CITY OF LEWISTON
PLANNING BOARD MEETING
Monday, February 8, 2016 – 5:30 P.M.
City Council Chambers – First Floor
Lewiston City Building
27 Pine Street, Lewiston, ME

AGENDA

I. ROLL CALL

II. ADJUSTMENTS TO THE AGENDA

III. CORRESPONDENCE

IV. PUBLIC HEARINGS:

1. Review and recommendation for the City Council's consideration on the FY 2017 Lewiston Capital Improvement Plan.
2. An application submitted by Stoneybrook Consultants, Inc. on behalf of M & B, LLC to establish a seven lot subdivision for single family homes on land at 4 Matobian Ave and 504 Pond Road with access from an extension of Matobian Ave (item continued from January 25, 2016 meeting).

V. OTHER BUSINESS:

a) Update on Planning Board meeting schedule
b) Any other business Planning Board Members may have relating to the duties of the Lewiston Planning Board.

VI. READING OF THE MINUTES: Motion to adopt the January 11, 2016, January 25, 2016 and February 1, 2016 draft minutes

VII. ADJOURNMENT

The City of Lewiston is an EOE. For more information please visit our website @ www.lewistonmaine.gov and click on the Non-Discrimination Policy.

CITY OF LEWISTON

Department of Planning & Code Enforcement

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TO: **Planning Board**
FROM: **David Hediger, City Planner**
DATE: **February 4, 2015**
RE: **February 8, 2014 Planning Board Agenda Item IV(a)**

Review and recommendation for the City Council's consideration on the FY 2017 Lewiston Capital Improvement Plan.

As the Board is aware, the Charter and the Zoning and Land Use Code require the Board to review and provide a recommendation on Lewiston's Capital Improvement Plan (LCIP). Specifically, Section 6.05. of the City Charter states the following:

> (a) Submission to council. The administrator shall each year prepare and submit to the council a five-year capital program, including the capital program proposed for the school department, at least five and one-half (5 1/2) months prior to the end of the current fiscal year. The administrator shall concurrently refer the capital program to the planning board for its review.
>
> (c) Planning board review. The planning board shall review the proposed capital program each year, and following public hearing thereon, shall forward its recommendations to the city council at least four and one-half (4 1/2) months prior to the end of the current fiscal year.

Article VII, Section 4(e) of the Zoning and Land Use Code states:

> The board shall review the annual capital program and report to the city council in accordance with Section 6.05 of the City Charter its findings regarding the needs of the city for the improvement, replacement and alteration of existing facilities and the acquisition or construction of additional facilities and the order in which such projects should be undertaken. The board shall hold at least one public hearing prior to making its recommendations to the city council.

The Board asked for clarification on the following items which will be provided at the meeting:

Airport:

- P.14: If Auburn doesn't pay, will project still occur?
- P.17: Is this accurate amount? 8,000 hours is not a lot for a 1990 model.
- P.18: Need more information; don't we already have a hanger operating at a loss? Board does not seem interested in supporting this. What's the airport bond's role in approving private lender funding?

LA 911

- P.23: Funding relationship with Auburn; how does this work and what if one of the communities does not contribute? How does the three-year implementation occur? NOTE: overall, the question of funding involving a number of projects

where both communities are listed as sources was questioned if one of the communities does not contribute).

LATC/Bus

P.25: What type of buses are being purchased, large or smaller buses; has fuel efficient, capacity been considered?

Acquisition/Demolition

P.28: Current balance for demolition? What did we ask for last year and what was funded?

Lewiston Steam Substation

P.29: What is the time schedule? Is the first quarter 2017 realistic for completion of the new substation? What was the acquisition costs involved with this?

Riverfront Implementation

P.30: Typos with respect to Funding Source columns? Questions/concerns about the bridge design and importance of aesthetics and the need to get PB and HPRB approval.

Oxford Street Parking Lot

P.32: Questions regarding use of CDBG funding of $28,000 as there was no demo funds last year in CDBG

Fire Department

P.36: See Fire Substation Study, P.42

P.37: Clarification of trucks proposed; average $50,000 when $30,000 trade is accounted for; Lewiston Public Works gets better prices; why?

Chestnut Street Parking Garage

P.39: This should be operating budget item; and how long would it be bonded for; longer than the life of the asset. Typo in justification: $5 per square foot.

Parking Study and Meters

P.40: What is the life expectancy of meters tied to bond amount and length? Why do we need a study?

Fire Substation Study

P.42: Why do a study? How does this relate to P.36? Why is this being bonded?

City Building Security

P.43: Is this enough funding for City Hall improvements?

Main Street Fire Station

P.46: Is the amount $600,000 or $650,000 (and summary sheet)? How does this relate to other fire requests one pages 36 and 42?

Street Maintenance

P.61 FY2017 & 2020 – Crowley Road is noted twice.

P. 61 and 63 – College Street duplication in FY17 and FY18.

Public Works asked to revisit:

Main Street: Russell Street to Wakefield Street

Rosedale: Lisbon to 204 Rosedale

Acadia should be advanced FY2021

Webster: five corners to Pine Street

MDOT 5 WIN/Sabattus Street

P.66 – typo under implementation schedule with respect to City share funding

Paradis Park

P.81 – some consideration to moving from FY17 assist in reducing debt amount.

Kennedy Park

P.82 – Master plan should consider security cameras given level of investment being made. $2 million proposal seems excessive.

Fleet Tracking

P.91 – How long is the warranty for?

LAWPC Land Acquisition

P.110 –clarification need on how funds used; acquisition policy, etc.

Storm Drains

P.125 – College Street: clarify this with requests on pages 61 and 63.

2017 Culvert Replacement

P.128 – Randall Road culvert replacement coordinate with Page 63 road improvements.

At this time, the Board is being asked to provide a favorable recommendation for adoption of the FY 2017 Lewiston Capital Improvement Program.

ACTIONS NECESSARY:

Make a motion pursuant to Article VII, Section 4(e) of the Zoning and Land Use Code to send a favorable recommendation for the City Council's consideration the adoption of the FY 2017 Lewiston Capital Improvement Program, subject to any concerns raised by the Planning Board or staff.

CITY OF LEWISTON

Department of Planning & Code Enforcement

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TO: **Planning Board**
FROM: **David Hediger, City Planner**
DATE: **February 4, 2016**
RE: **February 8, 2016 Planning Board Agenda Item IV(b)**

An application submitted by Stoneybrook Consultants, Inc. on behalf of M & B, LLC to establish a seven lot subdivision for single family homes on land at 4 Matobian Ave and 504 Pond Road with access from an extension of Matobian Ave (continued from January 25, 2016).

On January 25, 2016 the Planning Board voted 4-3 to continue the public hearing regarding this agenda item. At that time, some Board members were concerned with the number of conditions of approval being recommended and wanted the applicant to return with a more complete application.

Revised plans and documentation have since been provided by the applicant in response to staff's initial review comments provided to the Planning. Staff's recommended conditions of approval from January 25th have since been addressed as follows:

1. The applicant address all of the concerns noted in the January 21, 2016 memorandum from David Hediger to Stoneybrook Consultants to staff's satisfaction.
    a. The applicant has addressed all of these concerns with the following exceptions: Note 12 on the subdivision plan references grading easements for stormwater maintenance. These easements should be shown on the subdivision plan per Article XIII, Section 4(f)(8). The revised plans now show the required grading easements for lots within the subdivision. The applicant has provided signed grading agreements with the owners of four existing developed lots at 395 and 435 Old Greene Road and 3 and 4 Matobian Ave. However, additional documentation is needed for the grading impacting the properties at 395 and 435 Old Greene as neither of these lots are part of the existing or proposed subdivision. Grading impacting their lots is necessary for drainage improvements associated with the proposed street. *Staff recommends as a condition of approval that prior to construction activity and upon recording of the subdivision plan that grading agreements be recorded at the Androscoggin Registry of Deeds for both 395 and 435 Old Greene Road and that the agreements reference the specific approved plans showing the grading easement area.*
2. The applicant addresses all of the concerns noted in the January 22, 2016 memorandum from City of Lewiston Project Engineer Ryan Barnes to David Hediger to staff's satisfaction.
    - Public Works initial concerns have been addressed to their satisfaction.
3. The grading of the stormwater pond is revised to meet access and slope requirements.

b. Sheet 2 has been revised to staff's satisfaction.

4. Notes are added to the plan that pond's construction will be monitored for compliance throughout construction until completed in accordance with the approved plans.
   c. Notes 8 and 9 on the subdivision plan address this concern to staff's satisfaction.
5. Grading easements for stormwater maintenance will be shown on the subdivision plan.
   d. See number 1 above. *Staff recommends as a condition of approval that prior to construction activity and upon recording of the subdivision plan that grading agreements be recorded at the Androscoggin Registry of Deeds for both 395 and 435 Old Greene Road and that the agreements reference the specific approved plans showing the grading easement area.*
6. The applicant will confirm sight distance meets city requirements at the proposed street intersection with Old Greene Road.
   e. The applicant has demonstrated adequate sight distance shall be provided.
7. That evidence is provided of the Association Declaration of Covenants documents having been recorded upon the recording of the subdivision plan and/or prior to any lots being sold.
   f. *Staff recommends this remain a condition of approval.*

Additional comments at this time include:

1. Planning and Code Enforcement recommended language clarification with the Declaration of Covenants. Reference should be made to February 4, 2016 memorandum from David Hediger to Stoneybrook Consultants.
2. Public Works has three minor concerns. Reference should be made to Ryan Barnes memorandum to David Hediger dated February 3, 2016. *Staff recommends as a condition of approval revised plans are submitted for review and approval by staff prior to recording of any plans or construction activity.*

Based upon above and the responses provided by the applicant's representatives, staff recommends approval with the condition that no lots are sold, no construction activity occur, and no subdivision plans are recorded until:

1. The applicant addresses all of the concerns noted in the February 4, 2016 memorandum from David Hediger to Stoneybrook Consultants to staff's satisfaction.
2. The applicant addresses all of the concerns noted in the memorandum from Ryan Barnes memorandum to David Hediger dated February 3, 2016 to staff's satisfaction.
3. That prior to construction activity and upon recording of the subdivision plan that grading agreements be recorded at the Androscoggin Registry of Deeds for 395 and 435 Old Greene Road and that the agreements reference the specific approved plans showing the grading easement area.
4. That evidence is provided of the Association Declaration of Covenants documents having been recorded upon the recording of the subdivision plan and/or prior to any lots being sold.

ACTIONS NECESSARY

Make finding that the application meets all of the necessary criteria contained in the Zoning and Land Use Code, including Article XII, Section 2 and Article XIII, Section 4, 5

and 15 of the Zoning and Land Use Code and to grant approval to M & B, LLC to establish a seven lot subdivision for single family homes on land at 4 Matobian Lane and 504 Pond Road with access from an extension of Matobian (including, if any, specific conditions raised by the Planning Board or staff).

City of Lewiston
Planning & Code Enforcement

TO: **Stonybrook Consultants, Inc.**
FROM: **David Hediger, City Planner**
DATE: **2/4/16**
RE: **L&L Estates**

Planning and Code Enforcement offer the following comments and concerns with respect to the above referenced project:

Revised plans and documentation have been provided by the applicant in response to staff's initial review comments provided to the Planning Board at their January 25, 2016 meeting. The Board voted to continue the hearing so the applicant could return with a complete application with fewer outstanding conditions.

Staff's recommended conditions of approval from January 25th have since been addressed as follows:

1. The applicant address all of the concerns noted in the January 21, 2016 memorandum from David Hediger to Stoneybrook Consultants to staff's satisfaction.
    - The applicant has addressed all of these concerns with the following exceptions:
        Note 12 on the subdivision plan references grading easements for stormwater maintenance. These easements should be shown on the subdivision plan; see Article XIII, Section 4(f)(8). The revised plans now show the required grading easements. But additional documentation is needed for grading impacting two existing developed lots at 395 and 435 Old Greene Road. Neither of these lots are part of the existing or proposed subdivision. However, grading impacting their lots is necessary for drainage improvements associated with the proposed street. The applicant has provided a signed grading agreement with the owners for 395 Old Greene Road. *Staff recommends as a condition of approval the prior to construction activity and upon recording of the subdivision plan that grading agreements be recorded at the Androscoggin Registry of Deeds and that the agreements reference the specific approved plans showing the easement area for both 395 and 435 Old Greene Road.*
2. The applicant addresses all of the concerns noted in the January 22, 2016 memorandum from City of Lewiston Project Engineer Ryan Barnes to David Hediger to staff's satisfaction.
    - Public Works is reviewing the revisions and will provide comments.
3. The grading of the stormwater pond is revised to meet access and slope requirements.
    - Sheet 2 has been revised to staff's satisfaction.

4. Notes are added to the plan that pond's construction will be monitored for compliance throughout construction until completed in accordance with the approved plans.
    - Notes 8 and 9 on the subdivision plan address this concern to staff's satisfaction.
5. Grading easements for stormwater maintenance will be shown on the subdivision plan.
    - See number 1 above. *Staff recommends as a condition of approval the prior to construction activity and upon recording of the subdivision plan that grading agreements be recorded at the Androscoggin Registry of Deeds and that the agreements reference the specific approved plans showing the easement area for both 395 and 435 Old Greene Road.*
6. The applicant will confirm sight distance meets city requirements at the proposed street intersection with Old Greene Road.
    - The applicant has demonstrated adequate sight distance shall be provided.
7. That evidence is provided of the Association Declaration of Covenants documents having been recorded upon the recording of the subdivision plan and/or prior to any lots being sold.
    - *Staff recommends this remain a condition of approval.*

Additional comments at this time include:

a. The Declaration of Covenants, Exhibit A, page 12, section 2.2:
    - Reference to "applicant" should be referred to as "declarant" to be consistent with the terms referenced in the association documents.
    - The language should be similar to that of note 7 on the subdivision plan as the post construction inspection reports are required per MS4 requirements and stormwater requirements.
b. Page 17: Reference to applicant should be referred to as declarant.
c. Page 18: Post Construction Stormwater Management Performance Guarantee:
    - The first paragraph references compliance with the "notes on Sheet 3". Sheet 3 applies largely to best management practices during construction. Pursuant to Article XIII, Section 15, the guarantee must reference that Stormwater Management Facilities have been inspected, and that they are adequately maintained and functioning as intended by the approved Post-Construction Stormwater Management Plan, or that they require maintenance or repair, describing any required maintenance and any deficiencies found during inspection of the Stormwater Management Facilities and, if the Stormwater Management Facilities require maintenance or repair of deficiencies in order to function as intended by the approved Post-Construction Stormwater Management Plan, the Person shall provide a record of the required maintenance or deficiency and corrective action(s) taken.
    - The first paragraph of the guarantee states it shall remain valid until M&B, LLC has legally relinquished ownership of the subject properties. This conflicts with an earlier sentence referencing its successors, heirs and assigns, or other responsible party shall properly maintain, repair, or replace Stormwater Management Facilities This needs to be clarified.

Additional comments may be provided upon further review. Please contact me with any questions.

Thank you.

Lewiston Maine
Setting the Pace

It's Happening Here!

Department of Public Works
David A. Jones, P.E, Director

DATE: **February 3, 2016**

TO: David Hediger, Planning Director
FROM: Ryan Barnes, P.E., Project Engineer

SUBJECT: **Matobian Avenue #2**
M&B, LLC

Lewiston Public Works has the following comments at this time upon reviewing the revised application dated **February 1, 2016**:

1. The 30" Stormdrain located at STA 18+50 has less than four feet of cover and will require insulation.

2. The typical section provided on sheet 2 shows 2.25 feet of cover on the 6" underdrain, please revise to provide 4 feet of cover.

3. Please add the grading easement descriptions for easements #3, #5, and #6 to the subdivision plan.

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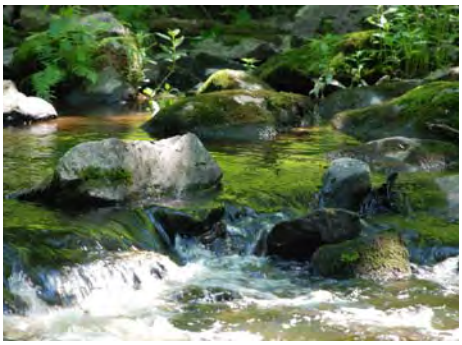

Stoneybrook Consultants, Inc.

456 Buckfield Road
Turner, Maine 04282
(207) 514-7491 voice
(207) 514-7492 fax

February 1, 2016

David Hediger, City Planner
Department of Planning & Code Enforcement
City of Lewiston
27 Pine Street
Lewiston, ME 04240-7201

Re: L & L Estates - Amendment
Development Review Application

Dear David:

Please consider the following as our additional response to your review comments of 1-21-16, specifically item # 9.

Planning and Code Enforcement offer the following comments and concerns with respect to the above referenced project:

9) Please confirm sight distance at the proposed streets intersection with Old Greene Road meets city requirements. See Article XIII, Section 4(c).

On January 30th, I measured sight distances at the intersection of Matobian Avenue and Old Greene Road. Using MDOT standards for measuring the sight distances, I found the sight distance looking northeasterly to be greater than 500'. Looking in a southwesterly direction, the sight distance was found to be 340'. The posted speed limit at the intersection is 30 MPH. MDOT's sightline standard for a posted speed limit of 30 MPH is 250'.

I have attached information from Summit Geoengineering Services, Inc. responding to comments by Ryan Barnes dated January 22, 2016. We believe that we have addressed all previous comments. In order to reconstruct Matobian Avenue to meet City Public Street requirements, grading will extend over the property of Lisa and Michael Hilton, owners of property located at 395 Old Greene Road. We have discussed this encroachment onto their property with them and they have agreed to allow us permission for that work. We will have a written agreement with them in a couple of days and will forward that information as soon as we have it.

I will plan to attend the Planning Board meeting and will be prepared to address any additional review comments at that time.

Respectfully Yours,

STONEYBROOK CONSULTANTS, INC.

Michael F. Gotto

cc: Rick LaChapelle

Department of Public Works
David A. Jones, P.E, Director

DATE: **January 22, 2016**

TO: David Hediger, Planning Director
FROM: Ryan Barnes, P.E., Project Engineer

SUBJECT: **Matobian Avenue**

Lewiston Public Works has the following comments at this time upon reviewing the application dated **January 18, 2016**:

The following comments reference MaineDEP Chapter 500: Stormwater Management

1. Section 4.B.2. Requires that runoff from 95% of the impervious area and no less than 80% of the developed area that is impervious or landscaped be treated.
    - Approximately 165' of the roadway and the turnaround are not being treated through the proposed wet pond. These two areas equal approximately 5,685 s.f. of impervious which accounts for 9.3% of the impervious area for a total of 90.7% being treated. Please revise the plans and calculations to reflect 95% treatment.

The location of the division between the portion of the road treated and the portion not treated has been adjusted to provide 95% treatment of the impervious area. The new road section not treated comprises 3,920 square feet. The total impervious at the site is 1.84 acres. The 3,920 sq ft represents 4.9% of the total impervious area. Therefore, 95.1% of the impervious area is being treated.

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2. Section 4.B.2.a. Requires that a wetpond must have a storage volume below the permanent pool equal to 1.5" times the impervious area and 0.6" times the non- impervious area.
   - The provided calculations for storage volume were based on 0.4" times the non-impervious area, please revise the calculations.

The computations have been revised and are included in the revised Stormwater Report

The following questions reference MaineDEP Volume III: BMPs Technical Design Manual – Chapter 4 Wet Ponds

3. Section 4.2.3 Permanent Flow – the stormdrain inlet at STA 16+30 right is designed to be three feet below the adjacent "potential" vernal pool. Will this cause permanent flow to enter the wet pond and cause a reduced detention time in the pond, and reduced treatment?

The location of the inlet ditch is not within the wetland area. However, in consideration of the above the invert of the inlet has been raised 2 feet to elevation 257 feet. This will not impact the wetland.

4. Section 4.2.5 Locations in Wetlands states that wet ponds must not be located within wetlands without appropriate permits from DEP and the Army Corps of Engineers. Have appropriate permits been received?

Not Applicable

5. Section 4.3.1.6 Ponds on Slopes states that when ponds are created by cutting and filling a slope, care should be taken that the seasonal groundwater table on the slope above the pond is not exposed, thus creating a seasonal spring. Given the proximity of existing wetlands, has the seasonal groundwater table been determined to know if it will be exposed?

This will be addressed during construction. Refer to new Note #4 on Sheet 3 under Construction Notes.

6. Section 4.3.1.14 Access A maintenance access should be added to the plans, the access should be a minimum of 10' wide with a maximum slope of 15% and a maximum cross slope of 3%.

A maintenance access drive has been added to the pond plan on Sheet 2.

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7. Section 4.3.1.20 Construction Construction of wet ponds can be started no later than September 1 or earlier than June 1.

   Construction of the pond will occur during the period mentioned above. Additional winter construction measures will be undertaken as described in Note #3 under Construction Notes on sheet 3.

The following comments reference the City of Lewiston Street Lighting Policy

8. Section 7.3.2 requires street lighting at intersections and dead ends. Please add a street light at these two locations.

   Two lights have been added to the plans

9. Section 7.4.1 requires street lighting at corners with angles less than 120° and at the bottom of steep hills. Please add a street light at these four locations.
   Three additional lights have been added to the plans.

10. The city requires an American Electric ATBS E MVOLT R2 NL PT AO PCL1 street light mounted on a 35' pole with a 6'x1.25" upsweep bracket.
    This product has been specified in Note 3 under Construction Notes on Sheet 3

The following comments reference the City of Lewiston Policy for the Design and Construction of Streets and Sidewalks

11. Section 2.02 slopes adjacent to the edge of pavement shall have erosion control matting installed along the edge a minimum of three feet wide. Please revise the typical section and details to reflect this.

    Revision made on Sheet 2

12. Section 2.02 slopes along the edge roadway shall have a maximum slope of 3:1. Please revise the typical section to reflect this.
    Revision made on Sheet 2

13. Section 2.03 stormdrain and underdrain shall have a minimum of four feet of cover. Several pipes have less than three feet of cover; please revise the drainage inverts accordingly.
    The inverts of the culverts have been adjusted to provide 4 feet of cover where possible. In one case the 4 foot depth cannot be achieved. We propose to install 2 inches of insulation over the pipe in this sections (24" CPP, Station 17+75 to Station 18+50)

14. Section 3.02 the maximum grade at Old Greene Road shall not exceed 3% for the first 100'. Between STA 0+50 and STA 1+12 the grade exceeds 3% because of the vertical curve please revised the profile accordingly.

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The road profile has been adjusted to provide a grade of 1.5% from Station 0+00 to Station 1+00. A curb and underdrain have been added to minimize the grading into the adjacent property that would be required with a ditch.

The Applicant is requesting a waiver for this section of road (150 feet) to allow for a 2H:1V side slope. This waiver will preclude grading on the neighboring property.

15. Section 4.02 the minimum gravel depth required for a public street is 15", after cutting and sloping the roadway it does not appear that adequate gravel will exist atTest Pits 1, 2, and 3. The existing roadway should be boxcut to the proper depth, or notes should be added to the plan requiring the design engineer to review installation of gravel and determine the adequacy of gravel depth as it is being installed.
The road profile has been adjusted to accommodate potential unanticipated changes in the existing subbase thickness. A note has been added to the profile indicating that the subbase thickness will be confirmed by SGS during construction improvements made in this section.

16. Section 4.03 states all loam, loamy material, clay, stumps, roots, brush and perishable material be removed. Test Pits 6 through 12 indicate the presence of these materials, how will this be addressed during construction? Additionally the plans indicate the roadway going through a wetland, what measures will be taken to protect the subgrade in this area?
Note #2 under Construction Notes has been added to Sheet 3.

General Plan Comments

17. Please add drainage easement lines for areas where the proposed ditches extend on to private property.
Drainage easement lines have been added to the plans.

18. The check dams located between STA 1+00 and STA 2+25 are spaced at 50' this spacing exceeds the recommend spacing for the 7.5% slope.
The stone check dam spacing has been reduced to 25 feet in this section as shown on Sheet 1.

19. The cross slope on the right side of the roadway should be labeled on the typical section.
Revision has been made on the Typical Cross Section on Sheet 2

20. The stormdrain inlet at STA 16+30 right is designed to be three feet below the adjacent "potential" vernal pool have appropriate permits been received from MaineDEP and the Army Corp of Engineers relative to this work?
Not Applicable

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21. The Stabilized Construction Exit detail should be revised to be a minimum of 50' long and included a geotextile fabric.
    Revision has been made to the Detail on Sheet 3
22. The stormdrain between CB 4 and the pond is listed as a 16"∅ the stormwater calculations list it as 24" ∅
    Revision has been made on Sheet 2

Stormwater Calculations

23. The flow rates listed in predevelopment table for watershed 1 do not match the flow rates in the provided hydrocad analysis for watershed 1.

    The flow rates were taken from an obsolete document. They have been revised in the new revised stormwater report.

24. The predevelopment areas for watershed 1 appear to include the impervious area for the existing portion of Matobian Way. The predevelopment areas and tc paths should be based on the condition of the site as of 11/16/05.

    The impervious area for Matobian Ave has been removed from the pre-development Hydrocad model. The amount of impervious has decreased from 0.43 Acres to 0.42 acres. Sheet SW-1 has been revised to reflect this change. The revised Hydrocad model is included in the revise Stormwater Plan.

25. The postdevelopment calculations only include 0.78 acres of impervious area, the portion of the proposed roadway included in these watersheds would be approximately 1.25 acres.

    The post development computations have been revised to account for 1.84 acres (80,324 sq ft) of impervious area, including new road, driveways, and roofs. This impervious area was also used in the wet pond sizing. The computations for the wet pond have also been revised accordingly. The pond has been sized to treat 100% of the impervious area (95% of the impervious is actually treated, see Comment 1)

26. The post development calculations for watershed 6 do not match the drainage areas shown on the post development watershed maps.

    The numbers have been revised on Sheet SW2.1 to match the numbers on Sheet SW2.2.

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GRADING AGREEMENT

TO WHOM IT MAY CONCERN:

We, Lisa E. and Michael S. Hilton with mailing address of 395 Old Greene Road, Lewiston, Maine 04240, being the current owners of property located at 395 Old Greene Road, authorize and grant our permission to M&B, LLC, with mailing address of 379 Lisbon Street, Lewiston, Maine, 04240, to file and seek approvals from the City of Lewiston to reconstruct Matobian Avenue and to extend the required side slopes onto our property. These rights, to be at the risk and expense of M&B, LLC, include the right to go upon our land to cut trees, bushes, shrubs, remove roots and earth, and to do any other work necessary to construct Matobian Avenue to City of Lewiston standards along the edge of our property as shown on the approved project plans.

In exchange for us granting these rights, M&B, LLC agrees to construct a 14' wide field entrance from Matobian Avenue onto our property near the property boundary abutting Brian LaChapelle. This field entrance is to be constructed at the sole expense of M&B, LLC.

M&B, LLC agrees to restore our land to its original condition, to the extent that is reasonable, including loaming, reseeding, and erosion control within the work areas. M&B, LLC shall be responsible (i) for obtaining all permits and improvements necessary or appropriate for its use of this area, and (ii) for compliance with all applicable laws, regulations and approvals.

Dated: 2-1-2016

Ron LeBlanc
Witness

Lisa E. Hilton
Lisa E. Hilton

Ron LeBlanc
Witness

M S Hilton
Michael S. Hilton

Ron LeBlanc
Witness

Rick LaChapelle
For M&B, LLC

GRADING AGREEMENT

TO WHOM IT MAY CONCERN:

We, Brian R. and Meredith L. LaChapelle with mailing address of 3 Matobian Avenue, Lewiston, Maine 04240, being the current owners of property located at 3 Matobian Avenue, authorize and grant our permission to M&B, LLC, with mailing address of 379 Lisbon Street, Lewiston, Maine 04240, to file and seek approvals from the City of Lewiston to reconstruct Matobian Avenue and to extend the required side slope grading and drainage improvements onto our property. These rights, to be at the risk and expense of M&B, LLC, include the right to go upon our land to cut trees, bushes, shrubs, remove roots and earth, and to do any other work necessary to construct Matobian Avenue to City of Lewiston standards along the edge of our property as shown on the approved project plans.

Before or at the time of public street acceptance of the street after construction, we further agree to grant the City of Lewiston easements rights to maintain any improvements constructed by M&B, LLC on or over our property.

M&B, LLC agrees to restore our land to its original condition, to the extent that is reasonable, including loaming, reseeding, and erosion control within the work areas. M&B, LLC shall be responsible (i) for obtaining all permits and improvements necessary or appropriate for its use of this area, and (ii) for compliance with all applicable laws, regulations and approvals.

Dated: 2-3-16

Witness

Brian R. LaChapelle

Witness

Meredith L. LaChapelle

Witness

For M&B, LLC

2/3/2016 11:37 AM FROM: Stoneybrook TO: 12077844778 PAGE: 001 OF 003

GRADING AGREEMENT

TO WHOM IT MAY CONCERN:

I, Matthew P. LaChapelle with mailing address of 435 Old Greene Road, Lewiston, Maine 04240, being the current owner of property located at 435 Old Greene Road, authorize and grant permission to M&B, LLC, with mailing address of 379 Lisbon Street, Lewiston, Maine, 04240, to file and seek approvals from the City of Lewiston to reconstruct Matobian Avenue and to extend the required side slope grading and drainage improvements onto my property. These rights, to be at the risk and expense of M&B, LLC, include the right to go upon my land to cut trees, bushes, shrubs, remove roots and earth, and to do any other work necessary to construct Matobian Avenue to City of Lewiston standards along the edge of my property as shown on the approved project plans.

Before or at the time of public street acceptance of the street after construction, I further agree to grant the City of Lewiston easements rights to maintain any improvements constructed by M&B, LLC on or over my property.

M&B, LLC agrees to restore my land to its original condition, to the extent that is reasonable, including loaming, reseeding, and erosion control within the work areas. M&B, LLC shall be responsible (i) for obtaining all permits and improvements necessary or appropriate for its use of this area, and (ii) for compliance with all applicable laws, regulations and approvals.

Dated: 2-3-16

Witness

Matthew P. LaChapelle

Witness

For M&B, LLC

2/3/2016 11:37 AM FROM: Stoneybrook TO: 12077844778 PAGE: 003 OF 003

GRADING AGREEMENT

TO WHOM IT MAY CONCERN:

We, Ronald L. and Ginette H. LeBlanc with mailing address of 4 Matobian Avenue, Lewiston, Maine 04240, being the current owners of property located at 4 Matobian Avenue, authorize and grant our permission to M&B, LLC, with mailing address of 379 Lisbon Street, Lewiston, Maine 04240, to file and seek approvals from the City of Lewiston to reconstruct Matobian Avenue and to extend the required side slope grading and drainage improvements onto our property. These rights, to be at the risk and expense of M&B, LLC, include the right to go upon our land to cut trees, bushes, shrubs, remove roots and earth, and to do any other work necessary to construct Matobian Avenue to City of Lewiston standards along the edge of our property as shown on the approved project plans.

Before or at the time of public street acceptance of the street after construction, we further agree to grant the City of Lewiston easements rights to maintain any improvements constructed by M&B, LLC on or over our property.

M&B, LLC agrees to restore our land to its original condition, to the extent that is reasonable, including loaming, reseeding, and erosion control within the work areas. M&B, LLC shall be responsible (i) for obtaining all permits and improvements necessary or appropriate for its use of this area, and (ii) for compliance with all applicable laws, regulations and approvals.

Dated: 2-3-16

Matthew LaChapelle
Witness

Ronald L. LeBlanc
Ronald L. LeBlanc

Matthew LaChapelle
Witness

Ginette H. LeBlanc
Ginette H. LeBlanc

Matthew LaChapelle
Witness

For M&B, LLC

2/3/2016 11:37 AM FROM: Stoneybrook TO: 12077844778 PAGE: 002 OF 003

SUMMIT
GEOENGINEERING SERVICES

Stormwater Report

L & L ESTATES
OLD GREENE ROAD
LEWISTON, MAINE

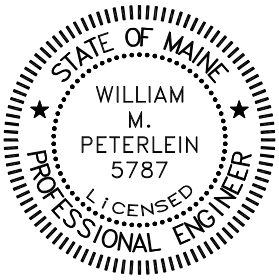
Prepared for:

Stoneybrook Consultants
456 Buckfield Road
Turner, Maine

Prepared by:

Summit Geoengineering Services, Inc.
P.O. Box 7216
Lewiston, Maine 04243

SGS #15135
January 2016



STORMWATER REPORT

L&L ESTATES
MATOBIAN AVENUE
LEWISTON, MAINE

This storm water report is prepared as part of a Development Review application for the construction of a road for a subdivision extending from old Greene Road. The intent is to create a standard subdivision with all lots exceeding the minimum lot size requirements of 60,000 square feet with 200' of frontage on a public street. Home development on each lot shown will also be able to meet all space and bulk requirements of these two zoning districts with construction of any home being placed in the building envelopes shown on the amended subdivision plan.

Stormwater improvements for this project have been designed to control stormwater runoff from the fill site as well as the proposed street improvements. This project will disturb 3.11 acres and will have 1.40 acres of impervious area once constructed. Erosion control information is included on the project plans and in this stormwater report. All stormwater improvements and erosion control measures have been designed to meet City and State requirements.

Based on the above, the current City and State regulations require consideration of Basic, General, and Flooding standards. Each of these areas of consideration is discussed below.

Reference is made to the following site development drawings.

Sheet 1 PLAN & PROFILE MATOBIAN AVENUE TO STATION 10+00
Sheet 2 PLAN & PROFILE STATION 10+00 TO END
Sheet 3 CONSTRUCTION NOTES/DETAILS

The storm water control designs are based on the following impervious and pervious areas.

Basic Standards

For this project, Basic Standards include the following elements.

- Erosion and Sedimentation Control Plan
  - General practices.
  - Temporary erosion and sedimentation control measures.
  - Temporary mulch/vegetation.

    - Permanent seeding.
    - Dust control.

- Inspection and maintenance.
    - Inspection of Temporary E&S Control Measures.
    - Inspection of Permanent E&S Control Measures.
    - Emergency measures.
    - Annual maintenance.
    - General maintenance.

- Housekeeping.

Information on each of these elements is presented in Appendix A. Included are inspection and maintenance forms for during construction and post construction, a City of Lewiston Annual Stormwater Management Facilities Certification Form, and a Post Construction Stormwater Management Plan performance guarantee document.

General Standards

To provide sufficient pollutant removal for storm water from the new road, the Applicant proposes to construct a wet pond. The location of the wet pond is shown on Sheet 2. The wet pond has been designed using the criteria in Chapter 4 Wet Ponds, of Volume III BMPs Technical Design Manual, January 2006. Computations are included in Appendix B. A plan view of the pond is presented on Sheet 2. A cross section of the wet pond and details are presented on Sheet 3. The permanent pool is designed to treat 100% of the impervious and non-impervious developed areas. The end portion of the proposed road is not treated in the pond. This untreated area represents 4.9% of the total post-developed impervious area. Thus, 95.1% treatment of the impervious area is realized.

Flooding Standards

The flooding standards are met by the inclusion of a channel protection volume set-aside within the wet pond. The channel protection volume allows for release of the post development flow rates to below the "pre-development" flow rates. Reference should be made to Sheets SW-1 and SW-2 included in Appendix D. The channel protection volume is computed for 93% of the new impervious area. This treatment meets the requirements for linear projects.

The soil at this site is mapped as Charlton Fine Sandy Loam, which is classified as Hydrologic Soil Group B.

"Pre-development" Flow Rates. For this project the "pre-development" flow rates were based on the condition of the site before any filling or other construction activities were completed (exceptions are a house on Acorn Court and three houses adjacent to Old Greene Road). Two control points were established based on the original topography. The runoff from both of these watershed areas will be intercepted by the proposed roadway after it is constructed and all post development stormwater from these areas will be directed to the new wet pond. The following table summarizes the peak runoff from the existing conditions.

"PREDEVELOPMENT" FLOW RATES (cfs)			
Event	**CP#1**	**CP#2**	**TOTAL**
2 yr	0.49	0.29	0.78
10 yr	2.69	1.62	4.31
25 yr	4.28	2.58	6.86

Detailed numbers are included in the Hydrocad Output in Appendix C.1

Post Development Flow Rates.

The stormwater runoff from the site after construction of the new roadway is shown on the attached Sheet SW-2 in Appendix D. The model boundaries match the boundaries for the existing conditions. Post development runoff from all areas in the uphill watershed is directed into the wet pond. The post development flowrates are based on treating 93% of the new impervious area of this linear project.

The Hydrocad output for the Post Developed site model is included in Appendix C.2.

A comparison of the "predevelopment" and post development peak flow rates is summarized in the following table.

STORMWATER RUNOFF SUMMARY			
Storm Event	**2 yr**	**10 yr**	**25 yr**
"Predevelopment"	0.78 cfs	4.31 cfs	6.86 cfs
Post Development	0.69 cfs	3.11 cfs	5.89 cfs

In all cases the post developement flow rates are less than the "pre-development" flow rates.

MS4 Area

Stormwater discharge from the wet pond will be into the City's MS4 Area.
A qualified Third Party Inspector will be engaged by the Applicant's representative:

Ron LeBlanc
4 Matobian Avenue
Lewiston, ME 04240
212-0004

at least annually to inspect the wet pond in accordance with the approved Post-Construction Stormwater Management Plan (PCSMP) for the wet pond. If the pond requires maintenance to function as intended, the Qualified Third Party shall note the deficiencies and the remedies. The Applicant's representative shall take the required actions to address any deficiencies. The Qualified Third Party Inspector shall provide, on or by May 31 of each year, a completed and signed City of Lewiston Annual Stormwater Management Facilities Certification (SMF) Form, certifying that the SMF have been inspected, and that they are adequately maintained and functioning as intended by the PCSMP, or that they require maintenance or repair, in order to function as intended by the PCSMP The Qualified Third Party shall provide a record of the required maintenance or deficiency and corrective actions taken.

A Post Constriction Stormwater Management Performance guarantee will be executed and filed with the Registry of Deeds and will be included in the deed for each lot. A copy of the PCSMP is included at the end of Appendix A.

APPENDIX A

BASIC STANDARDS

1.0 EROSION AND SEDIMENT CONTROL

The following plans are included in the Site Review Application to satisfy the Basic Standards Submission requirements:

Sheet 1 PLAN & PROFILE MATOBIAN AVENUE TO STATION 10+00
Sheet 2 PLAN & PROFILE STATION 10+00 TO END
Sheet 3 CONSTRUCTION NOTES/DETAILS

The Basic Standards herein are for temporary and permanent measures directly associated with the construction activities at the site.

Erosion and sediment control on Site will be implemented in accordance with the "Maine Erosion and Sediment Control BMPs" published by the MDEP. The following are general guidelines and preventative measures to control erosion and sediment during construction activities.

General Practices

- Sediment barriers (e.g., bark mulch berm) will be installed prior to beginning soil disturbance activities (e.g., grubbing, grading) at the perimeter of the property. Sediment barriers will be maintained until the disturbed area is permanently stabilized.
- Exposed soils that will not be worked for more than 7 days will be stabilized with mulch or other non-erodible cover.
- Erosion and sediment control features will be inspected and repaired weekly and before and after every storm event.
- All temporary soil stockpiles will be surrounded by silt fence and otherwise protected from creating down-slope sediment issues
- Temporary erosion and sediment control measures will be removed within 30 days after permanent stabilization is attained.
- Stabilization of soil during the winter shall be in accordance with this document and the notes on the construction drawings.

Temporary Erosion and Sediment Control Measures

Temporary erosion and sediment control measures will be in-place prior to beginning construction activities and will be maintained for the duration of the construction project. Silt fencing will be installed along the property lines adjacent to all disturbed areas.

Temporary Mulch/Vegetation

Exposed soil areas that will not be worked for more than 7 days will be mulched. Mulch shall consist of hay or straw that is air-dried, free of undesirable seeds and coarse materials. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

Temporary vegetation will be used in areas that will not be brought to final grade for a year or less. Preparation of the seedbed will be necessary to ensure sufficient vegetative growth. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer will be applied at a rate of 15 pounds per 1,000 square feet of 10-10-10 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. If the soil has been compacted during construction then the soil should be loosened to a depth of approximately 2 inches. Seeding recommendations are provided in the table below.

TEMPORARY GROUND STABILIZATION		
Seed	Pounds per 1,000 sq ft	Recommended Seeding Dates
Winter Rye	2.5	August 30-October 1
Oats	2.0	April 1-July 1 August 30-September 30
Annual Ryegrass	1.0	April 1-July 1
Sudangrass	1.0	May 15-August 30
Perennial	1.0	August 30-September 30

Note: Mulch shall be applied at the rates previously specified following the seed application.

Permanent Stabilization

Areas that will not be worked for more than one year or have been final graded will be permanently stabilized within 7 days. Permanent stabilization at this site will include road sub-base/pavement, permanent seeding, and permanent landscaping. Permanent seeding will be performed upon completion of construction activities. The type of seeding mix to be used for permanent seeding is noted on Sheet 3 CONSTRUCTION NOTES/DETAILS. All disturbed areas not otherwise stabilized shall be graded, smoothed, and prepared for

final seeding. Four inches of loam (minimum) shall be spread over the disturbed areas and smoothed to a uniform surface. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer can be applied at a rate of 15 pounds per 1,000 square feet of 10-20-20 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. Both the lime and fertilizer should be worked into the ground to a depth of 4 inches as practical. The seedbed should be subsequently rolled to firm prior to seeding. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

If hydro-seeding is used lime and fertilizer may be added with the seed and applied simultaneously. The use of straw mulch and adhesive material or 500 pounds of wood fiber mulch provides sufficient erosive protection. Seeding rates will be increased by 10% if hydro-seeding practices are employed.

All construction activities at the site are planned to be completed by or before the fall of 2014. In the event that construction occurs after 45 days prior to the first killing frost (October 15), dormant seeding will be performed. The seed mixture described Sheet 3 CONSTRUCTION NOTES/DETAILS would be doubled. Mulch should be applied according to the temporary mulching practices discussed previously. Dormant seeding requires inspection in the spring. All areas where cover is inadequate shall be immediately reseeded and mulched as soon as possible.

Erosion and sediment control features will not be removed until after all disturbed areas have been stabilized with permanent seeding exhibiting at least 90% vegetative cover.

Dust Control

Dust control methods will be employed on site to prevent movement of dust from exposed soil surfaces that could potentially create hazards to wildlife, humans, or plant life both onsite and offsite. Dust generated by activities at the Site, including dust associated with traffic to and from the Site, will be controlled by sweeping, paving, watering or other best management practices for control of fugitive emissions.

Preventive measures will include the following, as needed:

- Traffic will be restricted to predetermined routes (the existing driveways). Exit and entrance during construction will be limited to these locations.
- Natural vegetation and existing paved areas will be maintained to the extent practical.

- Excavation activities will be conducted in phases to reduce the area of land disturbed at any one time.
- Mulching and vegetative practices (e.g., temporary and permanent mulching, temporary and permanent vegetative cover) will be employed to reduce the need for dust control.
- Paved surfaces and roadways will be swept (e.g., mechanical sweeper) where necessary to prevent dust buildup.

Construction will begin immediately following the receipt of all necessary permits. The anticipated construction timeframe is winter-spring 2016.

Winter Construction

Winter construction" is construction activity performed during the period from November 1 through April 15. If disturbed areas are not stabilized with permanent measures by November 1 or new soil disturbance occurs after November 1, but before April 15, then these areas must be protected and runoff from them must be controlled by additional measures and restrictions.

- *Site Stabilization*. For winter stabilization, hay mulch is applied at twice the standard temporary stabilization rate. At the end of each construction day, areas that have been brought to final grade must be stabilized. Mulch may not be spread on top of snow.

- *Sediment Barriers*. All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers.

- *Ditch*. All vegetated ditch lines that have not been stabilized by November 1, or will be worked during the winter construction period, must be stabilized with an appropriate stone lining backed by an appropriate gravel bed or geotextile unless specifically released from this standard by the Department.

- *Slopes*. Mulch netting must be used to anchor mulch on all slopes greater than 8% unless erosion control blankets or erosion control mix is being used on these slopes.

2.0 INSPECTION AND MAINTENANCE PLAN

2.1 Construction Inspections

Inspections and maintenance of erosion and sedimentation control measures and stormwater control facilities will be performed during construction. Inspections will include:

- Disturbed and impervious areas.
- Erosion Control Measures.
- Materials storage areas exposed to precipitation.
- Vehicle entry and exit locations.

These areas will be inspected at least once per week as well as before and after a storm event, and prior to completing permanent stabilization measures.

An inspection check list sheet is included at the end of this section. The Contractor will be responsible for maintaining and preserving all erosion and sediment control features associated with the Site during construction. Any problems, damage, or costs directly associated with the performance of or lack of erosion control measures and maintenance are the sole responsibility of the Contractor.

In addition to the above, the applicant will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures. If necessary, the inspecting engineer will interpret the pond's construction plan for the contractor. Once all stormwater management structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the pond has been completed.

2.2 Post-Construction Inspections

The site Applicant will be responsible for long term inspection and maintenance of the wet pond and ensuring that the pond was construction in accordance with the design intents after construction is completed. An inspection checklist is included at the end of this section.

The Applicant shall pay for the services of a qualified Third Party to conduct inspections of the site, as needed, for compliance with the provisions of the Erosion and Sedimentation Control Plan. The person responsible for coordinating the Third Party and for performing any required maintenance is:

Ron LeBlanc
4 Matobian Avenue
Lewiston, ME 04240
212-0004

The Third Party inspector will provide to the City of Lewiston documentation on management of the stormwater facilities as required (refer to attached MS4 requirements).

2.3 Housekeeping

During and after construction, good housekeeping practices will be employed to minimize potential environmental impacts, specifically:

- Spill Prevention. Both petroleum and non-petroleum products utilized during construction will be stored in compatible and properly labeled containers. When not in use, these containers will be closed and storedin a secure area. A spill kit will be kept in close proximity to the secured area. Temporary fuel storage tanks mobilized to the site for construction will be double-walled. Both preventative and routine maintenance will be conducted to minimize the potential for fuel releases. These activities will be conducted offsite during construction.
- Groundwater Protection. Petroleum, non-petroleum, and other hazardous materials will not be handled on site.
- Fugitive Sediment and Dust. During construction, tracking of mud from construction vehicles into the public road will be minimized. During wet periods, the public road will be swept weekly, at a minimum, to control the amount of mud leaving the Site. During dry periods, fugitive sediment and dust will be controlled on site using a water truck, or similar, as necessary.
- Debris and other Materials. Litter, construction debris and chemicals will be stored in a manner such that the exposure to stormwater is minimized. Litter and construction debris will be separated and containerized, as necessary, for proper disposal. Chemicals will be stored in compatible and properly labeled containers and stored in a secure area equipped with a spill kit.

CONSTRUCTION INSPECTION

AND

MAINTENANCE FORMS

CONSTRUCTION

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG
L & L ESTATES, MATOBIAN AVENUE, LEWISTON, MAINE

Inspections to be performed once per week, before and after storms, and prior to completing permanent stabilization.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Vehicle Entrances and Exits	Yes No		
Disturbed Areas	Yes No		
Impervious Areas	Yes No		
Wet Pond Construction	Yes No		
Erosion and Sedimentation Control	Yes No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

REMARKS:

Disturbed Areas: Inspect mulched and temporary seed areas for rill erosion. Add additional mulch if less than 90% coverage is observed. Inspect nets after rain events for dislocation or failure.

Impervious Areas: Sweep or wash pavement as necessary to keep dust levels to a minimum. Wash water should be directed to an approved sediment trap, such as a "Filter Sock". Accumulated sediment shall be removed and stored or disposed of appropriately. Information on "filter socks" can be found at www.filtrexx.com.

Erosion and Sedimentation Control: Inspect silt fence for erosion or sedimentation below them. Replace silt fence where evidence of undercutting or impounding of water behind the fence occur. Replace fabric that has decomposed. Remove sediment deposits behind silt fence when deposits reach ½ the height of the fence.

Vehicle Entrances and Exits: Check for mudding and clogging of stone and replace as necessary. Sweep or wash pavement at exits where mud has been tracked onto the travelled way.

Wet Pond Construction: Confirm that pond is constructed in accordance with plans. Observe for seepage in sidewalls during construction. Consider additional construction requirements for construction during the winter, including the effects of snow and freezing temperatures

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG
L & L ESTATES, MATOBIAN AVENUE, LEWISTON, MAINE

Inspections for the Wet Pond to be performed once per year in accordance with the Post-construction Stormwater Management Plan.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Sediment Fore-bay	Yes / No		
Inlets and Outlets	Yes / No		
Gravel Trench	Yes / No		
Slope Erosion and Instability	Yes / No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

Sediment Forebay: Remove debris and sediment from the forebay. Remove clogged sections of the graded stone fore-bay outlet and replace.

Inlets and Outlets: Inspect for proper function and remove any accumulated debris.

Gravel Trench Outlet: Verify that the pond is slowly emptying through the gravel filter. Replace the top several inches of the gravel when water ponds above the permanent pool for more than 72 hours.

Slope Erosion and Instability: Inspect for erosion, destabilization of site slopes, embankment settling, or signs of structural failure. Repair slopes as necessary immediately upon the identification of problems.

Maintenance Dredging: Dredge accumulated sediments from the pond every 15 to 20 years.

Note: Inspections by the Qualified Third Party are for the wet pond only. Drainage structures associated with the roadway are the responsibility of the City of Lewiston.

MS4 AREA REQUIREMENTS

Stormwater discharge from the wet pond will be into the City's MS4 Area.
A qualified Third Party Inspector will be engaged by the Applicant's representative:

Ron LeBlanc
4 Matobian Avenue
Lewiston, ME 04240
212-0004

at least annually to inspect the wet pond in accordance with the approved Post-Construction Stormwater Management Plan (PCSMP) for the wet pond. If the pond requires maintenance to function as intended, the Qualified Third Party shall note the deficiencies and the remedies. The Applicant's representative shall take the required actions to address any deficiencies. The Qualified Third Party Inspector shall provide, on or by May 31 of each year, a completed and signed City of Lewiston Annual Stormwater Management Facilities Certification (SMF) Form, certifying that the SMF have been inspected, and that they are adequately maintained and functioning as intended by the PCSMP, or that they require maintenance or repair, in order to function as intended by the PCSMP The Qualified Third Party shall provide a record of the required maintenance or deficiency and corrective actions taken.

A Post Constriction Stormwater Management Performance guarantee will be executed and filed with the Registry of Deeds and will be included in the deed for each lot. A copy of the PCSMP is attached.

POST CONSTRUCTION STORMWATER MANAGEMENT PERFORMANCE GUARANTEE
M&B, LLC, LEWISTON, MAINE

This performance guarantee is provided by M&B LLC, a corporation located at 379 Lisbon Street in Lewiston, Maine. M&B, LLC, its successors, heirs, and assigns hereby acknowledge their legal obligation to repair, maintain, and replace the Stormwater Management Facilities (wet pond only) at the L&L Estates subdivision on Matobian Avenue property in accordance with the notes on Sheet 3, Construction Notes and Details, dated January 18, 2016. This performance guarantee shall be valid until M&B, LLC has legally relinquished ownership of the subject properties.

The City of Lewiston shall have the ability to establish a special assessment, district, or other means upon the parties responsible for the post construction stormwater management plan to ensure resources are available to perform the repairs, maintenance, and replacement of the Stormwater Management Facilities.

Stormwater management items at the subject property include a new stormwater detention pond including the outlet control structure and conveyances. The estimated costs of repair and replacement vary widely depending on the extent of repair or replacement necessary. Annual repairs could range between $1,000 and $10,000. Complete replacement of the wet pond could range as high as $30,000.

This document shall be recorded in the Androscoggin Registry of Deeds and be included in the deeds for each subdivision property.

_____
M&B LLC

_____
Date

_____
Witness

CITY OF LEWISTON

Annual Stormwater Management Facilities Certification

I, _____, certify the following:

1. I am making this Annual Stormwater Management Facilities Certification for the following property:

L&L Estates – Matobian Avenue

2. The owner of the Property is:

M&B LLC, 379 Lisbon Street, Lewiston, Maine 04240

3. I am a Qualified Third-Party Inspector hired by the owner of the Property.

4. I have knowledge of erosion and sedimentation control and have reviewed approved Post-Construction Stormwater Management Plan for the property.

5. On _____, I inspected the Stormwater Management Facilities, including but not limited to The WET POND located at Station 17+50 of Matobian Avenue.

6. At the time of my inspection of the Stormwater Management Facilities on the Property, I identified the following needs for routine maintenance or deficiencies in the Stormwater Management Facilities:

7. On _____, the Owner of the property took or had taken the following routine maintenance or the following corrective action(s) to address the deficiencies in the Stormwater Management Facilities stated in 5 above:

8. As of the date of this certification, the Stormwater Management Facilities are functioning as intended by the approved Post-Construction Stormwater Management Plan for the Property.

Date:_____

By:_____

Print Name:_____

Personally appeared the above-named_____, of _____, and acknowledged the foregoing Annual Certification to be said person's free act and deed in said capacity.

Before me, Notary Public, on this date: _____

Signature; _____

Mail this certification to the City of Lewiston at the following address:

Director of Planning and Code Enforcement
City Building
27 Pine Street
Lewiston, Maine 04240

Director of Public Works
103 Adams Avenue
Lewiston, Maine 04240

APPENDIX B

GENERAL STANDARDS COMPUTATIONS

L&L Estates, Matobian Avenue, Lewiston, Maine

Channel Protection Pond Geometry

Top / Berm = 351
Emergence Outlet = 349.5 – Top of "Channel protection volume" – 15728 sf
Back side of bench = 347.5 – Bottom of "Channel Protection" – 13790 sf
Total Channel protection = 29518 cf

Required Channel Protection

Impervious - 80,324 sf x .0833 = 6691 cf
Non-impervious – 681966 x .0333 = 22709cf
Total required = 29400 cf

Wet Pond Geometry

Top inside edge of bench – elev = 347.5 – top of wet pond – 10378sf
Elev 346 = 9196 sf
Elev 344 = 7668 sf
Elev 342 = 6260 sf
Total 45754 cf

Required Wet Pond

Impervious – 80,324 sf x 0.125 = 10041 cf
Non impervious – 681966 x 0.0333 = 34098 cf
Total required = 44138 cf

Mean depth

Elev 346.5 – 1' below top of wet pond – 9584
Bot/pond – 6260
Vol = 35649cf divided by surface area at 346.5 (9584) = 3.72

Summary for Pond WP: Wet Pond

Inflow Area = 17.707 ac, 10.71% Impervious, Inflow Depth > 2.45"
Inflow = 11.97 cfs @ 13.44 hrs, Volume= 3.614 af
Outflow = 11.91 cfs @ 13.52 hrs, Volume= 2.937 af, Atten= 1%, Lag= 4.7 min
Secondary = 11.91 cfs @ 13.52 hrs, Volume= 2.937 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 349.75' @ 13.52 hrs Surf.Area= 15,982 sf Storage= 33,514 cf

Plug-Flow detention time= 135.2 min calculated for 2.933 af (81% of inflow)
Center-of-Mass det. time= 55.6 min (979.9 - 924.3)

Volume	Invert	Avail.Storage	Storage Description
#1	347.50'	54,382 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

Device	Routing	Invert	Outlet Devices
#1	Secondary	349.50'	**30.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

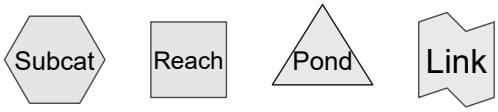
Secondary OutFlow Max=11.88 cfs @ 13.52 hrs HW=349.75' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 11.88 cfs @ 1.57 fps)

APPENDIX C

FLOODING STANDARDS COMPUTATIONS

APPENDIX C.1

PRE-DEVELOPMENT COMPUTATIONS



Routing Diagram for exisitng conditions rev 1-25-16. no WS3
Prepared by Microsoft, Printed 2/1/2016
HydroCAD® 10.00-12 s/n 01406 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.980	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.480	98	Paved parking, HSG B (1S, 2S)
0.140	98	Roofs, HSG B (1S, 2S)
14.830	55	Woods, Good, HSG B (1S, 2S)
17.430	**57**	**TOTAL AREA**

Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: WS#1 Runoff Area=11.200 ac 3.75% Impervious Runoff Depth=0.25"
Flow Length=1,050' Tc=99.0 min CN=57 Runoff=0.49 cfs 0.230 af

Subcatchment 2S: WS#2 Runoff Area=6.230 ac 3.21% Impervious Runoff Depth=0.25"
Flow Length=1,000' Tc=88.2 min CN=57 Runoff=0.29 cfs 0.128 af

Total Runoff Area = 17.430 ac Runoff Volume = 0.357 af Average Runoff Depth = 0.25"
96.44% Pervious = 16.810 ac 3.56% Impervious = 0.620 ac

Summary for Subcatchment 1S: WS#1

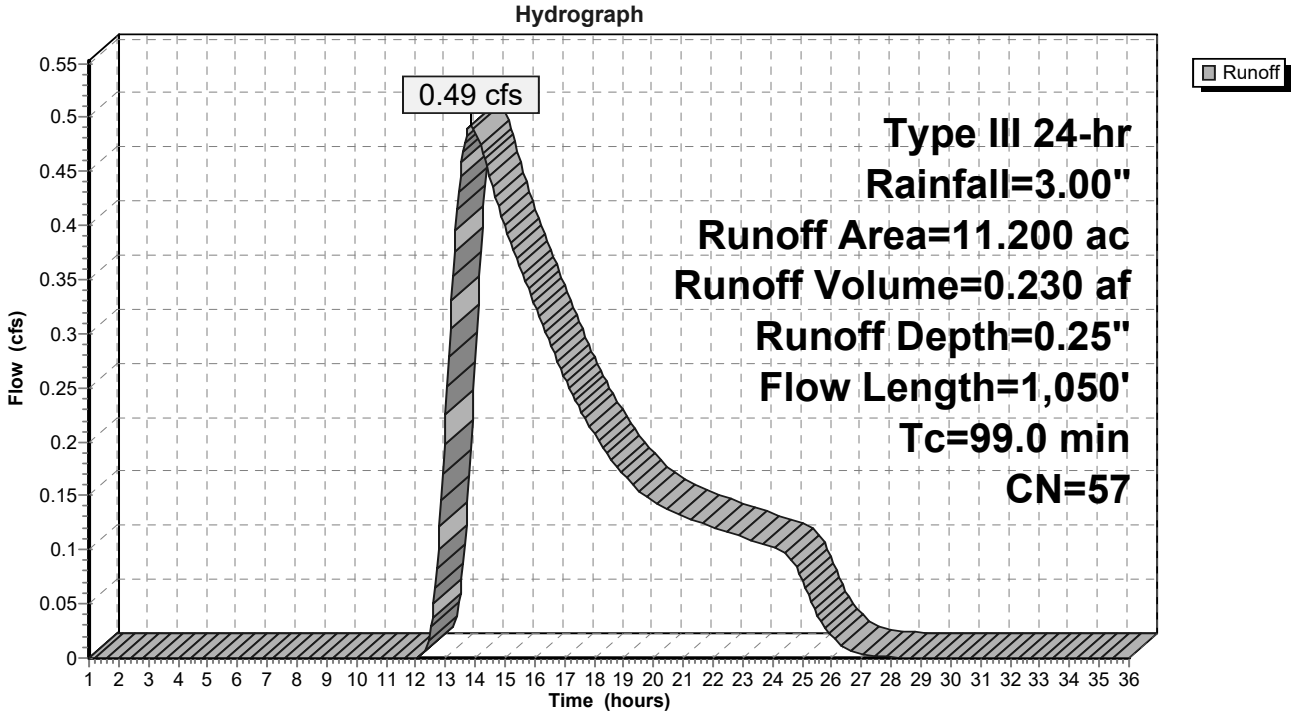
Runoff = 0.49 cfs @ 13.87 hrs, Volume= 0.230 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.040	98	Roofs, HSG B
0.380	98	Paved parking, HSG B
1.580	61	>75% Grass cover, Good, HSG B
9.200	55	Woods, Good, HSG B
11.200	57	Weighted Average
10.780		96.25% Pervious Area
0.420		3.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
6.4	280	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.1	150	0.0200	0.35		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
99.0	1,050	Total			

Subcatchment 1S: WS#1



Hydrograph for Subcatchment 1S: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.11	0.00	0.00
4.00	0.13	0.00	0.00
4.50	0.15	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.19	0.00	0.00
6.00	0.22	0.00	0.00
6.50	0.24	0.00	0.00
7.00	0.27	0.00	0.00
7.50	0.30	0.00	0.00
8.00	0.34	0.00	0.00
8.50	0.39	0.00	0.00
9.00	0.44	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.57	0.00	0.00
10.50	0.65	0.00	0.00
11.00	0.75	0.00	0.00
11.50	0.89	0.00	0.00
12.00	1.50	0.00	0.00
12.50	2.11	0.04	0.03
13.00	2.25	0.07	0.22
13.50	2.35	0.08	**0.45**
14.00	2.43	0.10	**0.49**
14.50	2.50	0.12	0.44
15.00	2.56	0.13	0.40
15.50	2.61	0.14	0.36
16.00	2.66	0.15	0.33
16.50	2.70	0.16	0.29
17.00	2.73	0.17	0.26
17.50	2.76	0.18	0.23
18.00	2.78	0.18	0.21
18.50	2.81	0.19	0.19
19.00	2.83	0.20	0.17
19.50	2.85	0.20	0.15
20.00	2.87	0.21	0.14
20.50	2.89	0.21	0.14
21.00	2.91	0.22	0.13
21.50	2.93	0.22	0.13
22.00	2.94	0.23	0.12
22.50	2.96	0.23	0.12
23.00	2.97	0.24	0.11
23.50	2.99	0.24	0.11
24.00	**3.00**	**0.25**	0.10
24.50	3.00	0.25	0.10
25.00	3.00	0.25	0.07
25.50	3.00	0.25	0.04
26.00	3.00	0.25	0.02
26.50	3.00	0.25	0.01
27.00	3.00	0.25	0.00
27.50	3.00	0.25	0.00
28.00	3.00	0.25	0.00
28.50	3.00	0.25	0.00
29.00	3.00	0.25	0.00
29.50	3.00	0.25	0.00
30.00	3.00	0.25	0.00
30.50	3.00	0.25	0.00
31.00	3.00	0.25	0.00
31.50	3.00	0.25	0.00
32.00	3.00	0.25	0.00
32.50	3.00	0.25	0.00
33.00	3.00	0.25	0.00
33.50	3.00	0.25	0.00
34.00	3.00	0.25	0.00
34.50	3.00	0.25	0.00
35.00	3.00	0.25	0.00
35.50	3.00	0.25	0.00
36.00	3.00	0.25	0.00

Summary for Subcatchment 2S: WS#2

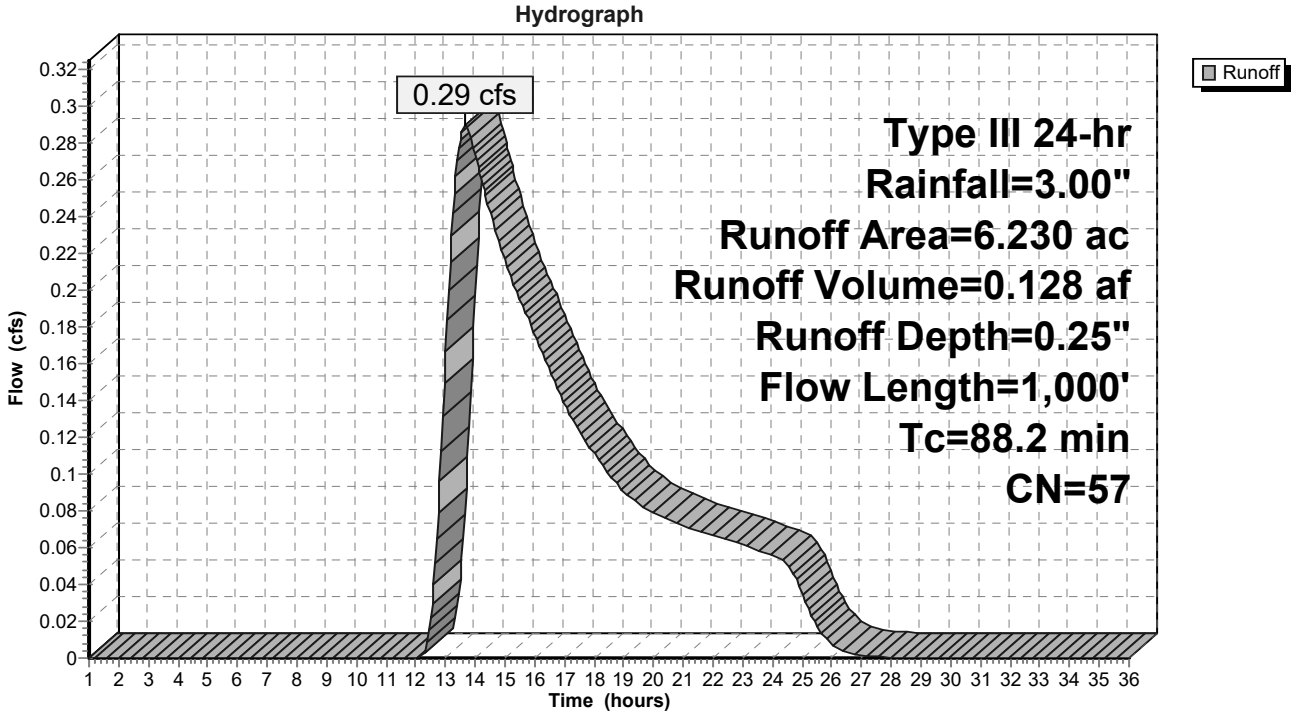
Runoff = 0.29 cfs @ 13.66 hrs, Volume= 0.128 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.100	98	Roofs, HSG B
0.100	98	Paved parking, HSG B
0.400	61	>75% Grass cover, Good, HSG B
5.630	55	Woods, Good, HSG B
6.230	57	Weighted Average
6.030		96.79% Pervious Area
0.200		3.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2	300	0.0770	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
2.2	90	0.0770	0.69		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
31.0	570	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
0.8	40	0.1000	0.79		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
88.2	1,000	Total			

Subcatchment 2S: WS#2



Hydrograph for Subcatchment 2S: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.11	0.00	0.00
4.00	0.13	0.00	0.00
4.50	0.15	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.19	0.00	0.00
6.00	0.22	0.00	0.00
6.50	0.24	0.00	0.00
7.00	0.27	0.00	0.00
7.50	0.30	0.00	0.00
8.00	0.34	0.00	0.00
8.50	0.39	0.00	0.00
9.00	0.44	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.57	0.00	0.00
10.50	0.65	0.00	0.00
11.00	0.75	0.00	0.00
11.50	0.89	0.00	0.00
12.00	1.50	0.00	0.00
12.50	2.11	0.04	0.02
13.00	2.25	0.07	0.17
13.50	2.35	0.08	**0.28**
14.00	2.43	0.10	**0.27**
14.50	2.50	0.12	0.24
15.00	2.56	0.13	0.22
15.50	2.61	0.14	0.19
16.00	2.66	0.15	0.18
16.50	2.70	0.16	0.16
17.00	2.73	0.17	0.14
17.50	2.76	0.18	0.12
18.00	2.78	0.18	0.11
18.50	2.81	0.19	0.10
19.00	2.83	0.20	0.09
19.50	2.85	0.20	0.08
20.00	2.87	0.21	0.08
20.50	2.89	0.21	0.08
21.00	2.91	0.22	0.07
21.50	2.93	0.22	0.07
22.00	2.94	0.23	0.07
22.50	2.96	0.23	0.06
23.00	2.97	0.24	0.06
23.50	2.99	0.24	0.06
24.00	**3.00**	**0.25**	0.06
24.50	3.00	0.25	0.05
25.00	3.00	0.25	0.04
25.50	3.00	0.25	0.02
26.00	3.00	0.25	0.01
26.50	3.00	0.25	0.00
27.00	3.00	0.25	0.00
27.50	3.00	0.25	0.00
28.00	3.00	0.25	0.00
28.50	3.00	0.25	0.00
29.00	3.00	0.25	0.00
29.50	3.00	0.25	0.00
30.00	3.00	0.25	0.00
30.50	3.00	0.25	0.00
31.00	3.00	0.25	0.00
31.50	3.00	0.25	0.00
32.00	3.00	0.25	0.00
32.50	3.00	0.25	0.00
33.00	3.00	0.25	0.00
33.50	3.00	0.25	0.00
34.00	3.00	0.25	0.00
34.50	3.00	0.25	0.00
35.00	3.00	0.25	0.00
35.50	3.00	0.25	0.00
36.00	3.00	0.25	0.00

Summary for Subcatchment 1S: WS#1

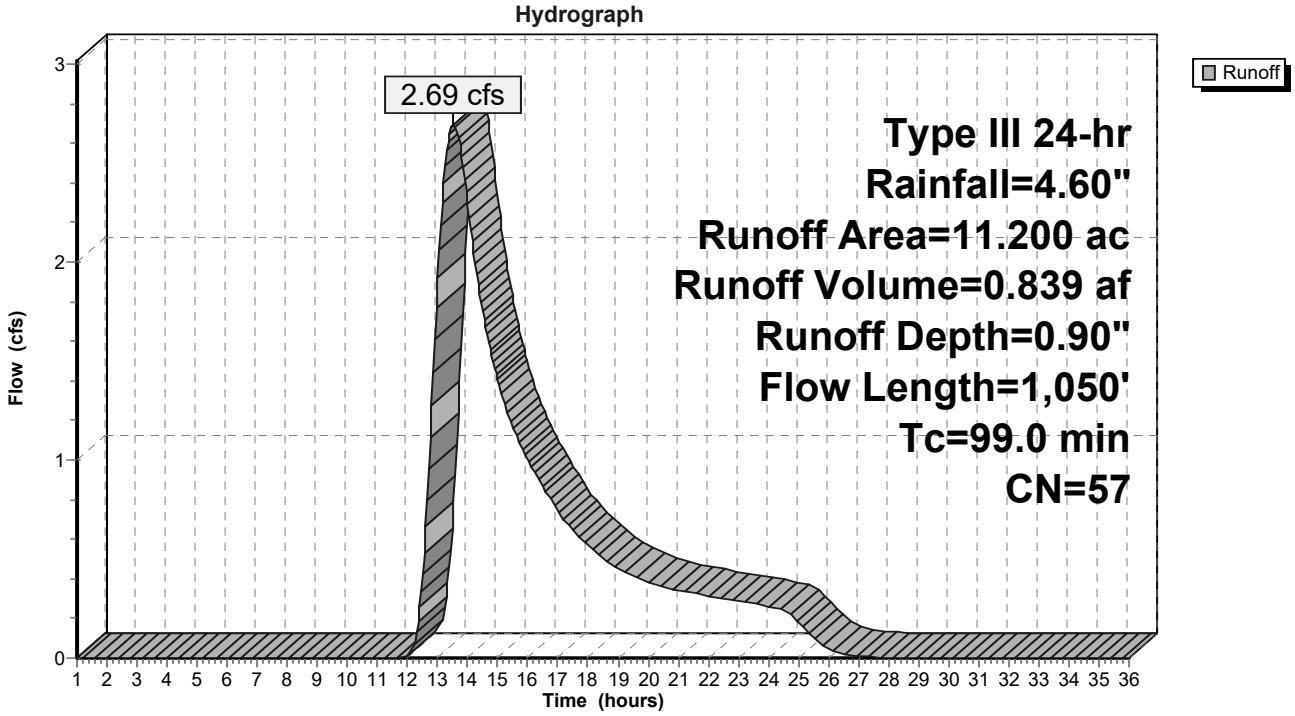
Runoff = 2.69 cfs @ 13.54 hrs, Volume= 0.839 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (ac)	CN	Description
0.040	98	Roofs, HSG B
0.380	98	Paved parking, HSG B
1.580	61	>75% Grass cover, Good, HSG B
9.200	55	Woods, Good, HSG B
11.200	57	Weighted Average
10.780		96.25% Pervious Area
0.420		3.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
6.4	280	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.1	150	0.0200	0.35		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
99.0	1,050	Total			

Subcatchment 1S: WS#1



Hydrograph for Subcatchment 1S: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.00	0.00
2.50	0.12	0.00	0.00
3.00	0.14	0.00	0.00
3.50	0.17	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.23	0.00	0.00
5.00	0.26	0.00	0.00
5.50	0.30	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.37	0.00	0.00
7.00	0.42	0.00	0.00
7.50	0.47	0.00	0.00
8.00	0.52	0.00	0.00
8.50	0.59	0.00	0.00
9.00	0.67	0.00	0.00
9.50	0.76	0.00	0.00
10.00	0.87	0.00	0.00
10.50	1.00	0.00	0.00
11.00	1.15	0.00	0.00
11.50	1.37	0.00	0.00
12.00	2.30	0.08	0.00
12.50	3.23	0.32	0.43
13.00	3.45	0.40	1.92
13.50	3.60	0.46	**2.69**
14.00	3.73	0.51	**2.29**
14.50	3.84	0.55	1.75
15.00	3.93	0.59	1.40
15.50	4.01	0.62	1.17
16.00	4.08	0.65	1.00
16.50	4.13	0.68	0.86
17.00	4.18	0.70	0.74
17.50	4.23	0.72	0.65
18.00	4.27	0.74	0.57
18.50	4.30	0.76	0.51
19.00	4.34	0.77	0.45
19.50	4.37	0.79	0.41
20.00	4.40	0.80	0.38
20.50	4.43	0.82	0.36
21.00	4.46	0.83	0.34
21.50	4.49	0.84	0.33
22.00	4.51	0.85	0.31
22.50	4.54	0.87	0.30
23.00	4.56	0.88	0.29
23.50	4.58	0.89	0.27
24.00	**4.60**	**0.90**	0.26
24.50	4.60	0.90	0.24
25.00	4.60	0.90	0.18
25.50	4.60	0.90	0.10
26.00	4.60	0.90	0.05
26.50	4.60	0.90	0.02
27.00	4.60	0.90	0.01
27.50	4.60	0.90	0.00
28.00	4.60	0.90	0.00
28.50	4.60	0.90	0.00
29.00	4.60	0.90	0.00
29.50	4.60	0.90	0.00
30.00	4.60	0.90	0.00
30.50	4.60	0.90	0.00
31.00	4.60	0.90	0.00
31.50	4.60	0.90	0.00
32.00	4.60	0.90	0.00
32.50	4.60	0.90	0.00
33.00	4.60	0.90	0.00
33.50	4.60	0.90	0.00
34.00	4.60	0.90	0.00
34.50	4.60	0.90	0.00
35.00	4.60	0.90	0.00
35.50	4.60	0.90	0.00
36.00	4.60	0.90	0.00

Summary for Subcatchment 2S: WS#2

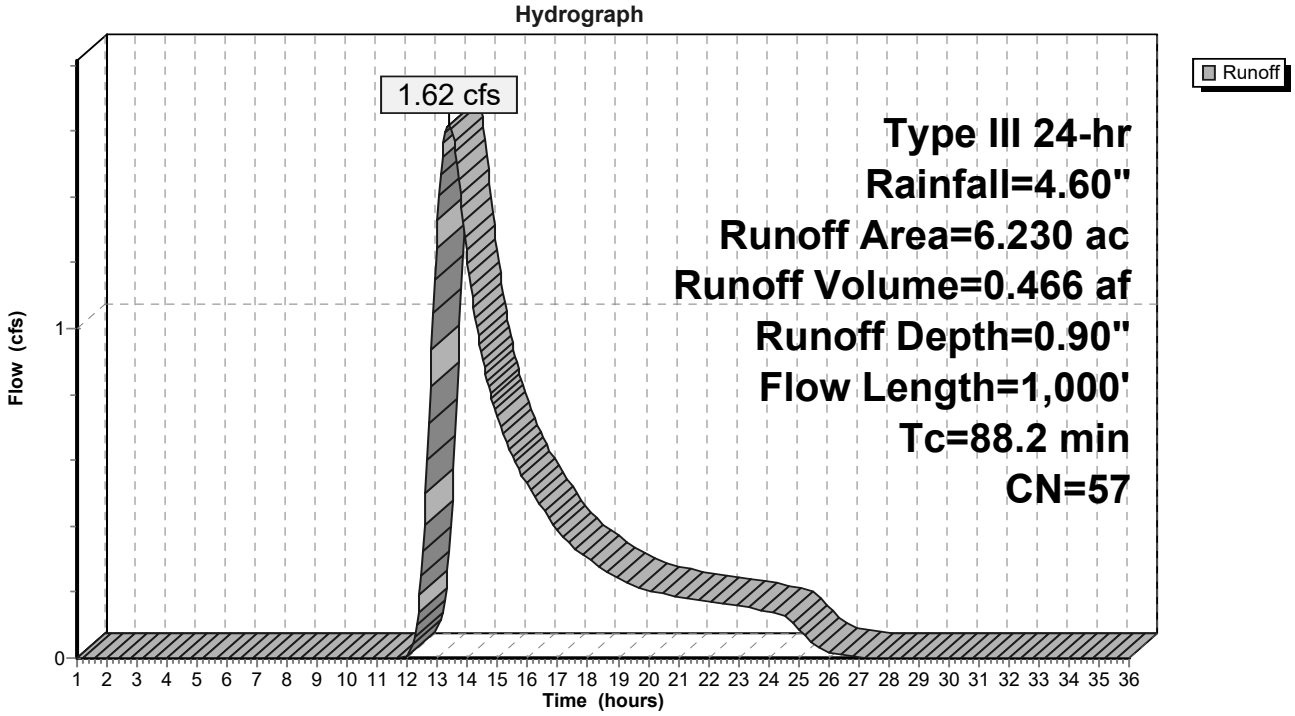
Runoff = 1.62 cfs @ 13.38 hrs, Volume= 0.466 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (ac)	CN	Description
0.100	98	Roofs, HSG B
0.100	98	Paved parking, HSG B
0.400	61	>75% Grass cover, Good, HSG B
5.630	55	Woods, Good, HSG B
6.230	57	Weighted Average
6.030		96.79% Pervious Area
0.200		3.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2	300	0.0770	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
2.2	90	0.0770	0.69		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
31.0	570	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
0.8	40	0.1000	0.79		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
88.2	1,000	Total			

Subcatchment 2S: WS#2



Hydrograph for Subcatchment 2S: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.00	0.00
2.50	0.12	0.00	0.00
3.00	0.14	0.00	0.00
3.50	0.17	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.23	0.00	0.00
5.00	0.26	0.00	0.00
5.50	0.30	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.37	0.00	0.00
7.00	0.42	0.00	0.00
7.50	0.47	0.00	0.00
8.00	0.52	0.00	0.00
8.50	0.59	0.00	0.00
9.00	0.67	0.00	0.00
9.50	0.76	0.00	0.00
10.00	0.87	0.00	0.00
10.50	1.00	0.00	0.00
11.00	1.15	0.00	0.00
11.50	1.37	0.00	0.00
12.00	2.30	0.08	0.00
12.50	3.23	0.32	0.33
13.00	3.45	0.40	**1.33**
13.50	3.60	0.46	**1.59**
14.00	3.73	0.51	1.20
14.50	3.84	0.55	0.91
15.00	3.93	0.59	0.73
15.50	4.01	0.62	0.61
16.00	4.08	0.65	0.53
16.50	4.13	0.68	0.45
17.00	4.18	0.70	0.39
17.50	4.23	0.72	0.34
18.00	4.27	0.74	0.30
18.50	4.30	0.76	0.27
19.00	4.34	0.77	0.24
19.50	4.37	0.79	0.22
20.00	4.40	0.80	0.21
20.50	4.43	0.82	0.20
21.00	4.46	0.83	0.19
21.50	4.49	0.84	0.18
22.00	4.51	0.85	0.17
22.50	4.54	0.87	0.16
23.00	4.56	0.88	0.16
23.50	4.58	0.89	0.15
24.00	**4.60**	**0.90**	0.14
24.50	4.60	0.90	0.13
25.00	4.60	0.90	0.09
25.50	4.60	0.90	0.04
26.00	4.60	0.90	0.02
26.50	4.60	0.90	0.01
27.00	4.60	0.90	0.00
27.50	4.60	0.90	0.00
28.00	4.60	0.90	0.00
28.50	4.60	0.90	0.00
29.00	4.60	0.90	0.00
29.50	4.60	0.90	0.00
30.00	4.60	0.90	0.00
30.50	4.60	0.90	0.00
31.00	4.60	0.90	0.00
31.50	4.60	0.90	0.00
32.00	4.60	0.90	0.00
32.50	4.60	0.90	0.00
33.00	4.60	0.90	0.00
33.50	4.60	0.90	0.00
34.00	4.60	0.90	0.00
34.50	4.60	0.90	0.00
35.00	4.60	0.90	0.00
35.50	4.60	0.90	0.00
36.00	4.60	0.90	0.00

Summary for Subcatchment 1S: WS#1

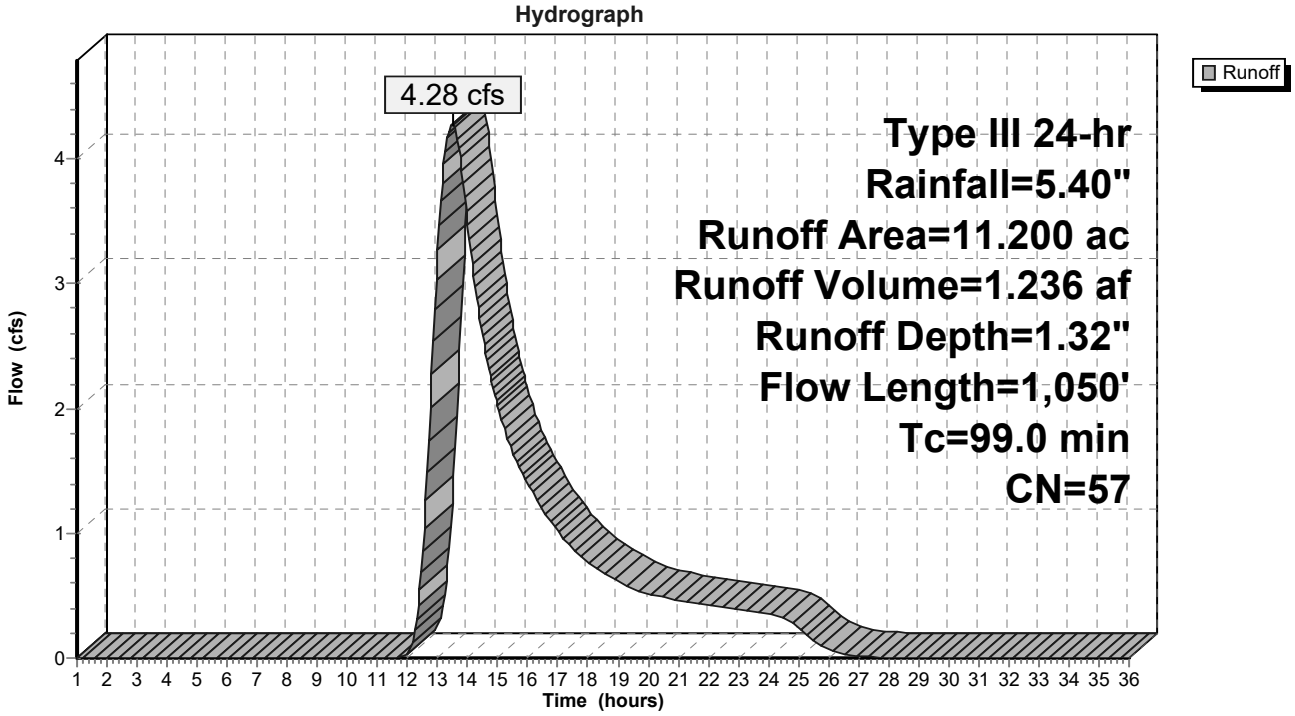
Runoff = 4.28 cfs @ 13.49 hrs, Volume= 1.236 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (ac)	CN	Description
0.040	98	Roofs, HSG B
0.380	98	Paved parking, HSG B
1.580	61	>75% Grass cover, Good, HSG B
9.200	55	Woods, Good, HSG B
11.200	57	Weighted Average
10.780		96.25% Pervious Area
0.420		3.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
6.4	280	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.1	150	0.0200	0.35		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
99.0	1,050	Total			

Subcatchment 1S: WS#1



Hydrograph for Subcatchment 1S: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.00
3.00	0.17	0.00	0.00
3.50	0.20	0.00	0.00
4.00	0.23	0.00	0.00
4.50	0.27	0.00	0.00
5.00	0.31	0.00	0.00
5.50	0.35	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.62	0.00	0.00
8.50	0.69	0.00	0.00
9.00	0.79	0.00	0.00
9.50	0.90	0.00	0.00
10.00	1.02	0.00	0.00
10.50	1.17	0.00	0.00
11.00	1.35	0.00	0.00
11.50	1.61	0.00	0.00
12.00	2.70	0.16	0.03
12.50	3.79	0.53	0.86
13.00	4.05	0.64	3.27
13.50	4.23	0.72	**4.28**
14.00	4.38	0.79	3.47
14.50	4.50	0.85	2.58
15.00	4.61	0.90	2.02
15.50	4.71	0.95	1.65
16.00	4.78	0.99	1.39
16.50	4.85	1.03	1.19
17.00	4.91	1.06	1.02
17.50	4.96	1.09	0.88
18.00	5.01	1.11	0.77
18.50	5.05	1.13	0.69
19.00	5.09	1.15	0.61
19.50	5.13	1.18	0.56
20.00	5.17	1.20	0.52
20.50	5.20	1.21	0.49
21.00	5.23	1.23	0.46
21.50	5.27	1.25	0.44
22.00	5.30	1.27	0.42
22.50	5.32	1.28	0.40
23.00	5.35	1.30	0.38
23.50	5.38	1.31	0.37
24.00	**5.40**	**1.32**	0.35
24.50	5.40	1.32	0.32
25.00	5.40	1.32	0.25
25.50	5.40	1.32	0.14
26.00	5.40	1.32	0.07
26.50	5.40	1.32	0.03
27.00	5.40	1.32	0.01
27.50	5.40	1.32	0.01
28.00	5.40	1.32	0.00
28.50	5.40	1.32	0.00
29.00	5.40	1.32	0.00
29.50	5.40	1.32	0.00
30.00	5.40	1.32	0.00
30.50	5.40	1.32	0.00
31.00	5.40	1.32	0.00
31.50	5.40	1.32	0.00
32.00	5.40	1.32	0.00
32.50	5.40	1.32	0.00
33.00	5.40	1.32	0.00
33.50	5.40	1.32	0.00
34.00	5.40	1.32	0.00
34.50	5.40	1.32	0.00
35.00	5.40	1.32	0.00
35.50	5.40	1.32	0.00
36.00	5.40	1.32	0.00

Summary for Subcatchment 2S: WS#2

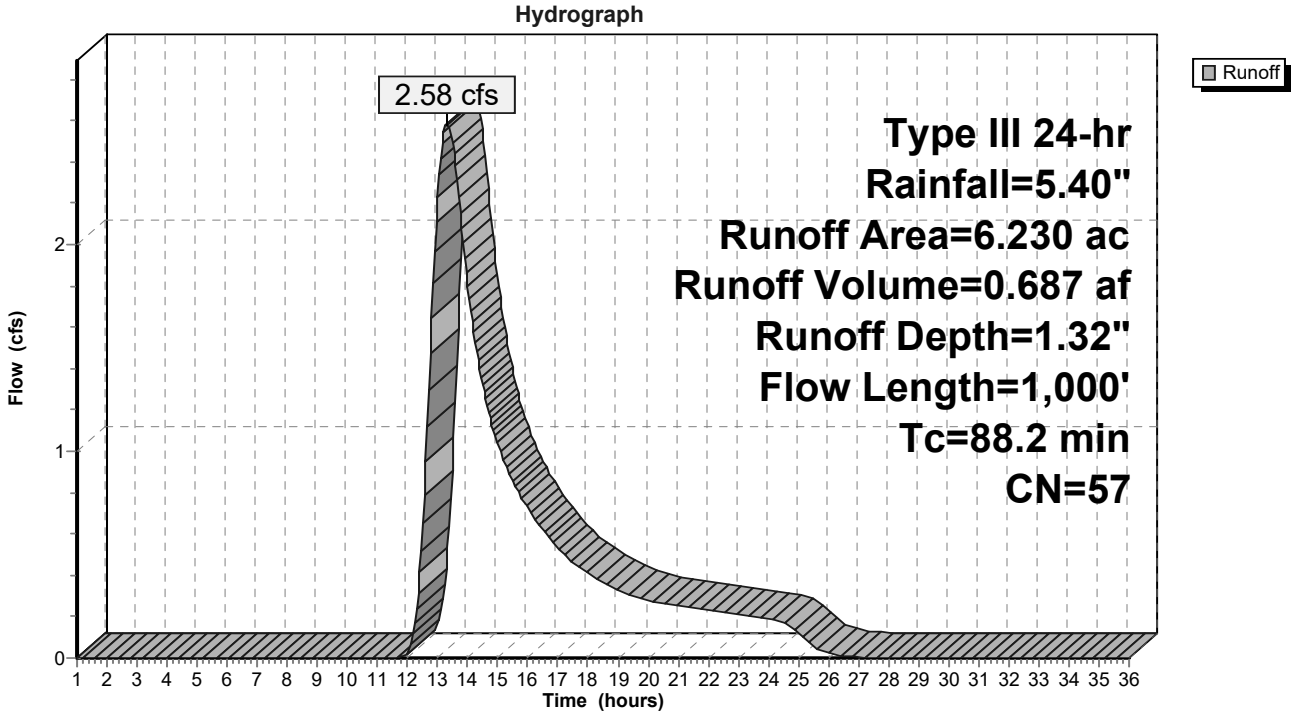
Runoff = 2.58 cfs @ 13.31 hrs, Volume= 0.687 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (ac)	CN	Description
0.100	98	Roofs, HSG B
0.100	98	Paved parking, HSG B
0.400	61	>75% Grass cover, Good, HSG B
5.630	55	Woods, Good, HSG B
6.230	57	Weighted Average
6.030		96.79% Pervious Area
0.200		3.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2	300	0.0770	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
2.2	90	0.0770	0.69		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
31.0	570	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
0.8	40	0.1000	0.79		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
88.2	1,000	Total			

Subcatchment 2S: WS#2

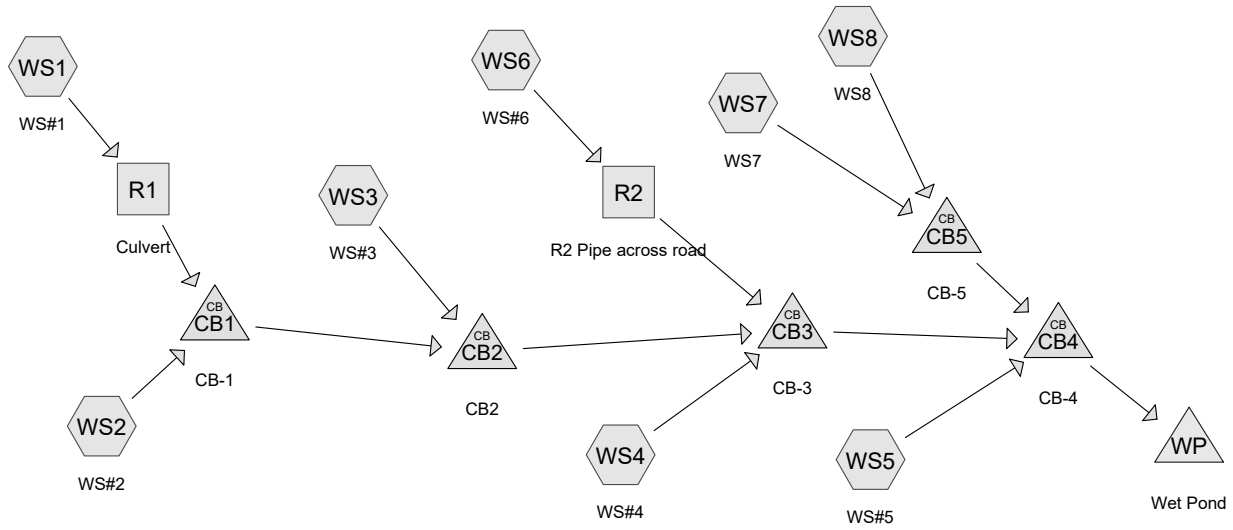


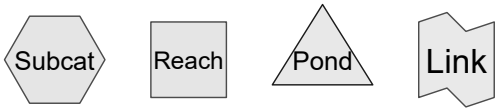
Hydrograph for Subcatchment 2S: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.00
3.00	0.17	0.00	0.00
3.50	0.20	0.00	0.00
4.00	0.23	0.00	0.00
4.50	0.27	0.00	0.00
5.00	0.31	0.00	0.00
5.50	0.35	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.62	0.00	0.00
8.50	0.69	0.00	0.00
9.00	0.79	0.00	0.00
9.50	0.90	0.00	0.00
10.00	1.02	0.00	0.00
10.50	1.17	0.00	0.00
11.00	1.35	0.00	0.00
11.50	1.61	0.00	0.00
12.00	2.70	0.16	0.02
12.50	3.79	0.53	0.65
13.00	4.05	0.64	**2.23**
13.50	4.23	0.72	**2.49**
14.00	4.38	0.79	1.80
14.50	4.50	0.85	1.32
15.00	4.61	0.90	1.03
15.50	4.71	0.95	0.85
16.00	4.78	0.99	0.73
16.50	4.85	1.03	0.62
17.00	4.91	1.06	0.53
17.50	4.96	1.09	0.46
18.00	5.01	1.11	0.41
18.50	5.05	1.13	0.37
19.00	5.09	1.15	0.33
19.50	5.13	1.18	0.30
20.00	5.17	1.20	0.28
20.50	5.20	1.21	0.26
21.00	5.23	1.23	0.25
21.50	5.27	1.25	0.24
22.00	5.30	1.27	0.23
22.50	5.32	1.28	0.22
23.00	5.35	1.30	0.21
23.50	5.38	1.31	0.20
24.00	**5.40**	**1.32**	0.19
24.50	5.40	1.32	0.17
25.00	5.40	1.32	0.12
25.50	5.40	1.32	0.06
26.00	5.40	1.32	0.03
26.50	5.40	1.32	0.01
27.00	5.40	1.32	0.00
27.50	5.40	1.32	0.00
28.00	5.40	1.32	0.00
28.50	5.40	1.32	0.00
29.00	5.40	1.32	0.00
29.50	5.40	1.32	0.00
30.00	5.40	1.32	0.00
30.50	5.40	1.32	0.00
31.00	5.40	1.32	0.00
31.50	5.40	1.32	0.00
32.00	5.40	1.32	0.00
32.50	5.40	1.32	0.00
33.00	5.40	1.32	0.00
33.50	5.40	1.32	0.00
34.00	5.40	1.32	0.00
34.50	5.40	1.32	0.00
35.00	5.40	1.32	0.00
35.50	5.40	1.32	0.00
36.00	5.40	1.32	0.00

APPENDIX C.2

POST-DEVELOPMENT HYDROCAD OUTPUT





Routing Diagram for post development 1-25-16
Prepared by Microsoft, Printed 2/1/2016
HydroCAD® 10.00-12 s/n 01406 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
7.390	65	2 acre lots, 12% imp, HSG B (WS6)
0.438	61	>75% Grass cover, Good, HSG B (WS1, WS7)
0.511	98	Paved parking, HSG B (WS2, WS3, WS4, WS5, WS8)
0.315	98	Paved roads w/curbs & sewers, HSG B (WS1)
0.184	98	Roofs, HSG B (WS7)
8.869	55	Woods, Good, HSG B (WS6, WS7)
17.707	**62**	**TOTAL AREA**

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	WS1	0.00	0.00	50.0	0.0100	0.013	12.0	0.0	0.0
2	WS1	0.00	0.00	40.0	0.0670	0.013	12.0	0.0	0.0
3	WS7	0.00	0.00	110.0	0.0100	0.030	6.0	0.0	0.0
4	R1	363.00	359.18	250.0	0.0153	0.011	15.0	0.0	0.0
5	R2	357.00	352.90	45.0	0.0911	0.013	18.0	0.0	0.0
6	CB1	359.08	355.03	250.0	0.0162	0.013	18.0	0.0	0.0
7	CB2	354.93	353.00	200.0	0.0097	0.013	24.0	0.0	0.0
8	CB3	352.90	352.00	200.0	0.0045	0.013	24.0	0.0	0.0
9	CB4	351.90	351.00	20.0	0.0450	0.013	30.0	0.0	0.0
10	CB5	352.80	352.00	30.0	0.0267	0.013	15.0	0.0	0.0
11	WP	345.00	342.00	40.0	0.0750	0.013	12.0	0.0	0.0

Time span=1.00-36.00 hrs, dt=0.05 hrs, 701 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment WS1: WS#1 Runoff Area=27,550 sf 49.73% Impervious Runoff Depth=1.19"
Flow Length=965' Tc=2.1 min CN=79 Runoff=0.95 cfs 0.063 af

Subcatchment WS2: WS#2 Runoff Area=3,800 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=275' Tc=1.8 min CN=98 Runoff=0.28 cfs 0.020 af

Subcatchment WS3: WS#3 Runoff Area=3,685 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=255' Slope=0.0150 '/' Tc=2.1 min CN=98 Runoff=0.27 cfs 0.020 af

Subcatchment WS4: WS#4 Runoff Area=2,950 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=205' Tc=1.9 min CN=98 Runoff=0.21 cfs 0.016 af

Subcatchment WS5: WS#5 Runoff Area=6,038 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=210' Tc=2.0 min CN=98 Runoff=0.44 cfs 0.032 af

Subcatchment WS6: WS#6 Runoff Area=562,450 sf 6.87% Impervious Runoff Depth=0.37"
Flow Length=1,570' Tc=105.0 min CN=61 Runoff=1.00 cfs 0.393 af

Subcatchment WS7: WS7 Runoff Area=159,050 sf 5.03% Impervious Runoff Depth=0.25"
Flow Length=1,095' Tc=96.1 min CN=57 Runoff=0.16 cfs 0.075 af

Subcatchment WS8: WS8 Runoff Area=5,781 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=195' Tc=1.9 min CN=98 Runoff=0.42 cfs 0.031 af

Reach R1: Culvert Avg. Flow Depth=0.27' Max Vel=4.92 fps Inflow=0.95 cfs 0.063 af
15.0" Round Pipe n=0.011 L=250.0' S=0.0153 '/' Capacity=9.44 cfs Outflow=0.89 cfs 0.063 af

Reach R2: R2 Pipe across road Avg. Flow Depth=0.18' Max Vel=8.15 fps Inflow=1.00 cfs 0.393 af
18.0" Round Pipe n=0.013 L=45.0' S=0.0911 '/' Capacity=31.71 cfs Outflow=1.00 cfs 0.393 af

Pond CB1: CB-1 Peak Elev=359.62' Inflow=1.15 cfs 0.083 af
18.0" Round Culvert n=0.013 L=250.0' S=0.0162 '/' Outflow=1.15 cfs 0.083 af

Pond CB2: CB2 Peak Elev=355.48' Inflow=1.41 cfs 0.102 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0097 '/' Outflow=1.41 cfs 0.102 af

Pond CB3: CB-3 Peak Elev=353.51' Inflow=1.61 cfs 0.511 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0045 '/' Outflow=1.61 cfs 0.511 af

Pond CB4: CB-4 Peak Elev=352.59' Inflow=2.46 cfs 0.648 af
30.0" Round Culvert n=0.013 L=20.0' S=0.0450 '/' Outflow=2.46 cfs 0.648 af

Pond CB5: CB-5 Peak Elev=353.14' Inflow=0.42 cfs 0.106 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0267 '/' Outflow=0.42 cfs 0.106 af

Pond WP: Wet Pond Peak Elev=347.88' Storage=5,377 cf Inflow=2.46 cfs 0.648 af
Primary=0.69 cfs 0.648 af Secondary=0.00 cfs 0.000 af Outflow=0.69 cfs 0.648 af

Total Runoff Area = 17.707 ac Runoff Volume = 0.648 af Average Runoff Depth = 0.44"
89.29% Pervious = 15.811 ac 10.71% Impervious = 1.896 ac

Summary for Subcatchment WS1: WS#1

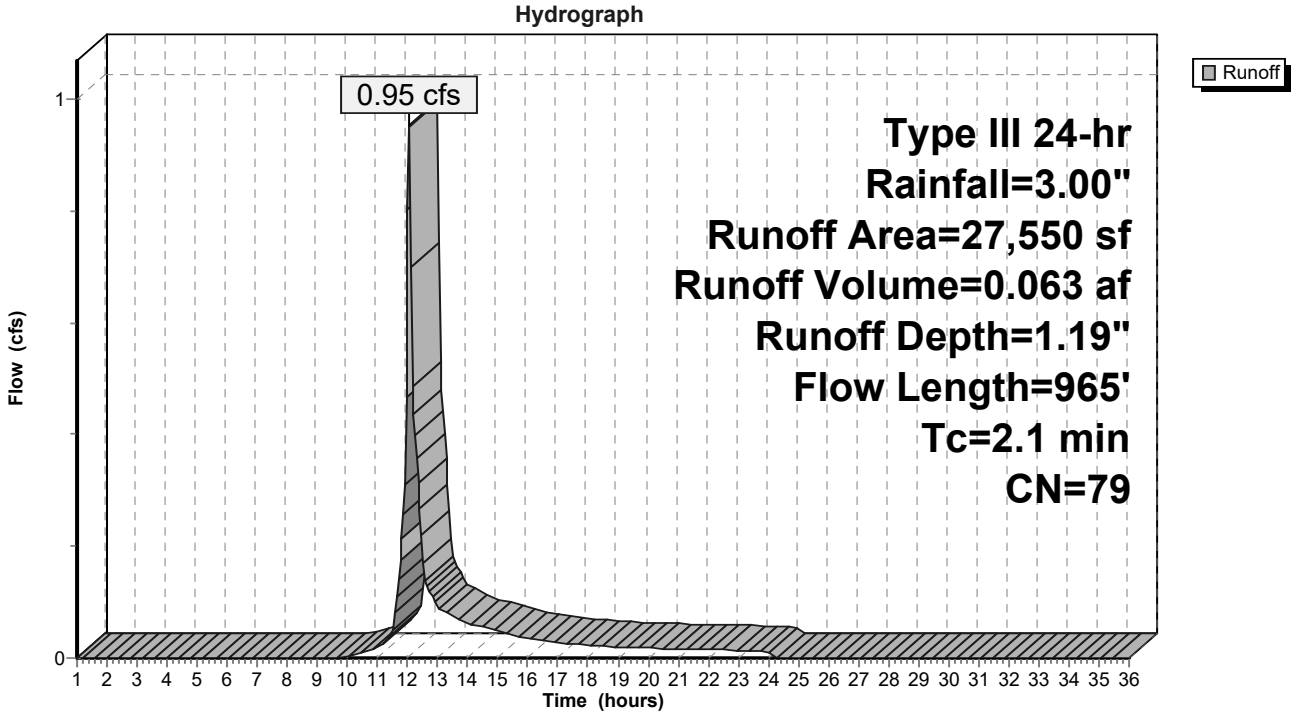
Runoff = 0.95 cfs @ 12.04 hrs, Volume= 0.063 af, Depth= 1.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
13,700	98	Paved roads w/curbs & sewers, HSG B
13,850	61	>75% Grass cover, Good, HSG B
27,550	79	Weighted Average
13,850		50.27% Pervious Area
13,700		49.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0300	1.36		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0700	10.67	106.73	**Trap/Vee/Rect Channel Flow, SEG BC DITCH** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
0.3	145	0.0340	7.44	74.39	**Trap/Vee/Rect Channel Flow, SEG CD** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.2	50	0.0100	4.54	3.56	**Pipe Channel, SEG DE CULVERT** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	80	0.0330	7.33	73.28	**Trap/Vee/Rect Channel Flow, SEG EF** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.1	40	0.0670	11.74	9.22	**Pipe Channel, SEG FG** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	440	0.0800	14.95	336.42	**Trap/Vee/Rect Channel Flow, SEG GH** Bot.W=0.00' D=3.00' Z= 2.0 & 3.0 '/' Top.W=15.00' n= 0.035
2.1	965	Total			

Subcatchment WS1: WS#1



Hydrograph for Subcatchment WS1: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.11	0.00	0.00
4.00	0.13	0.00	0.00
4.50	0.15	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.19	0.00	0.00
6.00	0.22	0.00	0.00
6.50	0.24	0.00	0.00
7.00	0.27	0.00	0.00
7.50	0.30	0.00	0.00
8.00	0.34	0.00	0.00
8.50	0.39	0.00	0.00
9.00	0.44	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.57	0.00	0.00
10.50	0.65	0.01	0.01
11.00	0.75	0.02	0.02
11.50	0.89	0.04	0.05
12.00	1.50	0.26	**0.80**
12.50	2.11	0.59	**0.17**
13.00	2.25	0.67	0.09
13.50	2.35	0.74	0.08
14.00	2.43	0.79	0.06
14.50	2.50	0.84	0.06
15.00	2.56	0.88	0.05
15.50	2.61	0.92	0.04
16.00	2.66	0.94	0.03
16.50	2.70	0.97	0.03
17.00	2.73	0.99	0.03
17.50	2.76	1.01	0.03
18.00	2.78	1.03	0.02
18.50	2.81	1.05	0.02
19.00	2.83	1.07	0.02
19.50	2.85	1.08	0.02
20.00	2.87	1.10	0.02
20.50	2.89	1.11	0.02
21.00	2.91	1.12	0.02
21.50	2.93	1.13	0.02
22.00	2.94	1.15	0.01
22.50	2.96	1.16	0.01
23.00	2.97	1.17	0.01
23.50	2.99	1.18	0.01
24.00	**3.00**	**1.19**	0.01
24.50	3.00	1.19	0.00
25.00	3.00	1.19	0.00
25.50	3.00	1.19	0.00
26.00	3.00	1.19	0.00
26.50	3.00	1.19	0.00
27.00	3.00	1.19	0.00
27.50	3.00	1.19	0.00
28.00	3.00	1.19	0.00
28.50	3.00	1.19	0.00
29.00	3.00	1.19	0.00
29.50	3.00	1.19	0.00
30.00	3.00	1.19	0.00
30.50	3.00	1.19	0.00
31.00	3.00	1.19	0.00
31.50	3.00	1.19	0.00
32.00	3.00	1.19	0.00
32.50	3.00	1.19	0.00
33.00	3.00	1.19	0.00
33.50	3.00	1.19	0.00
34.00	3.00	1.19	0.00
34.50	3.00	1.19	0.00
35.00	3.00	1.19	0.00
35.50	3.00	1.19	0.00
36.00	3.00	1.19	0.00

Summary for Subcatchment WS2: WS#2

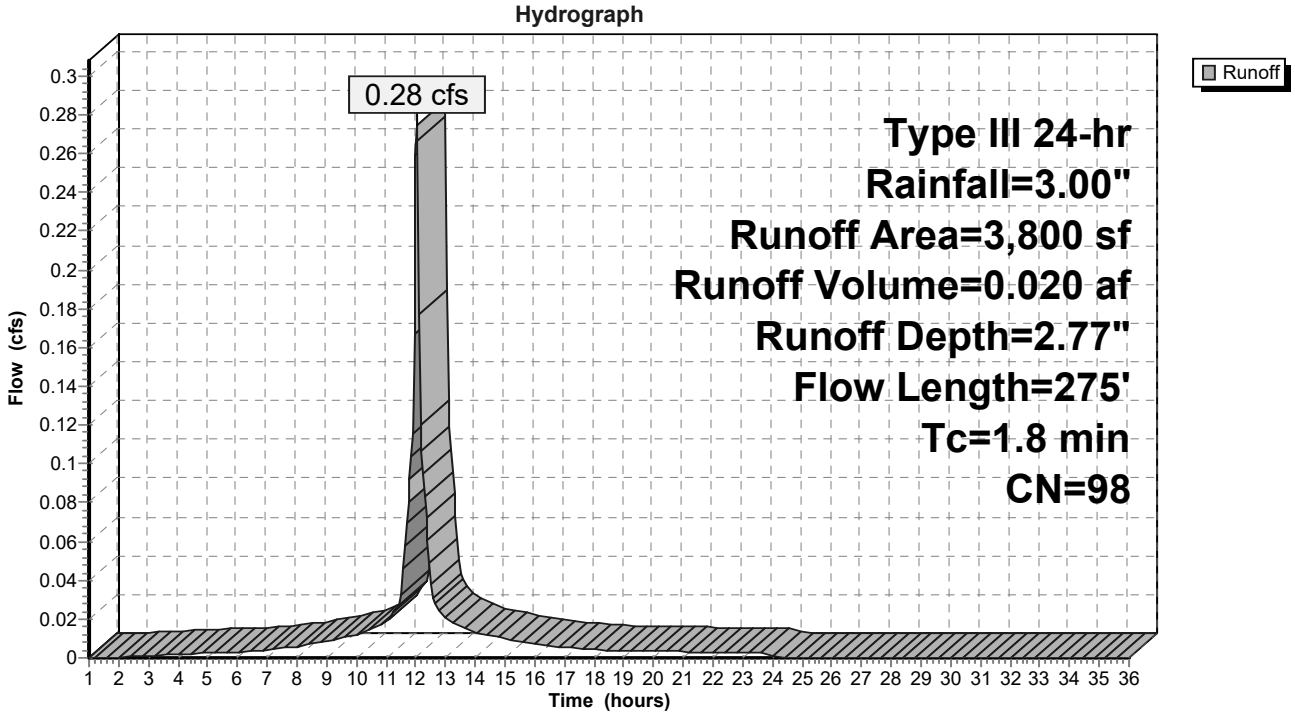
Runoff = 0.28 cfs @ 12.03 hrs, Volume= 0.020 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG B
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0820	2.00		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	230	0.0190	2.80		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.8	275	Total			

Subcatchment WS2: WS#2



Hydrograph for Subcatchment WS2: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.50	0.11	0.02	0.00
4.00	0.13	0.03	0.00
4.50	0.15	0.04	0.00
5.00	0.17	0.05	0.00
5.50	0.19	0.06	0.00
6.00	0.22	0.08	0.00
6.50	0.24	0.10	0.00
7.00	0.27	0.12	0.00
7.50	0.30	0.15	0.00
8.00	0.34	0.18	0.01
8.50	0.39	0.22	0.01
9.00	0.44	0.26	0.01
9.50	0.50	0.32	0.01
10.00	0.57	0.38	0.01
10.50	0.65	0.46	0.01
11.00	0.75	0.55	0.02
11.50	0.89	0.69	0.03
12.00	1.50	1.28	**0.26**
12.50	2.11	1.88	**0.04**
13.00	2.25	2.02	0.02
13.50	2.35	2.12	0.02
14.00	2.43	2.20	0.01
14.50	2.50	2.27	0.01
15.00	2.56	2.33	0.01
15.50	2.61	2.38	0.01
16.00	2.66	2.43	0.01
16.50	2.70	2.46	0.01
17.00	2.73	2.50	0.01
17.50	2.76	2.53	0.00
18.00	2.78	2.55	0.00
18.50	2.81	2.58	0.00
19.00	2.83	2.60	0.00
19.50	2.85	2.62	0.00
20.00	2.87	2.64	0.00
20.50	2.89	2.66	0.00
21.00	2.91	2.68	0.00
21.50	2.93	2.69	0.00
22.00	2.94	2.71	0.00
22.50	2.96	2.73	0.00
23.00	2.97	2.74	0.00
23.50	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00
24.50	3.00	2.77	0.00
25.00	3.00	2.77	0.00
25.50	3.00	2.77	0.00
26.00	3.00	2.77	0.00
26.50	3.00	2.77	0.00
27.00	3.00	2.77	0.00
27.50	3.00	2.77	0.00
28.00	3.00	2.77	0.00
28.50	3.00	2.77	0.00
29.00	3.00	2.77	0.00
29.50	3.00	2.77	0.00
30.00	3.00	2.77	0.00
30.50	3.00	2.77	0.00
31.00	3.00	2.77	0.00
31.50	3.00	2.77	0.00
32.00	3.00	2.77	0.00
32.50	3.00	2.77	0.00
33.00	3.00	2.77	0.00
33.50	3.00	2.77	0.00
34.00	3.00	2.77	0.00
34.50	3.00	2.77	0.00
35.00	3.00	2.77	0.00
35.50	3.00	2.77	0.00
36.00	3.00	2.77	0.00

Summary for Subcatchment WS3: WS#3

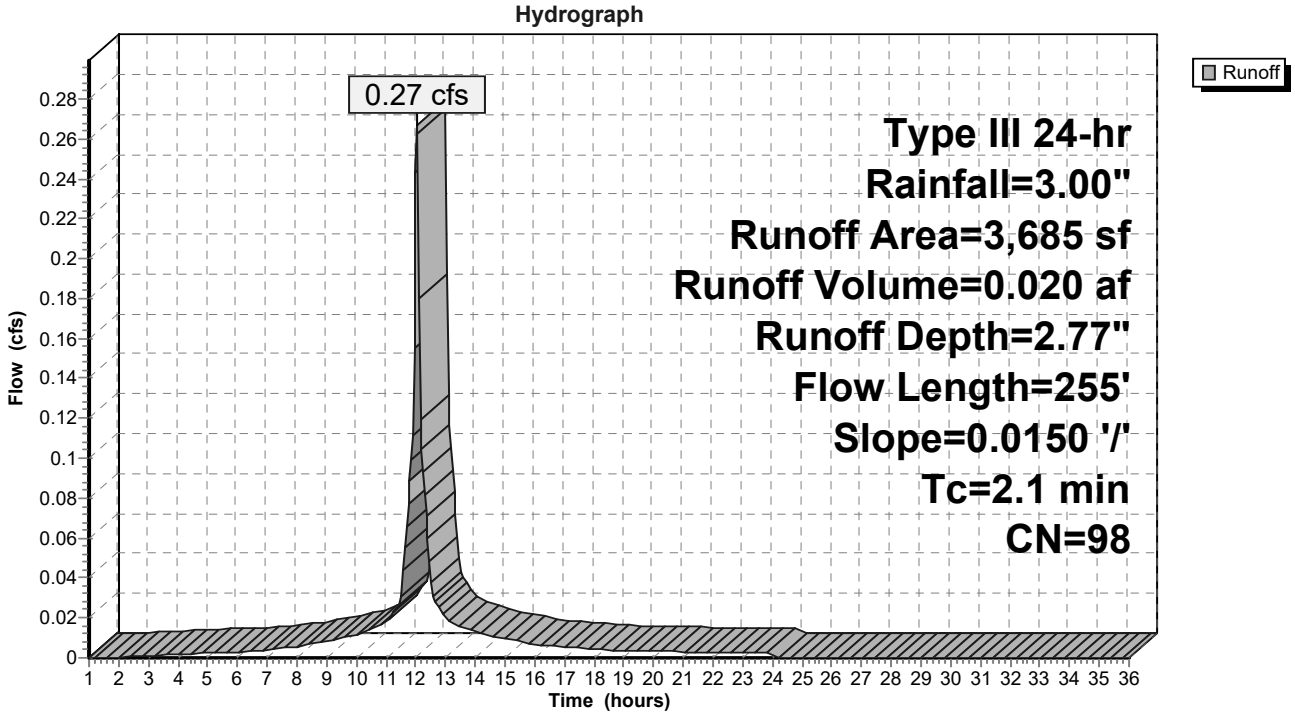
Runoff = 0.27 cfs @ 12.03 hrs, Volume= 0.020 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
3,685	98	Paved parking, HSG B
3,685		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	40	0.0150	0.99		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	215	0.0150	2.49		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.1	255	Total			

Subcatchment WS3: WS#3



Hydrograph for Subcatchment WS3: WS#3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.50	0.11	0.02	0.00
4.00	0.13	0.03	0.00
4.50	0.15	0.04	0.00
5.00	0.17	0.05	0.00
5.50	0.19	0.06	0.00
6.00	0.22	0.08	0.00
6.50	0.24	0.10	0.00
7.00	0.27	0.12	0.00
7.50	0.30	0.15	0.00
8.00	0.34	0.18	0.01
8.50	0.39	0.22	0.01
9.00	0.44	0.26	0.01
9.50	0.50	0.32	0.01
10.00	0.57	0.38	0.01
10.50	0.65	0.46	0.01
11.00	0.75	0.55	0.02
11.50	0.89	0.69	0.03
12.00	1.50	1.28	**0.24**
12.50	2.11	1.88	**0.04**
13.00	2.25	2.02	0.02
13.50	2.35	2.12	0.02
14.00	2.43	2.20	0.01
14.50	2.50	2.27	0.01
15.00	2.56	2.33	0.01
15.50	2.61	2.38	0.01
16.00	2.66	2.43	0.01
16.50	2.70	2.46	0.01
17.00	2.73	2.50	0.01
17.50	2.76	2.53	0.00
18.00	2.78	2.55	0.00
18.50	2.81	2.58	0.00
19.00	2.83	2.60	0.00
19.50	2.85	2.62	0.00
20.00	2.87	2.64	0.00
20.50	2.89	2.66	0.00
21.00	2.91	2.68	0.00
21.50	2.93	2.69	0.00
22.00	2.94	2.71	0.00
22.50	2.96	2.73	0.00
23.00	2.97	2.74	0.00
23.50	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00
24.50	3.00	2.77	0.00
25.00	3.00	2.77	0.00
25.50	3.00	2.77	0.00
26.00	3.00	2.77	0.00
26.50	3.00	2.77	0.00
27.00	3.00	2.77	0.00
27.50	3.00	2.77	0.00
28.00	3.00	2.77	0.00
28.50	3.00	2.77	0.00
29.00	3.00	2.77	0.00
29.50	3.00	2.77	0.00
30.00	3.00	2.77	0.00
30.50	3.00	2.77	0.00
31.00	3.00	2.77	0.00
31.50	3.00	2.77	0.00
32.00	3.00	2.77	0.00
32.50	3.00	2.77	0.00
33.00	3.00	2.77	0.00
33.50	3.00	2.77	0.00
34.00	3.00	2.77	0.00
34.50	3.00	2.77	0.00
35.00	3.00	2.77	0.00
35.50	3.00	2.77	0.00
36.00	3.00	2.77	0.00

Summary for Subcatchment WS4: WS#4

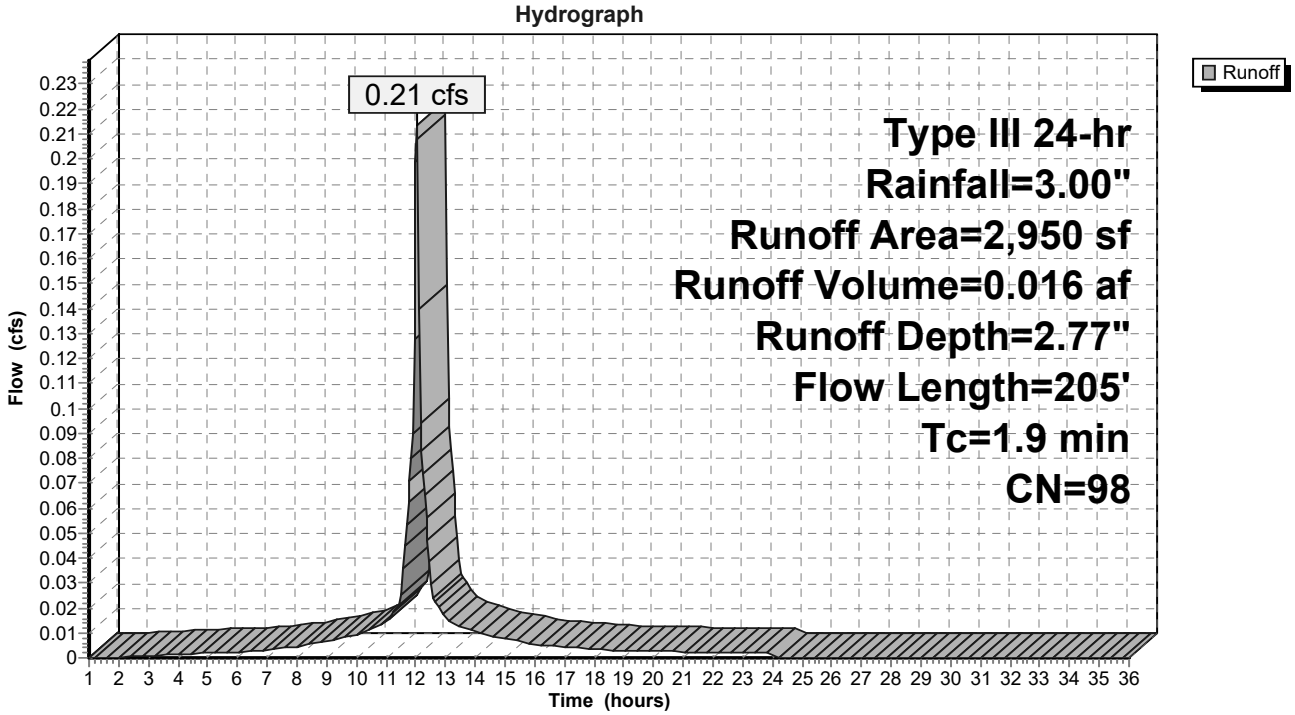
Runoff = 0.21 cfs @ 12.03 hrs, Volume= 0.016 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
2,950	98	Paved parking, HSG B
2,950		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	175	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	205	Total			

Subcatchment WS4: WS#4



Hydrograph for Subcatchment WS4: WS#4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.50	0.11	0.02	0.00
4.00	0.13	0.03	0.00
4.50	0.15	0.04	0.00
5.00	0.17	0.05	0.00
5.50	0.19	0.06	0.00
6.00	0.22	0.08	0.00
6.50	0.24	0.10	0.00
7.00	0.27	0.12	0.00
7.50	0.30	0.15	0.00
8.00	0.34	0.18	0.00
8.50	0.39	0.22	0.01
9.00	0.44	0.26	0.01
9.50	0.50	0.32	0.01
10.00	0.57	0.38	0.01
10.50	0.65	0.46	0.01
11.00	0.75	0.55	0.01
11.50	0.89	0.69	0.02
12.00	1.50	1.28	**0.20**
12.50	2.11	1.88	**0.03**
13.00	2.25	2.02	0.02
13.50	2.35	2.12	0.01
14.00	2.43	2.20	0.01
14.50	2.50	2.27	0.01
15.00	2.56	2.33	0.01
15.50	2.61	2.38	0.01
16.00	2.66	2.43	0.01
16.50	2.70	2.46	0.00
17.00	2.73	2.50	0.00
17.50	2.76	2.53	0.00
18.00	2.78	2.55	0.00
18.50	2.81	2.58	0.00
19.00	2.83	2.60	0.00
19.50	2.85	2.62	0.00
20.00	2.87	2.64	0.00
20.50	2.89	2.66	0.00
21.00	2.91	2.68	0.00
21.50	2.93	2.69	0.00
22.00	2.94	2.71	0.00
22.50	2.96	2.73	0.00
23.00	2.97	2.74	0.00
23.50	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00
24.50	3.00	2.77	0.00
25.00	3.00	2.77	0.00
25.50	3.00	2.77	0.00
26.00	3.00	2.77	0.00
26.50	3.00	2.77	0.00
27.00	3.00	2.77	0.00
27.50	3.00	2.77	0.00
28.00	3.00	2.77	0.00
28.50	3.00	2.77	0.00
29.00	3.00	2.77	0.00
29.50	3.00	2.77	0.00
30.00	3.00	2.77	0.00
30.50	3.00	2.77	0.00
31.00	3.00	2.77	0.00
31.50	3.00	2.77	0.00
32.00	3.00	2.77	0.00
32.50	3.00	2.77	0.00
33.00	3.00	2.77	0.00
33.50	3.00	2.77	0.00
34.00	3.00	2.77	0.00
34.50	3.00	2.77	0.00
35.00	3.00	2.77	0.00
35.50	3.00	2.77	0.00
36.00	3.00	2.77	0.00

Summary for Subcatchment WS5: WS#5

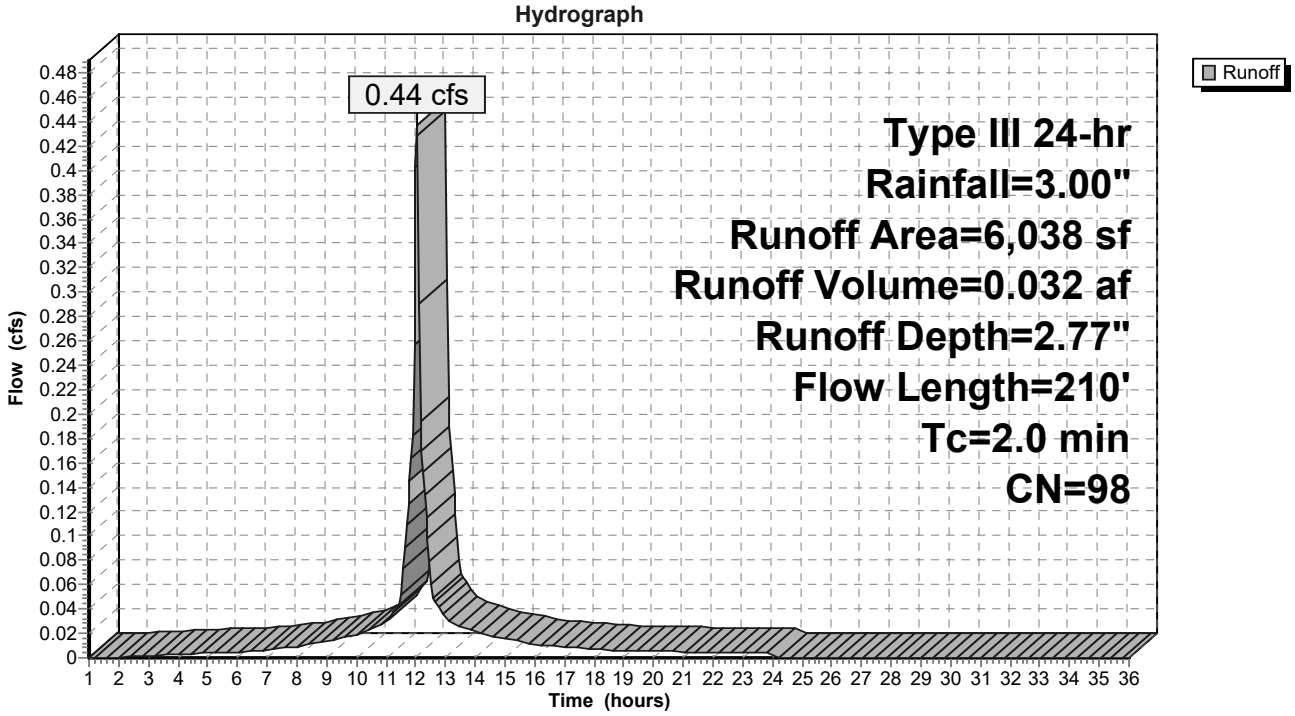
Runoff = 0.44 cfs @ 12.03 hrs, Volume= 0.032 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
6,038	98	Paved parking, HSG B
6,038		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.0	210	Total			

Subcatchment WS5: WS#5



Hydrograph for Subcatchment WS5: WS#5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.50	0.11	0.02	0.00
4.00	0.13	0.03	0.00
4.50	0.15	0.04	0.00
5.00	0.17	0.05	0.00
5.50	0.19	0.06	0.00
6.00	0.22	0.08	0.00
6.50	0.24	0.10	0.01
7.00	0.27	0.12	0.01
7.50	0.30	0.15	0.01
8.00	0.34	0.18	0.01
8.50	0.39	0.22	0.01
9.00	0.44	0.26	0.01
9.50	0.50	0.32	0.02
10.00	0.57	0.38	0.02
10.50	0.65	0.46	0.02
11.00	0.75	0.55	0.03
11.50	0.89	0.69	0.05
12.00	1.50	1.28	**0.40**
12.50	2.11	1.88	**0.06**
13.00	2.25	2.02	0.03
13.50	2.35	2.12	0.03
14.00	2.43	2.20	0.02
14.50	2.50	2.27	0.02
15.00	2.56	2.33	0.02
15.50	2.61	2.38	0.01
16.00	2.66	2.43	0.01
16.50	2.70	2.46	0.01
17.00	2.73	2.50	0.01
17.50	2.76	2.53	0.01
18.00	2.78	2.55	0.01
18.50	2.81	2.58	0.01
19.00	2.83	2.60	0.01
19.50	2.85	2.62	0.01
20.00	2.87	2.64	0.01
20.50	2.89	2.66	0.01
21.00	2.91	2.68	0.00
21.50	2.93	2.69	0.00
22.00	2.94	2.71	0.00
22.50	2.96	2.73	0.00
23.00	2.97	2.74	0.00
23.50	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00
24.50	3.00	2.77	0.00
25.00	3.00	2.77	0.00
25.50	3.00	2.77	0.00
26.00	3.00	2.77	0.00
26.50	3.00	2.77	0.00
27.00	3.00	2.77	0.00
27.50	3.00	2.77	0.00
28.00	3.00	2.77	0.00
28.50	3.00	2.77	0.00
29.00	3.00	2.77	0.00
29.50	3.00	2.77	0.00
30.00	3.00	2.77	0.00
30.50	3.00	2.77	0.00
31.00	3.00	2.77	0.00
31.50	3.00	2.77	0.00
32.00	3.00	2.77	0.00
32.50	3.00	2.77	0.00
33.00	3.00	2.77	0.00
33.50	3.00	2.77	0.00
34.00	3.00	2.77	0.00
34.50	3.00	2.77	0.00
35.00	3.00	2.77	0.00
35.50	3.00	2.77	0.00
36.00	3.00	2.77	0.00

Summary for Subcatchment WS6: WS#6

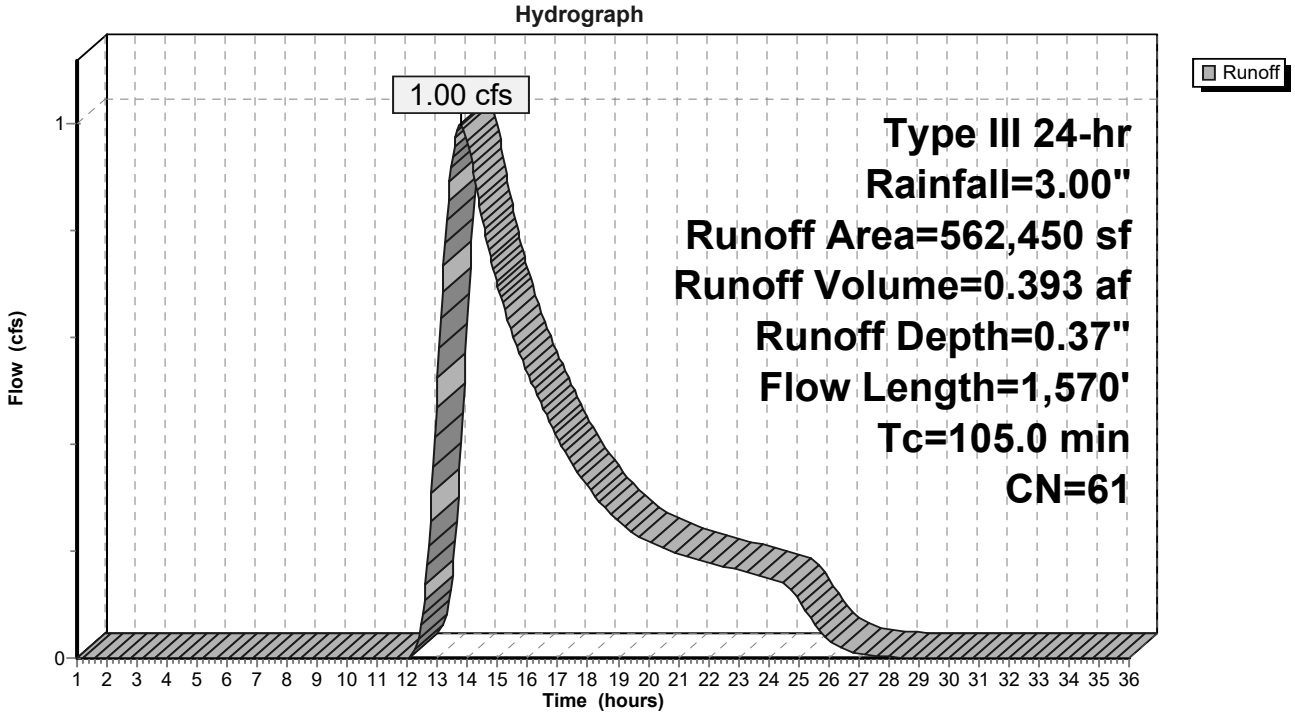
Runoff = 1.00 cfs @ 13.78 hrs, Volume= 0.393 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
321,930	65	2 acre lots, 12% imp, HSG B
240,520	55	Woods, Good, HSG B
562,450	61	Weighted Average
523,818		93.13% Pervious Area
38,632		6.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
4.3	190	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.5	215	0.0370	0.48		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
6.6	315	0.0130	0.80		**Shallow Concentrated Flow, SEG GH** Short Grass Pasture Kv= 7.0 fps
0.9	170	0.0150	3.11	7.78	**Trap/Vee/Rect Channel Flow, SEG HI** Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
0.2	60	0.0400	6.66	37.46	**Trap/Vee/Rect Channel Flow, SEG IJ** Bot.W=0.00' D=1.50' Z= 3.0 & 2.0 '/' Top.W=7.50' n= 0.035
105.0	1,570	Total			

Subcatchment WS6: WS#6



Hydrograph for Subcatchment WS6: WS#6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.11	0.00	0.00
4.00	0.13	0.00	0.00
4.50	0.15	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.19	0.00	0.00
6.00	0.22	0.00	0.00
6.50	0.24	0.00	0.00
7.00	0.27	0.00	0.00
7.50	0.30	0.00	0.00
8.00	0.34	0.00	0.00
8.50	0.39	0.00	0.00
9.00	0.44	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.57	0.00	0.00
10.50	0.65	0.00	0.00
11.00	0.75	0.00	0.00
11.50	0.89	0.00	0.00
12.00	1.50	0.01	0.00
12.50	2.11	0.09	0.08
13.00	2.25	0.13	0.52
13.50	2.35	0.15	**0.94**
14.00	2.43	0.18	**0.97**
14.50	2.50	0.20	0.82
15.00	2.56	0.21	0.70
15.50	2.61	0.23	0.60
16.00	2.66	0.24	0.53
16.50	2.70	0.26	0.47
17.00	2.73	0.27	0.41
17.50	2.76	0.28	0.36
18.00	2.78	0.29	0.32
18.50	2.81	0.30	0.29
19.00	2.83	0.30	0.26
19.50	2.85	0.31	0.23
20.00	2.87	0.32	0.22
20.50	2.89	0.32	0.21
21.00	2.91	0.33	0.19
21.50	2.93	0.34	0.19
22.00	2.94	0.34	0.18
22.50	2.96	0.35	0.17
23.00	2.97	0.35	0.16
23.50	2.99	0.36	0.16
24.00	**3.00**	**0.37**	0.15
24.50	3.00	0.37	0.14
25.00	3.00	0.37	0.11
25.50	3.00	0.37	0.07
26.00	3.00	0.37	0.03
26.50	3.00	0.37	0.02
27.00	3.00	0.37	0.01
27.50	3.00	0.37	0.00
28.00	3.00	0.37	0.00
28.50	3.00	0.37	0.00
29.00	3.00	0.37	0.00
29.50	3.00	0.37	0.00
30.00	3.00	0.37	0.00
30.50	3.00	0.37	0.00
31.00	3.00	0.37	0.00
31.50	3.00	0.37	0.00
32.00	3.00	0.37	0.00
32.50	3.00	0.37	0.00
33.00	3.00	0.37	0.00
33.50	3.00	0.37	0.00
34.00	3.00	0.37	0.00
34.50	3.00	0.37	0.00
35.00	3.00	0.37	0.00
35.50	3.00	0.37	0.00
36.00	3.00	0.37	0.00

Summary for Subcatchment WS7: WS7

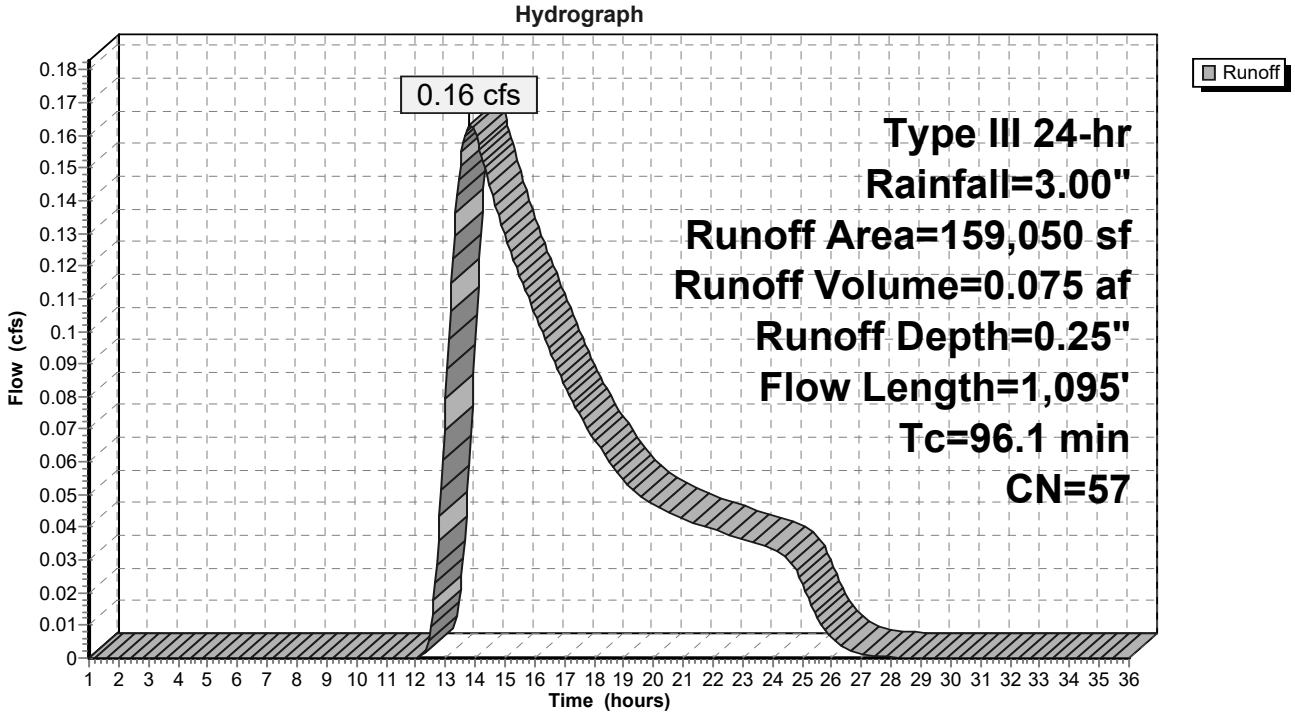
Runoff = 0.16 cfs @ 13.81 hrs, Volume= 0.075 af, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
5,250	61	>75% Grass cover, Good, HSG B
145,800	55	Woods, Good, HSG B
8,000	98	Roofs, HSG B
159,050	57	Weighted Average
151,050		94.97% Pervious Area
8,000		5.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.3	300	0.0670	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
17.7	325	0.0150	0.31		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
19.6	360	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
1.5	110	0.0100	1.24	0.24	**Pipe Channel, SEG DE** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.030 Corrugated metal
96.1	1,095	Total			

Subcatchment WS7: WS7



Hydrograph for Subcatchment WS7: WS7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.00	0.00
3.00	0.09	0.00	0.00
3.50	0.11	0.00	0.00
4.00	0.13	0.00	0.00
4.50	0.15	0.00	0.00
5.00	0.17	0.00	0.00
5.50	0.19	0.00	0.00
6.00	0.22	0.00	0.00
6.50	0.24	0.00	0.00
7.00	0.27	0.00	0.00
7.50	0.30	0.00	0.00
8.00	0.34	0.00	0.00
8.50	0.39	0.00	0.00
9.00	0.44	0.00	0.00
9.50	0.50	0.00	0.00
10.00	0.57	0.00	0.00
10.50	0.65	0.00	0.00
11.00	0.75	0.00	0.00
11.50	0.89	0.00	0.00
12.00	1.50	0.00	0.00
12.50	2.11	0.04	0.01
13.00	2.25	0.07	0.08
13.50	2.35	0.08	**0.15**
14.00	2.43	0.10	**0.16**
14.50	2.50	0.12	0.14
15.00	2.56	0.13	0.13
15.50	2.61	0.14	0.12
16.00	2.66	0.15	0.11
16.50	2.70	0.16	0.09
17.00	2.73	0.17	0.08
17.50	2.76	0.18	0.07
18.00	2.78	0.18	0.07
18.50	2.81	0.19	0.06
19.00	2.83	0.20	0.05
19.50	2.85	0.20	0.05
20.00	2.87	0.21	0.05
20.50	2.89	0.21	0.04
21.00	2.91	0.22	0.04
21.50	2.93	0.22	0.04
22.00	2.94	0.23	0.04
22.50	2.96	0.23	0.04
23.00	2.97	0.24	0.04
23.50	2.99	0.24	0.03
24.00	**3.00**	**0.25**	0.03
24.50	3.00	0.25	0.03
25.00	3.00	0.25	0.02
25.50	3.00	0.25	0.01
26.00	3.00	0.25	0.01
26.50	3.00	0.25	0.00
27.00	3.00	0.25	0.00
27.50	3.00	0.25	0.00
28.00	3.00	0.25	0.00
28.50	3.00	0.25	0.00
29.00	3.00	0.25	0.00
29.50	3.00	0.25	0.00
30.00	3.00	0.25	0.00
30.50	3.00	0.25	0.00
31.00	3.00	0.25	0.00
31.50	3.00	0.25	0.00
32.00	3.00	0.25	0.00
32.50	3.00	0.25	0.00
33.00	3.00	0.25	0.00
33.50	3.00	0.25	0.00
34.00	3.00	0.25	0.00
34.50	3.00	0.25	0.00
35.00	3.00	0.25	0.00
35.50	3.00	0.25	0.00
36.00	3.00	0.25	0.00

Summary for Subcatchment WS8: WS8

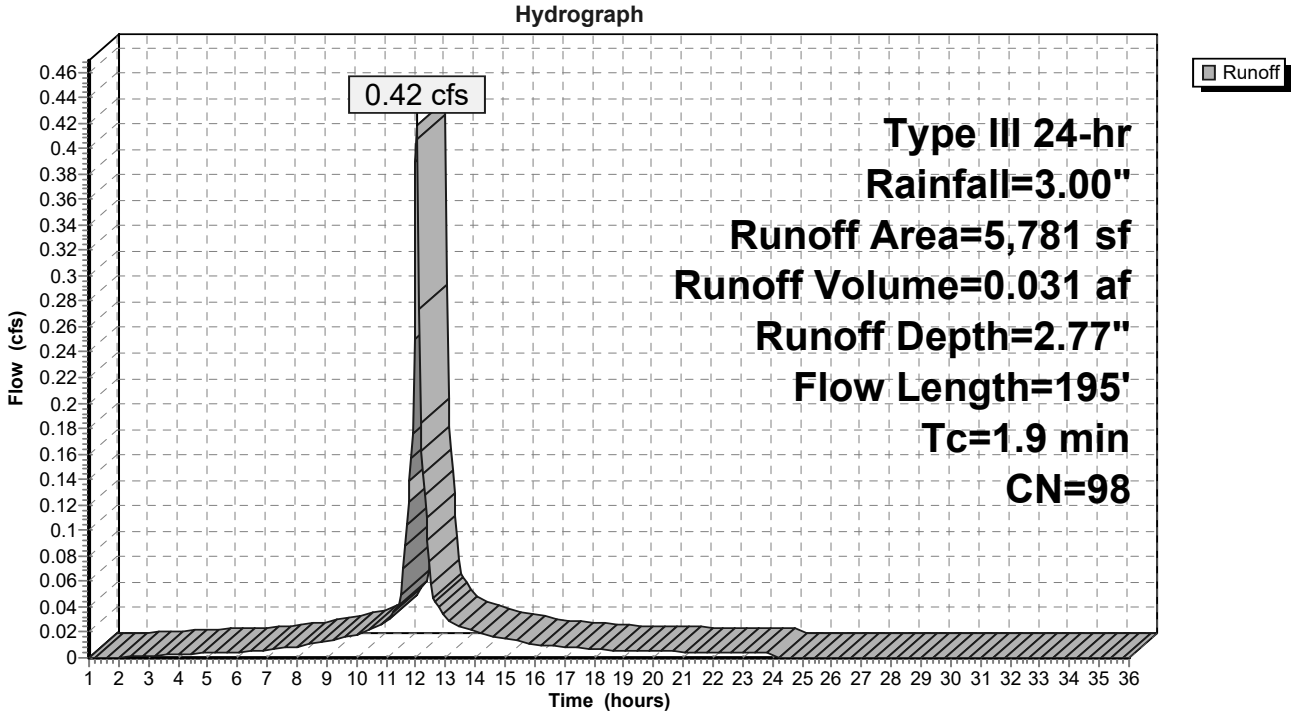
Runoff = 0.42 cfs @ 12.03 hrs, Volume= 0.031 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (sf)	CN	Description
5,781	98	Paved parking, HSG B
5,781		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	165	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	195	Total			

Subcatchment WS8: WS8



Hydrograph for Subcatchment WS8: WS8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.03	0.00	0.00
1.50	0.04	0.00	0.00
2.00	0.06	0.00	0.00
2.50	0.08	0.01	0.00
3.00	0.09	0.01	0.00
3.50	0.11	0.02	0.00
4.00	0.13	0.03	0.00
4.50	0.15	0.04	0.00
5.00	0.17	0.05	0.00
5.50	0.19	0.06	0.00
6.00	0.22	0.08	0.00
6.50	0.24	0.10	0.01
7.00	0.27	0.12	0.01
7.50	0.30	0.15	0.01
8.00	0.34	0.18	0.01
8.50	0.39	0.22	0.01
9.00	0.44	0.26	0.01
9.50	0.50	0.32	0.02
10.00	0.57	0.38	0.02
10.50	0.65	0.46	0.02
11.00	0.75	0.55	0.03
11.50	0.89	0.69	0.05
12.00	1.50	1.28	**0.39**
12.50	2.11	1.88	**0.06**
13.00	2.25	2.02	0.03
13.50	2.35	2.12	0.02
14.00	2.43	2.20	0.02
14.50	2.50	2.27	0.02
15.00	2.56	2.33	0.02
15.50	2.61	2.38	0.01
16.00	2.66	2.43	0.01
16.50	2.70	2.46	0.01
17.00	2.73	2.50	0.01
17.50	2.76	2.53	0.01
18.00	2.78	2.55	0.01
18.50	2.81	2.58	0.01
19.00	2.83	2.60	0.01
19.50	2.85	2.62	0.01
20.00	2.87	2.64	0.01
20.50	2.89	2.66	0.00
21.00	2.91	2.68	0.00
21.50	2.93	2.69	0.00
22.00	2.94	2.71	0.00
22.50	2.96	2.73	0.00
23.00	2.97	2.74	0.00
23.50	2.99	2.76	0.00
24.00	**3.00**	**2.77**	0.00
24.50	3.00	2.77	0.00
25.00	3.00	2.77	0.00
25.50	3.00	2.77	0.00
26.00	3.00	2.77	0.00
26.50	3.00	2.77	0.00
27.00	3.00	2.77	0.00
27.50	3.00	2.77	0.00
28.00	3.00	2.77	0.00
28.50	3.00	2.77	0.00
29.00	3.00	2.77	0.00
29.50	3.00	2.77	0.00
30.00	3.00	2.77	0.00
30.50	3.00	2.77	0.00
31.00	3.00	2.77	0.00
31.50	3.00	2.77	0.00
32.00	3.00	2.77	0.00
32.50	3.00	2.77	0.00
33.00	3.00	2.77	0.00
33.50	3.00	2.77	0.00
34.00	3.00	2.77	0.00
34.50	3.00	2.77	0.00
35.00	3.00	2.77	0.00
35.50	3.00	2.77	0.00
36.00	3.00	2.77	0.00

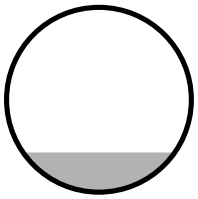
Summary for Reach R1: Culvert

Inflow Area = 0.632 ac, 49.73% Impervious, Inflow Depth = 1.19"
Inflow = 0.95 cfs @ 12.04 hrs, Volume= 0.063 af
Outflow = 0.89 cfs @ 12.07 hrs, Volume= 0.063 af, Atten= 6%, Lag= 1.3 min

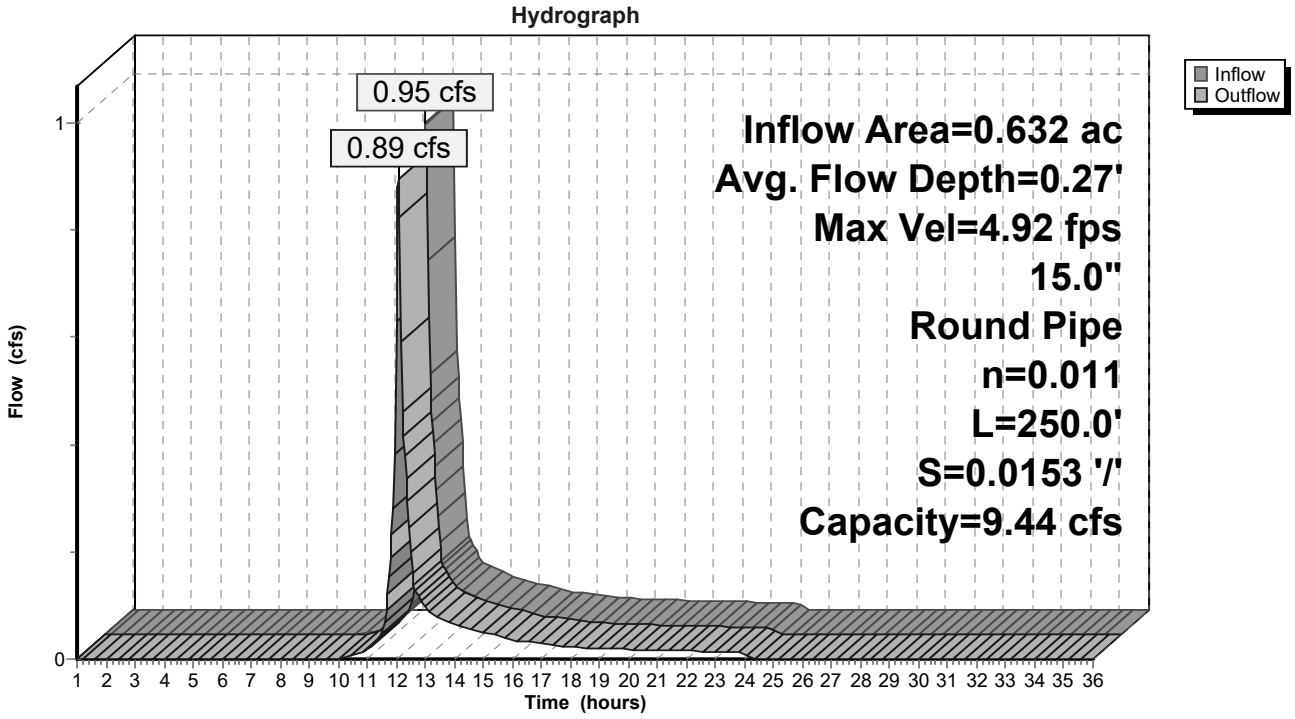
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.92 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.77 fps, Avg. Travel Time= 2.4 min

Peak Storage= 48 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0153 '/'
Inlet Invert= 363.00', Outlet Invert= 359.18'



Reach R1: Culvert



Hydrograph for Reach R1: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	363.00	0.00
2.00	0.00	0	363.00	0.00
3.00	0.00	0	363.00	0.00
4.00	0.00	0	363.00	0.00
5.00	0.00	0	363.00	0.00
6.00	0.00	0	363.00	0.00
7.00	0.00	0	363.00	0.00
8.00	0.00	0	363.00	0.00
9.00	0.00	0	363.00	0.00
10.00	0.00	0	363.01	0.00
11.00	0.02	3	363.04	0.02
12.00	**0.80**	**39**	**363.23**	**0.63**
13.00	**0.09**	**9**	**363.09**	**0.10**
14.00	0.06	7	363.07	0.06
15.00	0.05	6	363.06	0.05
16.00	0.03	5	363.06	0.04
17.00	0.03	4	363.05	0.03
18.00	0.02	3	363.04	0.02
19.00	0.02	3	363.04	0.02
20.00	0.02	3	363.04	0.02
21.00	0.02	3	363.04	0.02
22.00	0.01	3	363.04	0.02
23.00	0.01	2	363.04	0.01
24.00	0.01	2	363.03	0.01
25.00	0.00	0	363.00	0.00
26.00	0.00	0	363.00	0.00
27.00	0.00	0	363.00	0.00
28.00	0.00	0	363.00	0.00
29.00	0.00	0	363.00	0.00
30.00	0.00	0	363.00	0.00
31.00	0.00	0	363.00	0.00
32.00	0.00	0	363.00	0.00
33.00	0.00	0	363.00	0.00
34.00	0.00	0	363.00	0.00
35.00	0.00	0	363.00	0.00
36.00	0.00	0	363.00	0.00

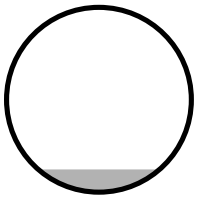
Summary for Reach R2: R2 Pipe across road

Inflow Area = 12.912 ac, 6.87% Impervious, Inflow Depth = 0.37"
Inflow = 1.00 cfs @ 13.78 hrs, Volume= 0.393 af
Outflow = 1.00 cfs @ 13.78 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.3 min

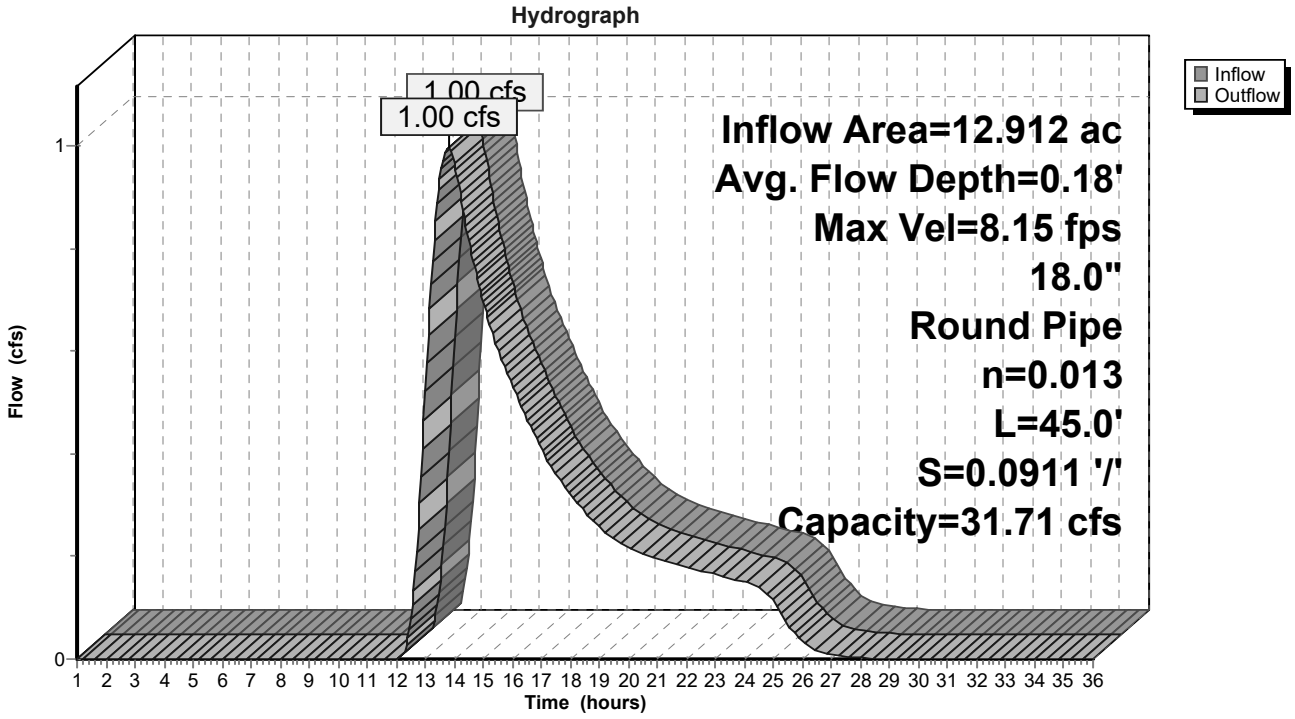
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 8.15 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 4.85 fps, Avg. Travel Time= 0.2 min

Peak Storage= 6 cf @ 13.78 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 31.71 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0911 '/'
Inlet Invert= 357.00', Outlet Invert= 352.90'



Reach R2: R2 Pipe across road



Hydrograph for Reach R2: R2 Pipe across road

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	357.00	0.00
2.00	0.00	0	357.00	0.00
3.00	0.00	0	357.00	0.00
4.00	0.00	0	357.00	0.00
5.00	0.00	0	357.00	0.00
6.00	0.00	0	357.00	0.00
7.00	0.00	0	357.00	0.00
8.00	0.00	0	357.00	0.00
9.00	0.00	0	357.00	0.00
10.00	0.00	0	357.00	0.00
11.00	0.00	0	357.00	0.00
12.00	0.00	0	357.00	0.00
13.00	**0.52**	**4**	**357.13**	**0.52**
14.00	**0.97**	**5**	**357.18**	**0.97**
15.00	0.70	4	357.15	0.70
16.00	0.53	4	357.14	0.53
17.00	0.41	3	357.12	0.41
18.00	0.32	2	357.11	0.32
19.00	0.26	2	357.10	0.26
20.00	0.22	2	357.09	0.22
21.00	0.19	2	357.08	0.19
22.00	0.18	2	357.08	0.18
23.00	0.16	2	357.08	0.16
24.00	0.15	1	357.07	0.15
25.00	0.11	1	357.06	0.11
26.00	0.03	1	357.04	0.03
27.00	0.01	0	357.02	0.01
28.00	0.00	0	357.01	0.00
29.00	0.00	0	357.00	0.00
30.00	0.00	0	357.00	0.00
31.00	0.00	0	357.00	0.00
32.00	0.00	0	357.00	0.00
33.00	0.00	0	357.00	0.00
34.00	0.00	0	357.00	0.00
35.00	0.00	0	357.00	0.00
36.00	0.00	0	357.00	0.00

Summary for Pond CB1: CB-1

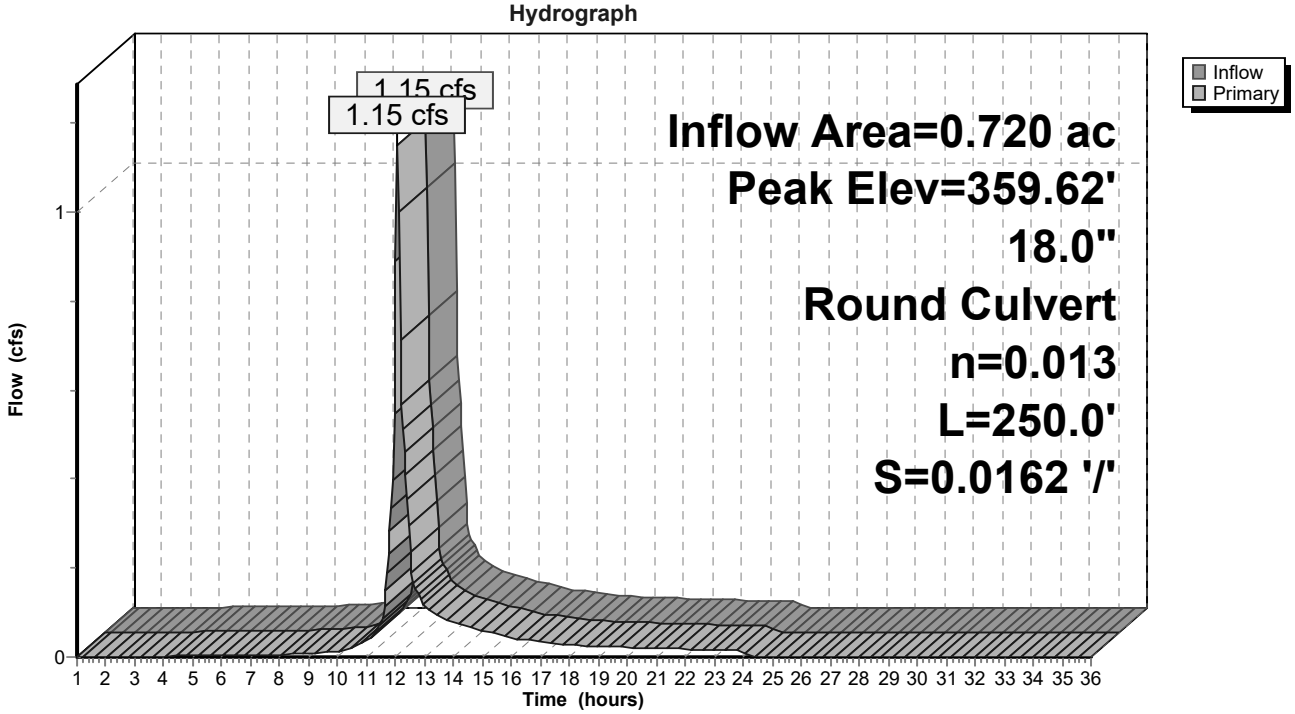
Inflow Area =	0.720 ac, 55.82% Impervious, Inflow Depth = 1.38"				
Inflow =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af	
Outflow =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 359.62' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	359.08'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 359.08' / 355.03' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.12 cfs @ 12.06 hrs HW=359.62' (Free Discharge)
└**1=CB-1** (Inlet Controls 1.12 cfs @ 1.97 fps)

Pond CB1: CB-1



Hydrograph for Pond CB1: CB-1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	359.08	0.00
1.50	0.00	359.08	0.00
2.00	0.00	359.09	0.00
2.50	0.00	359.09	0.00
3.00	0.00	359.10	0.00
3.50	0.00	359.10	0.00
4.00	0.00	359.10	0.00
4.50	0.00	359.10	0.00
5.00	0.00	359.10	0.00
5.50	0.00	359.10	0.00
6.00	0.00	359.11	0.00
6.50	0.00	359.11	0.00
7.00	0.00	359.11	0.00
7.50	0.00	359.11	0.00
8.00	0.01	359.12	0.01
8.50	0.01	359.12	0.01
9.00	0.01	359.12	0.01
9.50	0.01	359.13	0.01
10.00	0.01	359.13	0.01
10.50	0.02	359.15	0.02
11.00	0.04	359.17	0.04
11.50	0.08	359.21	0.08
12.00	**0.89**	**359.55**	**0.89**
12.50	**0.24**	**359.32**	**0.24**
13.00	0.11	359.24	0.11
13.50	0.09	359.23	0.09
14.00	0.08	359.21	0.08
14.50	0.07	359.21	0.07
15.00	0.06	359.20	0.06
15.50	0.05	359.19	0.05
16.00	0.04	359.18	0.04
16.50	0.04	359.17	0.04
17.00	0.03	359.17	0.03
17.50	0.03	359.16	0.03
18.00	0.03	359.16	0.03
18.50	0.02	359.16	0.02
19.00	0.02	359.15	0.02
19.50	0.02	359.15	0.02
20.00	0.02	359.15	0.02
20.50	0.02	359.15	0.02
21.00	0.02	359.15	0.02
21.50	0.02	359.15	0.02
22.00	0.02	359.14	0.02
22.50	0.02	359.14	0.02
23.00	0.02	359.14	0.02
23.50	0.02	359.14	0.02
24.00	0.01	359.14	0.01
24.50	0.00	359.08	0.00
25.00	0.00	359.08	0.00
25.50	0.00	359.08	0.00
26.00	0.00	359.08	0.00
26.50	0.00	359.08	0.00
27.00	0.00	359.08	0.00
27.50	0.00	359.08	0.00
28.00	0.00	359.08	0.00
28.50	0.00	359.08	0.00
29.00	0.00	359.08	0.00
29.50	0.00	359.08	0.00
30.00	0.00	359.08	0.00
30.50	0.00	359.08	0.00
31.00	0.00	359.08	0.00
31.50	0.00	359.08	0.00
32.00	0.00	359.08	0.00
32.50	0.00	359.08	0.00
33.00	0.00	359.08	0.00
33.50	0.00	359.08	0.00
34.00	0.00	359.08	0.00
34.50	0.00	359.08	0.00
35.00	0.00	359.08	0.00
35.50	0.00	359.08	0.00
36.00	0.00	359.08	0.00

Summary for Pond CB2: CB2

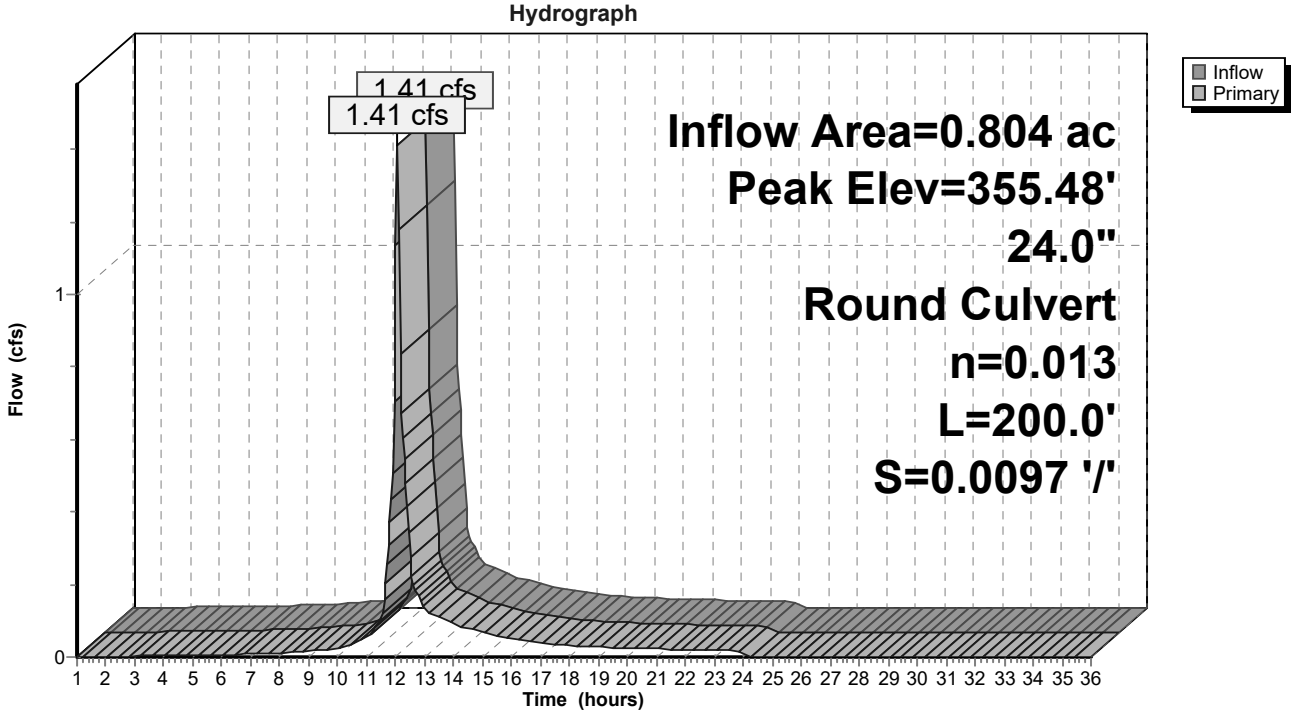
Inflow Area = 0.804 ac, 60.47% Impervious, Inflow Depth = 1.53"
Inflow = 1.41 cfs @ 12.05 hrs, Volume= 0.102 af
Outflow = 1.41 cfs @ 12.05 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.05 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.48' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.93'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.93' / 353.00' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.40 cfs @ 12.05 hrs HW=355.48' (Free Discharge)
└**1=CB-2** (Inlet Controls 1.40 cfs @ 1.99 fps)

Pond CB2: CB2



Hydrograph for Pond CB2: CB2

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	354.93	0.00
1.50	0.00	354.93	0.00
2.00	0.00	354.94	0.00
2.50	0.00	354.95	0.00
3.00	0.00	354.95	0.00
3.50	0.00	354.95	0.00
4.00	0.00	354.96	0.00
4.50	0.00	354.96	0.00
5.00	0.00	354.96	0.00
5.50	0.01	354.96	0.01
6.00	0.01	354.96	0.01
6.50	0.01	354.97	0.01
7.00	0.01	354.97	0.01
7.50	0.01	354.97	0.01
8.00	0.01	354.98	0.01
8.50	0.01	354.98	0.01
9.00	0.02	354.99	0.02
9.50	0.02	354.99	0.02
10.00	0.02	355.00	0.02
10.50	0.04	355.02	0.04
11.00	0.05	355.03	0.05
11.50	0.10	355.07	0.10
12.00	**1.13**	**355.42**	**1.13**
12.50	**0.27**	**355.17**	**0.27**
13.00	0.13	355.09	0.13
13.50	0.11	355.08	0.11
14.00	0.09	355.06	0.09
14.50	0.08	355.06	0.08
15.00	0.07	355.05	0.07
15.50	0.06	355.04	0.06
16.00	0.05	355.03	0.05
16.50	0.04	355.02	0.04
17.00	0.04	355.02	0.04
17.50	0.04	355.01	0.04
18.00	0.03	355.01	0.03
18.50	0.03	355.01	0.03
19.00	0.03	355.00	0.03
19.50	0.03	355.00	0.03
20.00	0.02	355.00	0.02
20.50	0.02	355.00	0.02
21.00	0.02	355.00	0.02
21.50	0.02	355.00	0.02
22.00	0.02	354.99	0.02
22.50	0.02	354.99	0.02
23.00	0.02	354.99	0.02
23.50	0.02	354.99	0.02
24.00	0.02	354.99	0.02
24.50	0.00	354.93	0.00
25.00	0.00	354.93	0.00
25.50	0.00	354.93	0.00
26.00	0.00	354.93	0.00
26.50	0.00	354.93	0.00
27.00	0.00	354.93	0.00
27.50	0.00	354.93	0.00
28.00	0.00	354.93	0.00
28.50	0.00	354.93	0.00
29.00	0.00	354.93	0.00
29.50	0.00	354.93	0.00
30.00	0.00	354.93	0.00
30.50	0.00	354.93	0.00
31.00	0.00	354.93	0.00
31.50	0.00	354.93	0.00
32.00	0.00	354.93	0.00
32.50	0.00	354.93	0.00
33.00	0.00	354.93	0.00
33.50	0.00	354.93	0.00
34.00	0.00	354.93	0.00
34.50	0.00	354.93	0.00
35.00	0.00	354.93	0.00
35.50	0.00	354.93	0.00
36.00	0.00	354.93	0.00

Summary for Pond CB3: CB-3

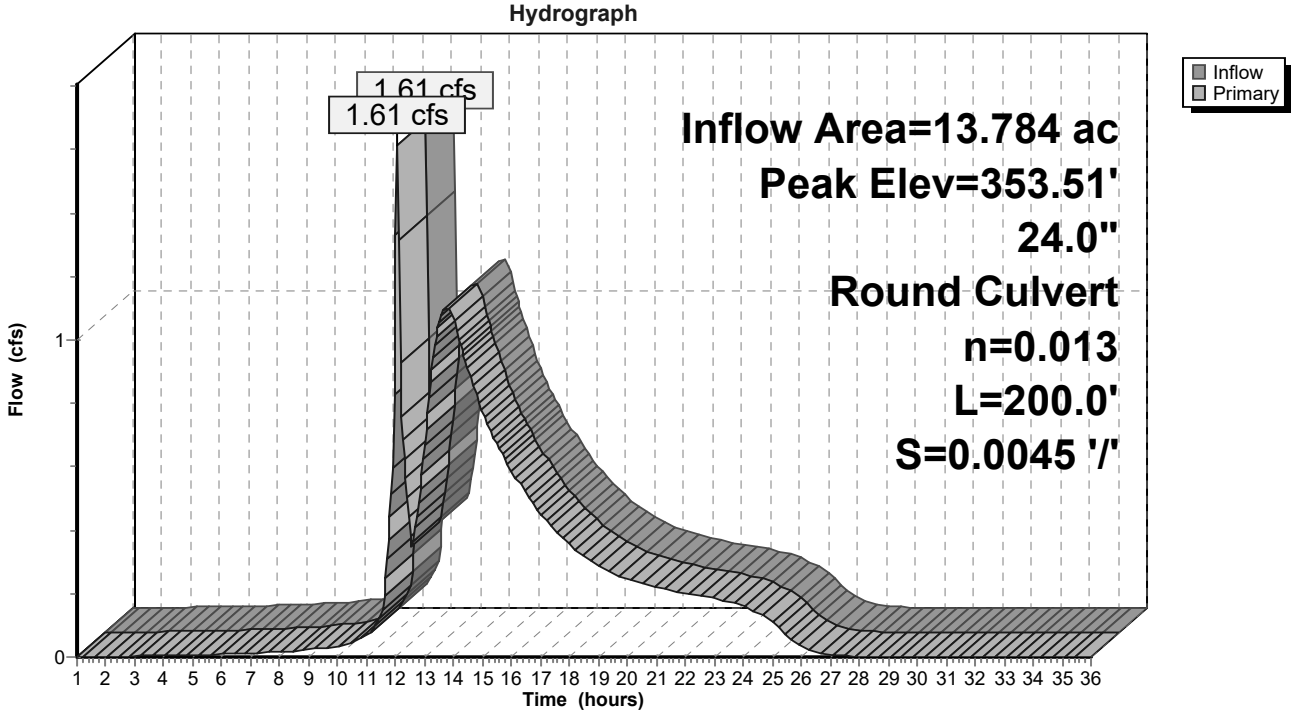
Inflow Area =	13.784 ac, 10.45% Impervious, Inflow Depth = 0.44"				
Inflow	=	1.61 cfs @	12.05 hrs, Volume=	0.511 af	
Outflow	=	1.61 cfs @	12.05 hrs, Volume=	0.511 af, Atten= 0%, Lag= 0.0 min	
Primary	=	1.61 cfs @	12.05 hrs, Volume=	0.511 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.51' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.90'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.90' / 352.00' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.61 cfs @ 12.05 hrs HW=353.51' (Free Discharge)
└**1=CB-3** (Barrel Controls 1.61 cfs @ 2.99 fps)

Pond CB3: CB-3



Hydrograph for Pond CB3: CB-3

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.90	0.00
1.50	0.00	352.90	0.00
2.00	0.00	352.92	0.00
2.50	0.00	352.92	0.00
3.00	0.00	352.93	0.00
3.50	0.00	352.93	0.00
4.00	0.00	352.94	0.00
4.50	0.01	352.94	0.01
5.00	0.01	352.94	0.01
5.50	0.01	352.94	0.01
6.00	0.01	352.95	0.01
6.50	0.01	352.95	0.01
7.00	0.01	352.96	0.01
7.50	0.01	352.96	0.01
8.00	0.02	352.96	0.02
8.50	0.02	352.97	0.02
9.00	0.02	352.98	0.02
9.50	0.03	352.99	0.03
10.00	0.03	352.99	0.03
10.50	0.05	353.01	0.05
11.00	0.07	353.03	0.07
11.50	0.13	353.07	0.13
12.00	**1.33**	**353.45**	**1.33**
12.50	**0.38**	**353.20**	**0.38**
13.00	0.67	353.29	0.67
13.50	1.06	353.39	1.06
14.00	1.07	353.39	1.07
14.50	0.90	353.35	0.90
15.00	0.77	353.32	0.77
15.50	0.67	353.29	0.67
16.00	0.59	353.26	0.59
16.50	0.52	353.24	0.52
17.00	0.45	353.22	0.45
17.50	0.40	353.20	0.40
18.00	0.35	353.18	0.35
18.50	0.32	353.17	0.32
19.00	0.29	353.16	0.29
19.50	0.26	353.15	0.26
20.00	0.24	353.14	0.24
20.50	0.23	353.13	0.23
21.00	0.22	353.13	0.22
21.50	0.21	353.12	0.21
22.00	0.20	353.12	0.20
22.50	0.19	353.11	0.19
23.00	0.18	353.11	0.18
23.50	0.18	353.10	0.18
24.00	0.17	353.10	0.17
24.50	0.14	353.08	0.14
25.00	0.11	353.06	0.11
25.50	0.07	353.03	0.07
26.00	0.03	352.99	0.03
26.50	0.02	352.97	0.02
27.00	0.01	352.95	0.01
27.50	0.00	352.93	0.00
28.00	0.00	352.92	0.00
28.50	0.00	352.91	0.00
29.00	0.00	352.91	0.00
29.50	0.00	352.90	0.00
30.00	0.00	352.90	0.00
30.50	0.00	352.90	0.00
31.00	0.00	352.90	0.00
31.50	0.00	352.90	0.00
32.00	0.00	352.90	0.00
32.50	0.00	352.90	0.00
33.00	0.00	352.90	0.00
33.50	0.00	352.90	0.00
34.00	0.00	352.90	0.00
34.50	0.00	352.90	0.00
35.00	0.00	352.90	0.00
35.50	0.00	352.90	0.00
36.00	0.00	352.90	0.00

Summary for Pond CB4: CB-4

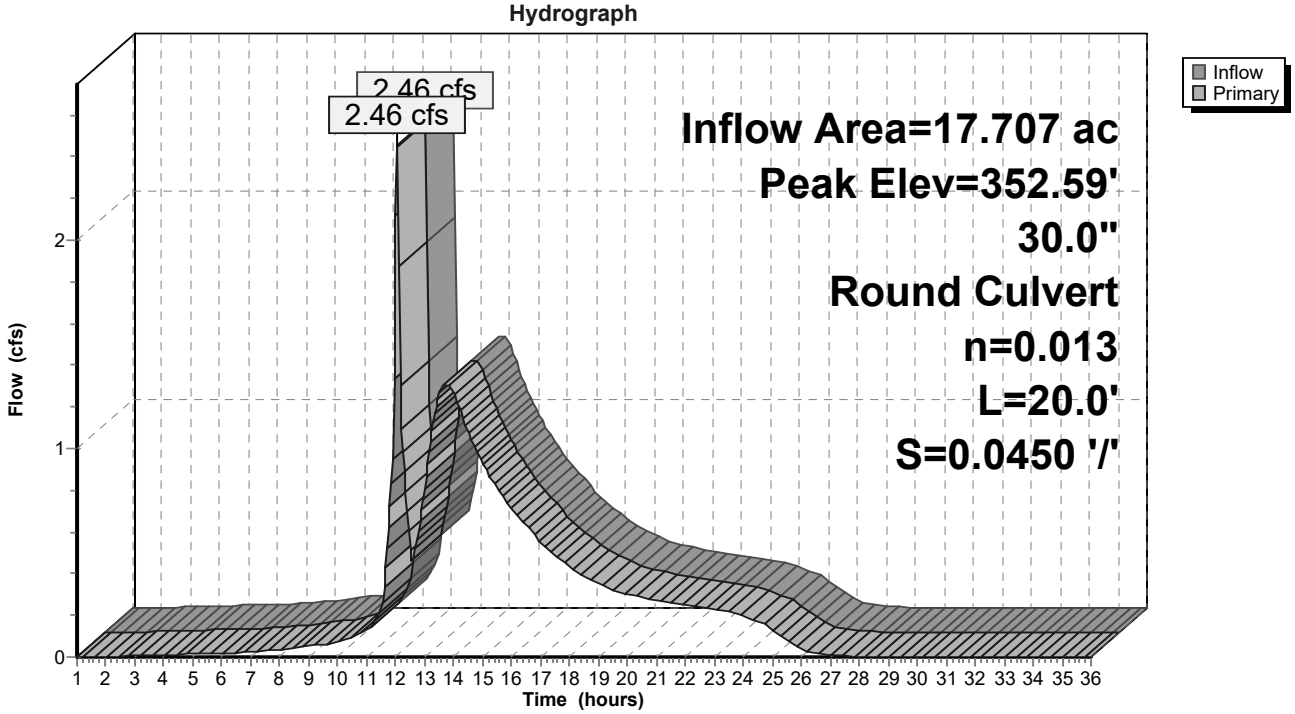
Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth = 0.44"				
Inflow	=	2.46 cfs @	12.04 hrs, Volume=	0.648 af	
Outflow	=	2.46 cfs @	12.04 hrs, Volume=	0.648 af, Atten= 0%, Lag= 0.0 min	
Primary	=	2.46 cfs @	12.04 hrs, Volume=	0.648 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 352.59' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	351.90'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 351.90' / 351.00' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=2.40 cfs @ 12.04 hrs HW=352.58' (Free Discharge)
└**1=30"** (Inlet Controls 2.40 cfs @ 2.22 fps)

Pond CB4: CB-4



Hydrograph for Pond CB4: CB-4

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	351.90	0.00
1.50	0.00	351.90	0.00
2.00	0.00	351.92	0.00
2.50	0.00	351.93	0.00
3.00	0.01	351.93	0.01
3.50	0.01	351.94	0.01
4.00	0.01	351.94	0.01
4.50	0.01	351.95	0.01
5.00	0.01	351.95	0.01
5.50	0.02	351.95	0.02
6.00	0.02	351.95	0.02
6.50	0.02	351.96	0.02
7.00	0.03	351.97	0.03
7.50	0.03	351.97	0.03
8.00	0.03	351.98	0.03
8.50	0.04	351.99	0.04
9.00	0.05	351.99	0.05
9.50	0.06	352.00	0.06
10.00	0.07	352.01	0.07
10.50	0.10	352.03	0.10
11.00	0.12	352.05	0.12
11.50	0.22	352.10	0.22
12.00	**2.12**	**352.54**	**2.12**
12.50	**0.51**	**352.21**	**0.51**
13.00	0.81	352.29	0.81
13.50	1.26	352.39	1.26
14.00	1.27	352.39	1.27
14.50	1.08	352.35	1.08
15.00	0.93	352.32	0.93
15.50	0.81	352.29	0.81
16.00	0.71	352.26	0.71
16.50	0.63	352.24	0.63
17.00	0.56	352.22	0.56
17.50	0.49	352.20	0.49
18.00	0.43	352.18	0.43
18.50	0.39	352.17	0.39
19.00	0.35	352.15	0.35
19.50	0.32	352.14	0.32
20.00	0.30	352.13	0.30
20.50	0.29	352.13	0.29
21.00	0.27	352.12	0.27
21.50	0.26	352.12	0.26
22.00	0.25	352.11	0.25
22.50	0.24	352.11	0.24
23.00	0.23	352.10	0.23
23.50	0.22	352.10	0.22
24.00	0.21	352.09	0.21
24.50	0.17	352.08	0.17
25.00	0.13	352.05	0.13
25.50	0.08	352.02	0.08
26.00	0.04	351.98	0.04
26.50	0.02	351.96	0.02
27.00	0.01	351.94	0.01
27.50	0.00	351.93	0.00
28.00	0.00	351.91	0.00
28.50	0.00	351.91	0.00
29.00	0.00	351.90	0.00
29.50	0.00	351.90	0.00
30.00	0.00	351.90	0.00
30.50	0.00	351.90	0.00
31.00	0.00	351.90	0.00
31.50	0.00	351.90	0.00
32.00	0.00	351.90	0.00
32.50	0.00	351.90	0.00
33.00	0.00	351.90	0.00
33.50	0.00	351.90	0.00
34.00	0.00	351.90	0.00
34.50	0.00	351.90	0.00
35.00	0.00	351.90	0.00
35.50	0.00	351.90	0.00
36.00	0.00	351.90	0.00

Summary for Pond CB5: CB-5

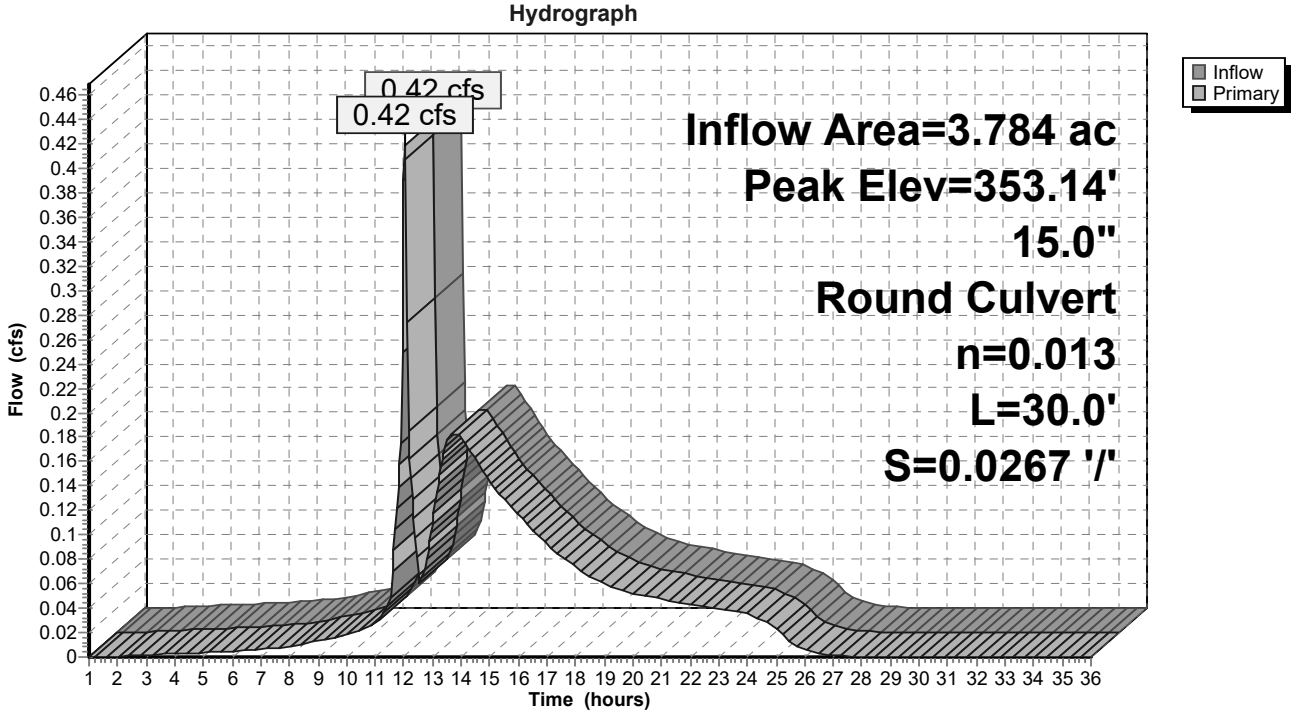
Inflow Area =	3.784 ac,	8.36% Impervious,	Inflow Depth =	0.33"	
Inflow =	0.42 cfs @	12.03 hrs,	Volume=	0.106 af	
Outflow =	0.42 cfs @	12.03 hrs,	Volume=	0.106 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.42 cfs @	12.03 hrs,	Volume=	0.106 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.14' @ 12.03 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.80'	**15.0" Round CB-5** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.80' / 352.00' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.40 cfs @ 12.03 hrs HW=353.13' (Free Discharge)
└**1=CB-5** (Inlet Controls 0.40 cfs @ 1.54 fps)

Pond CB5: CB-5



Hydrograph for Pond CB5: CB-5

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.80	0.00
1.50	0.00	352.80	0.00
2.00	0.00	352.81	0.00
2.50	0.00	352.82	0.00
3.00	0.00	352.82	0.00
3.50	0.00	352.82	0.00
4.00	0.00	352.83	0.00
4.50	0.00	352.83	0.00
5.00	0.00	352.83	0.00
5.50	0.00	352.83	0.00
6.00	0.00	352.83	0.00
6.50	0.01	352.84	0.01
7.00	0.01	352.84	0.01
7.50	0.01	352.84	0.01
8.00	0.01	352.85	0.01
8.50	0.01	352.85	0.01
9.00	0.01	352.86	0.01
9.50	0.02	352.86	0.02
10.00	0.02	352.87	0.02
10.50	0.02	352.88	0.02
11.00	0.03	352.88	0.03
11.50	0.05	352.91	0.05
12.00	**0.39**	**353.13**	**0.39**
12.50	**0.07**	**352.93**	**0.07**
13.00	0.11	352.97	0.11
13.50	0.18	353.01	0.18
14.00	0.18	353.02	0.18
14.50	0.16	353.01	0.16
15.00	0.14	352.99	0.14
15.50	0.13	352.98	0.13
16.00	0.12	352.97	0.12
16.50	0.10	352.96	0.10
17.00	0.09	352.95	0.09
17.50	0.08	352.95	0.08
18.00	0.07	352.94	0.07
18.50	0.07	352.93	0.07
19.00	0.06	352.92	0.06
19.50	0.06	352.92	0.06
20.00	0.05	352.92	0.05
20.50	0.05	352.91	0.05
21.00	0.05	352.91	0.05
21.50	0.05	352.91	0.05
22.00	0.04	352.91	0.04
22.50	0.04	352.90	0.04
23.00	0.04	352.90	0.04
23.50	0.04	352.90	0.04
24.00	0.04	352.90	0.04
24.50	0.03	352.89	0.03
25.00	0.02	352.88	0.02
25.50	0.01	352.86	0.01
26.00	0.01	352.84	0.01
26.50	0.00	352.83	0.00
27.00	0.00	352.82	0.00
27.50	0.00	352.81	0.00
28.00	0.00	352.80	0.00
28.50	0.00	352.80	0.00
29.00	0.00	352.80	0.00
29.50	0.00	352.80	0.00
30.00	0.00	352.80	0.00
30.50	0.00	352.80	0.00
31.00	0.00	352.80	0.00
31.50	0.00	352.80	0.00
32.00	0.00	352.80	0.00
32.50	0.00	352.80	0.00
33.00	0.00	352.80	0.00
33.50	0.00	352.80	0.00
34.00	0.00	352.80	0.00
34.50	0.00	352.80	0.00
35.00	0.00	352.80	0.00
35.50	0.00	352.80	0.00
36.00	0.00	352.80	0.00

Summary for Pond WP: Wet Pond

Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth = 0.44"			
Inflow =	2.46 cfs @	12.04 hrs, Volume=	0.648 af	
Outflow =	0.69 cfs @	16.12 hrs, Volume=	0.648 af, Atten= 72%, Lag= 244.9 min	
Primary =	0.69 cfs @	16.12 hrs, Volume=	0.648 af	
Secondary =	0.00 cfs @	1.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 347.88' @ 16.12 hrs Surf.Area= 14,156 sf Storage= 5,377 cf

Plug-Flow detention time= 70.7 min calculated for 0.647 af (100% of inflow)
Center-of-Mass det. time= 70.7 min (1,024.8 - 954.2)

Volume	Invert	Avail.Storage	Storage Description
#1	347.50'	54,382 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

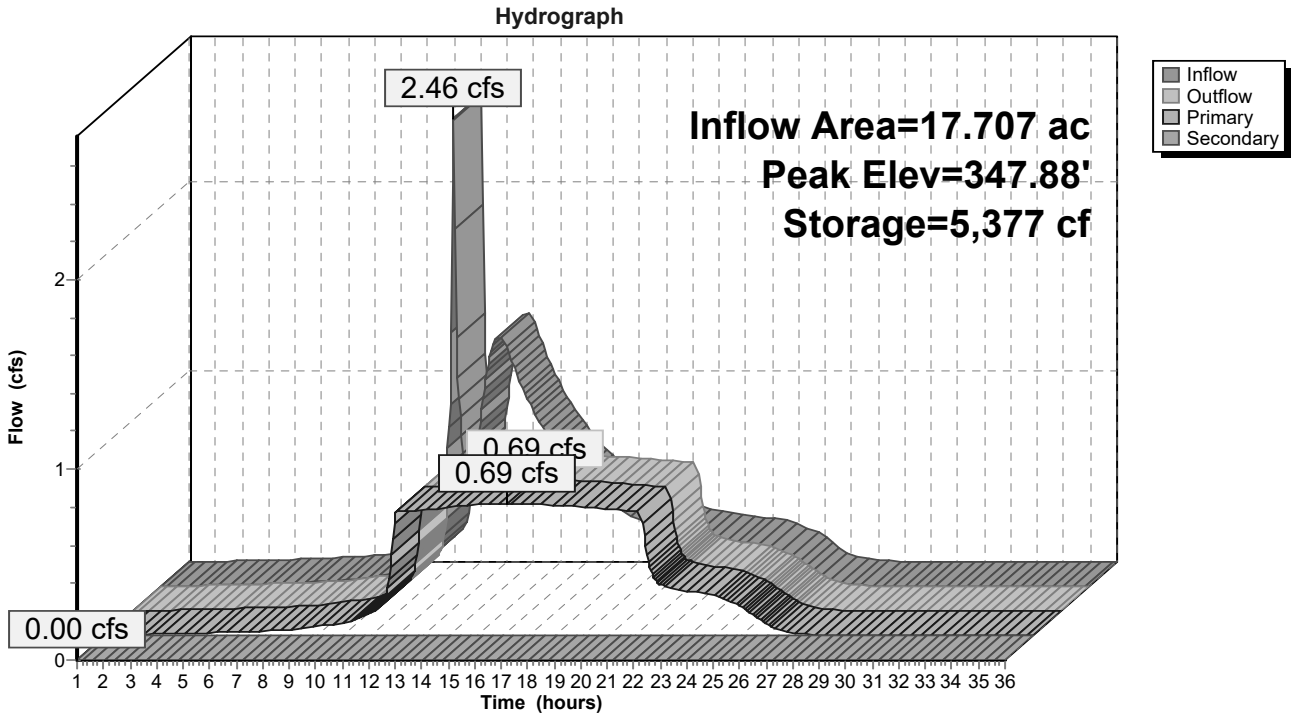
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.00' / 342.00' S= 0.0750 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	349.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	348.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	345.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Secondary	349.50'	**30.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=0.69 cfs @ 16.12 hrs HW=347.88' (Free Discharge)
└─**1=Culvert** (Passes 0.69 cfs of 4.61 cfs potential flow)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Orifice Controls 0.69 cfs @ 7.94 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=347.50' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WP: Wet Pond



Hydrograph for Pond WP: Wet Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	347.50	0.00	0.00	**0.00**
2.00	0.00	1	347.50	0.00	0.00	0.00
3.00	0.01	4	347.50	0.01	0.01	0.00
4.00	0.01	7	347.50	0.01	0.01	0.00
5.00	0.01	10	347.50	0.01	0.01	0.00
6.00	0.02	13	347.50	0.02	0.02	0.00
7.00	0.03	18	347.50	0.02	0.02	0.00
8.00	0.03	24	347.50	0.03	0.03	0.00
9.00	0.05	35	347.50	0.05	0.05	0.00
10.00	0.07	49	347.50	0.07	0.07	0.00
11.00	0.12	84	347.51	0.11	0.11	0.00
12.00	**2.12**	728	347.55	0.65	0.65	0.00
13.00	**0.81**	1,584	347.61	0.66	0.66	0.00
14.00	1.27	3,452	347.75	0.68	0.68	0.00
15.00	0.93	4,920	347.85	0.69	0.69	0.00
16.00	0.71	**5,372**	**347.88**	**0.69**	**0.69**	0.00
17.00	0.56	**5,160**	**347.87**	**0.69**	**0.69**	0.00
18.00	0.43	4,455	347.82	0.68	0.68	0.00
19.00	0.35	3,419	347.75	0.67	0.67	0.00
20.00	0.30	2,182	347.66	0.66	0.66	0.00
21.00	0.27	849	347.56	0.65	0.65	0.00
22.00	0.25	198	347.51	0.26	0.26	0.00
23.00	0.23	174	347.51	0.23	0.23	0.00
24.00	0.21	159	347.51	0.21	0.21	0.00
25.00	0.13	113	347.51	0.15	0.15	0.00
26.00	0.04	41	347.50	0.05	0.05	0.00
27.00	0.01	10	347.50	0.01	0.01	0.00
28.00	0.00	2	347.50	0.00	0.00	0.00
29.00	0.00	0	347.50	0.00	0.00	0.00
30.00	0.00	0	347.50	0.00	0.00	0.00
31.00	0.00	0	347.50	0.00	0.00	0.00
32.00	0.00	0	347.50	0.00	0.00	0.00
33.00	0.00	0	347.50	0.00	0.00	0.00
34.00	0.00	0	347.50	0.00	0.00	0.00
35.00	0.00	0	347.50	0.00	0.00	0.00
36.00	0.00	0	347.50	0.00	0.00	0.00

Summary for Subcatchment WS1: WS#1

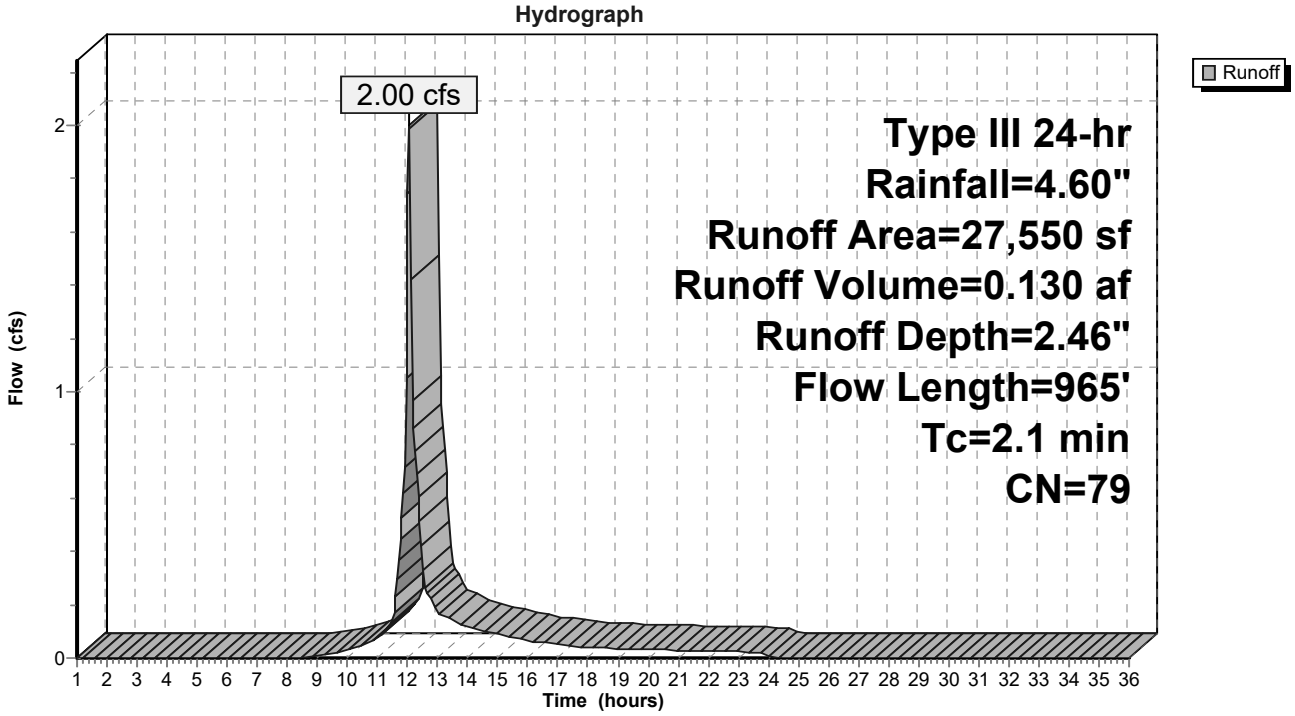
Runoff = 2.00 cfs @ 12.04 hrs, Volume= 0.130 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
13,700	98	Paved roads w/curbs & sewers, HSG B
13,850	61	>75% Grass cover, Good, HSG B
27,550	79	Weighted Average
13,850		50.27% Pervious Area
13,700		49.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0300	1.36		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0700	10.67	106.73	**Trap/Vee/Rect Channel Flow, SEG BC DITCH** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
0.3	145	0.0340	7.44	74.39	**Trap/Vee/Rect Channel Flow, SEG CD** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.2	50	0.0100	4.54	3.56	**Pipe Channel, SEG DE CULVERT** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	80	0.0330	7.33	73.28	**Trap/Vee/Rect Channel Flow, SEG EF** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.1	40	0.0670	11.74	9.22	**Pipe Channel, SEG FG** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	440	0.0800	14.95	336.42	**Trap/Vee/Rect Channel Flow, SEG GH** Bot.W=0.00' D=3.00' Z= 2.0 & 3.0 '/' Top.W=15.00' n= 0.035
2.1	965	Total			

Subcatchment WS1: WS#1



Hydrograph for Subcatchment WS1: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.00	0.00
2.50	0.12	0.00	0.00
3.00	0.14	0.00	0.00
3.50	0.17	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.23	0.00	0.00
5.00	0.26	0.00	0.00
5.50	0.30	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.37	0.00	0.00
7.00	0.42	0.00	0.00
7.50	0.47	0.00	0.00
8.00	0.52	0.00	0.00
8.50	0.59	0.00	0.00
9.00	0.67	0.01	0.01
9.50	0.76	0.02	0.02
10.00	0.87	0.04	0.03
10.50	1.00	0.07	0.05
11.00	1.15	0.12	0.07
11.50	1.37	0.20	0.14
12.00	2.30	0.71	**1.74**
12.50	3.23	1.36	**0.33**
13.00	3.45	1.53	0.17
13.50	3.60	1.65	0.14
14.00	3.73	1.75	0.12
14.50	3.84	1.83	0.10
15.00	3.93	1.91	0.09
15.50	4.01	1.97	0.08
16.00	4.08	2.03	0.06
16.50	4.13	2.07	0.06
17.00	4.18	2.11	0.05
17.50	4.23	2.15	0.05
18.00	4.27	2.18	0.04
18.50	4.30	2.21	0.04
19.00	4.34	2.24	0.04
19.50	4.37	2.27	0.03
20.00	4.40	2.29	0.03
20.50	4.43	2.32	0.03
21.00	4.46	2.34	0.03
21.50	4.49	2.36	0.03
22.00	4.51	2.39	0.03
22.50	4.54	2.41	0.03
23.00	4.56	2.43	0.02
23.50	4.58	2.44	0.02
24.00	**4.60**	**2.46**	0.02
24.50	4.60	2.46	0.00
25.00	4.60	2.46	0.00
25.50	4.60	2.46	0.00
26.00	4.60	2.46	0.00
26.50	4.60	2.46	0.00
27.00	4.60	2.46	0.00
27.50	4.60	2.46	0.00
28.00	4.60	2.46	0.00
28.50	4.60	2.46	0.00
29.00	4.60	2.46	0.00
29.50	4.60	2.46	0.00
30.00	4.60	2.46	0.00
30.50	4.60	2.46	0.00
31.00	4.60	2.46	0.00
31.50	4.60	2.46	0.00
32.00	4.60	2.46	0.00
32.50	4.60	2.46	0.00
33.00	4.60	2.46	0.00
33.50	4.60	2.46	0.00
34.00	4.60	2.46	0.00
34.50	4.60	2.46	0.00
35.00	4.60	2.46	0.00
35.50	4.60	2.46	0.00
36.00	4.60	2.46	0.00

Summary for Subcatchment WS2: WS#2

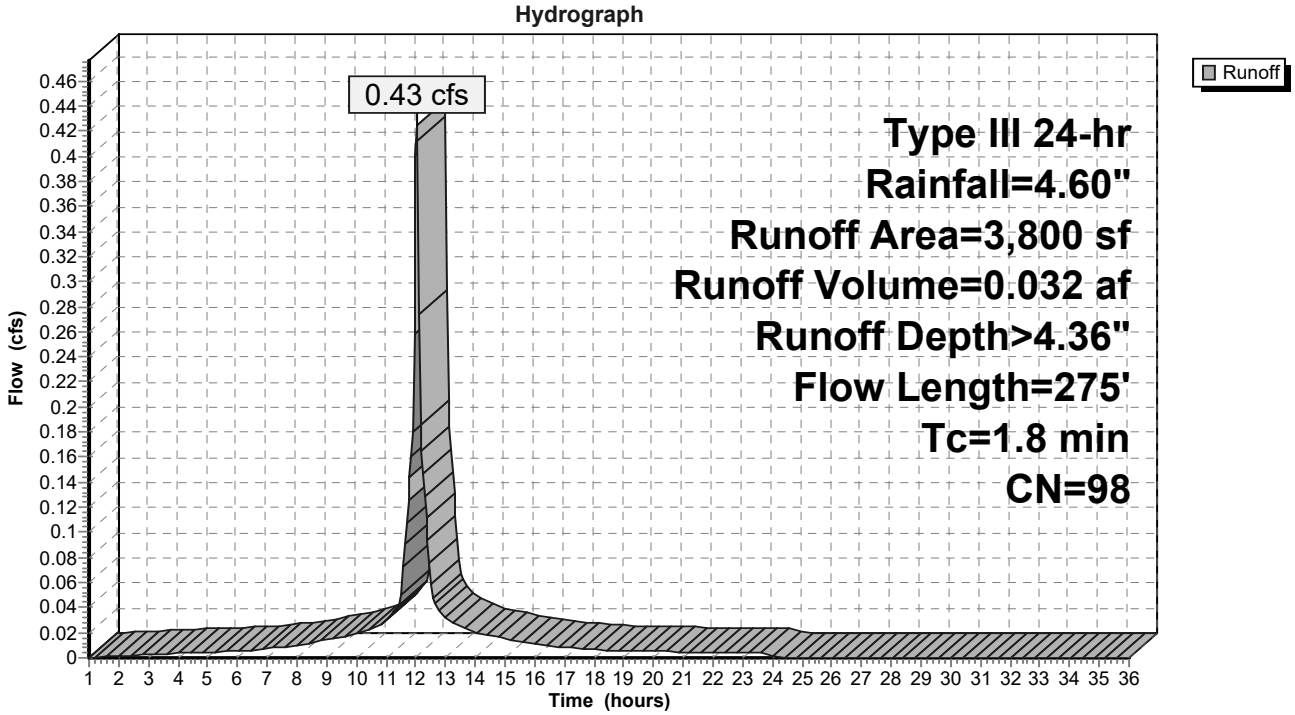
Runoff = 0.43 cfs @ 12.03 hrs, Volume= 0.032 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG B
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0820	2.00		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	230	0.0190	2.80		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.8	275	Total			

Subcatchment WS2: WS#2



Hydrograph for Subcatchment WS2: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.01	0.00
2.50	0.12	0.02	0.00
3.00	0.14	0.03	0.00
3.50	0.17	0.05	0.00
4.00	0.20	0.07	0.00
4.50	0.23	0.09	0.00
5.00	0.26	0.11	0.00
5.50	0.30	0.14	0.00
6.00	0.33	0.17	0.01
6.50	0.37	0.20	0.01
7.00	0.42	0.24	0.01
7.50	0.47	0.29	0.01
8.00	0.52	0.34	0.01
8.50	0.59	0.40	0.01
9.00	0.67	0.48	0.01
9.50	0.76	0.56	0.02
10.00	0.87	0.66	0.02
10.50	1.00	0.79	0.02
11.00	1.15	0.94	0.03
11.50	1.37	1.15	0.05
12.00	2.30	2.07	**0.40**
12.50	3.23	3.00	**0.06**
13.00	3.45	3.22	0.03
13.50	3.60	3.37	0.02
14.00	3.73	3.50	0.02
14.50	3.84	3.60	0.02
15.00	3.93	3.69	0.02
15.50	4.01	3.77	0.01
16.00	4.08	3.84	0.01
16.50	4.13	3.90	0.01
17.00	4.18	3.95	0.01
17.50	4.23	3.99	0.01
18.00	4.27	4.03	0.01
18.50	4.30	4.07	0.01
19.00	4.34	4.10	0.01
19.50	4.37	4.14	0.01
20.00	4.40	4.17	0.01
20.50	4.43	4.20	0.01
21.00	4.46	4.22	0.00
21.50	4.49	4.25	0.00
22.00	4.51	4.28	0.00
22.50	4.54	4.30	0.00
23.00	4.56	4.32	0.00
23.50	4.58	4.34	0.00
24.00	**4.60**	**4.36**	0.00
24.50	4.60	4.36	0.00
25.00	4.60	4.36	0.00
25.50	4.60	4.36	0.00
26.00	4.60	4.36	0.00
26.50	4.60	4.36	0.00
27.00	4.60	4.36	0.00
27.50	4.60	4.36	0.00
28.00	4.60	4.36	0.00
28.50	4.60	4.36	0.00
29.00	4.60	4.36	0.00
29.50	4.60	4.36	0.00
30.00	4.60	4.36	0.00
30.50	4.60	4.36	0.00
31.00	4.60	4.36	0.00
31.50	4.60	4.36	0.00
32.00	4.60	4.36	0.00
32.50	4.60	4.36	0.00
33.00	4.60	4.36	0.00
33.50	4.60	4.36	0.00
34.00	4.60	4.36	0.00
34.50	4.60	4.36	0.00
35.00	4.60	4.36	0.00
35.50	4.60	4.36	0.00
36.00	4.60	4.36	0.00

Summary for Subcatchment WS3: WS#3

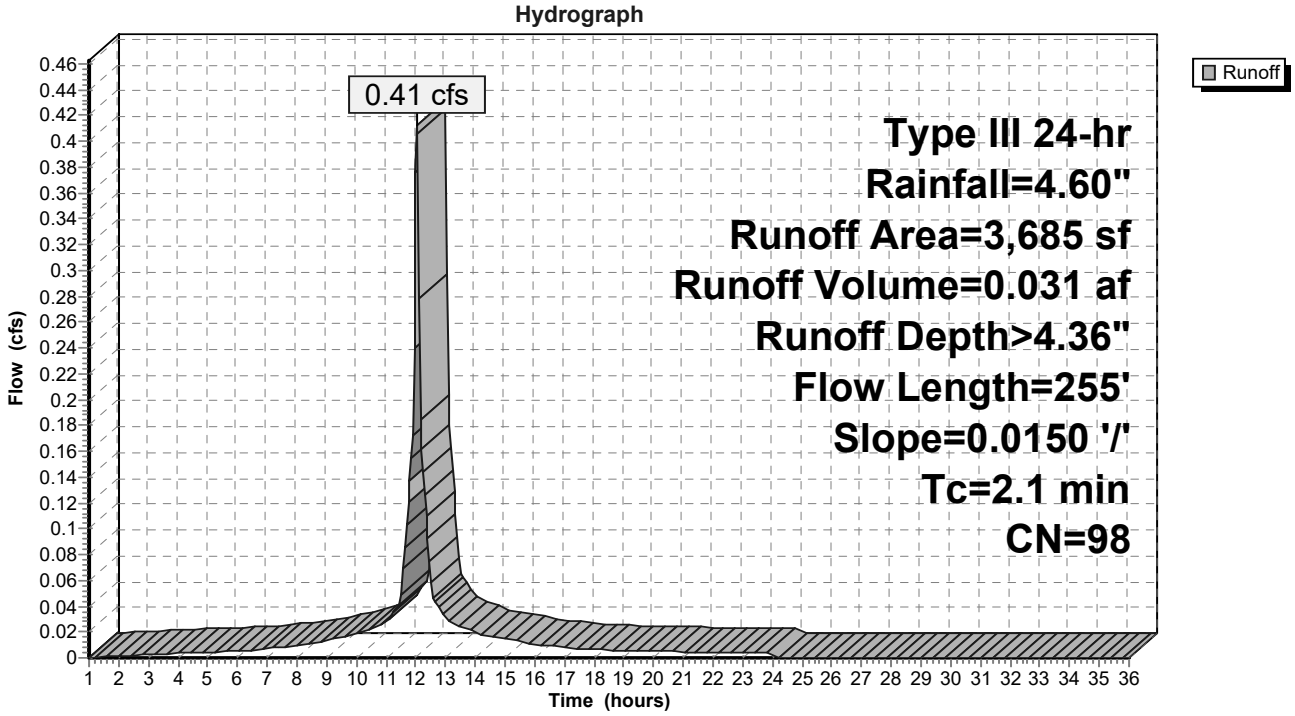
Runoff = 0.41 cfs @ 12.03 hrs, Volume= 0.031 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
3,685	98	Paved parking, HSG B
3,685		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	40	0.0150	0.99		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	215	0.0150	2.49		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.1	255	Total			

Subcatchment WS3: WS#3



Hydrograph for Subcatchment WS3: WS#3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.01	0.00
2.50	0.12	0.02	0.00
3.00	0.14	0.03	0.00
3.50	0.17	0.05	0.00
4.00	0.20	0.07	0.00
4.50	0.23	0.09	0.00
5.00	0.26	0.11	0.00
5.50	0.30	0.14	0.00
6.00	0.33	0.17	0.01
6.50	0.37	0.20	0.01
7.00	0.42	0.24	0.01
7.50	0.47	0.29	0.01
8.00	0.52	0.34	0.01
8.50	0.59	0.40	0.01
9.00	0.67	0.48	0.01
9.50	0.76	0.56	0.02
10.00	0.87	0.66	0.02
10.50	1.00	0.79	0.02
11.00	1.15	0.94	0.03
11.50	1.37	1.15	0.04
12.00	2.30	2.07	**0.38**
12.50	3.23	3.00	**0.06**
13.00	3.45	3.22	0.03
13.50	3.60	3.37	0.02
14.00	3.73	3.50	0.02
14.50	3.84	3.60	0.02
15.00	3.93	3.69	0.01
15.50	4.01	3.77	0.01
16.00	4.08	3.84	0.01
16.50	4.13	3.90	0.01
17.00	4.18	3.95	0.01
17.50	4.23	3.99	0.01
18.00	4.27	4.03	0.01
18.50	4.30	4.07	0.01
19.00	4.34	4.10	0.01
19.50	4.37	4.14	0.01
20.00	4.40	4.17	0.01
20.50	4.43	4.20	0.00
21.00	4.46	4.22	0.00
21.50	4.49	4.25	0.00
22.00	4.51	4.28	0.00
22.50	4.54	4.30	0.00
23.00	4.56	4.32	0.00
23.50	4.58	4.34	0.00
24.00	**4.60**	**4.36**	0.00
24.50	4.60	4.36	0.00
25.00	4.60	4.36	0.00
25.50	4.60	4.36	0.00
26.00	4.60	4.36	0.00
26.50	4.60	4.36	0.00
27.00	4.60	4.36	0.00
27.50	4.60	4.36	0.00
28.00	4.60	4.36	0.00
28.50	4.60	4.36	0.00
29.00	4.60	4.36	0.00
29.50	4.60	4.36	0.00
30.00	4.60	4.36	0.00
30.50	4.60	4.36	0.00
31.00	4.60	4.36	0.00
31.50	4.60	4.36	0.00
32.00	4.60	4.36	0.00
32.50	4.60	4.36	0.00
33.00	4.60	4.36	0.00
33.50	4.60	4.36	0.00
34.00	4.60	4.36	0.00
34.50	4.60	4.36	0.00
35.00	4.60	4.36	0.00
35.50	4.60	4.36	0.00
36.00	4.60	4.36	0.00

Summary for Subcatchment WS4: WS#4

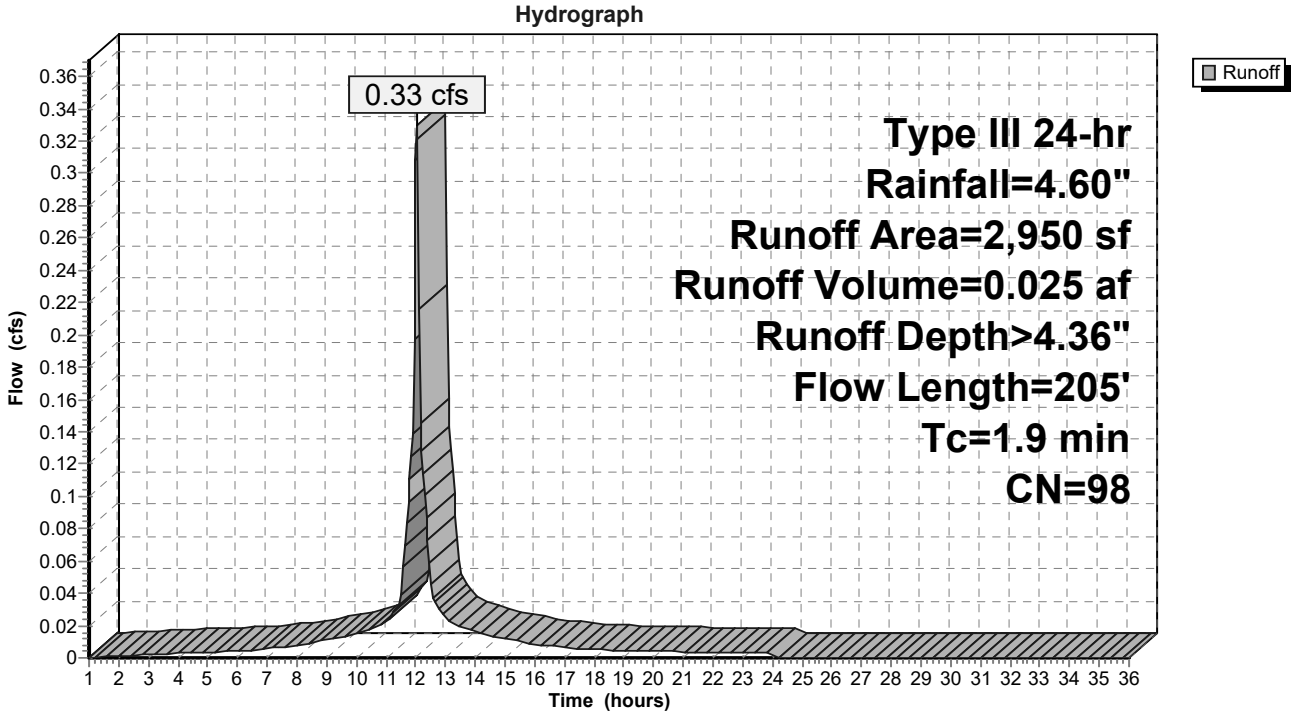
Runoff = 0.33 cfs @ 12.03 hrs, Volume= 0.025 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
2,950	98	Paved parking, HSG B
2,950		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	175	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	205	Total			

Subcatchment WS4: WS#4



Hydrograph for Subcatchment WS4: WS#4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.01	0.00
2.50	0.12	0.02	0.00
3.00	0.14	0.03	0.00
3.50	0.17	0.05	0.00
4.00	0.20	0.07	0.00
4.50	0.23	0.09	0.00
5.00	0.26	0.11	0.00
5.50	0.30	0.14	0.00
6.00	0.33	0.17	0.00
6.50	0.37	0.20	0.00
7.00	0.42	0.24	0.01
7.50	0.47	0.29	0.01
8.00	0.52	0.34	0.01
8.50	0.59	0.40	0.01
9.00	0.67	0.48	0.01
9.50	0.76	0.56	0.01
10.00	0.87	0.66	0.01
10.50	1.00	0.79	0.02
11.00	1.15	0.94	0.02
11.50	1.37	1.15	0.04
12.00	2.30	2.07	**0.31**
12.50	3.23	3.00	**0.05**
13.00	3.45	3.22	0.02
13.50	3.60	3.37	0.02
14.00	3.73	3.50	0.02
14.50	3.84	3.60	0.01
15.00	3.93	3.69	0.01
15.50	4.01	3.77	0.01
16.00	4.08	3.84	0.01
16.50	4.13	3.90	0.01
17.00	4.18	3.95	0.01
17.50	4.23	3.99	0.01
18.00	4.27	4.03	0.01
18.50	4.30	4.07	0.00
19.00	4.34	4.10	0.00
19.50	4.37	4.14	0.00
20.00	4.40	4.17	0.00
20.50	4.43	4.20	0.00
21.00	4.46	4.22	0.00
21.50	4.49	4.25	0.00
22.00	4.51	4.28	0.00
22.50	4.54	4.30	0.00
23.00	4.56	4.32	0.00
23.50	4.58	4.34	0.00
24.00	**4.60**	**4.36**	0.00
24.50	4.60	4.36	0.00
25.00	4.60	4.36	0.00
25.50	4.60	4.36	0.00
26.00	4.60	4.36	0.00
26.50	4.60	4.36	0.00
27.00	4.60	4.36	0.00
27.50	4.60	4.36	0.00
28.00	4.60	4.36	0.00
28.50	4.60	4.36	0.00
29.00	4.60	4.36	0.00
29.50	4.60	4.36	0.00
30.00	4.60	4.36	0.00
30.50	4.60	4.36	0.00
31.00	4.60	4.36	0.00
31.50	4.60	4.36	0.00
32.00	4.60	4.36	0.00
32.50	4.60	4.36	0.00
33.00	4.60	4.36	0.00
33.50	4.60	4.36	0.00
34.00	4.60	4.36	0.00
34.50	4.60	4.36	0.00
35.00	4.60	4.36	0.00
35.50	4.60	4.36	0.00
36.00	4.60	4.36	0.00

Summary for Subcatchment WS5: WS#5

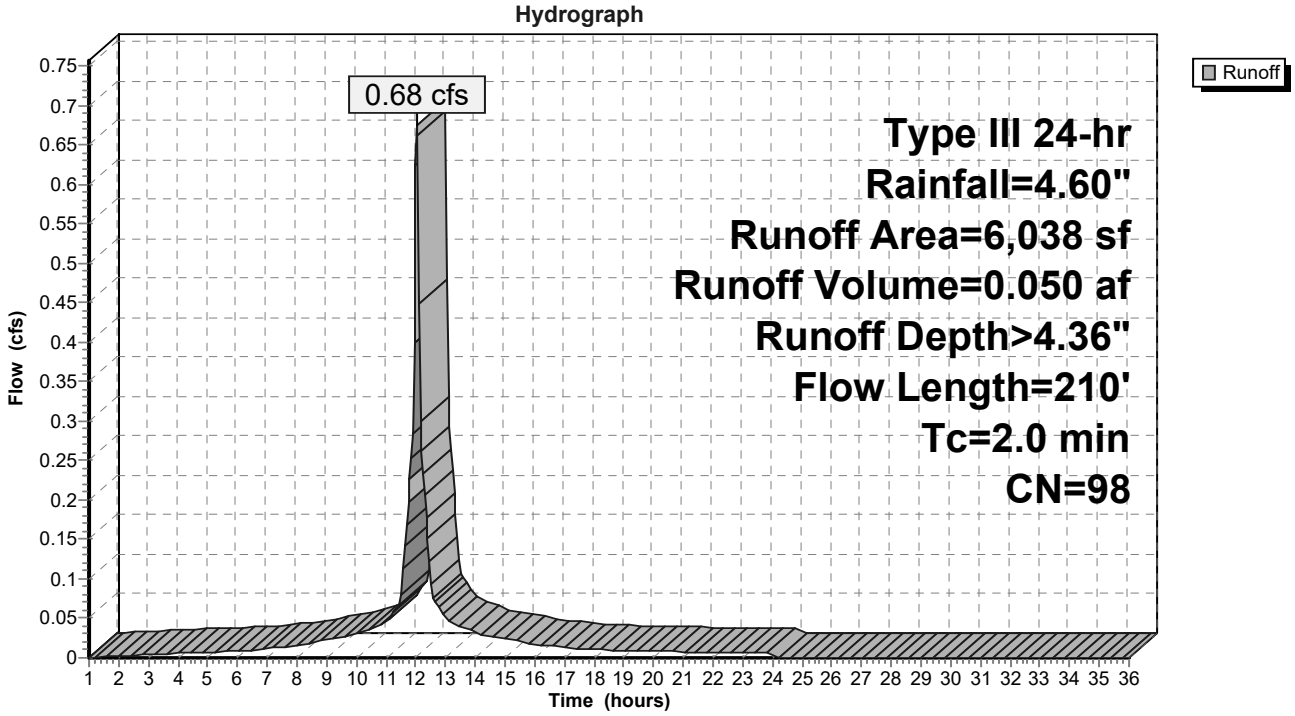
Runoff = 0.68 cfs @ 12.03 hrs, Volume= 0.050 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
6,038	98	Paved parking, HSG B
6,038		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.0	210	Total			

Subcatchment WS5: WS#5



Hydrograph for Subcatchment WS5: WS#5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.01	0.00
2.50	0.12	0.02	0.00
3.00	0.14	0.03	0.00
3.50	0.17	0.05	0.00
4.00	0.20	0.07	0.01
4.50	0.23	0.09	0.01
5.00	0.26	0.11	0.01
5.50	0.30	0.14	0.01
6.00	0.33	0.17	0.01
6.50	0.37	0.20	0.01
7.00	0.42	0.24	0.01
7.50	0.47	0.29	0.01
8.00	0.52	0.34	0.02
8.50	0.59	0.40	0.02
9.00	0.67	0.48	0.02
9.50	0.76	0.56	0.03
10.00	0.87	0.66	0.03
10.50	1.00	0.79	0.04
11.00	1.15	0.94	0.05
11.50	1.37	1.15	0.07
12.00	2.30	2.07	**0.62**
12.50	3.23	3.00	**0.09**
13.00	3.45	3.22	0.05
13.50	3.60	3.37	0.04
14.00	3.73	3.50	0.03
14.50	3.84	3.60	0.03
15.00	3.93	3.69	0.02
15.50	4.01	3.77	0.02
16.00	4.08	3.84	0.02
16.50	4.13	3.90	0.02
17.00	4.18	3.95	0.01
17.50	4.23	3.99	0.01
18.00	4.27	4.03	0.01
18.50	4.30	4.07	0.01
19.00	4.34	4.10	0.01
19.50	4.37	4.14	0.01
20.00	4.40	4.17	0.01
20.50	4.43	4.20	0.01
21.00	4.46	4.22	0.01
21.50	4.49	4.25	0.01
22.00	4.51	4.28	0.01
22.50	4.54	4.30	0.01
23.00	4.56	4.32	0.01
23.50	4.58	4.34	0.01
24.00	**4.60**	**4.36**	0.01
24.50	4.60	4.36	0.00
25.00	4.60	4.36	0.00
25.50	4.60	4.36	0.00
26.00	4.60	4.36	0.00
26.50	4.60	4.36	0.00
27.00	4.60	4.36	0.00
27.50	4.60	4.36	0.00
28.00	4.60	4.36	0.00
28.50	4.60	4.36	0.00
29.00	4.60	4.36	0.00
29.50	4.60	4.36	0.00
30.00	4.60	4.36	0.00
30.50	4.60	4.36	0.00
31.00	4.60	4.36	0.00
31.50	4.60	4.36	0.00
32.00	4.60	4.36	0.00
32.50	4.60	4.36	0.00
33.00	4.60	4.36	0.00
33.50	4.60	4.36	0.00
34.00	4.60	4.36	0.00
34.50	4.60	4.36	0.00
35.00	4.60	4.36	0.00
35.50	4.60	4.36	0.00
36.00	4.60	4.36	0.00

Summary for Subcatchment WS6: WS#6

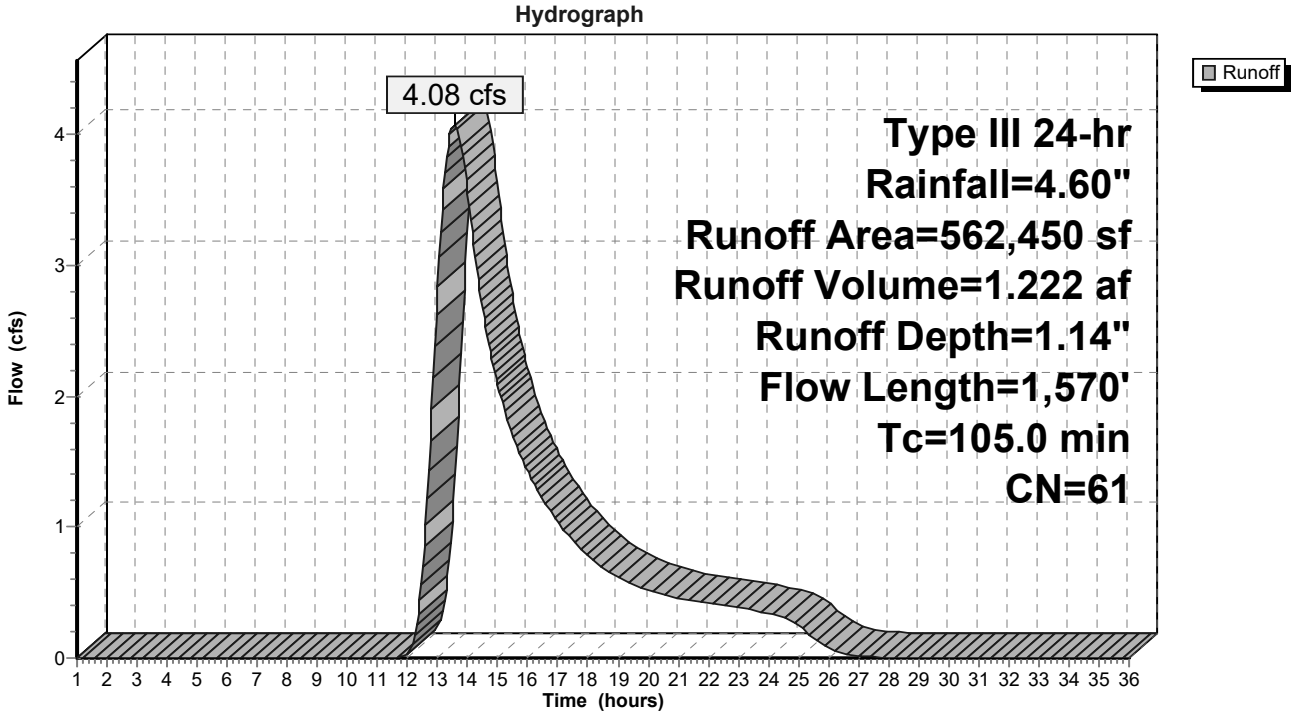
Runoff = 4.08 cfs @ 13.56 hrs, Volume= 1.222 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
321,930	65	2 acre lots, 12% imp, HSG B
240,520	55	Woods, Good, HSG B
562,450	61	Weighted Average
523,818		93.13% Pervious Area
38,632		6.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
4.3	190	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.5	215	0.0370	0.48		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
6.6	315	0.0130	0.80		**Shallow Concentrated Flow, SEG GH** Short Grass Pasture Kv= 7.0 fps
0.9	170	0.0150	3.11	7.78	**Trap/Vee/Rect Channel Flow, SEG HI** Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
0.2	60	0.0400	6.66	37.46	**Trap/Vee/Rect Channel Flow, SEG IJ** Bot.W=0.00' D=1.50' Z= 3.0 & 2.0 '/' Top.W=7.50' n= 0.035
105.0	1,570	Total			

Subcatchment WS6: WS#6



Hydrograph for Subcatchment WS6: WS#6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.00	0.00
2.50	0.12	0.00	0.00
3.00	0.14	0.00	0.00
3.50	0.17	0.00	0.00
4.00	0.20	0.00	0.00
4.50	0.23	0.00	0.00
5.00	0.26	0.00	0.00
5.50	0.30	0.00	0.00
6.00	0.33	0.00	0.00
6.50	0.37	0.00	0.00
7.00	0.42	0.00	0.00
7.50	0.47	0.00	0.00
8.00	0.52	0.00	0.00
8.50	0.59	0.00	0.00
9.00	0.67	0.00	0.00
9.50	0.76	0.00	0.00
10.00	0.87	0.00	0.00
10.50	1.00	0.00	0.00
11.00	1.15	0.00	0.00
11.50	1.37	0.00	0.00
12.00	2.30	0.14	0.02
12.50	3.23	0.46	0.69
13.00	3.45	0.55	2.84
13.50	3.60	0.62	**4.07**
14.00	3.73	0.68	**3.55**
14.50	3.84	0.73	2.66
15.00	3.93	0.78	2.09
15.50	4.01	0.82	1.70
16.00	4.08	0.85	1.43
16.50	4.13	0.88	1.22
17.00	4.18	0.91	1.04
17.50	4.23	0.93	0.90
18.00	4.27	0.95	0.78
18.50	4.30	0.97	0.69
19.00	4.34	0.99	0.62
19.50	4.37	1.01	0.56
20.00	4.40	1.03	0.52
20.50	4.43	1.04	0.49
21.00	4.46	1.06	0.46
21.50	4.49	1.07	0.44
22.00	4.51	1.09	0.42
22.50	4.54	1.10	0.40
23.00	4.56	1.11	0.38
23.50	4.58	1.12	0.36
24.00	**4.60**	**1.14**	0.35
24.50	4.60	1.14	0.32
25.00	4.60	1.14	0.26
25.50	4.60	1.14	0.15
26.00	4.60	1.14	0.08
26.50	4.60	1.14	0.04
27.00	4.60	1.14	0.02
27.50	4.60	1.14	0.01
28.00	4.60	1.14	0.00
28.50	4.60	1.14	0.00
29.00	4.60	1.14	0.00
29.50	4.60	1.14	0.00
30.00	4.60	1.14	0.00
30.50	4.60	1.14	0.00
31.00	4.60	1.14	0.00
31.50	4.60	1.14	0.00
32.00	4.60	1.14	0.00
32.50	4.60	1.14	0.00
33.00	4.60	1.14	0.00
33.50	4.60	1.14	0.00
34.00	4.60	1.14	0.00
34.50	4.60	1.14	0.00
35.00	4.60	1.14	0.00
35.50	4.60	1.14	0.00
36.00	4.60	1.14	0.00

Summary for Subcatchment WS7: WS7

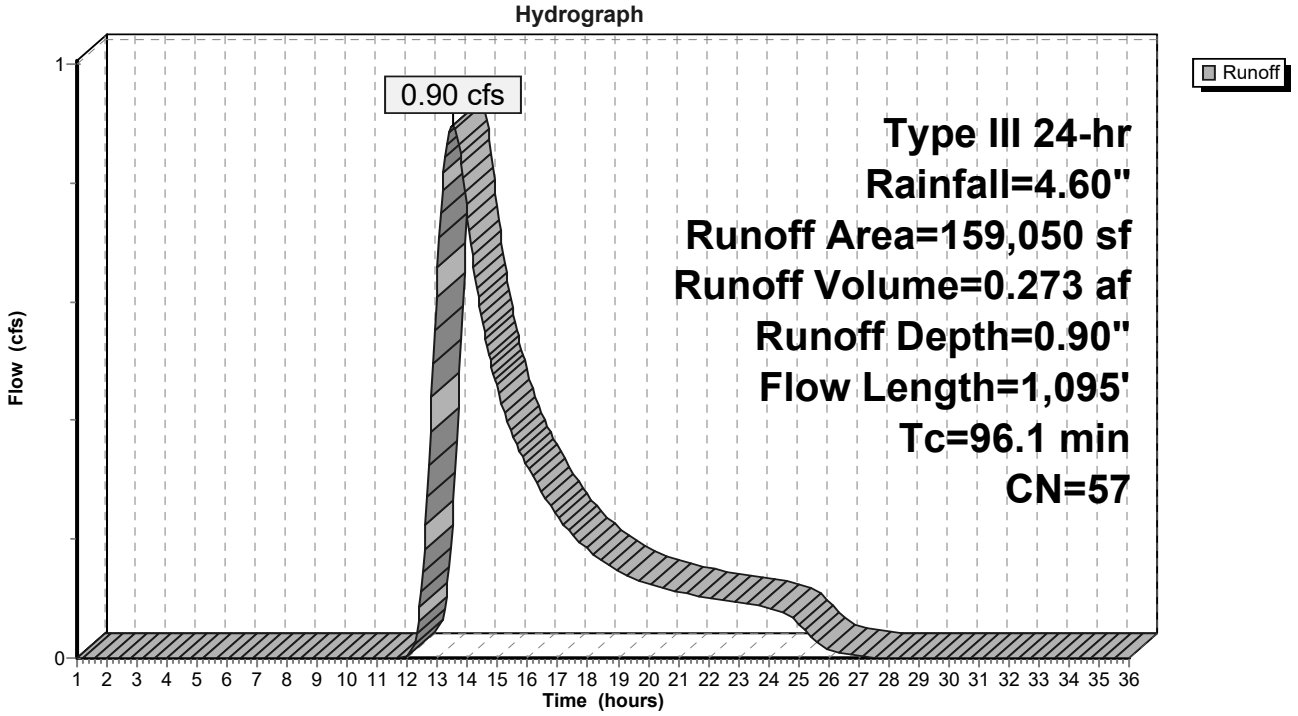
Runoff = 0.90 cfs @ 13.51 hrs, Volume= 0.273 af, Depth= 0.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
5,250	61	>75% Grass cover, Good, HSG B
145,800	55	Woods, Good, HSG B
8,000	98	Roofs, HSG B
159,050	57	Weighted Average
151,050		94.97% Pervious Area
8,000		5.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.3	300	0.0670	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
17.7	325	0.0150	0.31		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
19.6	360	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
1.5	110	0.0100	1.24	0.24	**Pipe Channel, SEG DE** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.030 Corrugated metal
96.1	1,095	Total			

Subcatchment WS7: WS7



Hydrograph for Subcatchment WS7: WS7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00	27.00	4.60	0.90	0.00
1.50	0.07	0.00	0.00	27.50	4.60	0.90	0.00
2.00	0.09	0.00	0.00	28.00	4.60	0.90	0.00
2.50	0.12	0.00	0.00	28.50	4.60	0.90	0.00
3.00	0.14	0.00	0.00	29.00	4.60	0.90	0.00
3.50	0.17	0.00	0.00	29.50	4.60	0.90	0.00
4.00	0.20	0.00	0.00	30.00	4.60	0.90	0.00
4.50	0.23	0.00	0.00	30.50	4.60	0.90	0.00
5.00	0.26	0.00	0.00	31.00	4.60	0.90	0.00
5.50	0.30	0.00	0.00	31.50	4.60	0.90	0.00
6.00	0.33	0.00	0.00	32.00	4.60	0.90	0.00
6.50	0.37	0.00	0.00	32.50	4.60	0.90	0.00
7.00	0.42	0.00	0.00	33.00	4.60	0.90	0.00
7.50	0.47	0.00	0.00	33.50	4.60	0.90	0.00
8.00	0.52	0.00	0.00	34.00	4.60	0.90	0.00
8.50	0.59	0.00	0.00	34.50	4.60	0.90	0.00
9.00	0.67	0.00	0.00	35.00	4.60	0.90	0.00
9.50	0.76	0.00	0.00	35.50	4.60	0.90	0.00
10.00	0.87	0.00	0.00	36.00	4.60	0.90	0.00
10.50	1.00	0.00	0.00				
11.00	1.15	0.00	0.00				
11.50	1.37	0.00	0.00				
12.00	2.30	0.08	0.00				
12.50	3.23	0.32	0.14				
13.00	3.45	0.40	0.66				
13.50	3.60	0.46	**0.90**				
14.00	3.73	0.51	0.74				
14.50	3.84	0.55	0.56				
15.00	3.93	0.59	0.45				
15.50	4.01	0.62	0.37				
16.00	4.08	0.65	0.32				
16.50	4.13	0.68	0.28				
17.00	4.18	0.70	0.24				
17.50	4.23	0.72	0.21				
18.00	4.27	0.74	0.18				
18.50	4.30	0.76	0.16				
19.00	4.34	0.77	0.15				
19.50	4.37	0.79	0.13				
20.00	4.40	0.80	0.12				
20.50	4.43	0.82	0.12				
21.00	4.46	0.83	0.11				
21.50	4.49	0.84	0.11				
22.00	4.51	0.85	0.10				
22.50	4.54	0.87	0.10				
23.00	4.56	0.88	0.09				
23.50	4.58	0.89	0.09				
24.00	**4.60**	**0.90**	0.08				
24.50	4.60	0.90	0.08				
25.00	4.60	0.90	0.06				
25.50	4.60	0.90	0.03				
26.00	4.60	0.90	0.01				
26.50	4.60	0.90	0.01				

Summary for Subcatchment WS8: WS8

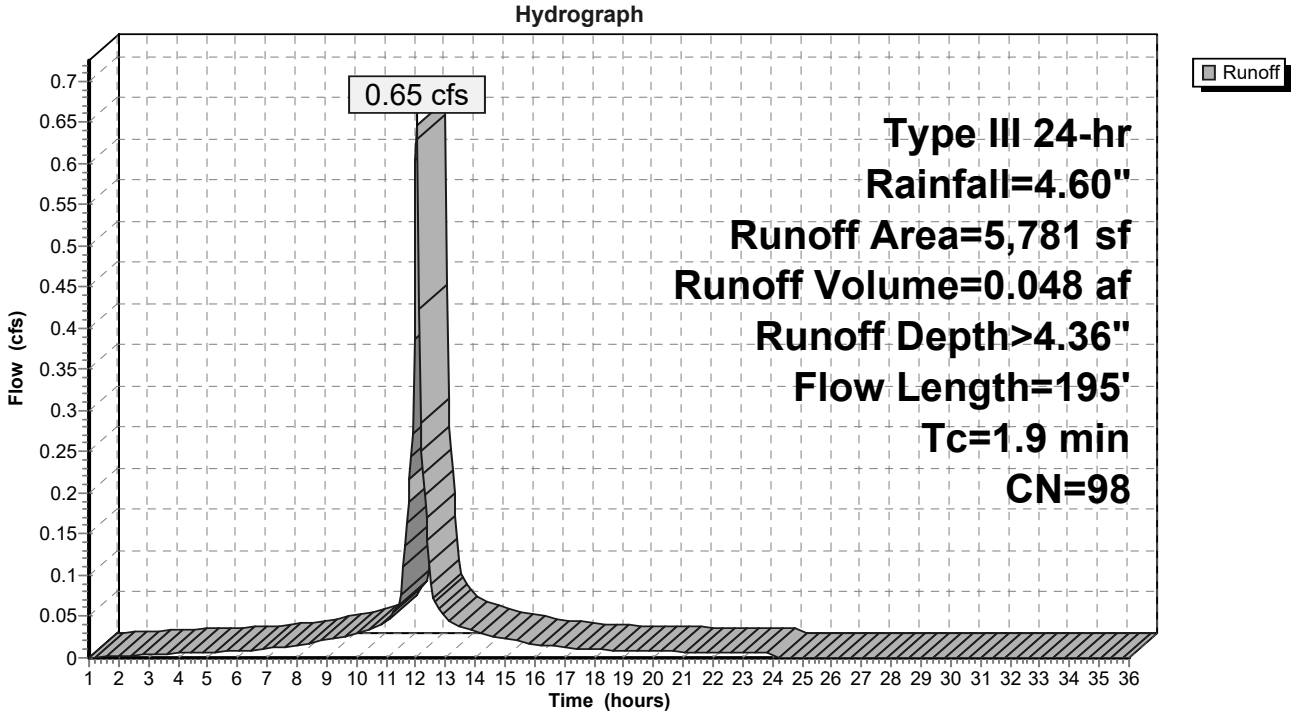
Runoff = 0.65 cfs @ 12.03 hrs, Volume= 0.048 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (sf)	CN	Description
5,781	98	Paved parking, HSG B
5,781		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	165	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	195	Total			

Subcatchment WS8: WS8



Hydrograph for Subcatchment WS8: WS8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.07	0.00	0.00
2.00	0.09	0.01	0.00
2.50	0.12	0.02	0.00
3.00	0.14	0.03	0.00
3.50	0.17	0.05	0.00
4.00	0.20	0.07	0.01
4.50	0.23	0.09	0.01
5.00	0.26	0.11	0.01
5.50	0.30	0.14	0.01
6.00	0.33	0.17	0.01
6.50	0.37	0.20	0.01
7.00	0.42	0.24	0.01
7.50	0.47	0.29	0.01
8.00	0.52	0.34	0.01
8.50	0.59	0.40	0.02
9.00	0.67	0.48	0.02
9.50	0.76	0.56	0.03
10.00	0.87	0.66	0.03
10.50	1.00	0.79	0.04
11.00	1.15	0.94	0.04
11.50	1.37	1.15	0.07
12.00	2.30	2.07	**0.60**
12.50	3.23	3.00	**0.09**
13.00	3.45	3.22	0.05
13.50	3.60	3.37	0.04
14.00	3.73	3.50	0.03
14.50	3.84	3.60	0.03
15.00	3.93	3.69	0.02
15.50	4.01	3.77	0.02
16.00	4.08	3.84	0.02
16.50	4.13	3.90	0.01
17.00	4.18	3.95	0.01
17.50	4.23	3.99	0.01
18.00	4.27	4.03	0.01
18.50	4.30	4.07	0.01
19.00	4.34	4.10	0.01
19.50	4.37	4.14	0.01
20.00	4.40	4.17	0.01
20.50	4.43	4.20	0.01
21.00	4.46	4.22	0.01
21.50	4.49	4.25	0.01
22.00	4.51	4.28	0.01
22.50	4.54	4.30	0.01
23.00	4.56	4.32	0.01
23.50	4.58	4.34	0.01
24.00	**4.60**	**4.36**	0.00
24.50	4.60	4.36	0.00
25.00	4.60	4.36	0.00
25.50	4.60	4.36	0.00
26.00	4.60	4.36	0.00
26.50	4.60	4.36	0.00
27.00	4.60	4.36	0.00
27.50	4.60	4.36	0.00
28.00	4.60	4.36	0.00
28.50	4.60	4.36	0.00
29.00	4.60	4.36	0.00
29.50	4.60	4.36	0.00
30.00	4.60	4.36	0.00
30.50	4.60	4.36	0.00
31.00	4.60	4.36	0.00
31.50	4.60	4.36	0.00
32.00	4.60	4.36	0.00
32.50	4.60	4.36	0.00
33.00	4.60	4.36	0.00
33.50	4.60	4.36	0.00
34.00	4.60	4.36	0.00
34.50	4.60	4.36	0.00
35.00	4.60	4.36	0.00
35.50	4.60	4.36	0.00
36.00	4.60	4.36	0.00

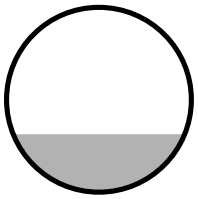
Summary for Reach R1: Culvert

Inflow Area = 0.632 ac, 49.73% Impervious, Inflow Depth = 2.46"
Inflow = 2.00 cfs @ 12.04 hrs, Volume= 0.130 af
Outflow = 1.91 cfs @ 12.06 hrs, Volume= 0.130 af, Atten= 4%, Lag= 1.0 min

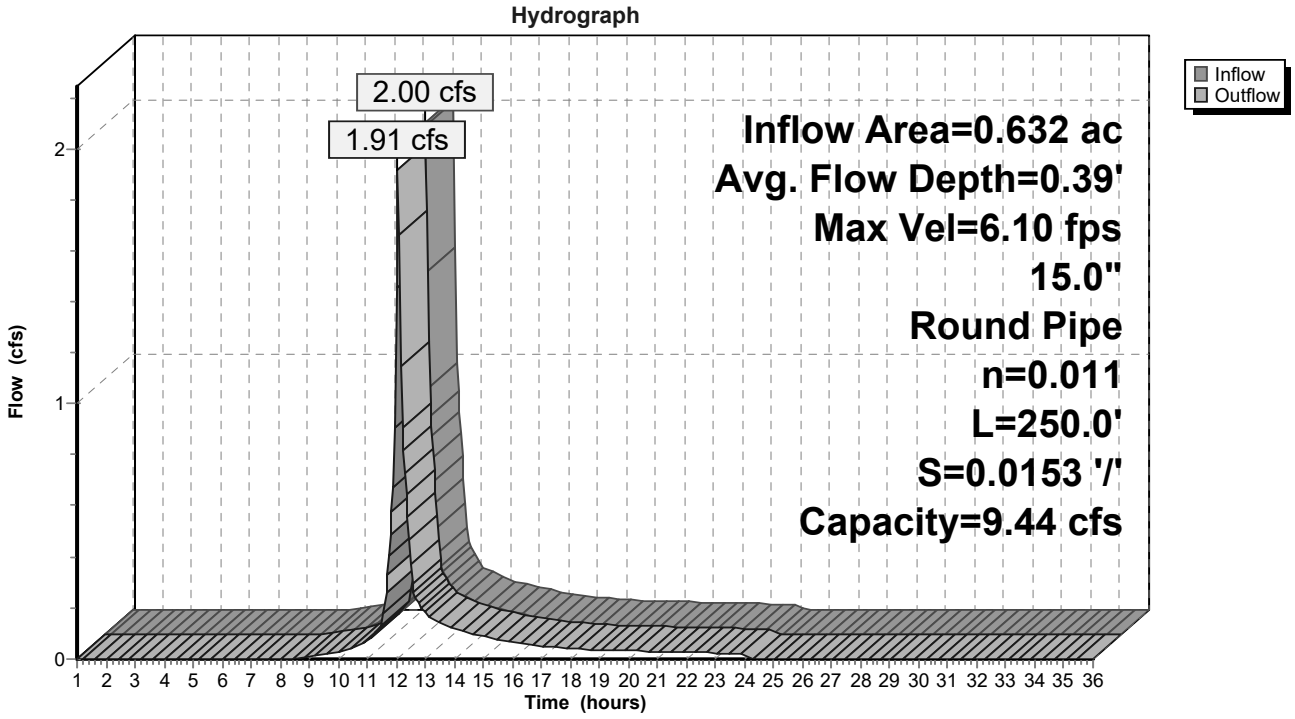
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.10 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.09 fps, Avg. Travel Time= 2.0 min

Peak Storage= 82 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0153 '/'
Inlet Invert= 363.00', Outlet Invert= 359.18'



Reach R1: Culvert



Hydrograph for Reach R1: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	363.00	0.00
2.00	0.00	0	363.00	0.00
3.00	0.00	0	363.00	0.00
4.00	0.00	0	363.00	0.00
5.00	0.00	0	363.00	0.00
6.00	0.00	0	363.00	0.00
7.00	0.00	0	363.00	0.00
8.00	0.00	0	363.00	0.00
9.00	0.01	2	363.03	0.01
10.00	0.03	4	363.05	0.03
11.00	0.07	8	363.08	0.07
12.00	**1.74**	**70**	**363.35**	**1.45**
13.00	**0.17**	**15**	**363.12**	**0.18**
14.00	0.12	11	363.10	0.12
15.00	0.09	9	363.09	0.09
16.00	0.06	7	363.07	0.06
17.00	0.05	6	363.07	0.05
18.00	0.04	5	363.06	0.04
19.00	0.04	5	363.06	0.04
20.00	0.03	4	363.05	0.03
21.00	0.03	4	363.05	0.03
22.00	0.03	4	363.05	0.03
23.00	0.02	4	363.05	0.02
24.00	0.02	3	363.04	0.02
25.00	0.00	0	363.00	0.00
26.00	0.00	0	363.00	0.00
27.00	0.00	0	363.00	0.00
28.00	0.00	0	363.00	0.00
29.00	0.00	0	363.00	0.00
30.00	0.00	0	363.00	0.00
31.00	0.00	0	363.00	0.00
32.00	0.00	0	363.00	0.00
33.00	0.00	0	363.00	0.00
34.00	0.00	0	363.00	0.00
35.00	0.00	0	363.00	0.00
36.00	0.00	0	363.00	0.00

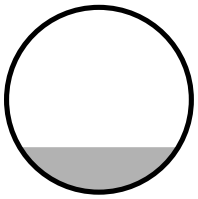
Summary for Reach R2: R2 Pipe across road

Inflow Area = 12.912 ac, 6.87% Impervious, Inflow Depth = 1.14"
Inflow = 4.08 cfs @ 13.56 hrs, Volume= 1.222 af
Outflow = 4.08 cfs @ 13.56 hrs, Volume= 1.222 af, Atten= 0%, Lag= 0.1 min

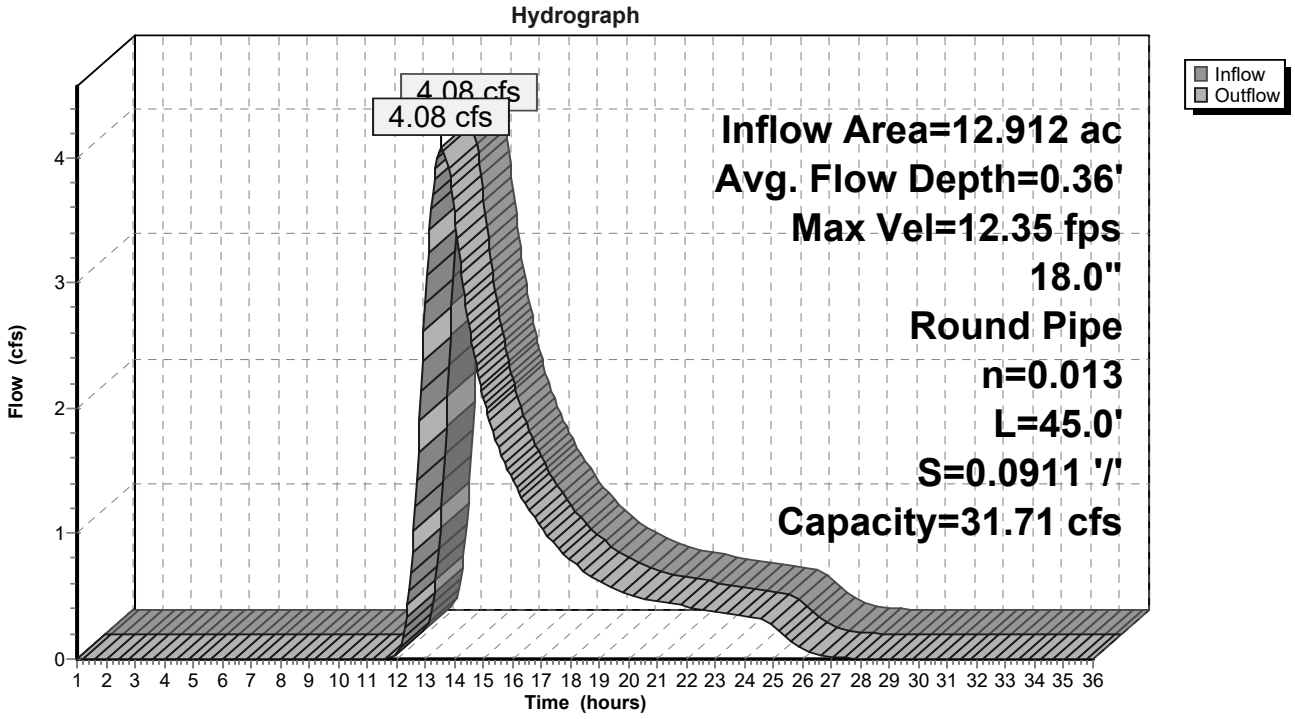
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 12.35 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.36 fps, Avg. Travel Time= 0.1 min

Peak Storage= 15 cf @ 13.56 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 31.71 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0911 '/'
Inlet Invert= 357.00', Outlet Invert= 352.90'



Reach R2: R2 Pipe across road



Hydrograph for Reach R2: R2 Pipe across road

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	357.00	0.00
2.00	0.00	0	357.00	0.00
3.00	0.00	0	357.00	0.00
4.00	0.00	0	357.00	0.00
5.00	0.00	0	357.00	0.00
6.00	0.00	0	357.00	0.00
7.00	0.00	0	357.00	0.00
8.00	0.00	0	357.00	0.00
9.00	0.00	0	357.00	0.00
10.00	0.00	0	357.00	0.00
11.00	0.00	0	357.00	0.00
12.00	0.02	0	357.03	0.02
13.00	**2.84**	**12**	**357.30**	**2.84**
14.00	**3.55**	**13**	**357.34**	**3.56**
15.00	2.09	9	357.26	2.09
16.00	1.43	7	357.22	1.43
17.00	1.04	6	357.19	1.04
18.00	0.78	5	357.16	0.79
19.00	0.62	4	357.15	0.62
20.00	0.52	3	357.13	0.52
21.00	0.46	3	357.13	0.46
22.00	0.42	3	357.12	0.42
23.00	0.38	3	357.12	0.38
24.00	0.35	3	357.11	0.35
25.00	0.26	2	357.10	0.26
26.00	0.08	1	357.05	0.08
27.00	0.02	0	357.03	0.02
28.00	0.00	0	357.01	0.00
29.00	0.00	0	357.00	0.00
30.00	0.00	0	357.00	0.00
31.00	0.00	0	357.00	0.00
32.00	0.00	0	357.00	0.00
33.00	0.00	0	357.00	0.00
34.00	0.00	0	357.00	0.00
35.00	0.00	0	357.00	0.00
36.00	0.00	0	357.00	0.00

Summary for Pond CB1: CB-1

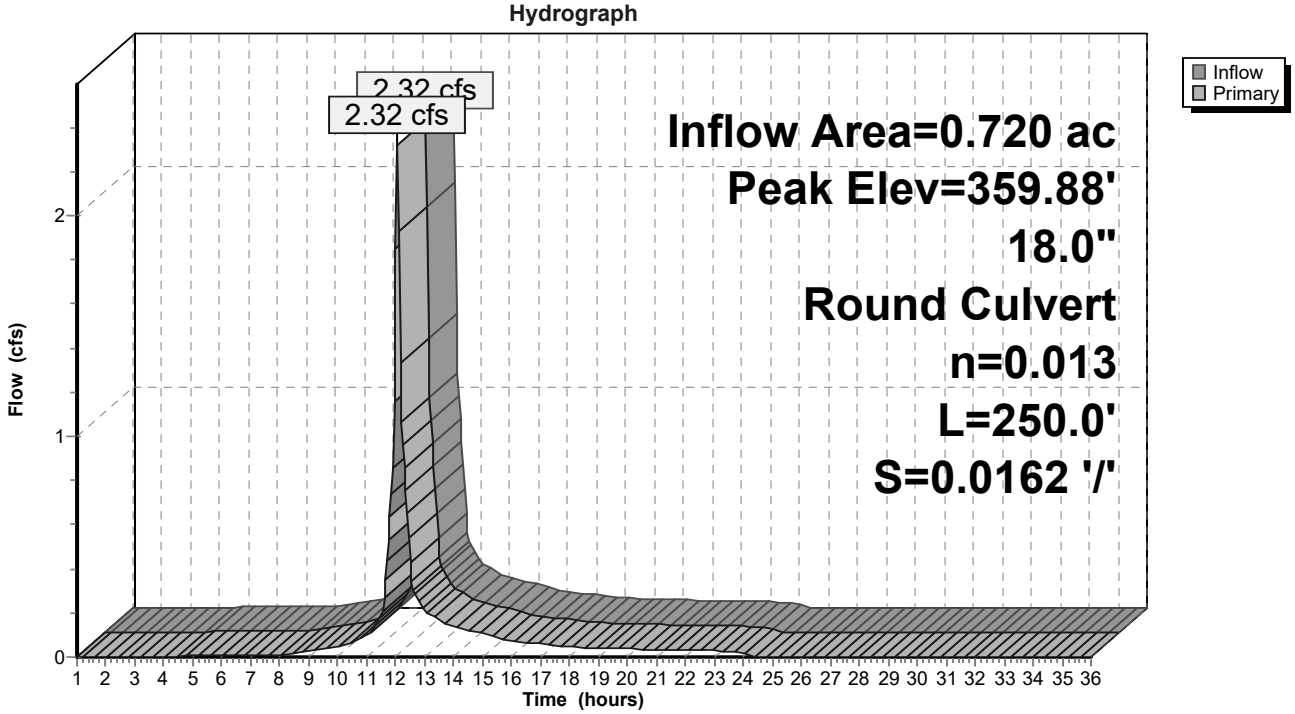
Inflow Area =	0.720 ac, 55.82% Impervious, Inflow Depth > 2.69"				
Inflow	=	2.32 cfs @	12.05 hrs, Volume=	0.161 af	
Outflow	=	2.32 cfs @	12.05 hrs, Volume=	0.161 af, Atten= 0%, Lag= 0.0 min	
Primary	=	2.32 cfs @	12.05 hrs, Volume=	0.161 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 359.88' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	359.08'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 359.08' / 355.03' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.30 cfs @ 12.05 hrs HW=359.88' (Free Discharge)
└**1=CB-1** (Inlet Controls 2.30 cfs @ 2.40 fps)

Pond CB1: CB-1



Hydrograph for Pond CB1: CB-1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	359.08	0.00
1.50	0.00	359.09	0.00
2.00	0.00	359.10	0.00
2.50	0.00	359.10	0.00
3.00	0.00	359.10	0.00
3.50	0.00	359.11	0.00
4.00	0.00	359.11	0.00
4.50	0.00	359.11	0.00
5.00	0.00	359.11	0.00
5.50	0.00	359.11	0.00
6.00	0.01	359.11	0.01
6.50	0.01	359.12	0.01
7.00	0.01	359.12	0.01
7.50	0.01	359.12	0.01
8.00	0.01	359.13	0.01
8.50	0.01	359.14	0.01
9.00	0.02	359.15	0.02
9.50	0.03	359.17	0.03
10.00	0.05	359.19	0.05
10.50	0.07	359.21	0.07
11.00	0.10	359.23	0.10
11.50	0.18	359.29	0.18
12.00	**1.85**	**359.79**	**1.85**
12.50	**0.43**	**359.40**	**0.43**
13.00	0.21	359.30	0.21
13.50	0.17	359.28	0.17
14.00	0.14	359.26	0.14
14.50	0.12	359.25	0.12
15.00	0.11	359.24	0.11
15.50	0.09	359.23	0.09
16.00	0.07	359.21	0.07
16.50	0.07	359.20	0.07
17.00	0.06	359.20	0.06
17.50	0.05	359.19	0.05
18.00	0.05	359.18	0.05
18.50	0.04	359.18	0.04
19.00	0.04	359.18	0.04
19.50	0.04	359.18	0.04
20.00	0.04	359.17	0.04
20.50	0.04	359.17	0.04
21.00	0.03	359.17	0.03
21.50	0.03	359.17	0.03
22.00	0.03	359.16	0.03
22.50	0.03	359.16	0.03
23.00	0.03	359.16	0.03
23.50	0.03	359.16	0.03
24.00	0.02	359.15	0.02
24.50	0.00	359.08	0.00
25.00	0.00	359.08	0.00
25.50	0.00	359.08	0.00
26.00	0.00	359.08	0.00
26.50	0.00	359.08	0.00
27.00	0.00	359.08	0.00
27.50	0.00	359.08	0.00
28.00	0.00	359.08	0.00
28.50	0.00	359.08	0.00
29.00	0.00	359.08	0.00
29.50	0.00	359.08	0.00
30.00	0.00	359.08	0.00
30.50	0.00	359.08	0.00
31.00	0.00	359.08	0.00
31.50	0.00	359.08	0.00
32.00	0.00	359.08	0.00
32.50	0.00	359.08	0.00
33.00	0.00	359.08	0.00
33.50	0.00	359.08	0.00
34.00	0.00	359.08	0.00
34.50	0.00	359.08	0.00
35.00	0.00	359.08	0.00
35.50	0.00	359.08	0.00
36.00	0.00	359.08	0.00

Summary for Pond CB2: CB2

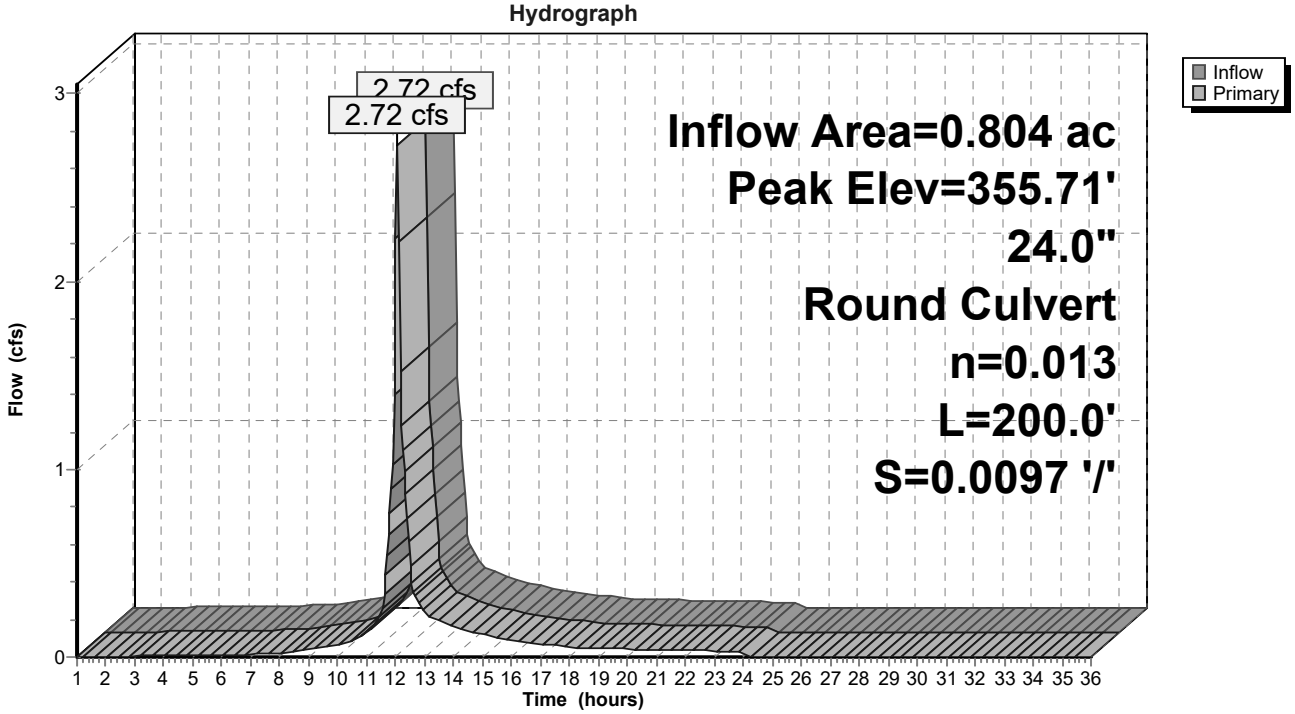
Inflow Area = 0.804 ac, 60.47% Impervious, Inflow Depth > 2.87"
Inflow = 2.72 cfs @ 12.05 hrs, Volume= 0.192 af
Outflow = 2.72 cfs @ 12.05 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.72 cfs @ 12.05 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.71' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.93'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.93' / 353.00' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.72 cfs @ 12.05 hrs HW=355.71' (Free Discharge)
└**1=CB-2** (Inlet Controls 2.72 cfs @ 2.38 fps)

Pond CB2: CB2



Hydrograph for Pond CB2: CB2

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	354.93	0.00
1.50	0.00	354.95	0.00
2.00	0.00	354.95	0.00
2.50	0.00	354.96	0.00
3.00	0.00	354.96	0.00
3.50	0.01	354.96	0.01
4.00	0.01	354.97	0.01
4.50	0.01	354.97	0.01
5.00	0.01	354.97	0.01
5.50	0.01	354.97	0.01
6.00	0.01	354.98	0.01
6.50	0.01	354.98	0.01
7.00	0.01	354.98	0.01
7.50	0.02	354.99	0.02
8.00	0.02	354.99	0.02
8.50	0.03	355.00	0.03
9.00	0.04	355.02	0.04
9.50	0.05	355.03	0.05
10.00	0.07	355.04	0.07
10.50	0.09	355.07	0.09
11.00	0.13	355.09	0.13
11.50	0.23	355.15	0.23
12.00	**2.23**	**355.63**	**2.23**
12.50	**0.49**	**355.25**	**0.49**
13.00	0.24	355.15	0.24
13.50	0.19	355.13	0.19
14.00	0.16	355.11	0.16
14.50	0.14	355.10	0.14
15.00	0.12	355.09	0.12
15.50	0.10	355.07	0.10
16.00	0.09	355.06	0.09
16.50	0.08	355.05	0.08
17.00	0.07	355.05	0.07
17.50	0.06	355.04	0.06
18.00	0.05	355.03	0.05
18.50	0.05	355.03	0.05
19.00	0.05	355.03	0.05
19.50	0.04	355.02	0.04
20.00	0.04	355.02	0.04
20.50	0.04	355.02	0.04
21.00	0.04	355.02	0.04
21.50	0.04	355.02	0.04
22.00	0.04	355.01	0.04
22.50	0.03	355.01	0.03
23.00	0.03	355.01	0.03
23.50	0.03	355.01	0.03
24.00	0.03	355.00	0.03
24.50	0.00	354.93	0.00
25.00	0.00	354.93	0.00
25.50	0.00	354.93	0.00
26.00	0.00	354.93	0.00
26.50	0.00	354.93	0.00
27.00	0.00	354.93	0.00
27.50	0.00	354.93	0.00
28.00	0.00	354.93	0.00
28.50	0.00	354.93	0.00
29.00	0.00	354.93	0.00
29.50	0.00	354.93	0.00
30.00	0.00	354.93	0.00
30.50	0.00	354.93	0.00
31.00	0.00	354.93	0.00
31.50	0.00	354.93	0.00
32.00	0.00	354.93	0.00
32.50	0.00	354.93	0.00
33.00	0.00	354.93	0.00
33.50	0.00	354.93	0.00
34.00	0.00	354.93	0.00
34.50	0.00	354.93	0.00
35.00	0.00	354.93	0.00
35.50	0.00	354.93	0.00
36.00	0.00	354.93	0.00

Summary for Pond CB3: CB-3

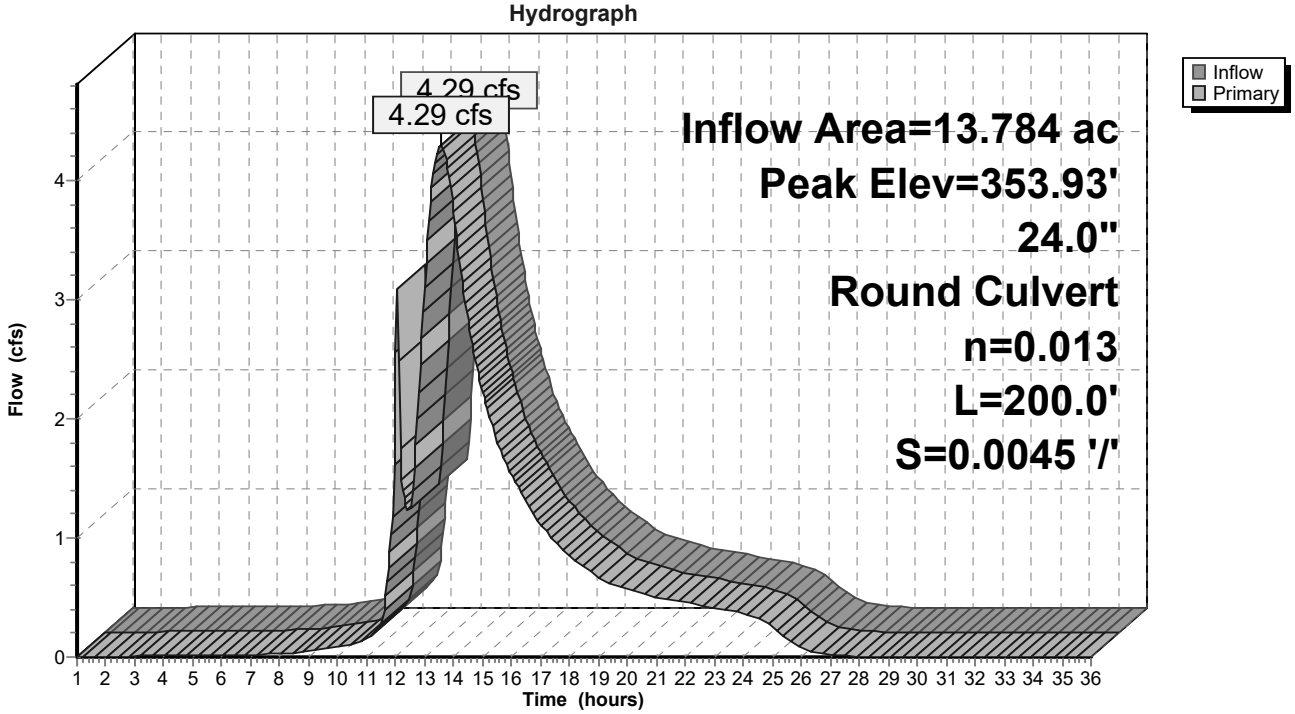
Inflow Area = 13.784 ac, 10.45% Impervious, Inflow Depth > 1.25"
Inflow = 4.29 cfs @ 13.55 hrs, Volume= 1.439 af
Outflow = 4.29 cfs @ 13.55 hrs, Volume= 1.439 af, Atten= 0%, Lag= 0.0 min
Primary = 4.29 cfs @ 13.55 hrs, Volume= 1.439 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.93' @ 13.55 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.90'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.90' / 352.00' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.29 cfs @ 13.55 hrs HW=353.93' (Free Discharge)
└**1=CB-3** (Barrel Controls 4.29 cfs @ 3.83 fps)

Pond CB3: CB-3



Hydrograph for Pond CB3: CB-3

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.91	0.00
1.50	0.00	352.93	0.00
2.00	0.00	352.93	0.00
2.50	0.01	352.94	0.01
3.00	0.01	352.94	0.01
3.50	0.01	352.95	0.01
4.00	0.01	352.95	0.01
4.50	0.01	352.95	0.01
5.00	0.01	352.96	0.01
5.50	0.01	352.96	0.01
6.00	0.01	352.96	0.01
6.50	0.02	352.97	0.02
7.00	0.02	352.97	0.02
7.50	0.02	352.98	0.02
8.00	0.03	352.98	0.03
8.50	0.04	352.99	0.04
9.00	0.05	353.01	0.05
9.50	0.06	353.02	0.06
10.00	0.08	353.04	0.08
10.50	0.11	353.06	0.11
11.00	0.15	353.09	0.15
11.50	0.26	353.15	0.26
12.00	2.56	353.68	2.56
12.50	1.22	353.43	1.22
13.00	3.10	353.76	3.10
13.50	**4.28**	**353.93**	**4.28**
14.00	**3.73**	**353.85**	**3.73**
14.50	2.82	353.72	2.82
15.00	2.22	353.62	2.22
15.50	1.81	353.55	1.81
16.00	1.52	353.49	1.52
16.50	1.30	353.44	1.30
17.00	1.12	353.40	1.12
17.50	0.97	353.37	0.97
18.00	0.84	353.34	0.84
18.50	0.75	353.31	0.75
19.00	0.67	353.29	0.67
19.50	0.61	353.27	0.61
20.00	0.56	353.26	0.56
20.50	0.53	353.25	0.53
21.00	0.50	353.24	0.50
21.50	0.48	353.23	0.48
22.00	0.46	353.22	0.46
22.50	0.44	353.21	0.44
23.00	0.42	353.21	0.42
23.50	0.40	353.20	0.40
24.00	0.38	353.19	0.38
24.50	0.32	353.17	0.32
25.00	0.26	353.14	0.26
25.50	0.15	353.09	0.15
26.00	0.08	353.04	0.08
26.50	0.04	353.00	0.04
27.00	0.02	352.97	0.02
27.50	0.01	352.95	0.01
28.00	0.00	352.93	0.00
28.50	0.00	352.92	0.00
29.00	0.00	352.91	0.00
29.50	0.00	352.90	0.00
30.00	0.00	352.90	0.00
30.50	0.00	352.90	0.00
31.00	0.00	352.90	0.00
31.50	0.00	352.90	0.00
32.00	0.00	352.90	0.00
32.50	0.00	352.90	0.00
33.00	0.00	352.90	0.00
33.50	0.00	352.90	0.00
34.00	0.00	352.90	0.00
34.50	0.00	352.90	0.00
35.00	0.00	352.90	0.00
35.50	0.00	352.90	0.00
36.00	0.00	352.90	0.00

Summary for Pond CB4: CB-4

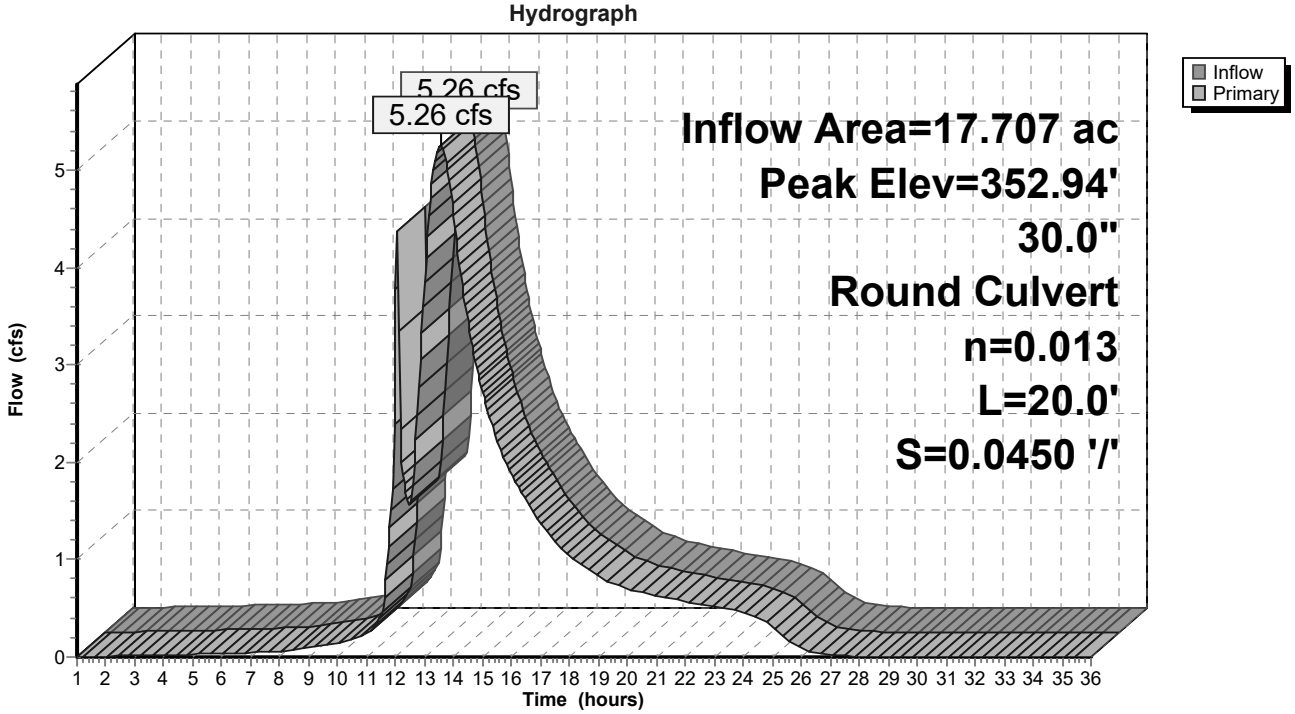
Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth > 1.23"			
Inflow =	5.26 cfs @ 13.54 hrs, Volume=	1.811 af		
Outflow =	5.26 cfs @ 13.54 hrs, Volume=	1.811 af, Atten= 0%, Lag= 0.0 min		
Primary =	5.26 cfs @ 13.54 hrs, Volume=	1.811 af		

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 352.94' @ 13.54 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	351.90'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 351.90' / 351.00' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=5.26 cfs @ 13.54 hrs HW=352.94' (Free Discharge)
└**1=30"** (Inlet Controls 5.26 cfs @ 2.74 fps)

Pond CB4: CB-4



Hydrograph for Pond CB4: CB-4

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	351.91	0.00
1.50	0.01	351.93	0.01
2.00	0.01	351.94	0.01
2.50	0.01	351.94	0.01
3.00	0.01	351.95	0.01
3.50	0.02	351.96	0.02
4.00	0.02	351.96	0.02
4.50	0.02	351.96	0.02
5.00	0.03	351.97	0.03
5.50	0.03	351.97	0.03
6.00	0.03	351.97	0.03
6.50	0.04	351.98	0.04
7.00	0.04	351.99	0.04
7.50	0.05	351.99	0.05
8.00	0.06	352.00	0.06
8.50	0.07	352.01	0.07
9.00	0.09	352.03	0.09
9.50	0.11	352.04	0.11
10.00	0.14	352.06	0.14
10.50	0.18	352.08	0.18
11.00	0.24	352.11	0.24
11.50	0.41	352.17	0.41
12.00	3.79	352.77	3.79
12.50	1.54	352.44	1.54
13.00	3.85	352.78	3.85
13.50	**5.25**	**352.94**	**5.25**
14.00	**4.53**	**352.86**	**4.53**
14.50	3.43	352.72	3.43
15.00	2.72	352.63	2.72
15.50	2.23	352.55	2.23
16.00	1.88	352.50	1.88
16.50	1.61	352.45	1.61
17.00	1.38	352.41	1.38
17.50	1.20	352.37	1.20
18.00	1.05	352.34	1.05
18.50	0.93	352.32	0.93
19.00	0.83	352.29	0.83
19.50	0.76	352.27	0.76
20.00	0.70	352.26	0.70
20.50	0.66	352.25	0.66
21.00	0.63	352.24	0.63
21.50	0.60	352.23	0.60
22.00	0.57	352.22	0.57
22.50	0.55	352.22	0.55
23.00	0.52	352.21	0.52
23.50	0.50	352.20	0.50
24.00	0.47	352.19	0.47
24.50	0.40	352.17	0.40
25.00	0.31	352.14	0.31
25.50	0.19	352.08	0.19
26.00	0.09	352.03	0.09
26.50	0.04	351.99	0.04
27.00	0.02	351.96	0.02
27.50	0.01	351.94	0.01
28.00	0.00	351.93	0.00
28.50	0.00	351.92	0.00
29.00	0.00	351.91	0.00
29.50	0.00	351.90	0.00
30.00	0.00	351.90	0.00
30.50	0.00	351.90	0.00
31.00	0.00	351.90	0.00
31.50	0.00	351.90	0.00
32.00	0.00	351.90	0.00
32.50	0.00	351.90	0.00
33.00	0.00	351.90	0.00
33.50	0.00	351.90	0.00
34.00	0.00	351.90	0.00
34.50	0.00	351.90	0.00
35.00	0.00	351.90	0.00
35.50	0.00	351.90	0.00
36.00	0.00	351.90	0.00

Summary for Pond CB5: CB-5

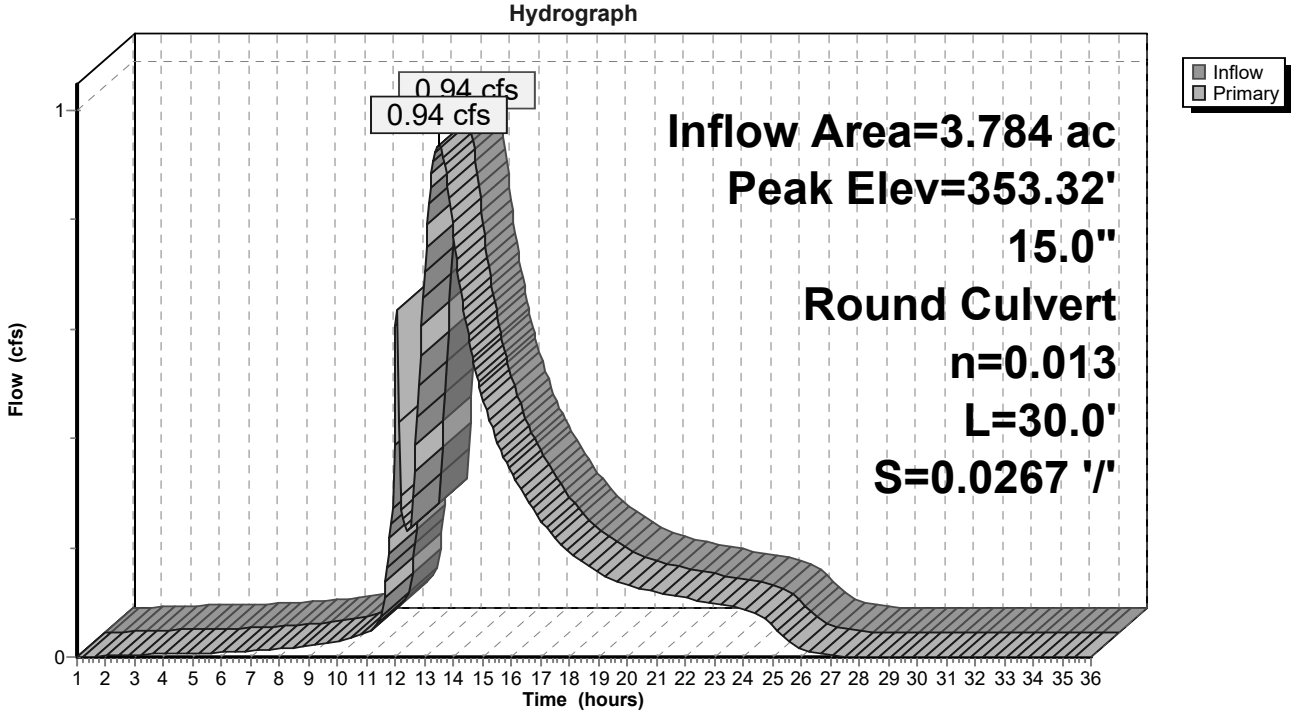
Inflow Area = 3.784 ac, 8.36% Impervious, Inflow Depth > 1.02"
Inflow = 0.94 cfs @ 13.48 hrs, Volume= 0.322 af
Outflow = 0.94 cfs @ 13.48 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 13.48 hrs, Volume= 0.322 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.32' @ 13.48 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.80'	**15.0" Round CB-5** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.80' / 352.00' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.94 cfs @ 13.48 hrs HW=353.32' (Free Discharge)
└**1=CB-5** (Inlet Controls 0.94 cfs @ 1.94 fps)

Pond CB5: CB-5



Hydrograph for Pond CB5: CB-5

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.80	0.00
1.50	0.00	352.82	0.00
2.00	0.00	352.82	0.00
2.50	0.00	352.83	0.00
3.00	0.00	352.83	0.00
3.50	0.00	352.83	0.00
4.00	0.01	352.84	0.01
4.50	0.01	352.84	0.01
5.00	0.01	352.84	0.01
5.50	0.01	352.84	0.01
6.00	0.01	352.84	0.01
6.50	0.01	352.85	0.01
7.00	0.01	352.85	0.01
7.50	0.01	352.86	0.01
8.00	0.01	352.86	0.01
8.50	0.02	352.87	0.02
9.00	0.02	352.87	0.02
9.50	0.03	352.88	0.03
10.00	0.03	352.89	0.03
10.50	0.04	352.90	0.04
11.00	0.04	352.91	0.04
11.50	0.07	352.93	0.07
12.00	0.61	353.21	0.61
12.50	0.23	353.05	0.23
13.00	0.71	353.25	0.71
13.50	**0.94**	**353.32**	**0.94**
14.00	0.77	353.27	0.77
14.50	0.59	353.21	0.59
15.00	0.47	353.16	0.47
15.50	0.39	353.13	0.39
16.00	0.34	353.10	0.34
16.50	0.29	353.08	0.29
17.00	0.25	353.06	0.25
17.50	0.22	353.04	0.22
18.00	0.19	353.03	0.19
18.50	0.17	353.01	0.17
19.00	0.15	353.00	0.15
19.50	0.14	352.99	0.14
20.00	0.13	352.99	0.13
20.50	0.12	352.98	0.12
21.00	0.12	352.98	0.12
21.50	0.11	352.97	0.11
22.00	0.11	352.97	0.11
22.50	0.10	352.96	0.10
23.00	0.10	352.96	0.10
23.50	0.09	352.96	0.09
24.00	0.09	352.95	0.09
24.50	0.08	352.94	0.08
25.00	0.06	352.92	0.06
25.50	0.03	352.89	0.03
26.00	0.01	352.86	0.01
26.50	0.01	352.84	0.01
27.00	0.00	352.83	0.00
27.50	0.00	352.82	0.00
28.00	0.00	352.81	0.00
28.50	0.00	352.80	0.00
29.00	0.00	352.80	0.00
29.50	0.00	352.80	0.00
30.00	0.00	352.80	0.00
30.50	0.00	352.80	0.00
31.00	0.00	352.80	0.00
31.50	0.00	352.80	0.00
32.00	0.00	352.80	0.00
32.50	0.00	352.80	0.00
33.00	0.00	352.80	0.00
33.50	0.00	352.80	0.00
34.00	0.00	352.80	0.00
34.50	0.00	352.80	0.00
35.00	0.00	352.80	0.00
35.50	0.00	352.80	0.00
36.00	0.00	352.80	0.00

Summary for Pond WP: Wet Pond

Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth > 1.23"			
Inflow =	5.26 cfs @	13.54 hrs, Volume=	1.811 af	
Outflow =	3.11 cfs @	14.71 hrs, Volume=	1.811 af, Atten= 41%, Lag= 70.1 min	
Primary =	3.11 cfs @	14.71 hrs, Volume=	1.811 af	
Secondary =	0.00 cfs @	1.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 349.16' @ 14.71 hrs Surf.Area= 15,400 sf Storage= 24,269 cf

Plug-Flow detention time= 167.1 min calculated for 1.811 af (100% of inflow)
Center-of-Mass det. time= 167.0 min (1,105.1 - 938.1)

Volume	Invert	Avail.Storage	Storage Description
#1	347.50'	54,382 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

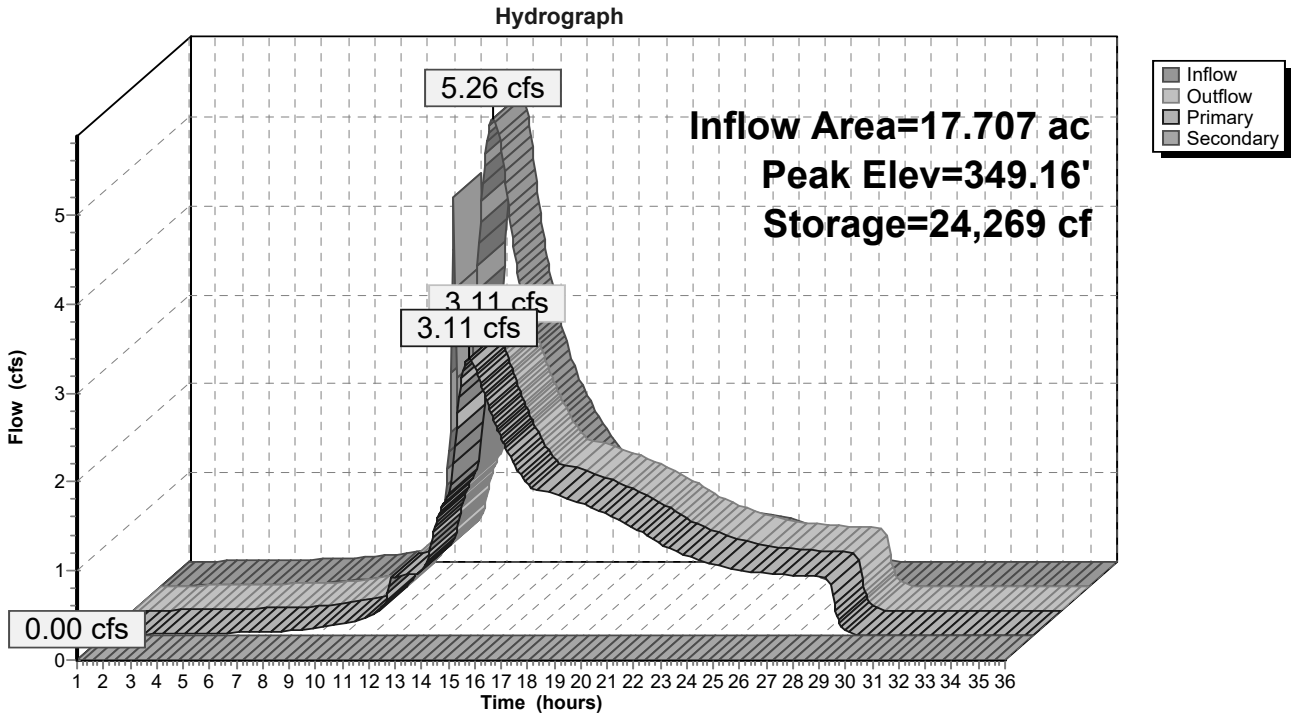
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.00' / 342.00' S= 0.0750 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	349.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	348.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	345.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Secondary	349.50'	**30.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=3.10 cfs @ 14.71 hrs HW=349.16' (Free Discharge)
└─**1=Culvert** (Passes 3.10 cfs of 5.71 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.36 cfs @ 1.32 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.90 cfs @ 4.60 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.84 cfs @ 9.63 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=347.50' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WP: Wet Pond



Hydrograph for Pond WP: Wet Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	347.50	0.00	0.00	**0.00**
2.00	0.01	5	347.50	0.01	0.01	0.00
3.00	0.01	10	347.50	0.01	0.01	0.00
4.00	0.02	15	347.50	0.02	0.02	0.00
5.00	0.03	19	347.50	0.03	0.03	0.00
6.00	0.03	23	347.50	0.03	0.03	0.00
7.00	0.04	30	347.50	0.04	0.04	0.00
8.00	0.06	40	347.50	0.05	0.05	0.00
9.00	0.09	63	347.50	0.08	0.08	0.00
10.00	0.14	97	347.51	0.13	0.13	0.00
11.00	0.24	161	347.51	0.22	0.22	0.00
12.00	3.79	1,608	347.62	0.66	0.66	0.00
13.00	**3.85**	7,921	348.06	0.73	0.73	0.00
14.00	**4.53**	**21,144**	**348.96**	**1.61**	**1.61**	0.00
15.00	2.72	**24,107**	**349.15**	**2.97**	**2.97**	0.00
16.00	1.88	23,006	349.08	2.17	2.17	0.00
17.00	1.38	21,963	349.01	1.69	1.69	0.00
18.00	1.05	20,450	348.91	1.58	1.58	0.00
19.00	0.83	18,292	348.77	1.48	1.48	0.00
20.00	0.70	15,937	348.61	1.35	1.35	0.00
21.00	0.63	13,730	348.46	1.20	1.20	0.00
22.00	0.57	11,875	348.34	1.03	1.03	0.00
23.00	0.52	10,411	348.24	0.89	0.89	0.00
24.00	0.47	9,186	348.15	0.79	0.79	0.00
25.00	0.31	7,876	348.06	0.73	0.73	0.00
26.00	0.09	6,013	347.93	0.70	0.70	0.00
27.00	0.02	3,711	347.77	0.68	0.68	0.00
28.00	0.00	1,353	347.60	0.66	0.66	0.00
29.00	0.00	24	347.50	0.03	0.03	0.00
30.00	0.00	0	347.50	0.00	0.00	0.00
31.00	0.00	0	347.50	0.00	0.00	0.00
32.00	0.00	0	347.50	0.00	0.00	0.00
33.00	0.00	0	347.50	0.00	0.00	0.00
34.00	0.00	0	347.50	0.00	0.00	0.00
35.00	0.00	0	347.50	0.00	0.00	0.00
36.00	0.00	0	347.50	0.00	0.00	0.00

Summary for Subcatchment WS1: WS#1

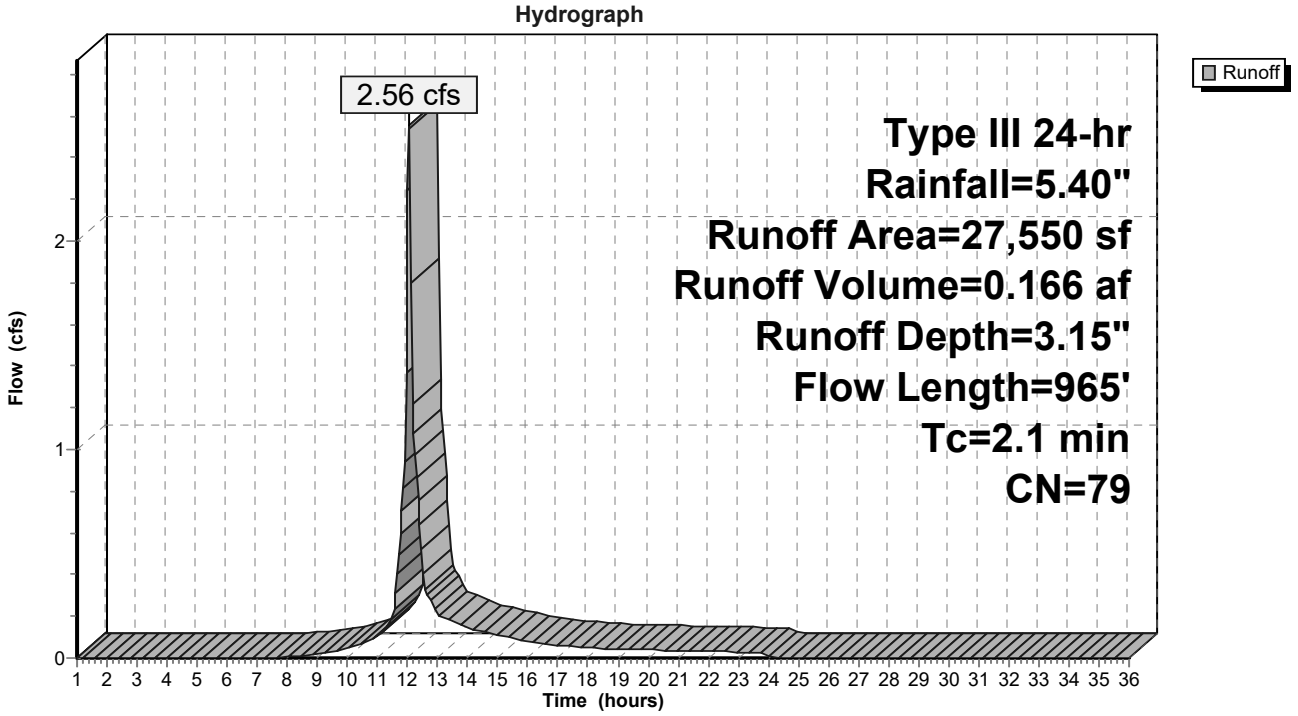
Runoff = 2.56 cfs @ 12.04 hrs, Volume= 0.166 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
13,700	98	Paved roads w/curbs & sewers, HSG B
13,850	61	>75% Grass cover, Good, HSG B
27,550	79	Weighted Average
13,850		50.27% Pervious Area
13,700		49.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	50	0.0300	1.36		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
0.2	160	0.0700	10.67	106.73	**Trap/Vee/Rect Channel Flow, SEG BC DITCH** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035 Earth, dense weeds
0.3	145	0.0340	7.44	74.39	**Trap/Vee/Rect Channel Flow, SEG CD** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.2	50	0.0100	4.54	3.56	**Pipe Channel, SEG DE CULVERT** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.2	80	0.0330	7.33	73.28	**Trap/Vee/Rect Channel Flow, SEG EF** Bot.W=0.00' D=2.00' Z= 2.0 & 3.0 '/' Top.W=10.00' n= 0.035
0.1	40	0.0670	11.74	9.22	**Pipe Channel, SEG FG** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
0.5	440	0.0800	14.95	336.42	**Trap/Vee/Rect Channel Flow, SEG GH** Bot.W=0.00' D=3.00' Z= 2.0 & 3.0 '/' Top.W=15.00' n= 0.035
2.1	965	Total			

Subcatchment WS1: WS#1



Hydrograph for Subcatchment WS1: WS#1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.00
3.00	0.17	0.00	0.00
3.50	0.20	0.00	0.00
4.00	0.23	0.00	0.00
4.50	0.27	0.00	0.00
5.00	0.31	0.00	0.00
5.50	0.35	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.62	0.00	0.01
8.50	0.69	0.01	0.01
9.00	0.79	0.02	0.02
9.50	0.90	0.04	0.03
10.00	1.02	0.08	0.05
10.50	1.17	0.12	0.07
11.00	1.35	0.19	0.10
11.50	1.61	0.31	0.20
12.00	2.70	0.97	**2.24**
12.50	3.79	1.80	**0.41**
13.00	4.05	2.00	0.21
13.50	4.23	2.15	0.18
14.00	4.38	2.28	0.14
14.50	4.50	2.38	0.13
15.00	4.61	2.47	0.11
15.50	4.71	2.55	0.09
16.00	4.78	2.62	0.08
16.50	4.85	2.67	0.07
17.00	4.91	2.73	0.06
17.50	4.96	2.77	0.06
18.00	5.01	2.81	0.05
18.50	5.05	2.85	0.05
19.00	5.09	2.88	0.04
19.50	5.13	2.92	0.04
20.00	5.17	2.95	0.04
20.50	5.20	2.98	0.04
21.00	5.23	3.00	0.04
21.50	5.27	3.03	0.03
22.00	5.30	3.06	0.03
22.50	5.32	3.08	0.03
23.00	5.35	3.11	0.03
23.50	5.38	3.13	0.03
24.00	**5.40**	**3.15**	0.02
24.50	5.40	3.15	0.00
25.00	5.40	3.15	0.00
25.50	5.40	3.15	0.00
26.00	5.40	3.15	0.00
26.50	5.40	3.15	0.00
27.00	5.40	3.15	0.00
27.50	5.40	3.15	0.00
28.00	5.40	3.15	0.00
28.50	5.40	3.15	0.00
29.00	5.40	3.15	0.00
29.50	5.40	3.15	0.00
30.00	5.40	3.15	0.00
30.50	5.40	3.15	0.00
31.00	5.40	3.15	0.00
31.50	5.40	3.15	0.00
32.00	5.40	3.15	0.00
32.50	5.40	3.15	0.00
33.00	5.40	3.15	0.00
33.50	5.40	3.15	0.00
34.00	5.40	3.15	0.00
34.50	5.40	3.15	0.00
35.00	5.40	3.15	0.00
35.50	5.40	3.15	0.00
36.00	5.40	3.15	0.00

Summary for Subcatchment WS2: WS#2

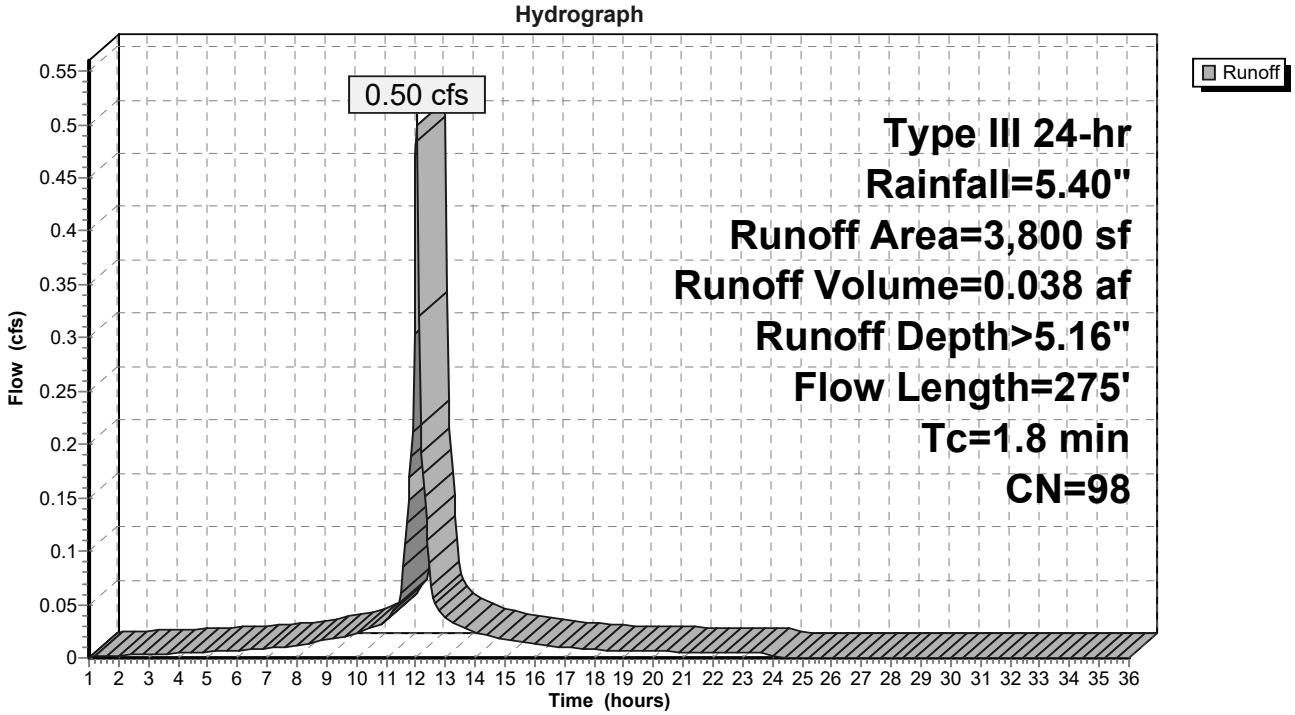
Runoff = 0.50 cfs @ 12.03 hrs, Volume= 0.038 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
3,800	98	Paved parking, HSG B
3,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	45	0.0820	2.00		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	230	0.0190	2.80		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.8	275	Total			

Subcatchment WS2: WS#2



Hydrograph for Subcatchment WS2: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.01	0.00
2.00	0.11	0.02	0.00
2.50	0.14	0.03	0.00
3.00	0.17	0.05	0.00
3.50	0.20	0.07	0.00
4.00	0.23	0.09	0.00
4.50	0.27	0.12	0.01
5.00	0.31	0.15	0.01
5.50	0.35	0.18	0.01
6.00	0.39	0.22	0.01
6.50	0.44	0.26	0.01
7.00	0.49	0.31	0.01
7.50	0.55	0.36	0.01
8.00	0.62	0.42	0.01
8.50	0.69	0.50	0.01
9.00	0.79	0.59	0.02
9.50	0.90	0.69	0.02
10.00	1.02	0.81	0.02
10.50	1.17	0.96	0.03
11.00	1.35	1.13	0.03
11.50	1.61	1.39	0.05
12.00	2.70	2.47	**0.47**
12.50	3.79	3.56	**0.07**
13.00	4.05	3.81	0.04
13.50	4.23	4.00	0.03
14.00	4.38	4.14	0.02
14.50	4.50	4.27	0.02
15.00	4.61	4.38	0.02
15.50	4.71	4.47	0.02
16.00	4.78	4.55	0.01
16.50	4.85	4.61	0.01
17.00	4.91	4.67	0.01
17.50	4.96	4.73	0.01
18.00	5.01	4.77	0.01
18.50	5.05	4.82	0.01
19.00	5.09	4.86	0.01
19.50	5.13	4.89	0.01
20.00	5.17	4.93	0.01
20.50	5.20	4.97	0.01
21.00	5.23	5.00	0.01
21.50	5.27	5.03	0.01
22.00	5.30	5.06	0.01
22.50	5.32	5.09	0.00
23.00	5.35	5.11	0.00
23.50	5.38	5.14	0.00
24.00	**5.40**	**5.16**	0.00
24.50	5.40	5.16	0.00
25.00	5.40	5.16	0.00
25.50	5.40	5.16	0.00
26.00	5.40	5.16	0.00
26.50	5.40	5.16	0.00
27.00	5.40	5.16	0.00
27.50	5.40	5.16	0.00
28.00	5.40	5.16	0.00
28.50	5.40	5.16	0.00
29.00	5.40	5.16	0.00
29.50	5.40	5.16	0.00
30.00	5.40	5.16	0.00
30.50	5.40	5.16	0.00
31.00	5.40	5.16	0.00
31.50	5.40	5.16	0.00
32.00	5.40	5.16	0.00
32.50	5.40	5.16	0.00
33.00	5.40	5.16	0.00
33.50	5.40	5.16	0.00
34.00	5.40	5.16	0.00
34.50	5.40	5.16	0.00
35.00	5.40	5.16	0.00
35.50	5.40	5.16	0.00
36.00	5.40	5.16	0.00

Summary for Subcatchment WS3: WS#3

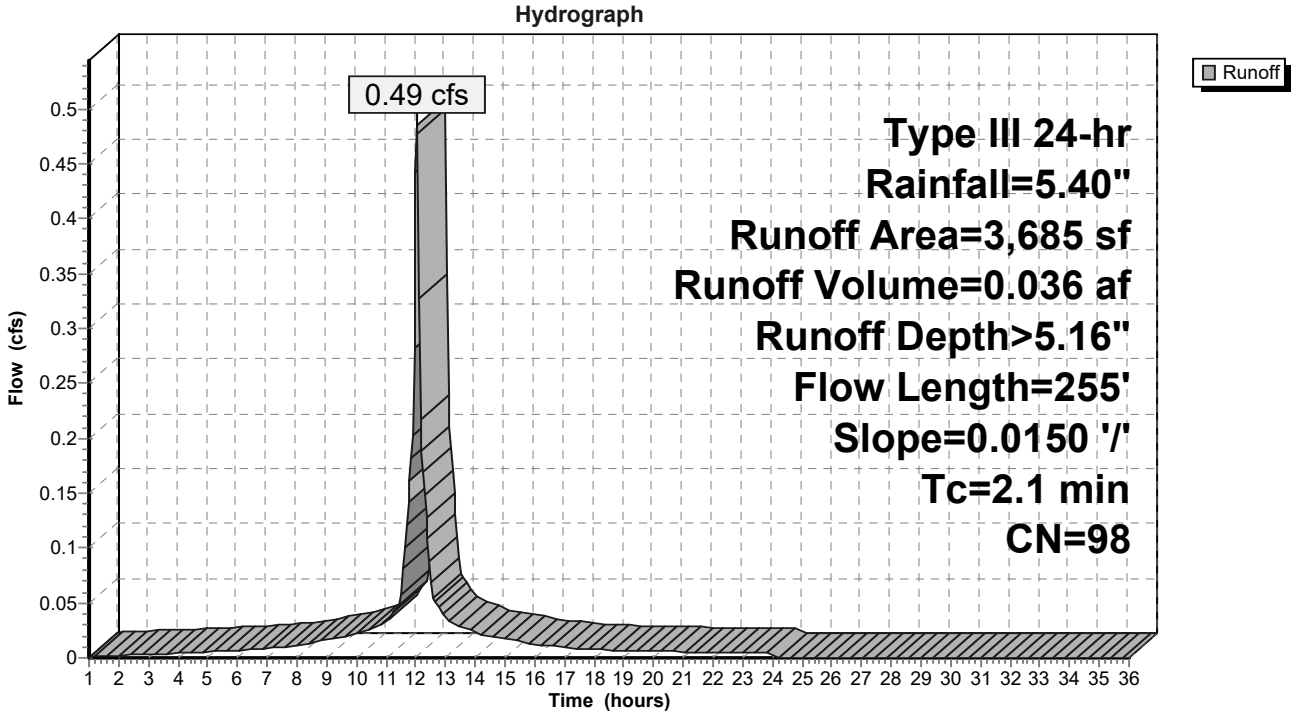
Runoff = 0.49 cfs @ 12.03 hrs, Volume= 0.036 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
3,685	98	Paved parking, HSG B
3,685		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	40	0.0150	0.99		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	215	0.0150	2.49		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.1	255	Total			

Subcatchment WS3: WS#3



Hydrograph for Subcatchment WS3: WS#3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.01	0.00
2.00	0.11	0.02	0.00
2.50	0.14	0.03	0.00
3.00	0.17	0.05	0.00
3.50	0.20	0.07	0.00
4.00	0.23	0.09	0.00
4.50	0.27	0.12	0.00
5.00	0.31	0.15	0.01
5.50	0.35	0.18	0.01
6.00	0.39	0.22	0.01
6.50	0.44	0.26	0.01
7.00	0.49	0.31	0.01
7.50	0.55	0.36	0.01
8.00	0.62	0.42	0.01
8.50	0.69	0.50	0.01
9.00	0.79	0.59	0.02
9.50	0.90	0.69	0.02
10.00	1.02	0.81	0.02
10.50	1.17	0.96	0.03
11.00	1.35	1.13	0.03
11.50	1.61	1.39	0.05
12.00	2.70	2.47	**0.44**
12.50	3.79	3.56	**0.07**
13.00	4.05	3.81	0.03
13.50	4.23	4.00	0.03
14.00	4.38	4.14	0.02
14.50	4.50	4.27	0.02
15.00	4.61	4.38	0.02
15.50	4.71	4.47	0.01
16.00	4.78	4.55	0.01
16.50	4.85	4.61	0.01
17.00	4.91	4.67	0.01
17.50	4.96	4.73	0.01
18.00	5.01	4.77	0.01
18.50	5.05	4.82	0.01
19.00	5.09	4.86	0.01
19.50	5.13	4.89	0.01
20.00	5.17	4.93	0.01
20.50	5.20	4.97	0.01
21.00	5.23	5.00	0.01
21.50	5.27	5.03	0.01
22.00	5.30	5.06	0.00
22.50	5.32	5.09	0.00
23.00	5.35	5.11	0.00
23.50	5.38	5.14	0.00
24.00	**5.40**	**5.16**	0.00
24.50	5.40	5.16	0.00
25.00	5.40	5.16	0.00
25.50	5.40	5.16	0.00
26.00	5.40	5.16	0.00
26.50	5.40	5.16	0.00
27.00	5.40	5.16	0.00
27.50	5.40	5.16	0.00
28.00	5.40	5.16	0.00
28.50	5.40	5.16	0.00
29.00	5.40	5.16	0.00
29.50	5.40	5.16	0.00
30.00	5.40	5.16	0.00
30.50	5.40	5.16	0.00
31.00	5.40	5.16	0.00
31.50	5.40	5.16	0.00
32.00	5.40	5.16	0.00
32.50	5.40	5.16	0.00
33.00	5.40	5.16	0.00
33.50	5.40	5.16	0.00
34.00	5.40	5.16	0.00
34.50	5.40	5.16	0.00
35.00	5.40	5.16	0.00
35.50	5.40	5.16	0.00
36.00	5.40	5.16	0.00

Summary for Subcatchment WS4: WS#4

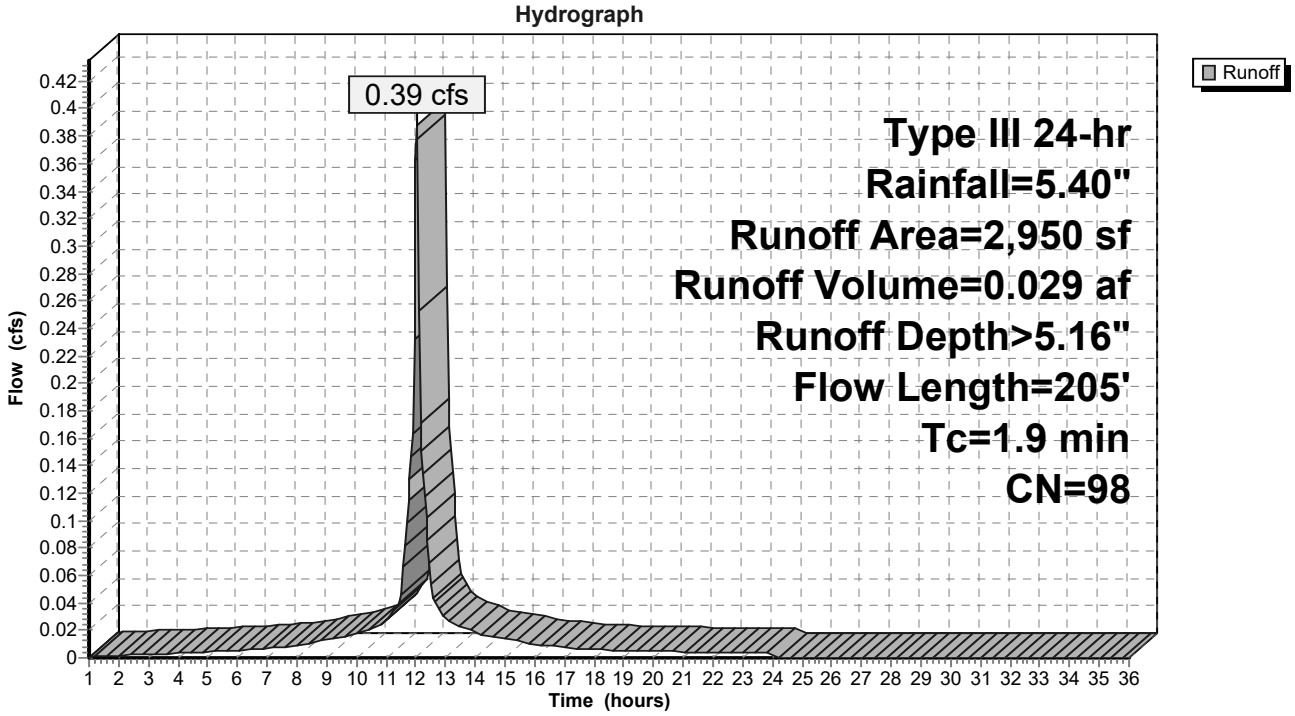
Runoff = 0.39 cfs @ 12.03 hrs, Volume= 0.029 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
2,950	98	Paved parking, HSG B
2,950		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	175	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	205	Total			

Subcatchment WS4: WS#4



Hydrograph for Subcatchment WS4: WS#4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.01	0.00
2.00	0.11	0.02	0.00
2.50	0.14	0.03	0.00
3.00	0.17	0.05	0.00
3.50	0.20	0.07	0.00
4.00	0.23	0.09	0.00
4.50	0.27	0.12	0.00
5.00	0.31	0.15	0.00
5.50	0.35	0.18	0.00
6.00	0.39	0.22	0.01
6.50	0.44	0.26	0.01
7.00	0.49	0.31	0.01
7.50	0.55	0.36	0.01
8.00	0.62	0.42	0.01
8.50	0.69	0.50	0.01
9.00	0.79	0.59	0.01
9.50	0.90	0.69	0.02
10.00	1.02	0.81	0.02
10.50	1.17	0.96	0.02
11.00	1.35	1.13	0.03
11.50	1.61	1.39	0.04
12.00	2.70	2.47	**0.36**
12.50	3.79	3.56	**0.05**
13.00	4.05	3.81	0.03
13.50	4.23	4.00	0.02
14.00	4.38	4.14	0.02
14.50	4.50	4.27	0.02
15.00	4.61	4.38	0.01
15.50	4.71	4.47	0.01
16.00	4.78	4.55	0.01
16.50	4.85	4.61	0.01
17.00	4.91	4.67	0.01
17.50	4.96	4.73	0.01
18.00	5.01	4.77	0.01
18.50	5.05	4.82	0.01
19.00	5.09	4.86	0.01
19.50	5.13	4.89	0.01
20.00	5.17	4.93	0.00
20.50	5.20	4.97	0.00
21.00	5.23	5.00	0.00
21.50	5.27	5.03	0.00
22.00	5.30	5.06	0.00
22.50	5.32	5.09	0.00
23.00	5.35	5.11	0.00
23.50	5.38	5.14	0.00
24.00	**5.40**	**5.16**	0.00
24.50	5.40	5.16	0.00
25.00	5.40	5.16	0.00
25.50	5.40	5.16	0.00
26.00	5.40	5.16	0.00
26.50	5.40	5.16	0.00
27.00	5.40	5.16	0.00
27.50	5.40	5.16	0.00
28.00	5.40	5.16	0.00
28.50	5.40	5.16	0.00
29.00	5.40	5.16	0.00
29.50	5.40	5.16	0.00
30.00	5.40	5.16	0.00
30.50	5.40	5.16	0.00
31.00	5.40	5.16	0.00
31.50	5.40	5.16	0.00
32.00	5.40	5.16	0.00
32.50	5.40	5.16	0.00
33.00	5.40	5.16	0.00
33.50	5.40	5.16	0.00
34.00	5.40	5.16	0.00
34.50	5.40	5.16	0.00
35.00	5.40	5.16	0.00
35.50	5.40	5.16	0.00
36.00	5.40	5.16	0.00

Summary for Subcatchment WS5: WS#5

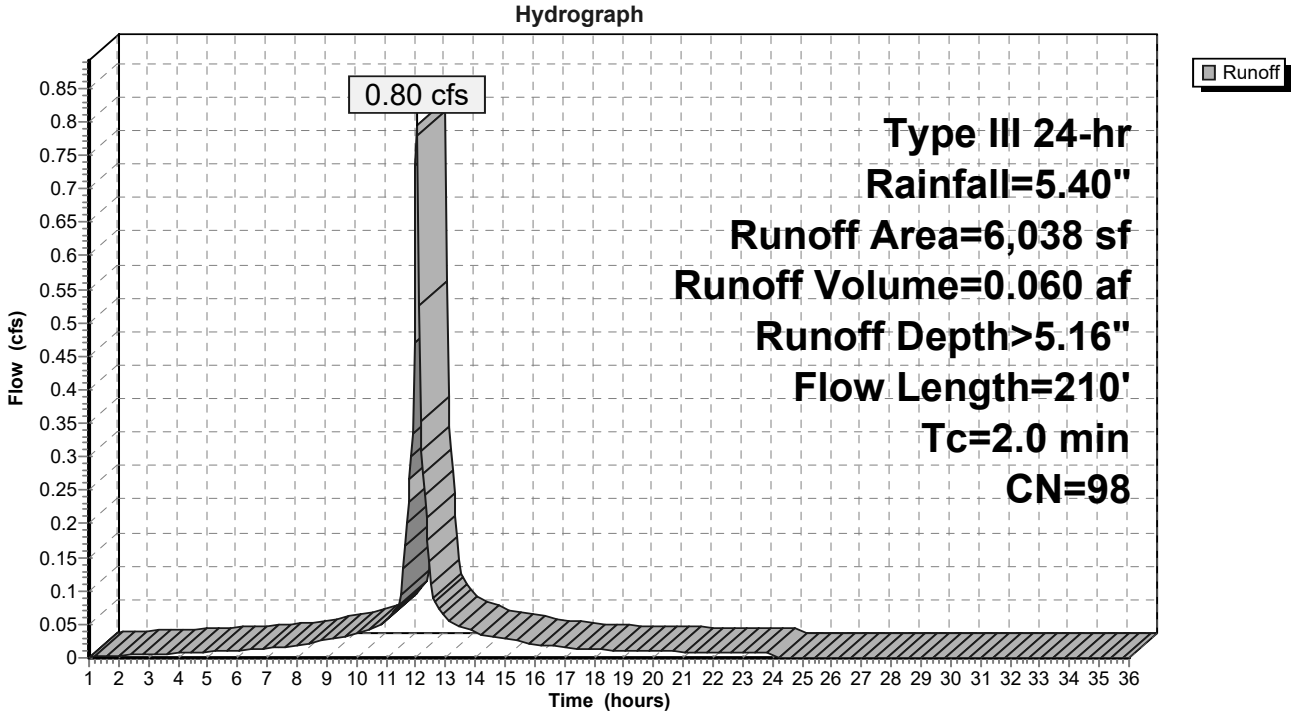
Runoff = 0.80 cfs @ 12.03 hrs, Volume= 0.060 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
6,038	98	Paved parking, HSG B
6,038		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.5	180	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
2.0	210	Total			

Subcatchment WS5: WS#5



Hydrograph for Subcatchment WS5: WS#5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.01	0.00
2.00	0.11	0.02	0.00
2.50	0.14	0.03	0.00
3.00	0.17	0.05	0.01
3.50	0.20	0.07	0.01
4.00	0.23	0.09	0.01
4.50	0.27	0.12	0.01
5.00	0.31	0.15	0.01
5.50	0.35	0.18	0.01
6.00	0.39	0.22	0.01
6.50	0.44	0.26	0.01
7.00	0.49	0.31	0.01
7.50	0.55	0.36	0.02
8.00	0.62	0.42	0.02
8.50	0.69	0.50	0.02
9.00	0.79	0.59	0.03
9.50	0.90	0.69	0.03
10.00	1.02	0.81	0.04
10.50	1.17	0.96	0.04
11.00	1.35	1.13	0.05
11.50	1.61	1.39	0.09
12.00	2.70	2.47	**0.73**
12.50	3.79	3.56	**0.11**
13.00	4.05	3.81	0.06
13.50	4.23	4.00	0.05
14.00	4.38	4.14	0.04
14.50	4.50	4.27	0.03
15.00	4.61	4.38	0.03
15.50	4.71	4.47	0.02
16.00	4.78	4.55	0.02
16.50	4.85	4.61	0.02
17.00	4.91	4.67	0.02
17.50	4.96	4.73	0.01
18.00	5.01	4.77	0.01
18.50	5.05	4.82	0.01
19.00	5.09	4.86	0.01
19.50	5.13	4.89	0.01
20.00	5.17	4.93	0.01
20.50	5.20	4.97	0.01
21.00	5.23	5.00	0.01
21.50	5.27	5.03	0.01
22.00	5.30	5.06	0.01
22.50	5.32	5.09	0.01
23.00	5.35	5.11	0.01
23.50	5.38	5.14	0.01
24.00	**5.40**	**5.16**	0.01
24.50	5.40	5.16	0.00
25.00	5.40	5.16	0.00
25.50	5.40	5.16	0.00
26.00	5.40	5.16	0.00
26.50	5.40	5.16	0.00
27.00	5.40	5.16	0.00
27.50	5.40	5.16	0.00
28.00	5.40	5.16	0.00
28.50	5.40	5.16	0.00
29.00	5.40	5.16	0.00
29.50	5.40	5.16	0.00
30.00	5.40	5.16	0.00
30.50	5.40	5.16	0.00
31.00	5.40	5.16	0.00
31.50	5.40	5.16	0.00
32.00	5.40	5.16	0.00
32.50	5.40	5.16	0.00
33.00	5.40	5.16	0.00
33.50	5.40	5.16	0.00
34.00	5.40	5.16	0.00
34.50	5.40	5.16	0.00
35.00	5.40	5.16	0.00
35.50	5.40	5.16	0.00
36.00	5.40	5.16	0.00

Summary for Subcatchment WS6: WS#6

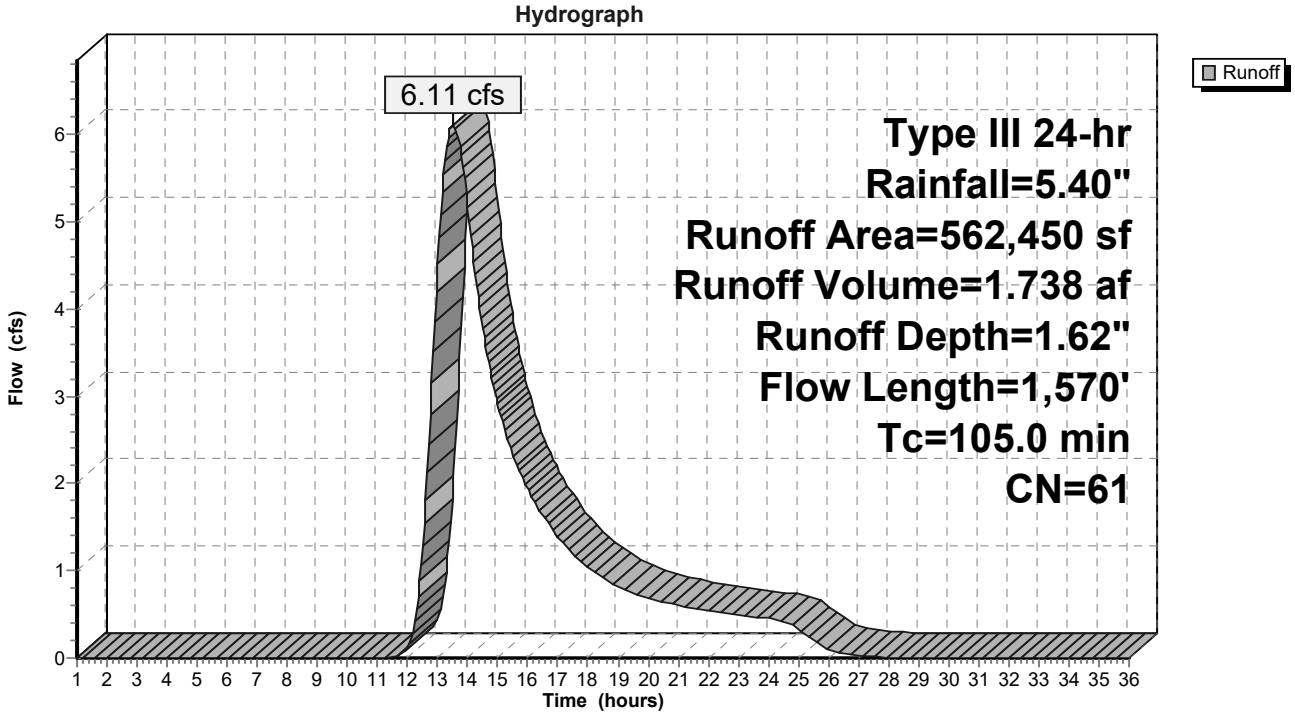
Runoff = 6.11 cfs @ 13.50 hrs, Volume= 1.738 af, Depth= 1.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
321,930	65	2 acre lots, 12% imp, HSG B
240,520	55	Woods, Good, HSG B
562,450	61	Weighted Average
523,818		93.13% Pervious Area
38,632		6.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
39.5	175	0.0580	0.07		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
35.7	120	0.0350	0.06		**Sheet Flow, SEG BC** Woods: Dense underbrush n= 0.800 P2= 3.00"
5.5	220	0.0720	0.67		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
4.8	105	0.0210	0.36		**Shallow Concentrated Flow, SEG DE** Forest w/Heavy Litter Kv= 2.5 fps
4.3	190	0.0850	0.73		**Shallow Concentrated Flow, SEG EF** Forest w/Heavy Litter Kv= 2.5 fps
7.5	215	0.0370	0.48		**Shallow Concentrated Flow, SEG FG** Forest w/Heavy Litter Kv= 2.5 fps
6.6	315	0.0130	0.80		**Shallow Concentrated Flow, SEG GH** Short Grass Pasture Kv= 7.0 fps
0.9	170	0.0150	3.11	7.78	**Trap/Vee/Rect Channel Flow, SEG HI** Bot.W=0.00' D=1.00' Z= 3.0 & 2.0 '/' Top.W=5.00' n= 0.035
0.2	60	0.0400	6.66	37.46	**Trap/Vee/Rect Channel Flow, SEG IJ** Bot.W=0.00' D=1.50' Z= 3.0 & 2.0 '/' Top.W=7.50' n= 0.035
105.0	1,570	Total			

Subcatchment WS6: WS#6



Hydrograph for Subcatchment WS6: WS#6

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.00
3.00	0.17	0.00	0.00
3.50	0.20	0.00	0.00
4.00	0.23	0.00	0.00
4.50	0.27	0.00	0.00
5.00	0.31	0.00	0.00
5.50	0.35	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.62	0.00	0.00
8.50	0.69	0.00	0.00
9.00	0.79	0.00	0.00
9.50	0.90	0.00	0.00
10.00	1.02	0.00	0.00
10.50	1.17	0.00	0.00
11.00	1.35	0.00	0.00
11.50	1.61	0.02	0.01
12.00	2.70	0.26	0.11
12.50	3.79	0.71	1.29
13.00	4.05	0.84	4.52
13.50	4.23	0.93	**6.11**
14.00	4.38	1.01	5.17
14.50	4.50	1.08	3.78
15.00	4.61	1.14	2.91
15.50	4.71	1.20	2.33
16.00	4.78	1.24	1.94
16.50	4.85	1.28	1.64
17.00	4.91	1.32	1.39
17.50	4.96	1.35	1.20
18.00	5.01	1.38	1.04
18.50	5.05	1.40	0.92
19.00	5.09	1.43	0.82
19.50	5.13	1.45	0.74
20.00	5.17	1.47	0.68
20.50	5.20	1.49	0.64
21.00	5.23	1.51	0.60
21.50	5.27	1.53	0.57
22.00	5.30	1.55	0.55
22.50	5.32	1.57	0.52
23.00	5.35	1.58	0.50
23.50	5.38	1.60	0.48
24.00	**5.40**	**1.62**	0.45
24.50	5.40	1.62	0.42
25.00	5.40	1.62	0.33
25.50	5.40	1.62	0.20
26.00	5.40	1.62	0.10
26.50	5.40	1.62	0.05
27.00	5.40	1.62	0.02
27.50	5.40	1.62	0.01
28.00	5.40	1.62	0.01
28.50	5.40	1.62	0.00
29.00	5.40	1.62	0.00
29.50	5.40	1.62	0.00
30.00	5.40	1.62	0.00
30.50	5.40	1.62	0.00
31.00	5.40	1.62	0.00
31.50	5.40	1.62	0.00
32.00	5.40	1.62	0.00
32.50	5.40	1.62	0.00
33.00	5.40	1.62	0.00
33.50	5.40	1.62	0.00
34.00	5.40	1.62	0.00
34.50	5.40	1.62	0.00
35.00	5.40	1.62	0.00
35.50	5.40	1.62	0.00
36.00	5.40	1.62	0.00

Summary for Subcatchment WS7: WS7

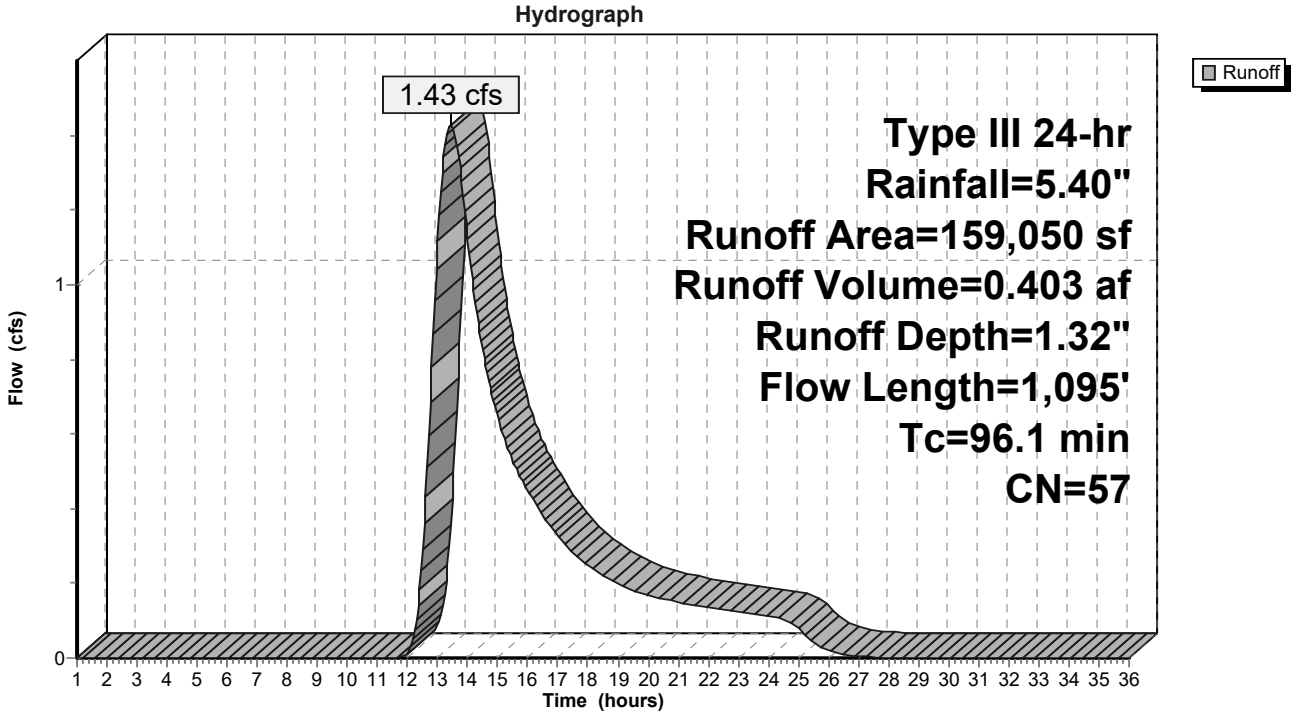
Runoff = 1.43 cfs @ 13.43 hrs, Volume= 0.403 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
5,250	61	>75% Grass cover, Good, HSG B
145,800	55	Woods, Good, HSG B
8,000	98	Roofs, HSG B
159,050	57	Weighted Average
151,050		94.97% Pervious Area
8,000		5.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
57.3	300	0.0670	0.09		**Sheet Flow, SEG AB** Woods: Dense underbrush n= 0.800 P2= 3.00"
17.7	325	0.0150	0.31		**Shallow Concentrated Flow, SEG BC** Forest w/Heavy Litter Kv= 2.5 fps
19.6	360	0.0150	0.31		**Shallow Concentrated Flow, SEG CD** Forest w/Heavy Litter Kv= 2.5 fps
1.5	110	0.0100	1.24	0.24	**Pipe Channel, SEG DE** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.030 Corrugated metal
96.1	1,095	Total			

Subcatchment WS7: WS7



Hydrograph for Subcatchment WS7: WS7

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.00	0.00
2.00	0.11	0.00	0.00
2.50	0.14	0.00	0.00
3.00	0.17	0.00	0.00
3.50	0.20	0.00	0.00
4.00	0.23	0.00	0.00
4.50	0.27	0.00	0.00
5.00	0.31	0.00	0.00
5.50	0.35	0.00	0.00
6.00	0.39	0.00	0.00
6.50	0.44	0.00	0.00
7.00	0.49	0.00	0.00
7.50	0.55	0.00	0.00
8.00	0.62	0.00	0.00
8.50	0.69	0.00	0.00
9.00	0.79	0.00	0.00
9.50	0.90	0.00	0.00
10.00	1.02	0.00	0.00
10.50	1.17	0.00	0.00
11.00	1.35	0.00	0.00
11.50	1.61	0.00	0.00
12.00	2.70	0.16	0.01
12.50	3.79	0.53	0.29
13.00	4.05	0.64	**1.12**
13.50	4.23	0.72	**1.42**
14.00	4.38	0.79	1.12
14.50	4.50	0.85	0.83
15.00	4.61	0.90	0.65
15.50	4.71	0.95	0.53
16.00	4.78	0.99	0.45
16.50	4.85	1.03	0.38
17.00	4.91	1.06	0.33
17.50	4.96	1.09	0.28
18.00	5.01	1.11	0.25
18.50	5.05	1.13	0.22
19.00	5.09	1.15	0.20
19.50	5.13	1.18	0.18
20.00	5.17	1.20	0.17
20.50	5.20	1.21	0.16
21.00	5.23	1.23	0.15
21.50	5.27	1.25	0.14
22.00	5.30	1.27	0.14
22.50	5.32	1.28	0.13
23.00	5.35	1.30	0.12
23.50	5.38	1.31	0.12
24.00	**5.40**	**1.32**	0.11
24.50	5.40	1.32	0.10
25.00	5.40	1.32	0.08
25.50	5.40	1.32	0.04
26.00	5.40	1.32	0.02
26.50	5.40	1.32	0.01
27.00	5.40	1.32	0.00
27.50	5.40	1.32	0.00
28.00	5.40	1.32	0.00
28.50	5.40	1.32	0.00
29.00	5.40	1.32	0.00
29.50	5.40	1.32	0.00
30.00	5.40	1.32	0.00
30.50	5.40	1.32	0.00
31.00	5.40	1.32	0.00
31.50	5.40	1.32	0.00
32.00	5.40	1.32	0.00
32.50	5.40	1.32	0.00
33.00	5.40	1.32	0.00
33.50	5.40	1.32	0.00
34.00	5.40	1.32	0.00
34.50	5.40	1.32	0.00
35.00	5.40	1.32	0.00
35.50	5.40	1.32	0.00
36.00	5.40	1.32	0.00

Summary for Subcatchment WS8: WS8

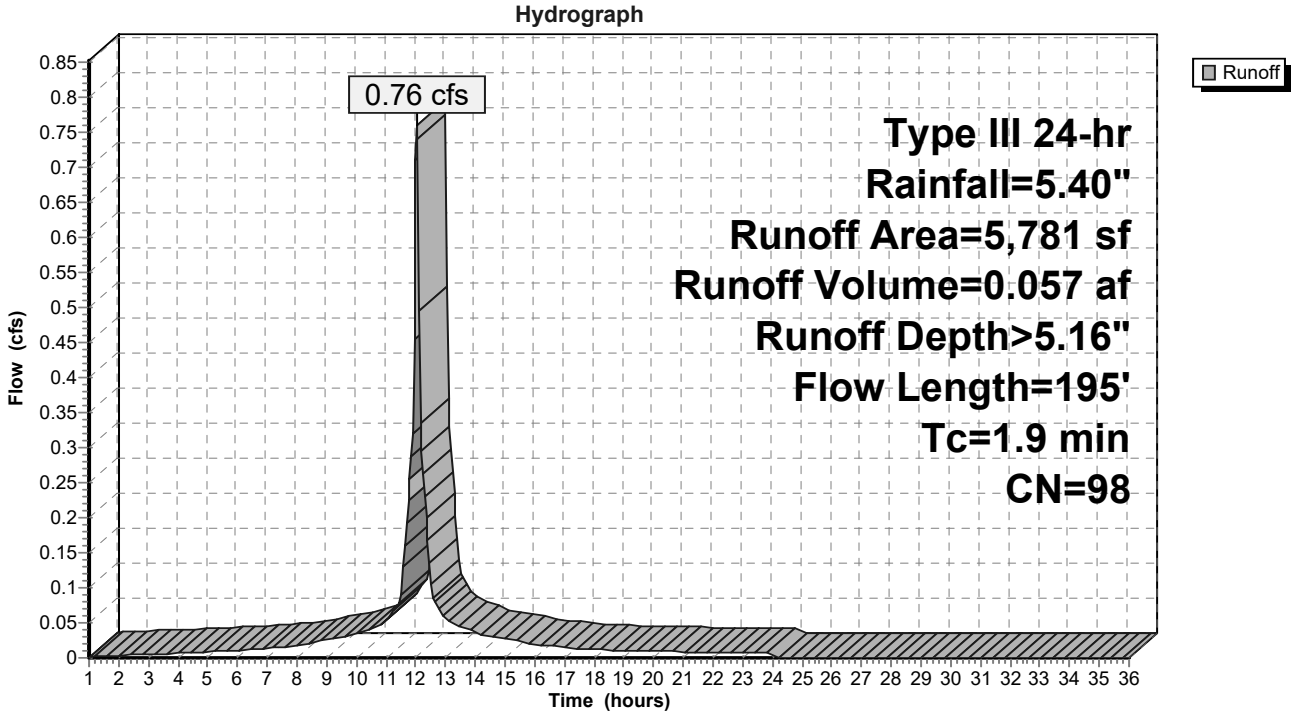
Runoff = 0.76 cfs @ 12.03 hrs, Volume= 0.057 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (sf)	CN	Description
5,781	98	Paved parking, HSG B
5,781		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	30	0.0150	0.93		**Sheet Flow, SEG AB** Smooth surfaces n= 0.011 P2= 3.00"
1.4	165	0.0100	2.03		**Shallow Concentrated Flow, SEG BC** Paved Kv= 20.3 fps
1.9	195	Total			

Subcatchment WS8: WS8



Hydrograph for Subcatchment WS8: WS8

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
1.00	0.05	0.00	0.00
1.50	0.08	0.01	0.00
2.00	0.11	0.02	0.00
2.50	0.14	0.03	0.00
3.00	0.17	0.05	0.01
3.50	0.20	0.07	0.01
4.00	0.23	0.09	0.01
4.50	0.27	0.12	0.01
5.00	0.31	0.15	0.01
5.50	0.35	0.18	0.01
6.00	0.39	0.22	0.01
6.50	0.44	0.26	0.01
7.00	0.49	0.31	0.01
7.50	0.55	0.36	0.02
8.00	0.62	0.42	0.02
8.50	0.69	0.50	0.02
9.00	0.79	0.59	0.03
9.50	0.90	0.69	0.03
10.00	1.02	0.81	0.03
10.50	1.17	0.96	0.04
11.00	1.35	1.13	0.05
11.50	1.61	1.39	0.08
12.00	2.70	2.47	**0.71**
12.50	3.79	3.56	**0.10**
13.00	4.05	3.81	0.05
13.50	4.23	4.00	0.04
14.00	4.38	4.14	0.04
14.50	4.50	4.27	0.03
15.00	4.61	4.38	0.03
15.50	4.71	4.47	0.02
16.00	4.78	4.55	0.02
16.50	4.85	4.61	0.02
17.00	4.91	4.67	0.02
17.50	4.96	4.73	0.01
18.00	5.01	4.77	0.01
18.50	5.05	4.82	0.01
19.00	5.09	4.86	0.01
19.50	5.13	4.89	0.01
20.00	5.17	4.93	0.01
20.50	5.20	4.97	0.01
21.00	5.23	5.00	0.01
21.50	5.27	5.03	0.01
22.00	5.30	5.06	0.01
22.50	5.32	5.09	0.01
23.00	5.35	5.11	0.01
23.50	5.38	5.14	0.01
24.00	**5.40**	**5.16**	0.01
24.50	5.40	5.16	0.00
25.00	5.40	5.16	0.00
25.50	5.40	5.16	0.00
26.00	5.40	5.16	0.00
26.50	5.40	5.16	0.00
27.00	5.40	5.16	0.00
27.50	5.40	5.16	0.00
28.00	5.40	5.16	0.00
28.50	5.40	5.16	0.00
29.00	5.40	5.16	0.00
29.50	5.40	5.16	0.00
30.00	5.40	5.16	0.00
30.50	5.40	5.16	0.00
31.00	5.40	5.16	0.00
31.50	5.40	5.16	0.00
32.00	5.40	5.16	0.00
32.50	5.40	5.16	0.00
33.00	5.40	5.16	0.00
33.50	5.40	5.16	0.00
34.00	5.40	5.16	0.00
34.50	5.40	5.16	0.00
35.00	5.40	5.16	0.00
35.50	5.40	5.16	0.00
36.00	5.40	5.16	0.00

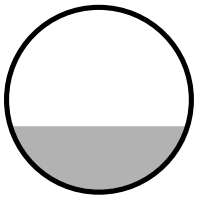
Summary for Reach R1: Culvert

Inflow Area = 0.632 ac, 49.73% Impervious, Inflow Depth = 3.15"
Inflow = 2.56 cfs @ 12.04 hrs, Volume= 0.166 af
Outflow = 2.46 cfs @ 12.06 hrs, Volume= 0.166 af, Atten= 4%, Lag= 1.0 min

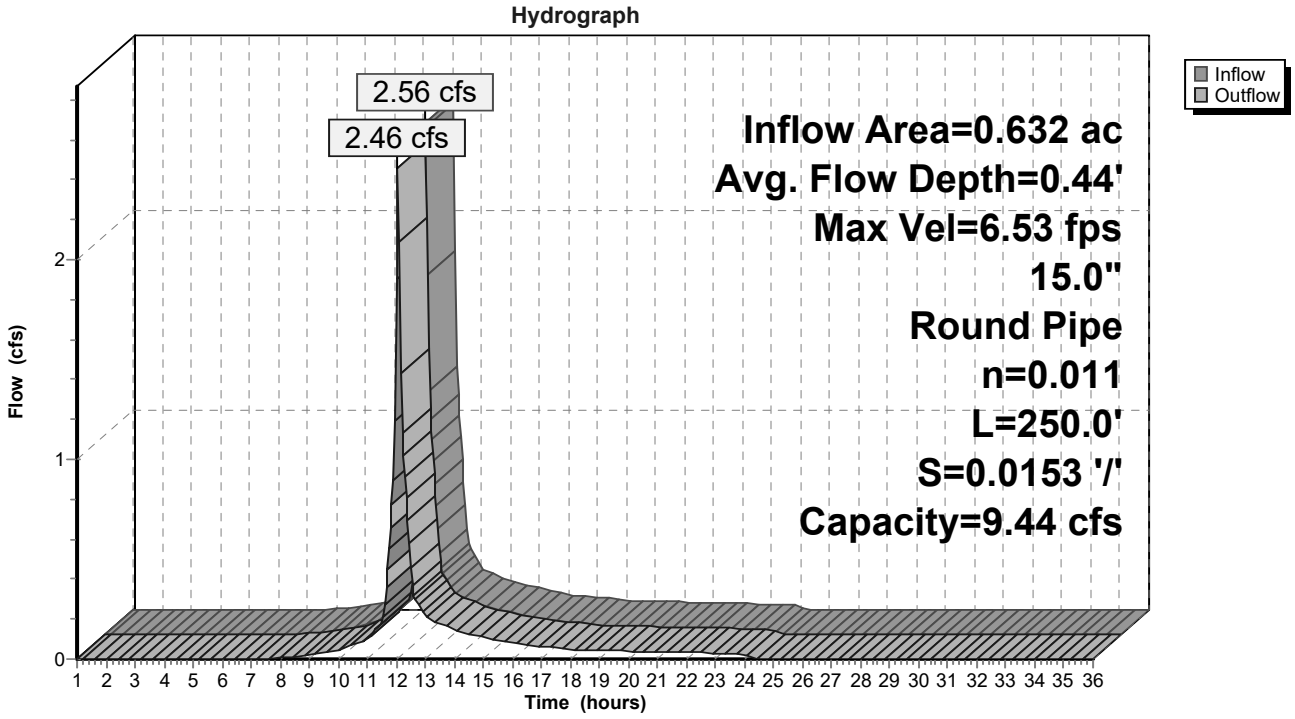
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.53 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.21 fps, Avg. Travel Time= 1.9 min

Peak Storage= 98 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 9.44 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0153 '/'
Inlet Invert= 363.00', Outlet Invert= 359.18'



Reach R1: Culvert



Hydrograph for Reach R1: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	363.00	0.00
2.00	0.00	0	363.00	0.00
3.00	0.00	0	363.00	0.00
4.00	0.00	0	363.00	0.00
5.00	0.00	0	363.00	0.00
6.00	0.00	0	363.00	0.00
7.00	0.00	0	363.00	0.00
8.00	0.01	1	363.02	0.00
9.00	0.02	3	363.04	0.02
10.00	0.05	6	363.06	0.05
11.00	0.10	10	363.09	0.10
12.00	**2.24**	**84**	**363.40**	**1.90**
13.00	**0.21**	**17**	**363.13**	**0.22**
14.00	0.14	13	363.11	0.14
15.00	0.11	11	363.09	0.11
16.00	0.08	8	363.08	0.08
17.00	0.06	7	363.07	0.06
18.00	0.05	6	363.06	0.05
19.00	0.04	6	363.06	0.04
20.00	0.04	5	363.06	0.04
21.00	0.04	5	363.06	0.04
22.00	0.03	5	363.05	0.03
23.00	0.03	4	363.05	0.03
24.00	0.02	4	363.05	0.03
25.00	0.00	0	363.00	0.00
26.00	0.00	0	363.00	0.00
27.00	0.00	0	363.00	0.00
28.00	0.00	0	363.00	0.00
29.00	0.00	0	363.00	0.00
30.00	0.00	0	363.00	0.00
31.00	0.00	0	363.00	0.00
32.00	0.00	0	363.00	0.00
33.00	0.00	0	363.00	0.00
34.00	0.00	0	363.00	0.00
35.00	0.00	0	363.00	0.00
36.00	0.00	0	363.00	0.00

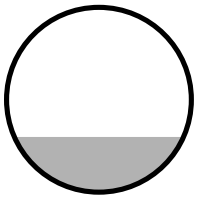
Summary for Reach R2: R2 Pipe across road

Inflow Area = 12.912 ac, 6.87% Impervious, Inflow Depth = 1.62"
Inflow = 6.11 cfs @ 13.50 hrs, Volume= 1.738 af
Outflow = 6.11 cfs @ 13.51 hrs, Volume= 1.738 af, Atten= 0%, Lag= 0.2 min

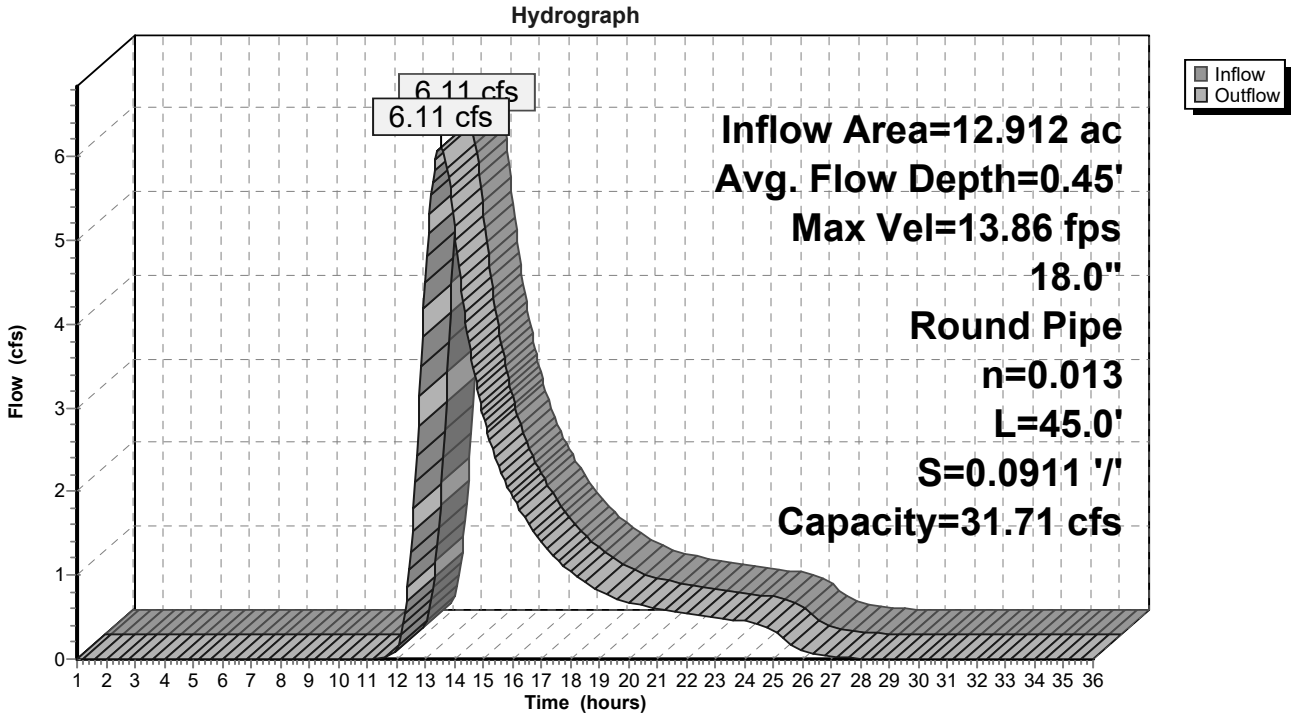
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 13.86 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.87 fps, Avg. Travel Time= 0.1 min

Peak Storage= 20 cf @ 13.51 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 31.71 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0911 '/'
Inlet Invert= 357.00', Outlet Invert= 352.90'



Reach R2: R2 Pipe across road



Hydrograph for Reach R2: R2 Pipe across road

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	357.00	0.00
2.00	0.00	0	357.00	0.00
3.00	0.00	0	357.00	0.00
4.00	0.00	0	357.00	0.00
5.00	0.00	0	357.00	0.00
6.00	0.00	0	357.00	0.00
7.00	0.00	0	357.00	0.00
8.00	0.00	0	357.00	0.00
9.00	0.00	0	357.00	0.00
10.00	0.00	0	357.00	0.00
11.00	0.00	0	357.00	0.00
12.00	0.11	1	357.07	0.11
13.00	**4.52**	**16**	**357.38**	**4.51**
14.00	**5.17**	**18**	**357.41**	**5.17**
15.00	2.91	12	357.31	2.91
16.00	1.94	9	357.25	1.94
17.00	1.39	7	357.21	1.39
18.00	1.04	6	357.19	1.04
19.00	0.82	5	357.17	0.82
20.00	0.68	4	357.15	0.68
21.00	0.60	4	357.14	0.60
22.00	0.55	4	357.14	0.55
23.00	0.50	3	357.13	0.50
24.00	0.45	3	357.13	0.45
25.00	0.33	3	357.11	0.33
26.00	0.10	1	357.06	0.10
27.00	0.02	0	357.03	0.02
28.00	0.01	0	357.02	0.01
29.00	0.00	0	357.00	0.00
30.00	0.00	0	357.00	0.00
31.00	0.00	0	357.00	0.00
32.00	0.00	0	357.00	0.00
33.00	0.00	0	357.00	0.00
34.00	0.00	0	357.00	0.00
35.00	0.00	0	357.00	0.00
36.00	0.00	0	357.00	0.00

Summary for Pond CB1: CB-1

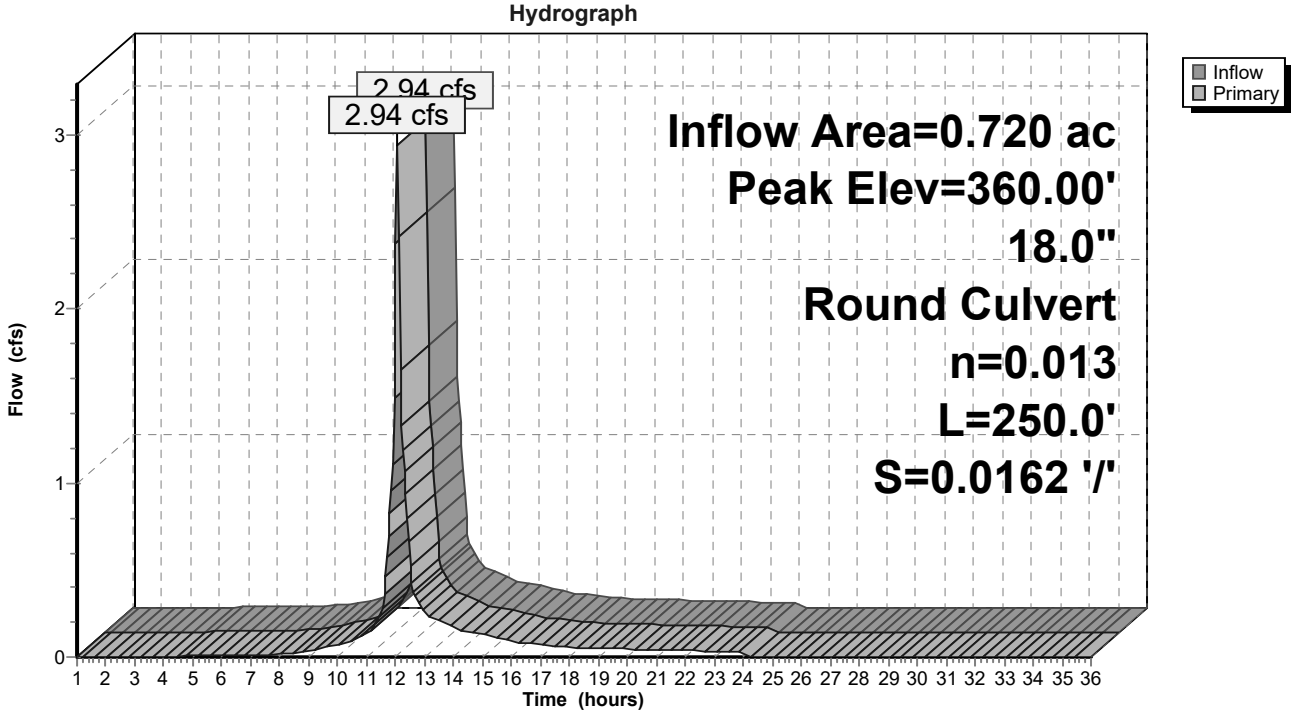
Inflow Area = 0.720 ac, 55.82% Impervious, Inflow Depth > 3.39"
Inflow = 2.94 cfs @ 12.05 hrs, Volume= 0.203 af
Outflow = 2.94 cfs @ 12.05 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min
Primary = 2.94 cfs @ 12.05 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 360.00' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	359.08'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 359.08' / 355.03' S= 0.0162 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.93 cfs @ 12.05 hrs HW=360.00' (Free Discharge)
└**1=CB-1** (Inlet Controls 2.93 cfs @ 2.58 fps)

Pond CB1: CB-1



Hydrograph for Pond CB1: CB-1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	359.09	0.00
1.50	0.00	359.10	0.00
2.00	0.00	359.10	0.00
2.50	0.00	359.10	0.00
3.00	0.00	359.11	0.00
3.50	0.00	359.11	0.00
4.00	0.00	359.11	0.00
4.50	0.01	359.11	0.01
5.00	0.01	359.12	0.01
5.50	0.01	359.12	0.01
6.00	0.01	359.12	0.01
6.50	0.01	359.12	0.01
7.00	0.01	359.13	0.01
7.50	0.01	359.13	0.01
8.00	0.02	359.14	0.02
8.50	0.02	359.16	0.02
9.00	0.04	359.17	0.04
9.50	0.05	359.19	0.05
10.00	0.07	359.21	0.07
10.50	0.10	359.23	0.10
11.00	0.13	359.26	0.13
11.50	0.24	359.32	0.24
12.00	**2.37**	**359.89**	**2.37**
12.50	**0.53**	**359.44**	**0.53**
13.00	0.26	359.33	0.26
13.50	0.21	359.30	0.21
14.00	0.17	359.28	0.17
14.50	0.15	359.27	0.15
15.00	0.13	359.25	0.13
15.50	0.11	359.24	0.11
16.00	0.09	359.23	0.09
16.50	0.08	359.22	0.08
17.00	0.07	359.21	0.07
17.50	0.06	359.20	0.06
18.00	0.06	359.19	0.06
18.50	0.05	359.19	0.05
19.00	0.05	359.19	0.05
19.50	0.05	359.19	0.05
20.00	0.05	359.18	0.05
20.50	0.04	359.18	0.04
21.00	0.04	359.18	0.04
21.50	0.04	359.18	0.04
22.00	0.04	359.17	0.04
22.50	0.04	359.17	0.04
23.00	0.03	359.17	0.03
23.50	0.03	359.17	0.03
24.00	0.03	359.16	0.03
24.50	0.00	359.08	0.00
25.00	0.00	359.08	0.00
25.50	0.00	359.08	0.00
26.00	0.00	359.08	0.00
26.50	0.00	359.08	0.00
27.00	0.00	359.08	0.00
27.50	0.00	359.08	0.00
28.00	0.00	359.08	0.00
28.50	0.00	359.08	0.00
29.00	0.00	359.08	0.00
29.50	0.00	359.08	0.00
30.00	0.00	359.08	0.00
30.50	0.00	359.08	0.00
31.00	0.00	359.08	0.00
31.50	0.00	359.08	0.00
32.00	0.00	359.08	0.00
32.50	0.00	359.08	0.00
33.00	0.00	359.08	0.00
33.50	0.00	359.08	0.00
34.00	0.00	359.08	0.00
34.50	0.00	359.08	0.00
35.00	0.00	359.08	0.00
35.50	0.00	359.08	0.00
36.00	0.00	359.08	0.00

Summary for Pond CB2: CB2

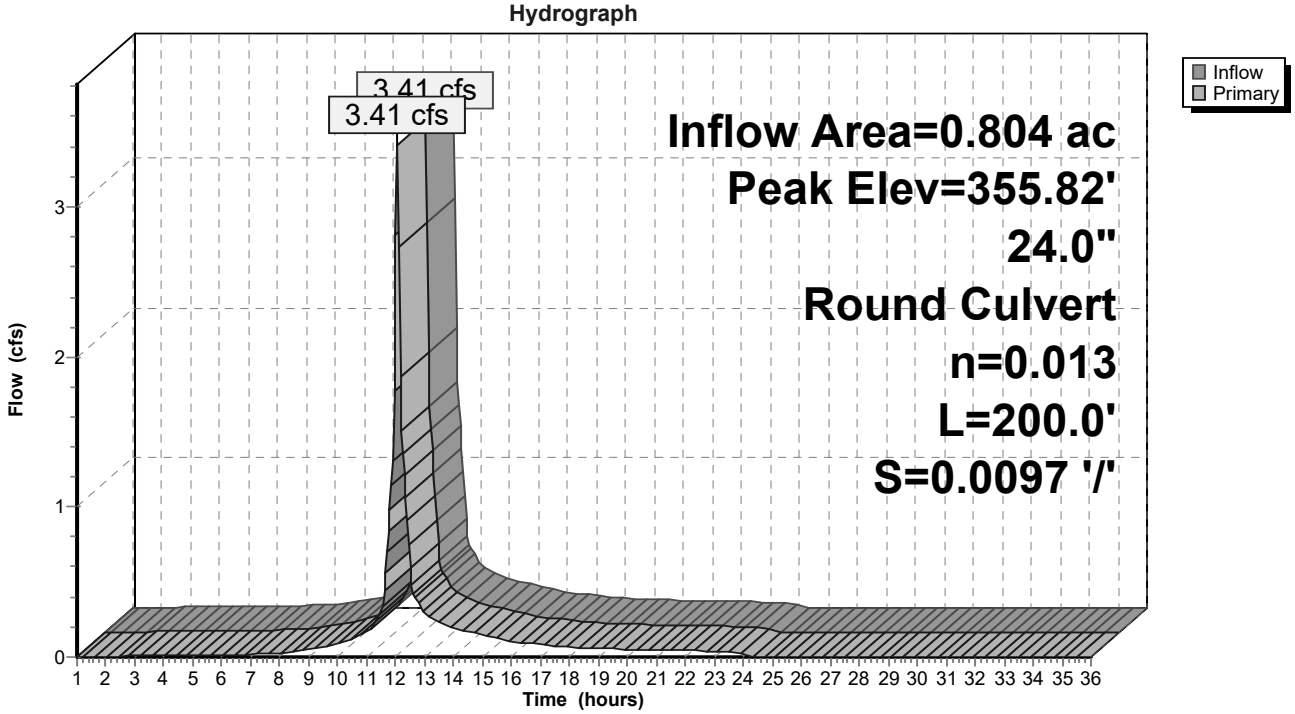
Inflow Area = 0.804 ac, 60.47% Impervious, Inflow Depth > 3.58"
Inflow = 3.41 cfs @ 12.05 hrs, Volume= 0.240 af
Outflow = 3.41 cfs @ 12.05 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 3.41 cfs @ 12.05 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.82' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.93'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.93' / 353.00' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.39 cfs @ 12.05 hrs HW=355.82' (Free Discharge)
└**1=CB-2** (Inlet Controls 3.39 cfs @ 2.53 fps)

Pond CB2: CB2



Hydrograph for Pond CB2: CB2

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	354.94	0.00
1.50	0.00	354.95	0.00
2.00	0.00	354.96	0.00
2.50	0.01	354.96	0.01
3.00	0.01	354.97	0.01
3.50	0.01	354.97	0.01
4.00	0.01	354.97	0.01
4.50	0.01	354.97	0.01
5.00	0.01	354.98	0.01
5.50	0.01	354.98	0.01
6.00	0.01	354.98	0.01
6.50	0.02	354.98	0.02
7.00	0.02	354.99	0.02
7.50	0.02	354.99	0.02
8.00	0.03	355.00	0.03
8.50	0.04	355.02	0.04
9.00	0.05	355.03	0.05
9.50	0.07	355.05	0.07
10.00	0.09	355.06	0.09
10.50	0.12	355.09	0.12
11.00	0.17	355.11	0.17
11.50	0.30	355.18	0.30
12.00	**2.81**	**355.73**	**2.81**
12.50	**0.59**	**355.28**	**0.59**
13.00	0.29	355.17	0.29
13.50	0.23	355.15	0.23
14.00	0.19	355.13	0.19
14.50	0.17	355.11	0.17
15.00	0.15	355.10	0.15
15.50	0.12	355.09	0.12
16.00	0.10	355.07	0.10
16.50	0.09	355.07	0.09
17.00	0.08	355.06	0.08
17.50	0.07	355.05	0.07
18.00	0.06	355.04	0.06
18.50	0.06	355.04	0.06
19.00	0.06	355.04	0.06
19.50	0.05	355.03	0.05
20.00	0.05	355.03	0.05
20.50	0.05	355.03	0.05
21.00	0.05	355.03	0.05
21.50	0.04	355.02	0.04
22.00	0.04	355.02	0.04
22.50	0.04	355.02	0.04
23.00	0.04	355.02	0.04
23.50	0.04	355.01	0.04
24.00	0.03	355.01	0.03
24.50	0.00	354.93	0.00
25.00	0.00	354.93	0.00
25.50	0.00	354.93	0.00
26.00	0.00	354.93	0.00
26.50	0.00	354.93	0.00
27.00	0.00	354.93	0.00
27.50	0.00	354.93	0.00
28.00	0.00	354.93	0.00
28.50	0.00	354.93	0.00
29.00	0.00	354.93	0.00
29.50	0.00	354.93	0.00
30.00	0.00	354.93	0.00
30.50	0.00	354.93	0.00
31.00	0.00	354.93	0.00
31.50	0.00	354.93	0.00
32.00	0.00	354.93	0.00
32.50	0.00	354.93	0.00
33.00	0.00	354.93	0.00
33.50	0.00	354.93	0.00
34.00	0.00	354.93	0.00
34.50	0.00	354.93	0.00
35.00	0.00	354.93	0.00
35.50	0.00	354.93	0.00
36.00	0.00	354.93	0.00

Summary for Pond CB3: CB-3

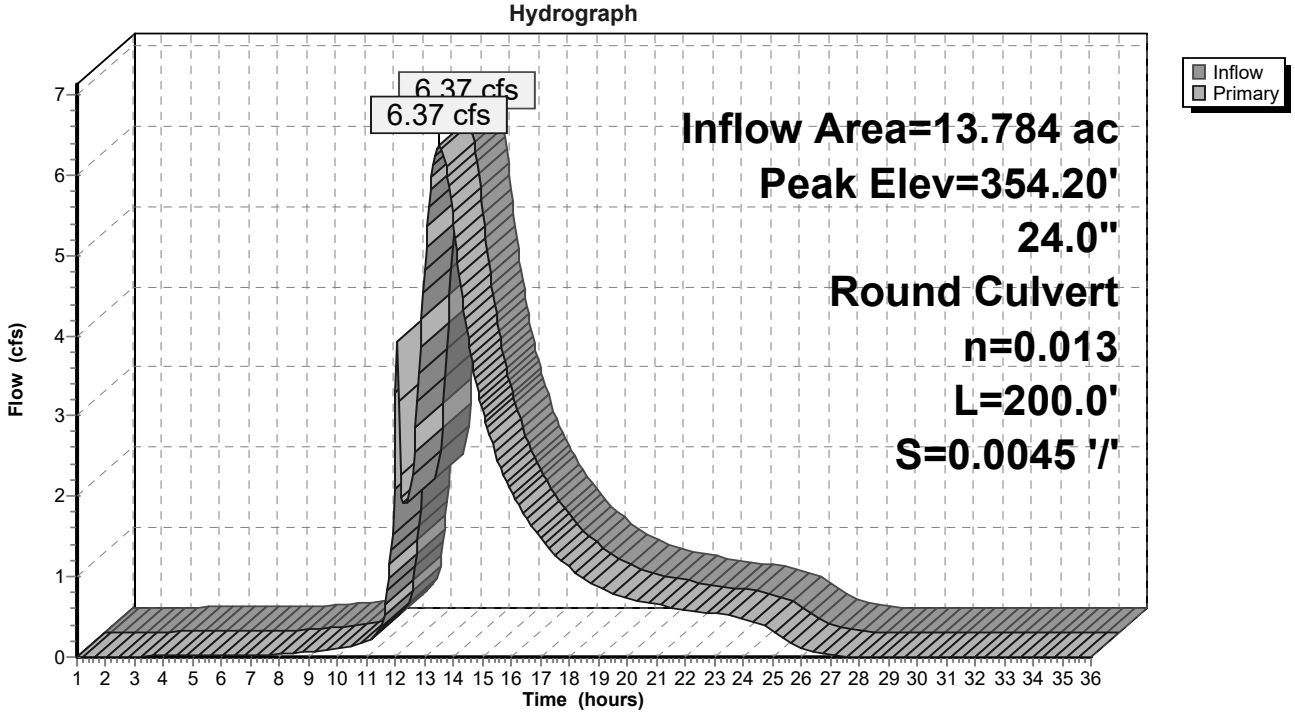
Inflow Area = 13.784 ac, 10.45% Impervious, Inflow Depth > 1.75"
Inflow = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af
Outflow = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af, Atten= 0%, Lag= 0.0 min
Primary = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 354.20' @ 13.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.90'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.90' / 352.00' S= 0.0045 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.37 cfs @ 13.49 hrs HW=354.20' (Free Discharge)
└**1=CB-3** (Barrel Controls 6.37 cfs @ 4.21 fps)

Pond CB3: CB-3



Hydrograph for Pond CB3: CB-3

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.92	0.00
1.50	0.00	352.93	0.00
2.00	0.01	352.94	0.01
2.50	0.01	352.95	0.01
3.00	0.01	352.95	0.01
3.50	0.01	352.95	0.01
4.00	0.01	352.96	0.01
4.50	0.01	352.96	0.01
5.00	0.02	352.96	0.02
5.50	0.02	352.97	0.02
6.00	0.02	352.97	0.02
6.50	0.02	352.97	0.02
7.00	0.02	352.98	0.02
7.50	0.03	352.99	0.03
8.00	0.04	353.00	0.04
8.50	0.05	353.01	0.05
9.00	0.07	353.03	0.07
9.50	0.09	353.04	0.09
10.00	0.11	353.06	0.11
10.50	0.15	353.09	0.15
11.00	0.19	353.11	0.19
11.50	0.35	353.18	0.35
12.00	3.29	353.79	3.29
12.50	1.92	353.57	1.92
13.00	4.82	354.00	4.82
13.50	**6.37**	**354.20**	**6.37**
14.00	5.38	354.07	5.38
14.50	3.97	353.89	3.97
15.00	3.07	353.75	3.07
15.50	2.47	353.66	2.47
16.00	2.05	353.59	2.05
16.50	1.74	353.53	1.74
17.00	1.48	353.48	1.48
17.50	1.28	353.44	1.28
18.00	1.11	353.40	1.11
18.50	0.99	353.37	0.99
19.00	0.88	353.35	0.88
19.50	0.80	353.32	0.80
20.00	0.74	353.31	0.74
20.50	0.69	353.30	0.69
21.00	0.65	353.28	0.65
21.50	0.62	353.28	0.62
22.00	0.59	353.27	0.59
22.50	0.57	353.26	0.57
23.00	0.54	353.25	0.54
23.50	0.52	353.24	0.52
24.00	0.49	353.23	0.49
24.50	0.42	353.21	0.42
25.00	0.33	353.18	0.33
25.50	0.20	353.12	0.20
26.00	0.10	353.06	0.10
26.50	0.05	353.01	0.05
27.00	0.02	352.98	0.02
27.50	0.01	352.96	0.01
28.00	0.01	352.94	0.01
28.50	0.00	352.93	0.00
29.00	0.00	352.92	0.00
29.50	0.00	352.90	0.00
30.00	0.00	352.90	0.00
30.50	0.00	352.90	0.00
31.00	0.00	352.90	0.00
31.50	0.00	352.90	0.00
32.00	0.00	352.90	0.00
32.50	0.00	352.90	0.00
33.00	0.00	352.90	0.00
33.50	0.00	352.90	0.00
34.00	0.00	352.90	0.00
34.50	0.00	352.90	0.00
35.00	0.00	352.90	0.00
35.50	0.00	352.90	0.00
36.00	0.00	352.90	0.00

Summary for Pond CB4: CB-4

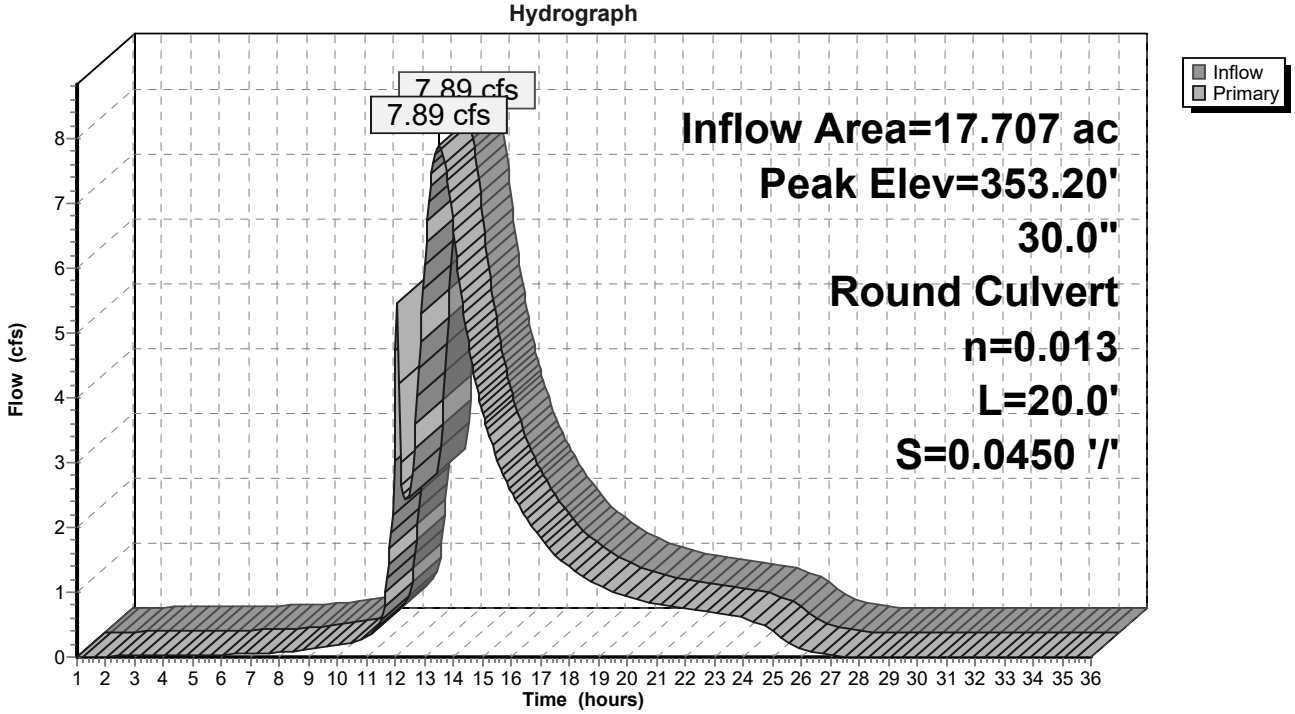
Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth > 1.71"			
Inflow =	7.89 cfs @ 13.47 hrs, Volume=	2.527 af		
Outflow =	7.89 cfs @ 13.47 hrs, Volume=	2.527 af, Atten= 0%, Lag= 0.0 min		
Primary =	7.89 cfs @ 13.47 hrs, Volume=	2.527 af		

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.20' @ 13.47 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	351.90'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 351.90' / 351.00' S= 0.0450 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=7.89 cfs @ 13.47 hrs HW=353.20' (Free Discharge)
└**1=30"** (Inlet Controls 7.89 cfs @ 3.06 fps)

Pond CB4: CB-4



Hydrograph for Pond CB4: CB-4

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	351.92	0.00
1.50	0.01	351.94	0.01
2.00	0.01	351.94	0.01
2.50	0.02	351.95	0.02
3.00	0.02	351.96	0.02
3.50	0.02	351.96	0.02
4.00	0.03	351.97	0.03
4.50	0.03	351.97	0.03
5.00	0.03	351.98	0.03
5.50	0.04	351.98	0.04
6.00	0.04	351.98	0.04
6.50	0.05	351.99	0.05
7.00	0.05	352.00	0.05
7.50	0.06	352.00	0.06
8.00	0.07	352.01	0.07
8.50	0.09	352.03	0.09
9.00	0.12	352.05	0.12
9.50	0.15	352.06	0.15
10.00	0.18	352.08	0.18
10.50	0.23	352.11	0.23
11.00	0.30	352.13	0.30
11.50	0.52	352.21	0.52
12.00	4.74	352.88	4.74
12.50	2.43	352.59	2.43
13.00	**6.05**	**353.02**	**6.05**
13.50	**7.88**	**353.20**	**7.88**
14.00	6.57	353.07	6.57
14.50	4.86	352.89	4.86
15.00	3.77	352.76	3.77
15.50	3.05	352.67	3.05
16.00	2.54	352.60	2.54
16.50	2.16	352.54	2.16
17.00	1.84	352.49	1.84
17.50	1.59	352.45	1.59
18.00	1.38	352.41	1.38
18.50	1.23	352.38	1.23
19.00	1.10	352.35	1.10
19.50	1.00	352.33	1.00
20.00	0.92	352.31	0.92
20.50	0.87	352.30	0.87
21.00	0.82	352.29	0.82
21.50	0.78	352.28	0.78
22.00	0.75	352.27	0.75
22.50	0.71	352.26	0.71
23.00	0.68	352.25	0.68
23.50	0.65	352.25	0.65
24.00	0.61	352.24	0.61
24.50	0.53	352.21	0.53
25.00	0.41	352.17	0.41
25.50	0.24	352.11	0.24
26.00	0.12	352.05	0.12
26.50	0.06	352.00	0.06
27.00	0.03	351.97	0.03
27.50	0.01	351.95	0.01
28.00	0.01	351.93	0.01
28.50	0.00	351.92	0.00
29.00	0.00	351.91	0.00
29.50	0.00	351.90	0.00
30.00	0.00	351.90	0.00
30.50	0.00	351.90	0.00
31.00	0.00	351.90	0.00
31.50	0.00	351.90	0.00
32.00	0.00	351.90	0.00
32.50	0.00	351.90	0.00
33.00	0.00	351.90	0.00
33.50	0.00	351.90	0.00
34.00	0.00	351.90	0.00
34.50	0.00	351.90	0.00
35.00	0.00	351.90	0.00
35.50	0.00	351.90	0.00
36.00	0.00	351.90	0.00

Summary for Pond CB5: CB-5

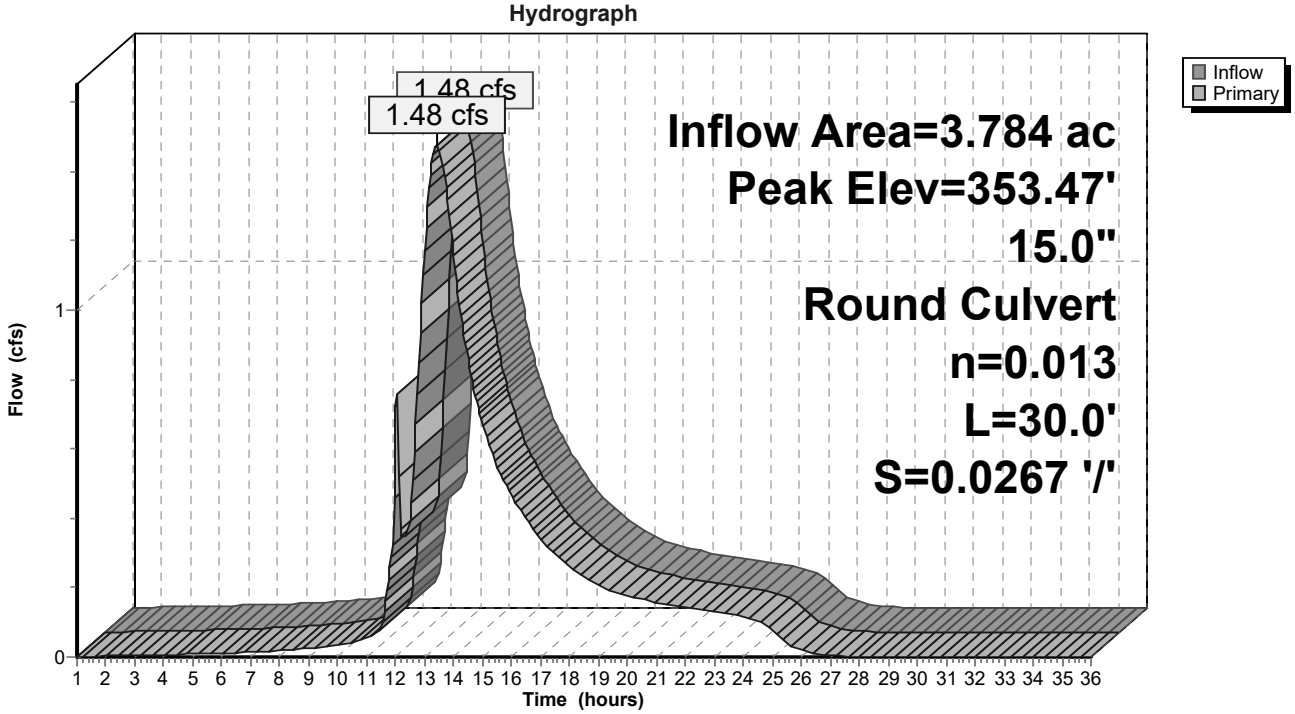
Inflow Area =	3.784 ac,	8.36% Impervious,	Inflow Depth >	1.46"	
Inflow =	1.48 cfs @	13.43 hrs,	Volume=	0.460 af	
Outflow =	1.48 cfs @	13.43 hrs,	Volume=	0.460 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.48 cfs @	13.43 hrs,	Volume=	0.460 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.47' @ 13.43 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.80'	**15.0" Round CB-5** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.80' / 352.00' S= 0.0267 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.47 cfs @ 13.43 hrs HW=353.47' (Free Discharge)
└**1=CB-5** (Inlet Controls 1.47 cfs @ 2.20 fps)

Pond CB5: CB-5



Hydrograph for Pond CB5: CB-5

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.81	0.00
1.50	0.00	352.82	0.00
2.00	0.00	352.83	0.00
2.50	0.00	352.83	0.00
3.00	0.01	352.84	0.01
3.50	0.01	352.84	0.01
4.00	0.01	352.84	0.01
4.50	0.01	352.84	0.01
5.00	0.01	352.85	0.01
5.50	0.01	352.85	0.01
6.00	0.01	352.85	0.01
6.50	0.01	352.85	0.01
7.00	0.01	352.86	0.01
7.50	0.02	352.86	0.02
8.00	0.02	352.87	0.02
8.50	0.02	352.87	0.02
9.00	0.03	352.88	0.03
9.50	0.03	352.89	0.03
10.00	0.03	352.89	0.03
10.50	0.04	352.90	0.04
11.00	0.05	352.91	0.05
11.50	0.08	352.95	0.08
12.00	0.72	353.25	0.72
12.50	0.40	353.13	0.40
13.00	**1.17**	**353.39**	**1.17**
13.50	**1.47**	**353.47**	**1.47**
14.00	1.16	353.38	1.16
14.50	0.86	353.30	0.86
15.00	0.67	353.23	0.67
15.50	0.55	353.19	0.55
16.00	0.47	353.16	0.47
16.50	0.40	353.13	0.40
17.00	0.34	353.10	0.34
17.50	0.30	353.08	0.30
18.00	0.26	353.06	0.26
18.50	0.23	353.05	0.23
19.00	0.21	353.03	0.21
19.50	0.19	353.02	0.19
20.00	0.18	353.02	0.18
20.50	0.17	353.01	0.17
21.00	0.16	353.00	0.16
21.50	0.15	353.00	0.15
22.00	0.14	352.99	0.14
22.50	0.14	352.99	0.14
23.00	0.13	352.99	0.13
23.50	0.13	352.98	0.13
24.00	0.12	352.98	0.12
24.50	0.10	352.96	0.10
25.00	0.08	352.94	0.08
25.50	0.04	352.90	0.04
26.00	0.02	352.87	0.02
26.50	0.01	352.85	0.01
27.00	0.00	352.83	0.00
27.50	0.00	352.82	0.00
28.00	0.00	352.81	0.00
28.50	0.00	352.81	0.00
29.00	0.00	352.80	0.00
29.50	0.00	352.80	0.00
30.00	0.00	352.80	0.00
30.50	0.00	352.80	0.00
31.00	0.00	352.80	0.00
31.50	0.00	352.80	0.00
32.00	0.00	352.80	0.00
32.50	0.00	352.80	0.00
33.00	0.00	352.80	0.00
33.50	0.00	352.80	0.00
34.00	0.00	352.80	0.00
34.50	0.00	352.80	0.00
35.00	0.00	352.80	0.00
35.50	0.00	352.80	0.00
36.00	0.00	352.80	0.00

Summary for Pond WP: Wet Pond

Inflow Area =	17.707 ac, 10.71% Impervious, Inflow Depth > 1.71"			
Inflow =	7.89 cfs @	13.47 hrs, Volume=	2.527 af	
Outflow =	5.89 cfs @	14.17 hrs, Volume=	2.527 af, Atten= 25%, Lag= 42.4 min	
Primary =	5.89 cfs @	14.17 hrs, Volume=	2.527 af	
Secondary =	0.00 cfs @	1.00 hrs, Volume=	0.000 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 349.40' @ 14.17 hrs Surf.Area= 15,627 sf Storage= 27,886 cf

Plug-Flow detention time= 142.0 min calculated for 2.523 af (100% of inflow)
Center-of-Mass det. time= 142.1 min (1,073.7 - 931.6)

Volume	Invert	Avail.Storage	Storage Description
#1	347.50'	54,382 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

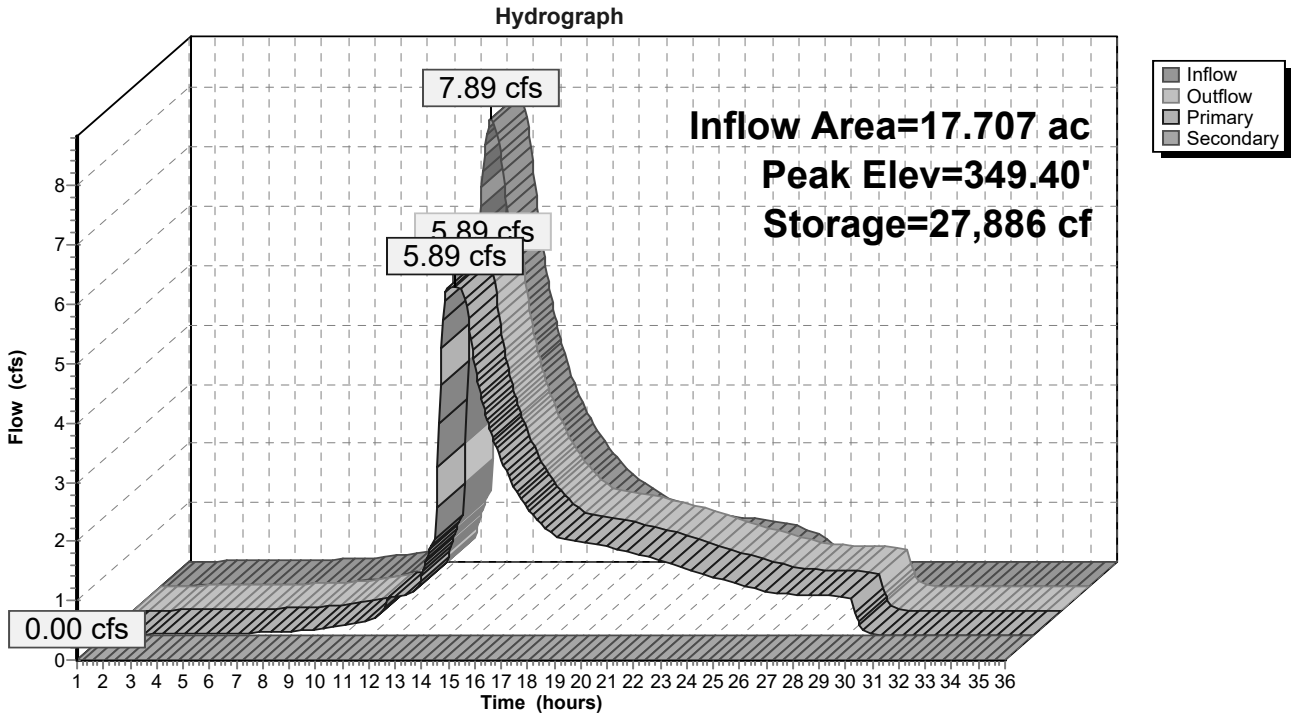
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	**12.0" Round Culvert** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 345.00' / 342.00' S= 0.0750 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	349.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	348.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	345.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Secondary	349.50'	**30.0' long (Profile 6) Broad-Crested Rectangular Weir** Head (feet) 0.49 0.98 1.48 Coef. (English) 3.12 3.41 3.59

Primary OutFlow Max=5.89 cfs @ 14.17 hrs HW=349.40' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.89 cfs @ 7.50 fps)
  ├─**2=Orifice/Grate** (Passes < 5.12 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 1.01 cfs potential flow)
  └─**4=Orifice/Grate** (Passes < 0.86 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=347.50' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond WP: Wet Pond



Hydrograph for Pond WP: Wet Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
1.00	0.00	0	347.50	0.00	0.00	**0.00**
2.00	0.01	8	347.50	0.01	0.01	0.00
3.00	0.02	13	347.50	0.02	0.02	0.00
4.00	0.03	19	347.50	0.02	0.02	0.00
5.00	0.03	23	347.50	0.03	0.03	0.00
6.00	0.04	28	347.50	0.04	0.04	0.00
7.00	0.05	37	347.50	0.05	0.05	0.00
8.00	0.07	50	347.50	0.07	0.07	0.00
9.00	0.12	81	347.51	0.11	0.11	0.00
10.00	0.18	123	347.51	0.16	0.16	0.00
11.00	0.30	202	347.51	0.27	0.27	0.00
12.00	4.74	2,205	347.66	0.66	0.66	0.00
13.00	**6.05**	12,457	348.38	1.08	1.08	0.00
14.00	**6.57**	**27,673**	**349.38**	**5.88**	**5.88**	0.00
15.00	3.77	**25,657**	**349.25**	**4.42**	**4.42**	0.00
16.00	2.54	24,003	349.15	2.88	2.88	0.00
17.00	1.84	22,920	349.08	2.12	2.12	0.00
18.00	1.38	21,918	349.01	1.68	1.68	0.00
19.00	1.10	20,517	348.92	1.59	1.59	0.00
20.00	0.92	18,571	348.79	1.49	1.49	0.00
21.00	0.82	16,519	348.65	1.38	1.38	0.00
22.00	0.75	14,572	348.52	1.26	1.26	0.00
23.00	0.68	12,836	348.40	1.12	1.12	0.00
24.00	0.61	11,396	348.30	0.98	0.98	0.00
25.00	0.41	9,965	348.21	0.85	0.85	0.00
26.00	0.12	8,035	348.07	0.73	0.73	0.00
27.00	0.03	5,713	347.91	0.70	0.70	0.00
28.00	0.01	3,301	347.74	0.67	0.67	0.00
29.00	0.00	928	347.57	0.65	0.65	0.00
30.00	0.00	10	347.50	0.01	0.01	0.00
31.00	0.00	0	347.50	0.00	0.00	0.00
32.00	0.00	0	347.50	0.00	0.00	0.00
33.00	0.00	0	347.50	0.00	0.00	0.00
34.00	0.00	0	347.50	0.00	0.00	0.00
35.00	0.00	0	347.50	0.00	0.00	0.00
36.00	0.00	0	347.50	0.00	0.00	0.00

APPENDIX D

SHEET SW-1 & SW-2

NOTES

1) EXISTING BOUNDARY INFORMATION IS BASED UPON PLANS BY OTHERS. EXISTING TOPOGRAPHY IS BASED UPON CITY OF LEWISTON G.I.S. MAPPING.

2) ALL BOOK AND PAGE REFERENCES REFER TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS.

3) OWNER OF RECORD - RICK & MONIQUE LACHAPELLE
DEED REFERENCES: BOOK 2099, PAGE 159 & BOOK 9073, PAGE 168
TAX MAP REFERENCE: MAP 59, LOTS 18 & 25

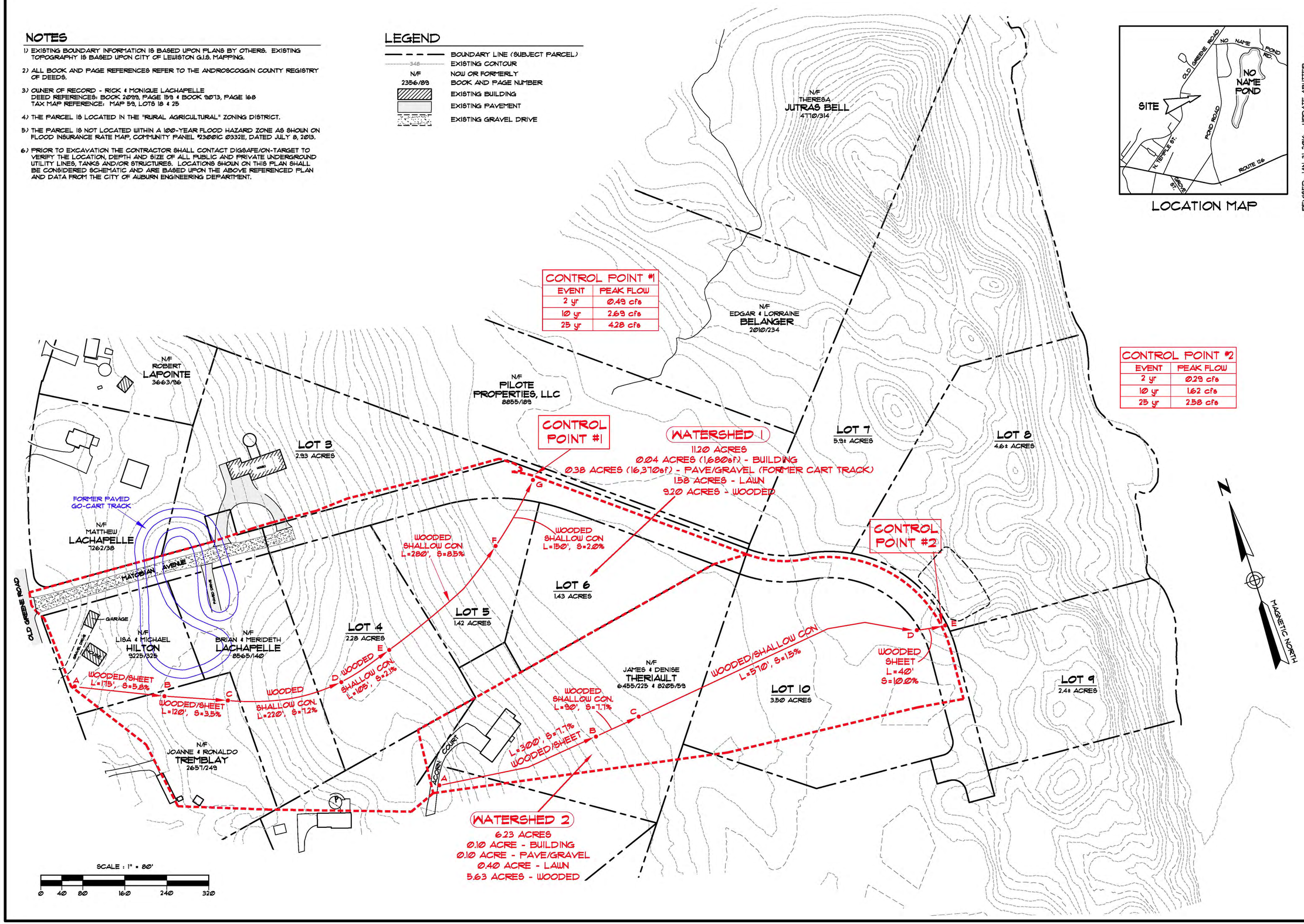
4) THE PARCEL IS LOCATED IN THE "RURAL AGRICULTURAL" ZONING DISTRICT.

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD ZONE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL #2300IC 0332E, DATED JULY 8, 2013.

6) PRIOR TO EXCAVATION THE CONTRACTOR SHALL CONTACT DIGSAFE/ON-TARGET TO VERIFY THE LOCATION, DEPTH AND SIZE OF ALL PUBLIC AND PRIVATE UNDERGROUND UTILITY LINES, TANKS AND/OR STRUCTURES. LOCATIONS SHOWN ON THIS PLAN SHALL BE CONSIDERED SCHEMATIC AND ARE BASED UPON THE ABOVE REFERENCED PLAN AND DATA FROM THE CITY OF AUBURN ENGINEERING DEPARTMENT.

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- 348 — EXISTING CONTOUR
- N/F — NOW OR FORMERLY
- 2356/89 — BOOK AND PAGE NUMBER
- EXISTING BUILDING
- EXISTING PAVEMENT
- EXISTING GRAVEL DRIVE



CONTROL POINT #1	
EVENT	PEAK FLOW
2 yr	0.49 cfs
10 yr	2.69 cfs
25 yr	4.28 cfs

CONTROL POINT #2	
EVENT	PEAK FLOW
2 yr	0.29 cfs
10 yr	1.62 cfs
25 yr	2.58 cfs

LOCATION MAP

REVISED: JAN. 31, 2016 - UPDATE ABUTTER
REVISED: JAN. 29, 2016 - CHANGES TO WATERSHED 1
REVISED: JAN. 18, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 13, 2016 - REMOVE POST 2006 ROAD IMPROVEMENTS

SHEET TITLE: **PRE-EXISTING CONDITION WATERSHED PLAN**

SCALE: 1" = 80'
DATE: DEC. 17, 2015
DRAWN BY: KRF
CHECKED BY: WMP

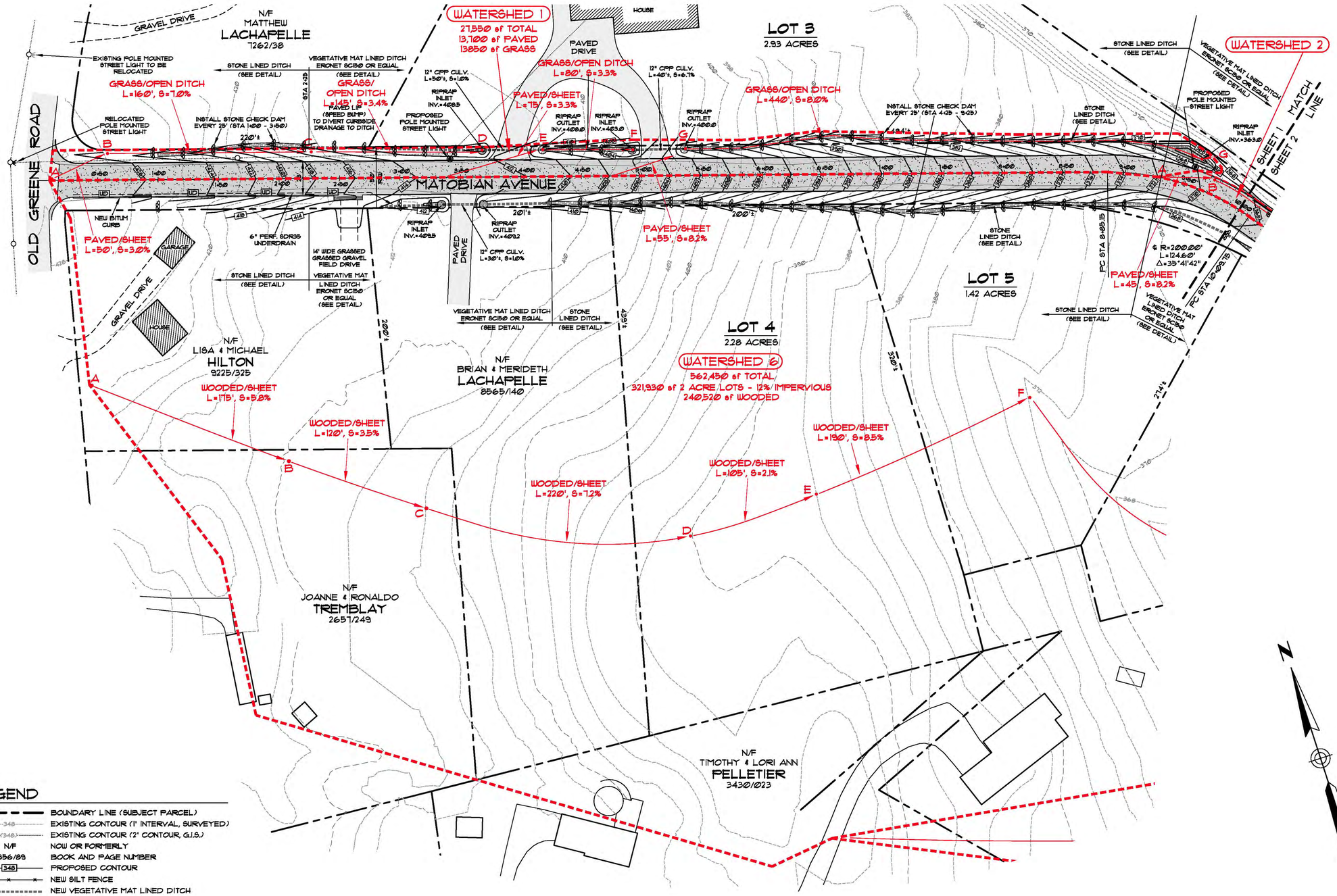
PROJECT: **L & L ESTATES - PHASE 2**
MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

Stonybrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice
(207) 514-7492 Fax

SUMMIT GEOENGINEERING SERVICES
113 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7161
415 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

JOB NO. - 15135
SHEET NUMBER
SW-1



LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- 348 EXISTING CONTOUR (1' INTERVAL, SURVEYED)
- (348) EXISTING CONTOUR (2' CONTOUR, G.I.S.)
- N/F NOW OR FORMERLY
- 2356/89 BOOK AND PAGE NUMBER
- 348 PROPOSED CONTOUR
- NEW SILT FENCE
- NEW VEGETATIVE MAT LINED DITCH
- NEW RIPRAP AREA
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- EXISTING GRAVEL DRIVE
- WETLAND AREA
- PROPOSED POLE MOUNTED STREET LIGHT (ACTUAL LOCATION TO BE DETERMINED BY CMP FINAL POLE PLACEMENT)

REVISED: JAN. 31, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 25, 2016 - CHANGES PER CITY REVIEW

SHEET TITLE: **PROPOSED CONDITIONS WATERSHED PLAN**

SCALE: 1" = 40'
DATE: NOV. 2015
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **L & L ESTATES - PHASE 2**
MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

Stoneybrook Consultants, Inc.
456 Duckfield Road - Turner, Maine 04282
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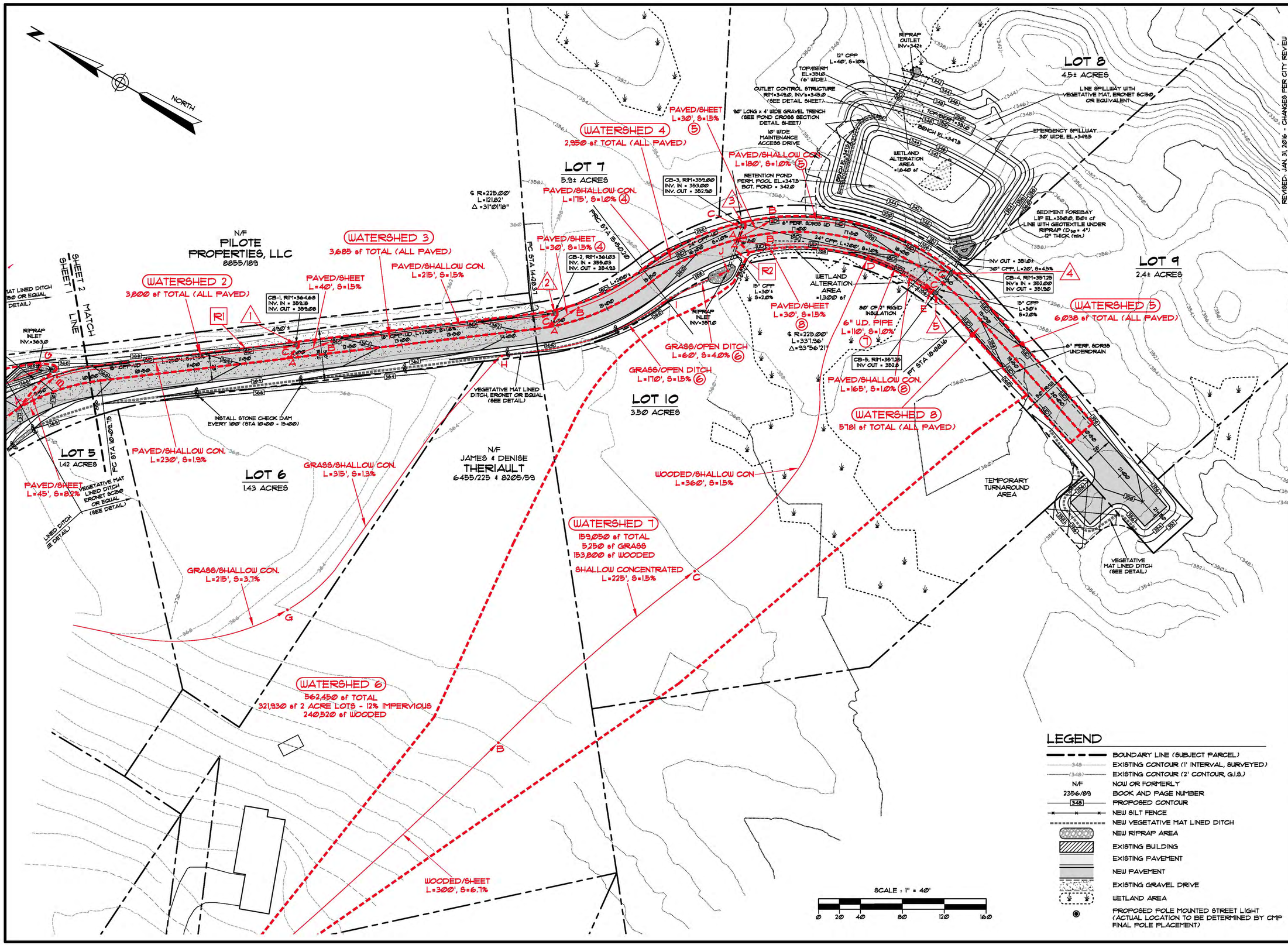
113 PLEASANT STREET ROCKLAND, ME 04841 Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel.: (207) 576-3313

JOB NO. - 15135

SHEET NUMBER
SW-2.1



LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- 348 EXISTING CONTOUR (1' INTERVAL, SURVEYED)
- (348) EXISTING CONTOUR (2' CONTOUR, G.I.S.)
- N/F NOW OR FORMERLY
- 2356/89 BOOK AND PAGE NUMBER
- 348 PROPOSED CONTOUR
- NEW SILT FENCE
- NEW VEGETATIVE MAT LINED DITCH
- NEW RIPRAP AREA
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- EXISTING GRAVEL DRIVE
- WETLAND AREA
- PROPOSED POLE MOUNTED STREET LIGHT (ACTUAL LOCATION TO BE DETERMINED BY CMP FINAL POLE PLACEMENT)

REVISED: JAN. 31, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 25, 2016 - CHANGES PER CITY REVIEW

SHEET TITLE: **PROPOSED CONDITIONS WATERSHED PLAN**

SCALE: AS NOTED
DATE: NOV. 2015
DRAWN BY: KRF
CHECKED BY: WHP

PROJECT: **L & L ESTATES - PHASE 2**
MATOBIAN AVENUE - LEWISTON, MAINE

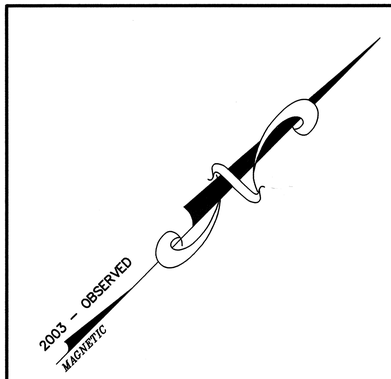
CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

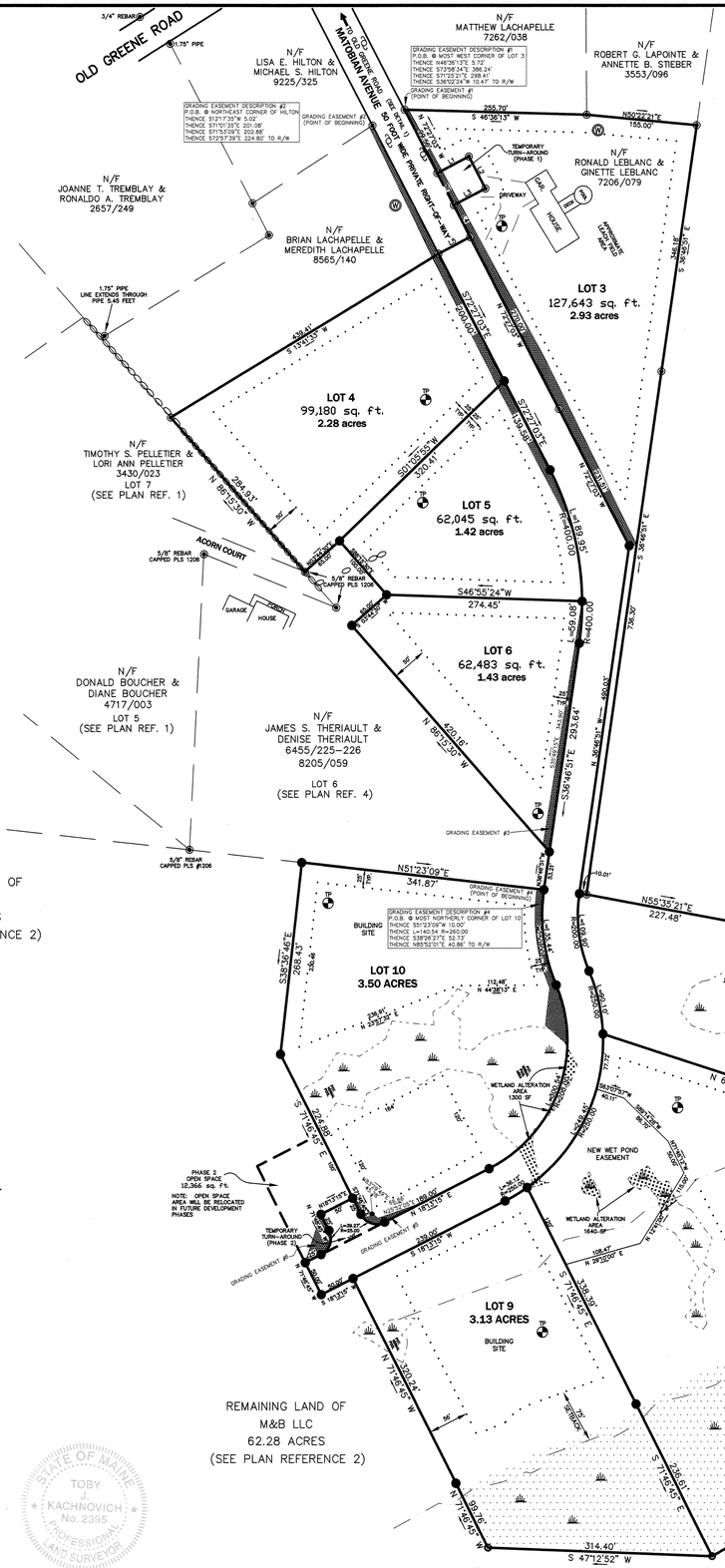
Stoneybrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice
(207) 514-7492 Fax

SUMMIT GEOENGINEERING SERVICES
173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

JOB NO. - 15135

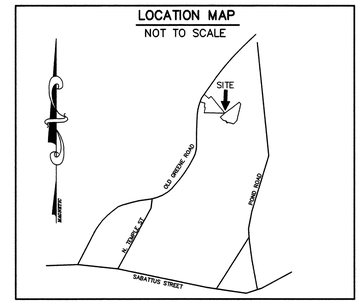
SHEET NUMBER
SW-2.2





LEGEND

◉	SET 5/8" REBAR WITH PLASTIC CAP MARKED "KACHNOVICH PLS 1134" (UNLESS NOTED OTHERWISE)
●	5/8" REBAR WITH PLASTIC CAP MARKED "KACHNOVICH PLS 2395" (TO BE SET)
———	BOUNDARY LINE
3553/096	REGISTRY BOOK AND PAGE NUMBERS
N/F	NOW OR FORMERLY
— — —	APPROXIMATE BOUNDARY LINE
	UTILITY POLE
	STONEWALL
—— x —— x	BARBED WIRE FENCE
TP	SOIL TEST SITE
W	DRILLED WELL
	SET BACK LINES
○	ANGLE POINT – NO MONUMENT SET DUE TO SUBMERGED WATER
	WETLAND
	APPROXIMATE SPECIAL FLOOD HAZARD AREA – SEE LEWISTON FIRM MAP NUMBER 23001C0332E DATED JULY 8, 2013



NOTES

1. ALL BOOK AND PAGE NUMBERS REFER TO THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS.

2. ALL BEARINGS ARE MAGNETIC 2003, SEE PLAN REFERENCE 2.

3. WETLANDS THAT ARE NOT SHOWN ON THIS PLAN AS IMPACTED ARE PROTECTED UNDER MDEP NRPA REQUIREMENTS. NO OTHER WETLANDS ON ANY LOT CAN BE FILLED, EXCAVATED OR IMPACTED WITHOUT APPROVAL FROM MDEP.

4. A PORTION OF THE PROPERTY IS LOCATED WITHIN THE 100 YEAR FLOOD HAZARD ZONE, PER ONLINE FLOOD MAP FOR THE CITY OF LEWISTON, MAINE.

5. CONSTRUCTION OF ANY ROADWAY OR STORMWATER IMPROVEMENTS WITHIN 250' OF ANY VERNAL POOL LOCATIONS SHOWN ON THIS PLAN SHALL NOT BEGIN AND NO BUILDING PERMITS SHALL BE ISSUED FOR HOME CONSTRUCTION ON LOTS 7–10 UNTIL THE POTENTIAL VERNAL POOLS SHOWN HAVE BEEN DETERMINED NOT TO BE SIGNIFICANT OR UNTIL A NRPA PERMIT-BY-RULE HAS BEEN ISSUED FOR ACTIVITIES IN, ON OR OVER SIGNIFICANT VERNAL POOL HABITAT.

6. ALL POWER AND COMMUNICATION LINES SHALL BE ABOVE GROUND TO BE LOCATED BY THAT SPECIFIC UTILITY COMPANY.

7. THE HOMEOWNERS ASSOCIATION WILL BE RESPONSIBLE FOR MAINTAINING THE REQUIRED OPEN SPACE AREA AND STORMWATER WET POND. IT WILL ALSO BE REQUIRED TO COMPLETE ANNUAL INSPECTIONS AND TO SHOW THE CITY AND THE MDEP THAT INSPECTIONS AND MAINTENANCE HAVE BEEN DONE ACCORDING TO THE REQUIREMENTS IN THE STORMWATER RULES AND TO RENEW THE LICENSE EVERY 5 YEARS WITH MDEP. THIS SUBDIVISION IS ALSO SUBJECT TO A MS4 POST CONSTRUCTION PERFORMANCE GUARANTEE WITH THE CITY OF LEWISTON, TO BE RECORDED.

8. WEEKLY THIRD PARTY OBSERVATION AND REPORTS ON CONSTRUCTION ACTIVITY ARE REQUIRED BY THE CITY OF LEWISTON TO DETERMINE IF APPROPRIATE SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED DURING CONSTRUCTION OF THE PROJECT.

9. PRIOR TO ANY CERTIFICATES OF OCCUPANCY BEING ISSUED, A PROFESSIONAL ENGINEER SHALL PROVIDE THE CITY WITH A STAMPED REPORT THAT THE STORMWATER POND HAS BEEN CONSTRUCTED PER THE APPROVED PLANS.

10. NO LOTS MAY BE SOLD AND NO PERMITS ISSUED UNTIL THE ROAD HAS BEEN ACCEPTED BY THE CITY OR A PERFORMANCE GUARANTEE IS PROVIDED TO THE CITY'S SATISFACTION FOR 125% OF THE COST OF IMPROVEMENTS.

11. NO IMPROVEMENTS SHALL BE CONSTRUCTED ON THE REMAINING LAND OF M&B, LLC AND THE REMAINING LAND SHALL NOT BE CONVEYED UNLESS APPROVALS ARE SECURED FROM THE CITY OF LEWISTON.

12. THE CITY OF LEWISTON SHALL BE GRANTED A SLOPE GRADING EASEMENT ALONG THE GRADING LINES SHOWN ON THIS PLAN TO ALLOW THEM RIGHTS TO MAINTAIN ALL DITCHING OR DRAINAGE IMPROVEMENTS CONSTRUCTED ALONG MATOBIAN AVENUE.

ZONE

ZONE RA – RURAL AGRICULTURAL DISTRICT AND SHORELAND OVERLAY DISTRICT.

PLAN REFERENCES

1. SUBDIVISION PLAN MAURICE ESTATES – PREPARED FOR LONGCHAMPS & SONS – DATED OCTOBER 1994 – COMPILED BY TECHNICAL SERVICES, INC. AND RECORDED AT THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS IN PLAN BOOK 38, PAGE 113.

2. SURVEY PLAN – LAND OF RICKY & MONIQUE LACHAPELLE (TOTAL AREA = 96.05 ACRES) – DATED MAY 2003 – COMPILED BY KACHNOVICH LAND SURVEYING, INC.

3. SUBDIVISION PLAN – L & L ESTATES – DATED MAY 2007 – COMPILED BY KACHNOVICH LAND SURVEYING, INC. – RECORDED AT THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS IN PLAN BOOK 46, PAGE 101.

4. SUBDIVISION AMENDMENT PLAN – AMENDMENT OF L & L ESTATES LOT 3 & AMENDMENT OF MAURICE ESTATES LOT 6 – DATED DECEMBER 2010 – COMPILED BY KACHNOVICH LAND SURVEYING, INC. – RECORDED AT THE ANDROSCOGGIN COUNTY REGISTRY OF DEEDS IN PLAN BOOK 48, PAGE 116.

OWNERS OF RECORD
M & B LLC
BOOK 9278, PAGES 255–257
DATED DECEMBER 16, 2015

SUBDIVISION PLAN

L & L ESTATES - PHASE 2

LOCATION: MATOBIAN AVENUE
CITY OF LEWISTON
ANDROSCOGGIN COUNTY, MAINE

MADE FOR: M & B LLC
379 LISBON STREET
LEWISTON, MAINE 04240

COMPILED BY:

KACHNOVICH LAND SURVEYING, INC.
328 MAIN STREET
JAY, MAINE 04239
TEL. & FAX (207) 897-2748
www.mainesurveying.com

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

APPROVED:

IF DEVELOPMENT HAS NOT OCCURRED, AS DEFINED WITHIN THE SCOPE OF THE CITY OF LEWISTON CODE OF ORDINANCES, WITHIN 24 MONTHS OF THE DATE OF APPROVAL, DEVELOPMENT REVIEW APPROVAL SHALL EXPIRE. THE APPLICANT MAY NOT BEGIN CONSTRUCTION OR OPERATION OF THE DEVELOPMENT UNTIL A NEW APPROVAL IS GRANTED (ARTICLE XIII, SECTION 11).

CHAIRMAN LEWISTON PLANNING BOARD _____ DATE _____

RECORDING DATA

STATE OF MAINE
ANDROSCOGGIN COUNTY REGISTRY OF DEEDS
RECEIVED _____
AT ____ h ____ m ____ M. RECORDED IN
FILE NUMBER _____
ATTEST _____
REGISTRAR

CERTIFICATION

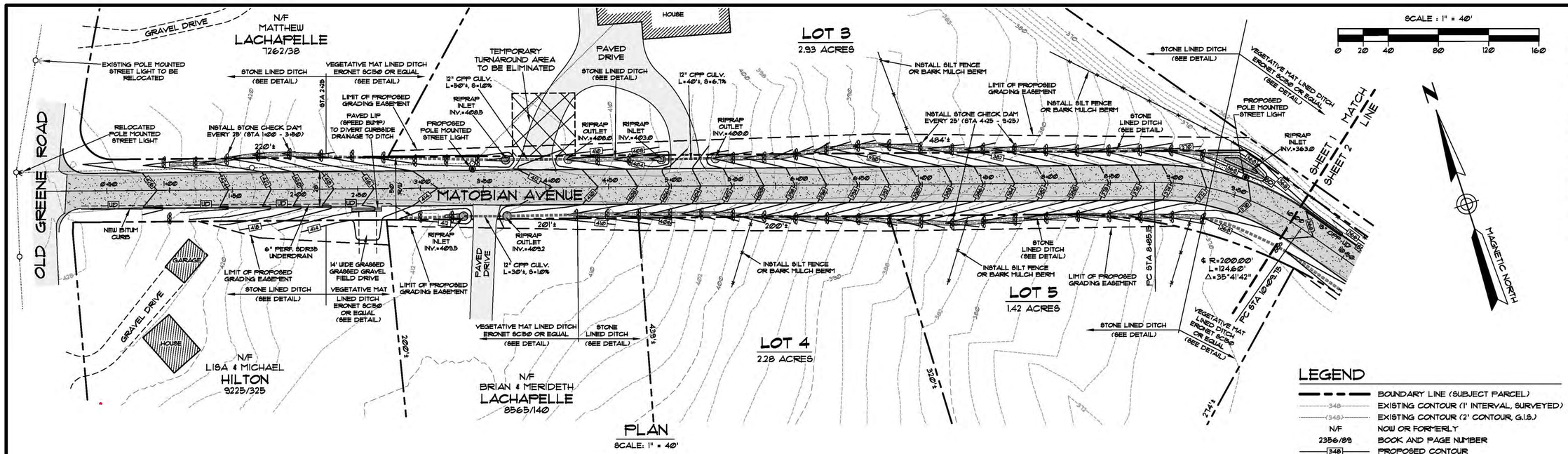
TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, ALL INFORMATION HEREON IS TRUE AND ACCURATELY SHOWN. IF NO EMBOSSING SEAL IS PRESENT, PLAN IS NOT A CERTIFIED COPY.

TOBY J. KACHNOVICH P.L.S. #2395 — DATE: 2-01-2016

STATE OF MAINE — TOBY J. KACHNOVICH — No. 2395 — PROFESSIONAL LAND SURVEYOR

PROJECT NAME	LACHAPELLE–15
DATE OF SURVEY	DECEMBER 2015
DATE OF PLAN	FEBRUARY 2016
DC	CD 2015

D1554



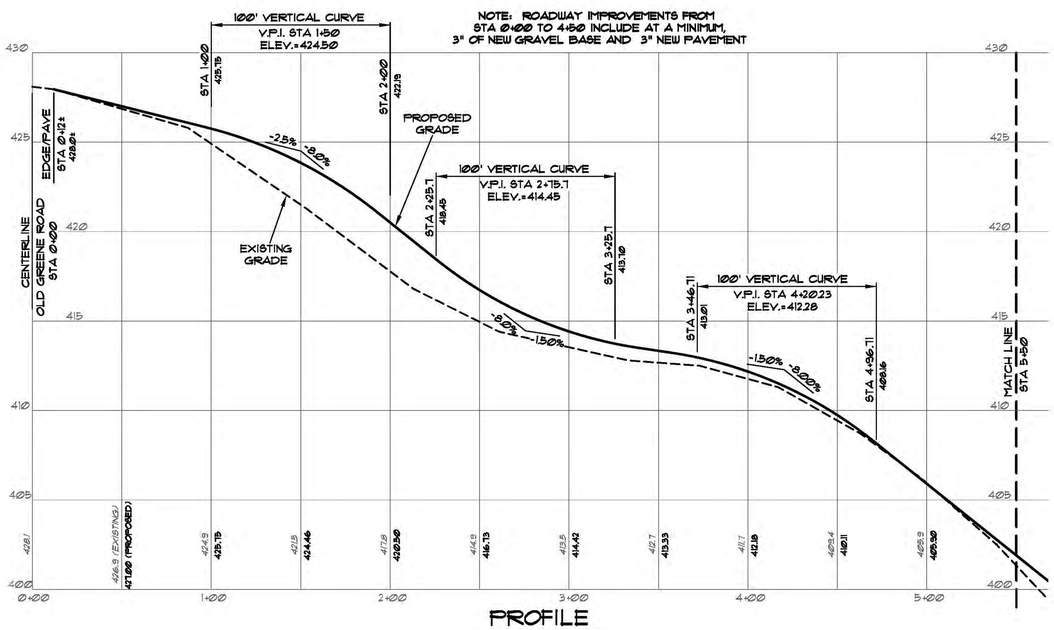
PLAN

SCALE: 1" = 40'

LEGEND

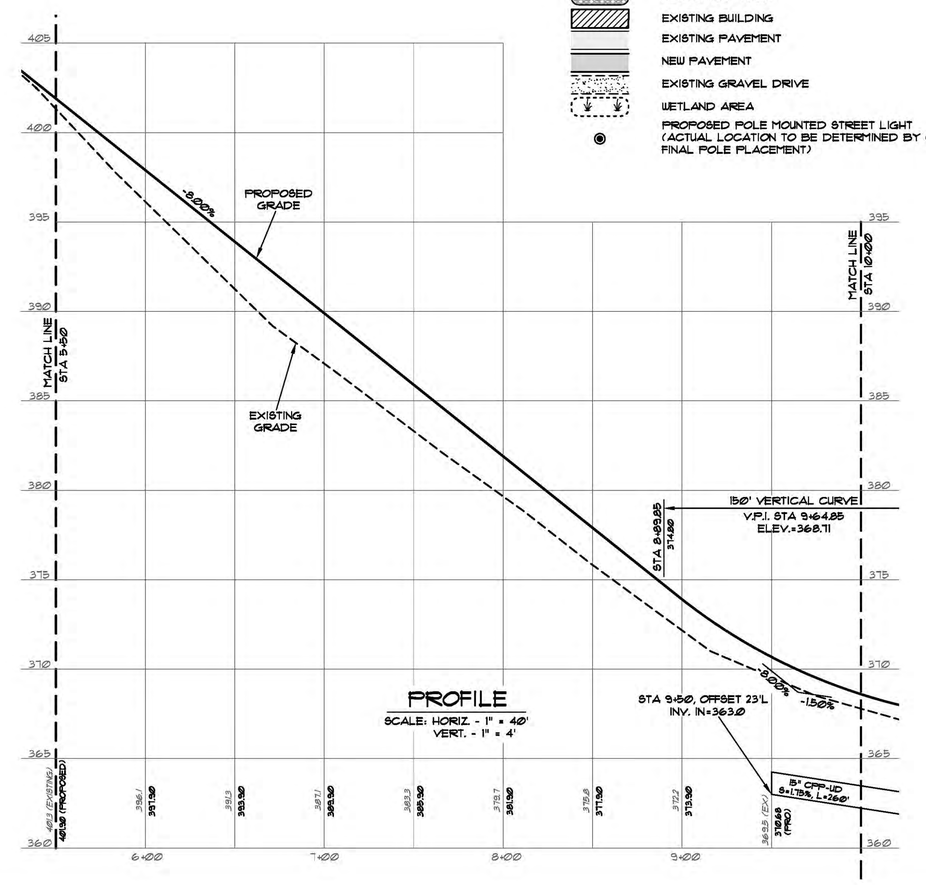
- BOUNDARY LINE (SUBJECT PARCEL)
- 348 — EXISTING CONTOUR (1' INTERVAL, SURVEYED)
- (348) — EXISTING CONTOUR (2' CONTOUR, G.I.S.)
- N/F — NOW OR FORMERLY
- 2356/89 — BOOK AND PAGE NUMBER
- 348 — PROPOSED CONTOUR
- NEW SILT FENCE
- NEW VEGETATIVE MAT LINED DITCH
- NEW RIPRAP AREA
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- EXISTING GRAVEL DRIVE
- WETLAND AREA
- PROPOSED POLE MOUNTED STREET LIGHT (ACTUAL LOCATION TO BE DETERMINED BY CMP FINAL POLE PLACEMENT)

NOTE: ROADWAY IMPROVEMENTS FROM STA 0+00 TO 4+50 INCLUDE AT A MINIMUM, 3" OF NEW GRAVEL BASE AND 3" NEW PAVEMENT



PROFILE

SCALE: HORIZ. - 1" = 40'
VERT. - 1" = 4'



PROFILE

SCALE: HORIZ. - 1" = 40'
VERT. - 1" = 4'

REVISED: JAN. 31, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 25, 2016 - CHANGES PER CITY REVIEW

SHEET TITLE: **PLAN & PROFILE MATOBIAN AVENUE STA 0+00 - 10+00**

SCALE: AS NOTED
DATE: DEC. 17, 2015
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **L & L ESTATES - PHASE 2**
MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

Stonybrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice
(207) 514-7492 Fax

SUMMIT GEOENGINEERING SERVICES
113 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 516-3313

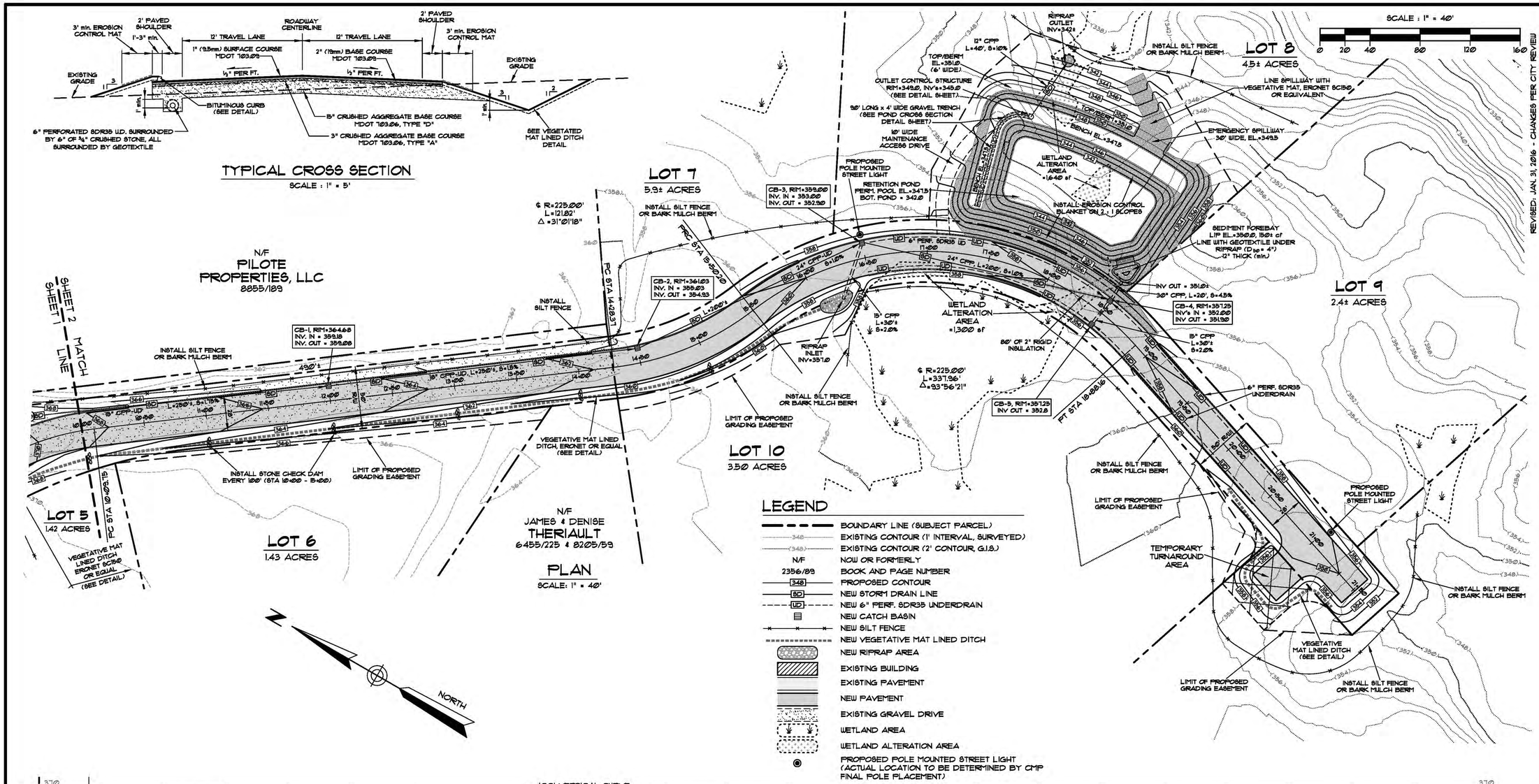
STATE OF MAINE
WILLIAM M. PETERLEIN
5787
LICENSED PROFESSIONAL ENGINEER

JOB NO. - 15135

SHEET NUMBER
—

TYPICAL CROSS SECTION

SCALE : 1" = 5'

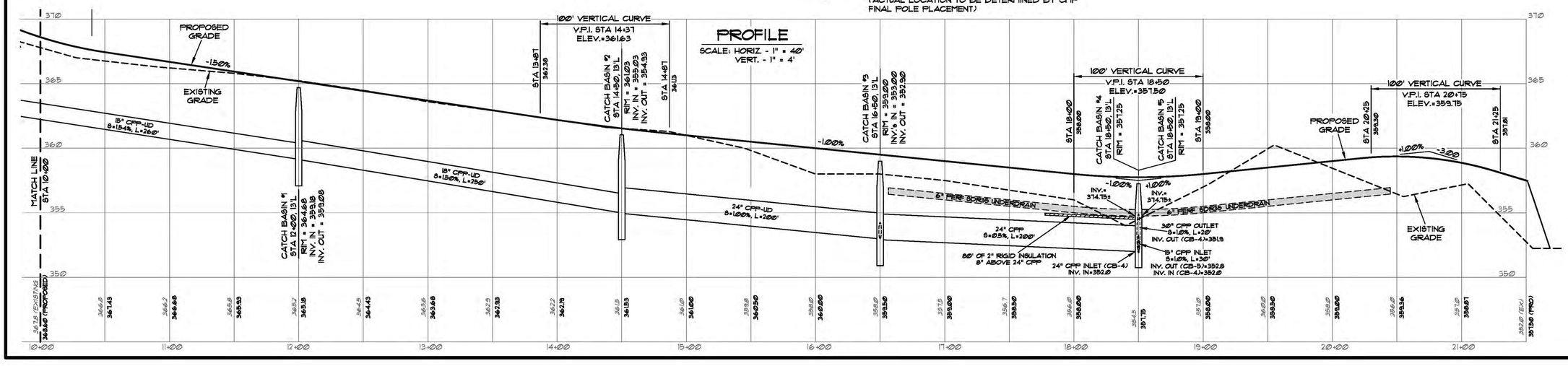


PLAN

SCALE: 1" = 40'

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- 348 EXISTING CONTOUR (1' INTERVAL, SURVEYED)
- 348 EXISTING CONTOUR (2' CONTOUR, G.I.S.)
- N/F NOW OR FORMERLY
- 2356/89 BOOK AND PAGE NUMBER
- 348 PROPOSED CONTOUR
- SD NEW STORM DRAIN LINE
- UD NEW 6" PERF. SDR35 UNDERDRAIN
- NEW CATCH BASIN
- NEW SILT FENCE
- NEW VEGETATIVE MAT LINED DITCH
- NEW RIPRAP AREA
- EXISTING BUILDING
- EXISTING PAVEMENT
- NEW PAVEMENT
- EXISTING GRAVEL DRIVE
- WETLAND AREA
- WETLAND ALTERATION AREA
- PROPOSED POLE MOUNTED STREET LIGHT (ACTUAL LOCATION TO BE DETERMINED BY CMP FINAL POLE PLACEMENT)



REVISED: JAN. 31, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 25, 2016 - CHANGES PER CITY REVIEW

SHEET TITLE: **PLAN & PROFILE MATOBIAN AVENUE STA 10+00 - END**

SCALE: AS NOTED
DATE: DEC. 17, 2015
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: **L & L ESTATES - PHASE 2**
MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

Stonebrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
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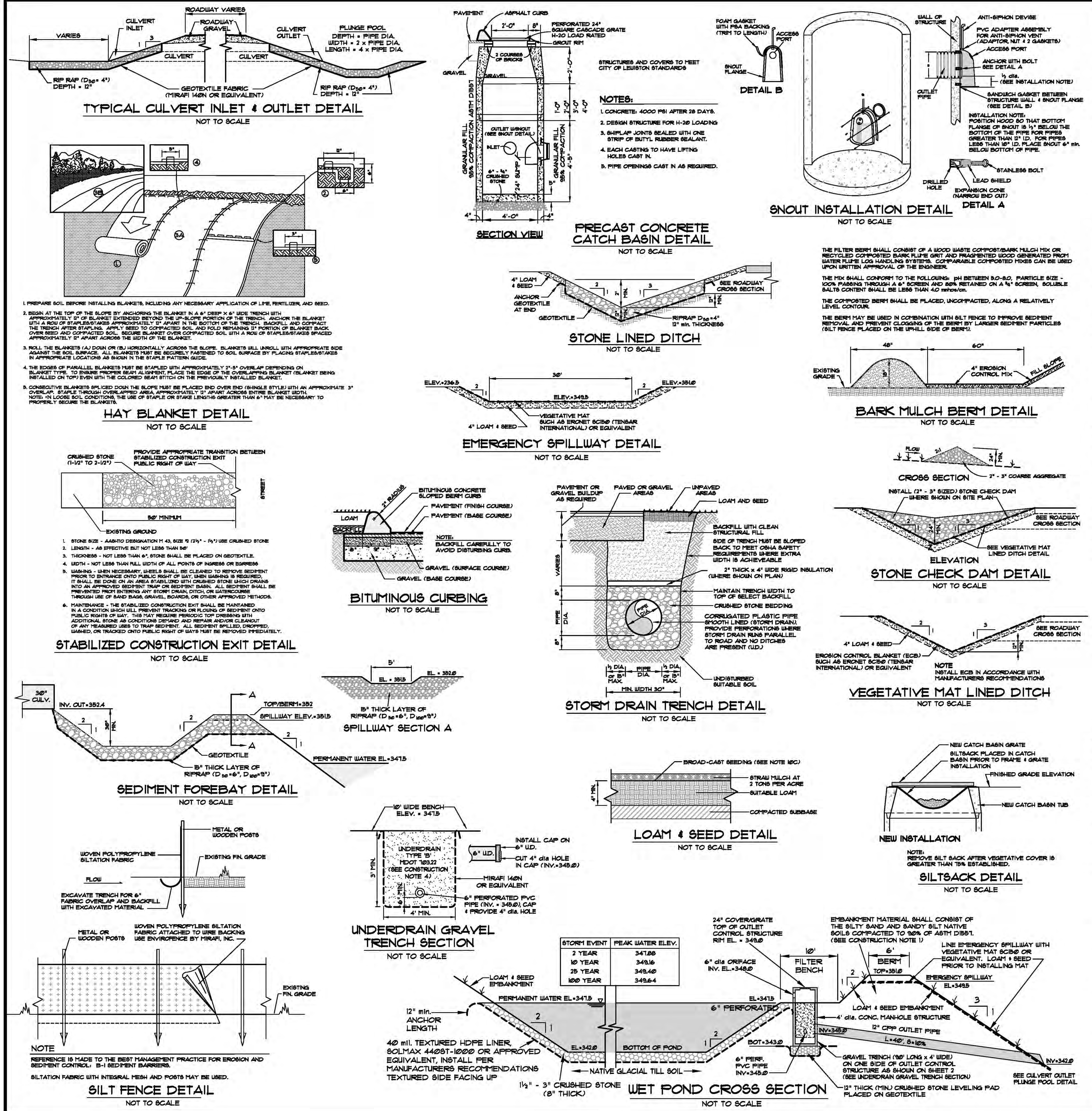
SUMMIT GEOENGINEERING SERVICES
173 PLEASANT STREET ROCKLAND, ME 04841 Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel.: (207) 516-3313

STATE OF MAINE WILLIAM M. PETERLEIN 5787 LICENSED PROFESSIONAL ENGINEER

JOB NO. - 15135

SHEET NUMBER **2**



GENERAL CONSTRUCTION NOTES

1) THE CONTRACT WORK TO BE PERFORMED ON THIS PROJECT CONSISTS OF FURNISHING ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, IMPLEMENTS, PARTS AND SUPPLIES NECESSARY FOR OR APPURTENANT TO, THE INSTALLATION OF CONSTRUCTION IMPROVEMENTS IN ACCORDANCE WITH THESE DRAWINGS AND AS FURTHER ELABORATED IN ANY ACCOMPANYING SPECS.

2) THE WORK SHALL BE PERFORMED IN A THOROUGH WORKMANLIKE MANNER. ALL CONTRACTORS TO CONFORM TO ALL APPLICABLE OSHA STANDARDS. ANY REFERENCE TO A SPECIFICATION OR DESIGNATION OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, FEDERAL SPECIFICATIONS, OR OTHER STANDARDS, CODES OR ORDERS, REFERS TO THE MOST RECENT OR LATEST SPECIFICATION OR DESIGNATION.

3) ALL CONSTRUCTION WITHIN THE CITY OF LEWISTON AND/OR STATE OF MAINE RIGHT OF WAY SHALL COMPLY WITH CITY PUBLIC WORKS AND/OR MDOT STANDARDS.

4) THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY THE CITY OF LEWISTON PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE CITY OF LEWISTON REQUIRED TO PERFORM ALL THE WORK (STREET OPENINGS, BUILDING PERMIT, ETC.). THE CONTRACTOR SHALL POST ALL BONDS AS REQUIRED, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.

5) PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR IS TO INFORM ALL AREA UTILITY COMPANIES AND GOVERNMENTAL AGENCIES OF PLANNED CONSTRUCTION. THE SITE CONTRACTOR IS REQUIRED TO CONTACT DIG-SAFE (1-800-225-4977) AT LEAST 3 BUSINESS DAYS PRIOR TO ANY EXCAVATION TO VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY LOCATIONS.

6) THE PROJECT DRAWINGS ARE GENERALLY SCHEMATIC AND INDICATE THE POSSIBLE LOCATION OF EXISTING UNDERGROUND UTILITIES. INFORMATION ON EXISTING UTILITIES HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING MUNICIPAL RECORD MAPS, AND FIELD SURVEY. IT IS NOT GUARANTEED TO BE CORRECT OR COMPLETE. UTILITIES ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF THE EXISTING UTILITIES AS APPROPRIATE. THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THE EXCAVATING AND BACKFILLING OPERATIONS. SHOULD ANY UNCHARTED OR INCORRECTLY CHARTED UTILITIES BE FOUND, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH THE WORK IN THIS AREA.

7) OSHA REGULATIONS MAKE IT UNLAWFUL TO OPERATE CRANES, BOOMS, HOISTS, ETC. WITHIN TEN FEET (10') OF ANY ELECTRIC LINE . IF THE CONTRACTOR MUST OPERATE CLOSER THAN 10', THE CONTRACTOR MUST CONTACT THE POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS BEFORE ENCROACHING ON THIS REQUIREMENT.

8) IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLANS, APPROVALS, AND DETAILS FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE SITE CONDITIONS IN THE FIELD AND CONTACT THE DESIGN ENGINEER IF THERE ARE ANY DISCREPANCIES REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT AN APPROPRIATE REVISION CAN BE MADE PRIOR TO BIDDING.

9) ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED IN WRITING BY THE OWNER, DESIGN ENGINEER, AND APPROPRIATE GOVERNMENTAL AGENCY PRIOR TO INSTALLATION.

10) ALL EXCAVATION SHALL BE BACKFILLED TO EXISTING GRADE BEFORE THE END OF THE DAY OR ADEQUATELY PROTECTED FROM DANGER TO HUMANS AND ANIMALS.

11) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE OWNER WILL PROVIDE A BENCH MARK AT THE CONSTRUCTION SITE FROM WHICH TO BEGIN LAYOUT.

12) THE CONTRACTOR SHALL FURNISH ELECTRICAL POWER, WATER, AND SANITARY FACILITIES FOR HIS EXCLUSIVE USE AT THE CONSTRUCTION SITE SHOULD THE CONTRACTOR DEEM THIS ESSENTIAL FOR THE PROPER PERFORMANCE OF THE CONTRACT.

13) WORK MAY PROGRESS MONDAY THROUGH FRIDAY 7:00 AM TO 7:00 PM. WORK AT OTHER TIMES MAY PROCEED UPON WRITTEN APPROVAL BY THE OWNER AND THE CITY OF LEWISTON.

14) THE CONTRACTOR SHALL GUARANTEE THE FAITHFUL REMEDY OF ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKMANSHIP AND GUARANTEES PAYMENT FOR ANY RESULTING DAMAGE WHICH SHALL APPEAR WITHIN A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.

15) THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.

16) PROPER IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE OF PARAMOUNT IMPORTANCE FOR THE PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR STATE/LOCAL/ FEDERAL OFFICIALS AT NO ADDITIONAL COST TO THE OWNER.

EROSION & SEDIMENTATION CONTROL NOTES

1) THE CONTRACTOR SHALL INSPECT EROSION & SEDIMENT CONTROL MEASURES WEEKLY AND AFTER HEAVY RAINFALLS THROUGHOUT THE DURATION OF THE PROJECT INCLUDING WEEKENDS AND HOLIDAYS. ALL EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED AS STIPULATED IN THE BASIC AND GENERAL STANDARDS SUBMISSION IN THE STORMWATER PERMIT.

2) THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING THE EROSION AND SEDIMENT CONTROL MEASURES IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES", DEPARTMENT OF EVIRONMENTAL PROTECTION, DATED MARCH 2003 (DEPLW 588) AND IN ACCORDANCE WITH THE STORMWATER REPORT INCLUDED WITH THE PERMIT APPLICATION APPROVED BY THE CITY OF LEWISTON. ADDITIONAL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY DURING ON-SITE INSPECTIONS BY THE OWNER, THEIR REPRESENTATIVES OR STATE/LOCAL/FEDERAL INSPECTORS AT NO ADDITIONAL COST TO THE OWNER.

3) PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWN GRADIENT EDGE OF THE DISTURBED AREA AND ADJACENT TO DRAINAGE CHANNELS WITHIN THIS AREA.

4) SILT FENCE AND/OR BARK MULCH BERM LOCATIONS SHOWN ARE APPROXIMATE. INSTALL WHERE APPROPRIATE TO CONTROL ALL SEDIMENTATION. SILT FENCE WILL BE REMOVED AFTER THE SITE IS STABILIZED WITH AT LEAST 90% VEGETATED GROWTH.

5) NO SLOPES, EITHER PERMANENT OR TEMPORARY, SHALL BE STEEPER THAN TWO TO ONE (2 TO 1).

6) ALL GEOTEXTILE TO BE MIRAFI 180N OR EQUIVALENT, UNLESS OTHERWISE NOTED.

7) AREAS DISTURBED DURING CONSTRUCTION SHALL BE MINIMIZED. AREAS SHALL BE TEMPORARILY STABILIZED WITH MULCH OR NON-ERODABLE COVER IF EXPOSED SOILS WILL NOT BE WORKED FOR MORE THAN 7 DAYS. STABILIZE AREAS WITHIN 75' OF THE WETLAND AREA WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OR PRIOR TO ANY STORM EVENT. PERMANENT SEEDING SHALL TAKE PLACE WITHIN 7 DAYS OF FINAL GRADING. REFER TO THE STORMWATER REPORT INCLUDED IN THE APPLICATION APPROVED BY THE CITY OF LEWISTON FOR TEMPORARY E & S CONTROL MEASURES.

8) IF FINAL SEEDING OF THE DISTURBED AREAS IS NOT COMPLETED 45 DAYS PRIOR TO THE FIRST KILLING FROST, USE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD. RECOMMENDATIONS FOR DORMANT SEEDING ARE INCLUDED IN THE STORMWATER REPORT REFERENCED ABOVE.

9) TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINAL GRADED SHALL BE COMPLETED BY AUGUST 15th OR 45 DAYS PRIOR TO THE FIRST KILLING FROST (OCT. 1) TO PROTECT FROM SPRING RUNOFF PROBLEMS.

10) REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED ABOVE. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED WILL BE GRADED, SMOOTHED AND PREPARED FOR FINAL SEEDING AS FOLLOWS

A) 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE.

B) APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL, FERTILIZER MAY BE APPLIED AT THE RATE OF 200 POUNDS PER ACRE OR 15 POUNDS PER SQUARE FOOT USING 10-20-20 (N-P205-K20) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3.3 TONS PER ACRE (150 lbs. PER 1000 s.f.)

C) FOLLOWING SEED BED PREPARATION, DITCHES AND BARK SLOPES WILL BE SEEDED TO A MIXTURE OF 47% CREEPING RED FESCUE, 5% REDTOP AND 48% TALL FESCUE. THE LAWN AREAS WILL BE SEEDED TO A PREMIUM TURF MIXTURE OF 44% KENTUCKY BLUEGRASS, 44% CREEPING RED FESCUE AND 12% PERENNIAL RYEGRASS: SEEDING RATE IS ONE POUND PER 1000 s.f. LAWN QUALITY SOD MAY BE SUBSTITUTED FOR SEED. SEED MIX SHALL CONTAIN 10% ANNUAL RYEGRASS.

D) HAY MULCH AT THE RATE OF 70-90 lbs PER 1000 s.f. OR A HYDRO-APPLICATION OF ASPHALT, WOOD OR PAPER FIBER SHALL BE APPLIED FOLLOWING SEEDING. A SUITABLE BINDER SUCH AS CURASOL OR RMB PLUS WILL BE USED ON HAY MULCH FOR WIND CONTROL.

CONSTRUCTION NOTES

1) IMPROVEMENTS FROM STA 0+00 TO 4+50 REQUIRE A MINIMUM OF 3" OF BASE GRAVEL AND 3" OF PAVEMENT. THE THICKNESS OF THE EXISTING GRAVEL SHALL BE DETERMINED AT SELECTED INTERVALS OF THE ROADWAY DURING CONSTRUCTION OF THE IMPROVEMENTS.

2) ALL LOAMY MATERIAL, CLAY, STUMPS, ROOTS, BRUSH AND PERISHABLE MATERIALS SHALL BE REMOVED FROM BENEATH THE NEW ROAD PRIOR TO PLACING FILL. SOIL AND WET AREAS SHALL BE OVER EXCAVATED AND REPLACED WITH GEOTEXTILE AND CRUSHED STONE OR SUBBASE GRAVEL, AS DIRECTED BY THE QUALIFIED THIRD PARTY INSPECTOR.

3) LIGHT POLES SHALL CONSIST OF AMERICAN ELECTRIC ATBS E MVOLT R2 NL PT AO PCLI STREET LIGHT MOUNTED ON A 35' POLE WITH A 6' x 1.25" UPSWEEP BRACKET.

4) THE WINTER CONSTRUCTION METHODS NOTED BELOW SHALL BE TAKEN IF THE POND IS CONSTRUCTED BETWEEN SEPTEMBER 1 AND JUNE 1. IN ADDITION, THE QUALIFIED THIRD PARTY INSPECTOR SHALL BE PRESENT TO OBSERVE THE EXCAVATION AND CONSTRUCTION OF THE POND. SITE VISITS SHALL BE MADE ON EACH DAY THAT POND CONSTRUCTION IS BEING PERFORMED. REPORTS OF FIELD INSPECTIONS WHICH INCLUDE A SUMMARY OF THE WORK COMPLETED AND ANY DIRECTIONS GIVEN OR TAKEN.

5) POND EMBANKMENT SOIL SHALL CONSIST OF THE NATIVE SILTY SAND AND SANDY SILT SOIL. THE MAXIMUM PARTICLE SIZE SHALL BE LIMITED TO 8". POND EMBANKMENT SOIL SHALL BE PLACED IN 12" LIFTS. EACH LIFT SHALL BE SCARIFIED PRIOR TO PLACING THE NEXT LIFT.

6) EXCAVATED SLOPE FOR THE POND SHALL BE STABILIZED TO CONTROL THE POTENTIAL FOR GROUNDWATER SEEPAGE. THE STABILIZATION LOCATIONS AND MEASURES SHALL BE DETERMINED BY THE QUALIFIED THIRD PARTY DURING THE EXCAVATION.

7)

THE APPLICANT WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES TO BE BUILT AS PART OF THE PROJECT. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE CONSTRUCTION PLANS FOR THE CONTRACTOR.

8) TESTING AND SUBMITTALS: ALL SOIL AND AGGREGATE USED FOR THE CONSTRUCTION OF THE WET POND'S IMPOUNDMENT EMBANKMENT AND THE UNDERDRAINED GRAVEL TRENCH OUTLET MUST BE CONFIRMED AS SUITABLE BY TESTING. THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH FILL OR AGGREGATE AND OBTAIN SAMPLES FOR TESTING. ALL TESTING MUST BE DONE BY A CERTIFIED LABORATORY. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE COMPLETION OF THE FOLLOWING SAMPLING AND TESTING BEFORE THE FILL OR AGGREGATE IS PLACED AS PART OF THE WET POND'S CONSTRUCTION. OBTAIN A SAMPLE OF THE GRAVEL FILL TO BE USED FOR THE UNDERDRAINED GRAVEL FILTER. THE SAMPLE MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. THE SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY. PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TESTING METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) OF THE FILL FOR THE UNDERDRAINED GRAVEL TRENCH OUTLET. THE FILL MUST CONFORM TO MEDOT 703.22 TYPE B BUT WITH 10% TO 15% BY WEIGHT PASSING THROUGH THE #50 SIEVE.

WINTER CONSTRUCTION

1) WINTER CONSTRUCTION IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 - APRIL 15. IF DISTURBED AREAS ARE NOT STABILIZED WITH PERMANENT MEASURES BY NOVEMBER 1 OR NEW SOIL DISTURBANCE OCCURS AFTER NOVEMBER 1, BUT BEFORE APRIL 15, THEN THESE AREAS MUST BE PROTECTED AND RUNOFF FROM THEM MUST BE CONTROLLED BY ADDITIONAL MEASURES AND RESTRICTIONS.

2) SITE STABILIZATION - FOR WINTER STABILIZATION, HAY MULCH IS APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.

3) SEDIMENT BARRIERS - ALL AREAS WITHIN 75 OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.

4) DITCH - ALL VEGETATIVE DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.

5) SLOPES - MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

REVISED: JAN. 31, 2016 - CHANGES PER CITY REVIEW
REVISED: JAN. 25, 2016 - CHANGES PER CITY REVIEW

SHEET TITLE: CONSTRUCTION NOTES & DETAILS

SCALE: AS NOTED
DATE: DEC. 17, 2015
DRAWN BY: KRF
CHECKED BY: WMP

PROJECT: L & L ESTATES - PHASE 2
MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: M & B, LLC
379 LISBON STREET - LEWISTON, ME 04240

Stoneybrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice
(207) 514-7492 Fax

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 376-3313
173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7716
SUMMIT GEOENGINEERING SERVICES

STATE OF MAINE
WILLIAM M. PETERLEIN
5787
LICENSED PROFESSIONAL ENGINEER

JOB NO. - 15135
SHEET NUMBER
3

Declaration of Covenants, Conditions, Restrictions and Easements
L&L Estates Subdivision
Lewiston, Androscoggin County, Maine

This DECLARATION is dated this _____ day of _____, 2016, by M&B, LLC, a Maine limited liability company with a principal place of business in Lewiston, Androscoggin County, State of Maine (hereinafter referred to as the "Declarant").

WITNESSETH:

WHEREAS, the Declarant has established a certain subdivision known as L&L Estates Subdivision, approved by the Lewiston Planning Board as depicted on a certain plan entitled "Subdivision Plan: L&L Estates – Phase 2", prepared by Kachnovich Land Surveying, Inc., dated February 2016, and recorded in the Androscoggin County Registry of Deeds in Plan Book _____, Page _____ (the "Plan"), and has subjected all of said lots to this Declaration of Covenants, Conditions, Restrictions and Easements, to be recorded in the Androscoggin County Registry of Deeds (Note: Lots 1, 2, and 3 were previously approved by the City of Lewiston Planning Board and are shown on two previously recorded plans. Lot 1 and Lot 2 have never been changed. Lot 3 was changed on the amended plan and on the Phase 2 plan currently under review. Please see Subdivision Plan: L&L Estates, dated May, 2007 and Subdivision Amendment Plan: Amendment of L&L Estates Lot 3 and Amendment of Maurice Estates Lot 6, dated December, 2010.);

WHEREAS, the Declarant, being about to sell and convey lots in said subdivision, desires to assure to said purchasers and their heirs, successors, and assigns owning such lots, the use, benefit and enjoyment of said lots in accordance with a harmonious plan, and to this end desires that said lots in said subdivision shall be subjected to certain restrictions, reservations, servitudes, covenants, agreements and easements as hereinafter set forth;

WHEREAS, it is the intent of the Declarant that the subdivision be an environmentally sound development, that residences be built and constructed in accordance with sound energy conservation principles, and that the development be in ecological and aesthetic harmony with the environment and the neighborhood.

NOW THEREFORE, in consideration of these promises, the Declarant hereby declares that the property described on said Plan is and shall be held and shall be conveyed subject to the restrictions, reservations, servitudes, covenants, agreements and easements as set forth in the various clauses of this Declaration, to apply to such lots, which Declaration is hereby covenanted and agreed shall inure to the benefit of and be binding upon the Declarant, its successors and

assigns, and the purchasers of said lots, their heirs, successors and assigns, and being binding upon all the land described on said Plan, to wit:

ARTICLE A.
GENERAL RESTRICTIONS

Each of the lots 1 through 10 in the L&L Estates Subdivision – Phase 2 shall be subject to and shall benefit from the following covenants and restrictions, which shall run with the land:

1. **Mobile Homes Prohibited:** There shall be no mobile homes or house trailers.
2. **Foundations:** All homes shall be constructed on a full foundation or a crawl-space foundation with frostwalls. No floating slabs are allowed.
3. **Unregistered Vehicles Prohibited:** No unregistered or unstickered (Maine State Inspection Sticker) vehicles may remain on the premises for more than 30 (thirty) days, unless such vehicle is always kept in a garage or other building and is kept out of sight of other users of the road and of land abutters.
4. **Recreational Vehicles:** Campers, boats, and all other recreational vehicles, visible from any street or other lot in this subdivision, shall be placed in a neat and orderly manner on the premises and shall be maintained in good and operational condition.
5. **Animals:** No poultry, swine, livestock, or other animals shall be kept on any lot of 3.5 (three and one half) acres or less except for household pets of the kind and number that are normally and customarily housed in a residence. All animals shall be restrained to the extent necessary so as not to become a nuisance or be offensive to neighbors. No animals of any kind shall be kept for commercial purposes.
6. **Business:** No retail business shall be conducted on the premises, except for the occasional or sporadic garage/yard/tag sales of personal family property, which may occur up to 4 (four) times per year at each lot.
7. **Nuisance:** No noxious or offensive activity which constitutes a nuisance may be conducted on the premises.
8. **Building Sites:** All structures must be constructed within the building sites shown on the Subdivision Plan: L&L Estates – Phase 2, and approved by owners, M&B, LLC.
9. **Approval of Plans:** No buildings shall be erected except in accordance with elevation, floor, and location plans approved by owners of the subdivision, as to general appearance and compatibility with other homes allowed in the subdivision. Single-level homes must be at least 1,500 square feet and two-story homes must be at least 2,500 square feet in above-ground living space. The authority to approve of such plans shall be given to the successors and assigns of the owners and the obligation to obtain such approval shall be

binding upon the heirs, personal representatives, successors, and assigns of the Grantee(s).

10. **Paved Driveways:** Paved driveways shall be constructed for all homes within 2 years of purchasing the relevant lot.

ARTICLE B.
OPEN SPACE & EROSION CONTROL AND STORMWATER MANAGEMENT MAINTENANCE PLAN

1. Open Space. An area of 12,366 square feet (approximately 0.28 acre) has been designated as Open Space on the Subdivision Plan for L&L Estates Phase 2. The developer retains the right to relocate the Open Space shown on said Phase 2 Plan to any location he desires, with City of Lewiston approval, in future phases of this project. Except as otherwise specifically permitted herein, the only activities to be conducted within areas designated on the Plan as "Open Space" shall be passive recreation. The Association shall have the specific powers to regulate the use, maintenance, repair, replacement and modification of the property under common use and/or control.

2. Erosion Control and Stormwater Management Maintenance Plan. The Association shall be responsible for the maintenance requirements (and all costs and expenses associated therewith) of the Stormwater Management System in accordance with the Erosion Control and Stormwater Management Maintenance Plan approved by the City of Lewiston and attached hereto as **Exhibit A.** The City of Lewiston shall not be responsible for the maintenance obligations detailed in Exhibit A. In the event that the Association fails to maintain the Stormwater Management System in accordance with the requirements set forth in Exhibit A, and such failure continues after thirty (30) days' written notice thereof to the Association, the City of Lewiston may, in its sole discretion, provide the necessary maintenance for the Stormwater Management System, and the Association shall reimburse the City of Lewiston for any reasonable costs and expenses incurred by the City as a result of such necessary maintenance.

ARTICLE C.
HOMEOWNERS' ASSOCIATION

1. Association. Every owner of a Lot within the Property shall be a member of the "L&L Estates Homeowners' Association" (herein referred to as the "Association"), which has or shall be created as a nonprofit and nonstick corporation, duly organized under the laws of the State of Maine. Membership shall be appurtenant to and may not be separated from Lot ownership. The

Lot owners shall be entitled to one vote for each Lot owned. The Association shall be the governing body for all of the above-mentioned Lot owners with respect to:

(a) Administering, managing, monitoring, enforcing and maintaining the covenants, restrictions and easements set forth in this Declaration;
(b) The administration, management, maintenance, repair, snowplowing, salting and sanding of the "Road", during such time as the Association remains liable for such work;
(c) The administration, management, maintenance and repair of all exterior lighting located on or adjacent to the "Road", during such time as the Association remains liable for such work;
(d) The administration, management, and maintenance of the Stormwater Management System as further described herein and as indicated on the Erosion and Sediment Control and Stormwater Management Maintenance Plan attached hereto as Exhibit A.

2. Bylaws. Where not inconsistent with the provisions of this Declaration, the Bylaws of the Association shall govern issues such as meetings, election and authority of officers, authority and power of the Association and its members, and annual and special assessments.

3. Assessments. The Declarant, for each applicable Lot owned within the Property, hereby covenants, and each owner of such Lots, by acceptance of a deed therefore, whether or not it shall be so expressed in such deed, is deemed to covenant and agree to pay to the Association: (1) all regular assessments or charges, and (2) all special assessments for capital improvements, such assessments to be established and collected as hereinafter provided.

Owners of Developed ("home present") Lots within the Property shall pay $100.00 annually to the Association, or its authorized representative, in addition to his or her proportionate share of all costs and expenses incurred (or projected to be incurred) by the Association, including without limitation all costs and expenses associated with the activities set forth above in Article E (1)(a-d) of this Declaration. The Association and its representatives retain the right to increase the annual fee amount, as needed, in order to cover costs and expenses incurred by the Association. Such proportionate share of expenses shall be evenly prorated for each Lot upon transfer of title. For any Lots not yet sold, M&B, LLC shall pay the assessment and proportionate share of costs and expenses for said unsold Lots.

An annual budget shall be prepared by the Board of Directors and ratified by the Lot owners in accordance with the Bylaws of the Association.

The annual assessments provided for herein shall commence to all applicable Lots once Declarant has conveyed a minimum of 60% of the total lots. The Board of Directors shall fix the amount of the annual assessment against each applicable lot at least thirty (30) days in advance

of each annual assessment period. Written notice shall be sent to each owner of Lots 1-10 subject hereto.

4. Assessment Lien. Assessments, both annual and special, and other proper charges authorized and billed by the Association shall be a charge on the Lot and shall be a continuing lien upon the Lot on which such assessment is made. If the assessment to the Lot owner is not paid within thirty (30) days after the due date, then said assessment shall become delinquent and shall, together with interest as the rate of one and one-half percent (1 ½ %) per month, or any portion thereof, costs of collection and reasonable attorneys' fees, become a continuing lien on the Lot owned by the delinquent Lot owner, which lien shall bind the Lot, with the buildings and improvements thereon, as well as the delinquent Lot owner, heirs, devisees, successors, personal representatives and assigns. Said lien may be enforced in the same manner as a lien for assessments against condominium units provided in the Maine statutes, as the same may be amended. Said lien for unpaid assessments shall be prior to all of the liens and encumbrances on the Lot other than mortgages recorded before the date on which the assessment which is sought to be enforced becomes delinquent and liens for real estate taxes and other governmental/municipal assessments or similar charges against the Lot. All such charges in addition to being a lien shall also constitute the personal liability of the owner of the Lot so assessed at the time of the assessment.

ARTICLE D.
GENERAL PROVISIONS

1. Binding Effect: Each of the provisions set forth in Article A of this Declaration shall continue and be binding in perpetuity, subject to change from time to time, as provided below. Until such time as Declarant no longer owns any of the lots in L&L Estates – Phase 2, Declarant retains the right to amend the provisions set forth in Article A, subject to Lewiston Planning Board approval, if required. Thereafter, any said changes shall require the consent of sixty-six percent (66%) of the lot owners, subject to Lewiston Planning Board approval, if required.

   Each Lot shall have one vote regardless of the numbers of owners of a Lot. The majority opinion of owners of a Lot shall control for that Lot.

2. Right of Declarant: The Declarant shall be M&B, LLC, or its assigns, so long as it owns one or more Lots. Until such time as Declarant no longer owns any of the Lots in L&L Estates – Phase 2, the Declarant reserves the right to:

a. Waive, change or cancel all or any of the size, number and location of lots, restrictions, covenants, easements, drainage easements, road rights-of-way, layout and location of any lot, subject to Lewiston Planning Board approval; thereafter, any said changes shall require the consent of sixty-six percent (66%) of the lot owners in addition to Lewiston Planning Board approval, if required. The same voting rule applies as under 1. Binding Effect, above. The change or changes shall be effective upon the recording of any amendment to this Declaration and/or the filing of a modified subdivision plan indicating the changes made.
b. Locate on the premises, even though not depicted on the Plan, and grant and reserve easements and rights-of-way for the installation, maintenance, repair, replacement and inspection of utility lines, wires, pipes, conduits and facilities.
c. Connect with and make use of utility lines, wires, pipes and conduits, located on any lot, for construction and sale purposes, provided that the Declarant shall be responsible for the cost of the service so used.
d. Place "For Sale" signs or other signs to aid in the marketing of any unsold lots and dwellings thereon.
e. The Declarant shall deposit $100 Capital assessment into the Homeowners Association account for each home sold by the Declarant.

3. Enforcement: These covenants, easements and restrictions are imposed as part of a general scheme for the protection and benefit of the Declarant and each subsequent owner of a lot in the Subdivision.

The provisions herein set forth shall run with the land and bind Declarant, its successors, grantees and assigns, and all parties claiming by, through, or under them. Declarant, or its successors or assigns, the City of Lewiston, the Association and each owner of any of the lots from time to time shall have the right, not the obligation, jointly and separately to sue for and obtain a prohibitive or mandatory injunction to prevent the breach of, or to enforce the observance of, the provisions above set forth, in addition to the right to bring an ordinary legal action for damages and the right to collect reasonable attorney's fees associated with the need to bring said suit. In no event shall the failure of Declarant, or its successors or assigns, and such owners to enforce any of the provisions herein set forth as to a particular violation be deemed to be a waiver of the right to do so as to any continuing or subsequent violation.

4. Evidence of Compliance: Any changes by consent as permitted above shall be effective only if expressed in a written instrument or instruments executed and acknowledged by each of the consenting owners and recorded in the Androscoggin County Registry of Deeds. Upon and after the effective date of any such change or changes, it or they shall be binding upon the lots subject to this Declaration and all persons then owning said lots

in L&L Estates – Phase 2 and shall run with the land and bind all persons claiming, by, through, or under any one or more of them.

5. Separate Provision: If any part of provision of this Declaration shall be held invalid or unenforceable by a Court of Law, such holding shall not impair, invalidate or otherwise affect the remainder of the Declaration, which shall remain in full force and effect.

6. Recording of Declaration: The final Declaration of Covenants, Conditions, Restrictions and Easements for L&L Estates Subdivision shall be recorded in the Androscoggin County Registry of Deeds prior to the sale of the first lot in said subdivision.

IN WITNESS WHEREOF, M&B, LLC has caused this Declaration to be executed by _____, its agent duly authorized, this _____ day of _____, 2016.

M&B, LLC

By: _____

STATE OF MAINE
ANDROSCOGGIN, SS. _____, 2016

Then personally appeared the above-named _____, _____ of M&B, LLC, as aforesaid, and acknowledged the foregoing instrument to be the free act and deed for the company and his free act and deed in said capacity.

Before me,

_____
Notary Public/Attorney at Law

_____
Print or typed name

Exhibit A

(Note: All pages from here to the end of the document *are* included in the Association documents.)

Erosion and Sediment Control and Stormwater Management Maintenance Plan

1.0 EROSION AND SEDIMENT CONTROL

The following plans are included in the Site Review Application to satisfy the Basic Standards Submission requirements:

Sheet 1	PLAN & PROFILE MATOBIAN AVENUE TO STATION 10+00
Sheet 2	PLAN & PROFILE STATION 10+00 TO END
Sheet 3	CONSTRUCTION NOTES/DETAILS

The plan procedures herein are for temporary and permanent measures directly associated with the construction activities at the site.

Erosion and sediment control on Site will be implemented in accordance with the "Maine Erosion and Sediment Control BMPs" published by the MDEP. The following are general guidelines and preventative measures to control erosion and sediment during construction activities.

General Practices

- Sediment barriers (e.g., bark mulch berm) will be installed prior to beginning soil disturbance activities (e.g., grubbing, grading) at the perimeter of the property. Sediment barriers will be maintained until the disturbed area is permanently stabilized.
- Exposed soils that will not be worked for more than 7 days will be stabilized with mulch or other non-erodible cover.
- Erosion and sediment control features will be inspected and repaired weekly and before and after every storm event.
- All temporary soil stockpiles will be surrounded by silt fence and otherwise protected from creating down-slope sediment issues
- Temporary erosion and sediment control measures will be removed within 30 days after permanent stabilization is attained.
- Stabilization of soil during the winter shall be in accordance with this document and the notes on the construction drawings.

Temporary Erosion and Sediment Control Measures

Temporary erosion and sediment control measures will be in-place prior to beginning construction activities and will be maintained for the duration of the construction project. Silt fencing will be installed along the property lines adjacent to all disturbed areas.

Temporary Mulch/Vegetation

Exposed soil areas that will not be worked for more than 7 days will be mulched. Mulch shall consist of hay or straw that is air-dried, free of undesirable seeds and coarse materials. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

Temporary vegetation will be used in areas that will not be brought to final grade for a year or less. Preparation of the seedbed will be necessary to ensure sufficient vegetative growth. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer will be applied at a rate of 15 pounds per 1,000 square feet of 10-10-10 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. If the soil has been compacted during construction then the soil should be loosened to a depth of approximately 2 inches. Seeding recommendations are provided in the table below.

TEMPORARY GROUND STABILIZATION		
Seed	Pounds per 1,000 sq ft	Recommended Seeding Dates
Winter Rye	2.5	August 30-October 1
Oats	2.0	April 1-July 1 August 30-September 30
Annual Ryegrass	1.0	April 1-July 1
Sudangrass	1.0	May 15-August 30
Perennial	1.0	August 30-September 30

Note: Mulch shall be applied at the rates previously specified following the seed application.

Permanent Stabilization

Areas that will not be worked for more than one year or have been final graded will be permanently stabilized within 7 days. Permanent stabilization at this site will include road sub-base/pavement, permanent seeding, and permanent landscaping. Permanent seeding will be performed upon completion of construction activities. The type of seeding mix to be used for permanent seeding is noted on Sheet 3 CONSTRUCTION NOTES/DETAILS. All disturbed areas not otherwise stabilized shall be graded, smoothed, and prepared for final seeding. Four inches of loam (minimum) shall be spread over the disturbed areas and smoothed to a uniform surface. Soil tests are recommended to determine the appropriate application rate of lime and fertilizer. If soil testing is not feasible, then fertilizer can be

applied at a rate of 15 pounds per 1,000 square feet of 10-20-20 (N-P205-K20) or equivalent. Apply limestone (equivalent to 50% calcium plus magnesium oxide) at a rate of 150 pounds per 1,000 square feet. Both the lime and fertilizer should be worked into the ground to a depth of 4 inches as practical. The seedbed should be subsequently rolled to firm prior to seeding. Mulch will be applied at 2 bales (70-90 pounds) per 1,000 square feet to cover 75-90% of the ground surface. Mulch will be kept moist or anchored in-place to prevent wind disturbance. Erosion control mix and chemical mulches with binder can also be used on site if applied in accordance with MDEP's BMPs.

If hydro-seeding is used lime and fertilizer may be added with the seed and applied simultaneously. The use of straw mulch and adhesive material or 500 pounds of wood fiber mulch provides sufficient erosive protection. Seeding rates will be increased by 10% if hydro-seeding practices are employed.

All construction activities at the site are planned to be completed by or before the fall of 2014. In the event that construction occurs after 45 days prior to the first killing frost (October 15), dormant seeding will be performed. The seed mixture described Sheet 3 CONSTRUCTION NOTES/DETAILS would be doubled. Mulch should be applied according to the temporary mulching practices discussed previously. Dormant seeding requires inspection in the spring. All areas where cover is inadequate shall be immediately reseeded and mulched as soon as possible.

Erosion and sediment control features will not be removed until after all disturbed areas have been stabilized with permanent seeding exhibiting at least 90% vegetative cover.

Dust Control

Dust control methods will be employed on site to prevent movement of dust from exposed soil surfaces that could potentially create hazards to wildlife, humans, or plant life both onsite and offsite. Dust generated by activities at the Site, including dust associated with traffic to and from the Site, will be controlled by sweeping, paving, watering or other best management practices for control of fugitive emissions.

Preventive measures will include the following, as needed:

- Traffic will be restricted to predetermined routes (the existing driveways). Exit and entrance during construction will be limited to these locations.
- Natural vegetation and existing paved areas will be maintained to the extent practical.
- Excavation activities will be conducted in phases to reduce the area of land disturbed at any one time.
- Mulching and vegetative practices (e.g., temporary and permanent mulching, temporary and permanent vegetative cover) will be employed to reduce the need for dust control.
- Paved surfaces and roadways will be swept (e.g., mechanical sweeper) where necessary to prevent dust buildup.

Construction will begin immediately following the receipt of all necessary permits. The anticipated construction timeframe is winter-spring 2016.

Winter Construction

Winter construction" is construction activity performed during the period from November 1 through April 15. If disturbed areas are not stabilized with permanent measures by November 1 or new soil disturbance occurs after November 1, but before April 15, then these areas must be protected and runoff from them must be controlled by additional measures and restrictions.

- *Site Stabilization*. For winter stabilization, hay mulch is applied at twice the standard temporary stabilization rate. At the end of each construction day, areas that have been brought to final grade must be stabilized. Mulch may not be spread on top of snow.

- *Sediment Barriers*. All areas within 75 feet of a protected natural resource must be protected with a double row of sediment barriers.

- *Ditch.* All vegetated ditch lines that have not been stabilized by November 1, or will be worked during the winter construction period, must be stabilized with an appropriate stone lining backed by an appropriate gravel bed or geotextile unless specifically released from this standard by the Department.

- *Slopes*. Mulch netting must be used to anchor mulch on all slopes greater than 8% unless erosion control blankets or erosion control mix is being used on these slopes.

2.0 INSPECTION AND MAINTENANCE PLAN

2.1 Construction Inspections

Inspections and maintenance of erosion and sedimentation control measures and stormwater control facilities will be performed during construction. Inspections will include:

- Disturbed and impervious areas.
- Erosion Control Measures.
- Materials storage areas exposed to precipitation.
- Vehicle entry and exit locations.

These areas will be inspected at least once per week as well as before and after a storm event, and prior to completing permanent stabilization measures.

An inspection check list sheet is included at the end of this section. The Contractor will be responsible for maintaining and preserving all erosion and sediment control features associated with the Site during construction. Any problems, damage, or costs directly associated with the performance of or lack of erosion control measures and maintenance are the sole responsibility of the Contractor.

In addition to the above, the applicant will retain the services of a professional engineer to inspect the construction and stabilization of all stormwater management structures. If necessary, the inspecting engineer will interpret the pond's construction plan for the contractor. Once all stormwater management

structures are constructed and stabilized, the inspecting engineer will notify the department in writing within 30 days to state that the pond has been completed.

2.2 Post-Construction Inspections

The site Declarant will be responsible for long term inspection and maintenance of the wet pond and ensuring that the pond was constructed in accordance with the design intents after construction is completed. An inspection checklist is included at the end of this section.

The Homeowners Association shall be responsible for maintaining the wet pond (stormwater pond). The Association will be required to show the City and Maine Dept. of Environmental Protection (MDEP) that inspection and maintenance have been done according to MS4 requirements and the stormwater rules. The Association will also be required to renew the license every 5 (five) years with MDEP.

The Declarant shall pay for the services of a qualified Third-Party to conduct inspections of the site, as needed, for compliance with the provisions of the Erosion and Sedimentation Control Plan. The inspections shall be conducted by a Qualified Post Construction Third-Party Inspector as defined in City of Lewiston ordinances, Article XIII, Section 15. The developer shall make initial contact with such a Qualified Post Construction Third-Party Inspector during construction and shall then turn that responsibility over to the Association as the lots are sold.

2.3 Housekeeping

The Third-Party inspector will provide to the City of Lewiston documentation on management of the stormwater facilities as required (refer to attached MS4 requirements).

During and after construction, good housekeeping practices will be employed to minimize potential environmental impacts, specifically:

- Spill Prevention. Both petroleum and non-petroleum products utilized during construction will be stored in compatible and properly labeled containers. When not in use, these containers will be closed and stored in a secure area. A spill kit will be kept in close proximity to the secured area. Temporary fuel storage tanks mobilized to the site for construction will be double-walled. Both preventative and routine maintenance will be conducted to minimize the potential for fuel releases. These activities will be conducted offsite during construction.
- Groundwater Protection. Petroleum, non-petroleum, and other hazardous materials will not be handled on site.
- Fugitive Sediment and Dust. During construction, tracking of mud from construction vehicles into the public road will be minimized. During wet periods, the public road will be swept weekly, at a minimum, to control the amount of mud leaving the Site. During dry periods, fugitive sediment and dust will be controlled on site using a water truck, or similar, as necessary.

- Debris and other Materials. Litter, construction debris and chemicals will be stored in a manner such that the exposure to stormwater is minimized. Litter and construction debris will be separated and containerized, as necessary, for proper disposal. Chemicals will be stored in compatible and properly labeled containers and stored in a secure area equipped with a spill kit.

CONSTRUCTION INSPECTION

AND

MAINTENANCE FORMS

CONSTRUCTION

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG
L & L ESTATES, MATOBIAN AVENUE, LEWISTON, MAINE

Inspections to be performed once per week, before and after storms, and prior to completing permanent stabilization.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Vehicle Entrances and Exits	Yes No		
Disturbed Areas	Yes No		
Impervious Areas	Yes No		
Erosion and Sedimentation Control	Yes No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

REMARKS:

Disturbed Areas: Inspect mulched and temporary seed areas for rill erosion. Add additional mulch if less than 90% coverage is observed. Inspect nets after rain events for dislocation or failure.

Impervious Areas: Sweep or wash pavement as necessary to keep dust levels to a minimum. Wash water should be directed to an approved sediment trap, such as a "Filter Sock". Accumulated sediment shall be removed and stored or disposed of appropriately. Information on "filter socks" can be found at www.filtrexx.com.

Erosion and Sedimentation Control: Inspect silt fence for erosion or sedimentation below them. Replace silt fence where evidence of undercutting or impounding of water behind the fence occur. Replace fabric that has decomposed. Remove sediment deposits behind silt fence when deposits reach ½ the height of the fence.

Vehicle Entrances and Exits: Check for mudding and clogging of stone and replace as necessary. Sweep or wash pavement at exits where mud has been tracked onto the travelled way.

EROSION AND SEDIMENTATION CONTROL MAINTENANCE LOG
L & L ESTATES, MATOBIAN AVENUE, LEWISTON, MAINE

Inspections for the Wet Pond to be performed once per year in accordance with the Post-construction Stormwater Management Plan.

ITEM	DEFECTS	DESCRIPTION OF DEFECTS AND REPAIRS/MAINTENANCE	
Sediment Fore-bay	Yes / No		
Inlets and Outlets	Yes / No		
Gravel Trench	Yes / No		
Slope Erosion and Instability	Yes / No		
DATE:	**BY:**	**COMPANY:**	**QUALS/POSITION:**

Sediment Forebay: Remove debris and sediment from the forebay. Remove clogged sections of the graded stone fore-bay outlet and replace.

Inlets and Outlets: Inspect for proper function and remove any accumulated debris.

Gravel Trench Outlet: Verify that the pond is slowly emptying through the gravel filter. Replace the top several inches of the gravel when water ponds above the permanent pool for more than 72 hours.

Slope Erosion and Instability: Inspect for erosion, destabilization of site slopes, embankment settling, or signs of structural failure. Repair slopes as necessary immediately upon the identification of problems.

Maintenance Dredging: Dredge accumulated sediments from the pond every 15 to 20 years.

Note: Inspections by the Qualified Third Party are for the wet pond only. Drainage structures associated with the roadway are the responsibility of the City of Lewiston.

MS4 AREA REQUIREMENTS

Stormwater discharge from the wet pond will be into the City's MS4 Area.

A qualified Third-Party Inspector will be engaged by the Declarant's representative at least annually to inspect the wet pond in accordance with the approved Post-Construction Stormwater Management Plan (PCSMP) for the wet pond. If the pond requires maintenance to function as intended, the Qualified Third Party shall note the deficiencies and the remedies. The Declarant's representative shall take the required actions to address any deficiencies. The Qualified Third Party Inspector shall provide, on or by May 31 of each year, a completed and signed City of Lewiston Annual Stormwater Management Facilities Certification (SMF) Form, certifying that the SMF have been inspected, and that they are adequately maintained and functioning as intended by the PCSMP, or that they require maintenance or repair, in order to function as intended by the PCSMP. The Qualified Third Party shall provide a record of the required maintenance or deficiency and corrective actions taken.

A Post Construction Stormwater Management Performance guarantee will be executed and filed with the Registry of Deeds and will be included in the deed for each lot. A copy of the PCSMP is attached.

POST CONSTRUCTION STORMWATER MANAGEMENT PERFORMANCE (PCSMP) GUARANTEE
M&B, LLC, LEWISTON, MAINE

This performance guarantee is provided by M&B LLC, a Maine limited liability company, located at 379 Lisbon Street in Lewiston, Maine 04240. M&B, LLC, its successors, heirs, and assigns hereby acknowledge their legal obligation to repair, maintain, and replace the Stormwater Management Facilities (wet pond only) at the L&L Estates subdivision on Matobian Avenue, pursuant to Article XIII, Section 15. Said Section requires that Stormwater Management Facilities have been inspected, and that they are adequately maintained and functioning as intended by the approved Post-Construction Stormwater Management Plan, or that they require maintenance or repair, describing any required maintenance and any deficiencies found during inspection of the Stormwater Management Facilities and, if the Stormwater Management Facilities require maintenance or repair of deficiencies in order to function as intended by the approved Post-Construction Stormwater Management Plan, the Person shall provide a record of the required maintenance or deficiency and corrective action(s) taken.

This performance guarantee shall be valid until M&B, LLC, its successors, heirs, and assigns have legally relinquished ownership of the subject properties.

The City of Lewiston shall have the ability to establish a special assessment, district, or impose other means upon the parties responsible for the post construction stormwater management plan to ensure resources are available to perform the repairs, maintenance, and replacement of the Stormwater Management Facilities.

Stormwater management items at the subject property include a new stormwater wet pond, including the outlet control structure and conveyances. The estimated costs of repair and replacement vary widely depending on the extent of repair or replacement necessary. Annual

repairs will likely range between $1,000 and $10,000. Complete replacement of the wet pond could range as high as $30,000.

This document shall be recorded in the Androscoggin Registry of Deeds and be included in the deeds for each subdivision property.

IN WITNESS WHEREOF, M&B, LLC has caused this Performance Guarantee to be executed by Rick LaChapelle, its owner and sole member, thereunto duly authorized, on the _____ day of _____, 2016.

_____
Agent for M&B, LLC a Maine Limited Liability Company

_____
Date

Personally appeared the above named Rick LaChapelle, owner and sole member of M&B, LLC, as aforesaid, thereunto duly authorized and acknowledges this Performance Guarantee to be his free act and deed in said capacity and the free act and deed of said limited liability company.

WITNESS my hand and notarial seal this _____ day of _____, 2016.

_____
Notary Public/Maine Attorney

CITY OF LEWISTON

Annual Stormwater Management Facilities Certification

I, _____ (NAME), of _____ (COMPANY), certify the following:

1. I am making this Annual Stormwater Management Facilities Certification for the following property:

2. The owner of the Property is:
   M&B, LLC

   379 Lisbon Street

   Lewiston, ME 04240

3. I am a Qualified Third-Party Inspector hired by the owner of the Property.

4. I have knowledge of erosion and sedimentation control and have reviewed approved Post-Construction Stormwater Management Plan for the property.

5. On _____ (DATE), I inspected the Stormwater Management Facilities, including but not limited to (LIST STORMWATER MANAGEMENT FACILITY ITEMS):
   _____
   _____
   __

of the City of Lewiston.

6. At the time of my inspection of the Stormwater Management Facilities on the Property, I identified the following needs for routine maintenance or deficiencies in the Stormwater Management Facilities: _____
_____
_____
_____.

7. On _____ (DATE), the Owner of the property took or had taken the following routine maintenance or the following corrective action(s) to address the deficiencies in the Stormwater Management Facilities stated in 5 above: _____

_____
_____
_____.

8. As of the date of this certification, the Stormwater Management Facilities are functioning as intended by the approved Post-Construction Stormwater Management Plan for the Property.

Date:_____

By:_____

Print Name: _____

Personally appeared the above-named _____ (NAME), of _____ (COMPANY), and acknowledged the foregoing Annual Certification to be said person's free act and deed in said capacity.

Before me, Notary Public, on this date: _____

Signature: _____

Print Name: _____

Mail this certification to the City of Lewiston and others at the following address:

Director of Planning and Code Enforcement
City Building
27 Pine Street
Lewiston, Maine 04240

Director of Public Works
103 Adams Avenue
Lewiston, Maine 04240

M&B, LLC
Rick LaChapelle
379 Lisbon Street
Lewiston, ME 04240