD) may determine the degree to which its programs are utilized by people of different racial & ethnic backgrounds.

RACIAL GROUP IDENTIFICATION: Used for statistical purposes only. (Please check only one from this group for the head of household only).

_____ White
_____ Black or African American
_____ Asian
_____ American Indian or Alaska Native
_____ Native Hawaiian or Other Pacific Islander
_____ American Indian or Alaska Native & White
_____ Asian & White
_____ Black or African American & White
_____ American Indian or Alaska Native & Black or African American
_____ Other Multi Racial

b. ETHNICITY: (check **only one** from this group) _____ Hispanic _____ Non-Hispanic

c. Do you need a handicapped adapted/adaptable apartment? _____YES _____NO

5. RENT:

What is your Current Monthly Rent $_____

Check Utilities paid by you now:

- ☐ Heat $_____ per month
- ☐ Electricity $_____ per month
- ☐ Gas $_____ per month
- ☐ Water $_____ per month
- ☐ Other $_____ per month

6. INCOME:

List **ALL** full-time, part-time, seasonal and/or temporary employment for **ALL** household members. Include overtime pay, commissions, fees, tips, bonuses and/or self-employed earnings.

HOUSEHOLD MEMBER	EMPLOYER'S NAME/ADDRESS	GROSS EARNINGS (Pre-Tax) CURRENT	ANTICIPATED
_____	_____ _____ _____	$_____ Weekly/ biweekly/ monthly **(circle one)**	$_____
_____	_____ _____ _____	$_____ Weekly/ biweekly/ monthly **(circle one)**	$_____
_____	_____ _____ _____	$_____ Weekly/ biweekly/ monthly **(circle one)**	$_____
_____	_____ _____ _____	$_____ Weekly/ biweekly/ monthly **(circle one)**	$_____

7. OTHER SOURCES OF INCOME:

(EXAMPLES: welfare, social security, SSI, pensions, disability compensation, unemployment compensation, interest, baby-sitting, care-giving, alimony, child support, annuities, dividends, income from rental property and/or Armed Forces Reserves.)

HOUSEHOLD MEMBER	SOURCE	AMOUNT
_____	_____	$ _____ $ _____ Weekly/ biweekly/ monthly **(circle one)**
_____	_____	$ _____ $ _____ Weekly/ biweekly/ monthly **(circle one)**
_____	_____	$ _____ $ _____ Weekly/ biweekly/ monthly **(circle one)**

8. HOUSEHOLD ASSETS:

Checking Accounts:

Bank: _____ Acct. No.: _____ Amt.: _____

Bank: _____ Acct. No.: _____ Amt.: _____

Savings Accounts: *(includes Passbook/Statement and Christmas/Vacation Clubs)*

Bank: _____ Acct. No.: _____ Amt.: _____

Bank: _____ Acct. No.: _____ Amt.: _____

Certificates of Deposit (CD's):

Bank: _____ Acct. No.: _____ Amt.: _____

Bank: _____ Acct. No.: _____ Amt.: _____

Bank: _____ Acct. No.: _____ Amt.: _____

Credit Union Shares:

Credit Union Name: _____ Amt.: _____

Address _____

Stocks/Bonds (value): $ _____ Savings Bonds (value): _____

Other Amt.: *(includes IRA's, trust, mutual funds, etc.)* $ _____

Does the applicant or co-applicant **NOW** own real estate: _____YES _____NO

If "yes", what is the value: _____

Has the applicant or co-applicant **EVER** owned real estate? _____YES _____NO

If "yes", when? _____

I DECLARE THAT THE STATEMENTS CONTAINED IN THIS APPLICATION ARE TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE. WARNING: WILLFUL FALSE STATEMENTS OR MISREPRESENTATIONS ARE A CRIMINAL OFFENSE.

_____ _____

Applicant Signature Date

_____ _____

Co-Applicant Signature Date

.....

CONSUMER CREDIT INFORMATION

I/ We hereby authorize Housing Action Council and Wilder Balter Partners to use any consumer reporting agency, credit bureau or other investigative agencies employed by such, to investigate references, or statements or other data obtained from me or from any person pertaining to my employment history, credit, prior tenancies, character, general reputation, personal characteristics and mode of living, to obtain a consumer report and such other credit information which may result thereby, and to disclose and furnish such information to the organizations listed above, to the owner, and to agencies that made or will make funding available in connection with this property listed above in support of this application. I have been advised that I have the right, under 606B of the Fair Credit Reporting Act, to make a written request, within reasonable time, for a complete and accurate disclosure of the nature and scope of any investigation.

_____ _____ _____

Applicant Signature Co-Applicant Signature Date

.....

9. HOW DID YOU HEAR ABOUT THIS DEVELOPMENT?

- ☐ Friend
- ☐ Employer
- ☐ Sign Posted on Building
- ☐ Website/ Internet _____ (list site)
- ☐ Newspaper (Identity): _____ On-line Version? _____
- ☐ Church/ Synagogue (Identify): _____
- ☐ Community Organization (Identify): _____
- ☐ Other (Identify): _____

Housing Action Council

EQUAL HOUSING OPPORTUNITY

Wilder Balter PARTNERS INC.

06.27.13

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th Floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **Fax:** (518) 402-8925
Website: www.dec.ny.gov

January 22, 2016

Jon P. Dahlgren
Tim Miller Associates, Inc.
10 North Street
Cold Spring, NY 10516

Re: Residential development on Route 22 south of Goldens Bridge
Town/City: Lewisboro. County: Westchester.

Dear Jon P. Dahlgren:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no recent records of rare or state-listed animals or plants, or significant natural communities at the subject property or in its immediate vicinity.

There is a historical record of bog turtle (*Glyptemys muhlenbergii*, federally listed as Threatened and listed in New York State as Endangered) in the area of the project site: in 1978, a bog turtle was found crossing Todd Road, about 1/3 mile south of the subject property. Bog turtles have not been observed in this area since then, and there is uncertainty regarding their continued presence. While its current status is not known, if suitable habitat for bog turtle is present at the project site, it is possible that it may still be found there. For information about any permit considerations for your project, please contact the Permits staff at the NYSDEC Region 3 Office at dep.r3@dec.ny.gov, (845) 256-3054. For information about potential impacts of your project on bog turtles, and how to avoid, minimize, or mitigate any impacts, contact the Region 3 Wildlife staff at Wildlife.R3@dec.ny.gov, (845) 256-3098..

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the Permits staff at the NYSDEC Region 3 Office as described above..

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

January 25, 2016

Jerome Kerner,
Chair, Town of Lewisboro Planning Board
20 North Salem Road, Ste. L (Lower Level)
P.O. Box 725
Cross River, NY 10518

Dear Jerome,

For past few years, Committee has been exploring ways to enable Lewisboro to comply with the obligations of the Westchester County Housing Settlement, and to facilitate the effort to provide fair and affordable housing in Town.

This has been the intent of proposals made by the Housing Committee and presented to the Town Board over the past three years. As you know, the Town Board delegated the responsibility for examining and developing these proposals into legislation to a joint task force composed of members of the Planning Board, Zoning Board of Appeals, Architectural Review Council and Housing Committee. The joint task force met over a period of several months and submitted proposals to amend the zoning code to the Town Board. One of these proposals, passed by the Town Board last year, amends the zoning Code to permit multi-family housing in commercial and business areas.

The majority of the Housing Committee feels that the proposed Wilder Balter 45-unit development would accomplish the goal for which the Zoning code was amended: providing fair and affordable housing in Lewisboro. The construction of the proposed AFFH housing in Lewisboro would also substantially help Lewisboro and the County in complying with the Settlement, joining other nearby towns such as North Salem, Pound Ridge and Bedford, who have also taken steps in this direction.

Last fall, representatives from Wilder Balter came to a Housing Committee meeting to speak with members about the proposed development. The Committee was impressed with the company's preliminary designs and with the rigorous procedures of their affiliate management company for screening applicants as to credit history, ability to pay the rents, lack of a criminal record or previous housing evictions. Some members of the Committee observed that the location was an excellent one, being close to transportation and the Goldens Bridge shopping center and in a currently undeveloped area. Other members of the committee were pleased that a large percentage of the property would be left in a natural state, with walking trails for residents and the community at large.

At a meeting in January, where the Committee discussed the proposal again, the majority again favored the proposal. One member felt it was "a great project," provided the property was well maintained and that the construction was of high calibre. It was stated by other members that 1) the development could fit in with the Goldens' Bridge revitalization efforts now underway, and make the hamlet "a more vibrant community"; 2) that, based on Bridleside and the initial designs, the development would look attractive.

In regard to the composition of occupants, it was noted that at Bridleside, 20% of the came from North Salem itself, a pattern we would expect to be followed in Lewisboro, a similar community; and that residents' primary source of income indicated a stable population (as follows: employment 58%,

retirement 20%, Social Security disability 16%, with 6% drawing from other sources, including vouchers – and no one unemployed).

Moreover, in developing this first AFFH housing complex in Lewisboro, it was important to the committee that Wilder Balter has a reputation as a leading and responsible developer of affordable housing for 25 years with attractive and well-run developments. Some members did express a desire that Wilder Balter commit, through its affiliate management company, to manage the property for a designated time period in order to ensure that the complex is as well maintained and run as Bridleside.

Members also voiced several concerns from the Goldens Bridge community, which were addressed by Wilder Balter. They were:

1—Will school taxes increase as a result of the new students entering the school system? Wilder Balter replied that the fiscal impacts will be closely studied in detail during the Planning Board review process. Based on Bridleside, they anticipate 15- 17 K – 12 new students entering the Katonah Lewisboro school system from the proposed development in Goldens Bridge. They do not expect that such a number would necessitate new administrative staff or new facilities and thus would likely not result in substantial additional costs to the School District.

2—Would the development adversely impact housing values? Wilder Balter responded that numerous studies (including those conducted by the National Association of Realtors and the National Housing Conference), have indicated that such affordable developments have no adverse impact on local housing values.

3—Could the development have fewer affordable units, mixed with market-rate ones? Wilder Balter responded that this would not be financially feasible for such a small development. While such a structure may be feasible with a denser development of at least 75 or more units, the current zoning and limitations of the site do not support this required increased density.

All in all, the majority of the Housing Committee would like the proposed Wilder Balter development in Goldens Bridge to move forward in a timely manner, in order to make fair and affordable housing a reality in Lewisboro.

Respectfully submitted,

Linda S. Rae

Linda S. Rae
Chair, Lewisboro Housing Committee

Cc: Peter Parsons, Lewisboro Town Supervisor
John Bainlardi, Wilder Balter Partners, LLC

TOWN OF LEWISBORO PLANNING BOARD
DECLARATION OF INTENT TO BE LEAD AGENCY

Wilder Balter Partners, Inc.
Proposed Multifamily Development
Coordinated Environmental Review

January 26, 2016

Date Mailed:_____

PLEASE TAKE NOTICE, that at its meeting held on January 26, 2016, the Town of Lewisboro Planning Board declared its intent to serve as Lead Agency pursuant to the State Environmental Quality Review Act (SEQRA) in connection with the proposed action described below; agreement among Involved Agencies is requested pursuant to the applicable requirements set forth in SEQRA, 6 NYCRR Part 617.

PROPOSED ACTION

The applicant is proposing the development of a multifamily community consisting of 45 affordable (AFFH) residential units and a caretaker's unit (46 units total) to be located within five (5) proposed buildings. The development is proposed to include a clubhouse, recreational facilities and supporting parking and stormwater management facilities. The subject property consists of ±35.4 acres of land and is located within the CC-20 and R-4A Zoning Districts, with the proposed buildings and supporting parking located entirely within the CC-20 Zone. Water service is proposed to be provided via on-site wells and wastewater will be treated via a private on-site septic system.

SITE LOCATION

NYS Route 22 (east side), located in proximity to the northbound I-684 exit ramp
Goldens Bridge (Town of Lewisboro), Westchester County, NY 10526

The following potential Involved and Interested Agencies have been identified:

POTENTIAL INVOLVED AGENCIES

1. Town of Lewisboro Planning Board
2. Town of Lewisboro Zoning Board of Appeals
3. Town of Lewisboro Building Department
4. Westchester County Department of Health
5. New York City Department of Environmental Protection
6. New York State Department of Environmental Conservation
7. New York State Department of Transportation
8. Westchester County Board of Legislators
9. New York State Homes and Community Renewal (NYSHCR)

POTENTIAL INTERESTED AGENCIES

1. Town of Lewisboro Architecture and Community Appearance Review Council
2. Town of Lewisboro Conservation Advisory Council
3. Goldens Bridge Fire Department
4. Town of Lewisboro Housing Committee
5. Westchester County Planning Board

COORDINATED ENVIRONMENTAL REVIEW PROCEDURES

Under the applicable standards of SEQRA, 6 NYCRR Part 617.6, the Planning Board of the Town of Lewisboro has concluded that it is the appropriate agency to serve as Lead Agency for the coordinated environmental review of the proposed action. At its meeting held on January 26, 2016, the Planning Board of the Town of Lewisboro declared its intent to serve as Lead Agency and further authorized the circulation of its intent to other Involved and Interested Agencies.

This notification along with the Planning Board Application, Part 1 of the Environmental Assessment Form (EAF), the proposed preliminary site plans, and the Lead Agency Agreement will be sent to all Involved and Interested Agencies. Each Involved Agency will be requested by the Planning Board to fill out the attached consent form. However, if any Involved Agency does not agree that the Town of Lewisboro Planning Board should be designated as the Lead Agency, it may follow the procedures set forth in SEQRA 6 NYCRR Part 617.6. If you have any questions or comments, you may contact:

Ciorsdan Conran, Planning Board Secretary
Town Offices @ Orchard Square, Suite L (Lower Level)
20 North Salem Road, Cross River, NY 10518
Phone: (914) 763-3060
Fax: (914) 533-0097

The Planning Board asks that each Involved Agency fill out the attached *"Lead Agency Agreement"* form either consenting or not consenting to the Lewisboro Planning Board serving as Lead Agency. Please return the completed form within 30 days to the Planning Board Secretary at the above address.

If you do not respond within 30 days, it will be interpreted as consent that the Lewisboro Planning Board serve as Lead Agency. You will continue to be notified of SEQRA determinations and hearing and copies of all environmental documents will be made available to you.

TOWN OF LEWISBORO PLANNING BOARD

LEAD AGENCY AGREEMENT

WILDER BALTER PARTNER'S INC.
Proposed Multifamily Development
NYS Route 22 (East Side)
Goldens Bridge (Town of Lewisboro)
Westchester County, New York 10526

On behalf of _____,
(INSERT NAME OF AGENCY)

Today's Date_____

The above named Involved Agency hereby:

(Please Check One)

( ) AGREES that the Town of Lewisboro Planning Board serve as Lead Agency for the coordinated environmental review of the proposed action and requests that the undersigned continue to be notified of all filings and hearings on this matter.

( ) DOES NOT AGREE to the Town of Lewisboro Planning Board serving as Lead Agency and wishes that _____ serve as Lead Agency. *To contest Lead Agency designation, the undersigned intends to follow the procedures in accordance with SEQRA 6 NYCRR Part 617.6.*

Please return within 30 days of the mailing of this correspondence. In addition, please specify the jurisdiction that your agency has over this project and what issues you believe are relevant in connection with this project.

Ciorsdan Conran, Planning Board Secretary
Town Offices @ Orchard Square, Suite L (Lower Level)
20 North Salem Road, Cross River, NY 10518
Phone: (914) 763-3060
Fax: (914) 533-0097

_____

Print Name Title

_____

Signature Title

TIM
MILLER
ASSOCIATES, INC.

---

10 North Street, Cold Spring, NY 10516 (845) 265-4400 265-4418 fax www.timmillerassociates.com

Michael Jumper - Assistant Superintendent for Business
Katonah Lewisboro School District
P.O. Box 387
Katonah, New York, 10536

Re: Proposed Wilder Balter AFFH Residential Development,
Town of Lewisboro, Westchester County, NY

Dear Mr. Jumper,

Tim Miller Associates is conducting the environmental review for a proposed residential development in the Town of Lewisboro. I have enclosed a site location map and preliminary site plan for your reference. As shown on the site location map, the site is located on NYS Route 22, in proximity to I-684 in the western area of the Town of Lewisboro, Westchester County, NY

The Applicant's proposal is shown on the attached preliminary Concept Plan. The proposed development consists of 45 affordable rental apartments plus a superintendents apartment. Based on a mix of one, two and three bedrooms per unit, we have projected a future population of approximately 110 people, including 16 school age children.

As part of the environmental review process, we wish to include any comments your office may have relative to this proposed project. We would appreciate your written response regarding the effect of the this proposal on the Katonah Lewisboro School District's facilities. I am specifically interested in the district's school capacities, ability to serve the anticipated number of new students and the potential impact on the school budget and associated costs.

Your input is important. You previously spoke to me about this proposed project and indicated the projected number of students would not present a problem for the District, particularly in light of the current declining enrollment trends and the relatively small number of new students compared to the District's overall enrollment of more than 3,100 students. In addition to our phone conversation, the Town of Lewisboro Planning Board has requested your written response on these matters.

Thank you for your assistance in this matter. Please do not hesitate to call me should you have any questions or need additional information. I look forward to hearing from you.

Sincerely,

Ann Cutignola, AICP
Senior Planner
TIM MILLER ASSOCIATES, INC.

April 25, 2016

Ann Cutignola, Senior Planner
Tim Miller Associates, Inc.
10 North Street
Cold Spring, NY 10516

Dear Ms. Cutignola,

I am writing at your request to provide comments relative to the impact which the construction of 45 affordable rental apartments *may* have on the Katonah Lewisboro School District. Your letter indicates that these 45 units are projected to produce 110 people, including 16 school age children.

Although our current enrollment estimates are predicted to continue to decline, the actual enrollment in 2015-16 (which did decline) was higher than projected. As the real estate market continues to evolve, the construction of 45 apartment units in one concentrated area could prove to be a challenge for the district. I do not anticipate that 16 school aged children would present a challenge to the district *if they are dispersed among our 13 grades (K-12) and multiple buildings*; however, if the concentration of these students is largely clustered into the Increase Miller Elementary School (the elementary school the children would attend based upon the map provided), the impact may be more significant resulting in the need to add staff. Since 2012 the district has been required to operate within the restrictions of the NYS Tax Cap. The addition of teaching staff combined with other increases we experience in any given year, could impact our ability to develop a budget which is at or under the NYS Tax Cap.

A larger than normal influx of K-5 students into the Increase Miller Elementary School could prove to be problematic especially if the students are concentrated at a few specific grade levels.

If the enrollment continues to decline as projected, and if these new students are distributed among all of the different grade levels, we will likely be able to handle the students without any problem; however, it is almost impossible to make a definitive statement relative to how the construction of these units will impact the schools. Much will depend upon the actual number of school aged children that are realized by the construction of these 45 units, and the distribution of the grade level of these students.

Sincerely,

Michael D. Jumper
Assistant Superintendent for Business

Copy: Peter Parsons, Supervisor Town of Lewisboro

Michael D. Jumper
Assistant Superintendent for Business

Katonah-Lewisboro School District
P.O. Box 387
Katonah, NY 10536

(914) 763-7043
mjumper@klsd.lhric.org
Website: www.klschooldistrict.org

APPENDIX B

Preliminary Stormwater Pollution Prevention Plan (SWPPP)

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

For

Wilder Balter Partners

NYS Route 22

Town of Lewisboro, New York

February 2, 2016

Owner Information:

Property Group Partners, LLC
c/o Jeffrey Sussman, President
609 Fifth Avenue, 6th Floor
New York, NY 10017

Applicant Information:

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Note: This report in conjunction with the project plans make up the complete Preliminary Stormwater Pollution Prevention Plan.

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

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- Appendix F Analysis of Practices Listed on Pages 10-19 and 10-20 of Chapter 10
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- SP-1 “Layout Plan”
- SP-2 “Conceptual Grading Plan”

1.0 INTRODUCTION

1.1 Project Description

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes the development of a multi-family community consisting of 45 affordable (AFFH) residential units and a caretaker's unit (46 units total) on a 35.4-acre site located on NYS Route 22 in the Town of Lewisboro, Westchester County, New York. The development will include five (5) residential buildings, including a community meeting space in one building, recreational facilities, and supporting parking and stormwater management facilities. Access to the development will be provided by a private driveway onto NYS Route 22. The subject property is located in the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station.

The development site is currently vacant wooded land and is not served by public water and sewer service. Water service will be provided by a new community water system supplied by on-site wells and wastewater will be treated by a new community on-site septic system. The community water and sewer systems will be designed and constructed in accordance with the standards and subject to the approval of the Westchester County Department of Health (WCDOH) and the New York State Department of Environmental Conservation (NYSDEC).

The development property is located in two zoning districts: the western portion of the site near Route 22 is in the CC-20 Campus Commercial District and the eastern portion of the site in the R4-A residential district. Multi-family housing is a permitted use in the CC-20 zoning district. Surrounding and nearby properties to the north, east and west are generally undeveloped and transportation uses (Interstate 684). Properties to the south are mostly developed low density residential lots.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.

There are no known enforcement actions, including lawsuits or administrative proceedings, commenced against the applicant, or any principle affiliate of the applicant, for any alleged violations of law related to the applicant of the site, in the five years preceding this application.

The following permits are required for the subject project.

Agency	Approval Required	Status
Town of Lewisboro Planning Board,	Site Plan Approval Stormwater Permit Wetland Permit	All Pending
Town of Lewisboro Zoning Board	Parking Variance	Pending
New York City Department of Environmental Protection (NYCDEP)	Stormwater Pollution Prevention Plan (SPPP)	Pending
New York State Department of Conservation (NYSDEC)	Coverage Under General Permit GP-0-15-002. NYSDEC Freshwater Wetlands Permit	All Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit	Pending
Westchester County Department of Health	Water/Sewer	Pending

The anticipated start date of this project is the spring of 2017, with an estimated completion date of the spring of 2018.

1.2 Existing Site Conditions

The subject project is located on three tax parcels along the eastern side of Goldens Bridge Road (NYS Route 22). The existing ground covers on the site are characterized as mainly woods with some brush at the lower elevation of the property. There is an existing NYSDEC Wetland (F-29) located along the southern portion of the site. The wetland areas drain to a watercourse near the southwest corner of the property. The property generally drains from north to south towards the NYSDEC Wetland. Slopes on the site vary from steep in the forested northern portion of the site to flatter slopes in the brush and wetland areas in the southern portion of the property.

The hydrologic soils groups for the project consist of a mix of A, B and D soils. The designations of the onsite soils located within the proposed limits of disturbance consist of Chatfield-Hollis-Rock Outcrop Complex (CtC and CuD), Hollis-Rock Outcrop Complex (HrF), and Riverhead Loam (RhB) as identified on the Soil Conservation Service Web Soil Survey. The soils boundaries are shown on Figure 2 and 3.

The stormwater runoff from the existing properties generally drains from north to south towards the NYSDEC wetland. The peak flow analysis included in the project SWPPP analyzes one (1) design line to assess the stormwater runoff from the property and any potential impacts from development to the existing natural resources on the property. The Pre Development Drainage Map (Figure 2 of this report) identifies Design Line 1 which represents the northern wetland boundary located at the southern portion of the project site. The contributing area to design line 1 is identified as subcatchment 1.0S.

The project site is in the Muscoot Watershed Basin. This Reservoir is located in the New York City East-of-Hudson Croton Watershed, where the Environmental Protection Agency (EPA) has established a Total Maximum Daily Load (TMDLs) for phosphorus. The burden for reducing current phosphorous loading to achieve the TMDL presently lies with the applicant, Town of Lewisboro and its regional partners. The program for phosphorous reduction has been established in the NYSDEC document entitled *Croton Watershed Phase II Phosphorous TMDL Nonpoint Source Implementation Plan* (TMDL Implementation Plan) dated January 14, 2009. For further discussion on this program, refer to the following section.

1.3 Proposed Site Conditions

As previously stated the subject project proposes the development of a five (5) multi-family buildings containing eight to ten units per building, and necessary driveway access to each building. A total of forty-six (46) units are proposed on the project site. Mitigation for the proposed impervious surfaces located within the project site will be provided in the form of proposed stormwater management practices (SMP's) discussed further in later sections of this report. The proposed SMP's will be designed to capture and treat runoff from the impervious surfaces associated with the proposed buildings, parking areas and access drive.

It is proposed to maintain the existing drainage patterns on the site to the maximum extent practical in the proposed condition. Stormwater treatment for the subject project will be accomplished with a number of different practices including an extended detention dry stormwater basin, used as pretreatment practice prior to an infiltration basin. The infiltration basin and extended detention pretreatment dry stormwater basin will both be sized to capture and treat the Water Quality Volume from the contributing area of the proposed development.

The stormwater runoff from the proposed development will be captured in a collection system and conveyed to the extended detention dry stormwater basins for pretreatment of the stormwater runoff, prior to discharging to the infiltration basin for final treatment. The contributing area to the pretreatment basin is shown as subcatchment 1.1S. The immediate contributing area to the infiltration basin is shown as subcatchment 1.2S. The untreated / undeveloped area on the site is shown as subcatchments 1.3S, and drains directly to the NYSDEC wetland. The subcatchments are shown in Figure 3 of this report.

As shown in the following sections of this report, the stormwater quality and quantity for the proposed development have been mitigated to the maximum extent practicable. Additionally, an erosion and sediment control plan has been prepared in accordance with the New York State Standards and Specifications for Erosion and Sediment Control to protect the existing waterbodies and drainage features during construction activities.

As noted above, the subject parcel is located within the Muscoot Watershed Basin for which a TMDL has been established. The TMDL Implementation Plan clearly states that for simplicity and ease of local government administration the plan is largely structured to use existing programs to achieve reductions. These programs include:

- Potential additional point source reductions.
- NYSDEC SPDES General Permit for Stormwater Discharges for Municipal Separate Stormwater Sewer Systems (MS4s) Permit No. GP-0-10-002.
- State and regional source control and agricultural programs.
- US EPA Filtration Avoidance Determination Program.
- Putnam County "Croton Plan".
- NYCDEP "Croton Strategy".
- NYCDEP EOH Water Quality Investment Funds.
- New York State non-point source programs.
- NYSDEC – NYCDEP Coordinated Stormwater Enforcement Protocol.

The proposed Stormwater Pollution Prevention Plan (SWPPP) for Wilder Balter Partners, Inc. is consistent with the TMDL Implementation Plan and applicable portions of the above-cited programs. Through compliance with this permit, which requires enhanced stormwater design in the NYC East of Hudson Watershed targeted at removing phosphorus, this SWPPP is consistent with TMDL Implementation Plan.

2.0 STORMWATER MANAGEMENT

The proposed stormwater management system for Wilder Balter Partners, Inc. has been designed to meet the requirements of local, city, and state stormwater ordinances and guidelines, including but not limited to those of the Town of Lewisboro, the NYSDEC, and the New York City Department of Environmental Protection (NYCDEP).

Since the subject project proposes the disturbance of more than one (1) acre, coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002 is required. In order to meet the requirements set forth by this permit, the latest edition of the NYSDEC *New York State Stormwater Management Design Manual* (NYSSMDM), including Chapter 10: *Enhanced Phosphorus Removal Standards* (Chapter 10), was referenced for the design of the proposed stormwater management system. A discussion of the requirements of Chapter 10 is included below including an analysis of Better Site Design techniques applied in the site design. The NYSSMDM specifies four design criteria that are discussed in detail below. They are Water Quality Volume, Stream Channel Protection Volume, Overbank Flood Control, and Extreme Flood Control. The first of the requirements relates to treating water quality, while the later pertain to stormwater quantity (peak flow) attenuation.

With regard to NYCDEP requirements, Section 18-39(b)(3)(iv) of the most current version of the *Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources (Rules and Regulations)*, requires a SWPPP Approval for this project. The developed areas for the proposed development contain more than 20% impervious groundcover, and per the Rules and Regulations only one (1) stormwater management practice, designed in accordance with the NYSSMDM is required when the stormwater runoff is directed to an infiltration practice for treatment. Therefore the stormwater design for the subject project consisting of a dry pretreatment extended detention stormwater basin with a discharge to an infiltration area for all of the developed areas of the project meets the latest NYCDEP stormwater quality requirements.

To address stormwater quantity requirements of both the NYSDEC and NYCDEP, the "HydroCAD" Stormwater Modeling System," by HydroCAD Software Solutions LLC in Tamworth, New Hampshire, was used to model and assess the peak stormwater flows for the subject project. HydroCAD is a computer aided

design program for modeling the hydrology and hydraulics of stormwater runoff. It is based primarily on hydrology techniques developed by the United States Department of Agriculture, Soil Conservation Service (USDA, SCS) TR-20 method combined with standard hydraulic calculations. For details on the input data for the subcatchments and design storms, please refer to Appendices B and C.

The input requirements for the HydroCAD computer program are as follows:

Subcatchments (contributing watershed/sub-watersheds)

- Design storm rainfall in inches
- CN (runoff curve number) values which are based on soil type and land use/ground cover
- Tc (time of concentration) flow path information
- Watershed Area in Acres

Stormwater Basins

- Surface area at appropriate elevations
- Flood elevation
- Outlet structure information

The precipitation values and intensity duration frequency (IDF) curves for the 1-Year, 10-Year, 100-Year 24 hour design storm events and rainfall distribution curves utilized for this report were obtained from the information provided by Northeast Regional Climate Center (NRCC) and the Natural Resources Conservation Service (NRCS) which is available online at *www.precip.eas.cornell.edu.* The values provided for all design storms analyzed have been listed below.

Table 2.0.1 – Precipitation Values for Corresponding Design Storms

Design Storm	24-Hour Rainfall
1-Year	2.8”
10-Year	5.1”
100-Year	9.1”

The CN (runoff curve number) values utilized in this report were referenced from the USDA, SCS publication *Urban Hydrology for Small Watersheds*. The following is a summary of the various land uses/ground covers and their associated CN values utilized in this report.

Table 2.0.2 – Project Ground Cover and Associated Curve Numbers (CN)

Land Use/Ground Cover	CN Value
Brush, A Soil	30
Woods, B Soil / D Soil	55 / 77
>75% Grass Cover, A Soil / B Soil	39 / 61
Paved Parking, sidewalks and Roofs	98

The hydrologic soils groups for the project consist of a mix of A, B and D soils. The designations of the onsite soils located within the proposed limits of disturbance consist of Chatfield-Hollis-Rock Outcrop Complex (CtC and CuD), Hollis-Rock Outcrop Complex (HrF), and Riverhead Loam (RhB) as identified on the Soil Conservation Service Web Soil Survey. The soils boundaries are shown on Figure 2 and 3.

Table 2.0.3 – Land Cover Breakdown by Subcatchment

Subcatchment	Land Use / Ground Cover (Acres)				Total Area (Acres)	Time of Concentration (Tc)	Curve Number (CN)
	Woods	Grass	Brush	Paved Parking, Roofs, & Water Surface (Impervious)			
Pre Development							
PRE 1	12.0		2.7		14.7	21.6	54
Post Development							
1.1S	3.9	3.2	-	2.8	9.9	22.3	67
1.2S	0.1	0.5	-	-	0.6	8.2	49
1.3S	2.0	1.0	1.3	-	4.3	11.9	50

2.1 Enhanced Phosphorus Removal Standards

As noted above, the New York City East of Hudson Watershed has been identified in the SPDES General Permit GP-0-15-002 as a watershed requiring compliance with the Enhanced Phosphorus Removal Standards when post-construction stormwater management practices are proposed. Chapter 10 of the NYSSMDM establishes four goals to meet sizing performance standards:

- Goal 1: Reducing Runoff Volumes
- Goal 2: Effective Bypass Treatment
- Goal 3: Achieving Effluent Concentrations for Particulate Phosphorus
- Goal 4: Achieving Effluent Concentrations for Dissolved Phosphorus

Goal 1 of reducing runoff volumes is achieved through source control. Source controls are implemented by Better Site Design (BSD) practices that are used to reduce the volume of runoff and thereby reduce pollutant loads to receiving waters. In order to achieve a reduction in runoff volume Chapter 4 specifies a percentage of the impervious area that shall be directed to a BSD practice or infiltrated for each hydrologic soil group. For the hydrologic group “B” as is present on the majority of subject site 40% of the impervious surfaces must be directed to a BSD practice. It should be noted that standard infiltration practice is to treat all the proposed development on the site. An analysis of the BSD practices incorporated into the site design is discussed in further detail below.

Goal 2 cites that proposed stormwater management practices should achieve less than 15% effective treatment bypass of the long-term runoff volume. Chapter 10 further notes this goal is satisfied by capturing and treating the 1-year 24-hour design storm. The NYSDEC stormwater quality treatment practice proposed for this project includes extended detention dry stormwater basins as pretreatment devices and infiltration basins as final treatment practices. Additional detail has been presented on the proposed practices in the following section addressing the Water Quality Volume requirement, however all practices will be designed in accordance with Chapter 10 by utilizing the 1-yr, 24 hour design storm to generate the Water Quality Volume. As such, Goal 2 will be achieved in the SWPPP for this project.

Achieving effluent concentrations for particulate phosphorus, Goal 3, is satisfied by achieving an 80% net removal of particulate phosphorus for a median influent concentration of 0.5mg/l. Chapter 10 states that through designing proposed stormwater management practices in accordance with Section 10.4 this goal will be achieved. The proposed stormwater management practices previously discussed will be designed in accordance with Section 10.4.4 of Chapter 10 thus satisfying the requirements of this goal.

Goal 4, achieving effluent concentration for dissolved phosphorus, is achieved by obtaining a 60% net removal of dissolved phosphorus given a median influent concentration of 0.15mg/l. As with Goal 3, Goal 4 is achieved by designing the proposed stormwater management practices in accordance with Section 10.4 of Chapter 10. As noted above the proposed stormwater practices will be designed in accordance with section 10.4.4 of Chapter 10 thus satisfying the requirements of this goal.

2.2 Better Site Design (BSD)

As noted above Goal 1 as identified in Chapter 10, requires an analysis of BSD Practices or standard infiltration practices, and directing 20% of the proposed impervious surfaces to a Better Site Design Practice or standard infiltration practice. The following list is all the BSD practices (as identified in NYSDEC's publication *Better Site Design*) incorporated in site design. In addition to the Better Site Design practices listed below, a table citing the practices listed on pages 10-19 and 10-20 of Chapter 10, and whether or not they have been included in the design has been provided in Appendix F.

- BSD Practice #1 Preservation of Undisturbed Areas: The site has been designed to preserve the undisturbed areas to the maximum extent practical.
- BSD Practice #2 Preservation of Buffers: The site has been designed to minimize disturbance within NYSDEC Wetland Buffer to preserve the maximum extent practical.
- BSD Practice #3 Reduction of Clearing and Grading: The site design has minimized the clearing and grading to the greatest extent practicable, and a Limits of Disturbance line has been established on the project drawings.
- BSD Practice #4 Locating Sites in Less Sensitive Areas: As previously stated, there are steep slopes that exist in the northwest property corner of the property. The current site design proposes minimize the disturbance within these areas of steep slopes. Disturbance has also been minimized within the limits of the NYSDEC wetland buffer. Therefore, the new site layout successfully addresses this BSD technique.
- BSD #14 \ 15 Infiltration: The runoff from <u>all</u> proposed impervious areas would discharge directly to the infiltration practice for treatment.

As noted above in order to satisfy Goal 1, 40% of the impervious surfaces must be directed to Better Site Design Practices. The proposed development will exceed this requirement by directing 100% of the stormwater runoff from the proposed impervious surfaces to an extended detention dry basin and infiltration basin. Thus, just by implementing BSD #14 Goal 1 has been achieved. As discussed above, many other BSD techniques have been incorporated into the site design for the subdivision in order to provide the optimum site design from an environmental and constructability standpoint.

2.3 NYSDEC Water Quality Volume, WQ_v

The subject project is located in the New York City East-of-Hudson Croton Watershed, which is listed as a phosphorus-limited watershed. Therefore, the stormwater management practices have been designed in accordance with the *Enhanced Phosphorus Removal Standards* (Chapter 10) of the NYSSMDM. As outlined in Chapter 10, the WQv is the runoff volume produced during the 1-year 24-hour design storm. The WQv treatment for the developed areas will be accomplished with an Infiltration Basin sized in accordance with the Infiltration Basin Design criteria (I-2) found in the NYSMDM.

Runoff volumes for each of the subcatchments for the 1-year 24-hour design storm, or the WQv volume produced by each subcatchment are found in Appendix C. It should be noted that per the requirements of the NYCDEP rules and regulations a comparison of the 1-year 24-hour design storm volume and the runoff produced during the 90% storm shall be used as the treatment volume within the NYC Watershed. The following equation, per Chapter 6, was used to determine the water quality volume for the 90% storm each of the contributing areas to the treatment practices:

The water quality volume shall be $WQ_v = \frac{(P)(R_v)(A)}{12}$

Where,

WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number = 1.45 inches
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres

Table 2.3.1 - Water Quality Volume Calculation Summary (90% Storm)

Subcatchment	P (in.)	R_v	A* (ac.)	WQ_v (ac-ft)	WQ_v (c.f.)
1.1S / 1.2S	1.45	0.30	10.1	0.366	15,943

*Information regarding contributing areas (A) is shown in Appendix C

The following table is a summary of the WQv for each of the Subcatchments produced by the 1-year, 24-hour storm.

Table 2.3.2 - Water Quality Volume Calculation Summary (1-Year 24-Hour Design Storm)

Subcatchment	WQ_v * (ac-ft)	WQ_v (c.f.) (1-year, 24-hour Storm)
1.1S/1.2S	0.402	17,511

*Information regarding 1-year 24-hour Design Storm Volumes (WQv) is shown in Appendix C

As shown in tables 2.3.1 and 2.3.2 above the volume produced by the 1-year, 24-hour design storm for the contributing areas is larger than the volume produced by the 90% storm for Subcatchment 1.1S, and the volume produced by the 90% storm for the contributing areas is larger than the volume produced by the 1-year, 24-hour design storm for Subcatchments 1.2S and 1.3S. The 1-year, 24-hour design storm volumes shall be used for the WQv sizing for the proposed stormwater management practice since the only subcatchment with proposed development is within Subcatchment 1.1S. Listed in Tables 2.3.3 and 2.3.4 below, are a summaries of the water quality volume of the NYSDEC compliant practice, and its satisfaction of the NYSDEC WQv requirements: It should be noted the calculated WQv shown above for the subcatchment was used in the sizing calculation for the Infiltration Basin, and Pretreatment Dry Stormwater Basin summarized in the following tables.

Table 2.3.3 Infiltration Area Water Quality Volume Treatment Summary

Subcatchment	Treatment Practice	NYSDEC Design Practice Designation	Ap* (Required Infiltration Surface Area) (s.f.)	Proposed Surface Area of Infiltration System (s.f.)
1.1S/1.2S	1.2 IB	Infiltration Basin (I-2)	5,837	6,300

* Information regarding required infiltration surface area (Ap) is calculated and shown in Appendix G

It should be noted that the above table illustrates the water quality volume storage requirements set forth in the NYSSWDM have been met for the infiltration basin design. By meeting the Water Quality Volume requirements through employment of an infiltration basin, the water quality objectives of the NYSDEC and the NYCDEP to treat the water quality volume will be met.

2.4 NYSDEC Runoff Reduction Volume, RR_v

The Runoff Reduction Volume (RR_v) criterion is intended to replicate pre-development hydrology by maintaining preconstruction infiltration, peak flow runoff, discharge volume, as well as minimizing concentrated stormwater flow. As stated in Chapter 4 of the NYSSMDM, RR_v may be treated with standard stormwater management practices (SMP's) sized in accordance with the Chapter 4/6 requirements, or with green infrastructure practices (GIP's) sized in accordance with the requirements set forth for each practice in Chapter 5. This requirement has been achieved on the subject project providing an infiltration practice, specifically an infiltration basin designed as an SMP in accordance with the latest design standards. Runoff reduction is achieved when runoff from a percentage of the impervious area on the site is captured, routed through an SMP or a GIP, infiltrated to the ground, reused, reduced by evapotranspiration, and eventually removed from the stormwater discharge from the site. Through the implementation, the design of the infiltration basin as an SMP with the runoff reduction capacity 100% of the WQ_v is to be reduced from the site.

Table 10.3 of the NYSSMDM notes the RR_v applies to the water quality volume from impervious surfaces resulting from the 1-year, 24-hour storm. Again, it shall be the intent to provide RR_v - equivalent to the entire WQ_v. Section 4.3 of the NYSSMDM states for sites that do not achieve runoff reduction to pre-construction condition must, at a minimum reduce a percentage of the runoff from impervious areas to be constructed on the site a minimum RR_v. The following equation can be used to determine the minimum runoff reduction volume:

The minimum runoff reduction volume shall be $RRv_{minimum} = \frac{(P)(R_v)(Ai)}{12}$

Where,

S	= Hydrologic Soil Group (HSG) Specific Reduction Factor = 0.40 (B Soils), 0.2 (D Soils)
A*i*c	= Total Area of New Impervious Cover
A*i*	= Impervious cover targeted for Runoff Reduction = (S)(A*i*c)
Rv	= 0.95

For detailed calculations of the runoff reduction for the proposed stormwater infiltration basin see Appendix A. Listed in Table 2.4.1 below is a summary of the NYSDEC compliant practice, and its satisfaction of the NYSDEC RRv requirements:

Table 2.4.1 Runoff Reduction Volume Summary

Subcatchment	**RR_v *Required* = WQ_v (c.f.)** From Table 2.3.2	**RR_v *Minimum* (c.f.)** Calculated in Appendix A	**NYSDEC Practice Designation**	**Allowable % of WQv provided to be applied towards RRv**	**Storage Volume Provided below Outlet Weir / System Overflow (c.f.)** (From Appendix C)	**RRv *Provided* (c.f.)**
1.1S/1.2S	17,511	4,396	I-2	100%*	18,250	18,250

* % are based on table 3.5 of the NYSSMDM.

As shown in the table above the RRv *provided* in each of the subcatchments is greater than the RRv *minimum* and RRv *required* , therefore the RRv requirement has been met for the subject project.

2.5 NYSDEC Stream Channel Protection Volume, CP_v

The Stream Channel Protection (CP_v) criterion is intended to protect stream channels from erosion and is accomplished by the 24-hour extended detention of the center-of-mass from the one-year, 24-hour storm event. The proposed stormwater management system has been designed to meet this requirement with the design of the dry pretreatment stormwater basin and the infiltration

basin. As designed, a center-of-mass detention time of 1,557 minutes (25.95 hours) has been achieved within the pond 1.1P. Additionally the 1-year 24-hour design storm will be directed from the extended detention dry basin to the infiltration basin for complete infiltration of the WQv. Therefore the requirement for stream channel protection has been met with the proposed stormwater design.

2.6 NYSDEC Overbank Flood Control, Q_p, and Extreme Flood Control, Q_f

The Overbank Flood Control (Q_p) requirement is intended to prevent an increase in the frequency and magnitude of out-of-bank flooding events generated by urban development. Overbank control requires storage to attenuate the post-development 10-year, 24-hour peak discharge to pre-development rates. The Extreme Flood Control (Q_f) requirement is intended to prevent the increased risk of flood damage from large storm events, maintain the boundaries of the pre-development 100-year flood plain, and protect the physical integrity of stormwater management practices. Extreme flood control requires storage to attenuate the post-development 100-year, 24-hour peak discharge to pre-development rates. As shown in Table 2.7.1 attenuation for both the 10-year and 100-year 24-hour storms has been provided thus satisfying the Q_p and Q_f requirements.

2.7 NYCDEP Quantity Requirements

As required per the NYCDEP rules and regulations, the attenuation of post-development peak flows from the 1, 10, and 100-year storms to pre-development levels is accomplished with the proposed stormwater management practices. The following tables summarize the pre and post development peak flows expected for the proposed project.

Table 2.7.1– Pre and Post-Development Peak Flows

24-HOUR DESIGN STORM PEAK FLOWS (c.f.s.)						
	1-YEAR		10-YEAR (Overbank Flood Control)		100-YEAR (Extreme Flood Control)	
	Pre	Post	Pre	Post	Pre	Post
Design Line	0.30	0.04	8.29	2.79	36.90	33.49

As shown in the above table the peak flows discharging to the design point in the proposed condition have been mitigated to below the existing condition levels, therefore the receiving drainage system will see a reduction in peak flows during the storm events shown above.

3.0 STORMWATER CONVEYANCE SYSTEM

The stormwater collection and conveyance systems for the project will consist of catch basins and HDPE pipe. The system will be sized to collect and convey at minimum the 25-year, 1-hour design storm using the Rational Method. The Rational Method is a standard method used by engineers to develop flow rates for sizing collection systems. The Rational Method calculates flows based on a one-hour design storm.

4.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control should be accomplished by four basic principles: diversion of clean water, containment of sediment, treatment of dirty water, and stabilization of disturbed areas. Diversion of clean water should be accomplished with swales. This diverted water should be safely conveyed around the construction area as necessary and discharged downstream of the disturbed areas. Sediment should be contained with the use of silt fence at the toe of disturbed slopes and excavation of the temporary sediment basin. Disturbed areas should be permanently stabilized within 14 days of final grading to limit the required length of time that the temporary facilities must be utilized. The owner will be responsible for the maintenance of the temporary erosion control facilities.

4.1 Temporary Erosion and Sediment Control Facilities

Temporary erosion and sediment control facilities should be installed and maintained as required to reduce the impacts to off-site properties. The owner will be required to provide maintenance for the temporary erosion and sediment control facilities. In general, the following temporary methods and materials should be used to control erosion and sedimentation from the project site:

- Stabilized Construction Entrance
- Silt Fence Barriers
- Storm Drain Inlet Protection
- Sediment Traps with optional Dewatering Devices

A stabilized construction entrance should be installed at the entrance to the site as shown on the plan. The design drawings will include details to guide the contractor in the construction of this entrance. The intent of the stabilized construction entrance is to prevent the "tracking" of soil from the site. Dust control should be accomplished with water sprinkling trucks if required. During dry periods, sprinkler trucks should wet all exposed earth surfaces as required to prevent the transport of air-borne particles to adjoining areas.

Siltation barriers constructed of geosynthetic filter cloth should be installed at the toe of all disturbed slopes. The intent of these barriers is to contain silt and sediment at the source and inhibit its transport by stormwater runoff. The siltation barriers will also help reduce the rate of runoff by creating filters through which the stormwater must pass.

The stormwater ponds will also act as a sediment traps with optional dewatering devices during construction of the site. Stormwater runoff from disturbed areas will be directed to the sediment trap. The trap will be sized in accordance with the publication, *New York State Standards and Specifications for Erosion and Sediment Control* (Blue Book), the latest edition.

4.2 Permanent Erosion and Sediment Control Facilities

Permanent erosion and sediment control will be accomplished by diverting stormwater runoff from steep slopes, controlling/reducing stormwater runoff velocities and volumes, and vegetative and structural surface stabilization. All of the permanent facilities are relatively maintenance free and only require periodic inspections. The owner will provide maintenance for all the permanent erosion and sediment control facilities.

The temporary sediment traps shall be cleaned of all sediment and debris, and converted to a extended detention dry stormwater basin per the final elevations and dimensions, and stabilized with the vegetation as indicated on the project drawings. Riprap aprons will be used at the discharge end of all piped drainage systems. Runoff velocities will be reduced to levels that are non-erosive to the receiving waterbodies through use of these aprons.

Other than the buildings and paved surfaces, disturbed surfaces will be stabilized with vegetation. The vegetation will control stormwater runoff by preventing soil erosion, reducing runoff volume and velocities, and providing a filter medium. Permanent seeding should optimally be undertaken in the spring from March 21st through May 20th and in late summer from August 15th to October 15th.

5.0 IMPLEMENTATION, MAINTENANCE & GENERAL HOUSEKEEPING

5.1 Construction Phase

Details associated with the implementation and maintenance of the proposed stormwater facilities and erosion control measures during construction are shown on the project drawings. A Construction Sequence has been provided to guide the contractor in the installation of the erosion control measures as well as the site plan features. In accordance with NYSDEC SPDES General Permit GP-0-15-002 no phase will exceed the maximum of 5 acres of disturbance at any given time as less than 5 acres of disturbance is proposed. The erosion control plan includes associated details and notes to aid the contractor in implementing the plan.

During construction, a Site Log Book, Appendix E, is required to be kept per NYSDEC SPDES General Permit GP-0-15-002. Erosion and sediment control inspections are required to be conducted

as necessary under coverage of the permit (minimum twice a week) and an updated logbook and a copy of the SWPPP is required to be kept on site for the duration of the construction activities. The Construction Site Log Book is an appendix taken from the *New York Standards and Specifications for Erosion and Sediment Control* (Blue Book).

In addition to the proposed erosion and sediment control facilities, the following good housekeeping best management practices shall be implemented to mitigate potential pollution during the construction phase of the project. The general contractor overseeing the day-to-day site operation shall be responsible for the good housekeeping best management practices included in the following general categories:

- Material Handling and Waste Management
- Establishment of Building Material Staging Areas
- Establishment of Washout Areas
- Proper Equipment Fueling and Maintenance Practices
- Spill Prevention and Control Plan

All construction waste materials shall be collected and removed from the site regularly by the general contractor. The general contractor shall supply waste barrels for proper disposal of waste materials. All personnel working on the site shall be instructed of the proper procedures for construction waste disposal.

Although it is not anticipated any hazardous waste materials will be utilized during construction, any hazardous waste materials shall be disposed of in accordance with federal, state, and local regulations. No hazardous waste shall be disposed of on-site. Hazardous waste materials shall be stored in appropriate and clearly marked containers and segregated from the other non-waste materials. All hazardous waste shall be stored in a structurally sound and sealed shipping containers located in the staging areas. Material safety data sheets, material inventory, and emergency contact numbers will be maintained in the office trailer. All personnel working on the site shall be instructed of the proper procedures for hazardous waste disposal.

Temporary sanitary facilities (portable toilets) shall be provided on site during the entire length of construction. The sanitary facilities shall be located in an alternate area away from the construction activities on the site. The portable toilets shall be inspected weekly for evidence of leaking holding tanks.

All recyclables, including wood pallets, cardboard boxes, and all other recyclable construction scraps shall be disposed of in a designated recycling barrel provided by the contractor and removed from the site regularly. All personnel working on the site shall be instructed of the proper procedures for construction waste recycling.

All construction equipment and maintenance materials shall be stored in a designated staging area. Silt fence shall be installed down gradient of the construction staging area. Shipping containers shall be utilized to store hand tools, small parts, and other construction materials, not taken off site daily. Construction waste barrels, recycling barrels and if necessary hazardous waste containers shall be located within the limits of the construction staging area.

Throughout the construction of the project, several types of vehicles and equipment will be used on-site. Fueling of the equipment shall occur within the limits of the construction staging area. Fuel will be delivered to the site as needed, by the general contractor, or a party chosen by the general contractor. Only minor vehicle equipment maintenance shall occur on-site, all major maintenance shall be performed off-site. All equipment fluids generated from minor maintenance activities shall be disposed of into designated drums and stored in accordance with the hazardous waste storage as previously discussed.

Vehicles and equipment shall be inspected on each day of use. Any leak discovered shall be repaired immediately. All leaking equipment unable to be repaired shall be removed from the site. Ample supplies of absorbent, spill-cleanup materials, and spill kits shall be located in the construction staging area. All spills shall be cleaned up immediately upon discovery. Spent absorbent materials and rags shall be hauled off-site immediately after the spill is cleaned for disposal at a local landfill. All personnel working on the site shall be instructed of the proper procedures for spill prevention and control. Any spill large enough to discharge to surface water will be immediately reported to the local fire / police departments, NYCDEP, and the National Response Center 1-800-424-8802.

Initially the stormwater basins and infiltration basins will require regular maintenance until the permanent vegetation is established. Vegetation should be inspected every 30 days and after every major storm event until established, after which inspections should take place on a quarterly basis and after every large storm event. Damaged areas should be immediately re-seeded and re-mulched. The seed mixtures contain several plant species that vary slightly in their needs for survival. It is expected that not all of the species will survive within each basin due to variations within each basin such as water, nutrients, and light. During the initial year of planting, the plants may require watering to germinate and establish. Note that several seedings may be required during the first year to completely establish vegetation within the basin. After the initial year of establishment, the basin does not need to be fertilized or watered. A natural selection process will occur over the first few years, such that the species within the seed mixture most suitable to the conditions will survive.

5.2 Long Term Maintenance Plan

Each spring the paved areas should be cleaned to remove the winter's accumulation of traction sand. After this is completed, all drain inlets sumps and the stormwater basins should be cleaned. All pipes should be checked for debris and blockages and cleaned as required. During the cleaning process, the drain inlets, catch basins, and pipes should be inspected for structural integrity and overall condition; repairs and/or replacement will be made as required.

Once the desired vegetative cover is established in the basins, only limited maintenance is required. The ponds and outlet structures should be inspected after major storm events and semi-annually. During the inspections, the following should be checked:

- Evidence of clogging of outlet structure.
- Erosion of the flow path through the basins.
- Subsidence, erosion, cracking or tree growth on the embankment/berm.
- Condition of the emergency spillway.
- Accumulation of sediment around the outlet structures.
- Adequacy of upstream/downstream channel erosion control measures.
- Erosion of the basin bed and banks.
- Sources of erosion in the contributory drainage, which should be stabilized.

Access to the ponds will be through a stabilized basin access. The access is proposed to be graded to final grades and seeded and mulched in accordance with Plans. The graded basin accesses, and the side slopes and berms of the basins should be mowed annually as applicable to prevent the establishment of woody plants within the swales, access, or pond berms. During the mowing operations, debris and litter should be removed from all parts of the access, and basin. Accumulated sediment will need to be removed from the basins approximately every 10 to 20 years, or when 50 percent of their capacity has been reached. All drain inlets and catch basin sumps will be cleaned. All pipes will be checked for debris and blockages and cleaned as required. During the cleaning process, the drain inlet, catch basins and pipes should be inspected for structural integrity and overall condition; repairs and/or replacement will be made as required. In addition to guidelines discussed above all maintenance, requirements outlined in the NYSSMDM shall be followed.

APPENDIX A
NYSDEC Runoff Reduction Calculations

RRv Calculation Worksheet - Subcatchment 1.1S/1.2S

Project: Wilder Balter Partners, Inc.
Project #: 15246.100
Date: 1/29/2016

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

1. RRv Initial = Water Quality Volume (WQv) *0.402 ac-ft* = *17,511 c.f.*
(refer to HydroCAD Subcatchments 2.5S, The Mews at Baldwin Place subcatchment 1.5S (0.071ac.ft.) and The Mews at Baldwin Place Phase 2 subcatchment 1.8S (0.086 ac. ft.) for Water Quality Volume)

2. *RRv Minimum* = [(P) (Rv) (S) (Aic)] /12 where…

P = Rainfall (in.)	=	1.45	in.
Rv = 0.05 + 0.009 (100%)	=	0.95	
S = Hydrologic Soil Group Specific Reduction Factor [HSG A = 0.55] [HSG B = 0.40] [HSG C = 0.30] [HSG D = 0.20]	=	0.31	
Aic = Total area of new impervious cover	=	2.8	Acres
RRv Minimum	=	*4,396*	*c.f.*

3. *RRv Required* = RRv Initial - Green Infrastructure Practice (GIP) with Area Reduction

GIP with Area Reduction Applied in Project		
5.3.1 Conservation of Natural Area	N/A	
5.3.2 Sheet Flow to Riparian Buffers or Filter Strips	N/A	
5.3.4 Tree Planting / Tree Box (4 trees at 100 s.f. per tree)	N/A	c.f.
5.3.5 Disconnection of Rooftop Runoff	N/A	
5.3.6 Stream Daylighting	N/A	
RRv Required(=WQv-RRV by area)(Refer to HydroCAD output in this Appendix)	= 17,511	c.f.

4. *RRv Provided*

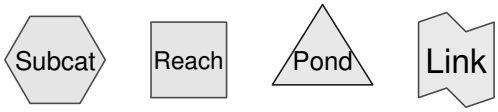
GIP with Volume Reduction Applied in Project	WQv Treated (c.f.)	% of WQv Applied to *RRv Provided*	*RRv Provided (c.f.)*
5.3.3 Vegetated Open Swales [HSG A / B = 20%] [HSG C / D = 10%] {Modified HSG C - D = 15% - 12%]			N/A
5.3.7 Rain Garden [No underdrains / Good Soils = 100%] [With underdrains / Poor Soils = 40%]		40%	
5.3.8 Green Roof [RRv provided equals volume provided in Green Roof]		100%	N/A
5.3.9 Stormwater Planters [Infiltration Planters = 100%] [Flow Through HSG C = 45%] [Flow Though HSG D = 30%]		45%	N/A
5.3.10 Rain Tank / Cisterns		100%	N/A
5.3.11 Porous Pavement		100%	0
Infiltration Practice (Standard SMP)	18250	100%	N/A
Bioretention Practice (Standard SMP) [Without Underdrains HSG A/B = 80%] [With Underdrain HSG C\D = 40%]		40%	N/A
Dry Swale (Open Channel Practice) (Standard SMP) [HSG A/B = 40%] [HSG C/D = 20%]		40%	0
RRv Provided =			*18,250*

5. Summary

RRv Initial	=	17,511	c.f.	
RRv Required	=	17,511	c.f.	
RRv Minimum	=	4,396	c.f.	
RRv Provided	=	18,250	c.f.	
WQv Required for Downstream SMP	=	0	c.f.	(= RRv Required - RRv Provided)

APPENDIX B

Pre-Development Computer Data



Routing Diagram for WB Lewisboro Pre Development
Prepared by Insite Engineering, Printed 1/29/2016
HydroCAD® 10.00-15 s/n 00891 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.0S:

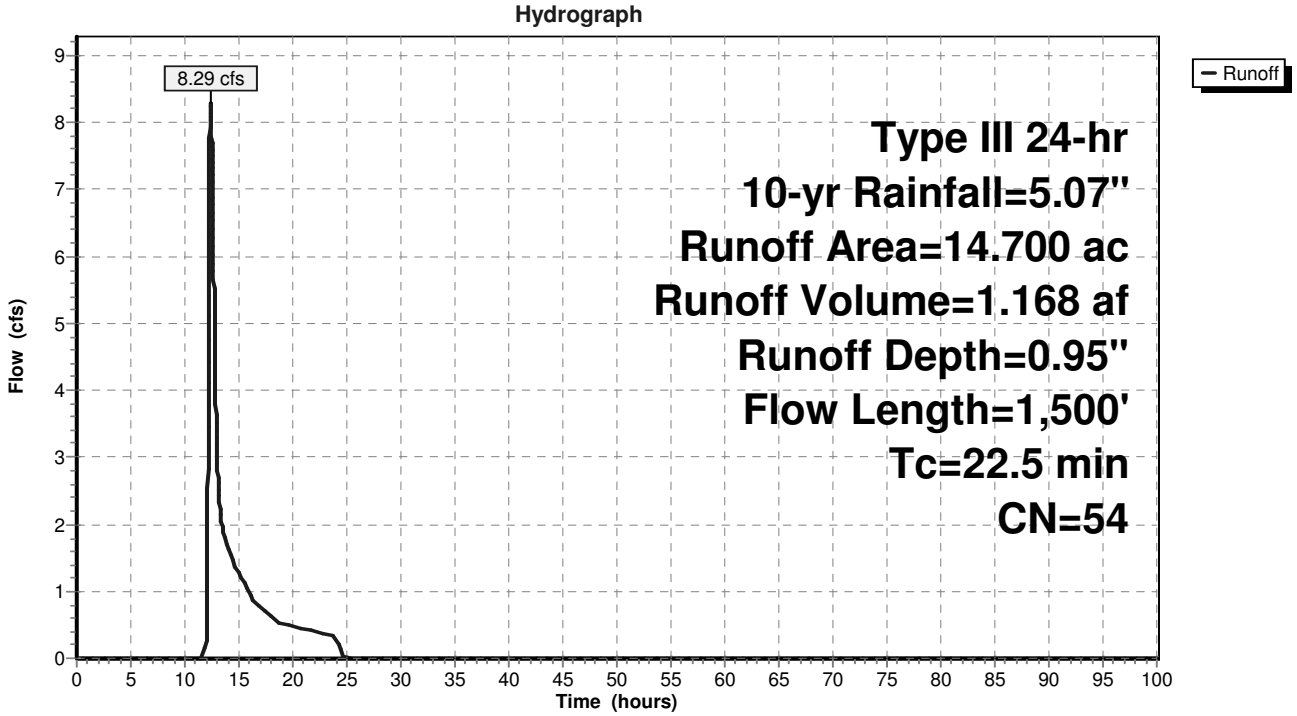
Runoff = 8.29 cfs @ 12.38 hrs, Volume= 1.168 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
2.700	48	Brush, Good, HSG B
12.000	55	Woods, Good, HSG B
14.700	54	Weighted Average
14.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.5	1,400	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.5	1,500	Total			

Subcatchment 1.0S:



Summary for Subcatchment 1.0S:

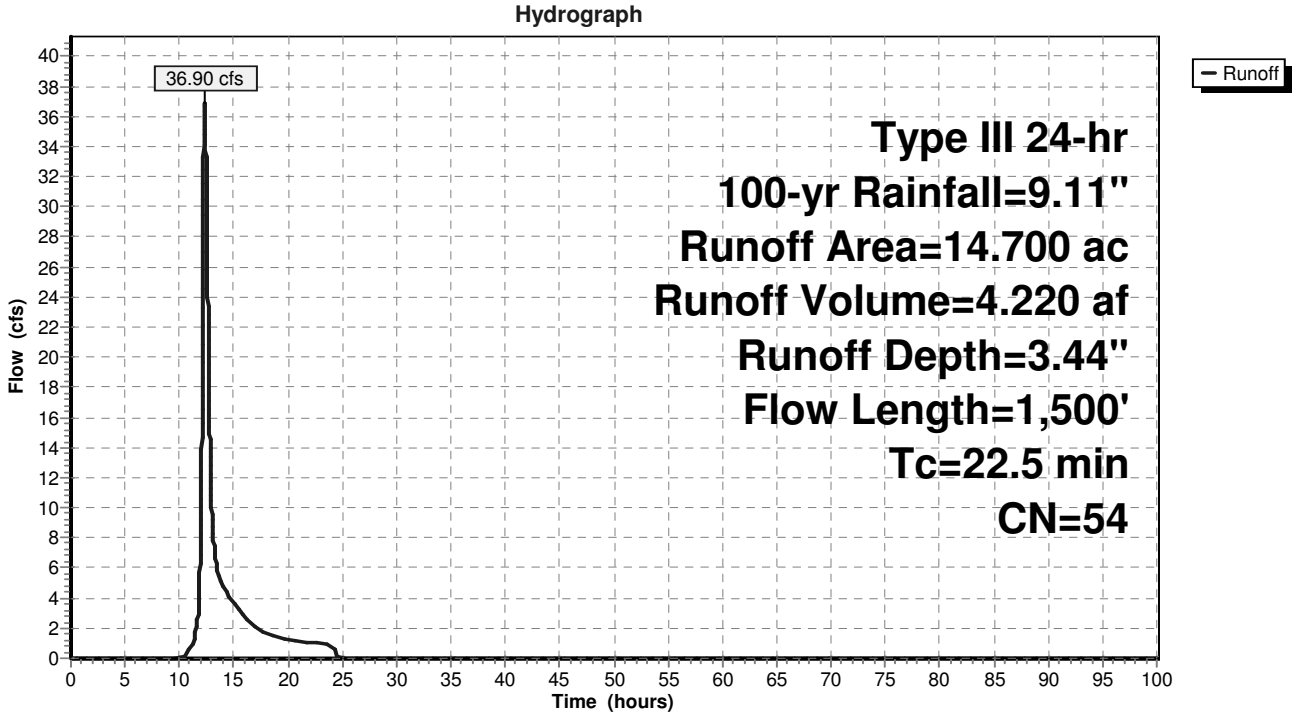
Runoff = 36.90 cfs @ 12.33 hrs, Volume= 4.220 af, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
2.700	48	Brush, Good, HSG B
12.000	55	Woods, Good, HSG B
14.700	54	Weighted Average
14.700		100.00% Pervious Area

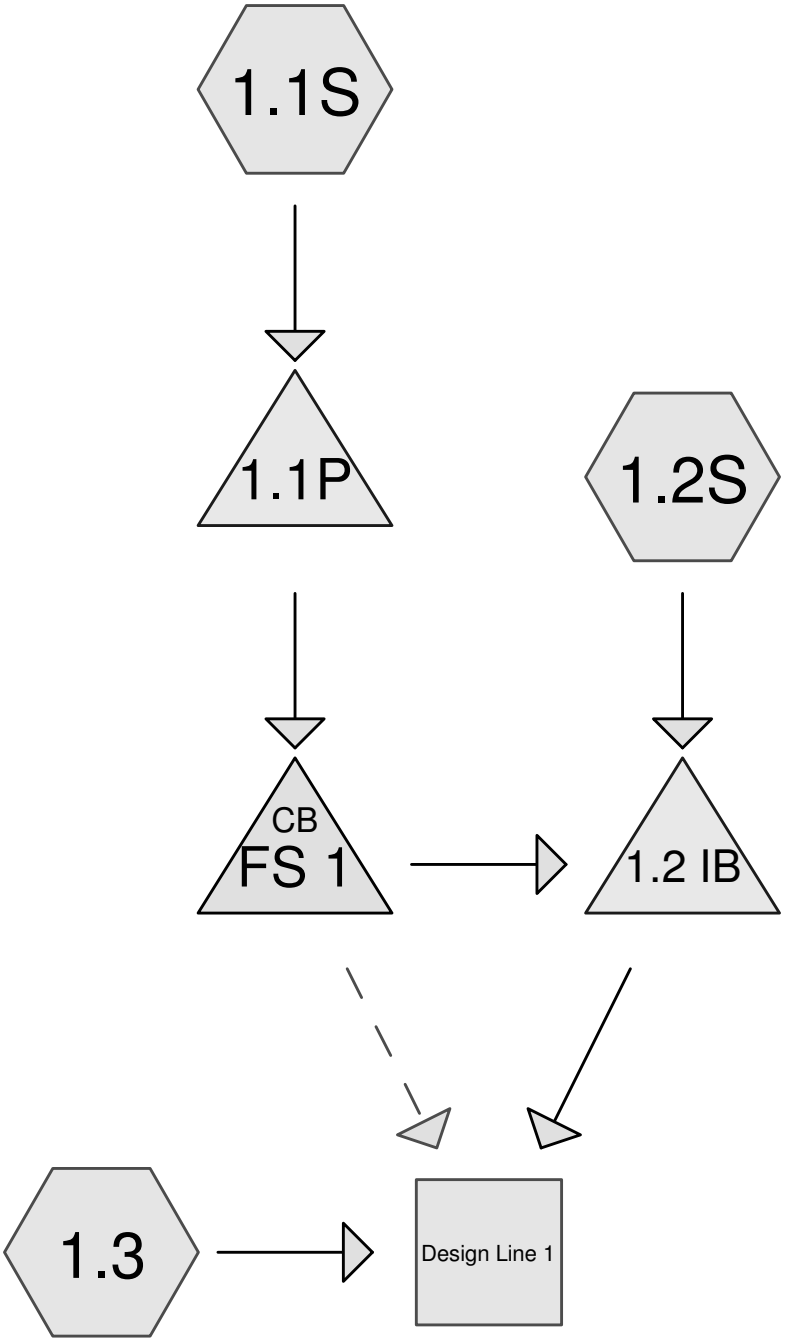
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.5	1,400	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.5	1,500	Total			

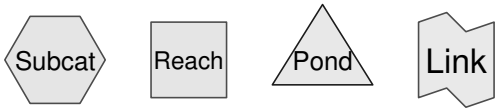
Subcatchment 1.0S:



APPENDIX C

Post-Development Computer Data





Routing Diagram for WB Lewisboro Post Development
Prepared by Insite Engineering, Printed 2/1/2016
HydroCAD® 10.00-15 s/n 00891 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.1S:

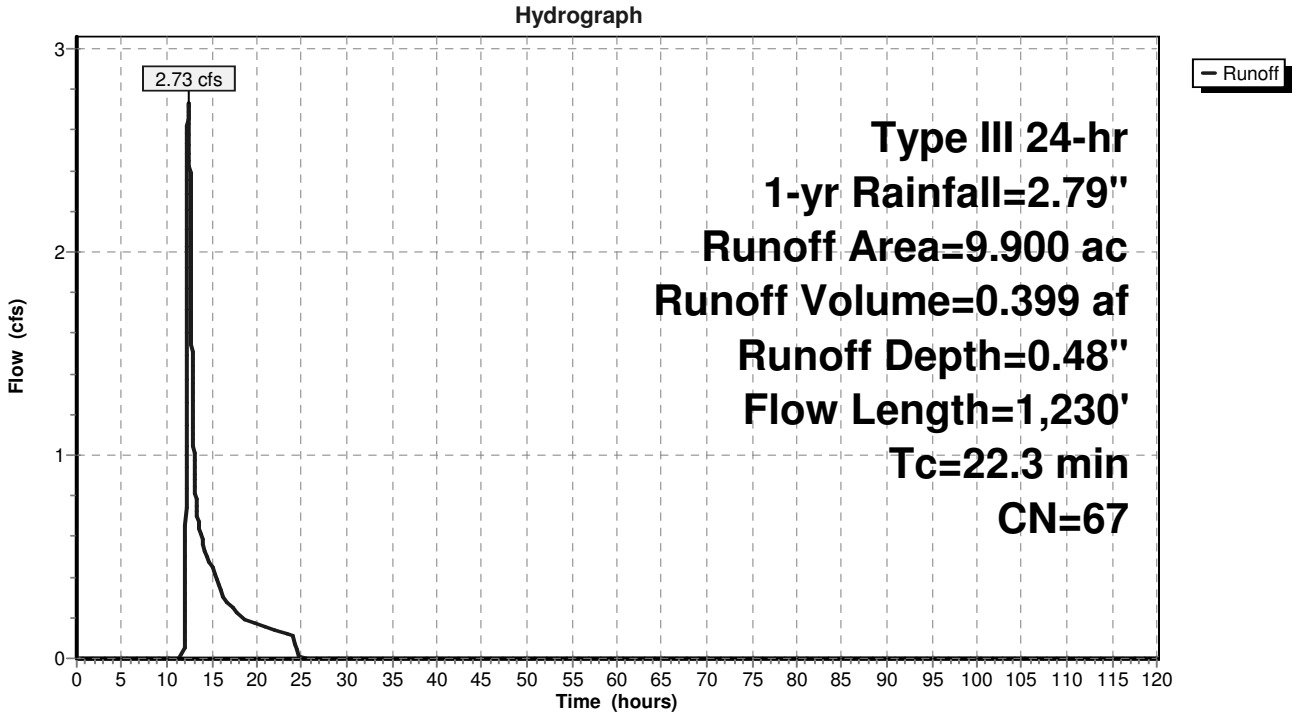
Runoff = 2.73 cfs @ 12.40 hrs, Volume= 0.399 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

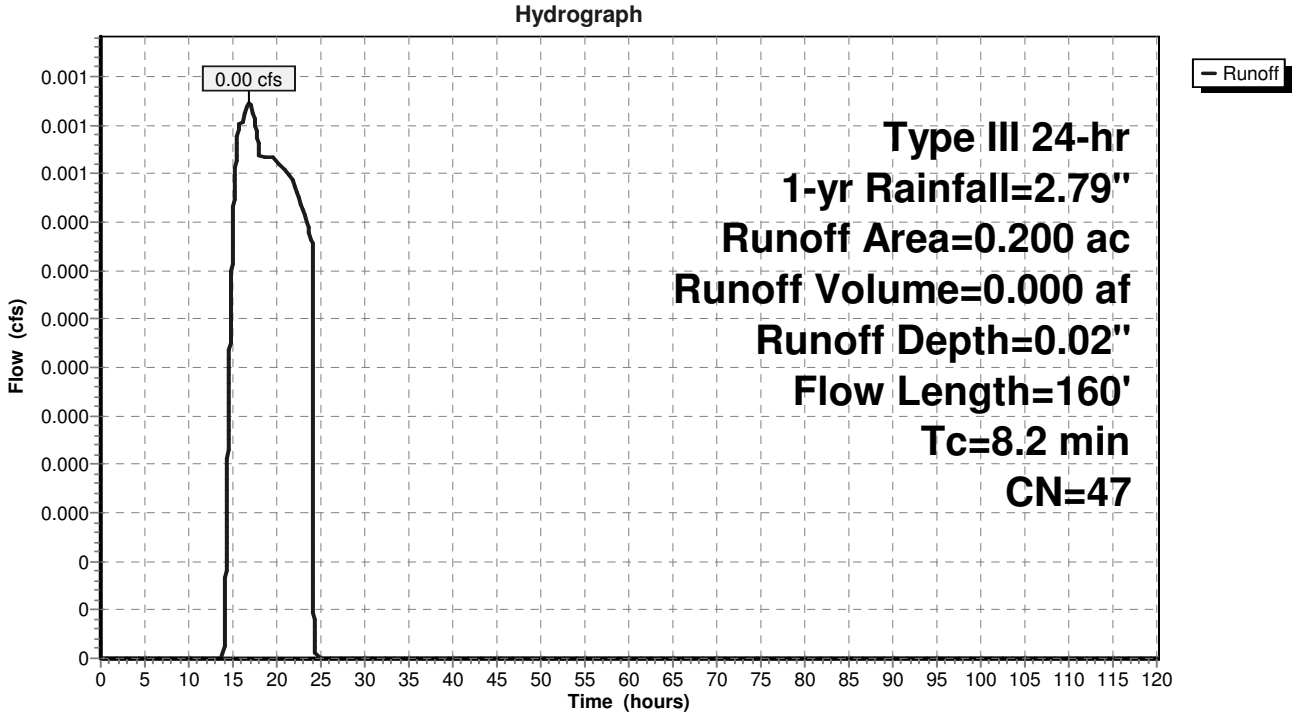
Runoff = 0.00 cfs @ 16.90 hrs, Volume= 0.000 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

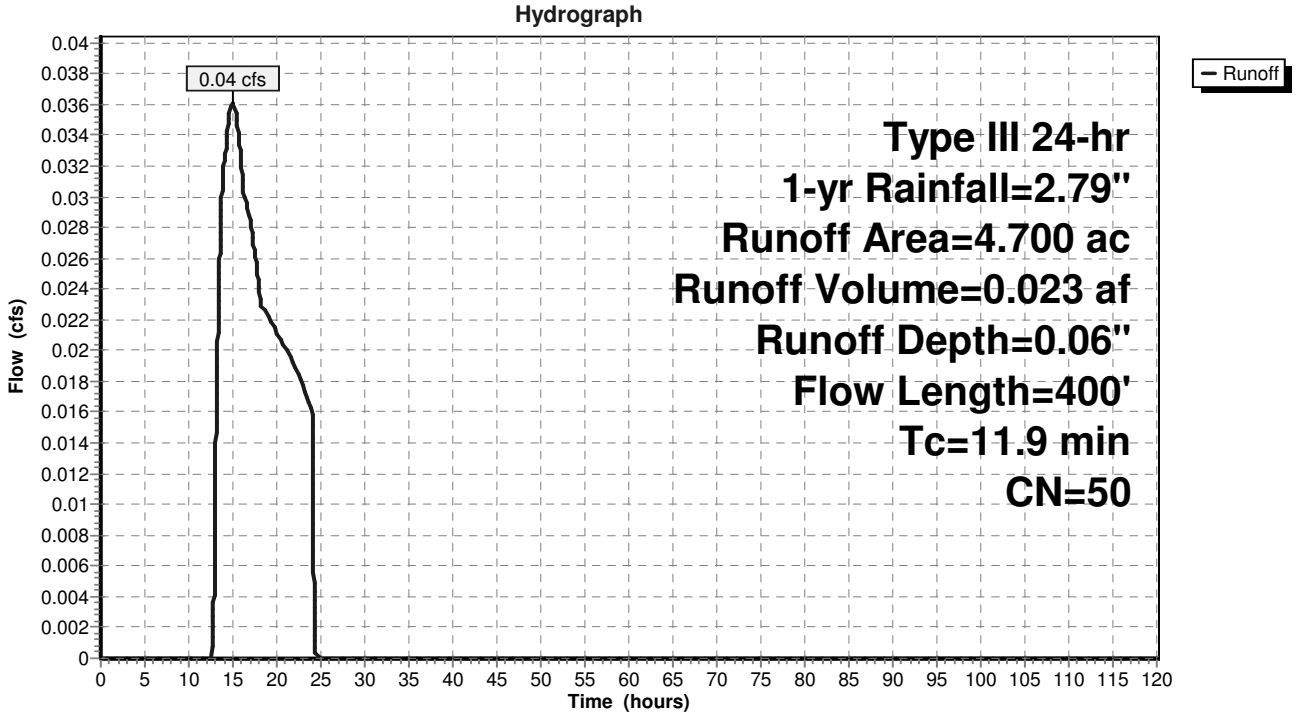
Runoff = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

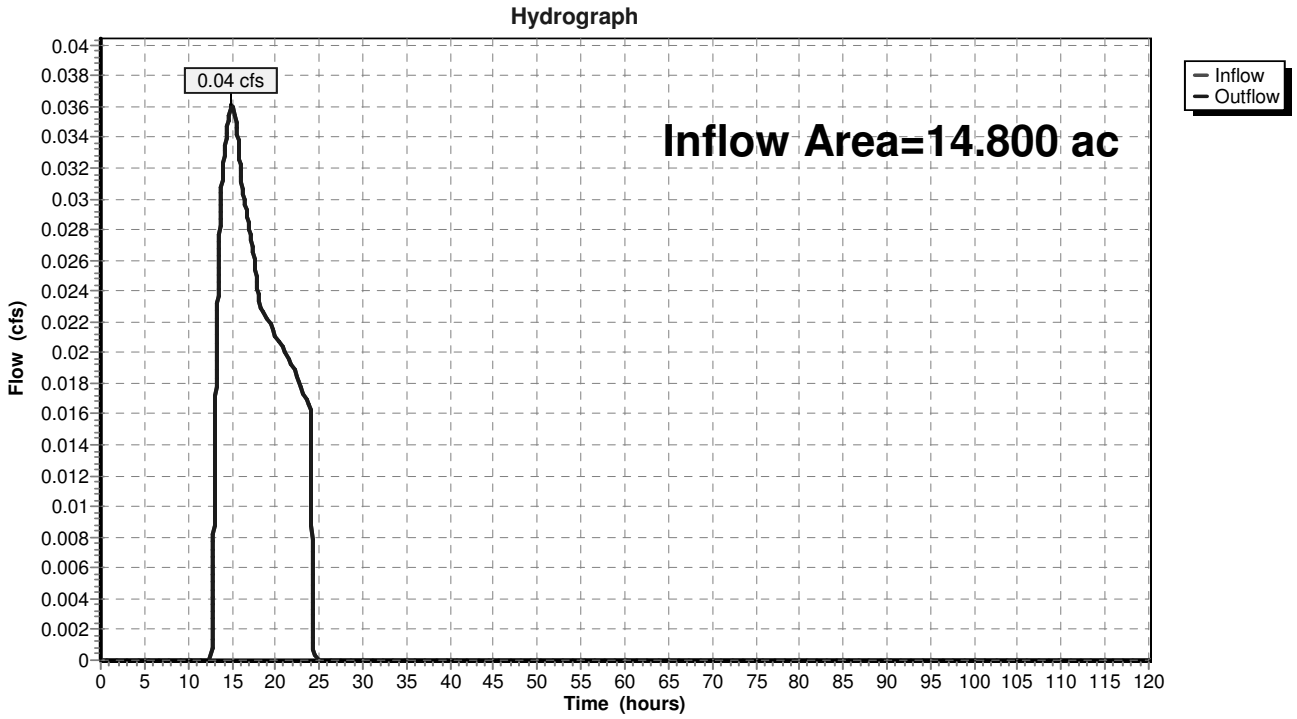


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 0.02" for 1-yr event
Inflow = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af
Outflow = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 0.48" for 1-yr event
Inflow = 2.73 cfs @ 12.40 hrs, Volume= 0.399 af
Outflow = 0.10 cfs @ 24.19 hrs, Volume= 0.399 af, Atten= 97%, Lag= 707.8 min
Primary = 0.10 cfs @ 24.19 hrs, Volume= 0.399 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 224.99' @ 24.19 hrs Surf.Area= 5,888 sf Storage= 13,473 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,556.5 min (2,471.9 - 915.4)

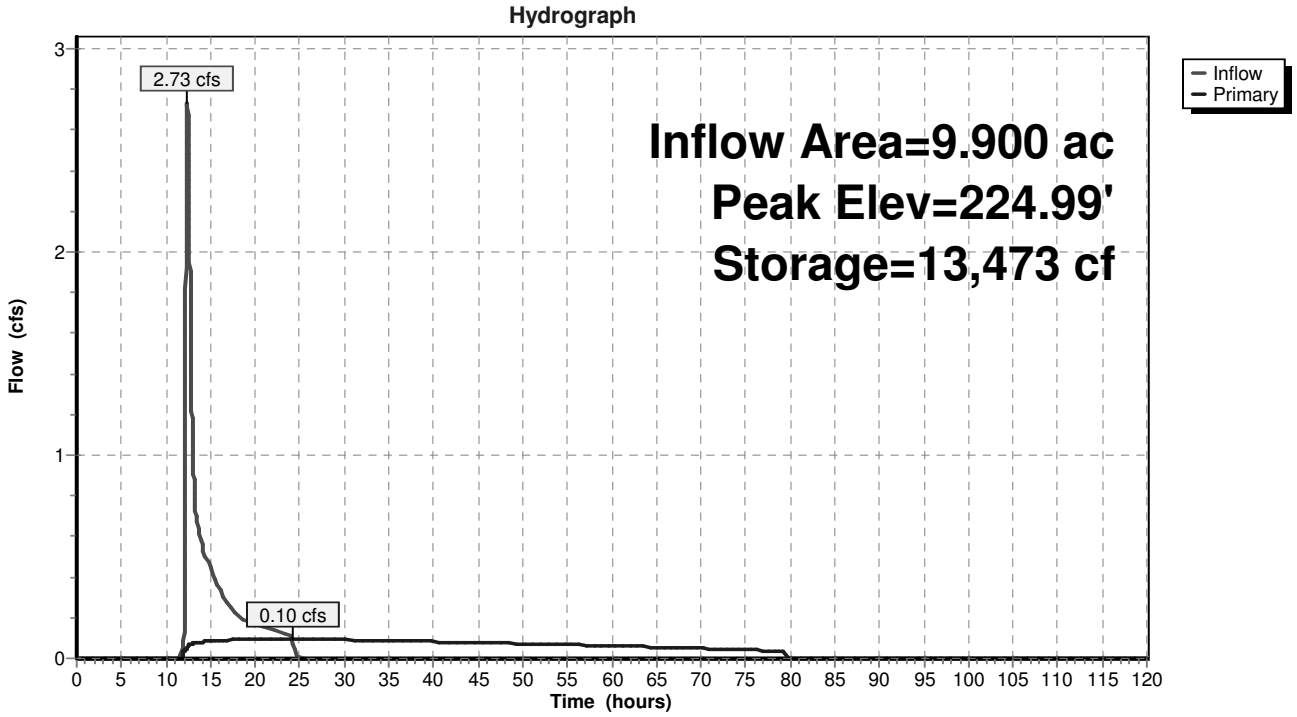
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.10 cfs @ 24.19 hrs HW=224.99' TW=221.42' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.10 cfs of 43.96 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 8.92 fps)
  └─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.1P:


Hydrograph
Inflow
Primary
2.73 cfs
0.10 cfs
Inflow Area=9.900 ac
Peak Elev=224.99'
Storage=13,473 cf
Flow (cfs)
Time (hours)
0
1
2
3
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 0.47" for 1-yr event				
Inflow =	0.10 cfs @	24.02 hrs,	Volume=	0.400 af	
Outflow =	0.10 cfs @	24.04 hrs,	Volume=	0.400 af,	Atten= 0%, Lag= 1.4 min
Discarded =	0.10 cfs @	24.04 hrs,	Volume=	0.400 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.00' @ 24.04 hrs Surf.Area= 6,303 sf Storage= 28 cf

Plug-Flow detention time= 4.8 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 4.8 min (2,475.4 - 2,470.6)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

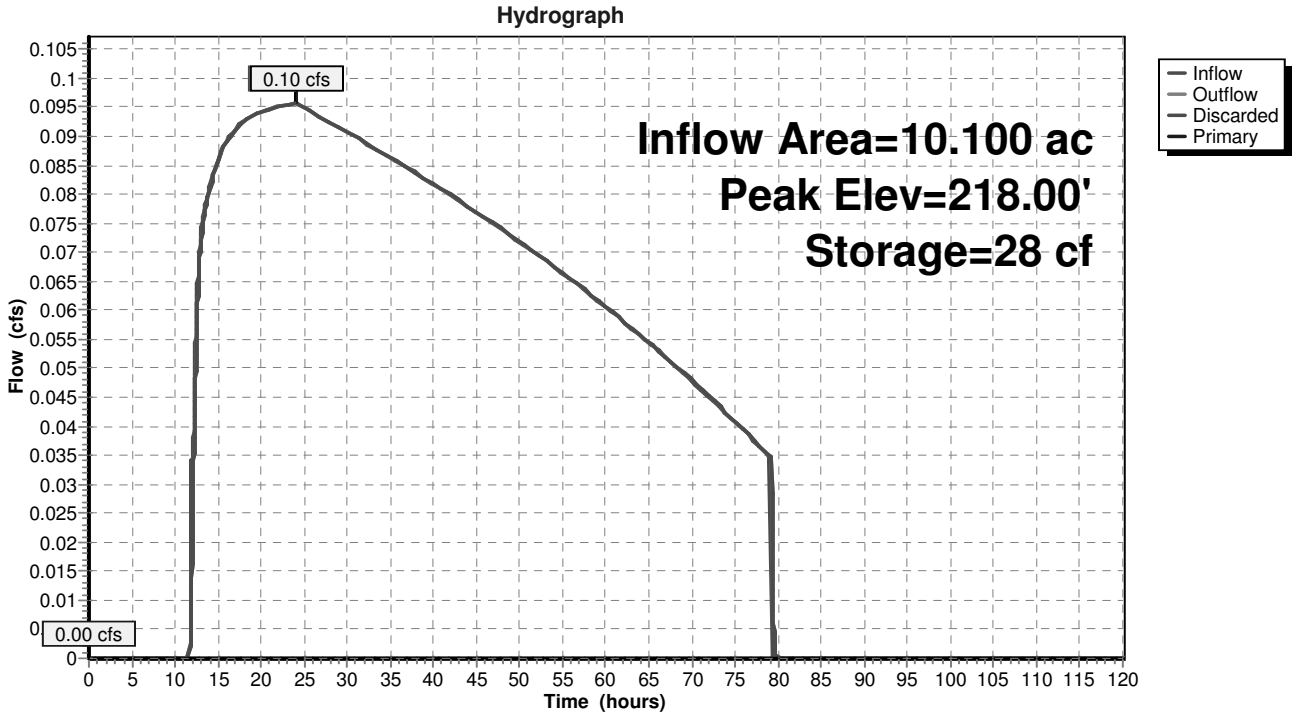
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.10 cfs @ 24.04 hrs HW=218.00' (Free Discharge)
└─**3=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
  └─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
0.10 cfs
0.00 cfs
Inflow Area=10.100 ac
Peak Elev=218.00'
Storage=28 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 0.48" for 1-yr event				
Inflow =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af	
Outflow =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af,	Atten= 0%, Lag= 0.1 min
Primary =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

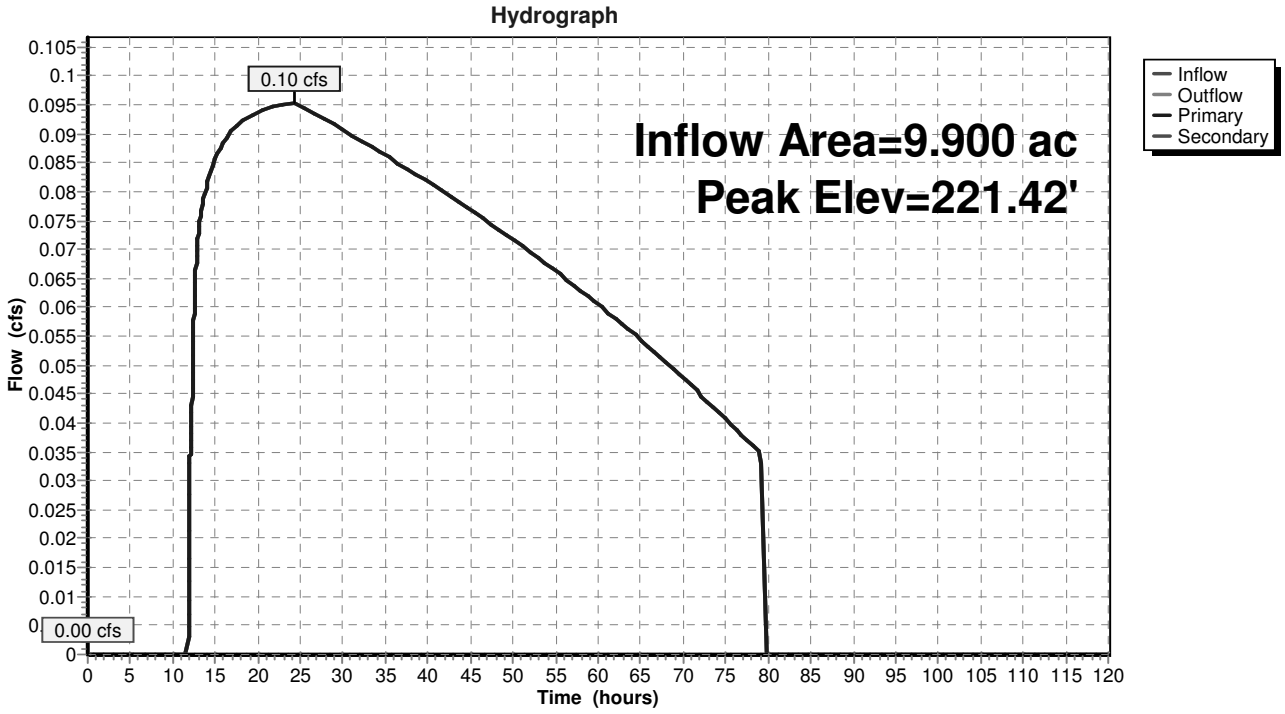
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 221.42' @ 24.19 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.10 cfs @ 24.19 hrs HW=221.42' TW=218.00' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.10 cfs @ 2.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=221.20' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond FS 1:



Summary for Subcatchment 1.1S:

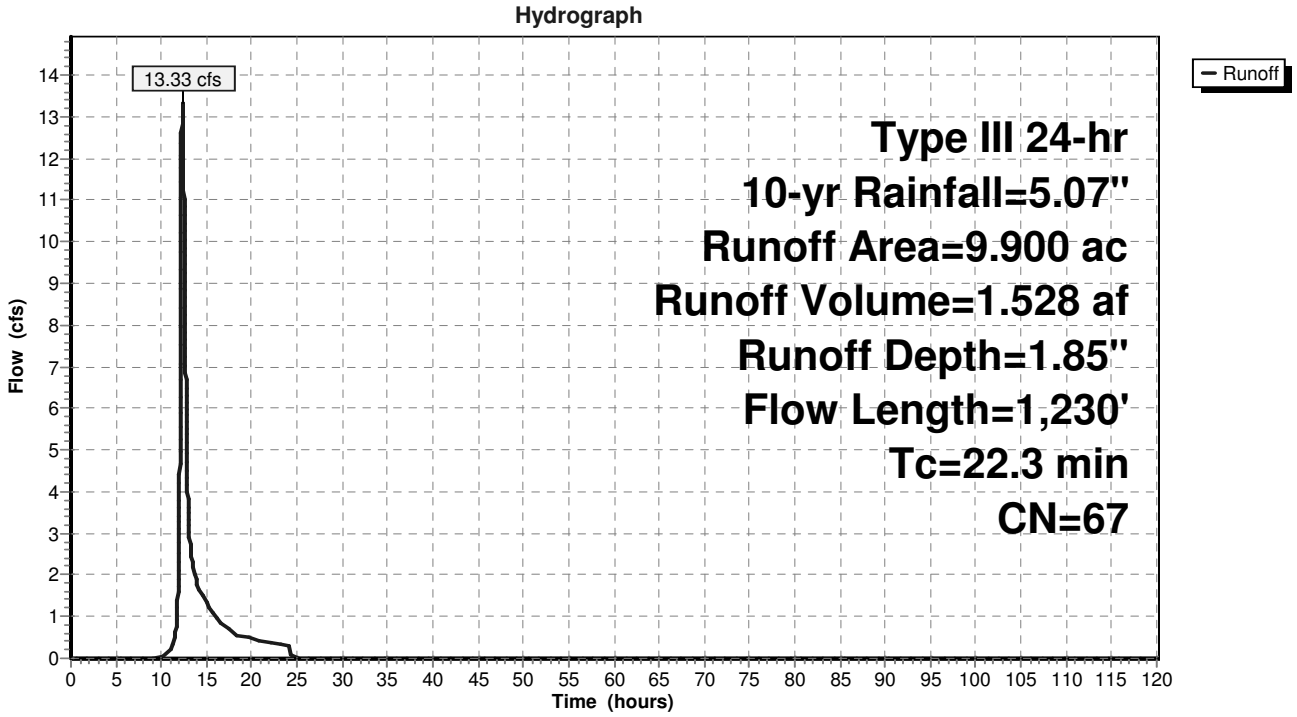
Runoff = 13.33 cfs @ 12.32 hrs, Volume= 1.528 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

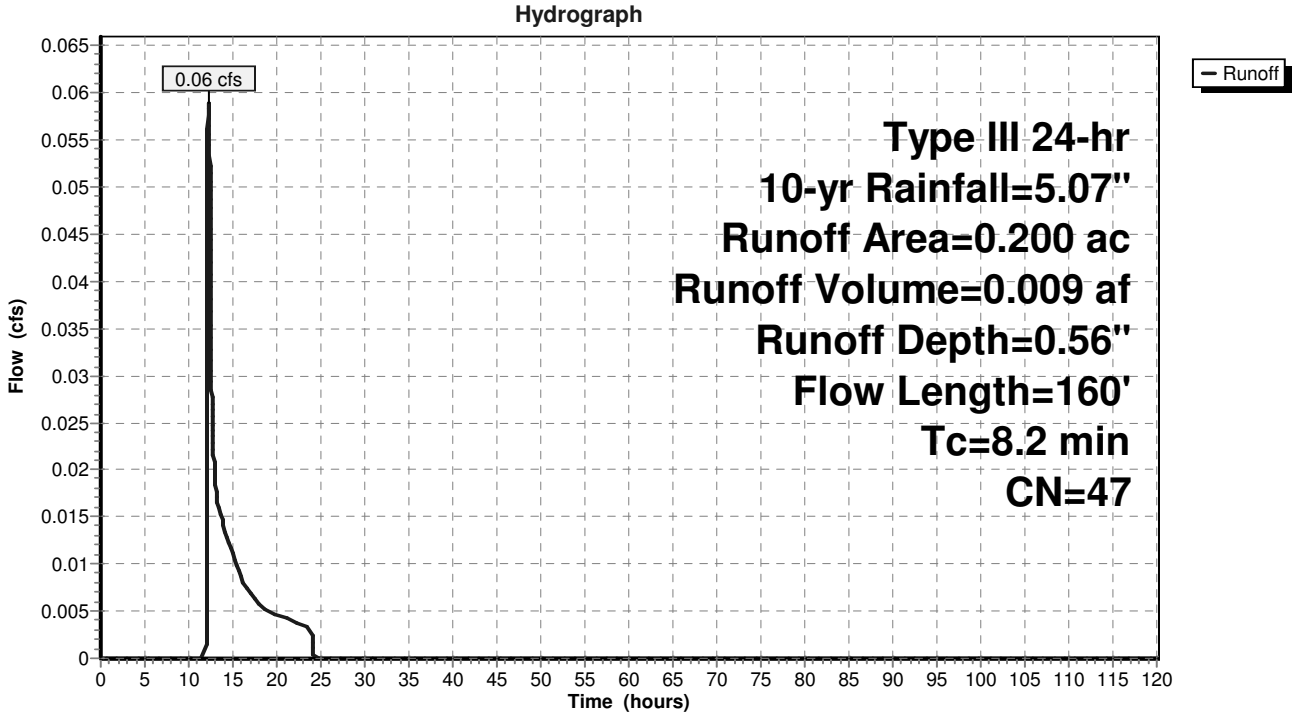
Runoff = 0.06 cfs @ 12.19 hrs, Volume= 0.009 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

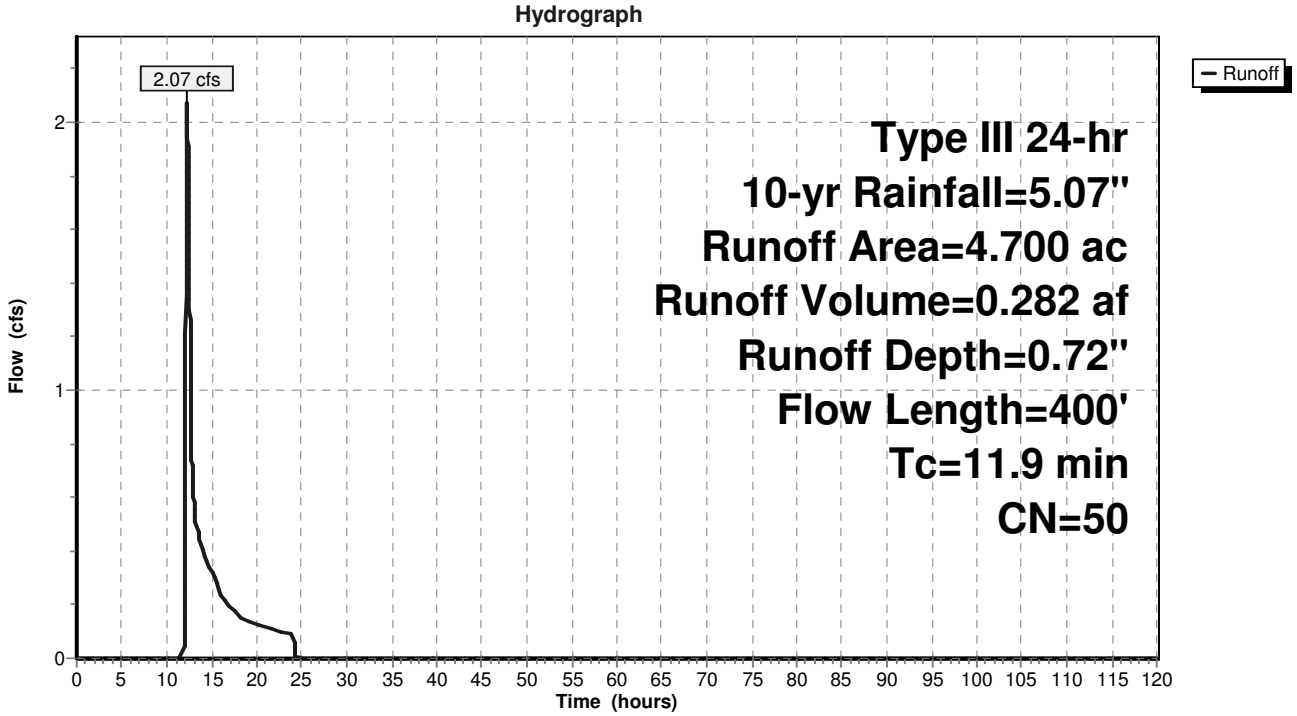
Runoff = 2.07 cfs @ 12.23 hrs, Volume= 0.282 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

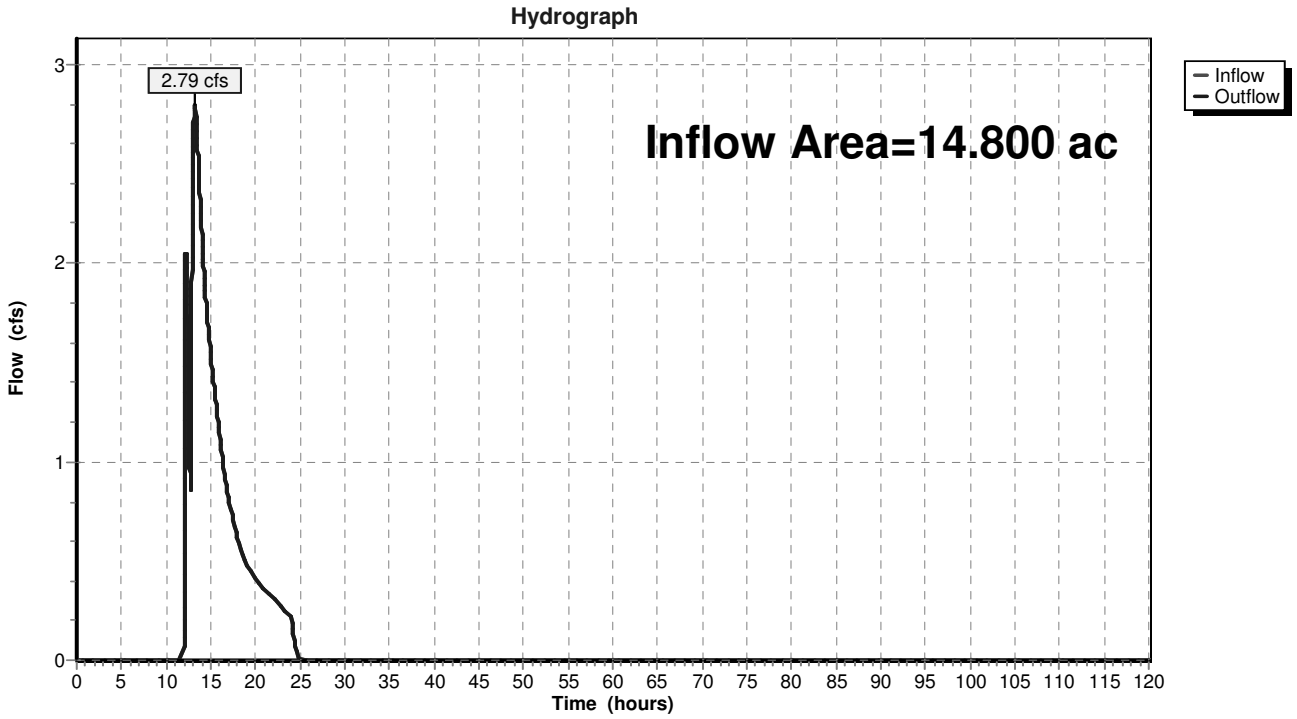


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 0.75" for 10-yr event
Inflow = 2.79 cfs @ 13.21 hrs, Volume= 0.921 af
Outflow = 2.79 cfs @ 13.21 hrs, Volume= 0.921 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 1.85" for 10-yr event
Inflow = 13.33 cfs @ 12.32 hrs, Volume= 1.528 af
Outflow = 2.61 cfs @ 13.23 hrs, Volume= 1.528 af, Atten= 80%, Lag= 54.5 min
Primary = 2.61 cfs @ 13.23 hrs, Volume= 1.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 227.55' @ 13.23 hrs Surf.Area= 8,506 sf Storage= 31,772 cf

Plug-Flow detention time= 1,275.4 min calculated for 1.528 af (100% of inflow)
Center-of-Mass det. time= 1,275.8 min (2,145.5 - 869.8)

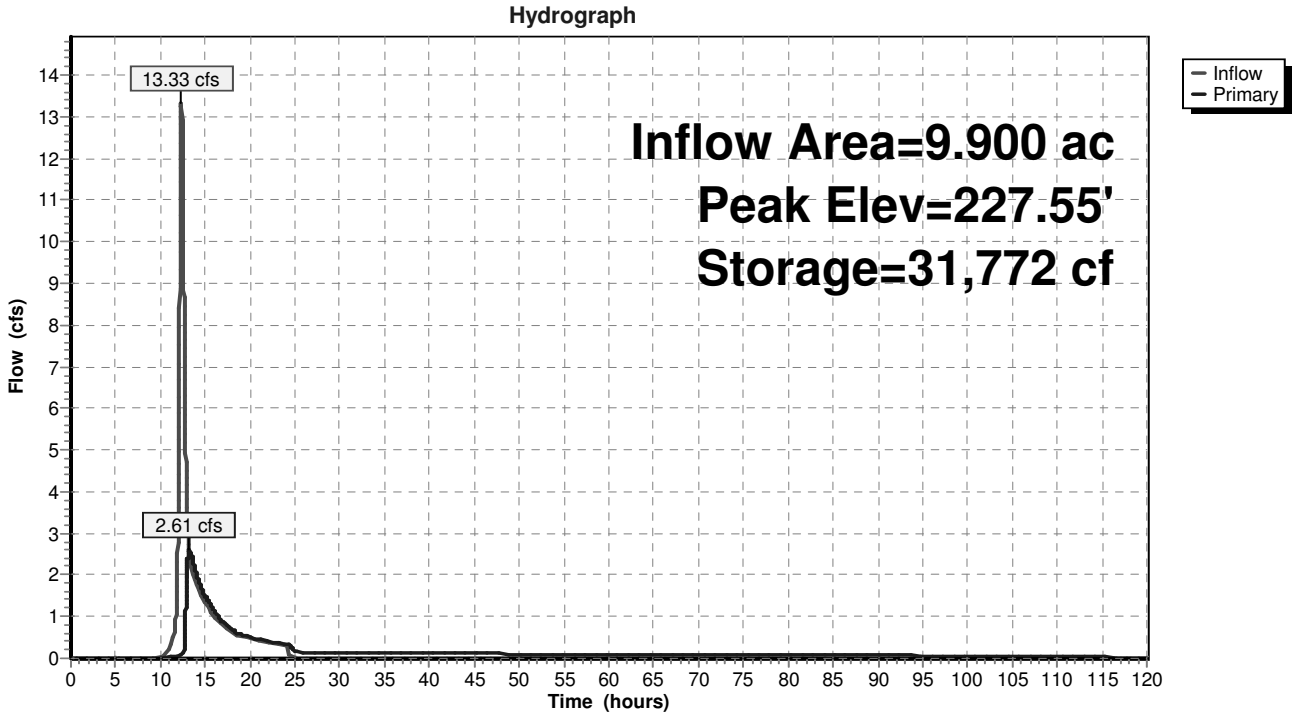
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=2.61 cfs @ 13.23 hrs HW=227.55' TW=222.06' (Dynamic Tailwater)
└─**3=Culvert** (Passes 2.61 cfs of 72.61 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.12 cfs @ 11.29 fps)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.49 cfs @ 2.26 fps)

Pond 1.1P:


Hydrograph
13.33 cfs
2.61 cfs
Inflow Area=9.900 ac
Peak Elev=227.55'
Storage=31,772 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 1.07" for 10-yr event				
Inflow =	0.33 cfs @	13.22 hrs,	Volume=	0.899 af	
Outflow =	0.22 cfs @	20.46 hrs,	Volume=	0.899 af,	Atten= 33%, Lag= 434.3 min
Discarded =	0.22 cfs @	20.46 hrs,	Volume=	0.899 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.21' @ 20.46 hrs Surf.Area= 6,466 sf Storage= 1,327 cf

Plug-Flow detention time= 26.5 min calculated for 0.899 af (100% of inflow)
Center-of-Mass det. time= 26.5 min (3,003.7 - 2,977.3)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

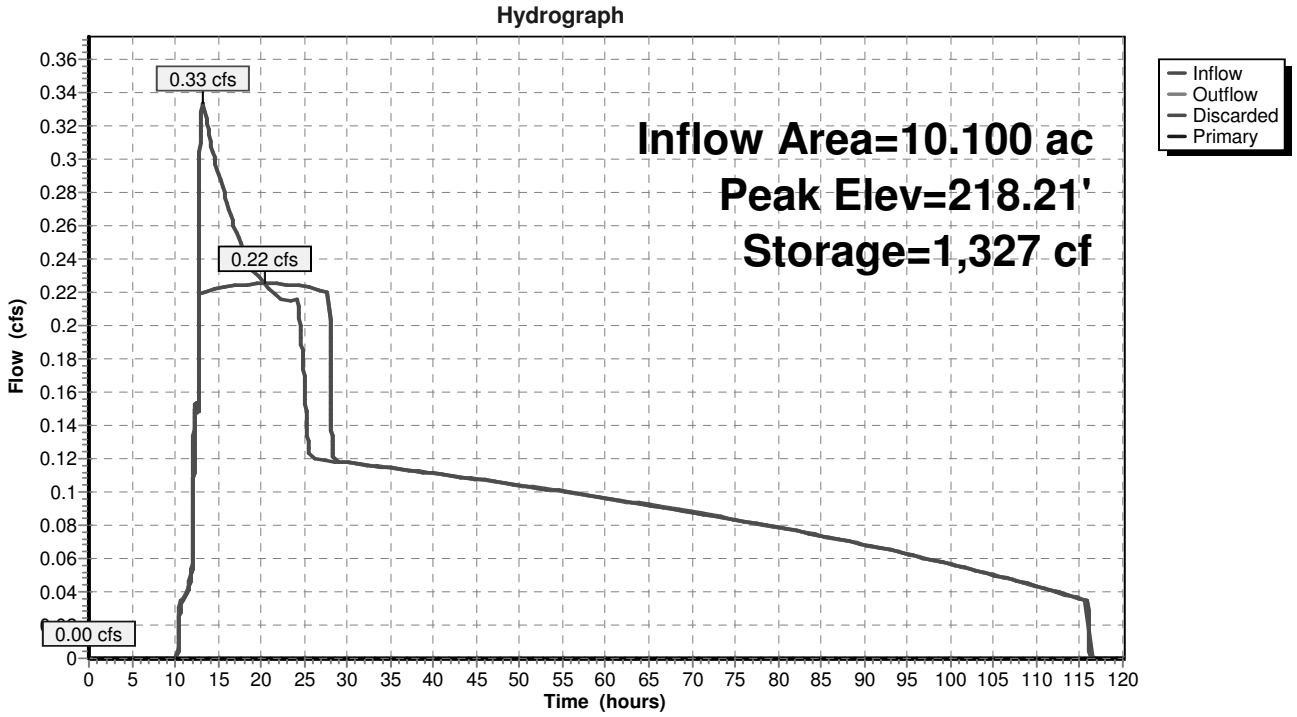
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 20.46 hrs HW=218.21' (Free Discharge)
└**3=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
Inflow Area=10.100 ac
Peak Elev=218.21'
Storage=1,327 cf
0.33 cfs
0.22 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 1.85" for 10-yr event			
Inflow =	2.61 cfs @ 13.23 hrs, Volume=	1.528 af		
Outflow =	2.61 cfs @ 13.23 hrs, Volume=	1.528 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.32 cfs @ 13.23 hrs, Volume=	0.890 af		
Secondary =	2.29 cfs @ 13.23 hrs, Volume=	0.638 af		

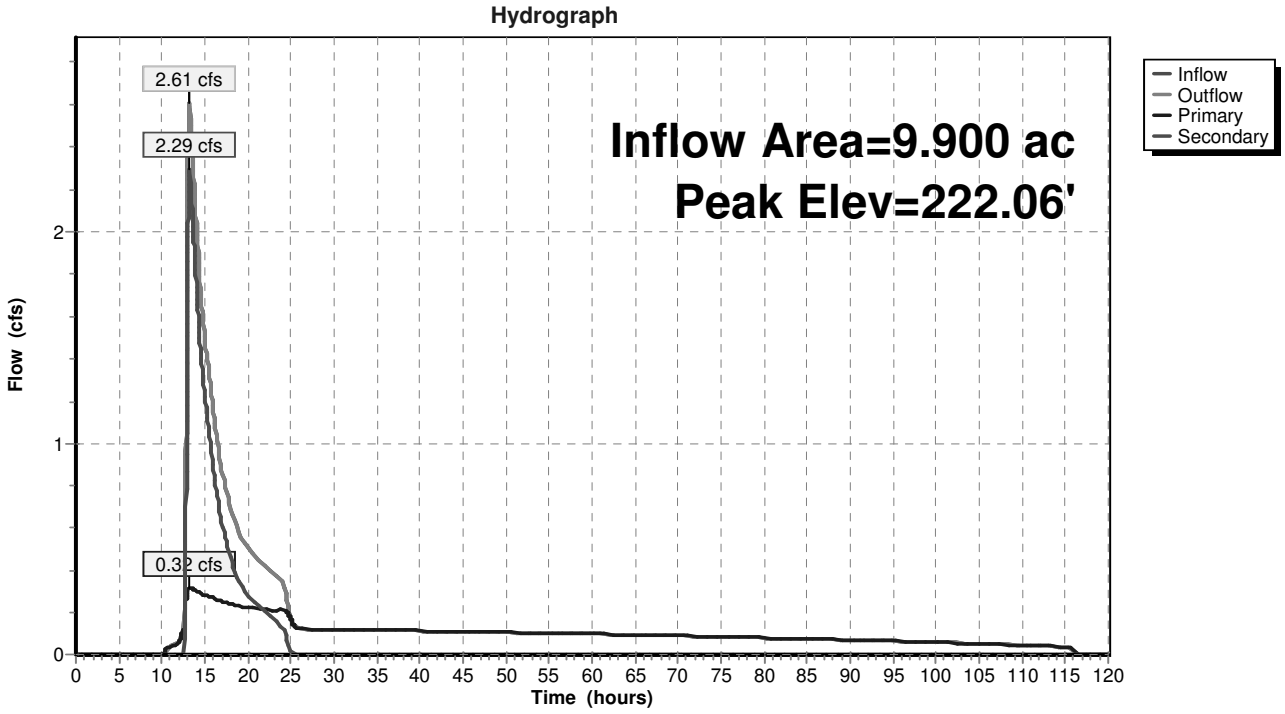
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 222.06' @ 13.23 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.32 cfs @ 13.23 hrs HW=222.06' TW=218.03' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.32 cfs @ 3.63 fps)

Secondary OutFlow Max=2.29 cfs @ 13.23 hrs HW=222.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.29 cfs @ 2.54 fps)

Pond FS 1:



Summary for Subcatchment 1.1S:

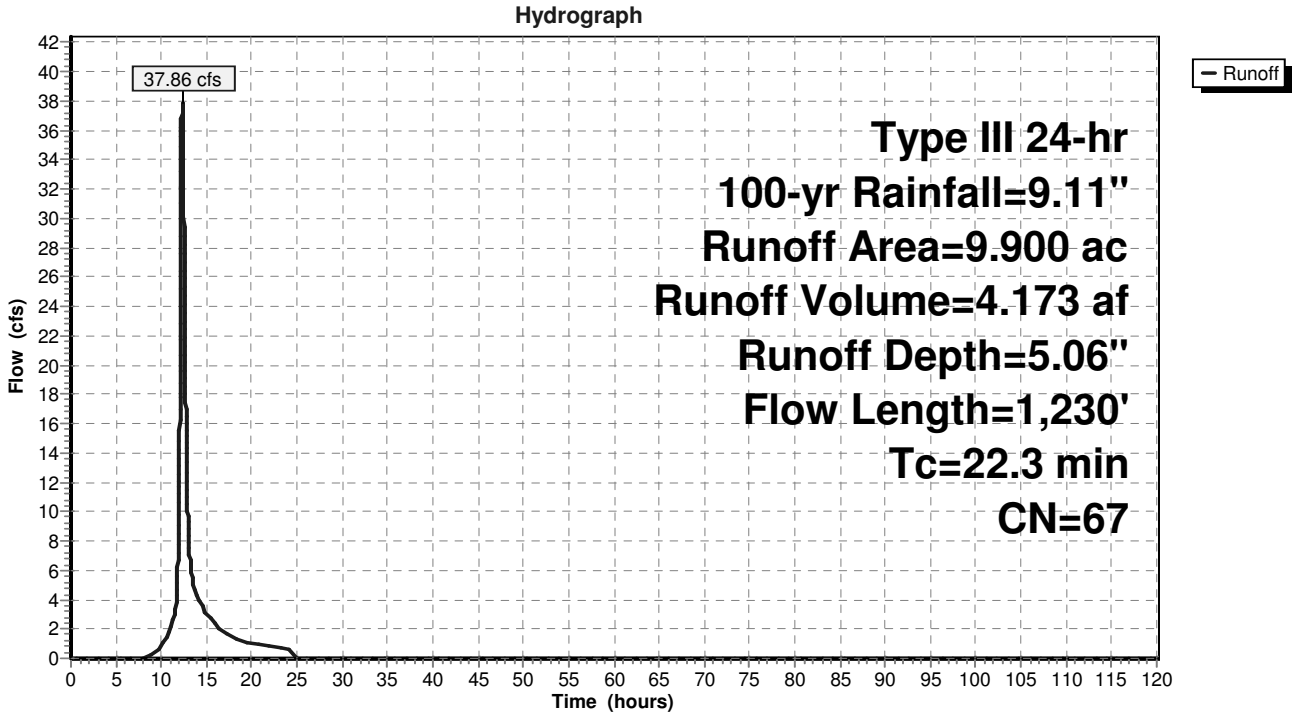
Runoff = 37.86 cfs @ 12.31 hrs, Volume= 4.173 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

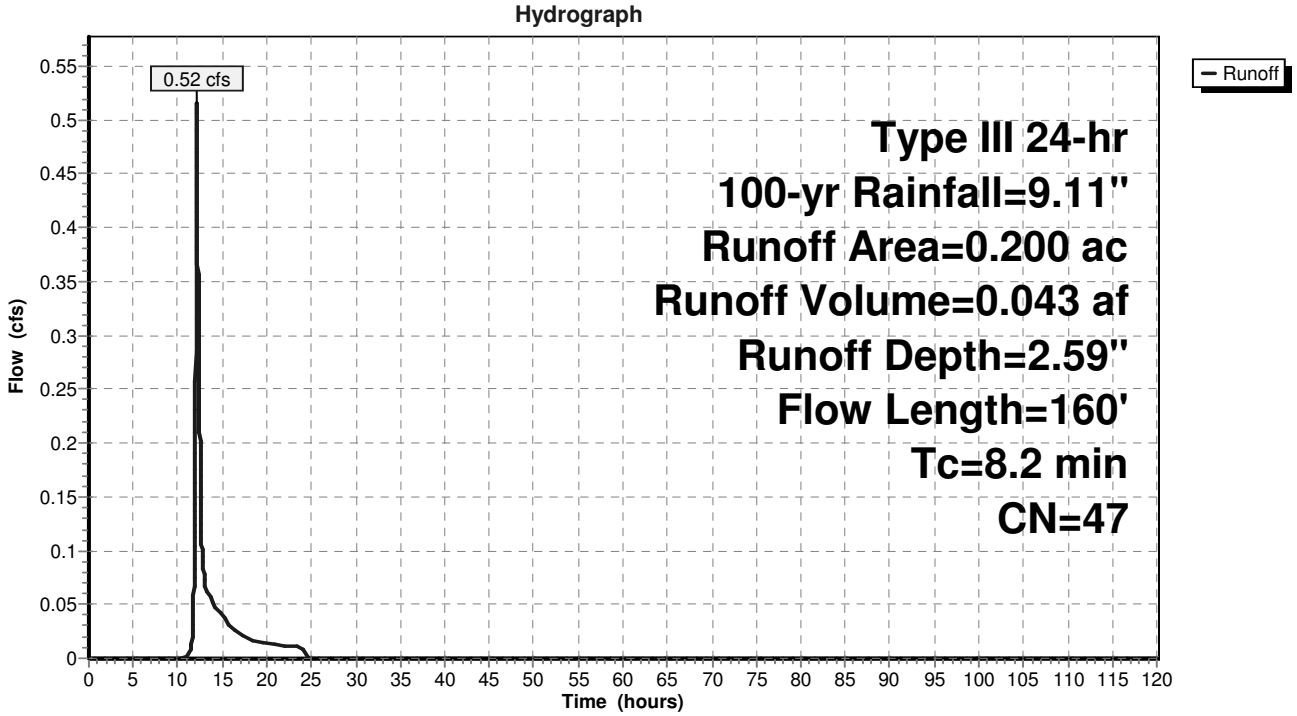
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 0.043 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

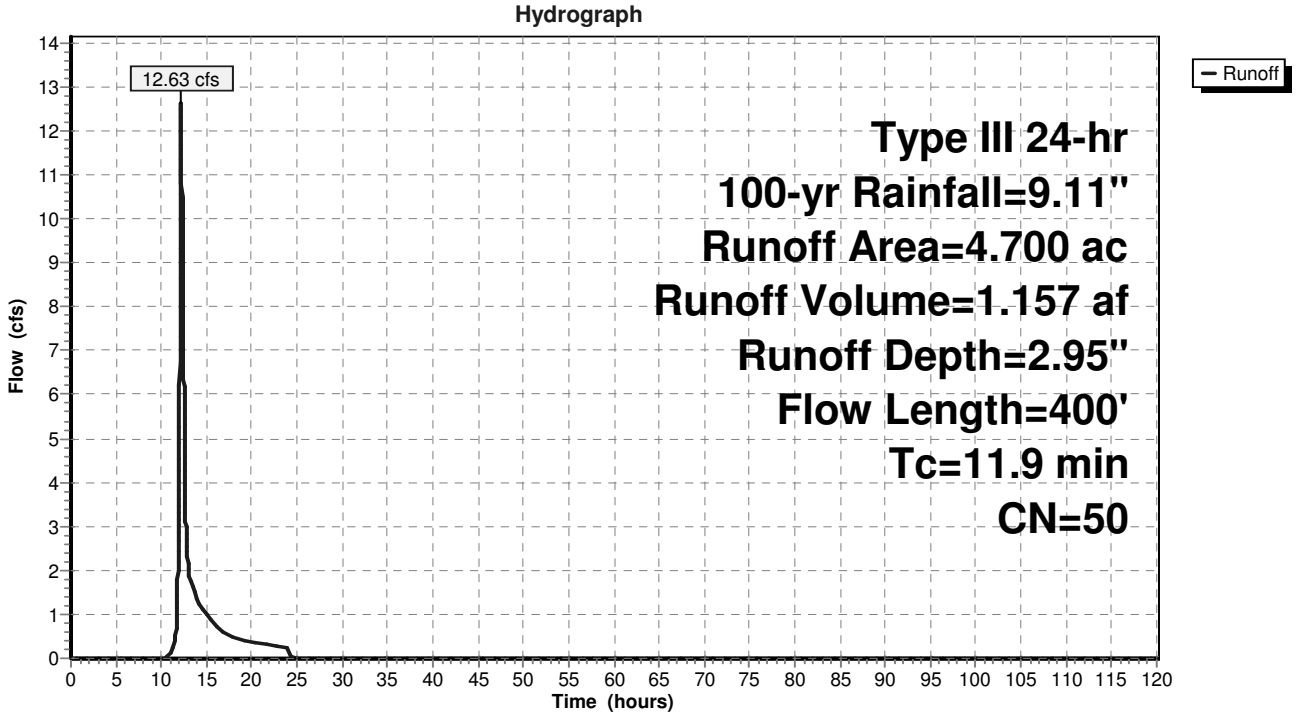
Runoff = 12.63 cfs @ 12.18 hrs, Volume= 1.157 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

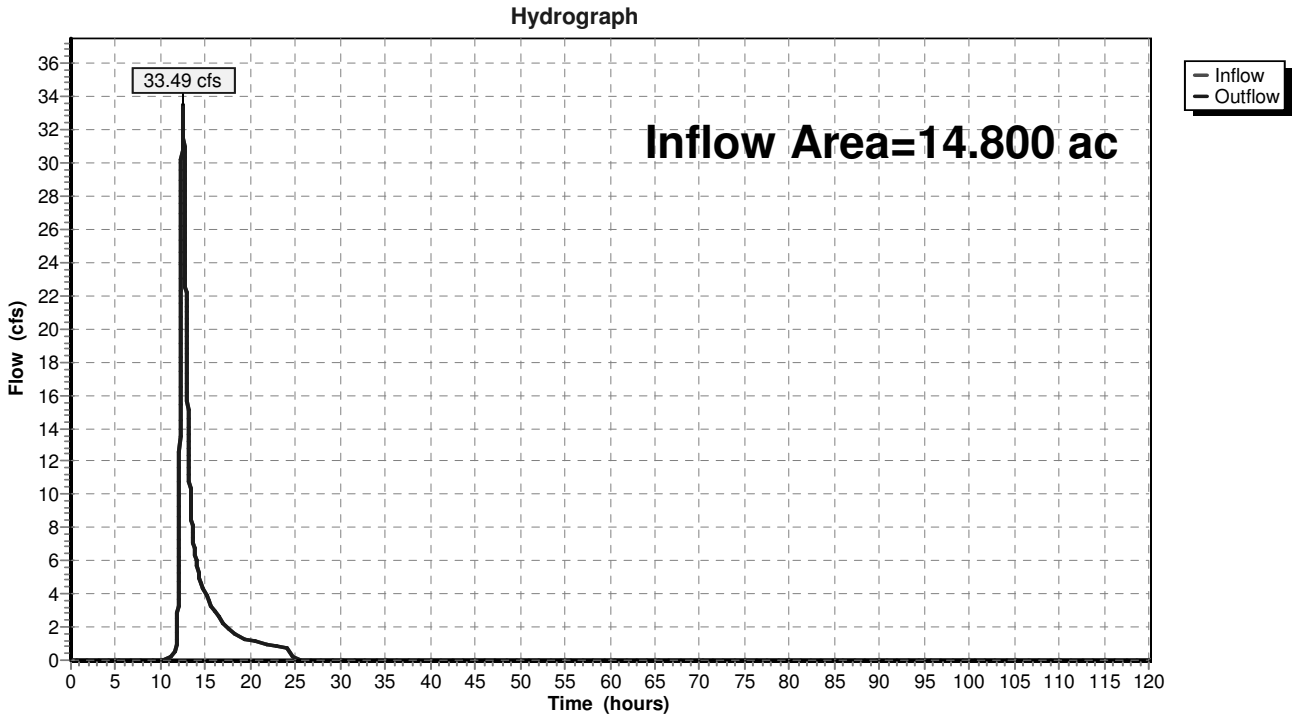


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 3.53" for 100-yr event
Inflow = 33.49 cfs @ 12.47 hrs, Volume= 4.348 af
Outflow = 33.49 cfs @ 12.47 hrs, Volume= 4.348 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 5.06" for 100-yr event
Inflow = 37.86 cfs @ 12.31 hrs, Volume= 4.173 af
Outflow = 27.90 cfs @ 12.52 hrs, Volume= 4.173 af, Atten= 26%, Lag= 12.3 min
Primary = 27.90 cfs @ 12.52 hrs, Volume= 4.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 229.60' @ 12.52 hrs Surf.Area= 10,995 sf Storage= 51,657 cf

Plug-Flow detention time= 491.0 min calculated for 4.173 af (100% of inflow)
Center-of-Mass det. time= 491.4 min (1,331.7 - 840.3)

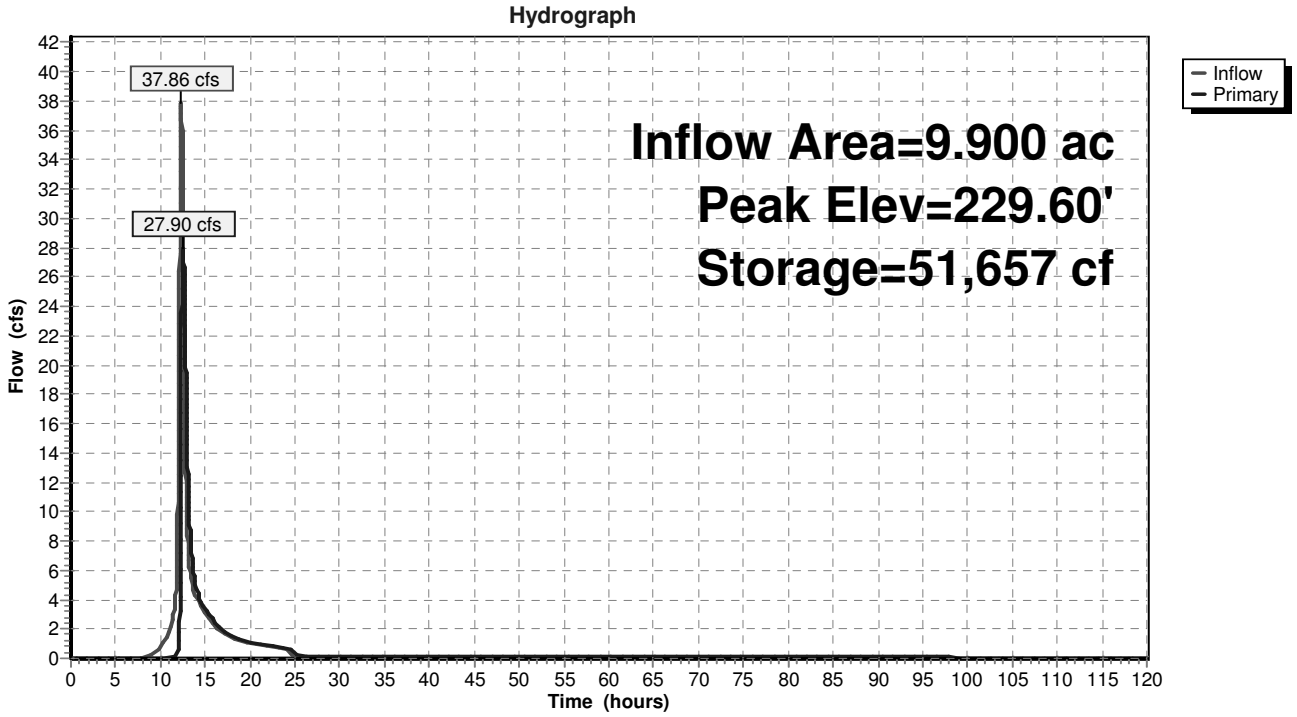
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=27.90 cfs @ 12.52 hrs HW=229.60' TW=223.66' (Dynamic Tailwater)
└─**3=Culvert** (Passes 27.90 cfs of 82.90 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.13 cfs @ 11.73 fps)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 27.77 cfs @ 5.35 fps)

Pond 1.1P:


Hydrograph
37.86 cfs
27.90 cfs
Inflow Area=9.900 ac
Peak Elev=229.60'
Storage=51,657 cf
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 1.22" for 100-yr event				
Inflow =	0.83 cfs @	12.18 hrs,	Volume=	1.026 af	
Outflow =	0.24 cfs @	24.22 hrs,	Volume=	1.026 af,	Atten= 71%, Lag= 722.6 min
Discarded =	0.24 cfs @	24.22 hrs,	Volume=	1.026 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.74' @ 24.22 hrs Surf.Area= 6,894 sf Storage= 4,900 cf

Plug-Flow detention time= 110.2 min calculated for 1.026 af (100% of inflow)
Center-of-Mass det. time= 110.2 min (2,853.3 - 2,743.1)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

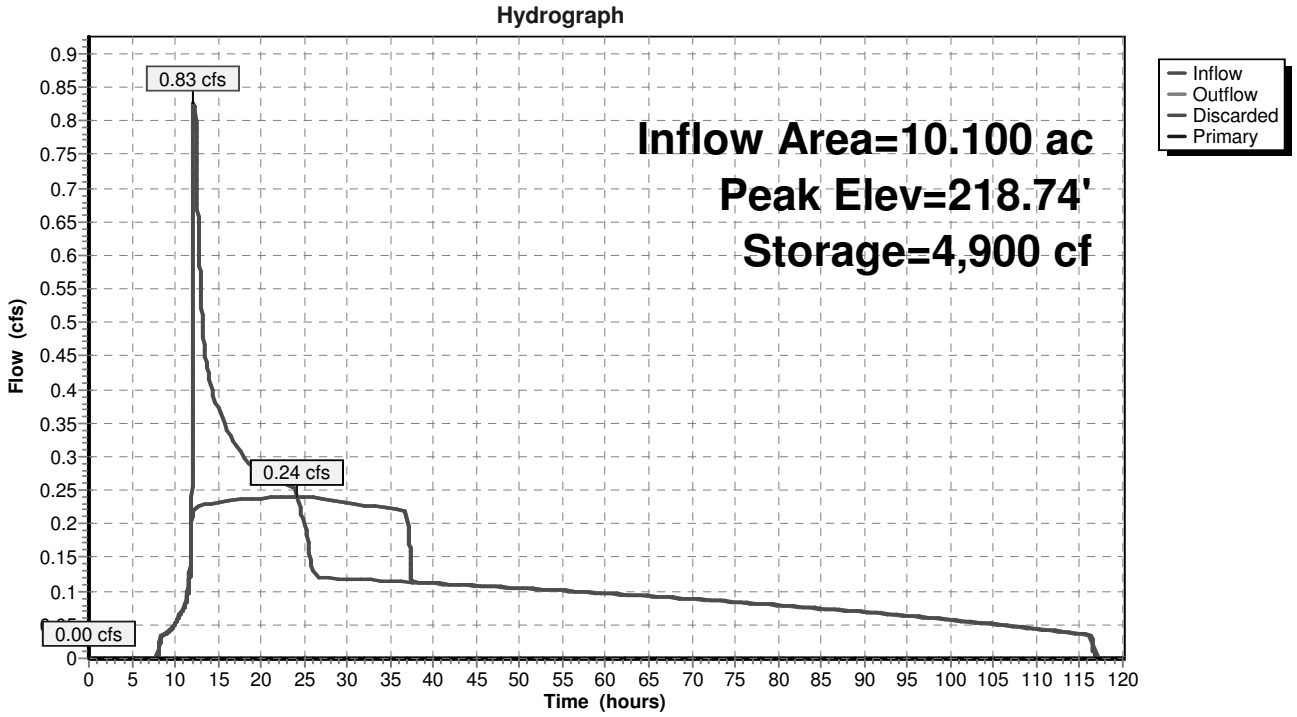
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 24.22 hrs HW=218.74' (Free Discharge)
└**3=Exfiltration** (Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
Inflow Area=10.100 ac
Peak Elev=218.74'
Storage=4,900 cf
0.83 cfs
0.24 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 5.06" for 100-yr event				
Inflow =	27.90 cfs @	12.52 hrs,	Volume=	4.173 af	
Outflow =	27.90 cfs @	12.52 hrs,	Volume=	4.173 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.57 cfs @	12.52 hrs,	Volume=	0.983 af	
Secondary =	27.33 cfs @	12.52 hrs,	Volume=	3.191 af	

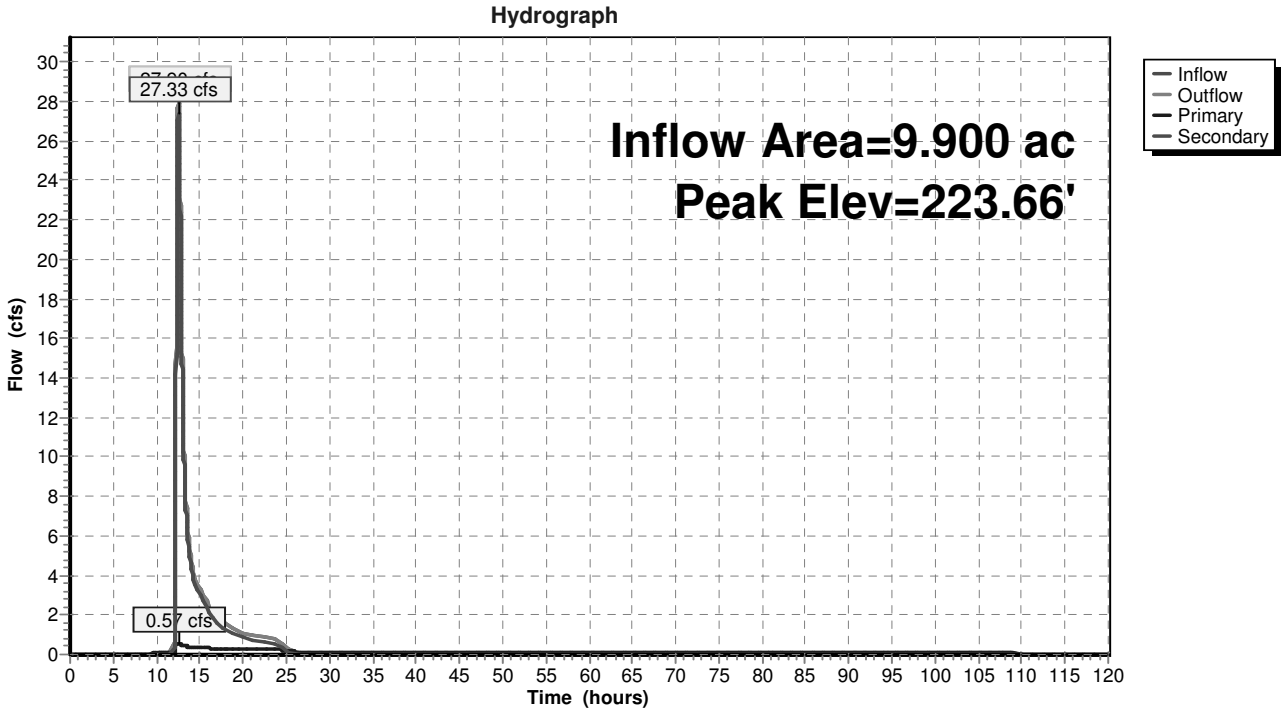
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 223.66' @ 12.52 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.57 cfs @ 12.52 hrs HW=223.66' TW=218.16' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.57 cfs @ 6.51 fps)

Secondary OutFlow Max=27.33 cfs @ 12.52 hrs HW=223.66' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 27.33 cfs @ 5.01 fps)

Pond FS 1:



APPENDIX D

Project and Owner Information

Site Data:

Wilder Balter Partners Inc.
Town of Lewisboro
Westchester County, New York
Area: 35.4 acres ±

Owner Information:

Property Group Partners, LLC
c/o Jeffrey Sussman, President
609 Fifth Avenue, 6th Floor
New York, NY 10017

Applicant Information:

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Party Responsible for Implementation of the Stormwater Pollution Prevention Plan (Including Maintenance During and After Construction):

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Qualified Professional Responsible for Inspection of the Stormwater Pollution Prevention Plan:

Inspector to be determined at time of construction

APPENDIX E

NYSDEC SPDES for Construction Activities Construction Site Log Book

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents.

a. Preamble to Site Assessment and Inspections

b. Operator's Certification

c. Qualified Professional's Credentials & Certification

d. Contractors Certification

e. Pre-Construction Site Assessment Checklist

II. Construction Duration Inspections

a. Directions

b. Modification to the SWPPP

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP 0-10-001 for Construction Activities, or superceding permit. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____**Date of Authorization**_____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

c. Qualified Professional's Credentials & Certification

“ I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction.”

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

d. Contractors Certification Statement

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

_____

Signature of Contractor Date

_____

Print Name Title

_____

Signature of Trained Contractor Date

_____

Print Name of Trained Contractor Title

Name of Contracting Firm _____

Street Address _____

City, State, Zip _____

Telephone No. _____

A copy of this statement shall be retained as part of the Stormwater Pollution Prevention Plan (SWPPP) for a period off at least five (5) years after the subject property is stabilized.

e. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 7-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?

[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ] [ ] [ ] All disturbance is within the limits of the approved plans.

[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?

[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

[ ] [ ] [ ] Is construction impacting the adjacent property?

[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.

[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?

[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.

[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.

[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.

[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.

[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.

[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.

[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS
b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

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APPENDIX F

Analysis of Practices Listed on Pages 10-19 and 10-20 of Chapter 10

Goal 1 of *Chapter 10: Enhanced Phosphorus Removal Standards* (Chapter 10) requires an analysis of Better Site Design Techniques or standard infiltration practices to which a percentage of proposed impervious surfaces must be directed. In addition to the Better Site Design Techniques referenced in Section 2.2 of this SWPPP the following analysis of the list obtained from pages 10-19 and 10-20 of Chapter 10 has been provided:

Proposed Practice	Used in SWPPP	Reason / Where Employed
Minimizing Disturbance	Yes	The overall site disturbance has been minimized to eliminate impacts to the buffer areas and areas of steep slopes.
Disconnecting Impervious Areas	No	The onsite collection system in the parking lot and entrance road ultimately discharges to an infiltration basin.
Minimize Grading and Compaction	Yes	The limits of disturbance have been minimized, and as such create minimal grading.
Employing methods to improve soil hydrologic function.	No	No techniques are specifically proposed.
Minimize disturbance and minimize siting of impervious cover on highly infiltrative soils.	Yes	As noted above the limits of disturbance has been minimized to the greatest extent practicable.
Maintain pre-development time of concentration	Yes	The development of this site allows for maintaining the pre-development time of concentration. Extended Detention dry pretreatment basin and infiltration basin will be used to maintain pre-development times of concentrations.
Increase roughness by establishing vegetative of woody surfaces.	Yes	A proposed planting plan is included on the project drawings including the planting of various trees and shrubs.
Using Grass Swales instead of closed channels.	No	Given the adjacent steep slopes and site grading, open channel systems for conveyance is not a practical application.
Using vegetative filter and buffer strips.	Yes	Vegetative filters and buffer strips have been indirectly utilized as disturbance for the project has been minimized, thus allowing large portions of the existing wooded areas to remain. Vegetative filters and buffer strips have not been targeted but promoted through the design
Reducing curb and gutter to direct flow onto vegetate or infiltration areas and reduce pipe discharge.	No	To minimize disturbance of steep slopes and environmentally sensitive areas a collection system is proposed to convey the stormwater runoff from the impervious areas to the extended detention basin and infiltration basin for treatment.
Using alternate materials such as porous pavements and paver system	Yes	The use of porous pavement will not be considered due to steep slopes and shallow depth to rock.
Capturing runoff within the catchment using distributed systems	No	All developed impervious areas shall be directed to an infiltration practice for treatment
Maintaining pre-development runoff volume through on-site stormwater management	No	Minimizing increase in runoff volumes has not been targeted and promoted through the use of an infiltration basin.
Providing retention and on-site reuse of runoff	Yes	Infiltration basin has been provided and will promote infiltration to the greatest extent allowable by the in-situ soils.

APPENDIX G

NYSDEC Infiltration System Calculations

Subcatchment 1.1S/1.2S for Treatment in Infiltration Basin 1.2 IB

- Infiltration sizing to treat the WQv for subcatchment 1.1S to meet the NYSDEC requirements

  Assumed Values:

  Water Quality Volume (WQ_v)

  WQv = 0.402* acre-feet = 17,511 cubic feet

  * As per the requirements of the Enhanced Phosphorus Removal Supplement (Chapter 10) of the NYSSMDM the WQv is the runoff volume produced during the 1-year 24-hour design storm. The above information was taken from Appendix C of this report. Information regarding contributing areas (A) and 1-year 24-hour Design Storm Volumes (WQv) to the infiltration basin is shown in Appendix C.

  Surface Area of Infiltration Trenches:

  $$A_p = \frac{V_w}{D_b}$$

  The following applies for the infiltration system:

  V_w = WQv = 17,511 c.f.

  D_b = 3.0 ft (depth of basin below emergency overflow)

  Therefore,

  $$A_p = \frac{17{,}511 \text{ c.f.}}{(3 \text{ ft})}$$

  A_p = 5,837 square-feet required

The bottom surface area of the infiltration basin as shown on the project plans is 5,900 s.f. > 6,300 s.f. required.

APPENDIX H
NYSDEC Stormwater Design Manual Chapter 5 Analysis

Table Key: ● = Practice Used in Accordance with Chapter 5 Requirements
o = Practice Not Used
- = Practice is Not Applicable

NYSDEC Chapter 5 Requirements	Subcatchments			Remarks
	1.1	1.2	1.3	
Chapter 5, Section 5.1: Preservation if Natural Features and Conservation Design				
Practices				
Preservation of Undisturbed Areas	-	●	●	See Note #2
Preservation of Buffers	●	●	●	See Note #5
Reduction of Clearing & Grading	●	●	●	See Note #6
Locating Development in Less Sensitive Areas	●	●	●	See Note #6
Open Space Design	-	-	-	
Soil Restoration	-	-	-	
Chapter 5, Section 5.2: Reduction of Impervious Cover				
Practices				
Roadway Reduction	-	-	-	
Sidewalk Reduction	●	-	-	See Note #1
Driveway Reduction	●	-	-	See Note #1
Cul-de-sac Reduction	-	-	-	
Building Footprint Reduction	●	-	-	See Note #6
Parking Reduction	●	-	-	See Note #6
Conservation of Natural Areas	●	-	-	See Note #5
Sheetflow to Riparian Buffers or Filter Strips	-	-	-	
Vegetated Swale	-	-	-	
Tree Planting / Tree Pit	●	-	-	See Note #7
Disconnection of Rooftop Runoff	-	-	-	
Stream Daylighting	-	-	-	
Rain Gardens	-	-	-	
Green Roofs	-	-	-	
Stormwater Planters	-	-	-	
Rain Barrels / Cisterns	-	-	-	See Note #3
Porous Pavement	-	-	-	See Note #4

Notes:

1. The proposed driveway entrance and onsite sidewalk areas have been designed to provide a minimum width for safe ingress and egress for the residential development.
2. Although no formal calculations have been provided, the subject project has provided conservation of natural areas to the maximum extent practical.
3. Roof runoff and stormwater runoff from the impervious areas surrounding the buildings will either be infiltrated within the infiltration basin, rather than using rain barrels / cisterns.
4. Due to driveway slopes and the shallow depth to rock, porous pavement was not utilized.
5. Town of Lewisboro Wetland Buffers have been maintained to the maximum extent practical as shown on the project plans. Any buffer disturbance in the future would need to meet the Town requirements.
6. The reduction in clearing and grading, as well as the driveway and building foot print reduction will be enforced with the approval of the project SWPPP. Notes on the project plans, establish that any changes in the project plans would require an amended approval from the necessary regulatory agencies.
7. Although tree planting is proposed it should also be noted that most of the subject project is located in mature forested areas. The limits of disturbance have been restricted as much as possible to save and maintain the existing forested areas as much as possible.

APPENDIX I
Temporary Sediment Trap Sizing

Temporary Sediment Trap Sizing Calculations:

Extended Detention Dry Pond 1.1P is proposed to be utilized as a Temporary Sediment Trap with Optional Dewatering Device During Construction.

Total Disturbed Tributary Area to 1.1P = 6.2 acres

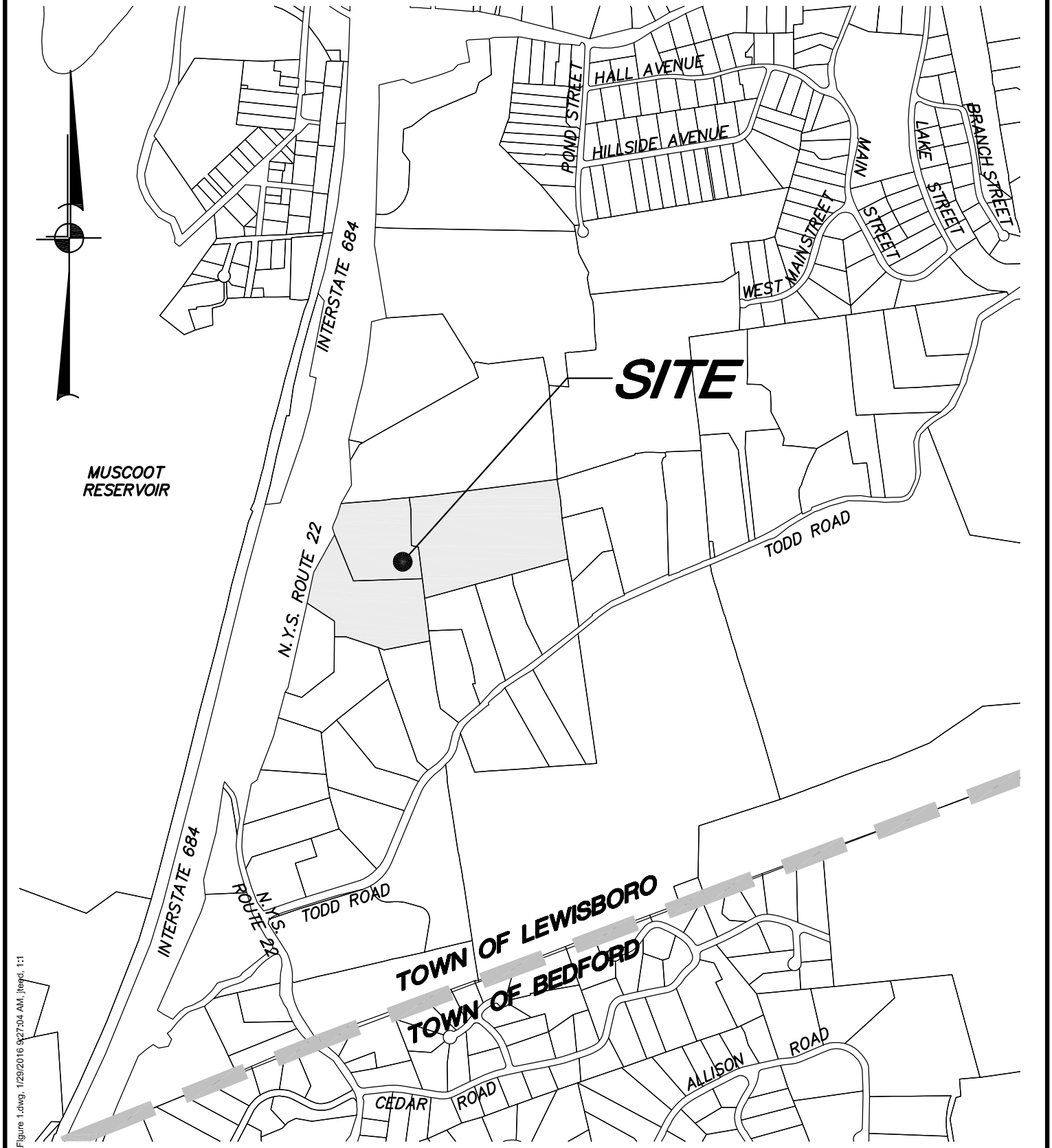
Volume required in Temporary Sediment Trap = 3,600 c.f. / acre

Total Required Volume in 1.1P = 5.9 acres (3,600 c.f. / acre) = 21,092 c.f.

The temporary sediment trap outlet structure for 1.1P proposes a weir at elevation 227.0.

The Extended Detention Dry Pond will be excavated to the proposed bottom elevation for use as a sediment trap (elevation 222.0). With a sediment trap bottom elevation of 222.0, the provided volume between elevation 222.0 and 227.0 is 27,250 c.f. and was determined from the Stage-Area-Storage Table in the HydroCAD output. The volume between elevation 222.0 and 227.0 was determined by calculating the difference between the cumulative storage volume of the 222.0 and 227.0 contours (27,250 c.f. minus 0 c.f.). As can be seen sufficient storage is available to meet the required temporary sediment trap volume.

FIGURES



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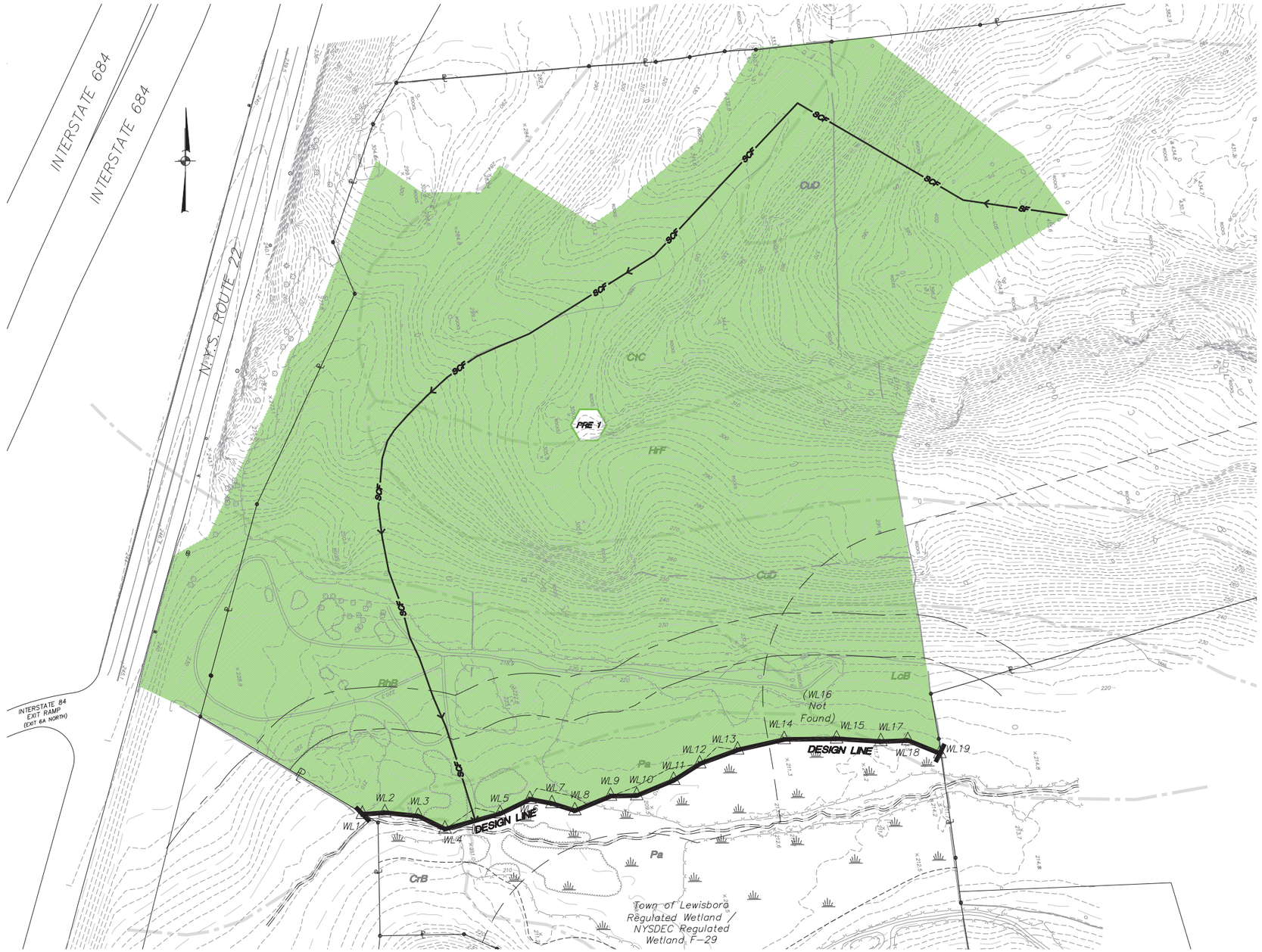
PROJECT: WILDER BALTER PARTNERS, INC. ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK	PREPARED BY: INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place • Carmel, New York 10512 Phone (845) 225-9690 • Fax (845) 225-9717 www.insite-eng.com	DATE: 01-29-16
DRAWING: LOCATION MAP		SCALE: 1" = 1,000'
		PROJECT NO.: 15246.100
		FIGURE: 1



OVERALL PLAN
SCALE: 1" = 50'

GENERAL NOTES:

1. Property lines as shown hereon are based on a Survey of Property prepared by Bunney Associates Land Surveyors, last revised October 31, 1984.
2. Topography as shown hereon is based on aerial photography dated April 2008, as prepared by Geomaps International. Contour Interval is 2'.
3. The wetland flagging as shown hereon was delineated by Steve Marino on November 16, 2015 and survey located by Insite Engineering, Surveying & Landscape Architecture PC, completed November 25, 2015.

LEGEND

PRE 1	SUBCATCHMENT
SF	TIME OF CONCENTRATION SHEET FLOW
SCF	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW

SOILS LEGEND

SOILS	DESCRIPTION	HYDROLOGICAL GROUP
ChB	Charlton loam, 2% to 8% slopes	B
CrC	Charlton-Chatfield Complex, rolling, very rocky	B
CtC	Chatfield-Hollis-Rock Outcrop Complex, rolling	B
CuD	Chatfield-Hollis-Rock Outcrop Complex, hilly	B
HrF	Hollis-Rock Outcrop Complex, very steep	D
LcB	Leicester loam, 3% to 8% slopes, stony	A/D
Pa	Palms Muck	A/D
RhB	Riverhead Loam, 3% to 8% slopes	A
	NRCS Soil Boundary Line	

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

NO.	DATE	REVISION	BY

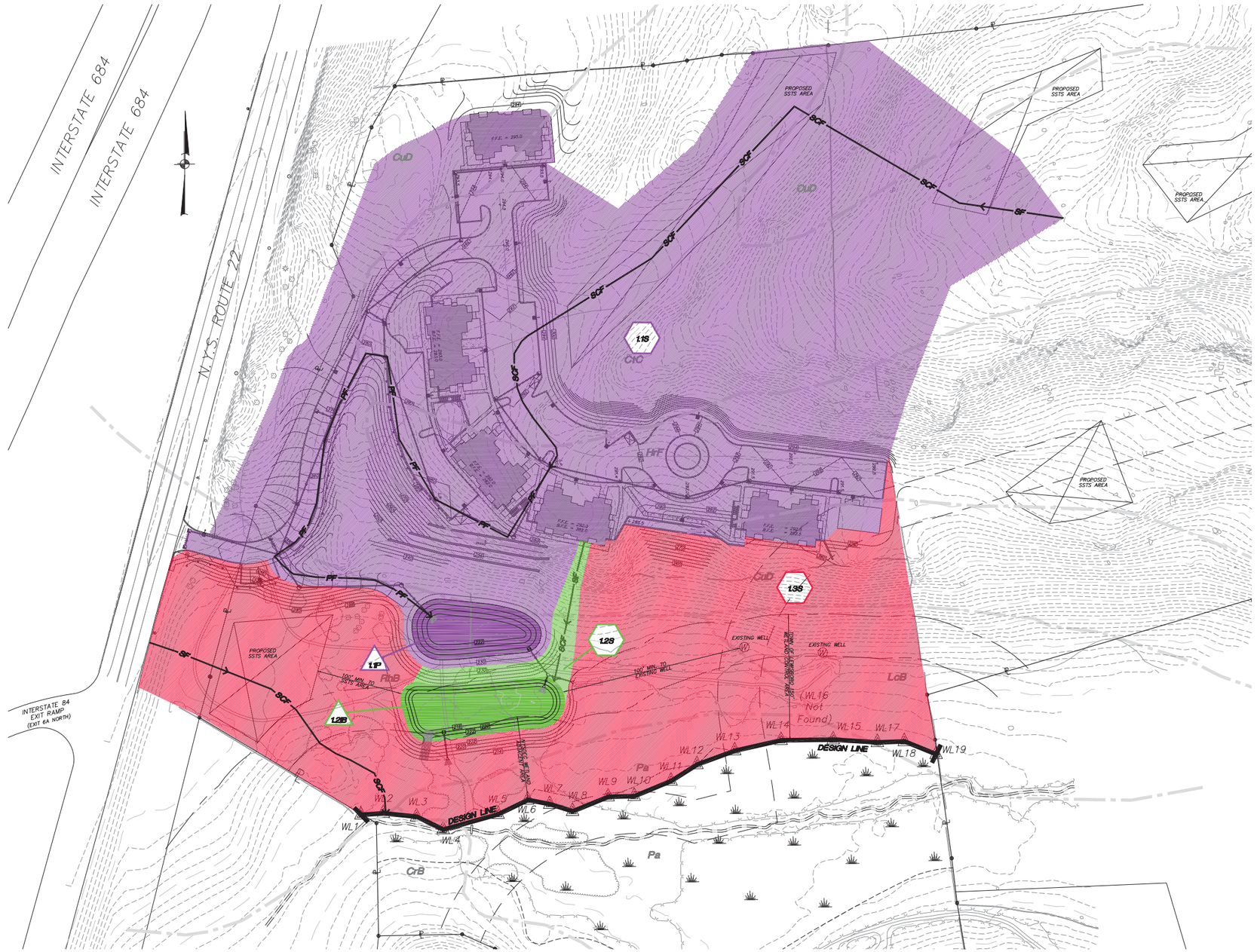
INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place
Carmel, NY 10512
(845) 225-9690
(845) 225-9717 fax
www.insite-eng.com

PROJECT:
WILDER BALTER PARTNERS, INC.
ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK

DRAWING:
PRE-DEVELOPMENT DRAINAGE

PROJECT NUMBER	15246.100	PROJECT MANAGER	J.J.C.	FIGURE NO.	SHEET
DATE	1-29-16	DRAWN BY	J.W.T.	2	2 / 3
SCALE	1" = 50'	CHECKED BY	Z.M.P.		

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.



OVERALL PLAN
SCALE: 1" = 50'

GENERAL NOTES:

1. Property lines as shown hereon are based on a Survey of Property prepared by Bunney Associates Land Surveyors, last revised October 31, 1984.
2. Topography as shown hereon is based on aerial photography dated April 2008, as prepared by Geomaps International. Contour Interval is 2'.
3. The wetland flagging as shown hereon was delineated by Steve Marino on November 16, 2015 and survey located by Insite Engineering, Surveying & Landscape Architecture PC, completed November 25, 2015.

LEGEND

1.1S	SUBCATCHMENT
1.1P	STORMWATER MANAGEMENT PRACTICE
PF	TIME OF CONCENTRATION PIPE FLOW
SF	TIME OF CONCENTRATION SHEET FLOW
SCF	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW

SOILS LEGEND

SOILS	DESCRIPTION	HYDROLOGICAL GROUP
ChB	Charlton loam, 2% to 8% slopes	B
CrC	Charlton–Chatfield Complex, rolling, very rocky	B
CtC	Chatfield–Hollis–Rock Outcrop Complex, rolling	B
CuD	Chatfield–Hollis–Rock Outcrop Complex, hilly	B
HrF	Hollis–Rock Outcrop Complex, very steep	D
LcB	Leicester loam, 3% to 8% slopes, stony	A/D
Pa	Palms Muck	A/D
RhB	Riverhead Loam, 3% to 8% slopes	A
	NRCS Soil Boundary Line	

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

NO.	DATE	REVISION	BY

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place
Carmel, NY 10512
(845) 225–9690
(845) 225–9717 fax
www.insite-eng.com

PROJECT:
WILDER BALTER PARTNERS, INC.
ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK

DRAWING:
POST–DEVELOPMENT DRAINAGE

PROJECT NUMBER	15246.100	PROJECT MANAGER	J.J.C.	FIGURE NO.	SHEET
DATE	1–29–16	DRAWN BY	J.W.T.	3	3 / 3
SCALE	1" = 50'	CHECKED BY	Z.M.P.		

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.

APPENDIX C

Preliminary Engineer's Report water Facilities

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

PRELIMINARY ENGINEER'S REPORT

Water Facilities

Prepared for

Wilder Balter Partners

NYS Route 22
Town of Lewisboro, New York
February 2, 2016

1.0 INTRODUCTION

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes the development of a multi-family community consisting of 45 affordable (AFFH) residential units and a caretaker's unit (46 units total) on a 35.4-acre site located on NYS Route 22 in the Town of Lewisboro, Westchester County, New York. The development will include five (5) residential buildings, including a community meeting space in one building, recreational facilities, and supporting parking and stormwater management facilities. Access to the development will be provided by a private driveway onto NYS Route 22. The subject property is located in the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station.

The development site is currently vacant wooded land and is not served by public water and sewer service. Water service will be provided by a new community water system supplied by on-site wells and wastewater will be treated by a new community on-site septic system. The community water and sewer systems will be designed and constructed in accordance with the standards and subject to the approval of the Westchester County Department of Health (WCDOH) and the New York State Department of Environmental Conservation (NYSDEC).

The development property is located in two zoning districts: the western portion of the site near Route 22 is in the CC-20 Campus Commercial District and the eastern portion of the site in the R4-A residential district. Multi-family housing is a permitted use in the CC-20 zoning district. Surrounding and nearby properties to the north, east and west are generally undeveloped and transportation uses (Interstate 684). Properties to the south are mostly developed low density residential lots.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.

2.0 DESIGN FLOW

Flow rates for the anticipated uses at the proposed facility and the design flow for the proposed project are listed in the table below. The average daily sewer design flows for the proposed project are based on the hydraulic loading rates given in the New York State Department of Environmental Conservation (NYSDEC) publication *Design Standards for Intermediate Sized Wastewater Treatment Systems – 2014 (DEC 14).*

The water and wastewater flow will be designed for the proposed fourteen (14) 1-bedroom units, twenty-eight (28) 2-bedroom units, and four (4) 3-bedroom units. A design flow of 110 gpd/bedroom is

used. Since the clubhouse will primarily be used by residents of the development, no additional gallon per day allotment is provided for the clubhouse.

Average Daily Design Flow			
Use	**# of Units**	**Flow Rate (gpd/unit)**	**Design Flow (gpd)**
One Bedroom Unit	14	110	1,540
Two Bedroom Unit	28	220	6,160
Three Bedroom Unit	4	330	1,320
Total			**9,020**

A design flow of 9,020 gallons per day will be used for the sewer and water facilities.

The average hourly flow rate for the project is calculated as follows:

Average Hourly Flow = 9,020 gpd ÷ 24 hr/day ÷ 60 min/hr = 6 gpm

The peak hourly flow for the water system is calculated using a peaking factor that is based on the population of the subject project. *Recommended Standards for Wastewater Facilities – 2004* was used to determine a peaking factor of ten.

Peak Hourly Flow = 6 gpm x 10 = 60 gpm

The peak hourly flow will be used to size the proposed distribution system.

Each building will be equipped with fire sprinklers. Initial estimates for the fire sprinkler demand are 300 gpm for a 30 minute duration (9,000 gallons).

The final fire sprinkler demands for the system will be confirmed by the project's mechanical engineer and provided in the Final Engineer's Report. The combined peak flow from domestic and fire sprinkler will be used to size the system. The combined peak flow for design is 300 + 60 = 360 gpm

3.0 WATER SUPPLY SOURCE

The water supply for the project is proposed to be provided by two existing onsite wells and additional proposed drilled wells. The two existing wells were drilled as private wells and will need to be re-tested to be used as public water supply wells. The wells will be required to meet the maximum day demand of 18,040 gpd (2 times average daily flow), or 12.5 gpm with the best well out of service. It is anticipated that 3 to 4 total wells will be required to meet the 12.5 gpm max day flow with the best well out of service.

4.0 WATER TREATMENT PLANT

A water control/treatment building is proposed to contain electrical controls and treatment equipment. The building will be locked except for maintenance and repair. The discharge from the three to four supply wells will be piped to this building through separate well service lines. After entering the building the raw water will be chlorinated before the well lines combine into a single pipe to transport the treated water to the storage/contact tank. The building will contain meters, water sampling spigots, and chlorinator equipment for each well source. If any of the wells are classified as groundwater under direct influence of surface water (GWUDI), UV treatment may also be required for the particular well. An emergency backup generator will be proposed to power the well pumps, controls, and disinfection equipment should primary utility power fail.

5.0 STORAGE TANK

A 15,000 gallon vented storage tank is proposed to provide chlorine contact and supplemental storage during times of peak flow. The Health Department's policy requires that the volume of the storage tank be approximately equal to or greater than the average daily flow.

The tank will be sized so at the normal low water elevation the tank will have a minimum reserve volume to provide 30 minutes of combined peak flow. The minimum reserve volume for 30 minutes of combined peak flow (360 gpm) is 10,800 gallons. The 15,000 gallon tank will allow for normal operation and cycling of the well pumps above the minimum reserve volume.

The tank is proposed to be a fiberglass potable water tank that conforms to NSF Standard 61. The tank levels will be used to control the well pumps. The well pumps will be set to rotate as lead pump so all wells will be utilized.

6.0 CHLORINE DISINFECTION

Disinfection will be provided by sodium hypochlorite. A separate chemical solution crock and feed pump will inject chlorine into each of the raw well water service lines prior to discharge into the vented storage tank. The vented storage tank and the distribution pipes to the first service connection will provide chlorine contact. The chlorination systems will be housed in a separate room within the water control building.

The New York State Department of Health Fact Sheet on Microbial Log Removal/Inactivation Rule Requirements was used to determine the required CT value to achieve 4-log virus inactivation. Assuming water with a maximum pH of 7.4 and a minimum temperature of 5 degree Celsius, a CT of 8.0 min*mg/l is required. The system is proposed to be designed to meet a CT of 8.0 min*mg/l.

7.0 SYSTEM OPERATION PRESSURES

The elevation of the storage tank above the users will provide the pressure for the distribution system. The static pressure is based upon relative elevation. The system will be designed to meet the *Recommended Standards for Water Works* 2012 Edition, minimum pressure at each service connection of 35 psi under normal flow conditions. The system will also be designed to meet the fire sprinkler pressure requirements under combined peak flow conditions.

8.0 DISTRIBUTION SYSTEM

The distribution system is proposed to be of PVC DR-14 watermain. The system will contain isolation gate valves and flushing hydrants. Gate valves will be located strategically to minimize the number of units out of service due to a service disruption. Fire service and domestic service lines will be installed for each building. Flushing hydrants will be installed at low points in the system, as well as at dead ends.

No fire hydrants are proposed since the system is only designed to meet domestic and fire sprinkler use requirements.

APPENDIX D

Preliminary Wastewater System Report

PRELIMINARY
WASTEWATER SYSTEM REPORT

For

WILDER BALTER PARTNERS
NYS Route 22

Town of Lewisboro, New York

February 2, 2016

Prepared by:
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

1.0 INTRODUCTION

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes the development of a multi-family community consisting of 45 affordable (AFFH) residential units and a caretaker's unit (46 units total) on a 35.4-acre site located on NYS Route 22 in the Town of Lewisboro, Westchester County, New York. The development will include five (5) residential buildings, including a community meeting space in one building, recreational facilities, and supporting parking and stormwater management facilities. Access to the development will be provided by a private driveway onto NYS Route 22. The subject property is located in the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station.

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The development property is located in two zoning districts: the western portion of the site near Route 22 is in the CC-20 Campus Commercial District and the eastern portion of the site in the R4-A residential district. Multi-family housing is a permitted use in the CC-20 zoning district. Surrounding and nearby properties to the north, east and west are generally undeveloped and transportation uses (Interstate 684). Properties to the south are mostly developed low density residential lots.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.

2.0 WASTEWATER DESIGN FLOW

Flow rates for the proposed development and the design flow for the proposed project are listed in the table below. The average daily sewer design flows for the proposed project are based on the hydraulic loading rates given in the New York State Department of Environmental Conservation (NYSDEC) publication *Design Standards for Intermediate Sized Wastewater Treatment Systems – 2014 (DEC 14).*

The wastewater flow will be designed for the proposed fourteen (14) 1-bedroom units, twenty-eight (28) 2-bedroom units, and four (4) 3-bedroom units. A design flow of 110 gpd/bedroom is used. Since the clubhouse will primarily be used by residents of the development, no additional gallon per day allotment is provided for the clubhouse.

Average Daily Design Flow			
Use	**# of Units**	**Flow Rate (gpd/unit)**	**Design Flow (gpd)**
One Bedroom Unit	14	110	1,540
Two Bedroom Unit	28	220	6,160
Three Bedroom Unit	4	330	1,320
Total			**9,020**

A design flow of 9,020 gallons per day will be used for the sewer and water facilities.

3.0 WASTEWATER COLLECTION SYSTEM

The wastewater collection system is proposed to consist of 8" diameter PVC SDR 35 sewer mains and precast concrete sewer manholes. The sewer mains are proposed to be located generally in the proposed road system. Individual 6" diameter PVC SDR 35 sewer service connections with cleanouts are proposed for each building. Wastewater flow from all of the proposed units and the wastewater collection system will be by gravity to a proposed septic tanks and a pump pit.

4.0 SUBSURFACE SEWAGE TREATMENT SYSTEM (SSTS)

4.1 Soil Testing

The SSTS areas will be located in the southwestern, northern, and eastern portion of the site. The entire project site was extensively evaluated, and these areas are deemed the most favorable area for wastewater treatment. Preliminary soil testing was conducted by Insite Engineering, Surveying & Landscape Architecture, P.C. (Insite),and suitable soils were found in the property. Approximately thirty (30) preliminary deep test pits were dug and observed in selected SSTS area. Test pits ranged from a minimum depth of 4' to 7'+, and generally consisted of a mixture of sandy and silty loams with some silt. No groundwater or mottling was encountered within the minimum regulatory depths of the test pits. Rock was encountered on several of the test pits. Therefore, R.O.B. gravel fill will be required over some of the SSTS areas based upon final witnessed testing. Twenty (20) preliminary percolation tests were also performed adjacent to the test pits. The preliminary percolation rates recorded ranged from 3 min/in to 10 min/in.

4.2 Absorption Trenches

The SSTS absorption fields consist of conventional 2' wide absorption trenches spaced 7' on center. The absorption trenches will be will be alternately dosed over the entire SSTS areas to evenly disperse the wastewater through a pump dosing system. The absorption trenches will be divided into 8 groups of trenches, with each group containing approximately 1,000 linear feet. The absorption trench design parameters are as follows:

Design Flow =	9,020 gpd
Soil Percolation Rate =	3 to 10 min/in
Application Rate (per percolation rate) =	0.9 to 1.2 gpd
Absorption Trench Width =	2 ft

Total length of absorption trenches required (L) = 9,020 gpd ÷ 0.9 gpd/sf ÷2 sf/lf

L = 5,012 linear feet (lf) of primary absorption trenches required.

The SSTS area is proposed to provide approximately 10,024 lf of absorption trenches (5,012 lf of primary absorption trenches, and 5,024 lf of 100% SSTS expansion area absorption trenches).

In summary, based on the site constraints, our preliminary testing and our intial assessment, the on-site soils can accommodate a SSTS to support a wastewater design flow of up to 9,020 gpd. The final SSTS capacity will be based on witnessed soil testing with the WCDOH and NYCDEP, and the final bedroom count for the project.

APPENDIX E

Hydrogeologic Assessment

LEGGETTE, BRASHEARS & GRAHAM, INC.

PROFESSIONAL GROUNDWATER AND ENVIRONMENTAL ENGINEERING SERVICES

4 RESEARCH DRIVE, SUITE 204
SHELTON, CT 06484
(203) 929-8555
FAX (203) 926-9140
www.lbgweb.com

January 18, 2016
(Revised: April 26, 2016)

Mr. John Bainlardi
Vice President
Wilder Balter Partners, Inc.
570 Taxter Road, Suite 673
Elmsford, NY 10523

Via Electronic Transmission

RE: Hydrogeologic Assessment
Wilder Balter Partners Property
Route 22
Lewisboro, New York

Dear Mr. Bainlardi:

Leggette, Brashears & Graham, Inc. (LBG) has completed a hydrogeologic assessment for your property located on Route 22 in Lewisboro, New York (figure 1). The hydrogeologic study has been conducted to review site geology and assess the potential for development of an onsite public water supply.

Water Demand

Based on communication with Wilder Balter Partners, an estimated average water demand for a proposed affordable 46-unit AFFH multi-family community on the site would be about 9,000 gpd (gallons per day) or 6.25 gpm (gallons per minute). The New York State Department of Health requires that a new public water-supply develop twice the average daily water demand with the best well out of service. To meet this requirement, the onsite wells would need to able to pump at a combined rate of 12.5 gpm (18,000 gpd) with the best well out of service.

The use of subsurface wastewater discharge is proposed for the development on the study property. Approximately 85 percent of the groundwater withdrawn from onsite wells would be

returned to the groundwater through percolation from the wastewater system. As a result, the total consumptive use, or water lost from the groundwater system, would be about 15 percent of the average water demand or 1,350 gpd.

HYDROGEOLOGIC SETTING

The development site is located north of Todd Road on the east side of Route 22 in the Town of Lewisboro (figure 1). Tax parcels 40.2-2-21, 40.2-2-22 and 40.2-5-5 comprise the study property and their combined acreage is about 35.25 acres. Elevations on the study property range from about 210 feet to 450 feet.

Surficial Geology

The surficial material underlying the site is mapped as glacial till with areas of bedrock at or near the surface. Glacial till consists of non-sorted, non-stratified sediments deposited by glacial activity. The sediments contain varying proportions of clay, silt, sand, gravel and boulders. Till is generally not suitable for well development because, as a result of the unsorted character of the material, it does not transmit water in sufficient quantities to support a well. A map of the surficial material for the study area is shown on figure 2.

Bedrock Geology

Groundwater occurs in bedrock aquifers in secondary pores, joints, fractures, solution cavities, fault zones and other secondary openings. The yield of bedrock aquifers vary greatly depending on the bedrock type and the secondary porosity and permeability exhibited by the bedrock units. The permeability of a bedrock unit depends on the degree of interconnection of fractures, joints and other secondary openings. Bedrock underlying the project site is mapped as Inwood Marble on the northern portion and Fordham Gneiss on the central and southern portions (figure 3).

Inwood Marble consists of white-whitish gray calcite and dolomite marble. The metamorphism of limestone and dolomite forms marble. Marble units exhibit similar characteristics to other carbonate units; however, fewer solution cavities are reported. Marble

bedrock units typically exhibit low primary permeability based on the porosity of the bedrock units; and secondary permeability caused by the presence of many interconnected fractures, joints and bedding planes can be moderate to high. Marble bedrock is susceptible to weathering and under deformational stress forms numerous open fractures. Water is contained in the many interconnected fractures, joints and other secondary openings.

Fordham Gneiss consists of undifferentiated gneiss bedrock units. The gneiss appears as randomly-speckled layers of light and dark minerals. Gneiss units are highly resistant to weathering and to erosion from previous glaciation. The erosion resistance is reflected by the more rugged topography and higher altitudes in the areas underlain by these rock types in the study region. The original solid structure of gneiss bedrock is generally unfavorable for storage or transmission of groundwater. However, previous tectonic displacement and metamorphic changes to the bedrock have enhanced the potential usefulness of the rock in Westchester County for water supply. These changes include jointing, fracturing and weathering of the bedrock. Over long intervals of geologic time, the hydraulic capability of the gneiss bedrock units has improved so they can store and transmit groundwater in fractures, joint systems and weathered zones. In general, gneiss exhibits very low primary permeability and secondary permeability caused by the presence of interconnected fractures can be low to moderate. Water is contained in the fractures, joints, faults and weathered zones.

A fracture-trace analysis was conducted for the study property and surrounding area. Fracture-trace analysis is employed to evaluate the potential for developing wells with larger than average yields from the bedrock aquifer in an area. A fracture-trace map includes the delineation of faults, fracture-trace joint systems, old river and stream courses, and major unconformities. These features frequently are indications of fractured or weathered zones within the bedrock and their identification is useful for identifying major fracture conduits for groundwater recharge and in selecting favorable well sites to develop higher yielding wells. The fracture-trace lineations identified are shown on figure 3.

Precipitation Recharge

A groundwater balance compares the available precipitation recharge to a property with the estimated water-supply demand of a proposed development. This comparison determines if

the property is self-sufficient in providing the water that will be required by the proposed project, or whether the proposed water demand exceeds the available recharge. If onsite recharge meets or exceeds the proposed demand, the water supply should be reliable and not adversely affect the aquifer in offsite areas. Although water-budget analyses are useful in estimating available groundwater resources, drilling and testing supply wells is the only definitive indicator of groundwater availability from the aquifer source and any potential impacts to neighboring water supplies.

Recharge is generally related to precipitation, but the amount of rainfall which becomes groundwater recharge is difficult to measure directly. Records for nearby Westchester County Airport climate station located in White Plains, New York report that the average annual precipitation in the area is 50.45 inches. About half this amount is lost to evaporation and transpiration processes. Groundwater recharge results from the portion of total rainfall and snowmelt that infiltrates the soil and overburden materials. A portion of the total runoff that infiltrates into the soil eventually recharges the bedrock fracture system and is available for capture by bedrock wells. Recharge to till-covered metamorphic bedrock is estimated to be approximately 7-inches annually (Mazzaferro, et al,. 1979) or about 520 gpd/acre (gallons per day per acre). For the 35.25-acre site, this equals about 18,330 gpd which exceeds the estimate consumptive water use at the site of 1,350 gpd.

Drought Considerations

Because groundwater supplies are recharged by precipitation, the recharge rate is directly dependent upon the precipitation rate. During periods of drought, the recharge rate and resulting groundwater availability diminishes. In the driest year in 30, defined as an extreme drought with a 3.3-percent probability of recurrence, about 36.0 inches of precipitation will fall in the study area as shown on the precipitation probability graph on figure 4. This is about 71 percent of the average annual precipitation of 50.45 inches per year. If recharge declines at the same rate as precipitation, the maximum recharge during a period of extreme drought would be 71 percent of the average recharge which is equal to 13,000 gpd. This drought recharge rate also exceeds the estimate consumptive water use at the site of 1,350 gpd.

EXISTING AND PROPOSED WELL LOCATIONS

LBG has reviewed the yield information for the two existing wells drilled on the project site and other nearby wells drilled in the bedrock. Two wells were drilled on the study property by P.F. Beal & Sons, Inc. in March 1987. The wells are located near the wetland feature on the southern portion of the property near a fracture trace lineation identified on figure 4. Well 1 was constructed with 30 feet of 6-inch casing set into bedrock and was drilled to a total depth of 525 feet. Well 2 was constructed with 64 feet of 6-inch diameter casing set into bedrock and was drilled to a total depth of 605 feet. The yield of both wells is reported to be 5 gpm. The well completion reports for the two onsite wells are included in Appendix I.

The depth and yield of other nearby wells drilled into bedrock has also been reviewed. Well information for eleven wells located to the south and east within 3,000 feet of the project site have been reviewed. The well information is provided on the table below.

Block	Lot	Tax ID	Total Depth (feet)	Reported Yield (gallons per minute)
10776	13	41.1-1-18	700	5
10776	17,22,23	40.2-2-10	168	12
10776	31	40.2-2-16	245	6
10776	36	41.1-1-16	102	10
10776	37	10.2-2-9	185	8
10776	38	41.1-1-17	470	5
10776	39	41.1-1-22	380	1.5
10776	40	41.1-1-23	175	15
10776	45	41.1-1-21	132	12
12660	10	41.1-1-7	285	12
12660	11	41.1-1-6	294	6
Average			285	8
Median			245	8

All of these wells were completed in the gneiss bedrock unit. The average and median well yields from the group are 8 gpm. All of the wells with the exception of one was reported to a yield 5 gpm or greater.

The closest residential wells to the existing onsite wells are about 600 feet. The potential for water-level interference between wells from pumping diminishes with increasing distance between the wells. With the relatively low average water withdrawal proposed for the project

(average demand of 9,000 gpd (6.25 gpm)), there is a low likelihood of significant mutual inference between the onsite wells and other nearby wells. However, drilling and testing of the proposed supply wells is the only definitive indicator of groundwater availability from the aquifer source and any potential impacts to neighboring water supplies.

WATER-SUPPLY DEVELOPMENT

For the development of new water-supply wells, the Health Department requires the demonstration of a stabilized yield of 5 gpm or more, regardless of the water demand of the project. Yields of 2 to 5 gpm may also be acceptable; however, additional onsite water storage would need to be provided. Well with yields of less than 2 gpm would not typically be approved for use by the Health Department.

In addition to the yield requirements, public water-supply well locations must also comply with minimum separation distances from potential contaminant sources identified in Appendix 5-D of New York State Department of Health (NYSDOH) sanitary code and must also demonstrate a 100-foot radius of ownership and 200-foot radius of sanitary control (through ownership or easement).

Based on LBG's hydrogeologic assessment of the project site and surrounding area, wells drilled at geologically favorable locations on the study property will likely yield in the range of 5 to 10 gpm. Therefore, the project would likely need to develop 3 to 4 onsite wells to meet the NYSDOH requirement of developing twice the average water demand with the best well out of service.

Following the drilling of the proposed water-supply wells on the project site, a 72-hour pumping test would need to be conducted on the wells to demonstrate stabilized yield and water-level drawdown in the pumping wells. A well monitoring program of onsite and offsite wells located within a minimum of 2,000 feet of the proposed supply wells would also be conducted during the pumping test to measure potential drawdown in the static water levels in the existing wells, if any, from pumping the new wells.

Per the Town's request, prior to drilling the new wells the applicant would submit a proposed well monitoring plan showing the areas in which property owners would be contacted

with a request to participate in the well monitoring program. Following the completion of well drilling, assuming the new wells produce sufficient yield for use a water-supply wells, those offsite well owners would be contacted with a request for participation in the well monitoring program. A proposed Pumping Test Plan would also be submitted to the Town for review prior to conducting the 72-hour pumping test program. Following the completion of the 72-hour pumping tests, the results of the pumping tests and well monitoring program would be submitted to the Town.

CONCLUSIONS

- The estimated average water demand for a proposed affordable 46-unit AFFH multi-family development on the site would be about 9,000 gpd which is equal to 6.25 gpm. The use of subsurface wastewater disposal would return approximately 85 percent of the water withdrawn back to the groundwater. This would reduce the consumptive water use on the project site to 1,350 gpd.

- The bedrock groundwater recharge calculated for the 35.25-acre development site under normal precipitation conditions is 18,330 gpd and under one-year-in-thirty drought conditions is 13,000 gpd. The calculation recharge is more than sufficient to support the consumptive demand of 1,350 gpd of the proposed development.

- Wells drilled at geologically favorable locations on the study property will likely yield in the range of 5 to 10 gpm. Therefore, the project would likely need to develop three to four onsite wells to meet the NYSDOH requirement of development twice the average water demand with the best well out of service.

- The relatively low average water withdrawal proposed for the development (average demand of 9,000 gpd (6.25 gpm)), there is a low likelihood of significant mutual inference between the onsite wells and other nearby wells. However, drilling and testing of the proposed supply wells is the only definitive indicator of groundwater availability from the aquifer source and any potential impacts to neighboring water supplies. A

72-hour pumping test and offsite well monitoring program would need to be conducted to document the well yields and potential offsite water-level impacts, if any, from pumping the new wells.

Should you have any questions, please feel free to contact either of the undersigned.

Very truly yours,

LEGGETTE, BRASHEARS & GRAHAM, INC.

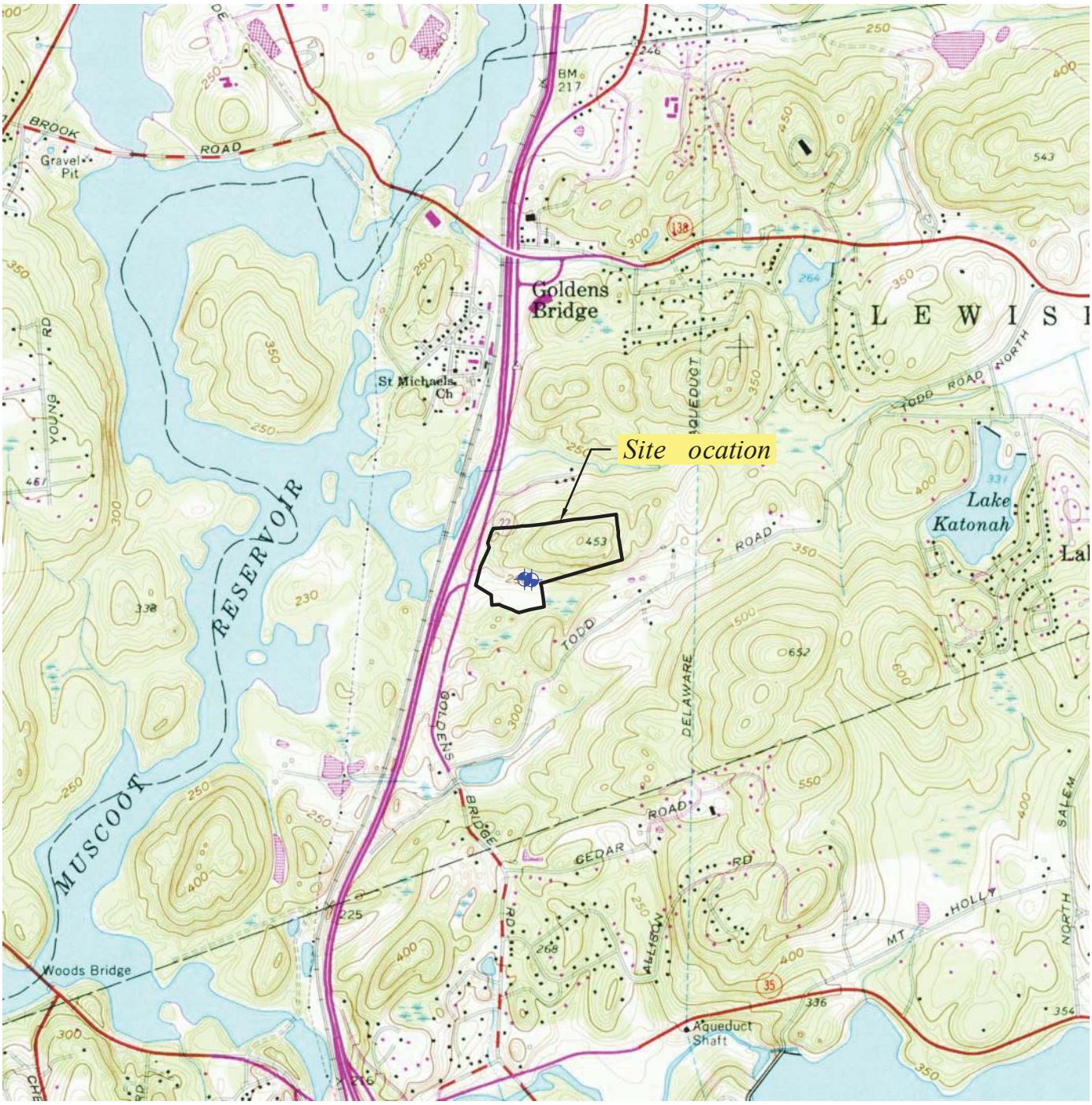
Stacy Stieber, CPG
Associate/Hydrogeologist

Reviewed by:

Thomas P. Cusack, CPG
Senior Vice President

SS:cmm
Enclosures
H:\Wilder Balter\Lewisboro\Draft Route 22 Hydro Assessment.doc

FIGURES



SOURCE: USGS TOPOGRAPHIC QUADRANGLE CROTON FALLS, NEW YORK (PHOTOREVISED 1981).

LEGEND

PROPERTY BOUNDARY

EXISTING WELL LOCATION

QUADRANGLE LOCATION

0 2000

SCALE IN FEET

WILDER BALTER PARTNERS
ROUTE 22
LEWISBORO, NEW YORK

SITE LOCATION MAP

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
Suite 204
Shelton, Connecticut 06484
(203) 929-8555

DRAWN:	RAC	CHECKED:	SS	DATE:	01/07/16	FIGURE:	1

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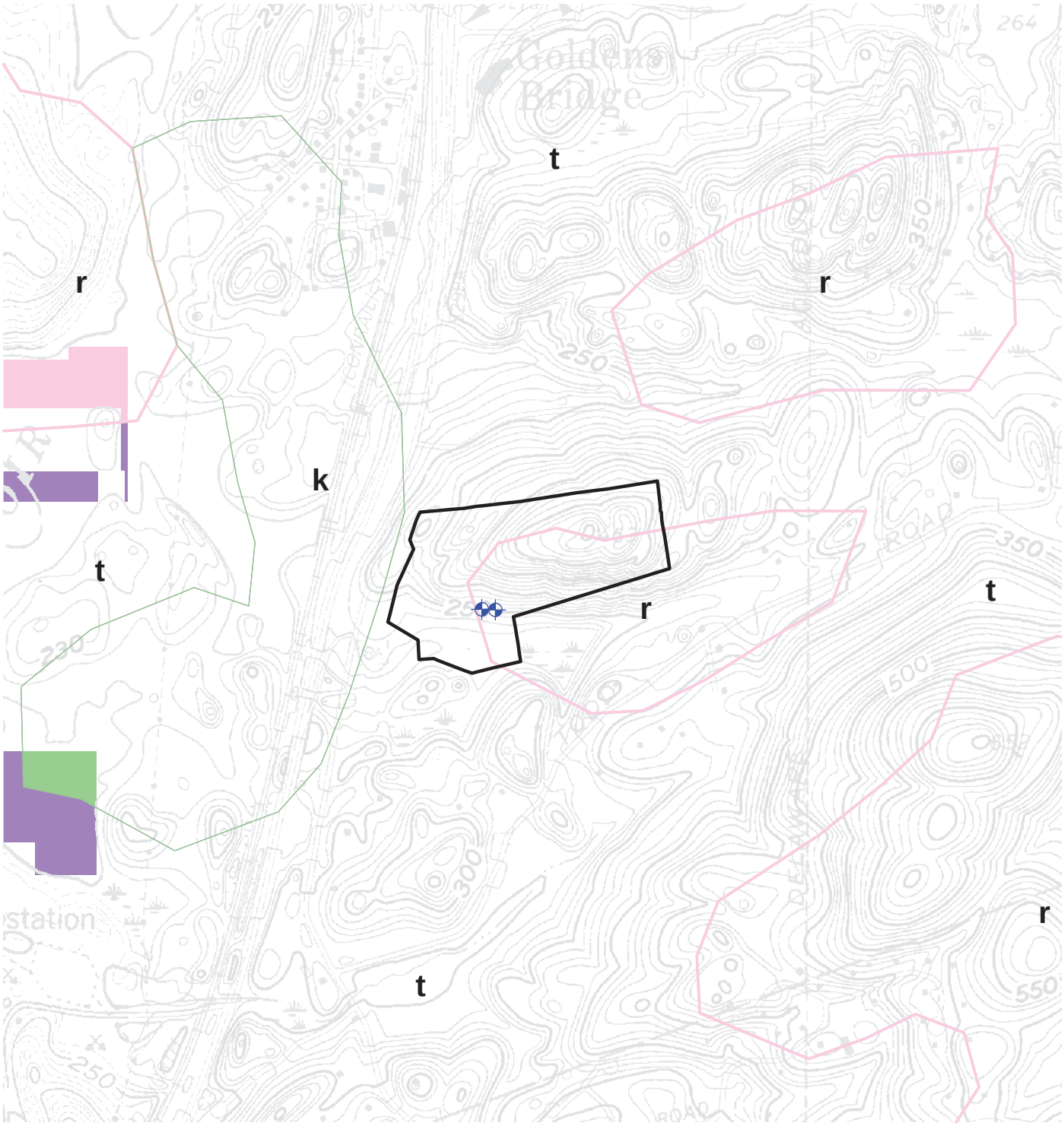

LEGEND

PROPERTY BOUNDARY

EXISTING WELL LOCATION

t GLACIAL TILL

k KAME DEPOSITS

r BEDROCK EXPOSED OR WITHIN 3 FEET OF THE SURFACE

N

SOURCE:
"SURFICIAL GEOLOGY-LOWER HUDSON SHEET", NEW YORK STATE MUSEUM MAP AND CHART SERIES NUMBER 40, 1997.

0 1000
SCALE IN FEET

WILDER BALTER PARTNERS
ROUTE 22
LEWISBORO, NEW YORK

SURFICIAL GEOLOGY

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
Suite 204
Shelton, Connecticut 06484
(203) 929-8555

DRAWN:	RAC	CHECKED:	SS	DATE:	01/11/16	FIGURE:	2

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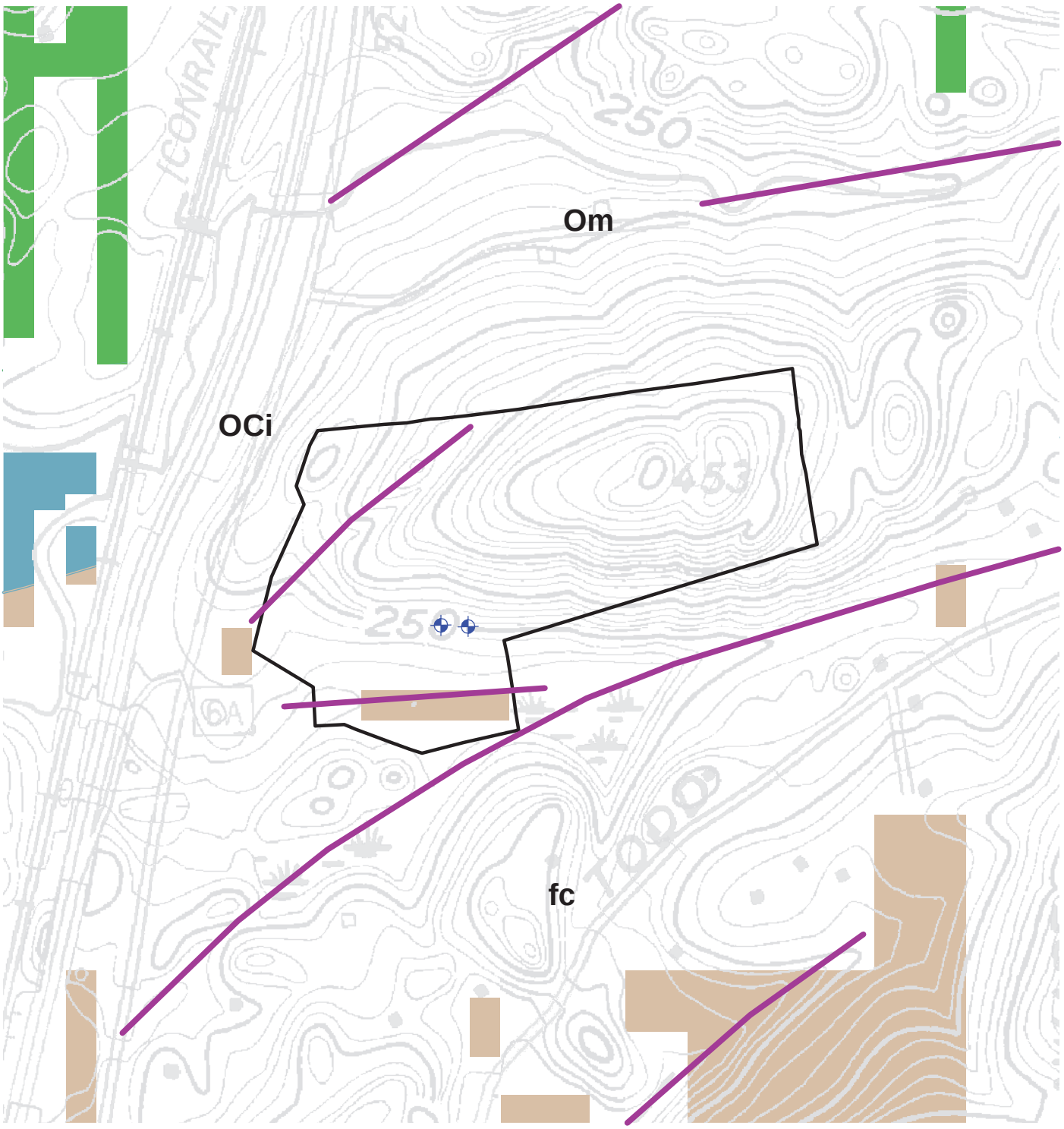

LEGEND

	PROPERTY BOUNDARY
⌖	EXISTING WELL LOCATION
Om	MANHATTAN FORMATION
OCi	INWOOD MARBLE
fc	FORDHAM GNEISS
	FRACTURE TRACE LINEATION

SOURCE:
"BEDROCK GEOLOGY-LOWER HUDSON SHEET", NEW YORK STATE MUSEUM MAP AND CHART SERIES NUMBER 15, 1999.

0 500
SCALE IN FEET

WILDER BALTER PARTNERS
ROUTE 22
LEWISBORO, NEW YORK

BEDROCK GEOLOGY

DATE	REVISED

PREPARED BY: LEGGETTE, BRASHEARS & GRAHAM, INC.
Professional Groundwater and Environmental Engineering Services
4 Research Drive
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Shelton, Connecticut 06484
(203) 929-8555

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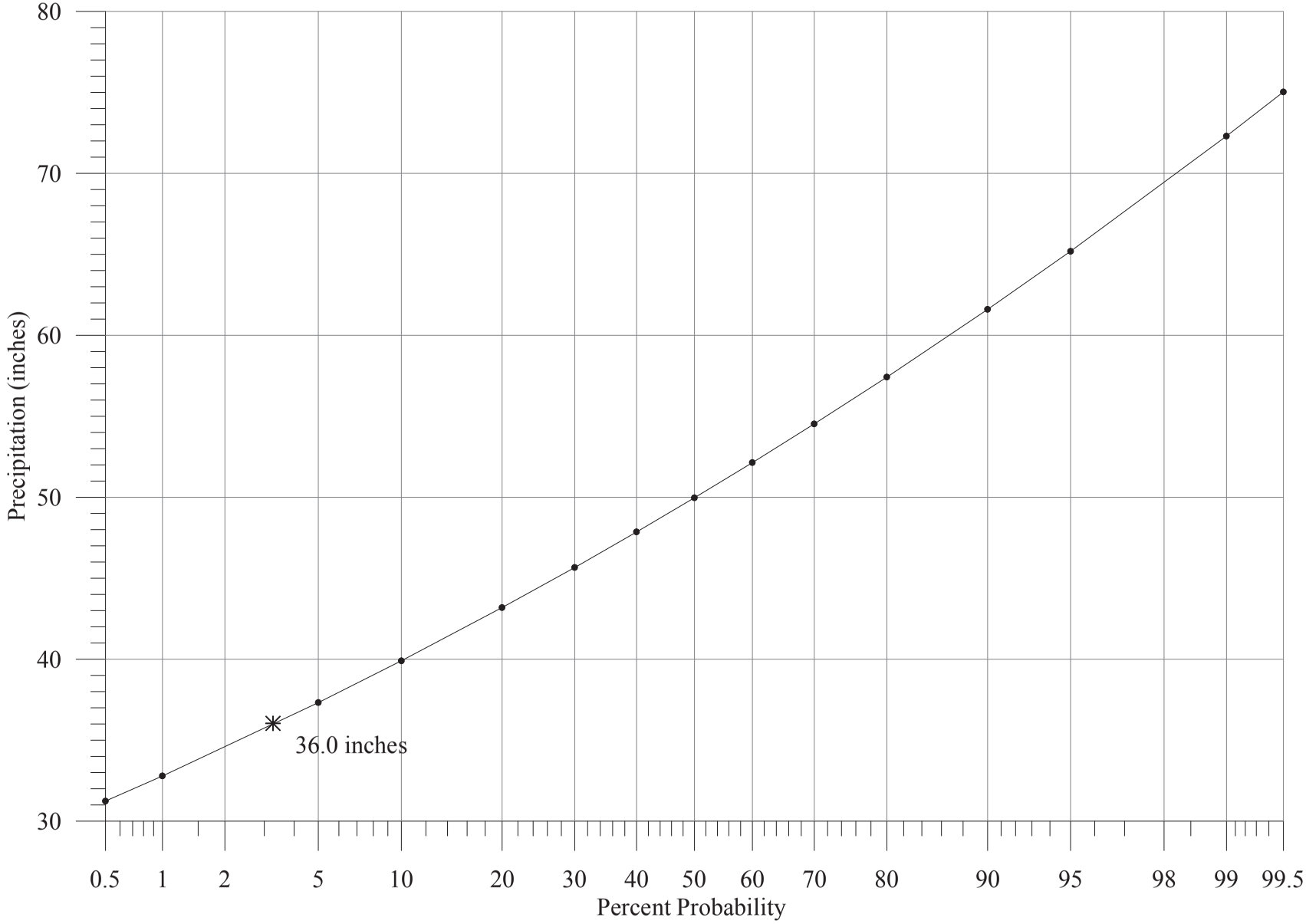
WILDER BALTER PARTNERS
ROUTE 22
LEWISBORO, NEW YORK

Precipitation Percent Probability Graph for Westchester County AP (1971-2000)



K:\Jobs\Wilder Balter Partners\Lewisboro\Figure 5 precip prob.grf

LEGGETTE, BRASHEARS & GRAHAM, INC.

FIGURE 4

APPENDIX I

COUNTRY EPICURE

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
Division of Environmental Quality

WELL COMPLETION REPORT

This report is to be completed be well driller and submitted to Health Department, together with laboratory report of analysis of water sample indicating water is of satisfactory bacterial quality, before certificate of construction compliance is issued.

Well construction to be in accordance with Bulletin SD-62
"RULES & REGULATIONS RELATING TO INDIVIDUAL WATER SUPPLIES"

Well #1

LOCATION: MUNICIPALITY: Goldens Bridge **SECTION:** _____ **BLOCK:** _____ **LOT:** _____

WELL OWNER: Country Epicure, Route 22, Goldens Bridge, NY
Name — Street Address — City and Town

WELL DRILLER: P.F. Beal & Sons, Inc., PO Box B., Brewster, NY
Name — Street Address — City and Town

CASING DETAILS	YIELD TEST	WATER LEVEL	SCREEN DETAILS
Length: 30' **Feet**	___ Bailed or X Pumped 6 Hours	(measure from land surface) Static: 30 **Feet**	**Make:**
Diameter: 6 **Inches**	**Yield:** 5 **G.P.M.**	When ~~Bailed~~ or Pumped 505 **Feet**	**Length:** **Ft.** **Slot Size**
Kind: Heavy Duty ~~Seamless Steel~~			**Diameter** **In.**

TOTAL DEPTH OF WELL: 525 **FEET**

WELL LOG

Depth From Ground Surface	Give description of formations penetrated, such as: peat, silt, sand, gravel, clay, hardpan, shale, sandstone, granite, etc. Include size of gravel (diam.) and sand (fine, medium, coarse), color of material, structure (loose, packed cemented, soft, hard). For example: 0 ft. to 27 ft. fine, packed, yellow sand. 27 ft. to 134 ft. gray granite.
0 **Ft. to** 8 **Ft.**	Drilling in overburden clay and boulders
Ft. to **Ft.**	Hit rock at 8 feet
8 **Ft. to** 30 **Ft.**	Drilling inrock, set casing, grouted.
30 **Ft. to** 525 **Ft.**	Drilling in rock granite.
Ft. to **Ft.**	
Ft. to **Ft.**	
Ft. to **Ft.**	
Ft. to **Ft.**	

Date Well Was Completed: 3/24/87 **Date of Report:** 6/4/87

Well Driller: _____

COUNTRY EPICURE

WESTCHESTER COUNTY DEPARTMENT OF HEALTH
Division of Environmental Quality

WELL COMPLETION REPORT

is report is to be completed be well driller and submitted to Health Department, together with boratory report of analysis of water sample indicating water is of satisfactory bacterial ality, before certificate of construction compliance is issued.

Well construction to be in accordance with Bulletin SD-62
"RULES & REGULATIONS RELATING TO INDIVIDUAL WATER SUPPLIES"

Well #2

CATION: MUNICIPALITY: Goldens Bridge SECTION: _____ BLOCK: _____ LOT: _____

LL OWNER: Country Epicure, Route 22, Goldens Bridge, NY
Name — Street Address — City and Town

LL DRILLER: P.F. Beal & Sons, Inc., PO Box B., Brewster, NY
Name — Street Address — City and Town

CASING DETAILS	YIELD TEST	WATER LEVEL	SCREEN DETAILS
ngth: 64 Feet	___ Bailed or X Pumped 6 Hours	(measure from land surface) Static: 35 Feet	Make:
ameter: 6 Inches	Yield: 5 G.P.M.	When Bailed or Pumped 585 Feet	Length: Ft. Slot Size
nd: Heavy Duty Seamless Steel			Diameter In.

TAL DEPTH OF WELL: 605' FEET

WELL LOG

Depth From ound Surface	Give description of formations penetrated, such as: peat, silt, sand, gravel, clay, hardpan, shale, sandstone, granite, etc. Include size of gravel (diam.) and sand (fine, medium, coarse), color of material, structure (loose, packed cemented, soft, hard). For example: 0 ft. to 27 ft. fine, packed, yellow sand. 27 ft. to 134 ft. gray granite.
0 Ft. to 35 Ft.	Drilling in clay and boulders
Ft. to Ft.	Hit rock at 35 feet
5 Ft. to 64 Ft.	Drilling in rock, set casing, grouted.
4 Ft. to 605 Ft.	Drilling in rock granite.
Ft. to Ft.	
Ft. to Ft.	
Ft. to Ft.	
Ft. to Ft.	

te Well Was Completed: 3/26/87 Date of Report: 6/4/87

Well Driller: _____

RA T

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The Developers, Wilder Balter Partners (WBP), will respond promptly to any complaints from offsite well owners within 2,000 feet of the proposed supply wells that allege damage caused by the operations of the WBP well-supply source. Depending on the nature of the complaint, the complaint will be directed to either LBG or the water operator of the system, or both, for investigation and remediation, if required. The operating premise of the response to offsite well problems is that damage to a distant offsite well, whether related to the ability of the well to produce its normal supply or water-quality degradation, can only result if significant drawdown of the static water level in the subject well occurred as a result of pumpage by the WBP well-supply sources.

If after investigation any complaint is found to be valid, i.e., a well problem caused by drawdown resulting from pumpage by the WBP well-supply source, the problem will be remediated at the cost of the Developers WBP. If the problem is unrelated to the operations of the WBP well-supply source, i.e., caused by normal wear and tear or naturally-occurring conditions, the well owner will be referred to a competent well or pump contractor for remediation at his cost. A written report regarding each such compliant will be provided to the WBP and to the complainant within seven days of the completion of any complaint investigation.

For any well problem that is found to have been caused by drawdown resulting from pumpage by the WBP well-supply source, a remedy or remedies would be offered to the well owner, to be paid by WBP. Such remedies might include lowering a well pump, replacing a well pump, deepening a well, redeveloping a well, or drilling a new well. In any such remediation, the costs to the WBP would include restoration of disturbed land or plantings. WBP would select the most efficacious remediation that is economically warranted.

H:\Wilder Balter\Lewisboro\Well MItigation Plan.doc

APPENDIX F

Archaeological Report

PHASE IA LITERATURE REVIEW AND SENSITIVITY ASSESSMENT
AND
PHASE IB ARCHEOLOGICAL FIELDWORK

Wilder Balter Lewisboro

Town of Lewisboro, Westchester County, New York

March 2016

Prepared by:

STRATA Cultural Resource Management, LLC
105 South Street
Warwick, NY 10990
Telephone: 845-647-1390
info@stratacrm.com
36CFR61 Archeological Consultants

MANAGEMENT SUMMARY

SHPO Project Review Number:

Involved State and Federal Agencies:

Phase of Survey: Phase IA/IB

Location Information: NYS Route 22, Town of Lewisboro, Westchester Co.,NY

Survey Area (Metric & English)
Number of Acres Surveyed: 36ac (14.5 ha)
Number of Square meters & Feet excavated:

USGS 7.5 Minute Quadrangle Map: 1981 Croton Falls, NY

Archeological Survey Overview
Number and Interval of Shovel Tests: 45 STPs @ 15-Meter (50-ft) interval
Number and Size of Units: 0

Results of Archeological Survey
Number and name of historic sites identified: 0
Number and name of prehistoric sites identified: 0

Results of Architectural Survey
Number of buildings/structures/cemeteries adjacent to Project Area: 0
Number of previously determined NR listed or eligible buildings/structures/cemeteries/districts: 0

Report Author: Jim Turner, RPA, Principal Investigator

Date of Report: March 2016

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  - **Soils and Drainage** **13**
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PHASE IA ARCHEOLOGICAL SENSITIVITY ASSESSMENT

INTRODUCTION

STRATA Cultural Resource Management was contacted on November 24, 2015 by Tim Miller of Tim Miller Associates, Inc. to conduct a Phase IA/IB Archeological Investigation on a group of three properties (SBL 5-10766-19, 20 & 21) measuring approximately 36 acres along NYS Route 22 in the Town of Lewisboro, Westchester County, New York.

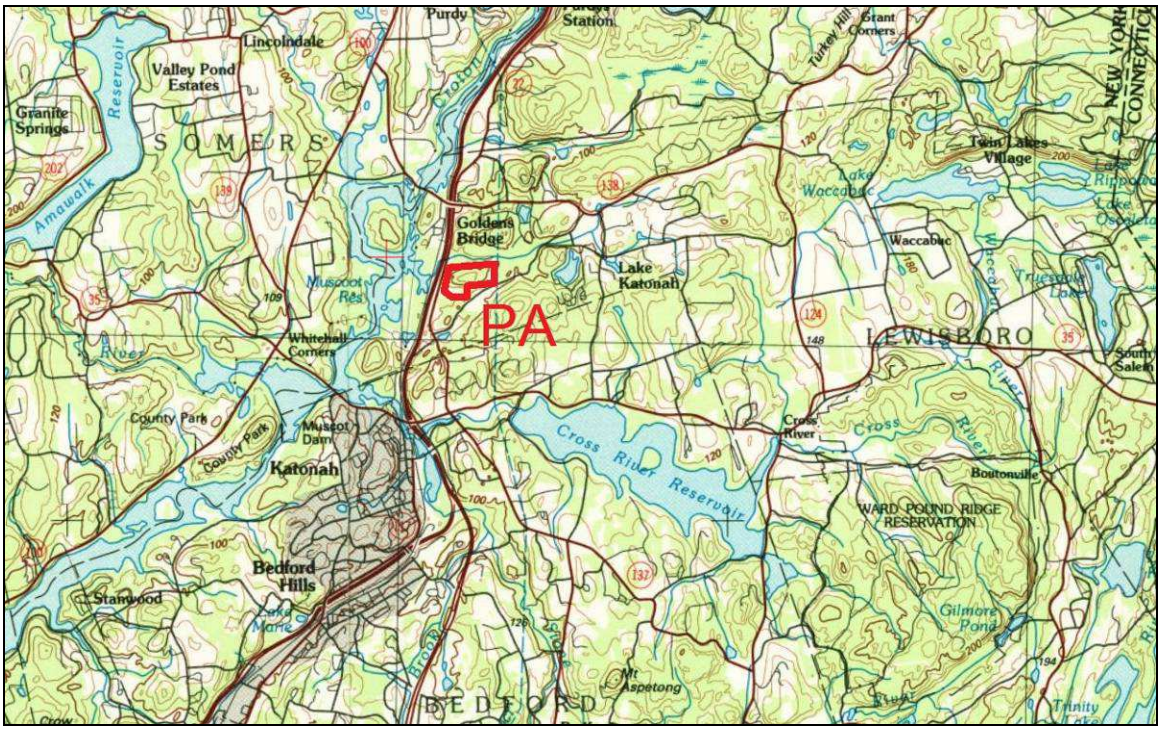
PROJECT INFORMATION

The proposed project consists of construction of six multi-family residences with associated roadways, parking, recreation facilities, underground utilities, subsurface sewage treatments systems (SSTS) and stormwater management.

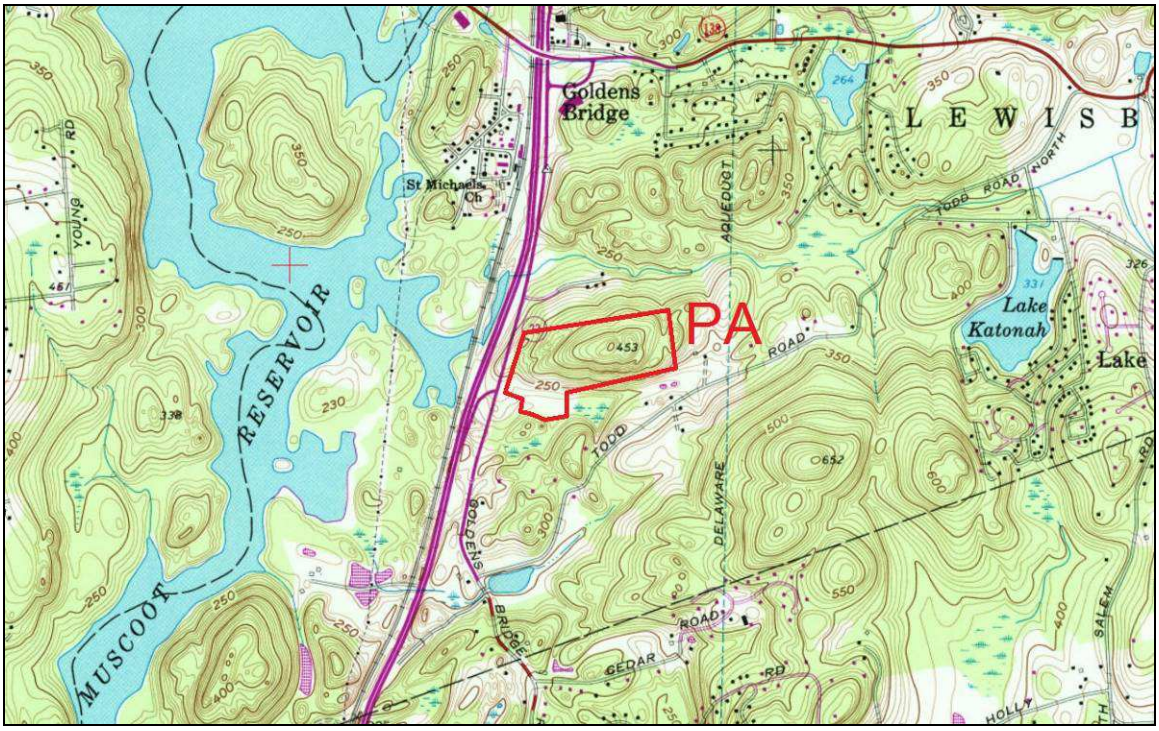
The Project Area (PA) is a roughly rectangular parcel that lies to the east of I-684 and NYS Route 22 between Katonah and Golden's Bridge (Photos 1-17; Maps 1-4). Elevations within the Project Area are approximately 211 feet (64 m) above mean sea level (AMSL) at the surface of the wetlands and rise to approximately 453 feet (138 m) AMSL in the center of the property at the top of the hill. Extensive bedrock outcrops characterize the higher elevations. An area of wetlands is located in the southwest portion of the Project Area.

The Area of Potential Effect (APE) is considered to be the western portions of Project Area containing the buildings, roadways, SSTS and stormwater ponds as well as select locations within the eastern portions of the Project Area containing SSTS.

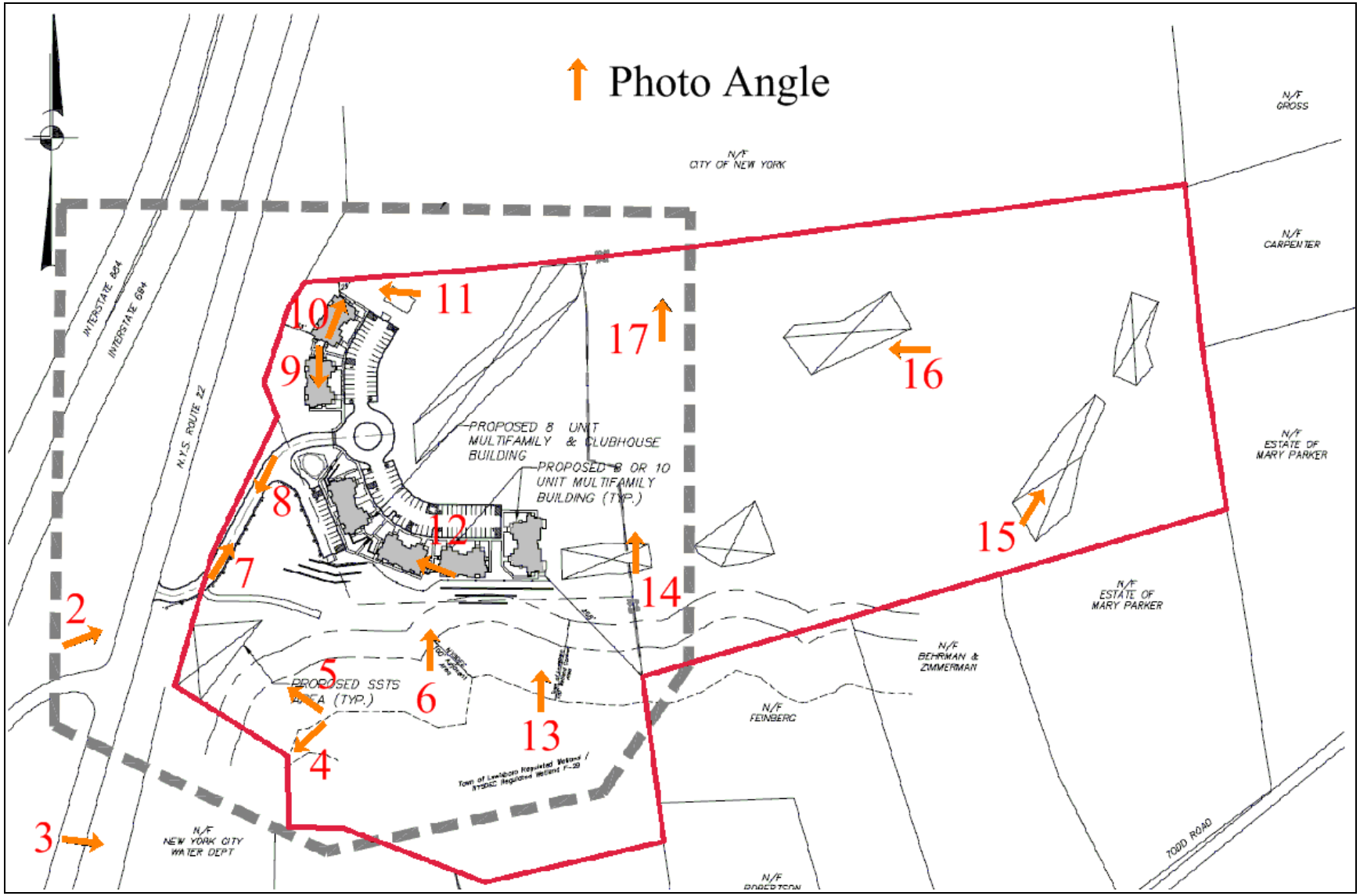
Photo 1: Aerial view of the Project Area south of Golden's Bridge.



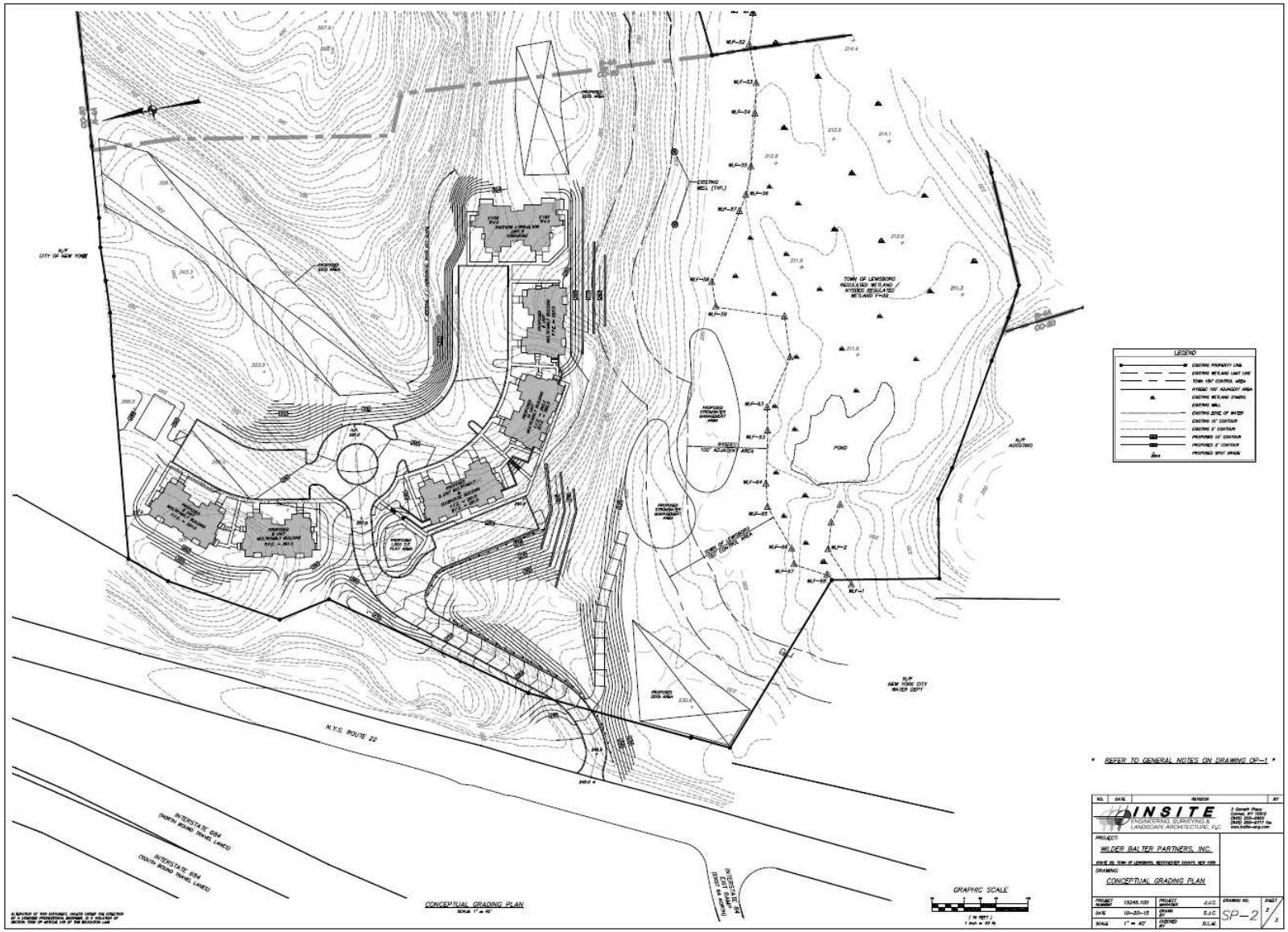
Map 1: USGS 1:250,000 Topographic Map showing Project Area.



Map 2: 1981 USGS 7.5' Topographic Quadrangle (Croton Falls, NY).



Map 3: Project Area showing proposed development including subsurface sewage treatment systems (SSTS) in eastern half of property and report photo angles.



Map 4: Project Area showing proposed development including multi-family dwellings, roadways, subsurface sewage treatment systems and stormwater ponds.

Photo 2: View northeast across Route 22 toward Project Area and proposed entry road.

Photo 3: View east from Route 22 across wetlands within Project Area.

Photo 4: View southwest of Project Area showing property corner monument at stream.

Photo 5: View northwest showing three-sided stone enclosure situated near stream.

Photo 6: View north of Project Area showing bedrock outcrop in vicinity of Building 5.

Photo 7: View northeast of Project Area showing proposed route of access road.

Photo 8: View southwest of Project Area showing proposed route of access road.

Photo 9: View south of Project Area showing staked centerline of Building 2.

Photo 10: View north of Project Area showing staked centerline of Building 1 with stone wall at rear.

Photo 11: View west of stone wall along property boundary showing elevation difference with Route 22 below.

Photo 12: View west of Project Area showing staked centerline of Building 4.

Photo 13: View north of Project Area showing steep hillside below Building 6.

Photo 14: View north of Project Area showing stone wall at location of proposed SSTS.

Photo 15: View northeast of Project Area near southeast property corner showing location of proposed SSTS.

Photo 16: View west of Project Area showing proposed location of SSTS.

Photo 17: View north of Project area showing steep slopes along northern property line.

Bedrock and Surficial Geology

The Project Area lies within metamorphic rocks of sedimentary and volcanic origin. The surficial geology of the Project Area consists of glacial till overlying bedrock with exposed outcrops.

Soils and Drainage

Soils within the Project Area consist of Charlton loam (**ChB**), Chatfield-Hollis-Rock Outcrop complex (**CtC, CuD**), Hollis Rock Outcrop complex (**HrF**), Leicester loam (**LcB**), Palms muck (**Pa**) and Riverhead loam (**RhB**) (Map 5) (USDA 1994). The typical soil profiles for soils contained within the APE are shown below in Table 1.

Map 5: Project Area soils (http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx).

Table 1: Project Area soils (USDA 1994).

Name	Soil Horizon Depth	Color	Texture, Inclusions	Slope %	Drainage	Description
Charlton loam (**ChB**)	**A** 0-2 in (0-5 cm) **B** 2-8 in (5-20 cm) **C** 8-24 in (20-61 cm) **D** 24-60 in (61-152 cm)	V Dk Gr Br Dk Br Dk Yl Br Dk Gr Br	Loam Loam Sandy loam Sandy loam	2-8	Well drained	Glacial till derived from granite, schist and gneiss
Chatfield-Hollis-Rock Outcrop complex (**CtC, CuD**)	**A** 0-2 in (0-5 cm) **B** 2-7 in (5-18 cm) **C** 7-24 in (18-61 cm) **D** 24 in (61 cm)	V Dk Gr Br Dk Br Br	Loam Loam Flaggy silt loam Bedrock	3-35	Somewhat excessively drained	Hilltops and narrow ridges in bedrock-controlled landscapes
Hollis Rock Outcrop complex (**HrF**)	**A** 0-1 in (0-3 cm) **B** 1-16 in (3-41 cm) **C** 16 in (41 cm)	Dk Br Yl Br	Fine sandy loam Fine sandy loam Bedrock	35-60	Somewhat excessively drained	Hillsides in bedrock-controlled landscapes
Leicester loam (**LcB**)	**A** 0-8 in (0-20 cm) **B** 8-18 in (20-46 cm) **C** 18-26 in (46-66 cm) **D** 26-60 in (66-152 cm)	V Dk Gr Br Dk Gr Br Br Br	Loam Sandy loam Sandy loam Sandy loam	3-8	Poorly drained	Lower parts of hillsides and small drainageways
Riverhead loam (**RhB**)	**A** 0-6 in (0-23 cm) **B** 6-14 in (23-41 cm) **C** 14-25 in (41-66 cm) **D** 25-30 in (66-76 cm) **E** 30-60 in (76-152 cm)	Dk Br Dk Br Dk Yl Br Yl Br Br	Loam Fine Sandy loam Sandy loam Loamy sand Loamy sand	3-8	Well drained	Benchlike areas along streams and on broad plains

Current Conditions and Previous Disturbance

The Project Area is currently forested uplands adjacent to a wetland with extensive bedrock outcrops across the proposed development footprint. Stone walls cross the Project Area along its southern slopes and a three-sided stone enclosure lies near the stream suggesting agricultural or livestock grazing usage in the past. A rough access road proceeds east from Route 22 along the northern edge of the wetland. Near the terminus of this road in the east there was observed disturbances in the ground surface consisting of mounds and depression suggesting mining and/or dumping activity at this location. The upland forest appears relatively undisturbed.

LITERATURE REVIEW

Site File Search

A site file search conducted at the Office of parks, Recreation and Historic Preservation (OPRHP) identified no New York State Museum (NYSM) sites or OPRHP sites within 500 feet of the Project Area.

National Register Listed and Eligible Properties

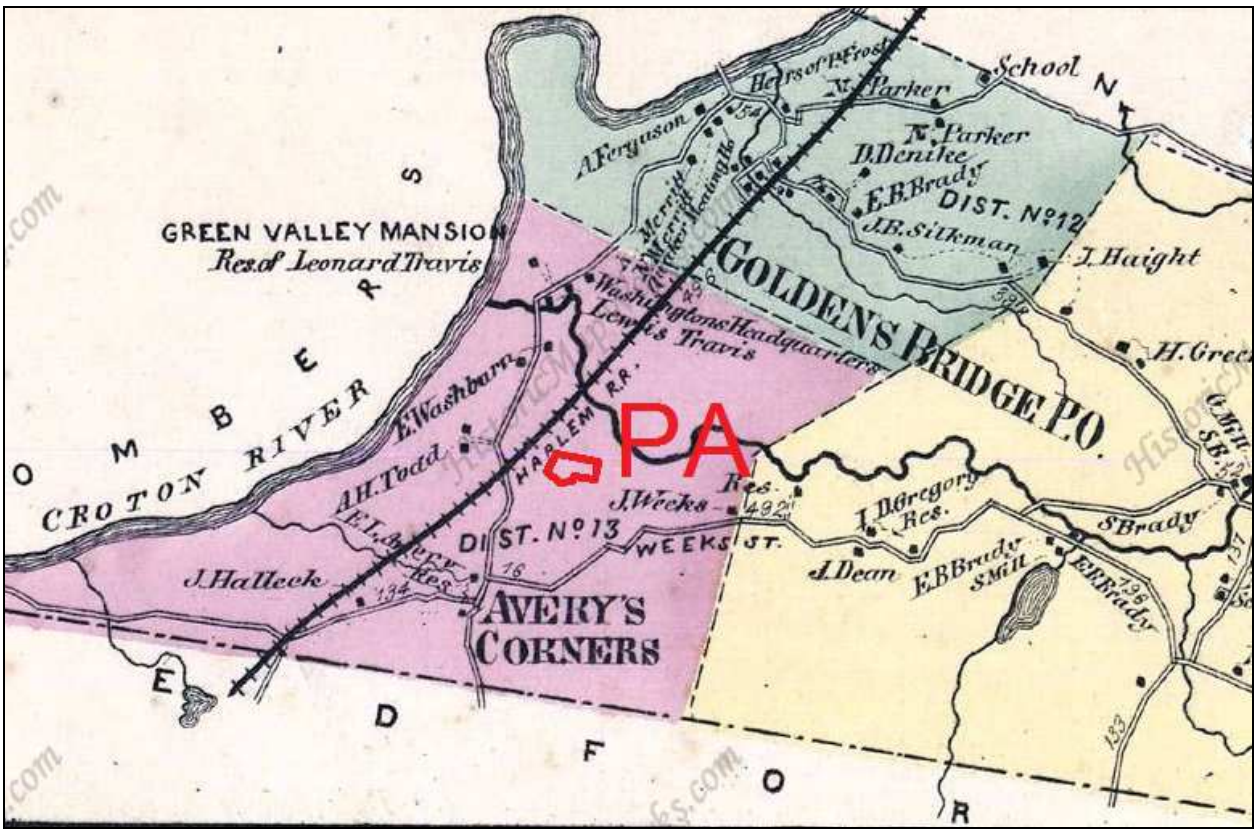
There are no National Register Listed or Eligible properties within 500 feet of the Project Area.

Previous surveys

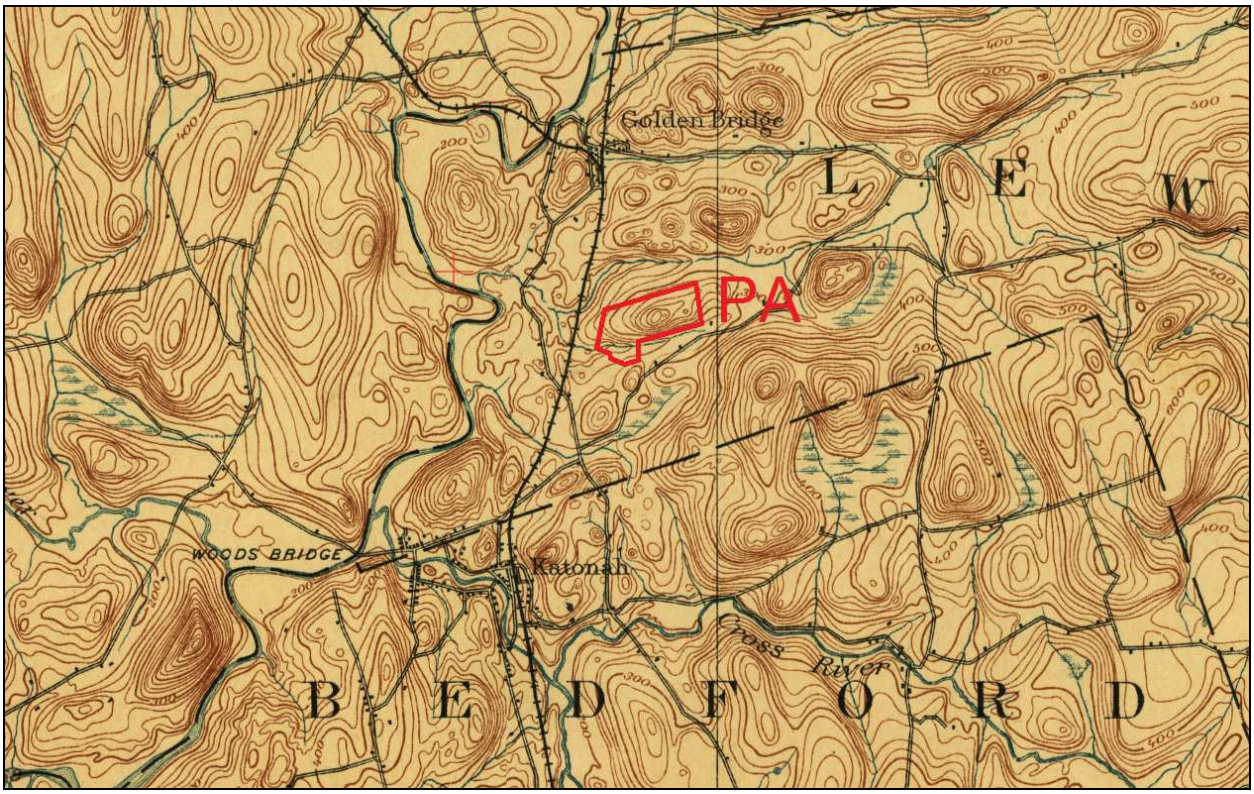
There have been no prior archeological investigations conducted within 500 feet of the Project Area.

Historic Map Review

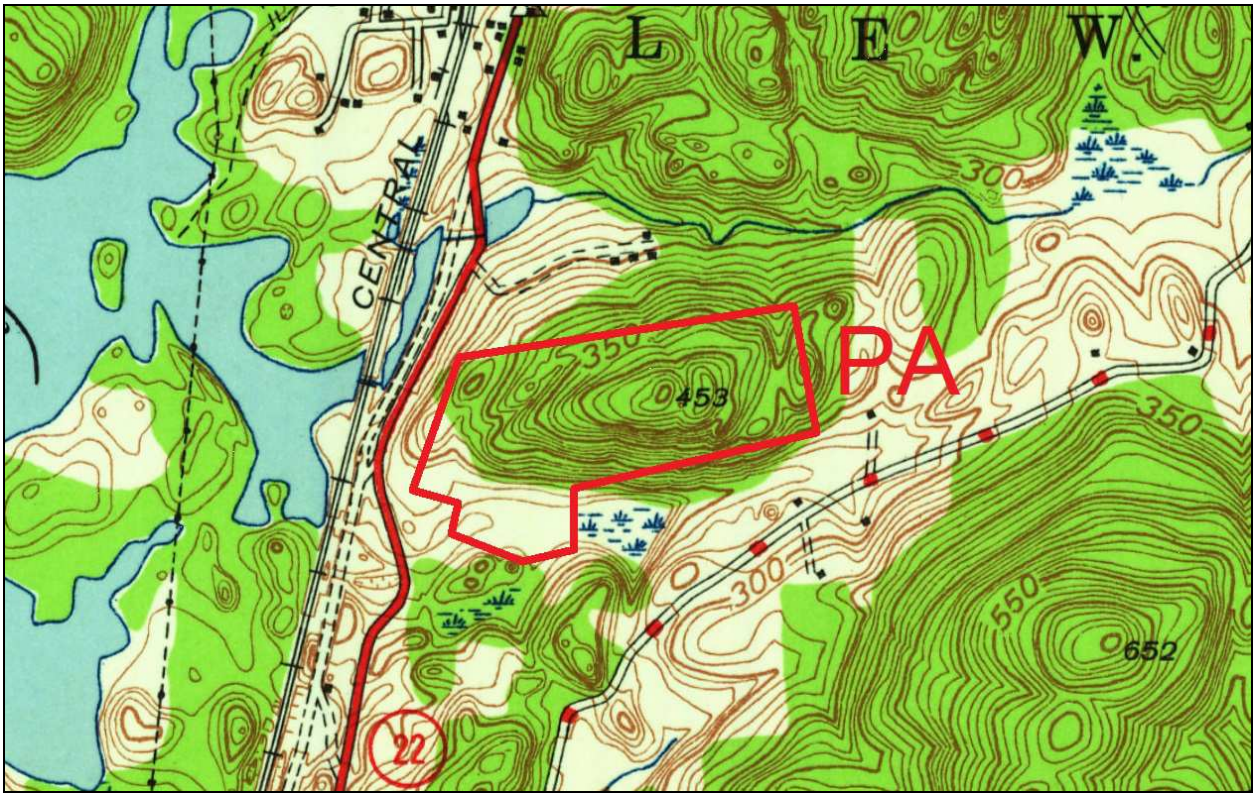
Three historic maps were reviewed to provide background context for the Project Area. These maps dated from 1867, 1892 and 1944. The earliest map by Beers shows the Project Area to the east of the Harlem Railroad line before the creation of the Muscoot Reservoir. The road north from Avery's Corners crosses the railroad due west of the Project Area. The 1892 USGS topo map shows the Project Area surrounding the large bedrock hilltop with water flowing westward across the bottom of the southern slope. The 1944 USGS topo map shows the Project Area after the creation of the Muscoot Reservoir as well as NYS Route 22. The drainage of the entire region has been modified and no water is shown flowing across the southern slope of the hilltop.



Map 6: 1867 *New York and its Vicinity* (Beers).



Map 7: 1892 USGS 15' Topographic Quadrangle (Carmel, NY).



Map 8: 1944 USGS 7.5' Topographic Quadrangle (Carmel, NY).

SENSITIVITY ASSESSMENT

Prehistoric Sensitivity

The Project Area is considered to have a moderate sensitivity for the presence of prehistoric cultural remains. The location exhibits several characteristics that are known to have been conducive to Native American occupation including an elevated hilltop adjacent to water sources that are themselves tributaries of a larger nearby river system. No rockshelters or usable lithic resources were identified within the Project Area indicating precontact sites would likely be limited to small temporary hunting camps rather than larger long-term settlements.

Historic Sensitivity

The Project Area is considered to have low sensitivity for the presence of historic cultural remains. Historic map research indicates that no structures have occupied the site from the early settlement of the area until the present day.

TESTING RECOMMENDATIONS

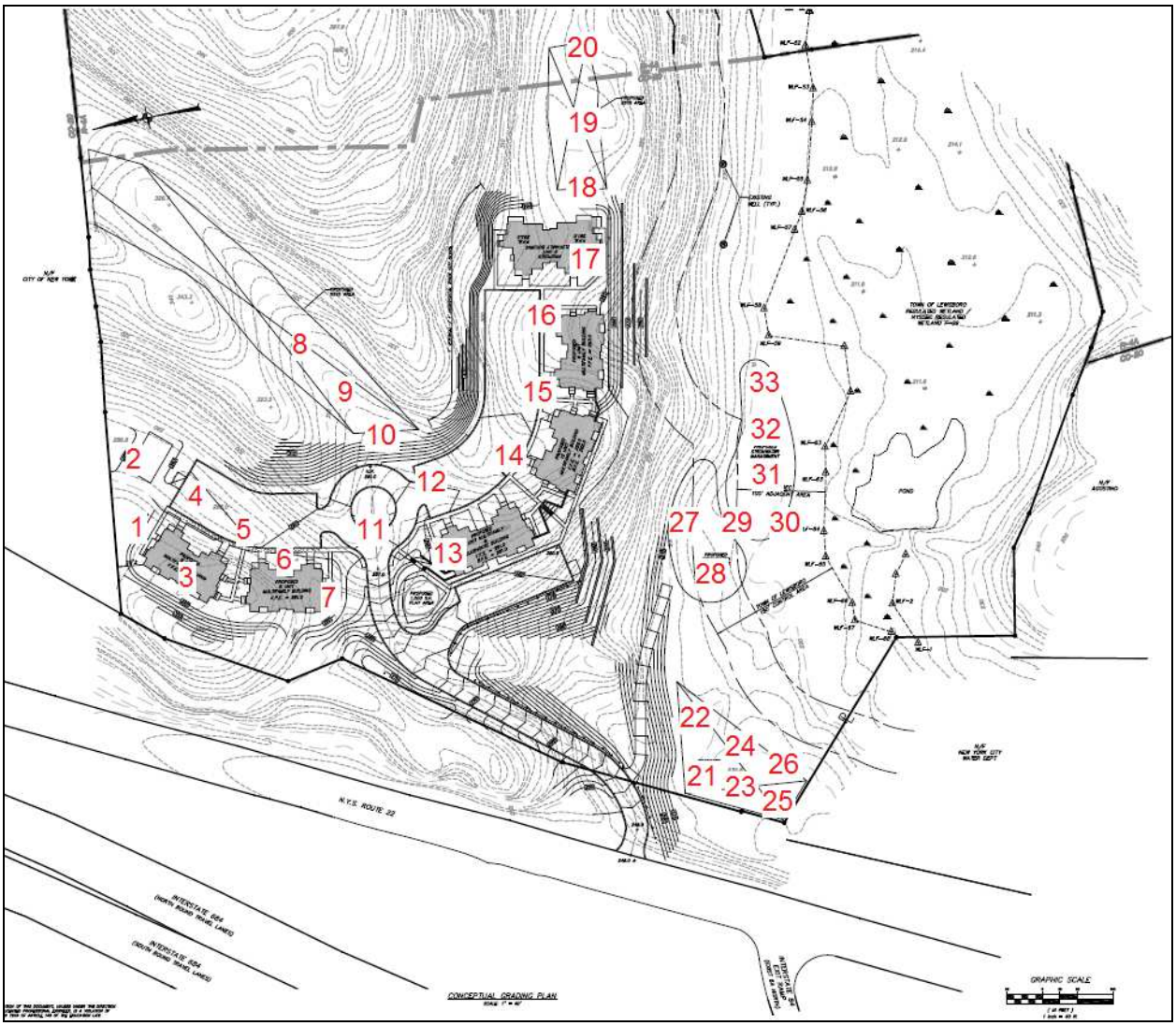
Due to the sensitivity for precontact cultural resources, subsurface archeological testing is recommended for all relatively level portions of the Project Area that are contained within the Project Area excepting the wetlands and areas of prior disturbance.

PHASE IB FIELD INVESTIGATION

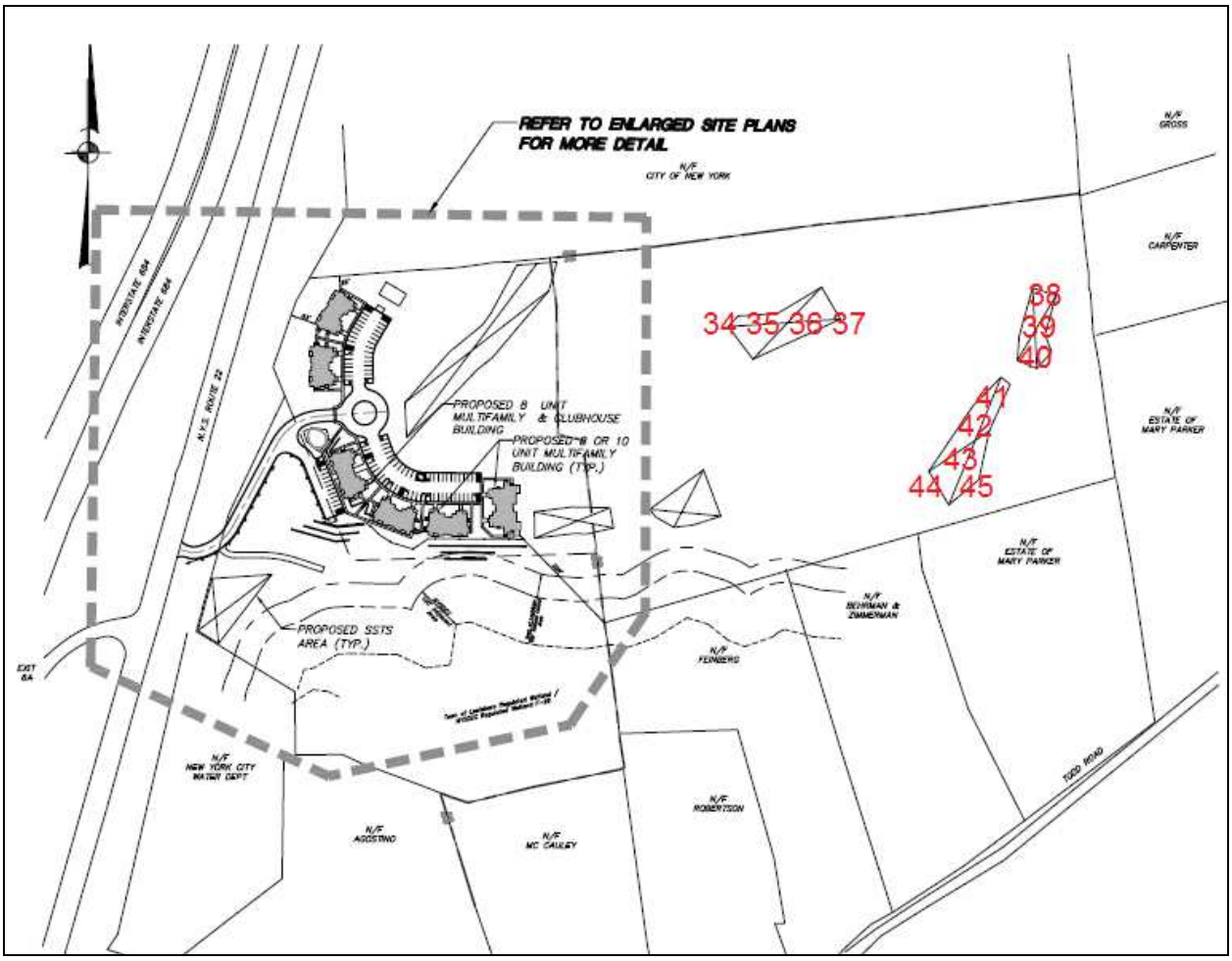
The Phase IB Field Investigation was conducted on January 17, 2016 beginning with a site walkover and visual surface survey of the Project Area. Shovel testing was performed by Mike Thomas, Field Technician and Jim Turner, Principal Investigator. For testing results see Appendix 1: Phase IB Shovel Test Records.

Shovel Testing Results

A total of 45 shovel test pits (STPs) were laid out within the Project Area (Map 10). No significant cultural deposits were identified during the subsurface excavations conducted within the Project Area.



Map 9: Shovel testing locations within the Project Area.



Map 10: Shovel testing locations within SSTS areas.

RECOMMENDATIONS

The Phase IA Literature Review and Sensitivity Assessment indicated a moderate sensitivity for precontact cultural resources and a low sensitivity for historic cultural resources. The Phase IB Archeological Fieldwork did not identify any significant cultural resources within the Project Area and therefore no further testing is recommended.

APPENDIX G

Transportation Report

Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING P. A.

Traffic Impact Study

WBP AFFH Multi-Family Development

NYS Route 22
Town of Lewisboro, Westchester County, New York

April 22, 2016

Prepared For

Wilder Balter Partners, Inc.
570 Taxter Road, Suite 673
Elmsford, NY 10523

Prepared By

Maser Consulting P.A.
11 Bradhurst Avenue
Hawthorne, NY 10532
914.347.7500

Philip J. Grealy, Ph.D., P.E., Principal
License No. 59858

MC Project No. 15002398A

www.maserconsulting.com

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APPENDIX E ..... ACCIDENT DATA

APPENDIX F ..... PUBLIC TRANSPORTATION INFORMATION

I. INTRODUCTION

This report incorporates the information from the original study, dated January 29, 2016 as well as the additional information presented in our March 30, 2016 letter, which was prepared in response to comments received from the Town of Lewisboro Planning Board and their Consultants. Accident data obtained from the New York State Department of Transportation (NYSDOT) has also been included.

A. PROJECT DESCRIPTION AND LOCATION (Figure No. 1)

This report has been prepared to evaluate the potential traffic impacts associated with the proposed WBP AFFH Multi-Family Development, which is proposed to consist of 46 dwelling units. The site is located in the Hamlet of Goldens Bridge, Town of Lewisboro, New York (See Figure No. 1) on a parcel of land located on the east side of NYS Route 22 immediately north of the I-684 northbound off ramp (Exit 6A). As shown on Figure No. 1, access to the development is proposed via a new driveway connection to NYS Route 22, which will be located approximately 250 feet north of the I-684 - Exit 6A northbound off ramp.

While the development is expected to be completed within the next several years, a Design Year of 2020 has been used in the evaluation herein to reflect future traffic conditions.

B. SCOPE OF STUDY

This study has been prepared to identify current and future traffic operating conditions on the surrounding roadway network and to assess the potential traffic impacts of the proposed multi-family housing development.

All available traffic count data for the study area intersections were obtained from any previous reports prepared by our office. These data were supplemented with new traffic counts collected by representatives of Maser Consulting, P.A. These data were also compared to count data obtained from the New York State Department of Transportation (NYSDOT). Together these data were utilized to establish the Year 2015 Existing Traffic Volumes representing existing traffic conditions in the vicinity of the site.

The Year 2015 Existing Traffic Volumes were then projected to the 2020 Design Year to take into account background traffic growth. In addition, traffic for other specific potential or approved developments in the area were estimated and then added to the Projected Traffic Volumes to obtain the Year 2020 No-Build Traffic Volumes.

Estimates were then made of the potential traffic that the proposed development would generate during each of the peak hours (see Section III-B for further discussion). The resulting site generated traffic volumes were then added to the roadway system and combined with the Year 2020 No-Build Traffic Volumes resulting in the Year 2020 Build Traffic Volumes.

The Existing, No-Build and Build Traffic Volumes were then compared to roadway capacities based on the procedures from the Highway Capacity Manual to determine existing and future Levels of Service and operating conditions. Recommendations for improvements were made where necessary to serve the existing and/or future traffic volumes.

II. EXISTING ROADWAY AND TRAFFIC DESCRIPTIONS

A. DESCRIPTION OF EXISTING ROADWAYS

As shown on Figure No. 1, the proposed Multi-Family Development will be accessed via a driveway connection to NYS Route 22 at a location approximately 250 feet north of the I-684 Exit 6A northbound off ramp. The following is a brief description of the roadways located within the study area. In addition, Section III-F provides a further description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service and any recommended improvements for each of the study area intersections. Appendix "C" contains copies of the capacity analyses which indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. Interstate Route 684

   Interstate Route 684 is a six lane, divided, limited access highway which originates in the Town of Harrison at an interchange connection with Interstate 287 and the Hutchinson River Parkway. The roadway traverses in a northerly direction through Westchester County passing the site and continuing north into Putnam County where it intersects with Interstate 84. There is a northbound exit ramp from I-684 (Exit 6A), which connects with NYS Route 22 immediately south of the site. In addition, there is a southbound entrance ramp to I-684 from NYS Route 138 approximately ¼ mile northwest of the site.

2. NYS Route 22

   NYS Route 22 is a major north/south roadway which traverses throughout Westchester County and extends north into Putnam County. Route 22 generally consists of one lane in each direction and has a signalized intersection connection with Route 35 approximately 2 miles south of the site and a stop sign controlled "T" intersection with I-684 Exit 6A in the vicinity of the site. The roadway in the vicinity of the site consists of one lane in each direction with paved shoulders. The posted speed limit is 45 mph immediately north of the site frontage. It should be noted that sections of Route 22 both to the north and south of the site also have some speed reductions to 40 mph due to horizontal and vertical road alignment controls.

B. YEAR 2015 EXISTING TRAFFIC VOLUMES (Figures No. 2. and 3)

Available data regarding existing traffic volumes and any planned improvements in the area were collected from the NYS Department of Transportation and the Town of Lewisboro. In addition to the above information, representatives of Maser Consulting, P.A. conducted field surveys during December 2015. During these surveys information was collected regarding traffic control, roadway geometrics and traffic flow characteristics.

In order to establish the existing traffic volumes on the area roadways, manual turning movement traffic counts were conducted at the intersection of NYS Route 22 and the I-684 (Exit 6A) northbound off ramp. The traffic volumes were counted during the weekday AM and PM Peak periods on December 2nd and 3rd of 2015. Based upon a review of the traffic counts taken and the traffic generating characteristics of the proposed site, the following peak hours were identified as being critical:

Peak AM Highway Hour	7:45 to 8:45 AM
Peak PM Highway Hour	5:00 to 6:00 PM

The counts taken were compared with traffic volume information obtained from the NYS Department of Transportation and with other counts collected in 2014 for the Goldens Bridge Shopping Centre located north of the site. The resulting volumes for the existing Peak Hour Traffic Volumes for the AM and PM Peak Hours are shown on Figures No. 2 and 3 in Appendix "A" of this report. The intersections considered in this report include:

1. NYS Route 22 and Proposed Site Access Driveway
2. NYS Route 22 and I-684 Northbound Off Ramp (Exit 6A)
3. North Street and NYS Route 138
4. NYS Route 22 and North Street

See Section III-F for the discussion on each of these locations.

C. ACCIDENT DATA (Table A – Appendix "E")

Available accident data for the latest five (5) year period for the area roadways were obtained from the NYSDOT. Copies of the reports for the NYS Route 22 roadway segment between Duffy's Bridge Road and North Street are contained in Appendix "E". The accident data was summarized by location, date, time of day, traffic control, accident class, light condition, road condition, weather, manner of collision and apparent contributing factors and are summarized in Table A in Appendix B. Note that a review of the table indicates that those accidents occurring in the vicinity of the I-684 – Exit 6A northbound off ramp are primarily due to failure to yield right of way.

III. EVALUATION OF FUTURE TRAFFIC CONDITIONS

A. YEAR 2020 NO-BUILD TRAFFIC VOLUMES (Figure No. 4 through 9)

The 2015 Existing Traffic Volumes were projected to the 2020 Design Year using a background growth factor of 0.5% per year which was developed as a result of a review of historical traffic volume data or a total increase of 2.5%. The projected traffic volumes for the AM and PM Highway Hour and are shown on Figures No. 4 and 5. Other Development volumes for the Goldens Bridge Village Centre expansion development for the AM and PM Highway Hour were also accounted for separately and are shown on Figures No. 6 and 7. The 2020 No-Build Traffic Volumes are a total of the projected volumes and other development traffic volumes. The resulting 2020 No-Build Traffic Volumes for the Peak AM Highway Hour and Peak PM Highway Hour are shown on Figures No. 8 and 9, respectively, which are located in Appendix "A" of this report.

B. SITE GENERATED TRAFFIC VOLUMES (Table No. 1)

The Site Generated Traffic Volumes for the proposed site were developed from data published by the Institute of Transportation Engineers (ITE) as contained in the report entitled "Trip Generation", 9th Edition, 2012. The Hourly Trip Generation Rates utilized and the anticipated amount of the new traffic that will be added to the adjoining roadway network as a result of the proposed development are summarized in Table No. 1 in Appendix "B" of this study.

C. ARRIVAL/DEPARTURE DISTRIBUTION (Figures No. 10 and 11)

The Arrival/Departure distribution pattern to assign the site generated traffic to the roadway system was developed based upon the existing traffic volume distributions observed on NYS Route 22 and supplemented with data on the population centers in the area. The anticipated Arrival/Departure distributions of the site generated traffic for the development are shown on Figures No. 10 and 11.

D. 2020 BUILD CONDITIONS TRAFFIC VOLUMES (Figures No. 12 through 15 and Tables 3A and 3B)

The Site Generated Traffic Volumes were assigned to the roadway network via the Arrival/Departure Distribution and are shown on Figures No. 12 and 13.

These site generated traffic volumes were added to the 2020 No-Build Traffic Volumes to obtain the 2020 Build Traffic Volumes. These volumes are shown on Figures No. 14 and 15 for the AM and PM Peak Hours, respectively. These figures are contained in Appendix "A".

Tabular summaries of the Existing, No-Build and Build Traffic Volumes are presented in Tables No. 3A and 3B for the AM and PM Peak Hours, respectively.

E. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis
  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the *2010 Highway Capacity Manual*, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis
  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the *2010 Highway Capacity Manual*. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the

vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "C" of this report.

F. RESULTS OF ANALYSIS (Tables No. 2)

Capacity analyses which take into consideration appropriate truck percentages, pedestrian activity, roadway grades and other factors were performed at the study area intersections utilizing the procedures described above to determine the Levels of Service and average vehicle delays. Summarized below are a description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service as well as any recommended improvements.

Using the above procedures together with the SYNCHRO Analysis Software, a capacity analysis was performed using the 2015 Existing, 2020 No-Build and 2020 Build Traffic Volumes for each of the intersections.

Table No. 2 summarize the results of the capacity analysis for the 2015 Existing, 2020 No-Build and 2020 Build Conditions. Appendix "C" contains copies of the capacity analysis which also indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. NYS Route 22 and I-684 NB Off Ramp (Exit 6A)
   This intersection is controlled by a "Stop" sign located on the Northbound Off Ramp at its approach to NYS Route 22. The analysis conducted using the 2015 Existing Traffic Volumes indicates that the left turn movement from the Northbound Off Ramp experiences Levels of Service "F" during the AM and PM Peak Hours.

   The installation of a traffic signal at this location would be needed to improve the level of service (see Level of Service Summary Table No. 2 in Appendix "B"). With the installation of a traffic signal, the 2020 Build Traffic Volumes indicates an overall Level of Service "B" or better during the AM and PM Peak Hours. However, a review of the traffic volumes indicates the intersection does not satisfy traffic signal

warrants as specified in the Manual of Uniform Traffic Control Devices. It is recommended that traffic volumes at this intersection continue to be monitored in the future for possible signalization.

2. NYS Route 22 and Site Access Driveway
As indicated above, access to the site is proposed via a single driveway connection to NYS Route 22 north of the I-684 (Exit 6A) northbound off ramp.

During the time of the field survey, sight distance measurements were observed and are summarized in Table No. 3. Some vegetation along the east side of NYS Route 22 south and north of the driveway intersection should be pruned to ensure adequate sight distances. The analysis indicates that Levels of Service "C" or better will be provided under future conditions for traffic entering and exiting the site. Also, a W2-2 "Intersection Ahead" advance warning sign should be installed on NYS Route 22 north and south of the site access. A final determination on this and other entrance design details will be made by NYSDOT as part of the Highway Work Permit Process.

3. NYS Route 138 and North Street
North Street intersects with NYS Route 138 at a signalized "T" intersection. The NYS Route 138 eastbound approach consists of one lane for through and right turn movements. The NYS Route 138 westbound approach consists of one lane for left turn movements and one lane for through movements. The North Street northbound approach consists of one lane for left turn movements and one lane for right turn movements. Capacity analysis conducted utilizing the 2015 Existing Traffic Volumes indicates that the intersection currently operates at a Level of Service "C" or better during peak periods.

Capacity analysis conducted utilizing the 2020 No-Build and 2020 Build traffic Volumes indicates that the intersection will continue to operate at good Levels of Service.

4. NYS Route 22 and North Street
This intersection is controlled by a "stop" sign located on North Street at its approach to NYS Route 22. The analysis indicated that the left turn movement from North Street experiences some delays during the Peak AM Hour. Levels of Service "E" are expected under future No-Build and Build conditions during this Peak AM time period. During other hours, a Level of Service "B" or better can be expected.

Signalization of this intersection would provide a significantly better level of service (see Level of Service Summary Table No. 2 in Appendix "B"). However, since the un-signalized analysis results in an operation still within capacity, and a review of the traffic volumes indicates the intersection would not meet traffic signal warrants as specified by the NYSDOT Manual of Uniform Traffic Control Devices, it is recommended that traffic volumes at this intersection continue to be monitored in the future for possible signalization.

It should be noted that the above referenced intersections (#3 and #4) were analyzed in detail as part of the Goldens Bridge Shopping Center expansion. That study had considered background traffic growth which accounts for the expected volumes from the proposed multi-family development. Even considering the conservatively high trip estimates used in the traffic study for the proposed multi-family housing project, these volumes equate to 2 entering and 9 exiting vehicles during the AM peak hour and 9 entering and 6 exiting vehicles during the PM peak hour at NYS Route 22 and North Street and less at North Street and Route 138. As shown in the Level of Service Summary Table (Table No. 2), the project will not have a significant impact on the Levels of Service or vehicle delays at these intersections.

G. OTHER CONSIDERATIONS

Access Location

The site access centerline is now located approximately 250' north of the centerline of the I-684 Exit 6A Northbound Off Ramp. This location was chosen to maximize sight distance for entering and exiting vehicles and the driveway includes appropriate radii to accommodate entering and exiting vehicles. As part of the Highway Work Permit Review, curbing and shoulder/pavement improvements will be finalized with NYSDOT.

Potential Impacts during Constructions

During construction, as required as part of the NYSDOT Highway Work Permits, a Maintenance and Protection of Traffic Plan will be prepared to ensure than any impacts to the adjacent state highway are minimized during construction. These plans include appropriate signing, and limits of hours of any work within the State R.O.W. associated with the project and also maintenance of the construction entrance to the site all in accordance with state standards and requirements. The details will be finalized as part of the Highway Work Permit.

Public Transportation

Information regarding available public transportation in the area including the Goldens Bridge metro-North service was compiled and is attached in Appendix. Note that there is no existing Bee-Line route along Route 22 in this vicinity.

Potential Shoulder Modification

Potential shoulder improvements along NYS Route 22 as well as provisions for bicycles and pedestrians are under the purview of the NYSDOT and their requirements for the project will be fulfilled as part of the Highway Work Permit process.

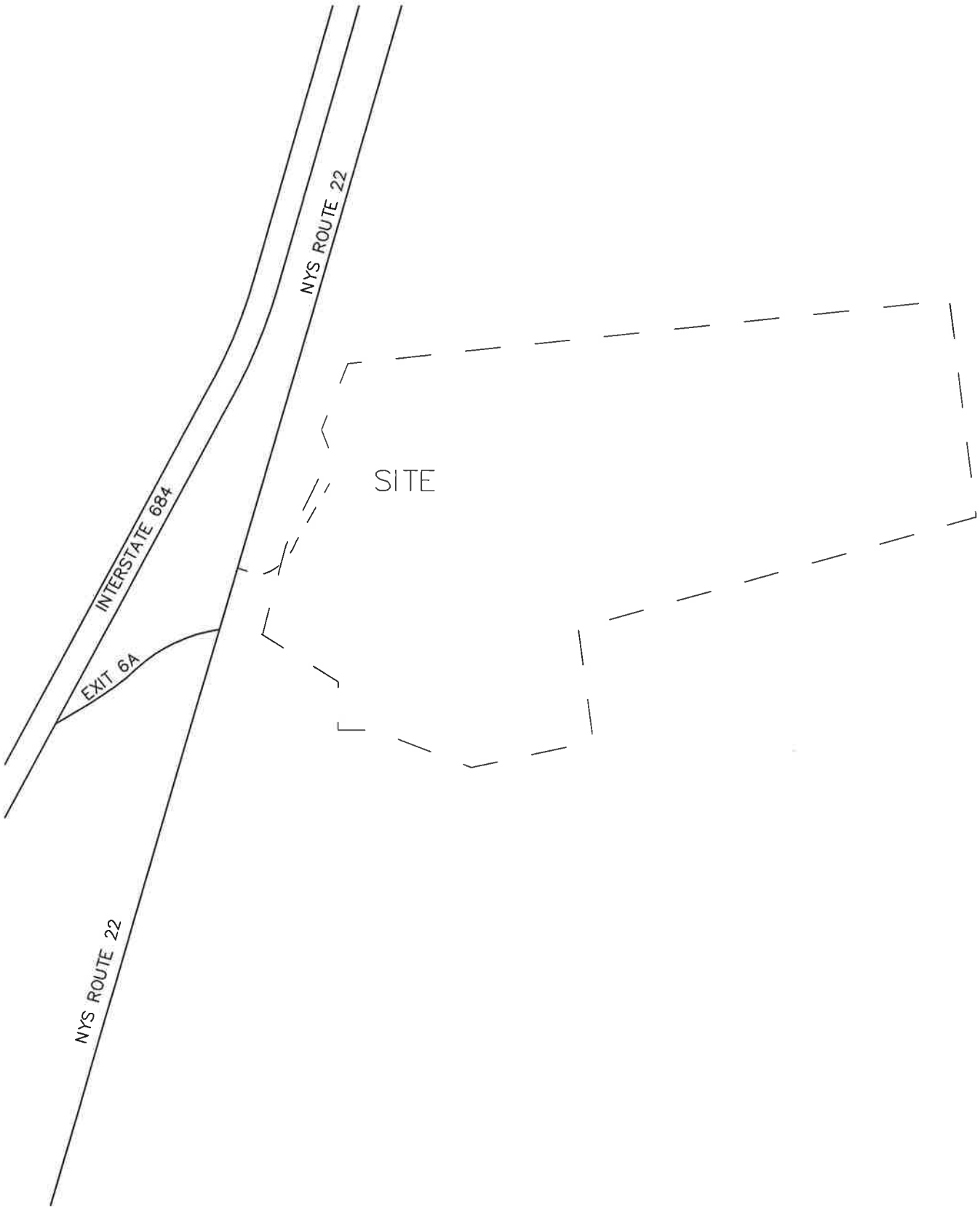
IV. SUMMARY AND CONCLUSION

The results of the capacity analysis indicated the proposed residential development will not significantly change the overall Levels of Service at each of the key locations. The intersection of I-684 and Route 22 will continue to experience operating problems during peak periods and should continue to be monitored in the future for a possible traffic signal. A Highway Work Permit will be required from the NYSDOT for the proposed access.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX A

FIGURES



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WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

SITE LOCATION MAP

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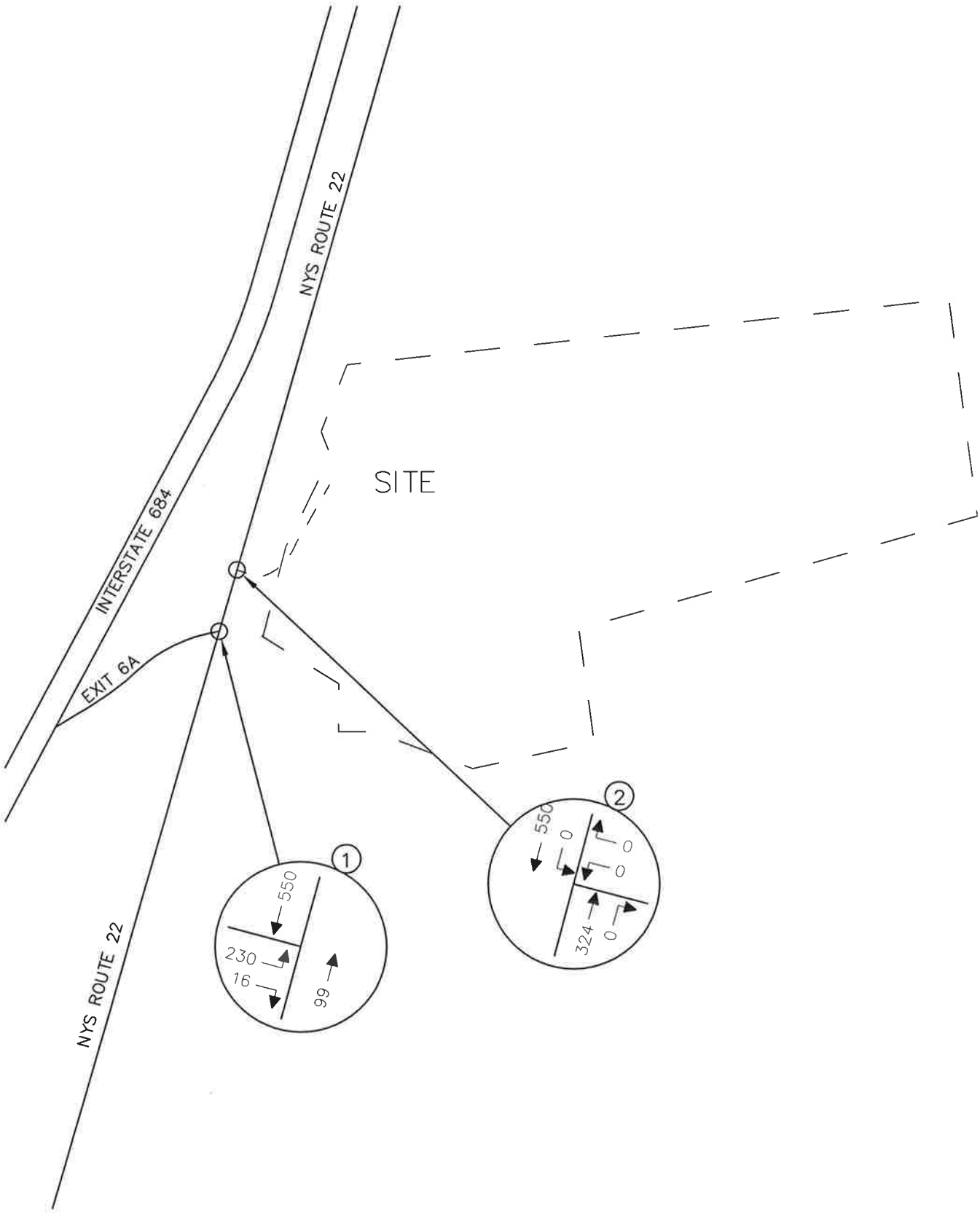
15002398A	JAN. 2016
FIGURE NUMBER:	
1	



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WBP AFFH MULTI-FAMILY DEVELOPMENT
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2015 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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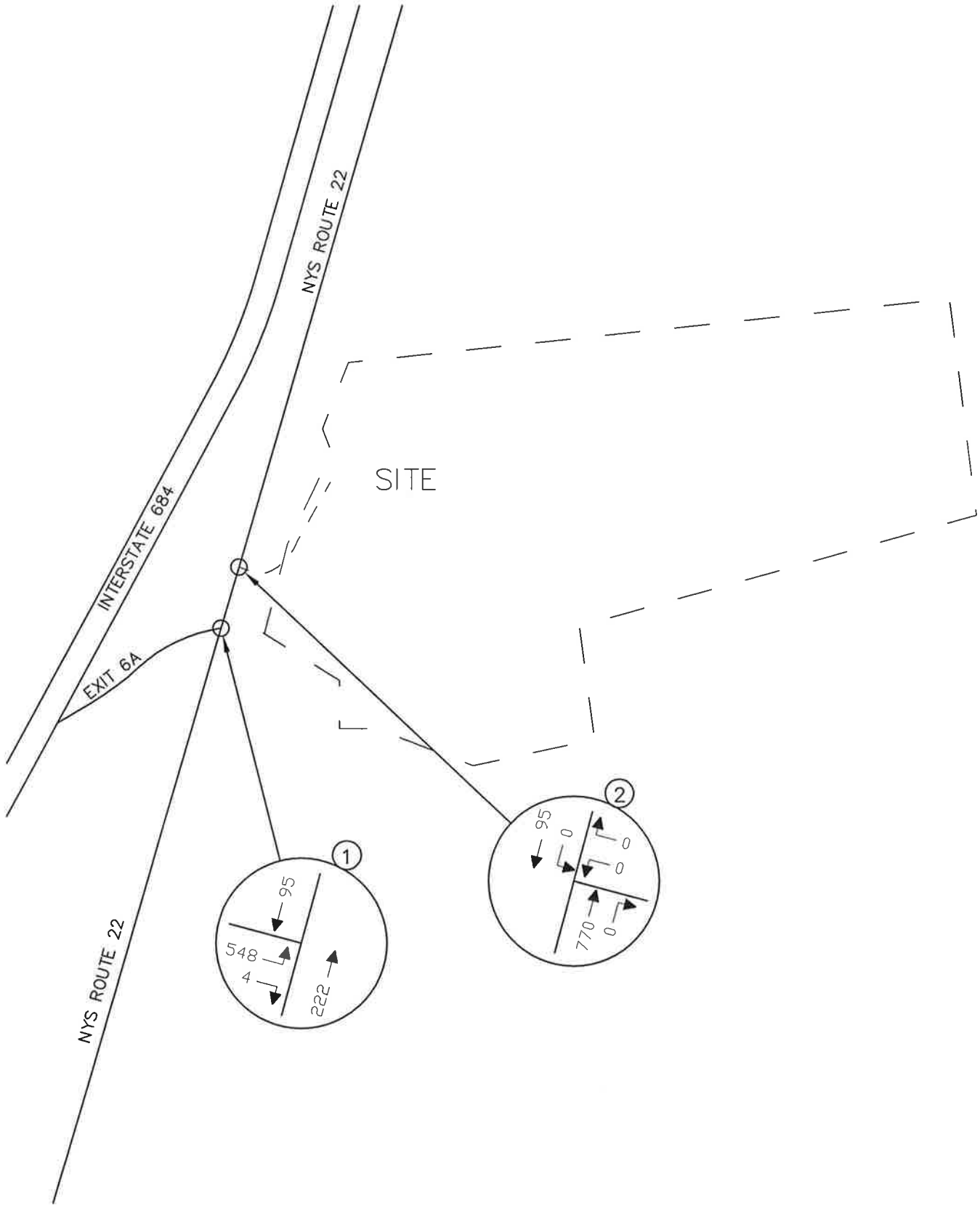

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2015 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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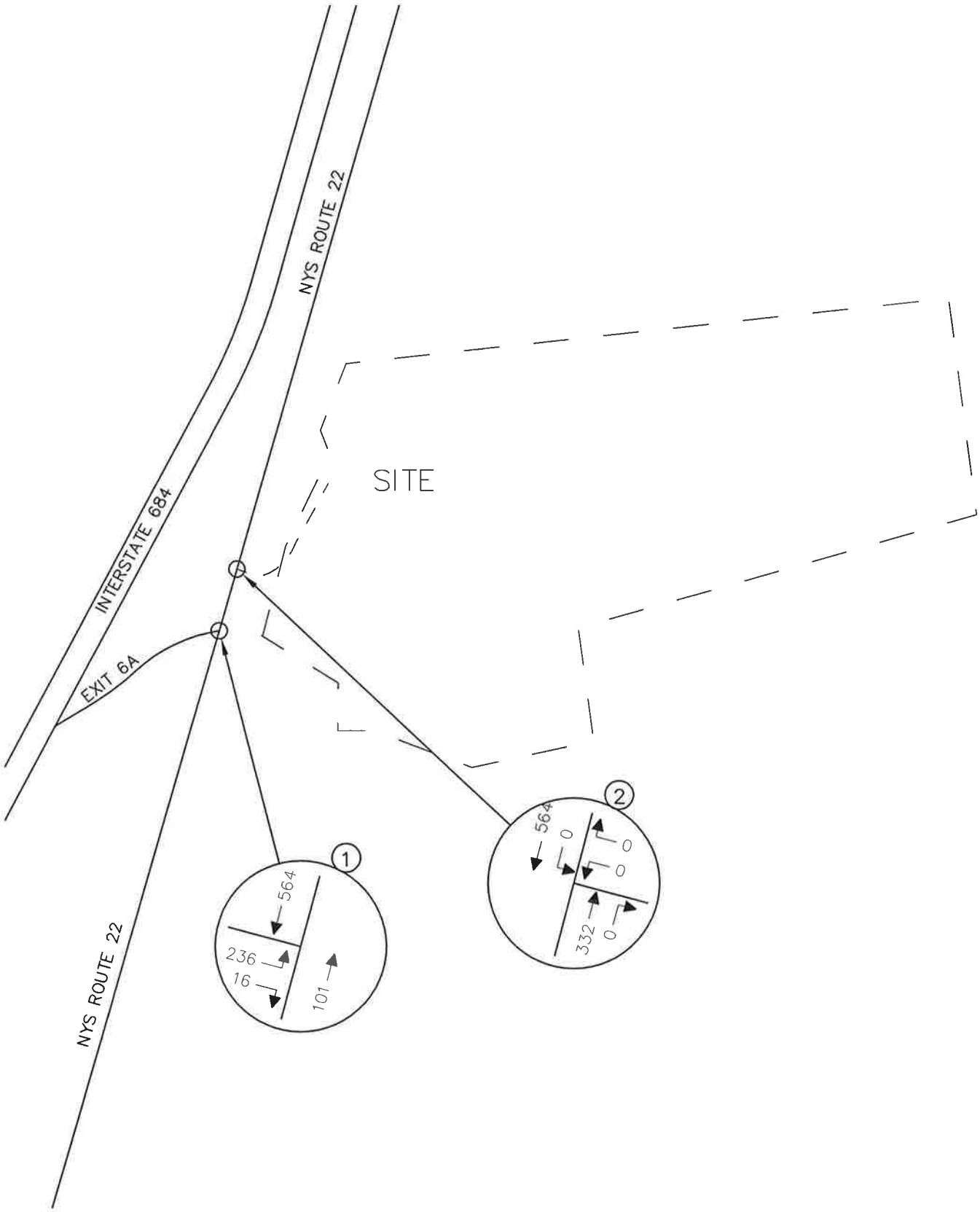

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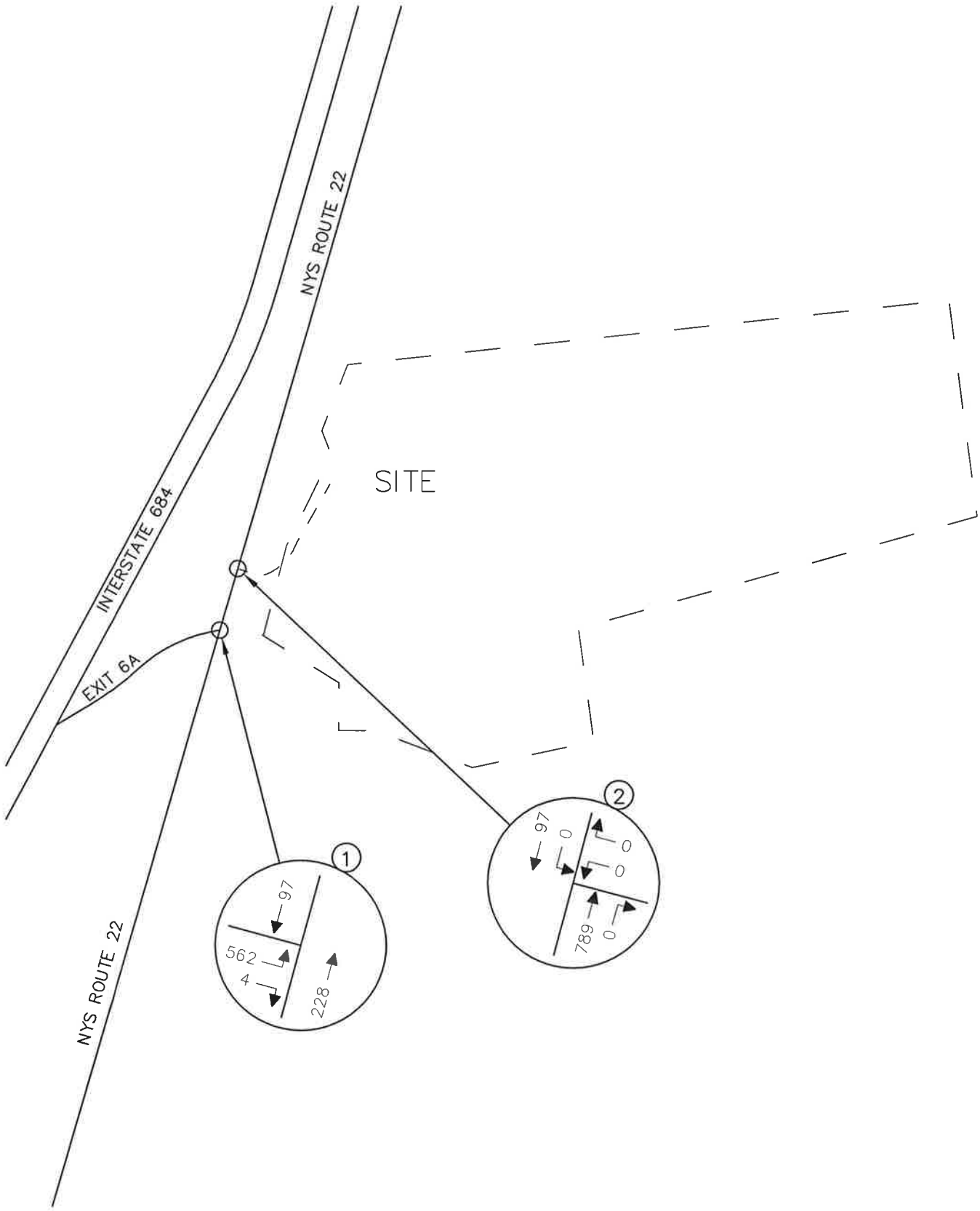
TOWN OF LEWISBORO, NY

2020 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
4	



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2020 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
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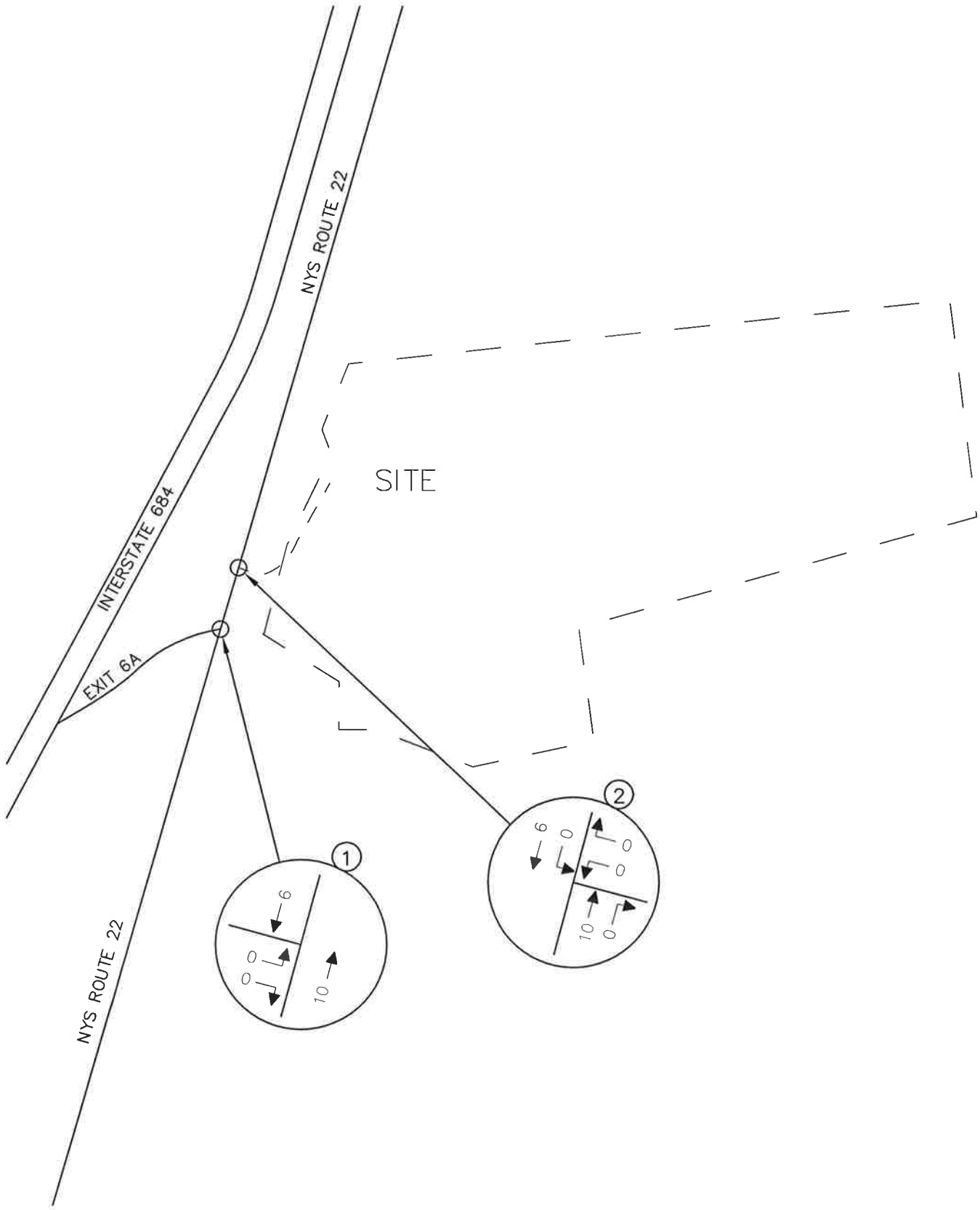

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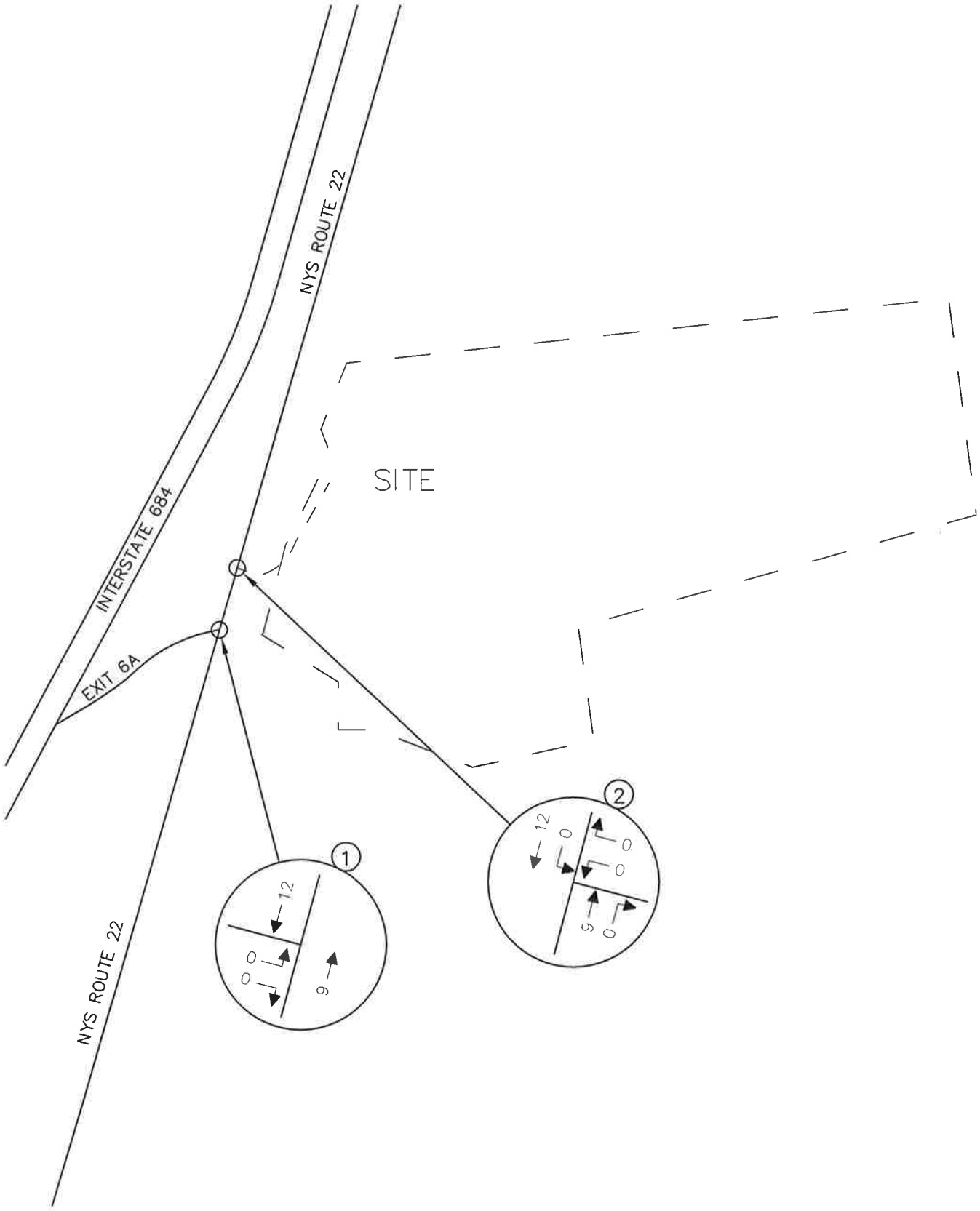
TOWN OF LEWISBORO, NY

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
6	



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OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
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FIGURE NUMBER:	
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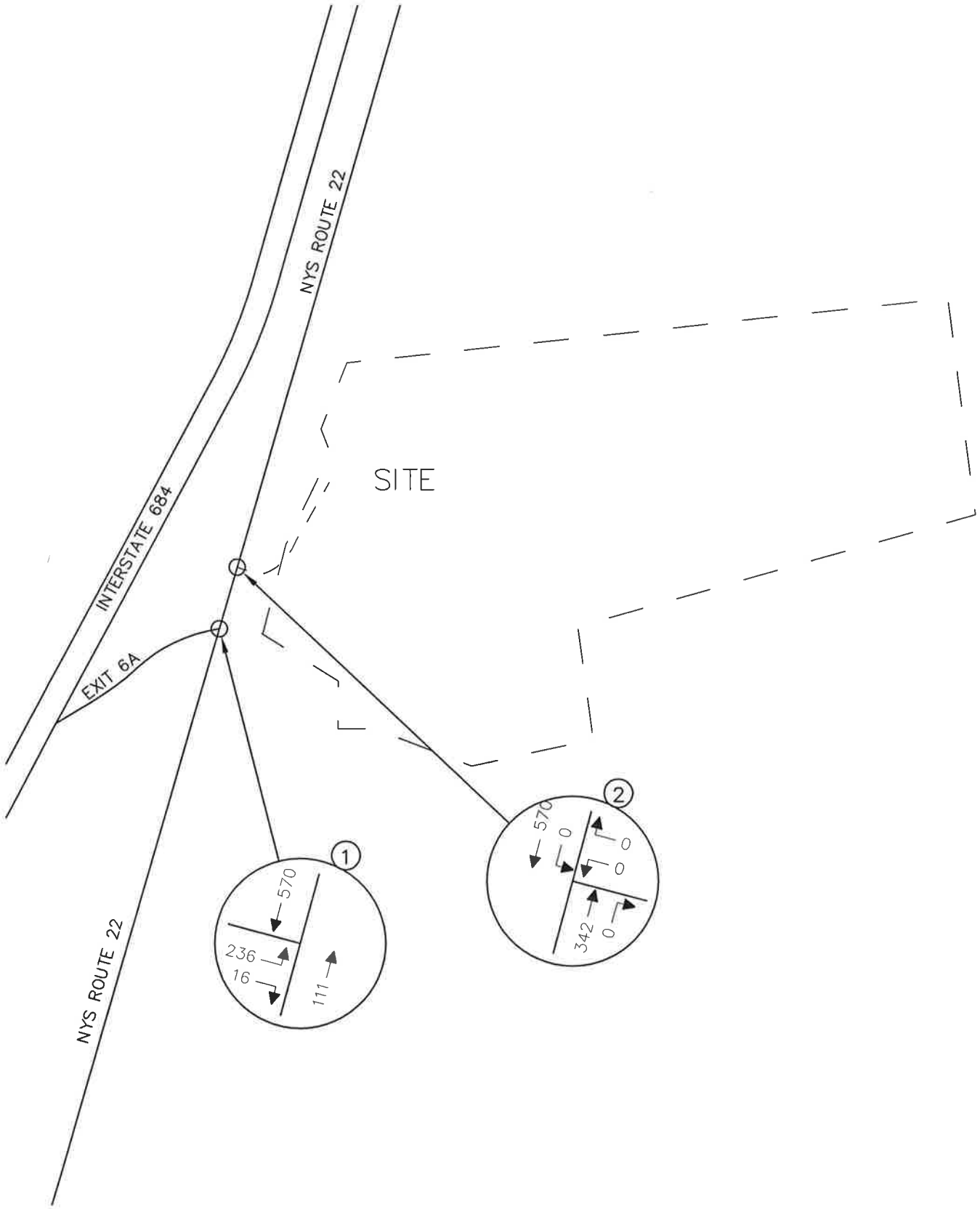

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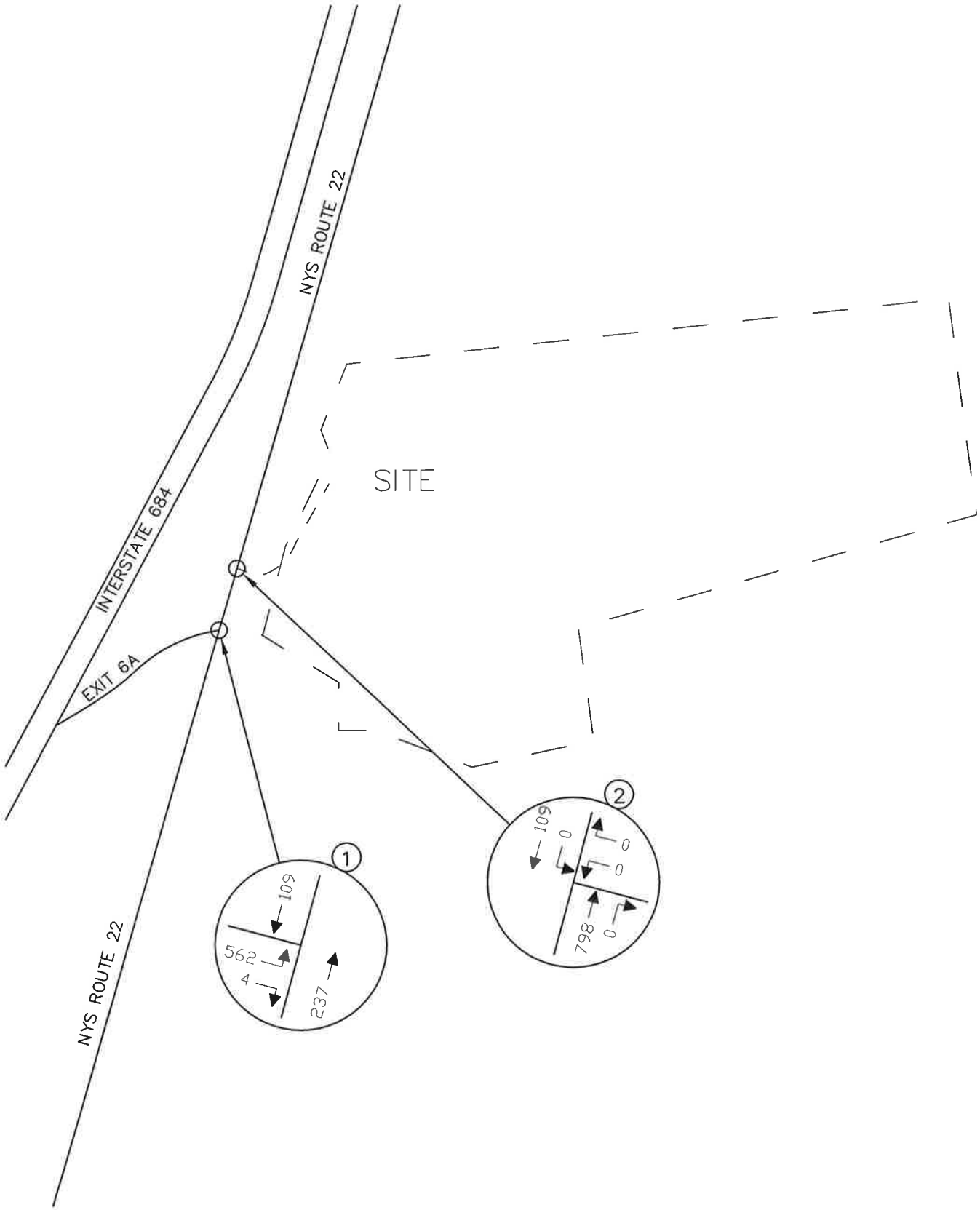
TOWN OF LEWISBORO, NY

2020 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
8	



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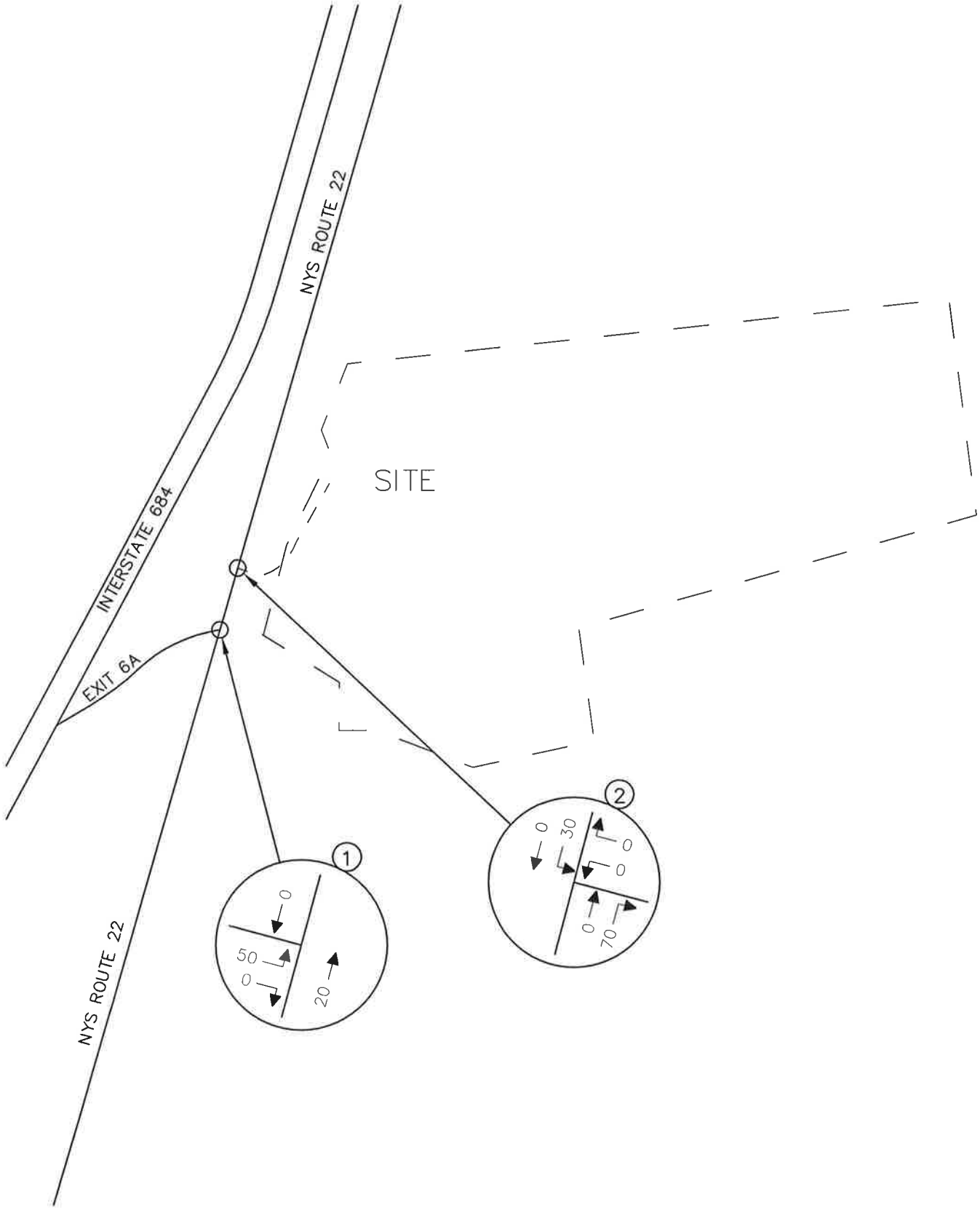
TOWN OF LEWISBORO, NY

2020 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
9	



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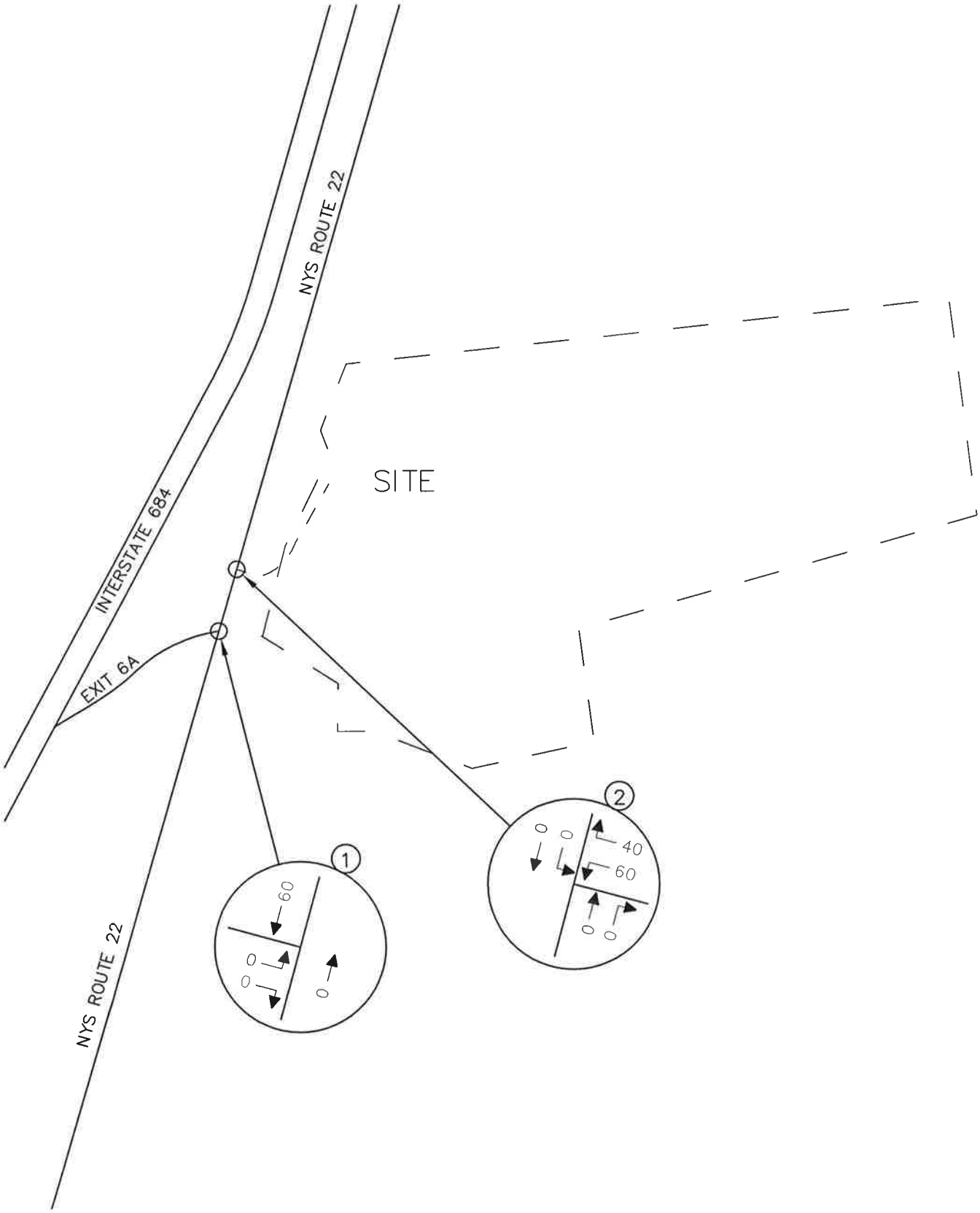
ARRIVAL DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
10	



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TOWN OF LEWISBORO, NY

DEPARTURE DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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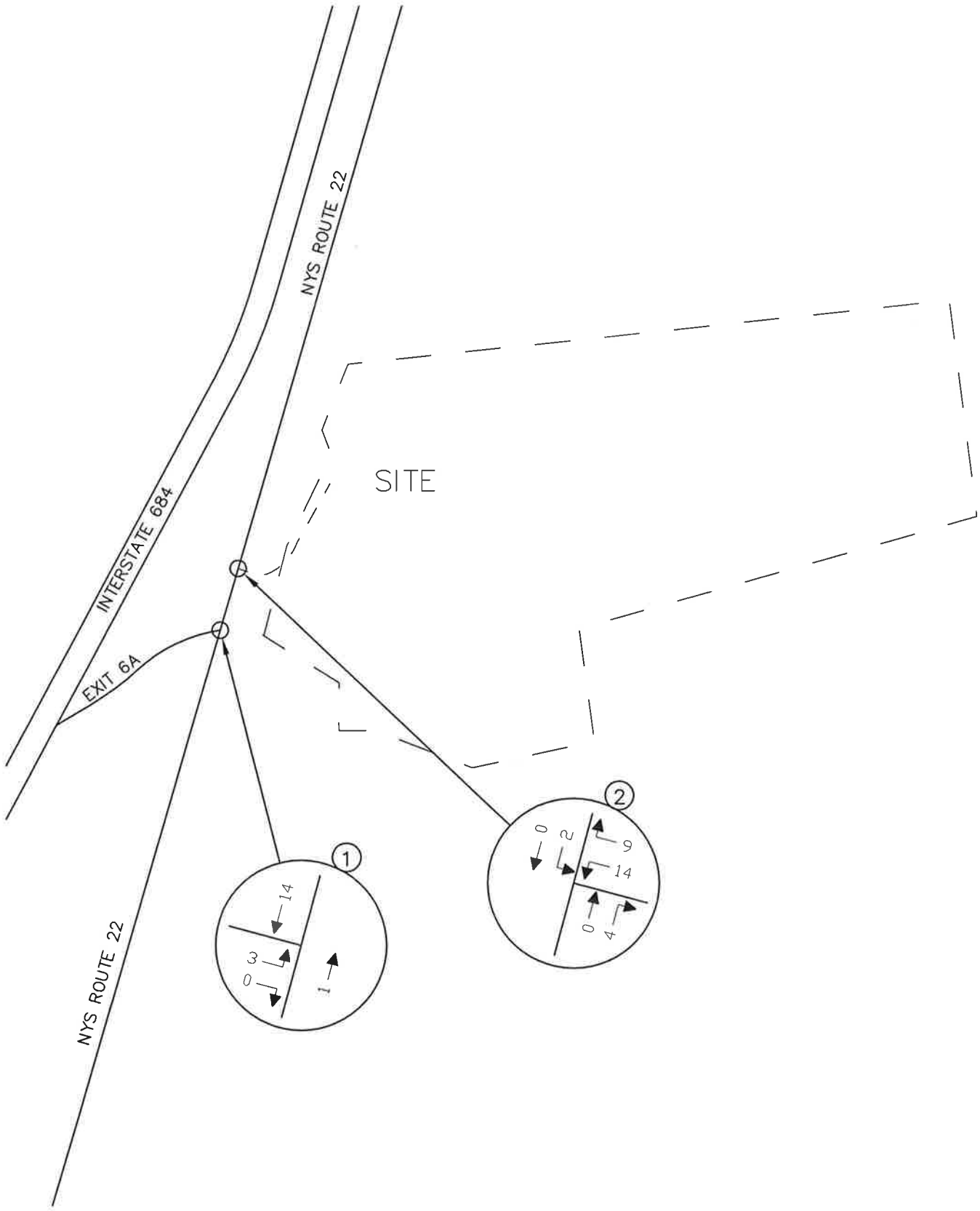

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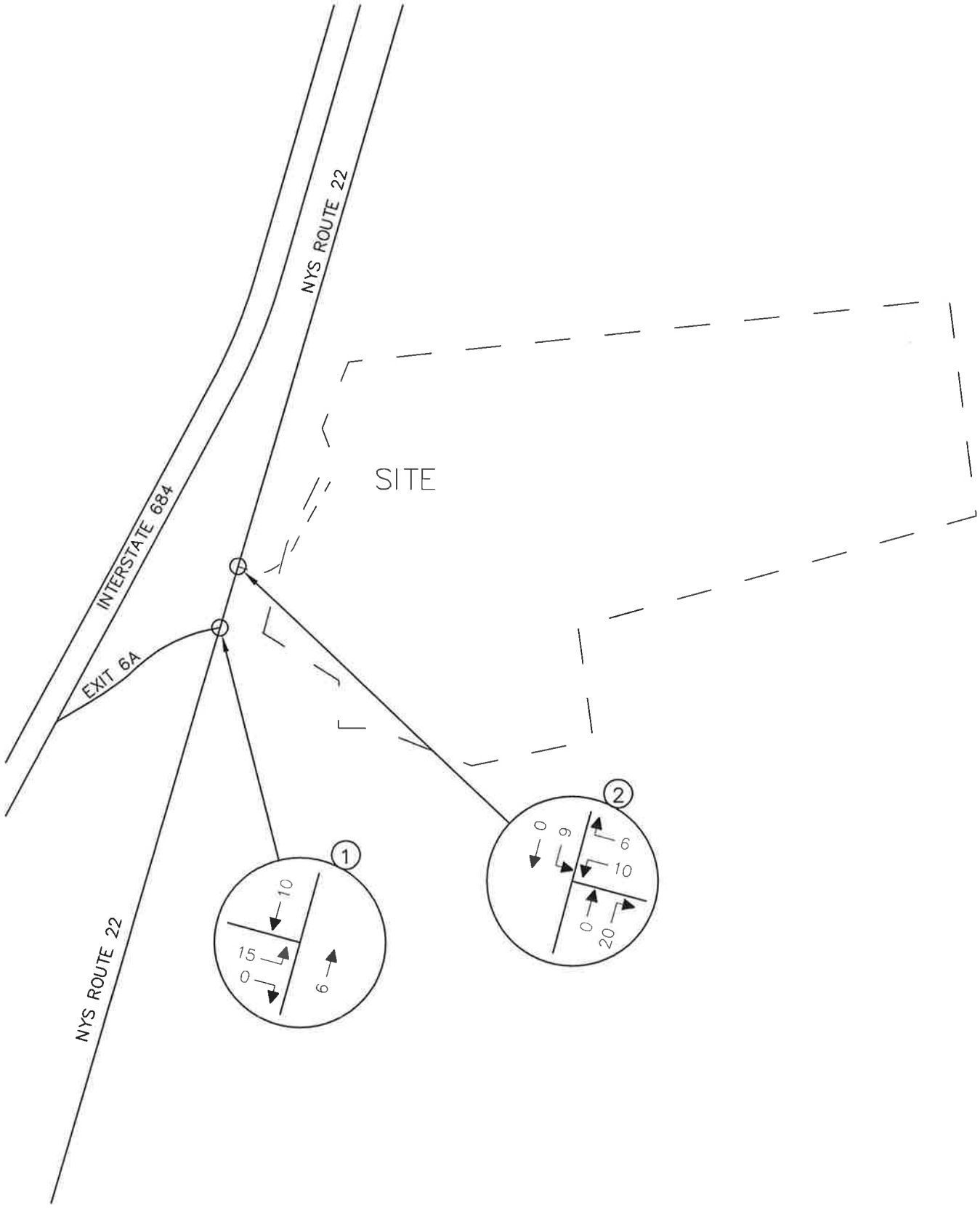
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
12	



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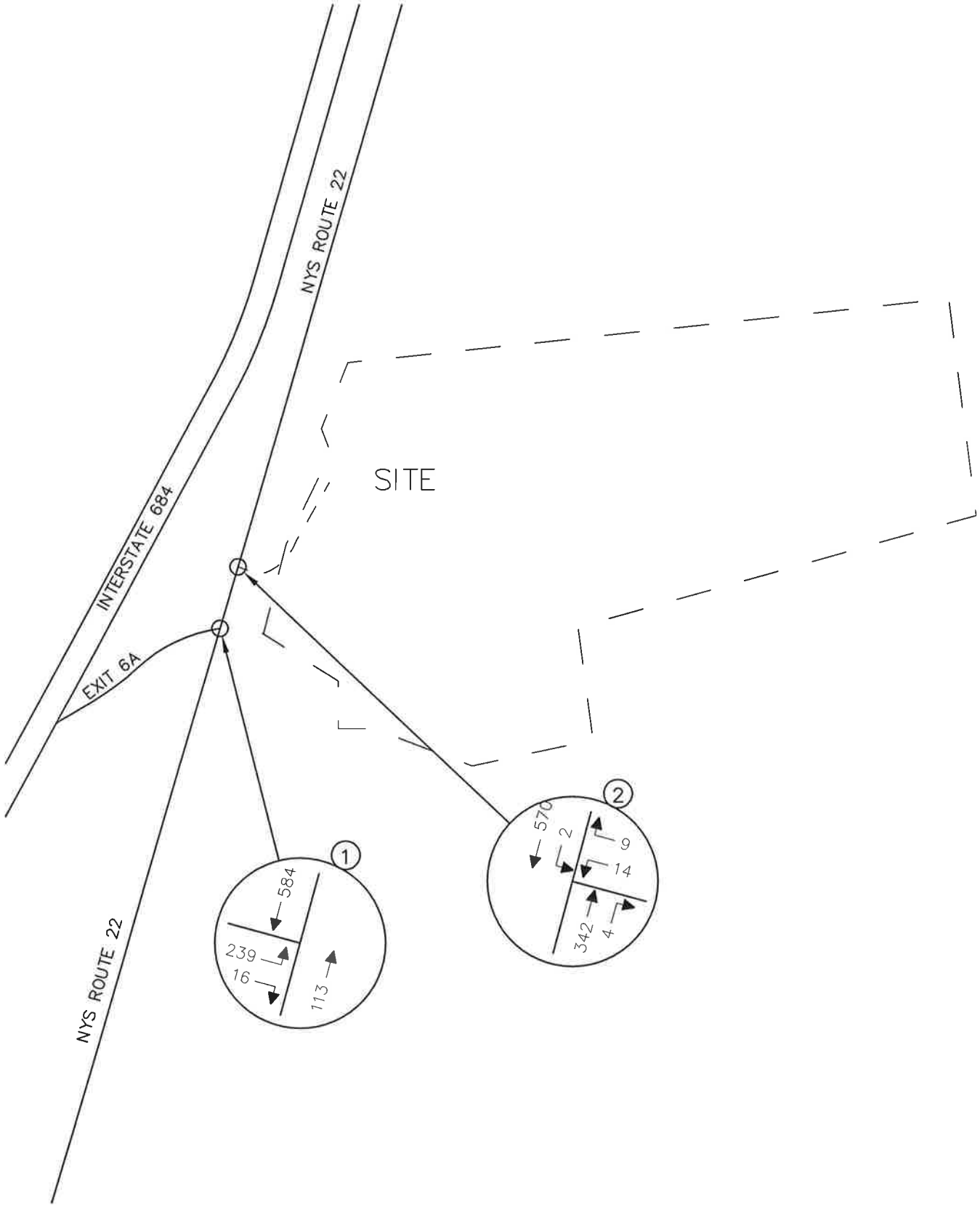
SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
13	



NOTE: LINE DIAGRAM NOT TO SCALE

MASER CONSULTING P.A.
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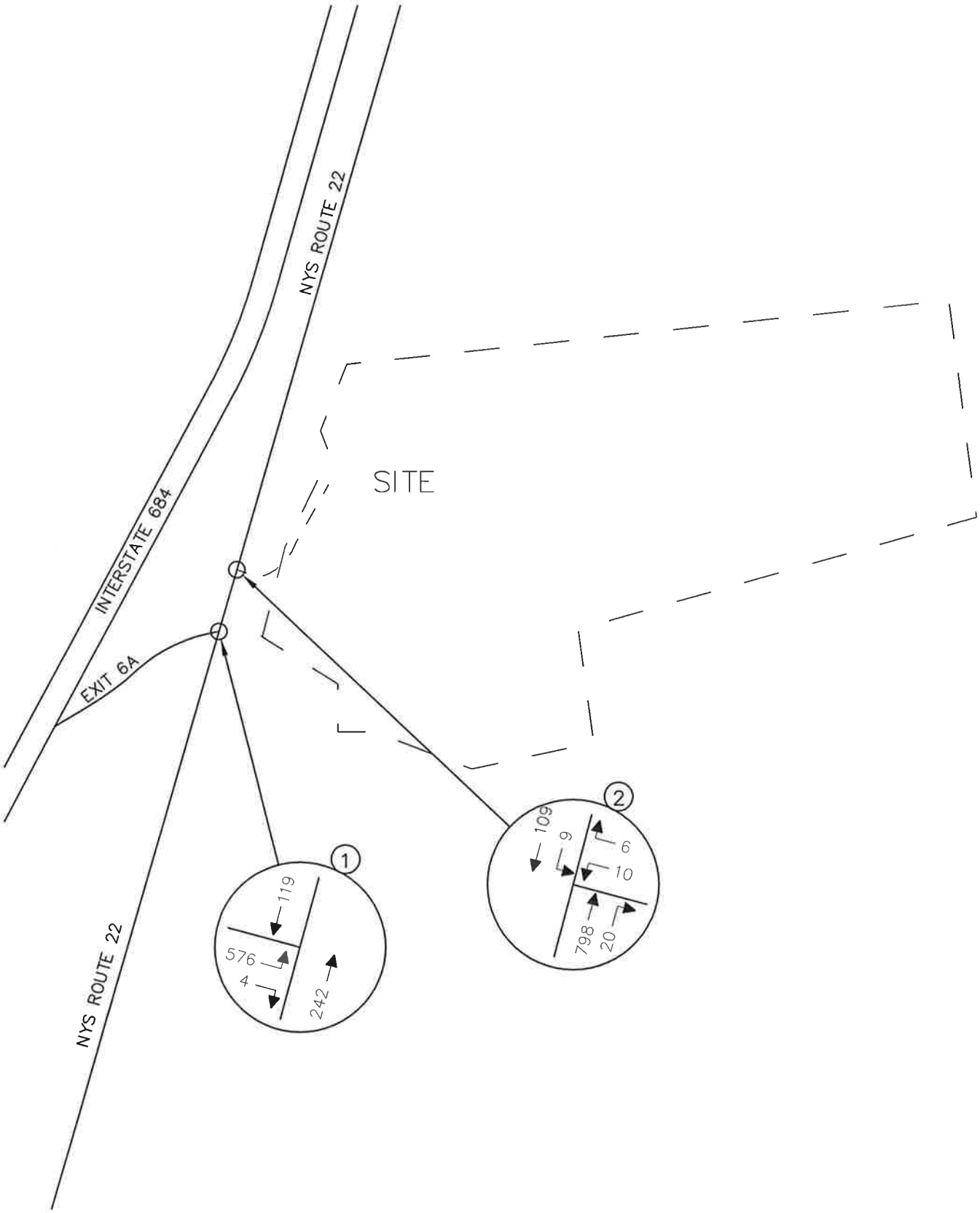
WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

2020 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
14	



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TOWN OF LEWISBORO, NY

2020 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
15	

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX B

TABLES

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

WBP AFFH MULTI-FAMILY DEVELOPMENT TOWN OF LEWISBORO, NEW YORK	ENTRY		EXIT	
	HTGR[1]	VOLUME	HTGR[1]	VOLUME
MULTI-FAMILY (46 DWELLING UNITS)				
PEAK AM HOUR	0.11	5	0.45	21
PEAK PM HOUR	0.59	28	0.32	15
SATURDAY PEAK HOUR	0.40	19	0.40	19

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 9TH EDITION, 2012. ITE LAND USE CODE - 220 - APARTMENT.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE

			2015 EXISTING		2020 NO-BUILD		2020 BUILD	
			AM	PM	AM	PM	AM	PM
1	NYS ROUTE 22 &	**UNSIGNALIZED**						
	I-684 NB OFF RAMP (EXIT 6A)	EB	F[62.6]	F[160.1]	F[81.1]	F[206.4]	F[91.9]	F[242.2]
	WITH SIGNALIZATION	EB	-	-	-	-	B[15.4]	B[11.4]
		NB	-	-	-	-	A[5.0]	B[14.7]
		SB	-	-	-	-	A[8.0]	B[12.1]
		OVERALL	-	-	-	-	**A[9.7]**	**B[12.3]**
2	NYS ROUTE 22 &	**UNSIGNALIZED**						
	SITE ACCESS DRIVEWAY	WB	-	-	-	-	C[17.8]	C[22.1]
		SB	-	-	-	-	A[8.1]	B[10.5]
3	NORTH STREET &	**SIGNALIZED**						
	NYS ROUTE 138	EB	A[4.4]	A[9.8]	A[4.5]	B[10.1]	A[4.5]	B[10.3]
		EN	B[15.5]	B[10.8]	B[16.2]	B[11.0]	B[16.6]	B[11.4]
		NB	B[15.5]	A[8.8]	B[15.8]	A[9.0]	B[15.7]	A[9.2]
		OVERALL	**B[13.7]**	**A[9.4]**	**B[14.2]**	**A[9.7]**	**B[14.3]**	**A[9.9]**
4	NORTH STREET	**UNSIGNALIZED**						
	NYS ROUTE 22	WB	D[33.9]	B[13.2]	E[47.4]	B[14.1]	E[49.4]	B[14.3]
		SB	A[8.5]	A[9.8]	A[8.6]	B[10.0]	A[8.7]	B[10.1]

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS.

2) SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

TABLE NO. 3

SIGHT DISTANCE SUMMARY TABLE FOR PROPOSED ACCESS

Location	Sight Line	Provided Sight Distance[1]	AASHTO Sight Distances[2]	
			Stopping Sight Distance	Intersection Sight Distance
SITE ACCESS	Looking Left	1422	495	610
	Looking Right	558	495	610
	Looking Right (3)	1203	495	610
	Left Turn Entry	1422	495	445
	Rear End	1203	495	495

NOTES:

1) Provided Sight Distances based on field measurements conducted by Maser Consulting, P.A. on December 3, 2015.

2) AASHTO Sight Distances based on data provided in the Geometric Design of Highways and Streets, 6th Edition dated 2011. Sight distances are based on the Posted Speed Limit of 55 MPH on NYS Route 22.

3) With completion of clearing and grading.

TABLE NO. 3A

SUMMARY OF EXISTING AND FUTURE TRAFFIC VOLUMES - AM PEAK HOUR

		2015 EXISTING	2020 NO-BUILD	SITE GENERATED TRAFFIC VOLUMES	2020 BUILD	% INCREASE NO-BUILD TO BUILD
1	NYS ROUTE 22 & I-684 NB OFF RAMP (EXIT 6A)	895	933	18	951	1.9%
2	NYS ROUTE 22 & SITE ACCESS DRIVEWAY	874	912	29	941	3.2%
3	NORTH STREET & NYS ROUTE 138	1390	1480	5	1485	0.3%
4	NORTH STREET & NYS ROUTE 22	1136	1214	11	1225	0.9%

TABLE NO. 3B

SUMMARY OF EXISTING AND FUTURE TRAFFIC VOLUMES - PM PEAK HOUR

		2015 EXISTING	2020 NO-BUILD	SITE GENERATED TRAFFIC VOLUMES	2020 BUILD	% INCREASE NO-BUILD TO BUILD
1	NYS ROUTE 22 & I-684 NB OFF RAMP (EXIT 6A)	869	912	31	943	3.4%
2	NYS ROUTE 22 & SITE ACCESS DRIVEWAY	865	907	45	952	5.0%
3	NORTH STREET & NYS ROUTE 138	1131	1227	8	1235	0.7%
4	NORTH STREET & NYS ROUTE 22	941	1025	15	1040	1.5%

TABLE NO. A

NYS Route 22 - Town of Lewisboro, Westchester County, New York

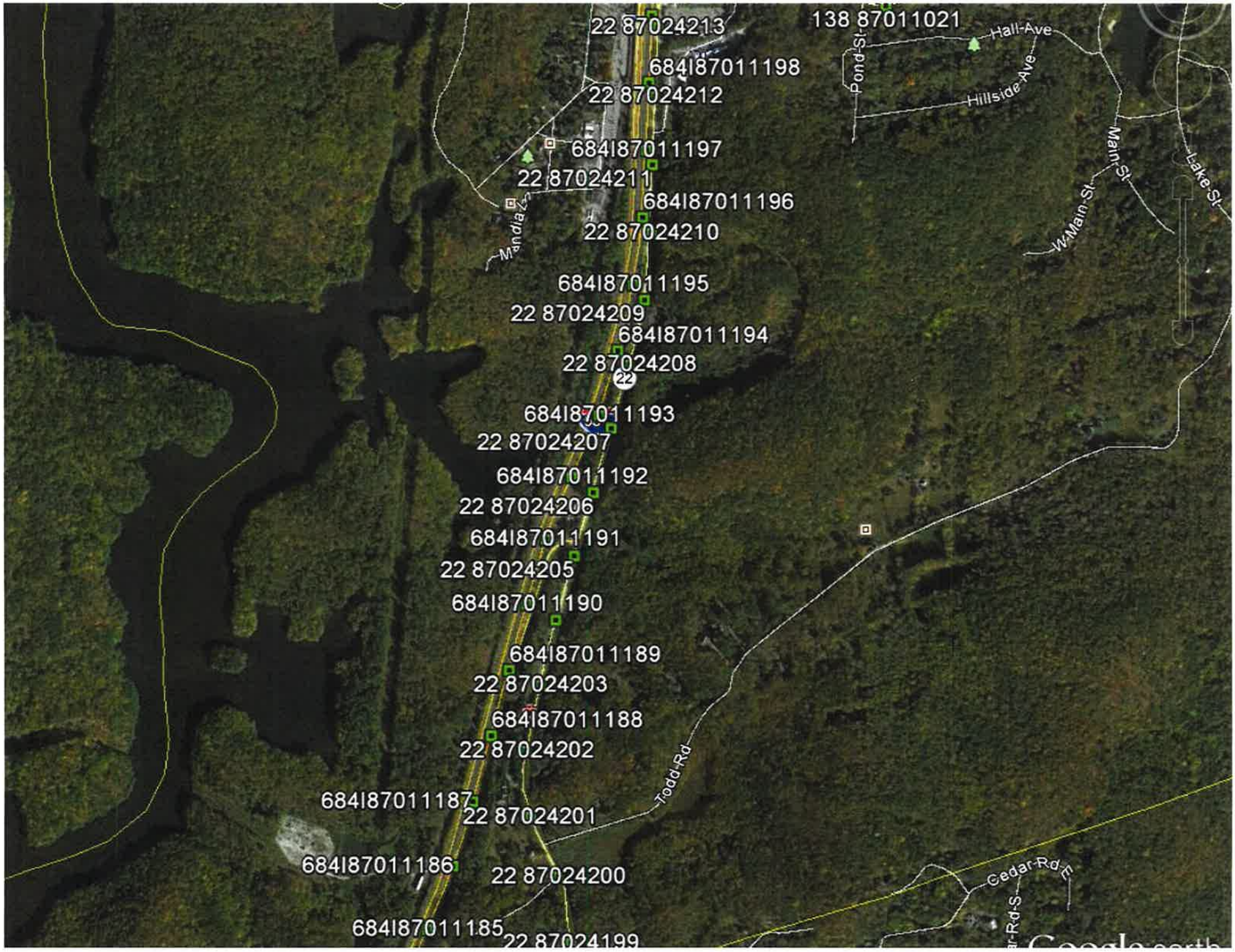
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
22 8702 4199	Non-Intersection Accidents	12/01/14	8:23 PM	None	PDO	1-0	Dark-Road Unlighted	Wet	Rain	Other	Animal's Action
22 8702 4199	Duffys Bridge Road	04/04/11	3:30 PM	Flashing Signal	PDO	2-0	Daylight	Dry	Clear	Rear End	Unknown
22 8702 4201	Non-Intersection Accidents	12/27/10	1:41 AM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Pavement Slippery
22 8702 4201	Non-Intersection Accidents	03/05/13	11:29 PM	No Passing Zone	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Animal's Action
22 8702 4201	Non-Intersection Accidents	03/27/13	2:31 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4201	Non-Intersection Accidents	01/10/14	11:00 PM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Sleet	Other	Pavement Slippery
22 8702 4202	Non-Intersection Accidents	06/27/12	7:45 AM	None	PDO	1-0	Daylight	Dry	Clear	Other	N/A
22 8702 4202	Non-Intersection Accidents	08/24/12	1:00 PM	None	PDO & I	2-1	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4202	Non-Intersection Accidents	03/20/15	6:38 PM	No Passing Zone	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4203	Non-Intersection Accidents	08/13/11	3:00 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	11/21/12	5:00 PM	No Passing Zone	PDO	1-0	Dusk	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	02/09/15	6:40 PM	None	PDO	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4204	Non-Intersection Accidents	02/08/13	1:08 PM	None	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4205	Non-Intersection Accidents	03/02/11	9:00 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way, Turning Improper
22 8702 4205	Non-Intersection Accidents	07/19/13	5:00 PM	Stop Sign	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4205	Non-Intersection Accidents	05/22/14	3:10 PM	None	PDO	2-0	Daylight	Wet	Rain	Left Turn	Turning Improper
22 8702 4205	Non-Intersection Accidents	12/01/14	8:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield ROW,Traffic Control devices Disregarded
22 8702 4205	Non-Intersection Accidents	08/09/15	4:19 AM	Stop Sign	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Unsafe Speed
22 8702 4206	Non-Intersection Accidents	05/17/13	10:00 AM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Overtaking	Turning Improper, Failure to Yield Right of Way
22 8702 4208	Non-Intersection Accidents	08/13/11	2:40 AM	None	PDO & I	1-1	Dark-Road Unlighted	Dry	Clear	Other	Driver Inattention
22 8702 4211	Intersection Accidents	09/09/11	3:10 PM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Right Turn	Failure to Yield Right of Way
22 8702 4211	Intersection Accidents	05/01/12	6:06 PM	None	PDO & I	2-1	Daylight	Dry	Cloudy	Rear End	Following too Closely
22 8702 4212	Non-Intersection Accidents	07/17/11	7:13 AM	None	PDO	1-0	Dawn	Dry	Cloudy	Other	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/24/11	10:15 AM	None	PDO	1-0	Daylight	Wet	Cloudy	Other	Pavement Slippery, Unsafe Speed
22 8702 4213	Non-Intersection Accidents	08/23/11	1:00 PM	None	PDO	2-0	Daylight	Dry	Clear	Sideswipe	Backing Unsafely
22 8702 4213	Non-Intersection Accidents	03/02/12	7:20 PM	Stop Sign	PDO	2-0	Dark-Road Lighted	Dry	Clear	Right Angle	Unknown
22 8702 4213	Non-Intersection Accidents	11/16/13	4:10 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
22 8702 4213	Non-Intersection Accidents	08/24/14	10:52 AM	No Passing Zone	PDO & I	2-2	Daylight	Dry	Cloudy	Sideswipe	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/28/15	8:12 AM	Stop Sign	PDO & I	2-1	Daylight	Dry	Fog/Smog	Left Turn	Failure to Yield Right of Way

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) I-684 NORTHBOUND RAMP INTERSECTION IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE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138 87011021
Hall Ave
Pond St
684I87011198
22 87024212
Hillside Ave
684I87011197
22 87024211
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22 87024210
Mandia Ln
Main St
W Main St
Lake St
684I87011195
22 87024209
684I87011194
22 87024208
22
684I87011193
22 87024207
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22 87024206
684I87011191
22 87024205
684I87011190
684I87011189
22 87024203
684I87011188
22 87024202
Todd Rd
684I87011187
22 87024201
684I87011186
22 87024200
Cedar Rd E
684I87011185
22 87024199

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX C

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 18-4

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

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

LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 19-1

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

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 for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 20-2

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX D

CAPACITY ANALYSIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	230	16	0	99	550	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991					
Flt Protected	0.955					
Satd. Flow (prot)	1725	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1725	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	261	18	0	113	625	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	279	0	0	112	625	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	17.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	230	16	0	99	550	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	261	18	0	112	625	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	738	625	625	0	-	0
Stage 1	625	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	310	440	942	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	440	942	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	62.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	942	-	316	-	-
HCM Lane V/C Ratio	-	-	0.885	-	-
HCM Control Delay (s)	0	-	62.6	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	8.2	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	548	4	0	222	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	685	5	0	278	119	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	690	0	0	278	119	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	101.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	548	4	0	222	95	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	685	5	0	278	119	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	397	119	119	0	-	0
Stage 1	119	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 540	909	1451	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 540	909	1451	-	-	-
Mov Cap-2 Maneuver	~ 540	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	705	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	160.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1451	-	542	-	-
HCM Lane V/C Ratio	-	-	1.273	-	-
HCM Control Delay (s)	0	-	160.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	27.8	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	236	16	0	111	570	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	268	18	0	126	648	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	0	0	126	648	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	21.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	236	16	0	111	570	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	268	18	0	126	648	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	774	648	648	0	-	0
Stage 1	648	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	292	425	924	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	425	924	-	-	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	81.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	924	-	298	-	-
HCM Lane V/C Ratio	-	-	0.961	-	-
HCM Control Delay (s)	0	-	81.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	9.7	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	562	4	0	237	109	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	703	5	0	296	136	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	707	0	0	296	136	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	128.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	562	4	0	237	109	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	702	5	0	296	136	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	432	136	136	0	-	0
Stage 1	136	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 510	888	1430	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	~ 689	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 510	888	1430	-	-	-
Mov Cap-2 Maneuver	~ 510	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	~ 689	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	206.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1430	-	512	-	-
HCM Lane V/C Ratio	-	-	1.382	-	-
HCM Control Delay (s)	0	-	206.4	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	32.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	239	16	0	113	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	272	18	0	128	664	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	128	664	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	24.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	239	16	0	113	584	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	272	18	0	128	664	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	792	664	664	0	-	0
Stage 1	664	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	284	415	911	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	415	911	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	91.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	911	-	290	-	-
HCM Lane V/C Ratio	-	-	0.999	-	-
HCM Control Delay (s)	0	-	91.9	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	10.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	14	9	342	4	2	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	11
Grade (%)	0%		6%			-7%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.948		0.998			
Flt Protected	0.970					
Satd. Flow (prot)	1664	0	1693	0	0	1810
Flt Permitted	0.970					
Satd. Flow (perm)	1664	0	1693	0	0	1810
Link Speed (mph)	30		45			45
Link Distance (ft)	119		187			1626
Travel Time (s)	2.7		2.8			24.6
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	16	10	389	5	2	648
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	394	0	0	650
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.09	1.04	0.96	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	9	342	4	2	570
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, %	0	-	6	-	-	-7
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	16	10	389	5	2	648

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1043	391	0	0	393	0
Stage 1	391	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	251	651	-	-	1149	-
Stage 1	677	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	250	651	-	-	1149	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	511	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	329	1149	-
HCM Lane V/C Ratio	-	-	0.079	0.002	-
HCM Control Delay (s)	-	-	16.9	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	576	4	0	242	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	720	5	0	303	149	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	725	0	0	302	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	149.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	576	4	0	242	119	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	720	5	0	302	149	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	452	149	149	0	-	0
Stage 1	149	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 494	872	1414	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	~ 682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 494	872	1414	-	-	-
Mov Cap-2 Maneuver	~ 494	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	~ 682	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	242.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	495	-	-
HCM Lane V/C Ratio	-	-	1.465	-	-
HCM Control Delay (s)	0	-	242.2	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	36.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	6	798	20	9	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	11
Grade (%)	0%		6%			-7%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.997			
Flt Protected	0.971					0.996
Satd. Flow (prot)	1662	0	1692	0	0	1803
Flt Permitted	0.971					0.996
Satd. Flow (perm)	1662	0	1692	0	0	1803
Link Speed (mph)	30		45			45
Link Distance (ft)	164		187			1626
Travel Time (s)	3.7		2.8			24.6
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	13	8	998	25	11	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	1023	0	0	147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.09	1.04	0.96	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	6	798	20	9	109
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, %	0	-	6	-	-	-7
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	12	8	998	25	11	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1169	1010	0	0	1023	0
Stage 1	1010	-	-	-	-	-
Stage 2	159	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	211	287	-	-	667	-
Stage 1	347	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	287	-	-	667	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.1	0	0.8
HCM LOS	C		

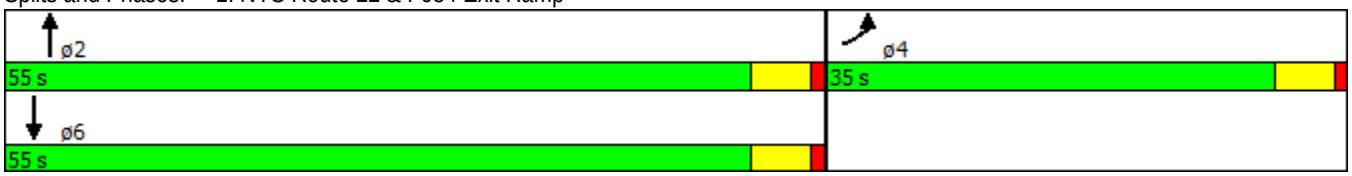
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	231	667	-
HCM Lane V/C Ratio	-	-	0.087	0.017	-
HCM Control Delay (s)	-	-	22.1	10.5	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	239	16	0	113	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	272	18	0	128	664	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	128	664	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
Turning Speed (mph)	15	9	15			9
Number of Detectors	1			2	2	
Detector Template	Left			Thru	Thru	
Leading Detector (ft)	20			100	100	
Trailing Detector (ft)	0			0	0	
Detector 1 Position(ft)	0			0	0	
Detector 1 Size(ft)	20			6	6	
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	
Detector 1 Queue (s)	0.0			0.0	0.0	
Detector 1 Delay (s)	0.0			0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases						
Detector Phase	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	
Minimum Split (s)	21.0			21.0	21.0	
Total Split (s)	35.0			55.0	55.0	
Total Split (%)	38.9%			61.1%	61.1%	
Maximum Green (s)	30.0			50.0	50.0	
Yellow Time (s)	4.0			4.0	4.0	
All-Red Time (s)	1.0			1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	
Recall Mode	None			Min	Min	
v/c Ratio	0.58			0.15	0.70	
Control Delay	22.3			7.9	15.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	22.3			7.9	15.2	
Queue Length 50th (ft)	65			17	130	
Queue Length 95th (ft)	177			51	304	
Internal Link Dist (ft)	769			909	107	
Turn Bay Length (ft)						
Base Capacity (vph)	1052			1555	1674	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.28			0.08	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 52.3	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: NYS Route 22 & I-684 Exit Ramp



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	239	16	0	113	584	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1852	0	1773	1909	0
Adj Flow Rate, veh/h	272	18	0	128	664	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	5	5	0
Cap, veh/h	364	24	0	865	931	0
Arrive On Green	0.22	0.22	0.00	0.49	0.49	0.00
Sat Flow, veh/h	1622	107	0	1773	1909	0
Grp Volume(v), veh/h	291	0	0	128	664	0
Grp Sat Flow(s),veh/h/ln	1735	0	0	1773	1909	0
Q Serve(g_s), s	5.4	0.0	0.0	1.4	9.5	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	1.4	9.5	0.0
Prop In Lane	0.93	0.06	0.00			0.00
Lane Grp Cap(c), veh/h	389	0	0	865	931	0
V/C Ratio(X)	0.75	0.00	0.00	0.15	0.71	0.00
Avail Cap(c_a), veh/h	1500	0	0	2555	2750	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	4.9	7.0	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	0.7	5.1	0.0
LnGrp Delay(d),s/veh	15.4	0.0	0.0	5.0	8.0	0.0
LnGrp LOS	B			A	A	
Approach Vol, veh/h	291			128	664	
Approach Delay, s/veh	15.4			5.0	8.0	
Approach LOS	B			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.9		12.8		21.9		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		50.0		30.0		50.0		
Max Q Clear Time (g_c+I1), s		3.4		7.4		11.5		
Green Ext Time (p_c), s		5.5		0.9		5.4		

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Notes

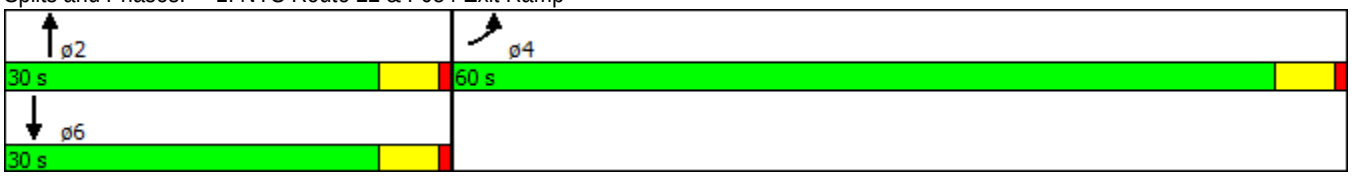
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	576	4	0	242	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	720	5	0	302	149	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	725	0	0	302	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
Turning Speed (mph)	15	9	15			9
Number of Detectors	1			2	2	
Detector Template	Left			Thru	Thru	
Leading Detector (ft)	20			100	100	
Trailing Detector (ft)	0			0	0	
Detector 1 Position(ft)	0			0	0	
Detector 1 Size(ft)	20			6	6	
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	
Detector 1 Queue (s)	0.0			0.0	0.0	
Detector 1 Delay (s)	0.0			0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases						
Detector Phase	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	
Minimum Split (s)	21.0			21.0	21.0	
Total Split (s)	60.0			30.0	30.0	
Total Split (%)	66.7%			33.3%	33.3%	
Maximum Green (s)	55.0			25.0	25.0	
Yellow Time (s)	4.0			4.0	4.0	
All-Red Time (s)	1.0			1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	
Recall Mode	None			Min	Min	
v/c Ratio	0.79			0.64	0.29	
Control Delay	18.1			27.6	21.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	18.1			27.6	21.1	
Queue Length 50th (ft)	166			86	38	
Queue Length 95th (ft)	305			193	97	
Internal Link Dist (ft)	769			909	107	
Turn Bay Length (ft)						
Base Capacity (vph)	1547			824	887	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.47			0.37	0.17	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 57.4	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: NYS Route 22 & I-684 Exit Ramp



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	576	4	0	242	119	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1852	0	1773	1909	0
Adj Flow Rate, veh/h	720	5	0	302	149	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	5	5	0
Cap, veh/h	844	6	0	458	493	0
Arrive On Green	0.49	0.49	0.00	0.26	0.26	0.00
Sat Flow, veh/h	1732	12	0	1773	1909	0
Grp Volume(v), veh/h	726	0	0	302	149	0
Grp Sat Flow(s),veh/h/ln	1746	0	0	1773	1909	0
Q Serve(g_s), s	14.3	0.0	0.0	6.0	2.5	0.0
Cycle Q Clear(g_c), s	14.3	0.0	0.0	6.0	2.5	0.0
Prop In Lane	0.99	0.01	0.00			0.00
Lane Grp Cap(c), veh/h	851	0	0	458	493	0
V/C Ratio(X)	0.85	0.00	0.00	0.66	0.30	0.00
Avail Cap(c_a), veh/h	2444	0	0	1128	1214	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	13.0	11.7	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	0.0	3.1	1.3	0.0
LnGrp Delay(d),s/veh	11.4	0.0	0.0	14.7	12.1	0.0
LnGrp LOS	B			B	B	
Approach Vol, veh/h	726			302	149	
Approach Delay, s/veh	11.4			14.7	12.1	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		15.1		24.2		15.1		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		25.0		55.0		25.0		
Max Q Clear Time (g_c+I1), s		8.0		16.3		4.5		
Green Ext Time (p_c), s		2.2		2.8		2.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX E

ACCIDENT DATA

TABLE NO. A

NYS Route 22 - Town of Lewisboro, Westchester County, New York

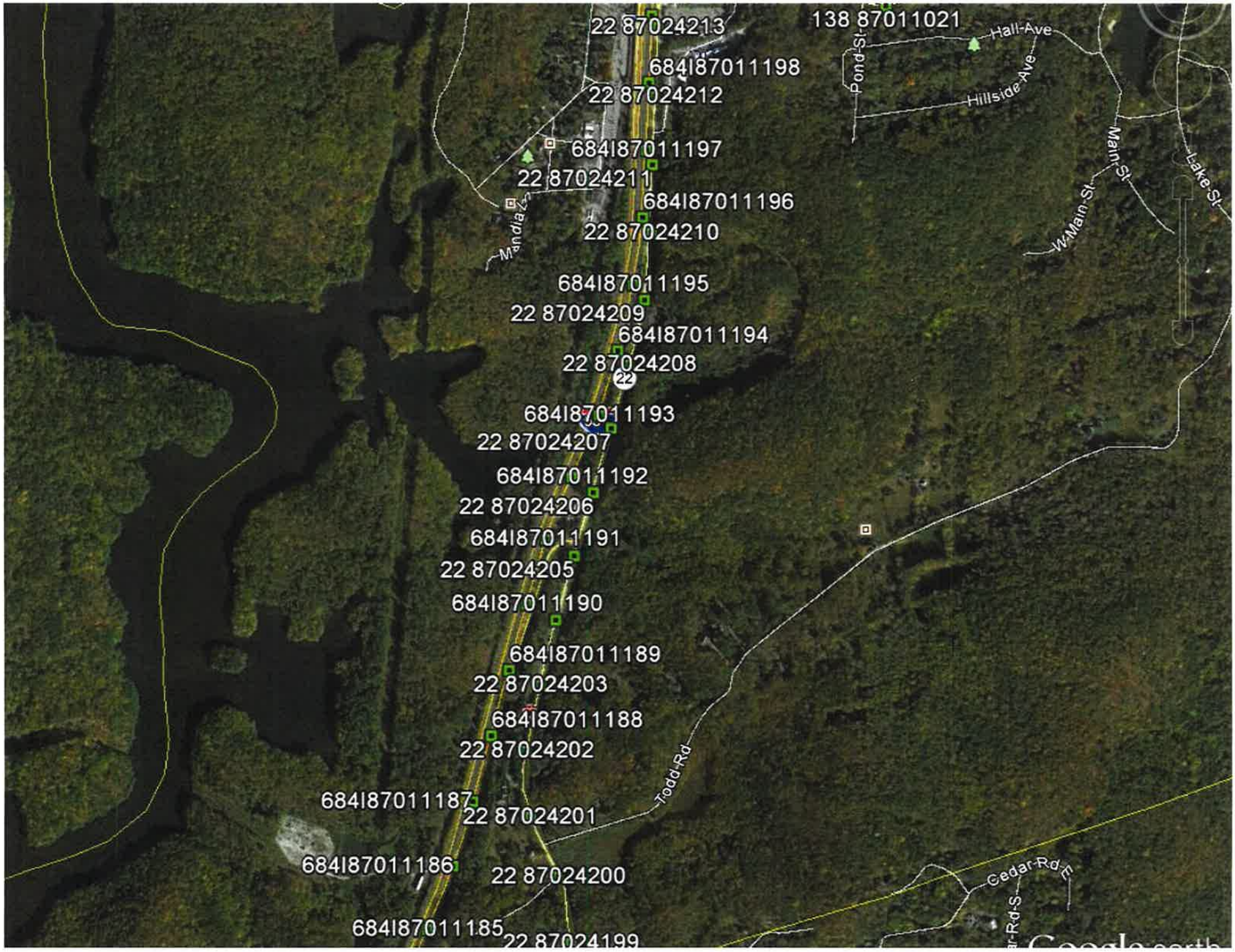
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
22 8702 4199	Non-Intersection Accidents	12/01/14	8:23 PM	None	PDO	1-0	Dark-Road Unlighted	Wet	Rain	Other	Animal's Action
22 8702 4199	Duffys Bridge Road	04/04/11	3:30 PM	Flashing Signal	PDO	2-0	Daylight	Dry	Clear	Rear End	Unknown
22 8702 4201	Non-Intersection Accidents	12/27/10	1:41 AM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Pavement Slippery
22 8702 4201	Non-Intersection Accidents	03/05/13	11:29 PM	No Passing Zone	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Animal's Action
22 8702 4201	Non-Intersection Accidents	03/27/13	2:31 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4201	Non-Intersection Accidents	01/10/14	11:00 PM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Sleet	Other	Pavement Slippery
22 8702 4202	Non-Intersection Accidents	06/27/12	7:45 AM	None	PDO	1-0	Daylight	Dry	Clear	Other	N/A
22 8702 4202	Non-Intersection Accidents	08/24/12	1:00 PM	None	PDO & I	2-1	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4202	Non-Intersection Accidents	03/20/15	6:38 PM	No Passing Zone	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4203	Non-Intersection Accidents	08/13/11	3:00 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	11/21/12	5:00 PM	No Passing Zone	PDO	1-0	Dusk	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	02/09/15	6:40 PM	None	PDO	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4204	Non-Intersection Accidents	02/08/13	1:08 PM	None	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4205	Non-Intersection Accidents	03/02/11	9:00 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way, Turning Improper
22 8702 4205	Non-Intersection Accidents	07/19/13	5:00 PM	Stop Sign	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4205	Non-Intersection Accidents	05/22/14	3:10 PM	None	PDO	2-0	Daylight	Wet	Rain	Left Turn	Turning Improper
22 8702 4205	Non-Intersection Accidents	12/01/14	8:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield ROW,Traffic Control devices Disregarded
22 8702 4205	Non-Intersection Accidents	08/09/15	4:19 AM	Stop Sign	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Unsafe Speed
22 8702 4206	Non-Intersection Accidents	05/17/13	10:00 AM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Overtaking	Turning Improper, Failure to Yield Right of Way
22 8702 4208	Non-Intersection Accidents	08/13/11	2:40 AM	None	PDO & I	1-1	Dark-Road Unlighted	Dry	Clear	Other	Driver Inattention
22 8702 4211	Intersection Accidents	09/09/11	3:10 PM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Right Turn	Failure to Yield Right of Way
22 8702 4211	Intersection Accidents	05/01/12	6:06 PM	None	PDO & I	2-1	Daylight	Dry	Cloudy	Rear End	Following too Closely
22 8702 4212	Non-Intersection Accidents	07/17/11	7:13 AM	None	PDO	1-0	Dawn	Dry	Cloudy	Other	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/24/11	10:15 AM	None	PDO	1-0	Daylight	Wet	Cloudy	Other	Pavement Slippery, Unsafe Speed
22 8702 4213	Non-Intersection Accidents	08/23/11	1:00 PM	None	PDO	2-0	Daylight	Dry	Clear	Sideswipe	Backing Unsafely
22 8702 4213	Non-Intersection Accidents	03/02/12	7:20 PM	Stop Sign	PDO	2-0	Dark-Road Lighted	Dry	Clear	Right Angle	Unknown
22 8702 4213	Non-Intersection Accidents	11/16/13	4:10 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
22 8702 4213	Non-Intersection Accidents	08/24/14	10:52 AM	No Passing Zone	PDO & I	2-2	Daylight	Dry	Cloudy	Sideswipe	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/28/15	8:12 AM	Stop Sign	PDO & I	2-1	Daylight	Dry	Fog/Smog	Left Turn	Failure to Yield Right of Way

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) I-684 NORTHBOUND RAMP INTERSECTION IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE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138 87011021
Hall Ave
Pond St
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22 87024212
Hillside Ave
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22 87024210
Mandia Ln
Main St
W Main St
Lake St
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22
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22 87024206
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22 87024205
684I87011190
684I87011189
22 87024203
684I87011188
22 87024202
Todd Rd
684I87011187
22 87024201
684I87011186
22 87024200
Cedar Rd E
684I87011185
22 87024199

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

ANDREW M. CUOMO
Governor

MATTHEW J. DRISCOLL
Commissioner

TODD WESTHUIS, P.E.
Acting Regional Director

March 25, 2016

Richard D'Andrea
Maser
11 Bradhurst Ave
Hawthorne, NY 10532

RE: Freedom of Information Law Request# **FR8-16-004418**
Accident Data
Route 22 in Lewisboro

VIA: E-Mail (No Hard Copy to Follow)

Dear Mr. D'Andrea:

This correspondence will acknowledge receipt of your March 24, 2016 Freedom of Information Law (FOIL) request at the New York State Department of Transportation (NYSDOT) Records Access Office on this date.

We are researching your request and will notify you within the next twenty days regarding the availability of the records you are seeking.

Please indicate the FOIL request number when corresponding on this subject.

Sincerely,

Andrew Wu
Records Access Officer
Andrew.wu@dot.ny.gov

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

ANDREW M. CUOMO
Governor

MATTHEW J. DRISCOLL
Commissioner

TODD WESTHUIS, P.E.
Regional Director

April 20, 2016

Richard D'Andrea
Maser
11 Bradhurst Ave
Hawthorne, NY 10532

RE: Freedom of Information Law Request# **FR8-16-004418**
Accident Data
Route 22 in Lewisboro

VIA: E-Mail (No Hard Copy to Follow)

Dear Mr. D'Andrea:

This correspondence is in reference to your March 24, 2016 Freedom of Information Law (FOIL) request and acknowledges receipt of your check in the amount of $60.00.

Enclosed are the records responsive to your request.

Please indicate the FOIL request number when corresponding on this subject.

Sincerely,

Andrew Wu
Records Access Officer
Andrew.wu@dot.ny.gov

Program: sass1701

NYSDOT Safety Information Management System

Date: 03/31/16 08:33

Accident Severity Summary

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213

Dates: 01-NOV-2010 thru 31-OCT-2015 Traffic Volume: 5,880

Total of Fatal Accd	Total of Injury Accd	Total of PDO Accd	Total of Non-Reportable	Total Number of Accidents	Accident Rate
0	6	20	3	29	1.8

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System
Summary Report By Segment And/Or Intersection
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

ROUTE: 22 HIGHWAY LOCATION: 22 87024199 - 22 87024213 DATES: 01-NOV-2010 - 31-OCT-2015

REFERENCE	INT.	DESCRIPTION	NUMBER OF ACCIDENTS TOTAL	FTL	INJ	PDO	N/R	WET ROAD **	FIXED OBJ **	PED& BIKE **	TRUCK *** **	LIGHT CONDITION DWN/DSK **	DAY **	NIGHT **
22 8702 4199			1	0	0	1	0	1	0	0	0	0	0	1
22 8702 4199	15	DUFFYS BRIDGE RD	1	0	0	1	0	0	0	0	0	0	1	0
22 8702 4201			4	0	0	2	2	0	4	0	1	0	0	4
22 8702 4202			3	0	1	2	0	0	1	0	0	0	3	0
22 8702 4203			3	0	0	3	0	0	1	0	0	1	0	2
22 8702 4204			1	0	0	1	0	0	1	0	0	0	1	0
22 8702 4205			5	0	1	4	0	1	1	0	0	0	4	1
22 8702 4206			1	0	0	0	1	0	0	0	0	0	1	0
22 8702 4208			1	0	1	0	0	0	1	0	0	0	0	1
22 8702 4211	17	SCHOOLHOUSE RD	2	0	1	1	0	0	0	0	0	0	2	0
22 8702 4212			1	0	0	1	0	0	1	0	0	1	0	0
22 8702 4213			6	0	2	4	0	1	1	0	0	0	5	1
		ROUTE TOTAL EXCLUDES 999 RMS	29	0	6	20	3	3	11	0	1	2	17	10

** EXCLUDES PARTIALLY CODED NON-REPORTABLES *** EXCLUDES PICKUPS & VANS

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4199 NON-INTERSECTION ACCIDENTS ***

DEC-01-2014 MON 08:23 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35492822
Accident Class: PROPERTY DAMAGE Police Agency:BEDFORD TOWN PD Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: RAIN
Road Surface Collision: WET Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: MA
Num of Occupants: 1 Drivers Age: 43 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

*** Ref Mrkr: 22 8702 4199 INTERSECTION ACCIDENTS - DUFFYS BRIDGE RD ***

MAR-04-2011 FRI 03:30 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33892894
Accident Class: PROPERTY DAMAGE Police Agency:NOT ENTERED Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOPPED SCHOOL BUS W/RED LIGHT FLSH
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3023 State of Registration: NY
Num of Occupants: 1 Drivers Age: 77 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors: UNKNOWN UNKNOWN

Veh: 2 OTHER Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 76 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS ***

DEC-27-2010 MON 01:41 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2010-33722870
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT/ GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 TRUCK Registered Weight: UNKNOWN State of Registration: FL
Num of Occupants: 1 Drivers Age: 34 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: YES School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY
Truck/Bus Clsf: NOT ENTERED

MAR-05-2013 TUE 11:29 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34685366
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2544 State of Registration: NY
Num of Occupants: 1 Drivers Age: 32 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ALCOHOL INVOLVEMENT ANIMAL'S ACTION

MAR-27-2013 WED 02:31 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34713438
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLL. W/LIGHT SUPPORT/UTILITY POLE Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4363 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

JAN-10-2014 FRI 11:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35078013
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLL. W/LIGHT SUPPORT/UTILITY POLE Traffic Control: NONE
Manner of Collision: OTHER Weather: SLEET/HAIL/FREEZING RAIN
Road Surface Collision: SNOW/ICE Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 22 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS *** (Continued)

Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: PAVEMENT SLIPPERY NOT APPLICABLE

*** Ref Mrkr: 22 8702 4202 NON-INTERSECTION ACCIDENTS ***

JUN-27-2012 WED 07:45 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34428771
Accident Class: PROPERTY DAMAGE Police Agency: Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3312 State of Registration: NY
Num of Occupants: 1 Drivers Age: 58 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

AUG-24-2012 FRI 01:00 PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: B Case: 2012-34470514
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3457 State of Registration: NY
Num of Occupants: 1 Drivers Age: 31 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TURNING IMPROPER

Veh: 2 MOTORCYCLE Registered Weight: 492 State of Registration: NY
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

MAR-20-2015 FRI 06:38 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35657008
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4202 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2254 State of Registration: NY
Num of Occupants: 1 Drivers Age: 25 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4203 NON-INTERSECTION ACCIDENTS ***

AUG-13-2011 SAT 03:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33998283
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4666 State of Registration: NY
Num of Occupants: 1 Drivers Age: 22 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

NOV-21-2012 WED 05:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34598390
Accident Class: PROPERTY DAMAGE Police Agency:PEEKSKILL CITY PD Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DUSK
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4747 State of Registration: NY
Num of Occupants: 1 Drivers Age: 35 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT ENTERED

FEB-09-2015 MON 06:40 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35596892
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4203 NON-INTERSECTION ACCIDENTS *** (Continued)

Num of Occupants: 1 Drivers Age: 27 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4204 NON-INTERSECTION ACCIDENTS ***

FEB-08-2013 FRI 01:08 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34649043
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 20 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS ***

MAR-02-2011 WED 09:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33794654
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2985 State of Registration: NY
Num of Occupants: 1 Drivers Age: 37 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TURNING IMPROPER

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4115 State of Registration: NY
Num of Occupants: 1 Drivers Age: 52 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

JUL-19-2013 FRI 05:00 PM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: CC Case: 2013-34860828
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS *** (Continued)

Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 23 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4606 State of Registration: NY
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

MAY-22-2014 THU 03:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35267120
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: RAIN
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4001 State of Registration: NY
Num of Occupants: 1 Drivers Age: 18 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING U TURN
Apparent Factors: TURNING IMPROPER NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4763 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

DEC-01-2014 MON 08:10 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35496018
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

NYSDOT Safety Information Management System
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Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 CAR/VAN/PICKUP Registered Weight: 5979 State of Registration: NY
Num of Occupants: 2 Drivers Age: 37 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TRAFFIC CONTROL DEVICES DISREGARDED

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 3 Drivers Age: 34 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

AUG-09-2015 SUN 04:19 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35842566
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: STOP SIGN
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 31 Sex: MALE Citation Issued: YES
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: POLICE PURSUIT
Apparent Factors: ALCOHOL INVOLVEMENT UNSAFE SPEED

*** Ref Mrkr: 22 8702 4206 NON-INTERSECTION ACCIDENTS ***

MAY-17-2013 FRI 10:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34776158
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: OVERTAKING Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 24 Sex: FEMALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING U TURN
Apparent Factors: TURNING IMPROPER FAILURE TO YIELD RIGHT OF WAY

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 27 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO

NYSDOT Safety Information Management System
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Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4206 NON-INTERSECTION ACCIDENTS *** (Continued)

Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 22 8702 4208 NON-INTERSECTION ACCIDENTS ***

AUG-13-2011 SAT 02:40 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: A Case: 2011-33998082
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLLISION WITH SIGN POST Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3929 State of Registration: NY
Num of Occupants: 1 Drivers Age: 64 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: DRIVER INATTENTION NOT APPLICABLE

*** Ref Mrkr: 22 8702 4211 INTERSECTION ACCIDENTS - SCHOOLHOUSE RD ***

SEP-09-2011 FRI 03:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34014927
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: RIGHT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3358 State of Registration: NY
Num of Occupants: 1 Drivers Age: 42 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4427 State of Registration: NY
Num of Occupants: 1 Drivers Age: 54 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: OTHER (VEHICLE) NOT APPLICABLE

MAY-01-2012 TUE 06:06 PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2012-34291553
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: REAR END Weather: CLOUDY

NYSDOT Safety Information Management System
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Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4211 INTERSECTION ACCIDENTS - SCHOOLHOUSE RD *** (Continued)

Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3050 State of Registration: NY
Num of Occupants: 1 Drivers Age: 71 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 22 8702 4212 NON-INTERSECTION ACCIDENTS ***

JUL-17-2011 SUN 07:13 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33952714
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NONE
Manner of Collision: OTHER Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 45 Sex: FEMALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FAILURE TO KEEP RIGHT OTHER (VEHICLE)

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS ***

JUL-24-2011 SUN 10:15 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33986576
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: CLOUDY
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2895 State of Registration: NY
Num of Occupants: 1 Drivers Age: 24 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Apparent Factors: PAVEMENT SLIPPERY UNSAFE SPEED

AUG-23-2011 TUE 01:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34029118
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: SIDESWIPE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3891 State of Registration: NY
Num of Occupants: 1 Drivers Age: 54 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: BACKING
Apparent Factors: BACKING UNSAFELY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3998 State of Registration: NY
Num of Occupants: 1 Drivers Age: 32 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: BACKING
Apparent Factors: BACKING UNSAFELY UNKNOWN

MAR-02-2012 FRI 07:20 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34295440
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AT HILLCREST Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 80 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: UNKNOWN UNKNOWN

Veh: 2 OTHER Registered Weight: UNKNOWN State of Registration: UNKNOWN
Num of Occupants: UNKNOWN Drivers Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: UNKNOWN UNKNOWN

NOV-16-2013 SAT 04:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-35008022
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3472 State of Registration: NY
Num of Occupants: 1 Drivers Age: 82 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2339 State of Registration: NY
Num of Occupants: 1 Drivers Age: 16 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

AUG-24-2014 SUN 10:52 AM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: BC Case: 2014-35374132
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: SIDESWIPE Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4790 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FAILURE TO KEEP RIGHT NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3612 State of Registration: NY
Num of Occupants: 1 Drivers Age: 68 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

JUL-28-2015 TUE 08:12 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2015-35818678
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: FOG/SMOG/SMOKE
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2425 State of Registration: NY

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Num of Occupants: 1 Drivers Age: 59 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: OTHER (VEHICLE) NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4210 State of Registration: NY
Num of Occupants: 1 Drivers Age: 81 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

TOTAL NUMBER OF ACCIDENTS PRINTED: 29

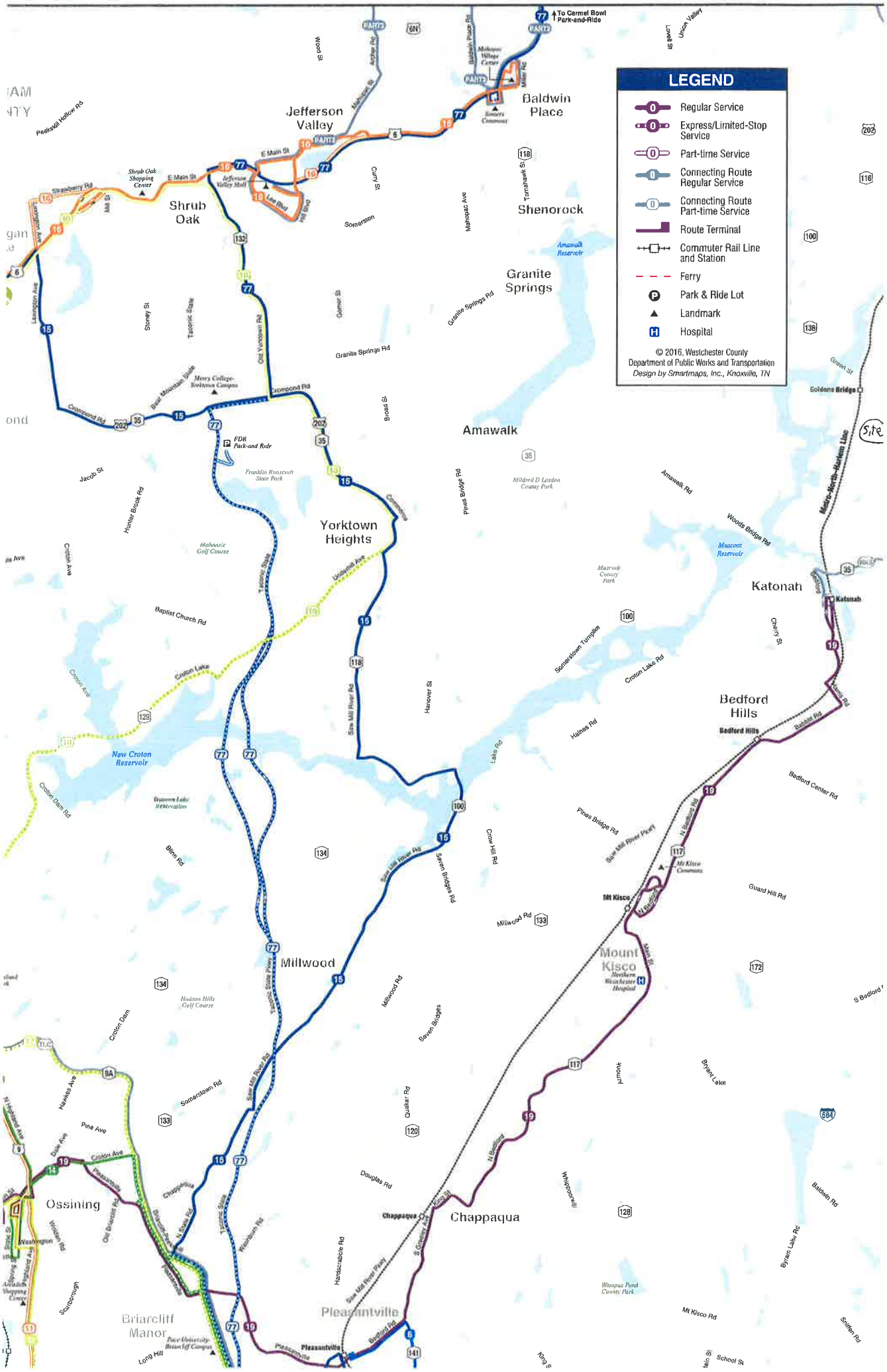
ABSENCE OF REFERENCE MARKERS OR INTERSECTION WITHIN A SPECIFIED ROADWAY SECTION & TIME PERIOD INDICATES NO ACCIDENTS FOUND

*** END OF REPORT ***

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX F

PUBLIC TRANSPORTATION INFORMATION


LEGEND
Regular Service
Express/Limited-Stop Service
Part-time Service
Connecting Route Regular Service
Connecting Route Part-time Service
Route Terminal
Commuter Rail Line and Station
Ferry
Park & Ride Lot
Landmark
Hospital
© 2016, Westchester County Department of Public Works and Transportation
Design by Smartmaps, Inc., Knoxville, TN
To Cermel Bowl Park-and-Ride
Baldwin Place
Jefferson Valley
Shrub Oak
Shenorock
Granite Springs
Amawalk
Yorktown Heights
Katonah
Bedford Hills
Mount Kisco
Millwood
Chappaqua
Pleasantville
Briarcliff Manor
Ossining
FDR Park-and-Ride
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake
Pine Ave
Somerstown Rd
Douglas Rd
Quaker Rd
Millwood Rd
Seven Bridges
Crow Hill Rd
Pines Bridge Rd
Halnes Rd
Croton Lake Rd
Somerstown Turnpike
Hanover St
Saw Mill River Rd
Baptist Church Rd
Hunter Brook Rd
Jacob St
Amawalk Rd
Woods Bridge Rd
Bedford Center Rd
Guard Hill Rd
Mt Kisco Rd
Bryant Lake Rd
Baldwin Rd
Whippoorwill
Hardscrabble Rd
Bedford Rd
Pleasantville
Chappaqua
Mt Kisco
Katonah
Goldens Bridge
Metro-North Harlem Line
Peekskill Hollow Rd
Strawberry Rd
E Main St
Jefferson Valley Mall
Shrub Oak Shopping Center
Somerset
Granite Springs Rd
Old Yorktown Rd
Mohansic Ave
Tomahawk St
Curry St
Stoney St
Taconic State
Mill St
Lexington Ave
Cortlandt Ave
Croton Ave
Croton Lake
Croton Dam Rd
Bleen Rd
Somerset Rd
Hawkes Ave
Pine Ave
Croton Ave
Pleasantville
Chappaqua
Washington
Sourbrough
Long Hill
Bedford Rd
Pleasantville
Mt Kisco
Bedford Hills
Katonah
Cherry St
Green St
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake
Pine Ave
Somerstown Rd
Douglas Rd
Quaker Rd
Millwood Rd
Seven Bridges
Crow Hill Rd
Pines Bridge Rd
Halnes Rd
Croton Lake Rd
Somerstown Turnpike
Hanover St
Saw Mill River Rd
Baptist Church Rd
Hunter Brook Rd
Jacob St
Amawalk Rd
Woods Bridge Rd
Bedford Center Rd
Guard Hill Rd
Mt Kisco Rd
Bryant Lake Rd
Baldwin Rd
Whippoorwill
Hardscrabble Rd
Bedford Rd
Pleasantville
Chappaqua
Mt Kisco
Katonah
Goldens Bridge
Metro-North Harlem Line
Peekskill Hollow Rd
Strawberry Rd
E Main St
Jefferson Valley Mall
Shrub Oak Shopping Center
Somerset
Granite Springs Rd
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Curry St
Stoney St
Taconic State
Mill St
Lexington Ave
Cortlandt Ave
Croton Ave
Croton Lake
Croton Dam Rd
Bleen Rd
Somerset Rd
Hawkes Ave
Pine Ave
Croton Ave
Pleasantville
Chappaqua
Washington
Sourbrough
Long Hill
Bedford Rd
Pleasantville
Mt Kisco
Bedford Hills
Katonah
Cherry St
Green St
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake

Schedules & Fares

MNR Schedules Look-up Results:

Origin Station: GOLDENS BRIDGE
Destination Station: GRAND CENTRAL
Travel Date: 03/24/2015
Note: To help you plan your trip, we have given you your time selection as well as the trains 2½ hours before and 2½ hours after.

If bold letter appears in Note column, click on it for details.

Departs GOLDENS BRIDGE	Notes	Arrives GRAND CENTRAL	Notes	Travel Time In Minutes	Transfer(s)	Fares
12:33 AM		1:54 AM		81	THROUGH TRAIN	OFF PEAK
4:40 AM		5:50 AM		70	THROUGH TRAIN	PEAK
5:01 AM		6:11 AM		70	THROUGH TRAIN	PEAK
5:31 AM		6:40 AM		69	THROUGH TRAIN	PEAK
5:54 AM		7:04 AM		70	THROUGH TRAIN	PEAK
6:10 AM		7:13 AM		63	THROUGH TRAIN	PEAK
6:17 AM		7:29 AM		72	THROUGH TRAIN	PEAK
6:27 AM		7:33 AM		66	THROUGH TRAIN	PEAK
6:34 AM		7:49 AM		75	THROUGH TRAIN	PEAK
6:44 AM		7:53 AM		69	THROUGH TRAIN	PEAK
7:06 AM		8:22 AM		76	THROUGH TRAIN	PEAK
7:16 AM		8:24 AM		68	THROUGH TRAIN	PEAK
7:27 AM		8:31 AM		64	THROUGH TRAIN	PEAK
7:39 AM		8:50 AM		71	THROUGH TRAIN	PEAK
7:51 AM		8:56 AM		65	THROUGH TRAIN	PEAK
8:05 AM		9:15 AM		70	THROUGH TRAIN	PEAK
8:22 AM		9:30 AM		68	THROUGH TRAIN	PEAK
8:40 AM		9:53 AM		73	THROUGH TRAIN	PEAK
9:06 AM		10:20 AM		74	THROUGH TRAIN	OFF PEAK
9:30 AM		10:44 AM		74	THROUGH TRAIN	OFF PEAK
9:53 AM		11:05 AM		72	THROUGH TRAIN	OFF PEAK
10:29 AM		11:43 AM		74	THROUGH TRAIN	OFF PEAK
10:53 AM		12:05 PM		72	THROUGH TRAIN	OFF PEAK
11:29 AM		12:43 PM		74	THROUGH TRAIN	OFF PEAK
12:29 PM		1:43 PM		74	THROUGH TRAIN	OFF PEAK
1:29 PM		2:43 PM		74	THROUGH TRAIN	OFF PEAK
2:29 PM		3:43 PM		74	THROUGH TRAIN	OFF PEAK
2:53 PM		4:06 PM		73	THROUGH TRAIN	OFF PEAK
3:18 PM		4:33 PM		75	THROUGH TRAIN	OFF PEAK
3:53 PM		5:05 PM		72	THROUGH TRAIN	OFF PEAK
4:20 PM		5:39 PM		79	THROUGH TRAIN	OFF PEAK
4:49 PM		6:07 PM		78	THROUGH TRAIN	OFF PEAK
5:18 PM		6:36 PM		78	THROUGH TRAIN	OFF PEAK
5:56 PM		7:08 PM		72	THROUGH TRAIN	OFF PEAK
6:20 PM		7:33 PM		73	THROUGH TRAIN	OFF PEAK
6:55 PM		8:07 PM		72	THROUGH TRAIN	OFF PEAK
7:28 PM		8:41 PM		73	THROUGH TRAIN	OFF PEAK
8:23 PM		9:36 PM		73	THROUGH TRAIN	OFF PEAK
9:29 PM		10:44 PM		75	THROUGH TRAIN	OFF PEAK
10:29 PM		11:44 PM		75	THROUGH TRAIN	OFF PEAK
11:28 PM		12:42 AM		74	THROUGH TRAIN	OFF PEAK

New Search | Return Schedule | All Trains | Trains After Midnight | Get fares | Buy WebTicket

Schedules & Fares

MNR Schedules Look-up Results:

Origin Station: GRAND CENTRAL
Destination Station: GOLDENS BRIDGE
Travel Date: 03/24/2015
Note: To help you plan your trip, we have given you your time selection as well as the trains 2½ hours before and 2½ hours after.

*If **bold** letter appears in Note column, click on it for details.*

Departs GRAND CENTRAL	Notes	Arrives GOLDENS BRIDGE	Notes	Travel Time In Minutes	Transfer(s)	Fares
12:04 AM		1:13 AM		69	THROUGH TRAIN	OFF PEAK
1:04 AM		2:13 AM		69	THROUGH TRAIN	OFF PEAK
1:56 AM		3:21 AM		85	THROUGH TRAIN	OFF PEAK
6:02 AM		7:14 AM		72	THROUGH TRAIN	PEAK
6:26 AM		7:38 AM		72	THROUGH TRAIN	PEAK
6:46 AM		8:03 AM		77	THROUGH TRAIN	PEAK
7:15 AM		8:34 AM		79	THROUGH TRAIN	PEAK
7:53 AM		9:09 AM		76	THROUGH TRAIN	PEAK
8:20 AM		9:35 AM		75	THROUGH TRAIN	PEAK
8:44 AM		9:56 AM		72	THROUGH TRAIN	PEAK
9:22 AM		10:32 AM		70	THROUGH TRAIN	OFF PEAK
9:45 AM		10:57 AM		72	THROUGH TRAIN	OFF PEAK
10:47 AM		11:56 AM		69	THROUGH TRAIN	OFF PEAK
11:47 AM		12:56 PM		69	THROUGH TRAIN	OFF PEAK
12:22 PM		1:31 PM		69	THROUGH TRAIN	OFF PEAK
12:47 PM		1:56 PM		69	THROUGH TRAIN	OFF PEAK
1:22 PM		2:31 PM		69	THROUGH TRAIN	OFF PEAK
1:47 PM		2:56 PM		69	THROUGH TRAIN	OFF PEAK
2:22 PM		3:31 PM		69	THROUGH TRAIN	OFF PEAK
2:47 PM		3:49 PM		62	THROUGH TRAIN	OFF PEAK
3:16 PM		4:26 PM		70	THROUGH TRAIN	OFF PEAK
3:43 PM		4:48 PM	H	65	THROUGH TRAIN	OFF PEAK
3:52 PM		5:02 PM		70	THROUGH TRAIN	OFF PEAK
4:18 PM		5:23 PM	H	65	THROUGH TRAIN	PEAK
4:21 PM		5:31 PM		70	THROUGH TRAIN	PEAK
4:35 PM		5:38 PM	H	63	THROUGH TRAIN	PEAK
4:42 PM		5:53 PM		71	THROUGH TRAIN	PEAK
4:57 PM		6:01 PM	H	64	THROUGH TRAIN	PEAK
5:27 PM		6:31 PM	H	64	THROUGH TRAIN	PEAK
5:29 PM		6:40 PM		71	THROUGH TRAIN	PEAK
5:44 PM		6:46 PM	H	62	THROUGH TRAIN	PEAK
6:04 PM		7:05 PM	H	61	THROUGH TRAIN	PEAK
6:29 PM		7:35 PM	H	66	THROUGH TRAIN	PEAK
6:56 PM		8:02 PM	H	66	THROUGH TRAIN	PEAK
7:21 PM		8:24 PM	H	63	THROUGH TRAIN	PEAK
7:54 PM		9:03 PM		69	THROUGH TRAIN	PEAK
8:22 PM		9:31 PM		69	THROUGH TRAIN	OFF PEAK
8:52 PM		10:01 PM		69	THROUGH TRAIN	OFF PEAK
9:22 PM		10:31 PM		69	THROUGH TRAIN	OFF PEAK
9:52 PM		11:01 PM		69	THROUGH TRAIN	OFF PEAK
10:22 PM		11:31 PM		69	THROUGH TRAIN	OFF PEAK
11:04 PM		12:13 AM		69	THROUGH TRAIN	OFF PEAK

New Search | Return Schedule | All Trains | Trains After Midnight | Get fares | Buy WebTicket

MONDAY – FRIDAY NEW YORK – WASSAIC

TO NEW YORK

AM PEAK (SENIOR/DISABLED/MEDICARE FARES NOT VALI

MILES		500	602	502	604	304	504	606	306	506	608	308	908	508	310	4910
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
82	Wassaic												5 10			C 5 15
80	Tenmile River												5 14			C 5 19
77	Dover Plains												5 19			C 5 24
69	Harlem Valley-Wingdale												5 28			C 5 33
64	Pawling												5 35			C 5 40
60	Patterson												5 41			C 5 46
53	Southeast Ar.															C 5 57
53	Southeast Lv.		4 26		4 47			5 17			5 40		5 51			6 02
52	Brewster		4 29		4 50			5 20			5 43		5 55			6 05
48	Croton Falls		4 34		4 55			5 25			5 48		6 01			6 10
46	Purdy's		4 37		4 58			5 28			5 51		6 05			6 13
44	Goldens Bridge		4 40		5 01			5 31			5 54		6 10			6 17
41	Katonah		4 44		5 05			5 35			5 58					6 21
39	Bedford Hills		4 48		5 09			5 39			6 02					6 25
37	Mount Kisco		4 52		5 13			5 43			6 06					6 29
32	Chappaqua		4 57		5 18			5 48			6 11					6 34
31	Pleasantville		5 00		5 21			5 51			6 14					6 37
28	Hawthorne		5 04		5 25			5 55			6 18					6 41
26	Valhalla		5 08		5 29			5 59			6 22					6 45
24	North White Plains	4 50	5 12	5 17	5 33	5 38	5 57		6 06	6 19	6 26			6 38		6 49
22	White Plains	4 53	5 15	5 20	5 36	5 41	6 00	6 05	6 09	6 22	6 29		6 37	6 41		6 53
21	Hartsdale	4 56		5 23		5 44	6 03		6 12	6 25				6 44		
19	Scarsdale	4 59		5 26		5 47	6 06		6 15	6 28				6 48		
17	Crestwood	5 02		5 29		5 50	6 09		6 18			6 36			6 50	
16	Tuckahoe	5 04		5 31		5 52			6 20			6 38			6 52	
15	Bronxville	5 06		5 33		5 54			6 22			6 40			6 54	
14	Fleetwood	5 08		5 35		5 56			6 24			6 42			6 57	
13	Mount Vernon West	5 11		5 38		5 59			6 27			6 45			7 00	
13	Wakefield	5 13		5 40		6 01			6 29			6 47				
12	Woodlawn	5 15		5 42		6 03			6 31			6 49				
11	Williams Bridge	5 17		5 44		6 05			6 33			6 51				
10	Botanical Garden	5 19		5 46		6 07			6 35							
9	Fordham	5 22		5 49		6 10			6 38							
8	Tremont															
6	Melrose															
4	Harlem-125th Street	D 5 30	D 5 39	D 5 57	D 6 00	H 6 18	D 6 26	D 6 29	H 6 46	D 6 48	D 6 53	H 7 02	D 7 02	D 7 09	D 7 14	D 7 17
0	Grand Central Terminal	5 41 AM	5 50 AM	6 08 AM	6 11 AM	6 29 AM	6 37 AM	6 40 AM	6 57 AM	6 59 AM	7 04 AM	7 13 AM	7 13 AM	7 21 AM	7 26 AM	7 29 AM

WILL NOT OPERATE 12/29 - 12/30

WILL OPERATE 12/29 - 12/30 ONLY

TO SOUTHEAST

AM PEAK

MILES		501	601 901	503	603	505	605	307	507	607	309	509	609 909	511	611	513
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
0	Grand Central Terminal	5 37	6 02	6 08	6 26	6 31	6 46	6 49	7 12	7 15	7 18	7 44	7 53	7 56	8 20	8 2
4	Harlem-125th Street	5 47	R 6 12	6 18	R 6 36	6 41	R 6 56	6 59	R 7 22	R 7 25	7 28	R 7 55	R 8 03	8 06	R 8 30	8 3
6	Melrose	5 51				6 45		7 03						8 10		
8	Tremont	5 54				6 48		7 06						8 13		
9	Fordham	5 57	6 20	6 26	6 44	6 51	7 05	7 09		7 33	7 36		8 11	8 16	8 38	8 4
10	Botanical Garden	5 59				6 53		7 11			7 39			8 19		8 4
11	Williams Bridge	6 01		6 29		6 55	7 09	7 13		7 37			8 15		8 41	
12	Woodlawn	6 04		6 32		6 58	7 12	7 16		7 40			8 18		8 44	
13	Wakefield	6 06				7 00		7 18			7 45			8 25		8 5
13	Mount Vernon West	6 09		6 35		7 03		7 21		7 43	7 48		8 22	8 28	8 48	8 5
14	Fleetwood	6 11		6 37		7 05		7 23			7 50			8 30		8 5
15	Bronxville	6 14		6 39		7 08		7 26			7 53			8 33		8 5
16	Tuckahoe	6 16		6 41		7 10		7 28			7 55			8 35		9 0
17	Crestwood	6 19		6 44		7 13		7 31			7 58			8 38		9 0
19	Scarsdale	6 22		6 47		7 16		7 34			8 01			8 41		9 0
21	Hartsdale	6 25		6 50		7 19		7 37			8 04			8 44		9 0
22	White Plains	6 28	6 38	6 53	7 02	7 22	7 27	7 40	H 7 48	7 57	8 07	H 8 22	8 33	8 47	8 59	9 1
24	North White Plains	6 35	6 42	7 01	7 06	7 29	7 31	7 47	7 55	8 02	8 17	8 31	8 37	8 55	9 03	9 2
26	Valhalla		6 46		7 10		7 35			8 06			8 41		9 07	
27	Hawthorne		6 50		7 14		7 39			8 10			8 45		9 11	
31	Pleasantville		6 54		7 18		7 43			8 14			8 49		9 15	
32	Chappaqua		6 57		7 21		7 46			8 17			8 52		9 18	
37	Mount Kisco		7 03		7 27		7 52			8 23			8 58		9 24	
39	Bedford Hills		7 07		7 31		7 56			8 27			9 02		9 28	
41	Katonah		7 10		7 34		7 59			8 30			9 05		9 31	
44	Goldens Bridge		7 14		7 38		8 03			8 34			9 09		9 35	
46	Purdy's		7 18		7 42		8 07			8 38			9 13		9 39	
48	Croton Falls		7 21		7 45		8 10			8 41			9 16		9 42	
52	Brewster		7 27		7 51		8 16			8 47			9 22		9 48	
53	Southeast Ar.		7 37		8 00		8 25			8 55			9 30		9 57	
53	Southeast Lv.		C 7 40										C 9 32			
60	Patterson		C 7 48										C 9 40			
64	Pawling		C 7 54										C 9 46			
69	Harlem Valley-Wingdale		C 8 01										C 9 53			
77	Dover Plains		C 8 09										C 10 01			
80	Tenmile River		C 8 12										C 10 04			
82	Wassaic		C 8 20										C 10 14			
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM

) ON INBOUND PEAK TRAINS) (BICYCLES NOT PERMITTED ON INBOUND AM PEAK TRAINS)

610	612	312	512	614	616	314	916	514	316	516	518	618	620	920	520	324	522	524	624	326	626	926	526	328	628	630	330	528	632	634
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	A
							6 00							6 30								6 52								
							6 04							6 34								6 56								
							6 09							6 39								7 01								
							6 18							6 48								7 10								
							6 25							6 55								7 17								
							6 31							7 01								7 23								
6 02	6 12			6 19			6 41					6 51	7 01	7 11							7 25	7 32				7 51				8 0
6 05	6 15			6 22			6 45					6 54	7 04	7 15							7 28	7 36				7 54				8 1
6 10	6 20			6 27			6 51					6 59	7 09								7 33	7 42				7 59				8 1
6 13	6 23			6 30			6 55					7 02	7 12								7 36	7 46				8 02				8 1
6 17	6 27			6 34	6 44							7 06	7 16	7 27							7 39	7 51				8 05				8 2
6 21	6 31			6 38	6 48							7 10	7 20								7 43					8 09				8 2
6 25	6 35			6 42	6 52							7 14	7 24								7 47					8 13				8 3
6 29	6 39			6 46	6 56							7 18	7 28						7 42		7 51				8 06	8 17			8 24	8 3
6 34				6 52	7 01							7 24	7 34						7 48		7 57				8 12	8 23			8 30	8 4
6 37				6 55								7 27							7 51						8 15				8 33	
6 41				6 59								7 31							7 55						8 19				8 37	
6 45				7 03								7 35							7 59						8 23				8 41	
6 49		6 43	7 00	7 07			7 23		7 16	7 35		7 39						8 00	8 03					8 12	8 27			8 40	8 45	
6 53		6 46	7 03	7 11	7 15		7 27		7 19	7 39		7 43	7 47	7 53				8 04	8 07		8 12	8 18		8 15	8 31	8 37		8 43	8 49	8 5
		6 49	7 06					7 34	7 22								8 01						8 28	8 18				8 46		
		6 52	7 10					7 38	7 25								8 05						8 32	8 21				8 49		
		6 56	7 14			7 19			7 29		7 41				7 58					8 11					8 25			8 41	8 53	
		6 58				7 21			7 31		7 43				8 00					8 13					8 27			8 43		
		7 00				7 23			7 33		7 45				8 03					8 16					8 30			8 46		
		7 03				7 26			7 36		7 48				8 06					8 19					8 32			8 48		
		7 06				7 29			7 39		7 51	7 55				8 01				8 22					8 35			8 51		
		7 08							7 41							8 03									8 37					
		7 10							7 44							8 05									8 39					
		7 13							7 47							8 08									8 42					
		7 15							7 49							8 10									8 44					
		7 18							7 52							8 13									8 46					
		7 20							7 54							8 15									8 48					
		7 23							7 57							8 18									8 51					
D 7 17	D 7 20	H 7 27	D 7 32	D 7 36	D 7 40	D 7 43	D 7 52	D 7 59	H 8 03	D 8 04	D 8 05	D 8 09	D 8 11	D 8 18		H 8 23			D 8 32	D 8 36	D 8 37	D 8 43	D 8 52	H 8 55	D 8 56	D 9 02			D 9 13	D 9 1
7 29 AM	7 33 AM	7 40 AM	7 45 AM	7 49 AM	7 53 AM	7 56 AM	8 05 AM	8 12 AM	8 16 AM	8 17 AM	8 18 AM	8 22 AM	8 24 AM	8 31 AM	8 34 AM	8 36 AM	8 37 AM	8 41 AM	8 45 AM	8 49 AM	8 50 AM	8 56 AM	9 05 AM	9 08 AM	9 09 AM	9 15 AM	9 17 AM	9 22 AM	9 26 AM	9 3 A

WILL NOT OPERATE 12/29 - 12/30

AM PEAK | OFF-PEAK

613	515	615	517	617 917	519	521	621	523	525	625 925	527	627	529	629	531	631	533	633 933	535	4535	635	537	637	639	541	4541	641	543	343	4643
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
8 44	8 53	9 22	9 25	9 45	9 54	10 25	10 47	10 54	11 25	11 47	11 54	12 22	12 25	12 47	12 54	1 22	1 25	1 47	1 54	2 18	2 22	2 25	2 47	2 53	2 56	3 13	3 16	3 19	3 22	3 3
R 8 54	9 03	R 9 32	9 35	R 9 55	10 04	10 35	R 10 57	11 04	11 35	R 11 57	12 04	R 12 32	12 35	R 12 57	1 04	R 1 32	1 35	R 1 57	2 04	R 2 28	R 2 32	2 35	R 2 57	R 3 03	3 06	R 3 23	R 3 26	R 3 29	3 32	R 3 4
			9 39						11 39								1 39												3 36	
			9 42						11 42								1 42												3 39	
9 02	9 11		9 45		10 12	10 43		11 12	11 45		12 12		12 43		1 12		1 45		2 12			2 43			3 14				3 42	
	9 14		9 47		10 14	10 45		11 14	11 47		12 14		12 45		1 14		1 47		2 14			2 45			3 16				3 44	
	9 17		9 50		10 17	10 48		11 17	11 50		12 17		12 48		1 17		1 50		2 17			2 48							3 47	
	9 20		9 53		10 20	10 51		11 20	11 52		12 20		12 51		1 20		1 53		2 20			2 51							3 50	
	9 22		9 55		10 22	10 53		11 22	11 55		12 22		12 53		1 22		1 55		2 22			2 53							3 52	
	9 25		9 57		10 25	10 56		11 25	11 58		12 25		12 56		1 25		1 58		2 25			2 56			3 23			H 3 43	3 55	
	9 27		10 00		10 27	10 58		11 27	12 00		12 27		12 58		1 27		2 00		2 27			2 58			3 25			H 3 45	3 57	
	9 29		10 02		10 29	11 00		11 29	12 02		12 29		1 00		1 29		2 02		2 29			3 00			3 27			H 3 48	3 59	
	9 31		10 04		10 31	11 02		11 31	12 04		12 31		1 02		1 31		2 04		2 31			3 02			3 29			H 3 50	4 01	
	9 34		10 07		10 34	11 05		11 34	12 07		12 34		1 05		1 34		2 07		2 34			3 05			3 32			H 3 53	4 04	
	9 37	9 53	10 10		10 37	11 08		11 37	12 10		12 37	12 52	1 08		1 37	1 52	2 10		2 37	H 2 48	2 52	3 08		3 23	3 35			H 3 56	4 07	
	9 40	9 56	10 13		10 40	11 11		11 40	12 13		12 40	12 55	1 11		1 40	1 55	2 13		2 40	H 2 51	2 55	3 11		3 26	3 38			H 3 59	4 10	
9 20	9 43	9 59	10 16	10 20	10 43	11 14	11 21	11 43	12 16	12 21	12 43	12 58	1 14	1 21	1 43	1 58	2 16	2 21	2 43	H 2 54	2 58	3 14	3 21	3 29	3 41	H 3 47	3 50	H 4 02	4 13	4 0
9 24	9 51	10 02	10 23	10 24	10 50	11 21	11 24	11 50	12 23	12 24	12 50	1 01	1 21	1 24	1 50	2 01	2 23	2 24	2 52	3 00	3 01	3 21		3 32	3 48	3 53	3 54	4 09	4 21	4 1
9 28				10 28			11 28			12 28				1 28				2 28						3 36			3 58			
9 32		10 09		10 33			11 32			12 32		1 08		1 32		2 08		2 32			3 08			3 40			4 02			
9 36		10 13		10 37			11 36			12 36		1 12		1 36		2 12		2 36			3 12			3 44			4 06			
9 39		10 16		10 40			11 39			12 39		1 15		1 39		2 15		2 39			3 15			3 47			4 09			
9 45		10 22		10 46			11 45			12 45		1 21		1 45		2 21		2 45			3 21		3 38	3 59			4 15			
9 49				10 50			11 49			12 49				1 49				2 49					3 42				4 19			
9 52		10 28		10 53			11 52			12 52		1 27		1 52		2 27		2 52			3 27		3 45				4 22			
9 56		10 32		10 57			11 56			12 56		1 31		1 56		2 31		2 56			3 31		3 49				4 26			4 3
10 00				11 01			12 00			1 00				2 00				3 00					3 53				4 30			4 3
10 03				11 04			12 03			1 03				2 03				3 03					3 56				4 33			4 3
10 09		10 43		11 10			12 09			1 09		1 42		2 09		2 42		3 09			3 42		4 02				4 39			4 4
10 19		10 51		11 17			12 16			1 16		1 49		2 16		2 49		3 16			3 49		4 09				4 46			4 5
				C 11 21						C 1 21								C 3 21												
				C 11 29						C 1 29								C 3 29												
				C 11 35						C 1 35								C 3 35												
				C 11 42						C 1 42								C 3 42												
				C 11 50						C 1 50								C 3 50												
				C 11 53						C 1 53								C 3 53												
				C 12 03						C 2 03								C 4 03												
AM	AM	AM	AM	PM	AM	AM	PM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P

WILL OPERATE 11/26 & 12/24 ONLY

WILL OPERATE 11/26 & 12/24 ONLY

WILL OPERATE 11/26 & 12/24 ONLY

STOPS AT MT. PLEASANT AT 10:30 AM

AM PEAK			OFF-PEAK																											
332	534	636	334	536	638	4940	336	538	940 640	640	540	642	542	4644	644	544	646	546	948 648	548	550	652	552	554	956 656	556	558	660	560	66
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P
						8 30			C 8 30										C 10 28						C 12 28					
						8 34			C 8 34										C 10 32						C 12 32					
						8 38			C 8 38										C 10 36						C 12 36					
						8 46			C 8 46										C 10 44						C 12 44					
						8 53			C 8 53										C 10 51						C 12 51					
						8 59			C 8 59										C 10 57						C 12 57					
									C 9 10										C 11 08						C 1 08					
		8 26			8 52	9 08			9 15	9 15		9 40		10 08	10 14		10 40		11 14			12 14			1 14			2 14		2
		8 29			8 55	9 12			9 18	9 18		9 43		10 12	10 17		10 43		11 17			12 17			1 17			2 17		2
		8 34			9 00				9 23	9 23					10 22				11 22			12 22			1 22			2 22		
		8 37			9 03				9 26	9 26					10 25				11 25			12 25			1 25			2 25		
		8 40			9 06				9 30	9 30		9 53		10 22	10 29		10 53		11 29			12 29			1 29			2 29		2
		8 44			9 10				9 34	9 34		9 57		10 26	10 33		10 57		11 33			12 33			1 33			2 33		2
		8 48			9 14				9 38	9 38					10 37				11 37			12 37			1 37			2 37		
		8 52			9 18	9 28			9 42	9 42		10 03		10 32	10 41		11 03		11 41			12 41			1 41			2 41		3
		8 58			9 24	9 34			9 48	9 48		10 09		10 38	10 47		11 09		11 47			12 47			1 47			2 47		3
		9 01			9 27				9 51	9 51		10 12			10 50		11 12		11 50			12 50			1 50			2 50		3
		9 05			9 31				9 55	9 55		10 16			10 54		11 16		11 54			12 54			1 54			2 54		3
		9 09			9 35				9 59	9 59					10 58				11 58			12 58			1 58			2 58		
	9 02	9 13		9 34	9 39	9 46		9 51	10 03	10 03	10 09	10 23	10 33	10 49	11 02	11 06	11 23	11 33	12 02	12 06	12 33	1 02	1 06	1 33	2 02	2 06	2 33	3 02	3 06	3
	9 06	9 17		9 37	9 43	9 50		9 54	10 06	10 06	10 12	10 26	10 36	10 53	11 05	11 09	11 26	11 36	12 05	12 09	12 36	1 05	1 09	1 36	2 05	2 09	2 36	3 05	3 09	3
	9 10			9 40				9 57			10 15	10 29	10 39			11 12	11 29	11 39		12 12	12 39		1 12	1 39		2 12	2 39		3 12	3
	9 14			9 43				10 00			10 18	10 32	10 42			11 15	11 32	11 42		12 15	12 42		1 15	1 42		2 15	2 42		3 15	3
9 02	9 18		9 26	9 47			9 52	10 04			10 22		10 46			11 19		11 46		12 19	12 46		1 19	1 46		2 19	2 46		3 19	
9 04			9 28				9 54				10 24		10 48			11 21		11 48		12 21	12 48		1 21	1 48		2 21	2 48		3 21	
9 07			9 30				9 56				10 26		10 50			11 23		11 50		12 23	12 50		1 23	1 50		2 23	2 50		3 23	
9 09			9 32				9 58				10 28		10 52			11 25		11 52		12 25	12 52		1 25	1 52		2 25	2 52		3 25	
9 12			9 35				10 01				10 31		10 55			11 28		11 55		12 28	12 55		1 28	1 55		2 28	2 55		3 28	
9 14			9 37				10 03				10 33		10 57			11 30		11 57		12 30	12 57		1 30	1 57		2 30	2 57		3 30	
9 16			9 39				10 05				10 35		10 59			11 32		11 59		12 32	12 59		1 32	1 59		2 32	2 59		3 32	
9 19			9 42				10 08				10 38		11 02			11 35		12 02		12 35	1 02		1 35	2 02		2 35	3 02		3 35	
9 21			9 44				10 10				10 40		11 04			11 37		12 04		12 37	1 04		1 37	2 04		2 37	3 04		3 37	
9 23			9 46				10 12				10 42		11 06			11 39		12 06		12 39	1 06		1 39	2 06		2 39	3 06	H 3 23	3 39	
											10 44									12 41						2 41				
											10 47									12 44						2 44				
D 9 33	D 9 36	H 9 41	D 9 55	H 10 06	H 10 09	H 10 17	D 10 21	H 10 24	H 10 33	H 10 33	H 10 52	H 10 54	H 11 15	H 11 20	H 11 32	H 11 48	H 11 54	H 12 15	H 12 32	H 12 50	H 1 15	H 1 32	H 1 48	H 2 15	H 2 32	H 2 50	H 3 15	H 3 32	H 3 48	H 3
9 45 AM	9 48 AM	9 53 AM	10 06 AM	10 17 AM	10 20 AM	10 28 AM	10 32 AM	10 35 AM	10 44 AM	10 44 AM	11 03 AM	11 05 AM	11 26 AM	11 31 AM	11 43 AM	11 59 AM	12 05 PM	12 26 PM	12 43 PM	1 01 PM	1 26 PM	1 43 PM	1 59 PM	2 26 PM	2 43 PM	3 01 PM	3 26 PM	3 43 PM	3 59 PM	4

WILL OPERATE 12/29 -12/30 ONLY

WILL NOT OPERATE 12/29 -12/30

WILL OPERATE 12/29 -12/30 ONLY

WILL OPERATE 12/29 -12/30 ONLY

STOPS AT MT. PLEASANT AT 12:56 PM

PM PEAK																															
943	643	545	345	645	647	547	349	949	649	551	351	353	651	653	355	953	655	657	557	357	359	659	661	559	361	363	963	663	665	56
PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P
3 43	3 52	3 55	3 57	4 18	4 21	4 24	4 30	4 35	4 42	4 45	4 48	4 54	4 57	5 04	5 10	5 19	5 27	5 29	5 35	5 38	5 40	5 44	5 49	5 52	5 58	6 00	6 04	6 10	6 13	6
R 3 54	R 4 02	R 4 05	4 07	R 4 28	R 4 31	R 4 34	4 40	R 4 46	R 4 52	R 4 55	R 4 58	5 04		R 5 14	R 5 20	R 5 30		R 5 39			5 50			R 6 02	R 6 08	6 10	R 6 15	R 6 20	R 6 23	R 6
			4 11				4 44					5 08									5 54					6 14					
			4 14				4 47					5 11									5 57					6 17					
			4 17				4 50					5 14									6 00					6 20					
			4 19				4 52					5 16									6 02					6 22					
			4 21				4 55					5 19									6 05					6 25					
			4 24				4 58					5 22			H 5 31						6 08					6 28					
			4 26				5 00					5 24			H 5 34						6 10					6 30					
			4 29			4 48	5 03				H 5 12	5 27			H 5 37					H 6 01	6 13				H 6 22	6 34					
			4 31			4 50	5 05				H 5 14	5 29			H 5 39					H 6 03	6 15				H 6 24	6 37					
			4 33			4 53	5 08				H 5 17	5 32			H 5 42					H 6 06	6 18				H 6 27	6 40					
			4 35			4 55	5 11				H 5 19	5 34			H 5 44					H 6 08	6 20				H 6 29	6 43					
		H 4 23	4 38			4 58	5 15				5 24	5 37			5 50					6 13	6 23				6 34	6 46					
		H 4 26	4 41			5 01	5 19			H 5 15		5 40		H 5 34					H 6 04		6 26			H 6 22		6 50					H 6
		H 4 29	4 44			5 04	5 22			H 5 18		5 43		H 5 37					H 6 07		6 29			H 6 25		6 53					H 6
4 18	4 26	H 4 32	4 47		4 54	5 07	5 25	5 11	5 16	H 5 21		5 47	5 31	H 5 40		5 54		6 03	H 6 10		6 32		H 6 22	H 6 28		6 57	R 6 39	6 44	6 47	H 6
4 22	4 30	4 39	4 54		4 58	5 15	5 33		5 20	5 29		5 55		H 5 43				6 07	6 18		6 40		H 6 25	6 36		7 05			6 50	7
	4 34				5 02				5 24					H 5 47				6 11					H 6 29							6 54	
	4 38				5 06				5 28					H 5 51				6 15					H 6 33							6 58	
	4 42				5 10				5 32					H 5 55				6 19					H 6 37							7 02	
H 4 33	4 45			H 5 05	5 13				5 35					H 5 58			H 6 13	6 22				H 6 30	H 6 40					H 6 58		7 05	
	4 51			H 5 11	5 19				5 41				H 5 49	6 08			H 6 19	6 28				H 6 35	6 50						H 7 04	7 15	
	4 55			H 5 15	5 23				5 45				H 5 53				H 6 23	6 32				H 6 39							H 7 08		
	4 58			H 5 19	5 27				5 49				H 5 57				H 6 27	6 36				H 6 42							H 7 12		
H 4 48	5 02			H 5 23	5 31			H 5 38	5 53				H 6 01				H 6 31	6 40				H 6 46					H 7 05				
H 4 52	5 06			H 5 27	5 35			H 5 42	5 57				H 6 05				H 6 35	6 44				H 6 50					H 7 09				
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(BICYCLES NOT PERMITTED ON OUTBOUND PM PEAK TRAINS)

WILL NOT OPERATE 11/26 & 12/24

WILL NOT OPERATE 11/26 & 12/24

WILL NOT OPERATE 11/26 & 12/24

NO SMOKING ON BOARD TRAINS

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17	3 33	3 55	4 05	4 20	4 26	4 33	4 52	4 57	5 01	5 18	5 26	5 32	5 55	6 07	6 29	6 36	6 57	7 08	7 28	7 39	8 04	8 09	8 36	8 59	9 09	10 05	10 09	11 05	11 09	12 04
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Metro-North **Train Time**™

Real-time train status and schedule information to your smartphone or computer.

Visit mta.info for more information.

TICKETS, FARES & PURCHASING OPTIONS

WebTicket - Buy your monthly, weekly, ten-trip or one-way/round trip ticket online at www.mta.info. Use any major credit card. Postage is free and tickets arrive 2-3 business days after you place your order.

Mail&Ride

Sign up online at www.mta.info for Mail&Ride, our monthly ticket-by-mail subscription program. Manage your account online too!

At Stations

Buy any ticket at a ticket office or easy-to-use ticket machine. You can use cash or a major credit or debit card. In the event of a ticket vending machine malfunction, please call our toll-free hotline at 877-886-6677.

On Board the Train

(Purchasing your ticket on board the train is a cash-only transaction and is the most expensive ticket-purchasing option. Tickets purchased on board cost between $5.75 and $6.50 more. Train crews must charge the higher on board fare at all times, without exceptions). Train crews have no discretion to waive this rule, even if there is no ticket office or working ticket machine at your boarding station.

Ticket Types

One-Way - Good for one ride for 60 days including date of sale. Sold for:

Peak - Weekday trains in the gray shaded areas in this timetable.

Off Peak – All other trains including all day weekends & holidays.

Round-Trip - Good for two rides for 60 days including date of sale. Sold for peak or off-peak travel. Priced at the combination of one way fares selected (peak, off-peak, peak/off-peak, senior both ways, etc.).

Weekly - Unlimited rides Saturday through Friday. On sale the Wednesday before the Saturday that the ticket becomes valid. Non-transferable.

Monthly - Unlimited rides during the calendar month indicated on the ticket. On sale starting on the 20th of the month prior. Non-transferable.

Ten-Trip Tickets - Good for ten one-way rides. Valid for six months from date of sale. Can be shared. Sold for peak, off peak, or intermediate travel. We also sell Senior/People with Disabilities and Medicare Customers Ten-Trips.

Senior/People with Disabilities and Medicare Customers

Half-fare good at all times except weekday AM Peak trains. Seniors must be 65 or older with valid ID; people with disabilities must present MTA ID card. Medicare customers must present valid Medicare card or an MTA Reduced-Fare MetroCard at time of ticket purchase or use to obtain half-fare price. Valid for 60 Days including date of sale.

Children's Fares and Family Fare - Children 5–11 years old ride for 50% of adult fares; children under 5 years old ride free at all times. "Family Fare" is available for off-peak travel; up to four children 5–11 may ride for $1.00 when accompanied by a fare-paying adult 18 years or older. Valid for 60 Days including date of sale.

Other Ticket Types - See the Tickets & Fares brochure, our website, or call for details about other ticket types: CityTicket, School Monthly, Group Rates, Deals & Getaways, etc.

RETURNING TICKETS

Consult Ticket Agent or mail claim to:

Ticket Redemption
MTA Metro-North Railroad
P.O.Box 4117
New York, NY 10163

Refunds are subject to a $10 processing fee per transaction. One-way and Round-trip tickets are valid for travel or refund for sixty (60) days from date of sale. Ten-trip tickets are valid for travel or refund for six (6) months from date of sale. Commutation Tickets – when monthly or weekly commutation tickets are submitted for refund before their expiration, the discount is forfeited, and we must deduct the proper combination of one-way and/or weekly fares for the period the ticket has been in the customer's possession. Details of refund regulations are contained in Metro-North's tariffs, which are available for review at any ticket office. Should any questions arise as to proper fare and ticket privileges, please pay the fare requested, obtain receipt, and communicate with us.

APPENDIX H

Blasting Mitigation Plan

Blasting Mitigation Plan

Blasting Protocol and Plan

Based upon initial soil testing and the proposed Site Plan layout, it is anticipated that rock will be encountered in the development of the site. If rock is encountered, mechanical means of rock removal such as ripping and hammering with a back hoe would be the first choices for rock removal. However, in the event that rock is encountered that would require more than mechanical removal, the Applicant has put together a blasting protocol that will then be submitted for approval prior to any blasting taking place.

The Town of Lewisboro has regulations regarding blasting in Chapter 92-18 Blasting Operations in the Building Code. The Code requires a blasting permit from the Building Inspector prior to any blasting operations. The Code provides blasting procedures, hours of blasting operations and insurance requirements (see attached).

Title 12 of the New York State Code of Rules and Regulations (12 NYCRR Part 39) governs the statewide handling, transportation, and storage of explosives. The applicant will follow the requirements contains therein, and will further mitigate any impacts from blasting, by meeting the following protocols which are typical of those found in municipal ordinances.

The following protocols will be followed by the project:

- All blasting will be conducted in compliance with New York State requirements (Title 12 of the New York Code of Rules and Regulations [12 NYCRR Part 39]) for the possession, handling, storage, and transportation of explosives.
- Blasting will be conducted by licensed, qualified and insured blasting contractors, who are certified in New York State. The blasting contractor will adhere to all insurance needs as required by the Town of Lewisboro Building Code. According to the Code:

  > The Building inspector shall not issue a permit for blasting unless the applicant has filed with the Building Inspector a certificate of insurance evidencing comprehensive general liability insurance on an occurrence basis insuring against bodily injury and property damage in the amount of at least $1,000,000 by an insurance carrier licensed by the Insurance Department o the State of New York, said certificate to include the Town of Lewisboro as an additional named insured. The applicant shall also file evidence of payment of the premium of payment of the premium for said insurance coverage.

- Pre-blasting inspections will be conducted for all off-site structures located within a predetermined radius or 1,000 feet of the blasting/excavation area, if authorized by the property owners. These inspections will include photo documentation and/or video documentation.
- Prior to blasting, an analysis will be completed by the contractor to determine the size, placement, and timing of blasting charges. This analysis will be provided in a written blasting plan.

- This blasting plan will be available for review by the Building Inspector or designee, and will include the blasting layout, size of blast, timing of charges, and quantity of material to be extracted.
- Seismographic equipment with decibel meters will be placed on the property line between the location of the blast and the nearest residences of structures. The results of the monitoring equipment will be promptly reviewed following each blast.
- The quantity of explosives will be limited to the amount necessary to fracture the rock without endangering persons or property. Before firing, all blasts will be covered with a suitable protective device to prevent escape of broken material.
- Blasting operations will be limited to the hours between 7:00 am and 7:00 pm, Monday through Saturday, consistent with the Lewisboro Zoning Code. Blasting will not be conducted between the hours of 7:00 pm and 7:00 am Monday through Saturday or anytime on Sunday or any holiday.
- The minimum required amount of explosives will be used in all blasting operations. Charges will be staggered to avoid the creation of high energy blasts.
- When blasting is to occur within 1,000 feet of existing off-site structures, the contractor will conduct test blasting, if necessary, prior to any other blasting to determine appropriate on-site blasting techniques.
- Blasting will be conducted so that the resulting ground vibrations at nearby structures does not exceed the standard industry measurement of a Peak Particle Velocity of 2.0 inches per second and the airborne noise does not exceed 130 dBA.
- Sufficient surficial converge of the blast area will be provided to prevent damage from air blast and vibration.
- Notifications will be made to the Town Clerk, Town Police, and nearby off-site residences/structures within 1,000 feet of the blasting area twice prior to blasting. Initially not less than 72-hours nor more than 30 days prior to the blast, notifying residents/property owners of the approximate anticipated day and time of blasting. The second notification would be not less than 24 hours and no more than 72 hours prior to the blast, to notify the exact time of blast (within 1 hour).
- Notification would be accomplished through mailings and by telephone calls (if feasible) to the property owners. The mailings documenting the blasting schedule would be sent through the US Postal Service to the appropriate officials and all residents/property owners within 1,000 feet of the blasting area. Phone calls to these residents/property owners would be made within the specified time frames noted above to provide additional notification of the pending blasting. The mailed notifications will include information regarding the blasting locations and the anticipated time during which the blasting would occur.
- When blasting activities are to be conducted, warning flags or other means will be used at a reasonable distance along roadways to give proper warning to the general public.
- For each blast, an air horn will be sounded in a manner to give proper warning before the firing of the blast, and to give and “all clear’ at the conclusion of each blast.

Preblast Surveys

The purpose of a preblast survey is to determine the condition of a dwelling or structure and document any preblast damage or other physical factors that could reasonably be affected by blasting. The survey can also be used to document that damage occurred after the survey was conducted.

Many structures develop hairline cracks over time. These can be caused by a number of environmental factors including humidity and temperature changes, settlement from consolidation, freeze-thaw cycles, variations in ground moisture and wind. Structural problems may result from constructing a building on improperly compacted fill, improperly sized footings or other structural elements, and not being built to Building Code requirements. Inadequate drainage around a building can also cause settling and cracking. These types of cracks will be noted during the preblast survey.

Any resident or property owner within 1,000 feet of the blast area may request a preblast survey. The request must be made in writing, directly to the Building Inspector who shall promptly

notify the applicant. The survey will include visual inspection of foundations and exposed walls, as well as photographic and/or video documentation of conditions prior to blasting. In locations where existing wells will also be monitored, the condition of the well, depth of casing and depth of water elevation will also be measured and recorded (see discussion of wells below).

The blasting contractor will promptly conduct a preblast survey (at his expense) and prepare a written report of the survey. Copies of the report shall be provided to the Building Inspector and to the person requesting the survey.

Complaints

Formal complaints about blasting can be sent to the Building Inspector. Complaints should include the date(s) and time(s) of the blast(s) (if known) and the owner's name, address, and telephone number (and email if preferred). A representative of the Village and the blasting contractor will follow-up all complaints with an inspection of the activities in question and provide a written response to the owner.

In the case of specific blast damage complaints, the Building inspector and blasting contractor will interview the person involved, locate the structure, determine the distance and direction to the blast sites, check the preblast survey, check the blast and seismic records and consider the probable or actual measured levels of energy from the blasting at the structure. If it is determined that blasting has caused damage the Building Inspector may issue a Notice of Violation. The notice will require appropriate mitigation to prevent recurrence of the violation. Monetary reparation for damage will be settled between the contractor and the property owner.

Town of Lewisboro, NY
Wednesday, March 30, 2016

Chapter 92. Building Code Administration

§ 92-18. Blasting operations.

[Added 6-18-2009 by L.L. No. 3-2009]

A. It shall be unlawful to conduct any blasting operations without having first obtained a permit for the same from the Building Inspector. Persons securing permits for blasting shall use the utmost care and caution to prevent excessive shock waves or stones or debris or other material from flying and endangering life and property. Immediately after loading and tamping each hole, and before firing the blast, except in the case of authorized ditching or drainage operations, the material to be blasted shall be covered completely on all exposed surfaces with a strong woven matting or rope or wire and timber cribbing, held securely together by chains or steel wire cables. After the material has been thus covered, the blast shall be fired without unnecessary delay. All blasting shall be done by means of approved detonators. No person shall conduct such blasting operations between 7:00 p.m. and 7:00 a.m. nor at any time on Sunday, except in an emergency and then only under authority of a special approval issued by the Building Inspector. The blasting of material contiguous to any building or other structure or pipeline shall be conducted so as not to cause any damage thereto. All blasting shall be under the direct supervision of persons approved and licensed by New York State.

B. The Building Inspector shall not issue a permit for blasting unless the applicant has filed with the Building Inspector a certificate of insurance evidencing comprehensive general liability insurance on an occurrence basis insuring against bodily injury and property damage in the amount of at least $1,000,000 by an insurance carrier licensed by the Insurance Department of the State of New York, said certificate to include the Town of Lewisboro as an additional named insured. The applicant shall also file evidence of payment of the premium for said insurance coverage.

APPENDIX I

Wetlands Mitigation Plan

Wetland Buffer Mitigation Plan Notes
Wilder Balter Lewisboro
Route 22, Town of Lewisboro, NY
March 14, 2016

Notes:

1. Limits of the wetland buffer enhancement area will be staked out prior to commencement of plant removal.
2. Nuisance and non-native vegetation will be removed, including species listed in the invasive species narrative.
3. Wetland seed mix will be used as specified to supplement plantings at a rate of 4 pounds per acre. Eight pounds of seed will be used for this site.
4. The area chosen for restoration and enhancement is adjacent to the northern side of the wetland, and is the location of past site activities. Historic aerial photos show that agricultural and forestry activities were being conducted on this part of the site as recently as the 1960's. Secondary growth following the cessation of this disturbance includes a number of non-native and invasive species, which will be cleared from the site in accordance with the attached maintenance plan.
5. Two stormwater management basins will be constructed partially within the regulated buffer areas. These basins will be planted as stormwater wetlands, and will also add diversity of vegetation and stormwater quality treatment to the site.
5. A total of 91 shrubs, 12 trees and a number of herbaceous plants will be planted to create a more diverse buffer plant community on site as per the plant list below.

Goals/Offsetting of Proposed Impacts

The proposed impacts to buffers and adjacent areas are associated with the construction of stormwater management basins designed to treat runoff from the newly developed residential units. These basins will be constructed in an area that was previously disturbed and has suitable topography such that the basins can be created with minimal grading and earth movement. The proposed planting plan will improve on this vegetative cover by introducing native species to the area, while providing filtering and flood attenuation of overland runoff before it enters the receiving stream.

It is noted that a portion of the proposal is to eliminate non-native vegetation in some areas of the existing wetland and adjacent areas. In total, the proposed mitigation will include approximately two acres of the site. No direct impacts to wetlands are proposed; approximately 14,500 sf of Town and 7,000 sf of DEC buffer will be affected. Mitigation ratios will therefore be approximately 3.7: and 7.7:1 respectively.

Proposed Wetland Buffer Enhancement

The overall mitigation area, identified on the plans as "wetland/buffer enhancement area", is a disturbed part of the site where previous site work, clearing and grading were done. As noted above, nuisance vegetation, stone piles and rubble will be removed in this area and plants installed as shown on the planting plan.

Planting Details

Plant choices for the wetland expansion were made according to existing site conditions and locally common species.

All planting will proceed by hand. Materials will be brought to the site in good condition (see below) and then placed in central drop locations. The materials will then be hand-carried to their planting locations and in turn, planted by hand. Only rounded, shallow planting shovels will be used in this effort.

Criteria for selecting plant material will include (1) the plant's ability to withstand the expected light and saturation conditions; (2) its demonstrated survival on this site and other nearby sites; (3) the plant must be native and non-invasive; and (4) whether the plant material is available at nurseries in the same region as the site. See Table 1 for complete plant species list. Seed mix was chosen based on the species' ability to survive in moist areas adjacent to the road with some sun.

Planting will be done in spring or early summer (between April 1 and July 1). Shrubs may also be planted in the late summer to early fall (September 1 to October 30). In all cases, a hole will be dug twice as deep as the root ball. The only shovels allowed are rounded, shallow spades. The hole will then be backfilled with a thin layer of rich, organic topsoil, the plant placed inside, the hole backfield to the top and then gently tamped down.

Container-grown plant material delivered to the job site will be inspected to assure moist soil/root masses. Any dry and light weight plants will not be accepted. If not planted immediately the container will be stored out of the sun and wind and kept moist (i.e., a means of watering will be provided and watering will occur daily). When removed from the containers, the plants will be the size of the specified container. If in leaf, the plants will appear healthy with no spots, leaf damage, discoloration, insects or fungus. If not in leaf, the buds will be firm and free of damage, discoloration, insects or fungus. Containers will be a minimum of quart size for shrubs and gallon size for trees.

Bare roots plants will be shipped from the nursery immediately after lifting from the field and will be planted immediately upon arrival at the site. If they cannot be planted as soon as arriving at the site, they will be stored in the shade, protected from sun and wind, and kept moist by the use of straw, peat moss, compost, or other suitable materials. Plants not having an abundance of well developed terminal buds on the leaders and branches will be rejected. The stems and branches of all plants will be turgid and the cambium healthy or the plants rejected. Any bare root plants that are in leaf or have leaflets will be rejected.

Plant Species Choices for Wetland Buffer Enhancement/Restoration

Map Symbol	Quantity	Scientific Name	Common Name	Size
Trees				
Aru	12	Acer rubrum	Red Maple	5' - 6'
Shrubs				
CSe	29	Cornus sericea	Redosier dogwood	3' - 4'
AC	6	Amelanchier canadensis	Shadblow	4' - 5'
SD	14	Salix discolor	Pussy willow	3' - 4'
VC	21	Vaccinium corymbosum	Highbush blueberry	4' - 5'
VD	21	Viburnum dentatum	Arrowwood	4' - 5'
Herbaceous Plants				
CS	100	Carex stricta	Tussock sedge	2" plug
CC	100	Carex crinita	Fringed sedge	2" plug
JE	100	Juncus effusus	Soft rush	2" plug
Seed Mix				
SWM	8 pounds	Riparian Buffer Mix ERNMX-154 Or equivalent		

Wetland Buffer Enhancement Areas

Following the removal of non-native invasive species as specified in the invasive species eradication plan, wetland and buffer areas will be seeded using the following seed mixes:

Buffer Areas - Riparian Buffer Mix (ERNMX-154 or equivalent) at 20 lbs/acre.

Monitoring and Maintenance

At least one pre-construction meeting will occur between the chosen grading and/or planting contractor/subcontractor and the site environmental monitor prior to beginning construction on site. The construction monitor will have experience in wetland construction and a Bachelor of Science degree in Natural and/or Physical Resources.

Monitoring and maintenance efforts for the mitigation plantings will take place over a three year period following construction. This will include bi-weekly visits for the first growing season, and then twice a year for the next two years, with additional inspections as required depending on conditions. The applicant's environmental monitor will conduct a survey of the site and site conditions will be noted and adjusted as necessary. An annual report will be provided to the Town of Lewisboro and government agencies at the end of the growing season for each of the three years. Deer fence will be utilized as necessary to minimize damage from deer browsing.

Invasive Species Monitoring and Control Program

Japanese barberry, oriental bittersweet, *Phragmites australis* and multifloral rose are all noted as present within and adjacent to the wetlands on the project site. These invasive species favor areas of disturbed soils and edge areas. This plan will implement an invasive species monitoring and manual control program for the duration of construction and development of the project. It has been designed to carry over into the needed maintenance plans that will need to be developed and implemented by the Project Owner.

Those areas of the site that are closest to the existing wetlands and watercourses have been disturbed and re-graded over the years. These are the portions of the site that are known to support invasive species which are altering the character of the wetlands and adjacent areas and represent a long term risk to the native vegetative community.

By controlling exotic vegetation, and reducing deer populations due to increased human activity on the site, nearby native plants will have less competition and therefore have more resources available for their own growth. An invasive species monitoring and control program will be implemented at the project site as part of the overall development plan. Species targeted for removal include the following:

Tree-of-heaven (Ailanthus altissima)
Multiflora rose (Rosa multiflora)
Mugwort (Artemisia vulgaris)
Autumn olive (Eleagnus umbellata)
Garlic mustard (Alliaria petiolata)
Purple loosestrife (Lythrum salicara)
Common reed (Phragmites australis)
Oriental bittersweet (Celastrus orbiculatus)
Porcelainberry (Ampelopsis brevipedunculata)
Japanese Barberry (Berberis thunbergii)
Japanese Stilt Grass (Microstegium vimeneum)
Winged Euonymus (Euonymus alatus)

The above listed species and all other invasive non-native plants that are detrimental to the ecology of the project site will be removed during site development to the extent practicable. The goal of this program is to reduce the presence of exotic/invasive species to a threshold of less than ten percent total cover within the areas shown on the Wetland Restoration and Buffer Enhancement Plan (the "Plan"). A qualified biologist/botanist will supervise the removal of invasive species. Invasive species can be removed in several ways, depending on the location and species of the plant:

1. If a shrub is isolated and does not have its root system entwined with other plants, it may be removed mechanically. As much of the root system as possible should be removed to prevent the possibility of the invasive plant sprouting from root pieces left behind.
2. If a shrub is growing amongst other native plants in a way that uprooting it may disturb surrounding native plants warranting preservation, the plant may be most safely and effectively removed by chemical means. To remove by chemical means, the plant shall first be cut back to a few stubs and stumps, about twelve inches from the base. An EPA approved solution of glyphosate (Round-up or equivalent) shall be painted on the ends of the stumps. This technique shall be applied in the early fall months before the onset of plant dormancy. Proper notification must be made prior to the application of all restricted pesticides, and application made by a licensed applicator, if required. During project construction, glyphosate will only be applied by a licensed herbicide applicator, as coordinated with the Environmental Site Monitor. Only hand-cutting and removal will be allowed within the Wetland Controlled Area.
3. Highly invasive groundcovers, such as Japanese honeysuckle, are difficult to eliminate due to their habit of rooting along the stem. Groundcovers of this type will be removed by hand or mechanically. If after the second year of treatment the species persists, it may be sprayed with glyphosate, using a very close and targeted application during the active growing season. If the plant is growing among other herbaceous or shrub material that would be harmed by spraying, the glyphosate shall be applied by brush or mechanical removal should be considered. Repeated treatments may be necessary to remove the plant completely.
4. Highly invasive annuals, such as garlic mustard, are difficult to eliminate due to their growth from seed that is widespread among the soil seed bank where the plants are found. Several methods may be utilized in removing this type of invasive plants. If the species is growing densely without other plants, the area will be sprayed with glyphosate during the active growing season, following the manufacturer's recommendations. Species will also be removed by hand. Both methods should be performed before plants set seed. Both methods shall be performed multiple times over a season and possibly over several seasons to completely eradicate the target species.

Monitoring and Maintenance Schedule

Following development of the site, a maintenance plan will include the regular inspection of undisturbed areas as shown on the Plan, and removal of these species as necessary. This represents the transitional areas that are most susceptible to opportunistic settling of invasive species. It is anticipated that a schedule of inspections three times a year for the first three years following full project build out (early, mid and late growing season) will be adequate for the identification and removal of the invasive species in this area.

The Town Building Inspector and Wetlands Inspector will be consulted prior to the proposed removal of invasive species within the controlled area. In addition, all activities related to invasive species control, monitoring and assessment of achievement of the 10 percent tolerance threshold for coverage by all invasive species on the project site will be coordinated with the Environmental Site Monitor. These inspections will include the mapping and identification of locations and extent of cover of invasive species, and identify the methods to be used for the subsequent removal. Following treatment, a brief report outlining extent, location and removal method for each species shall be prepared and filed with the Town Planning Office.

Buffer area to be enhanced. Invasive species will be removed, new plants installed and area seeded with transitional species mix.

Wetland area where invasive species will be removed.

Total Buffer Disturbance	
New York State DEC	7,000 sf
Town of Lewisboro	14,500 sf
Mitigation/Enhancement:	
Wetland/Buffer enhancement area	+/- 40,000 sf
Stormwater Basin planting	+/- 14,000 sf
Total buffer restoration/enhancement	+/- 54,000 sf
Buffer/restoration ratio - DEC	7.7:1
Buffer/restoration ratio - Town	3.7:1

Mitigation Plan prepared by Steve Marino, PWS

Date: March 14, 2016

Basemap provided by INSITE Engineering

Tim Miller Associates, Inc.
Environmental and Planning Services
10 North Street, Cold Spring, NY
845 265 4400

WETLAND BUFFER RESTORATION
AND ENHANCEMENT PLAN
FOR
WILDER BALTER PARTNERS INC.
ROUTE 22
LEWISBORO, WESTCHESTER COUNTY, NEW YORK

APPENDIX J

Wetland Delineation Report

Wetland / Watercourse Delineation Report and Assessment

The following description and assessment complies with Section 271-7A(5) and (6) of the Town of Lewisboro Code. Site observations were conducted by Steve Marino, PWS, of Tim Miller Associates in October and November of 2015 and January, March and April of 2016.

(a) **Hydrophytic vegetation**. In the relatively undisturbed portions of the wetland, the most common species are red maple (FAC), slippery elm (FAC), green ash (FACW) and occasionally pin oak (FACW). A well-developed shrub layer was not observed. Skunk cabbage (OBL), cinnamon fern (FACW), sensitive fern (FACW), Canada goldenrod (FACU) and occasional tussock sedge (OBL) were the most common native herbaceous species. Representative photos of the wetland are provided with this EAF.

(b) **Wetland/Watercourse hydrology**. Hydrology for the wetland is derived from the steep rocky slopes both north and south of the wetland, with runoff collecting at the bottom of the slopes within a relatively broad flat area. This wetland is identified as DEC Wetland F-29, and is listed as 14.4 acres total (Figure 3.3-1). It is shown as a palustirne scrub-shrub wetland on NWI mapping (Figure 3.3-2).

A watercourse has been created (or channelized) by past site activities, which flows from east to west, then turning south at the southwest property line and onto DEP property. This watercourse derives its hydrology from the rocky, steep slopes to the north, south and east, and becomes channelized on the parcel to the east of the subject property. After leaving the site, the watercourse flows south, and presumably eventually reaches a culvert under Route 684 and to the Muscoot Reservoir. This could not be verified in the field. The watercourse is not mapped by the DEC.

(c)**Wetland/Watercourse and buffer area functions and benefits.** Due to its location in the watershed, this wetland functions primarily to capture and treat stormwater runoff from the adjacent rocky hillsides before it makes its way into the stream channel and off-site. Nutrient attenuation by the wetland is high due to it dense vegetation and flat slope, which provides for a long residence time in the wetland. However, the "vegetative diversity" function is relatively low due to the high percentage of non-native species within the wetland corridor. While no wetland dependent wildlife were observed during the site inspections, it is likely that common salamanders (red-backed, slimy and two-lined) live within the wetland and its adjacent areas, and a number of bird species feed on the fruit and seeds of the various herbaceous plants. It is also possible that box turtles may utilize this corridor if they are present in the surrounding woods. The adjacent areas are less densely vegetated, due to the rocky substrate, but do function somewhat as a filter before runoff enters the wetland. Runoff is rapid, due to the rocky soils, but is also aerated as it flows over the rocks down the slope.

(d) **Site soil types, including all hydric inclusions per soil type and field-observed indicators of hydric soils. and their drainage characteristics and depth to bedrock.** Soils in the wetland are best described as Palms Muck for the majority of the flatter areas (Figure 3.3-3). As noted above, the soils in the western part of the wetland have been disturbed by previous activities, and exhibit some characteristics of udorthents (i.e.,

previously disturbed soils). Along the northwestern part of the wetland, the soils transition into Leicester loam as the slope rises, before changing over to the Chatfield Hollis soil group on the rocky steep upland slopes.

(e) **Site flora, including upland and hydrophytic vegetation with their wetland classified status (FAC, FACW, FACU, OBL) and dominant woody herbaceous species**. In the relatively undisturbed portions of the wetland, the most common species are red maple (FAC), slippery elm (FAC), green ash (FACW) and occasionally pin oak (FACW). A well-developed shrub layer was not observed. Skunk cabbage (OBL), cinnamon fern (FACW), sensitive fern (FACW), Canada goldenrod (FACU) and occasional tussock sedge (OBL) were the most common native herbaceous species. Representative photos of the wetland are provided with this EAF. However, the majority of the wetland area on site is previously disturbed, resulting in a mix of non-native and invasive species throughout the wetland and the surrounding buffers. Several impenetrable areas of *hr g t u tr* (FACW) were observed. Fox grape (FACU), multifloral rose (FACU), climbing bittersweet (UPL), garlic mustard (FACU), and Japanese barberry (FACU) were observed throughout the wetland and adjacent areas. Occasional morrow honeysuckle (FACU), tartarian honeysuckle (FACU) and brambles (FACU) were also observed. The majority of these introduced species are FACU and UPL, and are an indication of the wetland drying out over time, most likely due to the channelizing of the watercourse through the area.

(f) **Site fauna.** While no wetland dependent wildlife were observed during the site inspections, it is likely that common salamanders (red-backed, slimy and two-lined) live within the wetland and its adjacent areas, and a number of bird species feed on the fruit and seeds of the various herbaceous plants. It is also possible that box turtles may utilize this corridor if they are present in the surrounding woods.

(6) A narrative description of the proposed regulated activity or use, indicating:

(a) **Location of subject property and area to be affected.** The development site is located on Route 22 in the Town of Lewisboro, approximately three-quarters mile south of Route 311. The proposed disturbance will involve grading and vegetation removal within the 100 DEC adjacent area and within the Town 150 foot control area. The disturbance is necessary for the construction of stormwater management basins.

(b) **Environmental impact assessment and description of the wetland, watercourse and/or buffer area proposed to be disturbed or altered.** No direct impacts to Town or DEC regulated wetlands is proposed. One of the two stormwater management areas is proposed to be constructed partially within the 100 DEC adjacent area and entirely within the Town 150 foot control area. Of necessity these basins will be located within DEC and Town of Lewisboro buffer areas. An area of previously disturbed DEC adjacent area and Town 100 foot control area will be graded and the existing vegetation lost.

(c) **Intended purpose of the proposed activity or use and the applicant's interest in the subject property and area to be affected.** The applicant proposes an affordable residential (AFFH) development that requires grading and site disturbance to construct the development. The construction of the stormwater management basins will result in disturbance to the 100 DEC adjacent area and the Town 150 foot control area.

(d)**Intended purpose and extent of impact or alteration on the affected wetland, watercourse and/or buffer area.** The proposed disturbance to DEC adjacent area and the Town of Lewisboro buffer is necessary for the construction of stormwater basins. Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. No buildings, parking or other impervious surfaces will be placed within the adjacent area.

(e) **Explanation why the proposed regulated activity cannot be located at another site or location with no or less impact upon wetland, watercourse and/or buffer area**. In order to minimize site grading and take advantage of site topography, the basins must be located in the flattest portion of the site that is downgradient of the development areas. There is such an area available on the northern side of the flagged wetland, and the project engineer has developed plans that use this area while minimizing disturbance to the adjacent area. The chosen location is part of the previously disturbed buffer area, which is dominated by opportunistic volunteer species (primarily Canada goldenrod and multifloral rose), so that vegetative impacts will be minimized as well.

(f) **Explanation as to whether or not the proposed activity is dependent on the affected wetland, watercourse and/or buffer area.** The proposed stormwater management facilities are not dependent on the affected wetland buffer area, but rather occupy an area that has the required elevations to treat stormwater and that meets the NYSDEC requirements for stormwater basins (appropriate slopes, soils, contiguous area).

(g) **The alternatives to the proposed activity considered, and why the proposal to disturb or alter the affected wetland, watercourse and/or buffer area was chose instead**. No practical alternatives for the location of the stormwater management facilities exist for the proposed development. The project engineer has minimized impervious service to the extent practical and topography, appropriate soils, septic field and water supply well locations also limit alternative locations for stormwater management.

(h) **The mitigation measures proposed to avoid or reduce impact on the affected wetland, watercourse and/or buffer area.** The stormwater management basins will be planted with wetland vegetation (both woody and herbaceous) and overseeded with seed mixes appropriate for the transitional nature of the hydrology associated with storm basins. Additionally, a program of wetland and buffer restoration is proposed for transition areas immediately bordering the stormwater basin construction disturbance area. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently occupy this part of the site. A detailed plan, showing the areas to be treated, details of the methodology and plants to be installed is included with this EAF (See Appendix I).

Western part of wetland, looking east

Western part of wetland, looking west

Eastern portion of central watercourse

Watercourse through center of wetland

Northern edge of east part of wetland

Portion of wetland south of subject property

Watercourse leaving site onto DEP property

Watercourse flowing south on DEP property

EXPANDED ENVIRONMENTAL ASSESSMENT

SEQR Full Environmental Assessment Form (EAF) and Supplemental Studies

Application of Wilder Balter Partners, Inc.
for Site Plan, Wetlands Permit and Stormwater Permit

WB Lewisboro Affordable Housing
Route 22
Town of Lewisboro, New York

Applicant:
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Contact: John Bainlardi
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Project Engineer:
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Environmental Planner:
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(845) 265-4400

Revised April 28, 2016

Application of Wilder Balter Partners, Inc.
for Site Plan Approval, Wetlands Permit, Stormwater Permit
to Town of Lewisboro Planning Board

EXPANDED ENVIRONMENTAL ASSESSMENT

SEQR Full Environmental Assessment Form (EAF) and Supplemental Studies

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1.0 INTRODUCTION

Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4 acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The development site is located south of ~~in~~ the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station. The location of the site is shown on Figures 2-1 and 2-2. The site is currently vacant wooded land and is not served by public water or sewer service.

This Expanded Environmental Assessment Form (EAF) evaluates a focused scope of potential environmental impacts for the Proposed Action, based upon the evaluation process and questions found in the Full Environmental Assessment Form, and "EAF Workbooks" prepared by the NYSDEC.

This Expanded EAF is prepared in accordance with Section 8-0101 of the New York State Environmental Conservation Law and the regulations promulgated by the New York State Department of Environmental Conservation (NYSDEC) thereunder, which appear at 6NYCRR Part 617 (known as the New York State Environmental Quality Review Act, SEQRA, or SEQR).

This document includes the EAF form Parts 1, 2 and supplemental information as Part 3. Part 1 of the EAF Form provides project details and its environmental setting. Part 2 of the EAF Form identifies potential project impacts by category, such as surface water, aesthetic resources and transportation. The Part 3 evaluations provided in this Expanded EAF provide background information, technical studies and analyses of the potential impact categories as may result from the development. Part 3 also identifies the mitigation measures that are proposed (integral to the project design) to minimize or avoid the identified impacts as relates to the magnitude and importance of potential impacts. The Part 3 sections and evaluations are further described below.

Development Purpose, Needs, and Benefits

The proposed development will provide needed AFFH affordable rental apartments in a portion of the Town where multi-family residential is permitted and in close proximity to mass transit and major transportation routes. The proposed affordable rental community will add to the Town's housing inventory and fill a specific housing need.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.
.
The design of the proposed buildings will be an attractive addition to the neighborhood, set back from NYS Route 22 with appropriately scaled architecture and landscaping that will be compatible with its residential and mixed-use setting. The size, scale and architecture for the proposed residential buildings will be similar to a recently completed and well received multi-

family affordable development in North Salem, New York named Bridleside, which community serves as the Applicant's vision for the proposed action.

t o th t

The Applicant's proposal intends to accomplish the following:

- To provide affordable rental housing opportunities in an area of the Town zoned for and well suited to support such land use, especially its location in close proximity to mass transportation and shopping opportunities (Goldens Bridge).
- To create an attractive residential development that takes advantage of the recent changes in the Town Code to allow multi-family housing in the CC-20 zoning district, and a development that is compatible with the character of the community and the long-range plans for the area.
- To minimize the environmental impacts of the development by locating the development on the western portion of the property on the most level and suitable areas of the property. The eastern portion of the site (Parcel 40.2-2-5), is proposed to be permanently preserved through the use of restrictive covenants and/or conservation easements.

The Applicant, Wilder Balter Partners, Inc. is a leading developer of award winning new residential developments in the New York metropolitan area. WBP companies have built market rate and affordable communities throughout the Hudson Valley, in Connecticut and in Nassau and Suffolk counties in Long Island for 25 years. WB Residential Communities, Inc. (WBRES) is the property management affiliate of Wilder Balter Partners. This group successfully manages and oversees 32 WBP developed properties with more than 3,200 apartments located in New York, Connecticut and the US Virgin Islands.

Site Location and Environmental Setting

ro rt o t o

The development site is located on the east side of NYS Route 22 and immediately east of Interstate 684. The site is located approximately three-quarters of a mile south of Route 138 and the Goldens Bridge Metro North train station. The subject property is bounded on the north and east by vacant land, to the south by low density residential properties and on the west by NYS Route 22. Interstate 684 lies directly west of NYS Route 22 and the highway parallels the Metro North rail line. The Croton Reservoir, part of the New York City water supply system, lies approximately 550 feet west of the site.

The development site is located approximately ~~-~~one ~~—~~mile~~s~~ from the Goldens Bridge train station (as measured from Building 2~~A~~), and approximately 0.7 miles from the closest taxi service in Goldens Bridge. The Goldens Bridge Post office is approximately 0.8 miles north of the development site and is also located in Goldens Bridge.

Route 22 provides the only road frontage to the subject property. The site is comprised of three tax lots.

ro t tt g

The subject property is located within an area of low density residential development, undeveloped land and transportation uses, as shown in Figure 2-2 Aerial Photo. The land uses in the area are predominantly low density residential, although the western portion of the property is located in the CC-20 Campus Commercial zoning district. This district is located along the Route 22 corridor, approximately three-quarters ~~one-half~~ mile south of the Goldens Bridge Village Center.

The topographic setting of the property includes an east-west trending rocky hill which slopes towards lower elevations to the north, west, south and east. Elevations on the property range from 208 feet in the wetlands in the southwest portion of the site to 450 feet at the hilltop in the north central portion of the site. Steep slopes, consisting of slopes greater than 15 % are located on the slopes of the hill and many upland portions of the property. Steep slopes comprise approximately 67 percent of the subject site (23.8 acres).

The property is currently undeveloped with the exception of two water supply wells that were installed in the 1980's as part of an earlier proposed development that was never completed. The site is primarily wooded with second growth successional forest on upland portions of the site and mapped wetlands are located in the southeastern portion of the property. A small intermittent stream runs through the middle of the wetland. The wetlands are regulated by the Town of Lewisboro, the NYSDEC (Wetland F-29) and by the U.S. Army Corps of Engineers. Based upon mapping by the NYSDEC the property is not part of or adjacent to any designated significant natural community or state listed Critical Environmental Area.

The site is serviced by electric, telephone and cable service from private utilities on Route 22. No municipal water or sewer services are available to the site.

Development Description, Proposed Uses, and Layout

u d g out d g

The proposed residential development will include five (5) multi-family buildings serviced by a single 24-foot wide access driveway. Development is concentrated in upland areas in the western portion of the property. Each of the five buildings will contain between 8 and 10 residential units and one building (Building 2) will contain a community space (clubhouse). The layout plan is provided as Figure 2-3 and full sized drawings are attached. The buildings were located to minimize grading and site disturbance to the extent necessary on a property that has varied topography and areas of exposed bedrock. The buildings, driveways and parking areas were situated to make use of more level portions of the site and minimize disturbance to slopes.

Parking and driveway access for emergency vehicles is provided at the front of all buildings and additional parking is provided at the west side of Buildings 2 and 3, to take advantage of the difference in elevations from the front to the back of the Buildings. A traffic circle with a full radius of 65 feet is provided between Buildings 4 and 5 to allow for emergency vehicles to circulate through the development. In addition to the community space in Building 2, a children's play area is proposed between Buildings 2 and 3 and a multi-purpose sports court is provided next to Building 5. Sidewalks will link all of the buildings, parking and play areas.

Given the natural slopes on the property, development will require retaining walls south of Buildings 3 and 4 and between Buildings 4 and 5. Two stormwater management basins are

located south of the residential development, at lower elevations where stormwater naturally flows. A graded driveway will be provided for maintenance access to the stormwater management basins.

The residential development will be fully landscaped with vegetation that is common to the northeast.

[illegible]

The subject property lies in two Town zoning districts: the two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district. The proposed residential development is proposed for the two westerly lots in the CC-20 district, while the eastern lot is proposed to be permanently preserved through the use of restrictive covenants and/or conservation easements. A portion of the community septic system will need to be constructed on the easterly lot (R-4A district), but no structures or impervious surface. The proposed action will include a lot consolidation to result in a single tax lot for the entire property, replacing the three existing lots.

The site plans developed for this affordable housing application show and tabulate the various zoning requirements of the CC-20 and R-4A districts applicable to the property, including the new reference to the provisions for multi-family dwellings which are found in the R-MF requirements.

Multi-family dwellings are a permitted use in the CC-20 district, subject to the requirements of Section 220-26, Multifamily Residence District (R-MF), of the Zoning Code. The dimension and bulk zoning requirements of the R-MF district replace those of the underlying CC-20 district. The proposed plan meets all of the dimension and bulk requirements of the R-MF district, with the exception of parking.

The Applicant is proposing a total of 92 parking spaces for this facility, whereas 124 spaces are required by zoning based on the proposed bedroom count. The Applicant is requesting a parking variance from the Zoning Board of Appeals, based upon the actual parking usage at similar projects developed and managed by the Applicant

The Applicant proposes to permanently preserve at least 17 acres of the site through the use of restrictive covenants and/or conservation easements. This preserved area will be located substantially on the R-4A zoned parcel and provide a permanent buffer and open space resource for the benefit of the development's residents and surrounding properties.

[illegible]

The Town Master Plan outlines policies and goals formally adopted by the Town of Lewisboro in 1985[1] as a guide for land use and future development in the Town. In its Plan, the Town identified considerations for preservation of open space resources as well as for development that are generally applicable to the subject proposal today. The Plan does not identify site-specific consistency criteria, but it was intended to provide overall guidance on the local scale for land planning decisions.

[1] Accessed on the Town's website 1/21/16.

The 1985 Town Master Plan speaks of a vision for land use in the I-684/Route 22 corridor that would provide for development of campus commercial land use that would also incorporate the preservation of open space. Campus commercial development was envisioned and planned for in the area bordering Route 22 including the subject site and paved the way for the subsequent rezoning to CC-20. As stated in the Master Plan relative to campus commercial facilities, adequate buffering between such use and adjacent residential areas would allow the two different types of land use to coexist, and reduce impacts to the natural environment resulting from development.

The Town's Master Plan cites general design principles to guide future public and private development in the Town to support the goals and objectives of the Town. These recommendations refer to landscape buffering of buildings and parking areas, minimization of disturbance on steep slopes where potential for erosion needs to be addressed, and provisions to minimize adverse visual impact on Town character and neighboring uses.

The proposed plan will comply with the requirements of the Town's Zoning, with the exception of a parking variance. The site plan will incorporate various conventional slope protection and wetland protection measures that will minimize the potential for soil erosion and surface water impacts. The plan also will incorporate tree preservation measures (particularly by minimizing the overall area of site disturbance) and proposed landscape plantings that will minimize visual intrusion and create an asset to the community. Moreover, the site plan will preserve a significant area located outside of the limits of disturbance in permanent open space.

The proposed development plan addresses the Town's design principles relative to environmental protection and visual consistency, in the applicant's opinion. The proposed site plan has been laid out such that the buildings and other site features will be substantially surrounded by permanently preserved, wooded open spaces and will not be visually prominent at any time of year. In addition to the proposed landscape plan, natural topographic conditions render the development area of the site largely obscured from view from most offsite locations thereby avoiding potential impact on community character.

d t d M g t

The proposed development will be exclusively used for residential purposes. The Applicant proposes an affordable AFFH development with 45 rental units and a single caretakers unit (46 units total). The rental apartments will meet the requirements of the Westchester County Fair and Affordable Housing Implementation Plan (2000). While the development will be funded utilizing programs provided by Westchester County and NYSHCR, the development will be developed, built, marketed, owned and operated by Wilder Balter Partners, Inc.

The development will include a mix of one, two and three bedroom units as follows:

1 BR – 14 Units
2 BR – 28 Units (including caretakers units)
3 BR – 4 Units

The units will range will in size from approximately 842 square feet (1-BR unit), 1,025 square feet (2-BR unit) and 1,285 square feet (3-BR unit).

The development is proposed as a fair and affordable community subject to maximum income requirements. The units will be available to residents whose household incomes do not exceed

60% of the Area Median Income (AMI), based on family size, as established by the Department of Housing and Urban Development (HUD) on an annual basis. Nine of the units (20 percent) will be set aside for households at or below 50% of the AMI. In 2015, the area median income in Westchester County was established at $105,700 for a 4 person household. Therefore, for a family of 4, 60% of the AMI would be $63,420 and 50% would be $52,850. Further information on income eligibility, marketing and building occupancy is provided in Section 3.9 Community Facilities and Services and in the January 6, 1016 letter from Wilder Balter Partners, Inc. to the Planning Board (see Appendix A – Correspondence).

The apartments will be marketed by Wilder Balter Partners, Inc. together with a non-profit partner (expected to be the Housing Action Council) to households meeting the income eligibility requirements. Marketing will comply with the Westchester County Affirmative Fair Housing Marketing Plan. A typical application is provided in Appendix A (see January 6, 2016 Wilder Balter Partners, Inc. letter). Applicants will be selected for an interview by public lottery. Interviews will be conducted by trained and experienced management staff. In addition to income and asset information, all applicants will be required to pass established credit and criminal screening processes.

Further information regarding anticipated community demographics is provided in Section 3.9 – Community Facilities and Services. Information provided in the demographics and community services discussion is based, in part, on a recently completed and fully occupied affordable rental community in North Salem managed by Wilder Balter Partners, Inc. named Bridleside at North Salem.

[illegible]

A preliminary stormwater management plan for the proposed development has been prepared by the project engineer, Insite Engineering, Surveying, & landscape Architecture, P.C. The plan includes a stormwater pollution prevention plan report, or SWPPP and relevant engineering drawings. A copy of the preliminary SWPPP is provided in Appendix B.

The SWPPP is required to meet the regulatory requirements of the Town of Lewisboro, the NYSDEC and the New York City Department of Environmental Conservation (NYCDEP). Once the SWPPP is approved in final form (as part of the final site plan approval after the conclusion of the SEQR process), the document will govern all activities associated with site disturbance for construction and all permanent drainage features required to comply with applicable stormwater management regulations. Section 3.2 provides further description of the proposed stormwater management system.

The site plans call for a stormwater collection system to collect and direct stormwater from developed impervious surface to a single stormwater management practice, given the use of an infiltration practice for treatment. Therefore, the stormwater design consists of a dry pretreatment extended detention basin followed by discharge to an infiltration area (see Drawing SP-2 Conceptual Grading Plan).

The SWPPP also provides for erosion and sediment control during construction and on-going maintenance for stormwater management facilities.

[illegible]

The development site is not located in an area served by municipal water and sewer service. Water service will be provided by a new community water system supplied by on-site wells and wastewater will be treated by a new community on-site septic system. These systems are being designed by the project engineer, Insite Engineering, Surveying & landscape Architecture, P.C.

The engineer has developed preliminary water and sewer reports for the residential development and they are attached in Appendix C and D. The community water and sewer systems will be designed and constructed in accordance with the standards and subject to the approval of the Westchester County Department of Health (WCDOH) and New York State Department of Environmental Conservation (NYSDEC).

Water demand for the development has been estimated in the Water Facilities Report to be 9,020 gallons per day (gpd) based upon bedroom count. Average daily flow is estimated to be 6 gpm, with peak hourly flow estimated at 60 gpm. Each building will be equipped with sprinklers and the combined peak flow from domestic and fire sprinkler demand will be used to design the water system.

Water will be supplied from two existing wells, but an additional 1 to 2 wells will be required (3 to 4 wells total) to meet the NYSDEC requirements for maximum day demand with the best well out of service. Water supply for the development was evaluated by Leggette Brashears & Graham (see Water Supply Report – Appendix E). Further discussion of groundwater supply is provided in Section 3.4 Groundwater.

The community water system will include on-site water treatment facilities and an estimated 15,000 gallon storage tank.

Wastewater design flow for the residential development is based upon bedroom count and is estimated at 9,020 gallons per day (gpd). Preliminary soil testing for the Subsurface Treatment System (SSTS) areas have been completed by Insite. Suitable soils for the SSTS areas have been identified in the southwestern, northern and eastern portion of the site. Based on the site constraints, preliminary testing and initial assessment indicate that the on-site soils can accommodate a SSTS to support a wastewater design flow of up to 9,020 gpd. The final SSTS capacity will be based on witnessed soil testing with the WCDOH and NYCDEP and the final bedroom count for the development.

Construction

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The duration of the construction is anticipated to be approximately 16 months, beginning in Spring 2017. The residential development will be constructed as one continuous project. Construction activity will occur weekdays from 8:00 AM and Sunset, in conformance with the Town of Lewisboro regulations. No construction activity will occur between Sunset and 8:00 AM or on weekends or holidays.

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The site plan documents for permitting and construction will include detailed erosion and sedimentation control plans, details and notes designed in accordance with Town, NYSDEC and NYCDEP requirements for stormwater management. Erosion and sediment controls will include implementation and maintenance of temporary measures throughout the duration of the

construction activities and installation of structural measures for the permanent stabilization of the site. Details of the proposed erosion and sediment controls are specified in the preliminary Stormwater Pollution Prevention Plan (SWPPP) (see Appendix B).

Site excavation will entail excavation and earth removal. Based upon observation and preliminary soil testing, it is anticipated that grading for construction will require rock hammering and blasting. A cut and fill analysis is being completed by the project engineer as the Site Plan is refined. The project engineer will endeavor to bring the earthwork as close to balance as possible in order to minimize import/export. Re-using the on-site rock as construction fill will require on-site rock processing by a rock crusher. Any required blasting and/or rock crushing will be done in compliance with all Town of Lewisboro and New York State regulations and requirements. A Blasting Permit from the Town of Lewisboro is required for the work.

A stabilized gravel construction access pad will be installed at the construction entrance point identified on the erosion control plans to limit soil transport onto the local roadways from trucks leaving the site. The SWPPP will specify measures to stabilize the steep slopes during and after construction and to divert clean runoff water away from the construction area.

o tru t o t g g

Construction material and staging areas will be maintained on the site. Areas for equipment staging and soil stockpiling within the site will need to be designated prior to commencement of construction activities. Erosion controls will be utilized around all areas selected for material storage and equipment staging. The construction equipment entrance will be stabilized with broken stone and perimeter silt fencing will be installed around all construction areas.

ru r

Construction traffic will arrive at the beginning of the construction period, primarily consisting of trucks delivering equipment and building materials, and daily trips of construction workers. Large construction equipment will include bulldozers, graders, excavators and dump trucks. This equipment is typically brought to the site on tractor trailers and generally is kept at the site for the duration of site preparation activities.

While the construction activity is ongoing, construction materials will be brought in throughout the construction period. Trucks will travel to and from the site to transport construction materials.

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As described, the EAF Part 3 Evaluation provides information and analyses for those potential impact categories that are relevant to the proposed development. The Part 3 sections provide a description of existing conditions, potential impacts and proposed mitigation to avoid and/or minimize potential impacts.

3.1 Impact on Land (Soils, Topography, Geology)
The development will require grading and excavation for project construction. The project has been designed to minimize the limits and extent of grading. Mitigation measures including a Soil Erosion Control Plan are described in the section.

3.2 Impact on Surface Water
Site development, grading and soil erosion have the potential to impact on-site and off-site water quality. Mitigation measures including a Stormwater Pollution Prevention Plan (SWPPP) are described in the section.

3.3 Impact on Wetlands
The subject property contains a wetland regulated by the NYSDEC, the Town of Lewisboro and the US Army Corps of Engineers. The proposed Site Plan requires encroachment into the Town of Lewisboro and NYSDEC designated wetland buffer area (designated wetlands are avoided). Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. Mitigation measures including a wetlands mitigation plan are described.

3.4 Impact on Groundwater
The development site is not located in an area served by municipal water and therefore water service will be provided by a new community water system supplied by on-site wells. A hydrogeologic assessment for the property has been prepared and it is anticipated that on-site wells can meet the estimated water demand of 9,020 gallons per day (gpd), with no significant impact to the nearby private wells.

3.5 Impact on Ecology
The site is primarily wooded with second growth successional forest on upland portions of the site and a mapped wetland is located in the southeastern portion of the property. Grading for site development will alter approximately 9 acres of existing vegetation and habitat. An evaluation of existing vegetation and mitigation measures are provided.

3.6 Impact on Aesthetic Resources
The development will alter the view for drivers on the I-684 exit ramp and on a limited section of NYS Route 22. A visual analysis has been completed and mitigation measures are described. Mitigation will include building design elements such as building materials and colors.

3.7 Impact on Historic and Archeological Resources
On-site grading has the potential to impact archeological resources. Phase 1A and 1B Cultural Resources Surveys have been completed for the project area. The Phase 1B investigation involved soil test pits. Based upon the surveys, the development will have no impacts upon Historic and Archeological resources.

3.8 Impact on Transportation
The proposed development will result in approximately 43 new vehicle trips during the p.m. peak traffic hour. A traffic study has been completed and is described in the section. The development will not result in significant impacts to local traffic.

3.9 Impact on Community Facilities and Services
The new development will result in new demand for municipal services, including the addition of an estimated 17 school children to the Katonah-Lewisboro School District. The potential impacts to the Town of Lewisboro and the School District are evaluated.

3.10 Consistency with Community Character
The subject property lies in two Town zoning districts: the two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district. The proposed residential development is proposed for the two westerly lots in the CC-20 district, while the eastern lot is proposed to be permanently preserved through the use of restrictive covenants

and/or conservation easements. A discussion is provided regarding the development's consistency with nearby existing land uses, the Town Zoning Code and the Master Plan.

Approvals, Reviews and Permits

Approvals, reviews and/or permits required for the implementation of this development are listed below by issuing agency. These agencies are called Involved Agencies under SEQRA, and have approval authority over one or more aspects of this application.

Site Plan, Wetlands Permit and Stormwater Permit
Town of Lewisboro Planning Board
20 North Salem Road
Cross River, NY 10518

Variances from Zoning Code
Town of Lewisboro Zoning Board of Appeals
20 North Salem Road
Cross River, NY 10518

Building Permit, Blasting Permit
Town of Lewisboro Building Department
20 North Salem Road
Cross River, NY 10518

Community Septic System, Community Water Supply
Westchester County Department of Health
145 Huguenot Street
New Rochelle, NY 10801

Community Septic System, SWPPP
NYC Department of Environmental Preservation
465 Columbus Avenue
Valhalla, NY 10595

SPDES General Permit for Stormwater, Wetland Permit
NYS Department of Environmental Conservation
21 South Putt Corners Road
New Paltz, NY 12561

Highway Permit
NYS Department of Transportation
4 Burnett, Boulevard
Poughkeepsie, New York 12603

Development Funding
Westchester County Board of Legistlators~~Planning Board~~
148 Maritine Avenue
White Plains, New York 10601

Development Funding
New York State Homes & Community Renewal
641 Lexington Avenue
New York, New York 10022

3.1 SOILS, TOPOGRAPHY and GEOLOGY

Existing Conditions

The soils on the development site have been mapped by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) of Putnam and Westchester County, New York. Soils on the property are varied and are partly controlled by the varied topography and bedrock that is shallow or exposed in portions of the site.

The eight (8) soil types mapped on-site include: Chatfield-Hollis-Rock outcrop complex (CtC and CuD), Hollis-Rock outcrop (HrF), Palms muck (Pa), Riverhead loam (RhB), Leicester loam (LcB), Chatfield-Charlton Complex (CsD), Charlton Loam (ChD), and Charlton-Chatfield Complex (CrC). The location of these soils groups on the site is shown in Figure 3.1-1, Soils Map. A summary of on-site soils, soil characteristics, depth to groundwater and depth to bedrock is provided in Table 3.1-1.

The Chatfield-Hollis-Rock outcrop complex soils (CtC and CuD) are either hilly (CuD) or rolling (CtC) and are moderately to very deep and well drained to excessively drained. Slopes range from 3 to 15 percent (CtC) and 15 to 35 percent (CuD). Depth to water is more than 6 feet throughout the year, permeability is moderate to moderately rapid, and available water capacity is very low to moderate. The depth to bedrock is typically between 10 inches and 40 inches.

The Hollis-Rock outcrop complex soils (HrF) are shallow, very steep and well drained soils with areas of rock outcrop. Slopes will range from 35 to 60 percent. Depth to water is more than 6 feet throughout the year, permeability is moderate or moderately rapid, and the available water capacity is very low. The depth to bedrock is generally between 10 to 20 inches.

The Palms muck soils (Pa) are nearly level, very deep and very poorly drained soils and consists of 16 to 51 inches of organic material. Depth to water is typically 6 inches above to 12 inches below the surface from September through June, and up to 24 inches during dry periods. Permeability is moderately slow to moderately rapid with a high water capacity. Depth to bedrock is typically more than 60 inches.

The Riverhead loam (RhB) soils are gently sloping, very deep and well drained. Slopes range from 3 to 8 percent. Depth to water is more than 6 feet throughout the year. Permeability is moderately rapid with a moderate water capacity. The depth to bedrock is typically more than 60 inches.

The Leicester loam (LcB) soils are gently sloping, very deep and somewhat poorly drained. Slopes range from 3 to 8 percent. Depth to water is typically 1.5 feet in depth from November to May. Permeability is moderate or moderately rapid with a moderate water capacity. Depth the bedrock is greater than 60 inches.

The Chatfield-Charlton complex (CsD) is a soils unit that is very deep and well drained. Slopes range from 15 to 35 percent. Depth to water is generally more than 6 feet throughout the year. Permeability is moderate to moderately rapid with a low water capacity. Depth to bedrock is typically 20 to 40 inches.

The Charlton loam (ChD) soils are moderately steep, very deep and well drained. Slopes range from 15 to 25 percent. Depth to water is 6 feet below the ground surface throughout the year.

Permeability is moderate to moderately rapid with a moderate water capacity. Depth to bedrock is more than 60 inches.

The Charlton-Chatfield complex (CrC) consists of very deep and well drained soils. Slopes range from 2 to 15 percent. Depth to water is typically 6 feet throughout the year. Permeability is moderate to moderately rapid with a low to moderate water capacity. Depth to bedrock is greater than 60 inches.

Table 3-1-1
Soil Characteristics and Limitations

Soil Series	Hydrologic Group[1]	Permeability (in./hr.)	Erosion Factor K[2]	Depth to Bedrock (inches below the ground surface)	Depth to Water (feet below the ground surface)
Chatfield-Hollis-Rock outcrop (CtC & CuD)	B/C/D	0.6-6.0 (0-24" deep)	0.20-0.32	10-40 inches	>6 feet
Hollis-Rock outcrop (HrF)	C/D	0.6-6.0 (0-16" deep)	0.24-0.32	10-20 inches	>6 feet
Palms muck (Pa)	A/D	0.2-6.0 (0-48" deep) 0.2-2.0 (48-60" deep)	0.37	>60 inches	+1-1.0 feet (November thru May)
Riverhead loam (RhB)	B	2.0-6.0 (0-30" deep) >20 (30-60" deep)	0.17-.28	>60 inches	>6 feet
Leicester loam (LcB)	C	0.6-6.0 (0-26" deep) 0.6-20.0 (26-60" deep)	0.24-0.28	>60 inches	0-1.5 feet (November thru May)
Chatfield-Charlton complex (CsD)	B	0.6-6.0 (0-60" deep)	0.20-0.24	20-40 iches	>6 feet
Charlton loam (ChD)	B	0.6-6.0 (0-60" deep)	0.24	>60 inches	>6 feet
Charlton-Chatfield complex (CrC)	B	0.6-6.0 (0-60" deep)	0.20-0.24	>60 inches	>6 feet

[1] Hydrologic groups are used to estimate runoff from precipitation; they range from high infiltration (A) to low infiltration (D).
[2] Erosion Factor K indicates susceptibility to sheet and rill erosion by water measured in tons/acre/year. K values range from 0.05 to 0.69. Higher values indicate greater susceptibility
Source: Soil Survey of *t h t r d ut ou t* ~~Rockland County~~, New York, USDA SCS.

The site generally slopes from the north to the south towards the wetland in the southwestern portion or the property. Bedrock underlying the development site consists of Fordham Gneiss and Inwood Marble.

The project engineer has analyzed the existing slopes on the property. As shown in Drawing CM-1 Constraints and Net Lot Area Map, development is proposed on the more level, western

portions of the property. Existing slopes based upon slope categories are shown in Table 3.1-2 Existing Slopes.

Table 3.1-2 Existing Slopes	
0-15 %	11.6 acres
15-20%	4.1 acres
>20%	19.7 acres
Total	35.4 acres
Source: insite Engineering, Surveying, & Landscape Architecture, P.C. March 2016	

Potential Impacts

Grading is required to build the internal road network, install utilities, prepare areas for the proposed residential buildings and parking, and to create the stormwater management facilities located in the southern portion of the site. The conceptual grading is shown in Figure 3.1-2 - Conceptual Grading Plan. The site plan layout is designed to utilize the existing topography thereby minimizing the amount of earthwork necessary. Based on preliminary engineering estimates approximately 9 acres is proposed to be disturbed for the development. Exposed soils, especially in areas of steep slopes has the potential to result in soil erosion and sedimentation into areas of lower topography including wetland buffers and wetlands located in the southwest portion of the site.

[illegible]

Based upon analysis by the project engineer, the development will require some disturbance to slopes greater than 15 percent. Disturbance to slopes by category is provided in Table 3.1-3. Grading on steeper grades increases the potential for soil erosion, if stabilization and erosion control techniques are not properly implemented. An erosion and sediment control plan has been prepared to assure proper management of exposed soils and to minimize erosion, as further described below.

Table 3.1-3 Slope Disturbance	
0-15%	3.9 acres
15-20%	1.4 acres
>20%	3.6 acres
Total	8.9 acres
Source: Insite Engineering, Surveying, & Landscape Architecture, P.C. March 2016	

Bedrock outcrops are more prevalent in the eastern portion of the property and include a topographic ridge. Development on the eastern portion of the property is not proposed, with the possible exception of septic fields. The septic fields, as shown in the plans, would only occur on level portions of the site with sufficient soil cover above the bedrock. All major development is located on the western portion of the property. If bedrock is encountered during construction,

mechanical means (i.e. ripping, chipping) would be employed first to avoid any unnecessary blasting. Based upon observation and preliminary soil testing, it is anticipated that grading for construction will require rock hammering and blasting. In limited circumstances such as improper design or implementation, blasting has the potential to damage off-site foundations. The nearest existing off-site residences are located on Todd Road south of the property and approximately 600 feet from the proposed area of development. Blasting mitigation measures are described below.

A*voidance or Minimization of Potential Impacts* and Mitigation

Soils

As indicated, construction of the development will require the grading of approximately 9 acres of the 35.4 acre property or 25 percent. The project engineer has provided an estimate of the amount of grading required in each slope category, as shown in Table 3.1-3. As shown in the grading plan (Figure 3.1-2), grading on slopes greater than 15 percent is unavoidable, but has been minimized to the extent practical through the layout of the buildings, parking areas, driveways and septic fields.

Engineering measures such as proper design of foundations, subsurface drainage as needed, and proper designs of pavement subbase and excavated slopes can be utilized to overcome any construction limitations of the onsite soils.

A Soil Erosion and Sediment Control Plan (Drawing SP-3) has been prepared for the subject development, as part of the Stormwater Pollution Prevention Plan (SWPPP) to assure proper management of soils to minimize erosion, as further described below.

Blasting

A Blasting Permit will be obtained from the Town of Lewisboro for any required blasting, according to the Building Code (92-18 Blasting Operations).

Any necessary blasting would only be carried out in conformance with an approved Blasting Plan, specific to this project, developed between the Blasting Contractor and the Town. The Blasting Plan would include, but not be limited to the following:

- Determination of a radius of sensitive receptors to the blasting site.
- Notification of property owners within the radius of sensitive receptors. This notification would provide warning that blasting will occur and the dates it is planned to start and finish.
- Conducting pre-blasting inspections for buildings within the radius of sensitive receptors. This will be completed by the Blasting Contractor.
- Conducting post-blasting inspections of the buildings within the specified radius.
- Blasting would only be conducted during specified hours in conformance with the Town of Lewisboro Building Code (7:00 AM to 7:00 PM).

The Blasting Plan would be developed in full conformance with the Town of Lewisboro's Building Code and in accordance with New York State blasting law. A preliminary Blasting Plan is attached as Appendix H. The contractor's Blasting Contract would be based on site specific blasting requirements, and would be submitted to the Town for approval in advance of any site work activity. In accordance with the Town Building Code, the Building Inspector shall not issue

a permit for blasting unless the applicant has filed with the Building Inspector a certificate of insurance evidencing comprehensive general liability insurance.

Potential Erosion

The anticipated development includes the grading and disturbance of 9 forested acres. The area proposed to be disturbed is in the western portion of the site with more level topography minimizing disturbance to steep slopes to the extent practical. During construction, erosion control measures will be implemented to mitigate any steep slope disturbance that may occur.

A Soil Erosion and Sediment Control Plan (Drawing SP-3) has been prepared for the subject development, as part of the Stormwater Pollution Prevention Plan (SWPPP). The SWPPP is provided in Appendix B. The Erosion and Sediment Control Plan shows the limits of disturbance and the placement of silt fencing in locations down-slope from areas of grading. The proposed stabilized construction entrance is also shown in the Plan. Drainage inlets with inlet protection will be installed in conjunction with the stormwater collection drain system.

[illegible]

The SWPPP has been designed to conform to applicable requirements of the New York State Department of Environmental Conservation (NYSDEC), SPDES General Permit GP-0-15-002. The Plan will be completed in accordance with New York State Department of Environmental Conservation best management practices ("BMPs") as further described below.

[illegible]

The principle objectives of the Soil Erosion and Sediment Control Plan include the following:

- divert clean surface water before it reaches the construction area;
- control erosion at its source with temporary and permanent soil protection measures;
- capture sediment-laden runoff from areas of disturbance and filter the runoff prior to discharge; and,
- decelerate and distribute storm water runoff through use of natural vegetative buffers or structural means before discharge to off-site areas.

These objectives will be achieved by utilizing a collective approach to managing runoff, i.e. Best Management Practices (BMPs). Prior to any disturbance, erosion and sediment control measures will be installed in accordance with the specifications of the Erosion Control Plan. The construction contractor will be required to install all sediment and erosion control measures and maintain them throughout the entire construction process.

Based upon the proposed erosion control measures being implemented, construction impacts will be minimized.

3.2 IMPACT ON WATER RESOURCES

Existing Conditions

The development site is mostly wooded with second growth forest and an area of wetland located in the southwestern portion of the site. Topography on the property is varied and elevations range from about 210 feet to 450 feet. An east-west trending ridge is located in the northern portion of the property, and run-off generally drains from north to south towards the wetland. Surface water drainage flows by sheet flow from higher elevations to lower elevations on the site.

The wetland in the southwest portion of the property is mapped as a NYSDEC regulated wetland (F-29). This wetland is also regulated by the Town of Lewisboro and the US Army Corps of Engineers. According to the NYSDEC on-line database Wetland F-29 is 14.4 acres in size. Approximately 2.3 acres of this wetland is located on the subject property.

An intermittent watercourse is located in the mapped wetland and this watercourse flows towards the west under Route 22 and the eventually drains to the Muscoot Reservior located west of the property. A site walk with the New York City Department of Environmental Protection (NYCDEP) on March 9, 2016 confirmed that the on-site watercourse is not a reservoir stem. This intermittent watercourse is not designated on NYSDEC maps (NYSDEC Environmental Resource Mapper). The property contains no other streams, ponds or lakes.

The development site is in the Muscoot Watershed Basin. This Reservoir is located in the New York City East-of-Hudson Croton Watershed, where the Environmental Protection Agency (EPA) has established a Total Maximum Daily Load (TMDLs) for phosphorus. The burden for reducing current phosphorous loading to achieve the TMDL presently lies with the applicant, Town of Lewisboro and its regional partners. The program for phosphorous reduction has been established in the NYSDEC document entitled *roto t r h d h ho horou M o o t our t t o* (TMDL Implementation Plan) dated January 14, 2009.

Potential Impacts

Stormwater run-off during construction or post-development, has the potential to affect water quality for wetlands and water courses identified on-site and may potentially affect off-site water courses. During construction, stormwater run-off has the potential to transport sediment into wetlands and water courses. The development will result in the introduction of 2.4 acres of new impervious surface to the site. Post-development, stormwater may transport sediment, salt from winter deicing and oil and grease from parking lots and driveways. Effective stormwater management, both during and following the development, will minimize these potential stormwater impacts.

Avoidance or Minimization of Potential Impacts and Mitigation

In connection to the project plans, the project engineer has prepared a preliminary Stormwater Pollution Prevention Plan (SWPPP) for the proposed development. The development will require grading, excavation and the construction of driveways, parking areas and buildings. Approximately 2.4 acres will be converted to impervious surface for the development. Mitigation for the proposed impervious surfaces resulting from the development will be provided by the proposed stormwater management practices (SMP's) described in the SWPPP. The proposed SMP's will be designed to capture and treat runoff from the impervious surfaces associated with

the proposed buildings, parking areas and access drive. A copy of the preliminary SWPPP is attached in Appendix B.

The existing drainage patterns on the site will be maintained to the maximum extent practical in the proposed condition. Stormwater treatment for the subject project will be accomplished with several practices including an extended detention dry stormwater basin, used as pretreatment practice prior to an infiltration basin. The infiltration basin and extended detention pretreatment dry stormwater basin will both be sized to capture and treat the Water Quality Volume from the contributing area of the proposed development. The stormwater runoff from the proposed development will be captured in a collection system and conveyed to the extended detention dry stormwater basin for pretreatment of the stormwater runoff, prior to discharging to the infiltration basin for final treatment.

Given the topography and natural constraints on the subject property, limited practical area was available for stormwater management practices. As shown in Figure 3.1-2 Conceptual Grading Plan, the infiltration basin and extended detention pretreatment dry stormwater basin are located partially within the Town of Lewisboro 150 foot wetland buffer and the NYSDEC 100 foot adjacent area. Approximately 7,000 sf of NYSDEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently occupy this part of the site. In addition the stormwater management facilities will be planted with wetland vegetation, as further described in Section 3.5 - Impact on Ecology.

The proposed stormwater management system for the development has been designed to meet the requirements of local, city, and state stormwater ordinances and guidelines, including but not limited to those of the Town of Lewisboro, the NYSDEC, and the New York City Department of Environmental Protection (NYCDEP). Since the subject development proposes the disturbance of more than one (1) acre, coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002 is required. In order to meet the requirements set forth by this permit, the latest edition of the NYSDEC *or t t tor t r M g t g M u* (NYSSMDM), including Chapter 10: *h d ho horu o t d rd* (Chapter 10) was referenced for the design of the proposed stormwater management system. Based upon NYCDEP rules and regulations in the watershed, NYCDEP review and approval of a SWPPP Approval is required for this for this project. In the opinion of the applicant, adherence to the NYSDEC, NYCDEP and Town of Lewisboro stormwater regulations and requirements will ensure that stormwater quality from the development will be maintained.

Given the above mitigation measures, it is the applicant's opinion that the proposed action will have no significant impact to on-site or off-site water resources.

3.3 IMPACT ON WETLANDS

Existing Conditions

The 36 acre subject site is a mix of wooded upland slopes and wetland/stream corridor, located between undeveloped lands to the north and east, undeveloped lands and large lot residential development along Todd Road to the south, and Route 22 and I-684 to the west. The site wetland corridor is located along the southern property line, and drains to New York City owned property to the south. The 27 acre undeveloped parcel to the north is also owned by the DEP.

Site observations were conducted by Steve Marino, PWS, of Tim Miller Associates in October and November of 2015 and January of 2016. The following description complies with Section 271-7A(5) and (6) of the Town of Lewisboro Code. [illegible]

The site wetlands have been subject to disturbance over the years. Hydrology for the wetland is derived from the steep rocky slopes both north and south of the wetland, with runoff collecting at the bottom of the slopes within a relatively broad flat area. This wetland is identified as DEC Wetland F-29, and is listed as 14.4 acres total (Figure 3.3-1). It is shown as a palustirne scrub-shrub wetland on NWI mapping (Figure 3.3-2)

Soils in the wetland are best described as Palms Muck for the majority of the flatter areas (Figure 3.3-3). As noted above, the soils in the western part of the wetland have been disturbed by previous activities, and exhibit some characteristics of udorthents (i.e., previously disturbed soils). Along the northwestern part of the wetland, the soils transition into Leicester loam as the slope rises, before changing over to the Chatfield Hollis soil group on the rocky steep upland slopes.

In the relatively undisturbed portions of the wetland, the most common species are red maple (FAC), slippery elm (FAC), green ash (FACW) and occasionally pin oak (FACW). A well-developed shrub layer was not observed. Skunk cabbage (OBL), cinnamon fern (FACW), sensitive fern (FACW), Canada goldenrod (FACU) and occasional tussock sedge (OBL) were the most common native herbaceous species. Representative photos of the wetland are provided with this EAF.

However, the majority of the wetland area on site is previously disturbed, resulting in a mix of non-native and invasive species throughout the wetland and the surrounding buffers. Several impenetrable areas of [illegible] (FACW) were observed. Fox grape (FACU), multifloral rose (FACU), climbing bittersweet (UPL), garlic mustard (FACU), and Japanese barberry (FACU) were observed throughout the wetland and adjacent areas. Occasional morrow honeysuckle (FACU), tartarian honeysuckle (FACU) and brambles (FACU) were also observed. The majority of these introduced species are FACU and UPL, and are an indication of the wetland drying out over time, most likely due to the channelizing of the watercourse through the area.

A watercourse has been created (or channelized) by past site activities, which flows from east to west, then turning south at the southwest property line and onto DEP property. This watercourse derives its hydrology from the rocky, steep slopes to the north, south and east, and becomes channelized on the parcel to the east of the subject property. After leaving the site, the watercourse flows south, and presumably eventually reaches a culvert under Route 684 and to

the Muscoot Reservoir. This could not be verified in the field. The watercourse is not mapped by the DEC.

t d t r our d u r r u t o

Due to its location in the watershed, this wetland functions primarily to capture and treat stormwater runoff from the adjacent rocky hillsides before it makes its way into the stream channel and offsite. Nutrient attenuation by the wetland is high due to it dense vegetation and flat slope, which provides for a long residence time in the wetland. However, the "vegetative diversity" function is relatively low due to the high percentage of non-native species within the wetland corridor. While no wetland dependent wildlife were observed during the site inspections, it is likely that common salamanders (red-backed, slimy and two-lined) live within the wetland and its adjacent areas, and a number of bird species feed on the fruit and seeds of the various herbaceous plants. It is also possible that box turtles may utilize this corridor if they are present in the surrounding woods. The adjacent areas are less densely vegetated, due to the rocky substrate, but do function somewhat as a filter before runoff enters the wetland. Runoff is rapid, due to the rocky soils, but is also aerated as it flows over the rocks down the slope.

Impacts

No direct impacts to Town or DEC regulated wetlands is proposed. One of the two stormwater management areas is proposed to be constructed partially within the 100 DEC adjacent area and entirely within the Town 150 foot control area. Of necessity these basins will be located within DEC and Town of Lewisboro buffer areas. Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed. No buildings, parking or other impervious surfaces will be placed within the adjacent area.

In order to minimize site grading and take advantage of site topography, the basins must be located in the flattest portion of the site that is downgradient of the development areas. There is such an area available on the northern side of the flagged wetland, and the project engineer has developed plans that use this area while minimizing disturbance to the adjacent area. The chosen location is part of the previously disturbed buffer area, which is dominated by opportunistic volunteer species (primarily Canada goldenrod and multifloral rose), so that vegetative impacts will be minimized as well.

No grading or other activities will occur within the wetland, but will of necessity be near the wetland. The New York City DEP's interpretation of the Watershed Rules and Regulations results in a redundant stormwater treatment program, requiring two basins on the current design and sufficient capacity to capture the regulated runoff volumes.

Mitigation

The stormwater management basins will be planted with wetland vegetation (both woody and herbaceous) and overseeded with seed mixes appropriate for the transitional nature of the hydrology associated with storm basins. Additionally, a program of wetland and buffer restoration is proposed for transition areas immediately bordering the stormwater basin construction disturbance area. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently

occupy this part of the site. A detailed plan, showing the areas to be treated, details of the methodology and plants to be installed is included with this EAF (See Appendix I).

3.5 IMPACT ON ECOLOGY

Existing Conditions

The 36 acre subject site is a mix of wooded upland slopes and wetland/stream corridor, located between undeveloped lands to the north and east, undeveloped lands and large lot residential development along Todd Road to the south, and Route 22 and I-684 to the west. The site wetland corridor is located along the southern property line, and drains to New York City owned property to the south. The 27 acre undeveloped parcel to the north is also owned by the DEP.

[illegible]

Site observations were conducted by [illegible] ~~natural resource staff~~ of Tim Miller Associates in October and November of 2015 and January of 2016. [illegible] The following conditions were noted.

The site slopes downward from east to west, with steep slopes downward toward the wetland corridor along the southern border of the site. leveling off at the central stream corridor. The upland areas of the project site are predominately wooded with tree and shrub species typical of a [illegible] ~~Northern Hardwood F~~orest community in a rocky substrate [illegible] (Figure 3.~~4~~-1). Vegetation on the site is characterized as second growth woodlands including sugar maple, red oak, white oak, white ash, and various birches. Beech, tulip poplar and black cherry were occasionally observed. The shrub and herbaceous layer are sparse due to heavy deer grazing. Where there are groundcovers Christmas fern and Pennsylvania sedge are the most common.

Historically, the majority of the site has remained wooded since the 1940's, probably due to the rocky topography. Those areas closest to Route 22 are shown as open pasture in the 1947 aerial, and it is likely that some logging occurred through the 1960's. See Figures 3.~~4~~-2 and 3.~~4~~-3.

The site wetlands have been subject to disturbance over the years, as indicated in the aerial photograph from 1947. That photograph shows hedgerows and rock walls through the wetland area and the wetland cleared of trees. Hydrology for the wetland is derived from the steep slopes both north and south of the wetland, with runoff collecting at the bottom of the slopes within a relatively broad flat area. This wetland is identified as DEC Wetland F-29, and is listed as 14.4 acres total. A watercourse has been created by past site activities, which flows from east to west, then turning south at the southwest property line and onto DEP property.

In the relatively undisturbed portions of the wetland, the most common species are red maple, slippery elm, green ash and occasionally pin oak [illegible]. A well-developed shrub layer was not observed. Skunk cabbage, cinnamon fern, sensitive fern, Canada goldenrod and occasional tussock sedge were the most common native herbaceous species.

However, the majority of the wetland area on site is previously disturbed, resulting in a mix of non-native and invasive species throughout the wetland and the surrounding buffers. Several impenetrable areas of [illegible] were observed. Fox grape, multifloral rose, climbing bittersweet, garlic mustard, and Japanese barberry were observed throughout the wetland and adjacent areas. Occasional morrow honeysuckle, tartarian honeysuckle and brambles were also observed.

[illegible]

Project Site Vegetation	
Common Name (*Scientific name*)	
TREES	**SHRUBS**
Red oak ([illegible])	Flowering dogwood ([illegible])
White oak ([illegible])	Witch hazel ([illegible])
Chestnut oak ([illegible])	Tartarian honeysuckle ([illegible])
Pin oak ([illegible])	Morrow honeysuckle [illegible]
American beech ([illegible])	Japanese barberry ([illegible])
Red maple ([illegible])	Multiflora rose ([illegible])
Sugar maple ([illegible])	Winged euonymus ([illegible])
Pignut hickory ([illegible])	Privet ([illegible])
Shagbark hickory ([illegible])	**FORBS AND VINES**
Black birch ([illegible])	Grape ([illegible])
Black locust ([illegible])	Aster species ([illegible] spp.)
Eastern hop-hornbeam ([illegible])	Common yarrow ([illegible])
Black cherry ([illegible])	Mugwort ([illegible])
Sassafras ([illegible])	Garlic mustard ([illegible])
Slippery elm [illegible]	Bittersweet [illegible]
American elm ([illegible])	Skunk cabbage ([illegible])
Eastern red cedar ([illegible])	Dandeliion ([illegible])
Eastern cottonwood ([illegible])	Trout lily ([illegible])
Crabapple [illegible]	Violet ([illegible])
Larch ([illegible])	Yarrow ([illegible])
	Goldenrod species ([illegible] spp.)
FERNS AND CLUBMOSSES	Bedstraw species ([illegible] spp.)
New York fern ([illegible])	Aster species ([illegible] spp.)
Sensitive fern ([illegible])	
Peat moss [illegible]	**GRASSES AND SEDGES**
	Onion grass [illegible]
	Common reed ([illegible])
	Catail [illegible]
	Tussock sedge ([illegible])

Note: Species observed during site visits - 10/16/2015, 04/15/2016, and 04/20/2016
Note: This list includes many species that could potentially inhabit this site. It is not, however, an exhaustive list.
Source: Tim Miller Associates, Inc. 2016

[illegible]

[illegible]

[illegible]

[illegible] The wooded slopes on the north part of the site provides habitat for some of the more common species in the area, including white-tailed deer, raccoon, eastern gray squirrel, striped skunk, red fox and opossum. These species are likely to move back and forth through the wetland and upland areas. The overall quality of the wildlife habitat for less common species is compromised by the absence of understory and herbaceous layers and diversity of habitat available. However, undeveloped lands to the north and south do present opportunities for wildlife movement, and it is likely that coyote, rodents, some snake species and a variety of birds move through the area. [illegible]

The level of past site disturbance in the wetland is reflected in the habitat potential and number of species that are expected to be observed on these parcels. Green frogs, spring peepers, wood frogs, American toads and other small mobile species may utilize the wetland system. Some of the smaller bird species (wrens, sparrows, bluebirds) likely feed on the seeds of the grasses and wildflowers that are found on the site.

There are no known listed rare or threatened plant species on the site. The NYSDEC Environmental Resource Mapper did not identify the possible existence of a sensitive species in the immediate site vicinity (see attached Figure 3.[illegible]~~4~~-4). However, NYSDEC Natural Heritage did notify the applicant about a record of a bog turtle [illegible] being seen south of the site near Todd Road in 1978. Bog turtles are considered to be extirpated from Westchester County, and as Natural Heritage puts it, “there is uncertainty regarding their continued presence” (see attached letter from Natural Heritage Program). However, the bog turtle was unlikely to come from the site wetland, which is generally a wooded wetland and does not meet the typical habitat criteria for this species.

[illegible]

[illegible]

[illegible]

Project Site Wildlife	
Common Name (*Scientific name*)	
REPTILES	**AMPHIBIANS**
Garter snake ([illegible])	Green frog ([illegible])
BIRDS	**MAMMALS**
chickadee [illegible]	Eastern gray squirrel ([illegible])
crow [illegible]	Eastern chipmunk ([illegible])
blue jay [illegible]	Woodchuck ([illegible])
white-throated sparrow [illegible]	Raccoon ([illegible])
wood thrush ([illegible]	White-tailed deer ([illegible]
ovenbird [illegible]	
downy woodpecker [illegible]	
turkey vulture [illegible]	

Note: Species observed during site visits - 10/16/2015, 04/15/2016, and 04/20/2016
Note: This list includes many species that could potentially inhabit this site. It is not, however, an exhaustive list.
Source: Tim Miller Associates, Inc. 2016

Potential Impacts

[illegible]

The current plans call for the disturbance of approximately 9 acres of the 35.4 acre site for the construction of the new residences, parking facilities and stormwater management basins. [illegible] Most of these ~~facilities~~ [illegible] will be located within the higher elevations of the site, with the exception of the stormwater basins. These will be located out of necessity at the lower elevations closer to the wetland. The location of the stormwater facilities have been laid out at flattest available parts of the hillside slopes and parallel to the topography to the extent practicable. Of necessity [illegible] these basins will be located within DEC and Town of Lewisboro buffer areas. Approximately 7,000 sf of DEC adjacent area and 14,500 sf of Town of Lewisboro buffer will be disturbed.

[illegible]

The site does not contain areas of significant or unusual wildlife habitat that would be impacted by the development project, and the project itself affects [illegible] nine of the 35.4 acres available. [illegible]

[illegible]

The loss of ~~9~~ acres of upland and wetland buffer habitat is an unavoidable impact to develop the affordable residential community. The development will retain approximately 75 percent of the existing vegetation and wildlife habitat. *ot d o o o r t o o r r d t d o th ro rt or r to ut t d th r or o t to u h t d*

Avoidance or Minimization of Potential Impacts and Mitigation

With the preservation of the 18 acre eastern parcel as conservation land, and the undisturbed portions of the two western parcels (another eight acres), in the opinion of the applicant~~,~~ the development will not result in adverse environmental impacts to ecologically significant or unusual vegetation.

The proposed plan incorporates a landscape program for all areas disturbed by construction around the perimeter of the buildings and parking lots. Any disturbed side slopes below the development on the south side will be seeded with a restoration mix of quick germinating grass cover crop and herbaceous perennials to establish vegetative stabilization of the soil. Additionally, the mix used for the slopes will include seed for native grass and woody species that produce berries and seeds that will provide a food source for a greater diversity of animal species.

The stormwater management basins *h h r to tur d tr t tor t r ru o or t d h rg d to r g t r do tr o th t* will be planted with wetland vegetation (both woody and herbaceous) and overseeded with seed mixes appropriate for the transitional nature of the hydrology associated with storm basins. Additionally, a program of wetland and buffer restoration is proposed for transition areas immediately bordering the stormwater basin construction disturbance area. As mitigation for this disturbance, these transition areas will receive manual removal of invasive species during basin construction that will allow the native species to regenerate and compete with the more aggressive invasive species that currently occupy this part of the site. The wetland mitigation plan is provided in Appendix I.

In the opinion of the applicant, enhancement of the existing wetland and adjacent areas will provide an opportunity for the restoration of a more diverse and native vegetation community to that portion of the site, which will benefit a wider diversity of animal species, particularly birds.

3.4 IMPACT ON GROUNDWATER RESOURCES

Existing Conditions

The development site is located in a rural suburban setting with surrounding properties a mix of undeveloped wooded land and low density residential properties. The property is approximately 35.4 acres in size and located on the east side of NYS Route 22 and Interstate 684 which lie directly west of the site.

Topography on the property is varied and elevations range from about 210 feet to 450 feet. A east-west trending ridge is located in the northern portion of the property, and an area of wetland is located in the southwest corner of the site adjacent to Route 22. Approximately 67 percent of the property (23.8 acres) contain steep slopes (15 percent or greater) and bedrock is exposed or near surface in much of the northern portion of the property.

A hydrogeologic assessment has been completed for the property by Leggette Brashears & Graham, Inc. (LBG) and is provided in Appendix E. The technical information provided below summarizes the LBG hydrogeologic assessment.

Surficial Geology

The subject property is underlain by glacial till with areas of bedrock at or near the surface. Glacial till is composed of unsorted and non-stratified sediments deposited by glacial activity. These sediments contain variable proportions of clay, silt, sand, gravel and boulders. Till is usually not suitable for wells and water supply since the unsorted material does not readily transmit water. No sand and gravel deposits are mapped in the vicinity of the property. A map of the surficial material for the study area is provided in Appendix E, Figure 2.

Bedrock Geology

Bedrock underlying the development site is mapped as Inwood Marble on the northern portion and Fordam Gneiss on the central and southern portions. A map showing the distribution of bedrock types is shown in Appendix E - Figure 3. Inwood marble consists of white to whitish grey calcite and dolomite marble. In general, marble formations exhibit similar characteristics to other carbonate rocks, but have fewer solution cavities. Marble bedrock is susceptible to weathering and under deformational stress forms numerous open fractures. Groundwater is contained in the interconnected fractures, joints and secondary openings.

Fordam Gneiss consists of undifferentiated gneiss bedrock units. Gneiss is a metamorphic rock that typically appears layered with light and dark minerals. Gneiss bedrock is highly resistant to weathering and erosion and therefore forms the varied topography and ridges where it is found. Groundwater is found in secondary fractures, joint systems and weathered zones in gneiss bedrock.

A fracture trace analysis was conducted for the study area to identify potential areas that have to potential to develop bedrock wells with higher than average yields. A fracture trace map includes the delineation of faults, fracture trace joint systems, old or buried stream courses. These surface features often identify areas of subsurface fractures and weathering that provided favorable well locations for productive well yields. The fracture trace map is provided in Appendix E, Figure 3.

Precipitation Recharge

A recharge analysis provides a comparison of the natural precipitation recharge for a given property compared to the estimated water demand for proposed development. This analysis can determine if a property is self sufficient with regard to precipitation available to supply groundwater, or whether proposed water demand exceeds the available recharge. If on-site recharge meets or exceeds the proposed demand, the water supply should be reliable and not adversely affect the aquifer in off-site areas. Although recharge analysis or water-budget analysis, is useful in estimating available groundwater, drilling and pump-testing wells is the only definitive indicator of groundwater availability and method to identify potential off-site impacts. Bedrock fractures and the nature of the bedrock underlying a given property greatly affects groundwater availability and potential off-site impacts.

Groundwater recharge is generally related to precipitation, but the amount of rain-fall that reaches the aquifer and becomes groundwater is difficult to measure. Groundwater recharge occurs as a portion of overall precipitation infiltrates soil and bedrock fractures to reach the bedrock aquifer. Records for nearby Westchester County airport, in White Plains, NY report an annual rainfall of 50.45 inches. Approximately one-half of this amount is lost to run-off and the transpiration process. Recharge to till-covered metamorphic bedrock is estimated to be approximately 7 inches annually (Mazzaferro et.al., 1979)[1] or about 520 gpd/acre (gallons per day per acre). This estimate provides approximately 18,300 gpd for the 35.4 acre site, which greatly exceeds the estimated water demand for the development of 1,350 gpd.

Existing Wells

Two wells were drilled on the subject property in March 1987 by P.F. Beal and Sons. Inc. The wells were installed for a previously proposed site plan application for the property that was never developed beyond well installation. Based upon preliminary estimates those wells yield approximately 5 gpm each or 10 gpm total. The combined yield of the two wells would be approximately 14,400 gpd. The existing wells will require testing to confirm actual sustainable yields and any potential impacts to off-site water supplies.

[illegible]

Potential Impacts

Development Water Demand

[1] Mazzaferro, D., E. Handman, and M. Thomas. 1979. Water Resource Inventory of Connecticut, Part 8, Quinnipiac River Basin, CT Water Resource Bulletin, 27.

The proposed development will require an estimated water demand of approximately 9,000 gallons per day (gpd), or 6.25 gallons per minute (gpm) based upon bedroom counts and engineering estimates (see Appendix C - Engineers Water Report). NYS Department of Health standards require new water supply systems to provide twice the average daily water demand with the best well out of service. To meet this requirement, on-site wells would need to provide a combined rate of 12.5 gpm (18,000 gpd), with the best well out of service.

[illegible]

Unit Type	Number of Units	Water Usage Multiplier (gpd)	Total Water Usage (gpd)
1 Bedroom	14	110	1,540
2 Bedroom	28	220	6,160
3 Bedroom	4	330	1,320
		Total Water Demand	9,020

[illegible]

The use of subsurface wastewater disposal would return approximately 85 percent of the withdrawn water back to the groundwater. This would reduce the consumptive water use by the development to 1,350 gpd.

The bedrock groundwater recharge estimate for the 35.4 acre property is 18,330 gallons per day (gpd) under normal precipitation conditions and 13,000 gpd under one-year-in-thirty drought conditions. The estimated recharge under both normal and drought conditions is more than sufficient to support the estimated consumptive demand of 1,350 gpd for the proposed development.

[illegible]

[illegible]

As indicated, the two existing on-site wells have a combined estimated yield of 10 gpm. An additional one to two new wells (three to four wells total) will be necessary to produce the developments water demand of 12.5 gpm with the best well out of service. For the development of a new water supply, the NYS Health Department requires the demonstration of a stabilized yield of 5 gpm or greater, regardless of the development's water demand.

In addition, public water supplies must also comply with minimum separation distances from potential contamination sources identified in Appendix 5-D of the NYSDOH sanitary code. The required minimum separation distance to protect public water supply wells from contamination is 200 feet for absorption fields and for stormwater infiltration basins (treating stormwater from driveways and parking lots).

Based upon LBG's hydrogeologic assessment of the development site and environs, wells drilled at geologically favorable locations (i.e. Fracture trace liniations) will likely yield water in the range of 5 to 10 gpm.

The relatively low average water withdrawal for the proposed development of 9,000 gpd (6.25 gpm) indicates a low likelihood of significant mutual interference between the on-site wells and existing nearby off-site wells. The closest nearby wells are approximately 600 feet from the on-site wells. These include existing homes on Todd Road south and southeast of the subject site. However, the drilling and pump testing of the proposed wells is the only definitive indicator of groundwater availability and any potential impacts to neighboring water supplies.

Avoidance and Minimization of Potential Impacts or Mitigation

As described above, the relatively low average water withdrawal for the development indicates a low likelihood of significant mutual interference between on-site wells and existing nearby off-site wells. The drilling and pump testing of the proposed supply wells will provide definitive information regarding groundwater availability and potential impacts to neighboring wells.

[illegible]

[illegible]

In order to address the unlikely event that an impact to a neighboring well occurs that would potentially require mitigation, a draft Complaint Response and Mitigation Plan has been prepared (see Appendix E Hydrogeologic Assessment and Mitigation Plan). The Plan provides a process for off-site well owners to file a complaint to the applicant and for the complaint to be promptly investigated. If the complaint is found to be valid, remedies will be provided to the private well owner, fully paid for by the applicant. Remedies may include lowering a well pump, replacing a well pump, deepening a well, redeveloping a well or replacing a well. The draft Complaint Response and Mitigation Plan will be finalized in consultation with the Planning Board.

3.6 IMPACT ON AESTHETIC RESOURCES

Existing Conditions

o t t o t o u o t t

The setting in which the development site is situated consists of a mix of land uses -- commercial development to the north (including North County Shopping Center, aka Goldens Bridge Village Center), a major regional transportation corridor immediately to the west (NY State Route 22, Interstate Route 684 and the Metro-North railroad), single family residences on relatively large lots to the south, and wooded, undeveloped land and open water of the Croton reservoir system in much of the surrounding area. Figure 1-2 shows the site vicinity in a recent aerial photograph; Figure 3.6-1 shows the site on a topographic map.

The visual character of the immediate site vicinity is dominated by the Route 22 / I-684 transportation corridor including Exit 6A for Goldens Bridge, which meets Route 22 opposite the site. Route 22 and I-684 follow a winding north/south route in very undulating and irregular topography that has many small hills and narrow valleys and dense woodland cover that characterizes the rural feel of Lewisboro.

The site is a topographic knoll, rising some 200 feet above the road elevation, similar to numerous other knolls in the area. The site is almost entirely wooded with the exception of a rock outcrop exposed by the construction of Route 22. The trees are up to 55+ feet tall, predominantly deciduous, with moderately dense understory vegetation. The sizable rock outcrop provides a visual feature along the property frontage. While not prominent in the landscape of the street corridor, it provides a reminder of the nature of the Lewisboro landscape.

The visual experience for someone traveling in the road corridor in the site vicinity is a mix of single family residential lots, commercial development of varying sizes, and wooded open space. Buildings are visible, in many instances partially obscured, amongst the extensive woodland cover (evident in Figure 1-2), particularly for users of Route 22. In the immediate site area, the corridor is visually dominated by I-684. There are no provisions for pedestrian traffic in the corridor and incidental use by bicyclists was observed on Route 22.

The potential for views of the subject site were reviewed during a site area visit in January 2016. Key study views were identified within approximately one-half mile of the site. Views toward the site from publicly accessible locations are depicted in photographs presented in Figures 3.6-2 through 3.6-6. The limits of the possible view of the site are indicated in the figures. A key to the locations of the view points is shown in Figure 3.6-1. A ±125 foot high cell tower located on the opposite side of Route 22 from the subject property provides a landmark in the photographs. The study area views are:

- The street corridor within about one-half mile, which is primarily experienced by motorists passing the site on I-684 at highway speed or on Route 22 at varying speeds. Views 1A and 1B from southbound and northbound I-684, respectively, were investigated. These views are partially obscured by intervening vegetation and diminished by the speed of travel. These views are further obstructed during the warmer months when leaves are on the trees. Figure 3.6-2 shows existing views 1A and 1B looking toward the subject site from I-684 southbound and northbound. View 1A is interrupted as the driver passes under the bridge and quickly disappears behind intervening vegetation as one travels south. Likewise, the

mid-distance view toward the site (View 1B) for drivers approaching the Goldens Bridge exit quickly disappears behind intervening roadside vegetation.

- Views 2A and 2B from northbound and southbound Route 22, respectively, were found to reveal visibility of the development site for motorists approaching the site. Figure 3.6-3 shows these existing views from Route 22 northbound and southbound. There is roadside vegetation that interrupts or obscures portions of the view as a driver approaches the site from either vantage point.

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- The Exit 6A ramp from I-684 northbound meets Route 22 opposite the site at a Stop sign. Thus, there is a stationary view (View 3) in close proximity of the site frontage and looking into the western portion of the site, as experienced by drivers while they negotiate a right or left turn onto Route 22. Figure 3.6-4 shows a wide-angle view from this location in winter. The site rises above the road and, being a topographic knoll, much of the site is hidden from view due to the topography and intervening vegetation. During the winter months it is possible to see into the site several hundred feet amongst the tree trunks; when leaves are on the trees views into the site are largely obscured. *[illegible]ro[illegible]d[illegible]th[illegible]gr[illegible]t[illegible]t[illegible]u[illegible] [illegible]o[illegible]ur[illegible]o[illegible]th[illegible]t[illegible]ro[illegible] [illegible]o[illegible]th[illegible]d[illegible]t[illegible]d[illegible]t[illegible]g[illegible]o[illegible]t[illegible]*

- Figure 3.6-5 shows Views 4A and 4B from the ramp from Route 138 to Route 22, looking south, and from the top of the Route 138 ramp onto I-684 southbound, respectively. View 4A may be briefly experienced by drivers while they negotiate the turn onto southbound Route 22. View 4B may be experienced by drivers for a brief moment after they negotiate the turn from Route 138 onto the southbound ramp. The view from this viewpoint quickly vanishes as the driver descends the ramp and enters I-684.

- Views toward the site from Todd Road (south of the site) were investigated. Due to the intervening topography of Todd Road properties, view of the subject site from publicly accessible vantage points on the road is limited to a partial view beyond the intervening trees from one location in the vicinity of #35 Todd Road, the Bedford Audubon Society property. This is identified as View 5. Figure 3.6-6 shows a wide-angle view from this location, looking westward through the intervening trees.

There are no formally designated aesthetic resources or scenic vantage points sensitive to visual change in the viewshed of the subject site. Given the topography and dense tree cover of the site area, there is limited view of the development site from surrounding roads and there is no location in the study area that would afford a view of the entire site, based on site area reconnaissance undertaken in January 2016 along I-684, Route 22, Route 138, and Todd Road and at Goldens Bridge train station.

The Code of the Town of Lewisboro includes mention of aesthetics, most pointedly in §220-1 Zoning, Statement of Purpose: “To preserve the natural beauty of the physiography of the Town; to protect the Town against unsightly, obtrusive and obnoxious land uses and operations; to enhance the aesthetic aspect of the natural and man-made elements of the Town; and to ensure appropriate development with regard to those elements.”

Potential Impacts

To utilize the site in accordance with current zoning and a site-sensitive affordable housing plan, the proposed development will remove trees from the western portion of the site and small pockets in the interior of the site, create an opening in the tree canopy on the middle elevations of the site, and create an opening on Route 22 for a driveway, while preserving the existing tree cover on most of the property. Given its topographic position and the density of woodland cover around it, this clearing is not expected to be startling, visually prominent, nor out of character from the surrounding landscape.

The proposed buildings will be placed along the contour on the southwest-facing slopes of the knoll on the site. The 2-story buildings will be lower in elevation than the existing tree tops that will remain, thereby avoiding any direct or prominent visual exposure of the development from offsite. There will also be four SSTS areas cleared in the rear of the property (located where suitable soils are found), covering small areas of one-quarter to one-half acre in size. These areas are proposed to be replanted with a low growing conservation mix.

Site Profile Figure 3.6-7 shows a profile of the post-development ground line and tree line taken through the site [illegible] through the center of the proposed development area and one of the SSTS clearings. [illegible] An enlarged version of this profile is depicted in Figure 3.6-7E. (See Figure 3.6-1 showing the location of the profile line.) The Site Profile figure shows the line of sight for a person in a vehicle stopped on the Exit 6A Stop sign at Route 22, facing the subject property. This is View 3 depicted in the existing condition photograph in Figure 3.6-4. [illegible] As identified above, this vantage point would provide the most visual exposure of the proposed development from any of the identified vantage points.

[illegible]

The development will open a view into the subject property via the new entrance driveway on Route 22. (See the Conceptual Grading Plan, Figure 3.1-2.) Tree clearing will occur where the proposed driveway will access the site and climb the west side of the knoll, leaving a strip of existing trees along the driveway and atop the rock outcrop that faces Route 22. The driveway will be seen from the Exit 6A Stop sign and from vehicles traveling north past the site on Route 22. Vehicles traveling south past the site will see the driveway intersection on Route 22, and the entrance area landscaping. South of the driveway, an SSTS area is proposed in an area that already has low growing vegetation, and further into the site stormwater management basins are proposed. These areas will be situated some 15 to over 20 feet below the elevation of the road, virtually out of sight from the public.

[illegible]

Mitigation Measures

The streetscape character of the property frontage along Route 22 will not be adversely changed by the development; the proposed driveway entrance will be the only disturbance of existing vegetation on the frontage, which will receive appropriate landscape treatment so that the new development will be compatible with the characteristics of the neighborhood.

The applicant conducted a balloon flight at the property on January 21, 2016, to provide two points of reference for investigating possible views to the proposed development from local area vantage points. Two 3-foot red balloons were raised to the proposed height of the roof peak of buildings 1 and 3. In both locations the balloons were situated well below the tops of the trees.

The eight vantage points shown in the accompanying graphics were visited, however only from the Exit 6A Stop sign location could one of the balloons be seen, largely obscured by the trees. Observations while driving the area roads found that the balloons were visible from Route 22 and I-684 in very close proximity to the site (within approximately 800 feet of the proposed development area), demonstrating that the density of the existing tree cover on and off the property can be expected to provide significant buffering of views (mitigation) of the proposed buildings in winter. In summer months, it is likely that there will be no visibility of the buildings from offsite other than from Route 22 between Exit 6A and the site driveway.

All of the proposed buildings will be below the height of the tree line, and, while portions of buildings will likely be visible through the trees from vehicles passing the site, more so in winter than in summer, their presence will be compatible with the characteristics of the neighborhood. From no location will the entire development be visible; the “worst case” view studied in Figure 3.5-7E demonstrates the limited exposure of the development to outside views, and mitigation of partial views will be incorporated into the design plans such that no significant visual impact will result. The documentation provided demonstrates that such visibility would not be considered a significant adverse or unmitigated impact.

In summary, the proposed affordable housing development will create new openings in the tree canopy on portions of the existing wooded knoll, and will place new buildings below the tree line and behind a dense buffer of existing trees, which will have very limited visibility from off-site due to the extent of existing trees and understory vegetation proposed to remain on the site and the surrounding predominance of woodland cover.

Overall, in the applicant’s opinion, the development will have a minimal effect of the wooded, open space character of this area of the Town of Lewisboro and will not have a significant adverse impact on any visual or aesthetic resources. The visual changes which will result from the development, in the applicant’s opinion, will not result in significant impacts to identified aesthetic resources or vantage points with views to the subject site.

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fixtures, signage and retaining walls, and selection of plant materials. The applicant is committed to designing a housing development that will be an asset to the Town.

3.7 IMPACT ON HISTORICAL AND ARCHEOLOGICAL RESOURCES

Existing Conditions

As described herein, the 35.4 acre subject site is undeveloped and mostly wooded land. No structures or foundations have been observed on the property. Based upon historical photographs, the majority of the site has remained wooded since the 1940's, probably due to the rocky topography. Those areas closest to Route 22 are shown as open pasture in the 1947 aerial photograph, and it is likely that some logging occurred through the 1960's.

A Phase 1A and Phase 1B Cultural Resource Investigation has recently been conducted on the property. The Phase 1A / 1B investigation is provided in Appendix F. A file search at the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) identified no New York State Museum (NYSM), OPRHP sites or National Register Listed or Eligible properties on or within 500 feet of the subject property. There have been no prior archeological investigations conducted within 500 feet of the subject property.

Potential Impacts

According to the Phase 1A investigation, the subject site is considered to have moderate sensitivity for the presence of prehistoric cultural remains. The location exhibits several characteristics that are known to have been conducive to Native American occupation including the elevated hilltop adjacent to water sources that are themselves tributaries to a larger nearby river system. No rockshelters or usable lithic resources were identified within the proposed area of disturbance indicating that pre-contact sites would likely be limited to small temporary hunting camps rather than larger long-term settlements.

The proposed residential development will involve the grading of approximately 9 acres of relatively undeveloped land. The grading and excavation has the potential to disturb archeological cultural resources, should they be present on the property.

The Phase 1B fieldwork was conducted in December, 2015 at the subject site. The fieldwork consisted of 45 hand-excavated shovel tests across more level portions of the Area of Potential Effect (APE). The Area of Potential Effect is based upon the project plans. The test locations are shown in the Phase 1A/1B Archeological Investigation (Maps 9 and 10). No significant cultural resources were identified and no further archeological work was recommended.

Mitigation Measures

Based on the results of the Phase 1A/1B Cultural Resources investigation, no historic or archeological resources have been identified on or near the subject property and none will be impacted. No mitigation measures are warranted or proposed.

3.8 IMPACTS ON TRANSPORTATION

Existing Conditions

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4-acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The project site is located in the Hamlet of Goldens Bridge approximately ¾ - mile south of Route 138 and the Goldens Bridge train station. The location of the site is shown on maps in Figures 2-1 and 2-2. The site will have a single access slightly north of the northbound Interstate 684 Exit 6A ramp. This section summarizes the detailed transportation report by Maser Consulting P.A. contained in Appendix G.

Interstate 684 is a six lane divided limited access highway and is a major commuter route to Interstate 287 in southern Westchester County. Thus most regional commuter traffic does not use NYS Route 22 that passes by the site and parallels Interstate 684 in this area. The northbound exit ramp (6A) from Interstate 684 is located immediately south of the site and was studied along with the site access to NYS Route 22. NYS Route 22 is a two lane road with posted 40 miles per hour. Peak hour traffic volumes (weekday a.m. and p.m.) were counted in December of 2015 and compared with counts taken in 2014 for the Goldens Bridge Shopping Centre to the north.

Potential Impacts

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Traffic volumes were projected to the design year of 2020 using a background growth of 2.5 percent (0.5 percent per year) based on historical data. Traffic from the proposed Golden Bridge Village Shopping Centre expansion was also added to the future traffic.

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Site generated traffic was estimated for the apartments (Land Use code 220) using the Institute of Transportation Engineers, *[illegible]r[illegible] [illegible]r t o[illegible]M[illegible]u[illegible]*, 9th edition, 2012. In the a.m. peak hour 5 entering and 21 exiting trips were estimated. In the p.m. peak hour 28 entering and 15 exiting trips were projected. Distribution of arrival and departure traffic was based on existing traffic volumes and supplemental data.

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Capacity analysis using SYNCHRO analysis software is based on procedures documented in the *[illegible]* Traffic conditions are defined based on a level of service grade from A the best to F the worst conditions. NYS Route 22 and the site driveway are anticipated to operate at a level of service C or better for all movements.

The Interstate 684 northbound off ramp (Exit 6A) at NYS Route 22 experiences a level of service F in both the a.m. and p.m. peak hours in the Existing Condition and will experience increased delay with future traffic. Although a traffic signal would improve operation to a level of service B or better for all movements, the review of traffic volumes indicates the intersection does not satisfy signal warrants as specified by the *[illegible]*.

"The results of the capacity analysis indicated the proposed residential development will not significantly change the overall Levels of Service at each of the key locations. The intersection of I-684 and Route 22 will continue to experience operating problems during peak periods and should continue to be monitored in the future for a possible traffic signal." (See Appendix G - Page 6 Mr. Grealy letter to Mr. Bainlardi, January 29, 2016).

NYS Route 22 speeds limits are 45 miles per hour entering into the 40 mile per hour speed limit in the section including the site access. Sight distances were observed and summarized with only the intersection sight distance not meeting a 55 mile per hour posted speed looking to the right. Vegetation pruning is recommended to the north of the site access to increase the sight distance to exceed the intersection sight distance. A W2-2 "Intersection Ahead" sign should be posted in advance of the site north and south on NYS Route 22 with a final determination to be made by the New York State Department of Transportation as part of the Highway Work Permit Process.

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Avoidance or Minimization of Potential Impacts or Mitigation

Based on the transportation report, the proposed residential development will not significantly change the overall levels of service at each of the key locations studied. The applicant will work with the NYS Department of Transportation regarding the entrance driveway and the development's traffic as part of the Highway Work Permit Process. Given the lack of the project's impact on key locations, no mitigation measures are proposed.

3.9 COMMUNITY FACILITIES AND SERVICES

3.9.1 Demographic Resources

Existing Conditions

As discussed, The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes to develop a 46 unit affordable residential community on a 35.4-acre site located on NYS Route 22 in the western portion of the Town of Lewisboro, Westchester County, New York. The project site is located *outh o* ~~in~~ the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station. The project site is currently vacant.

Potential Impacts

The Applicant proposes to construct 45 units of affordable rental apartments plus one superintendents apartment (46 units total). The rental apartments will meet the requirements of the Westchester County Fair and Affordable Housing Implementation Plan. The proposed development will assist Westchester County in meeting its court mandated obligation to complete 750 affordable AFFH units, with building permits and funding in place, by December 31, 2016. The proposed AFFH apartments will also count toward the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015).

As illustrated in Figure 1-3, the 46 apartments will be located in five buildings of eight to ten units. The buildings will contain a mix of one, two and three bedroom units. The majority (eighty percent) of the units will be affordable to residents whose income does not exceed 60% of the Area Median Income (AMI), based upon family size, as established by the Department of Housing and Urban Development (HUD) on an annual basis. To further meet the affordability guidelines, twenty percent of the rental units will be marketed to residents whose income does not exceed 50% of the (AMI).

For the purpose of this analysis the development is envisioned to include 14 one bedroom units, 24 two bedroom units and 8 three bedroom units. The actual number of units and the proposed bedroom counts will be finalized prior to site plan approval. According to the NYS HCR funding guidelines the units are projected to rent for $988 to $1,643 depending upon number of bedrooms, unit size and affordability criteria.

Demographic multipliers published by the Rutgers University Center for Urban Policy Research (CUPR) were used to project the future population of the proposed affordable 46 unit AFFH multifamily community. Population projections are based upon the geographic region, type of unit, number of bedrooms, and the anticipated rental value. As shown in Table 3.9-1, based upon the nature of this development, the multipliers used to project the population are as follows; three bedroom units house 3.81 persons per unit, two bedroom units are 2.31 persons per unit and a one bedroom unit is 1.67 to 1.99 persons per unit depending upon the rental value. By comparison, 2010 U.S. Census data indicate that the average household size for all housing types in the Town of Lewisboro is 2.78 persons, and the average family size is 3.16 persons.

Based upon the CUPR residential multipliers, approximately 110 persons, including 16 school age children are projected to reside in the anticipated housing.

Table 3.9-1 Population Projections					
Unit Type	**Number of Units**	**Population Multiplier**	**Population**	**School Age Children Multiplier**	**School Age Population**
1-BR 50% AMI	3	1.99	6	0.30	0.9
2-BR 50% AMI	5	2.31	11	0.23	1.15
3-BR 50% AMI	1	3.81	4	1.50	1.5
1-BR 60% AMI	11	1.67	18	0.08	0.88
2-BR 60% AMI	18	2.31	42	0.23	4.14
3-BR 60% AMI	7	3.81	27	1.00	7
2-BR Superintendent Apartment	1	2.31	2	0.23	0.23
TOTAL	**46**		**110**		**16**

Source: Rutgers University Center for Urban Policy Research, June 2006. Table prepared by TMA, 2016. Values are based upon 5+ Unit Structures for Rent at more than $1,000 per month for one, two and Three Bedroom units as noted in the Table above.

3.9.2 Fiscal Resources

Existing Conditions

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The proposed AFFH multifamily community is contained on the following Town Tax Parcels;

- Sheet 5 - Block 10776 - Lot 19
- Sheet 5 - Block 10776 - Lot 20
- Sheet 5 - Block 10776 - Lot 21

The current equalized assessed value of the three undeveloped parcels is $87,300. This represents 9.9 percent of the total market value of the three parcels. According to a review of the 2015 tax bills for the subject parcels, the total annual property taxes paid to the Town of Lewisboro are $1,639 and the municipal taxes paid to the Goldens Bridge Fire Department are $890. The municipal taxes paid to Westchester County are $2,990. Thus, the total municipal taxes paid are $5,520 while the annual property taxes paid to the Katonah Lewisboro School District (KLSD) are $17,061.

Potential Impacts

The New York State Office of Real Property Services (NYSRPS) requires that rental properties are assessed in terms of the value of the income they provide. Based upon the income value of the proposed affordable rental apartments, the total market value of the proposed community is estimated to be $4,717,342. Using the current Town of Lewisboro 2015 equalization rate of 9.9 percent, the total future Assessed Value for this analysis is estimated to be $467,017.

[illegible]

Table 3.9-2 compares the revenues generated presently by the property to the revenues to be generated after the proposed rental community is complete. Revenues are based on the most current 2015 municipal tax rates (2015-2016 tax rate for the Katonah Lewisboro School District).

According to the Town of Lewisboro budget, the Town's tax rate includes Town governmental services, highway maintenance, justice court, police services, and parks & recreation.

As presented in Table 3.9-2, annual revenues to the Town of Lewisboro are projected to be approximately $8,770. Tax revenues to the Goldens Bridge Fire Department are estimated to be $4,762. The tax revenues to Westchester County would be approximately $15,995 annually, thus the total municipal revenue is estimated to be $29,527.

Table 3.9-2 also indicates the annual revenues to the Katonah Lewisboro School District would be approximately $91,268. The net [illegible] between the current tax revenues generated by the site and paid to the School District and the total future project-generated revenues to the school district are projected to be approximately $74,207 annually.

As can be seen in Table 3.9-2, overall, the combined tax revenues from each jurisdiction are projected to total more than $120 thousand annually.

Table 3.9-2
Current & Projected Taxes Generated by the 46 Unit AFFH Residential Community

Taxing Authority	Current Tax Rate	Current Taxes ($)	AFFH Projected Taxes Total ($)	Net Increase Between Current & Projected Taxes ($)
Westchester County	$34.2497	$2,990	$15,995	$13,005
Town of Lewisboro	$18.7796	$1,640	$8,771	$7,131
Goldens Bridge Fire District	$10.1963	$890	$4,762	$3,872
Total Town of Lewisboro		$2,530	$13,533	$11,003
Total Municipal	$63.2256	**$5,220**	**$29,258**	**$24,008**
Katonah Lewisboro School District	$195.4287	**$17,061**	**$91,268**	**$74,207**
TOTAL	$258.6543	**$22,581**	**$120,796**	**$98,215**

Notes:
Municipal taxes are based upon Town of Lewisboro 2015 Tax Rates. These rates are in effect 4/1/15 through 4/1/16.
Katonah Lewisboro School District Tax Rates are for the 2015-2016 school year.

[illegible]

A management company will operate and maintain all common areas, facilities and infrastructure included in the proposed action. All of the community aspects of the project will be privately maintained, including the roadway. There are no aspects of the project which are anticipated to result in an ownership, maintenance or operational responsibility to the Town of Lewisboro, thus reducing municipal costs to the maximum extent practicable.

3.9.3 Police, Fire and Emergency Services

Existing Conditions

[illegible]

The Lewisboro Police Department provides police protection services to properties within the 29 square mile area that comprises the Town of Lewisboro. The police department headquarters is located at 20 North Salem Road, Cross River, NY, approximately 5.5 miles (driving distance) southeast of the project site. The Town of Lewisboro is served by the New York State Police in conjunction with the Lewisboro Town Police. The New York State Police are stationed on Route 100 in Somers, NY.

The Lewisboro police force provides police protection for the Town of Lewisboro including the hamlets of Cross River, Goldens Bridge, South Salem, Waccabuc, Vista and Grants Corner.

The Lewisboro Police Department is led by Police Chief Frank Secret. [illegible] ~~The Department has a police force of 12 officers, in addition to civilian employees who provide police coverage.~~ According to the Police Chief[2], in 2015 the department handled approximately 1,851 calls for service. The population data from the 2010 census indicates there are 12,411 persons residing in the Town of Lewisboro. Based upon these figures, there is approximately one police officer for every 1,000 residents and annual average calls per capita equates to 0.15.

Sworn personnel are involved in various programs including Crime Prevention, Accident Investigation, STOP DWI, Commercial Vehicle Enforcement, Intelligence, and Youth Court.

Based upon location, typical response time to a residence in the proposed community is estimated to be five to ten minutes.

[illegible]

The proposed development is within the Goldens Bridge Fire District and is served by the Goldens Bridge Fire Department which is a 100% volunteer fire department. The Fire district covers an area of approximately 8 square miles in the hamlet of Goldens Bridge which includes a mix of both business and residential areas, as well as a section of Interstate 684 and the Metro North Railroad. Serving a population of approximately 4,000 residents and countless number of commuters who use both Interstate 684 and Metro-North Railroad, the fire department provides coverage 24 hours a day, 365 days a year. The Goldens Bridge Fire Department typically responds to an average of approximately 275 calls annually. Based upon these figures, annual average calls per capita equates to 0.07.

There are approximately 70 active members who serve the community by providing Fire, Rescue, Disaster Relief and Emergency Medical Services to anyone in need. The Goldens Bridge Fire Department is also dedicated to community service by offering scholarships for

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[1] Source; Lewisborogov.com/police.
[2] Phone conversation with Police Chief Secret on February 1, 2016.

community minded youth, supporting Scouting organizations of America and supporting other local charities.

The Goldens Bridge Fire Department currently operates 3 engines, 1 tanker truck, 2 heavy rescue vehicles, 1 brush unit, and 3 Chiefs' vehicles. These units are staffed by 100 volunteer members who respond from a fire station at 254 Waccabuc Road in Goldens Bridge. The station is approximately 1.5 miles (driving distance) from the subject site. In 2015, the department responded to approximately 250 alarms. These alarms consisted of structural fires, motor vehicle accidents (MVA's), automatic alarms, vehicle fires, mutual aid, and various other calls for assistance. The Goldens Bridge Fire Department does not respond to medical emergency calls. This service is provided by the Lewisboro Volunteer Ambulance Corps LVAC.

u d th r

The Lewisboro Volunteer Ambulance Corps (LVAC) provides emergency ambulance service to the project area. Average response time is between five and seven minutes. In 2013, LVAC responded to 416 ambulance calls. According to their records, 320 patients were transported to area hospitals. Based upon these figures, annual average calls per capita equates to 0.04.

Each ambulance response is staffed by a crew chief who is a New York State Certified Emergency Medical Technician, and a driver, who may or may not be an EMT. Most calls have a third crew member, referred to as the first aider, who also may or may not be an EMT. The crew chief is in charge of patient care decisions, including which hospital the patient is transported to.

The Town of Lewisboro is one of several towns in northern Westchester County which are additionally served by a paramedic service, Westchester EMS. There are three paramedic fly cars in service at all times and one is paged out along with LVAC on all calls. If the patient's condition warrants ALS, the paramedic will ride with the LVAC crew and provide advanced life support.

LVAC currently operates 2 ambulances, 67B1 and 67B2, the B standing for basic life support. The Corps also has a first response vehicle, a fully-equipped Chevrolet Tahoe. The Corp. has approximately 40 riding members. All members are trained to use AEDs (Automatic Electronic Defibrillators), and LVAC has 10 Lifepak AEDs. LVAC also participates in the Epipen program to administer epinephrine, is certified to use albuterol for the treatment of asthma, and trained to use glocometry. They have recently added the Lucas device to all vehicles which is used to provide continuous CPR for any patients that require the treatment.

The primary hospital serving the project area is Northern Westchester Hospital in Mt. Kisco. Services offered by this hospital include: emergency services, ambulatory surgery, cardiopulmonary center, diagnostic imaging, mental health unit, MRI center, nutritional services, occupational therapy, pediatrics, physical therapy, prostate cancer treatment, alcohol & substance abuse, speech & hearing, and a wound care center.

According to Northern Westchester Hospital, its physicians represent all of the medical specialties and offer their patients the latest in medical care supported by nursing, clinical, and technical staff. Northern Westchester Hospital also offers various outreach programs that present preventive medicine and wellness subjects.

Although LVAC transports most patients to Northern Westchester Hospital in Mt. Kisco, occasionally patients are transported to Putnam Hospital in Carmel, Westchester Medical Center in Valhalla, and Danbury or Norwalk Hospitals in Connecticut.

Potential Impacts

As shown in Table 3.9-1, development of the proposed residential community is anticipated to result in a population increase of approximately 110 persons. This increase represents less than one percent of the current Town population of 12,411 (2010 Census).

[illegible]o[illegible]rt[illegible]t

Based on planning standards contained in the Development Impact Assessment Handbook published by the Urban Land Institute, model factors for police protection recommend two (2) police personnel per 1,000 persons which further breaks down to 1.5 police personnel per 1,000 persons for residential uses and 0.5 police personnel per 1,000 persons for nonresidential uses. Based on this standard, 110 persons would increase police staffing needs by less than one quarter of a person which is not likely to have an impact on the Town's police personnel ratio of 1.0 officers personnel per 1,000 residents. As discussed earlier, annual average calls per capita equates to 0.15, thus it can be expected that calls for service to the Police Department would increase by approximately 17 calls annually.

[illegible]r[illegible]rt[illegible]t

Based on planning standards published in the Development Impact Assessment Handbook, approximately 1.65 fire department personnel per 1,000 population is recommended to provide adequate fire protection service. One hundred ten new residents would generate demand for an additional 0.18 fire department personnel. As discussed earlier in this section, the proposed development would generate $4,762 in annual property tax revenues to the fire district to offset any additional demand. The proposed site access roads will be designed in accordance with Town road specifications which are designed to adequately accommodate emergency service vehicles. As discussed earlier, annual average calls per capita equates to 0.07, thus it can be expected that calls for service to the Goldens Bridge Department would increase by approximately 8 calls annually.

Each of the proposed residential buildings will be equipped with fire sprinklers and the water system is designed to meet the combined peak flow for domestic and sprinkler use. Fire hydrants are not proposed given the use of sprinklers. The applicant will provide emergency back-up water supply storage in underground tanks. The applicant will work with the Goldens Bridge Fire Department regarding the final design for emergency back-up water supply.

[illegible]rg[illegible]M[illegible]d[illegible]r[illegible]

Based on planning standards contained in the Development Impact Assessment Handbook, approximately 36.5 calls per 1,000 population are made annually. Based on this standard, the 110 residents would increase EMS calls by approximately four calls annually on average. The Lewisboro Volunteer Ambulance Corp. has sufficient capabilities to handle this increase. As discussed earlier, annual average calls per capita equates to 0.04, thus it can be expected that calls for service to the Lewisboro Volunteer Ambulance Corp. from the proposed development would be approximately 4 calls annually.

[illegible]o[illegible]t[illegible]

Based on planning standards contained in the Development Impact Assessment Handbook, four (4.0) hospital beds should be provided per 1,000 persons. Based on this standard, the

projected population increase associated with the proposed residential development has the potential to increase the need for beds in hospitals serving the Northern Westchester County area by less than half of a bed. This is not considered a significant impact.

3.9.4 Comparison to Bridleside, North Salem

New Housing developments are often controversial. Existing residents like the character of their existing neighborhoods and are often attached to the undeveloped parcels which have provided areas of open space. There are also practical considerations like traffic, property values and additional school children, that can be cause for concern. These concerns can be even more exaggerated when the proposal is for affordable housing.

Wilder Balter, the project sponsor, has successfully developed many multifamily communities throughout the Hudson Valley, including a substantially similar affordable housing development in the neighboring Town of North Salem, known as "Bridleside" which provides a vision for the subject proposal. The Bridleside residential development includes 65 units of affordable housing with a similar mix of one, two and three bedroom units as are proposed in the 45 unit WB Lewisboro Affordable Housing Development. The projected funding sources and rental values will be virtually identical in the two developments. The market values of residential real estate is comparable in North Salem and Lewisboro. The tax structure, tax rates and equalization rates are also similar in the two communities. Beyond the projections provided in development models, real life experience with similar development can provide an accurate window into what the future will bring post development.

Table 3.9-3 shown below, provides data on population and relevant demands for community services at the Bridleside project. Data was gathered from the Town of North Salem Police Department, the North Salem Fire Department, the North Salem Volunteer Ambulance Corp. And the North Salem School District. Table 3.9-3 lists the annual calls for service to the North Salem emergency service providers, and compares this data to the projections of demands for community services anticipated from the Lewisboro residential community. Since the proposed Lewisboro development is 45 units compared to the 65 units built in Bridleside, the statistics for Bridleside have been factored by 69% to provide a direct comparison to the Lewisboro projections.

A count of school age children who reside at Bridleside indicates there are a total of 35 students, however of this total 9 students already lived within the North Salem School District, indicating the increase in the school districts enrollment was 26 students as shown in Table 3.9-3.

Table 3.9-3 Impact Comparison Bridleside vs. Lewisboro AFFH			
Area of Concern	***Bridleside North Salem***		***AFFH Lewisboro***
Land Use			
Total Site Area (acres)	40.0		35.4
Total Area of Disturbance (acres)	14.1		9.0
Impervious Surfaces (acres)	3.1		2.4
Community Resources			
	Bridleside Full Value	***Bridleside Factored at 69%***	***AFFH Lewisboro***
Residential Units	65	45	45
Population	137	95	110
School-age Children - New to the District	26	18	16
Police Annual Calls for Service	23	16	17 *
Fire Annual Calls for Service	17	12	8 *
Ambulance Annual Calls for Service	7	5	4 *
Municipal Taxes	$44,588	$30,766	$29,527
School Taxes	$102,076	$70,423	$91,268

Notes: Estimates are approximate.
Source: Insite Engineering; Tim Miller Associates, Inc., 2016
* Based upon existing average annual calls with the current service area.

Minimization of Potential Impacts and Mitigation

[illegible]o[illegible]r[illegible]d[illegible] [illegible]rg[illegible]r[illegible]

As Table 3.9-3 shows the actual calls for emergency service at Bridleside are consistent with the projection of need from the Lewisboro development. The anticipated calls for emergency services is not anticipated to result in any significant impact to police protection, or fire and emergency service provision in the Town of Lewisboro as a result of the construction of the proposed residential development.

The proposed development will generate tax revenues to balance any potential increases in the cost to various municipal and other district services.

[illegible]o[illegible]d[illegible]r[illegible]t[illegible]

There are expected to be secondary benefits to the local economy as a result of construction activities and the future spending by the new residents of this project. The spending of residents expected to live at the proposed development will benefit commercial businesses in the local area and the region, both in the Town of Lewisboro and the surrounding region.

3.9.5 Schools

Existing Conditions

The project site is served by the Katonah Lewisboro Union Free School District. The District includes three K-5 elementary schools, one middle school (grades 6, 7 and 8), and one high school. The Katonah Lewisboro Union Free School District geographically includes all of the Town of Lewisboro and the Katonah Hamlet area in the Town of Bedford, and smaller portions of the Town of North Salem and the Town of Pound Ridge.

According to information provided by the School District[3], enrollments have been steadily decreasing over the past 10 years. As of October 2014, 3,204 students were enrolled in the District. Table 3.9-4 below summarizes the 2014-2015 grade distributions and enrollments of the various schools within the District:

Table 3.9-4
Katonah Lewisboro School District (2014-2015 School Year)

School	Grades Served	2014 Enrollment
Increase Miller Elementary School	K-5	479
Katonah Elementary School	K-5	415
Meadow Pond Elementary School	K-5	384
John Jay Middle School	6-8	777
John Jay High School	9-12	1,149
TOTAL		**3,204**

Katonah Lewisboro School District, 2015.

All of the schools in this School District received a rating of “5” from the New York State Public School Report Card of Comprehensive Information with respect to the “district need to resource capacity”. This rating states that “this is a school district with average student needs in relation to district resources capacity”.

Potential Impacts

As shown in Table 3.9-1, based upon demographic multipliers published by the Rutgers University Center for Urban Policy Research, approximately 16 students are projected to reside in the proposed residential development.

According to the Assistant Superintendent for Business, Based upon the geographic location of the project site and the current student distribution among schools in the district, it is likely that students from the proposed residential development would attend the Increase Miller Elementary School, the John Jay Middle School and the John Jay high School. It should be noted that student distribution is reviewed annually and is subject to change.

[3] Katonah Lewisboro Union free School District 2015-2016 General Fund Budget Book, April 2015.

[illegible]

The budget for the 2015-2016 school year for the Katonah Lewisboro Union Free School District totals approximately $108,731,720. The portion of the budget to be raised through taxation is $95,904,695 - approximately 88 percent of the budget is met through the property tax levy. The addition of 16 students to a population of more than 3,200 students represents an increase of less than half of one percent. This deminimus increase in student population will not have a significant impact on administrative or capital needs of the district. Any costs to the District's would be related specifically to instruction and transportation, [illegible] referred to as marginal costs, District wide, these costs total $49,544,464[4]. Since 88 percent of the Budget is to be raised by the tax levy, the portion of these costs to be raised by the tax levy total $43,599,128.

With an enrollment of 3,204 students, the per-student marginal cost to be raised by the tax levy are calculated to be $13,608, ($43,599,128 / 3,204). This cost is likely overstated given the small percentage of new students compared to the existing student population. Projected costs to the school district could be up to $217,728 annually based on an estimated 16 students that would reside in the community.

The proposed residential housing development is estimated to generate $91,268 in property tax revenues annually to the school district. Thus, the overall impact on the district's budget could conservatively result in a cost of up to $126,460. If this cost materializes, it would need to be met by an adjustment to the overall tax rates of the School District of approximately 25 cents per $1,000 of assessed valuation. For a typical home in the Katonah Lewisboro District, this translates into approximately $12.50 per household.

The anticipated cost of education must be balanced with the fact that the WB Lewisboro Affordable Housing Development will be a resource that will provide for affordable housing that will help to advance the Town and County goals for such housing and will help to satisfy local and regional housing needs, truly a mitigation factor that must be given appropriate consideration.

Construction is projected to take 12 to 18 months which is likely to be spread over two school years. The increased student population is also expected to be distributed throughout the grade levels, resulting in an average of less than one student per grade. The multi-year phasing and distribution of students will allow for an additional 16 students to be integrated to the local schools with minimal impact. Conversation with the Business Administrator for the Katonah Lewisboro District[5] indicated absorption of the new students should not present a capacity problem for the school district, particularly in light of the declining enrollment trend the district is experiencing.

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[4] Katonah Lewisboro Union Free School District 2015-2016 General Fund Budget Book, April 2015, page 11.

[5] [illegible]

A letter from the School District [illegible] ~~to this effect has been requested from the School District.~~

Minimization of Potential Impacts and Mitigation

The development plans will be forwarded to the School District for review and comment on transportation safety, bus turning radius and bus stop locations. Since the potential for significant impacts is minimal, no further mitigation is proposed.

3.9.6 Summary

Lewisboro has a responsibility to provide for their share of the regional need for affordable housing. This need was recognized by the Town Board in its adoption of Local Law 7-2015 permitting the development of multi-family housing, including AFFH units, in various zoning districts throughout the Town (including the CC-20 zone in which the subject site exists).

As set forth in the Westchester County Affordable Housing Allocation Plan 2000-2015 (November 9, 2005), 239 units were estimated as Lewisboro's "fair share obligation" which has been substantially unmet. The WB Lewisboro Affordable Housing Development will provide needed affordable housing opportunities for the Town of Lewisboro. All of the 45 residential units will be designated affordable, in accordance with Westchester County's eligibility requirements.

Most impacts to be considered in development projects are site specific – traffic, visual, natural resources, etc. But fiscal impacts are not site specific other than whether or not a site has public roads, water, sewer and or sanitation. Fiscal impacts relating to school children are not at all site specific and therefore must be supported by the entire community.

The proposed 45 units in the WB Lewisboro Affordable Housing Development represent less than 25% of the Town's "fair share obligation" to provide affordable housing. Given the privately owned infrastructure, and the relatively low expected population of school age children, the fiscal impacts of these affordable units could not be any less.

3.10 IMPACT ON THE COMMUNITY

Existing Conditions

The subject property encompasses 35.4 acres of land on three lots located in the Town of Lewisboro, Westchester County, New York. The property is located on the east side of NYS Route 22, proximate to the I-684 northbound Exit 6A ramp and south of the hamlet of Goldens Bridge. The three parcels are located in the following special districts: Katonah-Lewisboro School District and Goldens Bridge Fire District. The two westerly lots are located in the CC-20 zoning district and the easterly lot is located in the R-4A zoning district.

The site is located approximately three-quarters of a mile south of the hamlet of Goldens Bridge, which includes several community-scale commercial businesses, a post office, a community center and the Goldens Bridge Metro-North train station. Generally within approximately three-quarters of a mile of the site, land uses to the north and west include residential, public uses, warehouse, commercial, retail, transportation and vacant land. To the south and east, land use is predominantly single family residential, and vacant land.

Town Master Plan

The Town Master Plan outlines policies and goals formally adopted by the Town of Lewisboro in 1985[1] as a guide for land use and future development in the Town. In its Plan, the Town identified considerations for preservation of open space resources as well as for development that are generally applicable to the subject proposal today. The Plan does not identify site-specific consistency criteria, but it was intended to provide overall guidance on the local scale for land planning decisions. Consistency of the proposed development with policies identified in the Plan, to the extent such policies are defined, is described below.

The 1985 Town Master Plan speaks of a vision for land use in the I-684/Route 22 corridor that would provide for development of campus commercial land use that would also incorporate the preservation of open space. Campus commercial development was envisioned and planned for in the area bordering Route 22 including the subject site and paved the way for the subsequent rezoning to CC-20. As stated in the Master Plan relative to campus commercial facilities, adequate buffering between such use and adjacent residential areas would allow the two different types of land use to coexist, and reduce impacts to the natural environment resulting from development.

Housing Market

A recent amendment to the zoning code adopted by the Town Board in 2015 (LL 7-2015) added provisions that would permit multi-family housing in commercial and business areas. A joint task force composed of members of the Planning Board, Zoning Board of Appeals, Architectural Review Council and Housing Committee had been tasked with exploring ways to enable Lewisboro to comply with the obligations of the Westchester County Housing Settlement, and to facilitate the effort to provide fair and affordable housing in Town. The amended provisions of the code apply to the subject site and is particularly appropriate for this application for affordable housing.

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[1] Accessed on the Town's website 1/21/16.

In her letter of January 25, 2016 to the Chair of the Lewisboro Planning Board, the Chair of the Lewisboro Housing Committee stated:

> The majority of the Housing Committee feels that the proposed Wilder Balter 45-unit development would accomplish the goal for which the Zoning code was amended: providing fair and affordable housing in Lewisboro. The construction of the proposed AFFH housing in Lewisboro would also substantially help Lewisboro and the County in complying with the Settlement, joining other nearby towns such as North Salem, Pound Ridge and Bedford, who have also taken steps in this direction.[2]

Potential Impacts

The site plans developed for this affordable housing application show and tabulate the various zoning requirements of the CC-20 and R-4A districts applicable to the property, including the new reference to the provisions for multi-family dwellings which are found in the R-MF requirements. The plans identify the conformance of the proposed plan to the applicable zoning requirements including the following information:

- Front, side and rear yard setbacks of the R-MF district or double the R-4A district setback, as applicable (these replace the setbacks of the CC-20 district);
- Density transition area of the R-MF district (replaces the perimeter buffer of the CC-20 district);
- Buffer lot with conservation easement (CC-20 district requirement);
- Town wetland control area and State wetland adjacent area; and,
- Tables with the applicable net land area calculations, density unit calculations, parking requirements and recreation requirements.

Multi-family dwellings are a permitted use in the CC-20 district, subject to the requirements of Section 220-26, Multifamily Residence District (R-MF), of the Zoning Code. The dimension and bulk zoning requirements of the R-MF district replace those of the underlying CC-20 district (to be confirmed by the Planning Board Attorney or Building Inspector).

The applicant is proposing a total of 92 parking spaces for this facility (2.0 per unit), whereas 124 spaces are required by zoning based on the proposed bedroom count. The required number of spaces far exceeds the parking needs of the development based upon the applicant's experience with other similar developments owned and managed by the applicant throughout the Hudson Valley. For example, the Bridleside 65-unit affordable rental community in North Salem was approved with 144 parking spaces but a recent three day survey showed that only 76 spaces were being used (53 percent of the requirement or 1.17 cars per dwelling unit). Another example is the 92-unit Roundtop affordable rental community in Montrose which was approved with 141 parking spaces (1.5 parking spaces per unit). The survey for that property showed that only 98 spaces were being used (70 percent or 1.07 cars per dwelling unit). Accordingly, the applicant is requesting a parking variance from the Zoning Board of Appeals.

The applicant proposes to permanently preserve open space on the easternmost part of the property located in the R-4A zoning district. The applicant intends to preserve at least 17 acres

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[2] See January 25, 2016 letter to the Chair of the Lewisboro Planning Board from the Chair of the Lewisboro Housing Committee.

of open space through restrictive covenants and/or a conservation easement, thereby providing a permanent buffer to the adjoining lands in the R-4A district.

Mitigation Measures

The Town's Master Plan cites general design principles to guide future public and private development in the Town to support the goals and objectives of the Town. These recommendations refer to landscape buffering of buildings and parking areas, minimization of disturbance on steep slopes where potential for erosion needs to be addressed, and provisions to minimize adverse visual impact on Town character and neighboring uses.

The Master Plan highlights the need for care in site planning of parcels containing steep slopes, wetlands and other open space resources to minimize the potential for impacts to the sensitive qualities of such areas as well as potential visual intrusions into the landscape of Lewisboro. In addressing these concerns, the proposed development plan presents a balance between the environmental goals of open space resource preservation and wise utilization of the land in the applicant's opinion.

The site plan will incorporate various conventional slope protection and wetland protection measures that will minimize the potential for soil erosion and surface water impacts. The plan also will incorporate tree preservation measures (particularly by minimizing the overall area of site disturbance) and proposed landscape plantings that will minimize visual intrusion and create an asset to the community. Moreover, the site plan will preserve a significant area located outside of the limits of disturbance in permanent open space.

Refer to the preceding narratives in this Part 3 on specific subject areas for discussions of environmental concerns relating to particular physical components of the proposed plan that are integral to the design and will effectively avoid or minimize impacts.

The proposed plan, in the applicant's opinion, will be consistent with the Town's Zoning Statement of Purpose (§220-1): "To preserve the natural beauty of the physiography of the Town; to protect the Town against unsightly, obtrusive and obnoxious land uses and operations; to enhance the aesthetic aspect of the natural and man-made elements of the Town; and to ensure appropriate development with regard to those elements."

The proposed plan will also meet the site plan standards set forth in §220-48 which the Planning Board will consider in acting on a site development plan application:

> (1) The proposed number, size, location, height, bulk, use, appearance and architectural features of all structures and facilities.
>
> (a) The overall building and site design shall enhance and protect the character and property values in the surrounding neighborhood.
>
> (b) Development shall be compatible with the architectural style and visual composition of the hamlet area in which it is located.
>
> (c) Development shall have a harmonious relationship with the natural terrain and vegetation on the site and on adjacent properties.

The proposed plan will address a housing need cited in the Town Master Plan. In it's determination of significance at the time that multi-family dwellings was added as a permitted use in the CC-20 district regulations (LL 7-2015), the Town's findings stated the "...definition of

AFFH Unit ... in addition to allowing multifamily housing within the Town's commercial zones, is consistent with the Goal and Policy set forth in the Town Master Plan, which recites that 'opportunities should be provided for a range of housing, including type, cost and character' (Town Master Plan, Goal 1C)."

The Westchester County Department of Planning supports the development of affordable affirmatively furthering fair housing (AFFH) rental units in the Town of Lewisboro.[3] This application is consistent with the Westchester County Planning Board's long-range planning policies set forth in *t h t r o t t or ou t d Mu g d o to u d ou t g* adopted 2008 and amended 2010), and its recommended strategies set forth in *tt r or t h t r h d d th o* (adopted 1995), which calls for increasing the range of housing types in Westchester County.[4]

The applicant is cognizant of the Town's Complete Streets Policy adopted in 2011 and although the policy does not specifically address individual site plans, this development proposal will conform with the policy as it might be applied to the plan.

The proposed affordable housing development plan addresses the Town's design principles relative to environmental protection and visual consistency, in the applicant's opinion. The proposed site plan has been laid out such that the buildings and other site features will be virtually surrounded by wooded open space, will not be visually prominent at any time of year, and will be largely obscured from offsite views when leaves are on the trees.

The development includes a natural landscape buffer to the public roads and nearby uses through the preservation of existing vegetation over much of the property. (These buffers reflect what is depicted for the property in the Town's Master Plan map of 1985.) In addition to the mixture of native and adaptive deciduous and evergreen tree and shrub species proposed on the landscape plan, natural topographic conditions render the development area of the site largely obscured from view from most offsite locations thereby avoiding potential impact on community character.

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[3] Letter to Jerome Kerner, Chair, Town of Lewisboro Planning Board, from Norma V. Drummond, Deputy Commissioner, Westchester County Department of Planning, dated March 11, 2016.

[4] Letter to Ciorsdan Conrad, Planning Board Secretary, Town of Lewisboro, from Edward Buroughs, AICP, Commissioner, Westchester County Planning Board, dated February 12, 2016.

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

PRELIMINARY STORMWATER POLLUTION PREVENTION PLAN

For

Wilder Balter Partners

NYS Route 22

Town of Lewisboro, New York

February 2, 2016

Owner Information:

Property Group Partners, LLC
c/o Jeffrey Sussman, President
609 Fifth Avenue, 6th Floor
New York, NY 10017

Applicant Information:

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Note: This report in conjunction with the project plans make up the complete Preliminary Stormwater Pollution Prevention Plan.

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1.0 INTRODUCTION

1.1 Project Description

The project sponsor, Wilder Balter Partners, Inc. (the "Applicant"), proposes the development of a multi-family community consisting of 45 affordable (AFFH) residential units and a caretaker's unit (46 units total) on a 35.4-acre site located on NYS Route 22 in the Town of Lewisboro, Westchester County, New York. The development will include five (5) residential buildings, including a community meeting space in one building, recreational facilities, and supporting parking and stormwater management facilities. Access to the development will be provided by a private driveway onto NYS Route 22. The subject property is located in the Hamlet of Goldens Bridge approximately three-quarters of a mile south of Route 138 and the Goldens Bridge train station.

The development site is currently vacant wooded land and is not served by public water and sewer service. Water service will be provided by a new community water system supplied by on-site wells and wastewater will be treated by a new community on-site septic system. The community water and sewer systems will be designed and constructed in accordance with the standards and subject to the approval of the Westchester County Department of Health (WCDOH) and the New York State Department of Environmental Conservation (NYSDEC).

The development property is located in two zoning districts: the western portion of the site near Route 22 is in the CC-20 Campus Commercial District and the eastern portion of the site in the R4-A residential district. Multi-family housing is a permitted use in the CC-20 zoning district. Surrounding and nearby properties to the north, east and west are generally undeveloped and transportation uses (Interstate 684). Properties to the south are mostly developed low density residential lots.

The development will comply with Westchester County's fair and affordable housing programs and policies, including the Westchester County Fair and Affordable Implementation Plan. The proposed development will assist the County in meeting its court mandated obligation to complete 750 affordable AFFH units with financing and building permits in place by December 31, 2016. The proposed AFFH apartments will also count towards the Town of Lewisboro's substantially unmet "fair share obligation" to create 239 units of affordable housing as established by the County's Affordable Housing Allocation Plan (2000-2015). Funding for the development will include programs provided by Westchester County and NYSHCR.

There are no known enforcement actions, including lawsuits or administrative proceedings, commenced against the applicant, or any principle affiliate of the applicant, for any alleged violations of law related to the applicant of the site, in the five years preceding this application.

The following permits are required for the subject project.

Agency	Approval Required	Status
Town of Lewisboro Planning Board,	Site Plan Approval Stormwater Permit Wetland Permit	All Pending
Town of Lewisboro Zoning Board	Parking Variance	Pending
New York City Department of Environmental Protection (NYCDEP)	Stormwater Pollution Prevention Plan (SPPP)	Pending
New York State Department of Conservation (NYSDEC)	Coverage Under General Permit GP-0-15-002. NYSDEC Freshwater Wetlands Permit	All Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit	Pending
Westchester County Department of Health	Water/Sewer	Pending

The anticipated start date of this project is the spring of 2017, with an estimated completion date of the spring of 2018.

1.2 Existing Site Conditions

The subject project is located on three tax parcels along the eastern side of Goldens Bridge Road (NYS Route 22). The existing ground covers on the site are characterized as mainly woods with some brush at the lower elevation of the property. There is an existing NYSDEC Wetland (F-29) located along the southern portion of the site. The wetland areas drain to a watercourse near the southwest corner of the property. The property generally drains from north to south towards the NYSDEC Wetland. Slopes on the site vary from steep in the forested northern portion of the site to flatter slopes in the brush and wetland areas in the southern portion of the property.

The hydrologic soils groups for the project consist of a mix of A, B and D soils. The designations of the onsite soils located within the proposed limits of disturbance consist of Chatfield-Hollis-Rock Outcrop Complex (CtC and CuD), Hollis-Rock Outcrop Complex (HrF), and Riverhead Loam (RhB) as identified on the Soil Conservation Service Web Soil Survey. The soils boundaries are shown on Figure 2 and 3.

The stormwater runoff from the existing properties generally drains from north to south towards the NYSDEC wetland. The peak flow analysis included in the project SWPPP analyzes one (1) design line to assess the stormwater runoff from the property and any potential impacts from development to the existing natural resources on the property. The Pre Development Drainage Map (Figure 2 of this report) identifies Design Line 1 which represents the northern wetland boundary located at the southern portion of the project site. The contributing area to design line 1 is identified as subcatchment 1.0S.

The project site is in the Muscoot Watershed Basin. This Reservoir is located in the New York City East-of-Hudson Croton Watershed, where the Environmental Protection Agency (EPA) has established a Total Maximum Daily Load (TMDLs) for phosphorus. The burden for reducing current phosphorous loading to achieve the TMDL presently lies with the applicant, Town of Lewisboro and its regional partners. The program for phosphorous reduction has been established in the NYSDEC document entitled *Croton Watershed Phase II Phosphorous TMDL Nonpoint Source Implementation Plan* (TMDL Implementation Plan) dated January 14, 2009. For further discussion on this program, refer to the following section.

1.3 Proposed Site Conditions

As previously stated the subject project proposes the development of a five (5) multi-family buildings containing eight to ten units per building, and necessary driveway access to each building. A total of forty-six (46) units are proposed on the project site. Mitigation for the proposed impervious surfaces located within the project site will be provided in the form of proposed stormwater management practices (SMP's) discussed further in later sections of this report. The proposed SMP's will be designed to capture and treat runoff from the impervious surfaces associated with the proposed buildings, parking areas and access drive.

It is proposed to maintain the existing drainage patterns on the site to the maximum extent practical in the proposed condition. Stormwater treatment for the subject project will be accomplished with a number of different practices including an extended detention dry stormwater basin, used as pretreatment practice prior to an infiltration basin. The infiltration basin and extended detention pretreatment dry stormwater basin will both be sized to capture and treat the Water Quality Volume from the contributing area of the proposed development.

The stormwater runoff from the proposed development will be captured in a collection system and conveyed to the extended detention dry stormwater basins for pretreatment of the stormwater runoff, prior to discharging to the infiltration basin for final treatment. The contributing area to the pretreatment basin is shown as subcatchment 1.1S. The immediate contributing area to the infiltration basin is shown as subcatchment 1.2S. The untreated / undeveloped area on the site is shown as subcatchments 1.3S, and drains directly to the NYSDEC wetland. The subcatchments are shown in Figure 3 of this report.

As shown in the following sections of this report, the stormwater quality and quantity for the proposed development have been mitigated to the maximum extent practicable. Additionally, an erosion and sediment control plan has been prepared in accordance with the New York State Standards and Specifications for Erosion and Sediment Control to protect the existing waterbodies and drainage features during construction activities.

As noted above, the subject parcel is located within the Muscoot Watershed Basin for which a TMDL has been established. The TMDL Implementation Plan clearly states that for simplicity and ease of local government administration the plan is largely structured to use existing programs to achieve reductions. These programs include:

- Potential additional point source reductions.
- NYSDEC SPDES General Permit for Stormwater Discharges for Municipal Separate Stormwater Sewer Systems (MS4s) Permit No. GP-0-10-002.
- State and regional source control and agricultural programs.
- US EPA Filtration Avoidance Determination Program.
- Putnam County "Croton Plan".
- NYCDEP "Croton Strategy".
- NYCDEP EOH Water Quality Investment Funds.
- New York State non-point source programs.
- NYSDEC – NYCDEP Coordinated Stormwater Enforcement Protocol.

The proposed Stormwater Pollution Prevention Plan (SWPPP) for Wilder Balter Partners, Inc. is consistent with the TMDL Implementation Plan and applicable portions of the above-cited programs. Through compliance with this permit, which requires enhanced stormwater design in the NYC East of Hudson Watershed targeted at removing phosphorus, this SWPPP is consistent with TMDL Implementation Plan.

2.0 STORMWATER MANAGEMENT

The proposed stormwater management system for Wilder Balter Partners, Inc. has been designed to meet the requirements of local, city, and state stormwater ordinances and guidelines, including but not limited to those of the Town of Lewisboro, the NYSDEC, and the New York City Department of Environmental Protection (NYCDEP).

Since the subject project proposes the disturbance of more than one (1) acre, coverage under the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit No. GP-0-15-002 is required. In order to meet the requirements set forth by this permit, the latest edition of the NYSDEC *New York State Stormwater Management Design Manual* (NYSSMDM), including Chapter 10: *Enhanced Phosphorus Removal Standards* (Chapter 10), was referenced for the design of the proposed stormwater management system. A discussion of the requirements of Chapter 10 is included below including an analysis of Better Site Design techniques applied in the site design. The NYSSMDM specifies four design criteria that are discussed in detail below. They are Water Quality Volume, Stream Channel Protection Volume, Overbank Flood Control, and Extreme Flood Control. The first of the requirements relates to treating water quality, while the later pertain to stormwater quantity (peak flow) attenuation.

With regard to NYCDEP requirements, Section 18-39(b)(3)(iv) of the most current version of the *Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and Its Sources (Rules and Regulations)*, requires a SWPPP Approval for this project. The developed areas for the proposed development contain more than 20% impervious groundcover, and per the Rules and Regulations only one (1) stormwater management practice, designed in accordance with the NYSSMDM is required when the stormwater runoff is directed to an infiltration practice for treatment. Therefore the stormwater design for the subject project consisting of a dry pretreatment extended detention stormwater basin with a discharge to an infiltration area for all of the developed areas of the project meets the latest NYCDEP stormwater quality requirements.

To address stormwater quantity requirements of both the NYSDEC and NYCDEP, the "HydroCAD" Stormwater Modeling System," by HydroCAD Software Solutions LLC in Tamworth, New Hampshire, was used to model and assess the peak stormwater flows for the subject project. HydroCAD is a computer aided

design program for modeling the hydrology and hydraulics of stormwater runoff. It is based primarily on hydrology techniques developed by the United States Department of Agriculture, Soil Conservation Service (USDA, SCS) TR-20 method combined with standard hydraulic calculations. For details on the input data for the subcatchments and design storms, please refer to Appendices B and C.

The input requirements for the HydroCAD computer program are as follows:

Subcatchments (contributing watershed/sub-watersheds)

- Design storm rainfall in inches
- CN (runoff curve number) values which are based on soil type and land use/ground cover
- Tc (time of concentration) flow path information
- Watershed Area in Acres

Stormwater Basins

- Surface area at appropriate elevations
- Flood elevation
- Outlet structure information

The precipitation values and intensity duration frequency (IDF) curves for the 1-Year, 10-Year, 100-Year 24 hour design storm events and rainfall distribution curves utilized for this report were obtained from the information provided by Northeast Regional Climate Center (NRCC) and the Natural Resources Conservation Service (NRCS) which is available online at *www.precip.eas.cornell.edu.* The values provided for all design storms analyzed have been listed below.

Table 2.0.1 – Precipitation Values for Corresponding Design Storms

Design Storm	24-Hour Rainfall
1-Year	2.8”
10-Year	5.1”
100-Year	9.1”

The CN (runoff curve number) values utilized in this report were referenced from the USDA, SCS publication *Urban Hydrology for Small Watersheds*. The following is a summary of the various land uses/ground covers and their associated CN values utilized in this report.

Table 2.0.2 – Project Ground Cover and Associated Curve Numbers (CN)

Land Use/Ground Cover	CN Value
Brush, A Soil	30
Woods, B Soil / D Soil	55 / 77
>75% Grass Cover, A Soil / B Soil	39 / 61
Paved Parking, sidewalks and Roofs	98

The hydrologic soils groups for the project consist of a mix of A, B and D soils. The designations of the onsite soils located within the proposed limits of disturbance consist of Chatfield-Hollis-Rock Outcrop Complex (CtC and CuD), Hollis-Rock Outcrop Complex (HrF), and Riverhead Loam (RhB) as identified on the Soil Conservation Service Web Soil Survey. The soils boundaries are shown on Figure 2 and 3.

Table 2.0.3 – Land Cover Breakdown by Subcatchment

Subcatchment	Land Use / Ground Cover (Acres)				Total Area (Acres)	Time of Concentration (Tc)	Curve Number (CN)
	Woods	Grass	Brush	Paved Parking, Roofs, & Water Surface (Impervious)			
Pre Development							
PRE 1	12.0		2.7		14.7	21.6	54
Post Development							
1.1S	3.9	3.2	-	2.8	9.9	22.3	67
1.2S	0.1	0.5	-	-	0.6	8.2	49
1.3S	2.0	1.0	1.3	-	4.3	11.9	50

2.1 Enhanced Phosphorus Removal Standards

As noted above, the New York City East of Hudson Watershed has been identified in the SPDES General Permit GP-0-15-002 as a watershed requiring compliance with the Enhanced Phosphorus Removal Standards when post-construction stormwater management practices are proposed. Chapter 10 of the NYSSMDM establishes four goals to meet sizing performance standards:

- Goal 1: Reducing Runoff Volumes
- Goal 2: Effective Bypass Treatment
- Goal 3: Achieving Effluent Concentrations for Particulate Phosphorus
- Goal 4: Achieving Effluent Concentrations for Dissolved Phosphorus

Goal 1 of reducing runoff volumes is achieved through source control. Source controls are implemented by Better Site Design (BSD) practices that are used to reduce the volume of runoff and thereby reduce pollutant loads to receiving waters. In order to achieve a reduction in runoff volume Chapter 4 specifies a percentage of the impervious area that shall be directed to a BSD practice or infiltrated for each hydrologic soil group. For the hydrologic group “B” as is present on the majority of subject site 40% of the impervious surfaces must be directed to a BSD practice. It should be noted that standard infiltration practice is to treat all the proposed development on the site. An analysis of the BSD practices incorporated into the site design is discussed in further detail below.

Goal 2 cites that proposed stormwater management practices should achieve less than 15% effective treatment bypass of the long-term runoff volume. Chapter 10 further notes this goal is satisfied by capturing and treating the 1-year 24-hour design storm. The NYSDEC stormwater quality treatment practice proposed for this project includes extended detention dry stormwater basins as pretreatment devices and infiltration basins as final treatment practices. Additional detail has been presented on the proposed practices in the following section addressing the Water Quality Volume requirement, however all practices will be designed in accordance with Chapter 10 by utilizing the 1-yr, 24 hour design storm to generate the Water Quality Volume. As such, Goal 2 will be achieved in the SWPPP for this project.

Achieving effluent concentrations for particulate phosphorus, Goal 3, is satisfied by achieving an 80% net removal of particulate phosphorus for a median influent concentration of 0.5mg/l. Chapter 10 states that through designing proposed stormwater management practices in accordance with Section 10.4 this goal will be achieved. The proposed stormwater management practices previously discussed will be designed in accordance with Section 10.4.4 of Chapter 10 thus satisfying the requirements of this goal.

Goal 4, achieving effluent concentration for dissolved phosphorus, is achieved by obtaining a 60% net removal of dissolved phosphorus given a median influent concentration of 0.15mg/l. As with Goal 3, Goal 4 is achieved by designing the proposed stormwater management practices in accordance with Section 10.4 of Chapter 10. As noted above the proposed stormwater practices will be designed in accordance with section 10.4.4 of Chapter 10 thus satisfying the requirements of this goal.

2.2 Better Site Design (BSD)

As noted above Goal 1 as identified in Chapter 10, requires an analysis of BSD Practices or standard infiltration practices, and directing 20% of the proposed impervious surfaces to a Better Site Design Practice or standard infiltration practice. The following list is all the BSD practices (as identified in NYSDEC's publication *Better Site Design*) incorporated in site design. In addition to the Better Site Design practices listed below, a table citing the practices listed on pages 10-19 and 10-20 of Chapter 10, and whether or not they have been included in the design has been provided in Appendix F.

- BSD Practice #1 Preservation of Undisturbed Areas: The site has been designed to preserve the undisturbed areas to the maximum extent practical.
- BSD Practice #2 Preservation of Buffers: The site has been designed to minimize disturbance within NYSDEC Wetland Buffer to preserve the maximum extent practical.
- BSD Practice #3 Reduction of Clearing and Grading: The site design has minimized the clearing and grading to the greatest extent practicable, and a Limits of Disturbance line has been established on the project drawings.
- BSD Practice #4 Locating Sites in Less Sensitive Areas: As previously stated, there are steep slopes that exist in the northwest property corner of the property. The current site design proposes minimize the disturbance within these areas of steep slopes. Disturbance has also been minimized within the limits of the NYSDEC wetland buffer. Therefore, the new site layout successfully addresses this BSD technique.
- BSD #14 \ 15 Infiltration: The runoff from <u>all</u> proposed impervious areas would discharge directly to the infiltration practice for treatment.

As noted above in order to satisfy Goal 1, 40% of the impervious surfaces must be directed to Better Site Design Practices. The proposed development will exceed this requirement by directing 100% of the stormwater runoff from the proposed impervious surfaces to an extended detention dry basin and infiltration basin. Thus, just by implementing BSD #14 Goal 1 has been achieved. As discussed above, many other BSD techniques have been incorporated into the site design for the subdivision in order to provide the optimum site design from an environmental and constructability standpoint.

2.3 NYSDEC Water Quality Volume, WQ_v

The subject project is located in the New York City East-of-Hudson Croton Watershed, which is listed as a phosphorus-limited watershed. Therefore, the stormwater management practices have been designed in accordance with the *Enhanced Phosphorus Removal Standards* (Chapter 10) of the NYSSMDM. As outlined in Chapter 10, the WQv is the runoff volume produced during the 1-year 24-hour design storm. The WQv treatment for the developed areas will be accomplished with an Infiltration Basin sized in accordance with the Infiltration Basin Design criteria (I-2) found in the NYSMDM.

Runoff volumes for each of the subcatchments for the 1-year 24-hour design storm, or the WQv volume produced by each subcatchment are found in Appendix C. It should be noted that per the requirements of the NYCDEP rules and regulations a comparison of the 1-year 24-hour design storm volume and the runoff produced during the 90% storm shall be used as the treatment volume within the NYC Watershed. The following equation, per Chapter 6, was used to determine the water quality volume for the 90% storm each of the contributing areas to the treatment practices:

The water quality volume shall be $WQ_v = \frac{(P)(R_v)(A)}{12}$

Where,

WQ_v = water quality volume (in acre-feet)
P = 90% Rainfall Event Number = 1.45 inches
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = site area in acres

Table 2.3.1 - Water Quality Volume Calculation Summary (90% Storm)

Subcatchment	P (in.)	R_v	A* (ac.)	WQ_v (ac-ft)	WQ_v (c.f.)
1.1S / 1.2S	1.45	0.30	10.1	0.366	15,943

*Information regarding contributing areas (A) is shown in Appendix C

The following table is a summary of the WQv for each of the Subcatchments produced by the 1-year, 24-hour storm.

Table 2.3.2 - Water Quality Volume Calculation Summary (1-Year 24-Hour Design Storm)

Subcatchment	WQ_v * (ac-ft)	WQ_v (c.f.) (1-year, 24-hour Storm)
1.1S/1.2S	0.402	17,511

*Information regarding 1-year 24-hour Design Storm Volumes (WQv) is shown in Appendix C

As shown in tables 2.3.1 and 2.3.2 above the volume produced by the 1-year, 24-hour design storm for the contributing areas is larger than the volume produced by the 90% storm for Subcatchment 1.1S, and the volume produced by the 90% storm for the contributing areas is larger than the volume produced by the 1-year, 24-hour design storm for Subcatchments 1.2S and 1.3S. The 1-year, 24-hour design storm volumes shall be used for the WQv sizing for the proposed stormwater management practice since the only subcatchment with proposed development is within Subcatchment 1.1S. Listed in Tables 2.3.3 and 2.3.4 below, are a summaries of the water quality volume of the NYSDEC compliant practice, and its satisfaction of the NYSDEC WQv requirements: It should be noted the calculated WQv shown above for the subcatchment was used in the sizing calculation for the Infiltration Basin, and Pretreatment Dry Stormwater Basin summarized in the following tables.

Table 2.3.3 Infiltration Area Water Quality Volume Treatment Summary

Subcatchment	Treatment Practice	NYSDEC Design Practice Designation	Ap* (Required Infiltration Surface Area) (s.f.)	Proposed Surface Area of Infiltration System (s.f.)
1.1S/1.2S	1.2 IB	Infiltration Basin (I-2)	5,837	6,300

* Information regarding required infiltration surface area (Ap) is calculated and shown in Appendix G

It should be noted that the above table illustrates the water quality volume storage requirements set forth in the NYSSWDM have been met for the infiltration basin design. By meeting the Water Quality Volume requirements through employment of an infiltration basin, the water quality objectives of the NYSDEC and the NYCDEP to treat the water quality volume will be met.

2.4 NYSDEC Runoff Reduction Volume, RR_v

The Runoff Reduction Volume (RR_v) criterion is intended to replicate pre-development hydrology by maintaining preconstruction infiltration, peak flow runoff, discharge volume, as well as minimizing concentrated stormwater flow. As stated in Chapter 4 of the NYSSMDM, RR_v may be treated with standard stormwater management practices (SMP's) sized in accordance with the Chapter 4/6 requirements, or with green infrastructure practices (GIP's) sized in accordance with the requirements set forth for each practice in Chapter 5. This requirement has been achieved on the subject project providing an infiltration practice, specifically an infiltration basin designed as an SMP in accordance with the latest design standards. Runoff reduction is achieved when runoff from a percentage of the impervious area on the site is captured, routed through an SMP or a GIP, infiltrated to the ground, reused, reduced by evapotranspiration, and eventually removed from the stormwater discharge from the site. Through the implementation, the design of the infiltration basin as an SMP with the runoff reduction capacity 100% of the WQ_v is to be reduced from the site.

Table 10.3 of the NYSSMDM notes the RR_v applies to the water quality volume from impervious surfaces resulting from the 1-year, 24-hour storm. Again, it shall be the intent to provide RR_v - equivalent to the entire WQ_v. Section 4.3 of the NYSSMDM states for sites that do not achieve runoff reduction to pre-construction condition must, at a minimum reduce a percentage of the runoff from impervious areas to be constructed on the site a minimum RR_v. The following equation can be used to determine the minimum runoff reduction volume:

The minimum runoff reduction volume shall be $RRv_{minimum} = \frac{(P)(R_v)(Ai)}{12}$

Where,

S	= Hydrologic Soil Group (HSG) Specific Reduction Factor = 0.40 (B Soils), 0.2 (D Soils)
A*i*c	= Total Area of New Impervious Cover
A*i*	= Impervious cover targeted for Runoff Reduction = (S)(A*i*c)
Rv	= 0.95

For detailed calculations of the runoff reduction for the proposed stormwater infiltration basin see Appendix A. Listed in Table 2.4.1 below is a summary of the NYSDEC compliant practice, and its satisfaction of the NYSDEC RRv requirements:

Table 2.4.1 Runoff Reduction Volume Summary

Subcatchment	**RR_v *Required* = WQ_v (c.f.)** From Table 2.3.2	**RR_v *Minimum* (c.f.)** Calculated in Appendix A	**NYSDEC Practice Designation**	**Allowable % of WQv provided to be applied towards RRv**	**Storage Volume Provided below Outlet Weir / System Overflow (c.f.)** (From Appendix C)	**RRv *Provided* (c.f.)**
1.1S/1.2S	17,511	4,396	I-2	100%*	18,250	18,250

* % are based on table 3.5 of the NYSSMDM.

As shown in the table above the RRv *provided* in each of the subcatchments is greater than the RRv *minimum* and RRv *required* , therefore the RRv requirement has been met for the subject project.

2.5 NYSDEC Stream Channel Protection Volume, CP_v

The Stream Channel Protection (CP_v) criterion is intended to protect stream channels from erosion and is accomplished by the 24-hour extended detention of the center-of-mass from the one-year, 24-hour storm event. The proposed stormwater management system has been designed to meet this requirement with the design of the dry pretreatment stormwater basin and the infiltration

basin. As designed, a center-of-mass detention time of 1,557 minutes (25.95 hours) has been achieved within the pond 1.1P. Additionally the 1-year 24-hour design storm will be directed from the extended detention dry basin to the infiltration basin for complete infiltration of the WQv. Therefore the requirement for stream channel protection has been met with the proposed stormwater design.

2.6 NYSDEC Overbank Flood Control, Q_p, and Extreme Flood Control, Q_f

The Overbank Flood Control (Q_p) requirement is intended to prevent an increase in the frequency and magnitude of out-of-bank flooding events generated by urban development. Overbank control requires storage to attenuate the post-development 10-year, 24-hour peak discharge to pre-development rates. The Extreme Flood Control (Q_f) requirement is intended to prevent the increased risk of flood damage from large storm events, maintain the boundaries of the pre-development 100-year flood plain, and protect the physical integrity of stormwater management practices. Extreme flood control requires storage to attenuate the post-development 100-year, 24-hour peak discharge to pre-development rates. As shown in Table 2.7.1 attenuation for both the 10-year and 100-year 24-hour storms has been provided thus satisfying the Q_p and Q_f requirements.

2.7 NYCDEP Quantity Requirements

As required per the NYCDEP rules and regulations, the attenuation of post-development peak flows from the 1, 10, and 100-year storms to pre-development levels is accomplished with the proposed stormwater management practices. The following tables summarize the pre and post development peak flows expected for the proposed project.

Table 2.7.1– Pre and Post-Development Peak Flows

24-HOUR DESIGN STORM PEAK FLOWS (c.f.s.)						
	1-YEAR		10-YEAR (Overbank Flood Control)		100-YEAR (Extreme Flood Control)	
	Pre	Post	Pre	Post	Pre	Post
Design Line	0.30	0.04	8.29	2.79	36.90	33.49

As shown in the above table the peak flows discharging to the design point in the proposed condition have been mitigated to below the existing condition levels, therefore the receiving drainage system will see a reduction in peak flows during the storm events shown above.

3.0 STORMWATER CONVEYANCE SYSTEM

The stormwater collection and conveyance systems for the project will consist of catch basins and HDPE pipe. The system will be sized to collect and convey at minimum the 25-year, 1-hour design storm using the Rational Method. The Rational Method is a standard method used by engineers to develop flow rates for sizing collection systems. The Rational Method calculates flows based on a one-hour design storm.

4.0 EROSION AND SEDIMENT CONTROL

Erosion and sediment control should be accomplished by four basic principles: diversion of clean water, containment of sediment, treatment of dirty water, and stabilization of disturbed areas. Diversion of clean water should be accomplished with swales. This diverted water should be safely conveyed around the construction area as necessary and discharged downstream of the disturbed areas. Sediment should be contained with the use of silt fence at the toe of disturbed slopes and excavation of the temporary sediment basin. Disturbed areas should be permanently stabilized within 14 days of final grading to limit the required length of time that the temporary facilities must be utilized. The owner will be responsible for the maintenance of the temporary erosion control facilities.

4.1 Temporary Erosion and Sediment Control Facilities

Temporary erosion and sediment control facilities should be installed and maintained as required to reduce the impacts to off-site properties. The owner will be required to provide maintenance for the temporary erosion and sediment control facilities. In general, the following temporary methods and materials should be used to control erosion and sedimentation from the project site:

- Stabilized Construction Entrance
- Silt Fence Barriers
- Storm Drain Inlet Protection
- Sediment Traps with optional Dewatering Devices

A stabilized construction entrance should be installed at the entrance to the site as shown on the plan. The design drawings will include details to guide the contractor in the construction of this entrance. The intent of the stabilized construction entrance is to prevent the "tracking" of soil from the site. Dust control should be accomplished with water sprinkling trucks if required. During dry periods, sprinkler trucks should wet all exposed earth surfaces as required to prevent the transport of air-borne particles to adjoining areas.

Siltation barriers constructed of geosynthetic filter cloth should be installed at the toe of all disturbed slopes. The intent of these barriers is to contain silt and sediment at the source and inhibit its transport by stormwater runoff. The siltation barriers will also help reduce the rate of runoff by creating filters through which the stormwater must pass.

The stormwater ponds will also act as a sediment traps with optional dewatering devices during construction of the site. Stormwater runoff from disturbed areas will be directed to the sediment trap. The trap will be sized in accordance with the publication, *New York State Standards and Specifications for Erosion and Sediment Control* (Blue Book), the latest edition.

4.2 Permanent Erosion and Sediment Control Facilities

Permanent erosion and sediment control will be accomplished by diverting stormwater runoff from steep slopes, controlling/reducing stormwater runoff velocities and volumes, and vegetative and structural surface stabilization. All of the permanent facilities are relatively maintenance free and only require periodic inspections. The owner will provide maintenance for all the permanent erosion and sediment control facilities.

The temporary sediment traps shall be cleaned of all sediment and debris, and converted to a extended detention dry stormwater basin per the final elevations and dimensions, and stabilized with the vegetation as indicated on the project drawings. Riprap aprons will be used at the discharge end of all piped drainage systems. Runoff velocities will be reduced to levels that are non-erosive to the receiving waterbodies through use of these aprons.

Other than the buildings and paved surfaces, disturbed surfaces will be stabilized with vegetation. The vegetation will control stormwater runoff by preventing soil erosion, reducing runoff volume and velocities, and providing a filter medium. Permanent seeding should optimally be undertaken in the spring from March 21st through May 20th and in late summer from August 15th to October 15th.

5.0 IMPLEMENTATION, MAINTENANCE & GENERAL HOUSEKEEPING

5.1 Construction Phase

Details associated with the implementation and maintenance of the proposed stormwater facilities and erosion control measures during construction are shown on the project drawings. A Construction Sequence has been provided to guide the contractor in the installation of the erosion control measures as well as the site plan features. In accordance with NYSDEC SPDES General Permit GP-0-15-002 no phase will exceed the maximum of 5 acres of disturbance at any given time as less than 5 acres of disturbance is proposed. The erosion control plan includes associated details and notes to aid the contractor in implementing the plan.

During construction, a Site Log Book, Appendix E, is required to be kept per NYSDEC SPDES General Permit GP-0-15-002. Erosion and sediment control inspections are required to be conducted

as necessary under coverage of the permit (minimum twice a week) and an updated logbook and a copy of the SWPPP is required to be kept on site for the duration of the construction activities. The Construction Site Log Book is an appendix taken from the *New York Standards and Specifications for Erosion and Sediment Control* (Blue Book).

In addition to the proposed erosion and sediment control facilities, the following good housekeeping best management practices shall be implemented to mitigate potential pollution during the construction phase of the project. The general contractor overseeing the day-to-day site operation shall be responsible for the good housekeeping best management practices included in the following general categories:

- Material Handling and Waste Management
- Establishment of Building Material Staging Areas
- Establishment of Washout Areas
- Proper Equipment Fueling and Maintenance Practices
- Spill Prevention and Control Plan

All construction waste materials shall be collected and removed from the site regularly by the general contractor. The general contractor shall supply waste barrels for proper disposal of waste materials. All personnel working on the site shall be instructed of the proper procedures for construction waste disposal.

Although it is not anticipated any hazardous waste materials will be utilized during construction, any hazardous waste materials shall be disposed of in accordance with federal, state, and local regulations. No hazardous waste shall be disposed of on-site. Hazardous waste materials shall be stored in appropriate and clearly marked containers and segregated from the other non-waste materials. All hazardous waste shall be stored in a structurally sound and sealed shipping containers located in the staging areas. Material safety data sheets, material inventory, and emergency contact numbers will be maintained in the office trailer. All personnel working on the site shall be instructed of the proper procedures for hazardous waste disposal.

Temporary sanitary facilities (portable toilets) shall be provided on site during the entire length of construction. The sanitary facilities shall be located in an alternate area away from the construction activities on the site. The portable toilets shall be inspected weekly for evidence of leaking holding tanks.

All recyclables, including wood pallets, cardboard boxes, and all other recyclable construction scraps shall be disposed of in a designated recycling barrel provided by the contractor and removed from the site regularly. All personnel working on the site shall be instructed of the proper procedures for construction waste recycling.

All construction equipment and maintenance materials shall be stored in a designated staging area. Silt fence shall be installed down gradient of the construction staging area. Shipping containers shall be utilized to store hand tools, small parts, and other construction materials, not taken off site daily. Construction waste barrels, recycling barrels and if necessary hazardous waste containers shall be located within the limits of the construction staging area.

Throughout the construction of the project, several types of vehicles and equipment will be used on-site. Fueling of the equipment shall occur within the limits of the construction staging area. Fuel will be delivered to the site as needed, by the general contractor, or a party chosen by the general contractor. Only minor vehicle equipment maintenance shall occur on-site, all major maintenance shall be performed off-site. All equipment fluids generated from minor maintenance activities shall be disposed of into designated drums and stored in accordance with the hazardous waste storage as previously discussed.

Vehicles and equipment shall be inspected on each day of use. Any leak discovered shall be repaired immediately. All leaking equipment unable to be repaired shall be removed from the site. Ample supplies of absorbent, spill-cleanup materials, and spill kits shall be located in the construction staging area. All spills shall be cleaned up immediately upon discovery. Spent absorbent materials and rags shall be hauled off-site immediately after the spill is cleaned for disposal at a local landfill. All personnel working on the site shall be instructed of the proper procedures for spill prevention and control. Any spill large enough to discharge to surface water will be immediately reported to the local fire / police departments, NYCDEP, and the National Response Center 1-800-424-8802.

Initially the stormwater basins and infiltration basins will require regular maintenance until the permanent vegetation is established. Vegetation should be inspected every 30 days and after every major storm event until established, after which inspections should take place on a quarterly basis and after every large storm event. Damaged areas should be immediately re-seeded and re-mulched. The seed mixtures contain several plant species that vary slightly in their needs for survival. It is expected that not all of the species will survive within each basin due to variations within each basin such as water, nutrients, and light. During the initial year of planting, the plants may require watering to germinate and establish. Note that several seedings may be required during the first year to completely establish vegetation within the basin. After the initial year of establishment, the basin does not need to be fertilized or watered. A natural selection process will occur over the first few years, such that the species within the seed mixture most suitable to the conditions will survive.

5.2 Long Term Maintenance Plan

Each spring the paved areas should be cleaned to remove the winter's accumulation of traction sand. After this is completed, all drain inlets sumps and the stormwater basins should be cleaned. All pipes should be checked for debris and blockages and cleaned as required. During the cleaning process, the drain inlets, catch basins, and pipes should be inspected for structural integrity and overall condition; repairs and/or replacement will be made as required.

Once the desired vegetative cover is established in the basins, only limited maintenance is required. The ponds and outlet structures should be inspected after major storm events and semi-annually. During the inspections, the following should be checked:

- Evidence of clogging of outlet structure.
- Erosion of the flow path through the basins.
- Subsidence, erosion, cracking or tree growth on the embankment/berm.
- Condition of the emergency spillway.
- Accumulation of sediment around the outlet structures.
- Adequacy of upstream/downstream channel erosion control measures.
- Erosion of the basin bed and banks.
- Sources of erosion in the contributory drainage, which should be stabilized.

Access to the ponds will be through a stabilized basin access. The access is proposed to be graded to final grades and seeded and mulched in accordance with Plans. The graded basin accesses, and the side slopes and berms of the basins should be mowed annually as applicable to prevent the establishment of woody plants within the swales, access, or pond berms. During the mowing operations, debris and litter should be removed from all parts of the access, and basin. Accumulated sediment will need to be removed from the basins approximately every 10 to 20 years, or when 50 percent of their capacity has been reached. All drain inlets and catch basin sumps will be cleaned. All pipes will be checked for debris and blockages and cleaned as required. During the cleaning process, the drain inlet, catch basins and pipes should be inspected for structural integrity and overall condition; repairs and/or replacement will be made as required. In addition to guidelines discussed above all maintenance, requirements outlined in the NYSSMDM shall be followed.

APPENDIX A
NYSDEC Runoff Reduction Calculations

RRv Calculation Worksheet - Subcatchment 1.1S/1.2S

Project: Wilder Balter Partners, Inc.
Project #: 15246.100
Date: 1/29/2016

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.

1. RRv Initial = Water Quality Volume (WQv) *0.402 ac-ft* = *17,511 c.f.*
(refer to HydroCAD Subcatchments 2.5S, The Mews at Baldwin Place subcatchment 1.5S (0.071ac.ft.) and The Mews at Baldwin Place Phase 2 subcatchment 1.8S (0.086 ac. ft.) for Water Quality Volume)

2. *RRv Minimum* = [(P) (Rv) (S) (Aic)] /12 where…

P = Rainfall (in.)	=	1.45	in.
Rv = 0.05 + 0.009 (100%)	=	0.95	
S = Hydrologic Soil Group Specific Reduction Factor [HSG A = 0.55] [HSG B = 0.40] [HSG C = 0.30] [HSG D = 0.20]	=	0.31	
Aic = Total area of new impervious cover	=	2.8	Acres
RRv Minimum	=	*4,396*	*c.f.*

3. *RRv Required* = RRv Initial - Green Infrastructure Practice (GIP) with Area Reduction

GIP with Area Reduction Applied in Project		
5.3.1 Conservation of Natural Area	N/A	
5.3.2 Sheet Flow to Riparian Buffers or Filter Strips	N/A	
5.3.4 Tree Planting / Tree Box (4 trees at 100 s.f. per tree)	N/A	c.f.
5.3.5 Disconnection of Rooftop Runoff	N/A	
5.3.6 Stream Daylighting	N/A	
RRv Required(=WQv-RRV by area)(Refer to HydroCAD output in this Appendix)	= 17,511	c.f.

4. *RRv Provided*

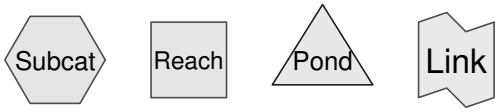
GIP with Volume Reduction Applied in Project	WQv Treated (c.f.)	% of WQv Applied to *RRv Provided*	*RRv Provided (c.f.)*
5.3.3 Vegetated Open Swales [HSG A / B = 20%] [HSG C / D = 10%] {Modified HSG C - D = 15% - 12%]			N/A
5.3.7 Rain Garden [No underdrains / Good Soils = 100%] [With underdrains / Poor Soils = 40%]		40%	
5.3.8 Green Roof [RRv provided equals volume provided in Green Roof]		100%	N/A
5.3.9 Stormwater Planters [Infiltration Planters = 100%] [Flow Through HSG C = 45%] [Flow Though HSG D = 30%]		45%	N/A
5.3.10 Rain Tank / Cisterns		100%	N/A
5.3.11 Porous Pavement		100%	0
Infiltration Practice (Standard SMP)	18250	100%	N/A
Bioretention Practice (Standard SMP) [Without Underdrains HSG A/B = 80%] [With Underdrain HSG C\D = 40%]		40%	N/A
Dry Swale (Open Channel Practice) (Standard SMP) [HSG A/B = 40%] [HSG C/D = 20%]		40%	0
RRv Provided =			*18,250*

5. Summary

RRv Initial	=	17,511	c.f.	
RRv Required	=	17,511	c.f.	
RRv Minimum	=	4,396	c.f.	
RRv Provided	=	18,250	c.f.	
WQv Required for Downstream SMP	=	0	c.f.	(= RRv Required - RRv Provided)

APPENDIX B

Pre-Development Computer Data



Routing Diagram for WB Lewisboro Pre Development
Prepared by Insite Engineering, Printed 1/29/2016
HydroCAD® 10.00-15 s/n 00891 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.0S:

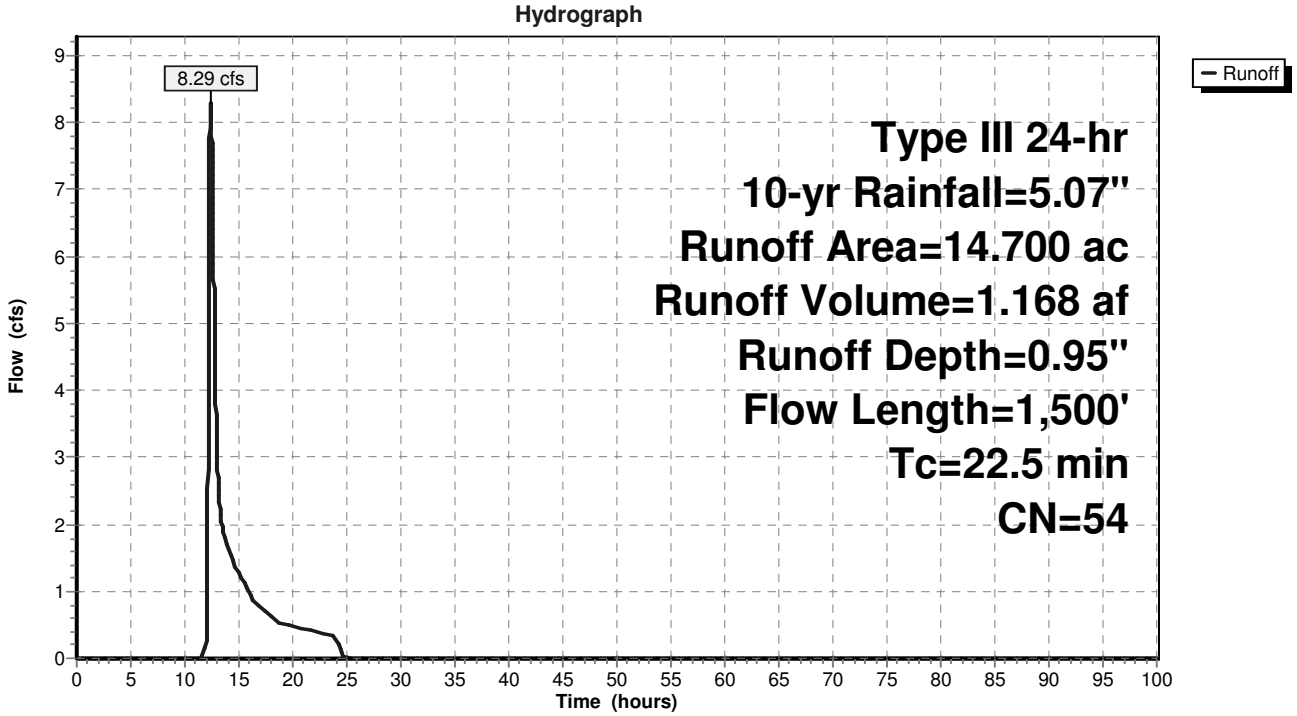
Runoff = 8.29 cfs @ 12.38 hrs, Volume= 1.168 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
2.700	48	Brush, Good, HSG B
12.000	55	Woods, Good, HSG B
14.700	54	Weighted Average
14.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.5	1,400	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.5	1,500	Total			

Subcatchment 1.0S:



Summary for Subcatchment 1.0S:

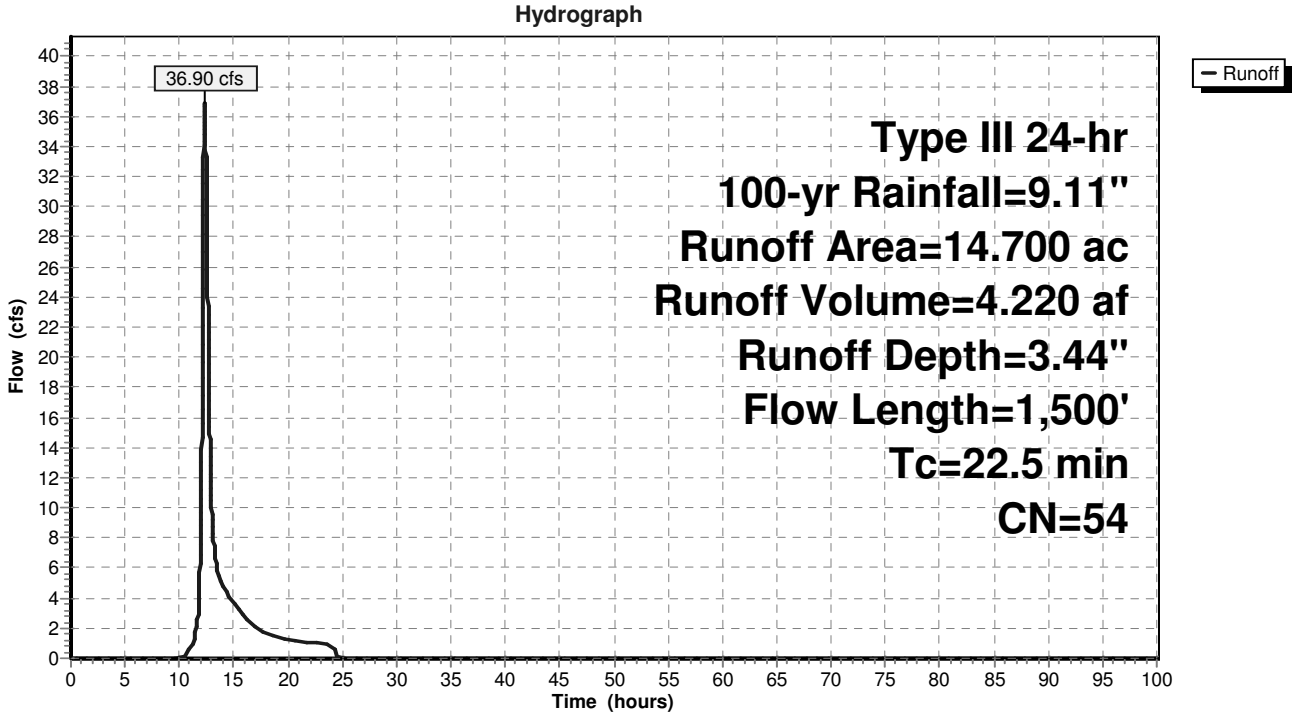
Runoff = 36.90 cfs @ 12.33 hrs, Volume= 4.220 af, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
2.700	48	Brush, Good, HSG B
12.000	55	Woods, Good, HSG B
14.700	54	Weighted Average
14.700		100.00% Pervious Area

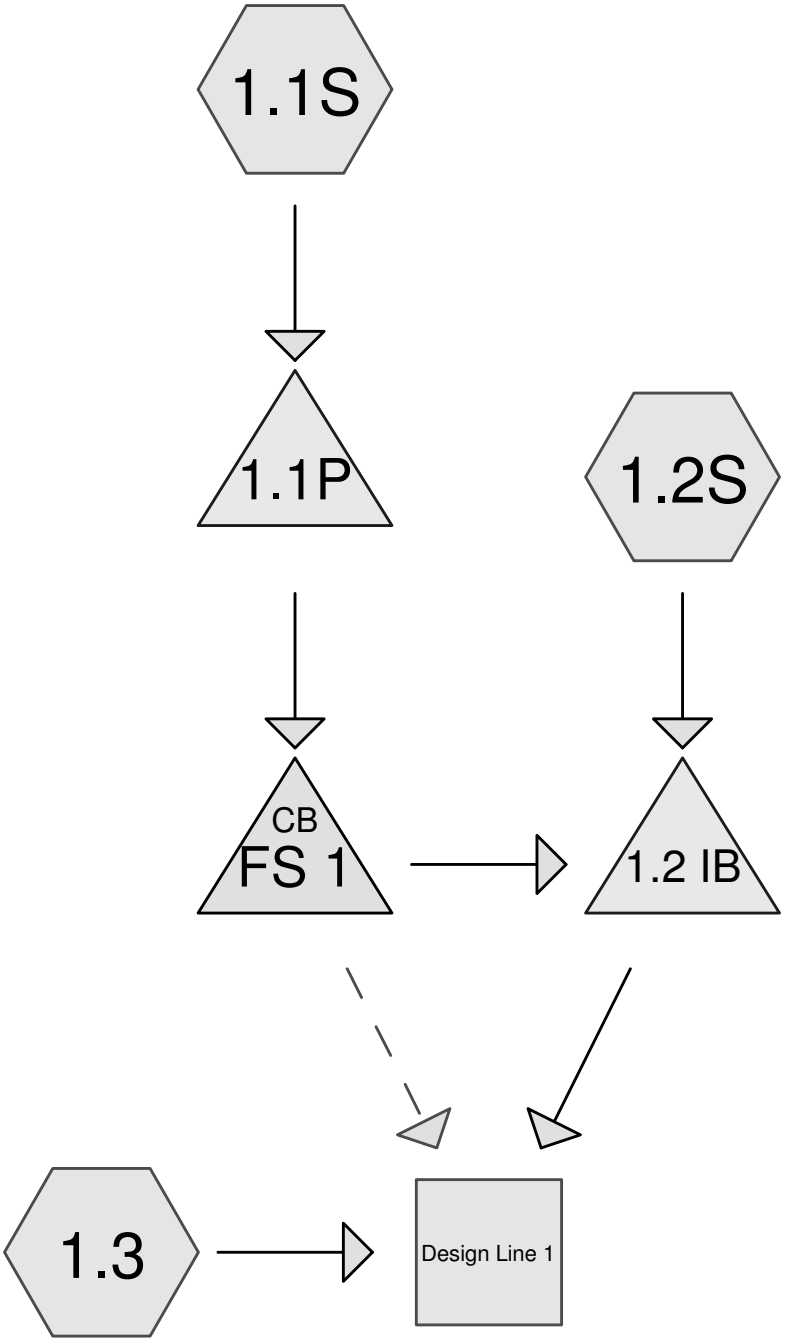
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.1200	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
12.5	1,400	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
22.5	1,500	Total			

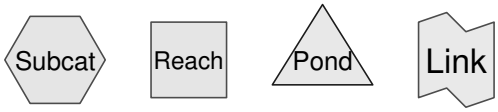
Subcatchment 1.0S:



APPENDIX C

Post-Development Computer Data





Routing Diagram for WB Lewisboro Post Development
Prepared by Insite Engineering, Printed 2/1/2016
HydroCAD® 10.00-15 s/n 00891 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.1S:

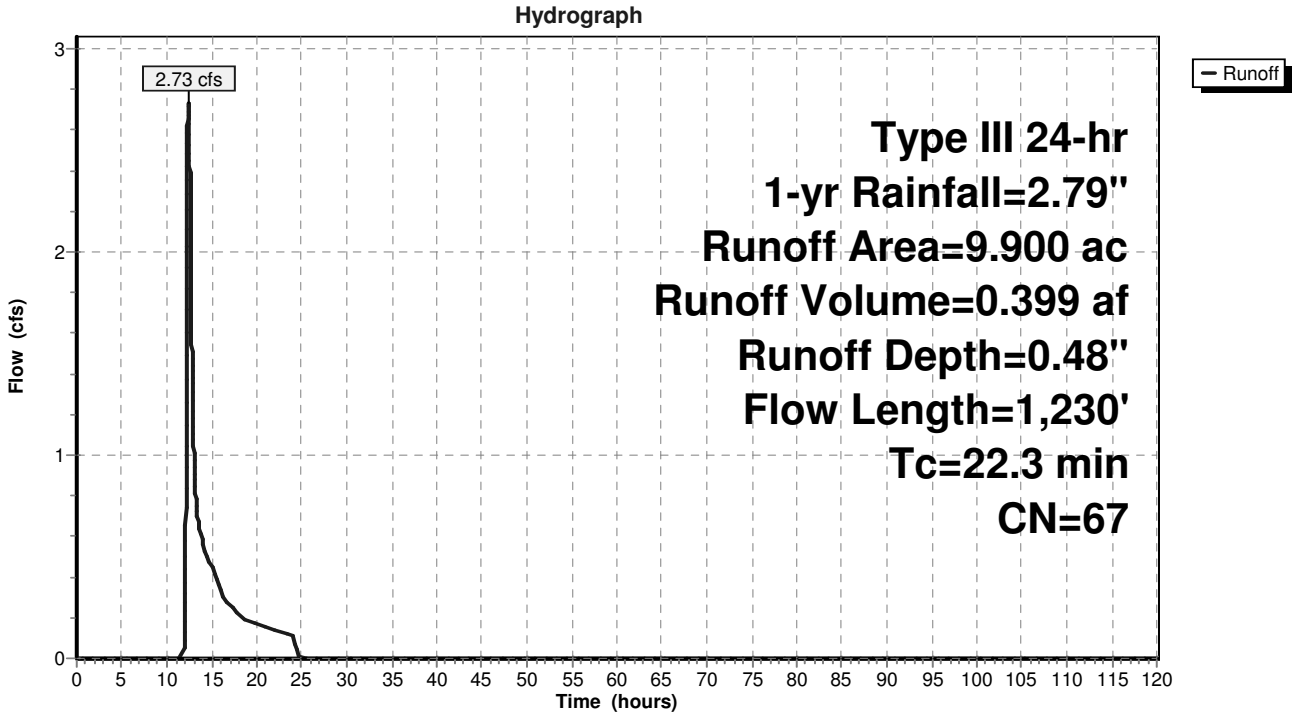
Runoff = 2.73 cfs @ 12.40 hrs, Volume= 0.399 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

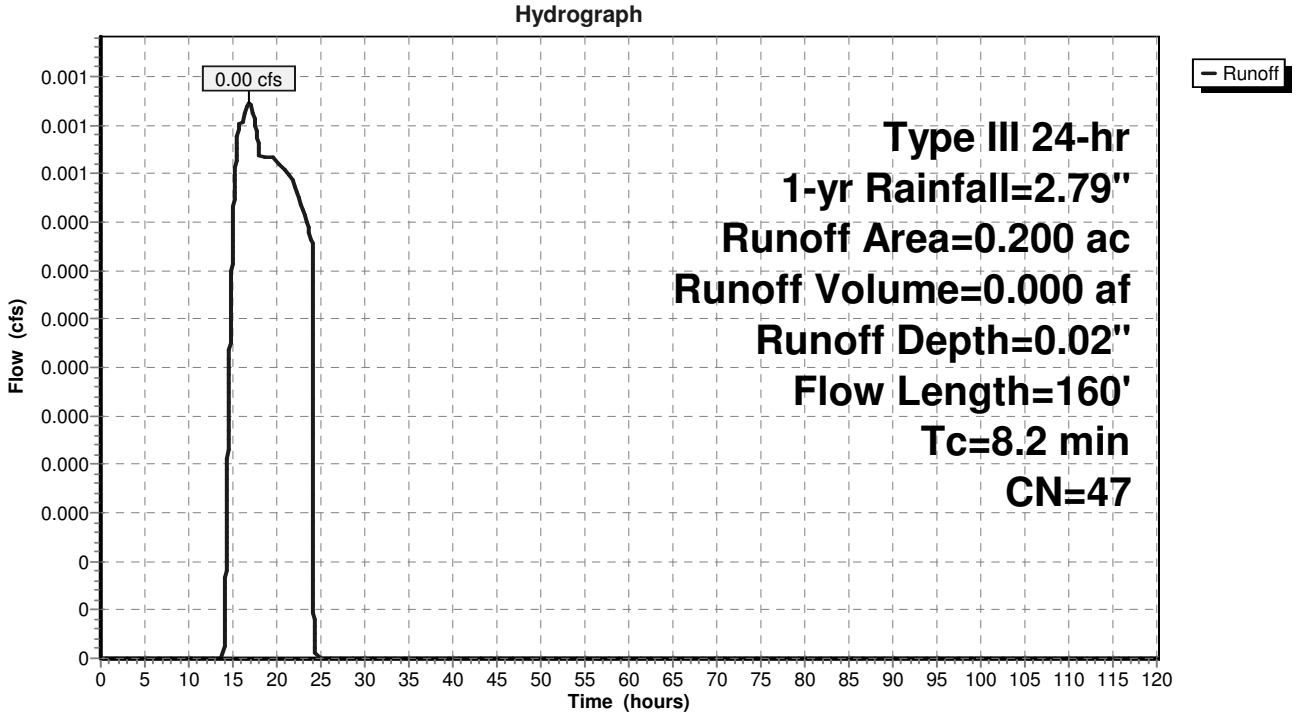
Runoff = 0.00 cfs @ 16.90 hrs, Volume= 0.000 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

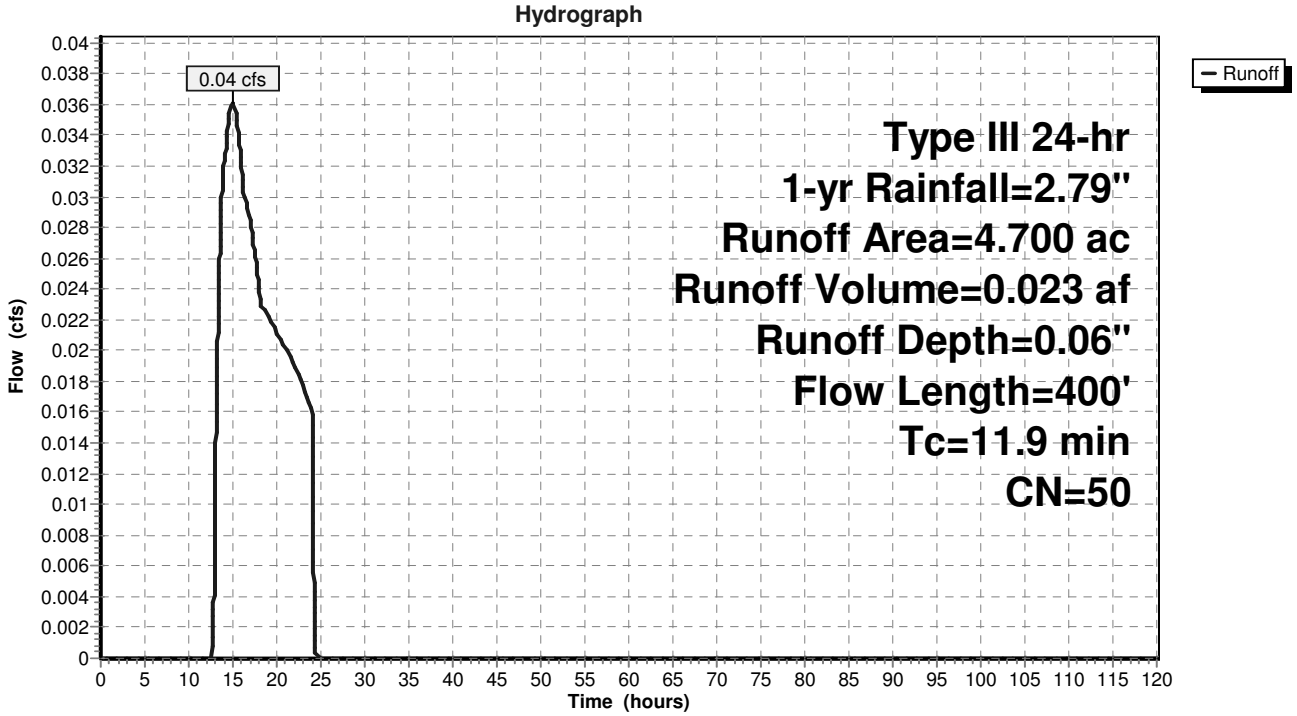
Runoff = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-yr Rainfall=2.79"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

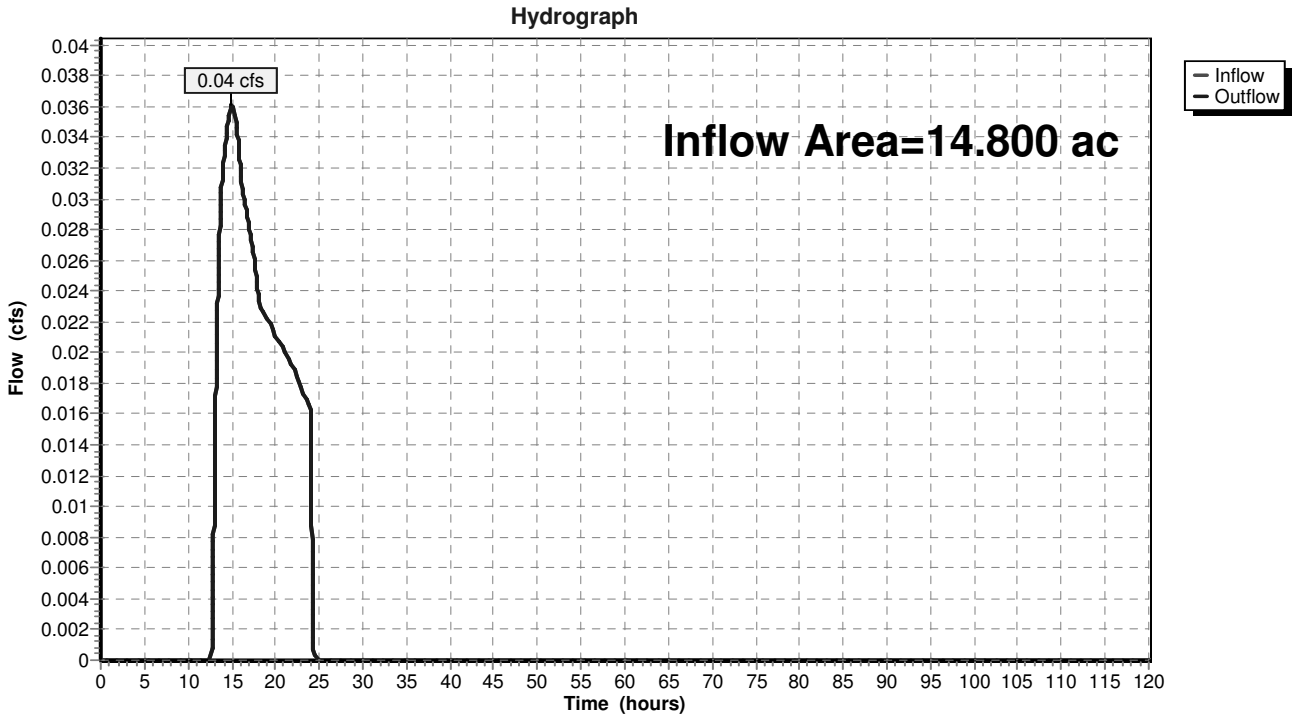


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 0.02" for 1-yr event
Inflow = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af
Outflow = 0.04 cfs @ 14.98 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 0.48" for 1-yr event
Inflow = 2.73 cfs @ 12.40 hrs, Volume= 0.399 af
Outflow = 0.10 cfs @ 24.19 hrs, Volume= 0.399 af, Atten= 97%, Lag= 707.8 min
Primary = 0.10 cfs @ 24.19 hrs, Volume= 0.399 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 224.99' @ 24.19 hrs Surf.Area= 5,888 sf Storage= 13,473 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1,556.5 min (2,471.9 - 915.4)

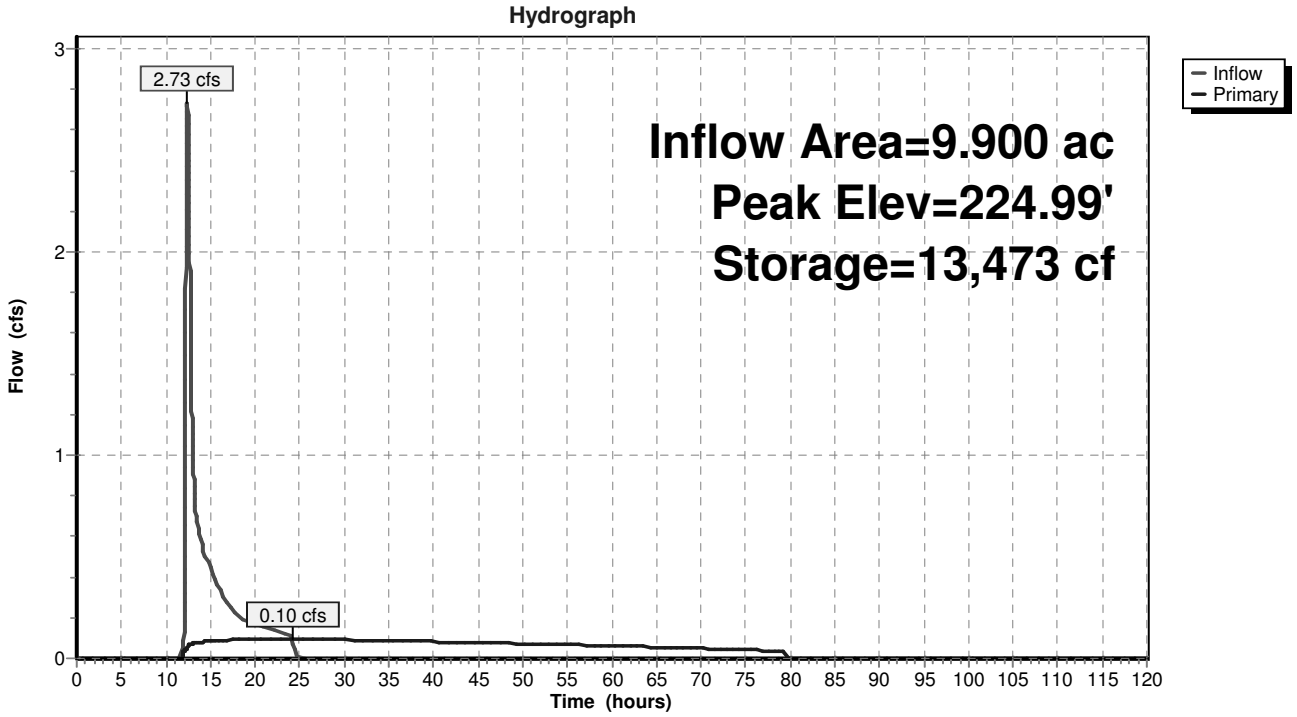
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=0.10 cfs @ 24.19 hrs HW=224.99' TW=221.42' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.10 cfs of 43.96 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 8.92 fps)
  └─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.1P:


Hydrograph
Inflow
Primary
2.73 cfs
0.10 cfs
Inflow Area=9.900 ac
Peak Elev=224.99'
Storage=13,473 cf
Flow (cfs)
Time (hours)
0
1
2
3
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 0.47" for 1-yr event				
Inflow =	0.10 cfs @	24.02 hrs,	Volume=	0.400 af	
Outflow =	0.10 cfs @	24.04 hrs,	Volume=	0.400 af,	Atten= 0%, Lag= 1.4 min
Discarded =	0.10 cfs @	24.04 hrs,	Volume=	0.400 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.00' @ 24.04 hrs Surf.Area= 6,303 sf Storage= 28 cf

Plug-Flow detention time= 4.8 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 4.8 min (2,475.4 - 2,470.6)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

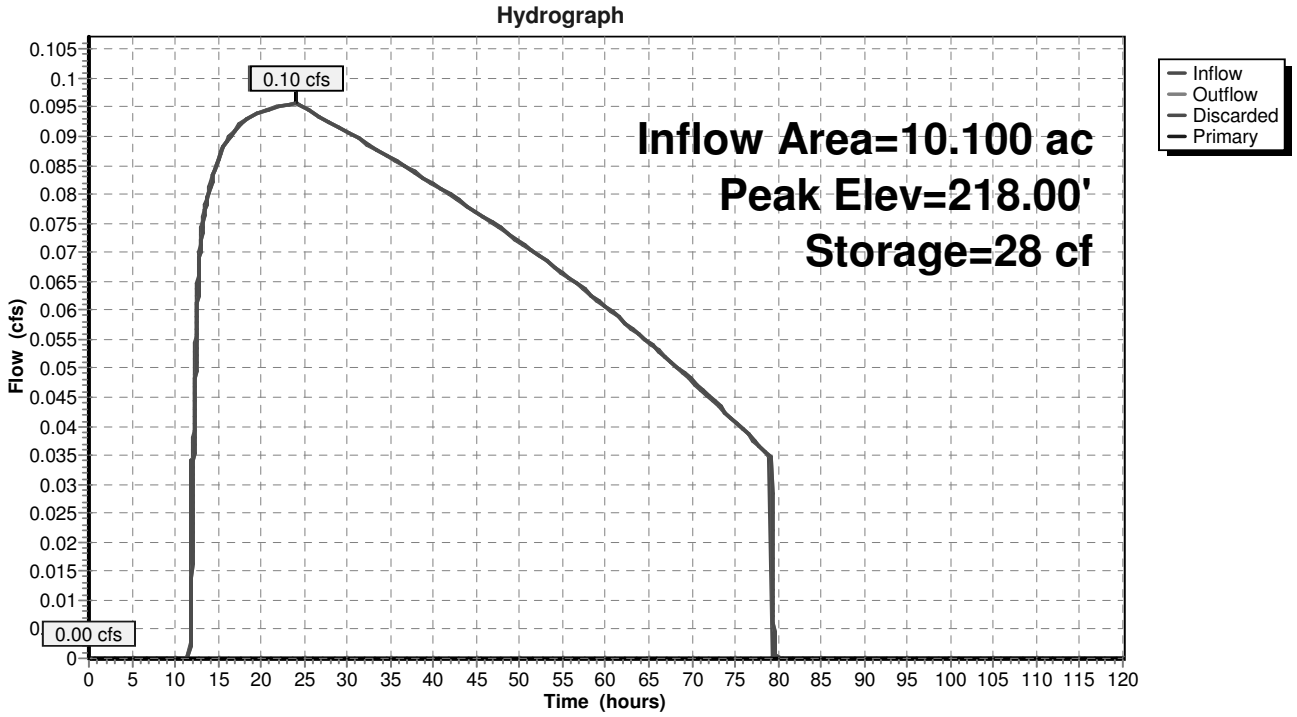
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.10 cfs @ 24.04 hrs HW=218.00' (Free Discharge)
└─**3=Exfiltration** (Controls 0.10 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└─**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
  └─**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
0.10 cfs
0.00 cfs
Inflow Area=10.100 ac
Peak Elev=218.00'
Storage=28 cf
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 0.48" for 1-yr event				
Inflow =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af	
Outflow =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af,	Atten= 0%, Lag= 0.1 min
Primary =	0.10 cfs @	24.19 hrs,	Volume=	0.399 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

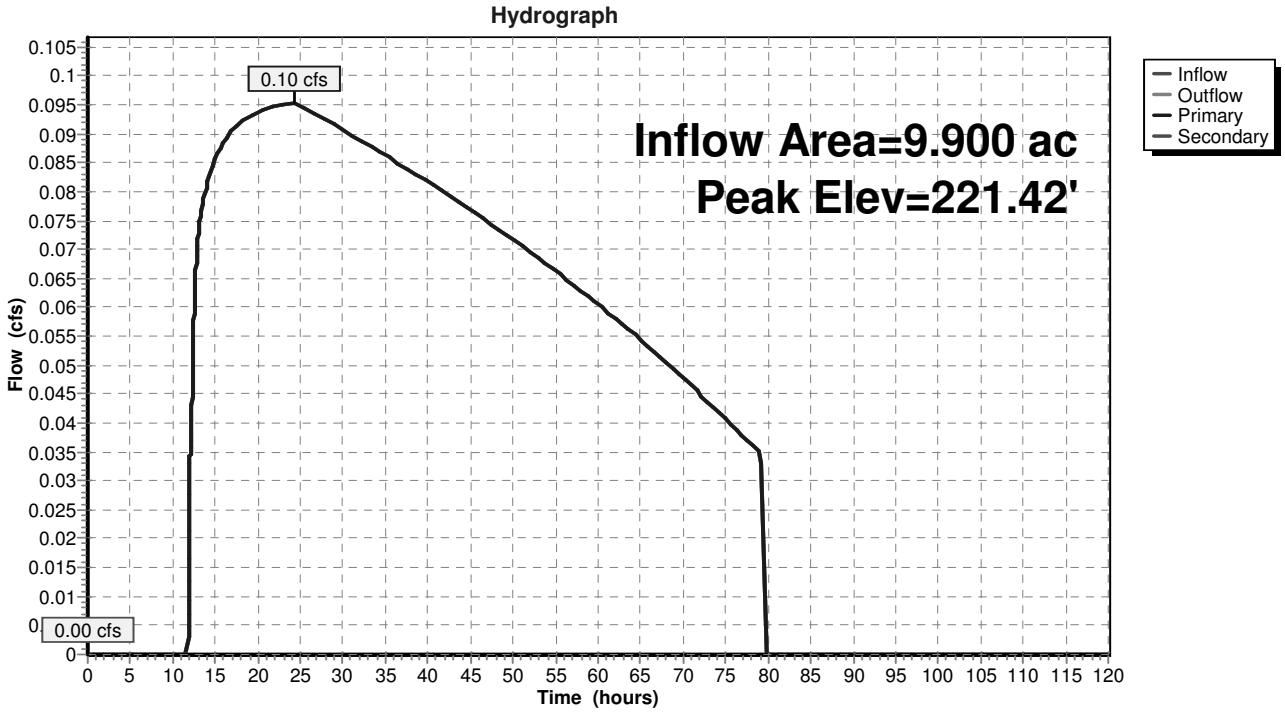
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 221.42' @ 24.19 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.10 cfs @ 24.19 hrs HW=221.42' TW=218.00' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.10 cfs @ 2.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=221.20' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)

Pond FS 1:



Summary for Subcatchment 1.1S:

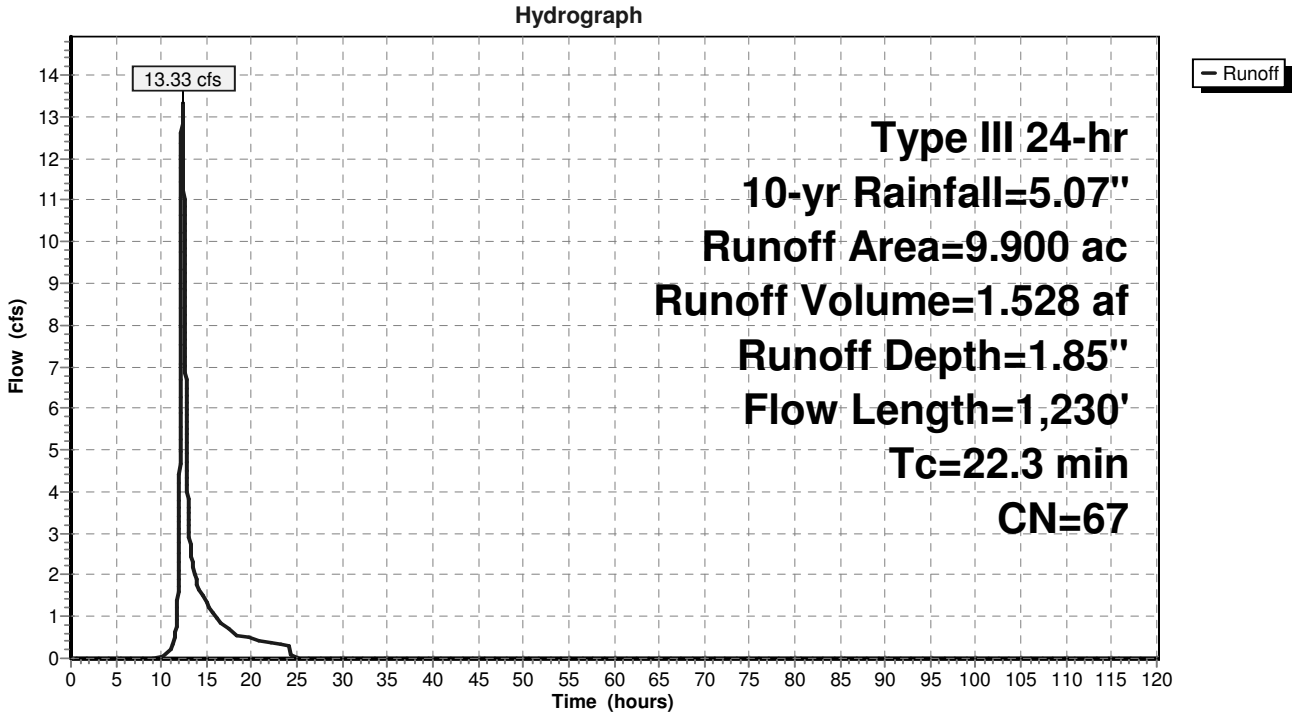
Runoff = 13.33 cfs @ 12.32 hrs, Volume= 1.528 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

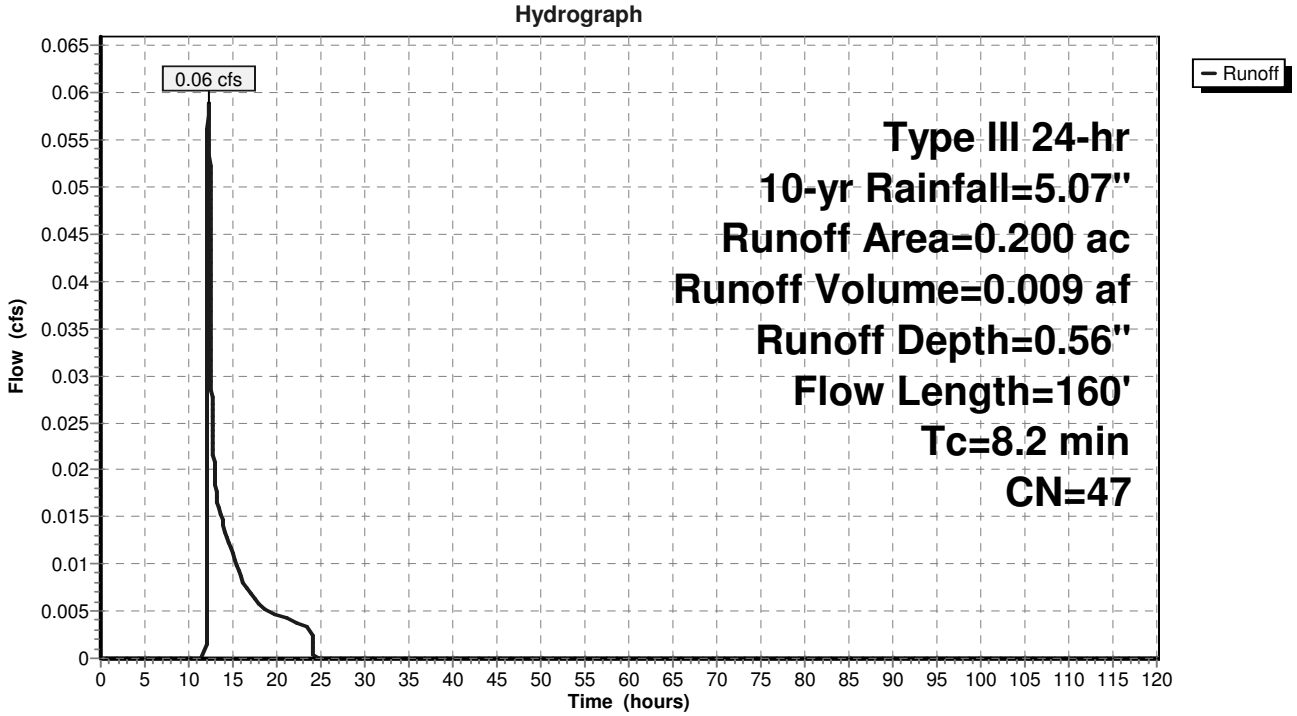
Runoff = 0.06 cfs @ 12.19 hrs, Volume= 0.009 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

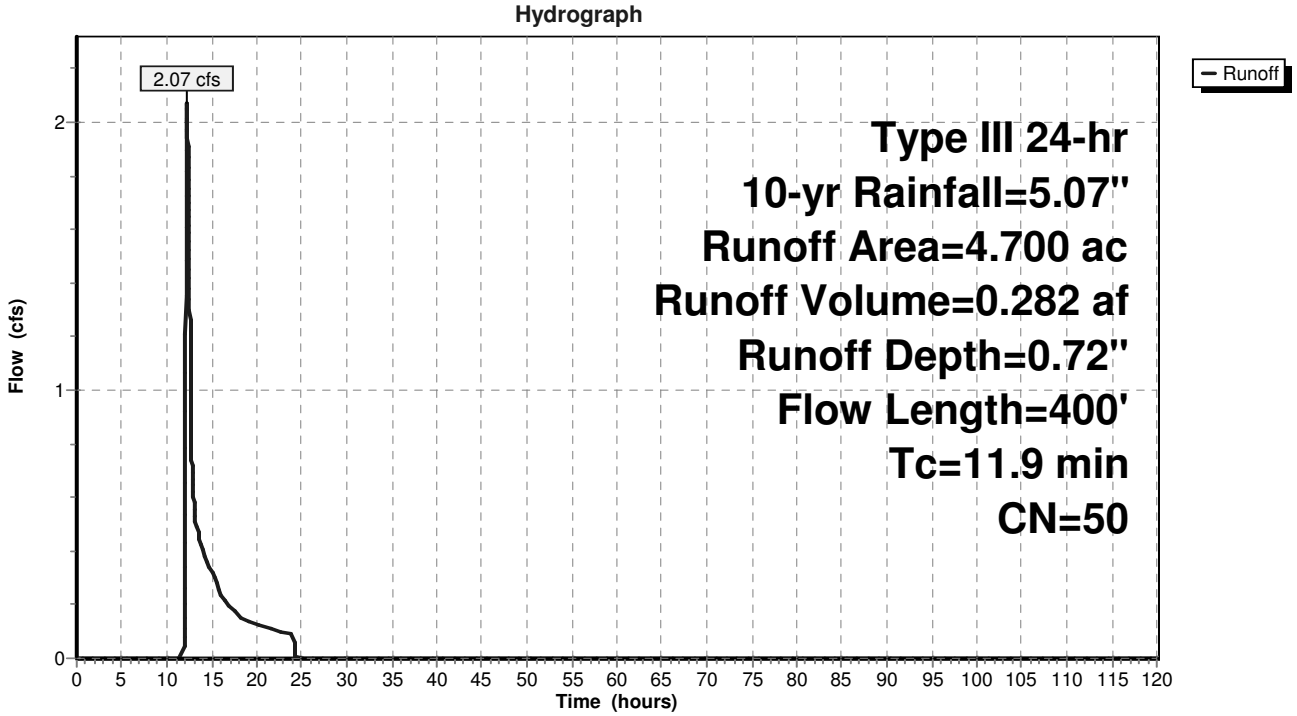
Runoff = 2.07 cfs @ 12.23 hrs, Volume= 0.282 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=5.07"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

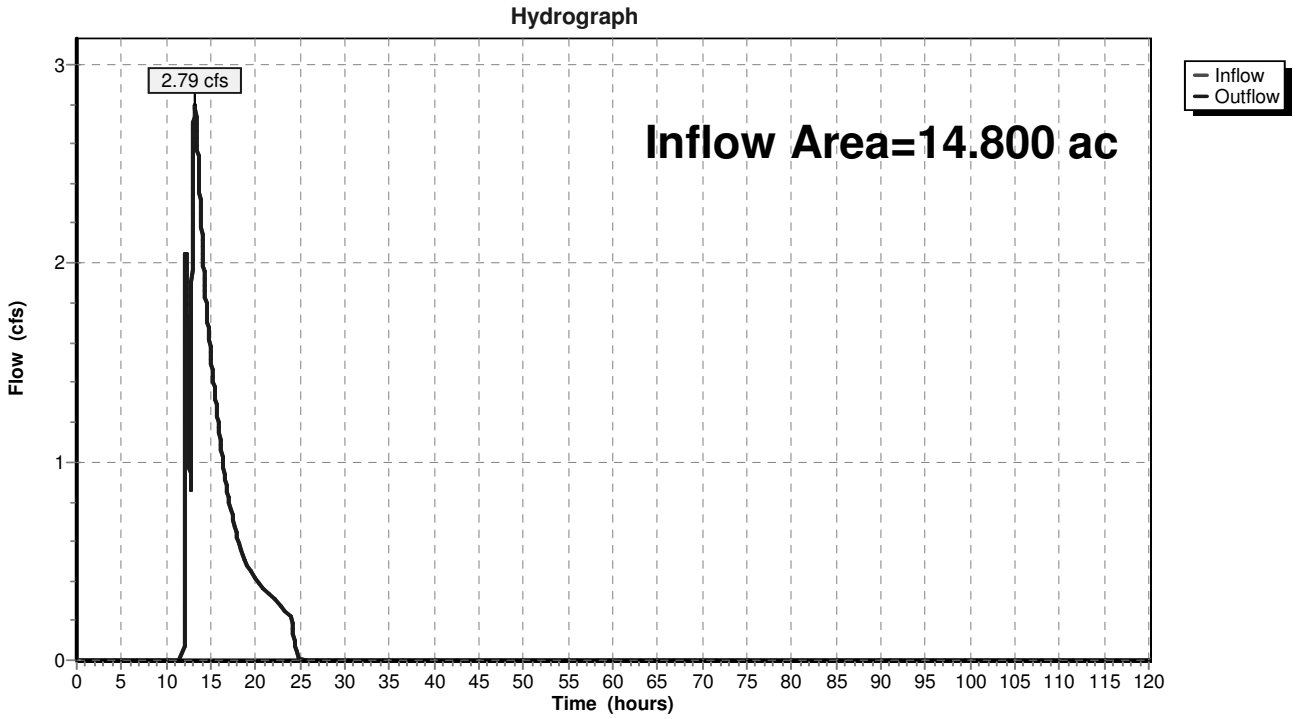


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 0.75" for 10-yr event
Inflow = 2.79 cfs @ 13.21 hrs, Volume= 0.921 af
Outflow = 2.79 cfs @ 13.21 hrs, Volume= 0.921 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 1.85" for 10-yr event
Inflow = 13.33 cfs @ 12.32 hrs, Volume= 1.528 af
Outflow = 2.61 cfs @ 13.23 hrs, Volume= 1.528 af, Atten= 80%, Lag= 54.5 min
Primary = 2.61 cfs @ 13.23 hrs, Volume= 1.528 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 227.55' @ 13.23 hrs Surf.Area= 8,506 sf Storage= 31,772 cf

Plug-Flow detention time= 1,275.4 min calculated for 1.528 af (100% of inflow)
Center-of-Mass det. time= 1,275.8 min (2,145.5 - 869.8)

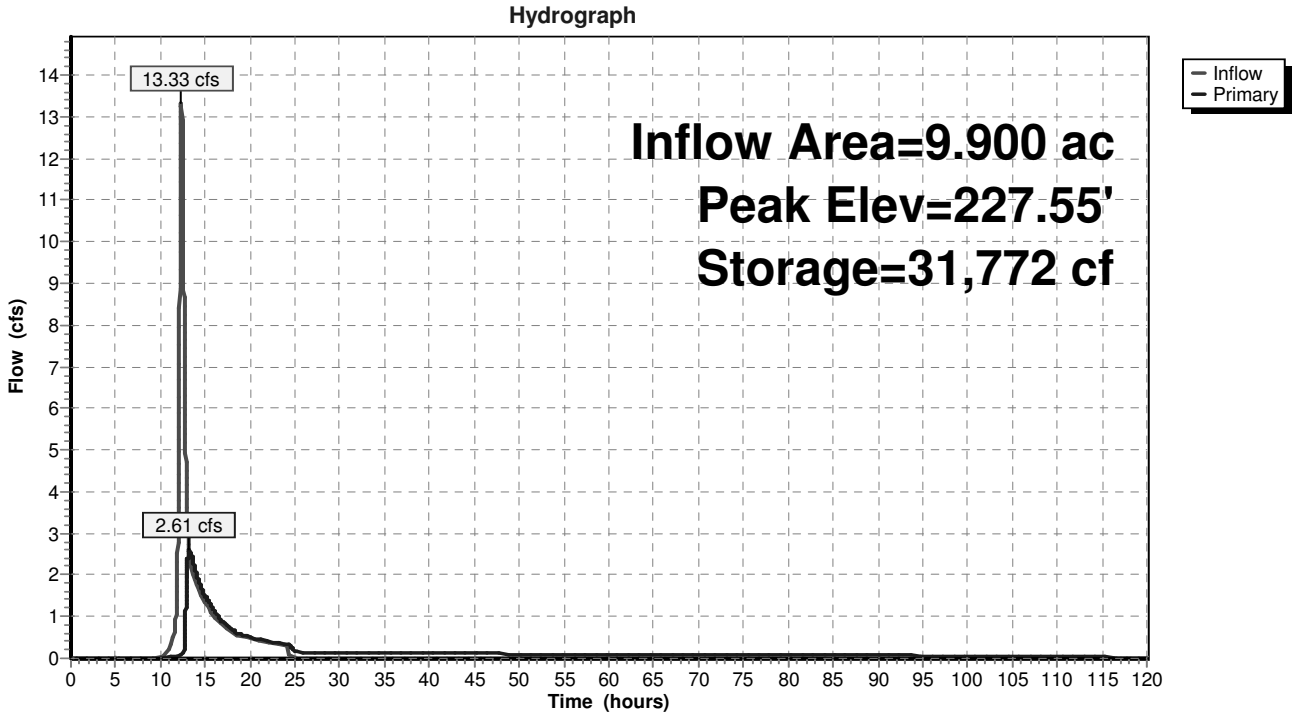
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=2.61 cfs @ 13.23 hrs HW=227.55' TW=222.06' (Dynamic Tailwater)
└─**3=Culvert** (Passes 2.61 cfs of 72.61 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.12 cfs @ 11.29 fps)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 2.49 cfs @ 2.26 fps)

Pond 1.1P:


Hydrograph
13.33 cfs
2.61 cfs
Inflow Area=9.900 ac
Peak Elev=227.55'
Storage=31,772 cf
Inflow
Primary
Flow (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 1.07" for 10-yr event				
Inflow =	0.33 cfs @	13.22 hrs,	Volume=	0.899 af	
Outflow =	0.22 cfs @	20.46 hrs,	Volume=	0.899 af,	Atten= 33%, Lag= 434.3 min
Discarded =	0.22 cfs @	20.46 hrs,	Volume=	0.899 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.21' @ 20.46 hrs Surf.Area= 6,466 sf Storage= 1,327 cf

Plug-Flow detention time= 26.5 min calculated for 0.899 af (100% of inflow)
Center-of-Mass det. time= 26.5 min (3,003.7 - 2,977.3)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

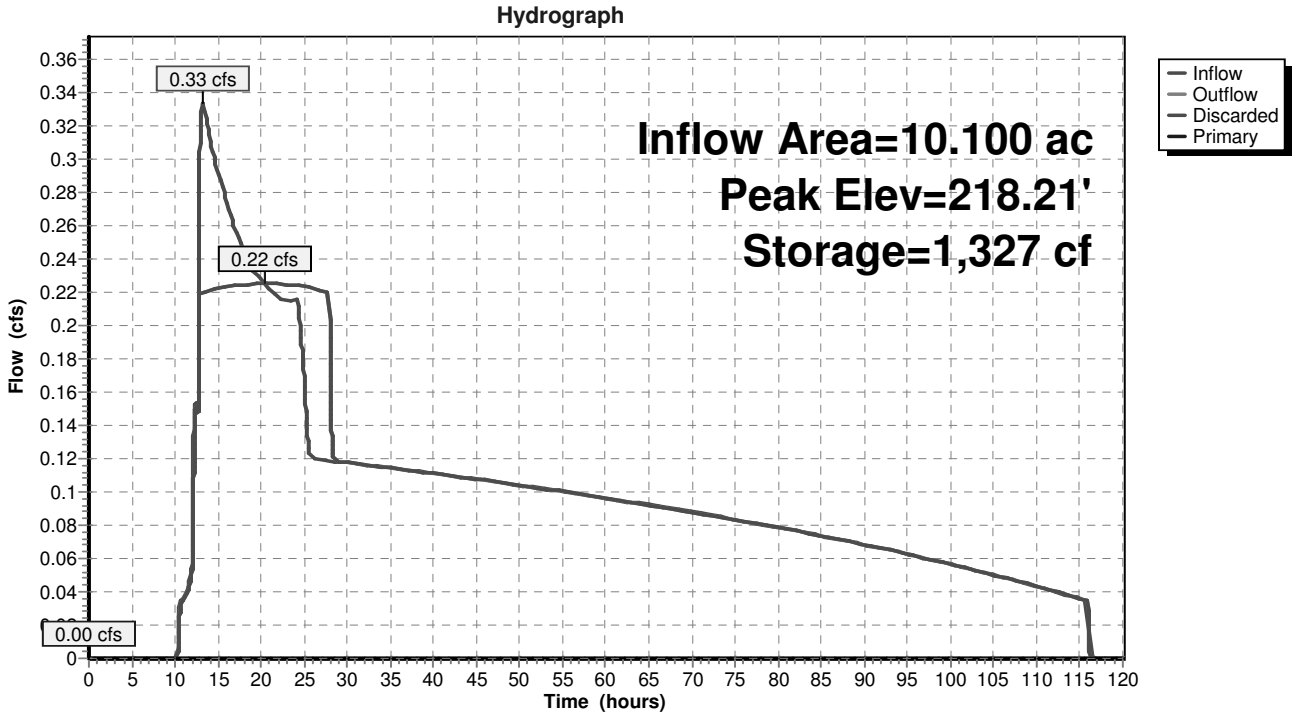
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.22 cfs @ 20.46 hrs HW=218.21' (Free Discharge)
└**3=Exfiltration** (Controls 0.22 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
Inflow Area=10.100 ac
Peak Elev=218.21'
Storage=1,327 cf
0.33 cfs
0.22 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 1.85" for 10-yr event			
Inflow =	2.61 cfs @ 13.23 hrs, Volume=	1.528 af		
Outflow =	2.61 cfs @ 13.23 hrs, Volume=	1.528 af, Atten= 0%, Lag= 0.0 min		
Primary =	0.32 cfs @ 13.23 hrs, Volume=	0.890 af		
Secondary =	2.29 cfs @ 13.23 hrs, Volume=	0.638 af		

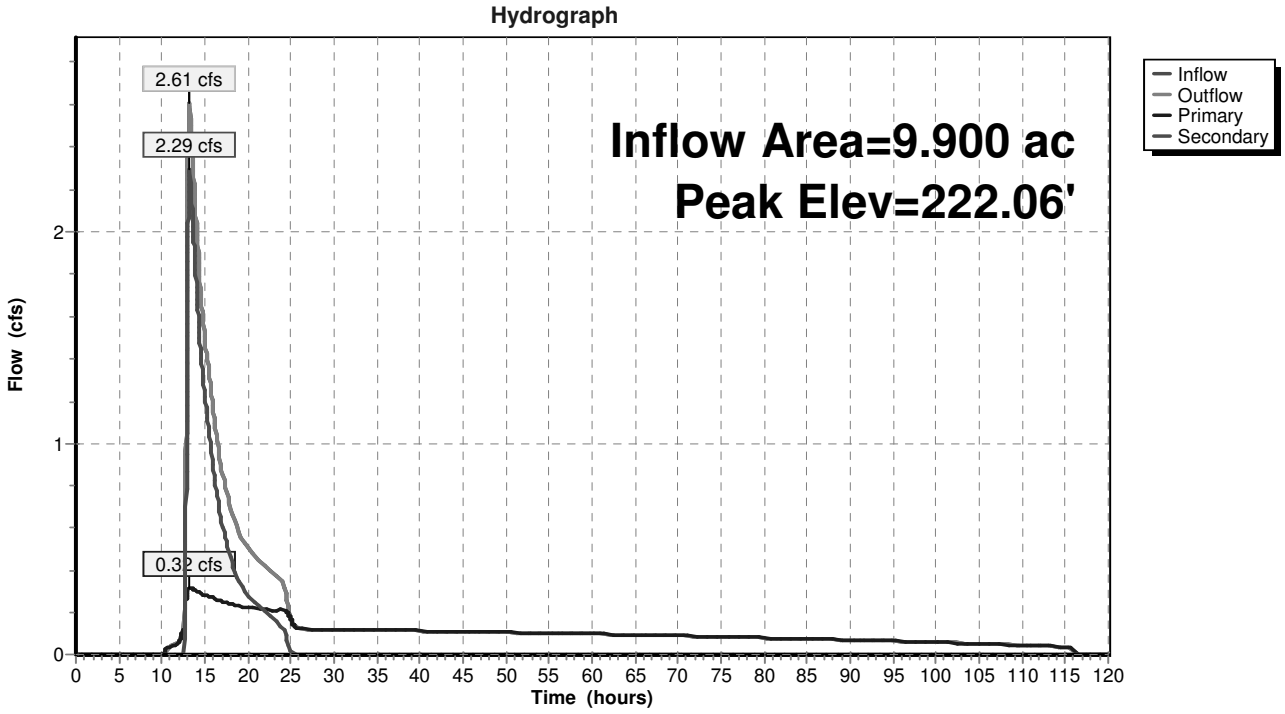
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 222.06' @ 13.23 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.32 cfs @ 13.23 hrs HW=222.06' TW=218.03' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.32 cfs @ 3.63 fps)

Secondary OutFlow Max=2.29 cfs @ 13.23 hrs HW=222.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 2.29 cfs @ 2.54 fps)

Pond FS 1:



Summary for Subcatchment 1.1S:

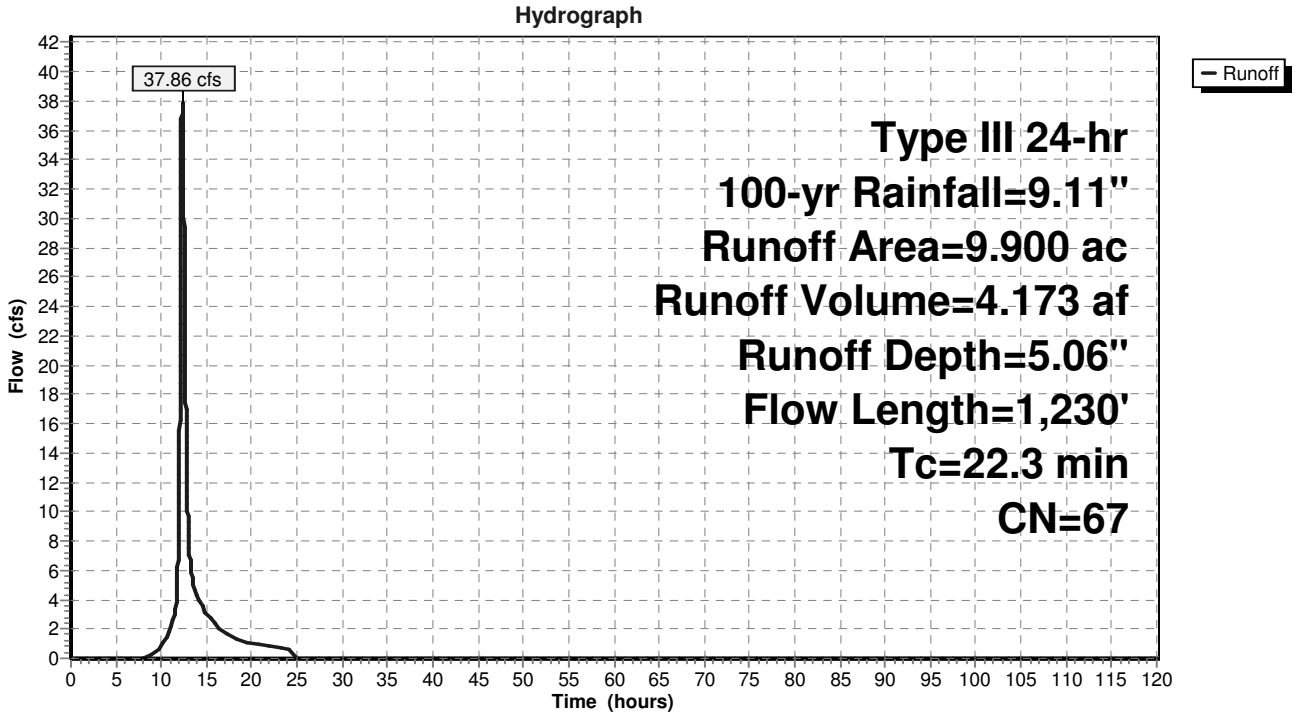
Runoff = 37.86 cfs @ 12.31 hrs, Volume= 4.173 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
2.800	98	Paved parking, HSG B
1.900	61	>75% Grass cover, Good, HSG B
3.400	55	Woods, Good, HSG B
1.300	39	>75% Grass cover, Good, HSG A
0.500	77	Woods, Good, HSG D
9.900	67	Weighted Average
7.100		71.72% Pervious Area
2.800		28.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	100	0.0050	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
1.3	150	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.0	250	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	200	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.5	530	0.1000	18.03	22.13	**Pipe Channel, CMP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
22.3	1,230	Total			

Subcatchment 1.1S:



Summary for Subcatchment 1.2S:

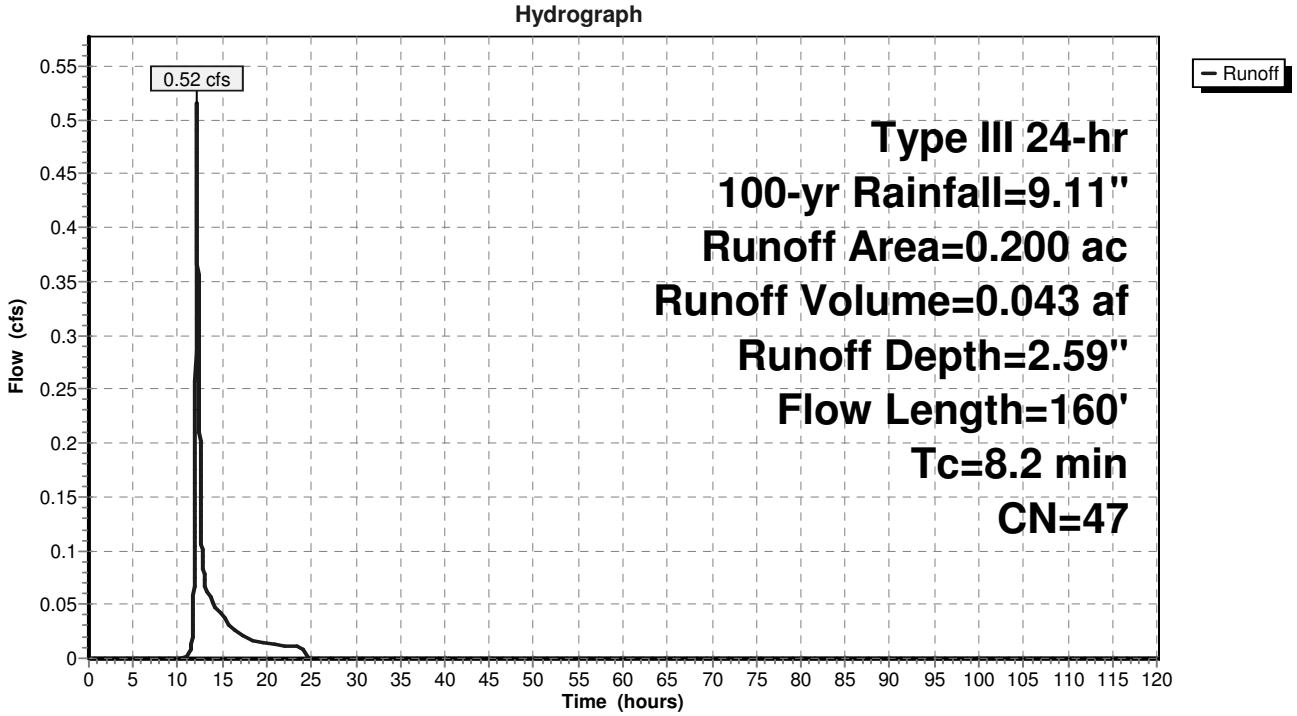
Runoff = 0.52 cfs @ 12.13 hrs, Volume= 0.043 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
0.100	39	>75% Grass cover, Good, HSG A
0.100	55	Woods, Good, HSG B
0.200	47	Weighted Average
0.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	20	0.2000	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.50"
6.8	80	0.2000	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.50"
0.4	60	0.2500	2.50		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
8.2	160	Total			

Subcatchment 1.2S:



Summary for Subcatchment 1.3:

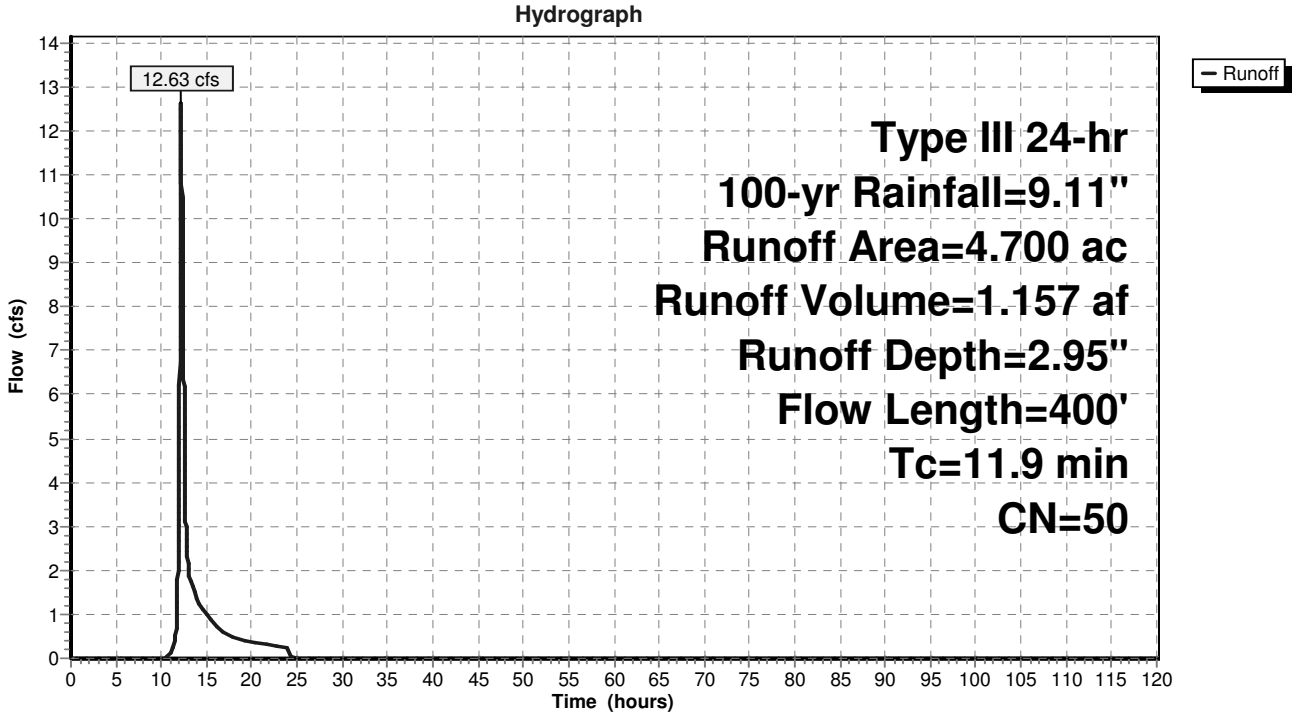
Runoff = 12.63 cfs @ 12.18 hrs, Volume= 1.157 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=9.11"

Area (ac)	CN	Description
1.200	39	>75% Grass cover, Good, HSG A
1.300	77	Woods, Good, HSG D
0.900	55	Woods, Good, HSG B
1.300	30	Brush, Good, HSG A
4.700	50	Weighted Average
4.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.1100	0.24		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.50"
5.0	300	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
11.9	400	Total			

Subcatchment 1.3:

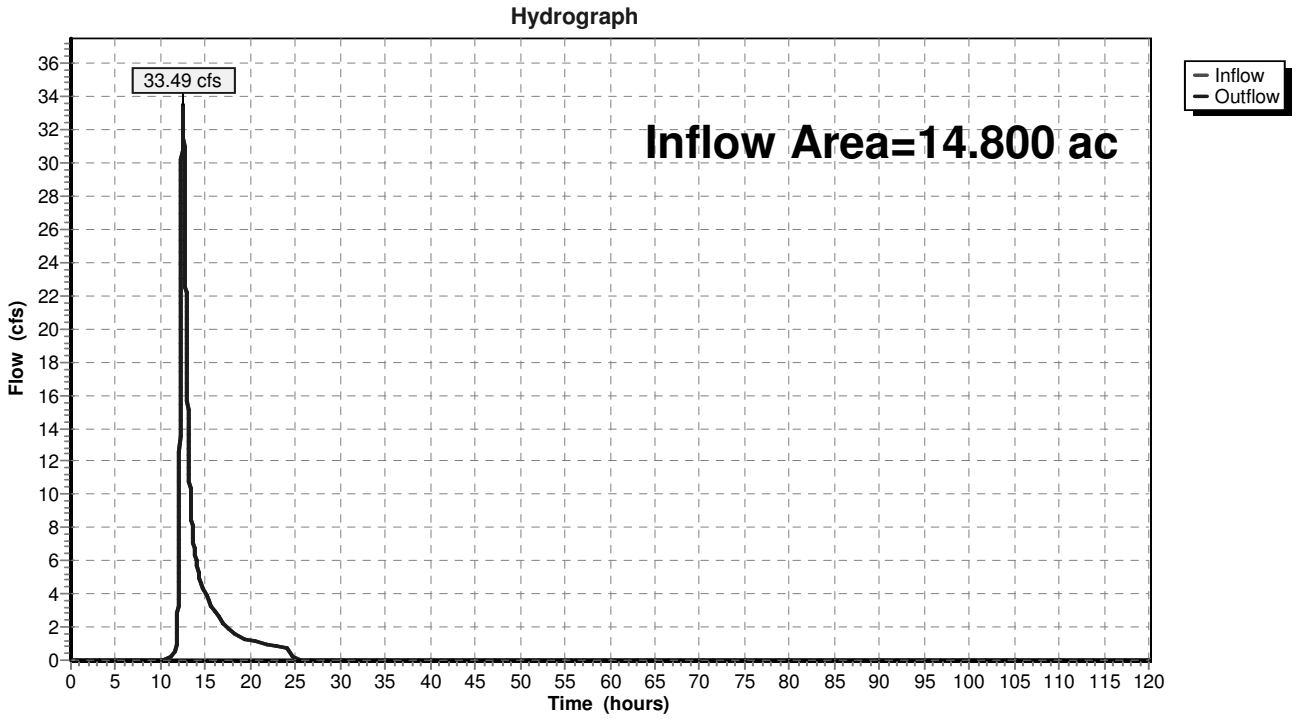


Summary for Reach Design Line 1:

Inflow Area = 14.800 ac, 18.92% Impervious, Inflow Depth = 3.53" for 100-yr event
Inflow = 33.49 cfs @ 12.47 hrs, Volume= 4.348 af
Outflow = 33.49 cfs @ 12.47 hrs, Volume= 4.348 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs

Reach Design Line 1:



Summary for Pond 1.1P:

Inflow Area = 9.900 ac, 28.28% Impervious, Inflow Depth = 5.06" for 100-yr event
Inflow = 37.86 cfs @ 12.31 hrs, Volume= 4.173 af
Outflow = 27.90 cfs @ 12.52 hrs, Volume= 4.173 af, Atten= 26%, Lag= 12.3 min
Primary = 27.90 cfs @ 12.52 hrs, Volume= 4.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 229.60' @ 12.52 hrs Surf.Area= 10,995 sf Storage= 51,657 cf

Plug-Flow detention time= 491.0 min calculated for 4.173 af (100% of inflow)
Center-of-Mass det. time= 491.4 min (1,331.7 - 840.3)

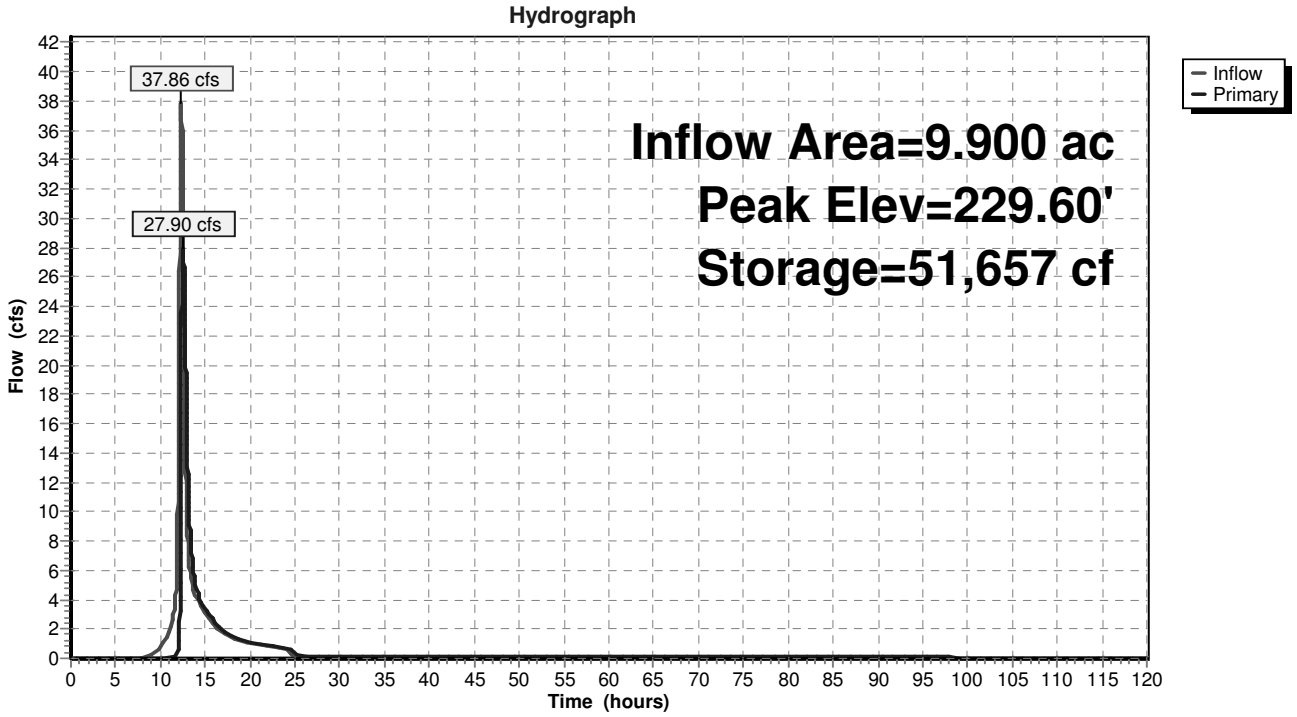
Volume	Invert	Avail.Storage	Storage Description
#1	222.00'	56,200 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
222.00	3,100	0	0
224.00	5,000	8,100	8,100
226.00	6,800	11,800	19,900
228.00	9,000	15,800	35,700
230.00	11,500	20,500	56,200

Device	Routing	Invert	Outlet Devices
#1	Device 3	221.50'	**1.4" Vert. Orifice/Grate** C= 0.600
#2	Device 3	227.00'	**2.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	221.50'	**36.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 221.20' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=27.90 cfs @ 12.52 hrs HW=229.60' TW=223.66' (Dynamic Tailwater)
└─**3=Culvert** (Passes 27.90 cfs of 82.90 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.13 cfs @ 11.73 fps)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 27.77 cfs @ 5.35 fps)

Pond 1.1P:


Hydrograph
37.86 cfs
27.90 cfs
Inflow Area=9.900 ac
Peak Elev=229.60'
Storage=51,657 cf
Inflow
Primary
Flow (cfs)
Time (hours)

Summary for Pond 1.2 IB:

Inflow Area =	10.100 ac, 27.72% Impervious, Inflow Depth = 1.22" for 100-yr event				
Inflow =	0.83 cfs @	12.18 hrs,	Volume=	1.026 af	
Outflow =	0.24 cfs @	24.22 hrs,	Volume=	1.026 af,	Atten= 71%, Lag= 722.6 min
Discarded =	0.24 cfs @	24.22 hrs,	Volume=	1.026 af	
Primary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 218.74' @ 24.22 hrs Surf.Area= 6,894 sf Storage= 4,900 cf

Plug-Flow detention time= 110.2 min calculated for 1.026 af (100% of inflow)
Center-of-Mass det. time= 110.2 min (2,853.3 - 2,743.1)

Volume	Invert	Avail.Storage	Storage Description
#1	218.00'	42,300 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

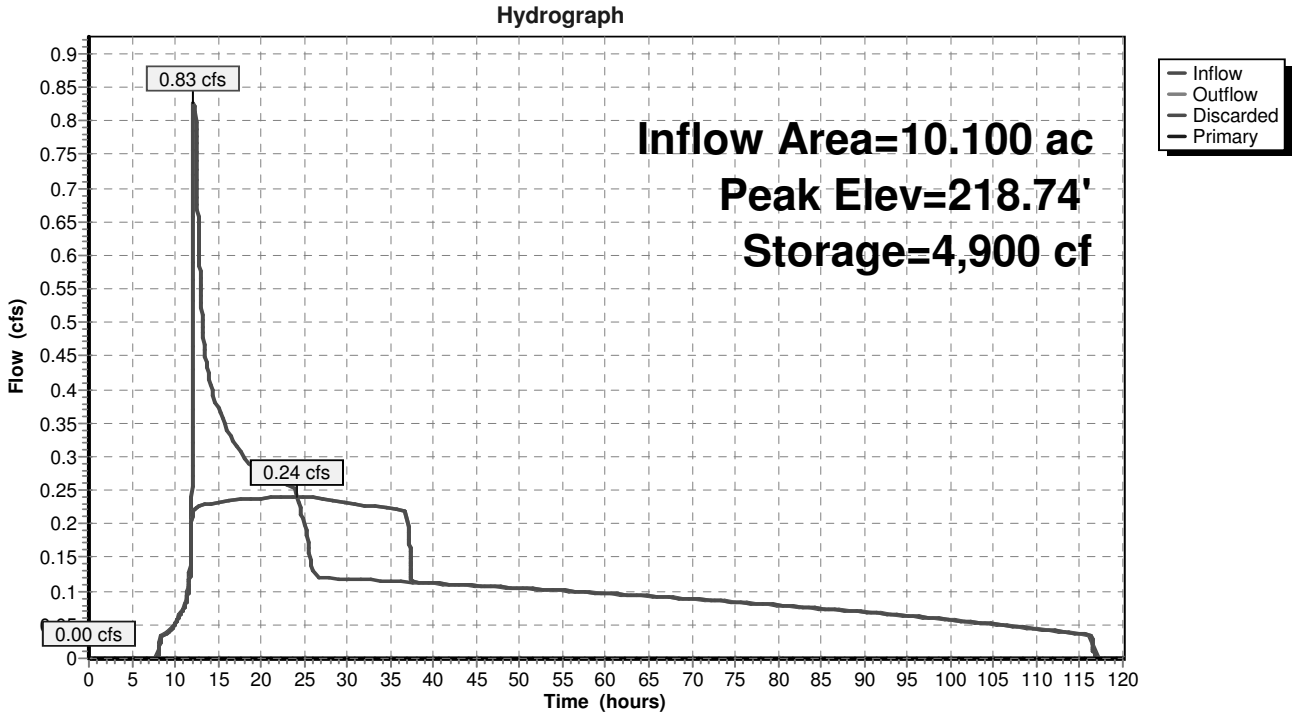
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
218.00	6,300	0	0
220.00	7,900	14,200	14,200
222.00	9,500	17,400	31,600
223.00	11,900	10,700	42,300

Device	Routing	Invert	Outlet Devices
#1	Device 2	220.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	217.50'	**15.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 217.50' / 214.00' S= 0.1029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Discarded	218.00'	**1.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00' Phase-In= 0.01'

Discarded OutFlow Max=0.24 cfs @ 24.22 hrs HW=218.74' (Free Discharge)
└**3=Exfiltration** (Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=218.00' TW=0.00' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 1.10 cfs potential flow)
└**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 1.2 IB:


Hydrograph
Inflow Area=10.100 ac
Peak Elev=218.74'
Storage=4,900 cf
0.83 cfs
0.24 cfs
0.00 cfs
Inflow
Outflow
Discarded
Primary
Flow (cfs)
Time (hours)

Summary for Pond FS 1:

Inflow Area =	9.900 ac, 28.28% Impervious, Inflow Depth = 5.06" for 100-yr event				
Inflow =	27.90 cfs @	12.52 hrs,	Volume=	4.173 af	
Outflow =	27.90 cfs @	12.52 hrs,	Volume=	4.173 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.57 cfs @	12.52 hrs,	Volume=	0.983 af	
Secondary =	27.33 cfs @	12.52 hrs,	Volume=	3.191 af	

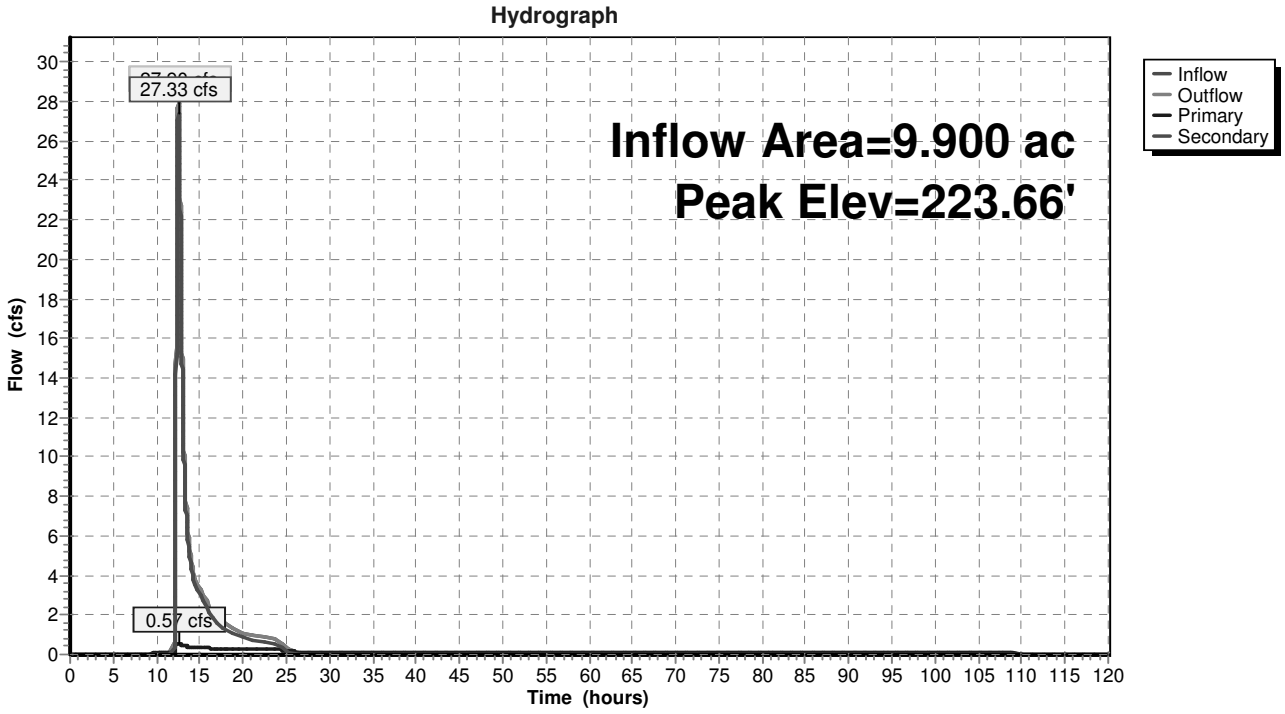
Routing by Dyn-Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
Peak Elev= 223.66' @ 12.52 hrs
Flood Elev= 226.00'

Device	Routing	Invert	Outlet Devices
#1	Secondary	221.50'	**36.0" Round Culvert** L= 60.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.50' / 218.00' S= 0.0583 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf
#2	Primary	221.20'	**4.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 221.20' / 221.00' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=0.57 cfs @ 12.52 hrs HW=223.66' TW=218.16' (Dynamic Tailwater)
└─**2=Culvert** (Barrel Controls 0.57 cfs @ 6.51 fps)

Secondary OutFlow Max=27.33 cfs @ 12.52 hrs HW=223.66' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 27.33 cfs @ 5.01 fps)

Pond FS 1:



APPENDIX D

Project and Owner Information

Site Data:

Wilder Balter Partners Inc.
Town of Lewisboro
Westchester County, New York
Area: 35.4 acres ±

Owner Information:

Property Group Partners, LLC
c/o Jeffrey Sussman, President
609 Fifth Avenue, 6th Floor
New York, NY 10017

Applicant Information:

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Party Responsible for Implementation of the Stormwater Pollution Prevention Plan (Including Maintenance During and After Construction):

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

Qualified Professional Responsible for Inspection of the Stormwater Pollution Prevention Plan:

Inspector to be determined at time of construction

APPENDIX E

NYSDEC SPDES for Construction Activities Construction Site Log Book

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents.

a. Preamble to Site Assessment and Inspections

b. Operator's Certification

c. Qualified Professional's Credentials & Certification

d. Contractors Certification

e. Pre-Construction Site Assessment Checklist

II. Construction Duration Inspections

a. Directions

b. Modification to the SWPPP

Properly completing forms such as those contained in this document meet the inspection requirement of NYSDEC SPDES GP 0-10-001 for Construction Activities, or superceding permit. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____**Date of Authorization**_____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections -The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law. "

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

c. Qualified Professional's Credentials & Certification

“ I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction.”

Name (please print):_____

Title _____**Date:**_____

Address: _____

Phone: _____ **Email:**_____

Signature:_____

d. Contractors Certification Statement

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

_____

Signature of Contractor Date

_____

Print Name Title

_____

Signature of Trained Contractor Date

_____

Print Name of Trained Contractor Title

Name of Contracting Firm _____

Street Address _____

City, State, Zip _____

Telephone No. _____

A copy of this statement shall be retained as part of the Stormwater Pollution Prevention Plan (SWPPP) for a period off at least five (5) years after the subject property is stabilized.

e. Pre-construction Site Assessment Checklist (NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 7-day period;

Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?

[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?

[ ] [ ] [ ] All disturbance is within the limits of the approved plans.

[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter and debris appropriately managed?

[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

[ ] [ ] [ ] Is construction impacting the adjacent property?

[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.

[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.

[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?

[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.

[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.

[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.

[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.

[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.

[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.

[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.

[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control

1. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation is ___% of design capacity.

Sediment Control (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS
b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

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APPENDIX F

Analysis of Practices Listed on Pages 10-19 and 10-20 of Chapter 10

Goal 1 of *Chapter 10: Enhanced Phosphorus Removal Standards* (Chapter 10) requires an analysis of Better Site Design Techniques or standard infiltration practices to which a percentage of proposed impervious surfaces must be directed. In addition to the Better Site Design Techniques referenced in Section 2.2 of this SWPPP the following analysis of the list obtained from pages 10-19 and 10-20 of Chapter 10 has been provided:

Proposed Practice	Used in SWPPP	Reason / Where Employed
Minimizing Disturbance	Yes	The overall site disturbance has been minimized to eliminate impacts to the buffer areas and areas of steep slopes.
Disconnecting Impervious Areas	No	The onsite collection system in the parking lot and entrance road ultimately discharges to an infiltration basin.
Minimize Grading and Compaction	Yes	The limits of disturbance have been minimized, and as such create minimal grading.
Employing methods to improve soil hydrologic function.	No	No techniques are specifically proposed.
Minimize disturbance and minimize siting of impervious cover on highly infiltrative soils.	Yes	As noted above the limits of disturbance has been minimized to the greatest extent practicable.
Maintain pre-development time of concentration	Yes	The development of this site allows for maintaining the pre-development time of concentration. Extended Detention dry pretreatment basin and infiltration basin will be used to maintain pre-development times of concentrations.
Increase roughness by establishing vegetative of woody surfaces.	Yes	A proposed planting plan is included on the project drawings including the planting of various trees and shrubs.
Using Grass Swales instead of closed channels.	No	Given the adjacent steep slopes and site grading, open channel systems for conveyance is not a practical application.
Using vegetative filter and buffer strips.	Yes	Vegetative filters and buffer strips have been indirectly utilized as disturbance for the project has been minimized, thus allowing large portions of the existing wooded areas to remain. Vegetative filters and buffer strips have not been targeted but promoted through the design
Reducing curb and gutter to direct flow onto vegetate or infiltration areas and reduce pipe discharge.	No	To minimize disturbance of steep slopes and environmentally sensitive areas a collection system is proposed to convey the stormwater runoff from the impervious areas to the extended detention basin and infiltration basin for treatment.
Using alternate materials such as porous pavements and paver system	Yes	The use of porous pavement will not be considered due to steep slopes and shallow depth to rock.
Capturing runoff within the catchment using distributed systems	No	All developed impervious areas shall be directed to an infiltration practice for treatment
Maintaining pre-development runoff volume through on-site stormwater management	No	Minimizing increase in runoff volumes has not been targeted and promoted through the use of an infiltration basin.
Providing retention and on-site reuse of runoff	Yes	Infiltration basin has been provided and will promote infiltration to the greatest extent allowable by the in-situ soils.

APPENDIX G

NYSDEC Infiltration System Calculations

Subcatchment 1.1S/1.2S for Treatment in Infiltration Basin 1.2 IB

- Infiltration sizing to treat the WQv for subcatchment 1.1S to meet the NYSDEC requirements

  Assumed Values:

  Water Quality Volume (WQ_v)

  WQv = 0.402* acre-feet = 17,511 cubic feet

  * As per the requirements of the Enhanced Phosphorus Removal Supplement (Chapter 10) of the NYSSMDM the WQv is the runoff volume produced during the 1-year 24-hour design storm. The above information was taken from Appendix C of this report. Information regarding contributing areas (A) and 1-year 24-hour Design Storm Volumes (WQv) to the infiltration basin is shown in Appendix C.

  Surface Area of Infiltration Trenches:

  $$A_p = \frac{V_w}{D_b}$$

  The following applies for the infiltration system:

  V_w = WQv = 17,511 c.f.

  D_b = 3.0 ft (depth of basin below emergency overflow)

  Therefore,

  $$A_p = \frac{17{,}511 \text{ c.f.}}{(3 \text{ ft})}$$

  A_p = 5,837 square-feet required

The bottom surface area of the infiltration basin as shown on the project plans is 5,900 s.f. > 6,300 s.f. required.

APPENDIX H
NYSDEC Stormwater Design Manual Chapter 5 Analysis

Table Key: ● = Practice Used in Accordance with Chapter 5 Requirements
o = Practice Not Used
- = Practice is Not Applicable

NYSDEC Chapter 5 Requirements	Subcatchments			Remarks
	1.1	1.2	1.3	
Chapter 5, Section 5.1: Preservation if Natural Features and Conservation Design				
Practices				
Preservation of Undisturbed Areas	-	●	●	See Note #2
Preservation of Buffers	●	●	●	See Note #5
Reduction of Clearing & Grading	●	●	●	See Note #6
Locating Development in Less Sensitive Areas	●	●	●	See Note #6
Open Space Design	-	-	-	
Soil Restoration	-	-	-	
Chapter 5, Section 5.2: Reduction of Impervious Cover				
Practices				
Roadway Reduction	-	-	-	
Sidewalk Reduction	●	-	-	See Note #1
Driveway Reduction	●	-	-	See Note #1
Cul-de-sac Reduction	-	-	-	
Building Footprint Reduction	●	-	-	See Note #6
Parking Reduction	●	-	-	See Note #6
Conservation of Natural Areas	●	-	-	See Note #5
Sheetflow to Riparian Buffers or Filter Strips	-	-	-	
Vegetated Swale	-	-	-	
Tree Planting / Tree Pit	●	-	-	See Note #7
Disconnection of Rooftop Runoff	-	-	-	
Stream Daylighting	-	-	-	
Rain Gardens	-	-	-	
Green Roofs	-	-	-	
Stormwater Planters	-	-	-	
Rain Barrels / Cisterns	-	-	-	See Note #3
Porous Pavement	-	-	-	See Note #4

Notes:

1. The proposed driveway entrance and onsite sidewalk areas have been designed to provide a minimum width for safe ingress and egress for the residential development.
2. Although no formal calculations have been provided, the subject project has provided conservation of natural areas to the maximum extent practical.
3. Roof runoff and stormwater runoff from the impervious areas surrounding the buildings will either be infiltrated within the infiltration basin, rather than using rain barrels / cisterns.
4. Due to driveway slopes and the shallow depth to rock, porous pavement was not utilized.
5. Town of Lewisboro Wetland Buffers have been maintained to the maximum extent practical as shown on the project plans. Any buffer disturbance in the future would need to meet the Town requirements.
6. The reduction in clearing and grading, as well as the driveway and building foot print reduction will be enforced with the approval of the project SWPPP. Notes on the project plans, establish that any changes in the project plans would require an amended approval from the necessary regulatory agencies.
7. Although tree planting is proposed it should also be noted that most of the subject project is located in mature forested areas. The limits of disturbance have been restricted as much as possible to save and maintain the existing forested areas as much as possible.

APPENDIX I
Temporary Sediment Trap Sizing

Temporary Sediment Trap Sizing Calculations:

Extended Detention Dry Pond 1.1P is proposed to be utilized as a Temporary Sediment Trap with Optional Dewatering Device During Construction.

Total Disturbed Tributary Area to 1.1P = 6.2 acres

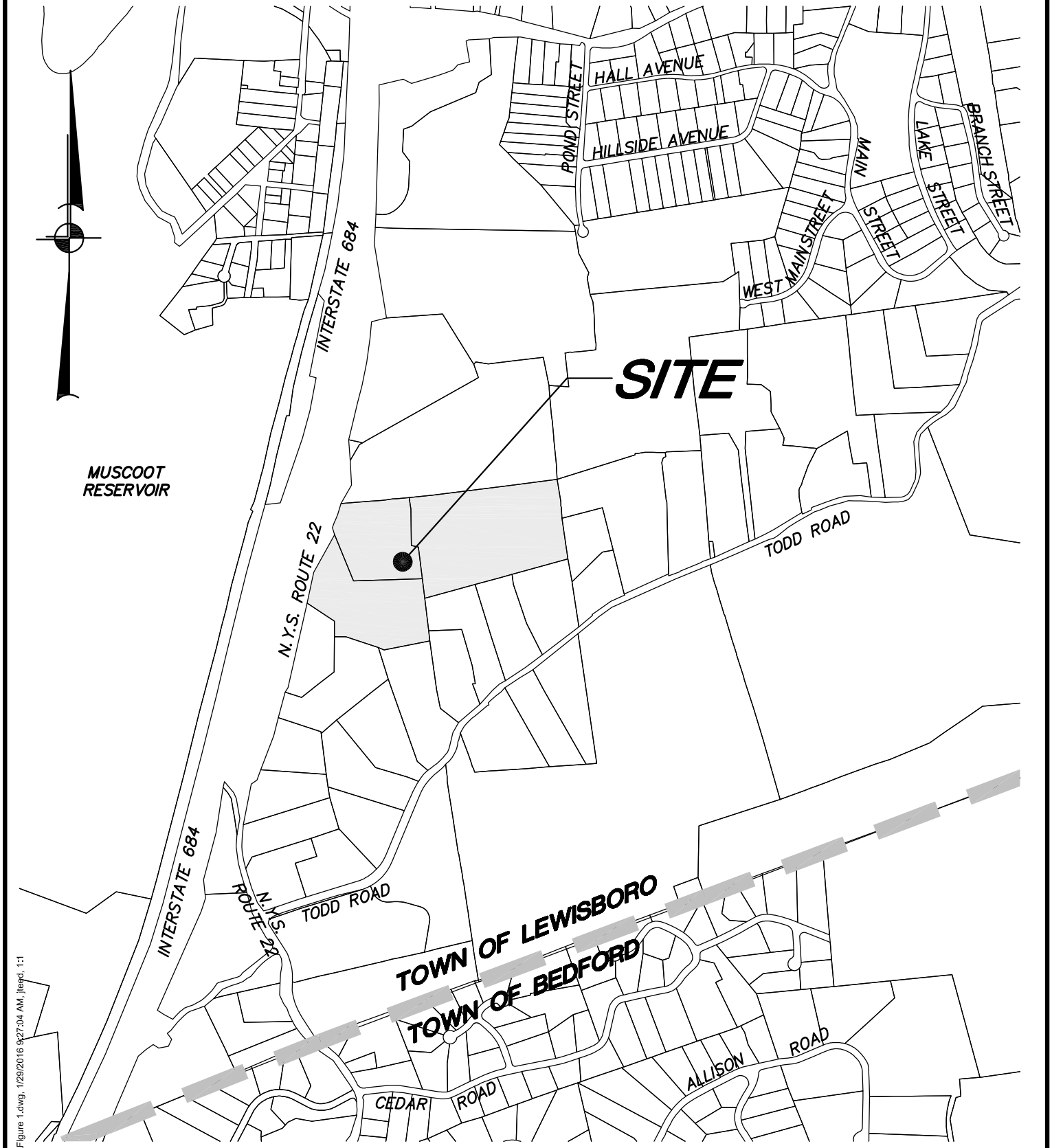
Volume required in Temporary Sediment Trap = 3,600 c.f. / acre

Total Required Volume in 1.1P = 5.9 acres (3,600 c.f. / acre) = 21,092 c.f.

The temporary sediment trap outlet structure for 1.1P proposes a weir at elevation 227.0.

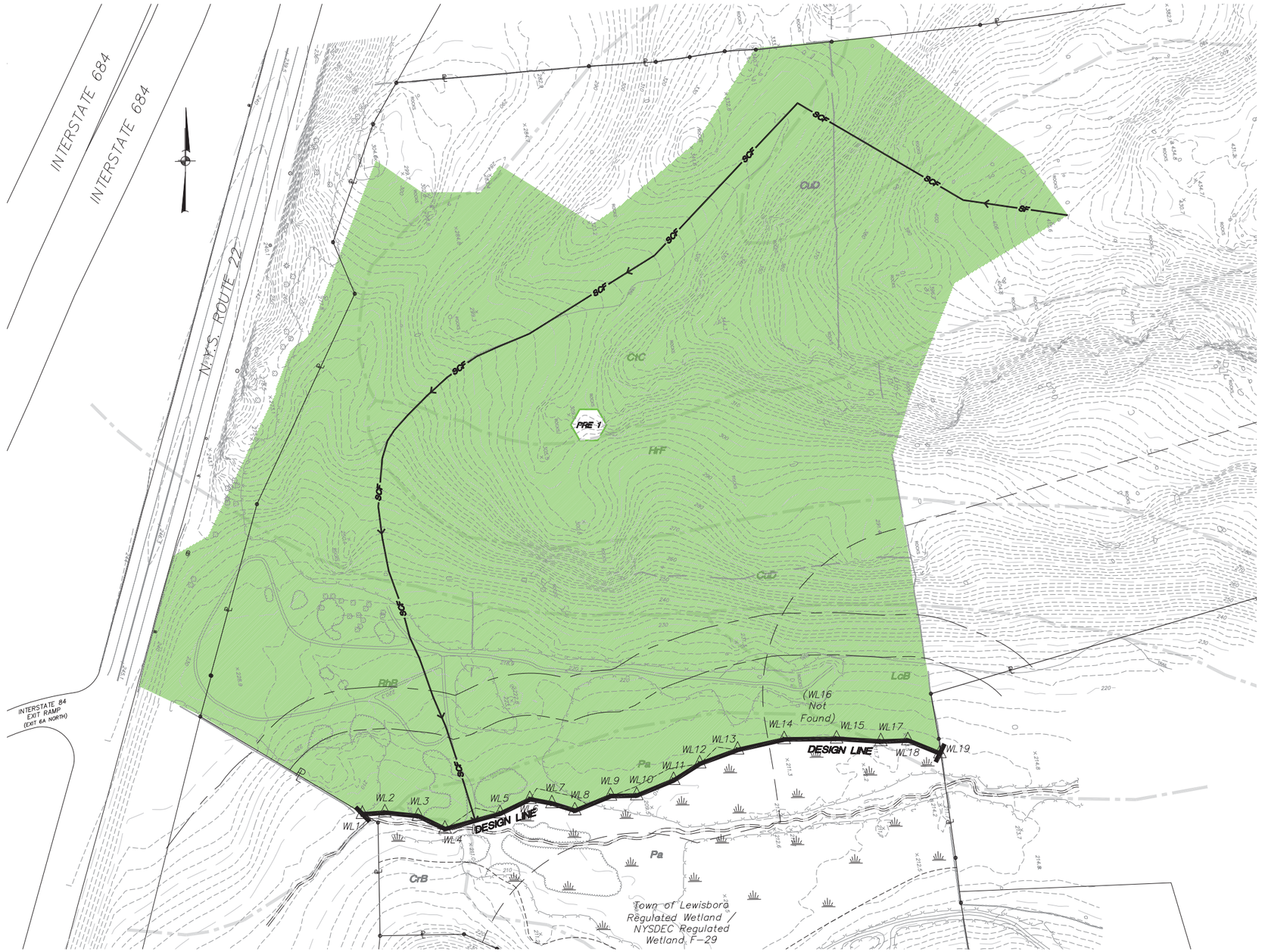
The Extended Detention Dry Pond will be excavated to the proposed bottom elevation for use as a sediment trap (elevation 222.0). With a sediment trap bottom elevation of 222.0, the provided volume between elevation 222.0 and 227.0 is 27,250 c.f. and was determined from the Stage-Area-Storage Table in the HydroCAD output. The volume between elevation 222.0 and 227.0 was determined by calculating the difference between the cumulative storage volume of the 222.0 and 227.0 contours (27,250 c.f. minus 0 c.f.). As can be seen sufficient storage is available to meet the required temporary sediment trap volume.

FIGURES



Z:\E\15246.00\Stormwater\Figures\Figure 1.dwg, 1/29/2016 9:27:04 AM, jteed, 1:1

PROJECT: WILDER BALTER PARTNERS, INC. ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK	PREPARED BY: INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place • Carmel, New York 10512 Phone (845) 225-9690 • Fax (845) 225-9717 www.insite-eng.com	DATE: 01-29-16
DRAWING: LOCATION MAP		SCALE: 1" = 1,000'
		PROJECT NO.: 15246.100
		FIGURE: 1



OVERALL PLAN
SCALE: 1" = 50'

GENERAL NOTES:

1. Property lines as shown hereon are based on a Survey of Property prepared by Bunney Associates Land Surveyors, last revised October 31, 1984.
2. Topography as shown hereon is based on aerial photography dated April 2008, as prepared by Geomaps International. Contour Interval is 2'.
3. The wetland flagging as shown hereon was delineated by Steve Marino on November 16, 2015 and survey located by Insite Engineering, Surveying & Landscape Architecture PC, completed November 25, 2015.

LEGEND

PRE 1	SUBCATCHMENT
SF	TIME OF CONCENTRATION SHEET FLOW
SCF	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW

SOILS LEGEND

SOILS	DESCRIPTION	HYDROLOGICAL GROUP
ChB	Charlton loam, 2% to 8% slopes	B
CrC	Charlton-Chatfield Complex, rolling, very rocky	B
CtC	Chatfield-Hollis-Rock Outcrop Complex, rolling	B
CuD	Chatfield-Hollis-Rock Outcrop Complex, hilly	B
HrF	Hollis-Rock Outcrop Complex, very steep	D
LcB	Leicester loam, 3% to 8% slopes, stony	A/D
Pa	Palms Muck	A/D
RhB	Riverhead Loam, 3% to 8% slopes	A
	NRCS Soil Boundary Line	

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

NO.	DATE	REVISION	BY

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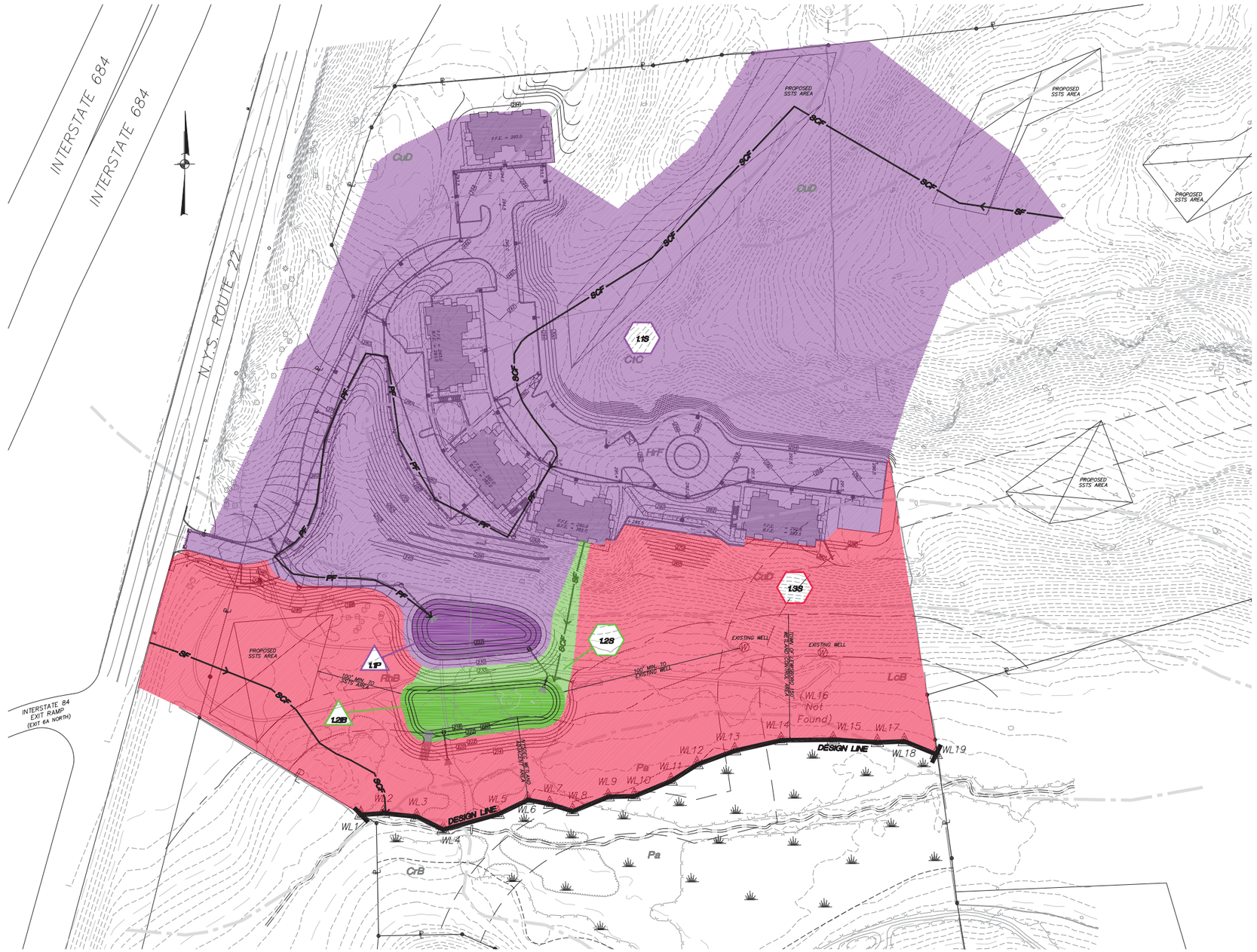
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place
Carmel, NY 10512
(845) 225-9690
(845) 225-9717 fax
www.insite-eng.com

PROJECT:
WILDER BALTER PARTNERS, INC.
ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK

DRAWING:
PRE-DEVELOPMENT DRAINAGE

PROJECT NUMBER	15246.100	PROJECT MANAGER	J.J.C.	FIGURE NO.	SHEET
DATE	1-29-16	DRAWN BY	J.W.T.	2	2 / 3
SCALE	1" = 50'	CHECKED BY	Z.M.P.		

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.



OVERALL PLAN
SCALE: 1" = 50'

GENERAL NOTES:

1. Property lines as shown hereon are based on a Survey of Property prepared by Bunney Associates Land Surveyors, last revised October 31, 1984.
2. Topography as shown hereon is based on aerial photography dated April 2008, as prepared by Geomaps International. Contour Interval is 2'.
3. The wetland flagging as shown hereon was delineated by Steve Marino on November 16, 2015 and survey located by Insite Engineering, Surveying & Landscape Architecture PC, completed November 25, 2015.

LEGEND

1.1S	SUBCATCHMENT
1.1P	STORMWATER MANAGEMENT PRACTICE
PF	TIME OF CONCENTRATION PIPE FLOW
SF	TIME OF CONCENTRATION SHEET FLOW
SCF	TIME OF CONCENTRATION SHALLOW CONCENTRATED FLOW

SOILS LEGEND

SOILS	DESCRIPTION	HYDROLOGICAL GROUP
ChB	Charlton loam, 2% to 8% slopes	B
CrC	Charlton–Chatfield Complex, rolling, very rocky	B
CtC	Chatfield–Hollis–Rock Outcrop Complex, rolling	B
CuD	Chatfield–Hollis–Rock Outcrop Complex, hilly	B
HrF	Hollis–Rock Outcrop Complex, very steep	D
LcB	Leicester loam, 3% to 8% slopes, stony	A/D
Pa	Palms Muck	A/D
RhB	Riverhead Loam, 3% to 8% slopes	A
	NRCS Soil Boundary Line	

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

NO.	DATE	REVISION	BY

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PROJECT:
WILDER BALTER PARTNERS, INC.
ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK

DRAWING:
POST–DEVELOPMENT DRAINAGE

PROJECT NUMBER	15246.100	PROJECT MANAGER	J.J.C.	FIGURE NO.	SHEET
DATE	1–29–16	DRAWN BY	J.W.T.	3	3 / 3
SCALE	1" = 50'	CHECKED BY	Z.M.P.		

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.

Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING P. A.

Traffic Impact Study

WBP AFFH Multi-Family Development

NYS Route 22
Town of Lewisboro, Westchester County, New York

April 22, 2016

Prepared For

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I. INTRODUCTION

This report incorporates the information from the original study, dated January 29, 2016 as well as the additional information presented in our March 30, 2016 letter, which was prepared in response to comments received from the Town of Lewisboro Planning Board and their Consultants. Accident data obtained from the New York State Department of Transportation (NYSDOT) has also been included.

A. PROJECT DESCRIPTION AND LOCATION (Figure No. 1)

This report has been prepared to evaluate the potential traffic impacts associated with the proposed WBP AFFH Multi-Family Development, which is proposed to consist of 46 dwelling units. The site is located in the Hamlet of Goldens Bridge, Town of Lewisboro, New York (See Figure No. 1) on a parcel of land located on the east side of NYS Route 22 immediately north of the I-684 northbound off ramp (Exit 6A). As shown on Figure No. 1, access to the development is proposed via a new driveway connection to NYS Route 22, which will be located approximately 250 feet north of the I-684 - Exit 6A northbound off ramp.

While the development is expected to be completed within the next several years, a Design Year of 2020 has been used in the evaluation herein to reflect future traffic conditions.

B. SCOPE OF STUDY

This study has been prepared to identify current and future traffic operating conditions on the surrounding roadway network and to assess the potential traffic impacts of the proposed multi-family housing development.

All available traffic count data for the study area intersections were obtained from any previous reports prepared by our office. These data were supplemented with new traffic counts collected by representatives of Maser Consulting, P.A. These data were also compared to count data obtained from the New York State Department of Transportation (NYSDOT). Together these data were utilized to establish the Year 2015 Existing Traffic Volumes representing existing traffic conditions in the vicinity of the site.

The Year 2015 Existing Traffic Volumes were then projected to the 2020 Design Year to take into account background traffic growth. In addition, traffic for other specific potential or approved developments in the area were estimated and then added to the Projected Traffic Volumes to obtain the Year 2020 No-Build Traffic Volumes.

Estimates were then made of the potential traffic that the proposed development would generate during each of the peak hours (see Section III-B for further discussion). The resulting site generated traffic volumes were then added to the roadway system and combined with the Year 2020 No-Build Traffic Volumes resulting in the Year 2020 Build Traffic Volumes.

The Existing, No-Build and Build Traffic Volumes were then compared to roadway capacities based on the procedures from the Highway Capacity Manual to determine existing and future Levels of Service and operating conditions. Recommendations for improvements were made where necessary to serve the existing and/or future traffic volumes.

II. EXISTING ROADWAY AND TRAFFIC DESCRIPTIONS

A. DESCRIPTION OF EXISTING ROADWAYS

As shown on Figure No. 1, the proposed Multi-Family Development will be accessed via a driveway connection to NYS Route 22 at a location approximately 250 feet north of the I-684 Exit 6A northbound off ramp. The following is a brief description of the roadways located within the study area. In addition, Section III-F provides a further description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service and any recommended improvements for each of the study area intersections. Appendix "C" contains copies of the capacity analyses which indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. Interstate Route 684

   Interstate Route 684 is a six lane, divided, limited access highway which originates in the Town of Harrison at an interchange connection with Interstate 287 and the Hutchinson River Parkway. The roadway traverses in a northerly direction through Westchester County passing the site and continuing north into Putnam County where it intersects with Interstate 84. There is a northbound exit ramp from I-684 (Exit 6A), which connects with NYS Route 22 immediately south of the site. In addition, there is a southbound entrance ramp to I-684 from NYS Route 138 approximately ¼ mile northwest of the site.

2. NYS Route 22

   NYS Route 22 is a major north/south roadway which traverses throughout Westchester County and extends north into Putnam County. Route 22 generally consists of one lane in each direction and has a signalized intersection connection with Route 35 approximately 2 miles south of the site and a stop sign controlled "T" intersection with I-684 Exit 6A in the vicinity of the site. The roadway in the vicinity of the site consists of one lane in each direction with paved shoulders. The posted speed limit is 45 mph immediately north of the site frontage. It should be noted that sections of Route 22 both to the north and south of the site also have some speed reductions to 40 mph due to horizontal and vertical road alignment controls.

B. YEAR 2015 EXISTING TRAFFIC VOLUMES (Figures No. 2. and 3)

Available data regarding existing traffic volumes and any planned improvements in the area were collected from the NYS Department of Transportation and the Town of Lewisboro. In addition to the above information, representatives of Maser Consulting, P.A. conducted field surveys during December 2015. During these surveys information was collected regarding traffic control, roadway geometrics and traffic flow characteristics.

In order to establish the existing traffic volumes on the area roadways, manual turning movement traffic counts were conducted at the intersection of NYS Route 22 and the I-684 (Exit 6A) northbound off ramp. The traffic volumes were counted during the weekday AM and PM Peak periods on December 2nd and 3rd of 2015. Based upon a review of the traffic counts taken and the traffic generating characteristics of the proposed site, the following peak hours were identified as being critical:

Peak AM Highway Hour	7:45 to 8:45 AM
Peak PM Highway Hour	5:00 to 6:00 PM

The counts taken were compared with traffic volume information obtained from the NYS Department of Transportation and with other counts collected in 2014 for the Goldens Bridge Shopping Centre located north of the site. The resulting volumes for the existing Peak Hour Traffic Volumes for the AM and PM Peak Hours are shown on Figures No. 2 and 3 in Appendix "A" of this report. The intersections considered in this report include:

1. NYS Route 22 and Proposed Site Access Driveway
2. NYS Route 22 and I-684 Northbound Off Ramp (Exit 6A)
3. North Street and NYS Route 138
4. NYS Route 22 and North Street

See Section III-F for the discussion on each of these locations.

C. ACCIDENT DATA (Table A – Appendix "E")

Available accident data for the latest five (5) year period for the area roadways were obtained from the NYSDOT. Copies of the reports for the NYS Route 22 roadway segment between Duffy's Bridge Road and North Street are contained in Appendix "E". The accident data was summarized by location, date, time of day, traffic control, accident class, light condition, road condition, weather, manner of collision and apparent contributing factors and are summarized in Table A in Appendix B. Note that a review of the table indicates that those accidents occurring in the vicinity of the I-684 – Exit 6A northbound off ramp are primarily due to failure to yield right of way.

III. EVALUATION OF FUTURE TRAFFIC CONDITIONS

A. YEAR 2020 NO-BUILD TRAFFIC VOLUMES (Figure No. 4 through 9)

The 2015 Existing Traffic Volumes were projected to the 2020 Design Year using a background growth factor of 0.5% per year which was developed as a result of a review of historical traffic volume data or a total increase of 2.5%. The projected traffic volumes for the AM and PM Highway Hour and are shown on Figures No. 4 and 5. Other Development volumes for the Goldens Bridge Village Centre expansion development for the AM and PM Highway Hour were also accounted for separately and are shown on Figures No. 6 and 7. The 2020 No-Build Traffic Volumes are a total of the projected volumes and other development traffic volumes. The resulting 2020 No-Build Traffic Volumes for the Peak AM Highway Hour and Peak PM Highway Hour are shown on Figures No. 8 and 9, respectively, which are located in Appendix "A" of this report.

B. SITE GENERATED TRAFFIC VOLUMES (Table No. 1)

The Site Generated Traffic Volumes for the proposed site were developed from data published by the Institute of Transportation Engineers (ITE) as contained in the report entitled "Trip Generation", 9th Edition, 2012. The Hourly Trip Generation Rates utilized and the anticipated amount of the new traffic that will be added to the adjoining roadway network as a result of the proposed development are summarized in Table No. 1 in Appendix "B" of this study.

C. ARRIVAL/DEPARTURE DISTRIBUTION (Figures No. 10 and 11)

The Arrival/Departure distribution pattern to assign the site generated traffic to the roadway system was developed based upon the existing traffic volume distributions observed on NYS Route 22 and supplemented with data on the population centers in the area. The anticipated Arrival/Departure distributions of the site generated traffic for the development are shown on Figures No. 10 and 11.

D. 2020 BUILD CONDITIONS TRAFFIC VOLUMES (Figures No. 12 through 15 and Tables 3A and 3B)

The Site Generated Traffic Volumes were assigned to the roadway network via the Arrival/Departure Distribution and are shown on Figures No. 12 and 13.

These site generated traffic volumes were added to the 2020 No-Build Traffic Volumes to obtain the 2020 Build Traffic Volumes. These volumes are shown on Figures No. 14 and 15 for the AM and PM Peak Hours, respectively. These figures are contained in Appendix "A".

Tabular summaries of the Existing, No-Build and Build Traffic Volumes are presented in Tables No. 3A and 3B for the AM and PM Peak Hours, respectively.

E. DESCRIPTION OF ANALYSIS PROCEDURES

In order to determine existing and future traffic operating conditions at the study area intersections, it was necessary to perform capacity analyses. The following is a brief description of the analysis method utilized in this report:

- Signalized Intersection Capacity Analysis
  The capacity analysis for a signalized intersection was performed in accordance with the procedures described in the *2010 Highway Capacity Manual*, published by the Transportation Research Board. The terminology used in identifying traffic flow conditions is Levels of Service. A Level of Service "A" represents the best condition and a Level of Service "F" represents the worst condition. A Level of Service "C" is generally used as a design standard while a Level of Service "D" is acceptable during peak periods. A Level of Service "E" represents an operation near capacity. In order to identify an intersection's Level of Service, the average amount of vehicle delay is computed for each approach to the intersection as well as for the overall intersection.

- Unsignalized Intersection Capacity Analysis
  The unsignalized intersection capacity analysis method utilized in this report was also performed in accordance with the procedures described in the *2010 Highway Capacity Manual*. The procedure is based on total elapsed time from when a vehicle stops at the end of the queue until the

vehicle departs from the stop line. The average total delay for any particular critical movement is a function of the service rate or capacity of the approach and the degree of saturation. In order to identify the Level of Service, the average amount of vehicle delay is computed for each critical movement to the intersection.

Additional information concerning signalized and unsignalized Levels of Service can be found in Appendix "C" of this report.

F. RESULTS OF ANALYSIS (Tables No. 2)

Capacity analyses which take into consideration appropriate truck percentages, pedestrian activity, roadway grades and other factors were performed at the study area intersections utilizing the procedures described above to determine the Levels of Service and average vehicle delays. Summarized below are a description of the existing geometrics, traffic control and a summary of the existing and future Levels of Service as well as any recommended improvements.

Using the above procedures together with the SYNCHRO Analysis Software, a capacity analysis was performed using the 2015 Existing, 2020 No-Build and 2020 Build Traffic Volumes for each of the intersections.

Table No. 2 summarize the results of the capacity analysis for the 2015 Existing, 2020 No-Build and 2020 Build Conditions. Appendix "C" contains copies of the capacity analysis which also indicate the existing geometrics (including lane widths) and other characteristics for each of the individual intersections studied.

1. NYS Route 22 and I-684 NB Off Ramp (Exit 6A)
   This intersection is controlled by a "Stop" sign located on the Northbound Off Ramp at its approach to NYS Route 22. The analysis conducted using the 2015 Existing Traffic Volumes indicates that the left turn movement from the Northbound Off Ramp experiences Levels of Service "F" during the AM and PM Peak Hours.

   The installation of a traffic signal at this location would be needed to improve the level of service (see Level of Service Summary Table No. 2 in Appendix "B"). With the installation of a traffic signal, the 2020 Build Traffic Volumes indicates an overall Level of Service "B" or better during the AM and PM Peak Hours. However, a review of the traffic volumes indicates the intersection does not satisfy traffic signal

warrants as specified in the Manual of Uniform Traffic Control Devices. It is recommended that traffic volumes at this intersection continue to be monitored in the future for possible signalization.

2. NYS Route 22 and Site Access Driveway
As indicated above, access to the site is proposed via a single driveway connection to NYS Route 22 north of the I-684 (Exit 6A) northbound off ramp.

During the time of the field survey, sight distance measurements were observed and are summarized in Table No. 3. Some vegetation along the east side of NYS Route 22 south and north of the driveway intersection should be pruned to ensure adequate sight distances. The analysis indicates that Levels of Service "C" or better will be provided under future conditions for traffic entering and exiting the site. Also, a W2-2 "Intersection Ahead" advance warning sign should be installed on NYS Route 22 north and south of the site access. A final determination on this and other entrance design details will be made by NYSDOT as part of the Highway Work Permit Process.

3. NYS Route 138 and North Street
North Street intersects with NYS Route 138 at a signalized "T" intersection. The NYS Route 138 eastbound approach consists of one lane for through and right turn movements. The NYS Route 138 westbound approach consists of one lane for left turn movements and one lane for through movements. The North Street northbound approach consists of one lane for left turn movements and one lane for right turn movements. Capacity analysis conducted utilizing the 2015 Existing Traffic Volumes indicates that the intersection currently operates at a Level of Service "C" or better during peak periods.

Capacity analysis conducted utilizing the 2020 No-Build and 2020 Build traffic Volumes indicates that the intersection will continue to operate at good Levels of Service.

4. NYS Route 22 and North Street
This intersection is controlled by a "stop" sign located on North Street at its approach to NYS Route 22. The analysis indicated that the left turn movement from North Street experiences some delays during the Peak AM Hour. Levels of Service "E" are expected under future No-Build and Build conditions during this Peak AM time period. During other hours, a Level of Service "B" or better can be expected.

Signalization of this intersection would provide a significantly better level of service (see Level of Service Summary Table No. 2 in Appendix "B"). However, since the un-signalized analysis results in an operation still within capacity, and a review of the traffic volumes indicates the intersection would not meet traffic signal warrants as specified by the NYSDOT Manual of Uniform Traffic Control Devices, it is recommended that traffic volumes at this intersection continue to be monitored in the future for possible signalization.

It should be noted that the above referenced intersections (#3 and #4) were analyzed in detail as part of the Goldens Bridge Shopping Center expansion. That study had considered background traffic growth which accounts for the expected volumes from the proposed multi-family development. Even considering the conservatively high trip estimates used in the traffic study for the proposed multi-family housing project, these volumes equate to 2 entering and 9 exiting vehicles during the AM peak hour and 9 entering and 6 exiting vehicles during the PM peak hour at NYS Route 22 and North Street and less at North Street and Route 138. As shown in the Level of Service Summary Table (Table No. 2), the project will not have a significant impact on the Levels of Service or vehicle delays at these intersections.

G. OTHER CONSIDERATIONS

Access Location

The site access centerline is now located approximately 250' north of the centerline of the I-684 Exit 6A Northbound Off Ramp. This location was chosen to maximize sight distance for entering and exiting vehicles and the driveway includes appropriate radii to accommodate entering and exiting vehicles. As part of the Highway Work Permit Review, curbing and shoulder/pavement improvements will be finalized with NYSDOT.

Potential Impacts during Constructions

During construction, as required as part of the NYSDOT Highway Work Permits, a Maintenance and Protection of Traffic Plan will be prepared to ensure than any impacts to the adjacent state highway are minimized during construction. These plans include appropriate signing, and limits of hours of any work within the State R.O.W. associated with the project and also maintenance of the construction entrance to the site all in accordance with state standards and requirements. The details will be finalized as part of the Highway Work Permit.

Public Transportation

Information regarding available public transportation in the area including the Goldens Bridge metro-North service was compiled and is attached in Appendix. Note that there is no existing Bee-Line route along Route 22 in this vicinity.

Potential Shoulder Modification

Potential shoulder improvements along NYS Route 22 as well as provisions for bicycles and pedestrians are under the purview of the NYSDOT and their requirements for the project will be fulfilled as part of the Highway Work Permit process.

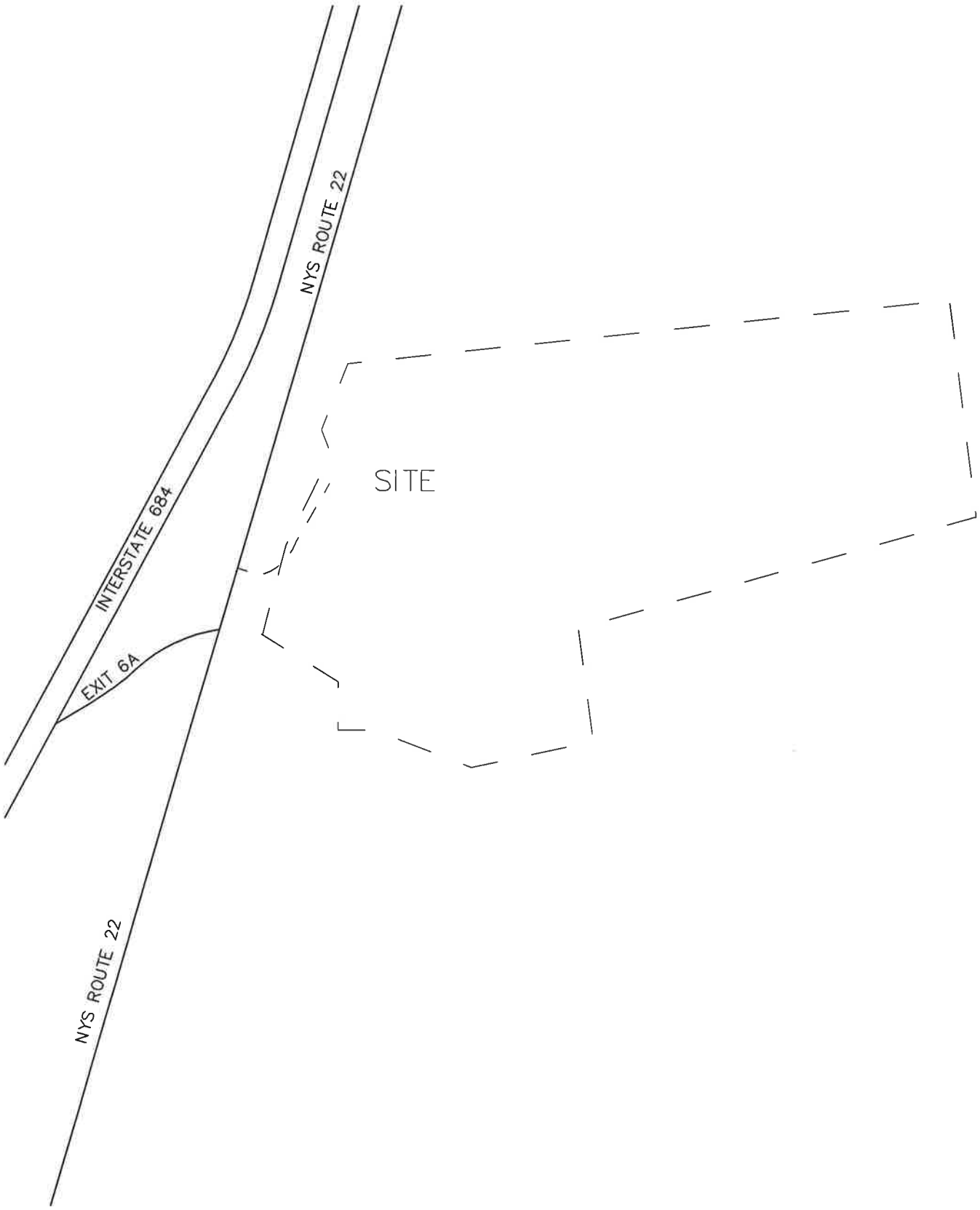
IV. SUMMARY AND CONCLUSION

The results of the capacity analysis indicated the proposed residential development will not significantly change the overall Levels of Service at each of the key locations. The intersection of I-684 and Route 22 will continue to experience operating problems during peak periods and should continue to be monitored in the future for a possible traffic signal. A Highway Work Permit will be required from the NYSDOT for the proposed access.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX A

FIGURES



NOTE: LINE DIAGRAM NOT TO SCALE

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Planners • Surveyors • Landscape Architects
State of N.Y. Certificate of Authorization: 0000172

New Jersey New York Pennsylvania Virginia
Customer Loyalty *through* Client Satisfaction

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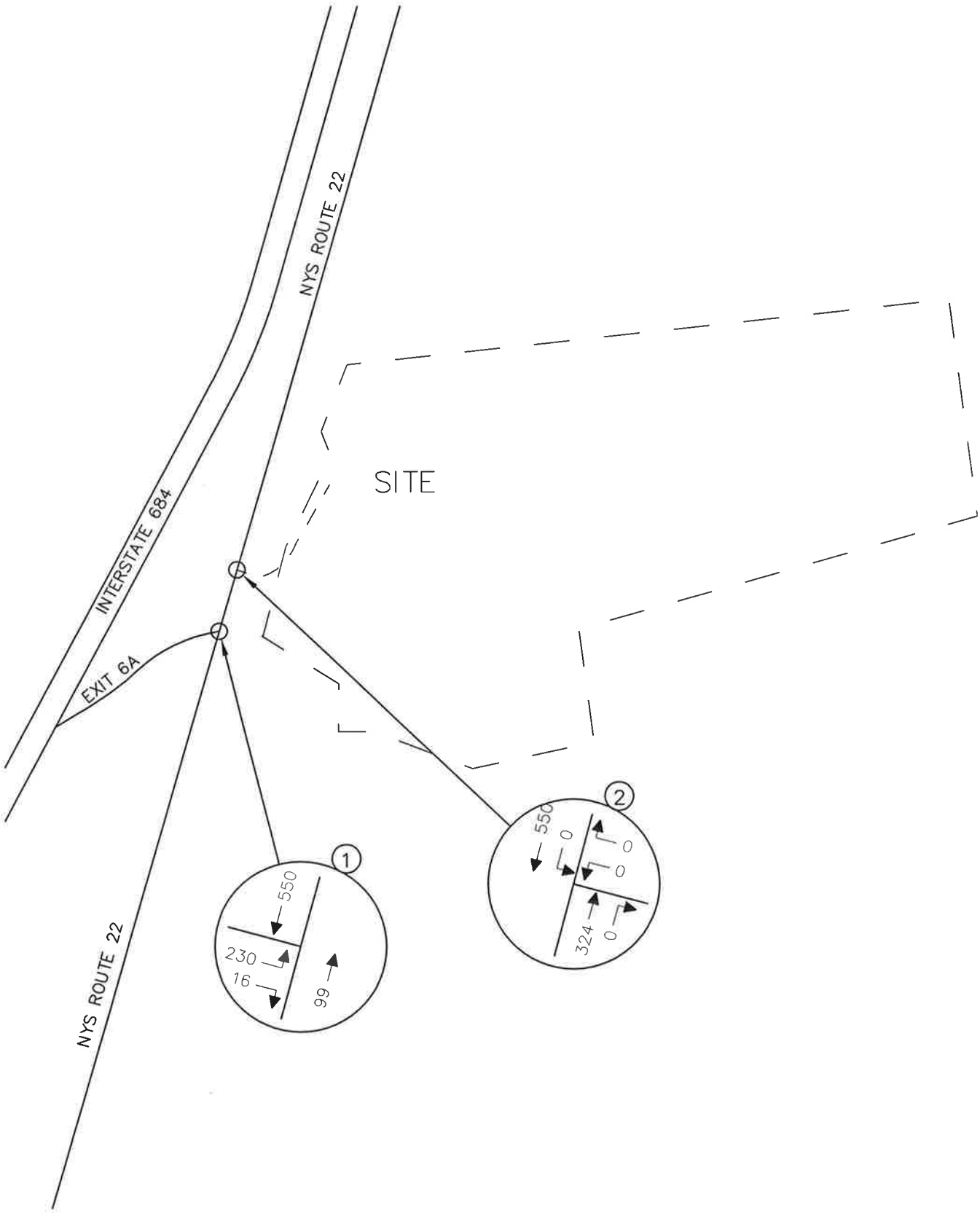
Fax: 914.347.7266
email: solutions @ maserconsulting.com

WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

SITE LOCATION MAP

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
1	



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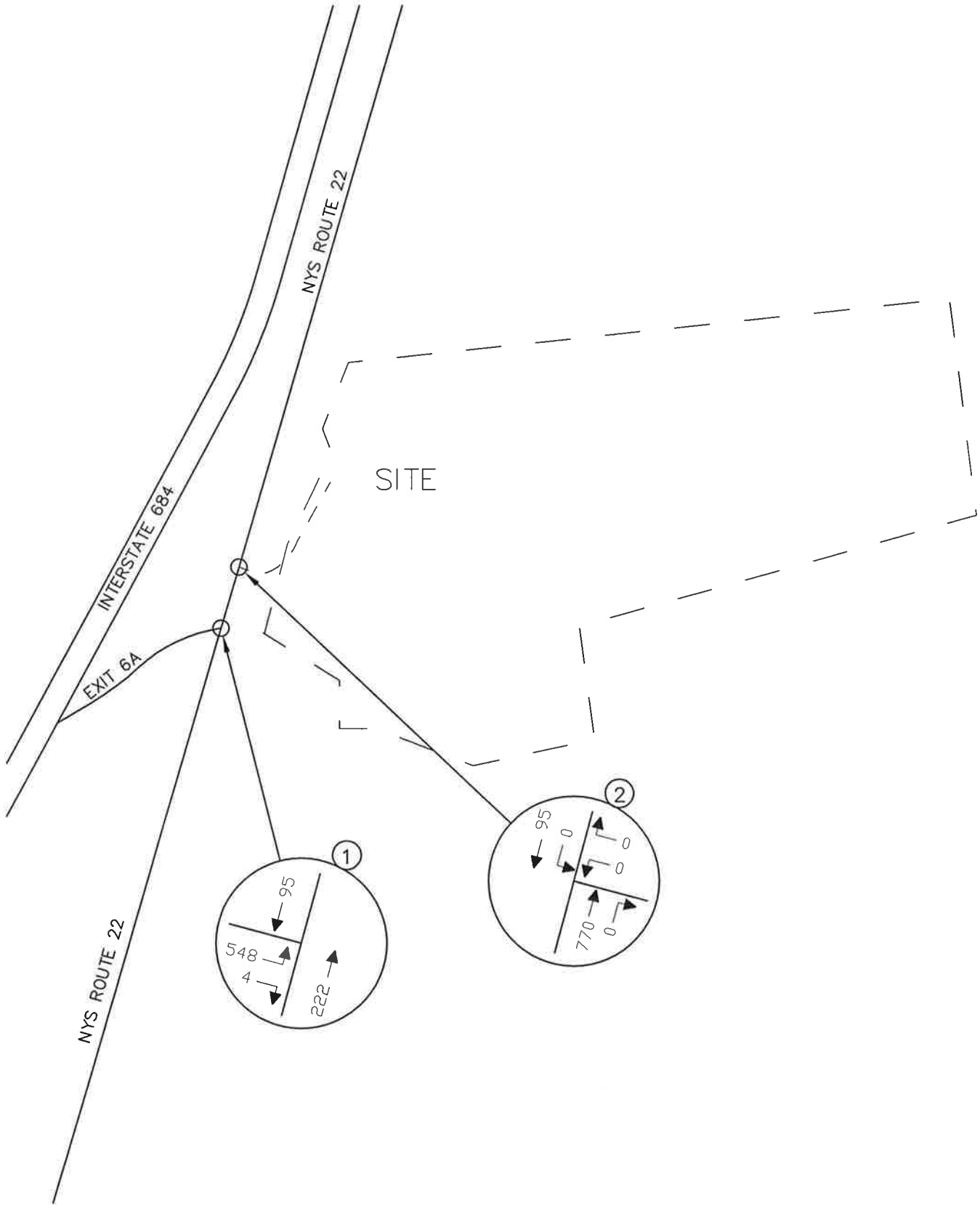
WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

2015 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
2	



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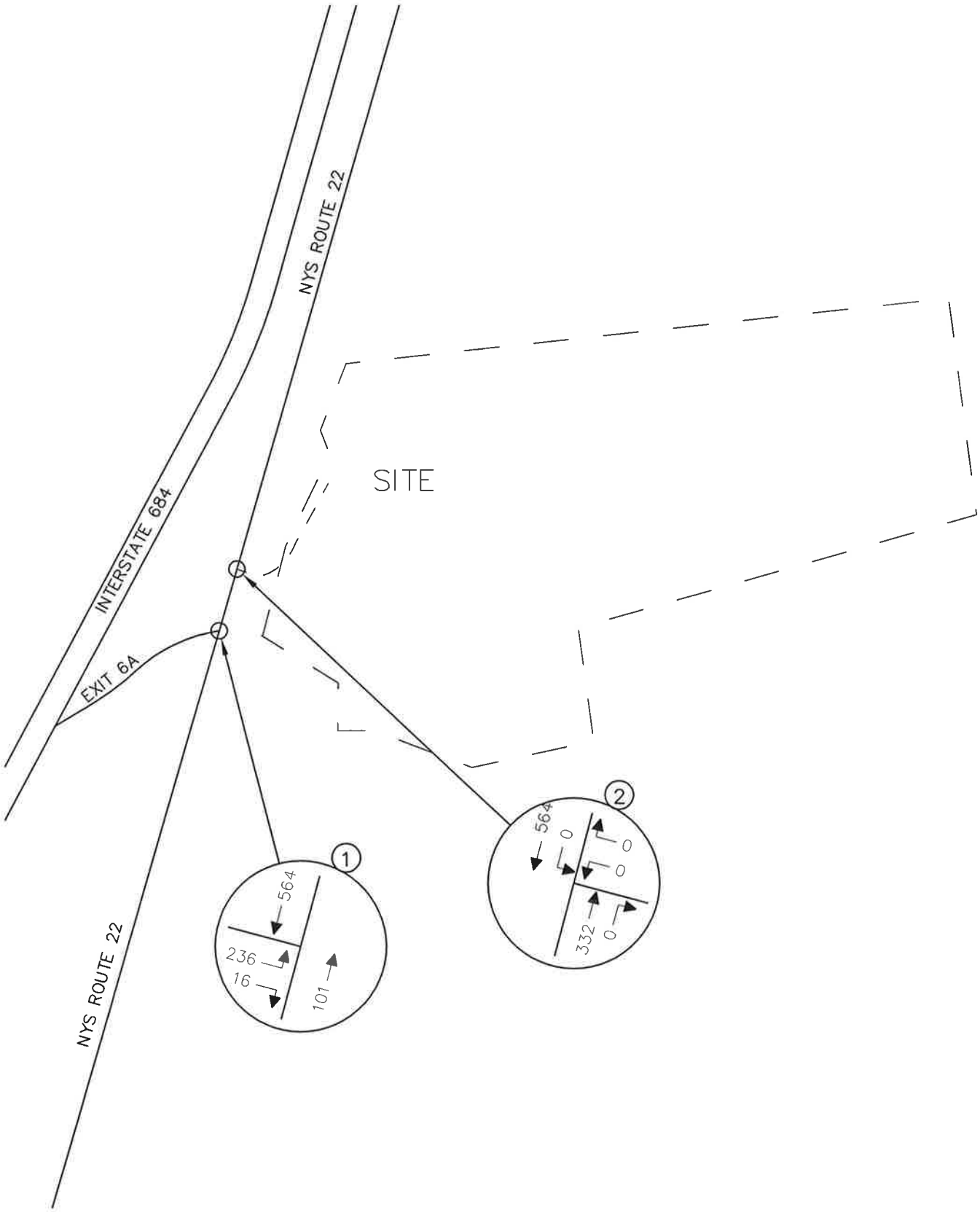
WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

2015 EXISTING TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
3	



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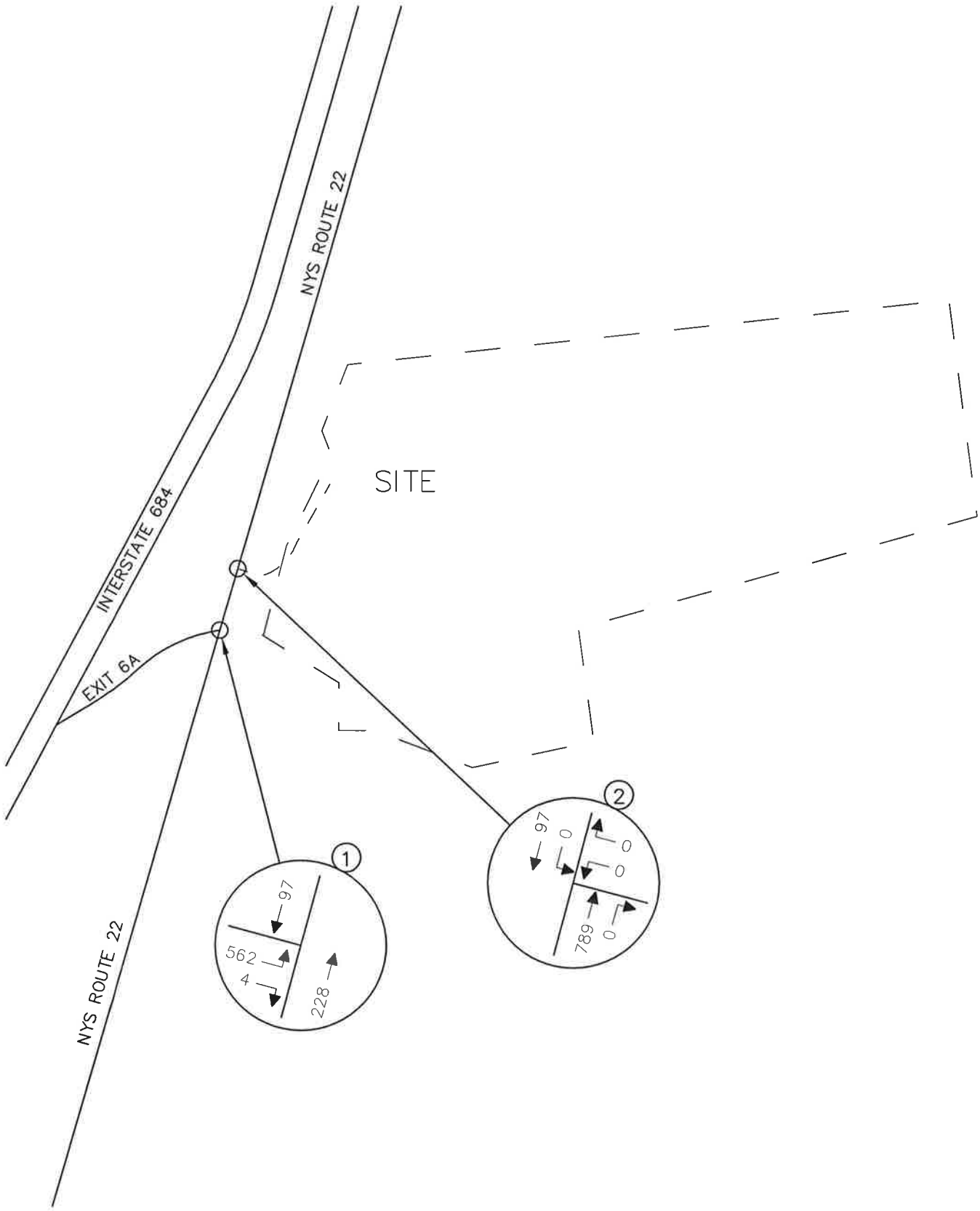
WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

2020 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
4	



NOTE: LINE DIAGRAM NOT TO SCALE

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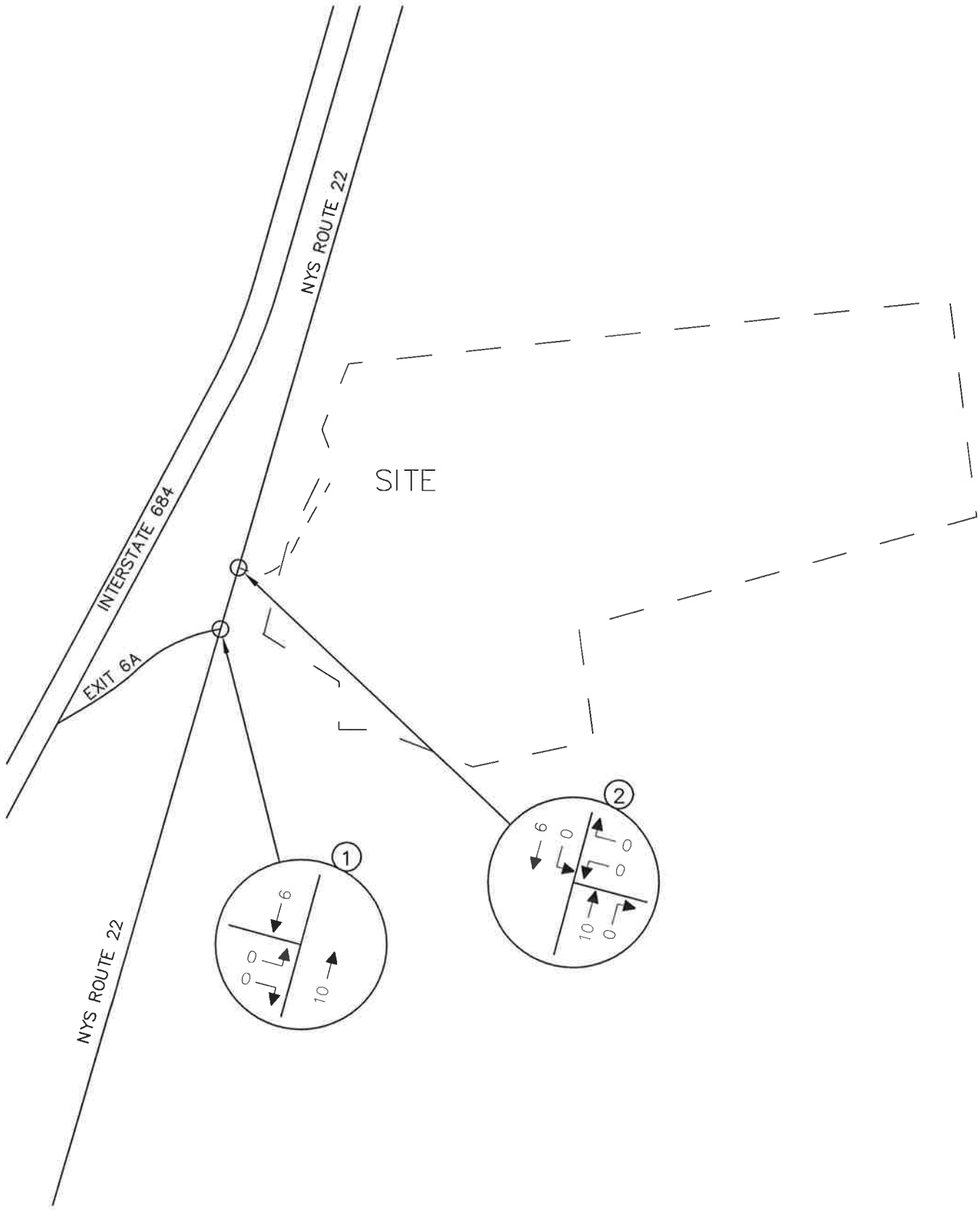
2020 PROJECTED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
5	



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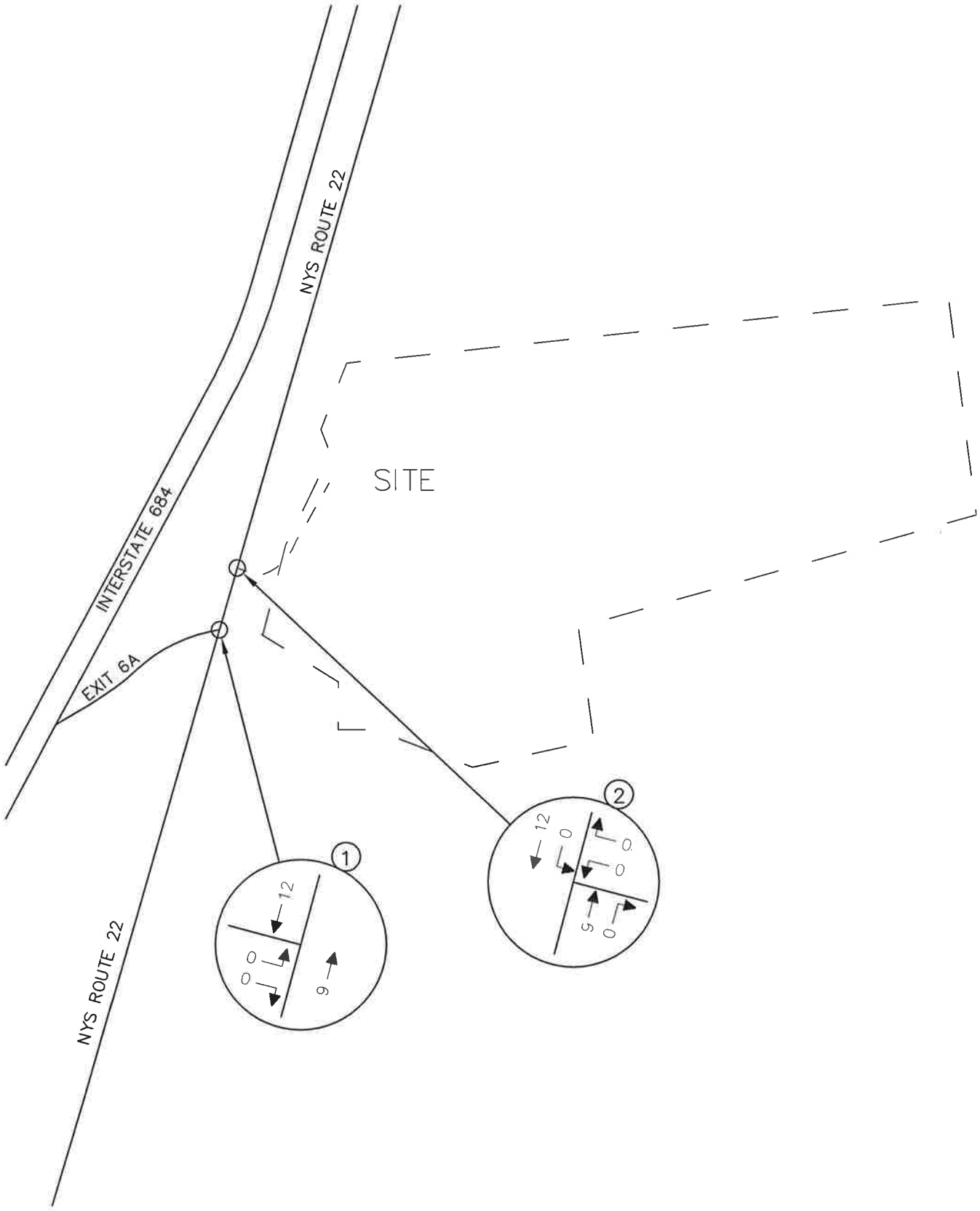
WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
6	



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TOWN OF LEWISBORO, NY

OTHER DEVELOPMENT TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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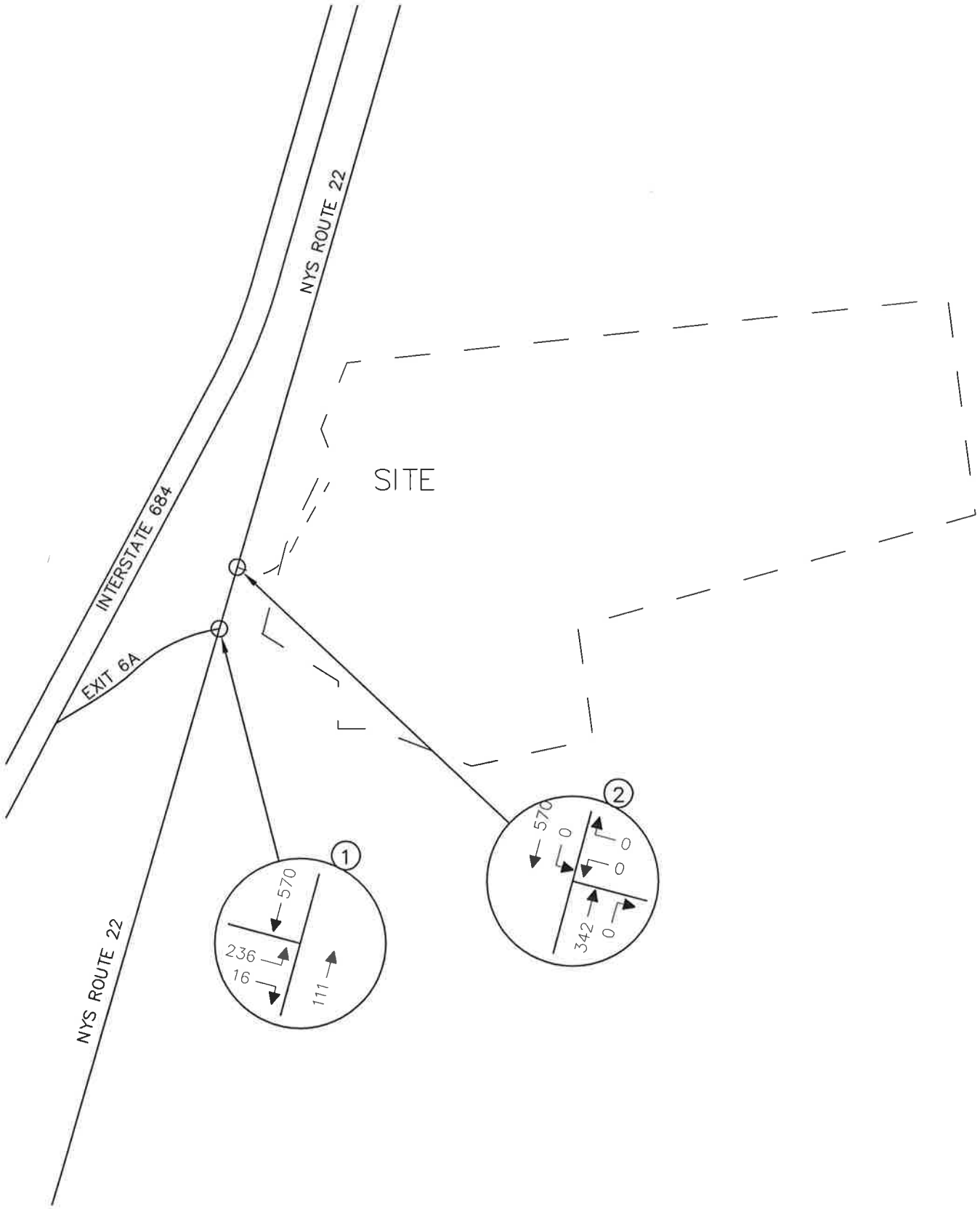

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WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

2020 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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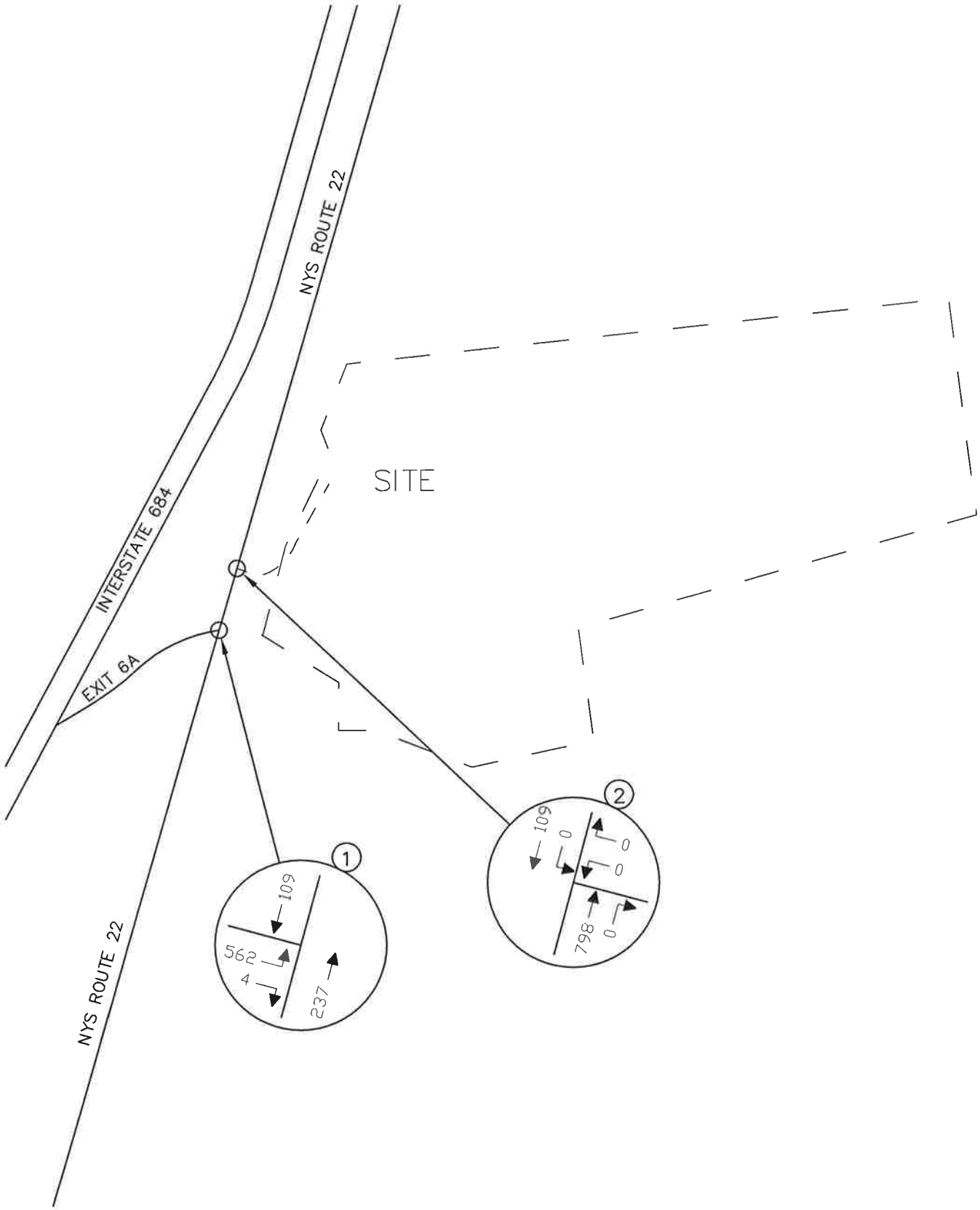

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TOWN OF LEWISBORO, NY

2020 NO-BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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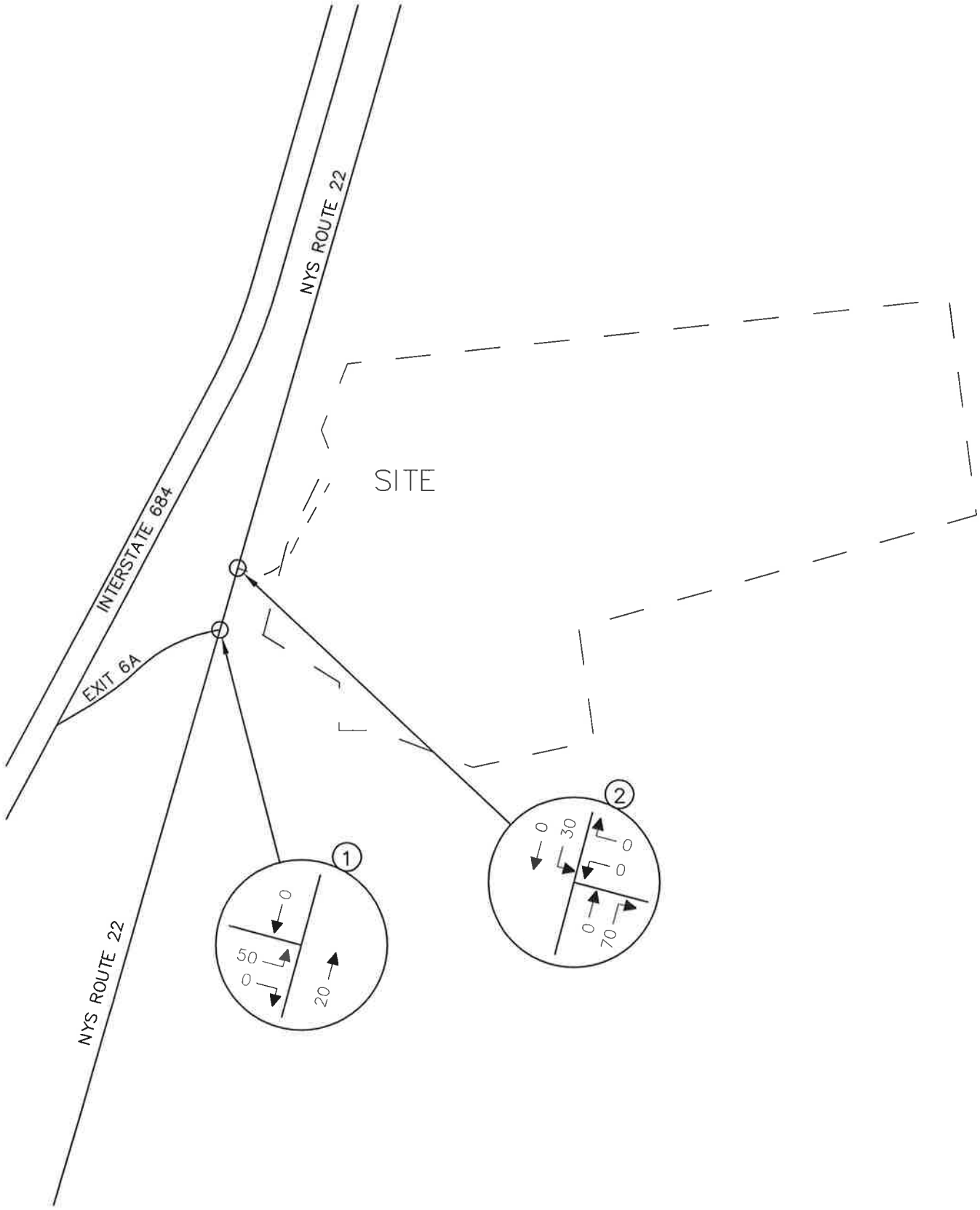

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TOWN OF LEWISBORO, NY

ARRIVAL DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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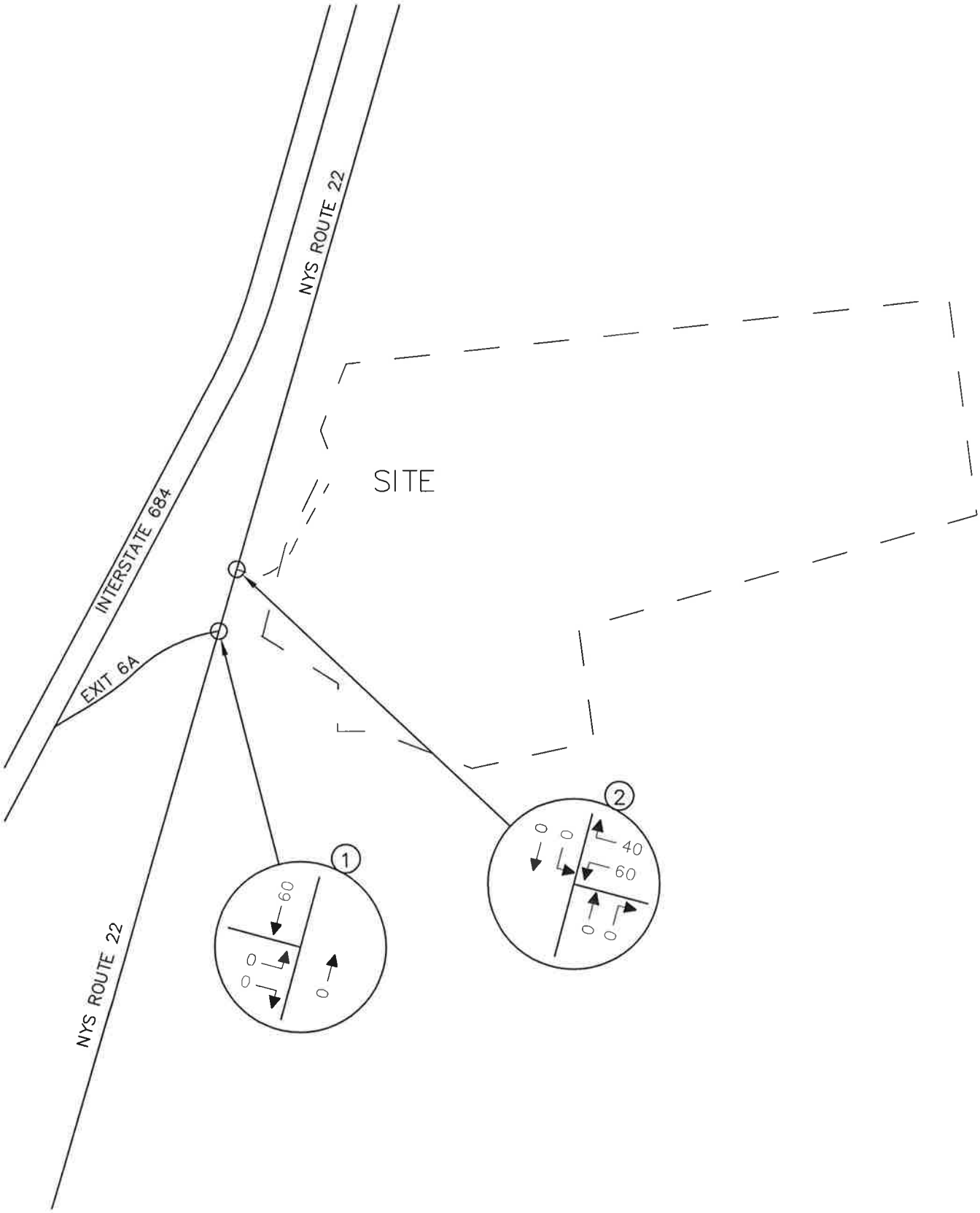

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WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

DEPARTURE DISTRIBUTION
(ALL VALUES EXPRESSED AS A %)

JOB NUMBER:	DATE:
15002398A	JAN. 2016
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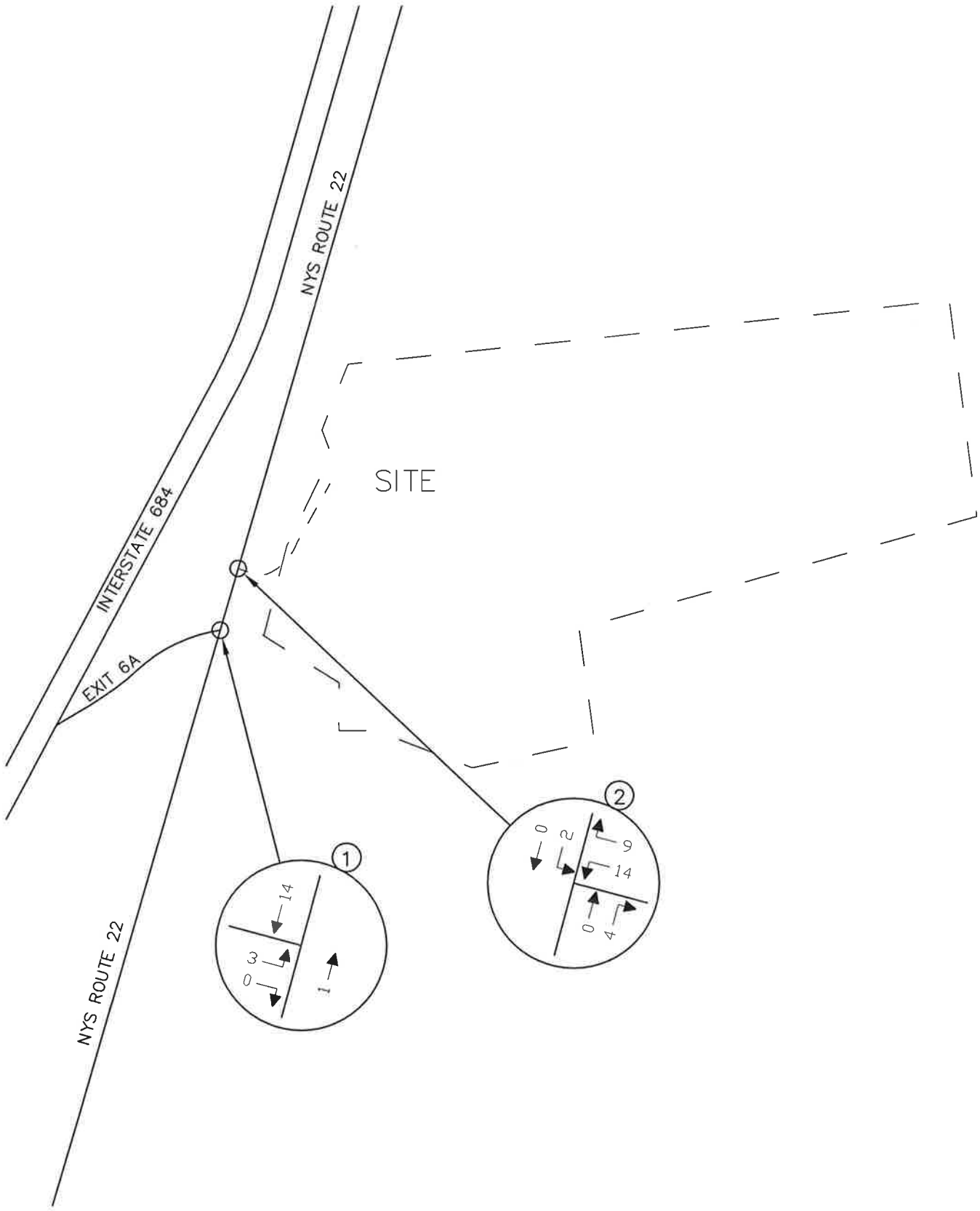

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WBP AFFH MULTI-FAMILY DEVELOPMENT
TOWN OF LEWISBORO, NY

SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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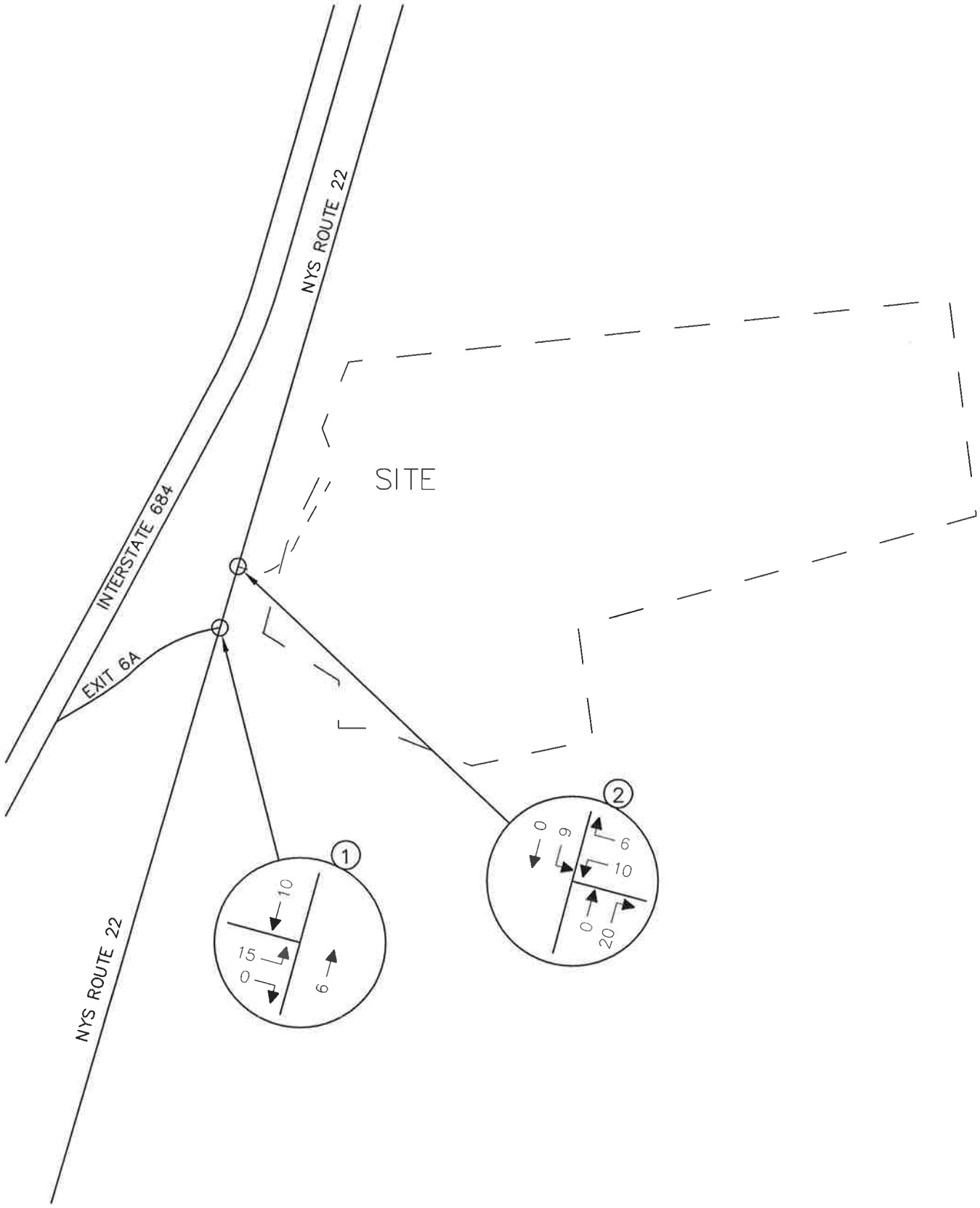

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SITE GENERATED TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
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FIGURE NUMBER:	
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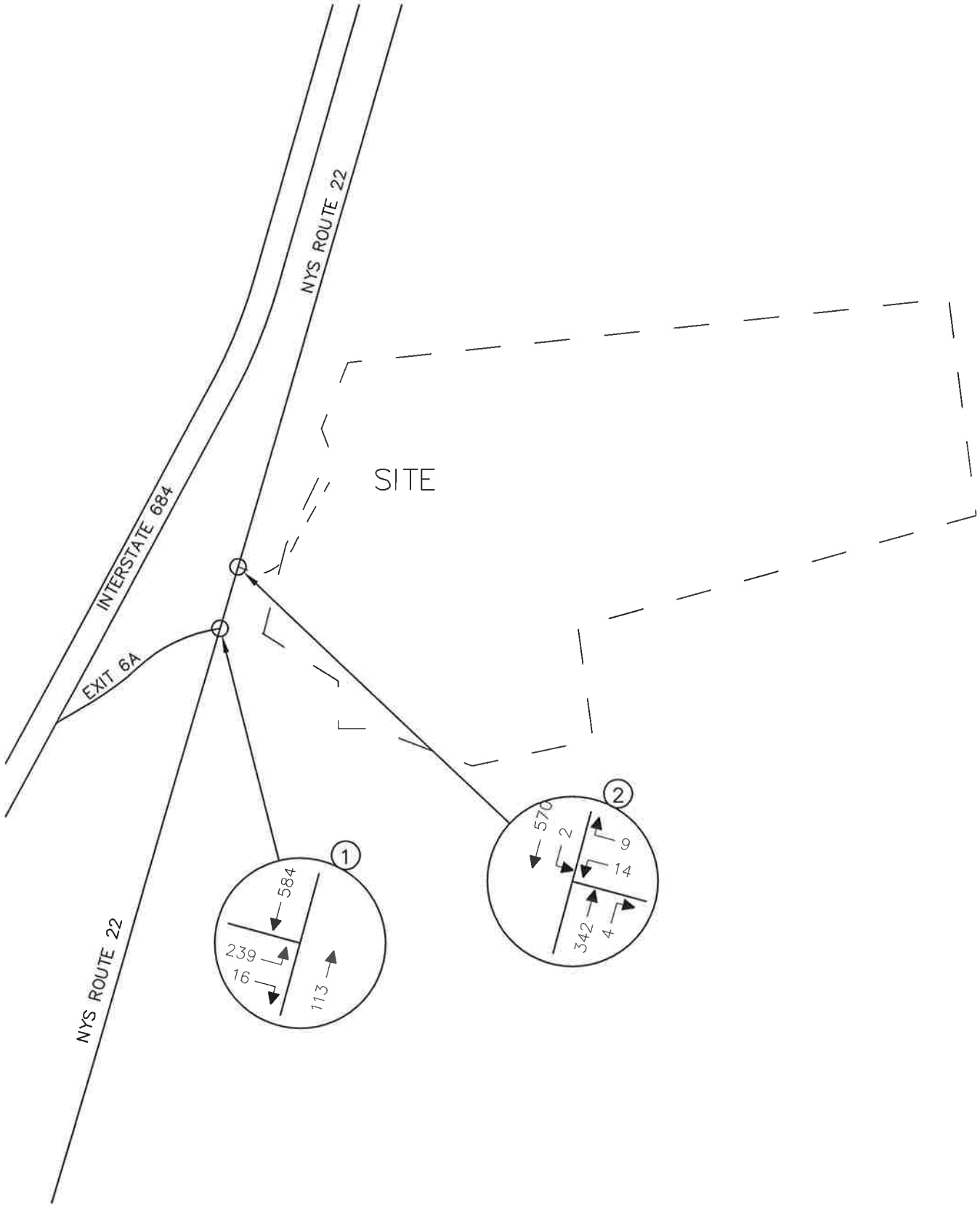

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WBP AFFH MULTI-FAMILY DEVELOPMENT
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2020 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK AM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
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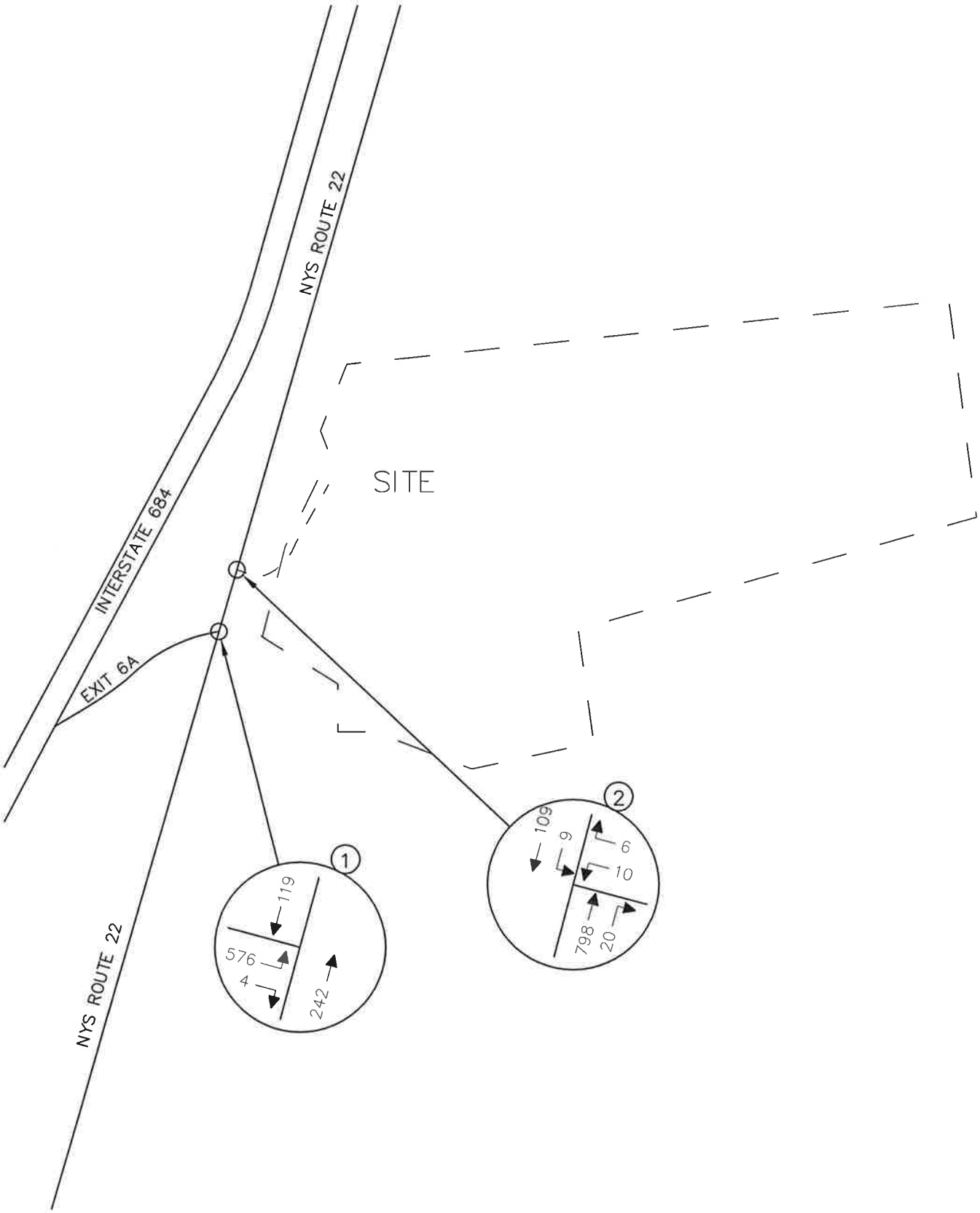

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2020 BUILD TRAFFIC VOLUMES
WEEKDAY PEAK PM HOUR

JOB NUMBER:	DATE:
15002398A	JAN. 2016
FIGURE NUMBER:	
15	

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX B

TABLES

TABLE NO. 1

HOURLY TRIP GENERATION RATES (HTGR) AND ANTICIPATED SITE GENERATED TRAFFIC VOLUMES

WBP AFFH MULTI-FAMILY DEVELOPMENT TOWN OF LEWISBORO, NEW YORK	ENTRY		EXIT	
	HTGR[1]	VOLUME	HTGR[1]	VOLUME
MULTI-FAMILY (46 DWELLING UNITS)				
PEAK AM HOUR	0.11	5	0.45	21
PEAK PM HOUR	0.59	28	0.32	15
SATURDAY PEAK HOUR	0.40	19	0.40	19

NOTES:

1) THE HOURLY TRIP GENERATION RATES (HTGR) ARE BASED ON DATA PUBLISHED BY THE INSTITUTE OF TRANSPORTATION ENGINEERS (ITE) AS CONTAINED IN THE TRIP GENERATION HANDBOOK, 9TH EDITION, 2012. ITE LAND USE CODE - 220 - APARTMENT.

TABLE NO. 2

LEVEL OF SERVICE SUMMARY TABLE

			2015 EXISTING		2020 NO-BUILD		2020 BUILD	
			AM	PM	AM	PM	AM	PM
1	NYS ROUTE 22 &	**UNSIGNALIZED**						
	I-684 NB OFF RAMP (EXIT 6A)	EB	F[62.6]	F[160.1]	F[81.1]	F[206.4]	F[91.9]	F[242.2]
	WITH SIGNALIZATION	EB	-	-	-	-	B[15.4]	B[11.4]
		NB	-	-	-	-	A[5.0]	B[14.7]
		SB	-	-	-	-	A[8.0]	B[12.1]
		OVERALL	-	-	-	-	**A[9.7]**	**B[12.3]**
2	NYS ROUTE 22 &	**UNSIGNALIZED**						
	SITE ACCESS DRIVEWAY	WB	-	-	-	-	C[17.8]	C[22.1]
		SB	-	-	-	-	A[8.1]	B[10.5]
3	NORTH STREET &	**SIGNALIZED**						
	NYS ROUTE 138	EB	A[4.4]	A[9.8]	A[4.5]	B[10.1]	A[4.5]	B[10.3]
		EN	B[15.5]	B[10.8]	B[16.2]	B[11.0]	B[16.6]	B[11.4]
		NB	B[15.5]	A[8.8]	B[15.8]	A[9.0]	B[15.7]	A[9.2]
		OVERALL	**B[13.7]**	**A[9.4]**	**B[14.2]**	**A[9.7]**	**B[14.3]**	**A[9.9]**
4	NORTH STREET	**UNSIGNALIZED**						
	NYS ROUTE 22	WB	D[33.9]	B[13.2]	E[47.4]	B[14.1]	E[49.4]	B[14.3]
		SB	A[8.5]	A[9.8]	A[8.6]	B[10.0]	A[8.7]	B[10.1]

NOTES:

1) THE ABOVE REPRESENTS THE LEVEL OF SERVICE AND VEHICLE DELAY IN SECONDS, C [16.2], FOR EACH KEY APPROACH OF THE UNSIGNALIZED INTERSECTIONS AS WELL AS FOR EACH APPROACH AND THE OVERALL INTERSECTION FOR THE SIGNALIZED INTERSECTIONS.

2) SEE APPENDIX "C" FOR A DESCRIPTION OF THE LEVELS OF SERVICE.

TABLE NO. 3

SIGHT DISTANCE SUMMARY TABLE FOR PROPOSED ACCESS

Location	Sight Line	Provided Sight Distance[1]	AASHTO Sight Distances[2]	
			Stopping Sight Distance	Intersection Sight Distance
SITE ACCESS	Looking Left	1422	495	610
	Looking Right	558	495	610
	Looking Right (3)	1203	495	610
	Left Turn Entry	1422	495	445
	Rear End	1203	495	495

NOTES:

1) Provided Sight Distances based on field measurements conducted by Maser Consulting, P.A. on December 3, 2015.

2) AASHTO Sight Distances based on data provided in the Geometric Design of Highways and Streets, 6th Edition dated 2011. Sight distances are based on the Posted Speed Limit of 55 MPH on NYS Route 22.

3) With completion of clearing and grading.

TABLE NO. 3A

SUMMARY OF EXISTING AND FUTURE TRAFFIC VOLUMES - AM PEAK HOUR

		2015 EXISTING	2020 NO-BUILD	SITE GENERATED TRAFFIC VOLUMES	2020 BUILD	% INCREASE NO-BUILD TO BUILD
1	NYS ROUTE 22 & I-684 NB OFF RAMP (EXIT 6A)	895	933	18	951	1.9%
2	NYS ROUTE 22 & SITE ACCESS DRIVEWAY	874	912	29	941	3.2%
3	NORTH STREET & NYS ROUTE 138	1390	1480	5	1485	0.3%
4	NORTH STREET & NYS ROUTE 22	1136	1214	11	1225	0.9%

TABLE NO. 3B

SUMMARY OF EXISTING AND FUTURE TRAFFIC VOLUMES - PM PEAK HOUR

		2015 EXISTING	2020 NO-BUILD	SITE GENERATED TRAFFIC VOLUMES	2020 BUILD	% INCREASE NO-BUILD TO BUILD
1	NYS ROUTE 22 & I-684 NB OFF RAMP (EXIT 6A)	869	912	31	943	3.4%
2	NYS ROUTE 22 & SITE ACCESS DRIVEWAY	865	907	45	952	5.0%
3	NORTH STREET & NYS ROUTE 138	1131	1227	8	1235	0.7%
4	NORTH STREET & NYS ROUTE 22	941	1025	15	1040	1.5%

TABLE NO. A

NYS Route 22 - Town of Lewisboro, Westchester County, New York

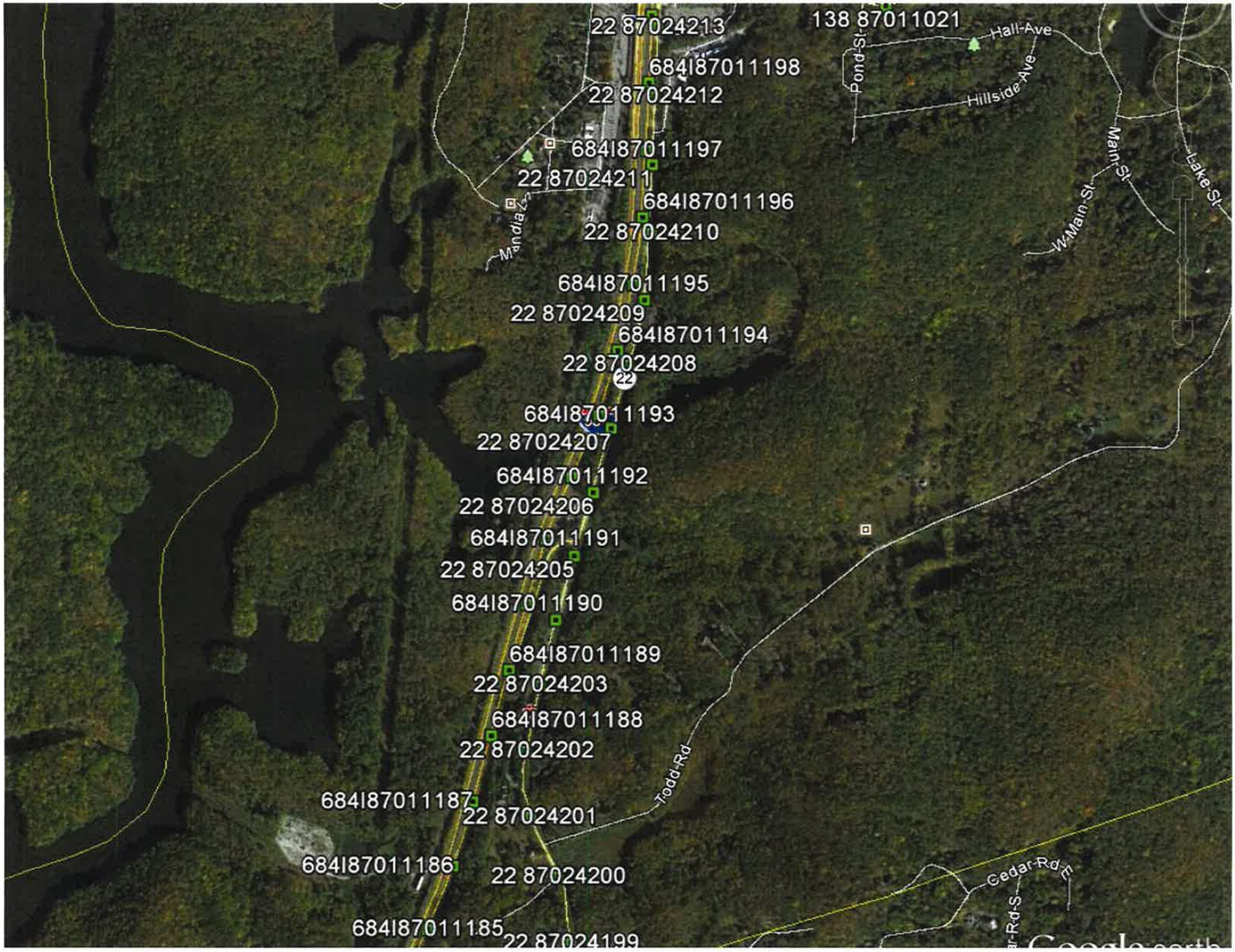
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
22 8702 4199	Non-Intersection Accidents	12/01/14	8:23 PM	None	PDO	1-0	Dark-Road Unlighted	Wet	Rain	Other	Animal's Action
22 8702 4199	Duffys Bridge Road	04/04/11	3:30 PM	Flashing Signal	PDO	2-0	Daylight	Dry	Clear	Rear End	Unknown
22 8702 4201	Non-Intersection Accidents	12/27/10	1:41 AM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Pavement Slippery
22 8702 4201	Non-Intersection Accidents	03/05/13	11:29 PM	No Passing Zone	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Animal's Action
22 8702 4201	Non-Intersection Accidents	03/27/13	2:31 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4201	Non-Intersection Accidents	01/10/14	11:00 PM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Sleet	Other	Pavement Slippery
22 8702 4202	Non-Intersection Accidents	06/27/12	7:45 AM	None	PDO	1-0	Daylight	Dry	Clear	Other	N/A
22 8702 4202	Non-Intersection Accidents	08/24/12	1:00 PM	None	PDO & I	2-1	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4202	Non-Intersection Accidents	03/20/15	6:38 PM	No Passing Zone	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4203	Non-Intersection Accidents	08/13/11	3:00 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	11/21/12	5:00 PM	No Passing Zone	PDO	1-0	Dusk	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	02/09/15	6:40 PM	None	PDO	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4204	Non-Intersection Accidents	02/08/13	1:08 PM	None	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4205	Non-Intersection Accidents	03/02/11	9:00 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way, Turning Improper
22 8702 4205	Non-Intersection Accidents	07/19/13	5:00 PM	Stop Sign	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4205	Non-Intersection Accidents	05/22/14	3:10 PM	None	PDO	2-0	Daylight	Wet	Rain	Left Turn	Turning Improper
22 8702 4205	Non-Intersection Accidents	12/01/14	8:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield ROW,Traffic Control devices Disregarded
22 8702 4205	Non-Intersection Accidents	08/09/15	4:19 AM	Stop Sign	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Unsafe Speed
22 8702 4206	Non-Intersection Accidents	05/17/13	10:00 AM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Overtaking	Turning Improper, Failure to Yield Right of Way
22 8702 4208	Non-Intersection Accidents	08/13/11	2:40 AM	None	PDO & I	1-1	Dark-Road Unlighted	Dry	Clear	Other	Driver Inattention
22 8702 4211	Intersection Accidents	09/09/11	3:10 PM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Right Turn	Failure to Yield Right of Way
22 8702 4211	Intersection Accidents	05/01/12	6:06 PM	None	PDO & I	2-1	Daylight	Dry	Cloudy	Rear End	Following too Closely
22 8702 4212	Non-Intersection Accidents	07/17/11	7:13 AM	None	PDO	1-0	Dawn	Dry	Cloudy	Other	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/24/11	10:15 AM	None	PDO	1-0	Daylight	Wet	Cloudy	Other	Pavement Slippery, Unsafe Speed
22 8702 4213	Non-Intersection Accidents	08/23/11	1:00 PM	None	PDO	2-0	Daylight	Dry	Clear	Sideswipe	Backing Unsafely
22 8702 4213	Non-Intersection Accidents	03/02/12	7:20 PM	Stop Sign	PDO	2-0	Dark-Road Lighted	Dry	Clear	Right Angle	Unknown
22 8702 4213	Non-Intersection Accidents	11/16/13	4:10 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
22 8702 4213	Non-Intersection Accidents	08/24/14	10:52 AM	No Passing Zone	PDO & I	2-2	Daylight	Dry	Cloudy	Sideswipe	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/28/15	8:12 AM	Stop Sign	PDO & I	2-1	Daylight	Dry	Fog/Smog	Left Turn	Failure to Yield Right of Way

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) I-684 NORTHBOUND RAMP INTERSECTION IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE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22 87024210
Mandia Ln
Main St
W Main St
Lake St
684I87011195
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22 87024202
Todd Rd
684I87011187
22 87024201
684I87011186
22 87024200
Cedar Rd E
684I87011185
22 87024199

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX C

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE STANDARDS

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) can be characterized for the entire intersection, each intersection approach, and each lane group. Control delay alone is used to characterize LOS for the entire intersection or an approach. Control delay and volume-to-capacity (v/c) ratio are used to characterize LOS for a lane group. Delay quantifies the increase in travel time due to traffic signal control. It is also a measure of driver discomfort and fuel consumption. The volume-to-capacity ratio quantifies the degree to which a phase's capacity is utilized by a lane group.

LOS A describes operations with a control delay of 10 s/veh or less and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If it is due to favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

LOS B describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

LOS C describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate.

LOS D describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long.

LOS E describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long.

LOS F describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long.

A lane group can incur a delay less than 80 s/veh when the volume-to-capacity ratio exceeds 1.0. This condition typically occurs when the cycle length is short, the signal progression is favorable, or both. As a result, both the delay and volume-to-capacity ratio are considered when lane group LOS is established. A ratio of 1.0 or more indicates that cycle capacity is fully utilized and represents failure from a capacity perspective (just as delay in excess of 80 s/veh represents failure from a delay perspective).

The Level of Service Criteria for signalized intersections are given in Exhibit 18-4 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 18-4

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
≤10	A	F
>10-20	B	F
>20-35	C	F
>35-55	D	F
>55-80	E	F
>80	F	F

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

LEVEL OF SERVICE CRITERIA
FOR TWO-WAY STOP-CONTROLLED (TWSC) UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) for a two-way stop-controlled (TWSC) intersection is determined by the computed or measured control delay. For motor vehicles, LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. LOS is not defined for the intersection as a whole or for major-street approaches.

The Level of Service Criteria for TWSC unsignalized intersections are given in Exhibit 19-1 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 19-1

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

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 for the intersection as a whole.

As Exhibit 19-1 notes, LOS F is assigned to the movement if the volume-to-capacity ratio for the movement exceeds 1.0, regardless of the control delay.

The Level of Service Criteria for unsignalized intersections are somewhat different from the criteria for signalized intersections.

LEVEL OF SERVICE CRITERIA
FOR ALL-WAY STOP-CONTROLLED (AWSC) UNSIGNALIZED INTERSECTIONS

The Levels of Service (LOS) for all-way stop-controlled (AWSC) intersections are given in Exhibit 20-2. As the exhibit notes, LOS F is assigned if the volume-to-capacity (v/c) ratio of a lane exceeds 1.0, regardless of the control delay. For assessment of LOS at the approach and intersection levels, LOS is based solely on control delay.

The Level of Service Criteria for AWSC unsignalized intersections are given in Exhibit 20-2 from the *2010 Highway Capacity Manual* published by the Transportation Research Board.

Exhibit 20-2

	LOS by Volume-to-Capacity Ratio	
Control Delay (s/veh)	**v/c ≤1.0**	**v/c >1.0**
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

For approaches and intersection wide assessment, LOS is defined solely by control delay.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX D

CAPACITY ANALYSIS

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	230	16	0	99	550	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.991					
Flt Protected	0.955					
Satd. Flow (prot)	1725	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1725	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	261	18	0	113	625	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	279	0	0	112	625	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	17.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	230	16	0	99	550	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	261	18	0	112	625	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	738	625	625	0	-	0
Stage 1	625	-	-	-	-	-
Stage 2	113	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	310	440	942	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	876	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	310	440	942	-	-	-
Mov Cap-2 Maneuver	310	-	-	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	876	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	62.6	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	942	-	316	-	-
HCM Lane V/C Ratio	-	-	0.885	-	-
HCM Control Delay (s)	0	-	62.6	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	8.2	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	548	4	0	222	95	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	685	5	0	278	119	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	690	0	0	278	119	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	101.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	548	4	0	222	95	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	685	5	0	278	119	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	397	119	119	0	-	0
Stage 1	119	-	-	-	-	-
Stage 2	278	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 540	909	1451	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	705	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 540	909	1451	-	-	-
Mov Cap-2 Maneuver	~ 540	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	705	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	160.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1451	-	542	-	-
HCM Lane V/C Ratio	-	-	1.273	-	-
HCM Control Delay (s)	0	-	160.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	27.8	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	236	16	0	111	570	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	268	18	0	126	648	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	286	0	0	126	648	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	21.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	236	16	0	111	570	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	268	18	0	126	648	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	774	648	648	0	-	0
Stage 1	648	-	-	-	-	-
Stage 2	126	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	292	425	924	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	425	924	-	-	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	430	-	-	-	-	-
Stage 2	862	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	81.1	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	924	-	298	-	-
HCM Lane V/C Ratio	-	-	0.961	-	-
HCM Control Delay (s)	0	-	81.1	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	9.7	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	562	4	0	237	109	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	703	5	0	296	136	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	707	0	0	296	136	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	128.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	562	4	0	237	109	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	702	5	0	296	136	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	432	136	136	0	-	0
Stage 1	136	-	-	-	-	-
Stage 2	296	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 510	888	1430	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	~ 689	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 510	888	1430	-	-	-
Mov Cap-2 Maneuver	~ 510	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	~ 689	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	206.4	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1430	-	512	-	-
HCM Lane V/C Ratio	-	-	1.382	-	-
HCM Control Delay (s)	0	-	206.4	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	32.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	239	16	0	113	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	272	18	0	128	664	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	128	664	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	24.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	239	16	0	113	584	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, %	5	-	-	4	-11	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	272	18	0	128	664	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	792	664	664	0	-	0
Stage 1	664	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	284	415	911	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	284	415	911	-	-	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	421	-	-	-	-	-
Stage 2	859	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	91.9	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	911	-	290	-	-
HCM Lane V/C Ratio	-	-	0.999	-	-
HCM Control Delay (s)	0	-	91.9	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	10.4	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	14	9	342	4	2	570
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	11
Grade (%)	0%		6%			-7%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.948		0.998			
Flt Protected	0.970					
Satd. Flow (prot)	1664	0	1693	0	0	1810
Flt Permitted	0.970					
Satd. Flow (perm)	1664	0	1693	0	0	1810
Link Speed (mph)	30		45			45
Link Distance (ft)	119		187			1626
Travel Time (s)	2.7		2.8			24.6
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	16	10	389	5	2	648
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	394	0	0	650
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.09	1.04	0.96	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	14	9	342	4	2	570
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, %	0	-	6	-	-	-7
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	16	10	389	5	2	648

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1043	391	0	0	393	0
Stage 1	391	-	-	-	-	-
Stage 2	652	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	251	651	-	-	1149	-
Stage 1	677	-	-	-	-	-
Stage 2	513	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	250	651	-	-	1149	-
Mov Cap-2 Maneuver	250	-	-	-	-	-
Stage 1	677	-	-	-	-	-
Stage 2	511	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	329	1149	-
HCM Lane V/C Ratio	-	-	0.079	0.002	-
HCM Control Delay (s)	-	-	16.9	8.1	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	576	4	0	242	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	720	5	0	303	149	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	725	0	0	302	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
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	149.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	576	4	0	242	119	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, %	5	-	-	4	-11	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	720	5	0	302	149	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	452	149	149	0	-	0
Stage 1	149	-	-	-	-	-
Stage 2	303	-	-	-	-	-
Critical Hdwy	7.45	6.75	4.15	-	-	-
Critical Hdwy Stg 1	6.45	-	-	-	-	-
Critical Hdwy Stg 2	6.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	~ 494	872	1414	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	~ 682	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 494	872	1414	-	-	-
Mov Cap-2 Maneuver	~ 494	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	~ 682	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	242.2	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	495	-	-
HCM Lane V/C Ratio	-	-	1.465	-	-
HCM Control Delay (s)	0	-	242.2	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0	-	36.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	10	6	798	20	9	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	12	12	11
Grade (%)	0%		6%			-7%
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.946		0.997			
Flt Protected	0.971					0.996
Satd. Flow (prot)	1662	0	1692	0	0	1803
Flt Permitted	0.971					0.996
Satd. Flow (perm)	1662	0	1692	0	0	1803
Link Speed (mph)	30		45			45
Link Distance (ft)	164		187			1626
Travel Time (s)	3.7		2.8			24.6
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	13	8	998	25	11	136
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	1023	0	0	147
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.09	1.04	0.96	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Vol, veh/h	10	6	798	20	9	109
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, %	0	-	6	-	-	-7
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	12	8	998	25	11	136

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1169	1010	0	0	1023	0
Stage 1	1010	-	-	-	-	-
Stage 2	159	-	-	-	-	-
Critical Hdwy	6.45	6.25	-	-	4.15	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	-	-	2.245	-
Pot Cap-1 Maneuver	211	287	-	-	667	-
Stage 1	347	-	-	-	-	-
Stage 2	862	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	287	-	-	667	-
Mov Cap-2 Maneuver	207	-	-	-	-	-
Stage 1	347	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.1	0	0.8
HCM LOS	C		

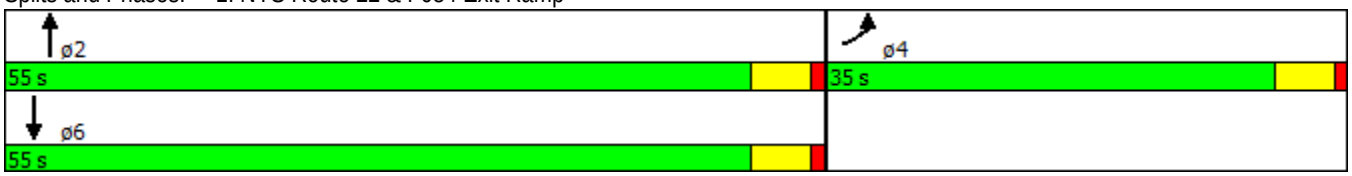
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	231	667	-
HCM Lane V/C Ratio	-	-	0.087	0.017	-
HCM Control Delay (s)	-	-	22.1	10.5	0
HCM Lane LOS	-	-	C	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	239	16	0	113	584	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					
Flt Protected	0.955					
Satd. Flow (prot)	1727	0	0	1714	1845	0
Flt Permitted	0.955					
Satd. Flow (perm)	1727	0	0	1714	1845	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4					
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	272	18	0	128	664	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	290	0	0	128	664	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
Turning Speed (mph)	15	9	15			9
Number of Detectors	1			2	2	
Detector Template	Left			Thru	Thru	
Leading Detector (ft)	20			100	100	
Trailing Detector (ft)	0			0	0	
Detector 1 Position(ft)	0			0	0	
Detector 1 Size(ft)	20			6	6	
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	
Detector 1 Queue (s)	0.0			0.0	0.0	
Detector 1 Delay (s)	0.0			0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases						
Detector Phase	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	
Minimum Split (s)	21.0			21.0	21.0	
Total Split (s)	35.0			55.0	55.0	
Total Split (%)	38.9%			61.1%	61.1%	
Maximum Green (s)	30.0			50.0	50.0	
Yellow Time (s)	4.0			4.0	4.0	
All-Red Time (s)	1.0			1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	
Recall Mode	None			Min	Min	
v/c Ratio	0.58			0.15	0.70	
Control Delay	22.3			7.9	15.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	22.3			7.9	15.2	
Queue Length 50th (ft)	65			17	130	
Queue Length 95th (ft)	177			51	304	
Internal Link Dist (ft)	769			909	107	
Turn Bay Length (ft)						
Base Capacity (vph)	1052			1555	1674	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.28			0.08	0.40	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 52.3	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: NYS Route 22 & I-684 Exit Ramp



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	239	16	0	113	584	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1852	0	1773	1909	0
Adj Flow Rate, veh/h	272	18	0	128	664	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	0	0	0	5	5	0
Cap, veh/h	364	24	0	865	931	0
Arrive On Green	0.22	0.22	0.00	0.49	0.49	0.00
Sat Flow, veh/h	1622	107	0	1773	1909	0
Grp Volume(v), veh/h	291	0	0	128	664	0
Grp Sat Flow(s),veh/h/ln	1735	0	0	1773	1909	0
Q Serve(g_s), s	5.4	0.0	0.0	1.4	9.5	0.0
Cycle Q Clear(g_c), s	5.4	0.0	0.0	1.4	9.5	0.0
Prop In Lane	0.93	0.06	0.00			0.00
Lane Grp Cap(c), veh/h	389	0	0	865	931	0
V/C Ratio(X)	0.75	0.00	0.00	0.15	0.71	0.00
Avail Cap(c_a), veh/h	1500	0	0	2555	2750	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	12.5	0.0	0.0	4.9	7.0	0.0
Incr Delay (d2), s/veh	2.9	0.0	0.0	0.1	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	0.7	5.1	0.0
LnGrp Delay(d),s/veh	15.4	0.0	0.0	5.0	8.0	0.0
LnGrp LOS	B			A	A	
Approach Vol, veh/h	291			128	664	
Approach Delay, s/veh	15.4			5.0	8.0	
Approach LOS	B			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		21.9		12.8		21.9		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		50.0		30.0		50.0		
Max Q Clear Time (g_c+I1), s		3.4		7.4		11.5		
Green Ext Time (p_c), s		5.5		0.9		5.4		

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Notes

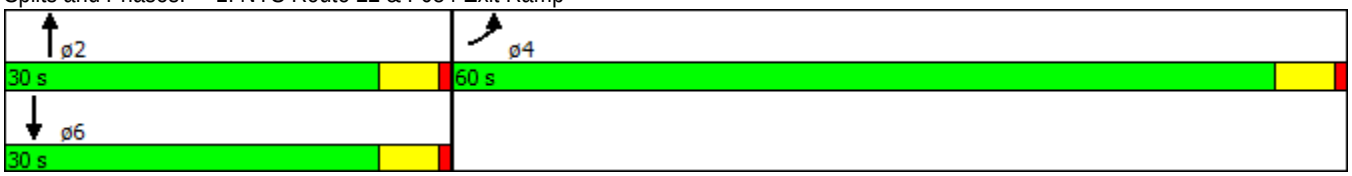
User approved volume balancing among the lanes for turning movement.

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	576	4	0	242	119	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	12	12	11	11	12
Grade (%)	5%			4%	-11%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.999					
Flt Protected	0.953					
Satd. Flow (prot)	1736	0	0	1714	1845	0
Flt Permitted	0.953					
Satd. Flow (perm)	1736	0	0	1714	1845	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					
Link Speed (mph)	30			45	45	
Link Distance (ft)	849			989	187	
Travel Time (s)	19.3			15.0	2.8	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	720	5	0	302	149	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	725	0	0	302	149	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	13			0	0	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	0.99	1.03	1.03	1.07	0.97	0.93
Turning Speed (mph)	15	9	15			9
Number of Detectors	1			2	2	
Detector Template	Left			Thru	Thru	
Leading Detector (ft)	20			100	100	
Trailing Detector (ft)	0			0	0	
Detector 1 Position(ft)	0			0	0	
Detector 1 Size(ft)	20			6	6	
Detector 1 Type	Cl+Ex			Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0			0.0	0.0	
Detector 1 Queue (s)	0.0			0.0	0.0	
Detector 1 Delay (s)	0.0			0.0	0.0	
Detector 2 Position(ft)				94	94	
Detector 2 Size(ft)				6	6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot			NA	NA	
Protected Phases	4			2	6	
Permitted Phases						
Detector Phase	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Switch Phase						
Minimum Initial (s)	4.0			4.0	4.0	
Minimum Split (s)	21.0			21.0	21.0	
Total Split (s)	60.0			30.0	30.0	
Total Split (%)	66.7%			33.3%	33.3%	
Maximum Green (s)	55.0			25.0	25.0	
Yellow Time (s)	4.0			4.0	4.0	
All-Red Time (s)	1.0			1.0	1.0	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.0			5.0	5.0	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	
Recall Mode	None			Min	Min	
v/c Ratio	0.79			0.64	0.29	
Control Delay	18.1			27.6	21.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	18.1			27.6	21.1	
Queue Length 50th (ft)	166			86	38	
Queue Length 95th (ft)	305			193	97	
Internal Link Dist (ft)	769			909	107	
Turn Bay Length (ft)						
Base Capacity (vph)	1547			824	887	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.47			0.37	0.17	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 57.4	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	

Splits and Phases: 1: NYS Route 22 & I-684 Exit Ramp



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	576	4	0	242	119	0
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1852	0	1773	1909	0
Adj Flow Rate, veh/h	720	5	0	302	149	0
Adj No. of Lanes	0	0	0	1	1	0
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	0	0	0	5	5	0
Cap, veh/h	844	6	0	458	493	0
Arrive On Green	0.49	0.49	0.00	0.26	0.26	0.00
Sat Flow, veh/h	1732	12	0	1773	1909	0
Grp Volume(v), veh/h	726	0	0	302	149	0
Grp Sat Flow(s),veh/h/ln	1746	0	0	1773	1909	0
Q Serve(g_s), s	14.3	0.0	0.0	6.0	2.5	0.0
Cycle Q Clear(g_c), s	14.3	0.0	0.0	6.0	2.5	0.0
Prop In Lane	0.99	0.01	0.00			0.00
Lane Grp Cap(c), veh/h	851	0	0	458	493	0
V/C Ratio(X)	0.85	0.00	0.00	0.66	0.30	0.00
Avail Cap(c_a), veh/h	2444	0	0	1128	1214	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	0.0	0.0	13.0	11.7	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	1.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	0.0	0.0	3.1	1.3	0.0
LnGrp Delay(d),s/veh	11.4	0.0	0.0	14.7	12.1	0.0
LnGrp LOS	B			B	B	
Approach Vol, veh/h	726			302	149	
Approach Delay, s/veh	11.4			14.7	12.1	
Approach LOS	B			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		15.1		24.2		15.1		
Change Period (Y+Rc), s		5.0		5.0		5.0		
Max Green Setting (Gmax), s		25.0		55.0		25.0		
Max Q Clear Time (g_c+I1), s		8.0		16.3		4.5		
Green Ext Time (p_c), s		2.2		2.8		2.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX E

ACCIDENT DATA

TABLE NO. A

NYS Route 22 - Town of Lewisboro, Westchester County, New York

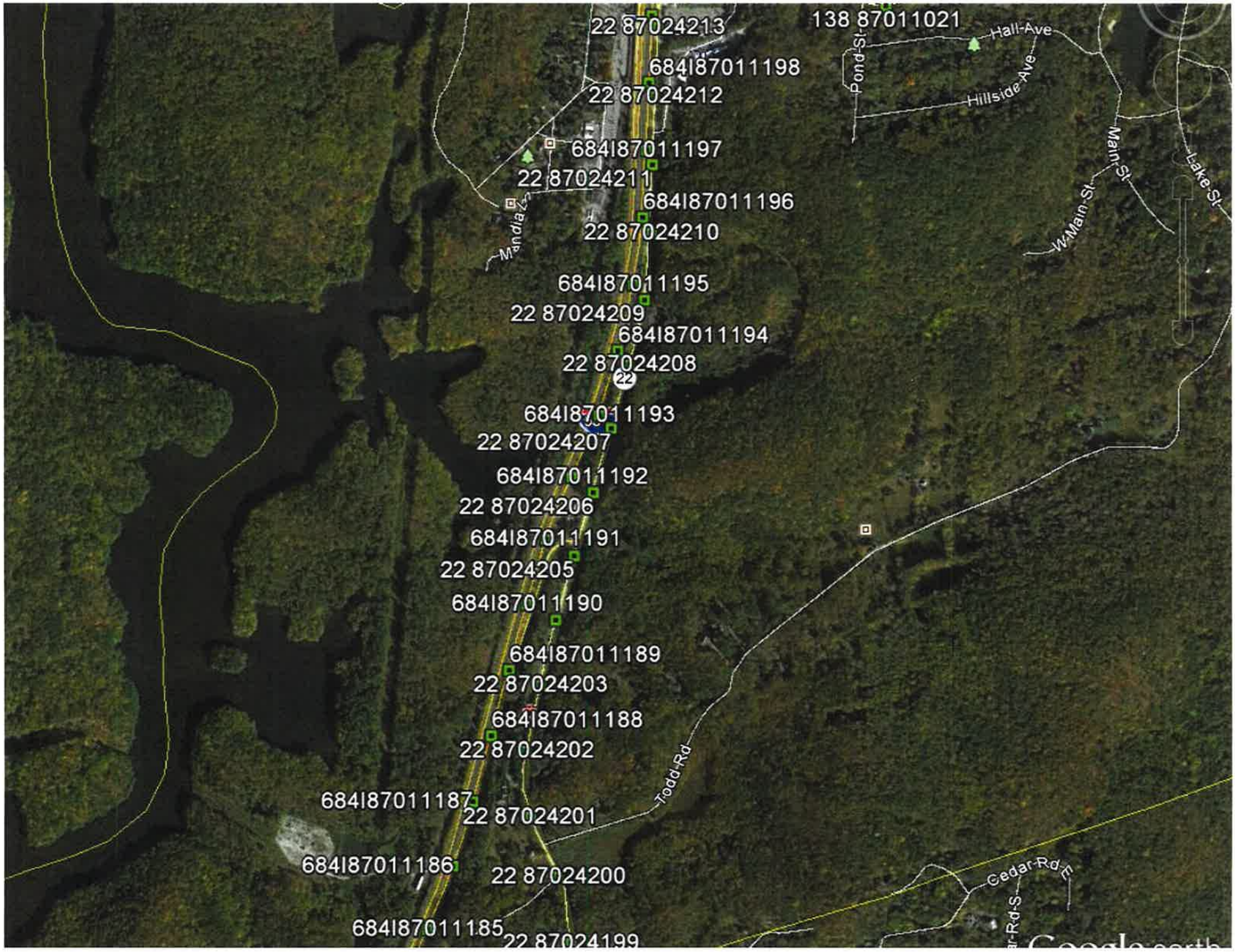
NODE/LINK	LOCATION	DATE	TIME	TRAFFIC CONTROL	ACCIDENT CLASS *	# OF VEHICLES - INJURIES	LIGHT CONDITION	ROAD CONDITION	WEATHER	MANNER OF COLLISION	APPARENT CONTRIBUTING FACTORS
22 8702 4199	Non-Intersection Accidents	12/01/14	8:23 PM	None	PDO	1-0	Dark-Road Unlighted	Wet	Rain	Other	Animal's Action
22 8702 4199	Duffys Bridge Road	04/04/11	3:30 PM	Flashing Signal	PDO	2-0	Daylight	Dry	Clear	Rear End	Unknown
22 8702 4201	Non-Intersection Accidents	12/27/10	1:41 AM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Pavement Slippery
22 8702 4201	Non-Intersection Accidents	03/05/13	11:29 PM	No Passing Zone	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Animal's Action
22 8702 4201	Non-Intersection Accidents	03/27/13	2:31 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4201	Non-Intersection Accidents	01/10/14	11:00 PM	None	N/R	1-0	Dark-Road Unlighted	Snow/Ice	Sleet	Other	Pavement Slippery
22 8702 4202	Non-Intersection Accidents	06/27/12	7:45 AM	None	PDO	1-0	Daylight	Dry	Clear	Other	N/A
22 8702 4202	Non-Intersection Accidents	08/24/12	1:00 PM	None	PDO & I	2-1	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4202	Non-Intersection Accidents	03/20/15	6:38 PM	No Passing Zone	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4203	Non-Intersection Accidents	08/13/11	3:00 AM	None	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	11/21/12	5:00 PM	No Passing Zone	PDO	1-0	Dusk	Dry	Clear	Other	Animal's Action
22 8702 4203	Non-Intersection Accidents	02/09/15	6:40 PM	None	PDO	1-0	Dark-Road Unlighted	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4204	Non-Intersection Accidents	02/08/13	1:08 PM	None	PDO	1-0	Daylight	Snow/Ice	Snow	Other	Unsafe Speed, Pavement Slippery
22 8702 4205	Non-Intersection Accidents	03/02/11	9:00 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way, Turning Improper
22 8702 4205	Non-Intersection Accidents	07/19/13	5:00 PM	Stop Sign	PDO & I	2-2	Daylight	Dry	Clear	Left Turn	Failure to Yield Right of Way
22 8702 4205	Non-Intersection Accidents	05/22/14	3:10 PM	None	PDO	2-0	Daylight	Wet	Rain	Left Turn	Turning Improper
22 8702 4205	Non-Intersection Accidents	12/01/14	8:10 AM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Left Turn	Failure to Yield ROW,Traffic Control devices Disregarded
22 8702 4205	Non-Intersection Accidents	08/09/15	4:19 AM	Stop Sign	PDO	1-0	Dark-Road Unlighted	Dry	Clear	Other	Alcohol Involvement, Unsafe Speed
22 8702 4206	Non-Intersection Accidents	05/17/13	10:00 AM	No Passing Zone	N/R	2-0	Daylight	Dry	Clear	Overtaking	Turning Improper, Failure to Yield Right of Way
22 8702 4208	Non-Intersection Accidents	08/13/11	2:40 AM	None	PDO & I	1-1	Dark-Road Unlighted	Dry	Clear	Other	Driver Inattention
22 8702 4211	Intersection Accidents	09/09/11	3:10 PM	No Passing Zone	PDO	2-0	Daylight	Dry	Clear	Right Turn	Failure to Yield Right of Way
22 8702 4211	Intersection Accidents	05/01/12	6:06 PM	None	PDO & I	2-1	Daylight	Dry	Cloudy	Rear End	Following too Closely
22 8702 4212	Non-Intersection Accidents	07/17/11	7:13 AM	None	PDO	1-0	Dawn	Dry	Cloudy	Other	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/24/11	10:15 AM	None	PDO	1-0	Daylight	Wet	Cloudy	Other	Pavement Slippery, Unsafe Speed
22 8702 4213	Non-Intersection Accidents	08/23/11	1:00 PM	None	PDO	2-0	Daylight	Dry	Clear	Sideswipe	Backing Unsafely
22 8702 4213	Non-Intersection Accidents	03/02/12	7:20 PM	Stop Sign	PDO	2-0	Dark-Road Lighted	Dry	Clear	Right Angle	Unknown
22 8702 4213	Non-Intersection Accidents	11/16/13	4:10 PM	Stop Sign	PDO	2-0	Daylight	Dry	Clear	Right Angle	Failure to Yield Right of Way
22 8702 4213	Non-Intersection Accidents	08/24/14	10:52 AM	No Passing Zone	PDO & I	2-2	Daylight	Dry	Cloudy	Sideswipe	Failure to Keep Right
22 8702 4213	Non-Intersection Accidents	07/28/15	8:12 AM	Stop Sign	PDO & I	2-1	Daylight	Dry	Fog/Smog	Left Turn	Failure to Yield Right of Way

NOTES:

1) ACCIDENT DATA FROM NYSDOT FOR TIME PERIOD FROM NOVEMBER 2010 TO OCTOBER 2015.

2) I-684 NORTHBOUND RAMP INTERSECTION IS LOCATED BETWEEN REFERENCE MARKER 22 8702 4205 AND 22 8702 4206.

3) *PDO = PROPERTY DAMAGE ONLY I = INJURY F = FATALITY N/R = NON-REPORTABLE


22 87024213
138 87011021
Hall Ave
Pond St
684I87011198
22 87024212
Hillside Ave
684I87011197
22 87024211
684I87011196
22 87024210
Mandia Ln
Main St
W Main St
Lake St
684I87011195
22 87024209
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22 87024208
22
684I87011193
22 87024207
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22 87024206
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22 87024205
684I87011190
684I87011189
22 87024203
684I87011188
22 87024202
Todd Rd
684I87011187
22 87024201
684I87011186
22 87024200
Cedar Rd E
684I87011185
22 87024199

NEW YORK STATE OF OPPORTUNITY. | Department of Transportation

ANDREW M. CUOMO
Governor

MATTHEW J. DRISCOLL
Commissioner

TODD WESTHUIS, P.E.
Acting Regional Director

March 25, 2016

Richard D'Andrea
Maser
11 Bradhurst Ave
Hawthorne, NY 10532

RE: Freedom of Information Law Request# **FR8-16-004418**
Accident Data
Route 22 in Lewisboro

VIA: E-Mail (No Hard Copy to Follow)

Dear Mr. D'Andrea:

This correspondence will acknowledge receipt of your March 24, 2016 Freedom of Information Law (FOIL) request at the New York State Department of Transportation (NYSDOT) Records Access Office on this date.

We are researching your request and will notify you within the next twenty days regarding the availability of the records you are seeking.

Please indicate the FOIL request number when corresponding on this subject.

Sincerely,

Andrew Wu
Records Access Officer
Andrew.wu@dot.ny.gov

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

ANDREW M. CUOMO
Governor

MATTHEW J. DRISCOLL
Commissioner

TODD WESTHUIS, P.E.
Regional Director

April 20, 2016

Richard D'Andrea
Maser
11 Bradhurst Ave
Hawthorne, NY 10532

RE: Freedom of Information Law Request# **FR8-16-004418**
Accident Data
Route 22 in Lewisboro

VIA: E-Mail (No Hard Copy to Follow)

Dear Mr. D'Andrea:

This correspondence is in reference to your March 24, 2016 Freedom of Information Law (FOIL) request and acknowledges receipt of your check in the amount of $60.00.

Enclosed are the records responsive to your request.

Please indicate the FOIL request number when corresponding on this subject.

Sincerely,

Andrew Wu
Records Access Officer
Andrew.wu@dot.ny.gov

Program: sass1701

NYSDOT Safety Information Management System

Date: 03/31/16 08:33

Accident Severity Summary

Intersection & Non-Intersection Accidents

Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213

Dates: 01-NOV-2010 thru 31-OCT-2015 Traffic Volume: 5,880

Total of Fatal Accd	Total of Injury Accd	Total of PDO Accd	Total of Non-Reportable	Total Number of Accidents	Accident Rate
0	6	20	3	29	1.8

Accident rate for linear section is accidents per million vehicle miles.

NYSDOT Safety Information Management System
Summary Report By Segment And/Or Intersection
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

ROUTE: 22 HIGHWAY LOCATION: 22 87024199 - 22 87024213 DATES: 01-NOV-2010 - 31-OCT-2015

REFERENCE	INT.	DESCRIPTION	NUMBER OF ACCIDENTS TOTAL	FTL	INJ	PDO	N/R	WET ROAD **	FIXED OBJ **	PED& BIKE **	TRUCK *** **	LIGHT CONDITION DWN/DSK **	DAY **	NIGHT **
22 8702 4199			1	0	0	1	0	1	0	0	0	0	0	1
22 8702 4199	15	DUFFYS BRIDGE RD	1	0	0	1	0	0	0	0	0	0	1	0
22 8702 4201			4	0	0	2	2	0	4	0	1	0	0	4
22 8702 4202			3	0	1	2	0	0	1	0	0	0	3	0
22 8702 4203			3	0	0	3	0	0	1	0	0	1	0	2
22 8702 4204			1	0	0	1	0	0	1	0	0	0	1	0
22 8702 4205			5	0	1	4	0	1	1	0	0	0	4	1
22 8702 4206			1	0	0	0	1	0	0	0	0	0	1	0
22 8702 4208			1	0	1	0	0	0	1	0	0	0	0	1
22 8702 4211	17	SCHOOLHOUSE RD	2	0	1	1	0	0	0	0	0	0	2	0
22 8702 4212			1	0	0	1	0	0	1	0	0	1	0	0
22 8702 4213			6	0	2	4	0	1	1	0	0	0	5	1
		ROUTE TOTAL EXCLUDES 999 RMS	29	0	6	20	3	3	11	0	1	2	17	10

** EXCLUDES PARTIALLY CODED NON-REPORTABLES *** EXCLUDES PICKUPS & VANS

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4199 NON-INTERSECTION ACCIDENTS ***

DEC-01-2014 MON 08:23 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35492822
Accident Class: PROPERTY DAMAGE Police Agency:BEDFORD TOWN PD Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: RAIN
Road Surface Collision: WET Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: MA
Num of Occupants: 1 Drivers Age: 43 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

*** Ref Mrkr: 22 8702 4199 INTERSECTION ACCIDENTS - DUFFYS BRIDGE RD ***

MAR-04-2011 FRI 03:30 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33892894
Accident Class: PROPERTY DAMAGE Police Agency:NOT ENTERED Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOPPED SCHOOL BUS W/RED LIGHT FLSH
Manner of Collision: REAR END Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3023 State of Registration: NY
Num of Occupants: 1 Drivers Age: 77 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: STOPPED IN TRAFFIC
Apparent Factors: UNKNOWN UNKNOWN

Veh: 2 OTHER Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 76 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNKNOWN UNKNOWN

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS ***

DEC-27-2010 MON 01:41 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2010-33722870
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT/ GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 TRUCK Registered Weight: UNKNOWN State of Registration: FL
Num of Occupants: 1 Drivers Age: 34 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: YES School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY
Truck/Bus Clsf: NOT ENTERED

MAR-05-2013 TUE 11:29 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34685366
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2544 State of Registration: NY
Num of Occupants: 1 Drivers Age: 32 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ALCOHOL INVOLVEMENT ANIMAL'S ACTION

MAR-27-2013 WED 02:31 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34713438
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLL. W/LIGHT SUPPORT/UTILITY POLE Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4363 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

JAN-10-2014 FRI 11:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35078013
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLL. W/LIGHT SUPPORT/UTILITY POLE Traffic Control: NONE
Manner of Collision: OTHER Weather: SLEET/HAIL/FREEZING RAIN
Road Surface Collision: SNOW/ICE Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 22 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4201 NON-INTERSECTION ACCIDENTS *** (Continued)

Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: PAVEMENT SLIPPERY NOT APPLICABLE

*** Ref Mrkr: 22 8702 4202 NON-INTERSECTION ACCIDENTS ***

JUN-27-2012 WED 07:45 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34428771
Accident Class: PROPERTY DAMAGE Police Agency: Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3312 State of Registration: NY
Num of Occupants: 1 Drivers Age: 58 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

AUG-24-2012 FRI 01:00 PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: B Case: 2012-34470514
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3457 State of Registration: NY
Num of Occupants: 1 Drivers Age: 31 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TURNING IMPROPER

Veh: 2 MOTORCYCLE Registered Weight: 492 State of Registration: NY
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT ENTERED NOT ENTERED

MAR-20-2015 FRI 06:38 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35657008
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4202 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2254 State of Registration: NY
Num of Occupants: 1 Drivers Age: 25 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4203 NON-INTERSECTION ACCIDENTS ***

AUG-13-2011 SAT 03:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33998283
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4666 State of Registration: NY
Num of Occupants: 1 Drivers Age: 22 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT APPLICABLE

NOV-21-2012 WED 05:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34598390
Accident Class: PROPERTY DAMAGE Police Agency:PEEKSKILL CITY PD Num of Veh: 1
Type of Accident: COLLISION WITH DEER Traffic Control: NO PASSING ZONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT/ GRADE Light Condition: DUSK
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4747 State of Registration: NY
Num of Occupants: 1 Drivers Age: 35 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: ANIMAL'S ACTION NOT ENTERED

FEB-09-2015 MON 06:40 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35596892
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4203 NON-INTERSECTION ACCIDENTS *** (Continued)

Num of Occupants: 1 Drivers Age: 27 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4204 NON-INTERSECTION ACCIDENTS ***

FEB-08-2013 FRI 01:08 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34649043
Accident Class: PROPERTY DAMAGE Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: SNOW
Road Surface Collision: SNOW/ICE Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 20 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: UNSAFE SPEED PAVEMENT SLIPPERY

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS ***

MAR-02-2011 WED 09:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33794654
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2985 State of Registration: NY
Num of Occupants: 1 Drivers Age: 37 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TURNING IMPROPER

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4115 State of Registration: NY
Num of Occupants: 1 Drivers Age: 52 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

JUL-19-2013 FRI 05:00 PM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: CC Case: 2013-34860828
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS *** (Continued)

Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (WITH OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 23 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4606 State of Registration: NY
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

MAY-22-2014 THU 03:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35267120
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: RAIN
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4001 State of Registration: NY
Num of Occupants: 1 Drivers Age: 18 Sex: MALE Citation Issued: YES
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING U TURN
Apparent Factors: TURNING IMPROPER NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4763 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

DEC-01-2014 MON 08:10 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2014-35496018
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4205 NON-INTERSECTION ACCIDENTS *** (Continued)

Veh: 1 CAR/VAN/PICKUP Registered Weight: 5979 State of Registration: NY
Num of Occupants: 2 Drivers Age: 37 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY TRAFFIC CONTROL DEVICES DISREGARDED

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 3 Drivers Age: 34 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

AUG-09-2015 SUN 04:19 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2015-35842566
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: STOP SIGN
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: CURVE AND GRADE Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 31 Sex: MALE Citation Issued: YES
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: POLICE PURSUIT
Apparent Factors: ALCOHOL INVOLVEMENT UNSAFE SPEED

*** Ref Mrkr: 22 8702 4206 NON-INTERSECTION ACCIDENTS ***

MAY-17-2013 FRI 10:00 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-34776158
Accident Class: NON-REPORTABLE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: OVERTAKING Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 24 Sex: FEMALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING U TURN
Apparent Factors: TURNING IMPROPER FAILURE TO YIELD RIGHT OF WAY

Veh: 2 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: NY
Num of Occupants: 1 Drivers Age: 27 Sex: MALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4206 NON-INTERSECTION ACCIDENTS *** (Continued)

Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 22 8702 4208 NON-INTERSECTION ACCIDENTS ***

AUG-13-2011 SAT 02:40 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: A Case: 2011-33998082
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP LEWISBORO SATELLITE Num of Veh: 1
Type of Accident: COLLISION WITH SIGN POST Traffic Control: NONE
Manner of Collision: OTHER Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DARK-ROAD UNLIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3929 State of Registration: NY
Num of Occupants: 1 Drivers Age: 64 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: DRIVER INATTENTION NOT APPLICABLE

*** Ref Mrkr: 22 8702 4211 INTERSECTION ACCIDENTS - SCHOOLHOUSE RD ***

SEP-09-2011 FRI 03:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34014927
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: RIGHT TURN (AGAINST OTHER CAR) Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3358 State of Registration: NY
Num of Occupants: 1 Drivers Age: 42 Sex: FEMALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4427 State of Registration: NY
Num of Occupants: 1 Drivers Age: 54 Sex: FEMALE Citation Issued: NO
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: OTHER (VEHICLE) NOT APPLICABLE

MAY-01-2012 TUE 06:06 PM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2012-34291553
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: REAR END Weather: CLOUDY

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4211 INTERSECTION ACCIDENTS - SCHOOLHOUSE RD *** (Continued)

Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 53 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FOLLOWING TOO CLOSELY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3050 State of Registration: NY
Num of Occupants: 1 Drivers Age: 71 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

*** Ref Mrkr: 22 8702 4212 NON-INTERSECTION ACCIDENTS ***

JUL-17-2011 SUN 07:13 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33952714
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 1
Type of Accident: COLLISION WITH GUIDE RAIL Traffic Control: NONE
Manner of Collision: OTHER Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAWN
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: UNKNOWN State of Registration: CT
Num of Occupants: 1 Drivers Age: 45 Sex: FEMALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FAILURE TO KEEP RIGHT OTHER (VEHICLE)

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS ***

JUL-24-2011 SUN 10:15 AM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-33986576
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 1
Type of Accident: COLL. W/EARTH ELE./ROCK CUT/DITCH Traffic Control: NONE
Manner of Collision: OTHER Weather: CLOUDY
Road Surface Collision: WET Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2895 State of Registration: NY
Num of Occupants: 1 Drivers Age: 24 Sex: FEMALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Apparent Factors: PAVEMENT SLIPPERY UNSAFE SPEED

AUG-23-2011 TUE 01:00 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2011-34029118
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NONE
Manner of Collision: SIDESWIPE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3891 State of Registration: NY
Num of Occupants: 1 Drivers Age: 54 Sex: MALE Citation Issued: NO
Direction of Travel: EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: BACKING
Apparent Factors: BACKING UNSAFELY UNKNOWN

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3998 State of Registration: NY
Num of Occupants: 1 Drivers Age: 32 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: BACKING
Apparent Factors: BACKING UNSAFELY UNKNOWN

MAR-02-2012 FRI 07:20 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2012-34295440
Accident Class: PROPERTY DAMAGE Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AT HILLCREST Light Condition: DARK-ROAD LIGHTED
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2687 State of Registration: NY
Num of Occupants: 1 Drivers Age: 80 Sex: MALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: UNKNOWN UNKNOWN

Veh: 2 OTHER Registered Weight: UNKNOWN State of Registration: UNKNOWN
Num of Occupants: UNKNOWN Drivers Age: UNKNOWN Sex: UNKNOWN Citation Issued: NO
Direction of Travel: NORTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: UNKNOWN UNKNOWN

NOV-16-2013 SAT 04:10 PM Persons Killed: 0 Persons Injured: 0 Extent of Injuries: Case: 2013-35008022
Accident Class: PROPERTY DAMAGE Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Manner of Collision: RIGHT ANGLE Weather: CLEAR
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 3472 State of Registration: NY
Num of Occupants: 1 Drivers Age: 82 Sex: MALE Citation Issued: NO
Direction of Travel: WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 2339 State of Registration: NY
Num of Occupants: 1 Drivers Age: 16 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

AUG-24-2014 SUN 10:52 AM Persons Killed: 0 Persons Injured: 2 Extent of Injuries: BC Case: 2014-35374132
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:NYSP SOMERS Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: NO PASSING ZONE
Manner of Collision: SIDESWIPE Weather: CLOUDY
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 4790 State of Registration: NY
Num of Occupants: 1 Drivers Age: 29 Sex: MALE Citation Issued: YES
Direction of Travel: NORTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: FAILURE TO KEEP RIGHT NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 3612 State of Registration: NY
Num of Occupants: 1 Drivers Age: 68 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: GOING STRAIGHT AHEAD
Apparent Factors: NOT APPLICABLE NOT APPLICABLE

JUL-28-2015 TUE 08:12 AM Persons Killed: 0 Persons Injured: 1 Extent of Injuries: C Case: 2015-35818678
Accident Class: PROPERTY DAMAGE AND INJURY Police Agency:LEWISBORO TOWN PD Num of Veh: 2
Type of Accident: COLLISION WITH MOTOR VEHICLE Traffic Control: STOP SIGN
Manner of Collision: LEFT TURN (AGAINST OTHER CAR) Weather: FOG/SMOG/SMOKE
Road Surface Collision: DRY Road Char: STRAIGHT AND LEVEL Light Condition: DAYLIGHT
Loc. of Ped/Bicycle: NOT APPLICABLE Action of Ped/Bicycle: NOT APPLICABLE

Veh: 1 CAR/VAN/PICKUP Registered Weight: 2425 State of Registration: NY

NYSDOT Safety Information Management System
Accident Verbal Description Report
Intersection & Non-Intersection Accidents
Complete Accident Data From NYSDMV Is Only Available thru 31-OCT-2015

Route: 22 Highway Location Ref Mrkr Range: 22 87024199 - 22 87024213 Dates: 01-NOV-2010 - 31-OCT-2015

*** Ref Mrkr: 22 8702 4213 NON-INTERSECTION ACCIDENTS *** (Continued)

Num of Occupants: 1 Drivers Age: 59 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH-EAST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING RIGHT TURN
Apparent Factors: OTHER (VEHICLE) NOT APPLICABLE

Veh: 2 CAR/VAN/PICKUP Registered Weight: 4210 State of Registration: NY
Num of Occupants: 1 Drivers Age: 81 Sex: FEMALE Citation Issued: NO
Direction of Travel: SOUTH-WEST Public Property Damage: NO School Bus Involved: NO
Pre-Accd Action: MAKING LEFT TURN
Apparent Factors: FAILURE TO YIELD RIGHT OF WAY NOT APPLICABLE

TOTAL NUMBER OF ACCIDENTS PRINTED: 29

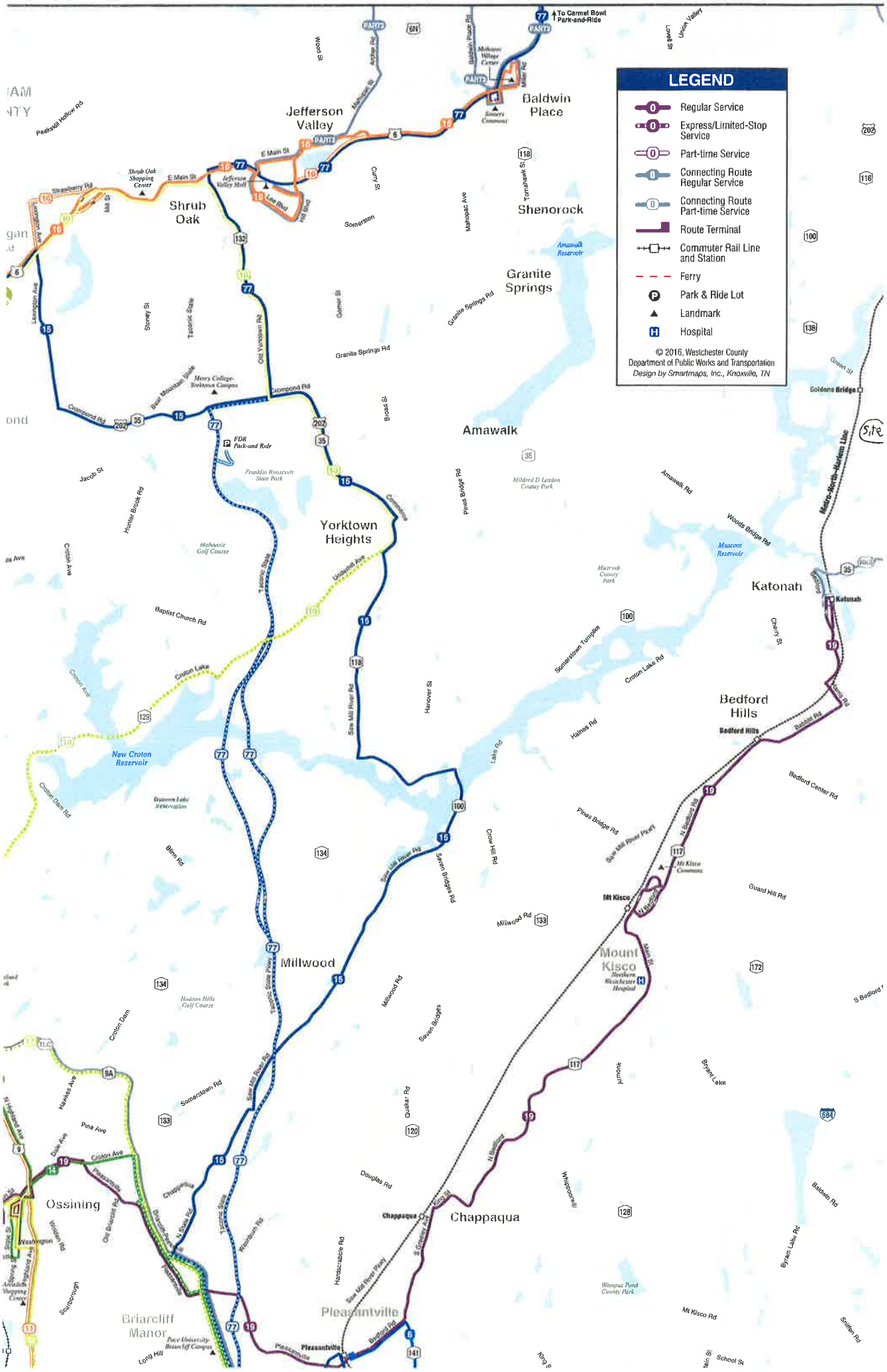
ABSENCE OF REFERENCE MARKERS OR INTERSECTION WITHIN A SPECIFIED ROADWAY SECTION & TIME PERIOD INDICATES NO ACCIDENTS FOUND

*** END OF REPORT ***

WBP AFFH MULTI-FAMILY DEVELOPMENT

APPENDIX F

PUBLIC TRANSPORTATION INFORMATION


LEGEND
Regular Service
Express/Limited-Stop Service
Part-time Service
Connecting Route Regular Service
Connecting Route Part-time Service
Route Terminal
Commuter Rail Line and Station
Ferry
Park & Ride Lot
Landmark
Hospital
© 2016, Westchester County Department of Public Works and Transportation
Design by Smartmaps, Inc., Knoxville, TN
To Cermel Bowl Park-and-Ride
Baldwin Place
Jefferson Valley
Shrub Oak
Shenorock
Granite Springs
Amawalk
Yorktown Heights
Katonah
Bedford Hills
Mount Kisco
Millwood
Chappaqua
Pleasantville
Briarcliff Manor
Ossining
FDR Park-and-Ride
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake
Pine Ave
Somerstown Rd
Douglas Rd
Quaker Rd
Millwood Rd
Seven Bridges
Crow Hill Rd
Pines Bridge Rd
Halnes Rd
Croton Lake Rd
Somerstown Turnpike
Hanover St
Saw Mill River Rd
Baptist Church Rd
Hunter Brook Rd
Jacob St
Amawalk Rd
Woods Bridge Rd
Bedford Center Rd
Guard Hill Rd
Mt Kisco Rd
Bryant Lake Rd
Baldwin Rd
Whippoorwill
Hardscrabble Rd
Bedford Rd
Pleasantville
Chappaqua
Mt Kisco
Katonah
Goldens Bridge
Metro-North Harlem Line
Peekskill Hollow Rd
Strawberry Rd
E Main St
Jefferson Valley Mall
Shrub Oak Shopping Center
Somerset
Granite Springs Rd
Old Yorktown Rd
Mohansic Ave
Tomahawk St
Curry St
Stoney St
Taconic State
Mill St
Lexington Ave
Cortlandt Ave
Croton Ave
Croton Lake
Croton Dam Rd
Bleen Rd
Somerset Rd
Hawkes Ave
Pine Ave
Croton Ave
Pleasantville
Chappaqua
Washington
Sourbrough
Long Hill
Bedford Rd
Pleasantville
Mt Kisco
Bedford Hills
Katonah
Cherry St
Green St
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake
Pine Ave
Somerstown Rd
Douglas Rd
Quaker Rd
Millwood Rd
Seven Bridges
Crow Hill Rd
Pines Bridge Rd
Halnes Rd
Croton Lake Rd
Somerstown Turnpike
Hanover St
Saw Mill River Rd
Baptist Church Rd
Hunter Brook Rd
Jacob St
Amawalk Rd
Woods Bridge Rd
Bedford Center Rd
Guard Hill Rd
Mt Kisco Rd
Bryant Lake Rd
Baldwin Rd
Whippoorwill
Hardscrabble Rd
Bedford Rd
Pleasantville
Chappaqua
Mt Kisco
Katonah
Goldens Bridge
Metro-North Harlem Line
Peekskill Hollow Rd
Strawberry Rd
E Main St
Jefferson Valley Mall
Shrub Oak Shopping Center
Somerset
Granite Springs Rd
Old Yorktown Rd
Mohansic Ave
Tomahawk St
Curry St
Stoney St
Taconic State
Mill St
Lexington Ave
Cortlandt Ave
Croton Ave
Croton Lake
Croton Dam Rd
Bleen Rd
Somerset Rd
Hawkes Ave
Pine Ave
Croton Ave
Pleasantville
Chappaqua
Washington
Sourbrough
Long Hill
Bedford Rd
Pleasantville
Mt Kisco
Bedford Hills
Katonah
Cherry St
Green St
Amawalk Reservoir
Muscoot Reservoir
New Croton Reservoir
Mohansic Golf Course
Franklin Roosevelt State Park
Mildred D Laxdon County Park
Muscoot County Park
Hudson Hills Golf Course
Wampus Pond County Park
Bryant Lake

Schedules & Fares

MNR Schedules Look-up Results:

Origin Station: GOLDENS BRIDGE
Destination Station: GRAND CENTRAL
Travel Date: 03/24/2015
Note: To help you plan your trip, we have given you your time selection as well as the trains 2½ hours before and 2½ hours after.

If bold letter appears in Note column, click on it for details.

Departs GOLDENS BRIDGE	Notes	Arrives GRAND CENTRAL	Notes	Travel Time In Minutes	Transfer(s)	Fares
12:33 AM		1:54 AM		81	THROUGH TRAIN	OFF PEAK
4:40 AM		5:50 AM		70	THROUGH TRAIN	PEAK
5:01 AM		6:11 AM		70	THROUGH TRAIN	PEAK
5:31 AM		6:40 AM		69	THROUGH TRAIN	PEAK
5:54 AM		7:04 AM		70	THROUGH TRAIN	PEAK
6:10 AM		7:13 AM		63	THROUGH TRAIN	PEAK
6:17 AM		7:29 AM		72	THROUGH TRAIN	PEAK
6:27 AM		7:33 AM		66	THROUGH TRAIN	PEAK
6:34 AM		7:49 AM		75	THROUGH TRAIN	PEAK
6:44 AM		7:53 AM		69	THROUGH TRAIN	PEAK
7:06 AM		8:22 AM		76	THROUGH TRAIN	PEAK
7:16 AM		8:24 AM		68	THROUGH TRAIN	PEAK
7:27 AM		8:31 AM		64	THROUGH TRAIN	PEAK
7:39 AM		8:50 AM		71	THROUGH TRAIN	PEAK
7:51 AM		8:56 AM		65	THROUGH TRAIN	PEAK
8:05 AM		9:15 AM		70	THROUGH TRAIN	PEAK
8:22 AM		9:30 AM		68	THROUGH TRAIN	PEAK
8:40 AM		9:53 AM		73	THROUGH TRAIN	PEAK
9:06 AM		10:20 AM		74	THROUGH TRAIN	OFF PEAK
9:30 AM		10:44 AM		74	THROUGH TRAIN	OFF PEAK
9:53 AM		11:05 AM		72	THROUGH TRAIN	OFF PEAK
10:29 AM		11:43 AM		74	THROUGH TRAIN	OFF PEAK
10:53 AM		12:05 PM		72	THROUGH TRAIN	OFF PEAK
11:29 AM		12:43 PM		74	THROUGH TRAIN	OFF PEAK
12:29 PM		1:43 PM		74	THROUGH TRAIN	OFF PEAK
1:29 PM		2:43 PM		74	THROUGH TRAIN	OFF PEAK
2:29 PM		3:43 PM		74	THROUGH TRAIN	OFF PEAK
2:53 PM		4:06 PM		73	THROUGH TRAIN	OFF PEAK
3:18 PM		4:33 PM		75	THROUGH TRAIN	OFF PEAK
3:53 PM		5:05 PM		72	THROUGH TRAIN	OFF PEAK
4:20 PM		5:39 PM		79	THROUGH TRAIN	OFF PEAK
4:49 PM		6:07 PM		78	THROUGH TRAIN	OFF PEAK
5:18 PM		6:36 PM		78	THROUGH TRAIN	OFF PEAK
5:56 PM		7:08 PM		72	THROUGH TRAIN	OFF PEAK
6:20 PM		7:33 PM		73	THROUGH TRAIN	OFF PEAK
6:55 PM		8:07 PM		72	THROUGH TRAIN	OFF PEAK
7:28 PM		8:41 PM		73	THROUGH TRAIN	OFF PEAK
8:23 PM		9:36 PM		73	THROUGH TRAIN	OFF PEAK
9:29 PM		10:44 PM		75	THROUGH TRAIN	OFF PEAK
10:29 PM		11:44 PM		75	THROUGH TRAIN	OFF PEAK
11:28 PM		12:42 AM		74	THROUGH TRAIN	OFF PEAK

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Schedules & Fares

MNR Schedules Look-up Results:

Origin Station: GRAND CENTRAL
Destination Station: GOLDENS BRIDGE
Travel Date: 03/24/2015
Note: To help you plan your trip, we have given you your time selection as well as the trains 2½ hours before and 2½ hours after.

*If **bold** letter appears in Note column, click on it for details.*

Departs GRAND CENTRAL	Notes	Arrives GOLDENS BRIDGE	Notes	Travel Time In Minutes	Transfer(s)	Fares
12:04 AM		1:13 AM		69	THROUGH TRAIN	OFF PEAK
1:04 AM		2:13 AM		69	THROUGH TRAIN	OFF PEAK
1:56 AM		3:21 AM		85	THROUGH TRAIN	OFF PEAK
6:02 AM		7:14 AM		72	THROUGH TRAIN	PEAK
6:26 AM		7:38 AM		72	THROUGH TRAIN	PEAK
6:46 AM		8:03 AM		77	THROUGH TRAIN	PEAK
7:15 AM		8:34 AM		79	THROUGH TRAIN	PEAK
7:53 AM		9:09 AM		76	THROUGH TRAIN	PEAK
8:20 AM		9:35 AM		75	THROUGH TRAIN	PEAK
8:44 AM		9:56 AM		72	THROUGH TRAIN	PEAK
9:22 AM		10:32 AM		70	THROUGH TRAIN	OFF PEAK
9:45 AM		10:57 AM		72	THROUGH TRAIN	OFF PEAK
10:47 AM		11:56 AM		69	THROUGH TRAIN	OFF PEAK
11:47 AM		12:56 PM		69	THROUGH TRAIN	OFF PEAK
12:22 PM		1:31 PM		69	THROUGH TRAIN	OFF PEAK
12:47 PM		1:56 PM		69	THROUGH TRAIN	OFF PEAK
1:22 PM		2:31 PM		69	THROUGH TRAIN	OFF PEAK
1:47 PM		2:56 PM		69	THROUGH TRAIN	OFF PEAK
2:22 PM		3:31 PM		69	THROUGH TRAIN	OFF PEAK
2:47 PM		3:49 PM		62	THROUGH TRAIN	OFF PEAK
3:16 PM		4:26 PM		70	THROUGH TRAIN	OFF PEAK
3:43 PM		4:48 PM	H	65	THROUGH TRAIN	OFF PEAK
3:52 PM		5:02 PM		70	THROUGH TRAIN	OFF PEAK
4:18 PM		5:23 PM	H	65	THROUGH TRAIN	PEAK
4:21 PM		5:31 PM		70	THROUGH TRAIN	PEAK
4:35 PM		5:38 PM	H	63	THROUGH TRAIN	PEAK
4:42 PM		5:53 PM		71	THROUGH TRAIN	PEAK
4:57 PM		6:01 PM	H	64	THROUGH TRAIN	PEAK
5:27 PM		6:31 PM	H	64	THROUGH TRAIN	PEAK
5:29 PM		6:40 PM		71	THROUGH TRAIN	PEAK
5:44 PM		6:46 PM	H	62	THROUGH TRAIN	PEAK
6:04 PM		7:05 PM	H	61	THROUGH TRAIN	PEAK
6:29 PM		7:35 PM	H	66	THROUGH TRAIN	PEAK
6:56 PM		8:02 PM	H	66	THROUGH TRAIN	PEAK
7:21 PM		8:24 PM	H	63	THROUGH TRAIN	PEAK
7:54 PM		9:03 PM		69	THROUGH TRAIN	PEAK
8:22 PM		9:31 PM		69	THROUGH TRAIN	OFF PEAK
8:52 PM		10:01 PM		69	THROUGH TRAIN	OFF PEAK
9:22 PM		10:31 PM		69	THROUGH TRAIN	OFF PEAK
9:52 PM		11:01 PM		69	THROUGH TRAIN	OFF PEAK
10:22 PM		11:31 PM		69	THROUGH TRAIN	OFF PEAK
11:04 PM		12:13 AM		69	THROUGH TRAIN	OFF PEAK

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MONDAY – FRIDAY NEW YORK – WASSAIC

TO NEW YORK

AM PEAK (SENIOR/DISABLED/MEDICARE FARES NOT VALI

MILES		500	602	502	604	304	504	606	306	506	608	308	908	508	310	4910
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
82	Wassaic												5 10			C 5 15
80	Tenmile River												5 14			C 5 19
77	Dover Plains												5 19			C 5 24
69	Harlem Valley-Wingdale												5 28			C 5 33
64	Pawling												5 35			C 5 40
60	Patterson												5 41			C 5 46
53	Southeast Ar.															C 5 57
53	Southeast Lv.		4 26		4 47			5 17			5 40		5 51			6 02
52	Brewster		4 29		4 50			5 20			5 43		5 55			6 05
48	Croton Falls		4 34		4 55			5 25			5 48		6 01			6 10
46	Purdy's		4 37		4 58			5 28			5 51		6 05			6 13
44	Goldens Bridge		4 40		5 01			5 31			5 54		6 10			6 17
41	Katonah		4 44		5 05			5 35			5 58					6 21
39	Bedford Hills		4 48		5 09			5 39			6 02					6 25
37	Mount Kisco		4 52		5 13			5 43			6 06					6 29
32	Chappaqua		4 57		5 18			5 48			6 11					6 34
31	Pleasantville		5 00		5 21			5 51			6 14					6 37
28	Hawthorne		5 04		5 25			5 55			6 18					6 41
26	Valhalla		5 08		5 29			5 59			6 22					6 45
24	North White Plains	4 50	5 12	5 17	5 33	5 38	5 57		6 06	6 19	6 26			6 38		6 49
22	White Plains	4 53	5 15	5 20	5 36	5 41	6 00	6 05	6 09	6 22	6 29		6 37	6 41		6 53
21	Hartsdale	4 56		5 23		5 44	6 03		6 12	6 25				6 44		
19	Scarsdale	4 59		5 26		5 47	6 06		6 15	6 28				6 48		
17	Crestwood	5 02		5 29		5 50	6 09		6 18			6 36			6 50	
16	Tuckahoe	5 04		5 31		5 52			6 20			6 38			6 52	
15	Bronxville	5 06		5 33		5 54			6 22			6 40			6 54	
14	Fleetwood	5 08		5 35		5 56			6 24			6 42			6 57	
13	Mount Vernon West	5 11		5 38		5 59			6 27			6 45			7 00	
13	Wakefield	5 13		5 40		6 01			6 29			6 47				
12	Woodlawn	5 15		5 42		6 03			6 31			6 49				
11	Williams Bridge	5 17		5 44		6 05			6 33			6 51				
10	Botanical Garden	5 19		5 46		6 07			6 35							
9	Fordham	5 22		5 49		6 10			6 38							
8	Tremont															
6	Melrose															
4	Harlem-125th Street	D 5 30	D 5 39	D 5 57	D 6 00	H 6 18	D 6 26	D 6 29	H 6 46	D 6 48	D 6 53	H 7 02	D 7 02	D 7 09	D 7 14	D 7 17
0	Grand Central Terminal	5 41 AM	5 50 AM	6 08 AM	6 11 AM	6 29 AM	6 37 AM	6 40 AM	6 57 AM	6 59 AM	7 04 AM	7 13 AM	7 13 AM	7 21 AM	7 26 AM	7 29 AM

WILL NOT OPERATE 12/29 - 12/30

WILL OPERATE 12/29 - 12/30 ONLY

TO SOUTHEAST

AM PEAK

MILES		501	601 901	503	603	505	605	307	507	607	309	509	609 909	511	611	513
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
0	Grand Central Terminal	5 37	6 02	6 08	6 26	6 31	6 46	6 49	7 12	7 15	7 18	7 44	7 53	7 56	8 20	8 2
4	Harlem-125th Street	5 47	R 6 12	6 18	R 6 36	6 41	R 6 56	6 59	R 7 22	R 7 25	7 28	R 7 55	R 8 03	8 06	R 8 30	8 3
6	Melrose	5 51				6 45		7 03						8 10		
8	Tremont	5 54				6 48		7 06						8 13		
9	Fordham	5 57	6 20	6 26	6 44	6 51	7 05	7 09		7 33	7 36		8 11	8 16	8 38	8 4
10	Botanical Garden	5 59				6 53		7 11			7 39			8 19		8 4
11	Williams Bridge	6 01		6 29		6 55	7 09	7 13		7 37			8 15		8 41	
12	Woodlawn	6 04		6 32		6 58	7 12	7 16		7 40			8 18		8 44	
13	Wakefield	6 06				7 00		7 18			7 45			8 25		8 5
13	Mount Vernon West	6 09		6 35		7 03		7 21		7 43	7 48		8 22	8 28	8 48	8 5
14	Fleetwood	6 11		6 37		7 05		7 23			7 50			8 30		8 5
15	Bronxville	6 14		6 39		7 08		7 26			7 53			8 33		8 5
16	Tuckahoe	6 16		6 41		7 10		7 28			7 55			8 35		9 0
17	Crestwood	6 19		6 44		7 13		7 31			7 58			8 38		9 0
19	Scarsdale	6 22		6 47		7 16		7 34			8 01			8 41		9 0
21	Hartsdale	6 25		6 50		7 19		7 37			8 04			8 44		9 0
22	White Plains	6 28	6 38	6 53	7 02	7 22	7 27	7 40	H 7 48	7 57	8 07	H 8 22	8 33	8 47	8 59	9 1
24	North White Plains	6 35	6 42	7 01	7 06	7 29	7 31	7 47	7 55	8 02	8 17	8 31	8 37	8 55	9 03	9 2
26	Valhalla		6 46		7 10		7 35			8 06			8 41		9 07	
27	Hawthorne		6 50		7 14		7 39			8 10			8 45		9 11	
31	Pleasantville		6 54		7 18		7 43			8 14			8 49		9 15	
32	Chappaqua		6 57		7 21		7 46			8 17			8 52		9 18	
37	Mount Kisco		7 03		7 27		7 52			8 23			8 58		9 24	
39	Bedford Hills		7 07		7 31		7 56			8 27			9 02		9 28	
41	Katonah		7 10		7 34		7 59			8 30			9 05		9 31	
44	Goldens Bridge		7 14		7 38		8 03			8 34			9 09		9 35	
46	Purdy's		7 18		7 42		8 07			8 38			9 13		9 39	
48	Croton Falls		7 21		7 45		8 10			8 41			9 16		9 42	
52	Brewster		7 27		7 51		8 16			8 47			9 22		9 48	
53	Southeast Ar.		7 37		8 00		8 25			8 55			9 30		9 57	
53	Southeast Lv.		C 7 40										C 9 32			
60	Patterson		C 7 48										C 9 40			
64	Pawling		C 7 54										C 9 46			
69	Harlem Valley-Wingdale		C 8 01										C 9 53			
77	Dover Plains		C 8 09										C 10 01			
80	Tenmile River		C 8 12										C 10 04			
82	Wassaic		C 8 20										C 10 14			
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM

) ON INBOUND PEAK TRAINS) (BICYCLES NOT PERMITTED ON INBOUND AM PEAK TRAINS)

610	612	312	512	614	616	314	916	514	316	516	518	618	620	920	520	324	522	524	624	326	626	926	526	328	628	630	330	528	632	634
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	A
							6 00							6 30								6 52								
							6 04							6 34								6 56								
							6 09							6 39								7 01								
							6 18							6 48								7 10								
							6 25							6 55								7 17								
							6 31							7 01								7 23								
6 02	6 12			6 19			6 41					6 51	7 01	7 11							7 25	7 32				7 51				8 0
6 05	6 15			6 22			6 45					6 54	7 04	7 15							7 28	7 36				7 54				8 1
6 10	6 20			6 27			6 51					6 59	7 09								7 33	7 42				7 59				8 1
6 13	6 23			6 30			6 55					7 02	7 12								7 36	7 46				8 02				8 1
6 17	6 27			6 34	6 44							7 06	7 16	7 27							7 39	7 51				8 05				8 2
6 21	6 31			6 38	6 48							7 10	7 20								7 43					8 09				8 2
6 25	6 35			6 42	6 52							7 14	7 24								7 47					8 13				8 3
6 29	6 39			6 46	6 56							7 18	7 28						7 42		7 51				8 06	8 17			8 24	8 3
6 34				6 52	7 01							7 24	7 34						7 48		7 57				8 12	8 23			8 30	8 4
6 37				6 55								7 27							7 51						8 15				8 33	
6 41				6 59								7 31							7 55						8 19				8 37	
6 45				7 03								7 35							7 59						8 23				8 41	
6 49		6 43	7 00	7 07			7 23		7 16	7 35		7 39						8 00	8 03					8 12	8 27			8 40	8 45	
6 53		6 46	7 03	7 11	7 15		7 27		7 19	7 39		7 43	7 47	7 53				8 04	8 07		8 12	8 18		8 15	8 31	8 37		8 43	8 49	8 5
		6 49	7 06					7 34	7 22								8 01						8 28	8 18				8 46		
		6 52	7 10					7 38	7 25								8 05						8 32	8 21				8 49		
		6 56	7 14			7 19			7 29		7 41				7 58					8 11					8 25			8 41	8 53	
		6 58				7 21			7 31		7 43				8 00					8 13					8 27			8 43		
		7 00				7 23			7 33		7 45				8 03					8 16					8 30			8 46		
		7 03				7 26			7 36		7 48				8 06					8 19					8 32			8 48		
		7 06				7 29			7 39		7 51	7 55				8 01				8 22					8 35			8 51		
		7 08							7 41							8 03									8 37					
		7 10							7 44							8 05									8 39					
		7 13							7 47							8 08									8 42					
		7 15							7 49							8 10									8 44					
		7 18							7 52							8 13									8 46					
		7 20							7 54							8 15									8 48					
		7 23							7 57							8 18									8 51					
D 7 17	D 7 20	H 7 27	D 7 32	D 7 36	D 7 40	D 7 43	D 7 52	D 7 59	H 8 03	D 8 04	D 8 05	D 8 09	D 8 11	D 8 18		H 8 23			D 8 32	D 8 36	D 8 37	D 8 43	D 8 52	H 8 55	D 8 56	D 9 02			D 9 13	D 9 1
7 29 AM	7 33 AM	7 40 AM	7 45 AM	7 49 AM	7 53 AM	7 56 AM	8 05 AM	8 12 AM	8 16 AM	8 17 AM	8 18 AM	8 22 AM	8 24 AM	8 31 AM	8 34 AM	8 36 AM	8 37 AM	8 41 AM	8 45 AM	8 49 AM	8 50 AM	8 56 AM	9 05 AM	9 08 AM	9 09 AM	9 15 AM	9 17 AM	9 22 AM	9 26 AM	9 3 A

WILL NOT OPERATE 12/29 - 12/30

AM PEAK | OFF-PEAK

613	515	615	517	617 917	519	521	621	523	525	625 925	527	627	529	629	531	631	533	633 933	535	4535	635	537	637	639	541	4541	641	543	343	4643
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
8 44	8 53	9 22	9 25	9 45	9 54	10 25	10 47	10 54	11 25	11 47	11 54	12 22	12 25	12 47	12 54	1 22	1 25	1 47	1 54	2 18	2 22	2 25	2 47	2 53	2 56	3 13	3 16	3 19	3 22	3 3
R 8 54	9 03	R 9 32	9 35	R 9 55	10 04	10 35	R 10 57	11 04	11 35	R 11 57	12 04	R 12 32	12 35	R 12 57	1 04	R 1 32	1 35	R 1 57	2 04	R 2 28	R 2 32	2 35	R 2 57	R 3 03	3 06	R 3 23	R 3 26	R 3 29	3 32	R 3 4
			9 39						11 39								1 39												3 36	
			9 42						11 42								1 42												3 39	
9 02	9 11		9 45		10 12	10 43		11 12	11 45		12 12		12 43		1 12		1 45		2 12			2 43			3 14				3 42	
	9 14		9 47		10 14	10 45		11 14	11 47		12 14		12 45		1 14		1 47		2 14			2 45			3 16				3 44	
	9 17		9 50		10 17	10 48		11 17	11 50		12 17		12 48		1 17		1 50		2 17			2 48							3 47	
	9 20		9 53		10 20	10 51		11 20	11 52		12 20		12 51		1 20		1 53		2 20			2 51							3 50	
	9 22		9 55		10 22	10 53		11 22	11 55		12 22		12 53		1 22		1 55		2 22			2 53							3 52	
	9 25		9 57		10 25	10 56		11 25	11 58		12 25		12 56		1 25		1 58		2 25			2 56			3 23			H 3 43	3 55	
	9 27		10 00		10 27	10 58		11 27	12 00		12 27		12 58		1 27		2 00		2 27			2 58			3 25			H 3 45	3 57	
	9 29		10 02		10 29	11 00		11 29	12 02		12 29		1 00		1 29		2 02		2 29			3 00			3 27			H 3 48	3 59	
	9 31		10 04		10 31	11 02		11 31	12 04		12 31		1 02		1 31		2 04		2 31			3 02			3 29			H 3 50	4 01	
	9 34		10 07		10 34	11 05		11 34	12 07		12 34		1 05		1 34		2 07		2 34			3 05			3 32			H 3 53	4 04	
	9 37	9 53	10 10		10 37	11 08		11 37	12 10		12 37	12 52	1 08		1 37	1 52	2 10		2 37	H 2 48	2 52	3 08		3 23	3 35			H 3 56	4 07	
	9 40	9 56	10 13		10 40	11 11		11 40	12 13		12 40	12 55	1 11		1 40	1 55	2 13		2 40	H 2 51	2 55	3 11		3 26	3 38			H 3 59	4 10	
9 20	9 43	9 59	10 16	10 20	10 43	11 14	11 21	11 43	12 16	12 21	12 43	12 58	1 14	1 21	1 43	1 58	2 16	2 21	2 43	H 2 54	2 58	3 14	3 21	3 29	3 41	H 3 47	3 50	H 4 02	4 13	4 0
9 24	9 51	10 02	10 23	10 24	10 50	11 21	11 24	11 50	12 23	12 24	12 50	1 01	1 21	1 24	1 50	2 01	2 23	2 24	2 52	3 00	3 01	3 21		3 32	3 48	3 53	3 54	4 09	4 21	4 1
9 28				10 28			11 28			12 28				1 28				2 28						3 36			3 58			
9 32		10 09		10 33			11 32			12 32		1 08		1 32		2 08		2 32			3 08			3 40			4 02			
9 36		10 13		10 37			11 36			12 36		1 12		1 36		2 12		2 36			3 12			3 44			4 06			
9 39		10 16		10 40			11 39			12 39		1 15		1 39		2 15		2 39			3 15			3 47			4 09			
9 45		10 22		10 46			11 45			12 45		1 21		1 45		2 21		2 45			3 21		3 38	3 59			4 15			
9 49				10 50			11 49			12 49				1 49				2 49					3 42				4 19			
9 52		10 28		10 53			11 52			12 52		1 27		1 52		2 27		2 52			3 27		3 45				4 22			
9 56		10 32		10 57			11 56			12 56		1 31		1 56		2 31		2 56			3 31		3 49				4 26			4 3
10 00				11 01			12 00			1 00				2 00				3 00					3 53				4 30			4 3
10 03				11 04			12 03			1 03				2 03				3 03					3 56				4 33			4 3
10 09		10 43		11 10			12 09			1 09		1 42		2 09		2 42		3 09			3 42		4 02				4 39			4 4
10 19		10 51		11 17			12 16			1 16		1 49		2 16		2 49		3 16			3 49		4 09				4 46			4 5
				C 11 21						C 1 21								C 3 21												
				C 11 29						C 1 29								C 3 29												
				C 11 35						C 1 35								C 3 35												
				C 11 42						C 1 42								C 3 42												
				C 11 50						C 1 50								C 3 50												
				C 11 53						C 1 53								C 3 53												
				C 12 03						C 2 03								C 4 03												
AM	AM	AM	AM	PM	AM	AM	PM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P

WILL OPERATE 11/26 & 12/24 ONLY

WILL OPERATE 11/26 & 12/24 ONLY

WILL OPERATE 11/26 & 12/24 ONLY

STOPS AT MT. PLEASANT AT 10:30 AM

AM PEAK			OFF-PEAK																											
332	534	636	334	536	638	4940	336	538	940 640	640	540	642	542	4644	644	544	646	546	948 648	548	550	652	552	554	956 656	556	558	660	560	66
AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P
						8 30			C 8 30										C 10 28						C 12 28					
						8 34			C 8 34										C 10 32						C 12 32					
						8 38			C 8 38										C 10 36						C 12 36					
						8 46			C 8 46										C 10 44						C 12 44					
						8 53			C 8 53										C 10 51						C 12 51					
						8 59			C 8 59										C 10 57						C 12 57					
									C 9 10										C 11 08						C 1 08					
		8 26			8 52	9 08			9 15	9 15		9 40		10 08	10 14		10 40		11 14			12 14			1 14			2 14		2
		8 29			8 55	9 12			9 18	9 18		9 43		10 12	10 17		10 43		11 17			12 17			1 17			2 17		2
		8 34			9 00				9 23	9 23					10 22				11 22			12 22			1 22			2 22		
		8 37			9 03				9 26	9 26					10 25				11 25			12 25			1 25			2 25		
		8 40			9 06				9 30	9 30		9 53		10 22	10 29		10 53		11 29			12 29			1 29			2 29		2
		8 44			9 10				9 34	9 34		9 57		10 26	10 33		10 57		11 33			12 33			1 33			2 33		2
		8 48			9 14				9 38	9 38					10 37				11 37			12 37			1 37			2 37		
		8 52			9 18	9 28			9 42	9 42		10 03		10 32	10 41		11 03		11 41			12 41			1 41			2 41		3
		8 58			9 24	9 34			9 48	9 48		10 09		10 38	10 47		11 09		11 47			12 47			1 47			2 47		3
		9 01			9 27				9 51	9 51		10 12			10 50		11 12		11 50			12 50			1 50			2 50		3
		9 05			9 31				9 55	9 55		10 16			10 54		11 16		11 54			12 54			1 54			2 54		3
		9 09			9 35				9 59	9 59					10 58				11 58			12 58			1 58			2 58		
	9 02	9 13		9 34	9 39	9 46		9 51	10 03	10 03	10 09	10 23	10 33	10 49	11 02	11 06	11 23	11 33	12 02	12 06	12 33	1 02	1 06	1 33	2 02	2 06	2 33	3 02	3 06	3
	9 06	9 17		9 37	9 43	9 50		9 54	10 06	10 06	10 12	10 26	10 36	10 53	11 05	11 09	11 26	11 36	12 05	12 09	12 36	1 05	1 09	1 36	2 05	2 09	2 36	3 05	3 09	3
	9 10			9 40				9 57			10 15	10 29	10 39			11 12	11 29	11 39		12 12	12 39		1 12	1 39		2 12	2 39		3 12	3
	9 14			9 43				10 00			10 18	10 32	10 42			11 15	11 32	11 42		12 15	12 42		1 15	1 42		2 15	2 42		3 15	3
9 02	9 18		9 26	9 47			9 52	10 04			10 22		10 46			11 19		11 46		12 19	12 46		1 19	1 46		2 19	2 46		3 19	
9 04			9 28				9 54				10 24		10 48			11 21		11 48		12 21	12 48		1 21	1 48		2 21	2 48		3 21	
9 07			9 30				9 56				10 26		10 50			11 23		11 50		12 23	12 50		1 23	1 50		2 23	2 50		3 23	
9 09			9 32				9 58				10 28		10 52			11 25		11 52		12 25	12 52		1 25	1 52		2 25	2 52		3 25	
9 12			9 35				10 01				10 31		10 55			11 28		11 55		12 28	12 55		1 28	1 55		2 28	2 55		3 28	
9 14			9 37				10 03				10 33		10 57			11 30		11 57		12 30	12 57		1 30	1 57		2 30	2 57		3 30	
9 16			9 39				10 05				10 35		10 59			11 32		11 59		12 32	12 59		1 32	1 59		2 32	2 59		3 32	
9 19			9 42				10 08				10 38		11 02			11 35		12 02		12 35	1 02		1 35	2 02		2 35	3 02		3 35	
9 21			9 44				10 10				10 40		11 04			11 37		12 04		12 37	1 04		1 37	2 04		2 37	3 04		3 37	
9 23			9 46				10 12				10 42		11 06			11 39		12 06		12 39	1 06		1 39	2 06		2 39	3 06	H 3 23	3 39	
											10 44									12 41						2 41				
											10 47									12 44						2 44				
D 9 33	D 9 36	H 9 41	D 9 55	H 10 06	H 10 09	H 10 17	D 10 21	H 10 24	H 10 33	H 10 33	H 10 52	H 10 54	H 11 15	H 11 20	H 11 32	H 11 48	H 11 54	H 12 15	H 12 32	H 12 50	H 1 15	H 1 32	H 1 48	H 2 15	H 2 32	H 2 50	H 3 15	H 3 32	H 3 48	H 3
9 45 AM	9 48 AM	9 53 AM	10 06 AM	10 17 AM	10 20 AM	10 28 AM	10 32 AM	10 35 AM	10 44 AM	10 44 AM	11 03 AM	11 05 AM	11 26 AM	11 31 AM	11 43 AM	11 59 AM	12 05 PM	12 26 PM	12 43 PM	1 01 PM	1 26 PM	1 43 PM	1 59 PM	2 26 PM	2 43 PM	3 01 PM	3 26 PM	3 43 PM	3 59 PM	4

WILL OPERATE 12/29 -12/30 ONLY

WILL NOT OPERATE 12/29 -12/30

WILL OPERATE 12/29 -12/30 ONLY

WILL OPERATE 12/29 -12/30 ONLY

STOPS AT MT. PLEASANT AT 12:56 PM

PM PEAK																															
943	643	545	345	645	647	547	349	949	649	551	351	353	651	653	355	953	655	657	557	357	359	659	661	559	361	363	963	663	665	56
PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P
3 43	3 52	3 55	3 57	4 18	4 21	4 24	4 30	4 35	4 42	4 45	4 48	4 54	4 57	5 04	5 10	5 19	5 27	5 29	5 35	5 38	5 40	5 44	5 49	5 52	5 58	6 00	6 04	6 10	6 13	6
R 3 54	R 4 02	R 4 05	4 07	R 4 28	R 4 31	R 4 34	4 40	R 4 46	R 4 52	R 4 55	R 4 58	5 04		R 5 14	R 5 20	R 5 30		R 5 39			5 50			R 6 02	R 6 08	6 10	R 6 15	R 6 20	R 6 23	R 6
			4 11				4 44					5 08									5 54					6 14					
			4 14				4 47					5 11									5 57					6 17					
			4 17				4 50					5 14									6 00					6 20					
			4 19				4 52					5 16									6 02					6 22					
			4 21				4 55					5 19									6 05					6 25					
			4 24				4 58					5 22			H 5 31						6 08					6 28					
			4 26				5 00					5 24			H 5 34						6 10					6 30					
			4 29			4 48	5 03				H 5 12	5 27			H 5 37					H 6 01	6 13				H 6 22	6 34					
			4 31			4 50	5 05				H 5 14	5 29			H 5 39					H 6 03	6 15				H 6 24	6 37					
			4 33			4 53	5 08				H 5 17	5 32			H 5 42					H 6 06	6 18				H 6 27	6 40					
			4 35			4 55	5 11				H 5 19	5 34			H 5 44					H 6 08	6 20				H 6 29	6 43					
		H 4 23	4 38			4 58	5 15				5 24	5 37			5 50					6 13	6 23				6 34	6 46					
		H 4 26	4 41			5 01	5 19			H 5 15		5 40		H 5 34					H 6 04		6 26			H 6 22		6 50					H 6
		H 4 29	4 44			5 04	5 22			H 5 18		5 43		H 5 37					H 6 07		6 29			H 6 25		6 53					H 6
4 18	4 26	H 4 32	4 47		4 54	5 07	5 25	5 11	5 16	H 5 21		5 47	5 31	H 5 40		5 54		6 03	H 6 10		6 32		H 6 22	H 6 28		6 57	R 6 39	6 44	6 47	H 6
4 22	4 30	4 39	4 54		4 58	5 15	5 33		5 20	5 29		5 55		H 5 43				6 07	6 18		6 40		H 6 25	6 36		7 05			6 50	7
	4 34				5 02				5 24					H 5 47				6 11					H 6 29							6 54	
	4 38				5 06				5 28					H 5 51				6 15					H 6 33							6 58	
	4 42				5 10				5 32					H 5 55				6 19					H 6 37							7 02	
H 4 33	4 45			H 5 05	5 13				5 35					H 5 58			H 6 13	6 22				H 6 30	H 6 40					H 6 58		7 05	
	4 51			H 5 11	5 19				5 41				H 5 49	6 08			H 6 19	6 28				H 6 35	6 50						H 7 04	7 15	
	4 55			H 5 15	5 23				5 45				H 5 53				H 6 23	6 32				H 6 39							H 7 08		
	4 58			H 5 19	5 27				5 49				H 5 57				H 6 27	6 36				H 6 42							H 7 12		
H 4 48	5 02			H 5 23	5 31			H 5 38	5 53				H 6 01				H 6 31	6 40				H 6 46					H 7 05				
H 4 52	5 06			H 5 27	5 35			H 5 42	5 57				H 6 05				H 6 35	6 44				H 6 50					H 7 09				
H 4 56	5 09			H 5 30	5 38			H 5 46	6 00				H 6 08				H 6 38	6 47				H 6 53					H 7 13				
H 5 03	5 15			H 5 36	5 44			H 5 53	6 06				H 6 14			H 6 32	H 6 44	6 55				H 6 59					H 7 20		7 31		
H 5 07	5 22			5 44	5 52			H 5 58	6 14				6 22			H 6 37	6 52					7 08					H 7 24				
H 5 16								H 6 07								H 6 46											H 7 33				
H 5 22								H 6 13								H 6 52											H 7 39				
H 5 30								H 6 21								H 7 00											H 7 47				
H 5 38								H 6 29								H 7 08											H 7 55				
H 5 42								H 6 33								H 7 12											H 7 59				
5 52								6 43								7 22											8 09				
PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	P

(BICYCLES NOT PERMITTED ON OUTBOUND PM PEAK TRAINS)

WILL NOT OPERATE 11/26 & 12/24

WILL NOT OPERATE 11/26 & 12/24

WILL NOT OPERATE 11/26 & 12/24

NO SMOKING ON BOARD TRAINS

562	964 664	564	566	666	366	568	668	368	570	670	370	972 672	572	674	574	676	576	678	578	980 680	580	682	684	584	988 688	588	992 692	592	696
PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
	C 2 18											C 4 18								C 6 05					C 8 30		C 9 30		
	C 2 22											C 4 22								C 6 09					C 8 34		C 9 34		
	C 2 26											C 4 26								C 6 13					C 8 38		C 9 38		
	C 2 34											C 4 34								C 6 24					C 8 50		C 9 50		
	C 2 41											C 4 41								C 6 31					C 8 57		C 9 57		
	C 2 47											C 4 47								C 6 37					C 9 03		C 10 03		
	C 2 58											C 4 58								C 7 01					C 9 13		C 10 13		
10	3 03			3 40			4 05			4 34		5 03		5 43		6 05		6 42		7 14			8 09		9 15		10 15		11 13
13	3 06			3 43			4 08			4 37		5 06		5 46		6 08		6 45		7 17			8 12		9 18		10 18		11 16
	3 11						4 13			4 42		5 11				6 13				7 22			8 17		9 23		10 23		11 21
	3 14						4 16			4 45		5 14				6 16				7 25			8 20		9 26		10 26		11 24
13	3 18			3 53			4 20			4 49		5 18		5 56		6 20		6 55		7 28			8 23		9 29		10 29		11 28
17	3 22			3 57			4 24			4 53		5 22		6 00		6 24		6 59		7 32			8 27		9 33		10 33		11 32
	3 26						4 28			4 57		5 26				6 28				7 36			8 31		9 37		10 37		11 36
13	3 30			4 03			4 32			5 01		5 30		6 06		6 32		7 05		7 40		8 16	8 35		9 41		10 41		11 40
19	3 36			4 09			4 38			5 07		5 36		6 12		6 38		7 11		7 45		8 22	8 40		9 46		10 46		11 46
2	3 39			4 12			4 41			5 10		5 39		6 15		6 41		7 14		7 48		8 25	8 43		9 49		10 49		11 49
6	3 43			4 16			4 45			5 14		5 43		6 19		6 45		7 18		7 52			8 47		9 53		10 53		11 53
	3 47						4 49			5 18		5 47				6 49				7 56			8 51		9 57		10 57		11 57
13	3 30	3 51	4 02	4 17		4 30	4 48	4 53	4 58	5 15	5 22	5 29	5 51	6 04	6 26	6 33	6 53	7 05	7 25	7 36	8 00	8 06	8 33	8 55	9 06	10 01	10 06	11 01	11 06	12 01
17	3 33	3 55	4 05	4 20	4 26	4 33	4 52	4 57	5 01	5 18	5 26	5 32	5 55	6 07	6 29	6 36	6 57	7 08	7 28	7 39	8 04	8 09	8 36	8 59	9 09	10 05	10 09	11 05	11 09	12 04
10	3 36		4 08	4 23		4 36			5 04	5 21		5 35		6 10	6 32	6 39		7 11	7 31	7 42		8 12	8 39		9 12		10 12		11 12	
13	3 39		4 11	4 26		4 39			5 07	5 24		5 38		6 13	6 35	6 42		7 14	7 34	7 45		8 15	8 42		9 15		10 15		11 15	
	3 43		4 15			4 43			5 11			5 42		6 17		6 46		7 18		7 49		8 19	8 46		9 19		10 19		11 19	
	3 45		4 17			4 45			5 13			5 44		6 19		6 48		7 20		7 51		8 21	8 48		9 21		10 21		11 21	
	3 47		4 19			4 47			5 15			5 46		6 21		6 50		7 22		7 53		8 23	8 50		9 23		10 23		11 23	
	3 49		4 21			4 49			5 17			5 48		6 23		6 52		7 24		7 55		8 25	8 52		9 25		10 25		11 25	
	3 52		4 24			4 52			5 20			5 51		6 26		6 55		7 27		7 58		8 28	8 55		9 28		10 28		11 28	
	3 54		4 26			4 54			5 22			5 53		6 28		6 57		7 29		8 00		8 30			9 30		10 30		11 30	
	3 56		4 28			4 56			5 24			5 55		6 30		6 59		7 31		8 02		8 32			9 32		10 32		11 32	
	3 59		4 31			4 59			5 27			5 58		6 33		7 02		7 34		8 05		8 35			9 35		10 35		11 35	
	4 01		4 33			5 01			5 29			6 00		6 35		7 04		7 36		8 07		8 37			9 37		10 37		11 37	
	4 03	H 4 12	4 35	H 4 41		5 03		H 5 16	5 31	H 5 38	H 5 44	6 02	H 6 13	6 37	H 6 49	7 06	H 7 14	7 38		8 09		8 39	9 02		9 39		10 39		11 39	
			4 37						5 33					6 39								8 41					10 41			
			4 40						5 36					6 42								8 44					10 44			
5	H 4 12	H 4 22	H 4 46	H 4 49	H 4 52	H 5 12	H 5 18	H 5 24	H 5 41	H 5 46	H 5 52	H 6 11	H 6 21	H 6 49	H 6 57	H 7 15	H 7 22	H 7 47	H 7 56	H 8 19	H 8 30	H 8 48	H 9 11	H 9 25	H 9 48	H 10 33	H 10 48	H 11 33	H 11 48	H 12 31
6	4 23	4 33	4 57	5 02	5 05	5 27	5 33	5 39	5 56	6 01	6 07	6 26	6 36	7 00	7 08	7 26	7 33	7 58	8 07	8 30	8 41	8 59	9 22	9 36	9 59	10 44	10 59	11 44	11 59	12 42
M	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	AM

	365	667	669	565	567	367	671 971	673	573	373	675	677	577	579	679 979	581	681	583	683 983	585	685	587	687 987	589	689	591	691	593	595	695 995
															PM PEAK		OFF-PEAK													
M	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	AM
16	6 23	6 29	6 32	6 36	6 38	6 49	6 56	6 59	7 03	7 05	7 21	7 24	7 28	7 31	7 54	7 58	8 22	8 25	8 52	9 00	9 22	9 25	9 52	10 00	10 22	10 25	11 04	11 13	11 44	12 04
26	R 6 33	R 6 39	R 6 42		R 6 48	6 59	R 7 06	R 7 09		R 7 15	R 7 31	R 7 34		7 41	R 8 04	8 08	R 8 32	8 35	R 9 02	9 10	R 9 32	9 35	R 10 02	10 10	R 10 32	10 35	R 11 14	11 23	11 54	R 12 14
						7 03								7 45								9 39								
						7 06								7 48								9 42								
						7 09								7 51		8 16		8 43		9 18		9 45		10 18		10 43		11 31	12 02	
						7 11								7 53				8 45				9 47				10 45			12 04	
						7 14								7 56				8 48				9 50				10 48			12 07	
						7 17								7 59				8 51				9 53				10 51			12 10	
						7 19								8 01				8 53				9 55				10 53			12 12	
	H 6 47				7 02	7 24				7 29				8 04		8 24		8 56		9 26		9 58		10 26		10 56		11 39	12 15	
	H 6 49				7 04					7 31				8 06		8 26		8 58		9 28		10 00		10 28		10 58		11 41	12 17	
	H 6 52				7 07					7 34				8 08		8 28		9 00		9 30		10 02		10 30		11 00		11 43	12 19	
	H 6 54				7 09					7 36				8 10		8 30		9 02		9 32		10 04		10 32		11 02		11 45	12 21	
	6 59				7 12					7 39			H 7 54	8 13		8 33		9 05		9 35		10 07		10 35		11 05		11 48	12 24	
16				H 7 05	7 15				H 7 32	7 42			H 7 57	8 16		8 36		9 08		9 38		10 10		10 38		11 08		11 51	12 27	
19				H 7 08	7 18				H 7 35	7 45			H 8 00	8 19		8 39		9 11		9 41		10 13		10 41		11 11		11 54	12 30	
32		R 7 03	7 07	H 7 11	7 21		7 30	7 33	H 7 38	7 48		7 58	H 8 03	8 22	8 28	8 42	8 56	9 14	9 26	9 44	9 56	10 16	10 26	10 44	10 56	11 14	11 38	11 57	12 33	12 38
0			7 10	7 19	7 29			7 36	7 45	7 56		8 01	8 12	8 30	8 31	8 50	8 59	9 21	9 29	9 51	9 59	10 23	10 29	10 51	10 59	11 21	11 41	12 04	12 40	12 41
			7 14					7 40	WILL NOT OPERATE 11/26 & 12/24			8 05	WILL NOT OPERATE 11/26 & 12/24		8 35		9 03		9 33		10 03		10 33		11 03		11 45			12 45
			7 18					7 44				8 09			8 39		9 07		9 37		10 07		10 37		11 07		11 49			12 49
			7 22					7 48				8 13			8 43		9 11		9 41		10 11		10 41		11 11		11 53			12 53
		H 7 17	7 25				H 7 44	7 51			H 8 07	8 16			8 46		9 14		9 44		10 14		10 44		11 14		11 56			12 56
		H 7 23	7 35				H 7 50	8 01			H 8 13	8 26			8 52		9 20		9 50		10 20		10 50		11 20		12 02			1 02
		H 7 27					H 7 54				H 8 17				8 56		9 24		9 54		10 24		10 54		11 24		12 06			1 06
		H 7 31					H 7 58				H 8 20				8 59		9 27		9 57		10 27		10 57		11 27		12 09			1 09
		H 7 35					H 8 02				H 8 24				9 03		9 31		10 01		10 31		11 01		11 31		12 13			1 13
		H 7 39					H 8 06				H 8 28				9 07		9 35		10 05		10 35		11 05		11 35		12 17			1 17
		H 7 42					H 8 09				H 8 31				9 10		9 38		10 08		10 38		11 08		11 38		12 20			1 20
		H 7 48					H 8 15				H 8 37				9 16		9 44		10 14		10 44		11 14		11 44		12 26			1 26
		7 55					8 22				8 44				9 22		9 50		10 20		10 50		11 20		11 50		12 32			1 35
							C 8 25								C 9 25				C 10 23				C 11 23							C 1 38
							CH 8 34								CH 9 34				CH 10 32				CH 11 32							CH 1 46
							CH 8 40								CH 9 40				CH 10 38				CH 11 38							CH 1 52
							CH 8 47								CH 9 47				CH 10 45				CH 11 45							CH 1 59
							CH 8 55								CH 9 55				CH 10 53				CH 11 53							2 11
							CH 8 58								CH 9 58				CH 10 56				CH 11 56							
							9 08								10 08				11 06				12 06							
M	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	AM	PM	PM	PM	AM	AM	AM	AM

F-PEAK	
6	998
	698
AM	PM
	C 11 28
	C 11 32
	C 11 36
	C 11 48
	C 11 55
	C 12 01
	C 12 11
	12 18
	12 21
	12 26
	12 29
	12 33
	12 37
	12 41
	12 45
	12 51
	12 54
	12 58
	1 02
06	1 06
09	1 09
12	1 12
15	1 15
19	1 19
21	1 21
23	1 23
25	1 25
28	1 28
30	
32	
35	
37	
39	1 35
48	H 1 43
59	1 54
AM	AM

OFF-PEAK			
597	697	599	699
AM	AM	AM	AM
12 30	1 04	1 17	1 56
12 40	R 1 14	1 27	2 06
12 48		1 35	2 14
12 50		1 37	2 16
12 53		1 40	2 19
12 56		1 43	2 22
12 58		1 45	2 24
1 01		1 48	2 27
1 03		1 50	2 29
1 05		1 52	2 31
1 07		1 54	2 33
1 10		1 57	2 36
1 13		2 00	2 39
1 16		2 03	2 42
1 19	1 38	2 06	2 45
1 28	1 41	2 15	2 49
	1 45		2 53
	1 49		2 57
	1 53		3 01
	1 56		3 04
	2 02		3 10
	2 06		3 14
	2 09		3 17
	2 13		3 21
	2 17		3 25
	2 20		3 28
	2 26		3 34
	2 35		3 45
AM	AM	AM	AM

Metro-North **Train Time**™

Real-time train status and schedule information to your smartphone or computer.

Visit mta.info for more information.

TICKETS, FARES & PURCHASING OPTIONS

WebTicket - Buy your monthly, weekly, ten-trip or one-way/round trip ticket online at www.mta.info. Use any major credit card. Postage is free and tickets arrive 2-3 business days after you place your order.

Mail&Ride

Sign up online at www.mta.info for Mail&Ride, our monthly ticket-by-mail subscription program. Manage your account online too!

At Stations

Buy any ticket at a ticket office or easy-to-use ticket machine. You can use cash or a major credit or debit card. In the event of a ticket vending machine malfunction, please call our toll-free hotline at 877-886-6677.

On Board the Train

(Purchasing your ticket on board the train is a cash-only transaction and is the most expensive ticket-purchasing option. Tickets purchased on board cost between $5.75 and $6.50 more. Train crews must charge the higher on board fare at all times, without exceptions). Train crews have no discretion to waive this rule, even if there is no ticket office or working ticket machine at your boarding station.

Ticket Types

One-Way - Good for one ride for 60 days including date of sale. Sold for:

Peak - Weekday trains in the gray shaded areas in this timetable.

Off Peak – All other trains including all day weekends & holidays.

Round-Trip - Good for two rides for 60 days including date of sale. Sold for peak or off-peak travel. Priced at the combination of one way fares selected (peak, off-peak, peak/off-peak, senior both ways, etc.).

Weekly - Unlimited rides Saturday through Friday. On sale the Wednesday before the Saturday that the ticket becomes valid. Non-transferable.

Monthly - Unlimited rides during the calendar month indicated on the ticket. On sale starting on the 20th of the month prior. Non-transferable.

Ten-Trip Tickets - Good for ten one-way rides. Valid for six months from date of sale. Can be shared. Sold for peak, off peak, or intermediate travel. We also sell Senior/People with Disabilities and Medicare Customers Ten-Trips.

Senior/People with Disabilities and Medicare Customers

Half-fare good at all times except weekday AM Peak trains. Seniors must be 65 or older with valid ID; people with disabilities must present MTA ID card. Medicare customers must present valid Medicare card or an MTA Reduced-Fare MetroCard at time of ticket purchase or use to obtain half-fare price. Valid for 60 Days including date of sale.

Children's Fares and Family Fare - Children 5–11 years old ride for 50% of adult fares; children under 5 years old ride free at all times. "Family Fare" is available for off-peak travel; up to four children 5–11 may ride for $1.00 when accompanied by a fare-paying adult 18 years or older. Valid for 60 Days including date of sale.

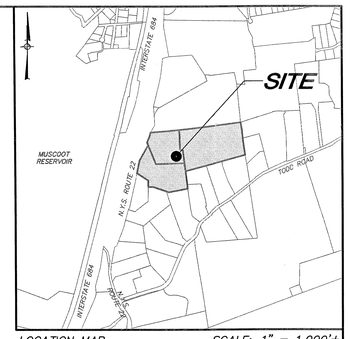
Other Ticket Types - See the Tickets & Fares brochure, our website, or call for details about other ticket types: CityTicket, School Monthly, Group Rates, Deals & Getaways, etc.

RETURNING TICKETS

Consult Ticket Agent or mail claim to:

Ticket Redemption
MTA Metro-North Railroad
P.O.Box 4117
New York, NY 10163

Refunds are subject to a $10 processing fee per transaction. One-way and Round-trip tickets are valid for travel or refund for sixty (60) days from date of sale. Ten-trip tickets are valid for travel or refund for six (6) months from date of sale. Commutation Tickets – when monthly or weekly commutation tickets are submitted for refund before their expiration, the discount is forfeited, and we must deduct the proper combination of one-way and/or weekly fares for the period the ticket has been in the customer's possession. Details of refund regulations are contained in Metro-North's tariffs, which are available for review at any ticket office. Should any questions arise as to proper fare and ticket privileges, please pay the fare requested, obtain receipt, and communicate with us.



LOCATION MAP SCALE: 1" = 1,000'±

OWNER:

Property Group Partners, LLC
Attn: Jeffrey Sussman, President
509 Fifth Avenue, 6th Floor
New York, NY 10017

APPLICANT:

Wilder Balter Partners, Inc.
570 Taxter Road
Elmsford, NY 10523

SITE DATA:

Zone: CC-20 (Campus Commercial) R-4A
Total Acreage: 35.43 AC. ±
Tax Map No.: Sheet 5, Block 10766, Lots 19, 20 & 21
Proposed Use: Multi-family Dwellings

GENERAL NOTES:

1. Property lines as shown hereon are based on a Survey of Property prepared by Bunney Associates Land Surveyors, last revised October 31, 1984.
2. Topography as shown hereon is based on aerial photography dated April 2008, as prepared by Geomaps International. Contour interval is 2'.
3. The wetland flagging as shown hereon was delineated by Steve Marino on November 16, 2015 and survey located by Insite Engineering, Surveying & Landscape Architecture PC, completed November 20, 2015.
4. Approximate location of expanded Town Regulated Wetland area as shown hereon based on sketch provided by Town Wetland Consultant, Kellard Sessions, January 2016.
5. NYSDEC Wetland delineation was verified in field by Heather Gierloff on NYSDEC on April 15, 2016.

LEGEND

- EXISTING PROPERTY LINE
- WL9 — WL10: EXISTING WETLAND LIMIT LINE
- TOWN 150' CONTROL AREA
- NYSDEC 100' ADJACENT AREA
- EXISTING WELL
- EXISTING WATERCOURSE
- EXISTING 10' CONTOUR
- EXISTING 2' CONTOUR
- EXISTING STONEWALL

NYSDEC FRESHWATER WETLAND BOUNDARY VALIDATION

The freshwater wetland boundary as represented on these plans accurately depicts the limits of Freshwater Wetland F-29 as delineated by Heather Gierloff of NYSDEC on April 15, 2016.

DEC Staff: Heather Gierloff 04/27/16 Surveyor/Engineer: _____

Date Valid: 04/27/16 Expiration Date: 04/27/2021 SEAL

Wetland boundary delineations as validated by the New York State Department of Environmental Conservation remain valid for five (5) years unless existing exempt activities, area hydrology, or land use practices change (e.g., agricultural to residential). After five (5) years the boundary must be revalidated by DEC staff. Revalidation may include a new delineation and survey of the wetland boundary.

Any proposed construction, grading, filling, excavating, clearing or other regulated activity in the freshwater wetland or within 100 feet of wetland boundary as depicted on this plan requires a permit from the New York State Department of Environmental Conservation under Article 24 of the Environmental Conservation Law (Freshwater Wetlands Act) prior to commencement of work.

GRAPHIC SCALE

60 0 30 60 120

(IN FEET)
1 inch = 60 ft.

NO.	DATE	REVISION	BY

INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place
Carmel, NY 10512
(845) 225-9690
(845) 225-9717 fax
www.insite-eng.com

PROJECT:
WILDER BALTER PARTNERS, INC.
ROUTE 22, TOWN OF LEWISBORO, WESTCHESTER COUNTY, NEW YORK

DRAWING:
NYSDEC WETLAND VALIDATION MAP

RECEIVED
APR 25 2016
Natural Resources
NYSDEC Region 3 - New Paltz

PROJECT NUMBER	15246.100	PROJECT MANAGER	J.J.C.
DATE	4-22-16	DRAWN BY	M.E.U.
SCALE	1" = 60'	CHECKED BY	D.L.M.

DRAWING NO. WV-1 SHEET 1 / 1

ALTERATION OF THIS DOCUMENT, UNLESS UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, IS A VIOLATION OF SECTION 7209 OF ARTICLE 145 OF THE EDUCATION LAW.

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