CITY OF LEWISTON
PLANNING BOARD MEETING
Monday, January 25, 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:

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 Lane and 504 Pond Road with access from an extension of Matobian Lane.

V. OTHER BUSINESS:

a) Review of FY2017 LCIP
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 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

TO: **Planning Board**
FROM: **David Hediger, City Planner**
DATE: **January 22, 2016**
RE: **December 14, 2015 Planning Board Agenda Item IV(a)**

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 Lane and 504 Pond Road with access from an extension of Matobian Lane

Stoneybrook Consultants, Inc. on behalf of M&B, LLC has submitted an application 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 Lane. This subdivision is an expansion of an existing three lot subdivision that was approved in 2007 and 2010 utilizing the frontage right-of-way provisions pursuant to Article XII, Section 10. The existing 450' long private driveway/frontage right-of-way (Matobian Lane) provides frontage and access for three developed lots. The applicant is proposing to upgrade and extend Matobian Lane at total of 2,150' to city street standards. The street will provide frontage to seven new single family house lots.

The entire 10 lot subdivision consists of approximately 36.03 acres located in the Rural Agricultural (RA) district. Lots 7-9 contain portions of land impacted by the 100-year flood zone and shoreland zoning associated with a significant wetland. All of the lots meet the space and bulk requirements for the RA district and requirements of the shoreland zoning provisions contained in Article XII, Section 2.

Staff has been working closely with the applicant's representative to address concerns and questions. The applicant has since provided revised plans and documentation referencing most of staff comments. The applicant has specifically referenced a number of the Code's requirements, including Article XII, Section 2, and Article XIII, Section 4, 5, and 15. However, staff is waiting for responses regarding a number of items (see January 21, 2016 memorandum from David Hediger to Stoneybrook Consultants and January 22, 2016 memorandum from Ryan Barnes to David Hediger) and expects the applicant to address these items before or at the meeting upon which staff will be prepared to make a recommendation with specific conditions, if necessary. Staff notes the following with respect to the proposed development:

- The subdivision itself consists of 36.03 acres. There remains 62.2 acres of land abutting the proposed subdivision owned by the applicant. This land is labeled on the subdivision plan as "remaining land of M&B LLC". Note 11 on the plan states that this land may not be developed unless approvals are received from the city.
- The entire length of Matobian Lane is proposed to be constructed to city street acceptance standards. Once the road is a completed to the satisfaction of Public Works and accepted as a city street by the City Council, maintenance and upkeep of the road will be the city's

responsibility with the exception of the stormwater pond located on Lot 8. Road ditching, catch basins, culverts, etc. associated with drainage and stormwater of the street will be the City's responsibility. However, the maintenance and responsibility of the stormwater pond is that of the developer. In this case, a homeowners association shall be responsible for the pond. A draft declaration of covenants has been provided as part of the application that references the association's responsibility to maintain the stormwater pond. Note 7 on the subdivision plan also references this responsibility.

- The Board should reference all of the notes on the subdivision plan. While staff expects the language to be amended slightly in light of staff's review comments, the majority of the notes capture the major concerns with compliance related to the Zoning and Land Use Code. Specifically:
    - Notes 3 and 5 with respect to approvals needed from DEP due to wetland and vernal pools on site and the need for permits.
    - Note 7 with respect to the association's responsibility of maintaining the stormwater pond.
    - Note 9 with respect to signoffs from the applicant on construction of the stormwater pond being constructed in accordance with the approved plans.
    - Note 10 stating no lots may be sold and no permits issued until the road has been accepted by the city or that a performance guarantee has been accepted by the City for the cost of the improvements.

While many of staff's initial comments and concerns have been addressed, both Planning/Code Enforcement and Public Works are waiting for revisions and responses from the applicant. The applicant has indicated they are confident most of the comments will be addressed to staff's satisfaction prior to Monday evening's meeting. While it is likely staff will be in a position to recommend approval with conditions, at this time those specific conditions are not known. Both the applicant and staff will be prepared at the meeting to speak to any remaining issues and staff will have a recommended motion with conditions of approval prepared.

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: **1/21/16**
RE: **L&L Estates**

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

1) Application makes reference to lots splits between the LeBlanc's, LaChappelle, and M&B. It appears a new lot has been created at 504 Pond Road. Please address if this lot is part of the subdivision or is exempt per state subdivision law. If not exempt, total acreage of the subdivision may trigger additional review requirements (i.e. site law). See Article XIII, Section 2(a)(13).
2) Application and draft association documents reference development being subject to MS4 requirements. Note 7 on the subdivision plan should be amended to include reference to the MS4 inspection requirements (yearly inspections) in addition to the stormwater inspections. See Article XIII, Section 15(f).
3) Note 7 should also make reference to the required open space within the subdivision, as referenced on the plan and declaration of covenants.
4) Note 12 on the subdivision plan references grading easement for stormwater maintenance. These easements should be shown on the subdivision plan. See Article XIII, Section 4(f)(8).
5) Access easement is needed for the maintenance of the stormwater pond. This should be shown on the subdivision plan. See Article XIII, Section 4(f)(8).
6) Applicant will need to apply for a Maine Construction General Permit through DEP prior to any site activity occurring.
7) Section 4 of the application packet references a waiver request for a super elevated section of road, yet the plan and profile show differently. Please confirm.
8) Section 6 of the application packet references the MS4 Post Construction Stormwater Management Performance Guarantee will be recorded at the registry. Evidence of this must be provided to the city and completed prior to the street's acceptance. The recording of this should be included with note 7 on the subdivision plan.
9) Please confirm sight distance at the proposed streets intersection with Old Greene Road meets city requirements. See Article XIII, Section 4(c).
10) Application should speak to landscaping with respect to defining street edges. See Article XIII, Section 4(q) and the site design guidelines which provides some ability to utilize the preservation of existing trees. Those lots currents heavily cleared (lots 3-6) should be specifically referenced.
11) Draft Declaration of Covenants: the document satisfies the major concerns of staff, that being the open space and maintenance of the stormwater pond. However, staff is recommending as

a condition of approval that evidence of the association document having been recorded by the applicant must occur prior to any lots being sold and acceptance of the street.

12) The application references possible vernal pools in the subdivision. Note 5 on the subdivision plan appropriately notes that no building permits shall be issued for construction on lots 7-10 until an official determination is made or NRPA permit is obtained. However, the wetland/vernal pool on lot 10 is also impacted by the roads construction. It is staff's understanding that no disturbance within the vernal pool depression may occur unless a permit is obtained and that the 4,300 SF exemption for wetland alterations would not apply until an official determination is made. Therefore, construction of the road may not occur until appropriate permits are obtained from DEP. A note to the effect should be added to the subdivision plan.

13) Recognizing the applicant is interested in starting construction ASAP and that DEP permitting may limit construction of the road, the applicant may want to consider phasing construction of the subdivision. If so, revised plans with phasing and related stormwater improvement for that phase of the road's construction will need to be provided.

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

Thank you.

DRAFT

Declaration of Covenants, 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 …… (To be completed at a later date.)

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 binging 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.

Intentionally left blank at this time.

ARTICLE B.

Intentionally left blank at this time.

ARTICLE C.
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 D.

Intentionally left blank at this time.

ARTICLE E.
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:

(Points a) through d) intentionally left blank and omitted at this time. Only point e) is shown immediately below.)

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 $25.00 annually to the Association, or its authorized representative, 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-e) of this Declaration. Such proportionate share of expenses shall be evenly prorated for each Lot upon transfer of title.

The 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 1-28? 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 F.

Intentionally left blank at this time.

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 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 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.

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 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 Applicant'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 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 (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, 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 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: _____

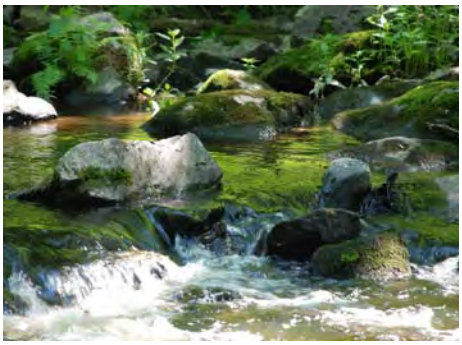
Mail this certification to the City of Lewiston at the following address:

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



Stoneybrook Consultants, Inc.

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

Development Review Application

prepared for

M&B, LLC

January 2016

Stoneybrook Consultants, Inc.

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

January 18, 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:

On behalf of M&B, LLC (M&B), I have attached a Development Review Application to establish seven new lots in the L & L Estates subdivision located off Old Greene Road. You may recall that this subdivision was originally approved with three lots in 2007. Lot 3 was revised by de minimus change in 2010. See Section _ for copies of these approved plans. The subdivision created a Frontage Right of Way road, known as Matobian Avenue, to provide frontage for Lots 2 & 3. Lot 1 has frontage on Old Greene Road. Currently, Matobian Avenue is about 450' long and ends in a "hammerhead turnaround" at Lot 3. All three lots have been sold and there is a house on each lot.

L & L Estates was originally developed by Rick and Monique LaChapelle in partnership with Ronald & Ginette LeBlanc, now owners of Lot 3. In 2007, the Leblancs purchased Lot 3, shown on the plans to include 9.21 acres, from the LaChapelles. The LaChapelles purchased a portion of Lot 3 back from the LeBlancs in January of 2015 creating the new Lot 3, with 2.93 acres, shown on our Phase 2 Subdivision Plan included in Section 10. M&B recently purchased the remainder of the L & L Estates subdivision, including the right of way area of Matobian Avenue, from the LaChapelles with about 85 acres of abutting property that the LaChapelles own fronting on Pond Road. These conveyances have reduced the size of Lot 3 from what was shown on the approved subdivision plans. We have numbered Lot 3 on the Phase 2

Subdivision Plan included within Section 10 to seek any approvals required to address this oversight.

The project is located in the Rural Agricultural District and portions of the development will also be subject to the Shoreland Overlay District requirements. 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. We have provided a graphic in Section 2 showing that all lots can contain a 200' diameter circle as required by the code. 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 new subdivision plan.

We have included a tax map graphic in Section 2 and a property graphic which shows the entire M&B ownership. The new development parcel includes parts of Tax Map 59, Lots 18 and 25. Total area of the M&B ownership is 91.6 acres. Total area of the L & L Estates development including the lots previously sold will be about 98.3 acres. The intent is for M&B to finish development of L & L Estates in multiple phases as market conditions allow for the sale of lots in each phase proposed. This next phase will include seven lots ranging in size from 1.42 acres to 8.39 acres. With the street right of way, L & L Estates will include a total of 36.03 acres at the completion of Phase 2.

As noted above, Matobian Avenue was originally constructed as a private drive meeting Frontage Right of Way standards. The existing roadway will need to be upgraded to meet City Public Street requirements. We have asked Summit Geoengineering Services, Inc. (Summit), to check the existing road condition and prepare design plans and construction details necessary to upgrade the existing roadway and an extension of those improvements to serve the development. Their report is included in Section 4 and the new design plans are included in Section 10.

During the first phase of roadway construction and to provide access to the rear portion of the Pond Road property for tree removal, Matobian Avenue was extended and portions of the property were filled. Fill from several City projects was deposited on the property over a two to three year period. After meeting with staff at the property, they indicated that our application for this phase of the subdivision should include information on the amount of fill material placed onsite. That information is included in Section 5.

Stormwater improvements for this project have been designed to control stormwater runoff from the fill site as well as the proposed street improvements. The Stormwater Report is included in Section 6 and the plans and details for construction of these proposed improvements are included in Section 10. 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. All stormwater improvements and erosion control measures have been designed to meet City and State requirements. Stormwater maintenance and the required MS4 documents will be sent under separate cover.

No wetland areas were identified on the first three lots based upon the prior recorded subdivision plans. The soils mapping for the area of Lot 3 that was filled and the test pit information for Lots 4-6 shown in that same area do not show any indication that any wetland areas were filled. Wetland mapping recently completed for the area proposed for development of Lots 7–10 did identify wetland areas along with several possible vernal pool locations. Development of the public street improvements and the detention pond will impact 2,940 square feet of wetland area. This level of wetland impact will not require any State permitting.

Development of the homes within 250' of a possible significant vernal pool area is limited under the Natural Resource Protection Act (NRPA) administered by the Maine Department of Environmental Protection (MDEP). We cannot determine if these vernal pools are significant until the Spring of 2016. As an alternative, we are allowed to submit a permit-by-rule application showing that we can maintain 75% of the critical habitat within 250' of any vernal pool. Our plan is to submit applications for construction of the homes on Lots 7–10 under these permit standards before these homes are constructed. In the Spring, we will check the vernal pools, as required. If these pools are found not to be significant, the limitation on development will go away. If they are found to be significant, those restrictions will remain until conditions onsite change.

We have shown building envelopes for each lot. Development on each lot will be restricted to the building envelope area, unless further restricted by the vernal pool requirements. The building envelopes have been established to protect wetland areas from any further development or impact and we have placed a note on the Subdivision Plan to restrict wetland impacts on these lots. Each lot is proposed to be served by an individual well and subsurface wastewater disposal system. Soils information for each lot is included in Section 7. A report from CES, Inc. outlining the water supply

availability is included in Section 8. Power service will extend overhead along the public street from the existing poles on Matobian Avenue.

Construction will begin this Winter as soon as approvals have been secured. Street construction will be complete by Fall of 2016. The project is expected to cost $275,000. A letter from Mechanic Savings Bank is included in Section 9 indicating that the applicant has the ability to finance this level of development. We trust you will find this application complete for processing and we will plan to attend the next available Planning Board meeting to answer any additional questions you or they may have.

Respectfully Yours

STONEYBROOK CONSULTANTS, INC.

Michael F. Gotto

cc: Rick LaChapelle

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Section 1

Application/Response

Development Review Application

City of Auburn Planning and Permitting Department
City of Lewiston Department of Planning and Code Enforcement

PROJECT NAME: L & L Estates

PROPOSED DEVELOPMENT ADDRESS: Matobian Avenue

PARCEL ID#: 59-25 and portion of 59-18

REVIEW TYPE: Site Plan/Special Exception ☐ Site Plan Amendment ☐
Subdivision ☑ Subdivision Amendment ☐

PROJECT DESCRIPTION: See cover letter.

CONTACT INFORMATION:

Applicant		Property Owner	
Name:	M&B, LLC	Name:	
Address:	379 Lisbon Street	Address:	
Zip Code	Lewiston, ME 04240	Zip Code	
Work #:	207-784-7919	Work #:	
Cell #:		Cell #:	
Fax #:		Fax #:	
Home #:		Home #:	
Email:	ips_inc@yahoo.com	Email:	

Project Representative		Other professional representatives for the project (surveyors, engineers, etc.),	
Name:	Mike Gotto - Stoneybrook Consultants	Name:	
Address:	456 Buckfield Road	Address:	
Zip Code	Turner, ME 04282	Zip Code	
Work #:	(207) 514-7491	Work #:	
Cell #:	(207) 513-6123	Cell #:	
Fax #:	(207) 514-7492	Fax #:	
Home #:		Home #:	
Email:	mike@stoneybrookllc.com	Email:	

PROJECT DATA

The following information is required where applicable, in order to complete the application

IMPERVIOUS SURFACE AREA/RATIO

Existing Total Impervious Area	37,400	sq. ft.
Proposed Total Paved Area	60,980	sq. ft.
Proposed Total Impervious Area	60,980	sq. ft.
Proposed Impervious Net Change	23,585	sq. ft.
Impervious surface ratio existing	2.4	% of lot area
Impervious surface ratio proposed	4	% of lot area

BUILDING AREA/LOT COVERAGE

Existing Building Footprint	0	sq. ft.
Proposed Building Footprint	0	sq. ft.
Proposed Building Footprint Net change	0	sq. ft.
Existing Total Building Floor Area	0	sq. ft.
Proposed Total Building Floor Area	0	sq. ft.
Proposed Building Floor Area Net Change	0	sq. ft
New Building	No	(yes or no)
Building Area/Lot coverage existing	0	% of lot area
Building Area/Lot coverage proposed	0	% of lot area

ZONING

Existing	RA
Proposed, if applicable	N/A

LAND USE

Existing	Vacant
Proposed	Residential Subdivision

RESIDENTIAL, IF APPLICABLE

Existing Number of Residential Units	3
Proposed Number of Residential Units	7
Subdivision, Proposed Number of Lots	10

PARKING SPACES

Existing Number of Parking Spaces	N/A
Proposed Number of Parking Spaces	N/A
Required Number of Parking Spaces	N/A
Number of Handicapped Parking Spaces	N/A

ESTIMATED COST OF PROJECT

DELEGATED REVIEW AUTHORITY CHECKLIST

SITE LOCATION OF DEVELOPMENT AND STORMWATER MANAGEMENT

Existing Impervious Area	37,400	sq. ft.
Proposed Disturbed Area	135,470	sq. ft.
Proposed Impervious Area	60,980	sq. ft.

1. ***If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with MDEP.***
2. ***If the proposed impervious area is greater than one acre including any impervious area crated since 11/16/05, then the applicant shall apply for a MDEP Stormwater Management Permit, Chapter 500, with the City.***
3. ***If total impervious area (including structures, pavement, etc) is greater than 3 acres since 1971 but less than 7 acres, then the applicant shall apply for a Site Location of Development Permit with the City. If more than 7 acres then the application shall be made to MDEP unless determined otherwise.***
4. ***If the development is a subdivision of more than 20 acres but less than 100 acres then the applicant shall apply for a Site Location of Development Permit with the City. If more than 100 acres then the application shall be made to MDEP unless determined otherwise.***

TRAFFIC ESTIMATE

Total traffic estimated in the peak hour-existing (Since July 1, 1997) _____ passenger car equivalents (PCE)

Total traffic estimated in the peak hour-proposed (Since July 1, 1997) _____ passenger car equivalents (PCE)

If the proposed increase in traffic exceeds 100 one-way trips in the peak hour then a traffic movement permit will be required.

Zoning Summary

1. Property is located in the RA zoning district.
2. Parcel Area: 36.03 acres / _____ square feet(sf).

Regulations	Required/Allowed	Provided
Min Lot Area	1.38 acres	1.42 acres
Street Frontage	200'	200'
Min Front Yard	25'	25'
Min Rear Yard	10'	10'
Min Side Yard	10'	10'
Max. Building Height	35'	35'
Use Designation	Residential	Residential
Parking Requirement	1 space/ per ____ square feet of floor area	
Total Parking:	N/A	N/A
Overlay zoning districts (if any):	Shoreland	/
Urban impaired stream watershed?	YES (NO) If yes, watershed name_____	

DEVELOPMENT REVIEW APPLICATION SUBMISSION

Submission shall include payment of fee and fifteen (15) complete packets containing the following materials:

1. Full size plans containing the information found in the attached sample plan checklist.
2. Application form that is completed and signed.
3. Cover letter stating the nature of the project.
4. All written submittals including evidence of right, title and interest.
5. Copy of the checklist completed for the proposal listing the material contained in the submitted application.

Refer to the application checklist for a detailed list of submittal requirements.

L/A's development review process and requirements have been made similar for convenience and to encourage development. Each Citys ordinances are available online at their prospective websites:
Auburn: www.auburnmaine.org under City Departments/ Planning and Permitting/Land Use Division/ Zoning Ordinance
Lewiston: http://www.ci.lewiston.me.us/clerk/ordinances.htm Refer to Appendix A of the Code of Ordinances

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, I certify that the City's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for development review <u>only</u>; a Performance Guarantee, Inspection Fee, Building Permit Application and other associated fees and permits will be required prior to construction.

Signature of Applicant:	Date:
[signature] As Agent	December 30, 2015

Development Review Checklist

City of Auburn Planning and Permitting Department
City of Lewiston Department of Planning and Code Enforcement

THE FOLLOWING INFORMATION IS REQUIRED WHERE APPLICABLE TO BE SUBMITTED FOR AN APPLICATION TO BE COMPLETE

PROJECT NAME: L & L Estates

PROPOSED DEVELOPMENT ADDRESS and PARCEL #: Matobian Avenue 59-25, 59-18

Required Information		Check Submitted		Applicable Ordinance	
Site Plan		**Applicant**	**Staff**	**Lewiston**	**Auburn**
	Owner's Names/Address	✓			
	Names of Development	✓			
	Professionally Prepared Plan	✓			
	Tax Map or Street/Parcel Number	✓			
	Zoning of Property	✓			
	Distance to Property Lines	✓			
	Boundaries of Abutting land	✓			
	Show Setbacks, Yards and Buffers	✓			
	Airport Area of Influence (Auburn only)	N/A			
	Parking Space Calcs	N/A			
	Drive Openings/Locations	N/A			
	Subdivision Restrictions	N/A			
	Proposed Use	✓			
	PB/BOA/Other Restrictions	N/A			
	Fire Department Review				
	Open Space/Lot Coverage	N/A			
	Lot Layout (Lewiston only)				
	Existing Building (s)	✓			
	Existing Streets, etc.	✓			
	Existing Driveways, etc.	✓			
	Proposed Building(s)				
	Proposed Driveways				
Landscape Plan					
	Greenspace Requirements	✓			
	Setbacks to Parking	✓			
	Buffer Requirements	N/A			
	Street Tree Requirements	N/A			
	Screened Dumpsters	N/A			
	Additional Design Guidelines	N/A			

	Planting Schedule				
Stormwater & Erosion Control Plan					
	Compliance w/ chapter 500	✓			
	Show Existing Surface Drainage	✓			
	Direction of Flow	✓			
	Location of Catch Basins, etc.	✓			
	Drainage Calculations	✓			
	Erosion Control Measures	✓			
	Maine Construction General Permit	✓			
	Bonding and Inspection Fees				
	Post-Construction Stormwater Plan				
	Inspection/monitoring requirements				
	Third Party Inspections (Lewiston only)				
Lighting Plan		N/A			
	Full cut-off fixtures				
	Meets Parking Lot Requirements				
Traffic Information		N/A			
	Access Management				
	Signage				
	PCE - Trips in Peak Hour				
	Vehicular Movements				
	Safety Concerns				
	Pedestrian Circulation				
	Police Traffic				
	Engineering Traffic				
Utility Plan					
	Water	N/A			
	Adequacy of Water Supply				
	Water main extension agreement	N/A			
	Sewer	✓			
	Available city capacity				
	Electric	✓			
	Natural Gas	N/A			
	Cable/Phone	✓			
Natural Resources					
	Shoreland Zone	✓			
	Flood Plain	✓			
	Wetlands or Streams				
	Urban Impaired Stream				
	Phosphorus Check				
	Aquifer/Groundwater Protection				
	Applicable State Permits				
	No Name Pond Watershed (Lewiston only)				

	Lake Auburn Watershed (Auburn only)				
	Taylor Pond Watershed (Auburn only)				
Right Title or Interest					
	Verify	✓			
	Document Existing Easements, Covenants, etc.				
Technical & Financial Capacity					
	Cost Est./Financial Capacity				
	Performance Guarantee				
State Subdivision Law					
	Verify/Check				
	Covenants/Deed Restrictions				
	Offers of Conveyance to City				
	Association Documents				
	Location of Proposed Streets & Sidewalks				
	Proposed Lot Lines, etc.				
	Data to Determine Lots, etc.				
	Subdivision Lots/Blocks				
	Specified Dedication of Land				
Additional Subdivision Standards					
	Single-Family Cluster (Lewiston only)				
	Multi-Unit Residential Development (Lewiston only)				
	Mobile Home Parks				
	Private Commercial or Industrial Subdivisions (Lewiston only)				
	PUD (Auburn only)				
A jpeg or pdf of the proposed site plan					
Final sets of the approved plans shall be submitted digitally to the City, on a CD or DVD, in AutoCAD format R 14 or greater, along with PDF images of the plans for archiving					

January 15, 2016

Response to Ordinance Requirements

Article XIII, Section 4

(a) *Utilization of the site* – This project was previously approved by the City of Lewiston as a three lot subdivision with a frontage right of way serving two of those lots. This project proposes to expand the subdivision to add seven new lots and to replace the frontage right of way with a public road. Under this proposal, Matobian Avenue will be upgraded to public road standards and extended 1,700 feet to create the required road frontage for the new lots. All lots will exceed minimum lot requirements and sensitive environmental areas will be preserved with the use of building envelopes to the extent possible.

(b) *Traffic Movements* – This project will create about 70 new vehicle trips per day associated with seven new single family homes. The entrance at Old Greene Road has been previously reviewed and approved.

(c) *Access to the site* – Access to the project will be from Old Greene Road at Matobian Avenue at the same location previously approved.

(d) *Internal vehicular circulation* – Not Applicable

(e) *Pedestrian circulation* – Not Applicable

(f) *Stormwater management* – Stormwater management has been designed to meet City and MDEP stormwater standards.

(g) *Erosion control* – All improvements for this project will be completed under the requirements outlined on the plan sheet submitted. All erosion control measures proposed meet or exceed all City and MDEP requirements.

(h) *Water supply* – This project will rely upon drilled wells. A report from CES, Inc. has been provided with details on water supply availability.

(i) *Sewer disposal* – This project will use a subsurface wastewater disposal system that will be designed in accordance with City and State standards.

(j) *Utilities* – This project will connect to the existing overhead utility services along Matobian Avenue.

(k) *Natural features* – Timber harvesting and filling activities have previously occurred on the property. No additional filling or disturbance, except what is required to construct the road and homes, is proposed. Much of the natural vegetation and sensitive environmental areas will remain with the construction limited to the building envelopes shown.

(l) *Groundwater protection* – There will be no impact to groundwater resources by this project.

(m) *Water and air pollution* – There will be no water or air pollution with this project.

(n) *Exterior lighting* – There is no exterior lighting proposed.

(o) *Waste disposal* – Waste generated by this project will be collected by the City.

(p) *Lot layout* – The lot sizes exceed all requirements of the Rural Agricultural District.

(q) *Landscaping* – none proposed.

(r) *Shoreland relationship* – Lots 7–9 are located within a shoreland zone surrounding an open wetland area. These lots are larger and the required setbacks to protect the wetland have been shown on the subdivision plan. These lots will not impact the water quality or shoreline area.

(s) *Open space* – An open space area has been provided at the end of Matobian Avenue. This area will be relocated with future development phases of this project.

(t) *Technical and financial capacity* – The application and design plans have been prepared by professionals qualified to perform this work. The applicant has completed the first phase of this project and owns a number of buildings in the City. The applicant has a proven track record for completing these types of projects.

(u) *Buffering* – There is no buffering required for this project.

(v) *Compliance with district regulations* – Development of this lot as proposed meets all of the requirements of Article XI, Section 1.

(w) *Design consistent with performance standards* – The improvements proposed will comply with the performance standards of Article XII, insofar as they may be applicable.

Article XIII, Section 5

(1) *Will not result in undue water or air pollution. In making this determination, it shall at least consider: the elevation of land above sea level and its relation to the floodplains; the nature of soils and subsoils and their ability to adequately support waste disposal; the slope of the land and its effect on effluents; the availability of streams for disposal of effluents; and the applicable state and local health and water resources regulations* – This project will not result in undue water or air pollution.

(2) *Has sufficient water available for the reasonably foreseeable needs of the subdivision* – Evidence that sufficient water is available was submitted and found acceptable.

(3) *Will not cause an unreasonable burden on an existing water supply, if one is to be utilized* – There is no existing water supply.

(4) *Will not cause unreasonable soil erosion or reduction in the capacity of the land to hold water so that a dangerous or unhealthy condition may result* – This project will not cause unreasonable soil erosion or a reduction in the capacity of the land to hold water.

(5) *Will not cause unreasonable highway or public road congestion or unsafe conditions with respect to use of the highways or public roads, existing or proposed* – This project will not cause unreasonable congestion or unsafe conditions on any existing roads.

(6) *Will provide for adequate sewage waste disposal* – This project will provide adequate sewage waste disposal.

(7) *Will not cause an unreasonable burden on the ability of a municipality to dispose of solid waste and sewage, if municipal services are to be utilized* – This project will not burden the ability of the City to dispose of solid waste or sewage.

(8) *Will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline* – This project will not have adverse effects on scenic or natural areas, historic sites, rare, irreplaceable natural areas or shoreline areas.

(9) *Is in conformance with this Code and the city's comprehensive plan* – This project is in conformance with the comprehensive plan.

(10) *The subdivider has adequate financial and technical capacity to meet the above stated standards* – The subdivider has provided documentation of technical and financial capacity to complete this project.

(11) *Whenever situated, in whole or in part, within 250 feet of any pond, lake, river or tidal waters, will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water* – This project will not impact the water quality or affect the shoreline of the wetland area.

(12) *Will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater* – This project will not affect the quality or quantity of groundwater.

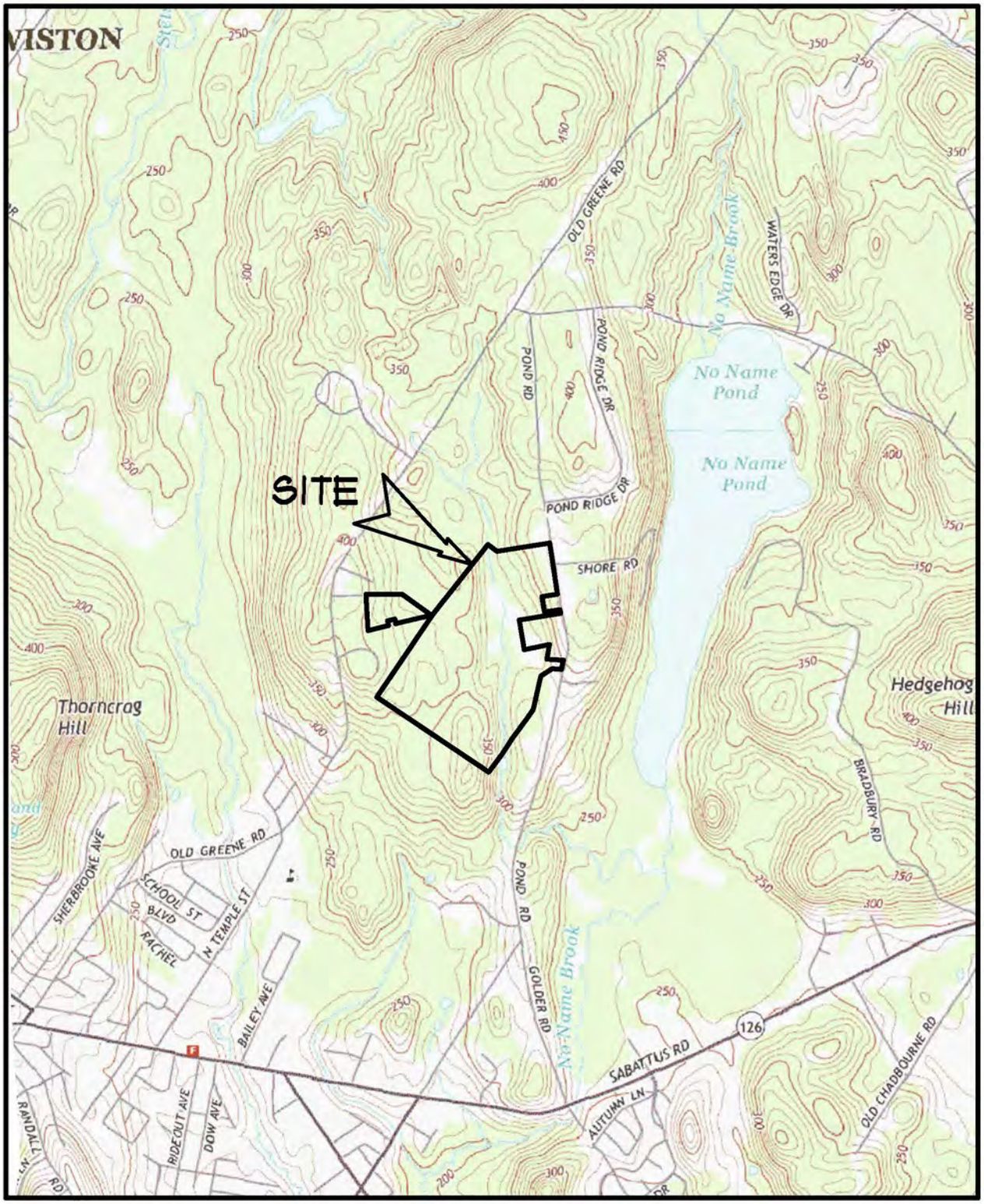
(13) *The subdivider will determine, based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, whether the subdivision is in a flood-prone area. If the subdivision, or any part of it, is in such an area the subdivider will determine the 100-year flood elevation and flood*

hazard boundaries within the subdivision. The proposed subdivision plan shall include a condition of plat approval requiring the principal structures on lots in the subdivision shall be constructed with their lowest floor, including the basement, at least one foot above the 100-year flood elevation – No buildings or improvements are proposed within a flood prone area.

(14) *Will not interfere unreasonably with the solar access of existing buildings or adjacent parcels* – This project will not interfere with solar access of any existing building.

Section 2

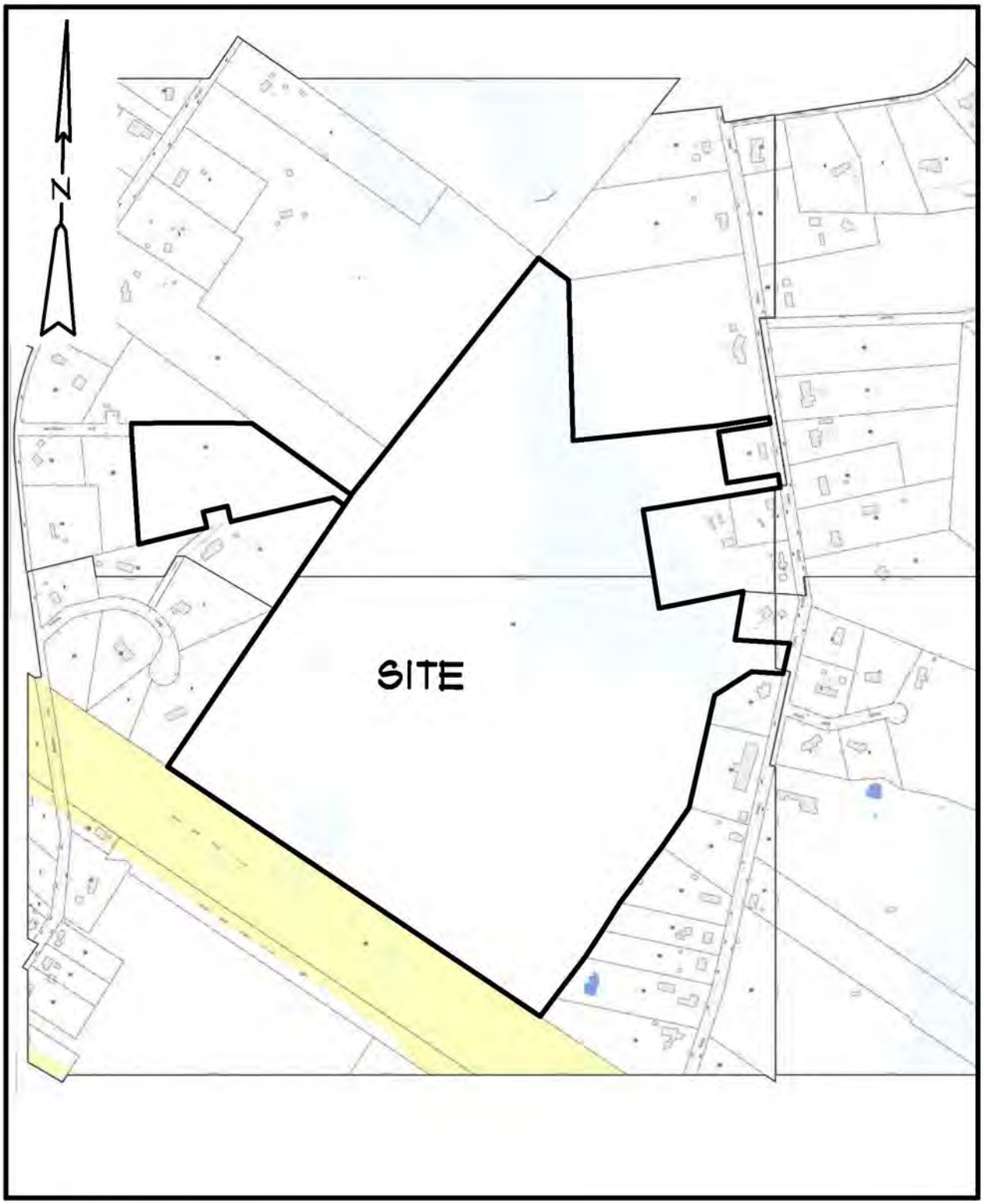
Project Maps



USGS LOCATION MAP

L&L ESTATES - MATOBIAN AVENUE, LEWISTON
OWNER: M&B, LLC
SCALE: 1" = 2,000'
DATE OF GRAPHIC: DECEMBER 10, 2015
SOURCE: MAINE OFFICE OF GIS
ORIGINAL PUBLICATION DATE: 1967

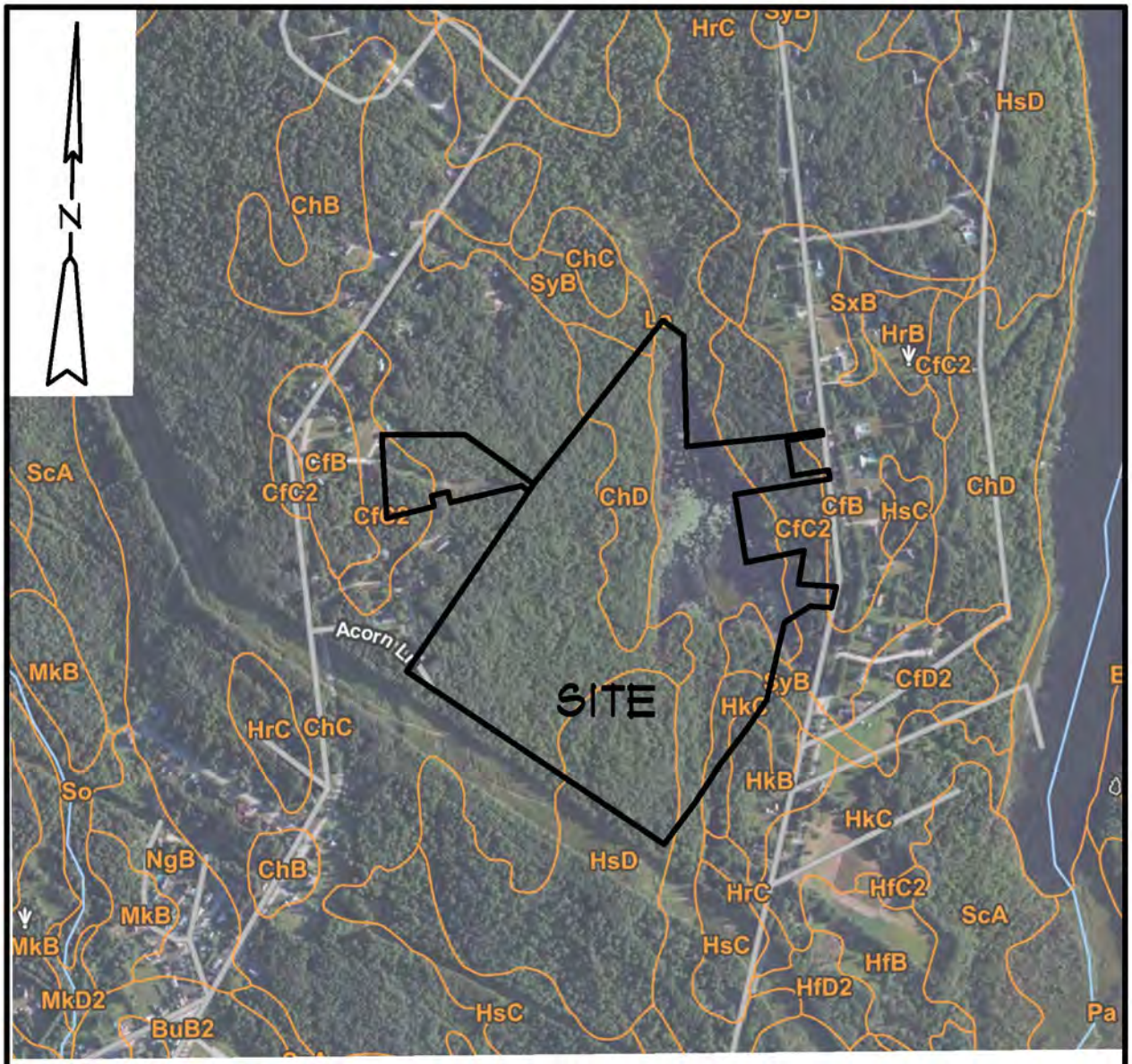
Stoneybrook Consultants, Inc.



TAX MAP

L&L ESTATES - MATOBIAN AVENUE, LEWISTON
OWNER: M&B, LLC
SCALE: 1" = 600'
DATE OF GRAPHIC: DECEMBER 10, 2015
SOURCE: CITY OF LEWISTON TAX MAPS
PUBLICATION DATE: APRIL 1, 2014

Stoneybrook Consultants, Inc.



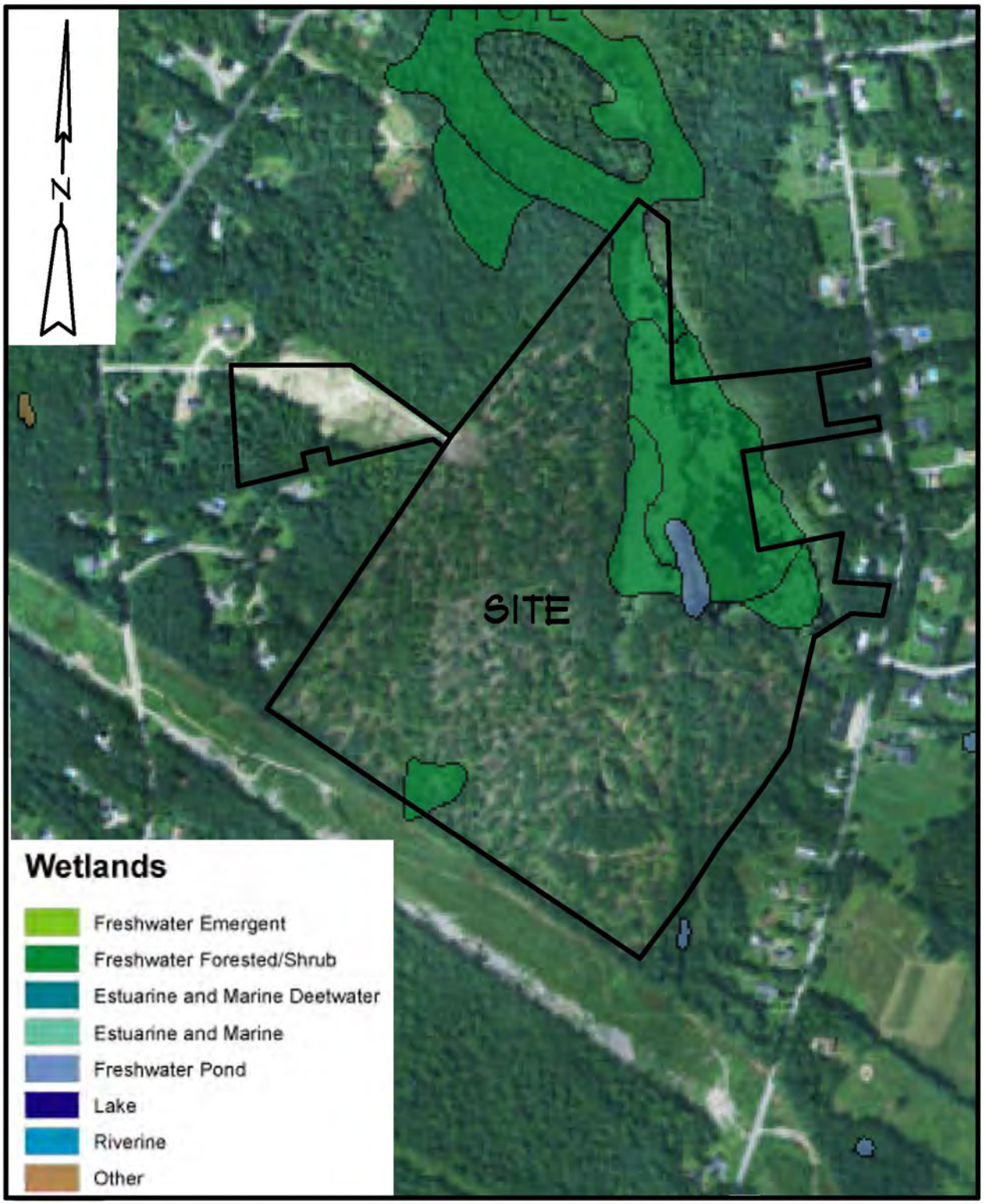
SOILS LEGEND

ChC	CHARLTON VERY STONY FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES
ChD	CHARLTON VERY STONY FINE SANDY LOAM, 15 TO 25 PERCENT SLOPES
CfB	CHARLTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES
CfC2	CHARLTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES
HkB	HINCKLEY GRAVELLY SANDY LOAM, 0 TO 8 PERCENT SLOPES
HkC	HINCKLEY GRAVELLY SANDY LOAM, 8 TO 15 PERCENT SLOPES
HrC	HOLLIS FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES
HsD	HOLLIS VERY ROCKY FINE SANDY LOAM 15 TO 45 PERCENT SLOPES
Le	LEICESTER VERY STONY FINE SANDY LOAM
SyB	SUTTON VERY STONY LOAM, 0 TO 8 PERCENT SLOPES

SOILS MAP

L&L ESTATES - MATOBIAN AVENUE, LEWISTON
OWNER: M&B, LLC
SCALE: 1" = 1,000'
DATE OF GRAPHIC: DECEMBER 10, 2015
SOURCE: USDA NRCS
PUBLICATION DATE: SEPTEMBER 14, 2015

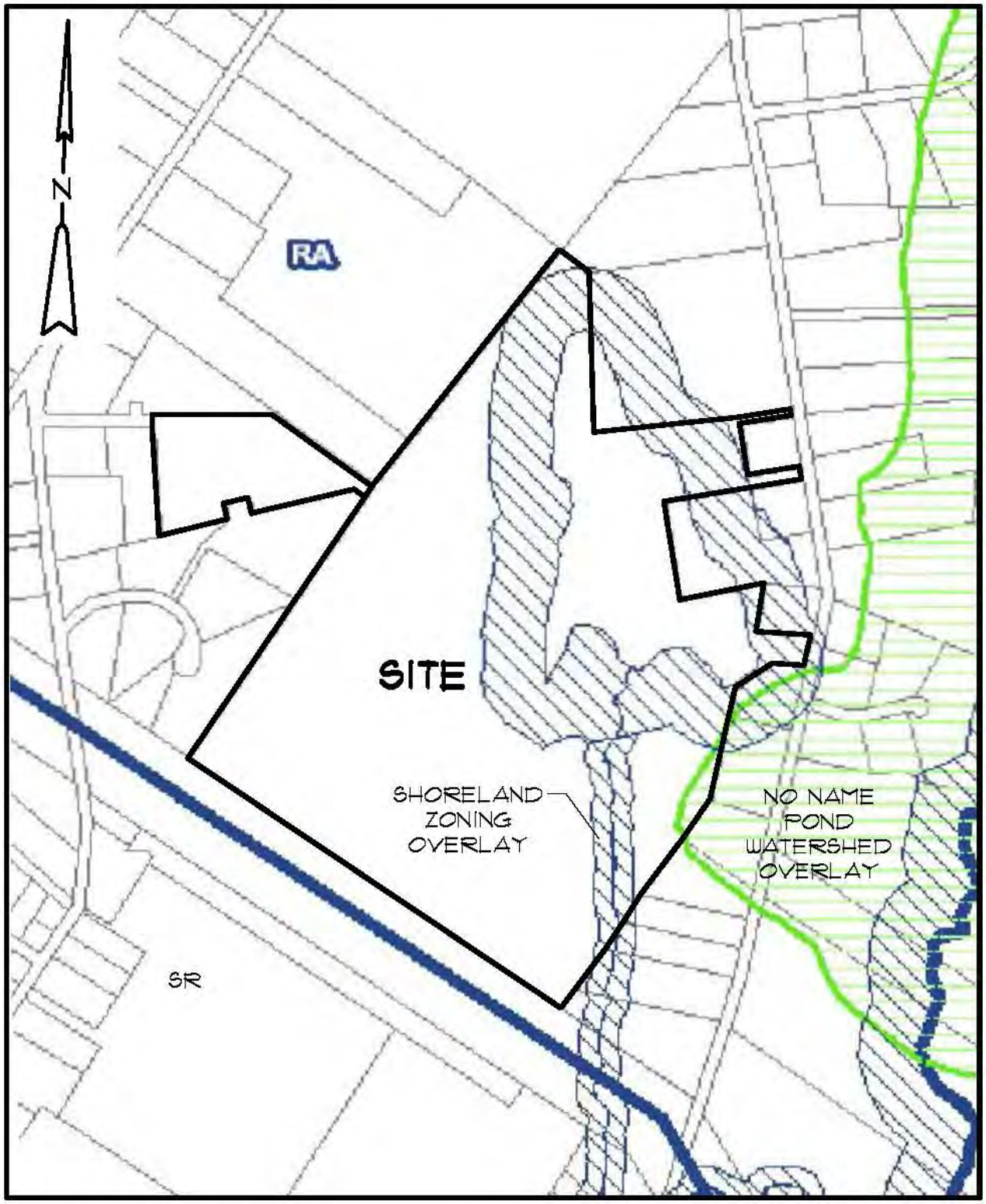
Stoneybrook Consultants, Inc.



WETLANDS MAP

L&L ESTATES - MATOBIAN AVENUE, LEWISTON
OWNER: M&B, LLC
SCALE: 1" = 600'
DATE OF GRAPHIC: DECEMBER 10, 2015
SOURCE: US FISH AND WILDLIFE SERVICE
PUBLICATION DATE: JANUARY 2010

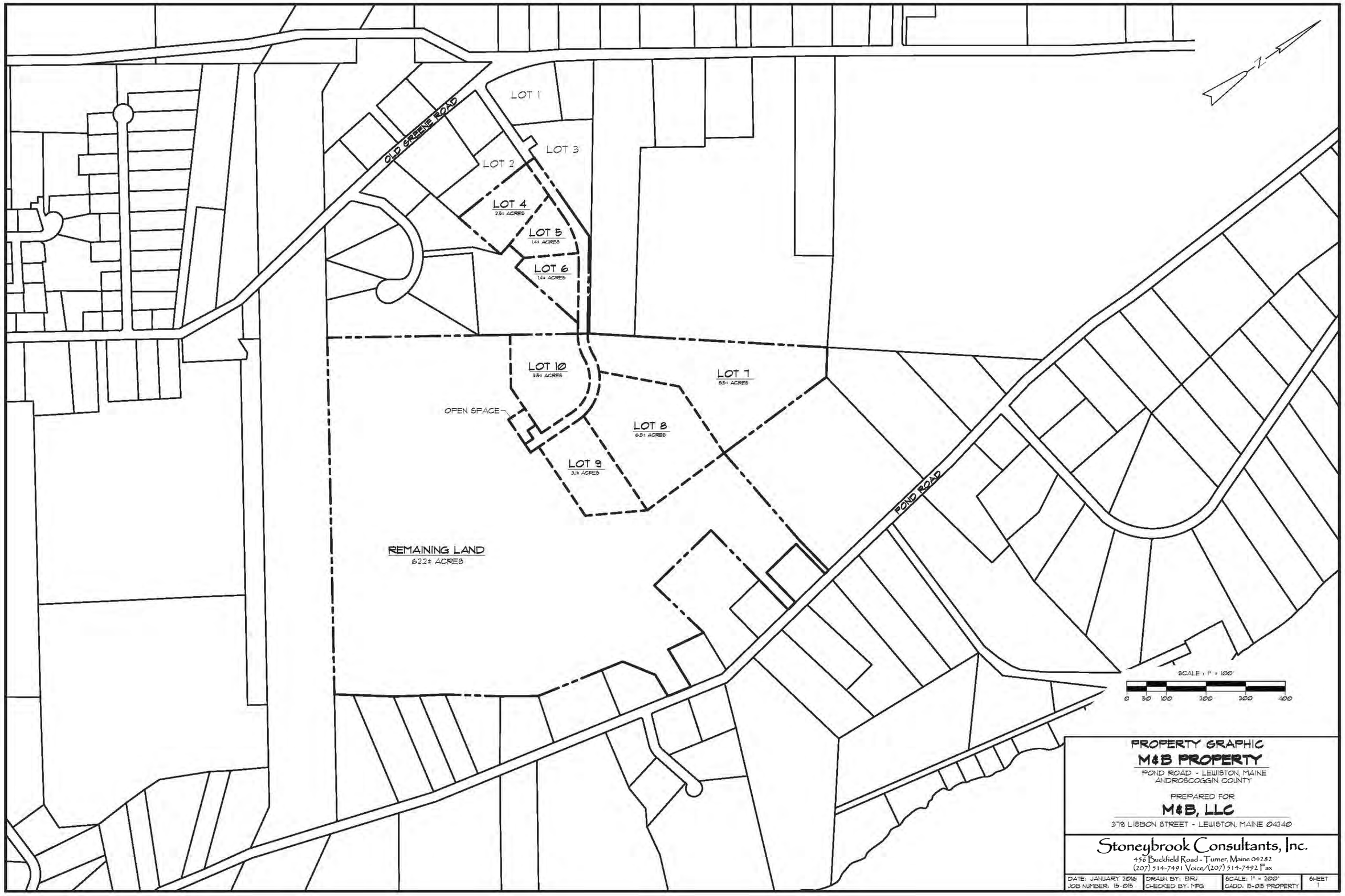
Stoneybrook Consultants, Inc.



ZONING MAP

L&L ESTATES - MATOBIAN AVENUE, LEWISTON
OWNER: M&B, LLC
SCALE: 1" = 600'
DATE OF GRAPHIC: DECEMBER 10, 2015
SOURCE: CITY OF LEWISTON GIS
PUBLICATION DATE: 2015

Stoneybrook Consultants, Inc.


OLD GREENE ROAD
LOT 1
LOT 2
LOT 3
LOT 4
2.5± ACRES
LOT 5
1.4± ACRES
LOT 6
1.4± ACRES
LOT 10
3.5± ACRES
LOT 7
8.5± ACRES
OPEN SPACE
LOT 8
6.5± ACRES
LOT 9
3.1± ACRES
REMAINING LAND
622± ACRES
POND ROAD
SCALE : 1" = 100'
0 50 100 200 300 400
PROPERTY GRAPHIC
M&B PROPERTY
POND ROAD - LEWISTON, MAINE
ANDROSCOGGIN COUNTY
PREPARED FOR
M&B, LLC
378 LISBON STREET - LEWISTON, MAINE 04240
Stoneybrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice/(207) 514-7492 Fax
DATE: JANUARY 2016
JOB NUMBER: 15-015
DRAWN BY: BRJ
CHECKED BY: NPG
SCALE: 1" = 200'
CADD: 15-015 PROPERTY
SHEET
1

NOTE:
THE PURPOSE OF THIS PLAN IS TO SHOW 200' CIRCLES WITHIN EACH PROPOSED LOT. THIS PLAN IS BASED ON A PLAN ENTITLED "SUBDIVISION PLAN - L&L ESTATES - PHASE 2" PREPARED BY KACHNOVICH LAND SURVEYING, INC.

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

DATE: JANUARY 2016
JOB NUMBER: 15-015

DRAWN BY: BRJ
CHECKED BY: MFG

SCALE: 1" = 200'
CADD: 15-015 LOT

LOT GRAPHIC
L&L ESTATES - PHASE 2
PREPARED FOR
M&B, LLC

SHEET
1

Section 3

Right, Title, Interest

Bk 9278 Pg255 #22563
12-21-2015 @ 03:11p

MAINE SHORT FORM WARRANTY DEED

We **Ricky R. LaChapelle and Monique S. LaChapelle**, husband and wife, both of Lewiston, County of Androscoggin, State of Maine, hereby grant to **M&B, LLC** with a principal place of business in Lewiston, County of Androscoggin, State of Maine, with **WARRANTY COVENANTS**, a certain lot or parcel of land, situated in Lewiston, County of Androscoggin, State of Maine, bounded and described as follows:

See Exhibit A attached hereto and made a part hereof.

The premises are conveyed subject to any easements and restrictions of record and this deed includes all rights, easements, privileges, and appurtenances belonging to the premises hereinabove described.

NO MAINE R.E.
TRANSFER TAX PAID

IN WITNESS WHEREOF, the Grantors have executed this instrument on this 16th day of December, 2015.

Signed, Sealed, and Delivered in the Presence of:

Michael A. Maines
Witness

Ricky R. LaChapelle
Ricky R. LaChapelle

Michael A. Maines
Witness

Monique S. LaChapelle
Monique S. LaChapelle

STATE OF MAINE
ANDROSCOGGIN, SS.

December 16th, 2015

Personally appeared the above-named **Ricky R. LaChapelle and Monique S. LaChapelle** and acknowledged the foregoing to be their free act and deed.

Before me,

Michael A. Maines
Notary Public/Attorney at Law
Print Name: Michael A. Maines, Esq.

SEAL

Exhibit A

A certain lot of parcel of land situated westerly of the Pond Road and easterly of the Old Greene Road, in the City of Lewiston, County of Androscoggin, State of Maine, bounded and described as follow to wit:

Being all of the land described in the following referenced deeds recorded at the Androscoggin County Registry of Deeds:

1) Land conveyed to Ricky R. LaChapelle and Monique S. LaChapelle from Gerald R. Whitmore by a deed dated June 1, 1987 and recorded in Book 2099, Page 159.
2) Land conveyed to Ricky LaChapelle and Monique S. LaChapelle from John N. Leblanc and Veronica L. Leblanc by a deed dated April 13, 1994 and recorded in Book 3244, Page 250.
3) Land conveyed to Ricky LaChapelle and Monique LaChapelle from Henry Leblanc, Jr. and Pauline J. Leblanc by a deed dated March 9, 2000 and recorded in Book 4401, Pages 196-198.

Excepting and reserving from the above described lots as follows:

Beginning at a found 5/8" rebar capped PLS 1134 on the apparent westerly sideline of the Pond Road, said rebar being the southeasterly corner of land now or formerly of Larry Cannon and Ruth Cannon as recorded at the Androscoggin County Registry of Deeds in Book 5444, Page 126;

Thence South 08 degrees 36 minutes 32 seconds West along the westerly sideline of said Road, a distance of 665.92 feet, to a point;

Thence North 79 degrees 26 minutes 11 seconds West through land of Grantors herein, a distance of 792.71 feet, to a point;

Thence North 15 degrees 39 minutes 58 seconds East through land of Grantors herein, a distance of 643.76 feet, to a found 5/8" rebar capped PLS 1134;

Thence South 81 degrees 23 minutes 28 seconds East along land now or formerly of said Cannon, a distance of 713.15 feet, to the first mentioned found 5/8" rebar capped PLS 1134, being the point of beginning.

The land herein contains 11.29 acres.

Bearings are referenced to magnetic north, 2003.

Also, conveying all of the land deeded to Ricky LaChapelle and Monique LaChapelle from Robert Gauthier and Eileen Gauthier by a deed dated November 9, 2006 and recorded in Book 6967, Pages 014-015 at the Androscoggin Country Registry of Deeds.

Excepting and reserving from the above described lot the two following deeds:

A) Land deeded to Matthew P. LaChapelle dated September 18, 2007 and recorded in Book 7262, Pages 038-040 at the Androscoggin County Registry of Deeds.
B) Land deeded to Brian R. LaChapelle and Meredith L. LaChapelle dated December 19, 2012 and recorded in Book 8565, Pages 140-141 at the Androscoggin County Registry of Deeds.

Also conveying all of the land deeded to Rick R. LaChapelle and Monique S. LaChapelle from Ronald L. Leblanc and Ginette H. Leblanc by a deed dated January 15, 2015 and recorded in Book 9073, Pages 168-172 at the Androscoggin County Registry of Deeds.

Total area being conveyed is approximately 91.6 acres.

NO TITLE SEARCH PERFORMED

ANDROSCOGGIN COUNTY
Tina M. Chaunard
REGISTER OF DEEDS

Section 4

Roadway Evaluation Letter

SUMMIT
GEOENGINEERING SERVICES

ROADWAY EVALUATION LETTER

Matobian Avenue
Lewiston, Maine

Prepared for:

Rick LaChapelle
504 Pond Road
Lewiston, Maine 04240

Prepared by:

Summit Geoengineering Services
145 Lisbon St.
Lewiston, Maine

Project #15287
December 2015

SUMMIT
GEOENGINEERING SERVICES

December 15, 2015
SGS #15287

Rick LaChapelle
504 Pond Road
Lewiston, Maine 04240

Reference: Existing Roadway Evaluation, Matobian Avenue
Lewiston, Maine 04240

Dear Rick;

Summit Geoengineering Services (SGS) evaluated the subsurface and geometric conditions for Matobian Avenue to confirm its compliance with the City of Lewiston Public Street standards and determine the necessary construction requirements to conform to the City standards (attached).

Project and Existing Conditions

Matobian Avenue extends from Old Greene Road in Lewiston, Maine approximately 2,100 feet in a south/southeastern direction. For the purpose of this letter, Matobian Avenue will be split into two sections:

- The first 450 feet, starting from Old Greene Road, will be referred to as the "Constructed Section." Based on discussions with the Owner of the roadway, the Constructed Section of Matobian Ave. was built in 2007 in conformance to the subdivision plan, L&L Estates, prepared by Kachnovich Land Surveying, Inc., dated 5/29/2007.
- The remaining 1,650 feet will be referred to as the "Logging/Access Section." Based on conversation with the Owner, this section has been constructed over time by clearing and placing miscellaneous soil fill.

Both sections of Matobian Ave are currently unpaved.

Explorations and Subsurface Conditions

SGS performed a total of 5 tests pits (TP-1 through TP-5) within the Constructed Section of roadway to determine the thickness of the gravel layer and to collected samples of the gravel for grain size analyses. Test pits were excavated to 24" below current ground surface. Thickness of the gravel ranged from 16" to 22." Grain size analyses results suggest that the in-place gravel meets the 2014 Maine DOT Type D gradation specification. The test pit logs are attached to this letter.

SGS performed a total of 7 test pits (TP-6 through TP-12) in the Logging/Access Section of the roadway to characterize the subsurface conditions and determine if subgrade improvements (such as overexcavation or subgrade stabilization) are necessary for the construction of this section of roadway. Findings from the test pits in the Logging/Access Section suggest that the subgrade consists either of native glacial till or imported fill. The glacial till and Fill encountered in this section of roadway does not meet the City of Lewiston Public Street Standards.

Roadway Conformance Evaluation

The objective of this letter is to describe the necessary improvements required to conform both sections of Matobian Avenue to The City of Lewiston Public Street Standards. The City of Lewiston Code of Ordinance, Chapter 66, Article IV, Section 66-96 states: "The city shall adopt standards for design and construction of streets and sidewalks in the City of Lewiston through the issuance of [The Policy for the Design and Constriction of Streets and Sidewalks]." The applicable standards from this document are attached to this letter. Chapter 3 "Geometric Design Standards" and Chapter 4 "Construction Standards" for both sections of roadway are addressed below:

Constructed Section:

Based on measurements of the existing roadway section, the following construction is necessary for the first 450 feet of Matobian Avenue to meet Chapter 3 "Geometric Design Standards" of The City of Lewiston Public Street Standards:

- Increase travel way width to 24'
- Provide 2' of shoulder width on each side of roadway

Based on the findings from the test pits in the existing roadway section, the first 450 feet of Matobian Avenue contains acceptable aggregate subbase material and thickness. ,The following construction is necessary for the first 450 feet of Matobian Avenue to meet Chapter 4 "Construction Standards" of The City of Lewiston Public Street Standards:

- Install 3" minimum of Crushed Aggregate Base Course (1 ½" maximum particle size)
- Pave roadway section with 2" Base Course and a 1" Surface Course

The widened sections of roadway should include the minimum 15" of Subbase Gravel to match the existing gravel layer.

Logging/Access Section:

Based on measurements of the existing roadway section, the following construction is necessary for the remaining 1,650 feet of Matobian Avenue to meet Chapter 3 "Geometric Design Standards" of The City of Lewiston Public Street Standards:

- Increase travel way width to 24'
- Maintain road grade between 0.5% and 8.0%

- Provide roadway crown
- Provide 2’ of shoulder width on each side of roadway
- Provide a turnaround at the end of Matobian Ave

In order to provide an efficient surface water collection system, a variance from the roadway crown requirements will be requested to allow for a roadway superelevation (1/2” per foot) for approximately 1,650 feet of roadway.

Based on the findings from the test pits in the existing roadway section, the remaining 1,650 feet of Matobian Avenue does not contain acceptable aggregate subbase material or thickness. The following construction is necessary for the “Logging/Access Section to meet Chapter 4 “Construction Standards” of The City of Lewiston Public Street Standards:

- Install 15” minimum of Crushed Aggregate Subbase Course (6” maximum particle size
- Install 3” minimum of Crushed Aggregate Base Course (1 ½” maximum particle size)
- Pave roadway section with 2” Base Course and a 1” Surface Course

All of the required improvements described above will be included in the construction documents submitted with the proper approvals.

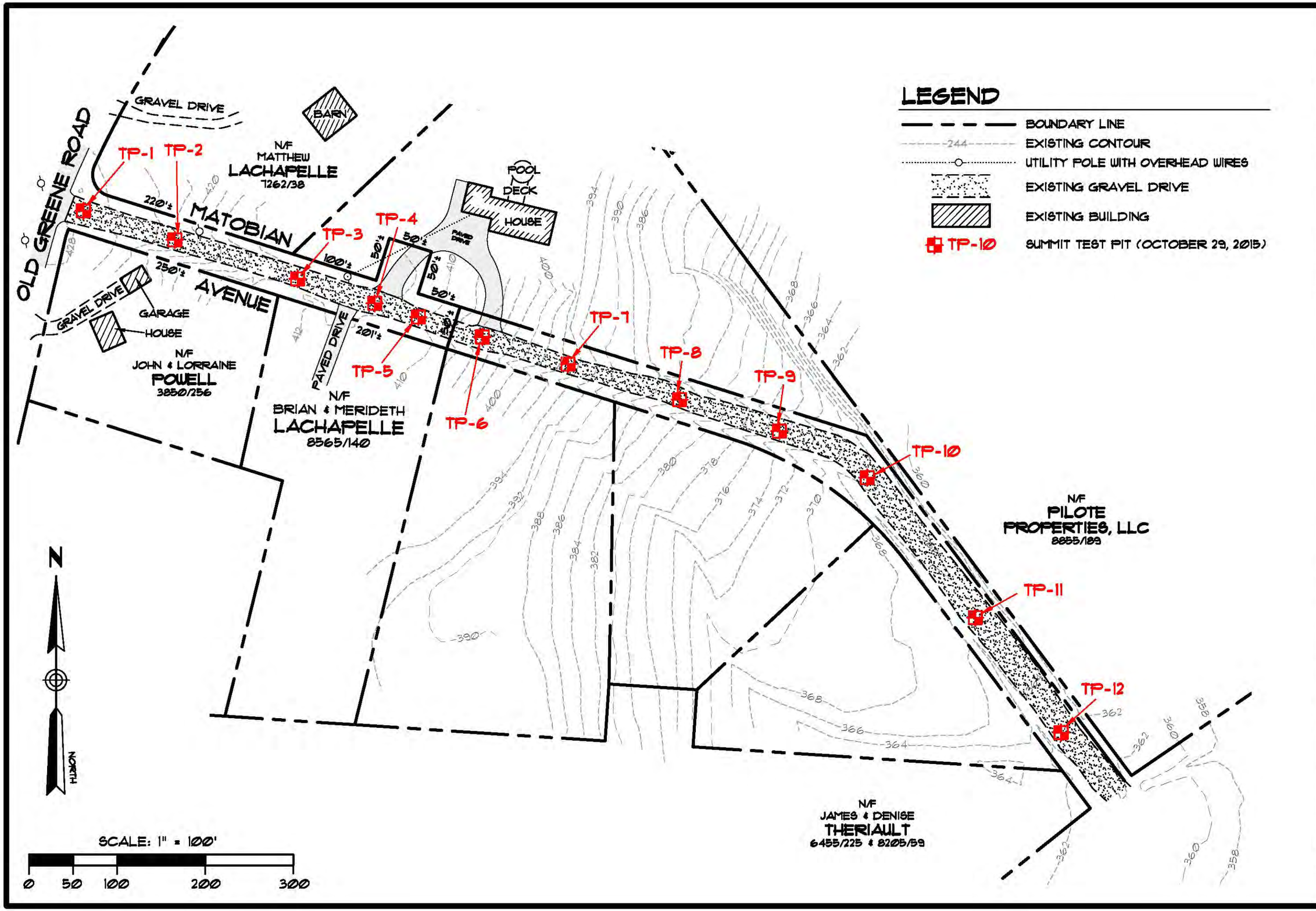
Sincerely yours,
Summit Geoengineering Services, Inc.

William M. Peterlein, P.E.
President & Principal Engineer

STATE OF MAINE
WILLIAM M. PETERLEIN 5787
LICENSED PROFESSIONAL ENGINEER

APPENDIX A

TEST PIT LOCATION PLAN



PROJECT: L & L ESTATES
MATOBIAN AVENUE - LEWISTON, ME

CLIENT: RICK & MONIQUE LACHAPELLE

TITLE: TEST PIT LOCATION PLAN

SCALE: 1" = 100'

DRAWN BY: KRF

DATE: DECEMBER 2015

APPR. BY: WAP

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

113 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7161

SUMMIT
GEOENGINEERING SERVICES

PROJ.#: 15135

FIGURE: 1

APPENDIX B

TEST PIT LOGS

SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-1
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Brown Sandy GRAVEL, little Silt, humid, compact, GW	FILL 18"
2	Dark tan SILT, little Gravel, Sand, and Clay, humid, ML	GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-2
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Brown Sandy GRAVEL, little Silt, humid, compact, GW	FILL 20"
2	Dark tan SILT, little Gravel, Sand, and Clay, humid, ML	GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-3
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Brown Sandy GRAVEL, little Silt, humid, compact, GW	FILL 19"
2	Dark tan SILT, little Gravel, Sand, and Clay, humid, ML	GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-4
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None

Contractor: Ron Leblanc	Ground Surface Elevation:		
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015		
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy	

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Brown Sandy GRAVEL, little Silt, humid, compact, GW	FILL 22"
2	Dark tan SILT, little Gravel, Sand, and Clay, humid, ML	GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-5
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Brown Sandy GRAVEL, little Silt, humid, compact, GW	FILL 16"
2	Dark tan SILT, little Gravel, Sand, and Clay, humid, ML	GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-6
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
	Brown Sandy GRAVEL, little Silt, humid, compact, GW	6" FILL
1	Dark tan SILT, little to some Clay, little Gravel and Sand, moist, mottled	heavily mottled
2		GLACIAL TILL
3	End of Test Pit at 30", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-7
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Olive gray Silty SAND, little Clay (Clay balls), little Gravel and Cobbles, asphalt and brick pieces, soft, wet, SM	FILL
2		
	Dark tan SILT, little Sand and Gravel, trace Clay, wet, ML mottled	GLACIAL TILL
3	End of Test Pit at 30", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-8
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Olive gray Silty SAND, little Clay (Clay balls), little Gravel and Cobbles, asphalt and brick pieces, soft, wet, SM	FILL
2		
3	Dark tan SILT, little Sand and Gravel, trace Clay, wet, ML mottled	GLACIAL TILL
4	End of Test Pit at 36", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-9
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Olive gray Silty SAND, little Clay (Clay balls), little Gravel and Cobbles, asphalt and brick pieces, soft, wet, SM	FILL
2		
3	increasing cobbles and boulders	
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5	End of Test Pit at 48", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-10
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Olive gray Silty GRAVEL, little Sand, brick pieces, loose, wet, GM	FILL 10"
2	Dark tan SILT, little Gravel, Sand, and Clay, wet, ML	trace roots GLACIAL TILL slightly mottled at 24"
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7	End of Test Pit at 6', no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-11
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Olive gray Sandy GRAVEL, little to some Silt, brick pieces, wet, GM	FILL 12"
2	Dark tan SILT, little Gravel, Sand, and Clay, wet, ML	trace roots and rootlets, mottled GLACIAL TILL
3	End of Test Pit at 24", no refusal	
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SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-12
	Project: LaChapelle Subdivision Road Matobian Ave. Lewiston, Maine	Project #: 15135 Groundwater: None
Contractor: Ron Leblanc	Ground Surface Elevation:	
Equipment: Daewoo 220 Excavator	Referenc "Subdivision Schematic" by Stoneybrook dated 10/2015	
Summit Staff: M. Hardison	Date: 10/29/2015	Weather: 50° Rainy

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
	Olive Gray Sandy GRAVEL, little Silt, soft, wet, GP	FILL
1	Tan SILT, little Sand, roots and rootlets, wet, mottled, ML	OLD TOPSOIL/FOREST DUFF
	End of Test Pit at 12", no refusal	
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APPENDIX C

LABORATORY TEST RESULTS

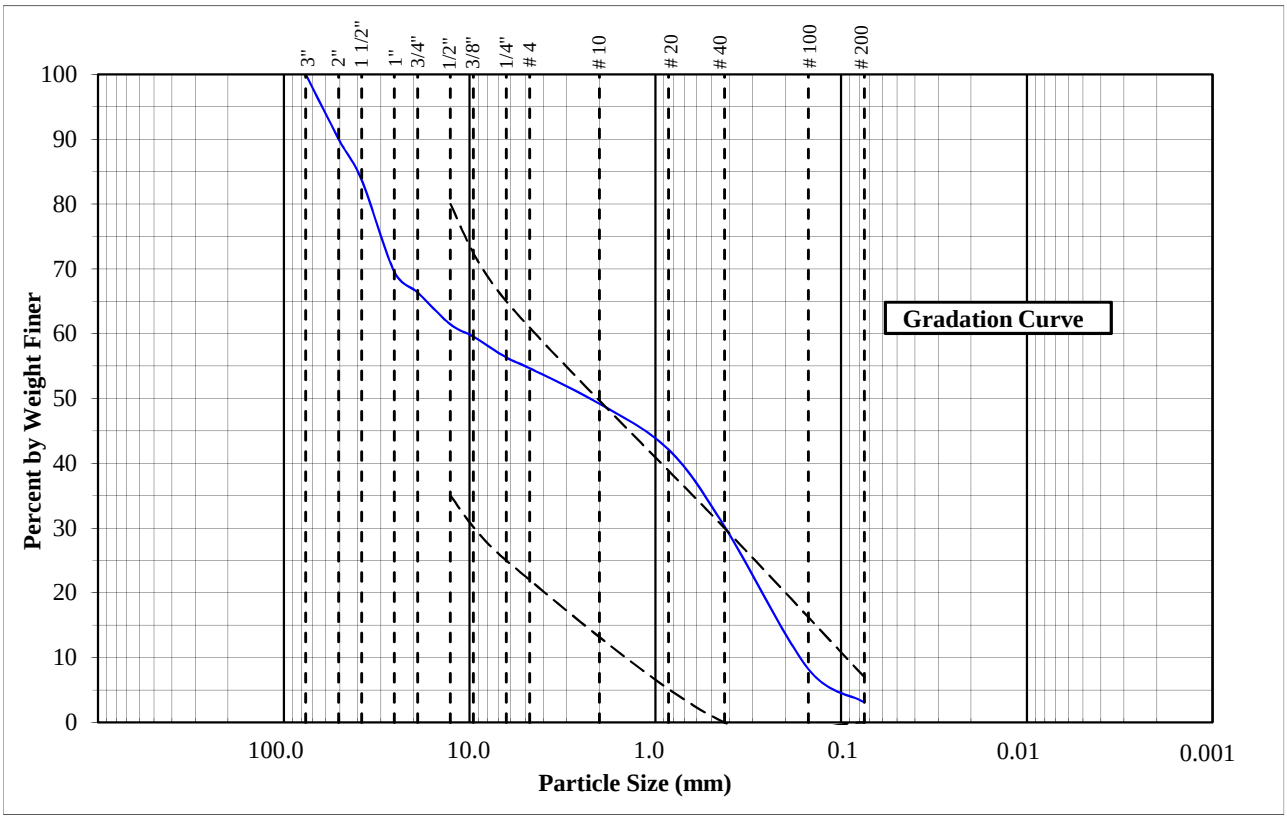
SUMMIT
GEOENGINEERING SERVICES

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Lachapelle Subdivision Roadway Design	PROJECT NUMBER:	15135
CLIENT:	Stoneybrook	SAMPLE NUMBER:	TP-1, S-1
SOURCE:	TP-1, 0"-18"	DESCRIPTION:	Gravelly SAND, trace Silt, SP
DATE:	11/4/2015	TECHNICIAN:	Erika Stewart, E.I.

DATA

PARTICLE SIZE mm		% BY WT FINER	MDOT 703.06 TYPE D
76.20	(3 in)	100.0	100
50.80	(2 in)	90.1	
38.10	(1-1/2 in)	83.7	
25.40	(1 in)	69.5	
19.05	(3/4 in)	66.4	
12.70	(1/2 in)	61.4	35 - 80
9.53	(3/8 in)	59.5	
6.35	(1/4 in)	56.3	25 - 65
4.75	(No. 4)	54.7	
2.00	(No. 10)	49.2	
0.85	(No. 20)	42.1	
0.43	(No. 40)	30.3	0 - 30
0.15	(No. 100)	8.2	
0.075	(No. 200)	3.1	0 - 7



REMARKS: Moisture Content = 2.9%, Angular gravel / rock pieces

145 Lisbon Street (PO Box 7216) Lewiston, Maine (207) 576-3313
173 Pleasant Street, Rockland, Maine 04841, (207) 318-7761

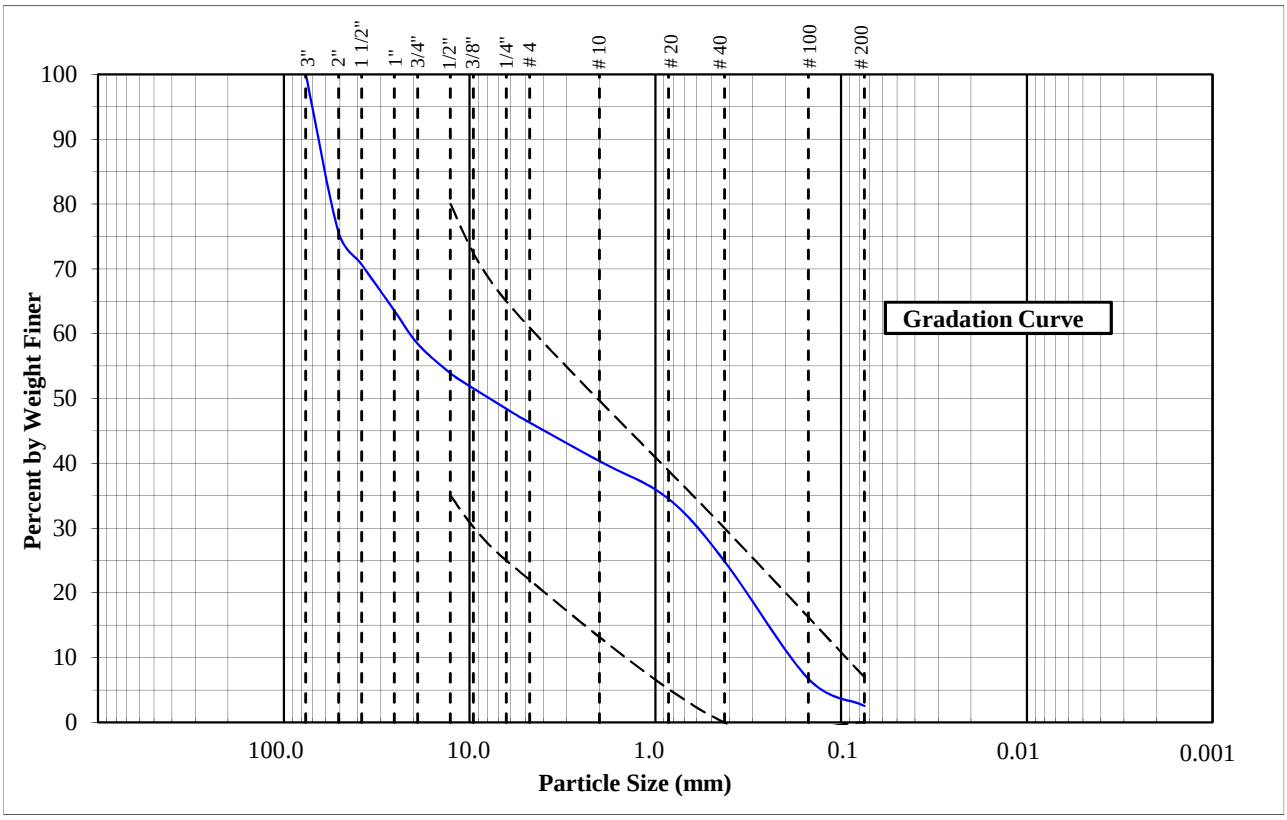
SUMMIT
GEOENGINEERING SERVICES

GRAIN SIZE ANALYSIS - ASTM D422

PROJECT NAME:	Lachapelle Subdivision Roadway Design	PROJECT NUMBER:	15135
CLIENT:	Stoneybrook	SAMPLE NUMBER:	TP-4, S-1
SOURCE:	TP-4, 0"-24"	DESCRIPTION:	Sandy GRAVEL, trace Silt, GP
DATE:	11/4/2015	TECHNICIAN:	Erika Stewart, E.I.

DATA

PARTICLE SIZE mm		% BY WT FINER	MDOT 703.06 TYPE D
76.20	(3 in)	100.0	100
50.80	(2 in)	75.7	
38.10	(1-1/2 in)	70.7	
25.40	(1 in)	63.6	
19.05	(3/4 in)	58.4	
12.70	(1/2 in)	53.9	35 - 80
9.53	(3/8 in)	51.6	
6.35	(1/4 in)	48.4	25 - 65
4.75	(No. 4)	46.3	
2.00	(No. 10)	40.3	
0.85	(No. 20)	34.5	
0.43	(No. 40)	24.9	0 - 30
0.15	(No. 100)	6.7	
0.075	(No. 200)	2.6	0 - 7



REMARKS: Moisture Content = 3.8%, Angular gravel / rock pieces

145 Lisbon Street (PO Box 7216) Lewiston, Maine (207) 576-3313
173 Pleasant Street, Rockland, Maine 04841, (207) 318-7761

APPENDIX D

CITY OF LEWISTON ROADWAY DESIGN SPECIFICATIONS

CHAPTER 3 – GEOMETRIC DESIGN STANDARDS

3.01 PURPOSE

The purpose of this section is to present standards for minimum road design criteria. These design standards apply to those streets and roads classified in Section 1.03 unless the Developer or Contractor first secures a waiver pursuant to Lewiston Code of Ordinances, Ch. 66, Art. IV, Sec. 66-97. Developments submitted for review under these standards shall be stamped by a State of Maine licensed professional engineer.

3.02 MINIMUM GEOMETRIC REQUIREMENTS

Following is a table with minimum geometric requirements for the various classifications of streets governed by this Policy.

Description	Classification of Street				
	Arterial	Collector	Public Street	Public Court	Mobile Home Park Road
Minimum Right-of way Width	100'	60'	50'	40'(6)	24'
Minimum Paved Travel Way Width(5)	24'	24'	24'	24'	20'
Sidewalk Width	5'(1)	5'(1)	5' (1)	5'(1)	5' (1)
Minimum Grade	.5%	.5%	.5%	.5%	.5%
Maximum Grade	8%	8%	8%	8%	8%
Minimum Centerline Radius	(2)	(2)	(2)	(2)	(2)
Minimum Tangent between Curves of reverse alignment	(2)	(2)	(2)	(2)	(2)
Roadway Crown	½ "/ft	½"/ft	½"/ft	½"/ft	½"/ft
Minimum Angle of Street Intersections	(2)	(2)	(2)	(2)	(2)
Maximum Grade at Street Intersection	3% in 100'	3% in 100'	3% in 100'	3% in 100'	3% in 100'
Minimum Curb Radii at Intersections	(2)	(2)	(2)	(2)	(2)
Minimum ROW Radii at Intersections	50'	25'	10'	10'	10'
Minimum Width of Shoulders each side (3)	10' (4)	4' (4)	2' (4)	n/a	n/a

(1) If sidewalks exist on the project site or adjacent properties or if significant pedestrian traffic is present or anticipated in the future, the appropriate reviewing authority may require the installation of sidewalks which shall meet the minimum requirements identified in this table.

(2) In accordance with Maine DOT Design Standards

(3) The construction detail for these street categories shall extend to the edge of the shoulder in a box section, or to the edge of slope in a rural section,

(4) Shoulders shall be paved

(5) Mobile home park roads do not need to be paved.

(6) The Director of Public services may approve a reduction in the width of a Public Court right-of-way to no less than 30' if there are compelling reason(s) to do so and all easements are provided for stormwater, drainage, snow storage, utility coridors and etc to the satisfaction of the Director of Public Services

Modifications to the above referenced grade requirements may be granted by the Director of Public Services should it be determined that safety and site distances have not been compromised. The Director may require that the applicant demonstrate this through the services of a State of Maine licensed professional engineer.

CHAPTER 4 – CONSTRUCTION STANDARDS

4.01 PURPOSE

The purpose of this section is to outline minimum construction standards that must be met in order for a proposed public street, public court or mobile home park road to be accepted or approved by the City of Lewiston.

4.02 MINIMUM MATERIAL REQUIREMENTS

The minimum material requirements to be used in the construction of all new, or proposed, public streets, public courts or mobile home park roads and alterations to the same shall conform to the standards of the City of Lewiston's Department of Public Services and the following table.

Street Materials Minimum Requirements	**Classification of Street**			
	Arterial	Collector	Public Street/Court	Mobile Home Road(3)
Travel Surface	HMA	HMA	HMA	gravel/HMA(4)
Aggregate – Subbase Course (1) (Maximum stone size – 6")	27"	27"	15"	15"
Crushed Aggregate Base Course (1) (Maximum stone size – 1 ½ ")	3"	3"	3"	3"
Hot Bituminous Pavement (1)				
Base Course/Binder (19 MM)	6"	6"	2"	
Surface Course (9.5 MM)	1.5"	1.5"	1"	
Curb	(2)	(2)	(2)	

(1) All thicknesses are minimums after compaction
(2) Curb shall be provided as necessary for erosion control
(3) At a minimum, a 15' x 20' paved apron at the roads intersection with the existing street must be installed. Otherwise, mobile home park roads do not need to be paved.

4.03 CONSTRUCTION REQUIREMENTS

Every street shall be constructed to its full roadway width and length, including sidewalks and curbing where required. Every street proposed for acceptance shall conform accurately to the grades, cross sections and all other requirements and circumstances approved by the City, and be shown on the plans and profiles herein required.

All loam, loamy material, clay, stumps, roots, brush and perishable material shall be cleared from the entire area of the right of way for public streets, private roads, and mobile home roads and for an additional ten feet on either side of the roadway for arterial or collector streets. In all cases this area shall be loamed and seeded in accordance with City of Lewiston's Department of Public Services Streets and Sidewalks Design and Construction Manual.

Section 5

Fill Information

145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

113 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

SUMMIT
GEOENGINEERING SERVICES

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

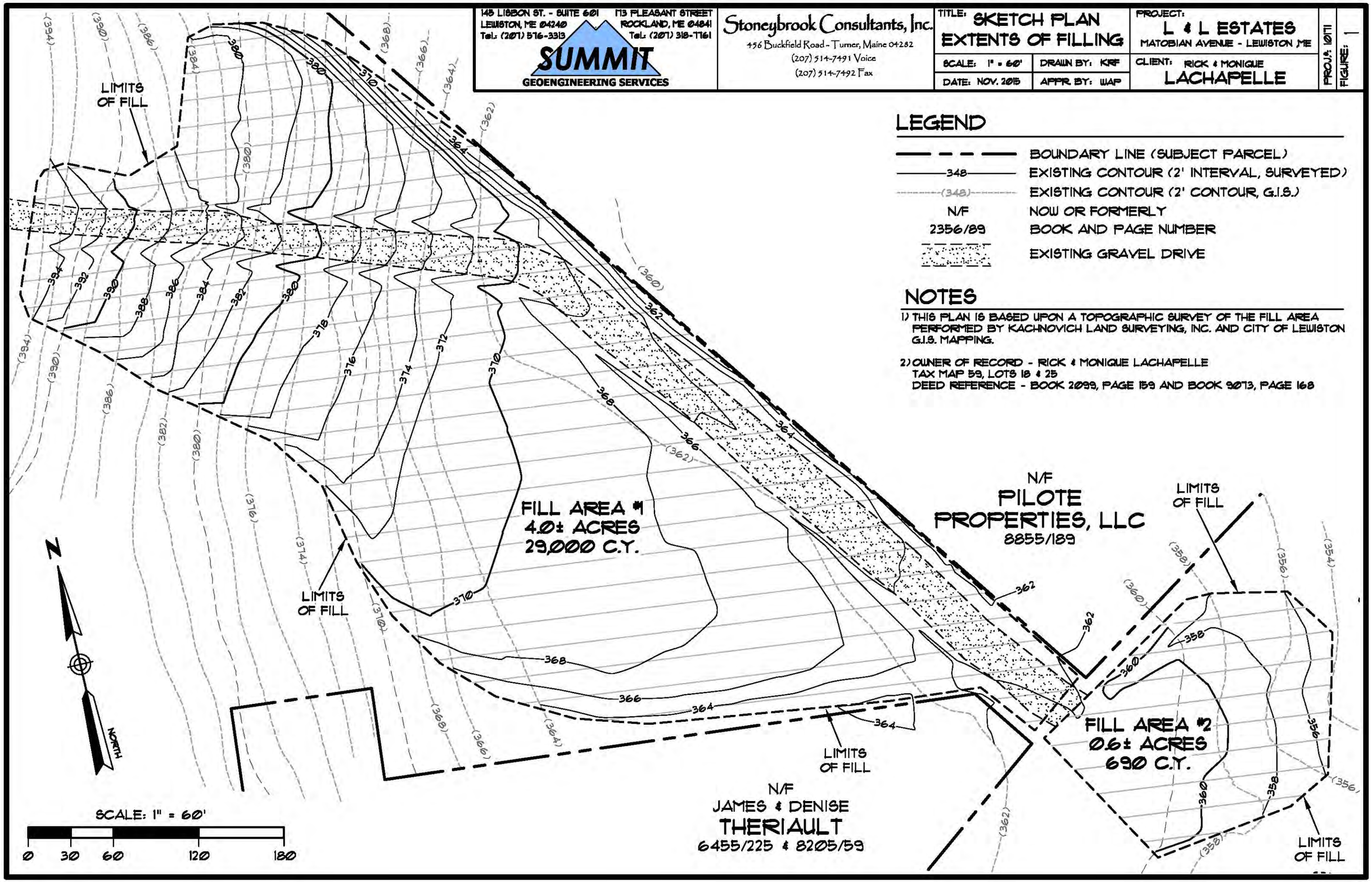
TITLE: SKETCH PLAN
EXTENTS OF FILLING

SCALE: 1" = 60'
DRAWN BY: KRF
DATE: NOV. 2015
APPR. BY: WAP

PROJECT:
L & L ESTATES
MATOBIAN AVENUE - LEWISTON, ME

CLIENT: RICK & MONIQUE
LACHAPELLE

PROJ.#: 10171
FIGURE: 1



LEGEND

— — —	BOUNDARY LINE (SUBJECT PARCEL)
——348——	EXISTING CONTOUR (2' INTERVAL, SURVEYED)
- - -(348)- - -	EXISTING CONTOUR (2' CONTOUR, G.I.S.)
N/F	NOW OR FORMERLY
2356/89	BOOK AND PAGE NUMBER
	EXISTING GRAVEL DRIVE

NOTES

1) THIS PLAN IS BASED UPON A TOPOGRAPHIC SURVEY OF THE FILL AREA PERFORMED BY KACHNOVICH LAND SURVEYING, INC. AND CITY OF LEWISTON G.I.S. MAPPING.

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

Section 6

Stormwater Report

SUMMIT
GEOENGINEERING SERVICES

Stormwater Report

L & L ESTATES
OLD GREENE ROAD
LEWISTON, MAINE

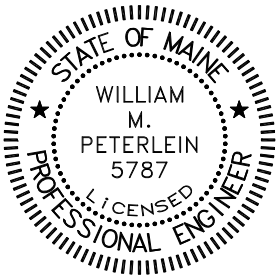
Prepared for:

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.
    - Winter construction.

- 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.

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). Refer to SW-1 in Appendix D. 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	1.61	4.30
25 yr	4.28	2.57	6.85

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	4.30 cfs	6.85 cfs
Post Development	0.69 cfs	2.89 cfs	5.87 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		
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 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, 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:

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: _____

Print Name: _____

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 - 81,000 sf x .0833 = 6747cf
Non-impervious – 681966 x .0333 = 22709cf
Total required = 29456 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 – 81,000sf x 0.125 = 10125cf
Non impervious – 681966 x 0.0333 = 22732cf
Total required = 32857 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 = 17.665 ac, 9.46% Impervious, Inflow Depth > 2.40"
Inflow = 11.71 cfs @ 13.44 hrs, Volume= 3.540 af
Outflow = 11.64 cfs @ 13.53 hrs, Volume= 2.862 af, Atten= 1%, Lag= 4.9 min
Secondary = 11.64 cfs @ 13.53 hrs, Volume= 2.862 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 349.75' @ 13.53 hrs Surf.Area= 15,978 sf Storage= 33,455 cf

Plug-Flow detention time= 137.3 min calculated for 2.858 af (81% of inflow)
Center-of-Mass det. time= 56.5 min (982.5 - 926.0)

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

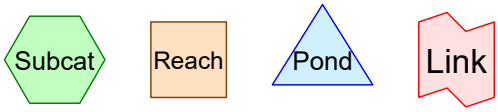
Secondary OutFlow Max=11.62 cfs @ 13.53 hrs HW=349.75' (Free Discharge)
└**1=Broad-Crested Rectangular Weir** (Weir Controls 11.62 cfs @ 1.56 fps)

APPENDIX C

FLOODING STANDARDS COMPUTATIONS

APPENDIX C.1

PRE-DEVELOPMENT COMPUTATIONS



Routing Diagram for exisitng conditions rev 1-13-16. no WS3
Prepared by Microsoft, Printed 1/13/2016
HydroCAD® 10.00-12 s/n 01406 © 2014 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.970	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.380	98	Paved parking, HSG B (1S, 2S)
0.250	98	Roofs, HSG B (1S, 2S)
15.000	55	Woods, Good, HSG B (1S, 2S)
17.600	**57**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=11.400 ac 3.77% Impervious Runoff Depth>0.19"
Flow Length=1,050' Tc=99.0 min CN=57 Runoff=0.50 cfs 0.181 af

Subcatchment 2S: WS#2 Runoff Area=6.200 ac 3.23% Impervious Runoff Depth>0.19"
Flow Length=1,000' Tc=88.2 min CN=57 Runoff=0.29 cfs 0.099 af

Total Runoff Area = 17.600 ac Runoff Volume = 0.280 af Average Runoff Depth = 0.19"
96.42% Pervious = 16.970 ac 3.58% Impervious = 0.630 ac

Summary for Subcatchment 1S: WS#1

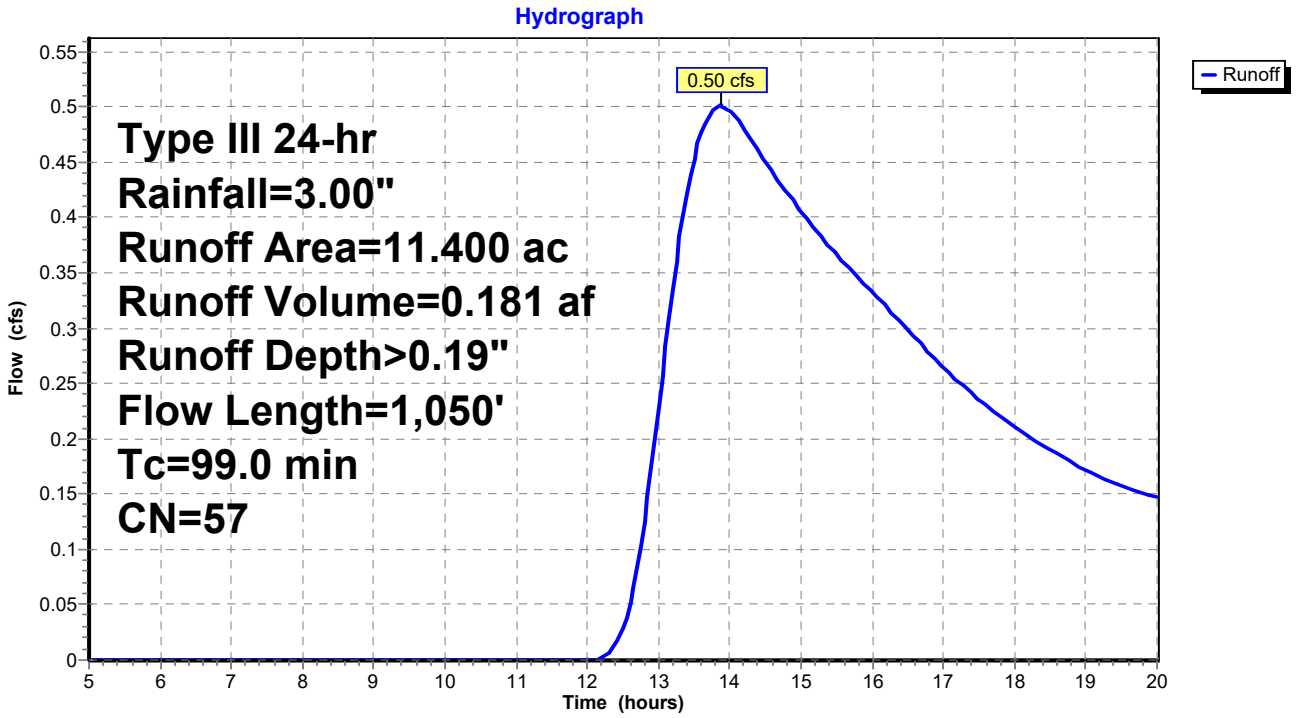
Runoff = 0.50 cfs @ 13.87 hrs, Volume= 0.181 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=3.00"

Area (ac)	CN	Description
0.150	98	Roofs, HSG B
0.280	98	Paved parking, HSG B
1.570	61	>75% Grass cover, Good, HSG B
9.400	55	Woods, Good, HSG B
11.400	57	Weighted Average
10.970		96.23% Pervious Area
0.430		3.77% 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)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.34	0.00	0.00
8.25	0.36	0.00	0.00
8.50	0.39	0.00	0.00
8.75	0.41	0.00	0.00
9.00	0.44	0.00	0.00
9.25	0.47	0.00	0.00
9.50	0.50	0.00	0.00
9.75	0.53	0.00	0.00
10.00	0.57	0.00	0.00
10.25	0.61	0.00	0.00
10.50	0.65	0.00	0.00
10.75	0.70	0.00	0.00
11.00	0.75	0.00	0.00
11.25	0.81	0.00	0.00
11.50	0.89	0.00	0.00
11.75	1.07	0.00	0.00
12.00	1.50	0.00	0.00
12.25	1.93	0.02	0.00
12.50	2.11	0.04	0.03
12.75	2.19	0.06	0.10
13.00	2.25	0.07	0.23
13.25	2.30	0.08	0.36
13.50	2.35	0.08	0.45
13.75	2.39	0.09	**0.50**
14.00	2.43	0.10	**0.50**
14.25	2.47	0.11	0.48
14.50	2.50	0.12	0.45
14.75	2.53	0.12	0.43
15.00	2.56	0.13	0.41
15.25	2.59	0.14	0.39
15.50	2.61	0.14	0.37
15.75	2.64	0.15	0.35
16.00	2.66	0.15	0.33
16.25	2.68	0.16	0.32
16.50	2.70	0.16	0.30
16.75	2.71	0.17	0.28
17.00	2.73	0.17	0.26
17.25	2.74	0.17	0.25
17.50	2.76	0.18	0.24
17.75	2.77	0.18	0.22
18.00	2.78	0.18	0.21
18.25	2.80	0.19	0.20
18.50	2.81	0.19	0.19
18.75	2.82	0.19	0.18
19.00	2.83	0.20	0.17
19.25	2.84	0.20	0.16
19.50	2.85	0.20	0.16
19.75	2.86	0.21	0.15
20.00	**2.87**	**0.21**	0.15

Summary for Subcatchment 2S: WS#2

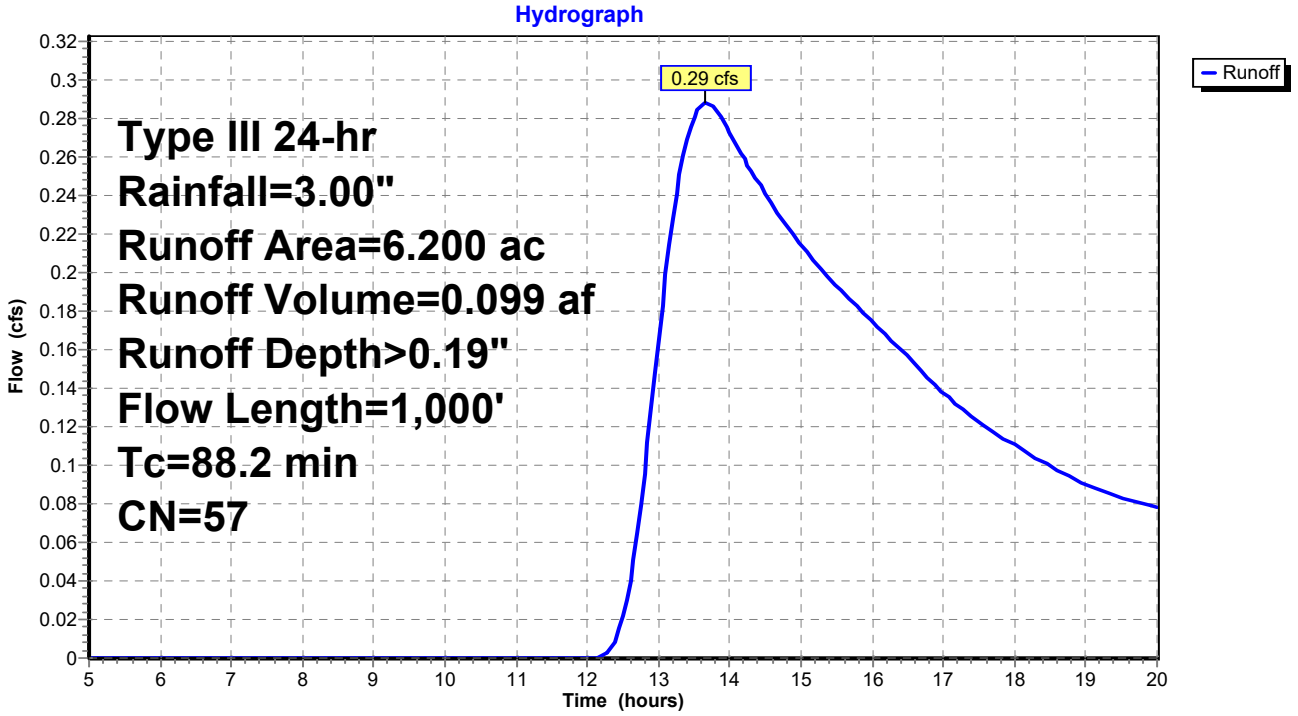
Runoff = 0.29 cfs @ 13.66 hrs, Volume= 0.099 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 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
5.600	55	Woods, Good, HSG B
6.200	57	Weighted Average
6.000		96.77% Pervious Area
0.200		3.23% 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)
5.00	0.17	0.00	0.00
5.25	0.18	0.00	0.00
5.50	0.19	0.00	0.00
5.75	0.20	0.00	0.00
6.00	0.22	0.00	0.00
6.25	0.23	0.00	0.00
6.50	0.24	0.00	0.00
6.75	0.26	0.00	0.00
7.00	0.27	0.00	0.00
7.25	0.29	0.00	0.00
7.50	0.30	0.00	0.00
7.75	0.32	0.00	0.00
8.00	0.34	0.00	0.00
8.25	0.36	0.00	0.00
8.50	0.39	0.00	0.00
8.75	0.41	0.00	0.00
9.00	0.44	0.00	0.00
9.25	0.47	0.00	0.00
9.50	0.50	0.00	0.00
9.75	0.53	0.00	0.00
10.00	0.57	0.00	0.00
10.25	0.61	0.00	0.00
10.50	0.65	0.00	0.00
10.75	0.70	0.00	0.00
11.00	0.75	0.00	0.00
11.25	0.81	0.00	0.00
11.50	0.89	0.00	0.00
11.75	1.07	0.00	0.00
12.00	1.50	0.00	0.00
12.25	1.93	0.02	0.00
12.50	2.11	0.04	0.02
12.75	2.19	0.06	0.08
13.00	2.25	0.07	0.17
13.25	2.30	0.08	0.24
13.50	2.35	0.08	**0.28**
13.75	2.39	0.09	**0.29**
14.00	2.43	0.10	0.27
14.25	2.47	0.11	0.26
14.50	2.50	0.12	0.24
14.75	2.53	0.12	0.23
15.00	2.56	0.13	0.21
15.25	2.59	0.14	0.20
15.50	2.61	0.14	0.19
15.75	2.64	0.15	0.18
16.00	2.66	0.15	0.17
16.25	2.68	0.16	0.17
16.50	2.70	0.16	0.16
16.75	2.71	0.17	0.15
17.00	2.73	0.17	0.14
17.25	2.74	0.17	0.13
17.50	2.76	0.18	0.12
17.75	2.77	0.18	0.12
18.00	2.78	0.18	0.11
18.25	2.80	0.19	0.10
18.50	2.81	0.19	0.10
18.75	2.82	0.19	0.09
19.00	2.83	0.20	0.09
19.25	2.84	0.20	0.09
19.50	2.85	0.20	0.08
19.75	2.86	0.21	0.08
20.00	**2.87**	**0.21**	0.08

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=11.400 ac 3.77% Impervious Runoff Depth>0.75"
Flow Length=1,050' Tc=99.0 min CN=57 Runoff=2.74 cfs 0.717 af

Subcatchment 2S: WS#2 Runoff Area=6.200 ac 3.23% Impervious Runoff Depth>0.76"
Flow Length=1,000' Tc=88.2 min CN=57 Runoff=1.61 cfs 0.393 af

Total Runoff Area = 17.600 ac Runoff Volume = 1.110 af Average Runoff Depth = 0.76"
96.42% Pervious = 16.970 ac 3.58% Impervious = 0.630 ac

Summary for Subcatchment 1S: WS#1

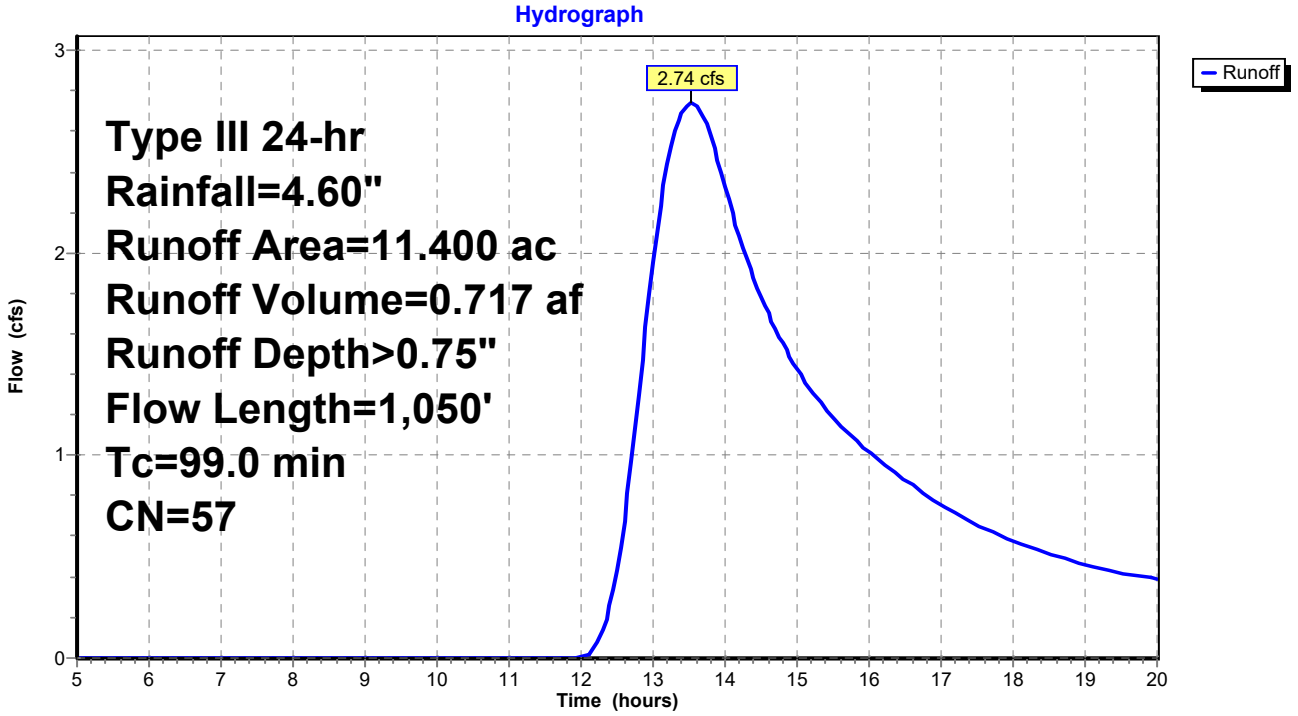
Runoff = 2.74 cfs @ 13.54 hrs, Volume= 0.717 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=4.60"

Area (ac)	CN	Description
0.150	98	Roofs, HSG B
0.280	98	Paved parking, HSG B
1.570	61	>75% Grass cover, Good, HSG B
9.400	55	Woods, Good, HSG B
11.400	57	Weighted Average
10.970		96.23% Pervious Area
0.430		3.77% 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)
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.39	0.00	0.00
7.00	0.42	0.00	0.00
7.25	0.44	0.00	0.00
7.50	0.47	0.00	0.00
7.75	0.50	0.00	0.00
8.00	0.52	0.00	0.00
8.25	0.56	0.00	0.00
8.50	0.59	0.00	0.00
8.75	0.63	0.00	0.00
9.00	0.67	0.00	0.00
9.25	0.72	0.00	0.00
9.50	0.76	0.00	0.00
9.75	0.81	0.00	0.00
10.00	0.87	0.00	0.00
10.25	0.93	0.00	0.00
10.50	1.00	0.00	0.00
10.75	1.07	0.00	0.00
11.00	1.15	0.00	0.00
11.25	1.25	0.00	0.00
11.50	1.37	0.00	0.00
11.75	1.63	0.00	0.00
12.00	2.30	0.08	0.00
12.25	2.97	0.24	0.09
12.50	3.23	0.32	0.44
12.75	3.35	0.36	1.13
13.00	3.45	0.40	1.95
13.25	3.53	0.43	2.53
13.50	3.60	0.46	**2.73**
13.75	3.67	0.48	**2.63**
14.00	3.73	0.51	2.33
14.25	3.79	0.53	2.02
14.50	3.84	0.55	1.78
14.75	3.88	0.57	1.59
15.00	3.93	0.59	1.43
15.25	3.97	0.61	1.30
15.50	4.01	0.62	1.19
15.75	4.04	0.64	1.10
16.00	4.08	0.65	1.02
16.25	4.10	0.66	0.95
16.50	4.13	0.68	0.88
16.75	4.16	0.69	0.81
17.00	4.18	0.70	0.76
17.25	4.21	0.71	0.70
17.50	4.23	0.72	0.66
17.75	4.25	0.73	0.62
18.00	4.27	0.74	0.58
18.25	4.29	0.75	0.55
18.50	4.30	0.76	0.52
18.75	4.32	0.76	0.49
19.00	4.34	0.77	0.46
19.25	4.36	0.78	0.44
19.50	4.37	0.79	0.42
19.75	4.39	0.79	0.40
20.00	**4.40**	**0.80**	0.39

Summary for Subcatchment 2S: WS#2

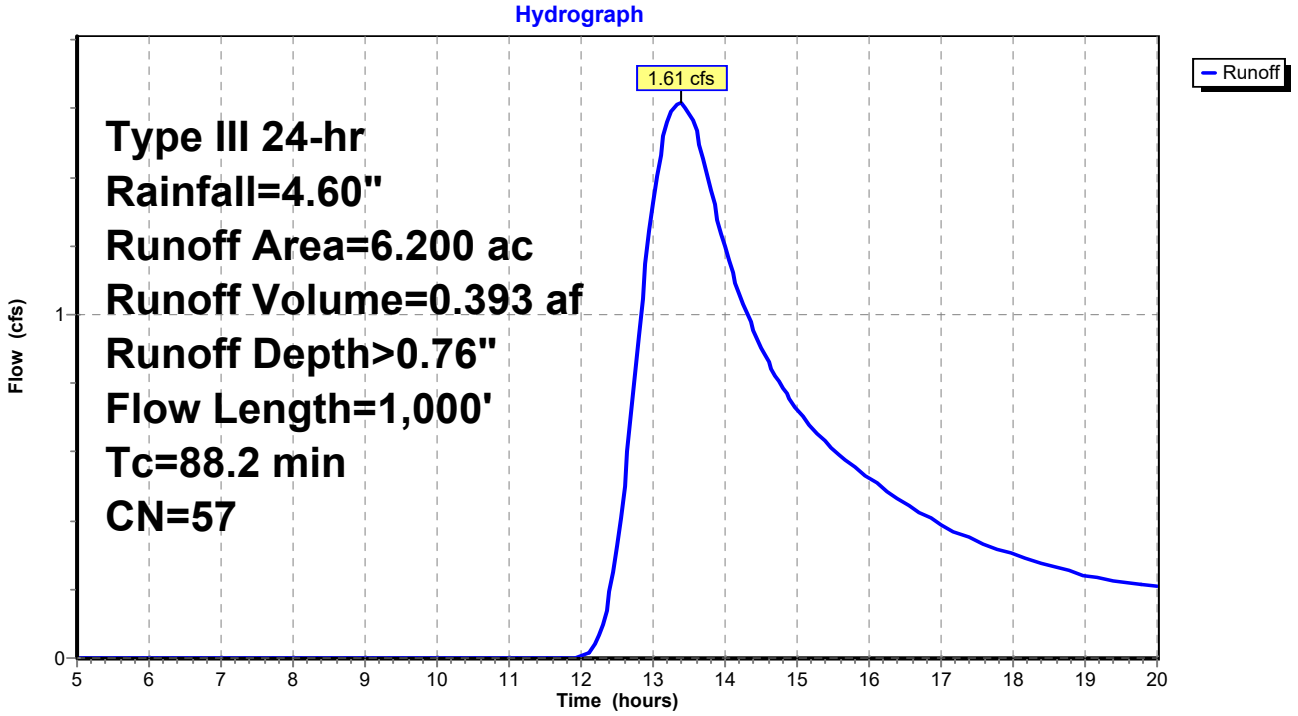
Runoff = 1.61 cfs @ 13.38 hrs, Volume= 0.393 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 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
5.600	55	Woods, Good, HSG B
6.200	57	Weighted Average
6.000		96.77% Pervious Area
0.200		3.23% 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)
5.00	0.26	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.31	0.00	0.00
6.00	0.33	0.00	0.00
6.25	0.35	0.00	0.00
6.50	0.37	0.00	0.00
6.75	0.39	0.00	0.00
7.00	0.42	0.00	0.00
7.25	0.44	0.00	0.00
7.50	0.47	0.00	0.00
7.75	0.50	0.00	0.00
8.00	0.52	0.00	0.00
8.25	0.56	0.00	0.00
8.50	0.59	0.00	0.00
8.75	0.63	0.00	0.00
9.00	0.67	0.00	0.00
9.25	0.72	0.00	0.00
9.50	0.76	0.00	0.00
9.75	0.81	0.00	0.00
10.00	0.87	0.00	0.00
10.25	0.93	0.00	0.00
10.50	1.00	0.00	0.00
10.75	1.07	0.00	0.00
11.00	1.15	0.00	0.00
11.25	1.25	0.00	0.00
11.50	1.37	0.00	0.00
11.75	1.63	0.00	0.00
12.00	2.30	0.08	0.00
12.25	2.97	0.24	0.06
12.50	3.23	0.32	0.33
12.75	3.35	0.36	0.82
13.00	3.45	0.40	1.33
13.25	3.53	0.43	**1.59**
13.50	3.60	0.46	**1.59**
13.75	3.67	0.48	1.40
14.00	3.73	0.51	1.20
14.25	3.79	0.53	1.03
14.50	3.84	0.55	0.90
14.75	3.88	0.57	0.80
15.00	3.93	0.59	0.72
15.25	3.97	0.61	0.66
15.50	4.01	0.62	0.61
15.75	4.04	0.64	0.56
16.00	4.08	0.65	0.52
16.25	4.10	0.66	0.49
16.50	4.13	0.68	0.45
16.75	4.16	0.69	0.42
17.00	4.18	0.70	0.39
17.25	4.21	0.71	0.36
17.50	4.23	0.72	0.34
17.75	4.25	0.73	0.32
18.00	4.27	0.74	0.30
18.25	4.29	0.75	0.28
18.50	4.30	0.76	0.27
18.75	4.32	0.76	0.25
19.00	4.34	0.77	0.24
19.25	4.36	0.78	0.23
19.50	4.37	0.79	0.22
19.75	4.39	0.79	0.21
20.00	**4.40**	**0.80**	0.21

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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=11.400 ac 3.77% Impervious Runoff Depth>1.13"
Flow Length=1,050' Tc=99.0 min CN=57 Runoff=4.35 cfs 1.074 af

Subcatchment 2S: WS#2 Runoff Area=6.200 ac 3.23% Impervious Runoff Depth>1.14"
Flow Length=1,000' Tc=88.2 min CN=57 Runoff=2.57 cfs 0.588 af

Total Runoff Area = 17.600 ac Runoff Volume = 1.663 af Average Runoff Depth = 1.13"
96.42% Pervious = 16.970 ac 3.58% Impervious = 0.630 ac

Summary for Subcatchment 1S: WS#1

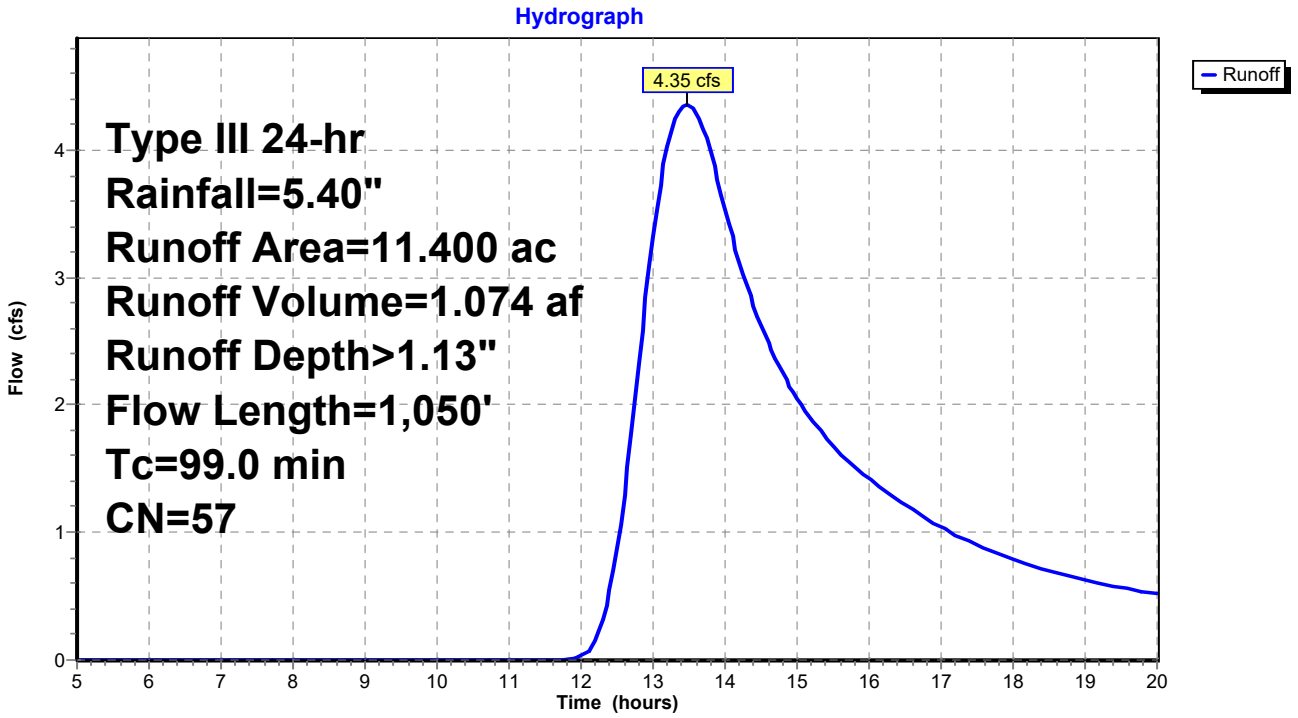
Runoff = 4.35 cfs @ 13.49 hrs, Volume= 1.074 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr Rainfall=5.40"

Area (ac)	CN	Description
0.150	98	Roofs, HSG B
0.280	98	Paved parking, HSG B
1.570	61	>75% Grass cover, Good, HSG B
9.400	55	Woods, Good, HSG B
11.400	57	Weighted Average
10.970		96.23% Pervious Area
0.430		3.77% 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)
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.37	0.00	0.00
6.00	0.39	0.00	0.00
6.25	0.41	0.00	0.00
6.50	0.44	0.00	0.00
6.75	0.46	0.00	0.00
7.00	0.49	0.00	0.00
7.25	0.52	0.00	0.00
7.50	0.55	0.00	0.00
7.75	0.58	0.00	0.00
8.00	0.62	0.00	0.00
8.25	0.65	0.00	0.00
8.50	0.69	0.00	0.00
8.75	0.74	0.00	0.00
9.00	0.79	0.00	0.00
9.25	0.84	0.00	0.00
9.50	0.90	0.00	0.00
9.75	0.96	0.00	0.00
10.00	1.02	0.00	0.00
10.25	1.09	0.00	0.00
10.50	1.17	0.00	0.00
10.75	1.26	0.00	0.00
11.00	1.35	0.00	0.00
11.25	1.46	0.00	0.00
11.50	1.61	0.00	0.00
11.75	1.92	0.02	0.00
12.00	2.70	0.16	0.03
12.25	3.48	0.41	0.23
12.50	3.79	0.53	0.87
12.75	3.94	0.59	2.05
13.00	4.05	0.64	3.33
13.25	4.14	0.68	4.14
13.50	4.23	0.72	**4.35**
13.75	4.31	0.76	4.09
14.00	4.38	0.79	3.53
14.25	4.44	0.82	3.02
14.50	4.50	0.85	2.63
14.75	4.56	0.88	2.31
15.00	4.61	0.90	2.05
15.25	4.66	0.93	1.85
15.50	4.71	0.95	1.68
15.75	4.75	0.97	1.54
16.00	4.78	0.99	1.42
16.25	4.82	1.01	1.31
16.50	4.85	1.03	1.21
16.75	4.88	1.04	1.12
17.00	4.91	1.06	1.04
17.25	4.94	1.07	0.96
17.50	4.96	1.09	0.90
17.75	4.99	1.10	0.84
18.00	5.01	1.11	0.79
18.25	5.03	1.12	0.74
18.50	5.05	1.13	0.70
18.75	5.07	1.14	0.66
19.00	5.09	1.15	0.62
19.25	5.11	1.17	0.59
19.50	5.13	1.18	0.57
19.75	5.15	1.19	0.54
20.00	**5.17**	**1.20**	0.52

Summary for Subcatchment 2S: WS#2

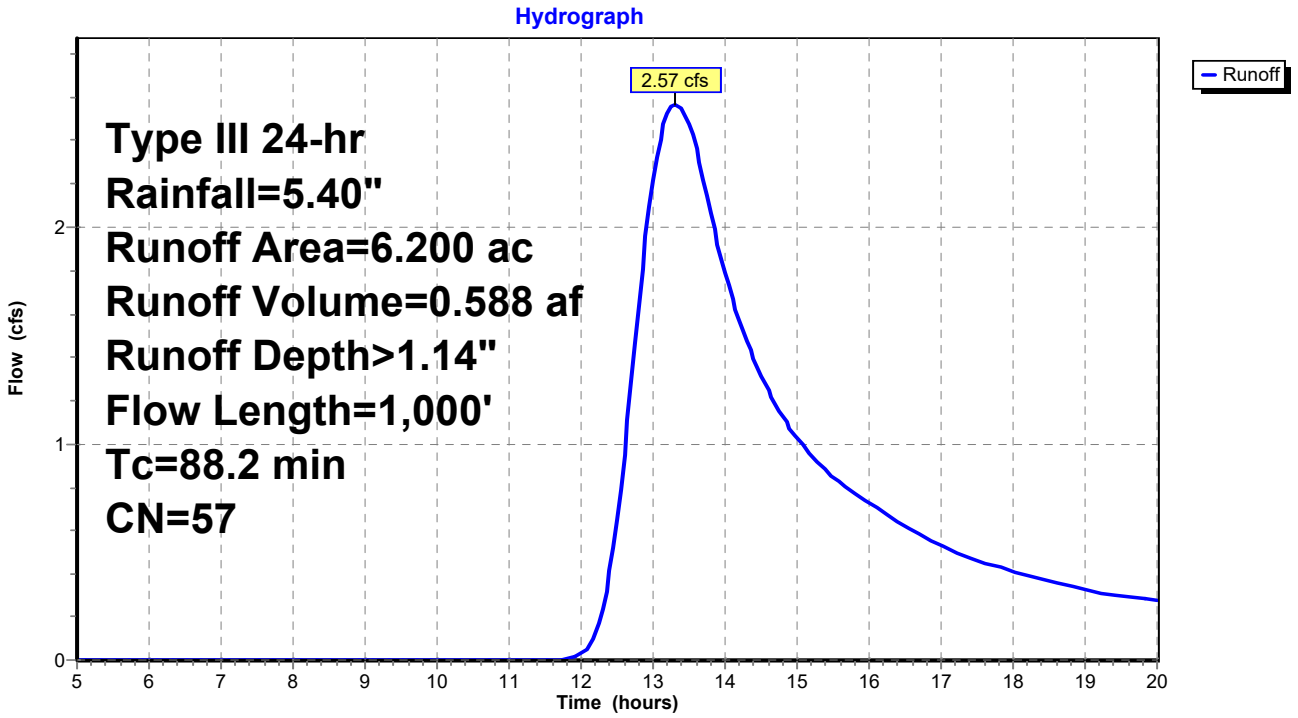
Runoff = 2.57 cfs @ 13.31 hrs, Volume= 0.588 af, Depth> 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 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
5.600	55	Woods, Good, HSG B
6.200	57	Weighted Average
6.000		96.77% Pervious Area
0.200		3.23% 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

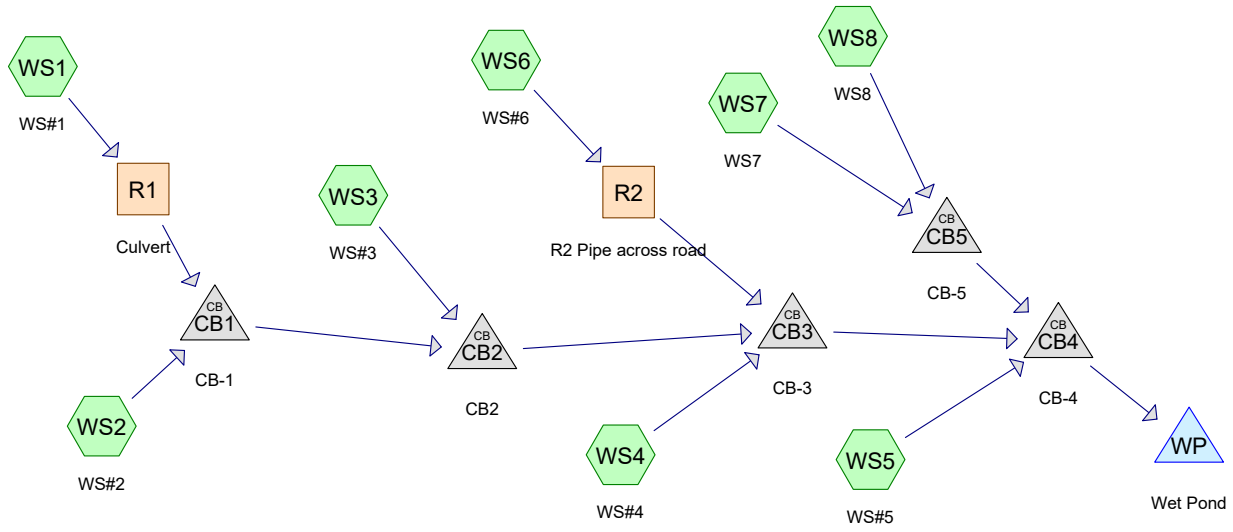


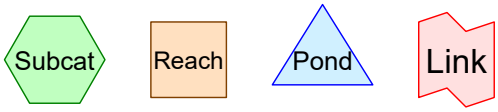
Hydrograph for Subcatchment 2S: WS#2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
5.00	0.31	0.00	0.00
5.25	0.33	0.00	0.00
5.50	0.35	0.00	0.00
5.75	0.37	0.00	0.00
6.00	0.39	0.00	0.00
6.25	0.41	0.00	0.00
6.50	0.44	0.00	0.00
6.75	0.46	0.00	0.00
7.00	0.49	0.00	0.00
7.25	0.52	0.00	0.00
7.50	0.55	0.00	0.00
7.75	0.58	0.00	0.00
8.00	0.62	0.00	0.00
8.25	0.65	0.00	0.00
8.50	0.69	0.00	0.00
8.75	0.74	0.00	0.00
9.00	0.79	0.00	0.00
9.25	0.84	0.00	0.00
9.50	0.90	0.00	0.00
9.75	0.96	0.00	0.00
10.00	1.02	0.00	0.00
10.25	1.09	0.00	0.00
10.50	1.17	0.00	0.00
10.75	1.26	0.00	0.00
11.00	1.35	0.00	0.00
11.25	1.46	0.00	0.00
11.50	1.61	0.00	0.00
11.75	1.92	0.02	0.00
12.00	2.70	0.16	0.02
12.25	3.48	0.41	0.17
12.50	3.79	0.53	0.65
12.75	3.94	0.59	1.47
13.00	4.05	0.64	2.22
13.25	4.14	0.68	**2.56**
13.50	4.23	0.72	**2.48**
13.75	4.31	0.76	2.15
14.00	4.38	0.79	1.79
14.25	4.44	0.82	1.52
14.50	4.50	0.85	1.31
14.75	4.56	0.88	1.15
15.00	4.61	0.90	1.03
15.25	4.66	0.93	0.93
15.50	4.71	0.95	0.85
15.75	4.75	0.97	0.78
16.00	4.78	0.99	0.72
16.25	4.82	1.01	0.67
16.50	4.85	1.03	0.62
16.75	4.88	1.04	0.57
17.00	4.91	1.06	0.53
17.25	4.94	1.07	0.49
17.50	4.96	1.09	0.46
17.75	4.99	1.10	0.43
18.00	5.01	1.11	0.41
18.25	5.03	1.12	0.39
18.50	5.05	1.13	0.36
18.75	5.07	1.14	0.34
19.00	5.09	1.15	0.32
19.25	5.11	1.17	0.31
19.50	5.13	1.18	0.30
19.75	5.15	1.19	0.29
20.00	**5.17**	**1.20**	0.28

APPENDIX C.2

POST-DEVELOPMENT HYDROCAD OUTPUT





Routing Diagram for post development 1-14-16
Prepared by Microsoft, Printed 1/16/2016
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)
0.469	98	Paved parking, HSG B (WS2, WS3, WS4, WS5, WS8)
0.315	98	Paved roads w/curbs & sewers, HSG B (WS1)
9.052	55	Woods, Good, HSG B (WS6, WS7)
17.665	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
17.665	HSG B	WS1, WS2, WS3, WS4, WS5, WS6, WS7, WS8
0.000	HSG C	
0.000	HSG D	
0.000	Other	
17.665		**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	0.0100	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	365.10	360.55	250.0	0.0182	0.011	15.0	0.0	0.0
5	R2	355.00	354.60	45.0	0.0089	0.013	18.0	0.0	0.0
6	CB1	360.45	356.70	250.0	0.0150	0.013	18.0	0.0	0.0
7	CB2	356.60	354.60	200.0	0.0100	0.013	24.0	0.0	0.0
8	CB3	354.50	352.50	200.0	0.0100	0.013	24.0	0.0	0.0
9	CB4	352.40	350.10	20.0	0.1150	0.013	30.0	0.0	0.0
10	CB5	352.80	352.50	30.0	0.0100	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=5,125 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=210' Tc=2.0 min CN=98 Runoff=0.37 cfs 0.027 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 0.00% Impervious Runoff Depth=0.19"
Flow Length=1,095' Tc=96.1 min CN=55 Runoff=0.11 cfs 0.059 af

Subcatchment WS8: WS8 Runoff Area=4,865 sf 100.00% Impervious Runoff Depth=2.77"
Flow Length=195' Tc=1.9 min CN=98 Runoff=0.35 cfs 0.026 af

Reach R1: Culvert Avg. Flow Depth=0.26' Max Vel=5.23 fps Inflow=0.95 cfs 0.063 af
15.0" Round Pipe n=0.011 L=250.0' S=0.0182 '/' Capacity=10.30 cfs Outflow=0.90 cfs 0.063 af

Reach R2: R2 Pipe across road Avg. Flow Depth=0.32' Max Vel=3.59 fps Inflow=1.00 cfs 0.393 af
18.0" Round Pipe n=0.013 L=45.0' S=0.0089 '/' Capacity=9.90 cfs Outflow=1.00 cfs 0.393 af

Pond CB1: CB-1 Peak Elev=361.00' Inflow=1.15 cfs 0.083 af
18.0" Round Culvert n=0.013 L=250.0' S=0.0150 '/' Outflow=1.15 cfs 0.083 af

Pond CB2: CB2 Peak Elev=357.15' Inflow=1.41 cfs 0.102 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=1.41 cfs 0.102 af

Pond CB3: CB-3 Peak Elev=355.09' Inflow=1.62 cfs 0.511 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=1.62 cfs 0.511 af

Pond CB4: CB-4 Peak Elev=353.07' Inflow=2.33 cfs 0.623 af
30.0" Round Culvert n=0.013 L=20.0' S=0.1150 '/' Outflow=2.33 cfs 0.623 af

Pond CB5: CB-5 Peak Elev=353.11' Inflow=0.35 cfs 0.085 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=0.35 cfs 0.085 af

Pond WP: Wet Pond Peak Elev=347.84' Storage=4,745 cf Inflow=2.33 cfs 0.623 af
Primary=0.69 cfs 0.623 af Secondary=0.00 cfs 0.000 af Outflow=0.69 cfs 0.623 af

Total Runoff Area = 17.665 ac Runoff Volume = 0.623 af Average Runoff Depth = 0.42"
90.54% Pervious = 15.994 ac 9.46% Impervious = 1.670 ac

Summary for Subcatchment WS1: WS#1

[49] Hint: Tc<2dt may require smaller dt

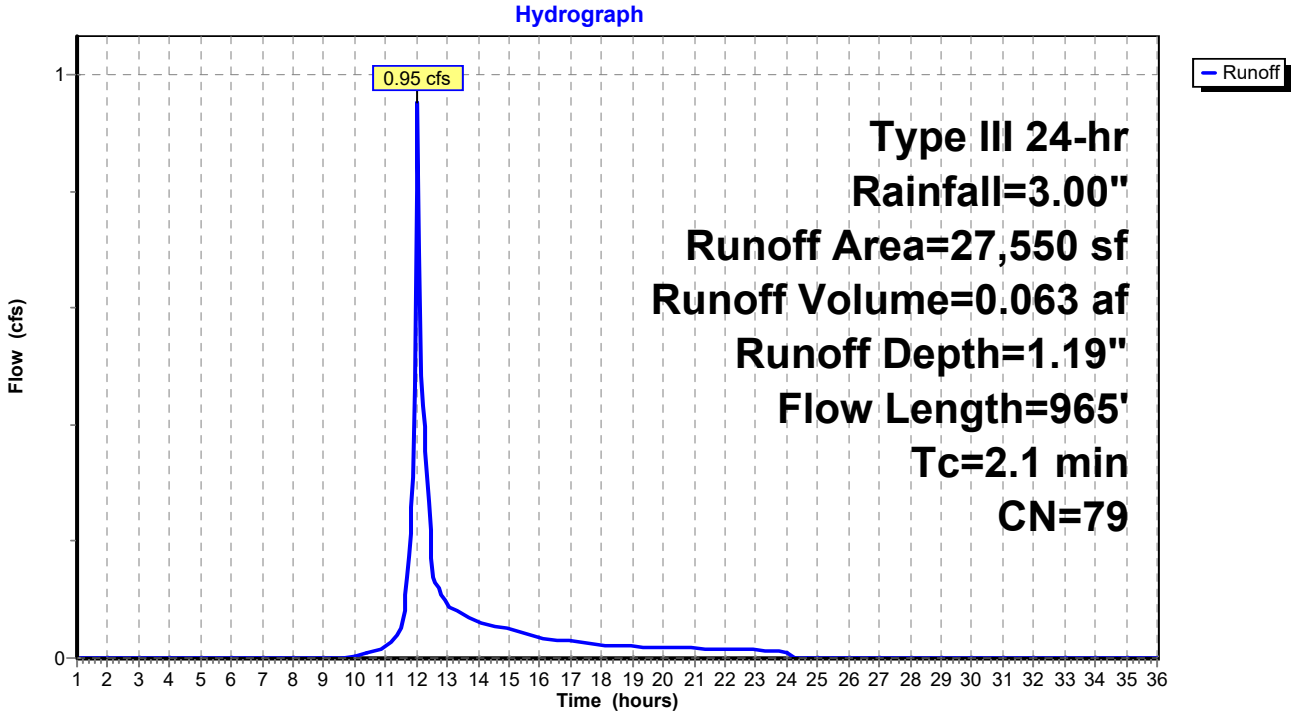
Runoff = 0.95 cfs @ 12.04 hrs, Volume= 0.063 af, Depth= 1.19"

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	0.0100	4.54	3.56	**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

[49] Hint: Tc<2dt may require smaller dt

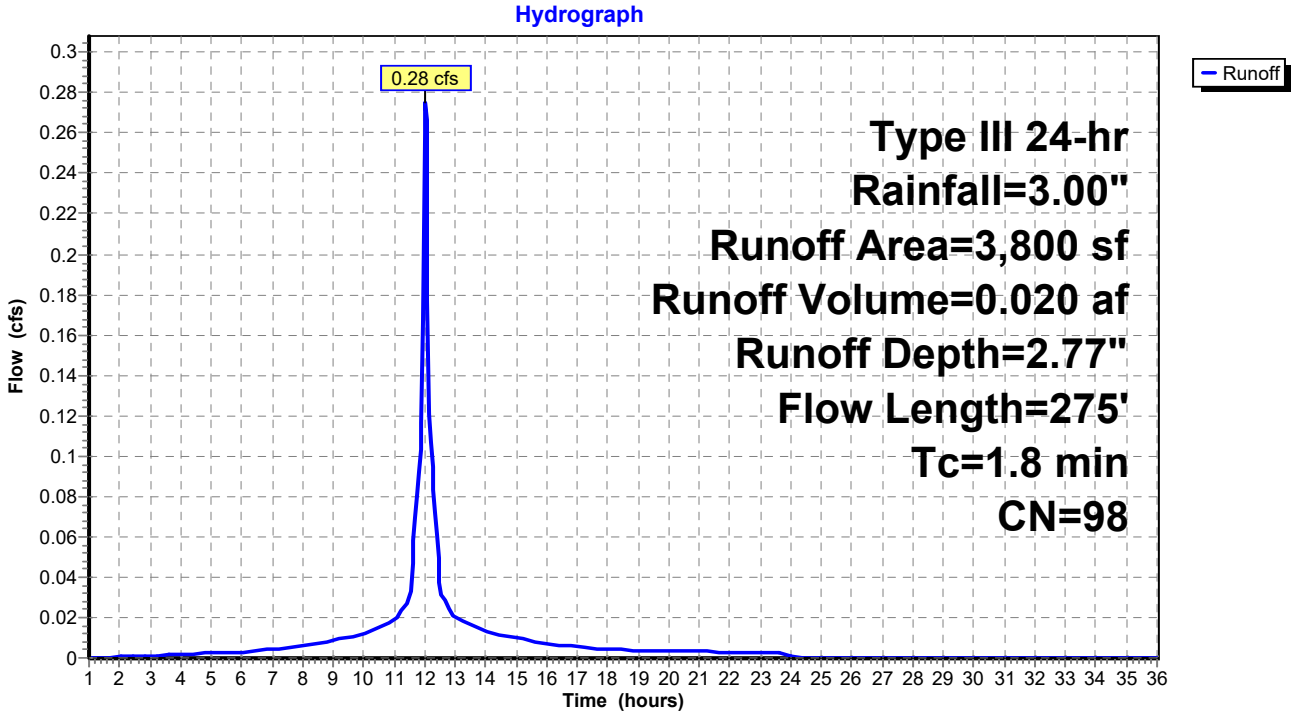
Runoff = 0.28 cfs @ 12.03 hrs, Volume= 0.020 af, Depth= 2.77"

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

[49] Hint: Tc<2dt may require smaller dt

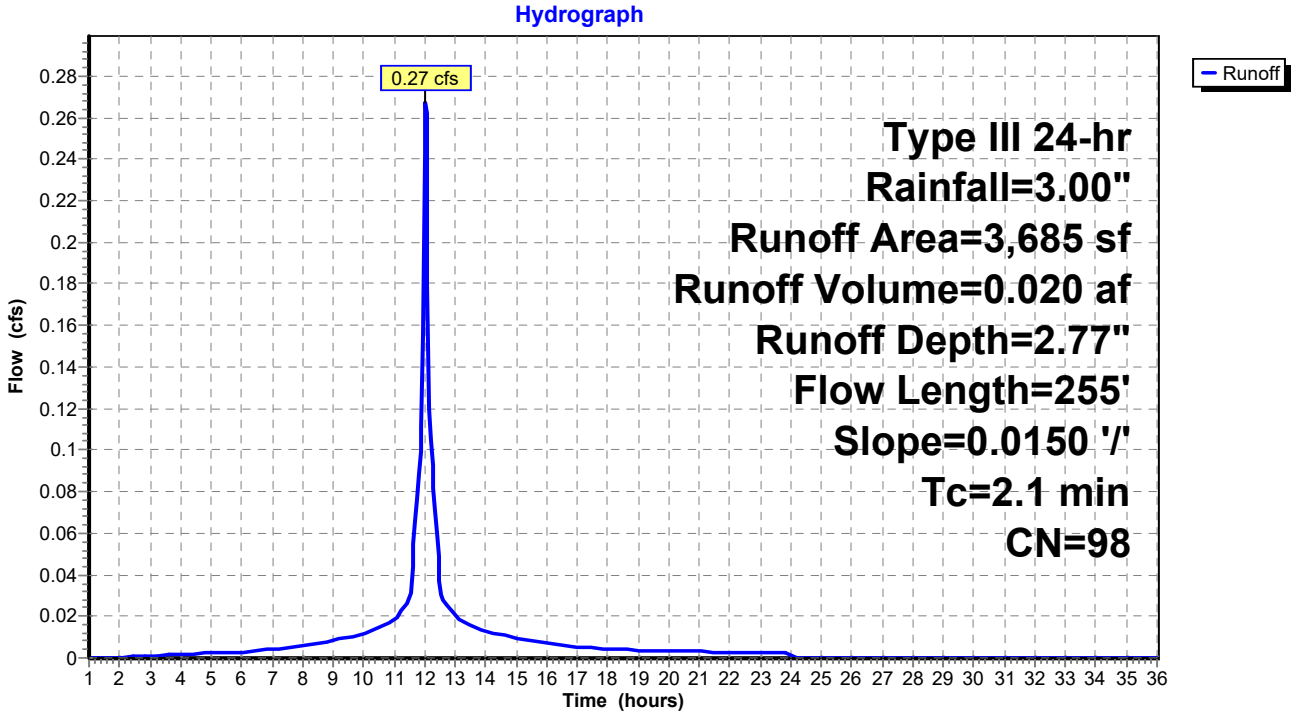
Runoff = 0.27 cfs @ 12.03 hrs, Volume= 0.020 af, Depth= 2.77"

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

[49] Hint: Tc<2dt may require smaller dt

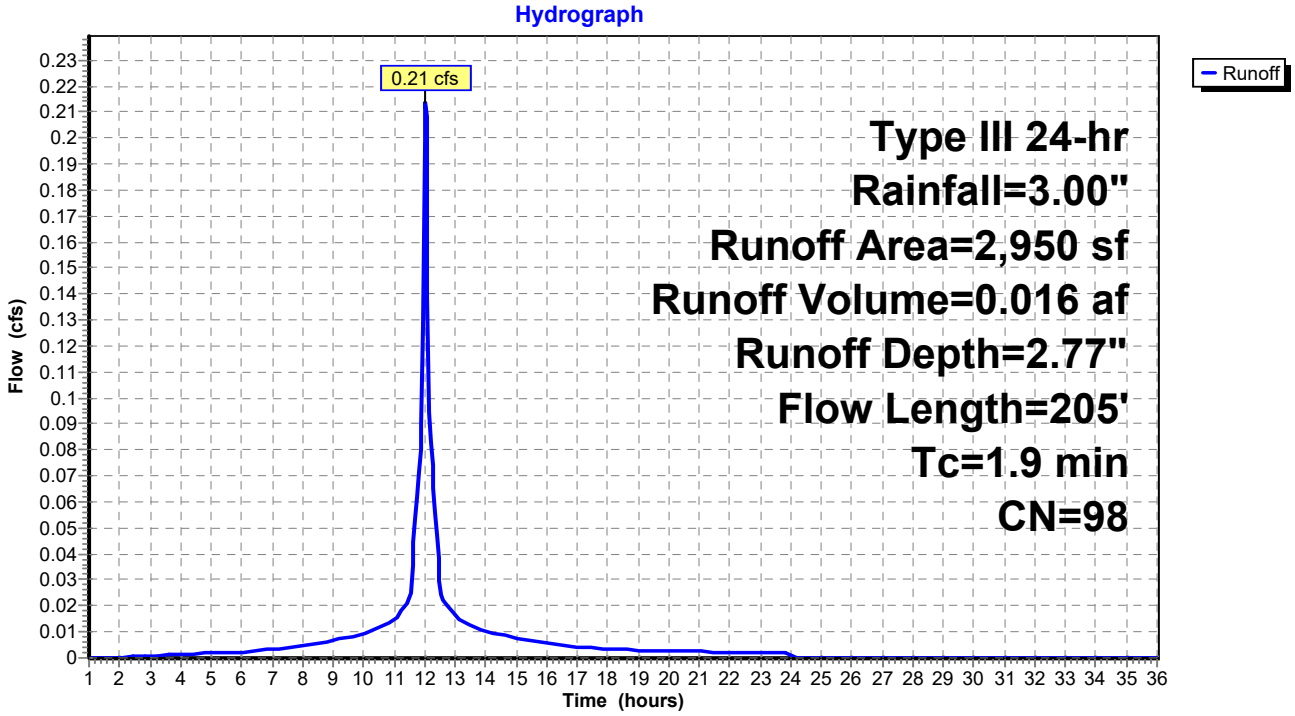
Runoff = 0.21 cfs @ 12.03 hrs, Volume= 0.016 af, Depth= 2.77"

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

[49] Hint: Tc<2dt may require smaller dt

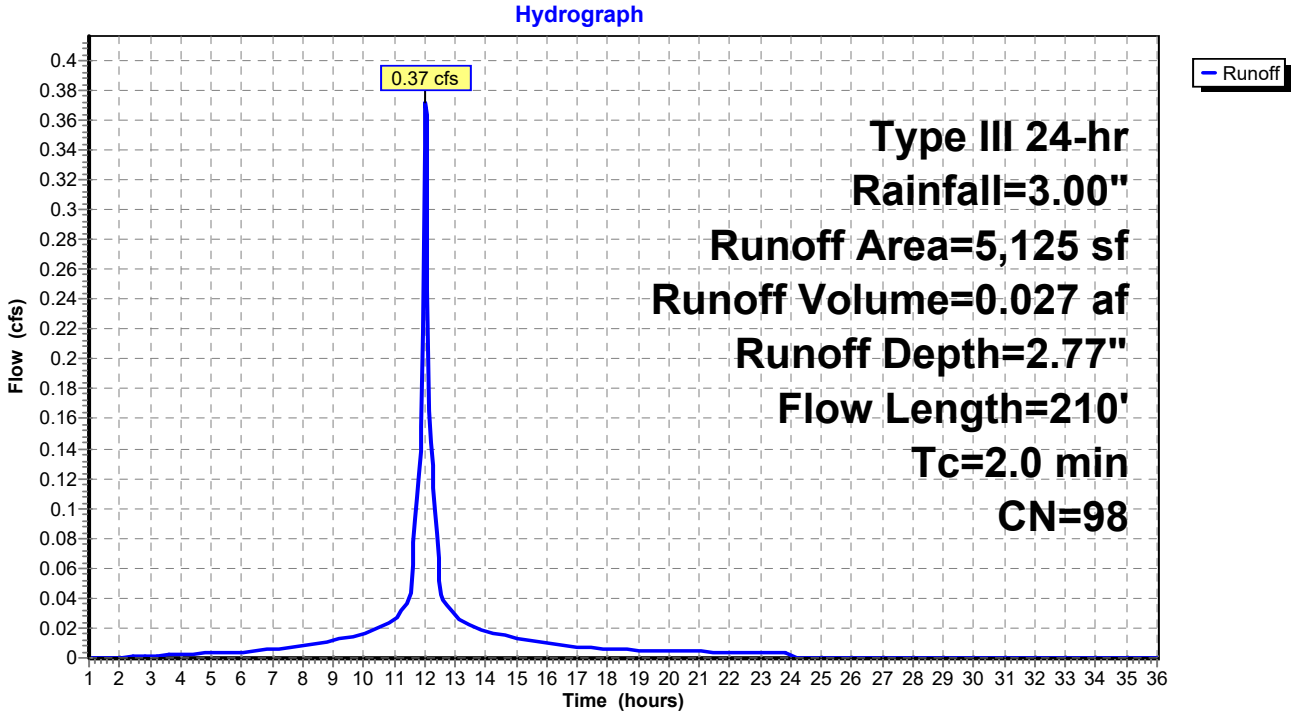
Runoff = 0.37 cfs @ 12.03 hrs, Volume= 0.027 af, Depth= 2.77"

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
5,125	98	Paved parking, HSG B
5,125		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	0.00
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	0.01
10.00	0.57	0.38	0.02
10.50	0.65	0.46	0.02
11.00	0.75	0.55	0.02
11.50	0.89	0.69	0.04
12.00	1.50	1.28	**0.34**
12.50	2.11	1.88	**0.05**
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	0.01
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	0.01
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	0.00
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 WS6: WS#6

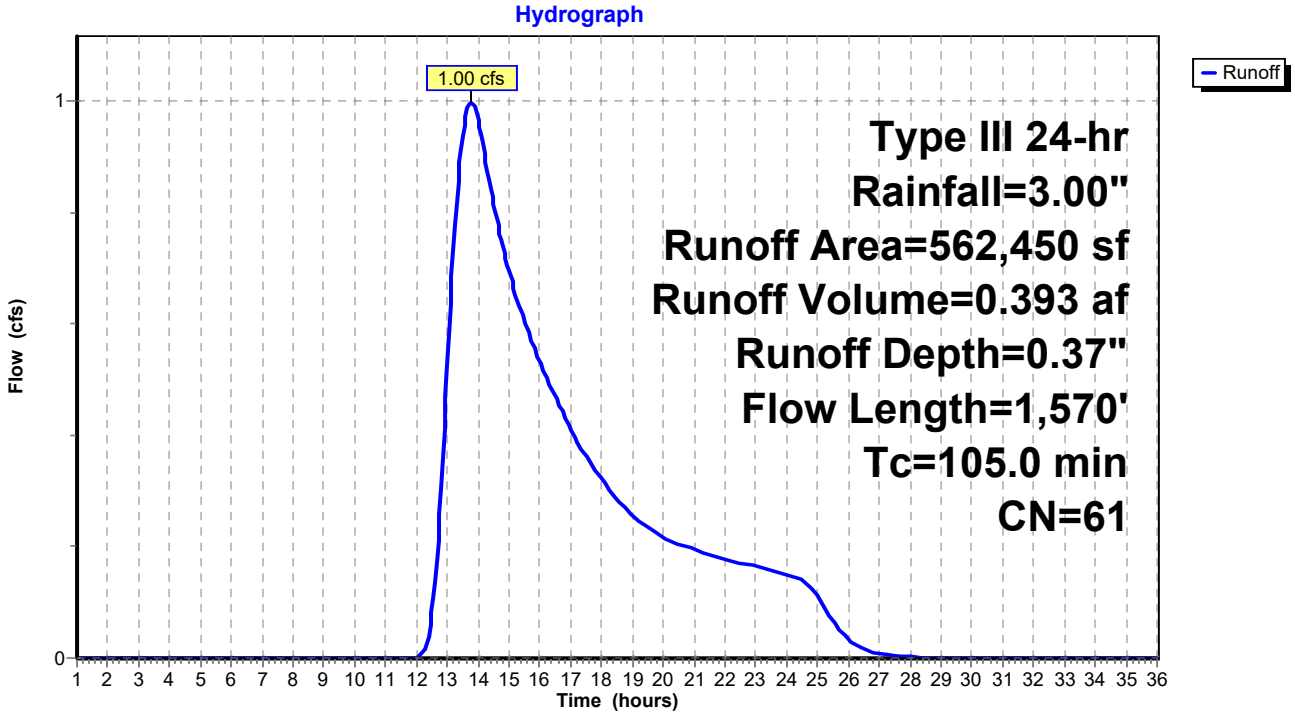
Runoff = 1.00 cfs @ 13.78 hrs, Volume= 0.393 af, Depth= 0.37"

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

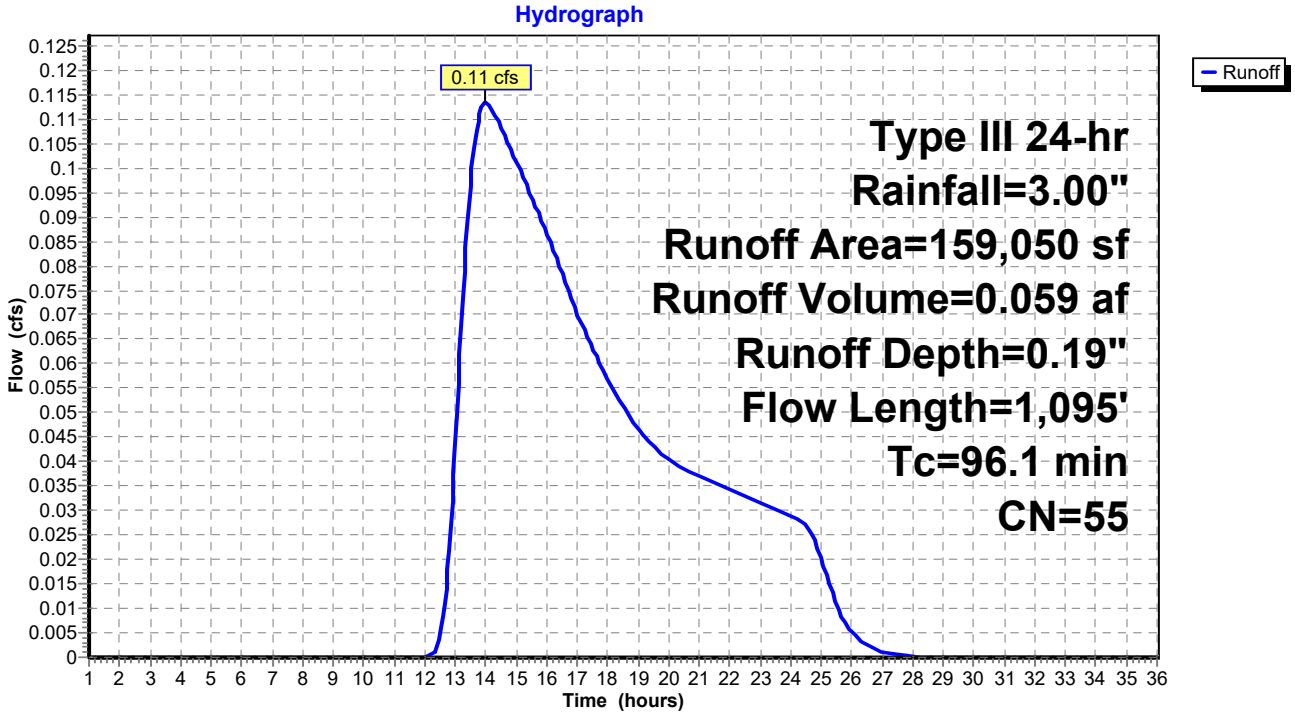
Runoff = 0.11 cfs @ 14.00 hrs, Volume= 0.059 af, Depth= 0.19"

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
5,250	61	>75% Grass cover, Good, HSG B
153,800	55	Woods, Good, HSG B
159,050	55	Weighted Average
159,050		100.00% Pervious 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	0.03	0.00
13.00	2.25	0.04	0.04
13.50	2.35	0.06	0.10
14.00	2.43	0.07	**0.11**
14.50	2.50	0.08	0.11
15.00	2.56	0.09	0.10
15.50	2.61	0.10	0.09
16.00	2.66	0.11	0.09
16.50	2.70	0.12	0.08
17.00	2.73	0.13	0.07
17.50	2.76	0.14	0.06
18.00	2.78	0.14	0.06
18.50	2.81	0.15	0.05
19.00	2.83	0.15	0.05
19.50	2.85	0.16	0.04
20.00	2.87	0.16	0.04
20.50	2.89	0.17	0.04
21.00	2.91	0.17	0.04
21.50	2.93	0.18	0.04
22.00	2.94	0.18	0.03
22.50	2.96	0.18	0.03
23.00	2.97	0.19	0.03
23.50	2.99	0.19	0.03
24.00	**3.00**	**0.19**	0.03
24.50	3.00	0.19	0.03
25.00	3.00	0.19	0.02
25.50	3.00	0.19	0.01
26.00	3.00	0.19	0.01
26.50	3.00	0.19	0.00
27.00	3.00	0.19	0.00
27.50	3.00	0.19	0.00
28.00	3.00	0.19	0.00
28.50	3.00	0.19	0.00
29.00	3.00	0.19	0.00
29.50	3.00	0.19	0.00
30.00	3.00	0.19	0.00
30.50	3.00	0.19	0.00
31.00	3.00	0.19	0.00
31.50	3.00	0.19	0.00
32.00	3.00	0.19	0.00
32.50	3.00	0.19	0.00
33.00	3.00	0.19	0.00
33.50	3.00	0.19	0.00
34.00	3.00	0.19	0.00
34.50	3.00	0.19	0.00
35.00	3.00	0.19	0.00
35.50	3.00	0.19	0.00
36.00	3.00	0.19	0.00

Summary for Subcatchment WS8: WS8

[49] Hint: Tc<2dt may require smaller dt

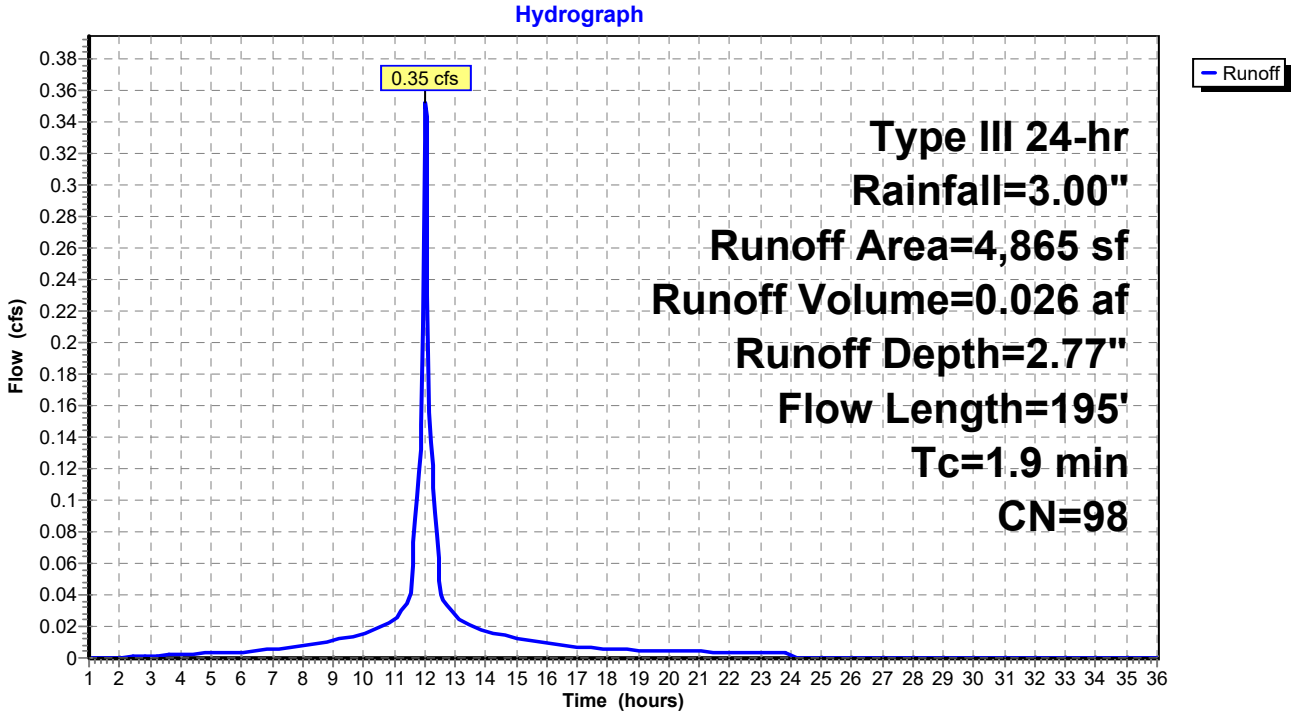
Runoff = 0.35 cfs @ 12.03 hrs, Volume= 0.026 af, Depth= 2.77"

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
4,865	98	Paved parking, HSG B
4,865		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	0.00
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	0.01
10.00	0.57	0.38	0.02
10.50	0.65	0.46	0.02
11.00	0.75	0.55	0.02
11.50	0.89	0.69	0.04
12.00	1.50	1.28	**0.33**
12.50	2.11	1.88	**0.05**
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	0.01
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	0.01
18.00	2.78	2.55	0.01
18.50	2.81	2.58	0.01
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 Reach R1: Culvert

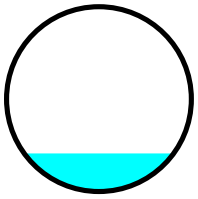
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.632 ac, 49.73% Impervious, Inflow Depth = 1.19"
Inflow = 0.95 cfs @ 12.04 hrs, Volume= 0.063 af
Outflow = 0.90 cfs @ 12.06 hrs, Volume= 0.063 af, Atten= 6%, Lag= 1.2 min

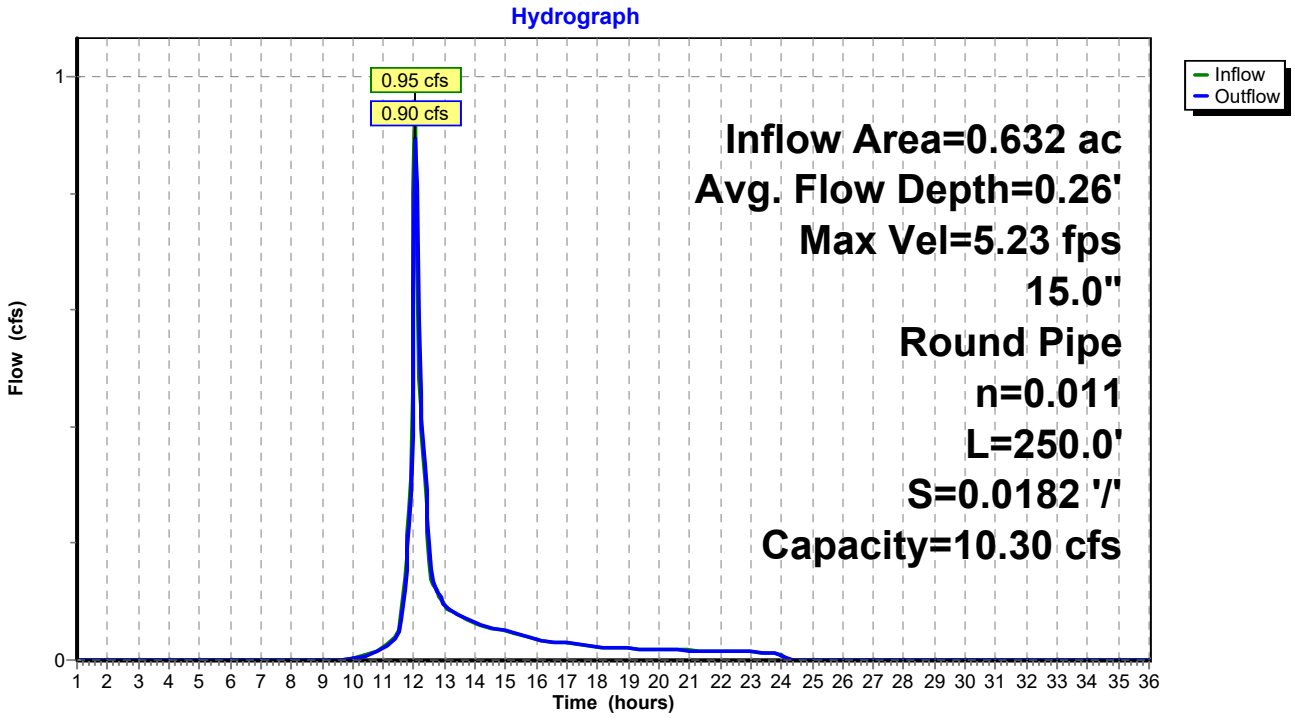
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.23 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.88 fps, Avg. Travel Time= 2.2 min

Peak Storage= 45 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.30 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0182 '/'
Inlet Invert= 365.10', Outlet Invert= 360.55'



Reach R1: Culvert



Hydrograph for Reach R1: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	365.10	0.00
2.00	0.00	0	365.10	0.00
3.00	0.00	0	365.10	0.00
4.00	0.00	0	365.10	0.00
5.00	0.00	0	365.10	0.00
6.00	0.00	0	365.10	0.00
7.00	0.00	0	365.10	0.00
8.00	0.00	0	365.10	0.00
9.00	0.00	0	365.10	0.00
10.00	0.00	0	365.11	0.00
11.00	0.02	3	365.14	0.02
12.00	**0.80**	**37**	**365.32**	**0.64**
13.00	**0.09**	**9**	**365.18**	**0.09**
14.00	0.06	7	365.17	0.06
15.00	0.05	6	365.16	0.05
16.00	0.03	5	365.15	0.04
17.00	0.03	4	365.15	0.03
18.00	0.02	3	365.14	0.02
19.00	0.02	3	365.14	0.02
20.00	0.02	3	365.14	0.02
21.00	0.02	3	365.14	0.02
22.00	0.01	2	365.14	0.02
23.00	0.01	2	365.13	0.01
24.00	0.01	2	365.13	0.01
25.00	0.00	0	365.10	0.00
26.00	0.00	0	365.10	0.00
27.00	0.00	0	365.10	0.00
28.00	0.00	0	365.10	0.00
29.00	0.00	0	365.10	0.00
30.00	0.00	0	365.10	0.00
31.00	0.00	0	365.10	0.00
32.00	0.00	0	365.10	0.00
33.00	0.00	0	365.10	0.00
34.00	0.00	0	365.10	0.00
35.00	0.00	0	365.10	0.00
36.00	0.00	0	365.10	0.00

Summary for Reach R2: R2 Pipe across road

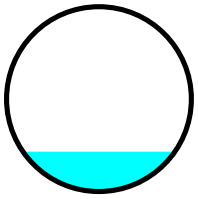
[52] Hint: Inlet/Outlet conditions not evaluated

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 @ 13.79 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.7 min

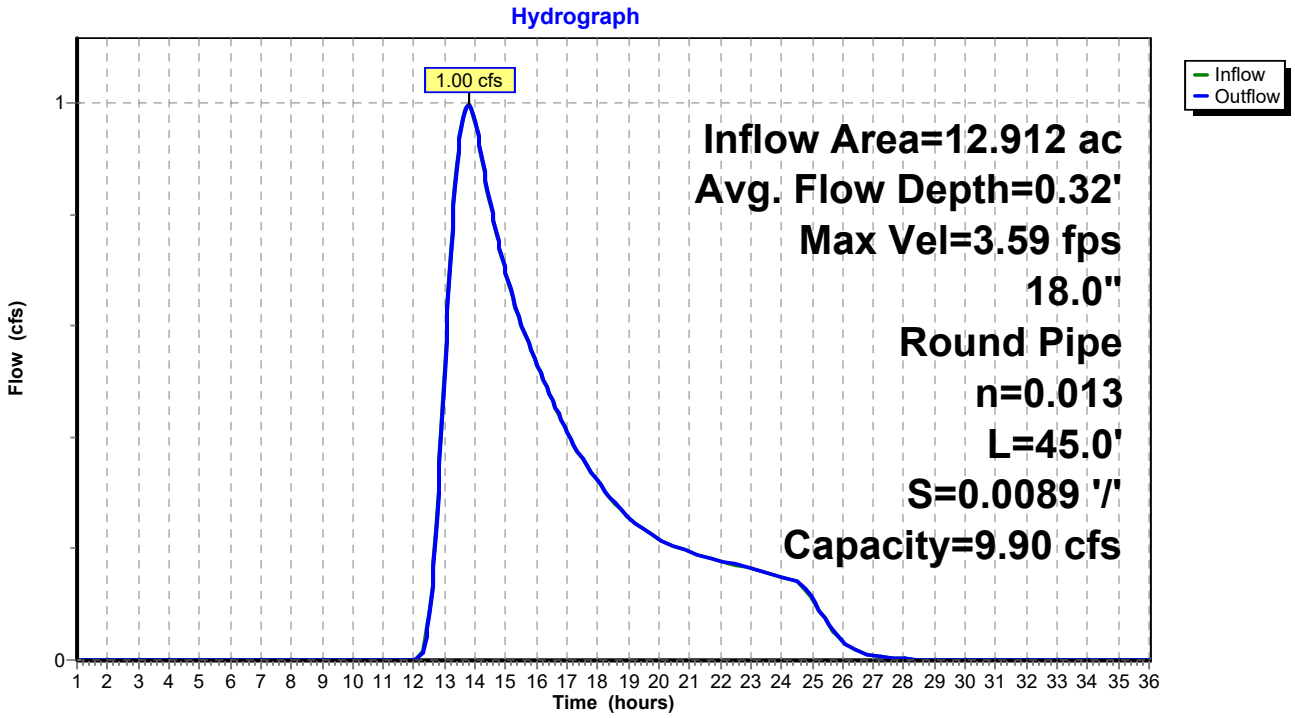
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.59 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.4 min

Peak Storage= 13 cf @ 13.79 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 9.90 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0089 '/'
Inlet Invert= 355.00', Outlet Invert= 354.60'



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	355.00	0.00
2.00	0.00	0	355.00	0.00
3.00	0.00	0	355.00	0.00
4.00	0.00	0	355.00	0.00
5.00	0.00	0	355.00	0.00
6.00	0.00	0	355.00	0.00
7.00	0.00	0	355.00	0.00
8.00	0.00	0	355.00	0.00
9.00	0.00	0	355.00	0.00
10.00	0.00	0	355.00	0.00
11.00	0.00	0	355.00	0.00
12.00	0.00	0	355.00	0.00
13.00	**0.52**	**8**	**355.23**	**0.52**
14.00	**0.97**	**12**	**355.32**	**0.97**
15.00	0.70	10	355.27	0.70
16.00	0.53	8	355.24	0.53
17.00	0.41	7	355.21	0.41
18.00	0.32	6	355.18	0.32
19.00	0.26	5	355.17	0.26
20.00	0.22	4	355.15	0.22
21.00	0.19	4	355.15	0.19
22.00	0.18	4	355.14	0.18
23.00	0.16	4	355.13	0.16
24.00	0.15	3	355.13	0.15
25.00	0.11	3	355.11	0.11
26.00	0.03	1	355.06	0.03
27.00	0.01	0	355.03	0.01
28.00	0.00	0	355.02	0.00
29.00	0.00	0	355.00	0.00
30.00	0.00	0	355.00	0.00
31.00	0.00	0	355.00	0.00
32.00	0.00	0	355.00	0.00
33.00	0.00	0	355.00	0.00
34.00	0.00	0	355.00	0.00
35.00	0.00	0	355.00	0.00
36.00	0.00	0	355.00	0.00

Summary for Pond CB1: CB-1

[57] Hint: Peaked at 361.00' (Flood elevation advised)
[62] Hint: Exceeded Reach R1 OUTLET depth by 0.19' @ 12.05 hrs

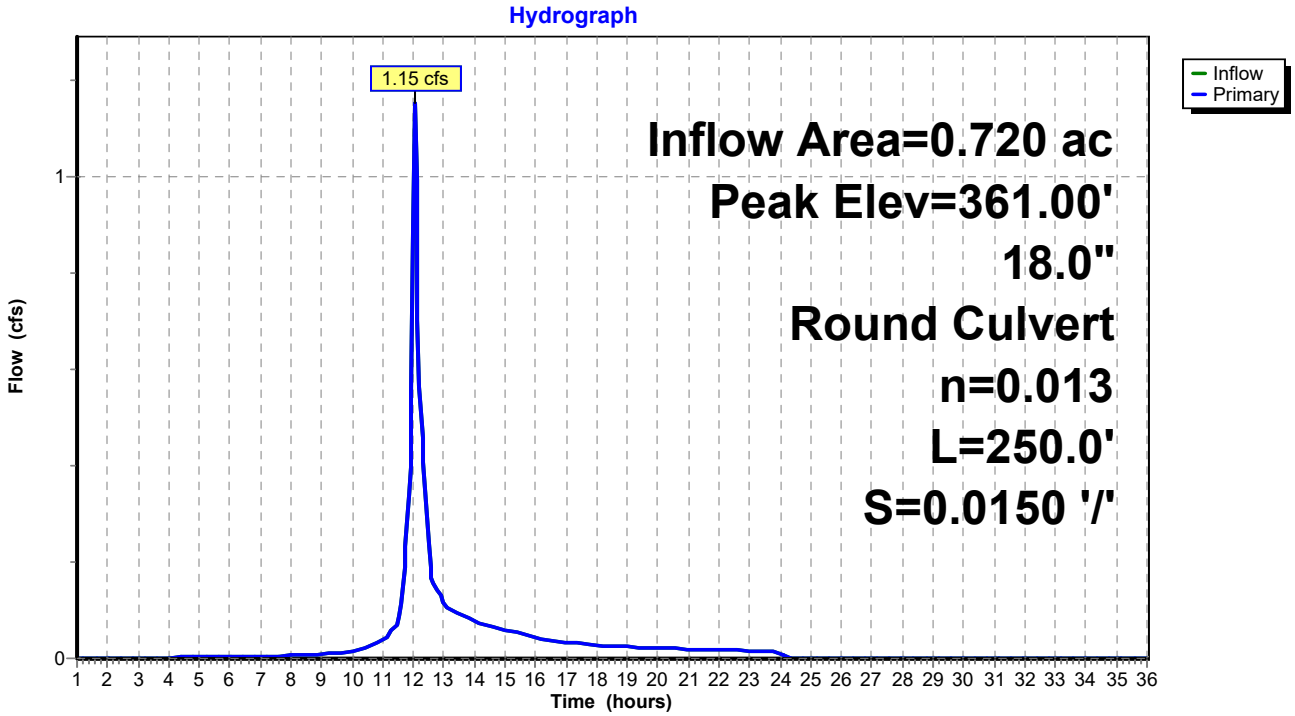
Inflow Area =	0.720 ac, 55.82% Impervious, Inflow Depth = 1.38"				
Inflow =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af	
Outflow =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.15 cfs @	12.06 hrs,	Volume=	0.083 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 361.00' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	360.45'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 360.45' / 356.70' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.13 cfs @ 12.06 hrs HW=360.99' (Free Discharge)
└─**1=CB-1** (Inlet Controls 1.13 cfs @ 1.98 fps)

Pond CB1: CB-1



Hydrograph for Pond CB1: CB-1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	360.45	0.00
1.50	0.00	360.45	0.00
2.00	0.00	360.46	0.00
2.50	0.00	360.46	0.00
3.00	0.00	360.47	0.00
3.50	0.00	360.47	0.00
4.00	0.00	360.47	0.00
4.50	0.00	360.47	0.00
5.00	0.00	360.47	0.00
5.50	0.00	360.47	0.00
6.00	0.00	360.48	0.00
6.50	0.00	360.48	0.00
7.00	0.00	360.48	0.00
7.50	0.00	360.48	0.00
8.00	0.01	360.49	0.01
8.50	0.01	360.49	0.01
9.00	0.01	360.49	0.01
9.50	0.01	360.50	0.01
10.00	0.01	360.50	0.01
10.50	0.02	360.52	0.02
11.00	0.04	360.54	0.04
11.50	0.08	360.58	0.08
12.00	**0.90**	**360.93**	**0.90**
12.50	**0.24**	**360.69**	**0.24**
13.00	0.11	360.61	0.11
13.50	0.09	360.60	0.09
14.00	0.08	360.58	0.08
14.50	0.07	360.58	0.07
15.00	0.06	360.57	0.06
15.50	0.05	360.56	0.05
16.00	0.04	360.55	0.04
16.50	0.04	360.54	0.04
17.00	0.03	360.54	0.03
17.50	0.03	360.53	0.03
18.00	0.03	360.53	0.03
18.50	0.02	360.53	0.02
19.00	0.02	360.52	0.02
19.50	0.02	360.52	0.02
20.00	0.02	360.52	0.02
20.50	0.02	360.52	0.02
21.00	0.02	360.52	0.02
21.50	0.02	360.52	0.02
22.00	0.02	360.51	0.02
22.50	0.02	360.51	0.02
23.00	0.02	360.51	0.02
23.50	0.02	360.51	0.02
24.00	0.01	360.51	0.01
24.50	0.00	360.45	0.00
25.00	0.00	360.45	0.00
25.50	0.00	360.45	0.00
26.00	0.00	360.45	0.00
26.50	0.00	360.45	0.00
27.00	0.00	360.45	0.00
27.50	0.00	360.45	0.00
28.00	0.00	360.45	0.00
28.50	0.00	360.45	0.00
29.00	0.00	360.45	0.00
29.50	0.00	360.45	0.00
30.00	0.00	360.45	0.00
30.50	0.00	360.45	0.00
31.00	0.00	360.45	0.00
31.50	0.00	360.45	0.00
32.00	0.00	360.45	0.00
32.50	0.00	360.45	0.00
33.00	0.00	360.45	0.00
33.50	0.00	360.45	0.00
34.00	0.00	360.45	0.00
34.50	0.00	360.45	0.00
35.00	0.00	360.45	0.00
35.50	0.00	360.45	0.00
36.00	0.00	360.45	0.00

Summary for Pond CB2: CB2

[57] Hint: Peaked at 357.15' (Flood elevation advised)
[79] Warning: Submerged Pond CB1 Primary device # 1 OUTLET by 0.45'

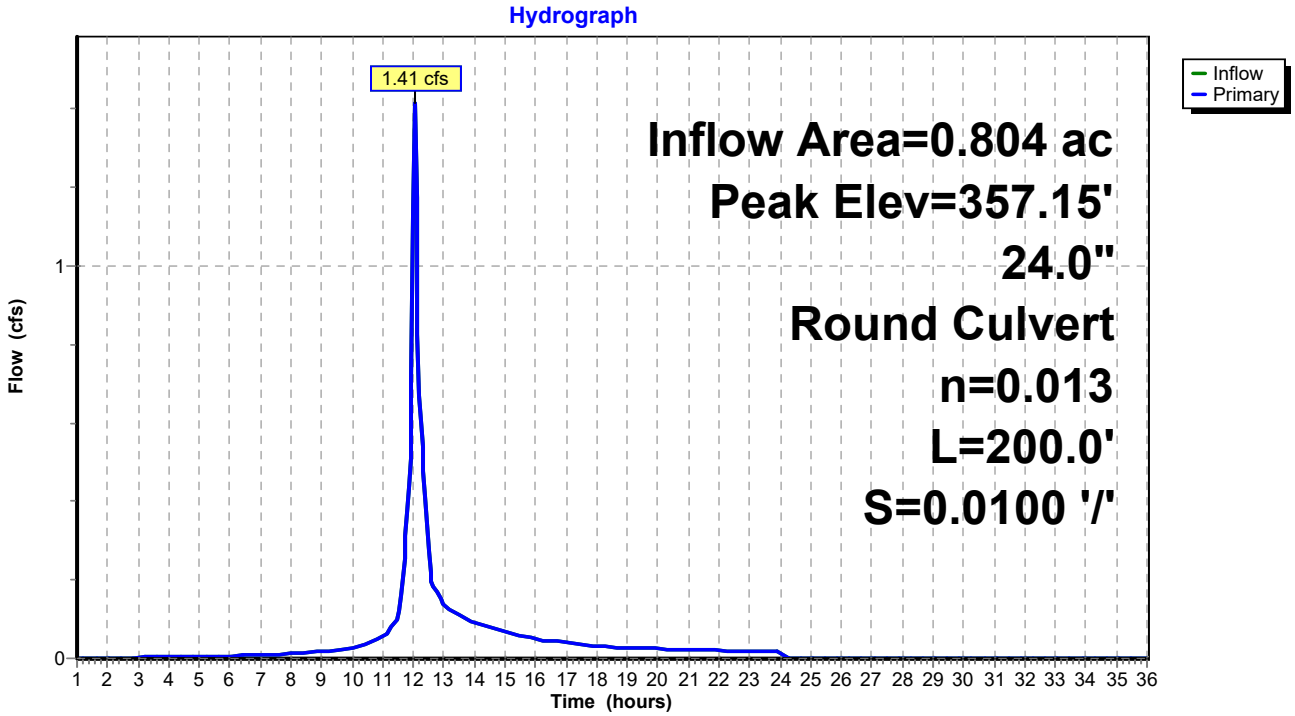
Inflow Area =	0.804 ac,	60.47% Impervious,	Inflow Depth =	1.53"	
Inflow =	1.41 cfs @	12.05 hrs,	Volume=	0.102 af	
Outflow =	1.41 cfs @	12.05 hrs,	Volume=	0.102 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.41 cfs @	12.05 hrs,	Volume=	0.102 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 357.15' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	356.60'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.60' / 354.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.41 cfs @ 12.05 hrs HW=357.15' (Free Discharge)
└─**1=CB-2** (Inlet Controls 1.41 cfs @ 2.00 fps)

Pond CB2: CB2



Hydrograph for Pond CB2: CB2

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	356.60	0.00
1.50	0.00	356.60	0.00
2.00	0.00	356.61	0.00
2.50	0.00	356.62	0.00
3.00	0.00	356.62	0.00
3.50	0.00	356.62	0.00
4.00	0.00	356.63	0.00
4.50	0.00	356.63	0.00
5.00	0.00	356.63	0.00
5.50	0.01	356.63	0.01
6.00	0.01	356.63	0.01
6.50	0.01	356.64	0.01
7.00	0.01	356.64	0.01
7.50	0.01	356.64	0.01
8.00	0.01	356.65	0.01
8.50	0.01	356.65	0.01
9.00	0.02	356.66	0.02
9.50	0.02	356.66	0.02
10.00	0.02	356.67	0.02
10.50	0.04	356.69	0.04
11.00	0.05	356.70	0.05
11.50	0.10	356.74	0.10
12.00	**1.14**	**357.09**	**1.14**
12.50	**0.27**	**356.84**	**0.27**
13.00	0.13	356.76	0.13
13.50	0.11	356.75	0.11
14.00	0.09	356.73	0.09
14.50	0.08	356.73	0.08
15.00	0.07	356.72	0.07
15.50	0.06	356.71	0.06
16.00	0.05	356.70	0.05
16.50	0.04	356.69	0.04
17.00	0.04	356.69	0.04
17.50	0.04	356.68	0.04
18.00	0.03	356.68	0.03
18.50	0.03	356.68	0.03
19.00	0.03	356.67	0.03
19.50	0.03	356.67	0.03
20.00	0.02	356.67	0.02
20.50	0.02	356.67	0.02
21.00	0.02	356.67	0.02
21.50	0.02	356.67	0.02
22.00	0.02	356.66	0.02
22.50	0.02	356.66	0.02
23.00	0.02	356.66	0.02
23.50	0.02	356.66	0.02
24.00	0.02	356.66	0.02
24.50	0.00	356.60	0.00
25.00	0.00	356.60	0.00
25.50	0.00	356.60	0.00
26.00	0.00	356.60	0.00
26.50	0.00	356.60	0.00
27.00	0.00	356.60	0.00
27.50	0.00	356.60	0.00
28.00	0.00	356.60	0.00
28.50	0.00	356.60	0.00
29.00	0.00	356.60	0.00
29.50	0.00	356.60	0.00
30.00	0.00	356.60	0.00
30.50	0.00	356.60	0.00
31.00	0.00	356.60	0.00
31.50	0.00	356.60	0.00
32.00	0.00	356.60	0.00
32.50	0.00	356.60	0.00
33.00	0.00	356.60	0.00
33.50	0.00	356.60	0.00
34.00	0.00	356.60	0.00
34.50	0.00	356.60	0.00
35.00	0.00	356.60	0.00
35.50	0.00	356.60	0.00
36.00	0.00	356.60	0.00

Summary for Pond CB3: CB-3

[57] Hint: Peaked at 355.09' (Flood elevation advised)
[63] Warning: Exceeded Reach R2 INLET depth by 0.09' @ 12.05 hrs
[79] Warning: Submerged Pond CB2 Primary device # 1 OUTLET by 0.49'

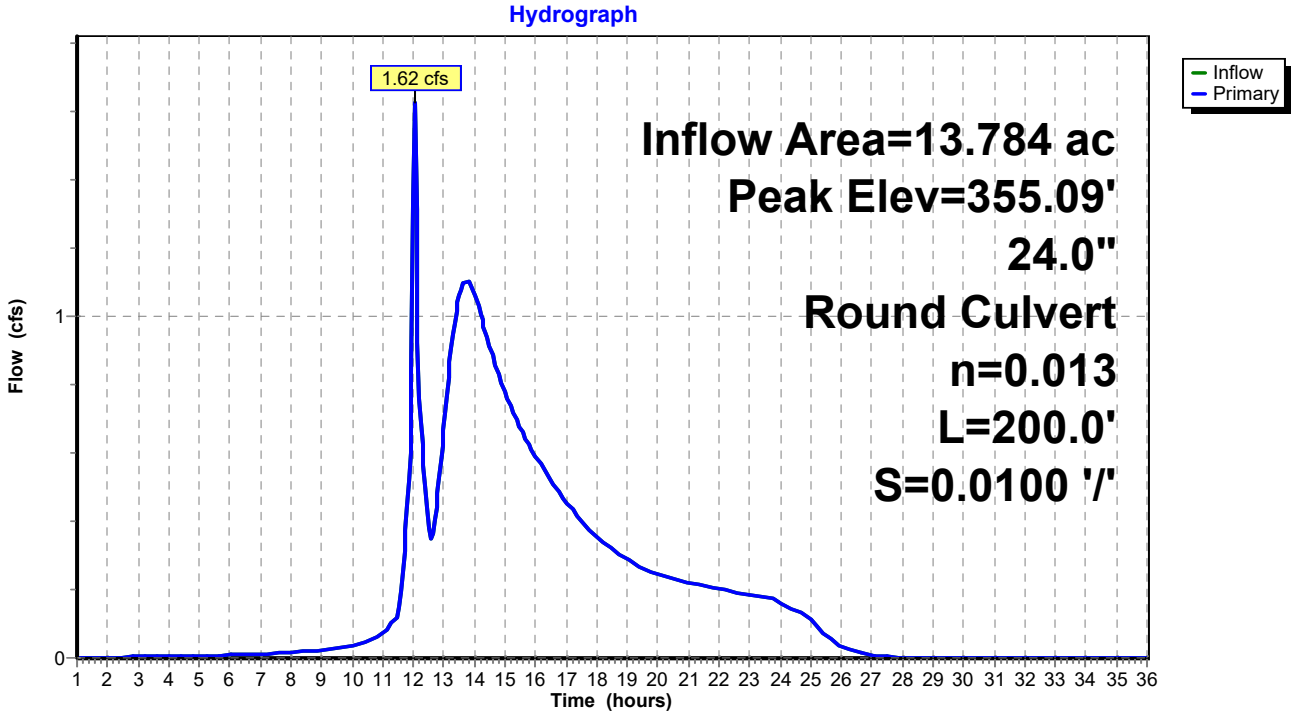
Inflow Area =	13.784 ac,	10.45% Impervious,	Inflow Depth =	0.44"	
Inflow =	1.62 cfs @	12.05 hrs,	Volume=	0.511 af	
Outflow =	1.62 cfs @	12.05 hrs,	Volume=	0.511 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.62 cfs @	12.05 hrs,	Volume=	0.511 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.09' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.50'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.50' / 352.50' S= 0.0100 '/' 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=355.09' (Free Discharge)
└**1=CB-3** (Inlet Controls 1.61 cfs @ 2.07 fps)

Pond CB3: CB-3



Hydrograph for Pond CB3: CB-3

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	354.50	0.00
1.50	0.00	354.50	0.00
2.00	0.00	354.51	0.00
2.50	0.00	354.52	0.00
3.00	0.00	354.52	0.00
3.50	0.00	354.53	0.00
4.00	0.00	354.53	0.00
4.50	0.01	354.53	0.01
5.00	0.01	354.54	0.01
5.50	0.01	354.54	0.01
6.00	0.01	354.54	0.01
6.50	0.01	354.54	0.01
7.00	0.01	354.55	0.01
7.50	0.01	354.55	0.01
8.00	0.02	354.56	0.02
8.50	0.02	354.56	0.02
9.00	0.02	354.57	0.02
9.50	0.03	354.57	0.03
10.00	0.03	354.58	0.03
10.50	0.05	354.60	0.05
11.00	0.07	354.62	0.07
11.50	0.13	354.66	0.13
12.00	**1.34**	**355.04**	**1.34**
12.50	**0.38**	**354.78**	**0.38**
13.00	0.67	354.87	0.67
13.50	1.06	354.97	1.06
14.00	1.07	354.98	1.07
14.50	0.91	354.94	0.91
15.00	0.77	354.90	0.77
15.50	0.67	354.88	0.67
16.00	0.59	354.85	0.59
16.50	0.52	354.83	0.52
17.00	0.46	354.81	0.46
17.50	0.40	354.79	0.40
18.00	0.35	354.77	0.35
18.50	0.32	354.76	0.32
19.00	0.29	354.74	0.29
19.50	0.26	354.73	0.26
20.00	0.24	354.72	0.24
20.50	0.23	354.72	0.23
21.00	0.22	354.71	0.22
21.50	0.21	354.71	0.21
22.00	0.20	354.70	0.20
22.50	0.19	354.70	0.19
23.00	0.18	354.69	0.18
23.50	0.18	354.69	0.18
24.00	0.17	354.68	0.17
24.50	0.14	354.67	0.14
25.00	0.11	354.65	0.11
25.50	0.07	354.62	0.07
26.00	0.03	354.58	0.03
26.50	0.02	354.56	0.02
27.00	0.01	354.54	0.01
27.50	0.00	354.53	0.00
28.00	0.00	354.52	0.00
28.50	0.00	354.51	0.00
29.00	0.00	354.50	0.00
29.50	0.00	354.50	0.00
30.00	0.00	354.50	0.00
30.50	0.00	354.50	0.00
31.00	0.00	354.50	0.00
31.50	0.00	354.50	0.00
32.00	0.00	354.50	0.00
32.50	0.00	354.50	0.00
33.00	0.00	354.50	0.00
33.50	0.00	354.50	0.00
34.00	0.00	354.50	0.00
34.50	0.00	354.50	0.00
35.00	0.00	354.50	0.00
35.50	0.00	354.50	0.00
36.00	0.00	354.50	0.00

Summary for Pond CB4: CB-4

[57] Hint: Peaked at 353.07' (Flood elevation advised)
[79] Warning: Submerged Pond CB3 Primary device # 1 OUTLET by 0.57'
[79] Warning: Submerged Pond CB5 Primary device # 1 INLET by 0.27'

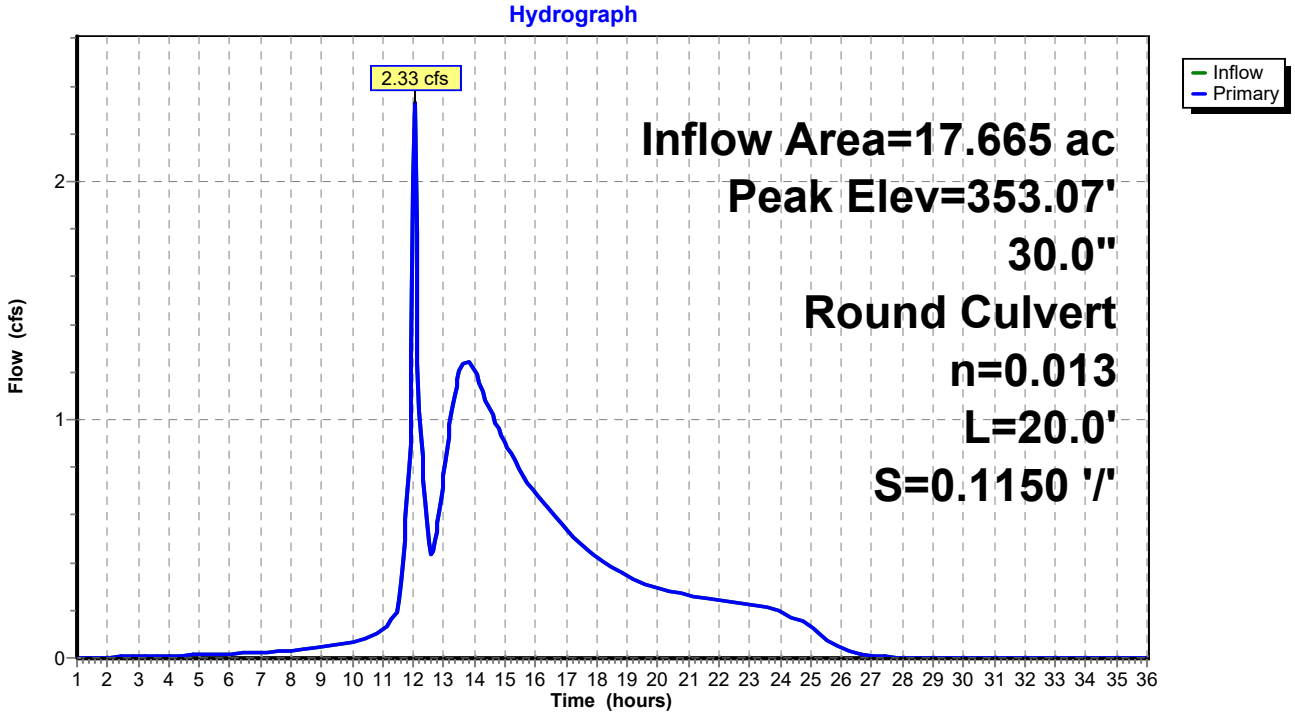
Inflow Area =	17.665 ac,	9.46% Impervious,	Inflow Depth =	0.42"	
Inflow =	2.33 cfs @	12.04 hrs,	Volume=	0.623 af	
Outflow =	2.33 cfs @	12.04 hrs,	Volume=	0.623 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.33 cfs @	12.04 hrs,	Volume=	0.623 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.07' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.40'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.40' / 350.10' S= 0.1150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=2.29 cfs @ 12.04 hrs HW=353.06' (Free Discharge)
└**1=30"** (Inlet Controls 2.29 cfs @ 2.19 fps)

Pond CB4: CB-4



Hydrograph for Pond CB4: CB-4

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.40	0.00
1.50	0.00	352.40	0.00
2.00	0.00	352.42	0.00
2.50	0.00	352.43	0.00
3.00	0.01	352.43	0.01
3.50	0.01	352.43	0.01
4.00	0.01	352.44	0.01
4.50	0.01	352.44	0.01
5.00	0.01	352.45	0.01
5.50	0.01	352.45	0.01
6.00	0.02	352.45	0.02
6.50	0.02	352.46	0.02
7.00	0.02	352.46	0.02
7.50	0.03	352.47	0.03
8.00	0.03	352.47	0.03
8.50	0.04	352.48	0.04
9.00	0.05	352.49	0.05
9.50	0.05	352.50	0.05
10.00	0.06	352.51	0.06
10.50	0.09	352.53	0.09
11.00	0.12	352.54	0.12
11.50	0.20	352.59	0.20
12.00	**2.01**	**353.02**	**2.01**
12.50	**0.48**	**352.70**	**0.48**
13.00	0.76	352.78	0.76
13.50	1.20	352.87	1.20
14.00	1.22	352.88	1.22
14.50	1.04	352.84	1.04
15.00	0.90	352.81	0.90
15.50	0.79	352.78	0.79
16.00	0.69	352.76	0.69
16.50	0.61	352.74	0.61
17.00	0.54	352.71	0.54
17.50	0.48	352.70	0.48
18.00	0.42	352.68	0.42
18.50	0.38	352.66	0.38
19.00	0.34	352.65	0.34
19.50	0.32	352.64	0.32
20.00	0.29	352.63	0.29
20.50	0.28	352.62	0.28
21.00	0.27	352.62	0.27
21.50	0.25	352.61	0.25
22.00	0.24	352.61	0.24
22.50	0.23	352.61	0.23
23.00	0.22	352.60	0.22
23.50	0.21	352.60	0.21
24.00	0.20	352.59	0.20
24.50	0.17	352.57	0.17
25.00	0.13	352.55	0.13
25.50	0.08	352.52	0.08
26.00	0.04	352.48	0.04
26.50	0.02	352.46	0.02
27.00	0.01	352.44	0.01
27.50	0.00	352.43	0.00
28.00	0.00	352.41	0.00
28.50	0.00	352.41	0.00
29.00	0.00	352.40	0.00
29.50	0.00	352.40	0.00
30.00	0.00	352.40	0.00
30.50	0.00	352.40	0.00
31.00	0.00	352.40	0.00
31.50	0.00	352.40	0.00
32.00	0.00	352.40	0.00
32.50	0.00	352.40	0.00
33.00	0.00	352.40	0.00
33.50	0.00	352.40	0.00
34.00	0.00	352.40	0.00
34.50	0.00	352.40	0.00
35.00	0.00	352.40	0.00
35.50	0.00	352.40	0.00
36.00	0.00	352.40	0.00

Summary for Pond CB5: CB-5

[57] Hint: Peaked at 353.11' (Flood elevation advised)

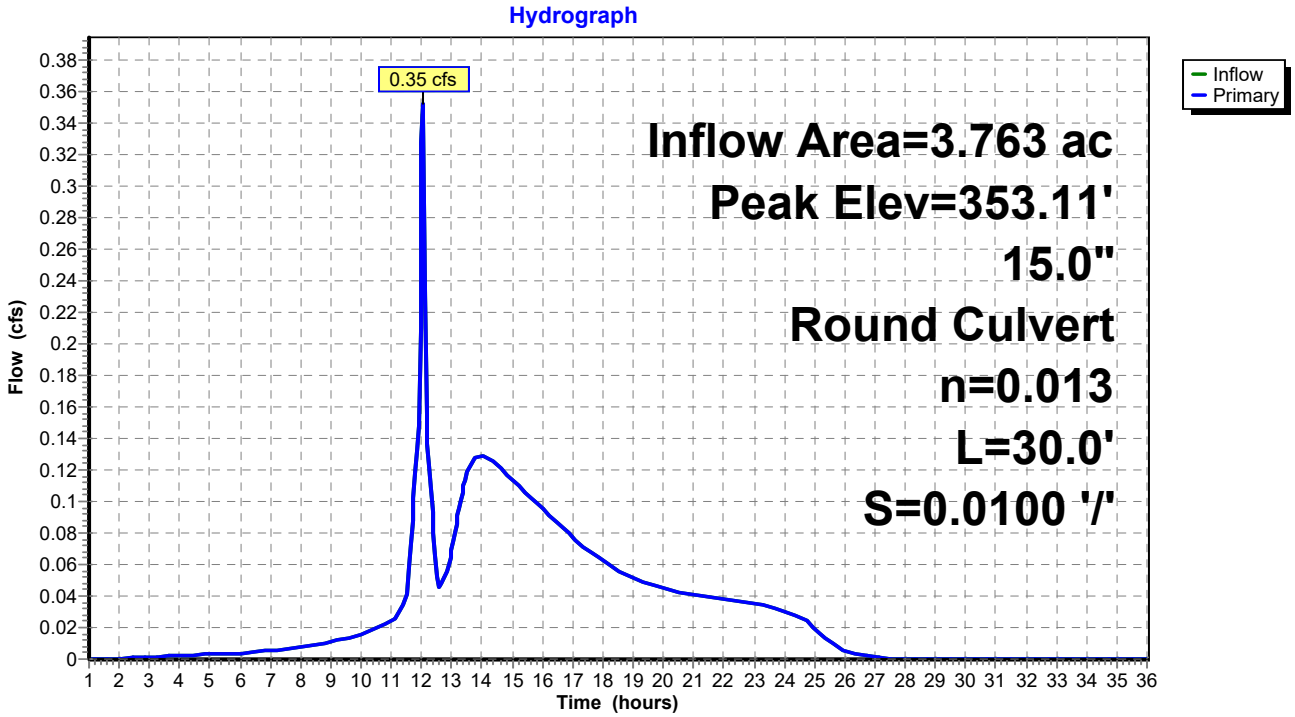
Inflow Area =	3.763 ac,	2.97% Impervious,	Inflow Depth =	0.27"	
Inflow =	0.35 cfs @	12.03 hrs,	Volume=	0.085 af	
Outflow =	0.35 cfs @	12.03 hrs,	Volume=	0.085 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.35 cfs @	12.03 hrs,	Volume=	0.085 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.11' @ 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' / 352.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.34 cfs @ 12.03 hrs HW=353.10' (Free Discharge)
└**1=CB-5** (Inlet Controls 0.34 cfs @ 1.48 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	352.82	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	0.00	352.83	0.00
7.00	0.01	352.84	0.01
7.50	0.01	352.84	0.01
8.00	0.01	352.84	0.01
8.50	0.01	352.85	0.01
9.00	0.01	352.85	0.01
9.50	0.01	352.86	0.01
10.00	0.02	352.86	0.02
10.50	0.02	352.87	0.02
11.00	0.02	352.88	0.02
11.50	0.04	352.90	0.04
12.00	**0.33**	**353.10**	**0.33**
12.50	**0.05**	**352.92**	**0.05**
13.00	0.07	352.93	0.07
13.50	0.12	352.97	0.12
14.00	0.13	352.98	0.13
14.50	0.12	352.98	0.12
15.00	0.11	352.97	0.11
15.50	0.10	352.97	0.10
16.00	0.10	352.96	0.10
16.50	0.09	352.95	0.09
17.00	0.08	352.94	0.08
17.50	0.07	352.93	0.07
18.00	0.06	352.93	0.06
18.50	0.06	352.92	0.06
19.00	0.05	352.91	0.05
19.50	0.05	352.91	0.05
20.00	0.04	352.91	0.04
20.50	0.04	352.90	0.04
21.00	0.04	352.90	0.04
21.50	0.04	352.90	0.04
22.00	0.04	352.90	0.04
22.50	0.04	352.90	0.04
23.00	0.03	352.89	0.03
23.50	0.03	352.89	0.03
24.00	0.03	352.89	0.03
24.50	0.03	352.88	0.03
25.00	0.02	352.87	0.02
25.50	0.01	352.85	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 =	17.665 ac,	9.46% Impervious,	Inflow Depth =	0.42"	
Inflow =	2.33 cfs @	12.04 hrs,	Volume=	0.623 af	
Outflow =	0.69 cfs @	16.03 hrs,	Volume=	0.623 af,	Atten= 71%, Lag= 239.4 min
Primary =	0.69 cfs @	16.03 hrs,	Volume=	0.623 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= 347.84' @ 16.03 hrs Surf.Area= 14,113 sf Storage= 4,745 cf

Plug-Flow detention time= 62.1 min calculated for 0.623 af (100% of inflow)
Center-of-Mass det. time= 62.0 min (1,019.1 - 957.1)

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

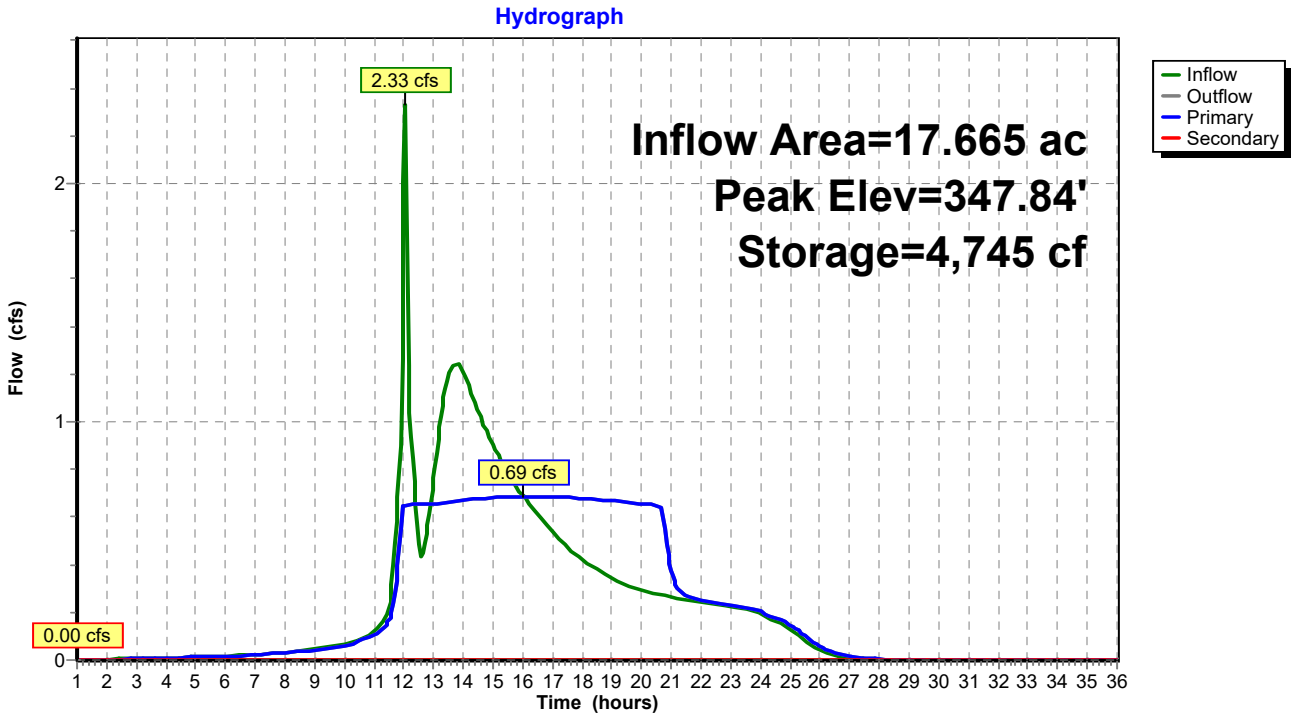
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

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=0.69 cfs @ 16.03 hrs HW=347.84' (Free Discharge)
└─**1=Culvert** (Passes 0.69 cfs of 4.57 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 @ 7.87 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	6	347.50	0.01	0.01	0.00
5.00	0.01	9	347.50	0.01	0.01	0.00
6.00	0.02	11	347.50	0.02	0.02	0.00
7.00	0.02	16	347.50	0.02	0.02	0.00
8.00	0.03	22	347.50	0.03	0.03	0.00
9.00	0.05	32	347.50	0.04	0.04	0.00
10.00	0.06	45	347.50	0.06	0.06	0.00
11.00	0.12	78	347.51	0.10	0.10	0.00
12.00	**2.01**	677	347.55	0.65	0.65	0.00
13.00	**0.76**	1,366	347.60	0.66	0.66	0.00
14.00	1.22	3,030	347.72	0.67	0.67	0.00
15.00	0.90	4,368	347.81	0.68	0.68	0.00
16.00	0.69	**4,745**	**347.84**	**0.69**	**0.69**	0.00
17.00	0.54	**4,488**	**347.82**	**0.68**	**0.68**	0.00
18.00	0.42	3,756	347.77	0.68	0.68	0.00
19.00	0.34	2,707	347.69	0.67	0.67	0.00
20.00	0.29	1,462	347.61	0.66	0.66	0.00
21.00	0.27	280	347.52	0.37	0.37	0.00
22.00	0.24	185	347.51	0.25	0.25	0.00
23.00	0.22	170	347.51	0.23	0.23	0.00
24.00	0.20	155	347.51	0.21	0.21	0.00
25.00	0.13	111	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

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	0.0100	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	365.10	360.55	250.0	0.0182	0.011	15.0	0.0	0.0
5	R2	355.00	354.60	45.0	0.0089	0.013	18.0	0.0	0.0
6	CB1	360.45	356.70	250.0	0.0150	0.013	18.0	0.0	0.0
7	CB2	356.60	354.60	200.0	0.0100	0.013	24.0	0.0	0.0
8	CB3	354.50	352.50	200.0	0.0100	0.013	24.0	0.0	0.0
9	CB4	352.40	350.10	20.0	0.1150	0.013	30.0	0.0	0.0
10	CB5	352.80	352.50	30.0	0.0100	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=2.46"
Flow Length=965' Tc=2.1 min CN=79 Runoff=2.00 cfs 0.130 af

Subcatchment WS2: WS#2 Runoff Area=3,800 sf 100.00% Impervious Runoff Depth>4.36"
Flow Length=275' Tc=1.8 min CN=98 Runoff=0.43 cfs 0.032 af

Subcatchment WS3: WS#3 Runoff Area=3,685 sf 100.00% Impervious Runoff Depth>4.36"
Flow Length=255' Slope=0.0150 '/' Tc=2.1 min CN=98 Runoff=0.41 cfs 0.031 af

Subcatchment WS4: WS#4 Runoff Area=2,950 sf 100.00% Impervious Runoff Depth>4.36"
Flow Length=205' Tc=1.9 min CN=98 Runoff=0.33 cfs 0.025 af

Subcatchment WS5: WS#5 Runoff Area=5,125 sf 100.00% Impervious Runoff Depth>4.36"
Flow Length=210' Tc=2.0 min CN=98 Runoff=0.57 cfs 0.043 af

Subcatchment WS6: WS#6 Runoff Area=562,450 sf 6.87% Impervious Runoff Depth=1.14"
Flow Length=1,570' Tc=105.0 min CN=61 Runoff=4.08 cfs 1.222 af

Subcatchment WS7: WS7 Runoff Area=159,050 sf 0.00% Impervious Runoff Depth=0.79"
Flow Length=1,095' Tc=96.1 min CN=55 Runoff=0.75 cfs 0.240 af

Subcatchment WS8: WS8 Runoff Area=4,865 sf 100.00% Impervious Runoff Depth>4.36"
Flow Length=195' Tc=1.9 min CN=98 Runoff=0.54 cfs 0.041 af

Reach R1: Culvert Avg. Flow Depth=0.37' Max Vel=6.50 fps Inflow=2.00 cfs 0.130 af
15.0" Round Pipe n=0.011 L=250.0' S=0.0182 '/' Capacity=10.30 cfs Outflow=1.92 cfs 0.130 af

Reach R2: R2 Pipe across road Avg. Flow Depth=0.67' Max Vel=5.33 fps Inflow=4.08 cfs 1.222 af
18.0" Round Pipe n=0.013 L=45.0' S=0.0089 '/' Capacity=9.90 cfs Outflow=4.08 cfs 1.222 af

Pond CB1: CB-1 Peak Elev=361.25' Inflow=2.33 cfs 0.161 af
18.0" Round Culvert n=0.013 L=250.0' S=0.0150 '/' Outflow=2.33 cfs 0.161 af

Pond CB2: CB2 Peak Elev=357.39' Inflow=2.73 cfs 0.192 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=2.73 cfs 0.192 af

Pond CB3: CB-3 Peak Elev=355.51' Inflow=4.29 cfs 1.439 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=4.29 cfs 1.439 af

Pond CB4: CB-4 Peak Elev=353.42' Inflow=5.10 cfs 1.762 af
30.0" Round Culvert n=0.013 L=20.0' S=0.1150 '/' Outflow=5.10 cfs 1.762 af

Pond CB5: CB-5 Peak Elev=353.27' Inflow=0.78 cfs 0.280 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=0.78 cfs 0.280 af

Pond WP: Wet Pond Peak Elev=349.15' Storage=24,009 cf Inflow=5.10 cfs 1.762 af
Primary=2.89 cfs 1.762 af Secondary=0.00 cfs 0.000 af Outflow=2.89 cfs 1.762 af

Total Runoff Area = 17.665 ac Runoff Volume = 1.762 af Average Runoff Depth = 1.20"
90.54% Pervious = 15.994 ac 9.46% Impervious = 1.670 ac

Summary for Subcatchment WS1: WS#1

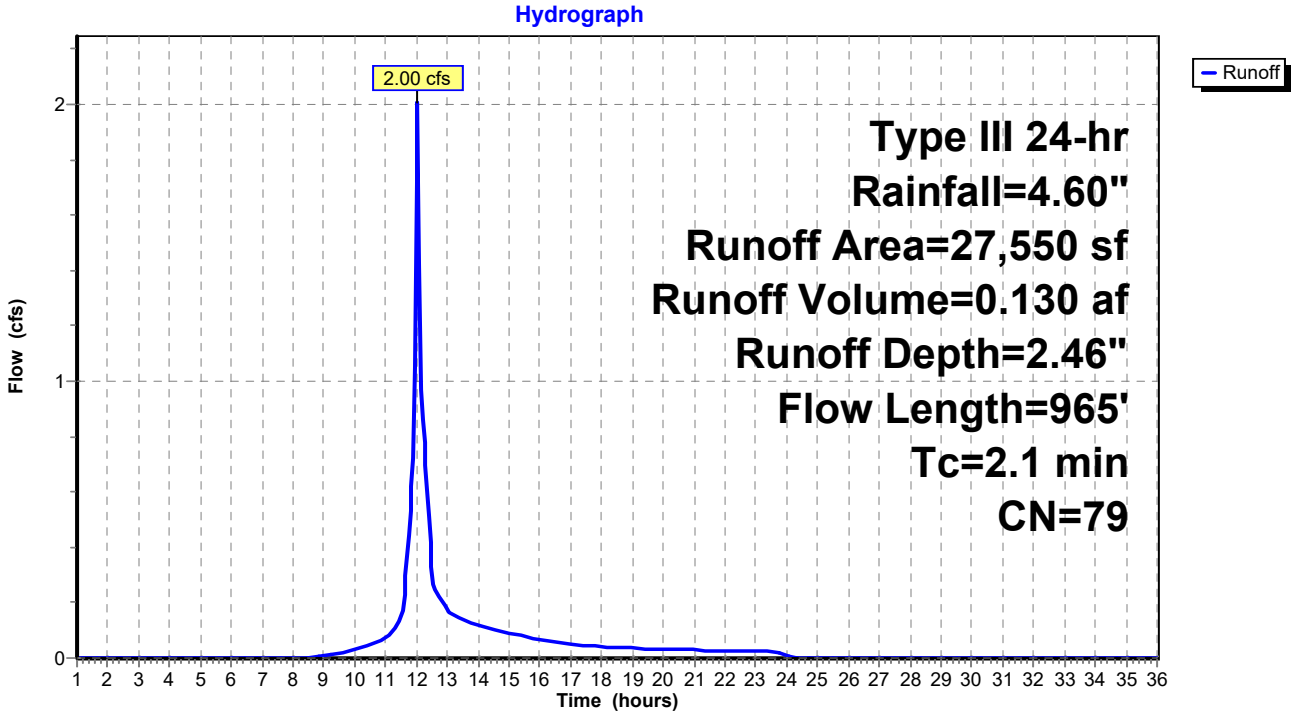
Runoff = 2.00 cfs @ 12.04 hrs, Volume= 0.130 af, Depth= 2.46"

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	0.0100	4.54	3.56	**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

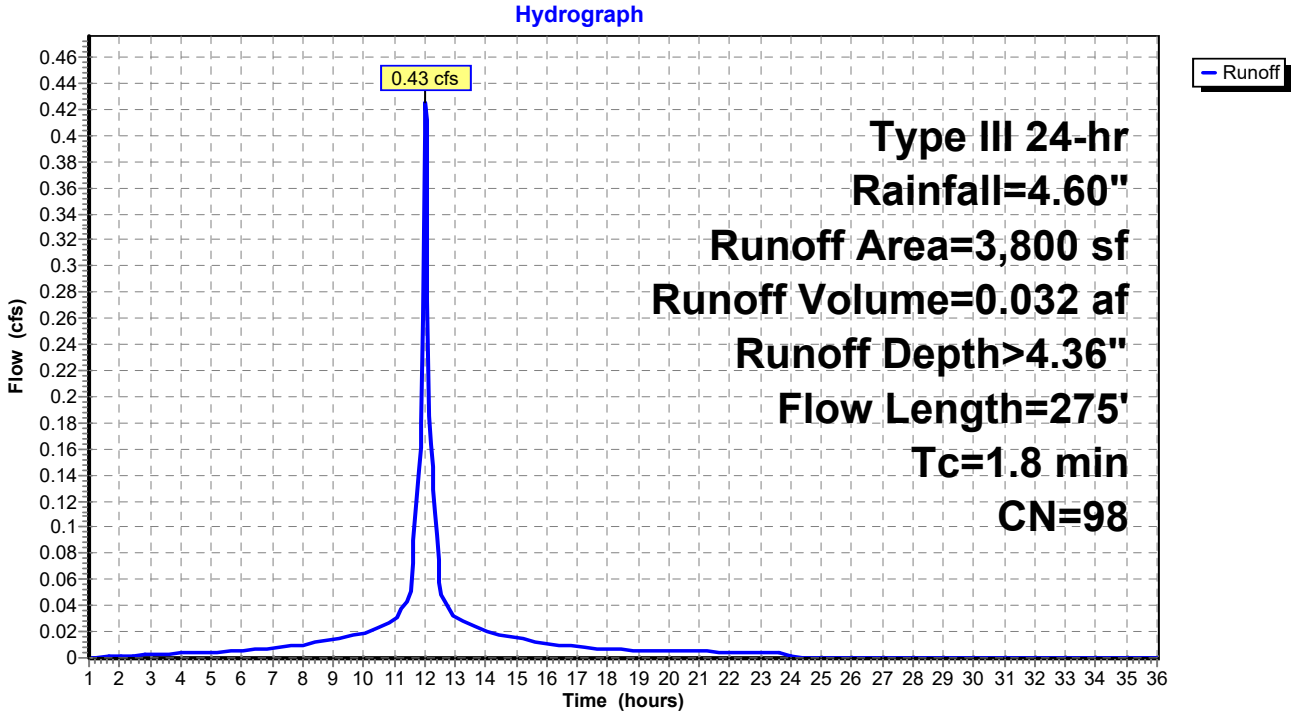
Runoff = 0.43 cfs @ 12.03 hrs, Volume= 0.032 af, Depth> 4.36"

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

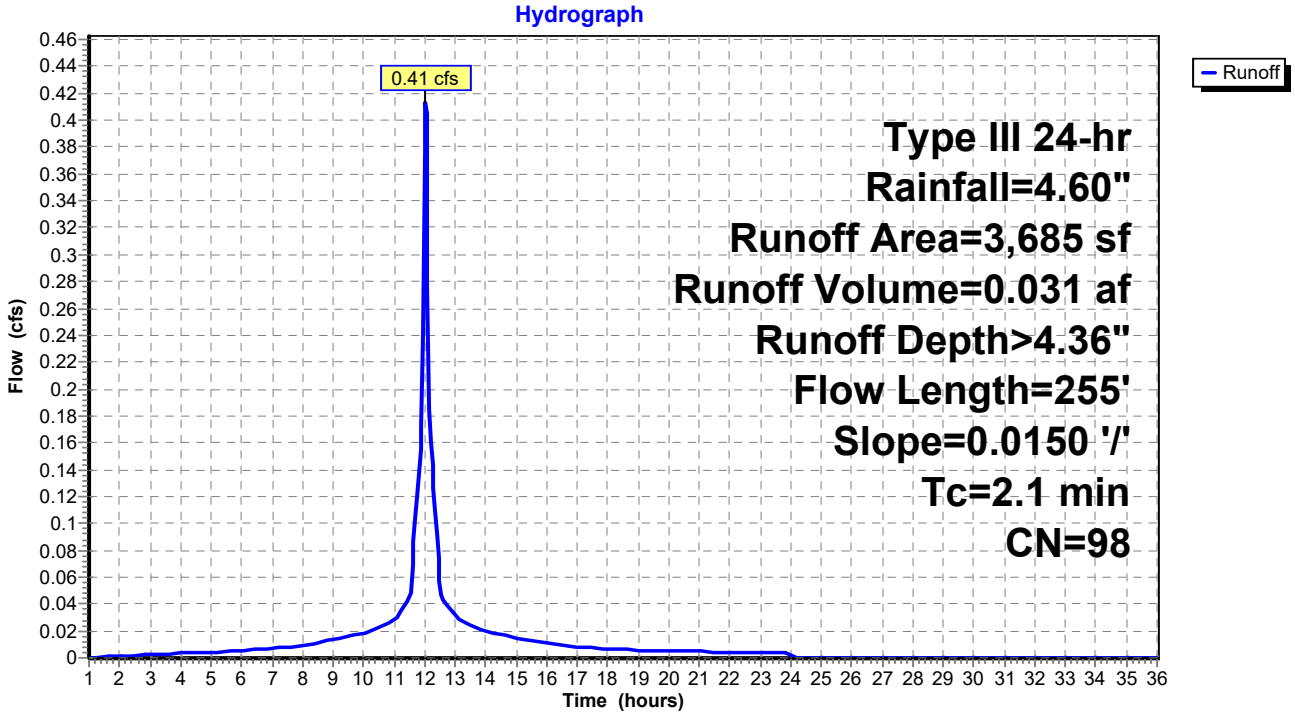
Runoff = 0.41 cfs @ 12.03 hrs, Volume= 0.031 af, Depth> 4.36"

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

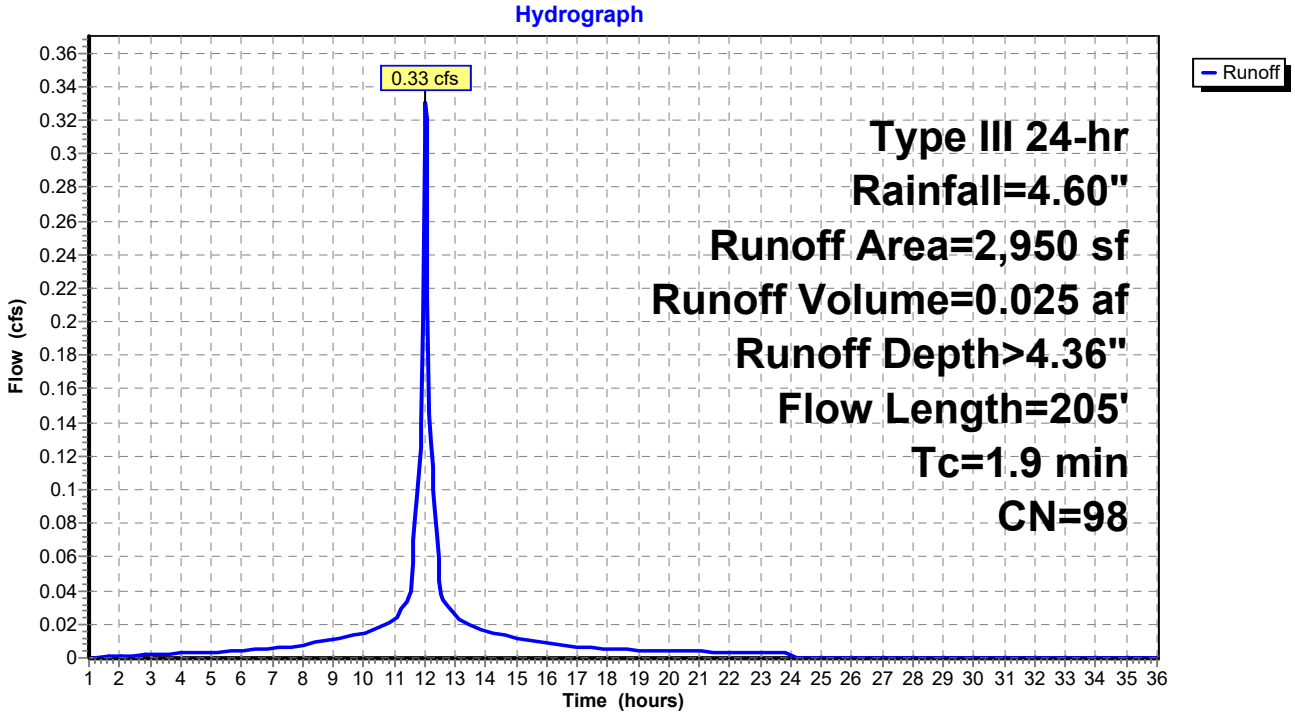
Runoff = 0.33 cfs @ 12.03 hrs, Volume= 0.025 af, Depth> 4.36"

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

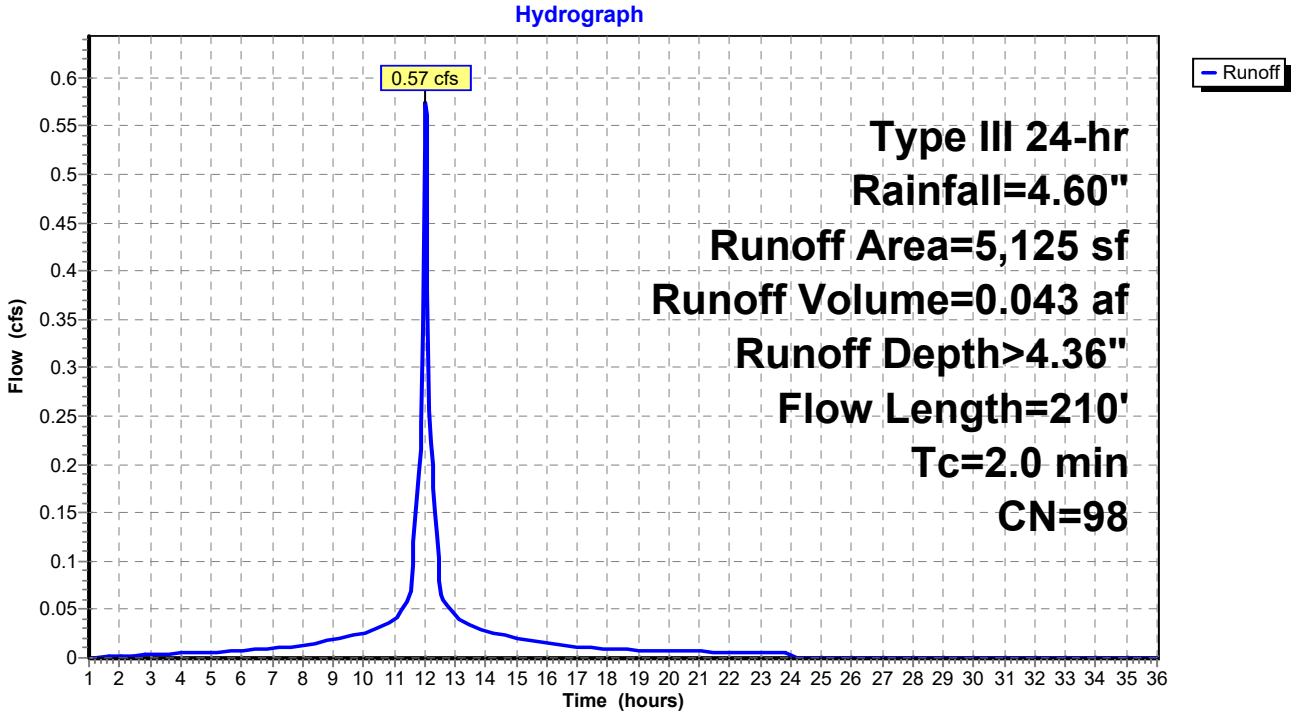
Runoff = 0.57 cfs @ 12.03 hrs, Volume= 0.043 af, Depth> 4.36"

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
5,125	98	Paved parking, HSG B
5,125		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	0.00
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	0.02
10.00	0.87	0.66	0.03
10.50	1.00	0.79	0.03
11.00	1.15	0.94	0.04
11.50	1.37	1.15	0.06
12.00	2.30	2.07	**0.53**
12.50	3.23	3.00	**0.08**
13.00	3.45	3.22	0.04
13.50	3.60	3.37	0.03
14.00	3.73	3.50	0.03
14.50	3.84	3.60	0.02
15.00	3.93	3.69	0.02
15.50	4.01	3.77	0.02
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	0.01
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	0.00
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 WS6: WS#6

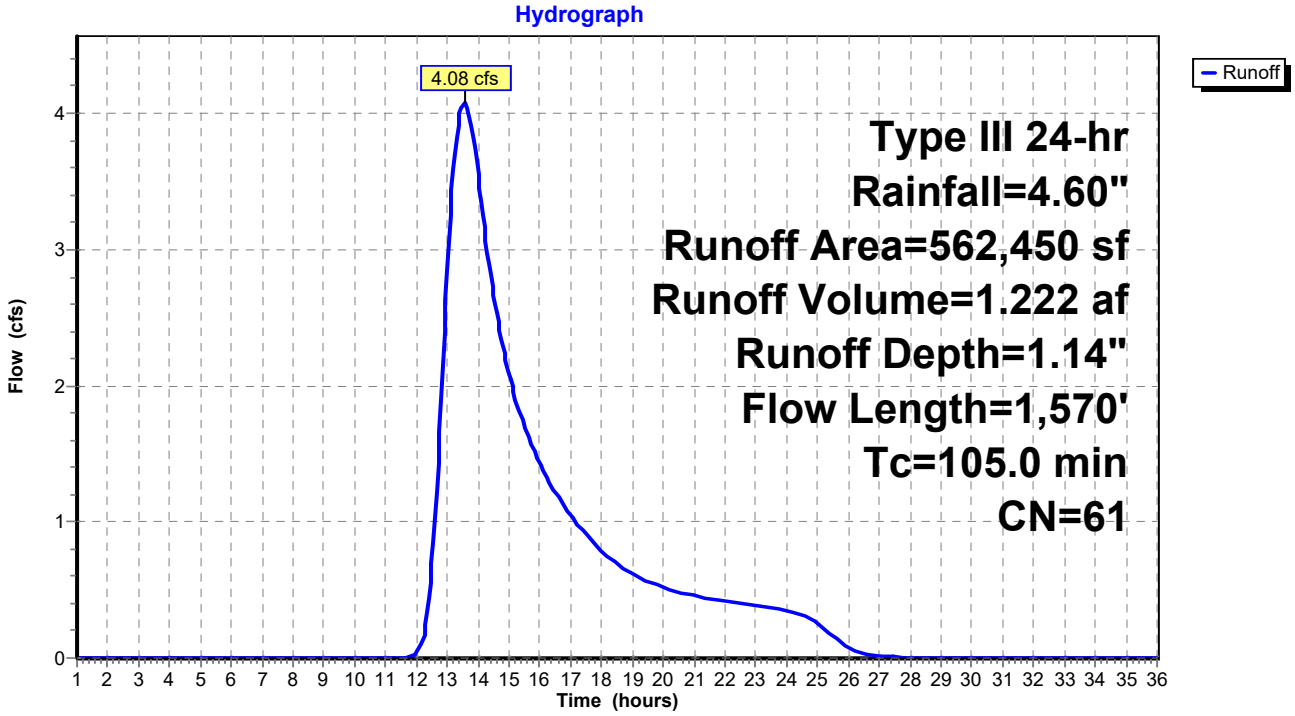
Runoff = 4.08 cfs @ 13.56 hrs, Volume= 1.222 af, Depth= 1.14"

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

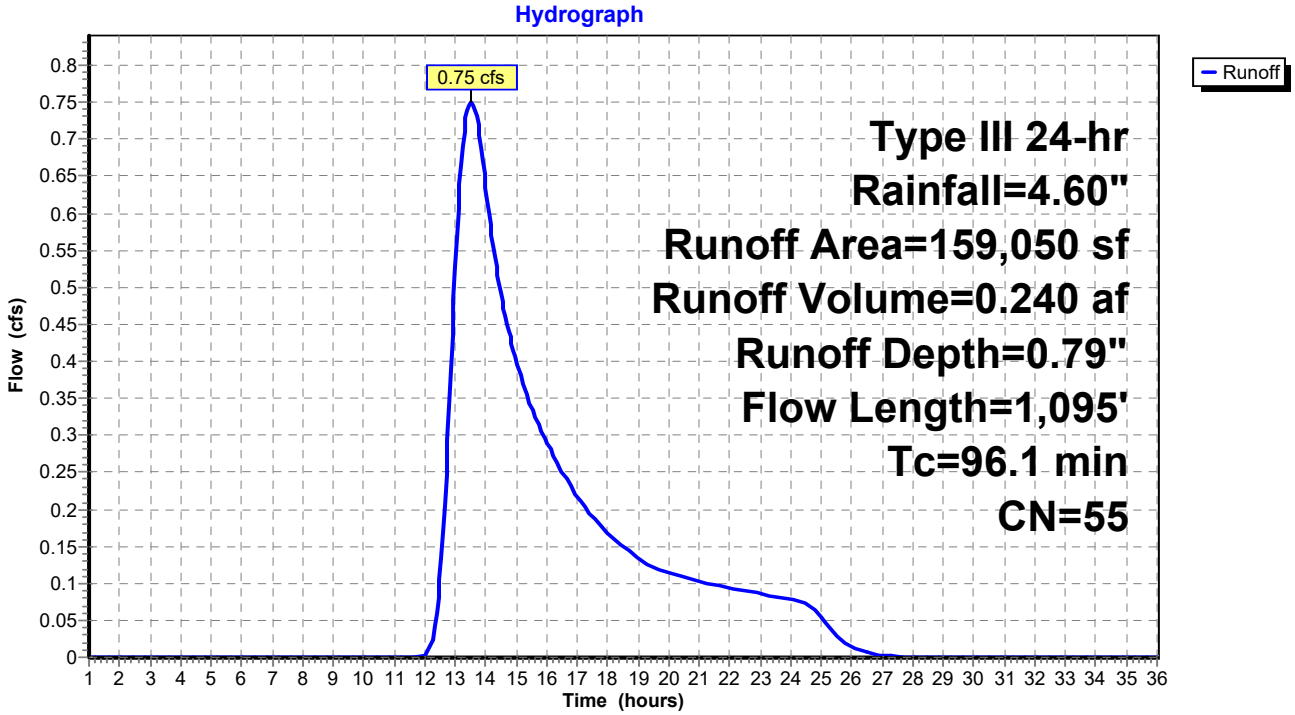
Runoff = 0.75 cfs @ 13.54 hrs, Volume= 0.240 af, Depth= 0.79"

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
153,800	55	Woods, Good, HSG B
159,050	55	Weighted Average
159,050		100.00% Pervious 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	0.07	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	0.05	0.00
12.50	3.23	0.26	0.10
13.00	3.45	0.33	0.53
13.50	3.60	0.38	**0.75**
14.00	3.73	0.43	**0.64**
14.50	3.84	0.47	0.49
15.00	3.93	0.50	0.40
15.50	4.01	0.53	0.34
16.00	4.08	0.56	0.29
16.50	4.13	0.58	0.25
17.00	4.18	0.60	0.22
17.50	4.23	0.62	0.19
18.00	4.27	0.64	0.17
18.50	4.30	0.66	0.15
19.00	4.34	0.67	0.13
19.50	4.37	0.69	0.12
20.00	4.40	0.70	0.11
20.50	4.43	0.71	0.11
21.00	4.46	0.72	0.10
21.50	4.49	0.74	0.10
22.00	4.51	0.75	0.09
22.50	4.54	0.76	0.09
23.00	4.56	0.77	0.09
23.50	4.58	0.78	0.08
24.00	**4.60**	**0.79**	0.08
24.50	4.60	0.79	0.07
25.00	4.60	0.79	0.05
25.50	4.60	0.79	0.03
26.00	4.60	0.79	0.01
26.50	4.60	0.79	0.01
27.00	4.60	0.79	0.00
27.50	4.60	0.79	0.00
28.00	4.60	0.79	0.00
28.50	4.60	0.79	0.00
29.00	4.60	0.79	0.00
29.50	4.60	0.79	0.00
30.00	4.60	0.79	0.00
30.50	4.60	0.79	0.00
31.00	4.60	0.79	0.00
31.50	4.60	0.79	0.00
32.00	4.60	0.79	0.00
32.50	4.60	0.79	0.00
33.00	4.60	0.79	0.00
33.50	4.60	0.79	0.00
34.00	4.60	0.79	0.00
34.50	4.60	0.79	0.00
35.00	4.60	0.79	0.00
35.50	4.60	0.79	0.00
36.00	4.60	0.79	0.00

Summary for Subcatchment WS8: WS8

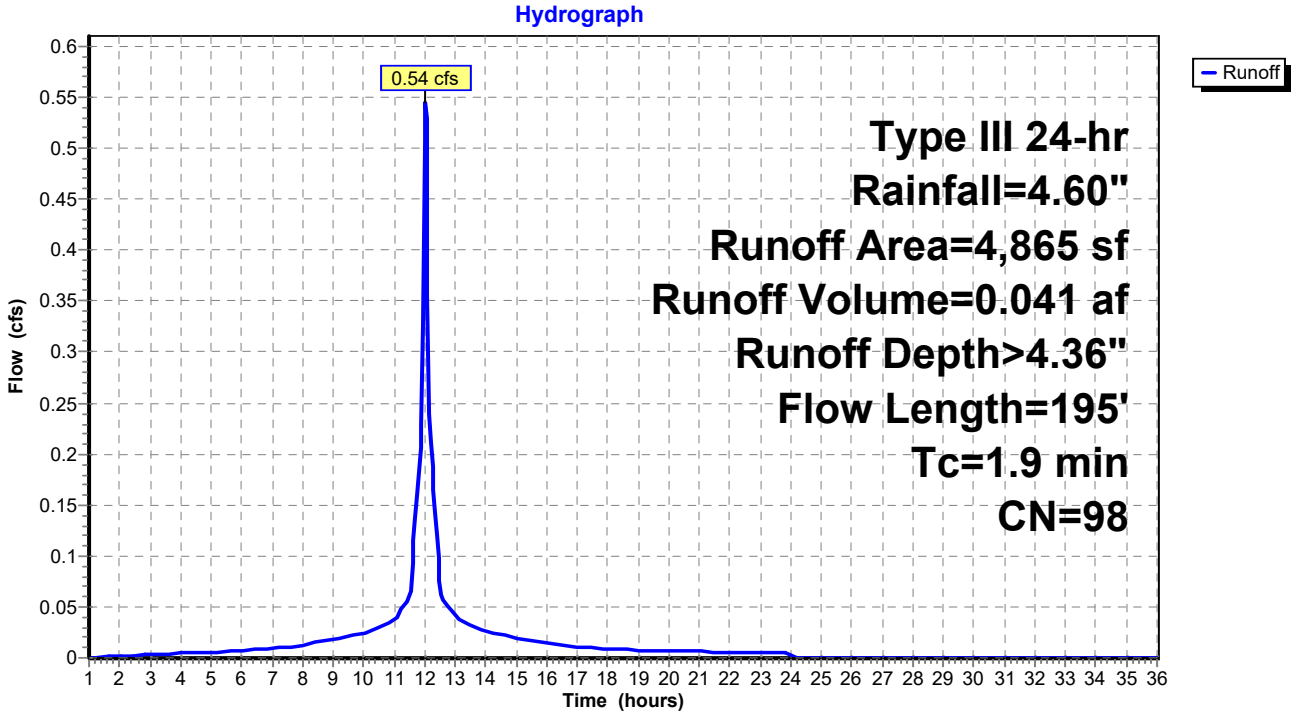
Runoff = 0.54 cfs @ 12.03 hrs, Volume= 0.041 af, Depth> 4.36"

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
4,865	98	Paved parking, HSG B
4,865		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	0.00
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	0.02
10.00	0.87	0.66	0.02
10.50	1.00	0.79	0.03
11.00	1.15	0.94	0.04
11.50	1.37	1.15	0.06
12.00	2.30	2.07	**0.51**
12.50	3.23	3.00	**0.07**
13.00	3.45	3.22	0.04
13.50	3.60	3.37	0.03
14.00	3.73	3.50	0.03
14.50	3.84	3.60	0.02
15.00	3.93	3.69	0.02
15.50	4.01	3.77	0.02
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	0.01
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	0.00
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

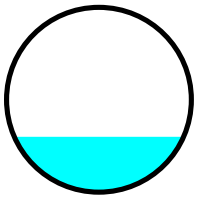
Summary for Reach R1: Culvert

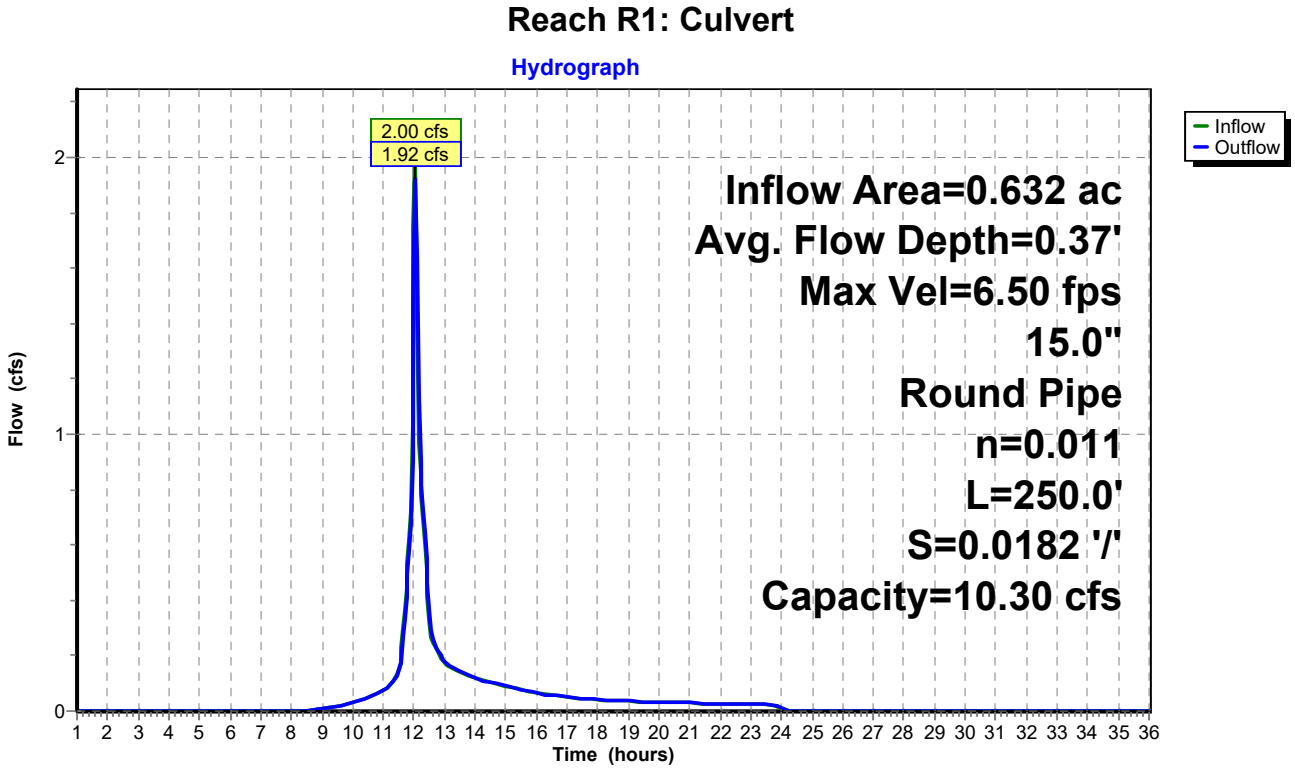
Inflow Area = 0.632 ac, 49.73% Impervious, Inflow Depth = 2.46"
Inflow = 2.00 cfs @ 12.04 hrs, Volume= 0.130 af
Outflow = 1.92 cfs @ 12.06 hrs, Volume= 0.130 af, Atten= 4%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.50 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.9 min

Peak Storage= 77 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.30 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0182 '/'
Inlet Invert= 365.10', Outlet Invert= 360.55'





Hydrograph for Reach R1: Culvert

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
1.00	0.00	0	365.10	0.00
2.00	0.00	0	365.10	0.00
3.00	0.00	0	365.10	0.00
4.00	0.00	0	365.10	0.00
5.00	0.00	0	365.10	0.00
6.00	0.00	0	365.10	0.00
7.00	0.00	0	365.10	0.00
8.00	0.00	0	365.10	0.00
9.00	0.01	2	365.13	0.01
10.00	0.03	4	365.15	0.03
11.00	0.07	7	365.17	0.07
12.00	**1.74**	**66**	**365.43**	**1.47**
13.00	**0.17**	**14**	**365.21**	**0.18**
14.00	0.12	10	365.19	0.12
15.00	0.09	9	365.18	0.09
16.00	0.06	7	365.17	0.06
17.00	0.05	6	365.16	0.05
18.00	0.04	5	365.16	0.04
19.00	0.04	5	365.15	0.04
20.00	0.03	4	365.15	0.03
21.00	0.03	4	365.15	0.03
22.00	0.03	4	365.15	0.03
23.00	0.02	3	365.14	0.02
24.00	0.02	3	365.14	0.02
25.00	0.00	0	365.10	0.00
26.00	0.00	0	365.10	0.00
27.00	0.00	0	365.10	0.00
28.00	0.00	0	365.10	0.00
29.00	0.00	0	365.10	0.00
30.00	0.00	0	365.10	0.00
31.00	0.00	0	365.10	0.00
32.00	0.00	0	365.10	0.00
33.00	0.00	0	365.10	0.00
34.00	0.00	0	365.10	0.00
35.00	0.00	0	365.10	0.00
36.00	0.00	0	365.10	0.00

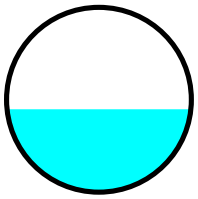
Summary for Reach R2: R2 Pipe across road

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

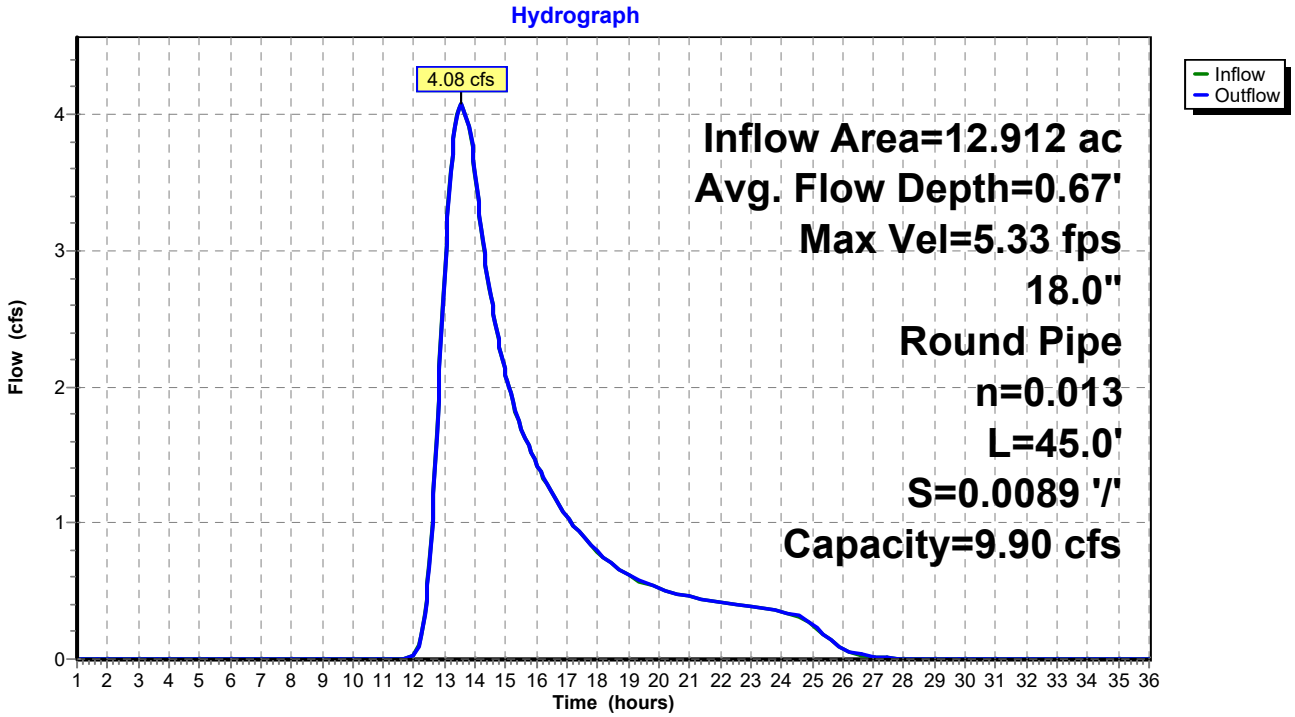
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.33 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.75 fps, Avg. Travel Time= 0.3 min

Peak Storage= 34 cf @ 13.56 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 9.90 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0089 '/'
Inlet Invert= 355.00', Outlet Invert= 354.60'



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	355.00	0.00
2.00	0.00	0	355.00	0.00
3.00	0.00	0	355.00	0.00
4.00	0.00	0	355.00	0.00
5.00	0.00	0	355.00	0.00
6.00	0.00	0	355.00	0.00
7.00	0.00	0	355.00	0.00
8.00	0.00	0	355.00	0.00
9.00	0.00	0	355.00	0.00
10.00	0.00	0	355.00	0.00
11.00	0.00	0	355.00	0.00
12.00	0.02	1	355.05	0.02
13.00	**2.84**	**26**	**355.55**	**2.83**
14.00	**3.55**	**31**	**355.62**	**3.56**
15.00	2.09	21	355.47	2.09
16.00	1.43	16	355.39	1.43
17.00	1.04	13	355.33	1.04
18.00	0.78	11	355.29	0.79
19.00	0.62	9	355.25	0.62
20.00	0.52	8	355.23	0.52
21.00	0.46	7	355.22	0.46
22.00	0.42	7	355.21	0.42
23.00	0.38	6	355.20	0.38
24.00	0.35	6	355.19	0.35
25.00	0.26	5	355.17	0.26
26.00	0.08	2	355.09	0.08
27.00	0.02	1	355.05	0.02
28.00	0.00	0	355.02	0.00
29.00	0.00	0	355.01	0.00
30.00	0.00	0	355.00	0.00
31.00	0.00	0	355.00	0.00
32.00	0.00	0	355.00	0.00
33.00	0.00	0	355.00	0.00
34.00	0.00	0	355.00	0.00
35.00	0.00	0	355.00	0.00
36.00	0.00	0	355.00	0.00

Summary for Pond CB1: CB-1

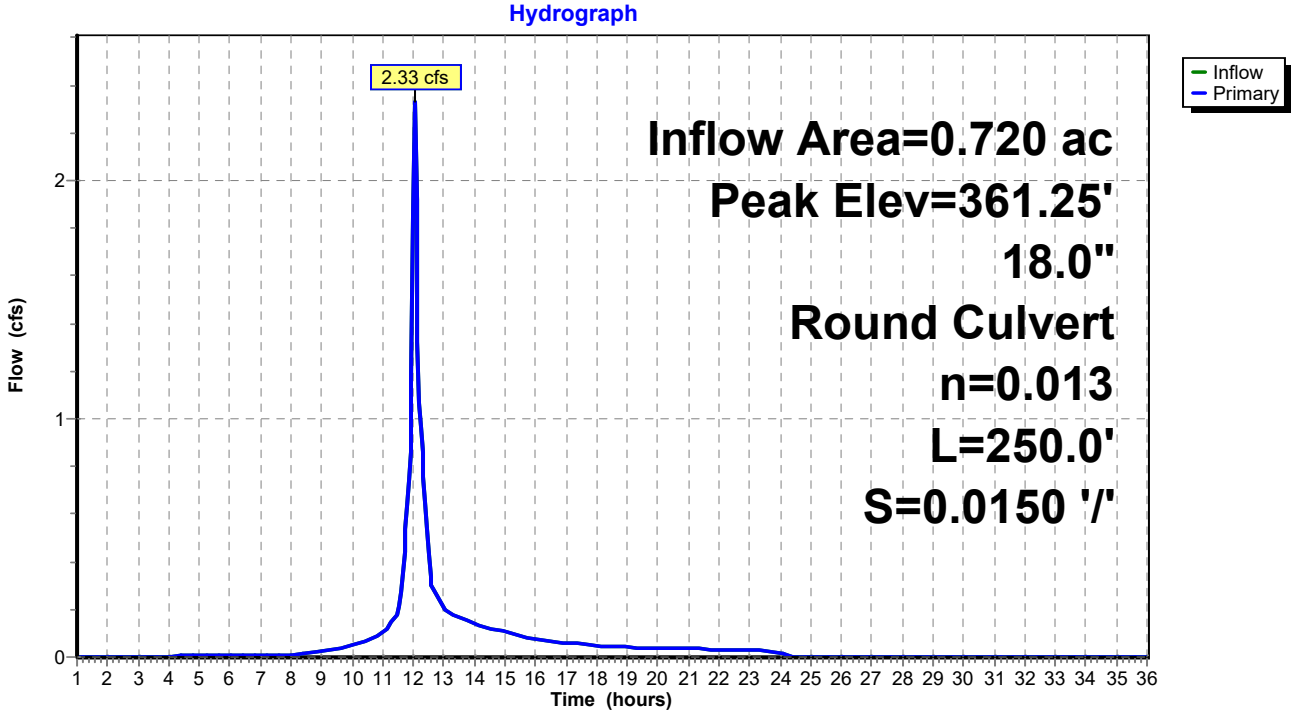
Inflow Area = 0.720 ac, 55.82% Impervious, Inflow Depth > 2.69"
Inflow = 2.33 cfs @ 12.05 hrs, Volume= 0.161 af
Outflow = 2.33 cfs @ 12.05 hrs, Volume= 0.161 af, Atten= 0%, Lag= 0.0 min
Primary = 2.33 cfs @ 12.05 hrs, Volume= 0.161 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 361.25' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	360.45'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 360.45' / 356.70' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.32 cfs @ 12.05 hrs HW=361.25' (Free Discharge)
└**1=CB-1** (Inlet Controls 2.32 cfs @ 2.41 fps)

Pond CB1: CB-1



Hydrograph for Pond CB1: CB-1

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	360.45	0.00
1.50	0.00	360.46	0.00
2.00	0.00	360.47	0.00
2.50	0.00	360.47	0.00
3.00	0.00	360.47	0.00
3.50	0.00	360.48	0.00
4.00	0.00	360.48	0.00
4.50	0.00	360.48	0.00
5.00	0.00	360.48	0.00
5.50	0.00	360.48	0.00
6.00	0.01	360.48	0.01
6.50	0.01	360.49	0.01
7.00	0.01	360.49	0.01
7.50	0.01	360.49	0.01
8.00	0.01	360.50	0.01
8.50	0.01	360.51	0.01
9.00	0.02	360.52	0.02
9.50	0.03	360.54	0.03
10.00	0.05	360.56	0.05
10.50	0.07	360.58	0.07
11.00	0.10	360.60	0.10
11.50	0.18	360.66	0.18
12.00	**1.87**	**361.16**	**1.87**
12.50	**0.43**	**360.77**	**0.43**
13.00	0.21	360.67	0.21
13.50	0.17	360.65	0.17
14.00	0.14	360.63	0.14
14.50	0.12	360.62	0.12
15.00	0.11	360.61	0.11
15.50	0.09	360.60	0.09
16.00	0.07	360.58	0.07
16.50	0.07	360.57	0.07
17.00	0.06	360.57	0.06
17.50	0.05	360.56	0.05
18.00	0.05	360.55	0.05
18.50	0.04	360.55	0.04
19.00	0.04	360.55	0.04
19.50	0.04	360.55	0.04
20.00	0.04	360.54	0.04
20.50	0.04	360.54	0.04
21.00	0.03	360.54	0.03
21.50	0.03	360.54	0.03
22.00	0.03	360.53	0.03
22.50	0.03	360.53	0.03
23.00	0.03	360.53	0.03
23.50	0.03	360.53	0.03
24.00	0.02	360.52	0.02
24.50	0.00	360.45	0.00
25.00	0.00	360.45	0.00
25.50	0.00	360.45	0.00
26.00	0.00	360.45	0.00
26.50	0.00	360.45	0.00
27.00	0.00	360.45	0.00
27.50	0.00	360.45	0.00
28.00	0.00	360.45	0.00
28.50	0.00	360.45	0.00
29.00	0.00	360.45	0.00
29.50	0.00	360.45	0.00
30.00	0.00	360.45	0.00
30.50	0.00	360.45	0.00
31.00	0.00	360.45	0.00
31.50	0.00	360.45	0.00
32.00	0.00	360.45	0.00
32.50	0.00	360.45	0.00
33.00	0.00	360.45	0.00
33.50	0.00	360.45	0.00
34.00	0.00	360.45	0.00
34.50	0.00	360.45	0.00
35.00	0.00	360.45	0.00
35.50	0.00	360.45	0.00
36.00	0.00	360.45	0.00

Summary for Pond CB2: CB2

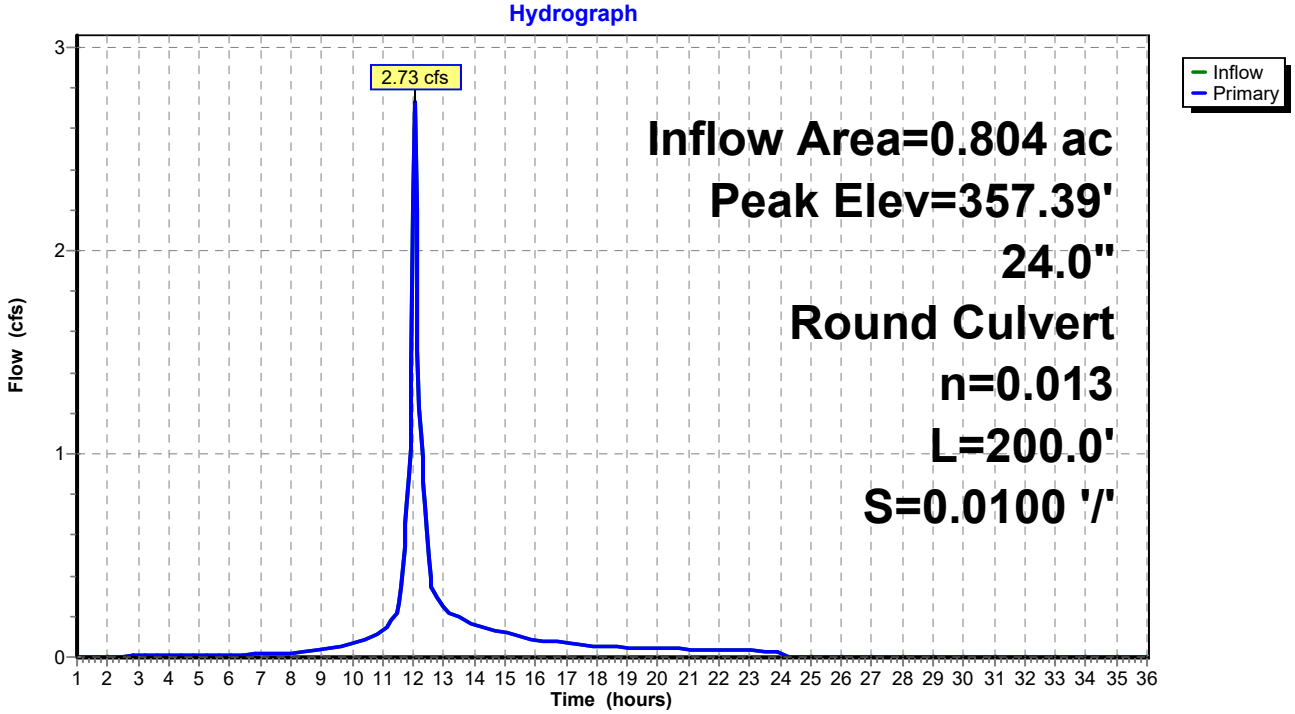
Inflow Area = 0.804 ac, 60.47% Impervious, Inflow Depth > 2.87"
Inflow = 2.73 cfs @ 12.05 hrs, Volume= 0.192 af
Outflow = 2.73 cfs @ 12.05 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.73 cfs @ 12.05 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 357.39' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	356.60'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.60' / 354.60' S= 0.0100 '/' 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=357.38' (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	356.60	0.00
1.50	0.00	356.62	0.00
2.00	0.00	356.62	0.00
2.50	0.00	356.63	0.00
3.00	0.00	356.63	0.00
3.50	0.01	356.63	0.01
4.00	0.01	356.64	0.01
4.50	0.01	356.64	0.01
5.00	0.01	356.64	0.01
5.50	0.01	356.64	0.01
6.00	0.01	356.64	0.01
6.50	0.01	356.65	0.01
7.00	0.01	356.65	0.01
7.50	0.02	356.66	0.02
8.00	0.02	356.66	0.02
8.50	0.03	356.67	0.03
9.00	0.04	356.69	0.04
9.50	0.05	356.70	0.05
10.00	0.07	356.71	0.07
10.50	0.09	356.74	0.09
11.00	0.13	356.76	0.13
11.50	0.23	356.82	0.23
12.00	**2.25**	**357.31**	**2.25**
12.50	**0.48**	**356.92**	**0.48**
13.00	0.24	356.82	0.24
13.50	0.19	356.80	0.19
14.00	0.16	356.78	0.16
14.50	0.14	356.77	0.14
15.00	0.12	356.76	0.12
15.50	0.10	356.74	0.10
16.00	0.08	356.73	0.08
16.50	0.08	356.72	0.08
17.00	0.07	356.72	0.07
17.50	0.06	356.71	0.06
18.00	0.05	356.70	0.05
18.50	0.05	356.70	0.05
19.00	0.05	356.70	0.05
19.50	0.04	356.69	0.04
20.00	0.04	356.69	0.04
20.50	0.04	356.69	0.04
21.00	0.04	356.69	0.04
21.50	0.04	356.69	0.04
22.00	0.04	356.68	0.04
22.50	0.03	356.68	0.03
23.00	0.03	356.68	0.03
23.50	0.03	356.68	0.03
24.00	0.03	356.67	0.03
24.50	0.00	356.60	0.00
25.00	0.00	356.60	0.00
25.50	0.00	356.60	0.00
26.00	0.00	356.60	0.00
26.50	0.00	356.60	0.00
27.00	0.00	356.60	0.00
27.50	0.00	356.60	0.00
28.00	0.00	356.60	0.00
28.50	0.00	356.60	0.00
29.00	0.00	356.60	0.00
29.50	0.00	356.60	0.00
30.00	0.00	356.60	0.00
30.50	0.00	356.60	0.00
31.00	0.00	356.60	0.00
31.50	0.00	356.60	0.00
32.00	0.00	356.60	0.00
32.50	0.00	356.60	0.00
33.00	0.00	356.60	0.00
33.50	0.00	356.60	0.00
34.00	0.00	356.60	0.00
34.50	0.00	356.60	0.00
35.00	0.00	356.60	0.00
35.50	0.00	356.60	0.00
36.00	0.00	356.60	0.00

Summary for Pond CB3: CB-3

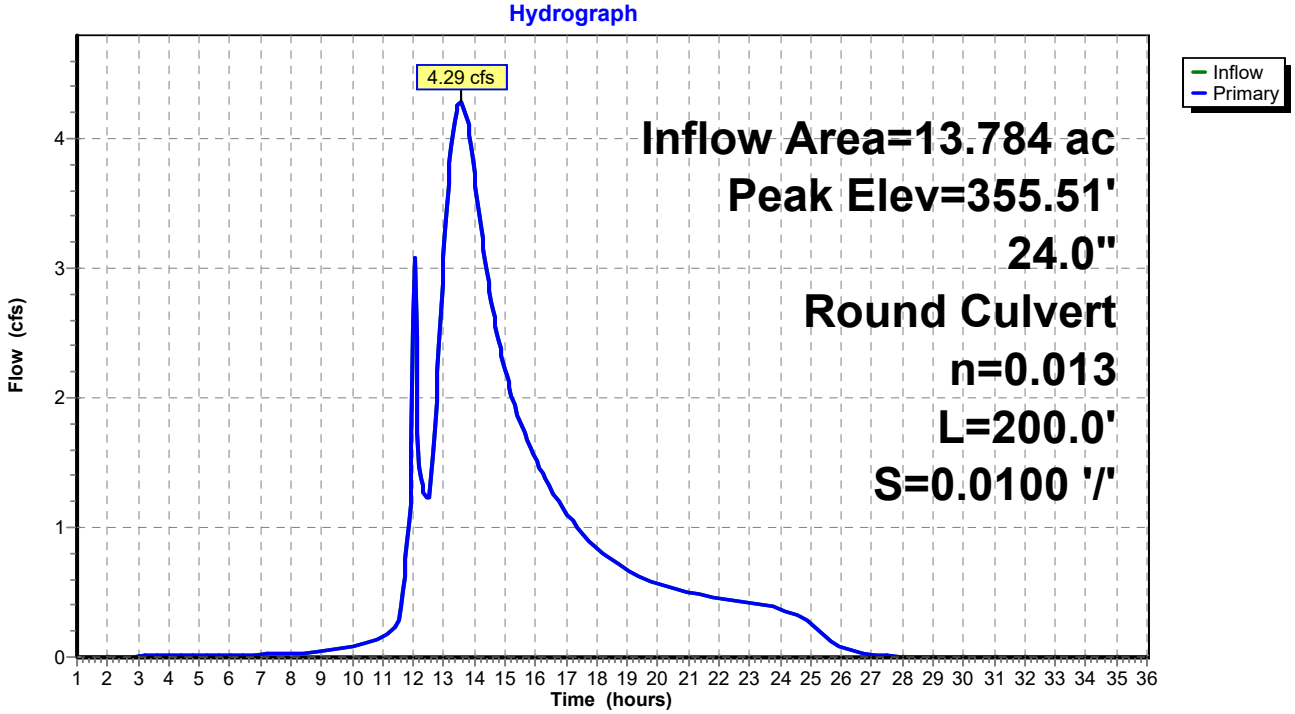
Inflow Area =	13.784 ac,	10.45% Impervious,	Inflow Depth >	1.25"	
Inflow =	4.29 cfs @	13.55 hrs,	Volume=	1.439 af	
Outflow =	4.29 cfs @	13.55 hrs,	Volume=	1.439 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.29 cfs @	13.55 hrs,	Volume=	1.439 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.51' @ 13.55 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.50'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.50' / 352.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.28 cfs @ 13.55 hrs HW=355.51' (Free Discharge)
└**1=CB-3** (Inlet Controls 4.28 cfs @ 2.70 fps)

Pond CB3: CB-3



Hydrograph for Pond CB3: CB-3

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	354.50	0.00
1.50	0.00	354.52	0.00
2.00	0.00	354.53	0.00
2.50	0.01	354.53	0.01
3.00	0.01	354.54	0.01
3.50	0.01	354.54	0.01
4.00	0.01	354.54	0.01
4.50	0.01	354.55	0.01
5.00	0.01	354.55	0.01
5.50	0.01	354.55	0.01
6.00	0.01	354.55	0.01
6.50	0.02	354.56	0.02
7.00	0.02	354.56	0.02
7.50	0.02	354.57	0.02
8.00	0.03	354.57	0.03
8.50	0.04	354.58	0.04
9.00	0.05	354.60	0.05
9.50	0.06	354.61	0.06
10.00	0.08	354.63	0.08
10.50	0.11	354.65	0.11
11.00	0.15	354.67	0.15
11.50	0.26	354.73	0.26
12.00	2.58	355.26	2.58
12.50	1.21	355.01	1.21
13.00	3.09	355.34	3.09
13.50	**4.28**	**355.51**	**4.28**
14.00	**3.73**	**355.43**	**3.73**
14.50	2.82	355.30	2.82
15.00	2.22	355.20	2.22
15.50	1.82	355.13	1.82
16.00	1.52	355.08	1.52
16.50	1.30	355.03	1.30
17.00	1.12	354.99	1.12
17.50	0.97	354.95	0.97
18.00	0.84	354.92	0.84
18.50	0.75	354.90	0.75
19.00	0.67	354.87	0.67
19.50	0.61	354.86	0.61
20.00	0.56	354.84	0.56
20.50	0.53	354.83	0.53
21.00	0.50	354.82	0.50
21.50	0.48	354.81	0.48
22.00	0.46	354.81	0.46
22.50	0.44	354.80	0.44
23.00	0.42	354.79	0.42
23.50	0.40	354.79	0.40
24.00	0.38	354.78	0.38
24.50	0.32	354.76	0.32
25.00	0.26	354.73	0.26
25.50	0.16	354.68	0.16
26.00	0.08	354.62	0.08
26.50	0.04	354.59	0.04
27.00	0.02	354.56	0.02
27.50	0.01	354.54	0.01
28.00	0.00	354.53	0.00
28.50	0.00	354.52	0.00
29.00	0.00	354.51	0.00
29.50	0.00	354.50	0.00
30.00	0.00	354.50	0.00
30.50	0.00	354.50	0.00
31.00	0.00	354.50	0.00
31.50	0.00	354.50	0.00
32.00	0.00	354.50	0.00
32.50	0.00	354.50	0.00
33.00	0.00	354.50	0.00
33.50	0.00	354.50	0.00
34.00	0.00	354.50	0.00
34.50	0.00	354.50	0.00
35.00	0.00	354.50	0.00
35.50	0.00	354.50	0.00
36.00	0.00	354.50	0.00

Summary for Pond CB4: CB-4

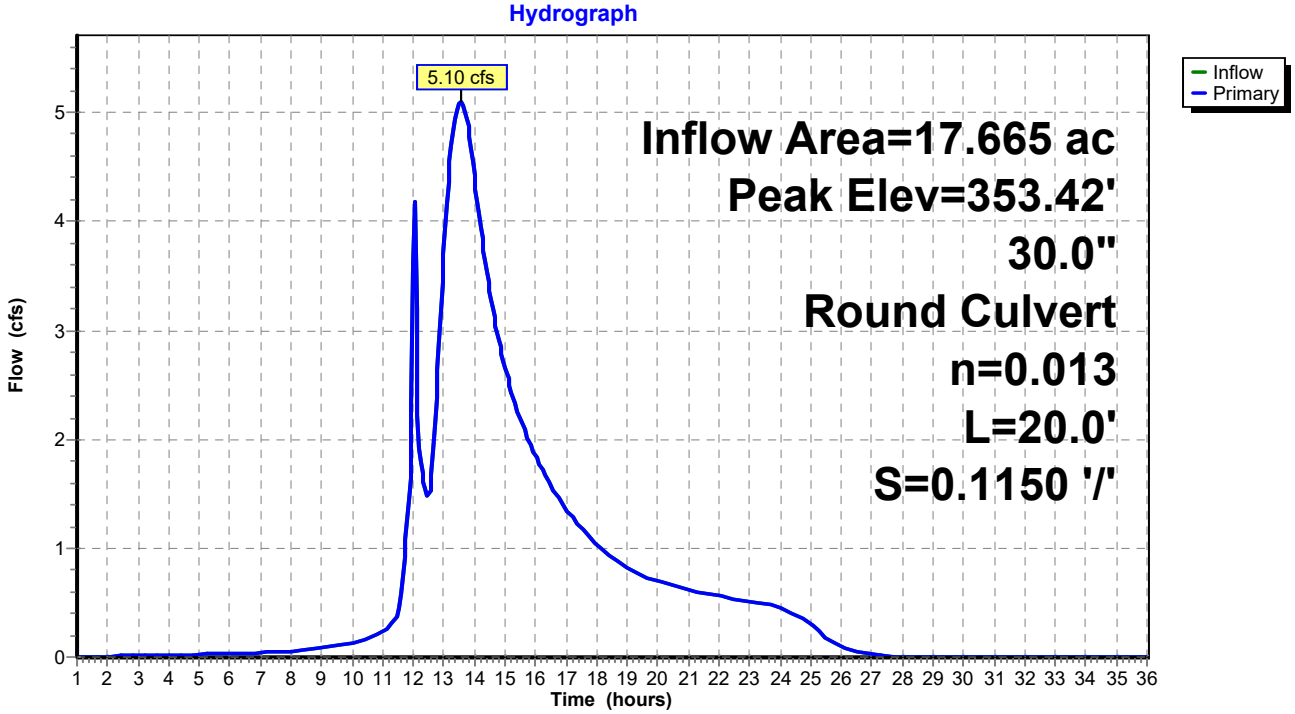
Inflow Area =	17.665 ac,	9.46% Impervious,	Inflow Depth >	1.20"	
Inflow =	5.10 cfs @	13.55 hrs,	Volume=	1.762 af	
Outflow =	5.10 cfs @	13.55 hrs,	Volume=	1.762 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.10 cfs @	13.55 hrs,	Volume=	1.762 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.42' @ 13.55 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.40'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.40' / 350.10' S= 0.1150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=5.10 cfs @ 13.55 hrs HW=353.42' (Free Discharge)
└**1=30"** (Inlet Controls 5.10 cfs @ 2.71 fps)

Pond CB4: CB-4



Hydrograph for Pond CB4: CB-4

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
1.00	0.00	352.41	0.00
1.50	0.00	352.43	0.00
2.00	0.01	352.43	0.01
2.50	0.01	352.44	0.01
3.00	0.01	352.45	0.01
3.50	0.02	352.45	0.02
4.00	0.02	352.46	0.02
4.50	0.02	352.46	0.02
5.00	0.02	352.46	0.02
5.50	0.03	352.47	0.03
6.00	0.03	352.47	0.03
6.50	0.03	352.48	0.03
7.00	0.04	352.48	0.04
7.50	0.05	352.49	0.05
8.00	0.05	352.50	0.05
8.50	0.07	352.51	0.07
9.00	0.09	352.52	0.09
9.50	0.11	352.54	0.11
10.00	0.13	352.55	0.13
10.50	0.17	352.58	0.17
11.00	0.22	352.60	0.22
11.50	0.39	352.67	0.39
12.00	3.61	353.25	3.61
12.50	1.46	352.93	1.46
13.00	3.70	353.26	3.70
13.50	**5.09**	**353.42**	**5.09**
14.00	**4.42**	**353.34**	**4.42**
14.50	3.36	353.21	3.36
15.00	2.66	353.12	2.66
15.50	2.19	353.05	2.19
16.00	1.84	352.99	1.84
16.50	1.58	352.95	1.58
17.00	1.36	352.91	1.36
17.50	1.18	352.87	1.18
18.00	1.03	352.84	1.03
18.50	0.92	352.81	0.92
19.00	0.82	352.79	0.82
19.50	0.75	352.77	0.75
20.00	0.69	352.76	0.69
20.50	0.65	352.75	0.65
21.00	0.62	352.74	0.62
21.50	0.59	352.73	0.59
22.00	0.56	352.72	0.56
22.50	0.54	352.71	0.54
23.00	0.51	352.71	0.51
23.50	0.49	352.70	0.49
24.00	0.46	352.69	0.46
24.50	0.39	352.67	0.39
25.00	0.31	352.64	0.31
25.50	0.18	352.58	0.18
26.00	0.09	352.53	0.09
26.50	0.04	352.49	0.04
27.00	0.02	352.46	0.02
27.50	0.01	352.44	0.01
28.00	0.00	352.43	0.00
28.50	0.00	352.42	0.00
29.00	0.00	352.41	0.00
29.50	0.00	352.40	0.00
30.00	0.00	352.40	0.00
30.50	0.00	352.40	0.00
31.00	0.00	352.40	0.00
31.50	0.00	352.40	0.00
32.00	0.00	352.40	0.00
32.50	0.00	352.40	0.00
33.00	0.00	352.40	0.00
33.50	0.00	352.40	0.00
34.00	0.00	352.40	0.00
34.50	0.00	352.40	0.00
35.00	0.00	352.40	0.00
35.50	0.00	352.40	0.00
36.00	0.00	352.40	0.00

Summary for Pond CB5: CB-5

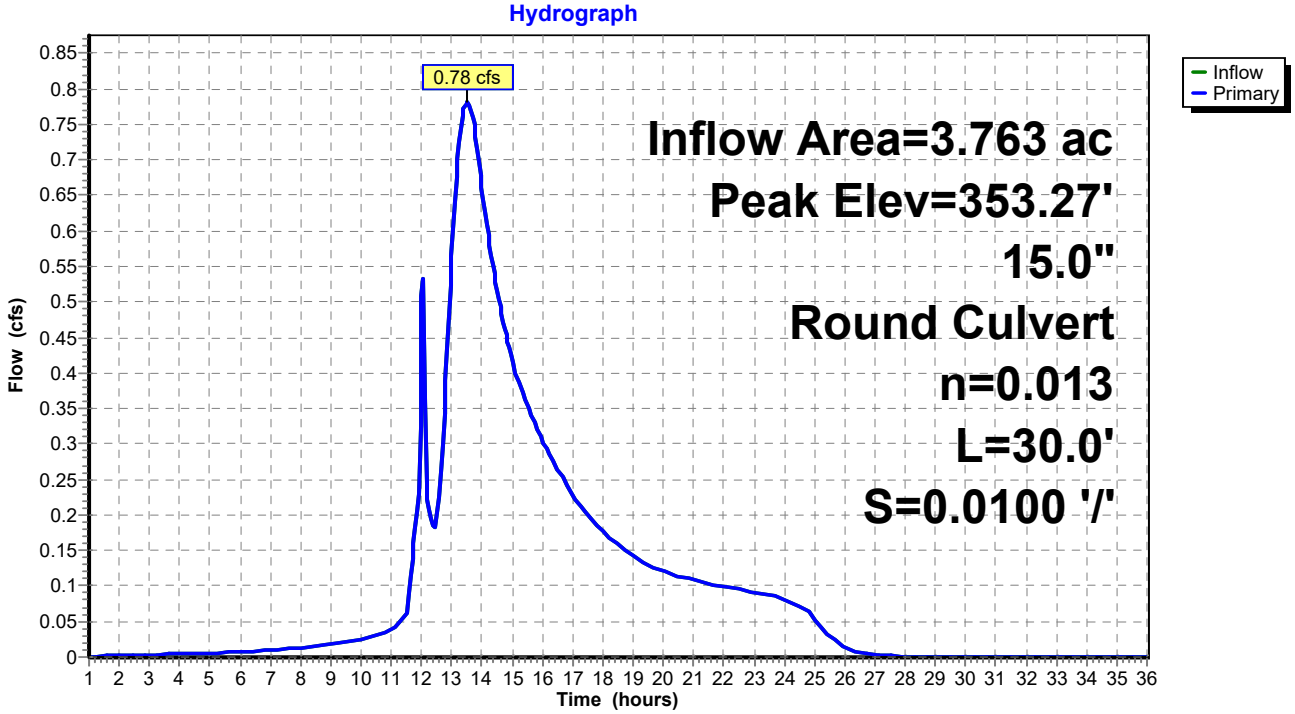
Inflow Area =	3.763 ac,	2.97% Impervious,	Inflow Depth >	0.89"	
Inflow =	0.78 cfs @	13.54 hrs,	Volume=	0.280 af	
Outflow =	0.78 cfs @	13.54 hrs,	Volume=	0.280 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.78 cfs @	13.54 hrs,	Volume=	0.280 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.27' @ 13.54 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' / 352.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.78 cfs @ 13.54 hrs HW=353.27' (Free Discharge)
└**1=CB-5** (Inlet Controls 0.78 cfs @ 1.85 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	0.00	352.83	0.00
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	352.84	0.01
7.00	0.01	352.85	0.01
7.50	0.01	352.85	0.01
8.00	0.01	352.86	0.01
8.50	0.02	352.86	0.02
9.00	0.02	352.87	0.02
9.50	0.02	352.87	0.02
10.00	0.02	352.88	0.02
10.50	0.03	352.89	0.03
11.00	0.04	352.90	0.04
11.50	0.06	352.92	0.06
12.00	0.51	353.17	0.51
12.50	0.18	353.02	0.18
13.00	0.57	353.20	0.57
13.50	**0.78**	**353.27**	**0.78**
14.00	**0.66**	**353.23**	**0.66**
14.50	0.52	353.18	0.52
15.00	0.42	353.14	0.42
15.50	0.35	353.11	0.35
16.00	0.30	353.09	0.30
16.50	0.26	353.07	0.26
17.00	0.23	353.05	0.23
17.50	0.20	353.03	0.20
18.00	0.18	353.02	0.18
18.50	0.16	353.00	0.16
19.00	0.14	352.99	0.14
19.50	0.13	352.98	0.13
20.00	0.12	352.98	0.12
20.50	0.11	352.97	0.11
21.00	0.11	352.97	0.11
21.50	0.10	352.96	0.10
22.00	0.10	352.96	0.10
22.50	0.10	352.96	0.10
23.00	0.09	352.95	0.09
23.50	0.09	352.95	0.09
24.00	0.08	352.95	0.08
24.50	0.07	352.94	0.07
25.00	0.05	352.92	0.05
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 =	17.665 ac,	9.46% Impervious,	Inflow Depth >	1.20"
Inflow =	5.10 cfs @	13.55 hrs,	Volume=	1.762 af
Outflow =	2.89 cfs @	14.82 hrs,	Volume=	1.762 af, Atten= 43%, Lag= 76.3 min
Primary =	2.89 cfs @	14.82 hrs,	Volume=	1.762 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= 349.15' @ 14.82 hrs Surf.Area= 15,383 sf Storage= 24,009 cf

Plug-Flow detention time= 169.1 min calculated for 1.759 af (100% of inflow)
Center-of-Mass det. time= 169.0 min (1,109.3 - 940.3)

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

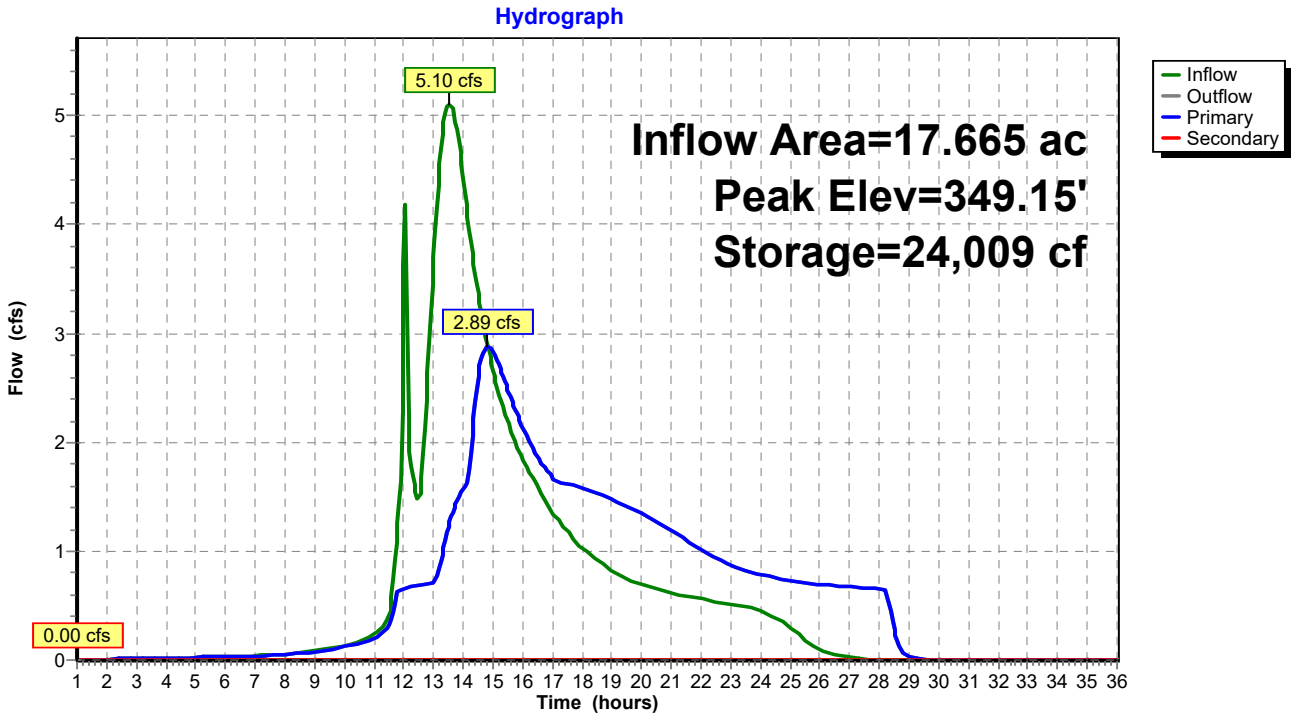
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

Device	Routing	Invert	Outlet Devices
#1	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=2.88 cfs @ 14.82 hrs HW=349.15' (Free Discharge)
└─**1=Culvert** (Passes 2.88 cfs of 5.70 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 1.15 cfs @ 1.25 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.90 cfs @ 4.56 fps)
  └─**4=Orifice/Grate** (Orifice Controls 0.84 cfs @ 9.61 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	9	347.50	0.01	0.01	0.00
4.00	0.02	13	347.50	0.02	0.02	0.00
5.00	0.02	17	347.50	0.02	0.02	0.00
6.00	0.03	21	347.50	0.03	0.03	0.00
7.00	0.04	28	347.50	0.04	0.04	0.00
8.00	0.05	36	347.50	0.05	0.05	0.00
9.00	0.09	58	347.50	0.08	0.08	0.00
10.00	0.13	90	347.51	0.12	0.12	0.00
11.00	0.22	151	347.51	0.20	0.20	0.00
12.00	3.61	1,501	347.61	0.66	0.66	0.00
13.00	**3.70**	7,418	348.03	0.71	0.71	0.00
14.00	**4.42**	**20,256**	**348.90**	**1.57**	**1.57**	0.00
15.00	2.66	**23,945**	**349.14**	**2.84**	**2.84**	0.00
16.00	1.84	22,939	349.08	2.13	2.13	0.00
17.00	1.36	21,896	349.01	1.67	1.67	0.00
18.00	1.03	20,332	348.91	1.58	1.58	0.00
19.00	0.82	18,140	348.76	1.47	1.47	0.00
20.00	0.69	15,771	348.60	1.34	1.34	0.00
21.00	0.62	13,564	348.45	1.19	1.19	0.00
22.00	0.56	11,727	348.33	1.01	1.01	0.00
23.00	0.51	10,277	348.23	0.88	0.88	0.00
24.00	0.46	9,059	348.14	0.78	0.78	0.00
25.00	0.31	7,752	348.05	0.72	0.72	0.00
26.00	0.09	5,889	347.92	0.70	0.70	0.00
27.00	0.02	3,590	347.76	0.68	0.68	0.00
28.00	0.00	1,236	347.59	0.65	0.65	0.00
29.00	0.00	19	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

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	0.0100	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	365.10	360.55	250.0	0.0182	0.011	15.0	0.0	0.0
5	R2	355.00	354.60	45.0	0.0089	0.013	18.0	0.0	0.0
6	CB1	360.45	356.70	250.0	0.0150	0.013	18.0	0.0	0.0
7	CB2	356.60	354.60	200.0	0.0100	0.013	24.0	0.0	0.0
8	CB3	354.50	352.50	200.0	0.0100	0.013	24.0	0.0	0.0
9	CB4	352.40	350.10	20.0	0.1150	0.013	30.0	0.0	0.0
10	CB5	352.80	352.50	30.0	0.0100	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=3.15"
Flow Length=965' Tc=2.1 min CN=79 Runoff=2.56 cfs 0.166 af

Subcatchment WS2: WS#2 Runoff Area=3,800 sf 100.00% Impervious Runoff Depth>5.16"
Flow Length=275' Tc=1.8 min CN=98 Runoff=0.50 cfs 0.038 af

Subcatchment WS3: WS#3 Runoff Area=3,685 sf 100.00% Impervious Runoff Depth>5.16"
Flow Length=255' Slope=0.0150 '/' Tc=2.1 min CN=98 Runoff=0.49 cfs 0.036 af

Subcatchment WS4: WS#4 Runoff Area=2,950 sf 100.00% Impervious Runoff Depth>5.16"
Flow Length=205' Tc=1.9 min CN=98 Runoff=0.39 cfs 0.029 af

Subcatchment WS5: WS#5 Runoff Area=5,125 sf 100.00% Impervious Runoff Depth>5.16"
Flow Length=210' Tc=2.0 min CN=98 Runoff=0.68 cfs 0.051 af

Subcatchment WS6: WS#6 Runoff Area=562,450 sf 6.87% Impervious Runoff Depth=1.62"
Flow Length=1,570' Tc=105.0 min CN=61 Runoff=6.11 cfs 1.738 af

Subcatchment WS7: WS7 Runoff Area=159,050 sf 0.00% Impervious Runoff Depth=1.19"
Flow Length=1,095' Tc=96.1 min CN=55 Runoff=1.24 cfs 0.361 af

Subcatchment WS8: WS8 Runoff Area=4,865 sf 100.00% Impervious Runoff Depth>5.16"
Flow Length=195' Tc=1.9 min CN=98 Runoff=0.64 cfs 0.048 af

Reach R1: Culvert Avg. Flow Depth=0.42' Max Vel=6.96 fps Inflow=2.56 cfs 0.166 af
15.0" Round Pipe n=0.011 L=250.0' S=0.0182 '/' Capacity=10.30 cfs Outflow=2.46 cfs 0.166 af

Reach R2: R2 Pipe across road Avg. Flow Depth=0.85' Max Vel=5.90 fps Inflow=6.11 cfs 1.738 af
18.0" Round Pipe n=0.013 L=45.0' S=0.0089 '/' Capacity=9.90 cfs Outflow=6.11 cfs 1.738 af

Pond CB1: CB-1 Peak Elev=361.37' Inflow=2.95 cfs 0.203 af
18.0" Round Culvert n=0.013 L=250.0' S=0.0150 '/' Outflow=2.95 cfs 0.203 af

Pond CB2: CB2 Peak Elev=357.49' Inflow=3.42 cfs 0.240 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=3.42 cfs 0.240 af

Pond CB3: CB-3 Peak Elev=355.77' Inflow=6.37 cfs 2.007 af
24.0" Round Culvert n=0.013 L=200.0' S=0.0100 '/' Outflow=6.37 cfs 2.007 af

Pond CB4: CB-4 Peak Elev=353.68' Inflow=7.68 cfs 2.467 af
30.0" Round Culvert n=0.013 L=20.0' S=0.1150 '/' Outflow=7.68 cfs 2.467 af

Pond CB5: CB-5 Peak Elev=353.42' Inflow=1.27 cfs 0.409 af
15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=1.27 cfs 0.409 af

Pond WP: Wet Pond Peak Elev=349.36' Storage=27,392 cf Inflow=7.68 cfs 2.467 af
Primary=5.87 cfs 2.467 af Secondary=0.00 cfs 0.000 af Outflow=5.87 cfs 2.467 af

Total Runoff Area = 17.665 ac Runoff Volume = 2.467 af Average Runoff Depth = 1.68"
90.54% Pervious = 15.994 ac 9.46% Impervious = 1.670 ac

Summary for Subcatchment WS1: WS#1

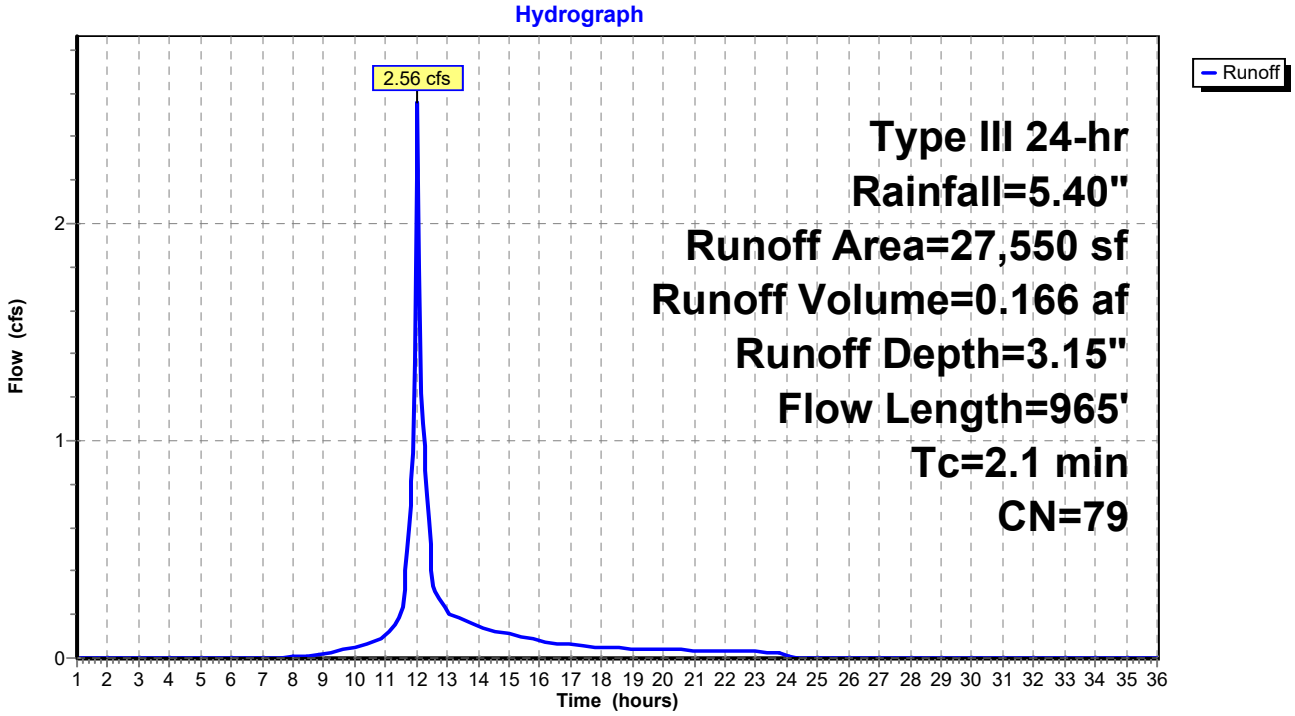
Runoff = 2.56 cfs @ 12.04 hrs, Volume= 0.166 af, Depth= 3.15"

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	0.0100	4.54	3.56	**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



Summary for Subcatchment WS2: WS#2

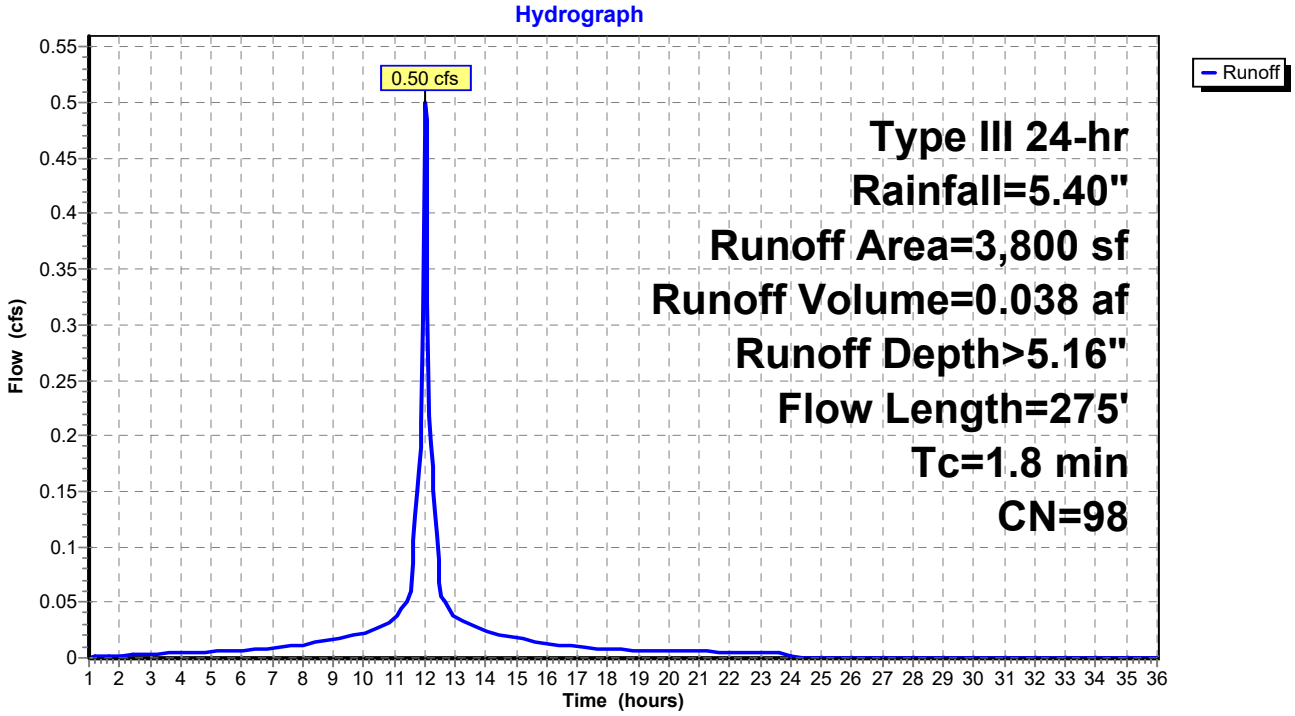
Runoff = 0.50 cfs @ 12.03 hrs, Volume= 0.038 af, Depth> 5.16"

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



Summary for Subcatchment WS3: WS#3

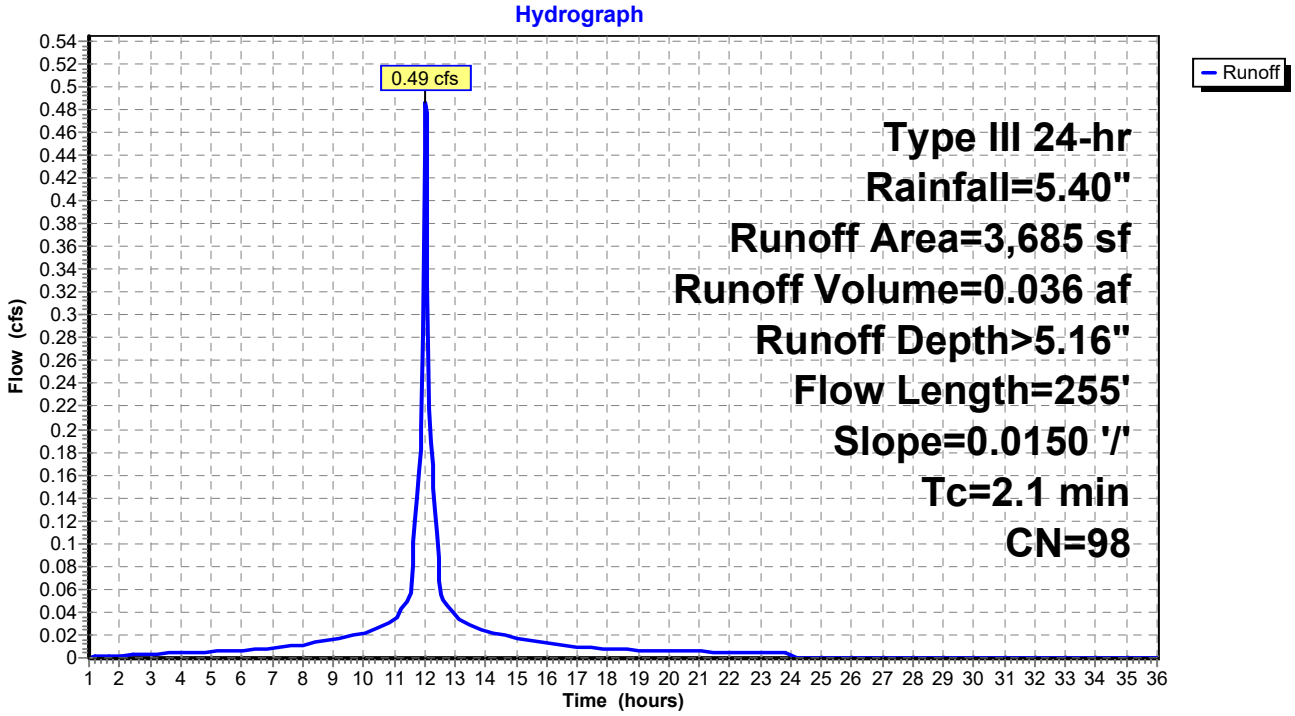
Runoff = 0.49 cfs @ 12.03 hrs, Volume= 0.036 af, Depth> 5.16"

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



Summary for Subcatchment WS4: WS#4

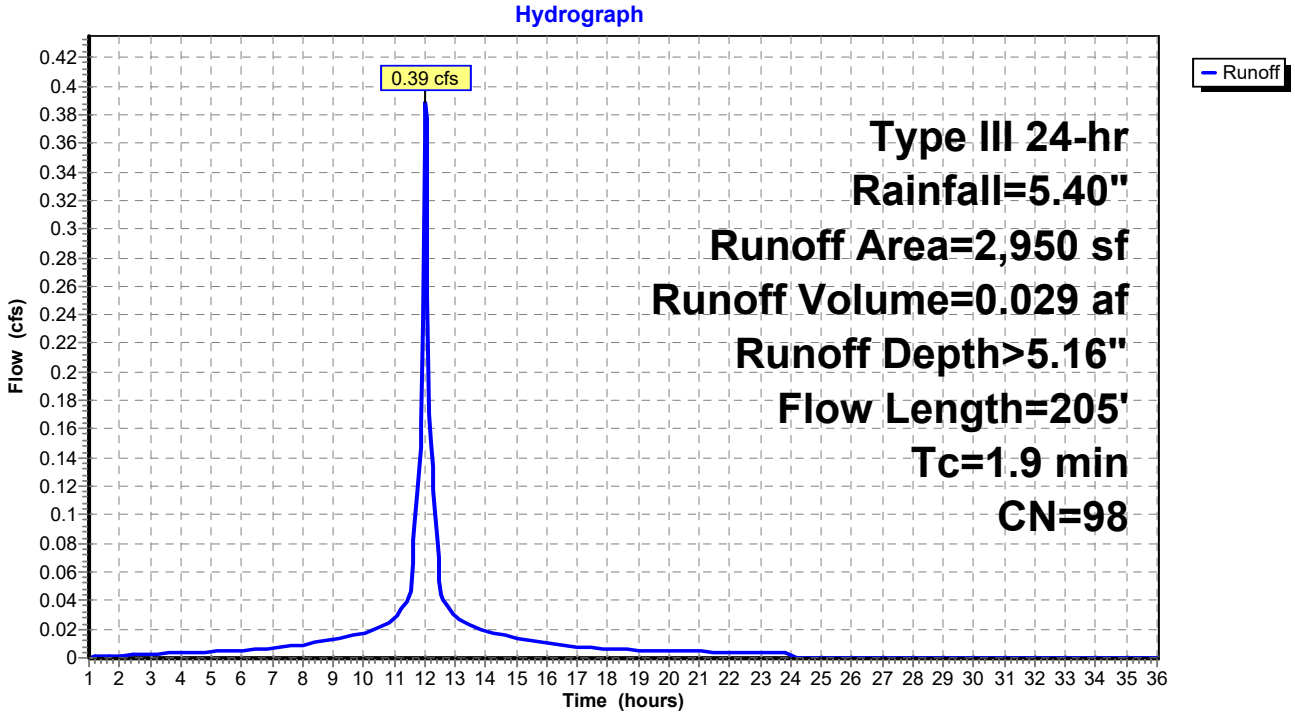
Runoff = 0.39 cfs @ 12.03 hrs, Volume= 0.029 af, Depth> 5.16"

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



Summary for Subcatchment WS5: WS#5

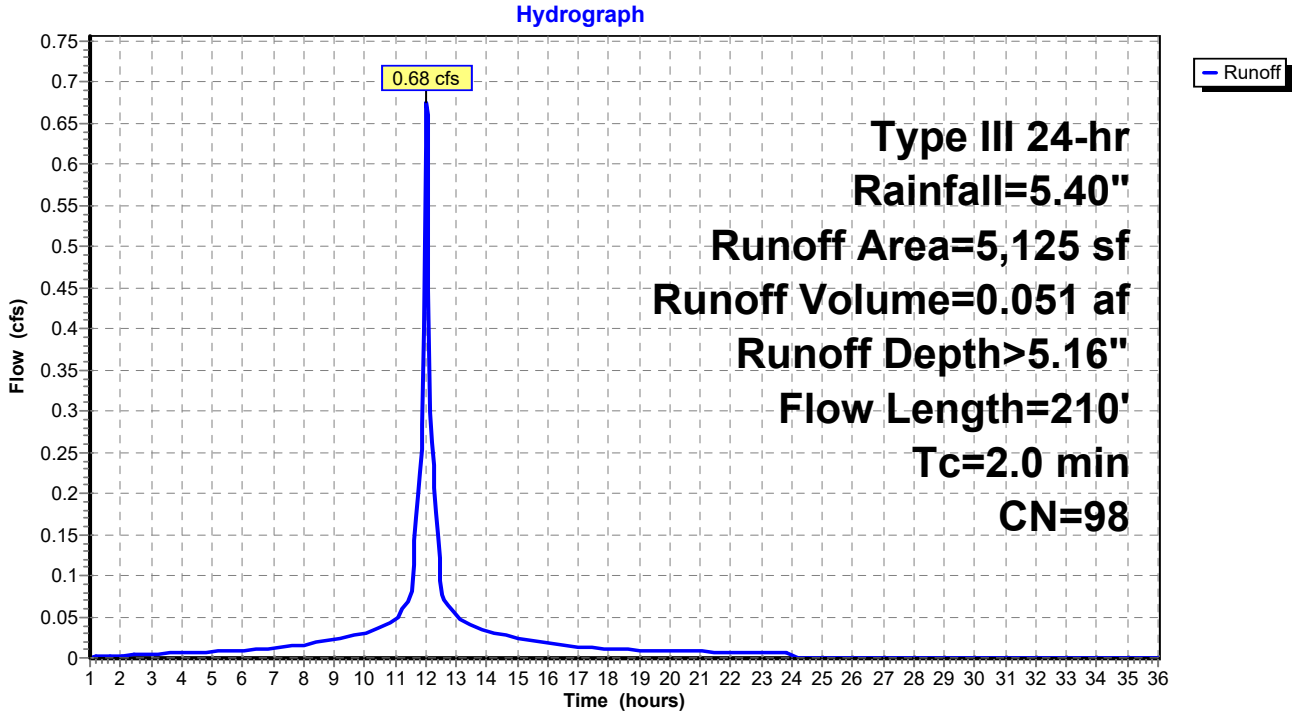
Runoff = 0.68 cfs @ 12.03 hrs, Volume= 0.051 af, Depth> 5.16"

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
5,125	98	Paved parking, HSG B
5,125		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



Summary for Subcatchment WS6: WS#6

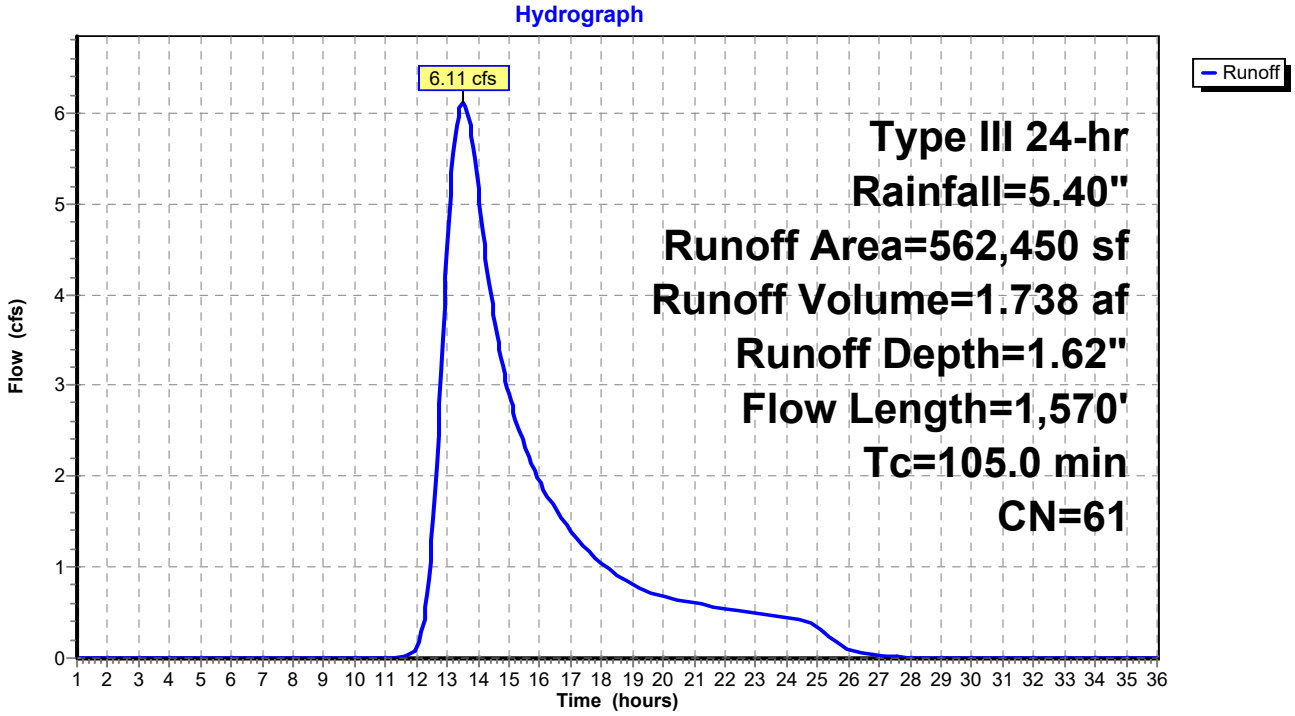
Runoff = 6.11 cfs @ 13.50 hrs, Volume= 1.738 af, Depth= 1.62"

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



Summary for Subcatchment WS7: WS7

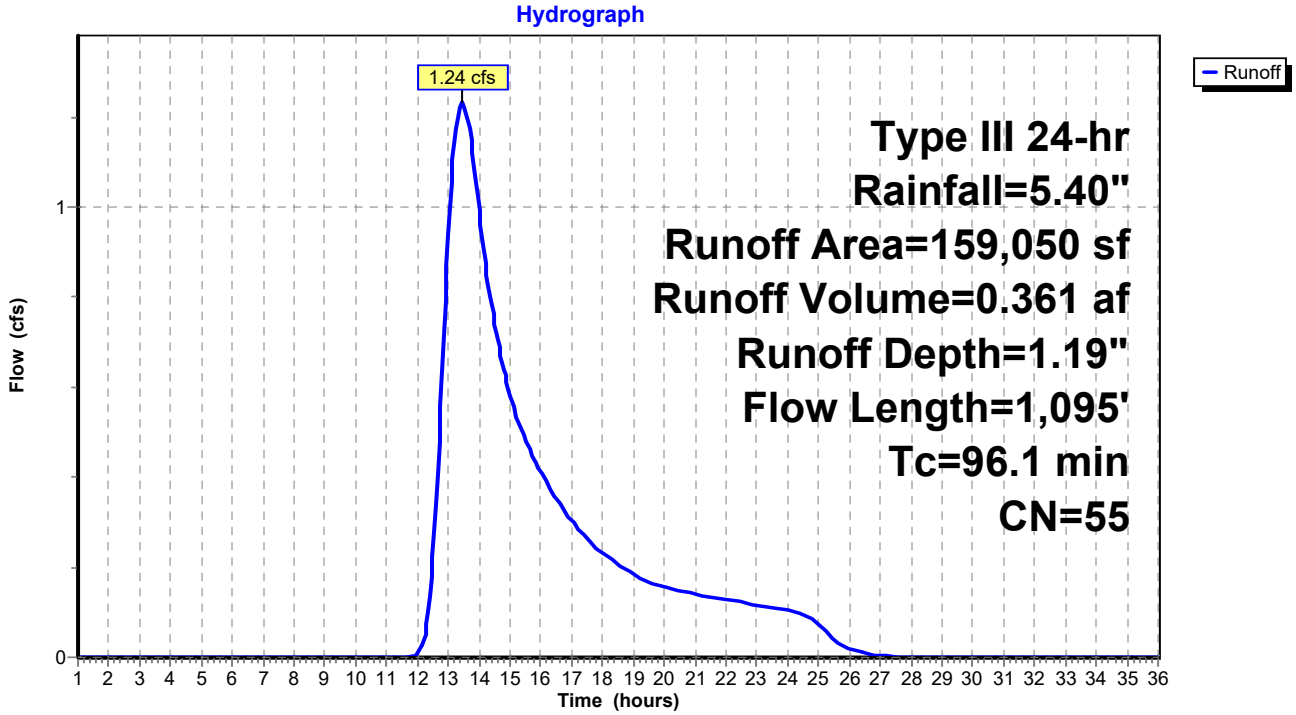
Runoff = 1.24 cfs @ 13.46 hrs, Volume= 0.361 af, Depth= 1.19"

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=5.40"

Area (sf)	CN	Description
5,250	61	>75% Grass cover, Good, HSG B
153,800	55	Woods, Good, HSG B
159,050	55	Weighted Average
159,050		100.00% Pervious 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



Summary for Subcatchment WS8: WS8

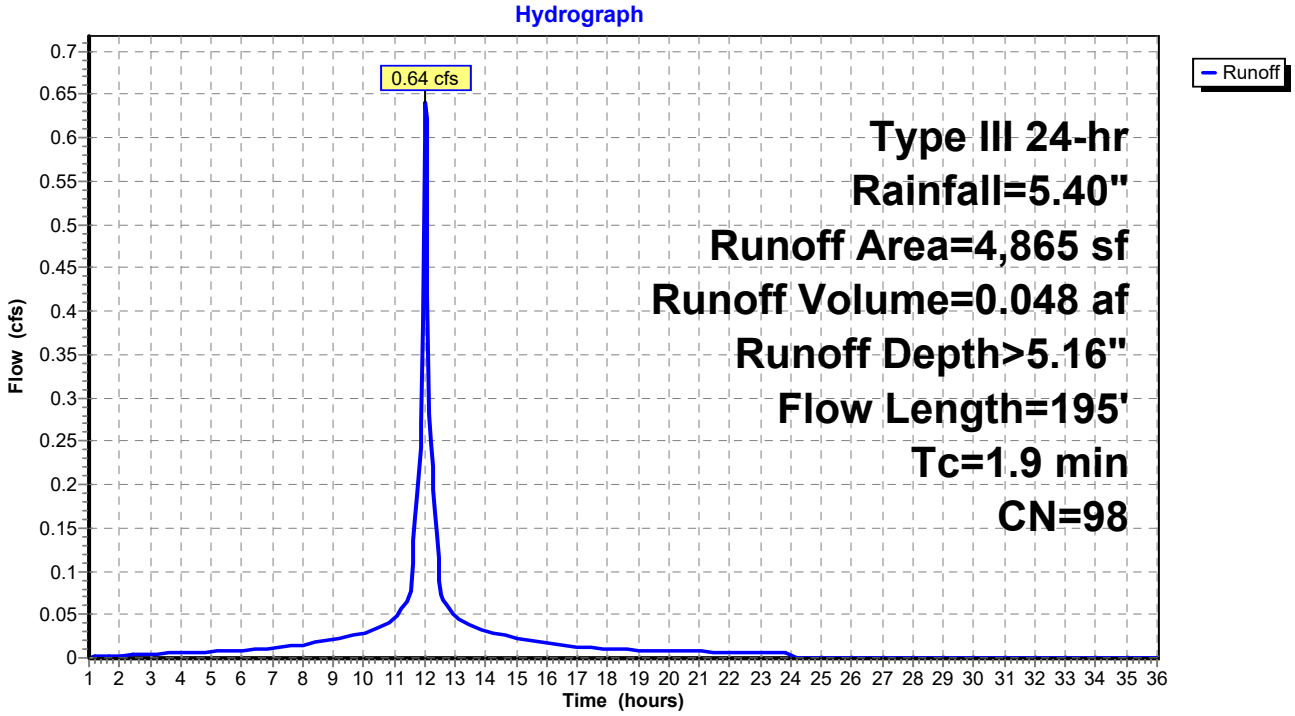
Runoff = 0.64 cfs @ 12.03 hrs, Volume= 0.048 af, Depth> 5.16"

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
4,865	98	Paved parking, HSG B
4,865		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



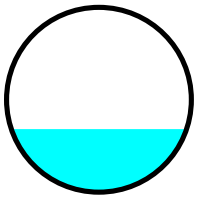
Summary for Reach R1: Culvert

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 @ 12.05 hrs, Volume= 0.166 af, Atten= 4%, Lag= 0.9 min

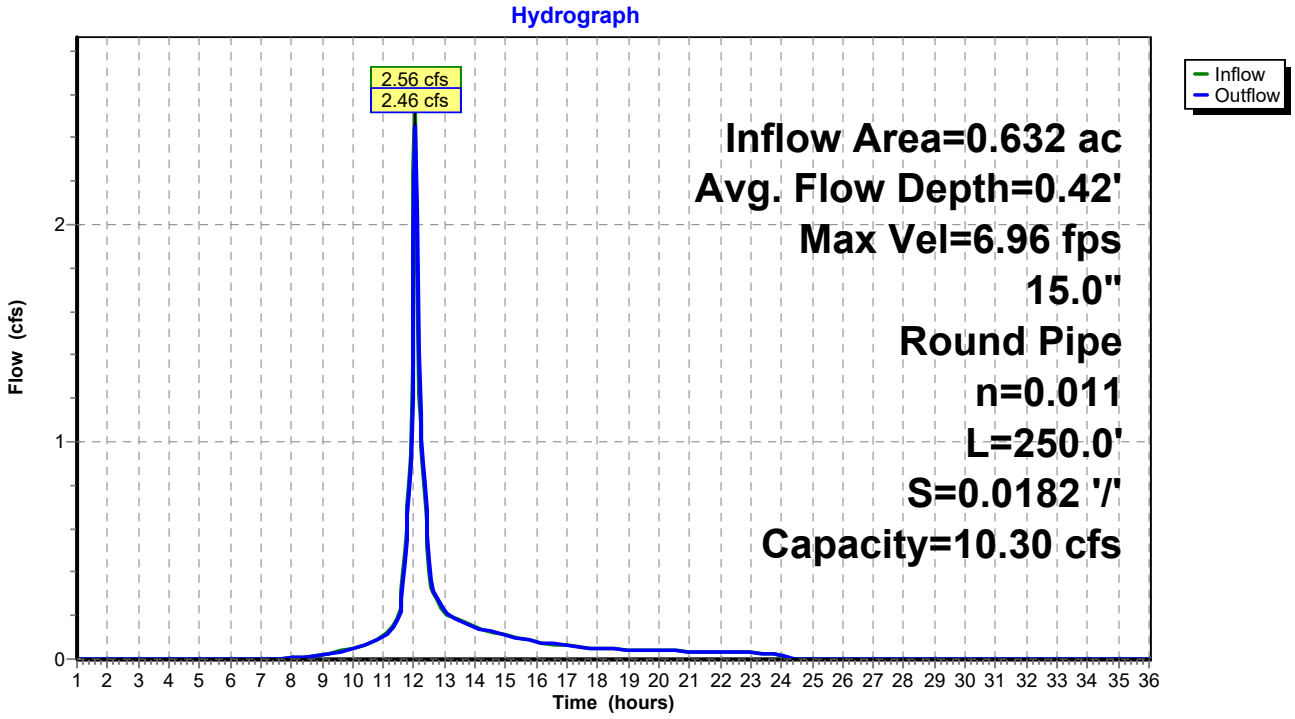
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.96 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.35 fps, Avg. Travel Time= 1.8 min

Peak Storage= 92 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 10.30 cfs

15.0" Round Pipe
n= 0.011 PVC, smooth interior
Length= 250.0' Slope= 0.0182 '/'
Inlet Invert= 365.10', Outlet Invert= 360.55'



Reach R1: Culvert



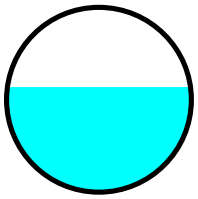
Summary for Reach R2: R2 Pipe across road

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= 0.5 min

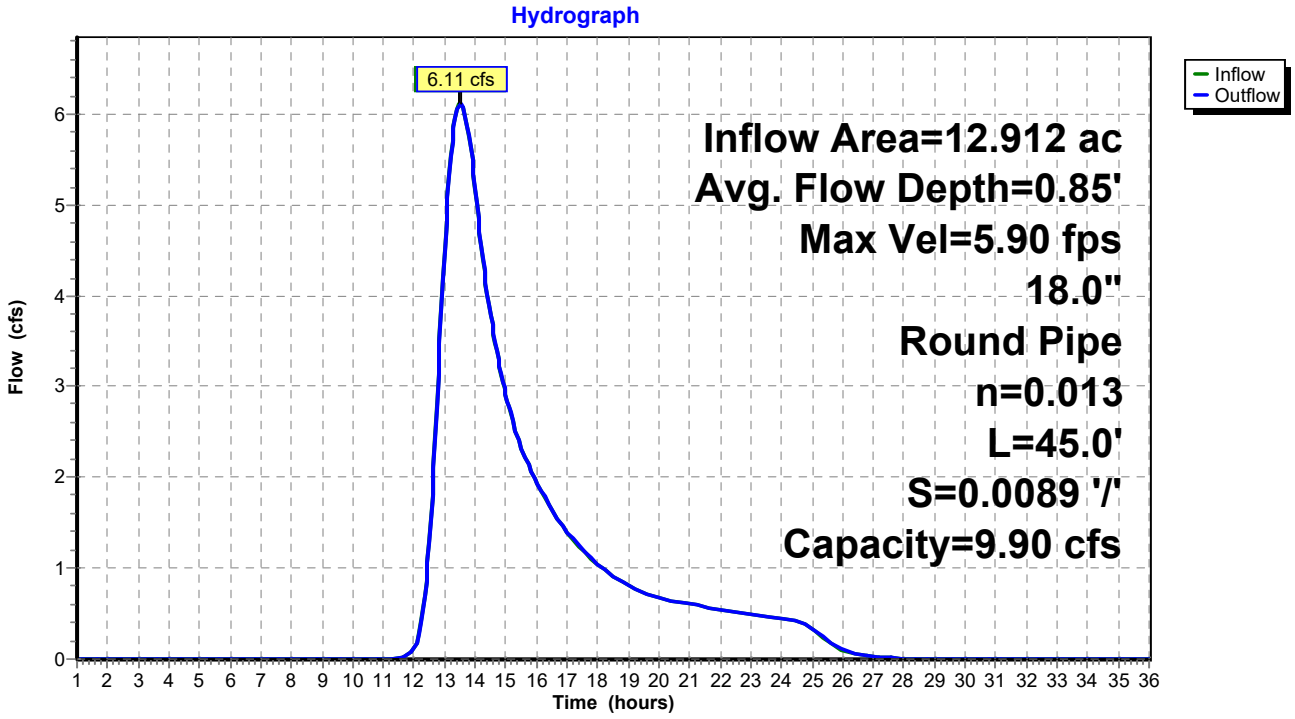
Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.96 fps, Avg. Travel Time= 0.3 min

Peak Storage= 47 cf @ 13.51 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 9.90 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 45.0' Slope= 0.0089 '/'
Inlet Invert= 355.00', Outlet Invert= 354.60'



Reach R2: R2 Pipe across road



Summary for Pond CB1: CB-1

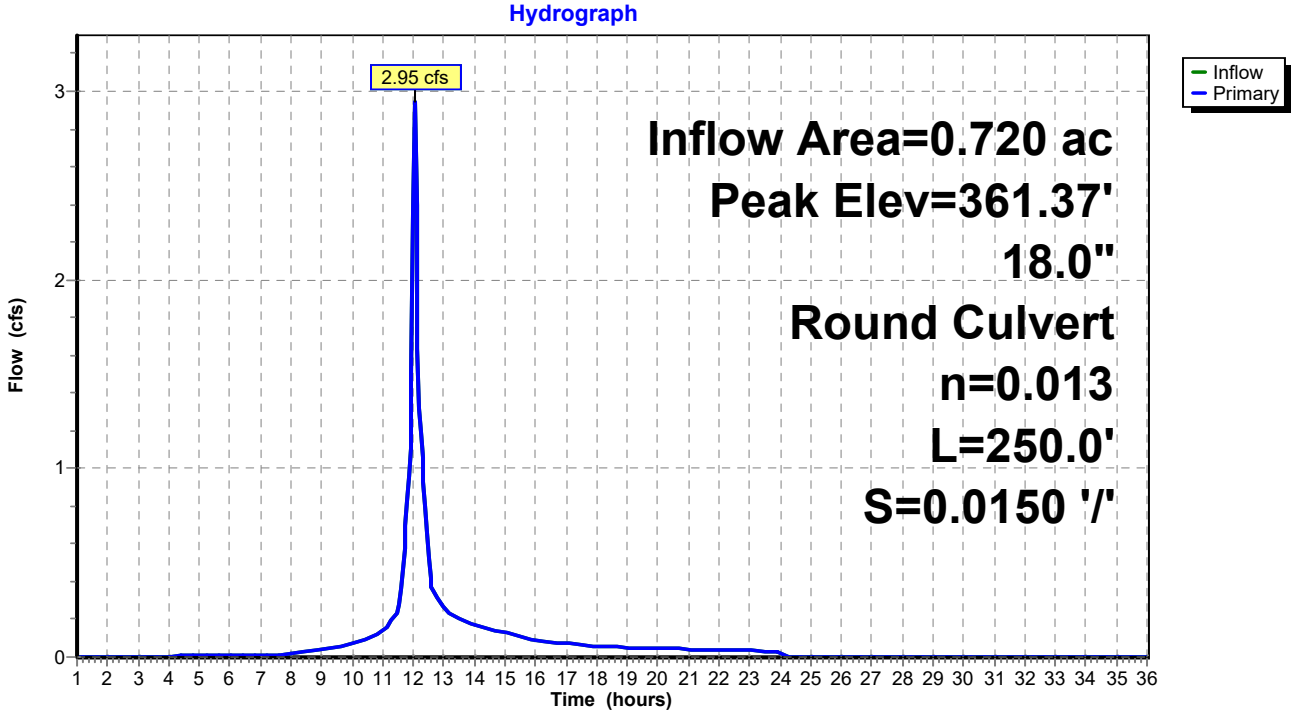
Inflow Area = 0.720 ac, 55.82% Impervious, Inflow Depth > 3.39"
Inflow = 2.95 cfs @ 12.05 hrs, Volume= 0.203 af
Outflow = 2.95 cfs @ 12.05 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min
Primary = 2.95 cfs @ 12.05 hrs, Volume= 0.203 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 361.37' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	360.45'	**18.0" Round CB-1** L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 360.45' / 356.70' S= 0.0150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.94 cfs @ 12.05 hrs HW=361.37' (Free Discharge)
└**1=CB-1** (Inlet Controls 2.94 cfs @ 2.58 fps)

Pond CB1: CB-1



Summary for Pond CB2: CB2

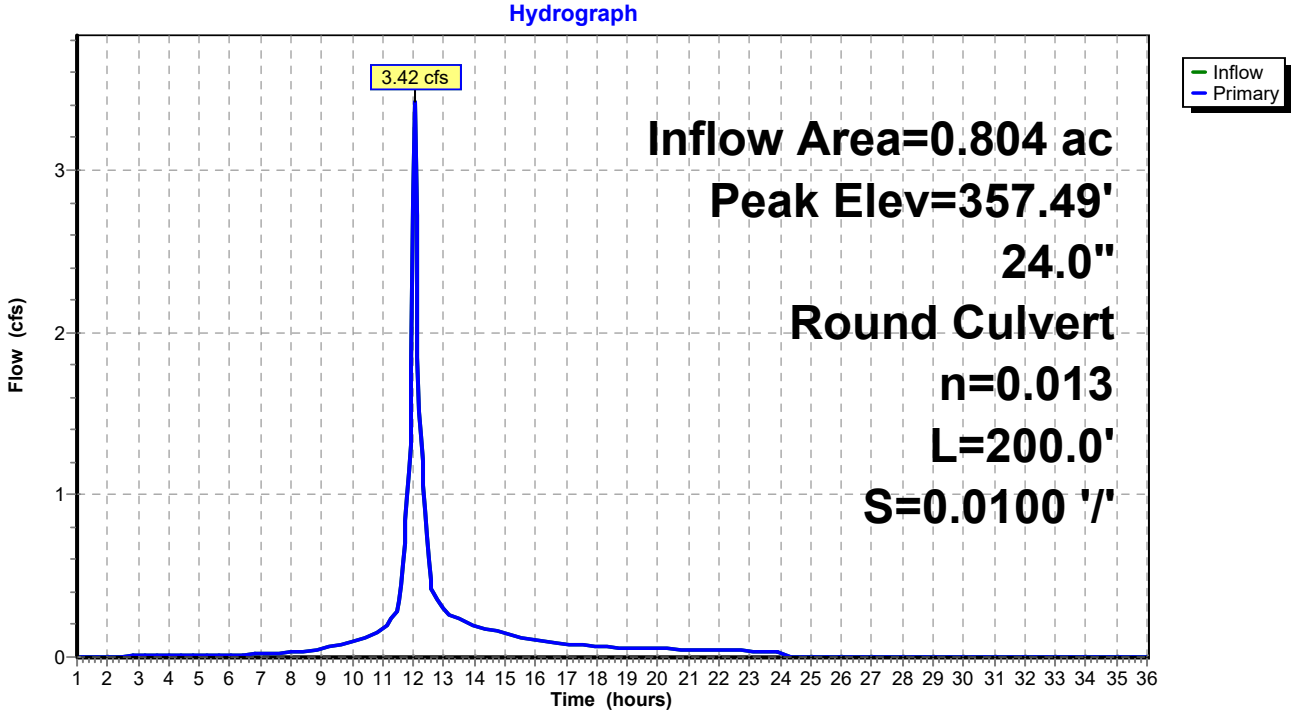
Inflow Area = 0.804 ac, 60.47% Impervious, Inflow Depth > 3.58"
Inflow = 3.42 cfs @ 12.05 hrs, Volume= 0.240 af
Outflow = 3.42 cfs @ 12.05 hrs, Volume= 0.240 af, Atten= 0%, Lag= 0.0 min
Primary = 3.42 cfs @ 12.05 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 357.49' @ 12.05 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	356.60'	**24.0" Round CB-2** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 356.60' / 354.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=3.40 cfs @ 12.05 hrs HW=357.49' (Free Discharge)
└**1=CB-2** (Inlet Controls 3.40 cfs @ 2.53 fps)

Pond CB2: CB2



Summary for Pond CB3: CB-3

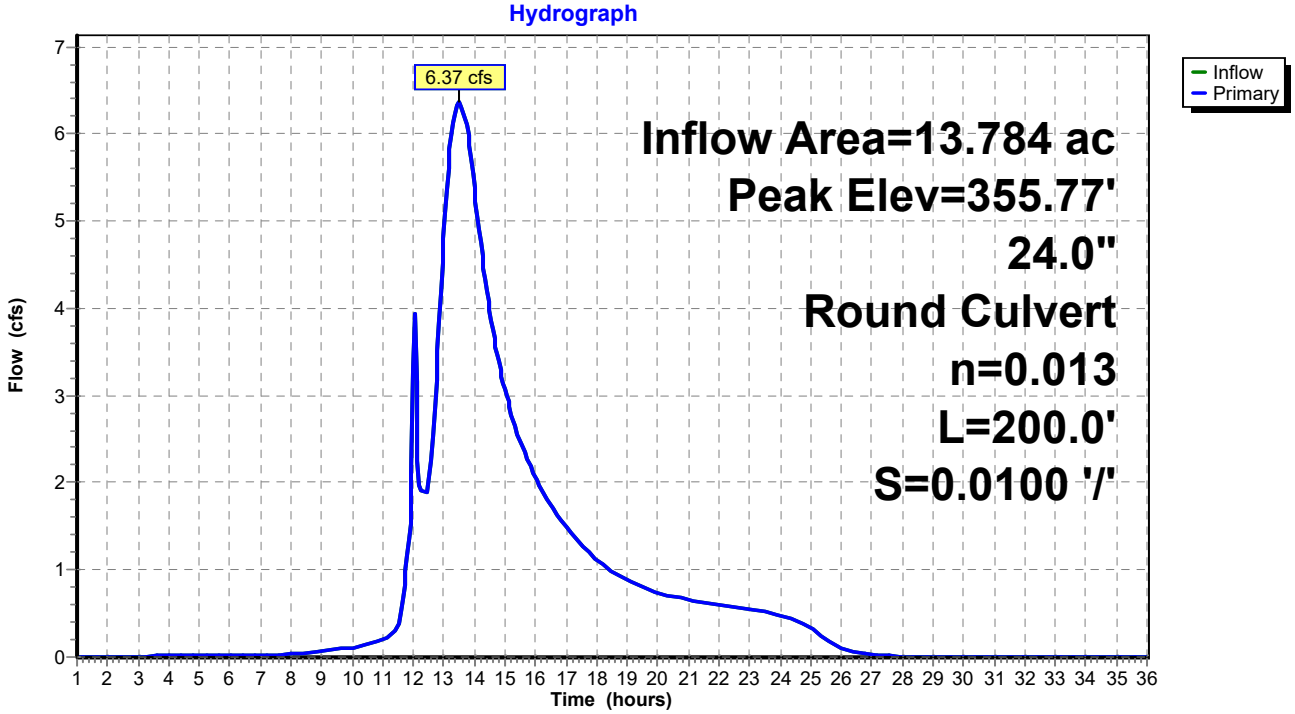
Inflow Area = 13.784 ac, 10.45% Impervious, Inflow Depth > 1.75"
Inflow = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af
Outflow = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af, Atten= 0%, Lag= 0.0 min
Primary = 6.37 cfs @ 13.49 hrs, Volume= 2.007 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 355.77' @ 13.49 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	354.50'	**24.0" Round CB-3** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.50' / 352.50' S= 0.0100 '/' 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=355.77' (Free Discharge)
└**1=CB-3** (Inlet Controls 6.37 cfs @ 3.03 fps)

Pond CB3: CB-3



Summary for Pond CB4: CB-4

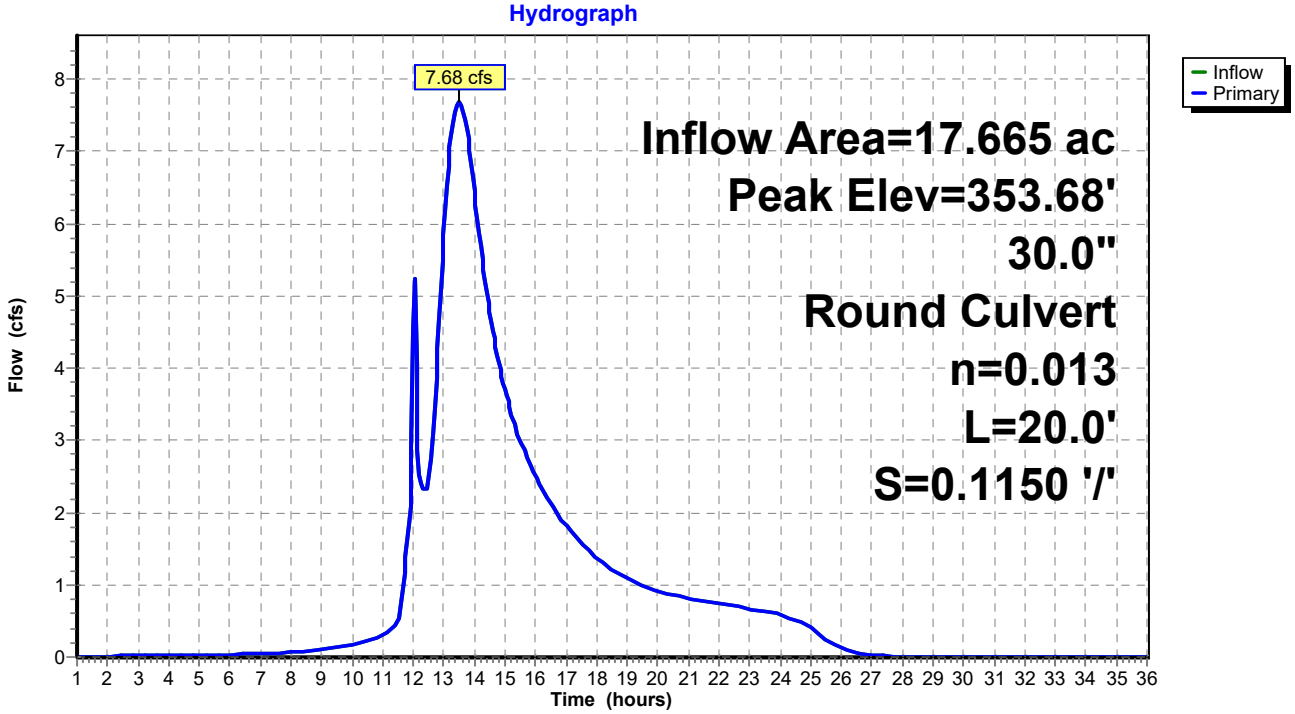
Inflow Area =	17.665 ac,	9.46% Impervious,	Inflow Depth >	1.68"	
Inflow =	7.68 cfs @	13.47 hrs,	Volume=	2.467 af	
Outflow =	7.68 cfs @	13.47 hrs,	Volume=	2.467 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.68 cfs @	13.47 hrs,	Volume=	2.467 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.68' @ 13.47 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	352.40'	**30.0" Round 30"** L= 20.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 352.40' / 350.10' S= 0.1150 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=7.68 cfs @ 13.47 hrs HW=353.68' (Free Discharge)
└**1=30"** (Inlet Controls 7.68 cfs @ 3.04 fps)

Pond CB4: CB-4



Summary for Pond CB5: CB-5

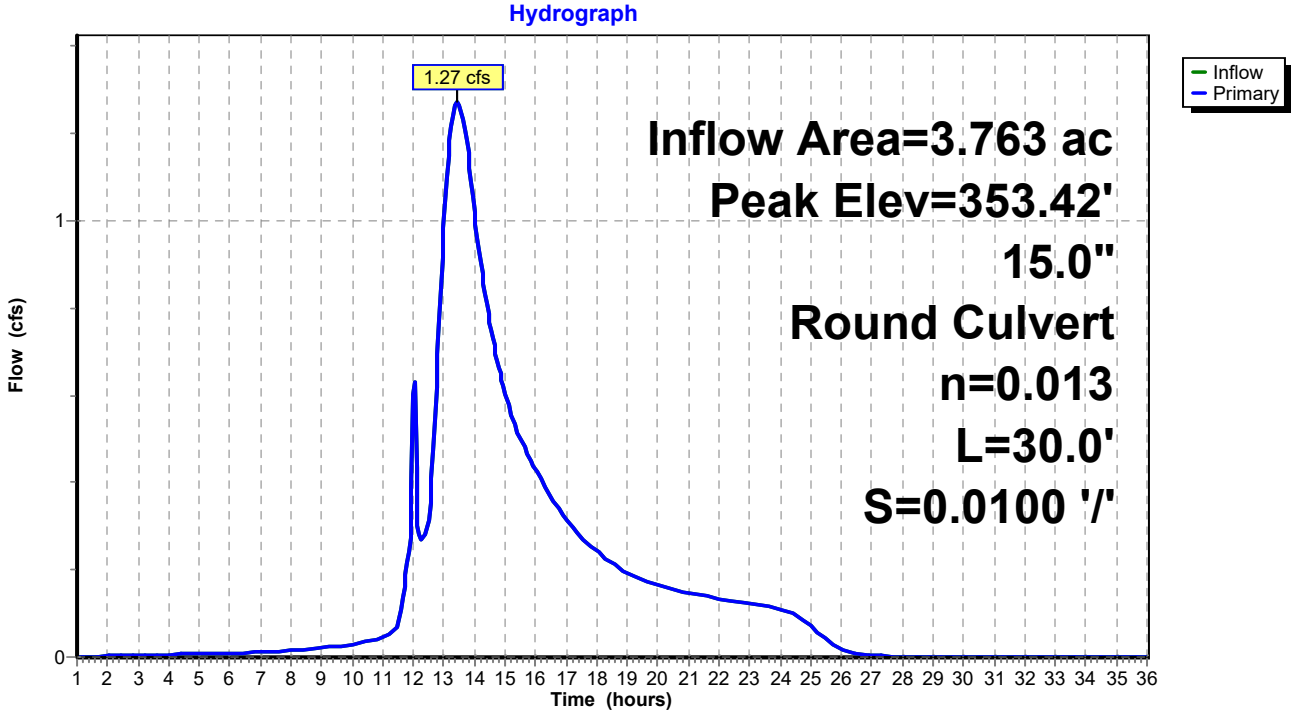
Inflow Area =	3.763 ac,	2.97% Impervious,	Inflow Depth >	1.30"	
Inflow =	1.27 cfs @	13.45 hrs,	Volume=	0.409 af	
Outflow =	1.27 cfs @	13.45 hrs,	Volume=	0.409 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.27 cfs @	13.45 hrs,	Volume=	0.409 af	

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 353.42' @ 13.45 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' / 352.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.27 cfs @ 13.45 hrs HW=353.42' (Free Discharge)
└**1=CB-5** (Inlet Controls 1.27 cfs @ 2.11 fps)

Pond CB5: CB-5



Summary for Pond WP: Wet Pond

Inflow Area =	17.665 ac,	9.46% Impervious,	Inflow Depth >	1.68"
Inflow =	7.68 cfs @	13.47 hrs,	Volume=	2.467 af
Outflow =	5.87 cfs @	14.15 hrs,	Volume=	2.467 af, Atten= 24%, Lag= 40.6 min
Primary =	5.87 cfs @	14.15 hrs,	Volume=	2.467 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= 349.36' @ 14.15 hrs Surf.Area= 15,596 sf Storage= 27,392 cf

Plug-Flow detention time= 143.8 min calculated for 2.463 af (100% of inflow)
Center-of-Mass det. time= 143.8 min (1,077.4 - 933.6)

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

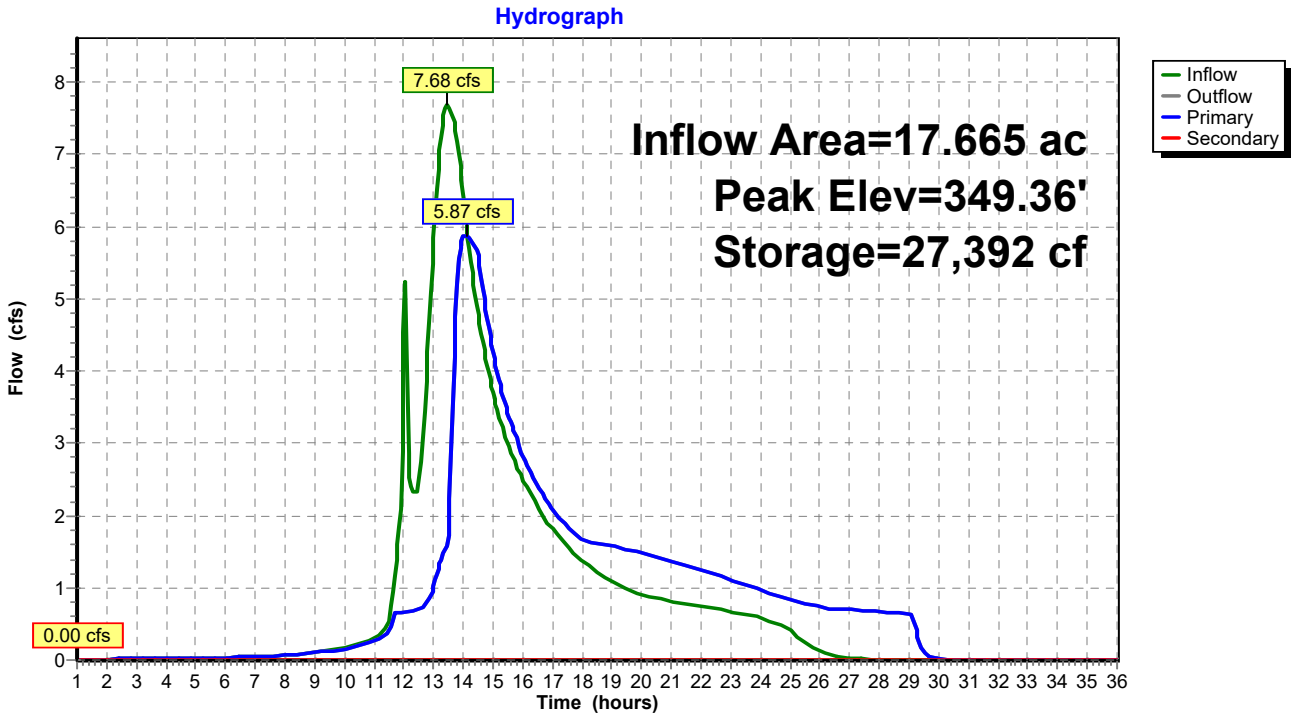
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.50	13,790	0	0
348.00	14,265	7,014	7,014
349.50	15,728	22,495	29,509
350.00	16,230	7,990	37,498
351.00	17,538	16,884	54,382

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=5.87 cfs @ 14.15 hrs HW=349.36' (Free Discharge)
└─**1=Culvert** (Inlet Controls 5.87 cfs @ 7.47 fps)
  ├─**2=Orifice/Grate** (Passes < 4.53 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 1.00 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



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

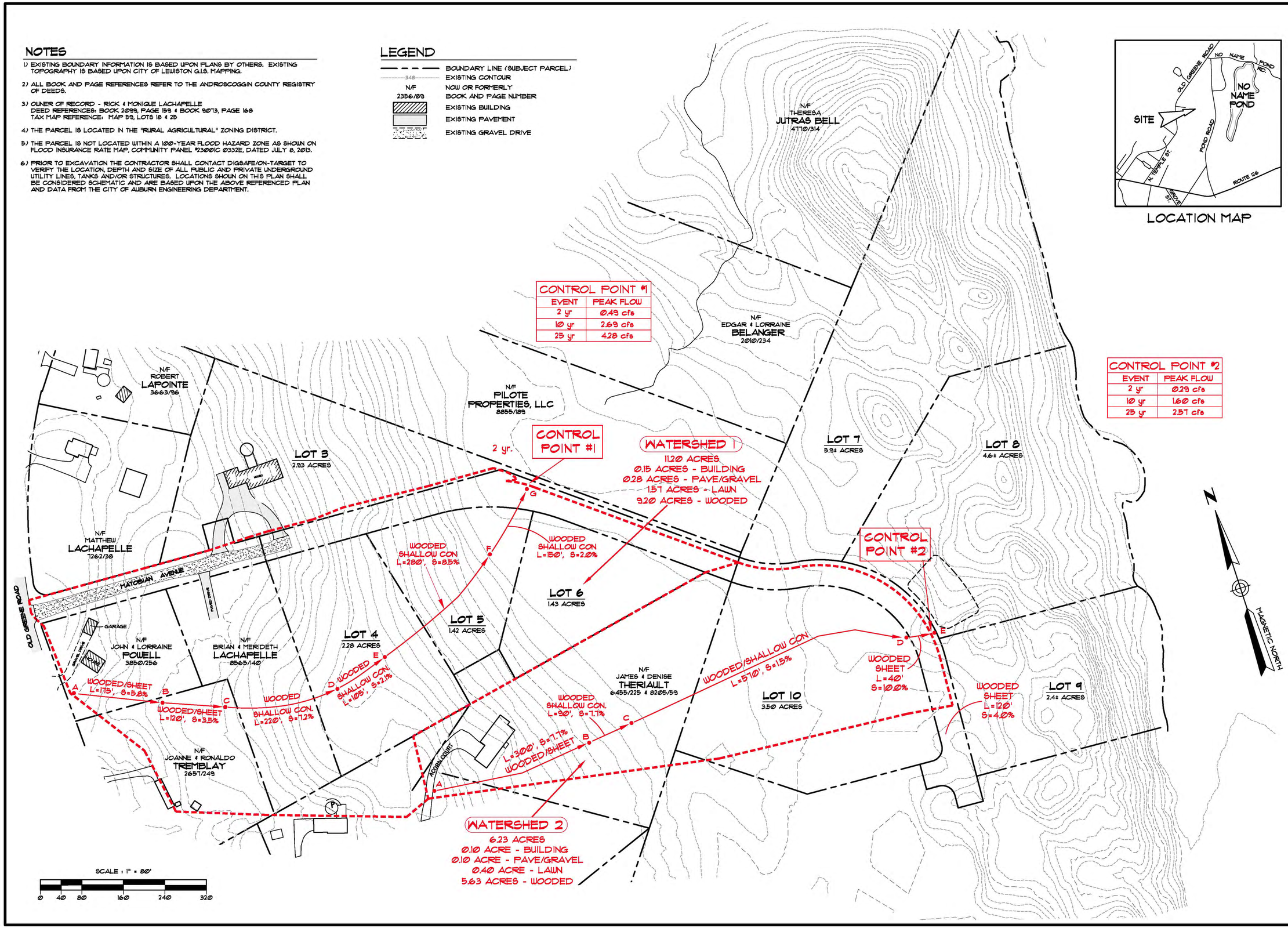
4) THE PARCEL IS LOCATED IN THE "RURAL AGRICULTURAL" ZONING DISTRICT.

5) THE PARCEL IS NOT LOCATED WITHIN A 100-YEAR FLOOD HAZARD ZONE AS SHOWN ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL #230010 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	1.60 cfs
25 yr	2.57 cfs

LOCATION MAP

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

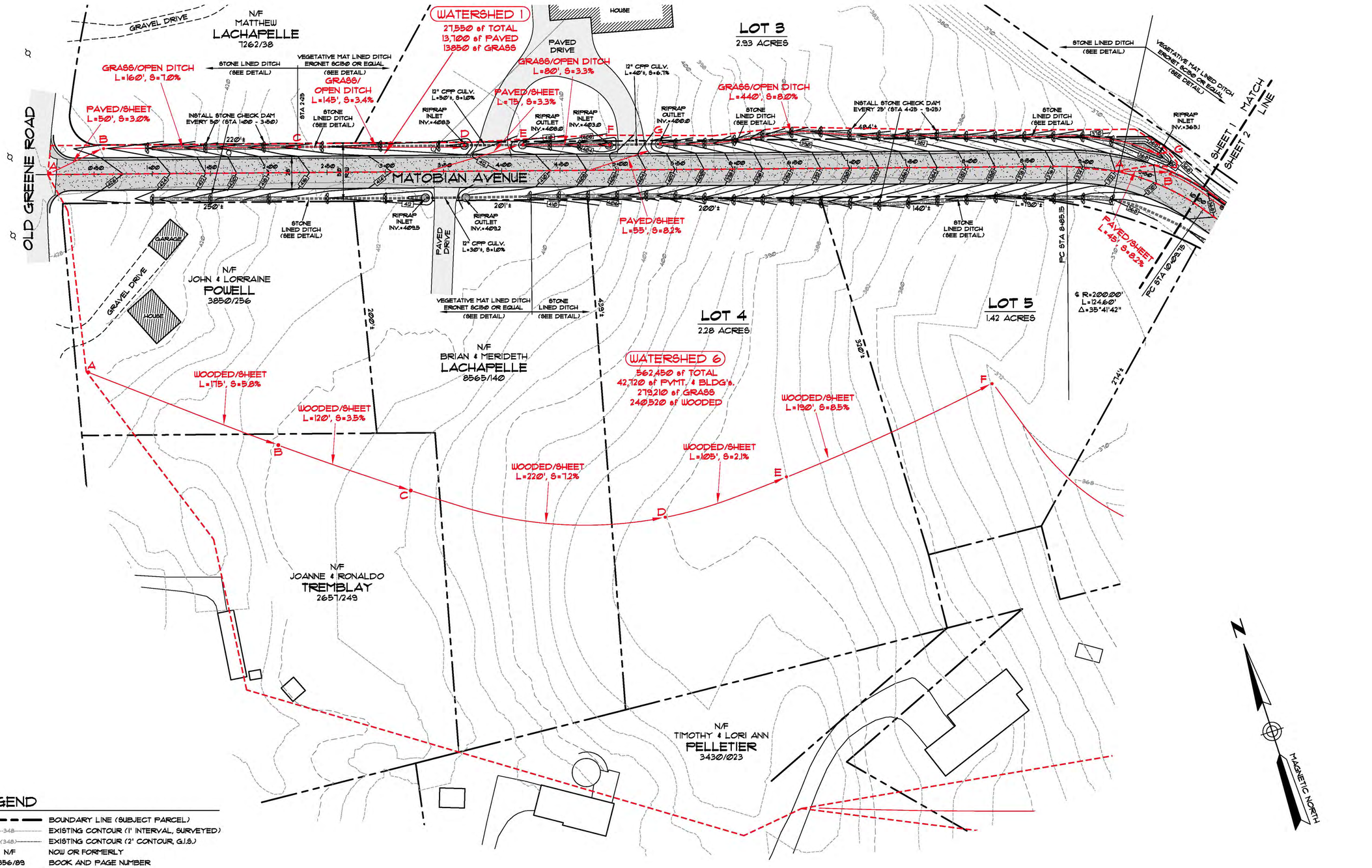
CLIENT: **M & B, LLC**
379 LISBON STREET - LEWISTON, ME 04240

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

SUMMIT GEOENGINEERING SERVICES
173 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-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

REVISED: JAN. 18, 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

Stonebrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
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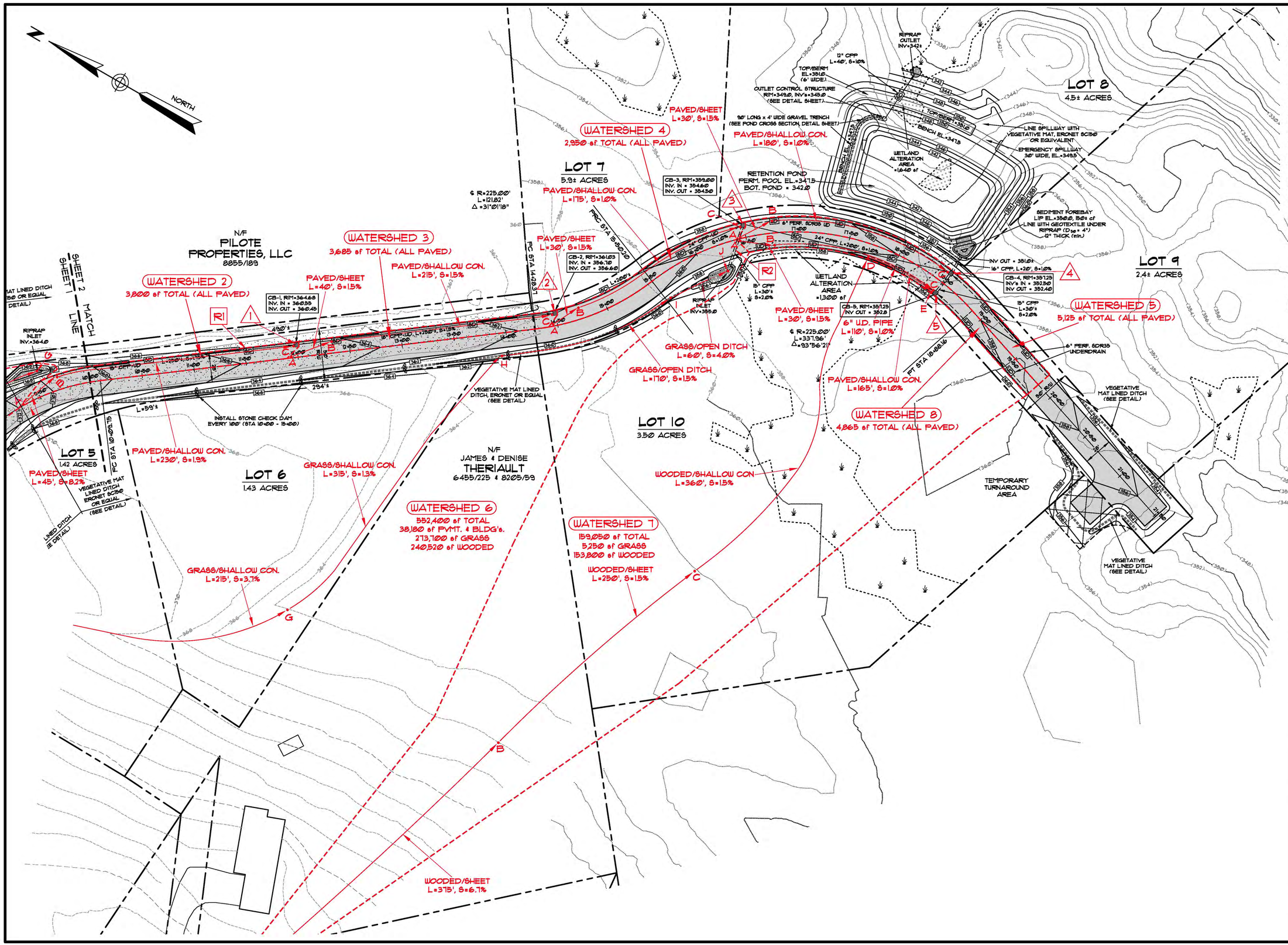
SUMMIT GEOENGINEERING SERVICES
173 PLEASANT STREET ROCKLAND, ME 04841 Tel.: (207) 318-7161
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel.: (207) 576-3313

JOB NO. - 15135

SHEET NUMBER
SW-2.1



REVISED: JAN. 18, 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

Section 7

Soils Report

Stephen P. Robbins

P.O. Box 271 ♦ East Winthrop, ME 04343 ♦ (207) 377-6707 ♦ Fax (207) 377-6707 ♦ E-MAIL narrowspd@aol.com

4 October 2015

Mike Gotto, Stoney Brook Consultants, Inc.
456 Buckfield Road
Turner, ME 04282

Re: Preliminary Soils Investigation; Rick Lachapelle, Matobian Avenue, Lewiston

Dear Mr. Gotto:

As requested, I have examined soil conditions at the Lachapelle subdivision located at Matobian Avenue, Lewiston. The property was identified on a recent survey by Kachnovich Land Surveying. The purpose of this investigation was to locate and identify areas of soils suitable for onsite subsurface wastewater disposal.

The soils were examined at hand dug test pits to depths sufficient to determine suitability according to the standards of the Maine Subsurface Waste Water Disposal Rules. The sites examined are marked on the lot with wooden stakes and flagging. The sites are to be further located on the Kachnovich plan. No wells were found within 100', and the sites were well within slope standards.

Lot #	SOIL CLASSIFICATION	DEPTH TO LIMITING FACTOR
#4	3C	-17" (seasonal high water)
#5	3C	-17" (seasonal high water)
#6	3D	-10" (depth of test pit)
#7	3C	-26'' (restrictive layer)
#8	8C	-15" (restrictive layer)
#9	3C	-21'' (restrictive layer)
#10	3C	-20'' (restrictive layer)

These classifications represent soils that are suitable for installation of septic systems within their respective areas. There is sufficient area at all sites, for the installation of systems capable of treating waste-water flow from four bedroom homes. The test pit on Lot #6 is of limited depth due to digging conditions. A re-examination will surely result in better conditions. If I can assist you further, please let me know.

Sincerely,

Stephen P Robbins, Site Evaluator #301

Cc: Toby Kachnovich

Stephen P. Robbins

P.O. Box 271 ◆ East Winthrop, ME 04343 ◆ (207) 377-6707 ◆ Fax (207) 377-6707 ◆ E-MAIL narrowspd@aol.com

16 January 2016

Mike Gotto, Stoney Brook Consultants, Inc.
456 Buckfield Road
Turner, ME 04282

Re: Preliminary Soils Investigation; Rick Lachapelle, Matobian Avenue, Lewiston

Dear Mr. Gotto:

As requested, I have considered the City of Lewiston's concern regarding the test pit results on Lot #6 in the Lachapelle Subdivision. This particular test pit was done in the winter of 2013. It was particularly difficult due to the ground being frozen deep. Digging was done with a 6' bar to just beyond the minimum depth to qualify it as a suitable site. "Depth of test pit" is a legitimate qualifier as seen on Page #2 of the HHE-200 form. Soil condition "D" is considered suitable if located beyond 250' from a watercourse major. A minimum depth of 9'' is required for a condition "D" soil, and it also requires an extra 6" of separation under the disposal area itself. These standards are spelled out in Tables 4E and 4F of the Subsurface Waste-Water Disposal Rules.

This classification does represent soils that are suitable for installation of septic systems outside the shore-land zone. There is sufficient area at this site for the installation of a system capable of treating waste-water flow from a four bedroom home. A re-examination would likely result in even better conditions. If I can assist you further, please let me know.

Sincerely,

Section 8

Water Supply

CES INC Engineers • Environmental Scientists • Surveyors

December 30, 2015

Mr. Mike Gotto
Stoneybrook Consultants, Inc.
456 Buckfield Road
Turner, Maine 04282

RE: Water Supply Availability
L&L Estates – Matobian Avenue in Lewiston, Maine

Dear Mike:

CES, Inc. (CES) has reviewed available Hydrogeologic data in the Maine Geological Survey (MGS) water well database for the vicinity of the proposed Subdivision referenced above.

The development proposes to add 7 Lots to an existing 3-Lot Subdivision. The additional Lots will range from approximately 1.4 to 8.5 acres. It is assumed that 4 bedroom homes will be built on each Lot and that each home will require up to 400 gallons per day of water (average of approximately 0.3 gallons per minute).

The MGS maintains a water well inventory of existing wells that is based on a voluntary program of information provided by well drilling firms. *Note that many more wells not voluntarily provided by drilling firms will exist in the area than are included on the MGS database.* However, the listed wells provide a reasonable representation of water supply wells in the vicinity of the Site. The database includes information on over 200 water supply wells in Lewiston. The majority of wells in the database are domestic water supply wells drilled into bedrock.

The attached figure is a graphical representation of wells in the vicinity of the Site. The wells are color-coded by estimated well yield. Green shades indicate yields of 1 to 10 gallons per minute (gpm), yellow 10-25 gpm and red shades greater than 25 gpm. According to the database, typical well depths range from 150 to 400 feet deep, although shallower and deeper wells are included in the database. Many wells in the immediate vicinity of the Site report estimated yields in excess of 10 gpm.

As would be expected for bedrock supply wells, well depths and yields vary throughout the area, but sufficient yields to supply residential homes are commonly obtained. Based on the data reviewed, water supply wells on the Lots in the proposed subdivision would be expected to supply a sufficient quantity of water to support residential uses.

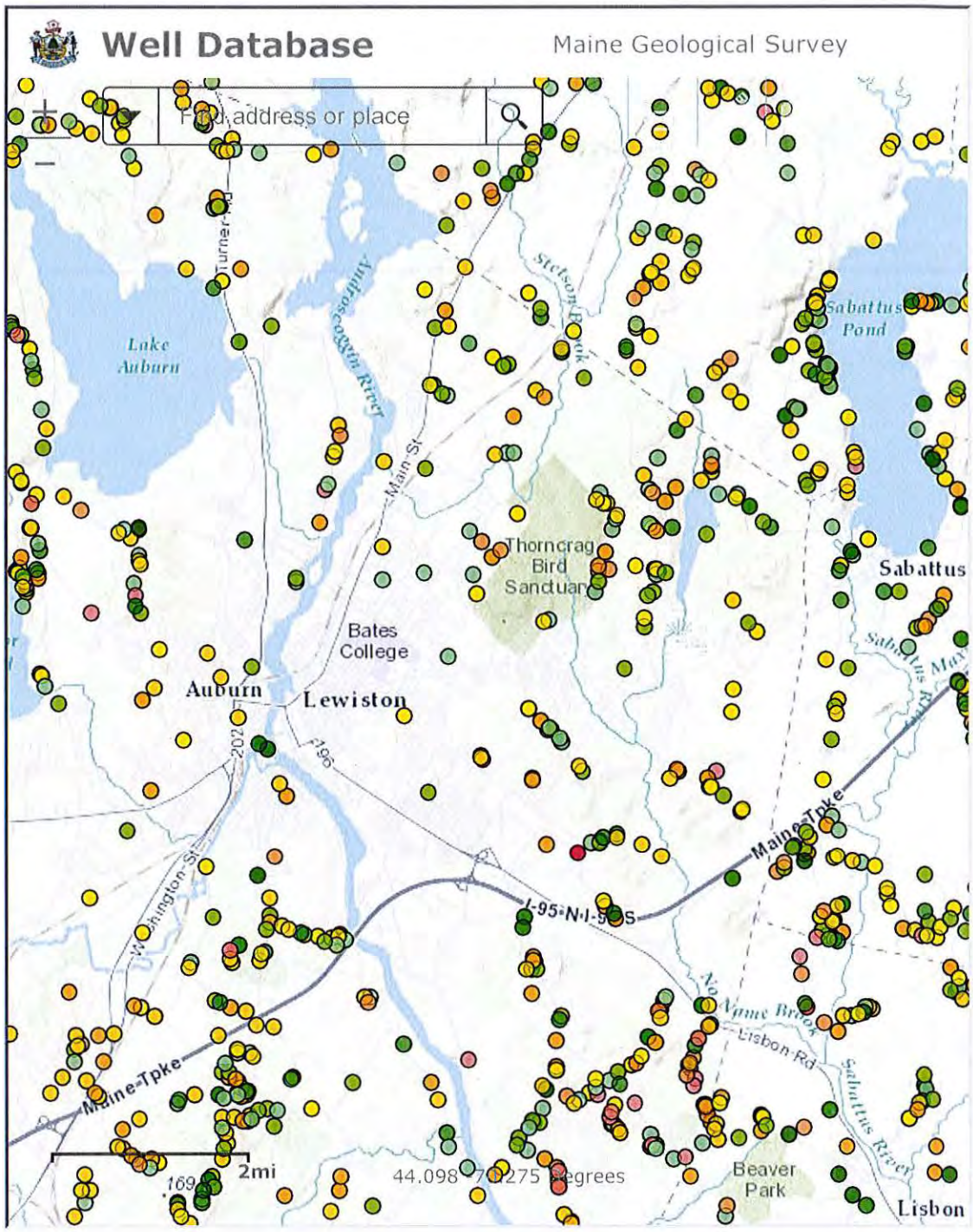
If you have any questions concerning this letter, please feel free to contact me.

Sincerely,
CES, INC.

Michael A. Deyling, C.G., LSE
Maine Certified Geologist #270

STATE OF MAINE
MICHAEL DEYLING
No. 270
CERTIFIED GEOLOGIST

640 Main Street
Lewiston, Maine 04240
T 207.795.6009
F 207.795.6128



View Map Full Screen

Last updated on October 30, 2015

Credits

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Section 9

Financial Capacity

Mechanics
Savings Bank

Personal Banking | Business and Private Banking | Mortgage Banking

January 14, 2016

Mr. David Hediger
Deputy Director/ City Planner
City of Lewiston
27 Pine Street 3rd Floor
Lewiston, ME 04240

Re: L & L Estates – Rick LaChapelle and M & B, LLC

Dear Mr. Hediger:

It is my understanding that Mr. Rick LaChapelle and his company M & B LLC has brought an application for the completion of a new subdivision called L & L Estates off of Greene Road in Lewiston. It is also my understanding the estimated costs for the proposed infrastructure improvements is in the vicinity of $275,000.

Please be advised that Mr. LaChapelle and his company M & B, LLC have a banking relationship with Mechanics Savings Bank and I have served as the primary relationship manager for the last several years. Although Mr. LaChapelle has not requested any funding from the bank, it is the banks opinion that he has the capacity to complete the project for the estimated cost described above.

Thank you very much for the consideration of the proposed project on behalf of the banks customer. If you should need any additional information, please feel free to contact me directly at 207 333-4553.

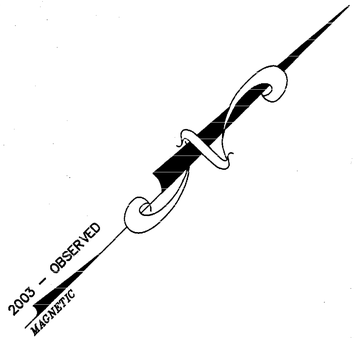
Sincerely,

Jeffrey R. Gosselin
Senior Vice President

Section 10

Plans

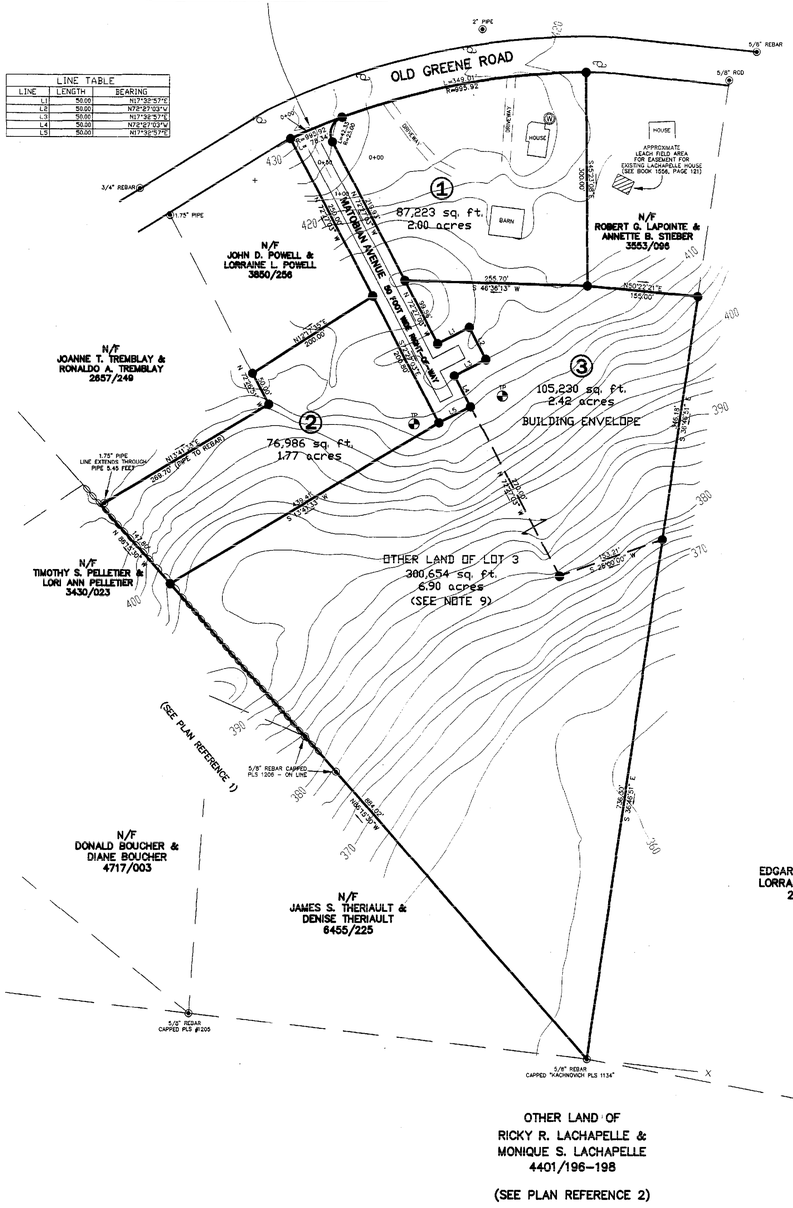
BK 46 PG101 Recd JUN 13, 2007 @ 9:43 am



SIGHT DISTANCE

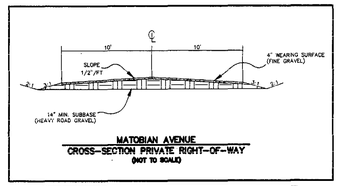
POSTED SPEED (MPH)	STANDARD VEHICLES	OBSERVED
30 MPH	250 FEET	LEFT - 275 FEET +/-
35 MPH	305 FEET	RIGHT 490 FEET +/-

LINE TABLE		
LINE	LENGTH	BEARING
L1	50.00	N17°35'57"E
L2	50.00	N72°27'03"W
L3	50.00	N17°35'57"E
L4	50.00	N72°27'03"W
L5	50.00	N17°35'57"E

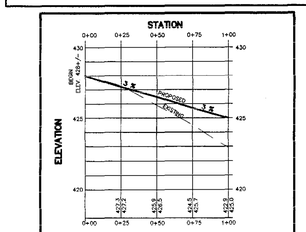


LEGEND

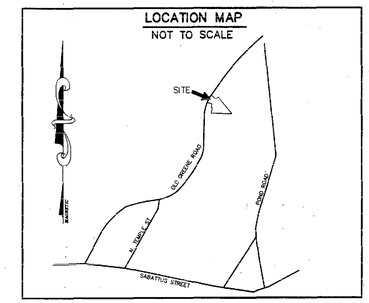
●	SET 5/8" REBAR WITH PLASTIC CAP MARKED "KACHNOVICH PLS 1134"
⊙	IRON ROD OR PIPE FOUND (DESC. NOTED)
———	BOUNDARY LINE
866/244	REGISTRY BOOK AND PAGE NUMBERS
N/F	NOW OR FORMERLY
— — — —	APPROXIMATE BOUNDARY LINE
	UTILITY POLE
	STONEWALL
——— x ——— x	BARBED WIRE FENCE
TP	SOIL TEST SITE
380	CONTOUR INTERVALS
W	DRILLED WELL



MATOBIAN AVENUE
CROSS-SECTION PRIVATE RIGHT-OF-WAY
(NOT TO SCALE)



ROAD PROFILE
SCALE: HOR: 1"=50' VER: 1"=5'



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. THIS LOT IS DESIGNATED ON THE CITY OF LEWISTON TAX MAP 59, AS LOT 12.

4. TOTAL AREA DEVELOPED INCLUDING R.O.W. = 6.77 ACRES.
TOTAL AREA WITHIN SUBDIVISION = 13.67 ACRES.

5. PRIVATE RIGHT OF WAY PERFORMANCE STANDARDS PER CITY OF LEWISTON ARTICLE XII, SECTION 18 OF THE ZONING AND LAND USE CODE ARE AS FOLLOWS:
A) 50 FOOT WIDE R.O.W.
B) 20 FOOT WIDE TRAVELED WAY
C) 18" GRAVEL BASE
D) 3% GRADE FOR FIRST 100 FEET OF TRAVELED WAY
E) IT IS THE RESPONSIBILITY OF THE OWNERS OF THE LOTS FROM WHICH FRONTAGE IS OBTAINED OFF THE R.O.W. TO ASSURE THE LONG TERM MAINTENANCE, REPAIR, AND REPLACEMENT OF AND IMPROVEMENTS WITHIN THE R.O.W.
F) A PAVED APRON MUST BE CONSTRUCTED A MINIMUM LENGTH OF 15 FEET FROM THE EDGE OF THE R.O.W.'S INTERSECTION WITH THE STREET. IT WILL BE COMPLETED PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY OR BY THE END OF THE NEXT CONSTRUCTION SEASON FROM WHEN THE CERTIFICATE WAS ISSUED.

6. PRIVATE RIGHT OF WAY WILL BE 50 FEET WIDE. NO VEHICLES TO PARK WITHIN THE R.O.W.

7. LOT 1 WILL BE ACCESSED BY OLD GREENE ROAD ONLY.

8. SOILS WERE EVALUATED BY STEVE HAMILTON ASSOCIATES - 4 FOREST CIRCLE - JAY, MAINE 04239.

9. NO WETLANDS WERE FOUND ON LOTS 1, 2, OR THE AREA BEING DEVELOPED OF LOT 3. WETLANDS WERE NOT DELINEATED ON THE OTHER LAND OF LOT 3 IN WHICH WILL BE UNDEVELOPED UNLESS APPROVED BY THE CITY OF LEWISTON PLANNING BOARD AT A LATER DATE. LOT 3 DEVELOPMENT ACTIVITY IS LIMITED TO THAT PORTION LABELED BUILDING ENVELOPE IN ADDITION TO MEETING THE SPACE AND BULK STANDARDS OF THE RURAL AGRICULTURE DISTRICT.

10. EROSION AND SEDIMENTATION BEST MANAGEMENT PRACTICES WILL BE FOLLOWED ON EACH LOT. THE USE OF BMP DURING CONSTRUCTION OF THE FRONTAGE RIGHT-OF-WAY IS REQUIRED. (SEE MAINE DEP MAINE EROSION AND SEDIMENTATION CONTROL BMP MANUAL, 2003)

11. CONTOUR INTERVALS (2 FOOT) TAKEN FROM CITY OF LEWISTON GIS, ROTATED TO FIT THIS DRAWING.

12. IT IS THE INTENTION THAT THIS FRONTAGE RIGHT-OF-WAY MAY BE UPGRADED TO A CITY STREET IN THE FUTURE TO ACCESS ADDITIONAL RESIDENTIAL LOTS.

ZONE

ZONE R - RURAL AGRICULTURAL

OWNERS OF RECORD
RICK LACHAPELLE &
MONIQUE LACHAPELLE
FROM
ROBERT GAUTHIER &
EILEEN GAUTHIER
BY DEED DATED NOVEMBER 9, 2006
BOOK 6967, PAGES 14-15

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.

SUBDIVISION PLAN

L & L ESTATES

LOCATION: 435 OLD GREENE ROAD
CITY OF LEWISTON
ANDROSCOGGIN COUNTY, MAINE

MADE FOR: RICK & MONIQUE LACHAPELLE
504 POND ROAD
LEWISTON, MAINE

COMPILED BY:
KACHNOVICH LAND SURVEYING, INC.
292 GODING ROAD
LIVERMORE, MAINE 04253
TEL. & FAX (207) 897-2748

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

APPROVED:

CHAIRMAN LEWISTON PLANNING BOARD — DATE 05-14-07

RECORDING DATA

STATE OF MAINE
ANDROSCOGGIN COUNTY REGISTRY OF DEEDS
RECEIVED June 13, 2007
AT 9 h 43 m A M. RECORDED IN
FILE NUMBER Book 46 Page 101
ATTEST Tina M. Chouinard
REGISTRAR

STATE OF MAINE — JAMES S. KACHNOVICH # 1134 — PROFESSIONAL LAND SURVEYOR

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.

JAMES S. KACHNOVICH P.L.S. #1134 — DATE 5-29-2007

PROJECT NAME	RICKY-03
DATE OF SURVEY	APRIL 2007
DATE OF PLAN	MAY 2007
DC	CD 8/6

D815

Book 46 Page 101

Bk 48 Pg 116 1/4/11 C 1134

2003 – OBSERVED MAGNETIC

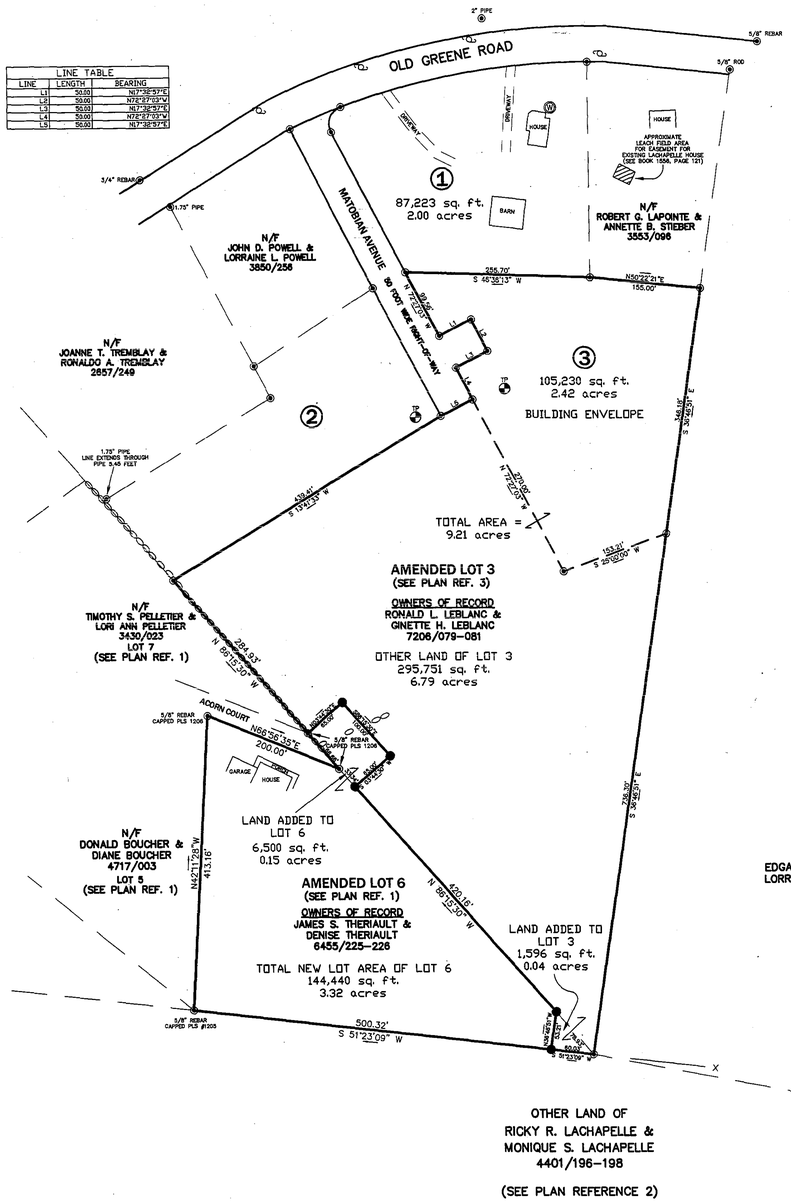
PLAN REFERENCES

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.

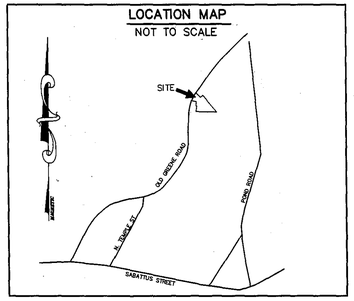
LINE TABLE		
LINE	LENGTH	BEARING
L1	50.00	N17°38'57"E
L2	50.00	N72°27'03"W
L3	50.00	N17°38'57"E
L4	50.00	N72°27'03"W
L5	50.00	N17°38'57"E



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
- 866/244 — REGISTRY BOOK AND PAGE NUMBERS
- N/F — NOW OR FORMERLY
- APPROXIMATE BOUNDARY LINE
- UTILITY POLE
- STONEWALL
- BARBED WIRE FENCE
- TP — SOIL TEST SITE
- W — DRILLED WELL

LOCATION MAP
NOT TO SCALE



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. THE PURPOSE OF THIS PLAN IS TO AMEND AND TO SHOW A LAND EXCHANGE BETWEEN LOT 3 ON L & L ESTATES AND LOT 6 ON MAURICE ESTATES.

ZONE

ZONE R – RURAL AGRICULTURAL

APPROVED:

THIS PLAN WAS APPROVED AS A DE MINIMIS CHANGE IN ACCORDANCE WITH ARTICLE XIII, SECTION 3 (k) OF THE ZONING AND LAND USE CODE.

Leroy A. Gisson — 12-13-2010
CHAIRMAN LEWISTON PLANNING BOARD — DATE

RECORDING DATA

STATE OF MAINE
ANDROSCOGGIN COUNTY REGISTRY OF DEEDS
RECEIVED January 4, 2011
AT 1 h 54 m P M. RECORDED IN
FILE NUMBER BK 48 Pg 116
ATTEST Lynda Desjardins-Michaud
REGISTRAR Deputy

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

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 — 12-14-2010
TOBY J. KACHNOVICH P.L.S. #2395 — DATE

SUBDIVISION AMENDMENT PLAN

AMENDMENT OF L & L ESTATES LOT 3 & AMENDMENT OF MAURICE ESTATES LOT 6

LOCATION: 435 OLD GREENE ROAD
CITY OF LEWISTON
ANDROSCOGGIN COUNTY, MAINE

MADE FOR: RICK & MONIQUE LACHAPELLE
504 POND ROAD
LEWISTON, MAINE

COMPILED BY:

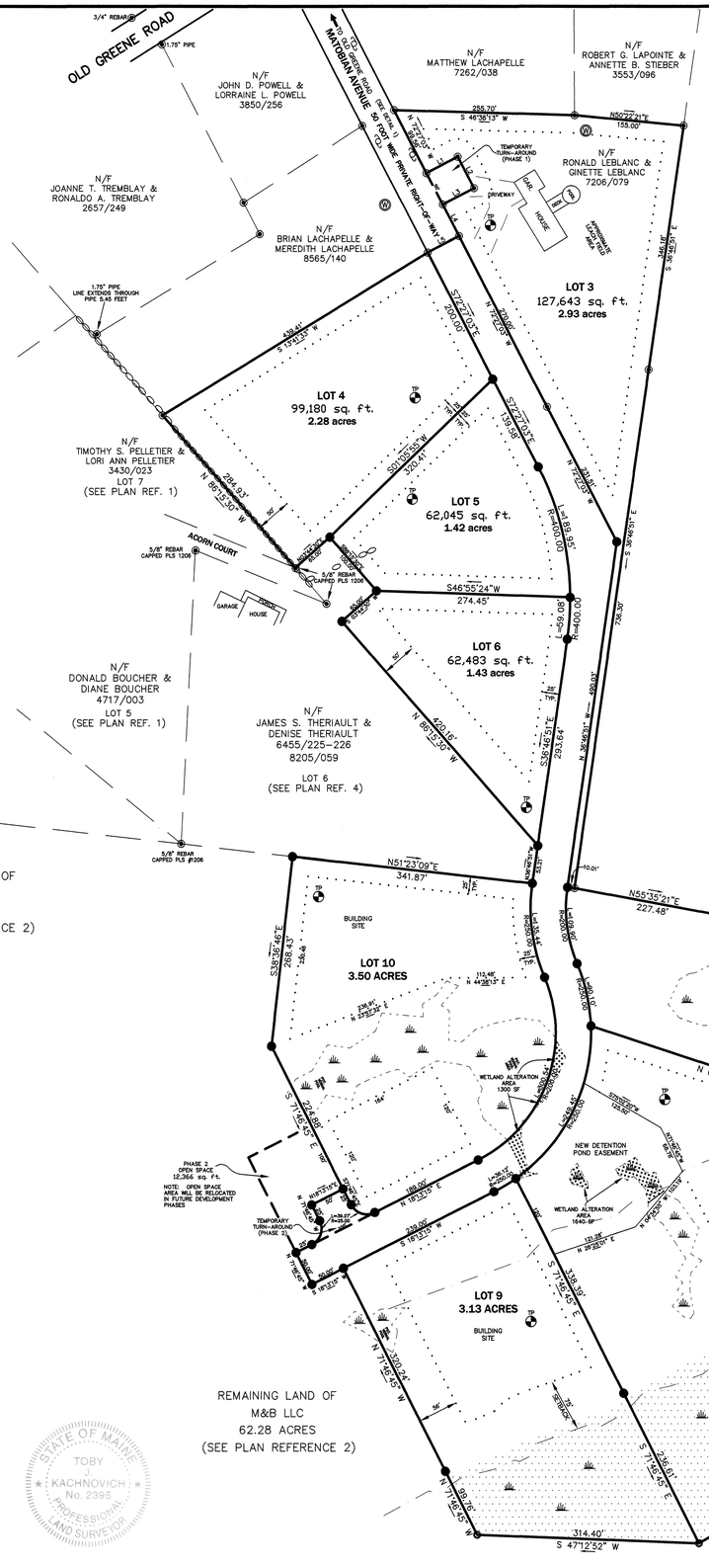
KACHNOVICH LAND SURVEYING, INC.
292 GODING ROAD
LIVERMORE, MAINE 04253
TEL. & FAX (207) 897-2748
www.mainesurveying.com

GRAPHIC SCALE
100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

PROJECT NAME	RICKY-03
DATE OF SURVEY	APRIL 2007
DATE OF PLAN	MAY 2007
DATE OF REVISION	DECEMBER 2010
DC	CD 2010

D815

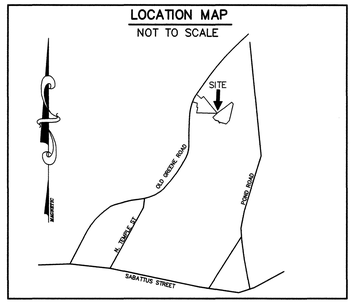
Book 48 Page 116



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

LOCATION MAP
NOT TO SCALE



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. 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 STORMWATER POND. IT WILL BE REQUIRED TO SHOW THE CITY AND THE MDEP THAT INSPECTION AND MAINTENANCE HAS BEEN DONE ACCORDING TO THE REQUIREMENTS IN THE STORMWATER RULES AND TO RENEW THE LICENSE EVERY 5 YEARS WITH MDEP.

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 OVER ALL LOTS 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.

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.

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.

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

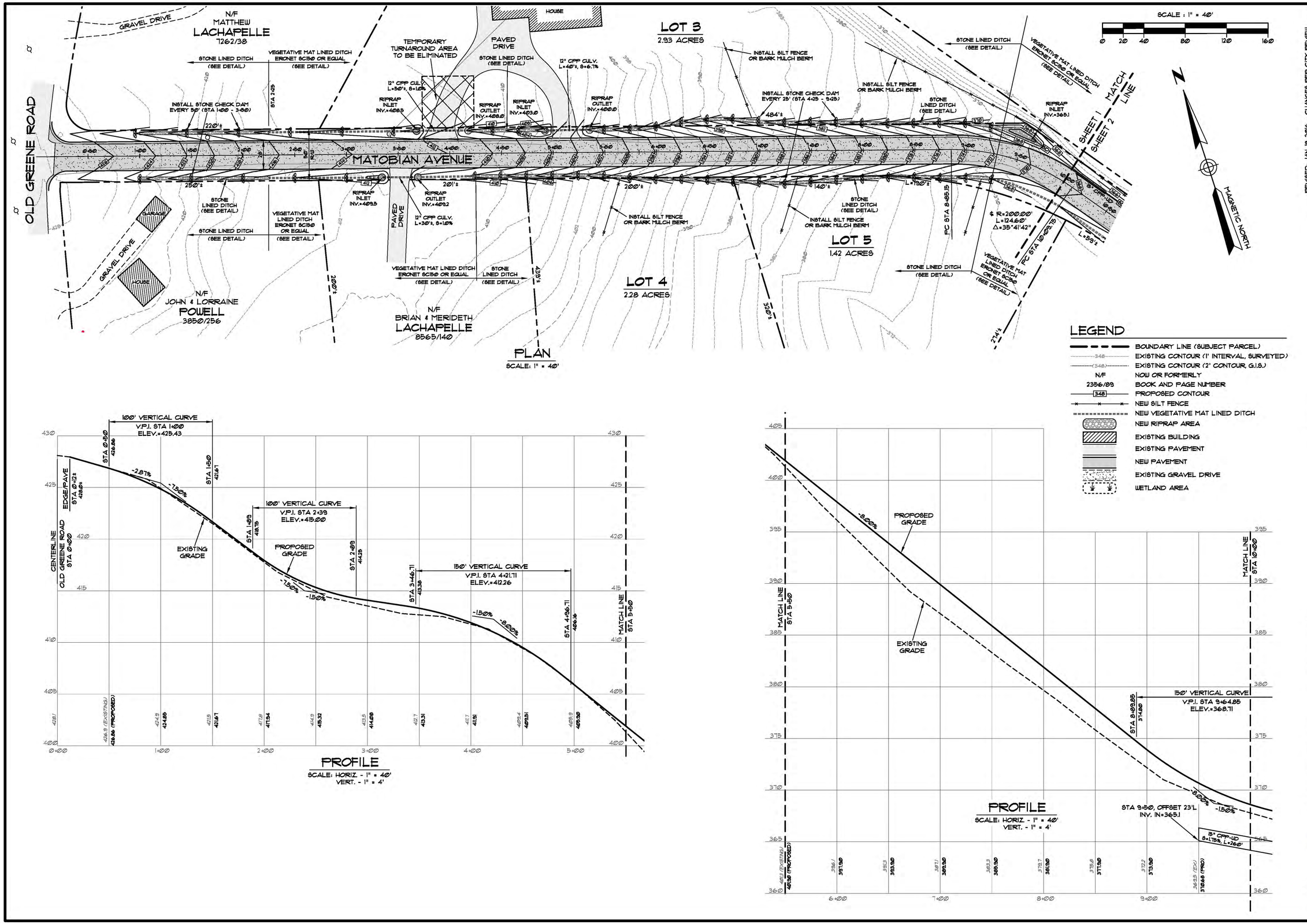
TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF, ALL INFORMATION HEREON IS TRUE AND ACCURATELY SHOWN. IF NO EMBOSSING SEAL IS PRESENT, PLAN IS NOT A CERTIFIED COPY.

TOBY J. KACHNOVICH P.L.S. #2395 — 1-18-2016 DATE

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

PROJECT NAME	LACHAPELLE-15
DATE OF SURVEY	DECEMBER 2015
DATE OF PLAN	JANUARY 2016
DC	CD 2015

D1554



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

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

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

REVISED: JAN. 18, 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
319 LISBON STREET - LEWISTON, ME 04240

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

113 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7161

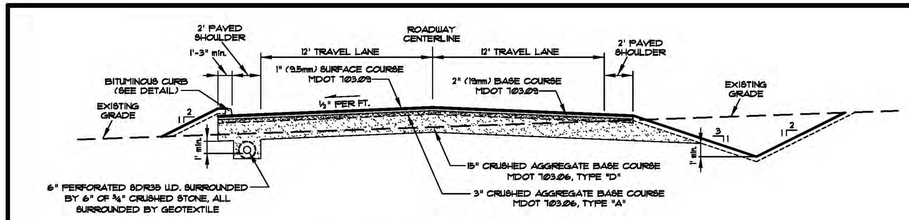
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 516-3313

SUMMIT GEOENGINEERING SERVICES

STATE OF MAINE
WILLIAM M. PETERLEIN
3787
LICENSED PROFESSIONAL ENGINEER

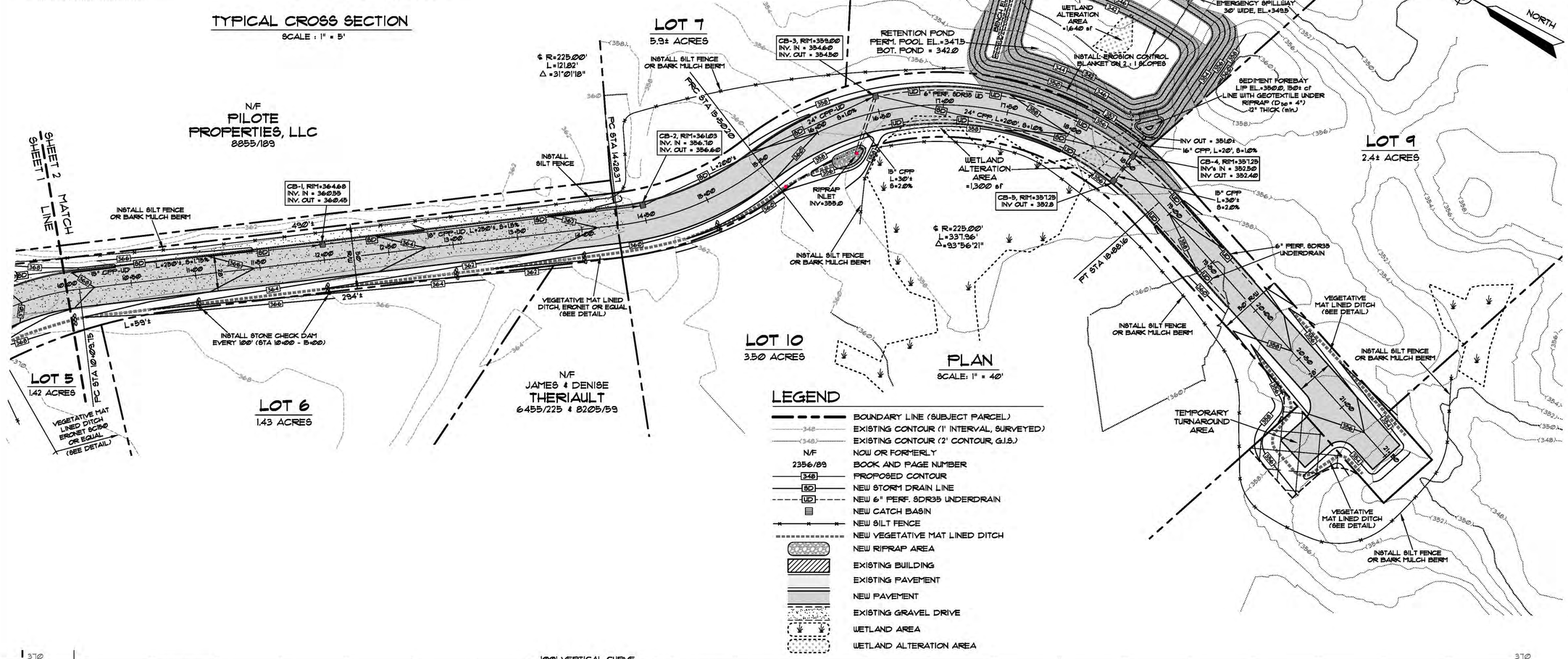
JOB NO. - 15135

SHEET NUMBER
1



TYPICAL CROSS SECTION

SCALE : 1" = 5'

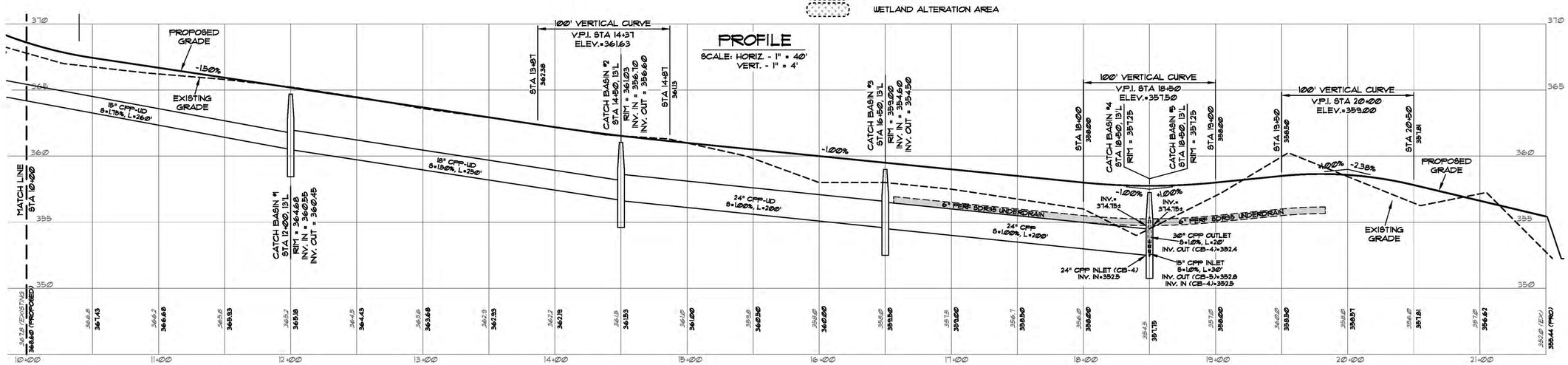


PLAN

SCALE: 1" = 40'

LEGEND

- BOUNDARY LINE (SUBJECT PARCEL)
- EXISTING CONTOUR (1' INTERVAL, SURVEYED)
- EXISTING CONTOUR (2' CONTOUR, G.I.S.)
- N/F — NOW OR FORMERLY
- 2356/89 — BOOK AND PAGE NUMBER
- 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



REVISED: JAN. 18, 2016 - CHANGES PER CITY REVIEW

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

SCALE: AS NOTED | DRAWN BY: KRF

DATE: DEC. 17, 2015 | CHECKED BY: WMP

PROJECT: L & L ESTATES - PHASE 2

MATOBIAN AVENUE - LEWISTON, MAINE

CLIENT: M & B, LLC

379 LISBON STREET - LEWISTON, ME 04240

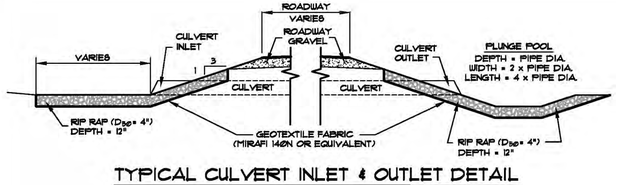
Stonebrook Consultants, Inc.
456 Buckfield Road - Turner, Maine 04282
(207) 514-7491 Voice
(207) 514-7492 Fax

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

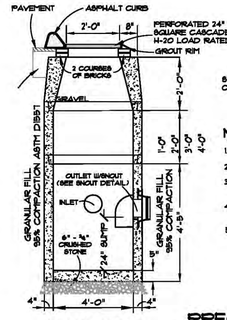
JOB NO. - 15135

SHEET NUMBER 2



TYPICAL CULVERT INLET & OUTLET DETAIL

NOT TO SCALE



STRUCTURES AND COVERS TO MEET CITY OF LEWISTON STANDARDS

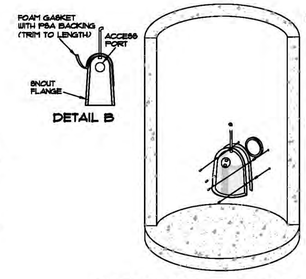
NOTES:

1. CONCRETE: 4000 PSI AFTER 28 DAYS.
2. DESIGN STRUCTURE FOR H-20 LOADING
3. SHIPLAP JOINTS SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5. PIPE OPENINGS CAST IN AS REQUIRED.

SECTION VIEW

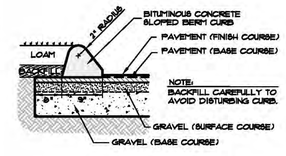
PRECAST CONCRETE CATCH BASIN DETAIL

NOT TO SCALE



SNOUT INSTALLATION DETAIL

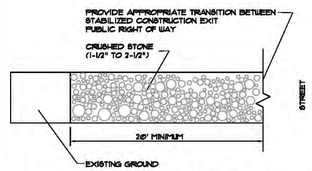
NOT TO SCALE



NOTE:
BACKFILL CAREFULLY TO AVOID DISTURBING CURB.

BITUMINOUS CURBING

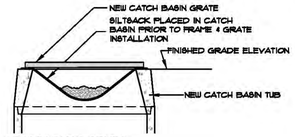
NOT TO SCALE



1. STONE SIZE - AASHTO DESIGNATION M 43, SIZE 2 (2½" - 1½") USE CRUSHED STONE
2. LENGTH - AS EFFECTIVE BUT NOT LESS THAN 50'
3. THICKNESS - NOT LESS THAN 6"
4. WIDTH - NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS
5. WASHING - WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT OF WAY, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS, OR OTHER APPROVED METHODS.
6. MAINTENANCE - THE STABILIZED CONSTRUCTION EXIT SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURED USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT OF WAYS MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION EXIT DETAIL

NOT TO SCALE

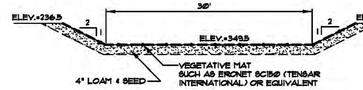


NEW INSTALLATION

NOTE:
REMOVE SILT SACK AFTER VEGETATIVE COVER IS GREATER THAN 75% ESTABLISHED.

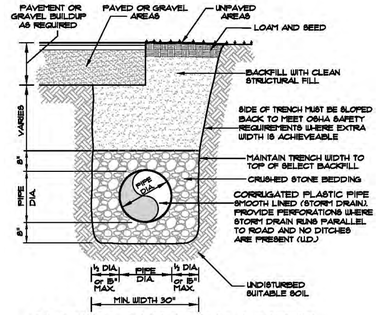
SILTSACK DETAIL

NOT TO SCALE



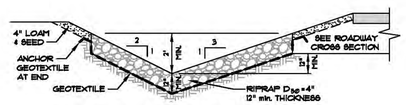
EMERGENCY SPILLWAY DETAIL

NOT TO SCALE



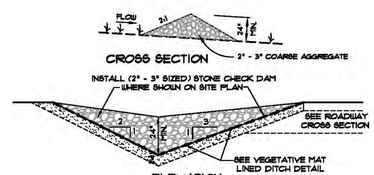
STORM DRAIN TRENCH DETAIL

NOT TO SCALE



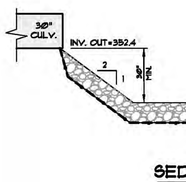
STONE LINED DITCH

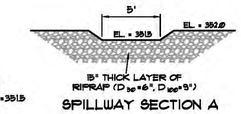
NOT TO SCALE



STONE CHECK DAM DETAIL

NOT TO SCALE





SPILLWAY SECTION A

SEDIMENT FOREBAY DETAIL

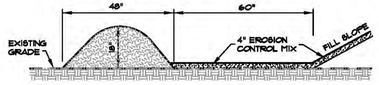
NOT TO SCALE

THE FILTER BERM SHALL CONSIST OF A WOOD WASTE COMPOST/BARK MULCH MIX OR RECYCLED COMPOSTED BARK FLUME GRIT AND FRAGMENTED WOOD GENERATED FROM WATER FLUME LOG HANDLING SYSTEMS. COMPARABLE COMPOSTED MIXES CAN BE USED UPON WRITTEN APPROVAL OF THE ENGINEER.

THE MIX SHALL CONFORM TO THE FOLLOWING: pH BETWEEN 5.0-8.0, PARTICLE SIZE - 100% PASSING THROUGH A 6" SCREEN AND 80% RETAINED ON A ¾" SCREEN, SOLUBLE SALTS CONTENT SHALL BE LESS THAN 4.0 mmho/cm.

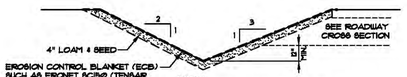
THE COMPOSTED BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.

THE BERM MAY BE USED IN COMBINATION WITH SILT FENCE TO IMPROVE SEDIMENT REMOVAL AND PREVENT CLOGGING OF THE BERM BY LARGER SEDIMENT PARTICLES (SILT FENCE PLACED ON THE UPHILL SIDE OF BERM).



BARK MULCH BERM DETAIL

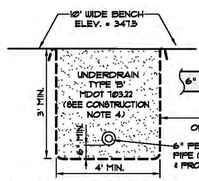
NOT TO SCALE



NOTE
INSTALL ECB IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS

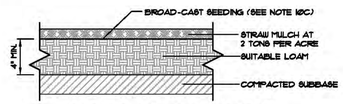
VEGETATIVE MAT LINED DITCH

NOT TO SCALE



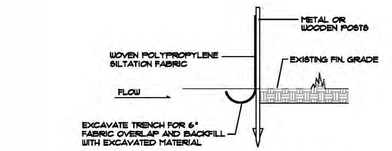
UNDERDRAIN GRAVEL TRENCH SECTION

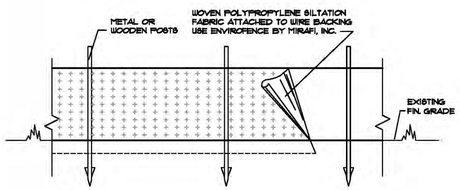
NOT TO SCALE



LOAM & SEED DETAIL

NOT TO SCALE





NOTE

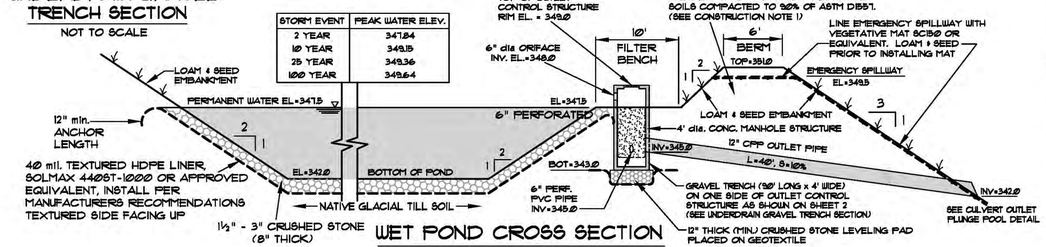
REFERENCE IS MADE TO THE BEST MANAGEMENT PRACTICE FOR EROSION AND SEDIMENT CONTROL: B-1 SEDIMENT BARRIERS.

SILTATION FABRIC WITH INTEGRAL MESH AND POSTS MAY BE USED.

SILT FENCE DETAIL

NOT TO SCALE

STORM EVENT	PEAK WATER ELEV.
2 YEAR	347.84
10 YEAR	349.15
25 YEAR	349.36
100 YEAR	349.64



WET POND CROSS SECTION

NOT TO SCALE

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 SPECIFICATIONS.

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 INCORRECTLY 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 22003 (DEPLW 1666) 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 140N 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-P2O5-K2O) 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) 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.

2) 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.

3) 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. 18, 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

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STATE OF MAINE WILLIAM M. PETRUCIN 5787 LICENSED PROFESSIONAL ENGINEER

JOB NO. - 15135

SHEET NUMBER 3