

**Town of Kittery
 Planning Board Meeting
 July 26, 2018**

Miller Road – Major Subdivision Preliminary Plan Review

Action: Accept application as complete; Approve or deny preliminary plan Owners Paul E. and Peter J. McCloud and Applicant Joseph Falzone requests consideration of a 6-lot conventional subdivision on land along Miller Road (Tax Map 59 Lot 20) in the Residential-Rural (R-RL) and Resource Protection Overlay (OZ-RP) Zones. Agent is Ken Wood, Attar Engineering.

PROJECT TRACKING

REQ'D	ACTION	COMMENTS	STATUS
YES	Sketch Plan Completeness Review/Approval	Approved 5/10/18	APPROVED
YES	Site Visit	Held on 5/1/18	HELD
YES	Preliminary Plan Review Completeness/Acceptance	Accepted on 6/12/18	ACCEPTED
YES	Public Hearing	Originally scheduled for July 12 th , scheduled for 7/26/18	PENDING
YES	Preliminary Plan Approval		PENDING
YES	Final Plan Review and Decision		

Applicant: Prior to the signing of the approved Plan any **Conditions of Approval related to the Findings of Fact along with waivers and variances (by the BOA) must be placed on the Final Plan and, when applicable, recorded at the York County Registry of Deeds. PLACE THE MAP AND LOT NUMBER IN 1/4" HIGH LETTERS AT LOWER RIGHT BORDER OF ALL PLAN SHEETS.** As per Section 16.4.4.13 - Grading/Construction Final Plan Required. - Grading or construction of roads, grading of land or lots, or construction of buildings is prohibited until the original copy of the approved final plan endorsed has been duly recorded in the York County registry of deeds when applicable.

Background

Miller Road lies between Bartlett Road and Norton Road. This lot lies closer to Norton Road and abuts Hutchins Creek. It is approximately 9.9 acres and 6 lots are proposed. Large portions of two lots lie within the Resource Protection Zone and FEMA Flood Zone A as shown on FEMA maps. The Applicant sought and received a Letter of Map Amendment (LOMA) from FEMA, included in the submission, to remove the lots from the floodplain.

Sketch Plan

The sketch plan design that the Board approved on May 10, 2018 included a hammerhead turnaround that would allow access to three lots, including the back lot and a shared driveway between lots 4 and 5. The number of curb cuts on Miller Road would be reduced to three. The Board’s informal consensus was to favor the special exception request for the conventional subdivision design over the cluster.

Meeting of July 12, 2018

At the meeting of July 12th, the Board voted to reschedule the public hearing to July 26th. A memo from Staff and a letter the applicant provided which were handed out at the meeting were also discussed. The Applicant received a LOMA and had requested that the OZ-RP boundary be adjusted to match the LOMA-adjusted boundary. The adjustment to the boundary was 200 feet or more in places. Staff were advised by DEP that adjustments of greater than 100 feet to a shoreland boundary should go through a formal map amendment process. This necessitated the Applicant to request a special exception request for the two single-family lots that lay within the OZ-RP boundary in order to move forward. That special exception request can be voted on when final plan approval action is taken. A sidewalk waiver was also requested.

The Board also discussed the CMA review and the staff notes. The staff review notes in yellow that follow has not been updated but is provided in case the Board had additional questions for the Applicant's agent following the public hearing.

The recommendations that follow the staff review notes, highlighted in gray, have been updated for the Board.

Staff Review

1. Submission: Staff has the following comments on the preliminary subdivision plan submission.
 - a. Front setbacks are not shown/labeled on the plans. **Update: Shown on the plans**
 - b. Nearly all, if not all, the site is wooded. A note describing the site as wooded could stand in for the required forest cover depiction on the plans. **Update: See Note 9**
 - c. The Resource Protection Zone line is not identified on the plans. Staff believes the OZ-RP line should be identified as such on the plans. See #4 below. **Update: See Note 13**
 - d. The legal interest documents, in this case the Purchase & Sale agreement, may have expired. Has the Applicant purchased the property?
 - e. The erosion and sedimentation control plan will be reviewed by CMA. **Update: CMA has reviewed the plans and their report is in the Board's packet.**
2. Conventional vs. Cluster. The proposed subdivision is presented as a major conventional subdivision which is a special exception use. Per 16.6.4.4., when granting a special exception use, the Board must find the proposed development meets the criteria of Section 16.10.8.3.4 and 16.6.6. The Board has provided feedback to the Applicant favoring the conventional design as shown. **Update: Prior to approving the plan, the Board must vote to grant the special exception use.**
3. Open Space. The proposed subdivision plan shows about 3.4 acres of open space along Hutchins Creek to the north which exceeds the 15% requirement for open space within a conventional subdivision in the Residential Rural Zone (R-RL). There does not appear to be access to the open space for the 4 lots that do not abut it. **Update: All the property owners of the lots will have the ability to access the open space.**
4. Floodplain, Resource Protection Overlay and Wetlands. The lot proposed for subdivision is roughly shaped like an "L" as it lies along Miller Road. Current floodplain maps (actually both the FEMA maps in effect and the 2013 FEMA draft maps) show that the longest/deepest portion of the lot from Miller Road to the end of the lot as it runs along Hutchins Creek has a band of varying width located within the flood zone. FEMA has granted the Applicant's LOMA request to revise the floodplain, shrinking the floodplain area considerably. The LOMA delineation likely impacts the Resource Protection (OZ-RP) zoned by the Town. Wetlands are shown as running along the creek in a narrow band beyond Lot #6 where they widen and encompass the farthest portion of the lot. The wetlands were delineated by James Logan, of Longview Partners (not sure when) and that firm also did the high intensity soil survey.
 - a. The Applicant is showing the LOMA line as the line for the OZ-RP overlay. Staff recommends that the Applicant involve DEP and IFW to make that determination and provide results to the Board. The Town will adjust the OZ-RP zoning accordingly. **Update: See note on July 12, 2018 meeting above.**
5. Calculations for Net Residential Acreage. Per Title 16.7.8 *Net Residential Acreage* has been calculated and is shown as note 6 on Sheet 1 of the plans.

- a. Was the new stormwater drainage easement shown on Lot 1 included in the calculations? Update: The land area included in rights of way and easements for the net residential area calculations has remained the same for all plans submitted since April. Is this correct? If not, the calculations should be updated to reflect the road easement and the stormwater drainage easements shown on the plans.
6. Dimensional standards. All lots meet the 40,000 sf requirement in the R-RL Zone. Building envelopes are shown. Front setbacks are not shown – does the building envelope begin at the 40 foot setback? Setbacks (side yards) are shown. The 150-foot frontage requirements are met. There are 40-foot setbacks shown for the three lots that abut the ROW per front yard requirements. The ROW is itself, 40 feet, and curves slightly per the Board’s preference from the last meeting. The ROW is separate from the lots it serves, meaning they do not derive any area from the ROW. There is a hammerhead to allow for turnaround as per the Board’s guidance from the last meeting.
 - a. Impervious surface calculations are missing – they were provided at sketch plan review. Update: no calculations were provided – this is not a requirement but good to have.
7. Stormwater. Stormwater ponds are shown along Miller Road.
 - a. It isn’t clear where spillway water goes that is shown on the northerly stormwater pond. Does it flow into the open space? Does the southerly stormwater pond direct water to the northerly stormwater pond? Update: another existing culvert was located which enabled the stormwater management system to be modified, a level spreader will be installed, avoiding existing trees.
 - a. Can the more northerly stormwater pond in the 40-foot setback be moved so that the no-cut buffer may be placed there? See #8 below for additional comments on no-cut buffers. Update: the no-cut buffer is shown on along the frontage of all the lots. Where the stormwater system will be installed within it, two significant trees have been identified for preservation.
8. Scenic Road/No-Cut Buffers. Miller Road is listed as a Scenic Road in the Comprehensive Plan (scenic roads are also addressed in the Comp Plan update that is being considered for adoption). At the site walk and at the last meeting, the Board heard from the Applicant that no-cut buffers would be provided along Miller Road, along the wetland setback and along the southwestern edge of Lot 5. A no-cut buffer of less than 40 feet is shown in front of Lots 4 and 5 and in back of Lots 3-5 (this wasn’t requested). Stormwater systems are shown in the 40-foot setback along Miller Road and Lots 1-3 have no no-cut buffer shown.
 - a. Site plan minutes from 5/1/18 and Planning Board minutes from the 5/10/18 meeting both indicate that no-cut buffers were discussed along the 40-foot ROW and that the buffers would be 50-60 feet wide. The Lot 5 side buffer was also agreed to by the Applicant. Update: a 50 foot no-cut buffer runs along the entire Miller Road frontage, and wraps around Lot 5’s southeastern side. A 40-foot no-cut buffer runs along the back of Lots 3-5. Note 10 describes the buffer and the restrictions.
 - b. A no-cut buffer in the 100-foot Resource Protection setback is recommended by Staff. Update: A no-cut buffer is noted on the plans and described in Note 11.
9. Road and Shared Driveway. The plan submitted shows a 40-foot ROW with an 18-foot gravel travel way to be shared with Lots 1, 2 and 6. No shoulders, sidewalks or pedestrian ways are being proposed.
 - a. Since the road will be private, the Applicant should request waivers for the road design and sidewalks. Update: waiver requests were not submitted but staff will ensure a list is provided for the meeting.

- b. A note should be placed on the plan saying: [The name of the road] shall be and must remain a private road, with the property owners, HOA or other such entity bearing all responsibility for maintenance including but not limited to, snowplowing, paving and stormwater system operation and repair. **Update: See Note 12.**
- The shared driveway does not have dimensions noted but the easement appears to be about 25 feet wide, travel way is likely 12 or 15 feet.
- c. **The driveway easement width and the travel way width should be noted on the plans**
Update: dimensions were added to the plans.
 - d. A significant tree (large healthy tree as defined by Title 16) was noted near the shared driveway location during the site walk. Will the driveway location spare that tree?
Update: a large healthy oak is identified on the plan to remain, the driveway avoids it.

10. HOA Document. The HOA document submitted seems to include all the six lots.

- a. It is not clear why Lots 3, 4 and 5 have interest in the road for use by Lots 1, 2 and 6.
Update: the HOA document clarifies responsibilities.
- b. Will all lot owners be responsible for the stormwater system operations and maintenance?
Update: The HOA appears to make all owners responsible.
- c. Any removal of vegetation in the OZ-RP zone or no-cut zones will require a permit from the Shoreland Resource Officer and the HOA document should clearly state this. This includes hazard/dead/dying trees and invasive species. The Town will issue a permit to remove hazard/dead/dying trees and invasive species but requires a permit to monitor cutting and to determine whether or not replanting needs to occur in the Resource Protection zone. **Update: The HOA document on page 8, numbers 3.28 and 3.3, should be updated to reflect the language above.**

11. Peer Review. CMA will review the plans and submit a report for the next meeting. **Update: CMA's report is included in the packet.**

Recommendations

Preliminary Plan review begins the formal permitting process for a subdivision. The Board is charged with giving the Applicant guidance and input to further refine the plan in accordance with Title 16 prior to final plan submission. The Board will also hold a public hearing to hear from abutters and neighbors. In addition, as part of this step, the Board will decide by vote whether the design of this subdivision aligns with special exception criteria and the definition of special exception in 16.2.

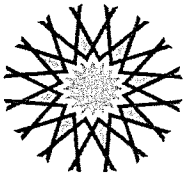
Update: Following the public hearing, the Board will want to discuss any further items of interest and then take a vote on the preliminary plan with conditions.

Staff recommends that the Board approve the preliminary plan with conditions.

Action

If the Board agrees with Staff recommendations, the Board may use the following motion:

Move to approve the preliminary subdivision application dated May 23, 2018 with revisions dated June 20, 2018 from owners Paul E. and Peter J. McCloud and applicant Joseph Falzone for a 6-lot subdivision on land along Miller Road (Tax Map 59 Lot 20) in the Residential-Rural (R-RL) and Resource Protection Overlay (OZ-RP) Zones with the conditions that all CMA comments must be addressed, impervious surface calculations added and that the HOA document be updated to reflect the no-cut, no-disturb buffer requirements including that any cutting of dead, dying or hazardous trees which while allowed, must receive a permit through the Town.



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Ms. Kathy Connor, Interim Town Planner
Town of Kittery
P.O. Box 808
Kittery, Maine 03904

July 10, 2018
Project No.: C142-18

**Re: Miller Road Subdivision
Preliminary Plan Application – Special Exception / Waiver Requests
Tax Map 56, Lot 20**

Dear Ms. Connor:

On behalf of Joseph Falzone, I have enclosed the FEMA Letter of Map Amendment (LOMA) for this project, as requested in your 7/9/18 email. The referenced email also suggested that the applicant request special exception review from the Planning Board and request a waiver for construction of a sidewalk along the proposed private drive, as follows:

Special Exception

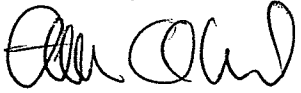
The attached LOMA relocates the Special Flood Hazard Boundary (100-Year Flood Zone) along Hutchins Creek to allow Lots 1 and 6 to be developed. The pre-LOMA location of the SFH Boundary represents the limit of the OZ-RP zoning district depicted on the current Kittery Zoning Map. We understand that Town Staff agrees that the location of OZ-RP zone should move to the LOMA location of the SFH Boundary, but that amendments to zone boundaries of more than 100' need special consideration by the Town, which would not coincide with the present review schedule. We also understand that the proposed development depicted on the current plans within the current OZ-RP zone, but outside the LOMA SFH Boundary can be approved by the Kittery Planning Board with review as a Special Exception. For the reasons stated, the applicant respectfully requests that the Planning Board consider granting a Special Exception to allow the project to move forward.

Waiver Request

The applicant respectfully requests a waiver from Kittery Land Use and Development Code (LUDC) Section 16.8, Table 1 (c.) which presumably requires a 5' wide sidewalk along Class I private streets. The justification for this request is that the sidewalk, if constructed, would not connect to any existing sidewalks along Miller Road, Bartlett Road, Norton Road or High Pasture Road, as there are no existing sidewalks in this area. In addition, a sidewalk is not necessary for internal pedestrian circulation, as only three lots will be utilizing the private street.

We look forward to discussing this project with the Planning Board at their next available meeting. Please contact me for any additional information or clarifications required.

Sincerely,

A handwritten signature in black ink, appearing to read 'KAW' with a stylized flourish at the end.

Kenneth A. Wood, P.E.
President

cc: Joseph Falzone

C142-18 Kittery LTR1.doc



TOWN OF KITTEERY
Planning and Development
200 Rogers Road, Kittery, ME 03904
Telephone: 207-475-1307 Fax: 207-439-6806

TO: PLANNING BOARD
FROM: KATHY CONNOR, INTERIM TOWN PLANNER
SUBJECT: MILLER ROAD SUBDIVISION AND RESOURCE PROTECTION OVERLAY
DATE: JULY 12, 2018
CC: ADAM CAUSEY, DIRECTORY OF PLANNING & DEVELOPMENT

The Board will recall that the Miller Road major subdivision's applicant, Joe Falzone, has received a LOMA letter from FEMA that essentially moves the floodplain line a considerable distance back from where it was originally shown on the FEMA maps. The original FEMA floodplain boundary appears to align with what the Town of Kittery adopted for its Resource Protection Overlay boundary. The Applicant proposed that due to the LOMA, the Resource Protection boundary should also be relocated which would remove proposed Lots 1 and 6 entirely from the Resource Protection Overlay. Without that boundary relocation, about half of Lot 1 and nearly all of Lot 6 will be within the Resource Protection Overlay.

Staff wanted to be sure that DEP had no concerns with the LOMA/Resource Protection Overlay boundary shift and reached out to Mike Morse at DEP. Mike indicated that since Kittery is more strict than the State in this instance (the State regulates a 75-foot setback and, does not regulate forested wetlands, Kittery's ordinance requires 100-feet and includes forested wetlands), DEP's legal counsel advises against him interpreting a town's ordinance. However he added the following in his email: *Legal counsel has recommended that an on-the-ground departure from the zoning map of something in the order of up to 100 feet or so would probably be acceptable without needing to adopt a formal map amendment, but much more than this relative distance should be addressed with such a map amendment (adopted by the Town Council) before permitting a project.*

The difference between the LOMA line and Kittery's shoreland zoning map's Resource Protection Overlay boundary is greater than 100 feet – it appears to be 200+ feet in places. Based on Mike's email and consideration of the boundary lines, Staff believes that the Town will need to adopt a formal map amendment. However, Kittery's ordinance does provide for single-family dwellings to be permitted within a Resource Protection Overlay through 16.3.2.19 as a special exception. Given that FEMA has approved the LOMA and that the Applicant's plans show that Lots 1 and 6 have building envelopes outside the 100-foot setback from the delineated wetlands, Staff believes the Planning Board may permit the two single-family residences proposed for Lots 1 and 6 as a special exception in addition to the major subdivision approval. The formal map amendment will proceed as a separate process.

July 5, 2018

Ms. Kathy Connor, Interim Town Planner
Town of Kittery
200 Rogers Road
Kittery, Maine 03904

RE: Town of Kittery, Planning Board Services
Preliminary Subdivision Plan Review #2-Miller Road Subdivision
CMA #591.119

Dear Ms. Connor:

CMA Engineers received the following information for Assignment #119, review of the subdivision for the property on Miller Road:

- 1) "Preliminary Subdivision Plan, Miller Road Subdivision, Miller Road, Kittery, Maine", prepared for Joseph Falzone, 7B Emery lane, Stratham, NH, by Attar Engineering, Inc., 1284 State Road, Eliot, ME 03903, dated May 23, 2018.
- 2) Stormwater Management Plan by Attar Engineering, Inc. dated May 23, 2018 and revised June 20, 2018.
- 3) Preliminary plan application by Attar Engineering, Inc. dated June 21, 2018

We have reviewed the information submitted for conformance with the Kittery Land Use and Development Code Zoning Ordinance and general engineering practices and offer the comments below that correspond directly to the Town's Ordinances. The project is in the Residential-Rural Zone (R-RL) and Resource Protection Overlay Zone (OZ-RP).

16.7 General Development Requirements

Article VIII. Net Residential Acreage

16.7.8.2.K

It isn't clear that the applicant has deducted all areas according to:

- B) All land located within the floodplain as defined in Title 16.2, Flood, One Hundred (100) Year.
- I) All land one (1) acre or more contiguous area with sustained slopes of 20% or greater.
- J) All land identified as exposed bedrock, and soils with a drainage class of poorly drained, and/or very poorly drained.
- K) 50% of all land characterized as drainage class of somewhat poorly drained, and/or very poorly drained.

16.8 Design and Performance Standards-Built Environment

Article IV. Streets and Pedestrian Ways/Sidewalks Site Design Standards

16.8.4.3.I. This street would be classified as a Class I private street. In accordance with Table 1, the applicant should label the right-of-way width on the Road Cross Section – Typical detail on Sheet 3.

A 5' sidewalk/pedestrian way is required but none is indicated. If a sidewalk is not included, the applicant should apply for a waiver.

16.8.4.8.D. The applicant should indicate the sight distances on Miller Road.

Article VI.: Water Supply

16.8.6.1 The applicant is proposing private wells on each lot. The proposed locations of the wells and protective radii should be shown on the plan.

Article VII.: Sewage Disposal

16.8.7.2 The applicant is proposing individual septic systems. The locations of the septic systems should be shown. Applicant should provide the test pit information. The applicant should show reserve septic locations where required based on test pit information.

Article VIII. Surface Drainage

We have the following general questions/comments on the stormwater design:

1). The applicant is proposing stormwater be managed through the use of swales, a culvert, buffers and a level spreader without the use of low impact development (LID) features. Are LID features necessary or desirable?

2). Please describe what, if any, MeDEP permitting is required.

16.8.8.1 The applicant has provided stormwater calculations for pre- and post-development conditions for the 2, 10 and 25-year storms. There is no discussion of pre- and post-development conditions, no summary and no explanation. The applicant should provide stormwater analysis of the 50 and 100-year storms. The stormwater report should have a cover page and be signed, stamped and dated.

16.8.8.2 The applicant should include a discussion of post-construction stormwater operations and maintenance that conforms to the Ordinances. The inspection and maintenance log should be specific to the project.

16.9 Design and Performance Standards – Natural Environment

Article 1: General

16.9.1.3.A.1 The applicant should provide the name and certification number of the person responsible for erosion and sediment control management.

16.9.1.4.C The applicant should provide the required information from the High Intensity Soil Survey.

Article II. Retention of Open Space and Natural or Historic Features

16.9.2.1 There should be a note restricting tree clearing to those limits shown on the plan.

16.9.2.2 There should be a note prohibiting tree clearing within 100' of the normal high-water line

General Comments:

1. The plans should have a cover page.
2. The plans should be stamped and signed by a licensed wetlands scientist.

Should you have any questions, please do not hesitate to call.

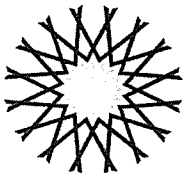
Very truly yours,

CMA ENGINEERS, INC.



Jodie Bray Strickland, P.E.

Project Engineer



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ENGINEERING, INC

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Ms. Kathy Connor, Interim Town Planner
Town of Kittery
P.O. Box 808
Kittery, Maine 03904

June 21, 2018
Project No.: C142-18

**Re: Miller Road Subdivision
Preliminary Plan Application
Tax Map 56, Lot 20**

Dear Ms. Connor:

On behalf of Joseph Falzone, I have enclosed a revised Preliminary Plan set and supporting material for your review and consideration. The site is located on Miller Road, contains approximately 9.9 acres and is located in the Residential-Rural (R-RL) zoning district and Resource Protection (OZ-RP) overlay zoning district.

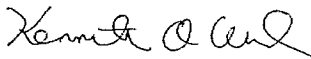
The applicant is proposing to divide the lot into 6 residential lots. The lots will be served by individual subsurface wastewater disposal systems and individual drilled wells. Lots 1, 2 and 6 will be accessed by a private street within a 40' wide right of way, which will provide lot frontage for these lots. Lots 3-5 have frontage along Miller Road and will be accessed by driveways connected to Miller Road. A shared driveway is proposed for Lots 5 and 6. Open space is proposed along Hutchins Creek.

The revised Preliminary Plan includes the following changes from the sketch plan due to Planning Board and Abutter input:

- Additional no-cut buffers have been added along Miller Road, along the sideline of Lot 5 and the rear lot lines of Lot's 3, 4 and 5.
- General Notes 9 – 13 have been added to address wetland and lot buffers, the road remaining private and the OZ-RP District boundary.
- A Stormwater Easement has been added to Lot 1 with the applicable deduction in lot area.
- The stormwater Management Plan has been revised to reflect less disturbance and storage of peak flows; the Stormwater Management Report (attached) provides additional details.
- Significant trees along Miller Road have been survey located and, in most cases, are avoided during construction of improvements.

We look forward to discussing this project with the Planning Board at their next available meeting. Please contact me for any additional information or clarifications required.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth A. Wood". The signature is written in a cursive style with a large initial "K" and "W".

Kenneth A. Wood, P.E.
President

cc: Joseph Falzone

C142-18 Kittery Prelim Cover.doc

DECLARATION OF COVENANTS, RESTRICTIONS,
EASEMENTS, CHARGES AND LIENS
FOR
HUTCHINS CREEK HOMEOWNERS ASSOCIATION
A SIX-LOT SUBDIVISION
MILLER ROAD, KITTERY, MAINE

This Declaration of Covenants, Restrictions, Easements, Charges and Liens for Hutchins Creek Homeowners Association (hereinafter "Declaration") is made this ____ day of _____, 2018, by Joseph Falzone, the owner and developer, having a mailing address of 7B Emery Lane, Stratham New Hampshire 03885 (hereinafter the "Declarant").

WITNESSETH:

WHEREAS, Declarant is the owner of a certain parcel of land located in the Town of Kittery, State of Maine (hereinafter the "Subdivision"), as shown on the Subdivision Plan identified below, and

WHEREAS, Declarant desires to make the Subdivision subject to this Declaration in order to: (a) provide for the operation, maintenance, repair and replacement of certain common facilities and amenities located on the Subdivision Property; and (b) preserve the environment of the Subdivision and, to this end, desires to subject the Subdivision to the covenants, restrictions, easements, charges and liens, hereinafter set forth, each and all of which is and are for the benefit of said Subdivision and each owner of a Lot therein; and

WHEREAS, Declarant has deemed it desirable to create a private, non-profit corporation to which should be delegated and assigned the authority to: (a) carry out certain responsibilities relating to the common facilities and amenities described herein and (b) administer and enforce the covenants, restrictions, easements, charges and liens set forth herein; and

WHEREAS, Declarant has established under the laws of the State of Maine a private, non-profit corporation, Hutchins Creek Homeowners Association, for the purpose of exercising the aforesaid functions;

NOW, THEREFORE, the Declarant declares that the Subdivision is and shall be held, transferred, sold, conveyed and occupied subject to the covenants, restrictions, easements, charges and liens hereinafter set forth.

ARTICLE 1

DEFINITIONS

The following words, when used in this Declaration or any Amendment thereto (unless the context shall prohibit), shall have the following meanings:

- 1.01 "Articles" shall mean and refer to the Articles of Incorporation which are or shall be filed in the Office of the Maine Secretary of State and which establish the Association.
- 1.02 "Assessment" shall mean a share of the funds required and which are to be assessed against an Owner and Lot for the payment of costs incurred by the Association for and including, but not limited to
- (a) Costs of maintaining roadway, common land, drainage and other similar facilities to the extent these facilities are not accepted for maintenance by governmental jurisdictions,
 - (b) Costs for goods and services determined by the Board to benefit the members,
 - (c) Reserves as determined by the Board,
 - (d) The maintenance and landscaping of roads and common areas in the Subdivision, and
 - (e) Incidental costs related to administration and enforcement of the covenants and restrictions described herein.
- 1.03 "Association" shall mean and refer to the HUTCHINS CREEK HOMEOWNERS ASSOCIATION, a private, non-profit, mutual benefit corporation organized and existing under the laws of the State of Maine.
- 1.04 "Board" shall mean and refer to the Board of Directors of the Association.
- 1.05 "Bylaws" shall mean and refer to the Bylaws of the Association and any amendments thereto.
- 1.06 "Common Expenses" shall mean the expenses for which each such owner is liable, which shall include, but not be limited to
- (a) Costs of maintaining roadways, streetlights, sewer, water, drainage, snow storage area and other similar facilities to the extent these facilities are not accepted for maintenance by governmental jurisdictions,

(b) Costs for goods or services determined by the Board to benefit the members,

(c) Reserves as determined by the Board,

(d) The maintenance and landscaping of roads and common areas in the Subdivision, and

(e) Incidental costs related to administration and enforcement of the covenants and restrictions described herein.

- 1.07 "Common Properties" shall mean the certain real and personal property designated for ownership by the Association and dedicated to the common use of Owners, including, but not limited to, the road and hammer-head servicing the Subdivision and shown on the Subdivision Plan, the snow storage area shown on the Subdivision Plan, drainage easement areas shown on the Subdivision Plan and utility facilities, if any, not dedicated to governmental entities.
- 1.08 "Declarant" shall mean and refer to Joseph Falzone, and its successors and assigns, who may own or acquire all or a portion of the Subdivision for development purposes, or a mortgagee who acquires title to any portion of the Subdivision by foreclosure against a Declarant.
- 1.09 "Lot" shall mean and refer to an improved or unimproved residential lot, as shown upon one or more Subdivision Plans, together with any dwelling unit(s) and other improvements located thereon.
- 1.10 "Member" shall mean and refer to all Lot Owners who shall be members of the Association in accordance with the provisions of Article 6 hereof.
- 1.11 "Owner" shall mean and refer to the record owner, whether one or more persons or entities, of the fee simple title to any Lot but notwithstanding any applicable theory of title; the term Owner shall not include any mortgagee of a Lot until the mortgagee has acquired the fee simple title pursuant to foreclosure or any proceedings in lieu of foreclosure.
- 1.12 "Subdivision Plan" shall mean and refer to the plan of land entitled, "Subdivision, Miller Road, Kittery, Maine", prepared by Attar Engineering Inc., recorded in the York County Registry of Deeds in Plan Book _____, Pages _____, together with such other plans and amended plans as may be hereafter recorded.

ARTICLE 2

TERM OF DECLARATION

- 2.01 Term. This Declaration shall run with, apply to, and bind the Subdivision in perpetuity and shall inure to the benefit of, and be enforceable by the Declarant and Owners, as appropriate, and their respective legal representative, heirs, successors and assigns, except that the covenants and restrictions in Article 3 shall have an initial term of fifteen (15) years from the date this Declaration is recorded in the York County Registry of Deeds, at the end of which such covenants and restrictions shall be automatically extended for successive periods of five (5) years, unless at least five-sevenths of all of the Lot Owners vote to terminate any or all of said covenants and restrictions at a duly noticed and held meeting in compliance with the provisions of the Bylaws of the Association.
- 2.02 Persons Bound. Unless otherwise indicated, all covenants, restrictions, easements, charges and liens herein are imposed on, charged on, and run with the land and bind the Lot Owners, their assigns, grantees, legal representatives, heirs and mortgagees. Failure to specifically refer to and include or incorporate this Declaration in deeds to Lots in the Subdivision shall not in any manner affect the validity and effectiveness of this Declaration upon any Lot made subject thereto.

ARTICLE 3

GENERAL COVENANTS AND RESTRICTIONS ON SUBDIVISION LOTS

- 3.01 No Lot intended as an individual residential lot as shown on the Subdivision Plan shall be further divided without prior written approval of Declarant and the Town of Kittery Planning Board.
- 3.02 Only single-family dwellings are allowed on each Lot. All single-family dwellings must have at least a two-car garage. All dwellings must have a turning area on the Lot to prevent vehicles from backing into street.
- 3.03 Lot grades shall not be changed in such a way as to divert the natural flow of water onto adjoining Lots.
- 3.04 No building or structure shall be erected, except in conformity with the setback and other land use requirements of the Town of Kittery. Exceptions to the setback requirements set forth above may be granted within the sole discretion of the Declarant, but only to the extent permitted by the Town of Kittery ordinances.
- 3.06 Each dwelling erected or constructed on any Lot shall contain a minimum of

one thousand seven hundred (1,700) square feet floor area. The method for determining the area of proposed buildings and structures shall be to multiply the outside horizontal dimensions of the building or structure at each floor level, excluding garages, breezeways, basements, decks, porches, patios and terraces in the calculation of the minimum square foot area. Exceptions to this restriction may be granted within the sole discretion of the Declarant upon written application by an Owner or prospective owner.

- 3.07 Each Lot shall be served by an on-site wastewater disposal system and water service (drilled well). The Owner of the Lot is responsible for maintaining and promptly repairing or replacing the wastewater disposal system in the event of malfunction; the septic tank should be pumped at least every two years.
- 3.08 Once construction is commenced upon a Lot, completion of all construction shall be accomplished as soon as is reasonable and in no event shall it be longer than one year from the time of commencement to complete construction. Completion shall include, but shall not be limited to exterior finishing, exterior landscaping, decorating and driveways. Driveways shall be finished with asphalt, concrete or other hard, dustless finished surface approved by the Declarant.
- 3.09 No temporary building, trailer, vehicle or structure shall be erected or placed on a Lot, except during the active phase of constructing a dwelling. For purposes of interpreting this clause, the "active phase of constructing" shall be limited to the period of one calendar year from the day work is commenced in clearing for the foundation of the dwelling. Sheds and fences are permitted subject to the provisions of Article 9.
- 3.10 No earth, stone or gravel removed from the site of a foundation shall be allowed to remain on a Lot in an unsightly manner.
- 3.11 No structure on a Lot shall be left with an unfinished exterior. The exterior of all structures shall be kept in a proper state of repair and maintenance.
- 3.12 All propane fuel tanks shall be installed in the ground. All oil fuel tanks shall be installed on a concrete slab in either the garage or basement, or constructed within a permitted wall or structure so that they shall not be visible from adjoining properties, or the right of way shown on the Subdivision Plan. If above-ground or outside the home or garage, the structure or wall must also be reasonably landscaped.
- 3.13 No incinerator shall be erected or maintained on any Lot.
- 3.14 All garbage and trash containers must be placed in an adjoining attractive and suitable walled or screened area so that they shall not be visible from other Lots or the right of way.

- 3.15 No outdoor clothes drying areas shall be allowed except in the rear yard and shall be situated so as not to be visible from the adjoining Lots or the right of way.
- 3.16 No trash, waste, filth, tools, or garden equipment shall be allowed to accumulate on a Lot or the exterior of any structure in such a manner as to give an unsightly appearance, to create a nuisance, or depreciate the Subdivision.
- 3.17 No private swimming pools, tennis courts, or similar areas for outdoor physical activities or games, shall be erected or constructed on a Lot without the written approval of the Declarant. Above ground swimming pools will not be permitted.
- 3.18 The Subdivision shall be used for private residential purposes only, and no commercial, manufacturing, or industrial use shall be permitted at any time, except for a professional home office; provided that
- (a) In no instance shall the permitted professional home office occupy a space greater than fifteen percent (15%) of the entire floor area of the home in which it is contained;
 - (b) No noise, odor, or disorderly appearance shall be created that is unreasonably offensive to the surrounding Lots; and such use is not prohibited by zoning.
- 3.19 An Owner, however, may, in his absence, rent his dwelling subject to the restrictions herein no more than twice in each calendar year. In such events, the Owner, his tenant and their families are subject to the restrictions herein.
- 3.20 An Owner shall be entitled to rent or lease his dwelling if
- (a) There is a written rental or lease agreement specifying that
 - (i) The tenant shall be subject to all provisions of this Declaration, the Bylaws and Rules and Regulations adopted by the Board; and
 - (ii) A failure to comply with any provision of such Declaration, Bylaws and Rules and Regulations shall constitute a default under the agreement, permitting the commencement of eviction proceedings in accordance with Maine law;
 - (b) The Owner gives each tenant a copy of the Declaration, Bylaws and Rules and Regulations; and
 - (c) The Owner provides the Board with a copy of the lease agreement,

together with written authorization to the Board to order the eviction of the tenant for violation of the terms of said lease or the Declaration, Bylaws or Rules and Regulations at the reasonable expense of the Owner.

- 3.21 No mobile home, trailer, or other similar, temporary or movable product or structure used as a living area shall be erected, placed, or caused to remain upon any Lot herein. Unregistered vehicles are prohibited unless stored in the garage. Small boats (less than 20 feet in length) and RV's are permitted on Lots but shall be stored in a tidy manner.
- 3.22 No vehicles shall be parked in driveways unless the length of the driveway is sufficient to hold the entire vehicle, and in no event shall vehicles be parked in such a manner as to inhibit or block access to Right of way. All driveways shall be used solely for the parking and storage of motor vehicles used for personal transportation, small boats and RV's. Garage doors shall remain closed except when the garage is in use. No part of the right of way or snow storage area shall be used for repair, construction or reconstruction of any vehicle, boat, RV or any other item or thing except in an emergency. As long as applicable ordinances and laws are observed, the Board may cause the removal of any vehicle, boat or RV that is in violation of this Declaration.
- 3.23 No obstruction of traffic in the Right-Of-Way and no blocking of entries to the various Lots by reason of the parking of vehicles and trailers are allowed. Lot Owners shall be responsible for any such obstruction by members of their households, their lessees, invitees, and guests.
- 3.24 No snow, ice, gravel, loam, compost, leaves, fertilizers, other mineral waste products or commodities shall be piled or stored within ten (10) feet of lines of adjoining Lots.
- 3.25 No noise or disturbance shall be made, suffered, or permitted on any Lot so as to constitute a nuisance to adjoining or neighboring Lots in the Subdivision.
- 3.26 Any purchaser of a Lot in the Subdivision shall be allowed to keep on his premises common domestic household animals. In interpreting this clause, domestic animals shall be dogs, cats, birds, and related animals. Any and all other animals shall be considered non-domestic. Under no circumstances shall commercial dog kennels or veterinary facilities be allowed. The Board may adopt rules and regulations to govern the keeping of pets so as to insure that no pets of an Owner interfere with the rights of other Owners to quiet enjoyment of the Subdivision Property. Owners shall be responsible for the cleanup of all waste matter of their pets. The Board may issue fines or order the removal of pets from the Subdivision for repeated violations of these restrictions.

- 3.27 Only one "For Sale" sign, not larger than six (6) square feet per side of a freestanding sign may be erected or displayed on any Lot or on any structure in the Subdivision. No other signs or displays, including, but not limited to commercial signs, shall be erected or displayed on the Lots or structures, except with the written permission of the Homeowners Association.
- 3.28 Lot No's 1, 2, 3, 4, 5 and 6 is subject to "no-cut buffers" as shown on the plan, wherein cutting of vegetation is prohibited.
- 3.29 Fences. All fencing shall be wood, vinyl or natural stone. No chain link fencing is permitted except to enclose swimming pools. No fence exceeding six (6) feet in height shall be permitted on any lot, except as part of an approved tennis court layout. All fences shall be constructed with finished side facing away from the dwelling.
- 3.30 Tree Removal. Within the No-Cut Buffer areas and within 100' of the Freshwater Wetland associated with Hutchins Creek, as shown on the Subdivision Plan, cutting of vegetation is prohibited except to remove safety hazards and any invasive species such as barberry, Russian olive, multi-flora rose and bittersweet.
- 3.33 Prohibited Building Type and Vehicle Use and Storage Activities
No metal buildings are permitted. No all-terrain vehicles, off road vehicles or snowmobiles shall be used on the premises nor shall any such vehicles nor any commercial vehicles, pleasure or commercial boats, motor homes, campers, trailers, powered or non-powered, be kept on the premises except out of sight of the roadway or stored in a garage or outbuilding conforming to these covenants. Unregistered or uninspected automobiles or automobiles being repaired or refinished over a period in excess of fourteen (14) consecutive days shall be stored in a garage or other enclosed structure.
- 3.34 Time for construction. The construction of any building shall be completed within nine (9) months from the time construction is begun. Completion is defined to include, but not limited to, exterior finishing, landscaping, paving and painting.
- 3.35 Building and site maintenance. During construction, no unsightly condition shall be permitted to exist on the property. Materials shall be neatly stacked on site or placed within the incomplete structure. Stockpiling of materials and parking of construction vehicles and equipment when not in use shall be no closer than 50 feet from the

roadway. Construction debris shall be kept in a dumpster. Any disturbance to the land area within the subdivision roadway right of way shall be repaired to include pavement grading, loam and seed, and replacement of any shrubs or plantings which have been damaged or destroyed.

3.36 Animals and pets.

A) No livestock or poultry of any kind shall be kept on any lots. Domestic dogs and cats are permitted provided that no kenneling or breeding for commercial purposes shall be allowed.

B) No domestic dogs, chained, tethered, roped, or otherwise secured outside of any dwelling causing any nuisance by reason of constant or continual barking shall be allowed in the subdivision.

3.37 Yard Maintenance. All lot owners shall maintain lawns and landscaping in an attractive manner.

3.38 Signs. No signs or billboards shall be erected or displayed on any lot or building thereon except a size not exceeding four (4) square feet as may pertain to the lease or sale of a lot or home.

3.39 Rubbish Disposal. No dumping, burning, or burying of rubbish, waste, trash, garbage or other refuse shall be permitted. Garbage, trash and other refuse shall be kept in closed containers which shall be screened from sight or located within a building, and removed at regular intervals.

3.40 Fuel Storage. No external tank for fuel storage shall be maintained unless buried, screened from sight or located within a building.

ARTICLE 4

COMMON PROPERTIES; EASEMENTS

4.01 Members' Easement of Enjoyment. Subject to the provisions of this Declaration and the Bylaws and Rules and Regulations of the Association, every Owner of a Lot shall have a right and easement of use and enjoyment in and to use the Common Properties and such easement shall be appurtenant to and shall pass with the title to every Lot.

4.02 Title to Common Properties. The title to the Common Properties other than the "Drainage Easement" areas shall be conveyed in fee simple to the Association by the Declarant no later than XXXX. The Association is hereby granted a perpetual easement over, through and under the "Drainage Easement" areas, including those located on the Lots, as shown on the Subdivision Plan for the purpose of cleaning, replanting, cutting, landscaping and otherwise maintaining the drainage swales, and associated

drainage facilities as required by the Kittery Planning Board.

4.03 Easements. The Subdivision and the rights and easements of enjoyment created hereby shall be subject to the following easements:

(a) Every Owner shall have an easement in the Common Properties to use the roads, walks and other common improvements located thereon, subject to the right of the Association to promulgate rules and regulations for the protection, use and enjoyment of the Common Properties or to suspend the voting rights of any Owner for any period during which any Assessment remains unpaid or violations of these covenants exist, but access to the Owner's Lot shall not be denied.

(b) The right of the Association to dedicate or transfer any part of the Common Properties to any municipal, county, state, federal, or other public agency, authority or utility for such purposes and subject to such conditions as may be agreed upon by majority vote of the Owners at a duly noticed and held meeting in accordance with the Bylaws.

(c) The Declarant reserves a perpetual, non-exclusive, transferable easement, without limitation or restriction, to facilitate development of Subdivision.

(d) A blanket non-exclusive easement is reserved for the Declarant, its successors and assigns, in, upon, over, under, across, and through the Subdivision for the purpose of installation, maintenance, repair, and replacement of all utility lines and any other equipment and machinery necessary or incidental for the proper function of any utility systems serving the Subdivision or any other development on adjacent or nearby land, which easements may be specifically conveyed to a public utility or municipality supplying the service. The easements created by this section 4.03(d) shall include, without limitation, rights of the Declarant or the appropriate utility or service company or governmental agency or authority to install, lay, maintain, repair, relocate and replace gas lines, pipes and conduits, water mains and pipes, sewer and drain lines, drainage ditches and pump stations, telephone wires and equipment, television equipment and facilities (cable or otherwise), electrical wires, conduits, equipment, ducts and vents over, under, through, along and on the Lots and Common Properties. Notwithstanding the foregoing, any such easement shall not be exercised as to materially interfere with the use or occupancy of any dwelling on a Lot.

(e) A blanket and non-exclusive easement is reserved for the Declarant, its successors and assigns, in, upon, over, under, through and across the Subdivision as long as the Declarant, its successors and assigns shall be engaged in the construction, development, and sale of lots within the Subdivision.

4.04 Use and Maintenance of Subdivision Road. Lot's 1, 2 and 6 shall be benefited with a non-exclusive right and easement to use the private right of way and cul-de-sac to be named "Hutchins Creek" which provides access to and from Miller Road, a public way. The Common Expenses shall include the Owners' proportionate share of the costs (the "Road Costs") of maintenance, repair, and replacement of right-of-way. Lot's 4 and 5 shall have similar use and responsibilities to the shared driveway located on their common sideline.

4.05 Stormwater/Erosion Control. The Association shall maintain all stormwater drainage swales, culverts, storage areas and related improvements located within the Subdivision, which includes all Common Properties and the Lots. Alteration or disturbance of stormwater improvements constructed by Declarant or the Association in accordance with the drainage plan approved by the Town of Kittery is strictly prohibited, the breach of which shall provide the Declarant and the Association, with all available legal and equitable remedies, together with the right to recover attorneys fees and cost from the party in breach in connection with any enforcement action. Maintenance of Other Drainage Facilities and Erosion Control Practices during Construction.

The Miller Road Subdivision located on Miller Road, Kittery, Maine contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater and the prevention of erosion. These BMP's consist of a stormwater treatment area, swales and culverts for stormwater and a stabilized construction entrance, siltation fences and seeding/fertilizing and mulching controls for erosion control. All Stormwater Treatment, Drainage and Permanent and Temporary Erosion Control Practices shall be inspected during construction, annually after construction or after a storm event which produces 1" of rainfall or greater within a 24-hour period. As these BMP's have been required of Declarant during the construction phase, Declarant reserves to itself, its successors and assigns, all rights of entry in and to any Lot for any purpose consistent with the BMP's. In particular, but without limitation, Declarant reserves such rights for the following purposes:

Stormwater Treatment Areas

The Stormwater Treatment area to ensure that there is no channeling of stormwater and that no debris accumulates within the detention areas. The vegetative cover conditions shall be maintained. The inlets and outlets shall be inspected for erosion and any evidence of debris that could clog the culverts. Emergency spillways and level spreaders shall be inspected for any evidence of drilling and channeling and shall be maintained to promote a level, sheet-flow discharge.

Swales

All swales should be inspected for accumulation of debris, which could

adversely affect the function of this BMP. These areas should also be maintained to have gradual slopes, which prevents channeling of stormwater and erosion of the bottom and sides of the swales.

Culverts

Culvert inlets and outlets should be inspected for debris, which could clog the BMP. Additionally, the placement of rip-rap should be inspected to ensure that all areas remain smooth and no areas exhibit erosion in the form of rills or gullies.

Snow Removal

Snow shall never be plowed into wetland areas. Additionally, a mostly sand mix (reduced salt) shall be applied during winter months to prevent excessive salt from leaching to the wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

Stabilized Construction Entrance

The stabilized construction entrance shall be inspected to ensure that all stone materials remain in place and that the entrance is not clogged with silt and mud. This BMP must remain effective in removing silt from construction vehicles prior to travel on the public way, Miller Road.

Siltation Fence

All silt fences must be installed, inspected and repaired in accordance with the plan details and notes. Excess silt must be removed from the up-gradient side of the fence and all fences must remain in a vertical position.

Seeding, Fertilizing and Mulching

All exposed soil materials and stockpiles must be either temporarily or permanently seeded, fertilized and mulched in accordance with plan specifications. This is one of the most important features of the Erosion Control Plan, which will provide both temporary and permanent stabilization. Areas must be repaired until a 75% effective growth of vegetation is established.

ARTICLE 5

ASSESSMENTS

- 5.01 General. The making and collecting of Assessments against Members for Common Expenses shall be pursuant to the Bylaws of the Association.
- 5.02 Share of the Common Expenses. Each Member shall be liable for an equal share of the common expenses except that the Declarant shall pay all direct costs necessary to operate the Association and maintain its property until XXXX.

- 5.03 Annual Assessment. The annual common expense incurred for operation, maintenance, improvement, and repair of the Common Properties shall be estimated in accordance with the Bylaws of the Association. The Annual Assessment will be payable in semi-annual installments based on the projected annual common expense.
- 5.04 Non-Waiver. The liability for assessments may not be avoided by waiver of the use or enjoyment of any Common Properties or by the abandoning of a Lot for which assessments are made.
- 5.05 Interest, Application of Payment. Owners paying assessments and installments of such assessments more than thirty (30) days after date when due shall be assessed a late fee and/or additional interest established by the Board of Directors. All payments on accounts shall be first applied to interest and then to the assessment first due.
- 5.06 Lien for Assessments. The Association shall have a lien on each Lot for any unpaid assessments, together with interest thereon against the Owner of such Lot, together with a lien on all real property, improvements and tangible personal property located upon said Lot, except that such lien upon the aforesaid tangible personal property shall be subordinated to prior bona fide liens of record. Reasonable attorneys' fees incurred by the Association, to the extent allowable by law, incident to the collection of such assessments or the enforcement of such lien, together with all sums advanced, shall be payable by owner and secured by such lien. The Association's lien shall also include those sums advanced on behalf of each Owner in payment of his obligation for use.
- 5.07 Subordination of the Lien to Mortgages. The lien for assessments as hereinabove provided for shall be inferior to the lien of any institutional mortgage or mortgages. Sale or transfer shall not affect the assessment lien. However, the sale or transfer of any Lot which is subject to the mortgage of any institutional lender, pursuant to foreclosure proceedings under such mortgage or any proceeding or deed in lieu of foreclose thereof, shall extinguish the lien of such assessments as to payments thereof, which became due prior to such sale or transfer.
- 5.08 Collection and Foreclosures. The Board of Directors may take such actions as they deem necessary to collect assessments of the Association by personal action or by enforcing the foreclosing interests of the Association.

ARTICLE 6

HUTCHINS CREEK HOMEOWNERS ASSOCIATION

- 6.01 Association. In order to provide for the proficient and effective administration of the Subdivision by the Lot Owners, a non-profit, mutual benefit corporation known and designated as Hutchins Creek Homeowners Association has been or shall be organized under the laws of the State of Maine, and said corporation shall administer the operation and management of the Subdivision and undertake and perform all actions and duties incident thereto and in accordance with the terms, provisions, and conditions of this Declaration and in accordance with the terms of the Articles of Incorporation, its Bylaws, and Rules and Regulations promulgated by the Association from time to time.
- 6.02 Articles of Incorporation. The Articles of Incorporation for the Association will be filed with the Maine Secretary of State.
- 6.03 Limitation upon Liability of Association. Notwithstanding the duty of the Association to maintain or repair portions of the Subdivision, the Association shall not be liable to any Owner for injury or damage, other than the costs of maintenance and repair, caused by any latent condition of the property to be maintained and repaired by the Association, or caused by the elements or other owners or persons.
- 6.04 Restraint upon Assignment of Shares and Assets. The share of a Member in the funds and assets of the Association cannot be assigned, hypothecated or transferred in any manner, except as an appurtenance to his Lot.
- 6.05 Approval or Disapproval of Matters. Whenever a decision of the Association is required upon any matter, whether or not the subject of an Association meeting, such decision shall be expressed in accordance with the Bylaws of the Association.
- 6.06 Membership. The Record Owners of Lots in the Subdivision shall be Members of the Association and no other persons or entities, except that Declarant shall be entitled to membership. Membership shall be established by acquisition of ownership of fee title or other interest in a Lot whether by conveyance, devise, judicial decree, foreclosure or otherwise, subject to the provision of this Declaration and by the recordation in the York County Registry of Deeds of the deed or other instrument establishing the acquisition and designating the Lot affected thereby and by the delivery to the Association of a true copy of such recorded deed or other instrument. The new Owner designated in such deed or other instrument shall thereupon become a Member of the Association, and the membership of the prior Owner as to the Lot designated shall be irrevocably and automatically terminated.
- 6.07 Voting. Except as otherwise set forth in the Articles of Incorporation or Bylaws regarding Declarant's voting rights, on all matters to which the

members shall be entitled to vote, there shall be only one vote for each Lot.

6.08 Controls by Declarant. Notwithstanding the foregoing or anything contained in this Declaration to the contrary, Declarant shall have the sole and exclusive right to appoint officers and directors of the Association until the earliest to occur of the following:

(a) XXXX; or

(b) Declarant's written notice to the Association of its election to transfer control to the Association.

During the period of control as set forth herein, Members of the Association, otherwise qualified hereunder, shall have non-voting membership, unless the provisions of this sentence expressly are waived relative to a particular issue by a writing signed by the Declarant. Upon Declarant turning control of the Association over to the Members as provided herein, it shall file appropriate documents in the York County Registry of Deeds. Thereafter, for so long as Declarant has any ownership interest in Subdivision property, it shall continue to have the right to appoint one Member of the Board of Directors as provided in the Bylaws.

ARTICLE 7

NOTICES TO ASSOCIATION

7.01 Notice of Lien. An Owner shall give notice to the Association of every lien upon his Lot other than for permitted mortgages, taxes, and special assessments within five (5) days after the attaching of the lien.

7.02 Notice of Suit. An Owner shall give notice to the Association of every suit or other proceeding which may affect the title to his Lot, such notice to be given within five (5) days after the Owner receives knowledge thereof.

7.03 Failure to Comply. Failure to comply with this Article 7 will not affect the validity of any judicial sale or foreclosure proceedings or deed in lieu of foreclosure.

ARTICLE 8

AMENDMENTS

8.01 General. The covenants, restrictions, easements, charges, and liens of this Declaration may be amended from time to time, but only by an instrument signed by not less than five-sevenths of all of the Lot Owners (including Declarant) or accompanied by a certificate of the Secretary of the Association that such a vote was cast at a duly called and held meeting of

the Owners. However, until the Declarant has completed all of the contemplated improvements and closed the sales of all Lots within the Subdivision, or XXXX, whichever occurs earlier, no amendment(s) to this Declaration shall be effective, unless joined by the Declarant. It is further provided that in order to be effective any amendment to the Declaration must be recorded in the York County Registry of Deeds.

8.02 Declarant's Rights. Notwithstanding anything herein to the contrary, the Declarant reserves the right to alter and amend this Declaration, as it deems necessary and /or appropriate for the protection and enhancement of the Subdivision or of any adjacent or contiguous land owned by the Declarant, and the Declarant shall not require or need the joinder of any Lot Owners, prior to such time as the Declarant conveys the last Lot of the Subdivision, elects to terminate its control over the Association or XXXX, whichever shall first occur, provided, however, that all such amendments shall be in compliance with the applicable laws of the State of Maine.

8.03 Restricted Amendments. No amendment and no rule or regulation shall discriminate against any Owner or against any Lot unless the Owner so affected and his institutional mortgagee shall consent; and no amendment or rule or regulation may change the method by which the Owner shares the Common Expenses unless the Owner and his institutional mortgagees join in the execution of the amendment, except as otherwise provided herein.

ARTICLE 9

GENERAL

9.01 Severability. The invalidation in whole or in part of any section, subsection, sentence, clause, phrase, word or other provision of this Declaration shall not affect the validity of the remaining portions that shall remain in full force and effect.

9.02 Rule against Perpetuities. In the event any court shall hereafter determine that any provisions as originally drafted herein shall violate the rule against perpetuities, the period specified in this Declaration shall not thereby become invalid, but instead shall be reduced to the maximum period allowed under such rules of the law.

9.03 Arbitration. Any dispute hereunder shall be submitted to binding arbitration under the Maine Uniform Arbitration Act, as may be amended. Any decision in arbitration may be filed in the Office of the Clerk, York County Superior Court, as a judgment, and shall be exclusive, final, and binding on the parties to the arbitration.

ARTICLE 10

RIGHTS AFFORDED LOT OWNERS AND INSTITUTIONAL LENDERS

10.01 Availability of Documents. The Association shall be required to make available to Owners and to holders, insurers or guarantors of any first mortgage, current copies of the Declaration, Articles, Bylaws, or other rules concerning the Subdivision and the books, records, and financial statements of the Association. "Available" means available for inspection, upon request, during normal hours or under other reasonable circumstances.

Upon written request to the Association, identifying the name and address of the holder, insurer or guarantor and the Lot number or address, any such eligible mortgage holder or eligible insurer or guarantor will be entitled to timely written notice of

(a) Any condemnation loss or any casualty loss which affects a material portion of the project or any Lot on which there is a first mortgage held, insured or guaranteed by such eligible mortgage holder or eligible insurer or guarantor, as applicable;

(b) Any delinquency in the payment of assessments or charges owed by an Owner of a Lot subject to a first mortgage held, insured or guaranteed by such eligible holder or eligible insurer or guarantor, which remains uncured for a period of sixty (60) days; or

(c) Any lapse, cancellation or material modification of any insurance policy or fidelity bond maintained by the Homeowners Association.

10.02 Rights of Mortgagees. A first mortgagee, upon request, is entitled to written notification from the Association of any default in the performance by the Individual Owner of any obligation under the Declaration which is not cured within sixty (60) days. In addition, first mortgagees of Lots may, jointly or singly, pay taxes or other charges which are in default and which may be or have become a charge against any Common Property and may pay overdue premiums on hazard insurance policies, or secure new hazard insurance coverage on the lapse of a policy for such Common Property, and first mortgagees making such payments shall be owed immediate reimbursement therefore from the Association.

IN WITNESS WHEREOF, the undersigned, being the Declarant herein,
has hereunto set its hand and seal this _____ day of _____ 2018.

WITNESS:

Joseph Falzone

By: _____
Joseph Falzone

STATE OF MAINE
COUNTY OF YORK

Date:

Then personally appeared the above named Joseph Falzone, and
acknowledged the foregoing instrument to be his free act and deed in his said
capacity and the free act and deed.

Before me,

Notary Public:
Printed Name:
Commission Expires:

EROSION & SEDIMENTATION CONTROL NOTES

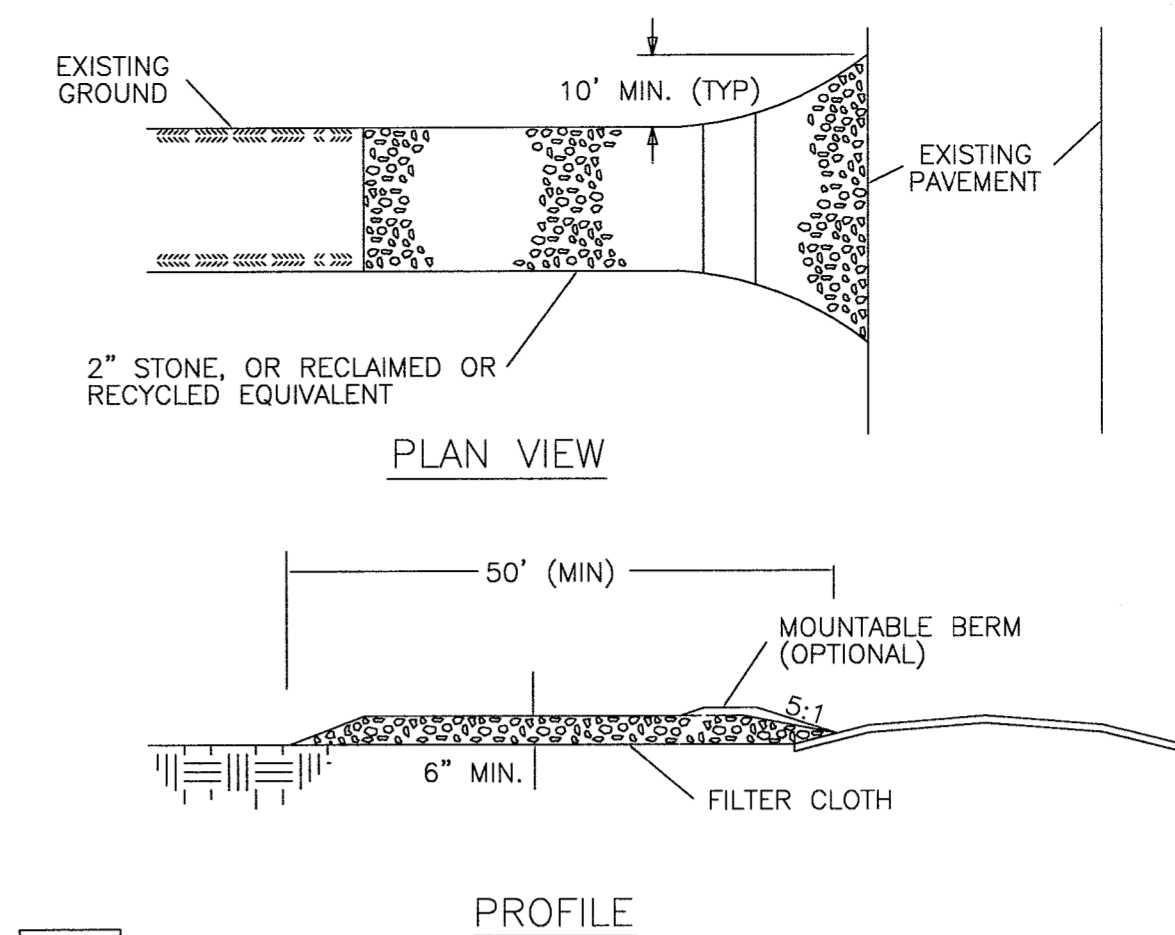
- SILTATION FENCE OR HAY BALE BARRIERS WILL BE INSTALLED DOWNSLOPE OF ALL STRIPPING OR CONSTRUCTION OPERATIONS. A DOUBLE SILT FENCE BARRIER SHALL BE INSTALLED DOWNSLOPE OF ANY SOIL MATERIAL STOCKPILES. SILT FENCES SHALL BE INSPECTED AFTER EACH RAIN EVENT AND DAILY DURING PROLONGED RAIN. SILT AND SOIL PARTICLES ACCUMULATING BEHIND THE FENCE SHALL BE REMOVED AFTER EACH SIGNIFICANT RAIN EVENT AND IN NO INSTANCE SHOULD ACCUMULATION EXCEED 1/2 THE HEIGHT OF THE FENCE. TORN OR DAMAGED AREAS SHALL BE REPAIRED.
- TEMPORARY AND PERMANENT VEGETATION AND MULCHING IS AN INTEGRAL COMPONENT OF THE EROSION AND SEDIMENTATION CONTROL PLAN. ALL AREAS SHALL BE INSPECTED AND MAINTAINED UNTIL THE DESIRED VEGETATIVE COVER IS ESTABLISHED. THESE CONTROL MEASURES ARE ESSENTIAL TO EROSION PREVENTION AND ALSO REDUCE COSTLY REWORK OF GRADED AND SHAPED AREAS.
- SEEDING, FERTILIZER AND LIME RATES AND TIME OF APPLICATION WILL BE DEPENDENT ON SOIL REQUIREMENTS. TEMPORARY VEGETATION SHALL BE MAINTAINED IN THESE AREAS UNTIL PERMANENT SEEDING IS APPLIED. ADDITIONALLY, EROSION AND SEDIMENTATION MEASURES SHALL BE MAINTAINED UNTIL PERMANENT VEGETATION IS ESTABLISHED.
- ALL LAWN AREA, OUTER POND SIDE SLOPES AND SWALES SHALL BE PERMANENTLY SEEDDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 2 LB/ACRE REDTOP AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 42 LB/ACRE. FERTILIZER AND LIME RATES SHALL BE DEPENDENT ON SOIL TESTING. IN THE ABSENCE OF SOIL TESTS, FERTILIZE WITH 10-20-20 (N-P205-K201) AT 800 LB/ACRE AND LIME AT 3 TONS/ACRE. MULCH WITH HAY AT 70-90 LB/1000 S.F. 4" OF LOAM SHALL BE APPLIED PRIOR TO SEEDING.
- POND BOTTOMS AND INNER POND SIDESLOPES SHALL BE PERMANENTLY SEEDDED WITH THE FOLLOWING MIXTURE: 20 LB/ACRE CREEPING RED FESCUE, 8 LB/ACRE BIRDSFOOT TREFLOIL AND 20 LB/ACRE TALL FESCUE FOR A TOTAL OF 48 LB/ACRE. SEE THE ABOVE NOTE FOR FERTILIZER, LIME AND MULCHING RATES.
- TEMPORARY VEGETATION OF ALL DISTURBED AREAS, MATERIAL STOCKPILES AND OTHER SUCH AREAS SHALL BE ESTABLISHED BY SEEDING WITH EITHER WINTER RYE AT A RATE OF 112 LB/ACRE OR ANNUAL RYEGRASS AT A RATE OF 40 LB/ACRE. WINTER RYE SHALL BE USED FOR FALL SEEDING AND ANNUAL RYEGRASS FOR SHORT DURATION SEEDING. SEEDING SHALL BE ACCOMPLISHED BEFORE OCTOBER 1.
- TEMPORARY SEEDING OF DISTURBED AREAS SHALL BE ACCOMPLISHED BEFORE OCTOBER 1. PERMANENT SEEDING SHALL BE ACCOMPLISHED BEFORE SEPTEMBER 15.
- ALL SEEDED AREAS SHALL BE MULCHED WITH HAY AT A RATE OF 2 BALES (70-90 LB) PER 1000 S.F. OF SEEDED AREA.
- SLOPES 2:1 OR STEEPER SHALL BE TREATED WITH POLYJUTE OPEN WEAVE GEOTEXTILE (OR EQUIVALENT) AFTER SEEDING. JUTE MATS SHALL BE ANCHORED PER MANUFACTURER'S SPECIFICATIONS.
- EXCESSIVE DUST CAUSED BY CONSTRUCTION OPERATIONS SHALL BE CONTROLLED BY APPLICATION OF WATER OR CALCIUM CHLORIDE.
- THE CONTRACTOR MAY OPT TO USE EROSION CONTROL MIX BERM AS A SEDIMENT BARRIER IN LIEU OF SILTATION FENCE OR HAY BALE BARRIERS WITH APPROVAL FROM THE INSPECTING ENGINEER.
- MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADE BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

EROSION & SED. CONTROL NOTES (CONT.)

- WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.
- PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRADE EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRADE OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.
- PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROW'S. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.
- WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE ANY EXPOSED SOIL WITH MULCH, OR OTHER NON-ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
- REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILTATION FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.
- IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.
- FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
- FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.
- FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE HOUSEKEEPING PRACTICES DURING THE CONSTRUCTION OF THE PROJECT. THESE STANDARDS CAN BE FOUND IN THE FOLLOWING DOCUMENT: MDEP CHAPTER 500 (STORMWATER MANAGEMENT), APPENDIX C. HOUSEKEEPING. HOUSEKEEPING PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, SPILL PREVENTION, GROUNDWATER PROTECTION, FUGITIVE SEDIMENT AND DUST, DEBRIS AND OTHER MATERIALS, EXCAVATION DEWATERING, AUTHORIZED NON-STORMWATER DISCHARGES AND UNAUTHORIZED NON-STORMWATER DISCHARGES.

WINTER CONSTRUCTION NOTES

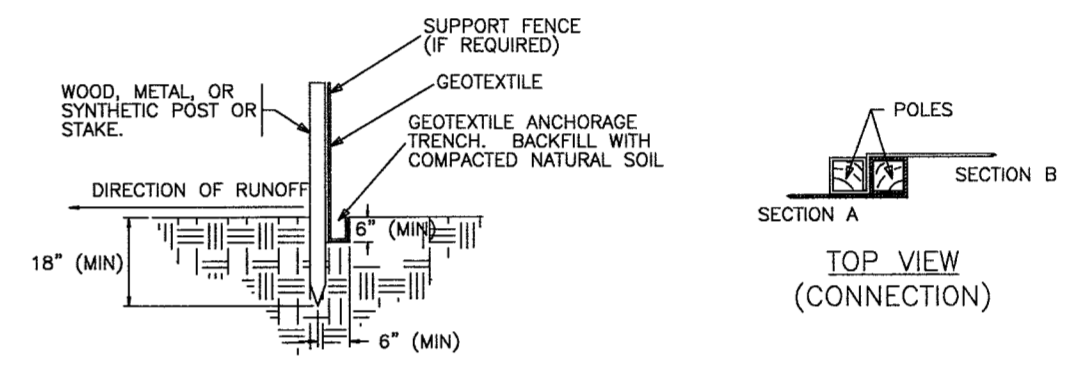
- EXPOSED AREAS SHOULD BE LIMITED TO AN AREA THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT.
- AN AREA SHALL BE CONSIDERED STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH HAY AT A RATE OF 100 LB/1000 S.F. OR DORMANT SEED, MULCHED AND ADEQUATELY ANCHORED BY AN APPROVED ANCHORING TECHNIQUE. IN ALL CASES, MULCH SHALL BE APPLIED SO THAT THE SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH.
- FROM OCTOBER 15 TO APRIL 1, LOAM AND SEED WILL NOT BE REQUIRED. DURING PERIODS OF TEMPERATURES ABOVE FREEZING, DISTURBED AREAS SHALL BE FINE GRADED AND PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL PERMANENT SEEDING CAN BE APPLIED. AFTER NOVEMBER 1, DISTURBED AREAS MAY BE LOAMED, FINE GRADED AND DORMANT SEED AT A RATE 200-300% HIGHER THAN THE SPECIFIED PERMANENT SEEDING RATE. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, DISTURBED AREAS SHALL BE GRADED BEFORE FREEZING AND TEMPORARILY STABILIZED WITH MULCH. DISTURBED AREAS SHALL NOT BE LEFT OVER THE WINTER OR FOR ANY OTHER EXTENDED PERIOD OF TIME UNLESS STABILIZED WITH MULCH.
- FROM NOVEMBER 1 TO APRIL 15 ALL MULCH SHALL BE ANCHORED BY EITHER PEG LINE, MULCH NETTING, ASPHALT EMULSION CHEMICAL, TRACK OR WOOD CELLULOSE FIBER. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 3%, SLOPES EXPOSED TO DIRECT WINDS AND FOR SLOPES GREATER THAN 8%. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL AREAS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1, THE SAME APPLIES TO ALL SLOPES GREATER THAN 8%.
- DURING WINTER CONSTRUCTION, DORMANT SEEDING OR MULCH AND ANCHORING SHALL BE APPLIED TO ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
- SNOW SHALL BE REMOVED FROM AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.
- FOR WINTER STABILIZATION, HAY MULCH SHALL BE APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE SHALL BE STABILIZED. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW.
- ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE SHALL BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.
- ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD, SHALL BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.
- MULCH NETTING SHALL BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON SUCH SLOPES.



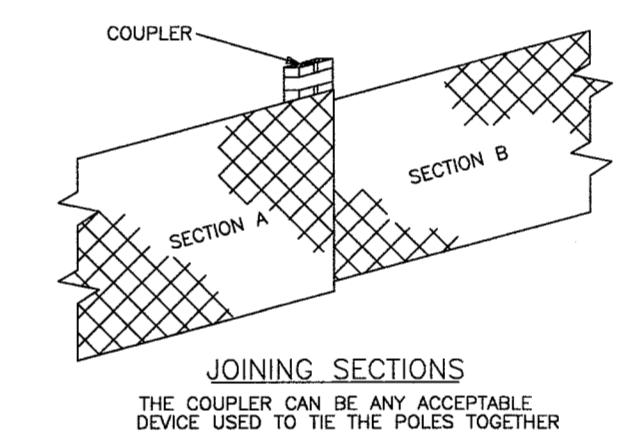
NOTES:

- GEOTEXTILE: PLACE FILTER CLOTH OVER ENTIRE AREA TO BE COVERED WITH AGGREGATE. FILTER CLOTH WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENTIAL LOT.
- PIPING OF SURFACE WATER UNDER ENTRANCE SHALL BE PROVIDED AS REQUIRED. IF PIPING IS IMPOSSIBLE, A MOUNTABLE BERM WITH A 5:1 SLOPE WILL BE PERMITTED.

STABILIZED CONSTRUCTION ENTRANCE



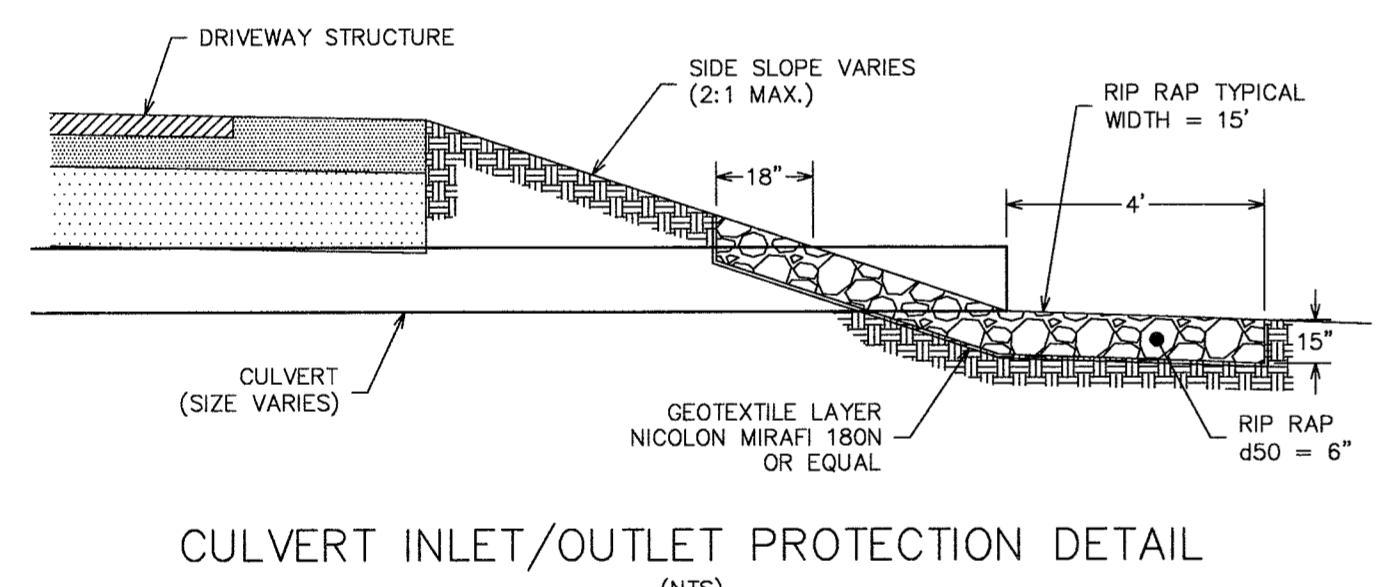
TOE - IN METHOD



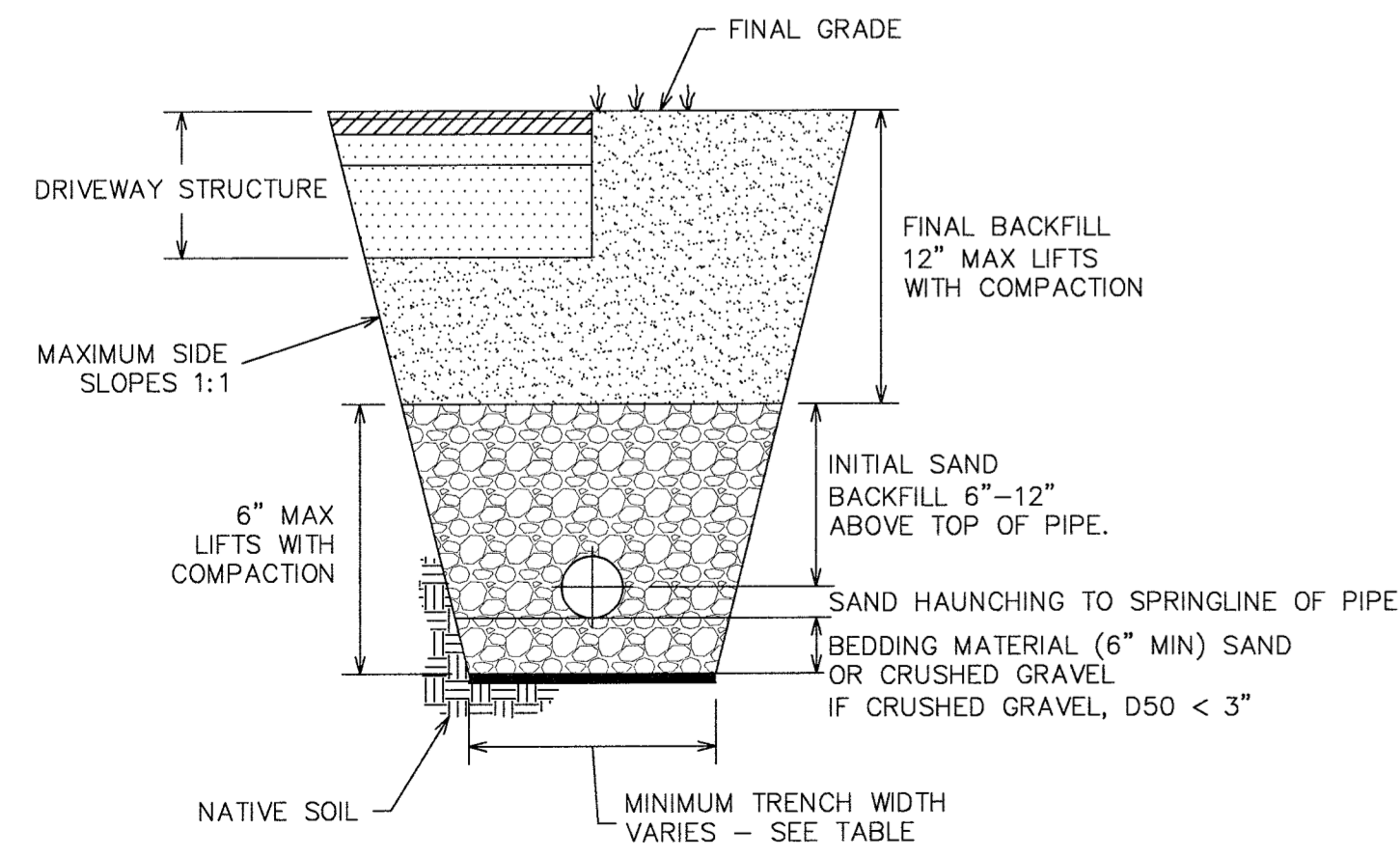
TEMPORARY SILT FENCE - NTS

E&S INSPECTION/MAINTENANCE DURING CONSTRUCTION

- INSPECTION AND CORRECTIVE ACTION.** INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.
- MAINTENANCE.** IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE REPAIRED, THE REPAIR WORK SHOULD BE INITIATED UPON DISCOVERY OF THE PROBLEM BUT NO LATER THAN THE END OF THE NEXT WORKDAY. IF ADDITIONAL BMPs OR SIGNIFICANT REPAIR OF BMPs ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). ALL MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
- DOCUMENTATION.** KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND ANY CORRECTIVE ACTION TAKEN. THE LOG MUST INCLUDE THE NAME(S) AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE(S) OF THE INSPECTIONS, AND MAJOR OBSERVATIONS ABOUT THE OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS, AND VEHICLES ACCESS POINTS TO THE PARCEL. MAJOR OBSERVATIONS MUST INCLUDE BMPs THAT NEED MAINTENANCE, BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION, AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. FOR EACH BMP REQUIRING MAINTENANCE, BMP NEEDING REPLACEMENT, AND LOCATION NEEDING ADDITIONAL BMPs, NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

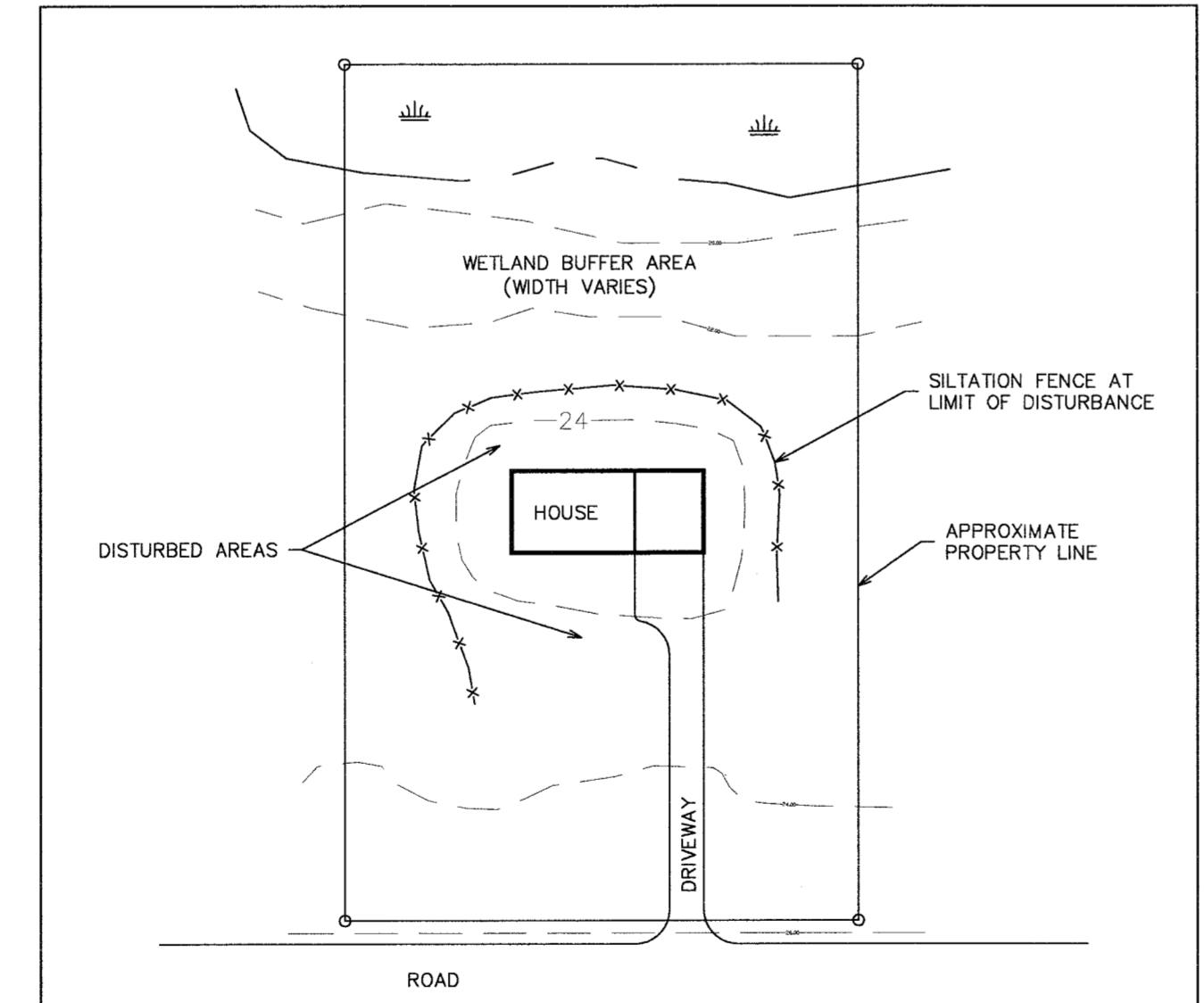


CULVERT INLET/OUTLET PROTECTION DETAIL (NTS)



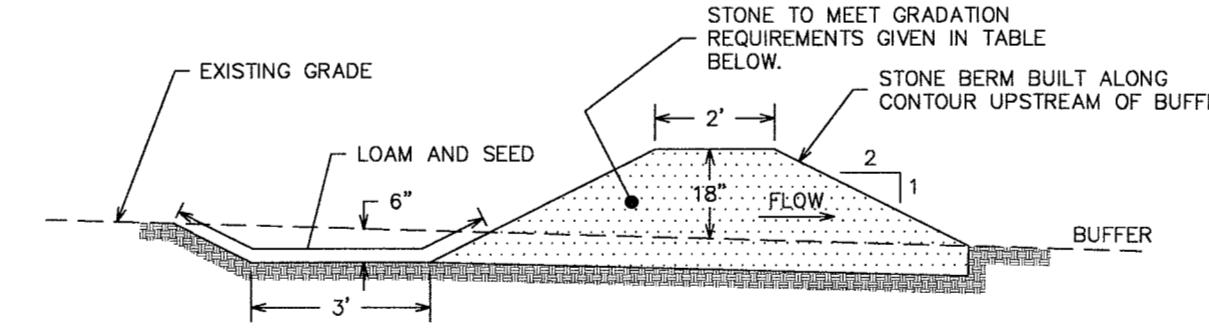
HDPE CULVERT TRENCH DETAIL (NTS)

TRENCH TO BE SUPPORTED BY SLOPING BACK AT 2:1 OR OTHER ACCEPTABLE METHOD.



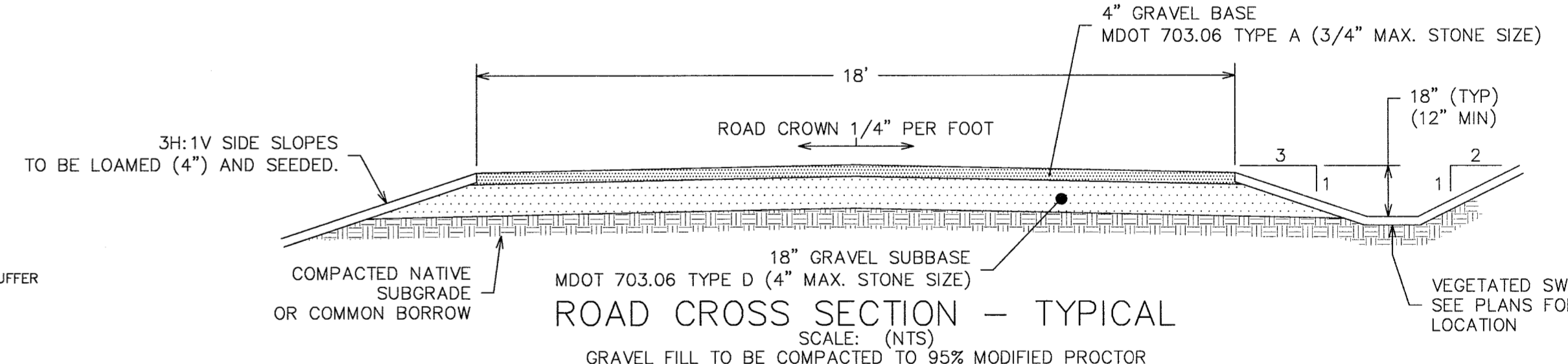
- NOTES:**
- THIS SKETCH IS INTENDED TO SHOW TYPICAL EROSION AND SEDIMENTATION CONTROLS FOR A RESIDENTIAL LOT. HOUSE LOCATIONS AND SETBACKS WILL VARY. SEE SUBDIVISION PLAN FOR SETBACK INFORMATION.
 - SILTATION FENCE SHALL BE INSTALLED DOWN SLOPE OF ALL DISTURBED AREAS. THE BOTTOM OF ALL SILTATION FENCE SHALL BE BURIED IN A 6"x6" TRENCH. DAMAGED OR COLLAPSED SECTIONS OF FENCE SHALL BE REPAIRED IMMEDIATELY.
 - DISTURBED AREAS SHALL BE FINAL GRADED THEN LOAMED, SEEDDED AND MULCHED WITH HAY.
 - VEGETATION (EXISTING OR LAWN AREAS) SHALL BE MAINTAINED IN WETLAND BUFFER AREAS. ACTIVITIES WITHIN THE BUFFER SHALL BE CONDUCTED IN A WAY THAT LIMITS SOIL EXPOSURE AND VEGETATION DAMAGE.

EROSION AND SEDIMENTATION CONTROLS FOR A TYPICAL RESIDENTIAL LOT



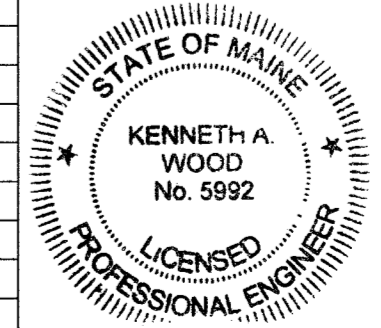
STONE BERM LEVEL SPREADER (NTS)

STONE GRADATION REQUIREMENTS		
SI (METRIC)	US (CUSTOMARY)	% PASSING (BY WEIGHT)
300 MM	12 IN	100
150 MM	6 IN	84-100
75 MM	3 IN	68-83
25.4 MM	1 IN	42-50
4.75 MM	No. 4	8-12



ROAD CROSS SECTION - TYPICAL (SCALE: NTS)

NO.	TOWN REVIEW REVISIONS	DATE
A		06/20/18
NO.	DESCRIPTION	DATE
	REVISIONS	



SITE DETAILS
MILLER ROAD SUBDIVISION
MILLER ROAD, KITTERY, MAINE

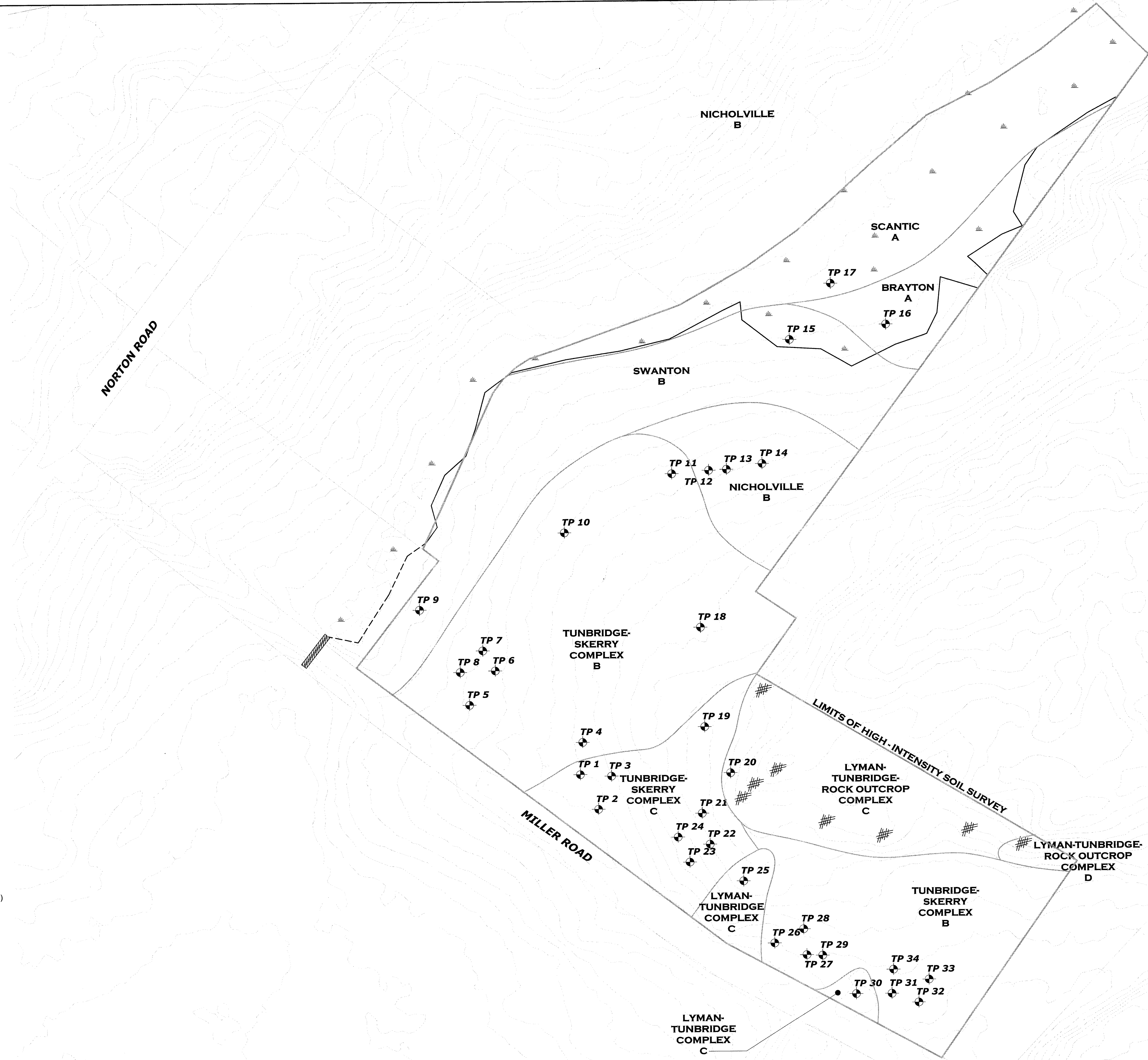
FOR: JOSEPH FALZONE
7B EMERY LANE
STRATHAM, NH 03885

ATTAR ENGINEERING, INC.
CIVIL • STRUCTURAL • MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128







SCALE: AS SHOWN
DATE: 05/23/18
JOB NO: C142-18

APPROVED BY: [Signature]
DATE: 6/21/2018
FILE: MILLER RD SDV BASE.DWG

DRAWN BY: MJS
REVISION DATE: A : 06/20/18
SHEET: 3



SOILS MAP LEGEND:

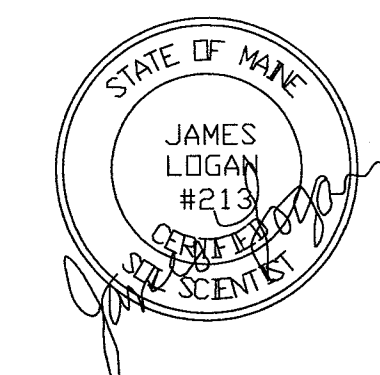
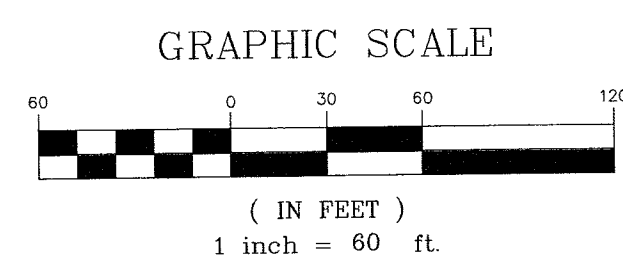
-  SOIL TEST PIT (LOCATED BY SUBMETER GPS)
-  SOIL BOUNDARY LINE
-  LIMITS OF INVESTIGATION
-  WETLAND AREA
-  STREAM
-  BEDROCK OUTCROPPING (LOCATED BY SUBMETER GPS)

SLOPE DESIGNATION


- A — 0 - 3%
- B — 3 - 8%
- C — 8 - 20%
- D — 20%+

NOTE: SEE ACCOMPANYING SOIL NARRATIVE REPORT, DATED JANUARY 2018

THE ACCOMPANYING SOILS SURVEY WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, FEBRUARY 1995, AS AMENDED.



CLASS A HIGH-INTENSITY SOIL SURVEY
PREPARED FOR
ATTAR ENGINEERING
MILLER ROAD
(MAP 56, LOT 20)
KITTERY, MAINE



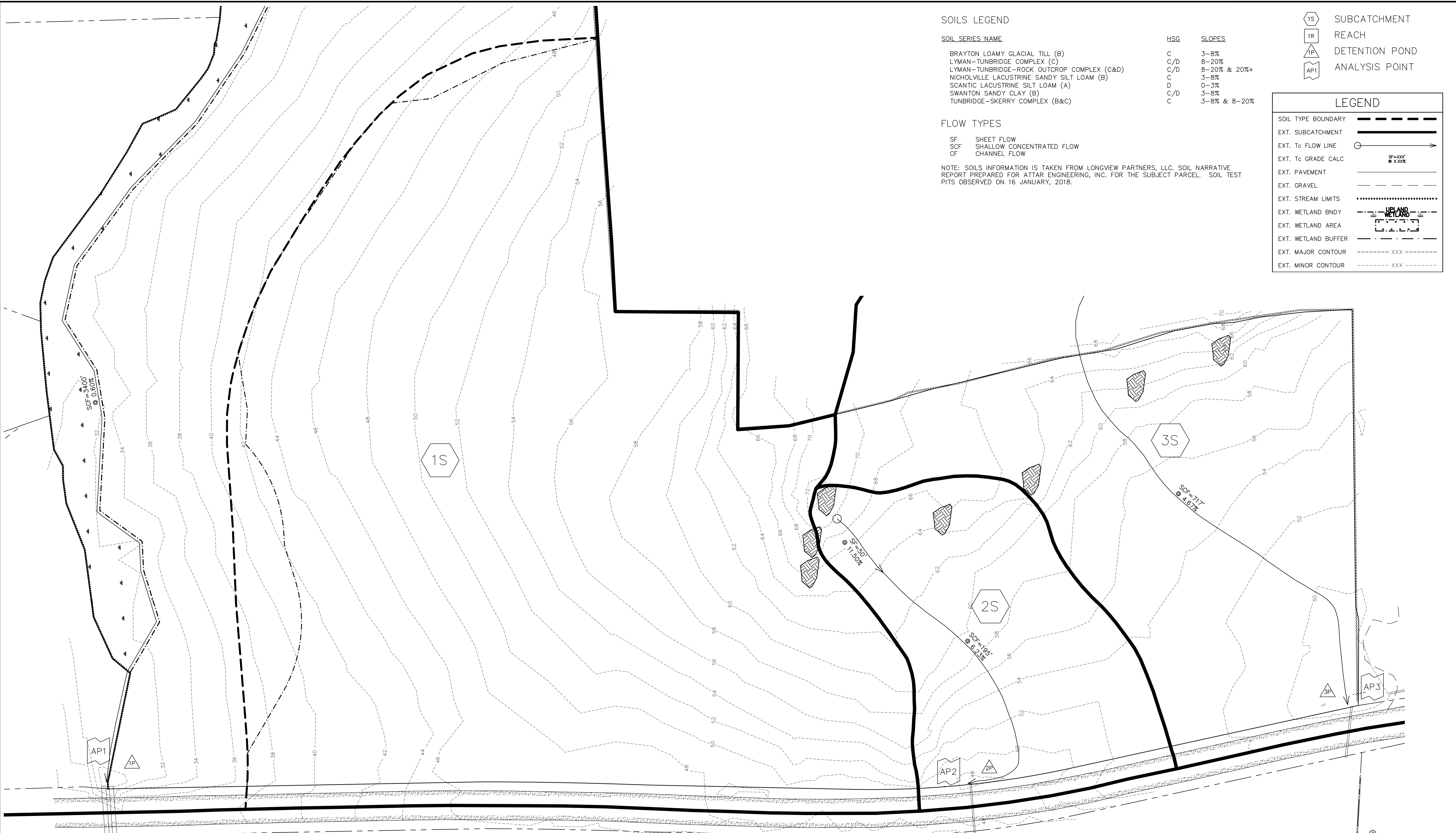
LONGVIEW PARTNERS, LLC

ENVIRONMENTAL PERMITTING SPECIALISTS

DRAFT: BO
SCALE: 1" = 60'
CHECKED: JL
PLAN DATE: 1-17-18

SHEET 4

TAX MAP 56, LOT 20



SOILS LEGEND

SOIL SERIES NAME

- BRAYTON LOAMY GLACIAL TILL (B)
- LYMAN-TUNBRIDGE COMPLEX (C)
- LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX (C&D)
- NICHOLVILLE LACUSTRINE SANDY SILT LOAM (B)
- SCANTIC LACUSTRINE SILT LOAM (A)
- SWANTON SANDY CLAY (B)
- TUNBRIDGE-SKERRY COMPLEX (B&C)

HSG	SLOPES
C	3-8%
C/D	8-20%
C/D	8-20% & 20%+
C	3-8%
D	0-3%
C/D	3-8%
C	3-8% & 8-20%

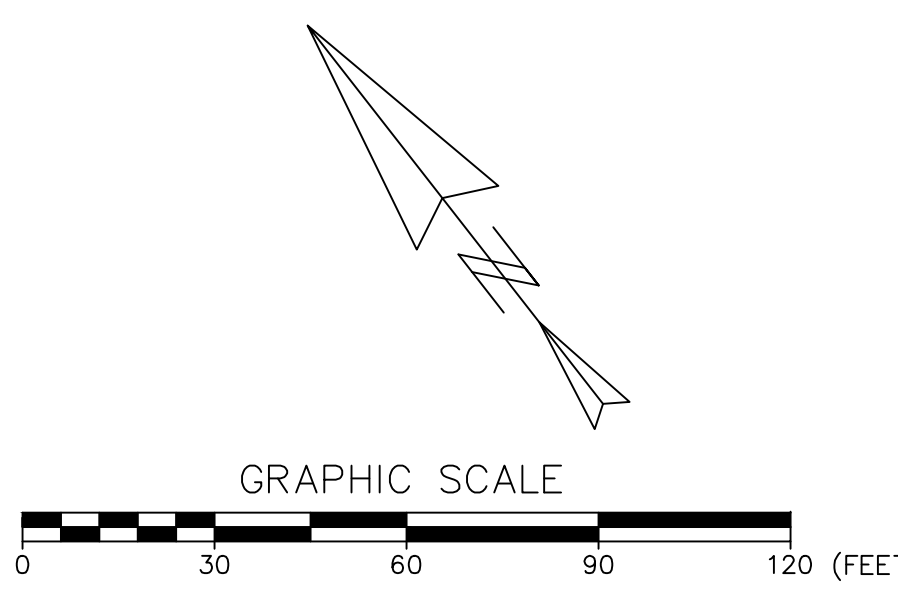
FLOW TYPES

- SF SHEET FLOW
- SCF SHALLOW CONCENTRATED FLOW
- CF CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM LONGVIEW PARTNERS, LLC. SOIL NARRATIVE REPORT PREPARED FOR ATTAR ENGINEERING, INC. FOR THE SUBJECT PARCEL. SOIL TEST PITS OBSERVED ON 16 JANUARY, 2018.

- 1S SUBCATCHMENT
- 1R REACH
- 1P DETENTION POND
- AP1 ANALYSIS POINT

LEGEND	
SOIL TYPE BOUNDARY	---
EXT. SUBCATCHMENT	---
EXT. To FLOW LINE	○ →
EXT. To GRADE CALC	○ $\frac{SF=XXX'}{L \times XX\%}$
EXT. PAVEMENT	---
EXT. GRAVEL	---
EXT. STREAM LIMITS
EXT. WETLAND BNDY	--- UPLAND WETLAND ---
EXT. WETLAND AREA	---
EXT. WETLAND BUFFER	---
EXT. MAJOR CONTOUR	--- XXX ---
EXT. MINOR CONTOUR	--- XXX ---



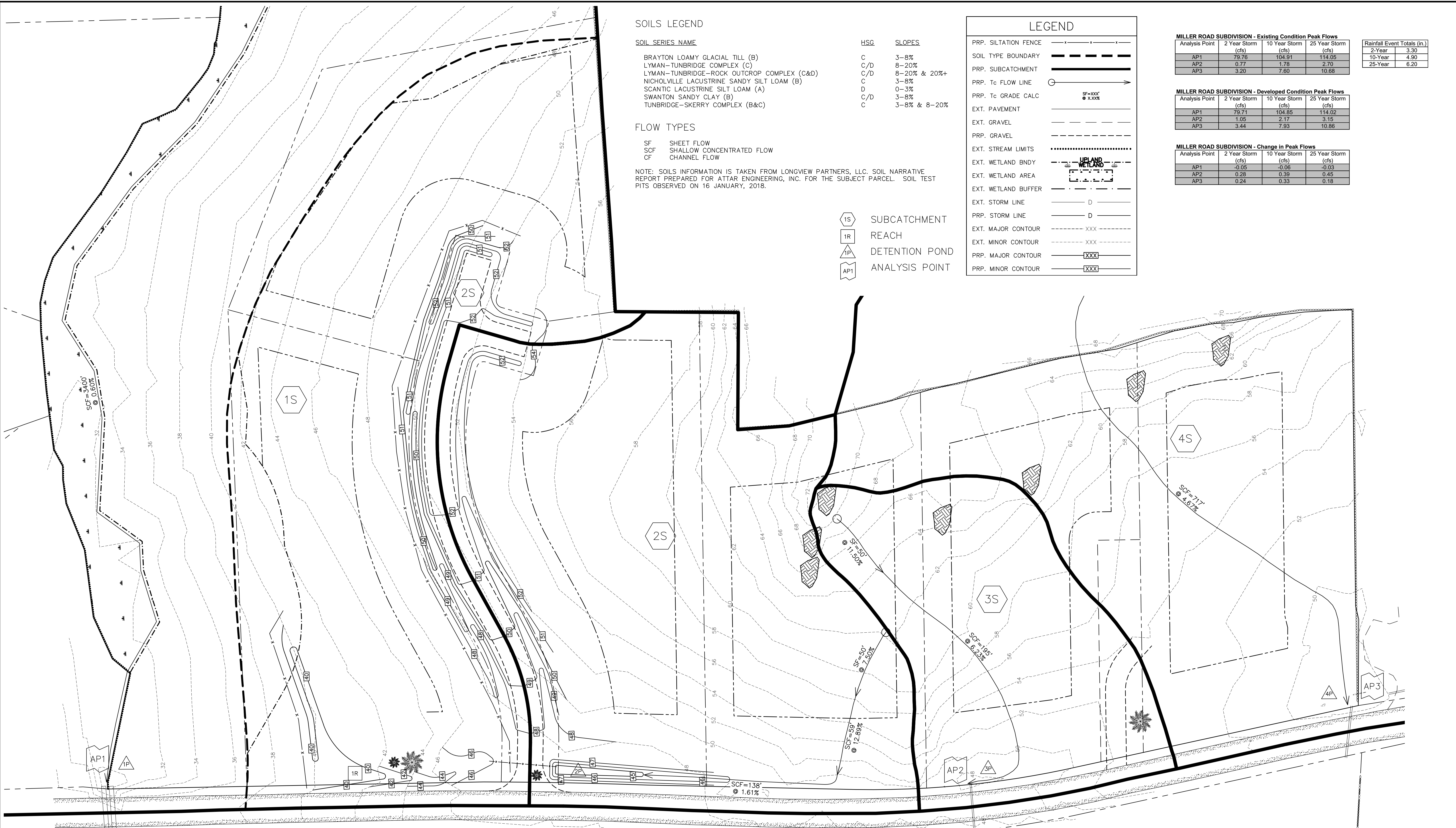
NO.	DESCRIPTION	DATE
A	TOWN REVIEW REVISIONS	06/20/18
	REVISIONS	

STORMWATER: EXISTING CONDITIONS
MILLER ROAD SUBDIVISION
MILLER ROAD, KITTERY, MAINE

FOR:
JOSEPH FALZONE
7B EMERY LANE
STRATHAM, NH 03885

ATTAR ENGINEERING, INC.
CIVIL ♦ STRUCTURAL ♦ MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE: 1" = 30'	APPROVED BY:	DRAWN BY: MJS
DATE: 05/23/18		REVISION DATE: A : 06/20/18
JOB NO: C142-18	FILE: MILLER RD SDV BASE.DWG	SHEET: 1 OF 2



SOILS LEGEND

SOIL SERIES NAME	HSG	SLOPES
BRAYTON LOAMY GLACIAL TILL (B)	C	3-8%
LYMAN-TUNBRIDGE COMPLEX (C)	C/D	8-20%
LYMAN-TUNBRIDGE-ROCK OUTCROP COMPLEX (C&D)	C/D	8-20% & 20%+
NICHOLVILLE LACUSTRINE SANDY SILT LOAM (B)	C	3-8%
SCANTIC LACUSTRINE SILT LOAM (A)	D	0-3%
SWANTON SANDY CLAY (B)	C/D	3-8%
TUNBRIDGE-SKERRY COMPLEX (B&C)	C	3-8% & 8-20%

FLOW TYPES

SF	SHEET FLOW
SCF	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW

NOTE: SOILS INFORMATION IS TAKEN FROM LONGVIEW PARTNERS, LLC. SOIL NARRATIVE REPORT PREPARED FOR ATTAR ENGINEERING, INC. FOR THE SUBJECT PARCEL. SOIL TEST PITS OBSERVED ON 16 JANUARY, 2018.

1S	SUBCATCHMENT
1R	REACH
1P	DETENTION POND
AP1	ANALYSIS POINT

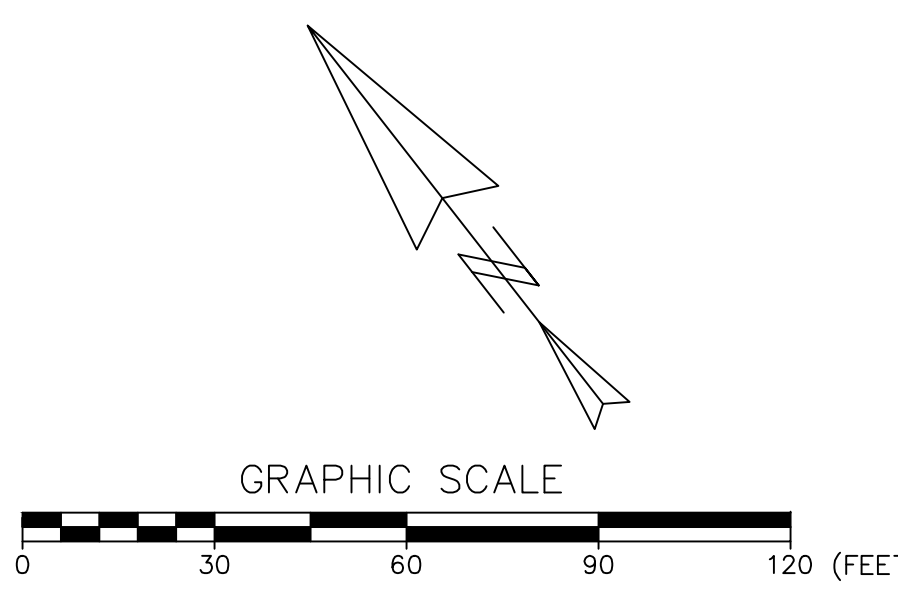
LEGEND

PRP. SILTATION FENCE	---
SOIL TYPE BOUNDARY	---
PRP. SUBCATCHMENT	---
PRP. Tc FLOW LINE	○ →
PRP. Tc GRADE CALC	g=xxx @ xxx%
EXT. PAVEMENT	---
EXT. GRAVEL	---
PRP. GRAVEL	---
EXT. STREAM LIMITS
EXT. WETLAND BNDY	WETLAND
EXT. WETLAND AREA	WETLAND
EXT. WETLAND BUFFER	---
EXT. STORM LINE	D
PRP. STORM LINE	D
EXT. MAJOR CONTOUR	---
EXT. MINOR CONTOUR	---
PRP. MAJOR CONTOUR	XXX
PRP. MINOR CONTOUR	XXX

MILLER ROAD SUBDIVISION - Existing Condition Peak Flows				Rainfall Event Totals (in.)	
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)	2-Year	3.30
AP1	79.76	104.91	114.05	10-Year	4.90
AP2	0.77	1.78	2.70	25-Year	6.20
AP3	3.20	7.60	10.68		

MILLER ROAD SUBDIVISION - Developed Condition Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	79.71	104.85	114.02
AP2	1.05	2.17	3.15
AP3	3.44	7.93	10.86

MILLER ROAD SUBDIVISION - Change in Peak Flows			
Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.05	-0.06	-0.03
AP2	0.28	0.39	0.45
AP3	0.24	0.33	0.18



NO.	DESCRIPTION	DATE
A	TOWN REVIEW REVISIONS	06/20/18

STORMWATER: DEVELOPED CONDITIONS
MILLER ROAD SUBDIVISION
MILLER ROAD, KITTEERY, MAINE

FOR:
JOSEPH FALZONE
7B EMERY LANE
STRATHAM, NH 03885

ATTAR ENGINEERING, INC.
CIVIL ♦ STRUCTURAL ♦ MARINE
1284 STATE ROAD - ELIOT, MAINE 03903
PHONE: (207)439-6023 FAX: (207)439-2128

SCALE:
1" = 30'

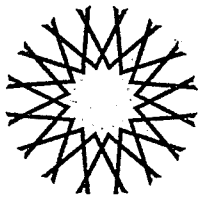
DATE:
05/23/18

APPROVED BY:

DRAWN BY:
MJS

REVISION DATE:
A : 06/20/18

JOB NO: C142-18 FILE: MILLER RD SDV BASE.DWG SHEET: 2 OF 2



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ENGINEERING, INC

CIVIL STRUCTURAL MARINE

STORMWATER MANAGEMENT PLAN MILLER ROAD SUBDIVISION MILLER ROAD, KITTERY, MAINE

Project No.: C142-18

May 23, 2018

Revised June 20, 2018

◆ Scope

This stormwater management plan has been prepared for the proposed Miller Road Subdivision located on Miller Road in Kittery, Maine. The project consists of a six-lot residential subdivision including a private drive to serve three of the lots. The project site contains approximately 10 acres.

The construction of the private drive will create approximately 0.51 acres of disturbed area and approximately 0.20 acres of impervious area, therefore, Chapter 500 (Stormwater Management) from the Maine Department of Environmental Protection (MDEP) is not necessary. The project has been designed to meet the stormwater management requirements outlined in the Kittery Land Use and Development Code (LUDC).

◆ Site and Watershed Description

The project site is located on Miller Road in Kittery, Maine. A 7½ minute series U.S.G.S. map of the project area is attached; the parcel is located on the north side of Miller Road.

The site is located in the Hutchins Creek watershed (source: USGS 7 ½ minute series, Kittery Quadrangle. The Hutchins Creek is tributary to the Spruce Creek, the Piscataqua River and the Atlantic Ocean.

The project site is undeveloped and wooded. Hutchins Creek forms the northwesterly boundary of the site. The topography of the site slopes toward Miller Road in the southeast part of the site and towards Hutchins Creek in the northwest part of the site. Existing grades are mostly from 4-10%. On-site elevations (datum is NGVD 1929) range from a high point of approximately 72' near the center of the site, to a low point of approximately 30' where Hutchins Creek crosses Miller Road via two 36" diameter culverts. A roadside swale conveys runoff from the southwest part of the site to Hutchins Creek. Two culverts convey runoff from the southeast part of the site to the south side of Miller Road

The site contains an area within a 100-Year Special Flood Hazard Area (SFHA) per the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 2301710002C (7/5/84), modified by a FEMA Letter of Map Amendment dated May 5, 2018. No disturbance is proposed within the modified SFHA.

◆ Soils/Hydrologic Soil Groups

Site soil types and the respective HSG's were taken from a High Intensity Soil Survey prepared by Longview Partners (James Logan – CSS #214).

Soil types are as follows:

Brayton – loamy glacial till, 3-8% slopes (HSG C)

Lyman-Tunbridge Complex – loamy glacial till, 8-20% slopes, (HSG C/D)

Lyman-Tunbridge Rock Outcrop Complex – loamy glacial till, 8-20+% slopes, (HSG C/D)

Nicholville – lacustrine silt and sand, 3-8% slopes, (HSG C)

Scantic – marine sediments, 0-3% slopes (HSG D)

Swanton – sandy outwash over marine/lacustrine sediments, 3-8% slopes, (HSG C/D)
Tunbridge-Skerry Complex – loamy glacial till, 3-20% slopes, (HSG C)

◆ **Methodology**

The stormwater quantity analysis was conducted using the HydroCAD Stormwater Modeling System by Applied Microcomputer Systems. The analysis was accomplished to determine the “Existing Condition” and “Developed Condition” stormwater flows. Both cases were analyzed for the 2, 10, and 25 year, 24-hour frequency storm events. The Existing Condition analyzes the site as it currently exists (wooded and undeveloped) and the Developed Condition models the site with the proposed development described above.

◆ **Water Quantity Analysis and Results**

Existing Condition

The site was modeled as three subcatchments (SC) for the Existing Condition analysis. All SC's include on and off-site areas. SC 1 contains a large off-site area that drains to the two 36" diameter culverts at Hutchins Creek / Miller Road.

Three Analysis Point (AP) were selected, downstream of the SC's. Analysis Points are typically located downstream of proposed developed areas and provide convenient locations to compare Existing Condition flows to Developed Condition flows. AP 1 is at the point of runoff into the two 36" diameter culverts at Hutchins Creek / Miller Road. AP 2 is at a low spot near the middle of the site frontage that drains to a 12" culvert under Miller Road. AP 3 is at a low spot at the southeast corner of the site that drains to a 15" culvert under Miller Road.

This report includes a plan that depicts the existing conditions on which the Existing Condition calculations are based.

Developed Condition

The Developed Condition analysis consists of four subcatchments. Other features such as ponds and reaches were added to account for on-site routing, detention and treatment of stormwater. A level spreader was added to convert channelized runoff along Miller Road to sheet flow prior to discharge to a wooded treatment buffer. All Developed Condition flows are routed to AP's 1-3, described above.

Tables showing Existing Condition peak flows, Developed Condition peak flows and the change in peak flow from Existing Condition to Developed Condition are presented on a separate page.

The analysis indicates decreases in peak flow at AP 1 for all storm events and negligible increases in peak flow at AP's 2 and 3 for all storm events. The increases in peak flow at AP's 2 and 3 are justified as follows:

- Wooded treatment buffers, which are not modeled in the quantity analysis are proposed upstream of the existing culverts. These buffers will serve to slow runoff from the developed lots and promote sheet flow prior to discharge to the existing culverts.
- The existing culverts are properly sized to accommodate the slight additional runoff from the developed lots.
- The culverts discharge to land owned by the current owners of the subject property, thus eliminating possible impacts to abutters.
- AP's 2 and 3 are eventually tributary to Hutchins Creek. The 25 year peak flow at Hutchins Creek is approximately 114 cubic feet per second (cfs). The cumulative increase in peak flow from AP's 2 and 3 is approximately 0.6 cfs, representing a 0.5% increase in peak flow at Hutchins Creek. Such a small increase is considered negligible and is not expected to have adverse impacts on downstream properties or drainage structures.

This report includes a plan that depicts the developed conditions on which the Developed Condition calculations are based.

◆ **Water Quality**

Runoff from developed areas on the site will receive treatment in 50'-100' wooded, upland, buffers prior to being discharged from the site.

◆ **Summary**

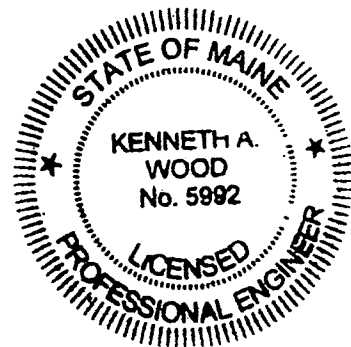
The use of buffers to attenuate peak flows results in no significant increase in peak runoff quantity from the proposed Miller Road Subdivision. No adverse effects are anticipated on any downstream properties or drainage structures for the analyzed storm events. A 100' wooded buffer along Hutchins Creek and a 50' wooded buffer along Miller Road provides treatment of runoff from the development.

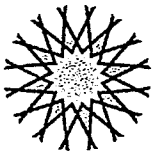
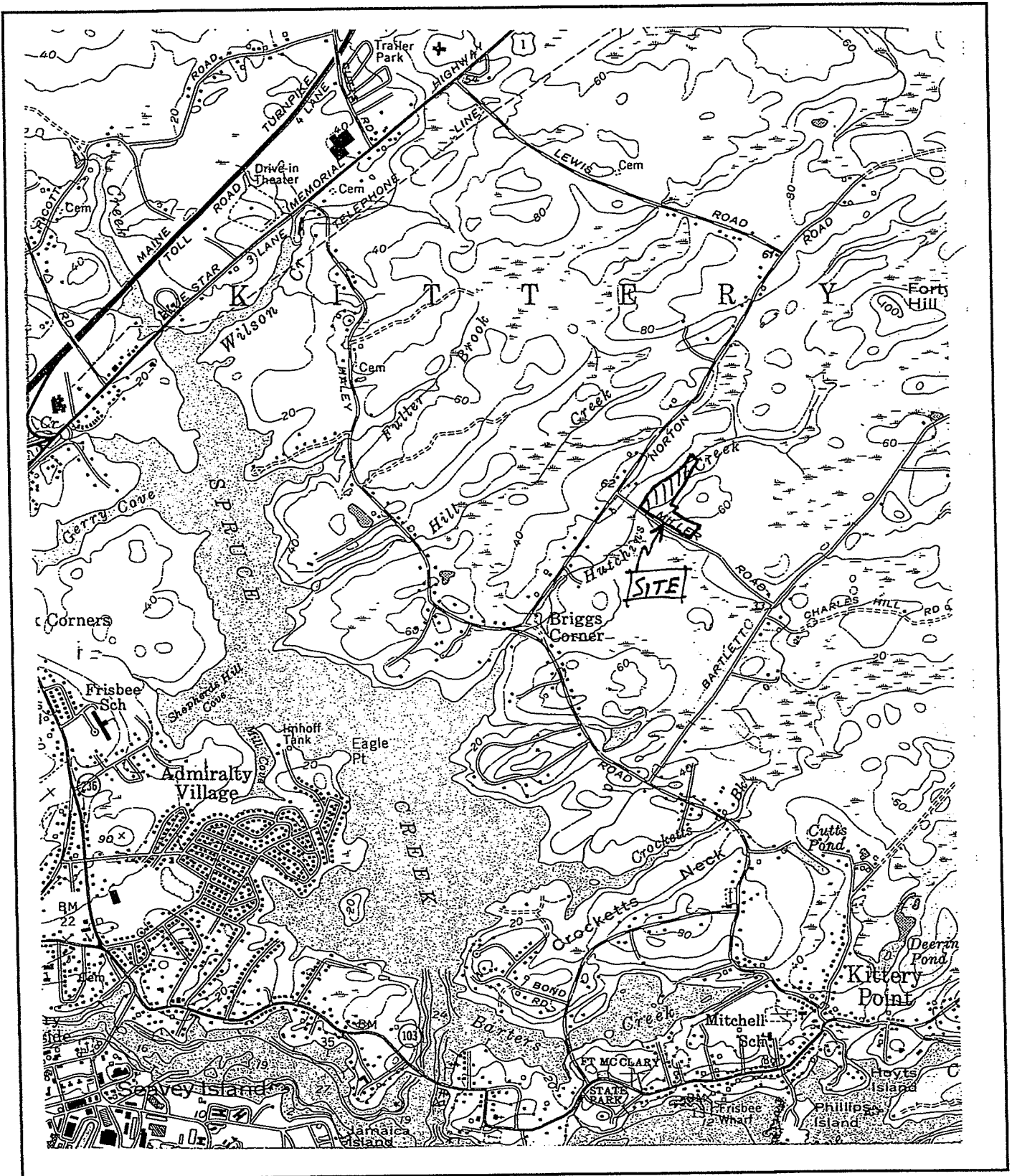
Sincerely;



Kenneth A. Wood, P.E.
President

C142-18_SW.doc





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 ENGINEERING, INC
 CIVIL STRUCTURAL MARINE

LOCATION MAP
 MILLER ROAD SUBDIVISION
 MILLER ROAD, KITTERY, ME
 USGS 7.5' MINUTE SERIES, KITTERY QUAD.
 APPROX. SCALE: 1:24,000
 PROJECT NO. C142-18

1284 STATE ROAD, ELIOT ME 03903

MILLER ROAD SUBDIVISION - Existing Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	79.76	104.91	114.05
AP2	0.77	1.78	2.70
AP3	3.20	7.60	10.68

Rainfall Event Totals (in.)	
2-Year	3.30
10-Year	4.90
25-Year	6.20

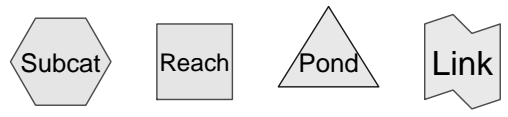
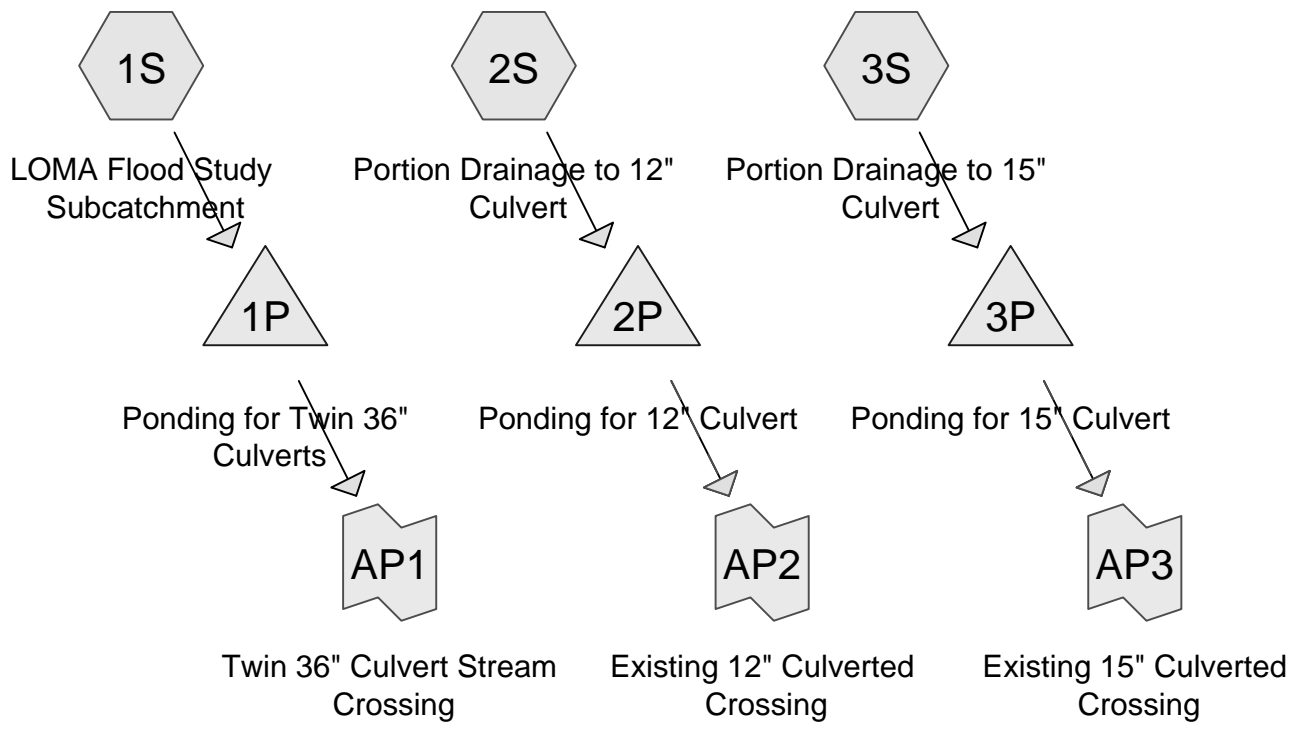
MILLER ROAD SUBDIVISION - Developed Condition Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	79.71	104.85	114.02
AP2	1.05	2.17	3.15
AP3	3.44	7.93	10.86

MILLER ROAD SUBDIVISION - Change in Peak Flows

Analysis Point	2 Year Storm (cfs)	10 Year Storm (cfs)	25 Year Storm (cfs)
AP1	-0.05	-0.06	-0.03
AP2	0.28	0.39	0.45
AP3	0.24	0.33	0.18

EXISTING CONDITION CALCULATIONS



Routing Diagram for MILLER RD SDV SWA EXT
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MILLER RD SDV SWA EXT

Prepared by Hewlett-Packard Company

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.222	70	Woods, Good, HSG C (2S, 3S)
25.000	77	2 Acre-Residential (1S)
135.000	79	Woods-Fair (1S)
0.102	98	Paved parking, HSG C (2S, 3S)
168.324	78	TOTAL AREA

MILLER RD SDV SWA EXT

Type III 24-hr 2 YEAR STORM Rainfall=3.30"

Prepared by Hewlett-Packard Company

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=160.000 ac 0.00% Impervious Runoff Depth>1.28"
Flow Length=4,900' Tc=44.0 min CN=79 Runoff=122.00 cfs 17.112 af

Subcatchment 2S: Portion Drainage to 12" Runoff Area=36,805 sf 5.08% Impervious Runoff Depth>0.85"
Flow Length=245' Tc=8.6 min CN=71 Runoff=0.76 cfs 0.060 af

Subcatchment 3S: Portion Drainage to 15" Runoff Area=325,778 sf 0.79% Impervious Runoff Depth>0.79"
Flow Length=931' Tc=46.1 min CN=70 Runoff=3.20 cfs 0.490 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=33.00' Storage=109,983 cf Inflow=122.00 cfs 17.112 af
Outflow=79.76 cfs 17.052 af

Pond 2P: Ponding for 12" Culvert Peak Elev=45.24' Storage=24 cf Inflow=0.76 cfs 0.060 af
Primary=0.77 cfs 0.060 af Secondary=0.00 cfs 0.000 af Outflow=0.77 cfs 0.060 af

Pond 3P: Ponding for 15" Culvert Peak Elev=46.84' Storage=197 cf Inflow=3.20 cfs 0.490 af
Primary=3.20 cfs 0.489 af Secondary=0.00 cfs 0.000 af Outflow=3.20 cfs 0.489 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=79.76 cfs 17.052 af
Primary=79.76 cfs 17.052 af

Link AP2: Existing 12" Culverted Crossing Inflow=0.77 cfs 0.060 af
Primary=0.77 cfs 0.060 af

Link AP3: Existing 15" Culverted Crossing Inflow=3.20 cfs 0.489 af
Primary=3.20 cfs 0.489 af

Total Runoff Area = 168.324 ac Runoff Volume = 17.662 af Average Runoff Depth = 1.26"
99.94% Pervious = 168.222 ac 0.06% Impervious = 0.102 ac

MILLER RD SDV SWA EXT

Type III 24-hr 10 YEAR STORM Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=160.000 ac 0.00% Impervious Runoff Depth>2.50"
Flow Length=4,900' Tc=44.0 min CN=79 Runoff=238.33 cfs 33.322 af

Subcatchment 2S: Portion Drainage to 12" Runoff Area=36,805 sf 5.08% Impervious Runoff Depth>1.88"
Flow Length=245' Tc=8.6 min CN=71 Runoff=1.78 cfs 0.132 af

Subcatchment 3S: Portion Drainage to 15" Runoff Area=325,778 sf 0.79% Impervious Runoff Depth>1.78"
Flow Length=931' Tc=46.1 min CN=70 Runoff=7.68 cfs 1.107 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=34.61' Storage=369,628 cf Inflow=238.33 cfs 33.322 af
Outflow=104.91 cfs 33.243 af

Pond 2P: Ponding for 12" Culvert Peak Elev=45.53' Storage=42 cf Inflow=1.78 cfs 0.132 af
Primary=1.78 cfs 0.132 af Secondary=0.00 cfs 0.000 af Outflow=1.78 cfs 0.132 af

Pond 3P: Ponding for 15" Culvert Peak Elev=48.20' Storage=734 cf Inflow=7.68 cfs 1.107 af
Primary=7.60 cfs 1.106 af Secondary=0.00 cfs 0.000 af Outflow=7.60 cfs 1.106 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=104.91 cfs 33.243 af
Primary=104.91 cfs 33.243 af

Link AP2: Existing 12" Culverted Crossing Inflow=1.78 cfs 0.132 af
Primary=1.78 cfs 0.132 af

Link AP3: Existing 15" Culverted Crossing Inflow=7.60 cfs 1.106 af
Primary=7.60 cfs 1.106 af

Total Runoff Area = 168.324 ac Runoff Volume = 34.561 af Average Runoff Depth = 2.46"
99.94% Pervious = 168.222 ac 0.06% Impervious = 0.102 ac

MILLER RD SDV SWA EXT

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Page 1

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=160.000 ac 0.00% Impervious Runoff Depth>3.57"
Flow Length=4,900' Tc=44.0 min CN=79 Runoff=338.28 cfs 47.613 af

Subcatchment 2S: Portion Drainage to 12" Runoff Area=36,805 sf 5.08% Impervious Runoff Depth>2.84"
Flow Length=245' Tc=8.6 min CN=71 Runoff=2.70 cfs 0.200 af

Subcatchment 3S: Portion Drainage to 15" Runoff Area=325,778 sf 0.79% Impervious Runoff Depth>2.71"
Flow Length=931' Tc=46.1 min CN=70 Runoff=11.81 cfs 1.687 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=35.30' Storage=648,062 cf Inflow=338.28 cfs 47.613 af
Outflow=114.05 cfs 47.522 af

Pond 2P: Ponding for 12" Culvert Peak Elev=45.81' Storage=62 cf Inflow=2.70 cfs 0.200 af
Primary=2.70 cfs 0.200 af Secondary=0.00 cfs 0.000 af Outflow=2.70 cfs 0.200 af

Pond 3P: Ponding for 15" Culvert Peak Elev=49.69' Storage=2,495 cf Inflow=11.81 cfs 1.687 af
Primary=10.68 cfs 1.686 af Secondary=0.00 cfs 0.000 af Outflow=10.68 cfs 1.686 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=114.05 cfs 47.522 af
Primary=114.05 cfs 47.522 af

Link AP2: Existing 12" Culverted Crossing Inflow=2.70 cfs 0.200 af
Primary=2.70 cfs 0.200 af

Link AP3: Existing 15" Culverted Crossing Inflow=10.68 cfs 1.686 af
Primary=10.68 cfs 1.686 af

Total Runoff Area = 168.324 ac Runoff Volume = 49.500 af Average Runoff Depth = 3.53"
99.94% Pervious = 168.222 ac 0.06% Impervious = 0.102 ac

MILLER RD SDV SWA EXT

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Summary for Subcatchment 1S: LOMA Flood Study Subcatchment

Runoff = 338.28 cfs @ 12.60 hrs, Volume= 47.613 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (ac)	CN	Description
* 25.000	77	2 Acre-Residential
* 135.000	79	Woods-Fair
160.000	79	Weighted Average
160.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.9	300	0.0700	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.30"
6.8	1,200	0.0330	2.92		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.3	3,400	0.0060	9.02	72.14	Channel Flow, Area= 8.0 sf Perim= 10.0' r= 0.80' n= 0.011
44.0	4,900	Total			

Summary for Subcatchment 2S: Portion Drainage to 12" Culvert

Runoff = 2.70 cfs @ 12.13 hrs, Volume= 0.200 af, Depth> 2.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
34,937	70	Woods, Good, HSG C
1,868	98	Paved parking, HSG C
36,805	71	Weighted Average
34,937		94.92% Pervious Area
1,868		5.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1150	0.14		Sheet Flow, SF 1 Woods: Light underbrush n= 0.400 P2= 3.30"
2.6	195	0.0623	1.25		Shallow Concentrated Flow, SCF 1 Woodland Kv= 5.0 fps
8.6	245	Total			

MILLER RD SDV SWA EXT

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Summary for Subcatchment 3S: Portion Drainage to 15" Culvert

Runoff = 11.81 cfs @ 12.65 hrs, Volume= 1.687 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
323,194	70	Woods, Good, HSG C
2,584	98	Paved parking, HSG C
325,778	70	Weighted Average
323,194		99.21% Pervious Area
2,584		0.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.1	160	0.0251	0.09		Sheet Flow, SF 1 Woods: Light underbrush n= 0.400 P2= 3.30"
4.6	171	0.0153	0.62		Shallow Concentrated Flow, SCF 1 Woodland Kv= 5.0 fps
1.5	132	0.0909	1.51		Shallow Concentrated Flow, SCF 2 Woodland Kv= 5.0 fps
11.9	468	0.0171	0.65		Shallow Concentrated Flow, SCF 3 Woodland Kv= 5.0 fps
46.1	931	Total			

Summary for Pond 1P: Ponding for Twin 36" Culverts

Inflow Area = 160.000 ac, 0.00% Impervious, Inflow Depth > 3.57" for 25 YEAR STORM event
 Inflow = 338.28 cfs @ 12.60 hrs, Volume= 47.613 af
 Outflow = 114.05 cfs @ 13.38 hrs, Volume= 47.522 af, Atten= 66%, Lag= 47.0 min
 Primary = 114.05 cfs @ 13.38 hrs, Volume= 47.522 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 35.30' @ 13.38 hrs Surf.Area= 372,513 sf Storage= 648,062 cf

Plug-Flow detention time= 50.1 min calculated for 47.364 af (99% of inflow)
 Center-of-Mass det. time= 49.2 min (861.1 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	29.30'	2,725,950 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.30	500	0	0
30.70	7,000	5,250	5,250
32.70	48,850	55,850	61,100
34.70	274,000	322,850	383,950
36.70	600,000	874,000	1,257,950
38.70	868,000	1,468,000	2,725,950

MILLER RD SDV SWA EXT

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Device	Routing	Invert	Outlet Devices
#1	Primary	29.30'	36.0" Round Culvert X 2.00 L= 45.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.30' / 28.20' S= 0.0244 '/' Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Primary	36.80'	65.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=114.05 cfs @ 13.38 hrs HW=35.30' (Free Discharge)

- 1=Culvert (Inlet Controls 114.05 cfs @ 8.07 fps)
- 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Ponding for 12" Culvert

[88] Warning: Qout>Qin may require Finer Routing>1

Inflow Area = 0.845 ac, 5.08% Impervious, Inflow Depth > 2.84" for 25 YEAR STORM event
 Inflow = 2.70 cfs @ 12.13 hrs, Volume= 0.200 af
 Outflow = 2.70 cfs @ 12.14 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.6 min
 Primary = 2.70 cfs @ 12.14 hrs, Volume= 0.200 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 45.81' @ 12.14 hrs Surf.Area= 73 sf Storage= 62 cf

Plug-Flow detention time= 0.8 min calculated for 0.199 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (799.6 - 799.1)

Volume	Invert	Avail.Storage	Storage Description
#1	44.80'	2,865 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.80	50	0	0
47.00	100	165	165
48.00	200	150	315
50.00	2,350	2,550	2,865

Device	Routing	Invert	Outlet Devices
#1	Primary	44.80'	12.0" Round CMP_Round 12" L= 35.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.80' / 43.60' S= 0.0343 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	49.80'	60.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=2.65 cfs @ 12.14 hrs HW=45.79' (Free Discharge)

↑1=CMP_Round 12" (Inlet Controls 2.65 cfs @ 3.38 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=44.80' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Ponding for 15" Culvert

Inflow Area = 7.479 ac, 0.79% Impervious, Inflow Depth > 2.71" for 25 YEAR STORM event
 Inflow = 11.81 cfs @ 12.65 hrs, Volume= 1.687 af
 Outflow = 10.68 cfs @ 12.82 hrs, Volume= 1.686 af, Atten= 10%, Lag= 10.2 min
 Primary = 10.68 cfs @ 12.82 hrs, Volume= 1.686 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 49.69' @ 12.82 hrs Surf.Area= 3,110 sf Storage= 2,495 cf

Plug-Flow detention time= 1.9 min calculated for 1.680 af (100% of inflow)
 Center-of-Mass det. time= 1.6 min (831.7 - 830.1)

Volume	Invert	Avail.Storage	Storage Description
#1	45.80'	30,355 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.80	100	0	0
49.00	650	1,200	1,200
50.00	4,220	2,435	3,635
52.00	22,500	26,720	30,355

Device	Routing	Invert	Outlet Devices
#1	Primary	45.80'	15.0" Round CMP_Round 15" L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.80' / 45.50' S= 0.0075 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	51.80'	60.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.67 cfs @ 12.82 hrs HW=49.69' (Free Discharge)

↑1=CMP_Round 15" (Inlet Controls 10.67 cfs @ 8.69 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=45.80' (Free Discharge)

↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link AP1: Twin 36" Culvert Stream Crossing

Inflow Area = 160.000 ac, 0.00% Impervious, Inflow Depth > 3.56" for 25 YEAR STORM event
Inflow = 114.05 cfs @ 13.38 hrs, Volume= 47.522 af
Primary = 114.05 cfs @ 13.38 hrs, Volume= 47.522 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: Existing 12" Culverted Crossing

Inflow Area = 0.845 ac, 5.08% Impervious, Inflow Depth > 2.84" for 25 YEAR STORM event
Inflow = 2.70 cfs @ 12.14 hrs, Volume= 0.200 af
Primary = 2.70 cfs @ 12.14 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min

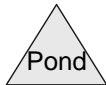
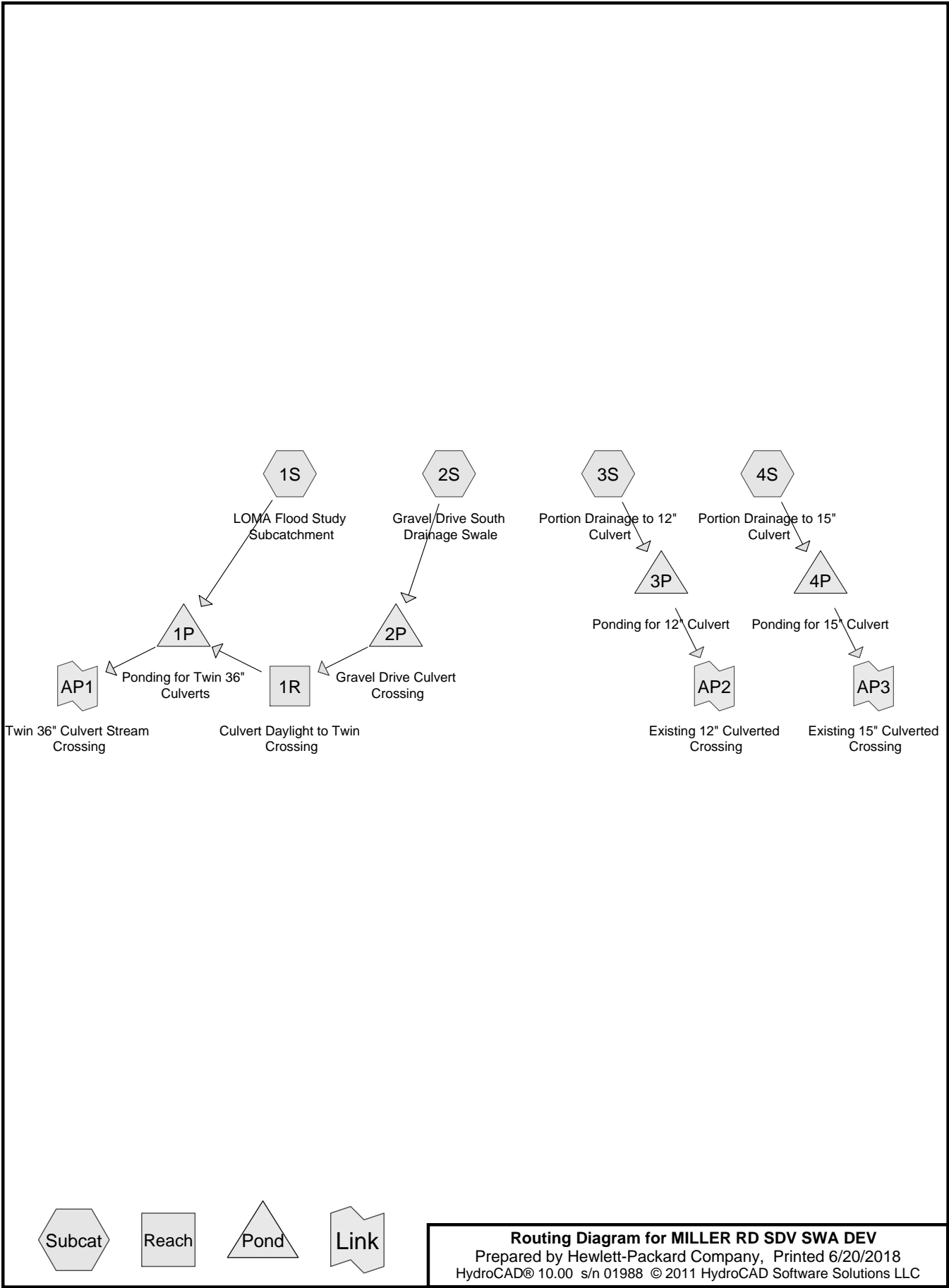
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP3: Existing 15" Culverted Crossing

Inflow Area = 7.479 ac, 0.79% Impervious, Inflow Depth > 2.70" for 25 YEAR STORM event
Inflow = 10.68 cfs @ 12.82 hrs, Volume= 1.686 af
Primary = 10.68 cfs @ 12.82 hrs, Volume= 1.686 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

DEVELOPED CONDITION CALCULATIONS



Routing Diagram for MILLER RD SDV SWA DEV
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MILLER RD SDV SWA DEV

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.023	70	Woods, Good, HSG C (2S, 3S, 4S)
0.661	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S)
25.000	77	2 Acre-Residential (1S)
3.192	79	1 acre lots, 20% imp, HSG C (1S, 2S, 3S, 4S)
131.000	79	Woods-Fair (1S)
0.449	98	Paved parking, HSG C (1S, 2S, 3S, 4S)
168.324	78	TOTAL AREA

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=158.000 ac 0.30% Impervious Runoff Depth>1.28"
Flow Length=4,900' Tc=44.0 min CN=79 Runoff=120.47 cfs 16.898 af

Subcatchment 2S: Gravel Drive South Runoff Area=87,120 sf 15.43% Impervious Runoff Depth>1.12"
Flow Length=247' Tc=10.3 min CN=76 Runoff=2.38 cfs 0.186 af

Subcatchment 3S: Portion Drainage to 12" Runoff Area=36,805 sf 15.13% Impervious Runoff Depth>1.12"
Flow Length=245' Tc=8.6 min CN=76 Runoff=1.05 cfs 0.079 af

Subcatchment 4S: Portion Drainage to 15" Runoff Area=325,778 sf 2.28% Impervious Runoff Depth>0.83"
Flow Length=931' Tc=46.1 min CN=71 Runoff=3.44 cfs 0.520 af

Reach 1R: Culvert Daylight to Twin Avg. Flow Depth=0.29' Max Vel=0.62 fps Inflow=2.30 cfs 0.186 af
n=0.240 L=230.0' S=0.0609 '/ Capacity=41.10 cfs Outflow=2.04 cfs 0.184 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=33.00' Storage=109,540 cf Inflow=121.66 cfs 17.082 af
Outflow=79.71 cfs 17.022 af

Pond 2P: Gravel Drive Culvert Crossing Peak Elev=45.27' Storage=201 cf Inflow=2.38 cfs 0.186 af
Primary=2.30 cfs 0.186 af Secondary=0.00 cfs 0.000 af Outflow=2.30 cfs 0.186 af

Pond 3P: Ponding for 12" Culvert Peak Elev=45.33' Storage=30 cf Inflow=1.05 cfs 0.079 af
Primary=1.05 cfs 0.079 af Secondary=0.00 cfs 0.000 af Outflow=1.05 cfs 0.079 af

Pond 4P: Ponding for 15" Culvert Peak Elev=46.89' Storage=212 cf Inflow=3.44 cfs 0.520 af
Primary=3.44 cfs 0.520 af Secondary=0.00 cfs 0.000 af Outflow=3.44 cfs 0.520 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=79.71 cfs 17.022 af
Primary=79.71 cfs 17.022 af

Link AP2: Existing 12" Culverted Crossing Inflow=1.05 cfs 0.079 af
Primary=1.05 cfs 0.079 af

Link AP3: Existing 15" Culverted Crossing Inflow=3.44 cfs 0.520 af
Primary=3.44 cfs 0.520 af

Total Runoff Area = 168.324 ac Runoff Volume = 17.684 af Average Runoff Depth = 1.26"
99.35% Pervious = 167.237 ac 0.65% Impervious = 1.087 ac

MILLER RD SDV SWA DEV

Type III 24-hr 10 YEAR STORM Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=158.000 ac 0.30% Impervious Runoff Depth>2.50"
Flow Length=4,900' Tc=44.0 min CN=79 Runoff=235.35 cfs 32.906 af

Subcatchment 2S: Gravel Drive South Runoff Area=87,120 sf 15.43% Impervious Runoff Depth>2.27"
Flow Length=247' Tc=10.3 min CN=76 Runoff=4.92 cfs 0.379 af

Subcatchment 3S: Portion Drainage to 12" Runoff Area=36,805 sf 15.13% Impervious Runoff Depth>2.28"
Flow Length=245' Tc=8.6 min CN=76 Runoff=2.17 cfs 0.160 af

Subcatchment 4S: Portion Drainage to 15" Runoff Area=325,778 sf 2.28% Impervious Runoff Depth>1.85"
Flow Length=931' Tc=46.1 min CN=71 Runoff=8.03 cfs 1.154 af

Reach 1R: Culvert Daylight to Twin Avg. Flow Depth=0.45' Max Vel=0.79 fps Inflow=4.64 cfs 0.379 af
n=0.240 L=230.0' S=0.0609 '/' Capacity=41.10 cfs Outflow=4.29 cfs 0.375 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=34.61' Storage=368,906 cf Inflow=237.57 cfs 33.281 af
Outflow=104.85 cfs 33.202 af

Pond 2P: Gravel Drive Culvert Crossing Peak Elev=45.73' Storage=481 cf Inflow=4.92 cfs 0.379 af
Primary=4.64 cfs 0.379 af Secondary=0.00 cfs 0.000 af Outflow=4.64 cfs 0.379 af

Pond 3P: Ponding for 12" Culvert Peak Elev=45.63' Storage=50 cf Inflow=2.17 cfs 0.160 af
Primary=2.17 cfs 0.160 af Secondary=0.00 cfs 0.000 af Outflow=2.17 cfs 0.160 af

Pond 4P: Ponding for 15" Culvert Peak Elev=48.33' Storage=802 cf Inflow=8.03 cfs 1.154 af
Primary=7.93 cfs 1.153 af Secondary=0.00 cfs 0.000 af Outflow=7.93 cfs 1.153 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=104.85 cfs 33.202 af
Primary=104.85 cfs 33.202 af

Link AP2: Existing 12" Culverted Crossing Inflow=2.17 cfs 0.160 af
Primary=2.17 cfs 0.160 af

Link AP3: Existing 15" Culverted Crossing Inflow=7.93 cfs 1.153 af
Primary=7.93 cfs 1.153 af

Total Runoff Area = 168.324 ac Runoff Volume = 34.598 af Average Runoff Depth = 2.47"
99.35% Pervious = 167.237 ac 0.65% Impervious = 1.087 ac

MILLER RD SDV SWA DEV

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
 Runoff by SCS TR-20 method, UH=SCS
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: LOMA Flood Study Runoff Area=158.000 ac 0.30% Impervious Runoff Depth>3.57"
 Flow Length=4,900' Tc=44.0 min CN=79 Runoff=334.05 cfs 47.018 af

Subcatchment 2S: Gravel Drive South Runoff Area=87,120 sf 15.43% Impervious Runoff Depth>3.31"
 Flow Length=247' Tc=10.3 min CN=76 Runoff=7.14 cfs 0.552 af

Subcatchment 3S: Portion Drainage to 12" Runoff Area=36,805 sf 15.13% Impervious Runoff Depth>3.32"
 Flow Length=245' Tc=8.6 min CN=76 Runoff=3.17 cfs 0.233 af

Subcatchment 4S: Portion Drainage to 15" Runoff Area=325,778 sf 2.28% Impervious Runoff Depth>2.80"
 Flow Length=931' Tc=46.1 min CN=71 Runoff=12.21 cfs 1.744 af

Reach 1R: Culvert Daylight to Twin Avg. Flow Depth=0.54' Max Vel=0.88 fps Inflow=6.25 cfs 0.552 af
 n=0.240 L=230.0' S=0.0609 '/' Capacity=41.10 cfs Outflow=5.97 cfs 0.548 af

Pond 1P: Ponding for Twin 36" Culverts Peak Elev=35.30' Storage=646,977 cf Inflow=337.24 cfs 47.566 af
 Outflow=114.02 cfs 47.474 af

Pond 2P: Gravel Drive Culvert Crossing Peak Elev=46.25' Storage=955 cf Inflow=7.14 cfs 0.552 af
 Primary=6.25 cfs 0.552 af Secondary=0.00 cfs 0.000 af Outflow=6.25 cfs 0.552 af

Pond 3P: Ponding for 12" Culvert Peak Elev=45.99' Storage=76 cf Inflow=3.17 cfs 0.233 af
 Primary=3.15 cfs 0.233 af Secondary=0.00 cfs 0.000 af Outflow=3.15 cfs 0.233 af

Pond 4P: Ponding for 15" Culvert Peak Elev=49.80' Storage=2,870 cf Inflow=12.21 cfs 1.744 af
 Primary=10.86 cfs 1.743 af Secondary=0.00 cfs 0.000 af Outflow=10.86 cfs 1.743 af

Link AP1: Twin 36" Culvert Stream Crossing Inflow=114.02 cfs 47.474 af
 Primary=114.02 cfs 47.474 af

Link AP2: Existing 12" Culverted Crossing Inflow=3.15 cfs 0.233 af
 Primary=3.15 cfs 0.233 af

Link AP3: Existing 15" Culverted Crossing Inflow=10.86 cfs 1.743 af
 Primary=10.86 cfs 1.743 af

Total Runoff Area = 168.324 ac Runoff Volume = 49.548 af Average Runoff Depth = 3.53"
99.35% Pervious = 167.237 ac 0.65% Impervious = 1.087 ac

Summary for Subcatchment 1S: LOMA Flood Study Subcatchment

Runoff = 334.05 cfs @ 12.60 hrs, Volume= 47.018 af, Depth> 3.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (ac)	CN	Description
* 25.000	77	2 Acre-Residential
* 131.000	79	Woods-Fair
1.400	79	1 acre lots, 20% imp, HSG C
0.400	74	>75% Grass cover, Good, HSG C
0.200	98	Paved parking, HSG C
158.000	79	Weighted Average
157.520		99.70% Pervious Area
0.480		0.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.9	300	0.0700	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.30"
6.8	1,200	0.0330	2.92		Shallow Concentrated Flow, Unpaved Kv= 16.1 fps
6.3	3,400	0.0060	9.02	72.14	Channel Flow, Area= 8.0 sf Perim= 10.0' r= 0.80' n= 0.011
44.0	4,900	Total			

Summary for Subcatchment 2S: Gravel Drive South Drainage Swale

Runoff = 7.14 cfs @ 12.15 hrs, Volume= 0.552 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
34,289	70	Woods, Good, HSG C
35,351	79	1 acre lots, 20% imp, HSG C
11,106	74	>75% Grass cover, Good, HSG C
6,374	98	Paved parking, HSG C
87,120	76	Weighted Average
73,676		84.57% Pervious Area
13,444		15.43% Impervious Area

MILLER RD SDV SWA DEV

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0750	0.12		Sheet Flow, SF 1 Woods: Light underbrush n= 0.400 P2= 3.30"
0.5	59	0.1289	1.80		Shallow Concentrated Flow, SCF 1 Woodland Kv= 5.0 fps
2.6	138	0.0161	0.89		Shallow Concentrated Flow, SCF 2 Short Grass Pasture Kv= 7.0 fps
10.3	247	Total			

Summary for Subcatchment 3S: Portion Drainage to 12" Culvert

Runoff = 3.17 cfs @ 12.12 hrs, Volume= 0.233 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
16,175	70	Woods, Good, HSG C
1,868	98	Paved parking, HSG C
18,503	79	1 acre lots, 20% imp, HSG C
259	74	>75% Grass cover, Good, HSG C
36,805	76	Weighted Average
31,236		84.87% Pervious Area
5,569		15.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1150	0.14		Sheet Flow, SF 1 Woods: Light underbrush n= 0.400 P2= 3.30"
2.6	195	0.0623	1.25		Shallow Concentrated Flow, SCF 1 Woodland Kv= 5.0 fps
8.6	245	Total			

Summary for Subcatchment 4S: Portion Drainage to 15" Culvert

Runoff = 12.21 cfs @ 12.65 hrs, Volume= 1.744 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25 YEAR STORM Rainfall=6.20"

Area (sf)	CN	Description
298,999	70	Woods, Good, HSG C
2,584	98	Paved parking, HSG C
24,195	79	1 acre lots, 20% imp, HSG C
325,778	71	Weighted Average
318,355		97.72% Pervious Area
7,423		2.28% Impervious Area

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Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.1	160	0.0251	0.09		Sheet Flow, SF 1 Woods: Light underbrush n= 0.400 P2= 3.30"
4.6	171	0.0153	0.62		Shallow Concentrated Flow, SCF 1 Woodland Kv= 5.0 fps
1.5	132	0.0909	1.51		Shallow Concentrated Flow, SCF 2 Woodland Kv= 5.0 fps
11.9	468	0.0171	0.65		Shallow Concentrated Flow, SCF 3 Woodland Kv= 5.0 fps
46.1	931	Total			

Summary for Reach 1R: Culvert Daylight to Twin Crossing

[79] Warning: Submerged Pond 2P Primary device # 1 INLET by 0.04'

Inflow Area = 2.000 ac, 15.43% Impervious, Inflow Depth > 3.31" for 25 YEAR STORM event
 Inflow = 6.25 cfs @ 12.21 hrs, Volume= 0.552 af
 Outflow = 5.97 cfs @ 12.34 hrs, Volume= 0.548 af, Atten= 4%, Lag= 7.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.88 fps, Min. Travel Time= 4.3 min
 Avg. Velocity = 0.31 fps, Avg. Travel Time= 12.3 min

Peak Storage= 1,567 cf @ 12.26 hrs
 Average Depth at Peak Storage= 0.54'
 Bank-Full Depth= 1.50' Flow Area= 26.3 sf, Capacity= 41.10 cfs

10.00' x 1.50' deep channel, n= 0.240 Sheet flow over Dense Grass
 Side Slope Z-value= 5.0 ' Top Width= 25.00'
 Length= 230.0' Slope= 0.0609 '
 Inlet Invert= 44.00', Outlet Invert= 30.00'

**Summary for Pond 1P: Ponding for Twin 36" Culverts**

[62] Hint: Exceeded Reach 1R OUTLET depth by 5.14' @ 13.40 hrs

Inflow Area = 160.000 ac, 0.49% Impervious, Inflow Depth > 3.57" for 25 YEAR STORM event
 Inflow = 337.24 cfs @ 12.60 hrs, Volume= 47.566 af
 Outflow = 114.02 cfs @ 13.38 hrs, Volume= 47.474 af, Atten= 66%, Lag= 47.0 min
 Primary = 114.02 cfs @ 13.38 hrs, Volume= 47.474 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Peak Elev= 35.30' @ 13.38 hrs Surf.Area= 372,108 sf Storage= 646,977 cf

Plug-Flow detention time= 50.0 min calculated for 47.316 af (99% of inflow)

Center-of-Mass det. time= 49.2 min (860.9 - 811.7)

Volume	Invert	Avail.Storage	Storage Description
#1	29.30'	2,725,950 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
29.30	500	0	0
30.70	7,000	5,250	5,250
32.70	48,850	55,850	61,100
34.70	274,000	322,850	383,950
36.70	600,000	874,000	1,257,950
38.70	868,000	1,468,000	2,725,950

Device	Routing	Invert	Outlet Devices
#1	Primary	29.30'	36.0" Round Culvert X 2.00 L= 45.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 29.30' / 28.20' S= 0.0244 '/ Cc= 0.900 n= 0.011, Flow Area= 7.07 sf
#2	Primary	36.80'	65.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=114.02 cfs @ 13.38 hrs HW=35.30' (Free Discharge)

1=Culvert (Inlet Controls 114.02 cfs @ 8.07 fps)

2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 2P: Gravel Drive Culvert Crossing

Inflow Area =	2.000 ac, 15.43% Impervious, Inflow Depth > 3.31" for 25 YEAR STORM event
Inflow =	7.14 cfs @ 12.15 hrs, Volume= 0.552 af
Outflow =	6.25 cfs @ 12.21 hrs, Volume= 0.552 af, Atten= 12%, Lag= 3.7 min
Primary =	6.25 cfs @ 12.21 hrs, Volume= 0.552 af
Secondary =	0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 46.25' @ 12.21 hrs Surf.Area= 1,149 sf Storage= 955 cf

Plug-Flow detention time= 1.9 min calculated for 0.552 af (100% of inflow)

Center-of-Mass det. time= 1.6 min (792.6 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1	44.50'	3,700 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

MILLER RD SDV SWA DEV

Type III 24-hr 25 YEAR STORM Rainfall=6.20"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.50	100	0	0
45.00	300	100	100
46.00	900	600	700
47.00	1,900	1,400	2,100
47.50	4,500	1,600	3,700

Device	Routing	Invert	Outlet Devices
#1	Primary	44.50'	15.0" Round Culvert L= 42.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 44.50' / 44.00' S= 0.0119 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	47.40'	20.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=6.22 cfs @ 12.21 hrs HW=46.24' (Free Discharge)
 ↳1=Culvert (Barrel Controls 6.22 cfs @ 5.06 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=44.50' (Free Discharge)
 ↳2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 3P: Ponding for 12" Culvert

Inflow Area = 0.845 ac, 15.13% Impervious, Inflow Depth > 3.32" for 25 YEAR STORM event
 Inflow = 3.17 cfs @ 12.12 hrs, Volume= 0.233 af
 Outflow = 3.15 cfs @ 12.14 hrs, Volume= 0.233 af, Atten= 1%, Lag= 0.8 min
 Primary = 3.15 cfs @ 12.14 hrs, Volume= 0.233 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 45.99' @ 12.14 hrs Surf.Area= 77 sf Storage= 76 cf

Plug-Flow detention time= 0.8 min calculated for 0.233 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (790.2 - 789.7)

Volume	Invert	Avail.Storage	Storage Description
#1	44.80'	2,865 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
44.80	50	0	0
47.00	100	165	165
48.00	200	150	315
50.00	2,350	2,550	2,865

Device	Routing	Invert	Outlet Devices
#1	Primary	44.80'	12.0" Round CMP_Round 12" L= 35.0' CMP, square edge headwall, Ke= 0.500

#2 Secondary 49.80' Inlet / Outlet Invert= 44.80' / 43.60' S= 0.0343 1/ S= 0.0343 1/ Cc= 0.900
 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
60.0' long x 20.0' breadth Broad-Crested Rectangular Weir
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=3.09 cfs @ 12.14 hrs HW=45.97' (Free Discharge)
 ↑1=CMP_Round 12" (Inlet Controls 3.09 cfs @ 3.93 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=44.80' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 4P: Ponding for 15" Culvert

Inflow Area = 7.479 ac, 2.28% Impervious, Inflow Depth > 2.80" for 25 YEAR STORM event
 Inflow = 12.21 cfs @ 12.65 hrs, Volume= 1.744 af
 Outflow = 10.86 cfs @ 12.83 hrs, Volume= 1.743 af, Atten= 11%, Lag= 11.1 min
 Primary = 10.86 cfs @ 12.83 hrs, Volume= 1.743 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 49.80' @ 12.83 hrs Surf.Area= 3,514 sf Storage= 2,870 cf

Plug-Flow detention time= 2.0 min calculated for 1.743 af (100% of inflow)
 Center-of-Mass det. time= 1.8 min (830.1 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	45.80'	30,355 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
45.80	100	0	0
49.00	650	1,200	1,200
50.00	4,220	2,435	3,635
52.00	22,500	26,720	30,355

Device	Routing	Invert	Outlet Devices
#1	Primary	45.80'	15.0" Round CMP_Round 15" L= 40.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 45.80' / 45.50' S= 0.0075 1/ S= 0.0075 1/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	51.80'	60.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.85 cfs @ 12.83 hrs HW=49.80' (Free Discharge)
 ↑1=CMP_Round 15" (Inlet Controls 10.85 cfs @ 8.84 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=45.80' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Link AP1: Twin 36" Culvert Stream Crossing

Inflow Area = 160.000 ac, 0.49% Impervious, Inflow Depth > 3.56" for 25 YEAR STORM event
Inflow = 114.02 cfs @ 13.38 hrs, Volume= 47.474 af
Primary = 114.02 cfs @ 13.38 hrs, Volume= 47.474 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP2: Existing 12" Culverted Crossing

Inflow Area = 0.845 ac, 15.13% Impervious, Inflow Depth > 3.31" for 25 YEAR STORM event
Inflow = 3.15 cfs @ 12.14 hrs, Volume= 0.233 af
Primary = 3.15 cfs @ 12.14 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Link AP3: Existing 15" Culverted Crossing

Inflow Area = 7.479 ac, 2.28% Impervious, Inflow Depth > 2.80" for 25 YEAR STORM event
Inflow = 10.86 cfs @ 12.83 hrs, Volume= 1.743 af
Primary = 10.86 cfs @ 12.83 hrs, Volume= 1.743 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

BMP CALCULATIONS

Miller Road - Stone Berm Level Spreader Sizing

SOURCE: Maine Stormwater Management Manual, Vol. III, Chapter 5 (Vegetated Buffers)

- Stone Size:** The stone must be coarse enough that it will not clog with sediment. Stone for stone bermed level lip spreaders must consist of sound durable rock that will not disintegrate by exposure to water or weather. Fieldstone, rough quarried stone, blasted ledge rock or tailings may be used. The rock must be well graded with a median size of approximately 3 inches and a maximum size of 6 inches per Table 5.4.
- Buffer Length:** The size of a buffer area below a stone bermed level lip spreader varies with the size and imperviousness of the developed area, and the type of soil, the slope, and the vegetative cover type of the buffer. Table 5.5 indicates the required berm length per acre of impervious area and lawn draining to a buffer.

Sieve	% by Weight Passing
12 in.	100%
6 in.	84-100%
3 in.	68-83%
1 in.	42-55%
No. 4	8-12%

Hydrologic Soil Group	Length of Flow Path in Buffer (feet)	Berm Length (feet)							
		0-8% Slope				9-15% Slope			
		Per Acre of Impervious Area		Per Acre of Lawn		Per Acre of Impervious Area		Per Acre of Lawn	
		FB	MB	FB	MB	FB	MB	FB	MB
A	75	75	125	25	35	90	150	30	42
	100	65	75	20	25	78	90	24	30
	150	50	60	15	20	60	72	18	24
B	75	100	150	30	45	120	180	36	54
	100	80	100	25	30	96	120	30	36
	150	65	75	20	25	78	90	24	30
C Loamy Sand or Sandy Loam	75	125	150	35	45	150	180	42	54
	100	100	125	30	35	120	150	36	42
	150	75	100	25	30	90	120	30	36
C Silty Loam, Clay Loam or Silty Clay Loam	100	150	200	45	60	180	240	54	72
	150	100	150	30	45	120	180	36	54
D Non-Wetland	150	150	200	45	60	180	240	54	72

FB = Forest Buffer MB = Meadow Buffer
 NOTE: These tables were developed using a 1.25 inch, 24 hour storm of type III distribution, giving a maximum unit flow rate of less than 0.009 cfs per foot.

IMP 0.4 ac. $\times 100'/ac = 40'$

LAWN 0.5 ac $\times 30'/ac = 15'$

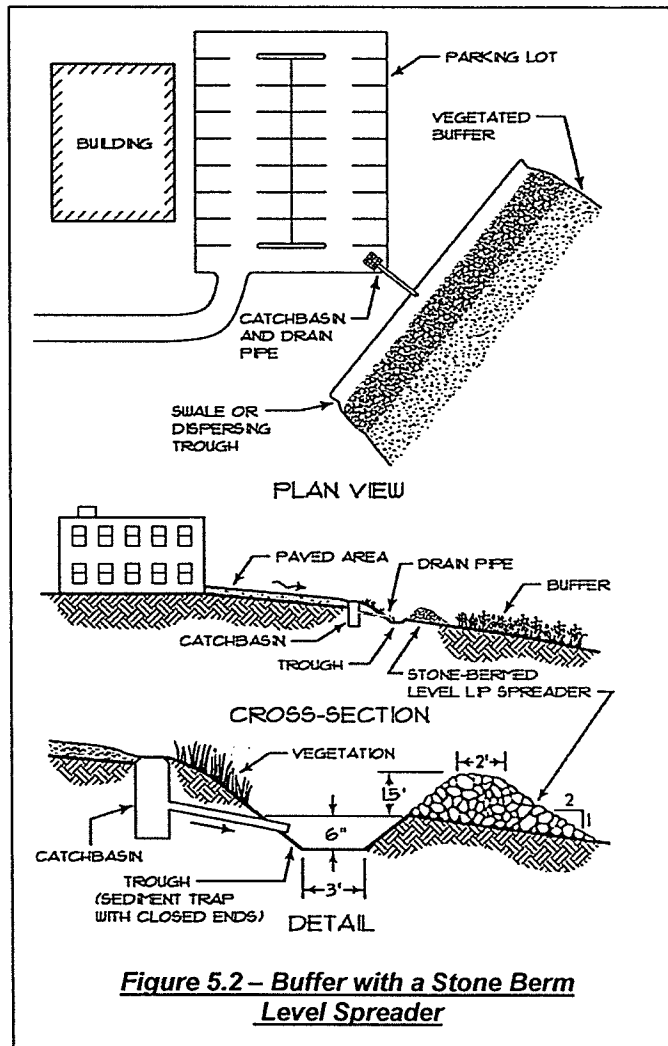
55' length of SBLs Req'd

5.2 - Buffer with a Stone Bermed Level Lip Spreader

In this type of buffer, runoff is directed behind the stone berm, which is constructed along the contour at the upper margin of a buffer area. The runoff then spreads out behind the berm so that it seeps through the entire length of the berm and is evenly distributed across the top of a buffer as sheet flow. Figure 5-2 shows a typical buffer with stone bermed level lip spreader. This type of buffer must be used when treating stormwater runoff from any of the following:

- An impervious area greater than one acre;
- Impervious areas where the flow path across the impervious area exceeds 150 feet; or
- Developed areas, including lawns and impervious surfaces, where runoff is concentrated, intentionally or unintentionally, so that it does not run off in well-distributed sheet flow when it enters the upper end of a buffer, except that road ditch runoff may be treated using a ditch turnout buffer.

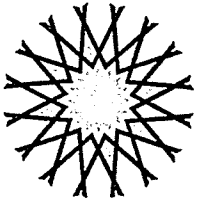
In addition to the general design and construction criteria provided in the beginning of this Chapter, the following criteria must also be applied in the design and construction of a buffer with a stone bermed level lip spreader.



Distribution of runoff to a Level Lip Spreader: A turnout should extend into the side ditch or cut slope in a manner that it intercepts the ditch runoff that carries it into the buffer area. The buffer end of the turnout must be level and equipped with a stone bermed level lip spreader.

- **Stone Berm Specifications:** The berm must be well-graded and contain some small stone and gravel so that flow through the berm will be restricted enough to cause it to spread out behind the berm. The stone berm must be at least 1.5 feet high and 2.0 feet across the top with 2:1 side slopes constructed along the contour and closed at the ends. Unless otherwise approved by the DEP, the design must include a shallow, 6-inch deep trapezoidal trough with a minimum bottom width of three feet, and with a level downhill edge excavated along the contour on the uphill edge of the stone berm.

OPERATION AND MAINTENANCE PROGRAM



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MILLER ROAD SUBDIVISION MILLER ROAD, KITTERY, MAINE

OPERATION AND MAINTENANCE PROGRAM **STORMWATER MANAGEMENT BMP's**

The proposed Miller Road Subdivision located on Miller Road in Kittery, Maine contains specific Best Management Practices (BMP's) for the conveyance, storage, and treatment of stormwater. These BMP's consist of stormwater detention areas, swales, buffer areas and culverts. All components should be inspected quarterly, and after every significant rain event of 1" in any 24-hour period.

Stormwater Detention Areas

The Stormwater Detention Areas shall be inspected to ensure that there is no channeling of stormwater and that no debris accumulates within the detention areas. The vegetative cover conditions shall be maintained. The inlets and outlets shall be inspected for erosion and any evidence of debris that could clog the outlet structures and culverts. Emergency spillways and level spreaders shall be inspected for any evidence of rilling and channeling and shall be maintained to promote a level, sheet-flow discharge.

Swales

All swales should be inspected for accumulation of debris, which could adversely affect the function of this BMP. These areas should also be maintained to have gradual slopes, which prevents channeling of stormwater and erosion of the bottom and sides of the swales.

Culverts

Culvert inlets and outlets should be inspected for debris, which could clog the BMP. Additionally, the placement of rip-rap should be inspected to ensure that all areas remain smooth and no areas exhibit erosion in the form of rills or gullies.

Wooded Buffer Areas

All wooded buffer areas shall be maintained in their natural, undisturbed condition. The forest duff layer shall be maintained and all debris shall be removed from the area.

Snow Removal

Snow shall be stockpiled in the approved snow storage areas only. Snow shall never be stockpiled in wetland areas. Additionally, a mostly sand mix (reduced salt) could be considered during winter months to prevent excessive salt from leaching to the wetland areas. Excess sand shall be removed from the storage areas, all paved surfaces and adjacent areas each spring.

Record Keeping

Routine maintenance and inspections will be accomplished by the property owner, or homeowner's association. It is recommended that all inspections accomplished in accordance with this program be documented on the attached Inspection & Maintenance Log.

