

## Town of Kittery Planning Board Meeting November 8, 2018

### ITEM 7 - Andrews Cluster Subdivision - Preliminary Plan Review

Action: Accept application as complete. Owner /Applicant, Arthur W. Andrews Rev. Trust requests consideration of a 11-lot cluster subdivision on 106.82 acres located off Deer Ridge Lane (Tax Map 60, Lot 10) in the Residential Rural (R-RL) and Shoreland Overlay and Resource Protection (OZ-RP & OZ-SL 250') Zones. Agent is Jeff Clifford, P.E., Altus Engineering.

#### PROJECT TRACKING

REQ'D	ACTION	COMMENTS	STATUS
Yes	Sketch Plan Review / Concept Approval	Scheduled for 8/9/2018	PENDING
No	Site Visit	9/11/18	HELD
Yes	Preliminary Plan Review Completeness/Acceptance	Scheduled for 11/8/18	PENDING
Yes	Public Hearing		
Yes	Preliminary Plan Approval		
Yes	Final Plan Review		

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.** 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 has been duly recorded in the York County registry of deeds, when applicable.

#### Background

Planning Board review of the proposed development is required by 16.10.3.1, General Development, Site and Subdivision Plans Review, because it is a cluster subdivision. The first lot was subdivided from the Andrews family parcel in 1982 with additional lots that followed in 1987, 2000, 2004 and 2017 thereby defining the current parcel and Deer Ridge Lane right-of-way. The proposed development is an 11-lot cluster subdivision that will consist of seven (7) lots serviced by a proposed 640 foot roadway off of Deer Ridge Lane. The other four (4) lots will be serviced by the existing Deer Ridge Lane.

At the August 9, 2018 meeting, the Board voted accept and approve the Sketch plan concept for the project and a site walk was attended by members on September 11, 2018.

The purpose of this review is to determine the completeness of the preliminary plan application, as well as determine what, if any, additional information the Board may require in its review of the proposed development.

#### Staff Review

1. Zoning. The applicant is proposing an 11-lot cluster subdivision with modified street frontage, minimum lot size and minimum front, side and rear yard setback standards. A cluster subdivision is a permitted use in the R-RL zone. All requested modified dimensional standards are depicted on sheet S – 1.2. The applicant has provided a list of deductions to determine the lot's Net Residential Area (NRA) and open space requirements. The proposed dimensional modifications per Section 16.8.11.3 are as follows:
  - a. 16.3.2.1.D2 – Minimum lot area: 22,771 sf \* vs 40,000 sf \* listed but smallest lot size per the plan is 23,512 sf;
  - b. 16.3.2.1.D2 – Street frontage: 40' vs 150 minimum;
  - c. 16.3.2.1.D2 – Side and rear yard setback: 10' vs 20';

- d. 16.8.4.4 – (Minor street standard) Side slope 2:1 vs 3:1; and,
  - e. 16.8.4.4 - (Minor street standard) Paved shoulder: none vs. 2' at walk side and 8' opp. side.
2. All of the required submittal items have been provided per 16.10.5.2. A standard boundary survey has been completed for the subject parcel and is included with the plan set.
  3. Open Space. Per 16.8.11.6.E.1, 50% of the total property, approximately 46.7 acres, is required to be maintained as designated open space. The applicant is proposing 84.6(+/-) acres of protected common open space or 90% of the parcel. The applicant states that the open space is configured to maximize the sensitivity to the natural resources within and near the property by providing significant forested buffers to wetlands which connect to protected woodland tracts on adjacent properties. The applicant also states the open space provides abundant opportunities for nature trails. The applicant has initiated talks with the Kittery Land Trust regarding a possible easement arrangement whereby the Trust would manage the open space in conjunction with abutting protected land.
  4. Floodplain, Resource Protection Areas, Wetlands. Flood Hazard Zone A per FIRM map #23031C0663G, dated preliminary November 5, 2013 is shown along the Cutts Ridge Brook corridor. Zone A has no defined 100-year flood elevation. No filling or development is proposed within the floodplain.

The proposed lots are within a significant sand and gravel aquifer and/or the Shoreland Water Body/Wetlands Protection Area (OZ-SL-250), therefore the lots will require an advance pre-treatment aeration at each subsurface wastewater disposal system. Seven (7) of the lots are partially located in the Shoreland Water Body/Wetlands Protection Area (OZ-SL-250') overlay zone, therefore a Special Exception is being requested. No wetlands will be impacted by the development. Per 16.8.11.6.I.5, all wetland setbacks must be maintained as a no-cut no-disturb area.

According to the applicant, Joseph Noel has surveyed the property for vernal pools. With assistance from MDIFW staff, it was determined that only one (1) of the sixteen (16) vernal pools qualified as a Significant Vernal Pool (SVP) under MDEP regulations. The other vernal pools did not contain a significant enough number of egg masses to be regulated. There will be no development within 250 feet of any vernal pools.

5. All lots appear to be regularly shaped and meet the lot shape standards (16.8.16.1).
6. The lots will be serviced by municipal water: an existing 8" main along Deer Ridge Lane and a proposed 6" main extended along the new roadway. There are two (2) existing fire hydrants on Remick's lane within 470 feet of Deer Ridge Lane entrance. A new hydrant will be proposed at the intersection of Deer Ridge lane and the new roadway.
7. Roads. A proposed 640 foot roadway will be constructed off Deer Ridge lane to service seven (7) of the proposed lots. Based upon the estimated ADT of 70 trips per day, Turkeytail Lane would be classified under 16.8 Attachment 1, Table 1 Design and Construction Standards for Streets and Pedestrianways as a Class II street.

Deer Ridge Lane is a private roadway that is maintained by an existing *Declaration of Rights, Restrictions and Covenants, Deer Ridge Lane Associates*, recorded at Y.C.R.D book 17344 pages 667-676. It is proposed to be extended 100+/- feet to an overall length of 1,033 feet with an

emergency vehicle turnaround provided. Based upon Table 1, Deer Ridge Lane is considered a Class III street with a maximum cul-de-sac length of 1,200-feet so it appears that requirement will be met.

The existing entrance to Deer Ridge Lane was reviewed by the Planning Board during the September 11, 2018 site walk. According to the applicant, the existing paved travel way was not built within the center of the right-of-way to preserve existing large trees. The applicant believes the rural character of the existing layout reduces roadway speed and is aesthetically desirable. The proposed roadway improvement will soften the initial curves of Deer Ridge lane and widen the travelled way to 20 feet while minimizing cutting trees at the entrance.

The proposed street does not include sidewalks and Deer Ridge lane does not contain sidewalks. The applicant has submitted a waiver request from 16.8.4.13, Table 1. In addition, waivers are requested from 16.8, Table 1:

- a. Gravel shoulder – propose 2’ gravel shoulders to maintain the existing rural character of the neighborhood.
- b. Travel pavement – roadways will be privately owned and maintained, therefore the applicant proposes 18’ and 20’ wide paved traveled ways.

A street naming application has been submitted as part of the preliminary plan application.

8. Stormwater management. Stormwater from impervious and disturbed areas on the site will be treated by the use of stormwater BMP’s designed to remove fine particulates and suspended sediments. A grassed underdrain soil filter, wooded buffers, grass swales, level spreaders and rip rap protection will be utilized to obtain the required stormwater treatment. The applicant has stated that preliminary stormwater practices were discussed during a MDEP *Stormwater Law License* pre-application meeting. A comprehensive review of the stormwater management plans will be done by MDEP.
9. Peer Review. CMA will review the plans and submit a report for the next meeting.
10. We have received a letter from the Kittery Water District dated October 23, 2018 verifying capacity to serve the proposed development.
11. The applicant has requested a waiver of Section 16.10.5.2.B(2) for drawings scale:
  - a. 1”=100’ for Existing Conditions and Topographic Plans and Subdivision Plans; and,
  - b. 1”=200’ for Soils Plan;
  - c. 1’=30” horizontal and 1’=3’ vertical for Lot plans and Roadway plan and Profile.The smaller scale coincides with lot plans, while having a scale that is easily readable.

### **Recommendation**

The preliminary plan submittal appears substantially complete and in general compliance with the standards of Title 16. The Board may request additional information if necessary to continue the review. If the Board determines no further information is needed, the Board may accept and preliminary plan application and schedule a public hearing.

***Move to accept the preliminary plan application dated October 18, 2018 from Owners / applicant Arthur W. Andrews Rev. Trust for an 11-lot cluster subdivision located off of Deer Ridge Lane (Tax Map 60 Lot 10) in the Residential Rural and Shoreland Overlay and Resource Protection (OZ-RP & OZ-SL 250’) Zones as complete.***

***Move to schedule a public hearing on {date} for the cluster subdivision plan, dated October 18, 2018 from Owners / applicant for Arthur W. Andrews Rev. Trust an 11-lot cluster subdivision located off of Deer Ridge Lane (Tax Map 60 Lot 10 in the Residential Rural and Shoreland Overlay and Resource Protection (OZ-RP & OZ-SL 250') Zones.***

## Jamie Steffen

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**From:** Eric Waddell <ewaddell@kitteryschools.com>  
**Sent:** Thursday, November 01, 2018 11:39 AM  
**To:** Jamie Steffen  
**Subject:** Re: Plan Review Meeting Follow-Up

Hi Jamie...

From a school district perspective, I would say that we can definitely absorb any new students who might enroll as a result of the subdivision. Other than that, I don't see the the School District having any concerns. We can definitely absorb the students who might result from moving to the new neighborhood.

Eric

On Thu, Nov 1, 2018 at 10:52 AM Jamie Steffen <[JSteffen@kitteryme.org](mailto:JSteffen@kitteryme.org)> wrote:

As a follow-up to our meeting earlier, I'm doing the Planning Board packets today and need to get Plan Review Notes out to the Planning Board as part of the packets.

I note Fire Chief Dave O'Brien comments regarding the proposed projects:

Homestead Subdivison / Site Plan:

- 1) Plan adjustments to provide closer access in the rear of the hotel building for fire truck apparatus; and
- 2) Additional sidewalk around the outside of the residential buildings to provide better egress in the event of an emergency.

Andrews Subdivision:

- 1) Concerned about the location of the proposed turnaround for Turkeytail Lane being located at the driveway entrance of lot 10.

Lt. Desjardins, I have received your evaluation letters. If those that were not able to attend have any comments / concerns on the projects that I can include for the PB packets please email them to me today.

## Jamie Steffen

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**From:** David Rich  
**Sent:** Thursday, November 01, 2018 2:35 PM  
**To:** Jamie Steffen  
**Subject:** RE: Plan Review Meeting Follow-Up

Hi Jamie,

Per our earlier discussion both projects are going to remain private. so I have no issues/ concerns with the projects as long as the proper waivers have been granted and no drainage is adversely affecting any abutting lots. Thanks

David Rich  
Commissioner of Public Works  
Town of Kittery  
[drich@kitteryme.org](mailto:drich@kitteryme.org)  
(207) 439-0333

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**From:** Jamie Steffen  
**Sent:** Thursday, November 01, 2018 10:53 AM  
**To:** David O'Brien <DO'Brien@kitteryme.org>; David Rich <drich@kitteryme.org>; Eric Waddell <ewaddell@kitteryschools.com>; John Desjardins <JDesjardins@kitteryme.org>; George Kathios <GKathios@kitteryme.org>  
**Cc:** Adam Causey <ACausey@kitteryme.org>  
**Subject:** Plan Review Meeting Follow-Up

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Thank you,

Jamie

Jamie Steffen



Donald O'Halloran  
Interim Chief of Police

# KITTERY POLICE DEPARTMENT

200 Rogers Road, Kittery, ME 03904  
Telephone: (207) 439-1638 Fax: (207) 439-6140



John Desjardins  
Lieutenant

To: Jamie Steffen  
From: John Desjardins  
Date: November 1, 2018  
Re: Turkey Tail Ln. Subdivision

Jamie,

After reviewing the development plans for the newly proposed Turkey Tail Ln. subdivision located off of Deer Ridge Ln., the Kittery Police Department has no specific public safety concerns that need to be addressed at this time.

Thank you,

Lt. John Desjardins

## Jamie Steffen

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**From:** David O'Brien  
**Sent:** Thursday, November 01, 2018 11:39 AM  
**To:** Jamie Steffen  
**Subject:** RE: Plan Review Meeting Follow-Up

I just left Attar Engineering and they are going to make changes to the hotel plan to meet my suggestions. It will be done prior to the meeting

**From:** Jamie Steffen  
**Sent:** Thursday, November 01, 2018 10:53 AM  
**To:** David O'Brien <DO'Brien@kitteryme.org>; David Rich <drich@kitteryme.org>; Eric Waddell <ewaddell@kitteryschools.com>; John Desjardins <JDesjardins@kitteryme.org>; George Kathios <GKathios@kitteryme.org>  
**Cc:** Adam Causey <ACausey@kitteryme.org>  
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Thank you,

Jamie

Jamie Steffen  
Town Planner  
Town of Kittery  
200 Rogers Road  
Kittery, ME 03904  
1-207-475-1323  
[jsteffen@kitteryme.org](mailto:jsteffen@kitteryme.org)



ROGER C. RAYMOND, JR., President  
ROBERT P. WYMAN, Treasurer

JAMES E. GOLTER, Secretary  
MICHAEL S. ROGERS, Superintendent

OFFICE OF  
**KITTERY WATER DISTRICT**

17 State Road  
Kittery, Maine 03904-1565  
TEL: 207-439-1128  
FAX: 207-439-8549  
Email: kitterywater@comcast.net

Jamie Steffen, Town Planner  
Town of Kittery  
200 Rogers Road  
Kittery, ME 03904

October 23, 2018

Re: Proposed Andrews Subdivision – Map 60, Lot 10

Dear Jamie,

Please accept this letter as verification that the Kittery Water District does have the capacity to supply municipal water service for both domestic and fire protection purposes to the proposed Andrews Subdivision, Map 60 Lot 10.

Sincerely,



Michael S. Rogers  
Superintendent

cc: Ronald M. Beal, P.E., Altus Engineering, Inc.

**Subdivision Review Application**

***Andrews Subdivision***

***Residential Cluster Subdivision***

**Tax Map 60, Lot 10**

**Kittery, Maine**

**October 18, 2018**

*Prepared For:*

**Arthur W. Andrews Rev. Trust**  
**c/o Mary Thron**

P.O. Box 96  
Kittery Point, Maine 03905  
(603)-868-5995

*Prepared By:*

**Altus Engineering, Inc.**

133 Court Street  
Portsmouth, NH 03801  
Phone: (603) 433-2335  
Fax: (603) 433-4194



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Jamie Steffen, Town Planner  
Town of Kittery  
200 Rogers Road  
Kittery, Maine 03904

Re: **Andrews Subdivision**  
**Map 60, Lot 10**  
**Kittery, Maine**  
**P-4795**

Dear Mr. Steffen:

Altus Engineering, Inc. (Altus) is pleased to submit on behalf of the applicant, Arthur W. Andrews Rev. Trust, c/o Mary Thron Trustee, an Application for *Cluster Development Plan Review* to the Kittery Planning Board for a proposed 11-lot residential clustered subdivision at the subject parcel which is located on the south side of Deer Ridge Lane and west of Remicks Lane. A 640 linear foot private roadway is proposed and improvements are being made to Deer Ridge Lane. As a clustered subdivision, 84.6 acres of protected common open space will be provided. At their August 9, 2018 meeting, the Planning Board voted to accept the Sketch Plan concept for the project and a site walk was attended by members on September 11, 2018.

This Preliminary Plan Review submission includes the following materials:

- Application and supporting documents – (15 copies)
- Preliminary Plan Sets –5 (24"x36") and 10 (11"x17")
- Drainage Analysis – (3 copies)
- Check in the amount of \$1,070.00 for the Application

The applicant seeks to be placed on the November 8, 2018 Planning Board agenda. Please call if you have any questions or require additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeff Clifford".

Jeffrey K. Clifford, P.E.  
Vice President

RMB/jkc/4795.001.JS.ltr.doc

Enclosures

e-copies (w/enclosures): Mary Thron, Trustee

# *Andrews Subdivision*

**Kittery, Maine**

## **Cluster Subdivision Review Application**

**October 18, 2018**

### **SUBMISSION DOCUMENT LIST:**

- *Application for Cluster Development Plan Review*
- List of Dimensional Modifications
- Letters of Authorization
- *Road Name Application*
- Kittery Tax Map 60
- Abutters List and Map
- Abutter Notification Letter
- Copy of Certified Mail Receipts
- Trustee's Deeds
- Declaration of Rights, Restrictions and Covenants (Deer Ridge Lane Association)
- Development Narrative
- Traffic Generator Summary
- Location Map (USGS map)
- Aerial Map
- Vicinity Plan, showing area open space
- Kittery Overlay Zones Map
- Kittery Natural Resources Map (from Town GIS)
- Kittery Wetlands Map (from Town GIS)
- Kittery Municipal Water System Map (from Town GIS)
- Beginning with Habitat Maps
- Significant Sand and Gravel Aquifer
- FEMA Map
- Maine D.E.P. Vernal Pool Significance Determination letter (dated April 13, 2018)
- NRCS - York County Soils Map
- *Soil Survey Report* (by Joseph W. Noel)
- Department Heads letters
- Engineer's Opinion of Cost
- Draft Findings of Fact

**SUBDIVISION PLANS:** Five sets (24"x36") & ten sets (11"x17")



# TOWN OF KITTERY MAINE

## TOWN PLANNING AND DEVELOPMENT DEPARTMENT

200 Rogers Road, Kittery, Maine 03904

PHONE: (207) 475-1323

Fax: (207) 439-6806

[www.kittery.org](http://www.kittery.org)

### CLUSTER DEVELOPMENT PLAN REVIEW

<b>FEES FOR REVIEW:</b>  <input checked="" type="checkbox"/> \$500.00 PLUS  <input type="checkbox"/> \$50.00/LOT OR DWELLING UNIT	<b>Application Fee Paid:</b> \$ 1,050.00  Date: _____	<b>Map #:</b> <u>60</u> <b>Lot #:</b> <u>10</u> <b>Zones:</b> Base <u>R-RL</u> Overlay(s) <u>OZ-RP &amp; OZ-SL-250'</u>		
	<b>Review Escrow Fee Paid:</b> \$ _____  Date: _____	<b>Physical Address:</b> <u>Deer Ridge Lane</u>		
<b>PROPERTY OWNER/APPLICANT INFORMATION*</b> (print clearly) <small>*Applicant must also provide owner's signed authorization to act on their behalf.</small>	<b>Owner's Name:</b>	Arthur W. Andrews Rev. Trust	<b>Owner's Mailing Address:</b> c/o Mary Thron, Trustee P.O. Box 96 Kittery Point, ME 03905	
	<b>Phone:</b>	207-439-0889		
	<b>Email:</b>	marythron@comcast.net		
	<b>Applicant's Name:</b>	same	<b>Applicant's Mailing Address:</b>	
	<b>Phone:</b>			
<b>Email:</b>				
<b>APPLICANT'S AGENT INFORMATION</b> (print clearly)	<b>Name:</b>	Jeffrey K. Clifford	<b>Name of Business</b>	Altus Engineering, Inc.
	<b>Phone:</b>	603-433-2335	<b>Mailing Address</b> 133 Court Street Portsmouth, NH 03801	
	<b>Fax:</b>			
	<b>Email:</b>	jclifford@altus-eng.com		
<b>PROJECT DESCRIPTION</b>	<b>Existing Use(s):</b> <u>Undeveloped Woodland</u>			
	<b>Number of Proposed Lots</b>	<u>11</u>	<b>Subdivision Name</b>	<u>Andrews Subdivision</u>
	<b>Proposed Road Name:</b> <u>Turkeytail Lane</u>			
	<small>(A separate application is required and approval received from Public Safety/DPW/Planning Board prior to final plan signature.)</small>			
	<b>Ownership: (check)</b>	<input checked="" type="checkbox"/> Fee- Simple <input type="checkbox"/> Condominium	<b>Responsibilities: (check)</b>	<input checked="" type="checkbox"/> Total Development <input type="checkbox"/> Other
<b>ADDITIONAL SUBMITTAL INFORMATION</b>	<b><u>Article XI, Chapter 8 – Cluster Residential and Cluster Mixed-Use Development</u></b>			
	To begin Preliminary Plan Review for Cluster Development, the Applicant must have received Sketch Plan acceptance through Planning Board action, including all requirements for Sketch Plan submittal as described in Title 16.8.11.5. As part of the preliminary plan review, sketch plan review submittal information must be attached to this plan application, including documentation of Planning Board action on the sketch plan. All other requirements as outlined in Article XI, Chapter 8 must be addressed at the Preliminary Plan Review level and included herein.			
	To begin Final Plan Review for Cluster Development, the Applicant must have received Preliminary Plan approval through Planning Board action.			
	Throughout plan review, it is the responsibility of the Applicant/Agent to provide information as required in Chapter 16.8 Design and Performance Standards-Built Environment, Chapter 16.9 Design and Performance Standards-Natural Environment and Chapter 16.10 Development Plan Application and Review, and other requirements as referenced.			

<b>Title 16.7.4.1:</b>		In granting modifications or waivers, the Planning Board must require such conditions as will, in its judgment, substantially meet the objectives of the requirements so waived or modified.
<b>REQUESTED WAIVERS</b>	<b>Ordinance Section</b>	<b>Describe why this request is being made.</b>
	***EXAMPLE*** 16.32.560 (B)- OFFSTREET PARKING.	***EXAMPLE*** Requesting a waiver of this ordinance since the proposed professional offices have a written agreement with the abutting Church owned property to share parking.
	16.8.5.1.3 (a&b) Roadway Plan & profile drawing scale	Drawing scale: 1"=100' for Existing Conditions and Topographic plans and Subdivision Plans; 1"=200' for Soils Plan; 1"=30' horizontal and 1"=3' vertical for Lot Plans and Roadway Plan and Profile. The smaller scale coincides with the Lot Plans, while having a scale that is easily readable.
	16.8.4.13 Sidewalks	No sidewalk is proposed.
	16.8 Table 1 Gravel Shoulders	Propose 2' gravel shoulders to maintain the existing rural character of the neighborhood
	16.8 Table 1 Traveled way	Roadways will be privately owned and maintained, therefore the applicant proposes 18' and 20' wide paved traveled ways

## **■ ABUTTER NOTIFICATION**

**16.10.5.1.1. Preliminary Plan Application Filing and Completeness Review.** The application must be accompanied by a Plan and the required fee together with a certification the applicant has notified abutters by mail of the filing of the Plan application for approval.

Submitted Applications must include a list of the names and addresses of the abutters and date notification mailed.  
The abutter Notice of Filing must include the owner/applicant name, address and description of the proposed project.

**Applications will not be accepted without submittal of all plan requirements as specified herein, and without a complete, signed application page (page 5).**

# Minimum Plan Submission Requirements (Title 16.10.5.2)

- 15 COPIES OF THIS APPLICATION       15 COPIES OF THE PLAN – 5 OF WHICH MUST BE 24" X 36"  
 1 PDF OF THE SITE PLAN SHOWING GPS COORDINATES

Prior to starting the review process, the Planning Board will decide whether sufficient information has been provided and will vote to **DETERMINE COMPLETENESS/ACCEPTANCE**. The applicant is responsible to clearly describe the project. The following requirements must be addressed, and noted if not applicable.

**Paper size:**

- No less than 11" X 17" (reduced) or greater than 24" X 36" (full)

**Scale size:**

- Under 10 acres: no greater than 1" = 30'  
 10 + acres: 1" = 50'

**Title block:**

- Applicant's name and address  
 Name of preparer of plans with professional information and professional seal  
 Parcel's tax map identification (map – lot)  
 Date of plan preparation

**Boundary survey performed and sealed by licensed surveyor:**

- Identify all existing boundary markers  
 Show all proposed boundary monuments (per ordinance)

**Provide orientation:**

- Arrow showing true north and magnetic declination  
 Graphic scale       Parcel Owners and map and lot  
 Deed docket and page numbers       Signature blocks

**Show location and description of:**

- All structures       Floor plans  
 Elevations of principle structures  
 All structures and accesses within 100 feet

**Show parcel data:**

- Total parcel area       Rights-of-way area       Wetlands area  
 Area to be disturbed       Length of street frontage  
 Building setback lines       Wetland setbacks  
 All parcels of land proposed to be dedicated to public use and the conditions of such dedication

**Indicate how the existing ground will change by showing:**

- Existing contours       Proposed contours       % grade  
 Finished grades       Proposed slopes       Finished floor elevations

- Show names and addresses of all owners of record on abutting parcels and the assessor's map and lot numbers.

- Label all zoning districts abutting the property boundaries.

- Show locations of natural physical features such as water bodies, watercourses, forest cover, and ledge outcroppings.

Show the locations of existing and proposed utilities and identify which utilities are to be privately owned/ municipally owned:

- Overhead Electric       underground electric       Water mains       Wells  
 Gas mains       Cable TV       Sewer mains       Test pits       Septic tanks  
 Leach fields       Storm drain lines       Catch basins       Culverts  
 Gutters       Stormwater storage basins       Rain gardens  
 Nearest fire hydrant

**Indicate required landscaping including:**

- Type of plant material       Plant/Tree sizes  
 Placement       Irrigation systems

**Show natural and historical topography:**

- Rock walls       Railroad beds  
 The location of all natural features or site elements to be preserved.

Provide a **locus map** showing the property in relation to surrounding roads, within 2,000 feet of any property line of the development.

Provide a **vicinity map and aerial photograph** at a scale not more than **400 feet to the inch** showing the relation to other properties and geographic features and show:

- All the area within five hundred (500) feet of the boundary line of the proposed development including roads, geographic features, natural resources (wetlands, etc.), historic sites, applicable comprehensive plan features such as proposed park locations, land uses, Zones and other features;  
 Any smaller area between the tract and all existing streets, provided any part of such a street used as part of the perimeter for the vicinity map is at least five hundred (500) feet from any boundary of the proposed development.

**Show the locations of any:**

- Parks       Open space       Conservation easement

**Identify and locate each:**

- Easements       Rights-of-way       Street alignments  
 All intersecting property lines within 50 feet of the parcel.

Include plans, profiles and typical sections of all **roads and other paved ways**, including all relevant street data.

- Intersections or       Distance to nearest intersection  
 Driveways onsite       Distance to nearest driveway  
 Sight visibility lines

**Show all existing and proposed lighting**

- Map of all street lighting, attached lighting, and area lighting  
 Location of lighted signs       Photo-metrics map

- Indicate the location of any permanently installed machinery likely to cause appreciable noise at the lot lines.

**Provide description of these materials stored on the property:**

- Hazardous       Toxic       Raw Waste

**Indicate the location and dimensions of (existing and proposed):**

- Sidewalks       Curbs       Driveways  
 Fences       Retaining walls       Other artificial features

**Show parking calculations and parking spaces on the site plan and:**

- Existing parking, if applicable       proposed parking spaces  
 Handicapped spaces

**Copies of State and Local permit applications:**

- Notice of Intent       NRPA       Permit by Rule  
 all other applicable permits

- Copy of **FIRM Map** showing proposed parcel boundary.

**PRIOR TO A SITE WALK, TEMPORARY MARKERS MUST BE ADEQUATELY PLACED THAT ENABLE THE PLANNING BOARD TO READILY LOCATE AND APPRAISE THE LAYOUT OF THE DEVELOPMENT.**

**SUBMITTALS THE TOWN PLANNER DEEMS SUFFICIENTLY LACKING IN CONTENT WILL NOT BE SCHEDULED FOR PLANNING BOARD REVIEW.**

## Plan Findings of Fact

The following Findings (Title 16.10.8.3.4) must be sufficiently addressed in writing by the applicant/agent and submitted to the Planning Department with the Preliminary Plan application. These Findings must be updated as necessary during the review process, and the Plan must be in compliance with these Findings prior to Final Plan approval by the Planning Board.

- A. *Development Conforms to Local Ordinances*** The proposed development conforms to a duly adopted comprehensive plan as per adopted provisions in the Town Code, zoning ordinance, subdivision regulation or ordinance, development plan or land use plan, if any. In making this determination, the municipal reviewing authority may interpret these ordinances and plans.
- B. *Freshwater Wetlands Identified*** All freshwater wetlands within the project area have been identified on any maps submitted as part of the application, regardless of the size of these wetlands.
- C. *River, Stream or Brook Identified*** Any river, stream or brook within or abutting the proposed project area has been identified on any maps submitted as part of the application. For purposes of this section, "river, stream or brook" has the same meaning as in 38 M.R.S. §480-B, Subsection 9.
- D. *Water Supply Sufficient*** The proposed development has sufficient water available for the reasonably foreseeable needs of the development.
- E. *Municipal Water Supply Available*** The proposed development will not cause an unreasonable burden on an existing water supply, if one is to be used.
- F. *Sewage Disposal Adequate*** The proposed development will provide for adequate sewage waste disposal and will not cause an unreasonable burden on municipal services if they are utilized.
- G. *Municipal Solid Waste Disposal Available*** The proposed development will not cause an unreasonable burden on the municipality's ability to dispose of solid waste, if municipal services are to be used.
- H. *Water Body Quality and Shoreline Protected*** Whenever situated entirely or partially within two hundred fifty (250) feet of any wetland, the proposed development will not adversely affect the quality of that body of water or unreasonably affect the shoreline of that body of water.
- I. *Groundwater Protected*** The proposed development will not, alone or in conjunction with existing activities, adversely affect the quality or quantity of groundwater.
- J. *Flood Areas Identified and Development Conditioned*** All flood-prone areas within the project area have been identified on maps submitted as part of the application based on the Federal Emergency Management Agency's Flood Boundary and Floodway Maps and Flood Insurance Rate Maps, and information presented by the applicant. If the proposed development, or any part of it, is in such an area, the applicant must determine the one hundred (100) year flood elevation and flood hazard boundaries within the project area. The proposed plan must include a condition of plan approval requiring that principal structures in the development will be constructed with their lowest floor, including the basement, at least one foot above the one hundred (100) year flood elevation.
- K. *Stormwater Managed*** The proposed development will provide for adequate stormwater management.
- L. *Erosion Controlled*** The proposed development will not cause unreasonable soil erosion or a reduction in the land's capacity to hold water so that a dangerous or unhealthy condition results.
- M. *Traffic Managed*** The proposed development will:
1. Not cause unreasonable highway or public road congestion or unsafe conditions with respect to the use of the highways or public roads existing or proposed; and
  2. Provide adequate traffic circulation, both on-site and off-site.
- N. *Water and Air Pollution Minimized*** The proposed development will not result in undue water or air pollution. In making this determination, the following must be considered:
1. Elevation of the land above sea level and its relation to the floodplains;
  2. Nature of soils and sub-soils and their ability to adequately support waste disposal;
  3. Slope of the land and its effect on effluents;
  4. Availability of streams for disposal of effluents;
  5. Applicable state and local health and water resource rules and regulations; and
  6. Safe transportation, disposal and storage of hazardous materials.



<b>O. Aesthetic, Cultural and Natural Values Protected</b>	The proposed development will not have an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat identified by the department of inland fisheries and wildlife or the municipality, or rare and irreplaceable natural areas or any public rights for physical or visual access to the shoreline.
<b>P. Developer is Financially and Technically Capable</b>	Developer is financially and technically capable to meet the standards of this section.
<b>Q. Wireless Communication Facility Development (requirements as specified)</b>	
<b>R. Shoreland, Resource Protection or Commercial Fisheries/Maritime Use Overlay Zone Development (requirements as specified)</b>	
<b>S. Right-of-Way Plan (requirements as specified)</b>	
<b>T. Special Exception Use (requirements as specified)</b>	

**16.10.8.2.5 - Conditions or Waivers.**

Conditions required by the Planning Board at the final plan review phase must have been met before the final plan may be given final approval unless so specified in the condition or specifically waived, upon written request by the applicant, by formal Planning Board action wherein the character and extent of such waivers which may have been requested are such that they may be waived without jeopardy to the public health, safety and general welfare.

**Title 16.10.8.2.6 - Conditions on Plan**

The decision of the Planning Board, plus any conditions, must be noted on three copies of the final plan to be recorded at the York County Registry of Deeds, when required. One copy must be returned to the applicant, one retained by the Town Planner and one forwarded to the Code Enforcement Officer.

Minimum conditions include:

1. Prior to the issuance of a Building Permit by the Town's Code Enforcement Officer, the Developer must submit:
  - A. A recorded copy of the Plan and all related legal documents that may be required.
  - B. Payment of all outstanding fees associated with the permitting, including, but not limited to, Town Attorney fees, peer review, newspaper advertisements and abutter notification.
  - C. A Performance Guarantee and/or an escrow account to pay for any required field inspections (see attached 'Cost Estimates').
  
2. Before construction or soil disturbance:
  - A. The owner and/or developer must stake all corners of the building envelope, as shown on the plan. These markers must remain in place until the Code Enforcement Officer determines construction is completed and there is no danger of damage to areas that are, per Planning Board approval, to remain undisturbed.
  - B. The owner and/or developer, in an amount and form acceptable to the town manager, must file with the municipal treasurer an instrument to cover the cost of all infrastructure and right-of-way improvements and site erosion and stormwater stabilization (see attached 'Cost Estimates').

**16.10.9.1.2 - Plan Revisions After Approval**

No Changes, erasures, modifications or revisions may be made to any Planning Board approved final plan, unless in accordance with the Planner's and CEO's powers and duties as found in Chapter 16.4, or unless the plan has been resubmitted and the Planning Board specifically approves such modifications.

<p><b>I certify, to the best of my knowledge, the information provided in this Application is true and correct, abutters to the project have been notified, and I will not deviate from the approved plan without following code requirements. Permission is granted to Town Staff to access the property associated with this application to aid in the regulatory review.</b></p>			
<p><b>Applicant's Signature:</b> <b>Date:</b></p>	<p><i>Maya Ryan Trustee</i> _____ 12/12/18</p>	<p><b>Owner's Signature:</b> <b>Date:</b></p>	<p>X <i>Maya Ryan Trustee</i> _____ 12/12/18</p>



# Town of Kittery, Maine

## Planning Office

P.O. Box 808, Kittery, Maine 03904  
Phone 439-0452

### ANDREWS SUBDIVISION

#### LIST OF DIMENSIONAL STANDARDS MODIFICATIONS

Proposed Dimensional Modifications per Article XIII, Clustered Residential Development, Section 16.8.11.3

16.3.2.1.D2	Minimum lot area: 22,771 s.f. vs. 40,000 s.f.
16.3.2.1.D2	Street frontage: 40.00' vs. 150' minimum
16.3.2.1.D2	Side and rear yard setback: 10' vs. 20'
16.8.4.4	(Minor street std.) Side slope: 2:1 vs. 3:1
16.8.4.4	(Minor street std.) Paved shoulder: none vs. 2' at walk side and 8' opp. side

**Andrews Subdivision**

Agent: Altus Engineering, Inc.

Name of Development


Owner or Agent

Jeffrey K. Clifford, P.E.

**Letter of Authorization**

I, Mary Thron, hereby authorize Altus Engineering, Inc. of Portsmouth, New Hampshire to represent me in all matters concerning engineering and related permitting for Kittery Tax Map 60 Lot 10 located off Remick Lane in Kittery, Maine. This authorization shall include any signatures required for Federal, State and Municipal permit applications.

x  Mary Thron 10/12/18  
Signature Print Name Date

 Megan Ramos 10/12/18  
Witness Print Name Date



**TOWN OF KITTERY MAINE**  
**TOWN PLANNING AND DEVELOPMENT**  
 200 Rogers Road, Kittery, ME 03904  
 Telephone: 207-475-1323 Fax: 207-439-6806

**APPLICATION: STREET NAMING**

FOR YOUR SAFETY AND SERVICE, MUNICIPAL DEPARTMENT REVIEW AND TOWN PLANNING BOARD APPROVAL IS REQUIRED.		Fee for Review	<input checked="" type="checkbox"/> \$20.00	Amount Paid: \$ _____ Date: _____
APPLICANT/S PROPERTY OWNER'S INFORMATION	Name	Arthur W. Andrews Rev. Trust	Mailing Address	c/o Mary Thron, Trustee
	Phone	207-439-0889		P.O. Box 96
	Email	marythron@comcast.net		Kittery Point, ME 03905
APPLICANT'S AGENT'S INFORMATION	Name	Jeffery K.Clifford, PE	Name of Business	Altus Engineering, Inc.
	Phone	603-433-2335	Mailing Address	133 Court Street
	Fax	603-433-4194		Portsmouth, NH 03801
	Email	jclifford @altus-eng.com		
DESCRIPTION	EXISTING STREET NAME:	N/A		
	PROPOSED STREET NAME:	Turkeytail Lane		
	STREET LOCATION (e.g. off Haley Road, after # 157 between Norton and Bartlett Road “):			
	South side of Deer Ridge Lane, 550 feet southwest of Cutts Road			

A Street Name application and departmental review and acceptance is required prior to Planning Board approval.  
 In the case of active developments before the Planning Board, this application fee is waived.

**FOR YOUR INFORMATION – TOWN CODE TITLE 16.8 ARTICLE III. STREET SIGNS.**

**16.8.3.1 Names** – Streets which join or are in alignment with streets of abutting or neighboring properties must bear the same name. Names of new streets may not duplicate, nor bear phonetic resemblance to the names of existing streets within the municipality and are subject to the approval of the Planning Board.

**16.8.3.2 Signs Provided** – Street name signs are to be furnished and installed by the developer; the type, size and location to be approved by the Commissioner of Public Works.

**INSTRUCTIONS FOR SUBMITTING A COMPLETE STREET NAME APPLICATION**

The following information must be provided when submitting a request for Planning Board review:

- A copy of the Town Tax Map indicating the location of the proposed private drive or right-of-way and the Tax Map Lots affected (abutters).
- A specific written description of where the private drive or right-of-way is located (i.e. “off Haley Road, after # 157 between Norton and Bartlett Road”).
- A list of the Town Tax Map/Lot numbers and names of all abutters to the right-of-way and obtain their signatures on the street name application.

WE THE UNDERSIGNED PROPERTY OWNERS DO HEREBY REQUEST APPROVAL OF THE NAME Turkeytail Lane FOR A STREET LOCATED OFF OF Deer Ridge Lane (STREET/RD/LN). UPON APPROVAL BY THE PLANNING BOARD, WE HEREIN ACKNOWLEDGE RESPONSIBILITY FOR EXPENSES INCURRED TO CHANGE OUR MAILING ADDRESS AS WELL AS TO PURCHASE AND INSTALL THE STREET SIGN(S).

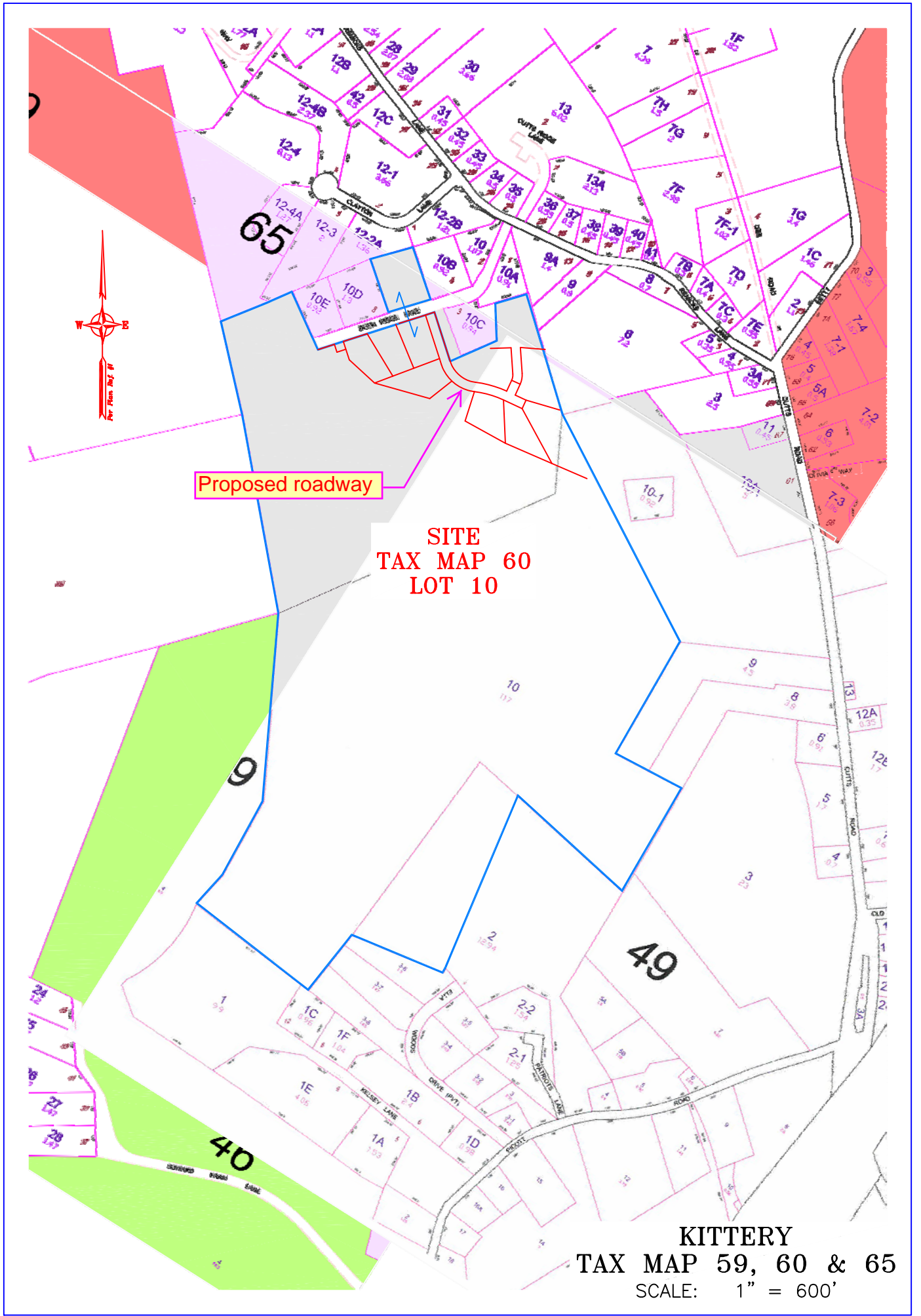
**APPLICANT MUST ACQUIRE SIGNATURES OF PROPERTY OWNERS ABUTTING THE STREET TO BE NAMED\***

PRINTED NAME	SIGNATURE OF PROPERTY OWNER	MAILING ADDRESS	MAP & LOT NUMBER	TELEPHONE NUMBER
Mary Thron	<i>Mary Thron</i>	P.O. Box 96, Kittery Point, ME 03905	66 / 10	207-439-0889
Chris & Rachael Andrews	<i>Chris &amp; Rachael Andrews</i>	3 Deer Ridge Lane, Kittery, ME 03904	65 / 10C	207-439-6356

\*If applicable. If undeveloped, current property owner's name. Please attach additional pages if necessary.

**THIS SECTION FOR OFFICE USE ONLY:**

DEPARTMENT	COMMENTS	APPROVED (A) OR DENIED (D)	SIGNATURE	DATE
FIRE DEPARTMENT		A D		
POLICE DEPARTMENT		A D		
PUBLIC WORKS		A D		
CODE ENFORCEMENT		A D		
PLANNING		A D		
ASSESSING		A D		
TOWN CLERK /VOTER REGISTRAR		A D		
PLANNING BOARD		A D		



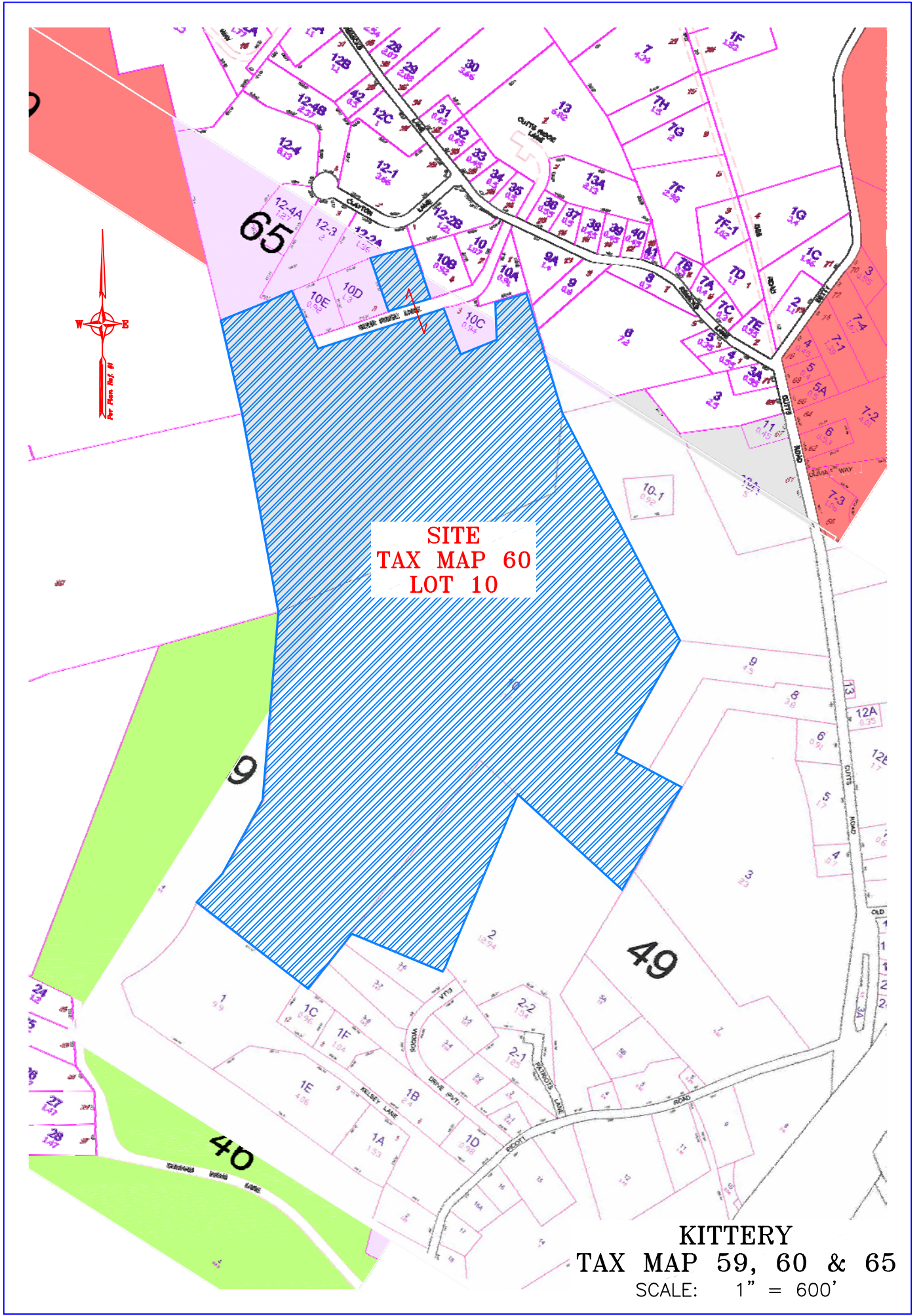
Proposed roadway

SITE  
TAX MAP 60  
LOT 10

KITTERY

TAX MAP 59, 60 & 65

SCALE: 1" = 600'



**SITE  
TAX MAP 60  
LOT 10**

**KITTERY**

**TAX MAP 59, 60 & 65**

SCALE: 1" = 600'

**Andrews Subdivision  
Tax Map 60 Lot 10  
Kittery, Maine**

**Abutters List (parcel within 150 feet)**

Prepared on October 17, 2018

Map 65, Lot 10C  
Chris & Rachael Andrews  
3 Deer Ridge Lane  
Kittery, ME 03904

Map 60, Lot 8  
John & Elizabeth Delio Sr.  
43 Cutts Road  
Kittery, ME 03904

Map 60, Lot 1C  
Paul & Angela Laroche  
12 Kesley Lane  
Kittery, ME 03904

Map 65, Lot 10A  
John & Lisa Hippen  
1 Deer Ridge Lane  
Kittery, ME 03904

Map 60, Lot 3  
Heirs of Joseph Kozlowski  
c/o Robert & Nathalie Harris  
40 Cutts Road  
Kittery, ME 03904

Map 60, Lot 1  
Webster & Marilyn Kesley  
14 Remicks Lane  
Kittery, ME 03904

Map 65, Lot 9A  
Steven & Kelly Abbott  
13 Remicks Lane  
Kittery, ME 03904

Map 49, Lot 7-3  
Jared & Chelsey Fournier  
58 Joe Jenny Road  
Oxford, MA 01540

Map 46, Lot 4  
Patti Parsons,  
Gary & Gregg Seward  
11 Mill Lane  
York, ME 03909

Map 65, Lot 9  
Peter & Kim Bostrom  
9 Remicks Lane  
Kittery, ME 03904

Map 60, Lot 2  
James & Jodie Nielsen  
10 Ella Woods Drive  
Kittery, ME 03904

Map 59, Lot 7  
Suzanne Patten, Trustee  
86 Wilson Road  
Kittery, ME 03904

Map 65, Lot 6  
Robert Charest  
5 Remicks Lane  
Kittery, ME 03904

Map 49, Lot 3-6  
Linda Kellett  
PO Box 694  
York, ME 03909

Map 59, Lot 21  
Richard Johnson  
110 Wilson Road  
Kittery, ME 03904

Map 60, Lot 10-3  
Arthur Andrews Jr.  
61 Cutts Road  
Kittery, ME 03904

Map 49, Lot 3-7  
Ronald & Laura Brown  
7 Ella Woods Drive  
Kittery, ME 03904

Map 65, Lot 12-4  
Kittery Land Trust  
PO Box 467  
Kittery, ME 03904

Map 60, Lot 9  
Steven Brake  
37 Creamery Hill Road  
Lebanon, ME 04027

Map 49, Lot 3-8  
James & Donna Gorman  
5 Ella Woods Drive  
Kittery, ME 03904

Map 65, Lot 12-3  
Joshua Abbott & James Scully  
PO Box 16  
Kittery Point, ME 03905



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Prepared By:



**Andrews Subdivision  
Tax Map 60 Lot 10  
Kittery, Maine**

**Abutters List (parcel within 150 feet)**

Prepared on October 17, 2018

Map 65, Lot 10E  
Endeavor Properties LLC  
PO Box 366  
York, ME 03909

**Owners/Applicant:**  
Arthur W. Andrews Rev. Trust  
Mary Thron  
P.O. Box 96  
Kittery Point, ME 03905

Map 65, Lot 10D  
Maria Wyka  
8 Deer Ridge Lane  
Kittery, ME 03904

**Engineer:**  
Jeffrey K. Clifford, P.E.  
Altus Engineering, Inc.  
133 Court Street  
Portsmouth, NH 03801

Map 65, Lot 12-2A  
Boon Rock LLC  
PO Box 226  
York Harbor, ME 03911

**Surveyor:**  
North Easterly Survey, Inc.  
191 State Road  
Kittery, ME 03904

Map 65, Lot 12-2B  
Joshua & Megan Abbott  
1 Clayton Lane  
Kittery, ME 03904

**Soils & Wetland Scientist:**  
Joseph Noel  
P.O. Box 174  
South Berwick, ME 03908

Map 65, Lot 10B  
Michael Scarpone  
4 Deer Ridge Lane  
Kittery, ME 03904

Map 65, Lot 10  
David & Theresa Tozier  
2 Deer Ridge Lane  
Kittery, ME 03904



---

Prepared By:



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

**Subject: Andrews Subdivision – Kittery Planning Board Review**  
**Tax Map 60, Lot 10**  
**Cutts Road**  
**Kittery, Maine 03904**

Dear Abutter:

This letter is to notify you that Mary Thron is submitting an application to the Town of Kittery Planning Board for an 11-lot residential cluster subdivision off Remicks Lane on 106.81-acre property identified as Tax Map 60, Lot 10. Your parcel directly abuts, or is estimated to be within 150 feet, of this property.

Plans are available for public review at the Planning Department in the Kittery Town Hall at 200 Rogers Road. Also, you may track the application's progress by reviewing Planning Board meeting dates, agendas and minutes on the internet. Please go to internet address [www.kitteryme.org](http://www.kitteryme.org) and on the left hand side of the web page, click on "Agendas and Meetings" and then on the appropriate date.

Otherwise you may contact the Town Planning Department at 207-475-1323.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

RMB\jkc\4795.07 Abut.notice.ltr.doc

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Sent To: Maria Wyka  
 Street and Apt. #: 8 Deer Ridge Lane  
 City, State, ZIP+4: Kittery, ME 03904

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Sent To: Michael Scarpone  
 Street and Apt. #: 4 Deer Ridge Lane  
 City, State, ZIP+4: Kittery, ME 03904

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Sent To: David & Theresa Tozier  
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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
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Sent To: Joshua & Megan Abbott  
 Street and Apt. #: 1 Clayton Lane  
 City, State, ZIP+4: Kittery, ME 03904

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Sent To: Boon Rock LLC  
 Street and Apt. #: PO Box 226  
 City, State, ZIP+4: York Harbor, ME 03911

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
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<b>Total Postage and Fees</b>	<b>\$3.95</b>

Sent To: Joshua Abbott & James Scully  
 Street and Apt. #: PO Box 16  
 City, State, ZIP+4: Kittery Point, ME 03905

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<b>Total Postage and Fees</b>	<b>\$3.95</b>

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Sent To: Ronald & Laura Brown  
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 City, State, ZIP+4: Kittery, ME 03904

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<input type="checkbox"/> Adult Signature Required	\$0.00
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<b>Total Postage and Fees</b>	<b>\$3.95</b>

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Sent To: James & Donna Gorman  
 Street and Apt. No.: 5 Ella Woods Drive  
 City, State, ZIP+4: Kittery, ME 03904

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**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
<b>Total Postage and Fees</b>	<b>\$3.95</b>

**PORTSMOUTH, NH 03801**  
 OCT 18 2018  
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Sent To: Paul & Angela Laroche  
 Street and Apt. No.: 12 Kesley Lane  
 City, State, ZIP+4: Kittery, ME 03904

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7016 2710 0000 1715 1294

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**KITTERY, ME 03904**

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
<b>Total Postage and Fees</b>	<b>\$3.95</b>

**PORTSMOUTH, NH 03801**  
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Sent To: Webster & Marilyn Kesley  
 Street and Apt. No.: 14 Remicks Lane  
 City, State, ZIP+4: Kittery, ME 03904

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**OXFORD, MA 01540**

**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
<b>Total Postage and Fees</b>	<b>\$3.95</b>

**PORTSMOUTH, NH 03801**  
 OCT 18 2018  
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Sent To: Jared & Chelsey Fournier  
 Street and Apt. No.: 58 Joe Jenny Road  
 City, State, ZIP+4: Oxford, MA 01540

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**YORK, ME 03909**

**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
<b>Total Postage and Fees</b>	<b>\$3.95</b>

**PORTSMOUTH, NH 03801**  
 OCT 18 2018  
 Postmark Here  
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Sent To: Endeavor Properties LLC  
 Street and Apt. No.: PO Box 366  
 City, State, ZIP+4: York, ME 03909

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**KITTERY, ME 03904**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

**PORTSMOUTH, ME 03801**  
 OCT 18 2018  
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Sent To: Arthur Andrews Jr.  
 Street and Apt. No: 61 Cutts Road  
 City, State, ZIP+4: Kittery, ME 03904

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7016 2710 0000 1715 1218

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**LEBANON, ME 04027**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

**PORTSMOUTH, ME 03801**  
 OCT 18 2018  
 Postmark Here  
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Sent To: Steven Brake  
 Street and Apt. No: 37 Creamery Hill Road  
 City, State, ZIP+4: Lebanon, ME 04027

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**KITTERY, ME 03904**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

**PORTSMOUTH, ME 03801**  
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Sent To: John & Elizabeth Delio Sr.  
 Street and Apt. No: 43 Cutts Road  
 City, State, ZIP+4: Kittery, ME 03904

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**KITTERY, ME 03904**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

**PORTSMOUTH, ME 03801**  
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Sent To: Heirs of Joseph Kozlowski  
 c/o Robert & Nathalie Harris  
 Street and Apt. No: 40 Cutts Road  
 City, State, ZIP+4: Kittery, ME 03904

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**KITTERY, ME 03904**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

**PORTSMOUTH, ME 03801**  
 OCT 18 2018  
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Sent To: James & Jodie Nielsen  
 Street and Apt. No: 10 Ella Woods Drive  
 City, State, ZIP+4: Kittery, ME 03904

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**YORK, ME 03909**

**CERTIFIED MAIL**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

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 OCT 18 2018  
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Sent To: Linda Kellett  
 Street and Apt. No: PO Box 694  
 City, State, ZIP+4: York, ME 03909

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Chris & Rachael Andrews  
 Street and Apt. #: 3 Deer Ridge Lane  
 City, State, ZIP+: Kittery, ME 03904

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: John & Lisa Hippert  
 Street and Apt. #: 1 Deer Ridge Lane  
 City, State, ZIP+: Kittery, ME 03904

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Steven & Kelly Abbott  
 Street and Apt. #: 13 Remicks Lane  
 City, State, ZIP+: Kittery, ME 03904

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**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Peter & Kim Bostrom  
 Street and Apt. #: 9 Remicks Lane  
 City, State, ZIP+: Kittery, ME 03904

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Robert Charest  
 Street and Apt. #: 5 Remicks Lane  
 City, State, ZIP+: Kittery, ME 03904

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**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Kittery Land Trust  
 Street and Apt. No.: PO Box 467  
 City, State, ZIP+4: Kittery, ME 03904

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Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Richard Johnson  
 Street and Apt. No.: 110 Wilson Road  
 City, State, ZIP+4: Kittery, ME 03904

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**PORTSMOUTH, ME 03801**  
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**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Suzanne Patten, Trustee  
 Street and Apt. No.: 86 Wilson Road  
 City, State, ZIP+4: Kittery, ME 03904

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**KITTERY, ME 03904**

**OFFICIAL USE**

Certified Mail Fee	\$3.45
Extra Services & Fees (check box, add fee as appropriate)	\$0.00
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
Total Postage and Fees	\$3.95

Sent To: Patti Parsons,  
 Gary & Gregg Seward  
 Street and Apt. No.: 11 Mill Lane  
 City, State, ZIP+4: Kittery, ME 03904

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 OCT 18 2018  
 USPS  
 10/18/2018



BK 16935 PGS 411 - 412 12/08/2014 10:28:33 AM  
 INSTR # 2014049195 DEBRA ANDERSON  
 RECEIVED YORK SS REGISTER OF DEEDS

**Return to:**  
 Mulhern & Scott, PLLC  
 155 Fleet Street  
 Portsmouth, NH 03801

2/188

[Space Above This Line For Recording Data]

**TRUSTEE'S DEED**

**Mary Thron, Successor Trustee of the Roseann Andrews Revocable Trust** U/T/A dated January 28, 2004, as amended, with a mailing address if Post Office Box 96, Town of Kittery Point, County of York, State of Maine 03905 ("Grantor"), by the power conferred by the Trust, the Maine Uniform Trust Code, and every other power, for consideration paid, grant all of my right, title, and interest to **Arthur W. Andrews, Trustee of the Arthur W. Andrews Revocable Trust** U/T/A dated February 10, 1999, as amended, with a mailing address if 61 Cutts Road, Town of Kittery, County of York, State of Maine 03904 ("Grantee"), the following described real estate:

A certain lot or parcel of land, together with any buildings and improvements thereon, Situate in Kittery, County of York, State of Maine, and being bounded and described as follows:

Being shown as Tax Map 60, Lot 10 on a plan entitled "Standard Boundary Survey Plan of land of Arthur W. & Roseann ANDREWS" as prepared by Civil Consultants, dated July 28, 2000, as recorded with the York County Registry of Deeds in Plan Book 289, Page 46.

There is excepted and reserved from the above-described property the following tracts or parcels of land which have been conveyed from the property as described above:

1. Quitclaim Deed of Arthur W. Andrews and Roseann Andrews to Chris A. Andrews and Rachel M. Andrews dated October 5, 2012 and recorded in the York County Registry of Deeds at Book 16431, Page 706.
2. Trustee's Deed (corrective deed) of Roseann Andrews, Trustee of the Roseann Andrews Revocable Trust to Chris A. Andrews and Rachel M. Andrews dated October 15, 2012 and recorded in the York County Registry of Deeds at Book 16438, Page 622.

NO R.E. TRANSFER TAX PAID



Meaning and intending to convey the same premises conveyed from Arthur W. Andrews and Roseann Andrews to Roseann Andrews, Trustee of the Roseann Andrews Revocable Trust U/T/A dated January 28, 2004 by Quitclaim Deed dated January 28, 2004 and recorded with the York County Registry of Deeds at Book 13914, Page 252. For further reference see certified death certificate for Roseann Andrews recorded of near or even date.


The undersigned, Mary Thron, Successor Trustee of the Roseann Andrews Revocable Trust, a Maine Trust, created under trust agreement dated January 28, 2004, is the Trustee at the time of this conveyance and has full and absolute power in said trust agreement to convey any interest in real estate and improvements thereon held in said trust, and no purchaser or third party shall be bound to inquire whether the trustee has said power or is properly exercising said power or to see to the application of any trust asset paid to the trustee for a conveyance thereof.

This is a non-contractual transfer.

No title search was conducted in connection with this deed.

WITNESS my hand and seals this 25 day of 11, 2014.

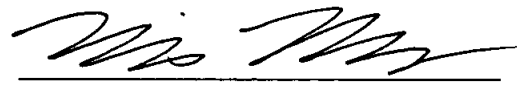
WITNESS:

  
\_\_\_\_\_  
Mary Thron, Successor Trustee  
of the Roseann Andrews Revocable Trust

**STATE OF MAINE  
COUNTY OF YORK, SS**

The foregoing instrument was acknowledged before me this 25 day of NOV, 2014 by Mary Thron, Successor Trustee of the Roseann Andrews Revocable Trust.

**MIKE ROSS**  
Notary Public State of Maine  
My Commission Expires September 24, 2021

  
\_\_\_\_\_  
Notary Public

**SEAL**



BK 17344 PGS 667 - 676  
INSTR # 2016044989  
RECEIVED YORK SS

10/19/2016 11:54:54 AM  
DEBRA ANDERSON  
REGISTER OF DEEDS

**Declaration of Rights, Restrictions and Covenants  
Deer Ridge Lane Association  
Town of Kittery, York County, Maine**

**Property Affected by Declaration**

This Declaration of Rights, Restrictions and Covenants shall bind the owners of lots abutting Deer Ridge Lane or any extension thereof and shown on the Town of Kittery Tax Map 59, Lot 30, Tax Map 65, Lots 10, 10A, 10B and 10C as well as Tax Map 60, Lot 10 (hereinafter collectively referred to as the Lots).

This Declaration is created to assure all owners and purchasers of lots along Deer Ridge Lane, their heirs, personal representatives, successors and assigns that the use, development, benefit and enjoyment of said Lots, roads and common lands shall be in accordance with a harmonious plan, and to this end, the undersigned Lot Owners deem that all Lots be subjected to the restrictions, reservation, servitudes, covenants, agreements and easements as hereinafter set forth.

**Article A. General Restrictions**

Each of the Lots shall be subject to the following rights, restrictions and covenant which shall run with the land.

1. Each Lot shall be used exclusively for single family residential purposes. Excepting Tax Map 60, Lot 10, no lot shall be further divided, whether by lease, conveyance or condominiumization.
2. No commercial, industrial, business, professional use or enterprise of any nature or description shall be carried on upon any Lot unless (a) its conduct on the lots is wholly within the residence located on the Lot, (b) it has no more than one employee, other than the Lot owner, (c) there is no signage or advertising on the Lot or roads approaching the Lot suggesting the existence of the business activity; (d) such use does not require regular client/customer contact at the dwelling; and (e) any client/customer visiting the Lot shall not park on Deer Ridge Lane, or other ancillary streets which use Deer Ridge Lane as access to the public way.
3. Boats, snowmobiles and trailers may be stored on any lot so long as they are properly screened (from Deer Ridge Lane, or other ancillary streets which use Deer Ridge Lane as access to the public way).
4. No structure shall be erected on any lot except one detached, single family residential dwelling, hereinafter referred to as the Dwelling. No Dwelling shall not exceed two and one-half stories in height. One free-standing storage shed shall be permitted.
5. Each Dwelling shall be supported by a solid masonry foundation or slab. All exterior portions of chimneys and fireplaces shall be of brick or stone construction. No cinder block chimneys are allowed on the exterior of any dwelling or structure located on the Lot.

10 pgs -> Clark + Howell  
P.O. Box 545  
York, ME 03904

6. Construction of a Dwelling, once begun, shall be pursued diligently and completed within one year. All construction equipment and material used during construction upon a Lot shall be off-loaded on the Lot and not upon Deer Ridge Lane or other ancillary streets which use Deer Ridge Lane as access to the public way.
7. It shall be the responsibility of the Lot owner to repair any damage to Deer Ridge Lane (and other ancillary streets which use Deer Ridge Lane as access to the public way) and adjacent slopes and common areas resulting from the transportation and delivery of any building/construction materials.
8. All dwellings shall be constructed making an effort to retain and preserve the natural vegetation, trees, shrubs and other beneficial flora existing on the Lot. Vegetation which is hazardous to the Lot owner (e.g., dead trees or invasive species such as sumac, bittersweet or Japanese Knotweed) or that may impede proper drainage of the Lot may be removed.
9. No Lot owner shall park vehicles on Deer Ridge Lane (or other ancillary streets which use Deer Ridge Lane as access to the public way). Guests of lot owners may temporarily park on Deer Ridge Lane for not more than 24 hours; provide, however, such parked cars shall not obstruct passage by other vehicles.
10. No Lot owner may grant easements benefitting real property located outside of the Deer Ridge Lane Development unless approved by the Association described in Article B, below.
11. No livestock, farm animals or animals raised for commercial purposes shall be kept, bred, maintained or allowed on any Lot. Livestock raise purely for domestic use by the Lot Owner is permitted. Domestic pets are permitted.
12. Propane tanks, satellite dishes and other communications equipment are permitted; however, such equipment must be fully screened so that they cannot be viewed from Deer Ridge Lane and adjacent Lots.
13. No Lot owner may do or permit anything to be done on their Lot which is or may constitute a nuisance, or violate any Rule established by the Association.
14. No sign of any nature shall be displayed to public view on a Lot or on the common area except one customary name and address sign of not more than four square feet.
15. No trash, ashes or other refuse, junk, vehicles in disrepair, brushwood or other unsightly objects shall be kept or permitted on any Lot or in the common areas except in sanitary containers concealed from public view.
16. Children's swing sets, jungle gyms, wading pools and similar play equipment may only be maintained in the rear yards. ( For the purpose of this provision, the term "rear yard" shall mean that area located on the opposite side of the house from the front door.)
17. House shall be painted in "earth-tones." In the event there is any question as to the nature of a particular color and whether it meets the definition of "earth-tones," then the Board of Director of the Association shall have the absolute right to make a final decision.

18. No snow, ice gravel, loam compost, leaves, fertilizers or other mineral waste products or commodities shall be piled or stored within ten (10) feet of boundaries of any Lot; and snow and ice shall not be deposited on roadways or sidewalks so as to obstruct motor vehicles or pedestrian passage by other Lot owners.
19. Lot owners shall properly and regularly maintain drainage swales (if any) across their Lot so that water properly drains through the Lots. Failure to do so shall subject a Lot owner to fines and corrective action by the Association, including entry upon their Lot by the Association to correct the drainage and the assessment against the Lot owner for the cost of such corrective action.

## **Article B: Easement**

Each Lot owner, their heirs, personal Representatives, successors and assigns is hereby granted a perpetual easement, to be used by foot or by motor vehicle, and for all utilities, in common over Deer Ridge Lane.

## **Article C: Homeowners' Association**

### **1. Creation and Purpose:**

The Deer Ridge Lane Association, Inc. is a non-profit Maine corporation established for the following purposes:

- 1) To hold title to Deer Ridge Lane for the benefit of all Lot owners
- 2) To maintain and repair the roadway until such time as title to the roadway has been turned over to the Town of Kittery, if ever;
- 3) To facilitate the collection of fees from Lot owners for snow removal and road maintenance for Deer Ridge Lane;
- 4) To administer, maintain and repair any internal drainage system;
- 5) To enforce and administer the Declaration of Rights, Restrictions and Covenants;
- 6) To administer all the common areas;
- 7) Generally, to preserving property values and amenities along and within the Deer Ridge Lane development; and
- 8) To undertake any other activities authorized by Title 13 – B, the Maine Nonprofit Corporation Act.;

In addition, to the provisions set forth herein, the Association shall be governed by Articles of Incorporation, Bylaws and any amendments thereto or any rules and regulations subsequently adopted by the Association. In the event of a conflict the provisions of this Declaration and the Articles of Incorporation Bylaws or Rules and Regulation, the provisions of this Declaration shall govern.

### **2. Membership in the Association and Voting:**

- a. Every record owner of a Lot (a Lot Owner) shall be members of the Association and each lot shall be entitled to one vote. Lot Owners in arrears in paying their annual dues or assessments shall not have the right to vote.

- b. Meetings of the Association membership shall be held at a time and place to be established by the Board, as shall be specified in the notice of the meeting.
- c. **Annual Meetings.** The annual meetings of the Association members shall be held each year on the \_\_\_\_\_. In the event that the day for which an annual meeting is scheduled is a legal holiday, then the meeting shall be held on the first day thereafter which is not a legal holiday. At such meetings there shall be elected by ballot of the members a Board of Directors in accordance with the provisions of these Bylaws. The Association Members shall also transact such other business as may properly come before them. All matters to come before any meeting of the association shall be determined by a vote of a Majority of members in attendance at the meeting.
- d. **Meeting by Remote Communication.** Any one or more Association member may participate in a meeting of the Association by means of a conference telephone, video conference, or similar communications equipment. Participation by such means shall constitute presence in person at a meeting provided that all persons participating in the meeting can hear each other at the same time and each director can participate in all matters before the Association, including, without limitation, the ability to propose, object to, and vote upon a specific action to be taken by the Association.

### **3. Power of the Association:**

The Association shall have all of the powers of a Maine non-profit corporation, including the authority to:

- a. Acquire, own, convey, mortgage, pledge or lease such property as may be necessary in order to carry out the purposes of the Association and to hold title or an easement to Deer Ridge Lane;
- b. The power and duty to determine an annual budget.
- c. To elect a Board of Directors;

## **ARTICLE D: Board of Directors**

### **1. Creation and Purpose.**

The affairs of the Association will be carried out by a three-person Board of Directors elected annually by the Lot Owners Board members shall be owners of lots along Deer Ridge Lane (or their spouse is the spouse is not a title holder). The Board members so chosen shall vote to establish the three positions: President, Secretary and Treasurer (the Officers). The officers may, but need not, be chosen from among the Board Members. Homeowners may nominate any Lot Owner (or spouse of a Lot Owner) member to be elected to the Board. Elections will be made by a majority vote at the annual meeting of the Association. Each board member will serve for a three-year term. Board Members may be reelected at the end of their three-year term.

2. **Powers and Duties.** The Board shall have the duty and power to:
- a. enforce the terms of the Declaration and Bylaws;
  - b. open bank accounts on behalf of the Association and designate the signatories thereon.
  - c. determine fines for violations of the Declaration of Rights, Restrictions and Covenant and the Rules and Regulations;
  - d. create and enforce Rules and Regulations for the administration of the Association and the roadway;
  - e. to designate, hire and dismiss the personnel necessary for the maintenance, operation, repair and replacement of the Common Areas;
  - f. to prepare and present to the Association at the annual meeting a proposed budget for the coming year;
  - g. To establish a capital reserve account if the Board deems it necessary for the management of the Association and its Common areas, i.e., Deer Ridge Lane;
  - h. based upon the budget established by the Association, to make assessments against Lot Owners to defray the costs and expenses of the Association, establish the means and methods of collecting such assessments from the Lot Owners and establish the period of the installment payment of annual dues and assessments;
  - i. to collect the assessments for Common Expenses against the Lot Owners, deposit the proceeds thereof in any bank depositories or money market funds designated by the Board of Directors and use the proceeds to carry out the administration of the Common Areas;
  - j. to provide for the operation, care, upkeep and maintenance of all of the Common Areas including improvement, maintenance, repair, street sweeping, sealcoating, snow plowing and snow removal from Deer Ridge Lane, any other Common Areas and storm water drainage facilities;
  - k. carry out the business of the Association in any manner the Board deems necessary and appropriate;
3. **Notice of Meetings.** Notice of a meeting may be sent by mail, telephone, facsimile transmission, telegraph, courier service, electronic mail or hand delivery, directed to each director at his or her address or contact information as it appears on the records of the President. Such notice shall state the time and place where the meeting is to be held and, need not specify the purpose(s) for which the meeting is called. Notice shall be deemed to have been given when sent, and if by mail, when deposited in the United States mail with prepaid postage thereon. No notice shall be required for any regular meeting for which the time and place has been previously fixed by the Board of Directors. Notice of any regular meeting for which the time and place is not fixed by the Board of Directors must be given to each director not less than thirty (30) days before

such meeting. Notice of a special meeting of the Board of Directors must be given to each director not less than seven (7) days before such meeting, provided, however, that notice of special meetings relating to an emergency which must, in the reasonable judgment of the President, be resolved in a shorter time frame shall be given as promptly as possible. Notice of a regular or special meeting need not be given to a director who submits a signed waiver of notice before or at the meeting's commencement, or who attends the meeting without protesting (not later than the commencement of the meeting) the lack of notice to him or her.

4. **Quorum.** At each meeting of the Board of Directors, the presence of two-thirds (2/3) of the directors in office immediately prior to the commencement of the meeting shall constitute a quorum for the transaction of business or any specified item of business. If a quorum is not present at any meeting of the Board of Directors, the meeting shall be adjourned to another time without notice other than by announcement at the meeting, until such a quorum is present, except that notice of such adjournment shall be given to any directors who were not present at the time of the adjournment.
5. **Voting.** Except as otherwise provided by statute, the Articles of Organization or these by-laws, the vote of a majority of the directors present at the time of a vote, if a quorum is present at such time, shall be the act of the Board of Directors.
  - a. **Presumption of Assent.** A director of the Association who is present at a meeting of the Board of Directors when action is taken is deemed to have assented to the action taken unless: (i) the director objects at the beginning of the meeting (or promptly upon arrival) to holding the meeting or transacting business at it; (ii) the director's dissent or abstention from the action taken is entered in the minutes of the meeting; or (iii) the director files written notice of the dissent or abstention with the presiding officer of the meeting before its adjournment or with the Association immediately after adjournment of the meeting. This right of dissent or abstention is not available to a director who votes in favor of the action taken.
  - b. **Meeting by Remote Communication.** Any one or more members of the Board of Directors or any committee thereof may participate in a meeting of the Board of Directors or such committee by means of a conference telephone, video conference, or similar communications equipment. Participation by such means shall constitute presence in person at a meeting provided that all persons participating in the meeting can hear each other at the same time and each director can participate in all matters before the Board of Directors, including, without limitation, the ability to propose, object to, and vote upon a specific action to be taken by the Board of Directors or committee.
  - c. **Action Without Meeting.** Any action required or permitted to be taken by the Board of Directors or any committee thereof may be taken without a meeting if all members of the Board of Directors or committee consent in writing to the adoption of a resolution authorizing the action. Such consent may be written or electronic. The resolution and written consents thereto by the members of the Board of Directors or such committee shall be filed with the minutes of the proceedings of the Board of Directors or such committee.

## **ARTICLE E: Method of Providing General Funds:**

For the purpose of providing a general fund to enable the Association to exercise the powers and make and maintain the improvement and render the services herein provided, the Board of Directors of the Association shall determine for each year the total amount required for such fund for such year to be approved by the Association Members at the Annual Meeting by majority vote of those in attendance at the annual meeting. Once approved by the Association Members, the Board of Directors shall levy an annual assessment uniformly against each of Lot, hereinafter called the Association Fee.

The yearly Association Fee shall be assessed to each Lot Owner by November 1 of each year. ( Lot owners may choose to make payments on a monthly basis; however, failure to make a monthly payment shall constitute a breach and entitle the Association to collect a late charge of \$25.00 as well as interest, at the rate of eighteen percent (18%) per annum, from the due date thereof, plus costs of collection, including without limitation attorney fees.) In the event of failure of any owner to pay any assessment on or before thirty (30) days following notice to such Lot owner of such assessment of the scheduled due date thereof, then such assessment shall become delinquent and shall bear interest at the rate of eighteen percent (18%) per annum from the due date thereof, plus costs of collection, including without limitation attorney fees. When delinquent, payment of principal, interest and costs may thereafter be enforced against the owner personally, and as a lien upon the delinquent Lot Owner's Lot. The Board of Directors shall have the power and duty to place a Certificate of Lien in the York County Registry of Deeds upon the lot of any delinquent Lot Owner. The Board of Directors shall establish a written policy for the enforcement of the annual assessment. It shall be the duty of the Association, acting through its Board, to bring suits to enforce such liens before the expiration thereof. For each certificate so filed, the Association shall be entitled to collect from the delinquent Lot Owner, in addition to the unpaid assessment, an administration fee based upon the cost of preparing and processing the Certificate of Lien. Such fee shall be collectable in the same manner as the original assessment.

The liens for such assessments shall be subordinate to the lien of any valid mortgage now existing or that may hereafter encumber a Lot. The event of the issuance of a deed pursuant to foreclosures of such mortgage or in lieu of such foreclosure, the Grantee of such deed shall take title free and clear from any liens herein provided which accrue prior to the recording of such deed.

Such liens shall continue for a period of five years from the date of delinquency and no longer, unless within such time suit shall have been filed for the collection of the assessment, in which case the lien shall continue until the termination of the suit and until the sale of the property under execution of the judgment in such suit.

Expenditures Limited to Assess for Current Year. The Association shall not expend more money within one than the total amount of the assessment for that particular year, plus any surplus which it may have on hand from previous assessments; nor shall said Association enter into any contract whatsoever binding the assessment of any future year, and no such contract shall be valid or enforceable against the Association

## **ARTICLE F: General Provisions**

1. Each of the Restrictions set forth in **ARTICLE A** of this Declaration shall continue and remain binding for a period of fifty (50) years from the date hereof, and thereafter shall



continue automatically in effect for two additional periods of twenty (20) years, unless otherwise agreed to in writing by two-thirds of the lot owners. This Declaration may be amended by written consent of **two-thirds** of the Lot Owners. Said written consent to amend shall be prepared and signed by the President and Secretary of the Association and recorded in the York County Registry of Deeds.

2. **ARTICLES C, D AND E** may be amended by with the written consent of a **majority** of the Lot Owners. Said written consent to amend shall be prepared and signed by the President and Secretary of the Association and recorded in the York County Registry of Deeds.
3. The provisions herein set forth shall run with the land and bind the Lot Owner, their heirs, personal representative, successors and assigns, and all parties claiming by, through or under them. Each Lot Owner shall have the right, but not the obligation, jointly and separately, to sue for and obtain a prohibitive and mandatory injunction to prevent the breach of or to enforce the observance of, the provisions of this Declaration or any of them, in addition to the right to bring an ordinary legal action for damages. If any Lot Owner or the Association engages the services of an attorney to enforce the provisions set forth herein and is successful in establishing that a breach of these covenants by defendant has occurred, then the Lot Owner or Association shall be entitled to recover from the defendant reasonable attorney's fees. In no event shall the failure of Lot to enforce any of the provisions herein set forth as to a particular violation be deemed to be a waiver of the right to do so as to any subsequent violation. A Lot Owner aggrieved by the beach of these covenants may in the absence of enforcement action by the Association, initiate his own enforcement action.
4. If a court of competent jurisdiction shall hold invalid or unenforceable any provision contained in this Declaration, such holdings shall not impair, invalidate or otherwise affect the remainder of this Declaration which shall remain in full force and effect.
5. A written or printed notice, deposited in the United States Post Office, postage prepaid, and addressed to any Lot Owner at the address on file with the Town of Kittery Tax Assessor's office shall be sufficient and proper notice to such owner wherever notices are required in the Declaration; a mailing by United States Postal Service "return receipt" to this address shall be deemed delivery of notice to a lot owner.
6. By acceptance of a deed of conveyance to a Lot, notice is thereby given notice of this Declaration and these Bylaws of the Deer Ridge Lane' Association, Inc. whether or not it shall be so expressed in the deed. By acceptance of a deed, each Lot Owner agrees to become and remain an member in good standing in the Association and to comply with the Declaration, Bylaws and Rules and Regulations. Each Lot Owner is entitled to the rights and privileges of membership in the Association, as provided in this Declaration and the Bylaws, and shall be responsible for the duties of membership, including the duty to pay Association assessments and the duty to remain in good standing.
7. This Declaration shall be governed by, construed, and enforced in accordance with the laws of the State of Maine.

IN WITNESS WHEREOF, MARY THRON, Trustee, ARTHUR W. ANDREWS and ANNE L. ANDREWS, MICHAEL F. SCARPONE, KRISTINE I. SCARPONE, JOHN P. HIPPERN, LISA K. HIPPERN, CHRIS ANDREWS and RACHAEL ANDREWS have caused this instrument to be signed this 30<sup>th</sup> day of September, 2016.

Arthur W. Andrews Revocable Trust

Victoria M. Mullett

Witness

Chris Andrews

Witness

Chris Andrews

Witness

Chris Andrews

Witness

Chris Andrews

Witness

Chris Andrews

Witness

Chris Andrews

Witness

all w. and j

Witness

all w. and j

Witness

By: Mary Thron Trustee

MARY THRON, TRUSTEE

all w. and j

ARTHUR W. ANDREWS, JR.

Anne L. Andrews

ANNE L. ANDREWS

Michael F. Scarpone

MICHAEL F. SCARPONE

Kristine I. Scarpone

KRISTINE I. SCARPONE

John P. Hippern

JOHN P. HIPPERN

Lisa K. Hippern

LISA K. HIPPERN

Chris Andrews

CHRIS ANDREWS

Rachael Andrews

RACHAEL ANDREWS

STATE OF MAINE

County of YORK

September 30, 2016

Then personally appeared the above-named, ARTHUR W. ANDREWS and ANNE L. ANDREWS, and acknowledged the foregoing instrument to be their free act and deed

Before me, Betty J. Cormier

Betty J. Cormier  
Notary Public

Betty J. Cormier  
Print Name

**BETTY J. CORMIER  
NOTARY PUBLIC  
State of Maine  
My Commission Expires  
October 22, 2022**

**Seal**

# PROJECT NARRATIVE

## *Andrews Subdivision*

### *Map 60 – Lot 10*

**Deer Ridge Lane**

**Kittery, Maine**

**October 18, 2018**

The owner/applicant, Arthur W. Andrews Revocable Trust, is proposing a clustered subdivision on a 106.81 acre parcel located primarily on the south side of Deer Ridge Lane in the northerly portion of Kittery, Maine. Located off Remicks Lane, Deer Ridge Lane is a private roadway created by the Andrews family over several years. The first lot was subdivided from the Andrews family holdings in 1982 with additional lots being created in 1987, 2000, 2004 and 2017, thereby defining the current parcel and the 60-foot wide right-of-way. A lot line adjustment is proposed that transfers 13.48-acres to an abutting parcel to the east owned by Arthur W. Andrews, Jr., identified as Map 60 Lot 10-3. The remainder of the parent parcel for development will be 93.34 acres. This land, consisting of vacant woodlands, is abutted to the north, northeast and south by single family homes. The Johnson Farm property abuts the westerly property line. An undeveloped parcel abutting to the north is owned by the Kittery Land Trust.

The proposed clustered subdivision creates eleven (11) single family residential lots. The project has been designed to fit harmoniously into the landscape and maintain the rural woodland character of the surrounding area using concepts and guidelines developed for conservation subdivision design. Through the flexibility provided in the ordinance's cluster provisions, the project team found that carefully locating the house lots and minimizing pavement and clearing respected the land's natural features, and provides a community atmosphere.

The project will provide over 84.6(±) acres of protected common open space, encompassing 90% of the parent parcel. The open space is configured to maximize sensitivity to the natural resources within and near the property by providing significant forested buffers to wetlands which connect to protected woodland tracts on adjacent properties. The open space provides abundant opportunities for nature trails. The applicant has initiated talks with the Kittery Land Trust regarding a possible easement arrangement whereby the Trust would manage the open space in conjunction with abutting protected land.

The project does not maximize the allowed density. Based on Kittery Land Use and Development Code (LUDC), the Net Residential Acreage calculation allows for at least 34 lots, whereas only eleven (11) residential lots are proposed.

A detailed topography survey and a Class A soils survey was performed within the area of the proposed subdivision. Utilizing the Town of Kittery topographic data based on lidar survey, a Class C soils survey was performed for the remainder of the site that will be protected as common open space.

Under the clustered subdivision provisions, the Kittery Land Use and Development Code Zoning Ordinance allows for modifications of certain design standards. This project includes proposed dimensional modifications for lot size and yard setbacks. The modifications allow for the efficient and desirable cluster lot configurations as presented on Sheet C-1.0, thereby maximizing the function and effectiveness of the common open space.

The first 550 feet of Deer Ridge Lane will be upgraded to a 20-foot wide paved roadway. The remainder of Deer Ridge Lane and new roadway will be paved 18-foot wide to maintain the rural character of the area and to minimize impervious surfaces.

The existing entrance into Deer Ridge Lane was reviewed with Planning Board members during the September 11, 2018 site walk. During the original construction, the existing paved traveled way was not built within the center of the right-of-way to preserve existing large trees. The applicant believes that the rural character of the existing layout reduces roadway speed and is aesthetically desirable. The proposed roadway improvement will soften the initial curves of Deer Ridge Lane and widen travelled way to 20 feet while minimizing cutting trees at the entrance.

Deer Ridge Lane is a private roadway that is maintained under the provisions of the existing *Declaration of Rights, Restrictions and Covenants, Deer Ridge Lane Association*, recorded at Y.C.R.D. book 17344 pages 667-676. The roadway will be extended approximately 100± feet to an overall length of 1,033 feet and be provided with an emergency vehicle turnaround area. A proposed 640 foot roadway will be constructed off Deer Ridge Lane to service seven (7) of the proposed lots. The Covenants will be updated to include the additional roadway and house lots.

The proposed lots are being serviced by an existing 8-inch municipal watermain along Deer Ridge Lane and a proposed 6-inch water main along the new roadway. There are two (2) existing fire hydrants on Remick's Lane within 470 feet of Deer Ridge Lane entrance. A new hydrant will be proposed at the intersection of Deer Ridge Lane and the new roadway.

The eleven (11) proposed lots are located within a mapped significant sand and gravel aquifer. Therefore, the lots require advanced pre-treatment (aeration) at each subsurface wastewater disposal system. Eight (8) of the lots are partially located in the Shoreland Water Body/Wetlands Protection Area (OZ-SL-250') overlay zone, therefore a Special Exception is being requested. No wetlands will be impacted by the development.

Federal, state and local documents and maps associated with the site were reviewed. Flood Insurance Rate Maps and Town maps indicate that the only designated floodplain area on the property is located several hundred feet from the area of development. The *Beginning with Habitat – High Value Plant and Animal Habitat* depicts a potential corridor of New England Cottontail habitat on the southeasterly portion of the property located over 1,500 feet from the proposed residential lots. Joseph Noel surveyed the property for vernal pools. With assistance from MDIFW staff, it was determined that only one (1) of the sixteen (16) vernal pools qualified as a Significant Vernal Pool (SVP) under Maine Department of Environmental Protection (MDEP) regulations. The other vernal pools, including those considered natural, did not contain a sufficient number of egg masses to be regulated as vernal pools by MDEP. A letter dated April 13, 2018 from MDEP confirmed the findings. There will be no development within 250 feet of any vernal pools.

The project will require a Stormwater Law License from the MDEP. The rigorous state review process involves a pre-application meeting and detailed analysis of the proposed stormwater management systems as well as erosion and sediment control practices. The applicant is proposing extensive use of best management practices, including a grassed underdrain soil filter, level spreaders and “buffer easements” to address both the stormwater quality and quantity requirements of MDEP’s regulations.

The project team believes that this development concept has been developed with significant sensitivity to the environment and is pleased to present it to the Planning Board for consideration and approval.

# *Andrews Subdivision Residential Cluster Subdivision*

**Kittery, Maine**

## **Traffic Generator Summary**

**October 18, 2018**

(Institute of Transportation Engineers, Trip Generation, 9<sup>th</sup> Edition).

Section 210 - single family detached housing – residential traffic

Peak day 9.91 trips per day (Saturday)

Peak hour 1.02 trips per day

Road Name	Single-Family Houses	Peak day ADT	Peak hour ADT
Deer Ridge Lane * Sta. 5+50 to Sta. 10+33	6	60	6
Turkeytail Lane	7	70	7
Deer Ridge Lane * Sta. 0+00 to Sta. 5+50	17	169	17

- Includes existing house lots

# Single-Family Detached Housing (210)

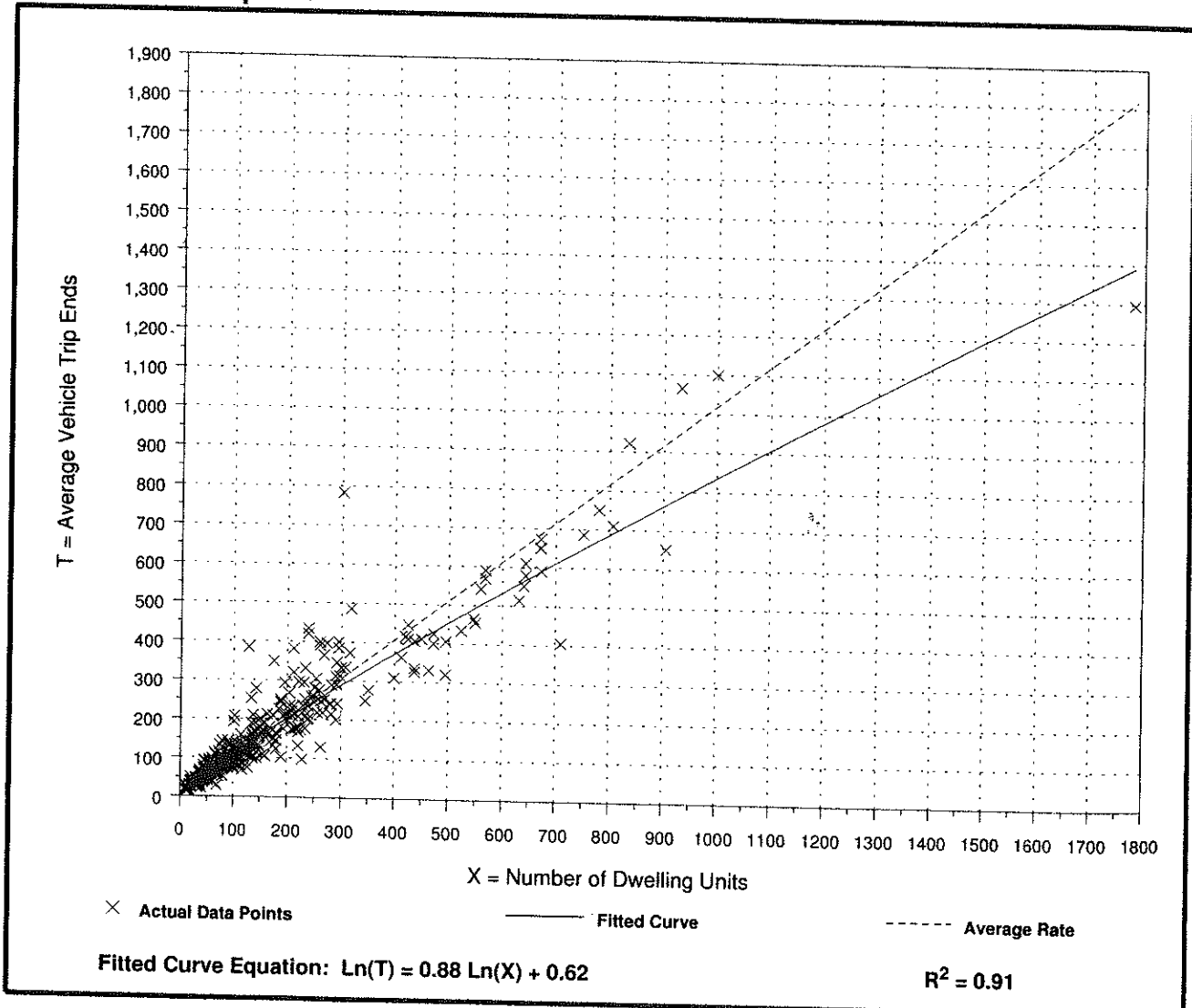
**Average Vehicle Trip Ends vs: Dwelling Units**  
**On a: Weekday,**  
**P.M. Peak Hour of Generator**

Number of Studies: 362  
 Avg. Number of Dwelling Units: 174  
 Directional Distribution: 64% entering, 36% exiting

## Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
1.02	0.42 - 2.98	1.05

## Data Plot and Equation





# Single-Family Detached Housing (210)

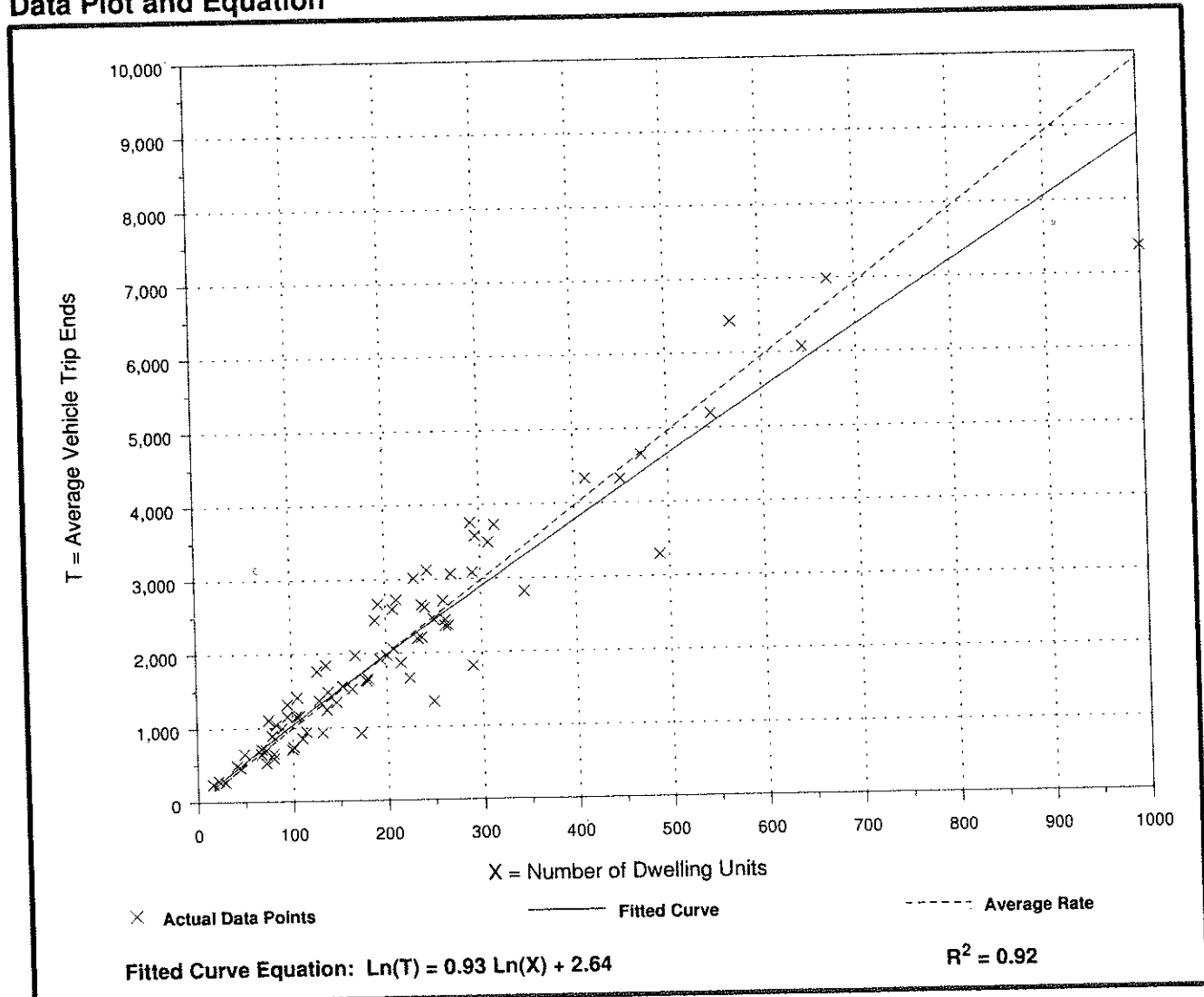
Average Vehicle Trip Ends vs: Dwelling Units  
On a: Saturday

Number of Studies: 77  
Avg. Number of Dwelling Units: 215  
Directional Distribution: 50% entering, 50% exiting

## Trip Generation per Dwelling Unit

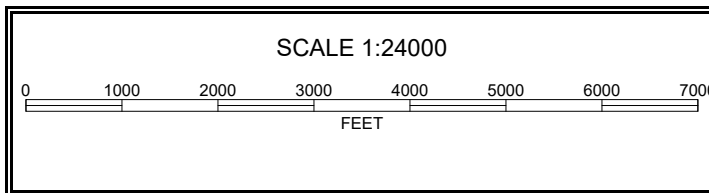
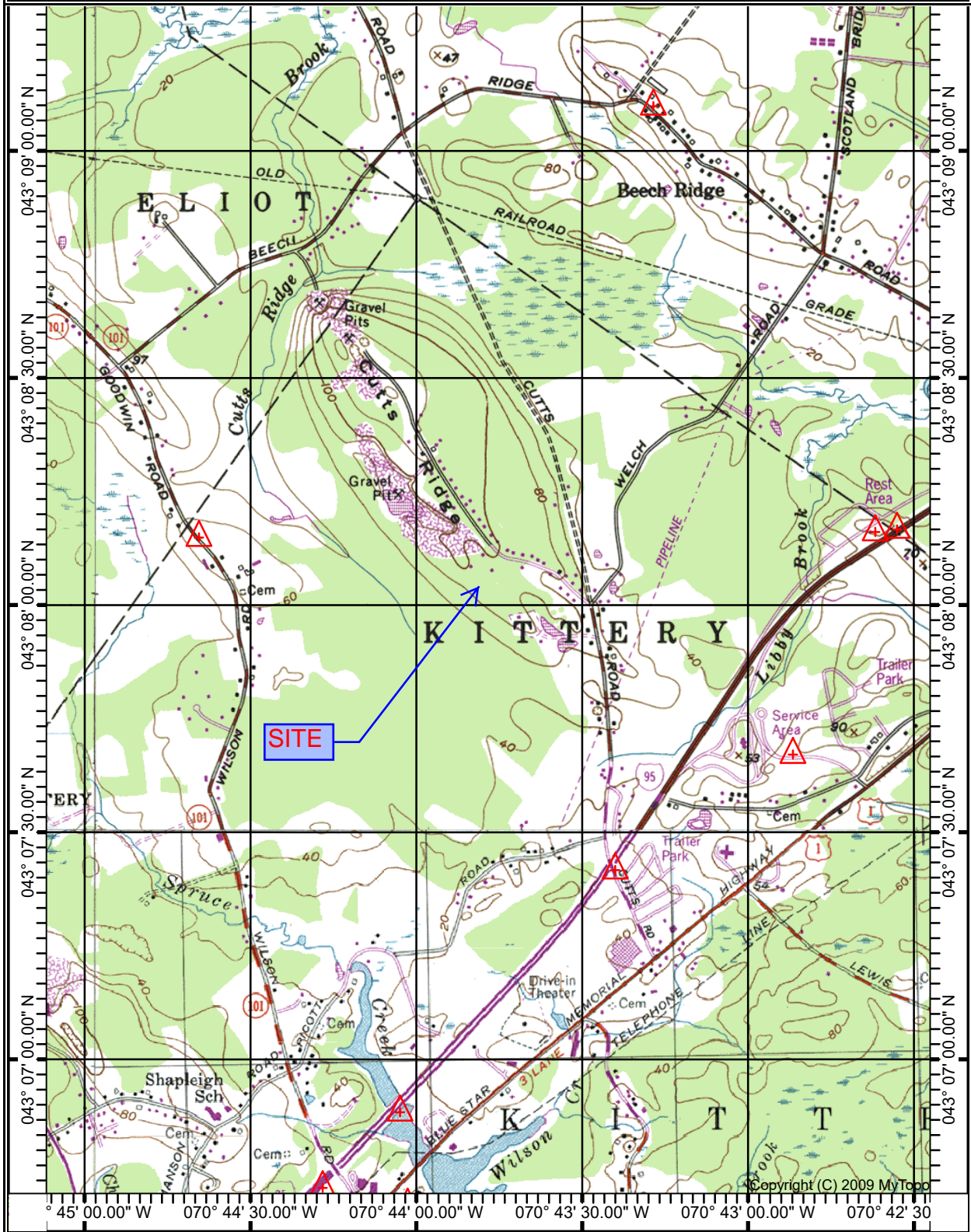
Average Rate	Range of Rates	Standard Deviation
9.91	5.32 - 15.25	3.72

## Data Plot and Equation



Map Name: YORK HARBOR  
Scale: 1 inch = 2,000 ft.

Map Center: 043° 08' 02.84" N 070° 43' 47.02" W  
Horizontal Datum: NAD83

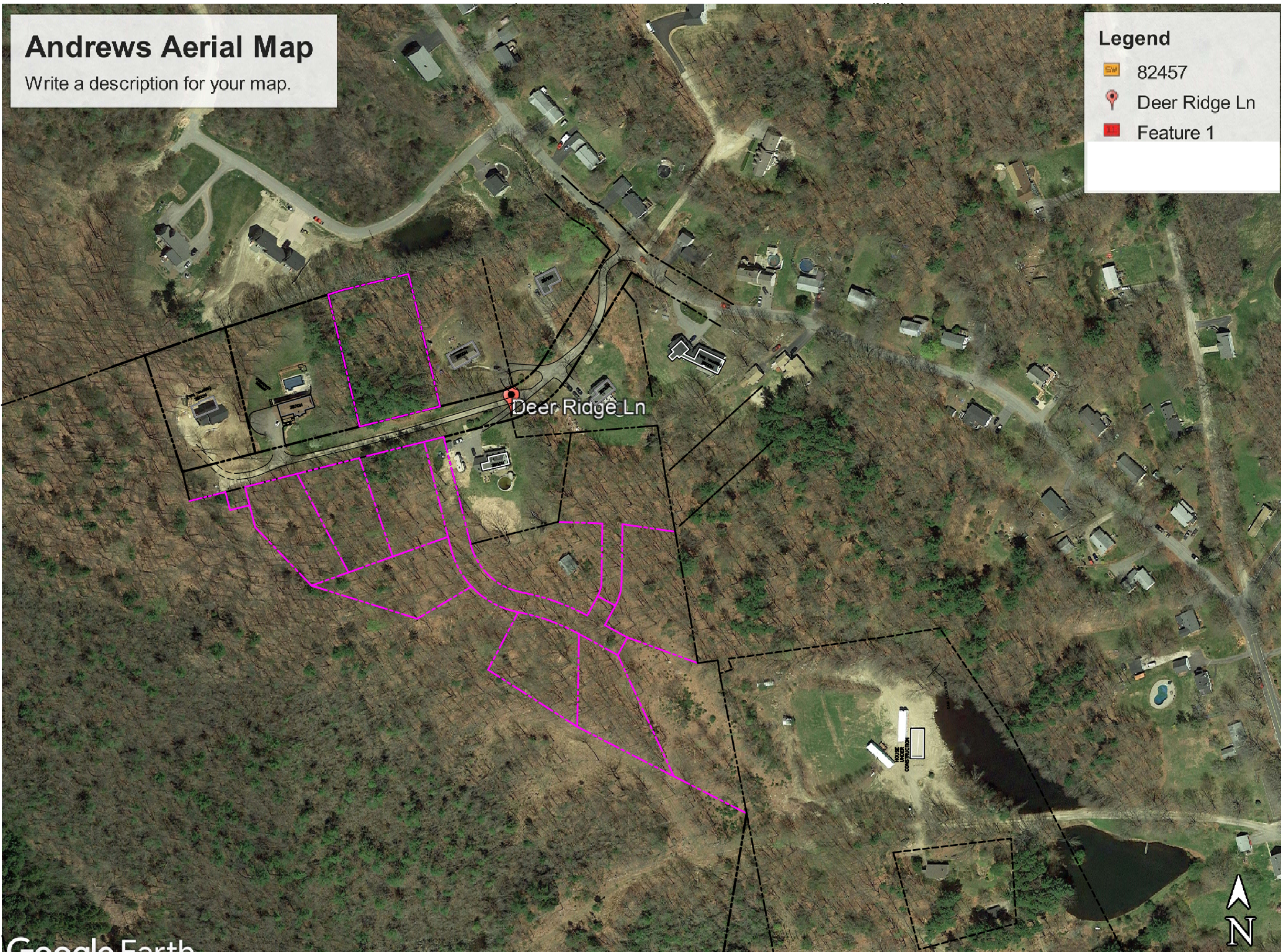


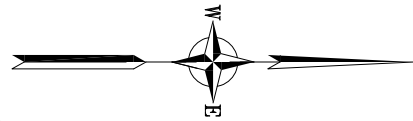
# Andrews Aerial Map

Write a description for your map.

## Legend

-  82457
-  Deer Ridge Ln
-  Feature 1





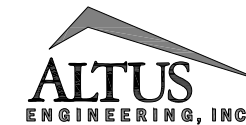
**LEGEND:**



SUBJECT PARCEL TAX MAP 60 LOT 10



LOTS WITH EXISTING HOUSE



133 COURT STREET PORTSMOUTH, NH 03801  
(603) 433-2335 www.ALTUS-ENG.com

North  
W **EASTERLY**  
**SURVEYING, Inc.**

SURVEYORS IN N.H. & MAINE  
191 STATE ROAD, SUITE #1  
KITTERY, MAINE 03904  
(207) 439-6333

**THIS DRAWING HAS NOT BEEN  
RELEASED FOR CONSTRUCTION**

ISSUED FOR:  
**SKETCH PLAN REVIEW**

ISSUE DATE:  
**JULY 19, 2018**

REVISIONS  
NO. DESCRIPTION BY DATE  
0 INITIAL SUBMISSION JKC 7/19/18

DRAWN BY: \_\_\_\_\_ RMB  
APPROVED BY: \_\_\_\_\_ JKC  
DRAWING FILE: 4795SKETCH.DWG

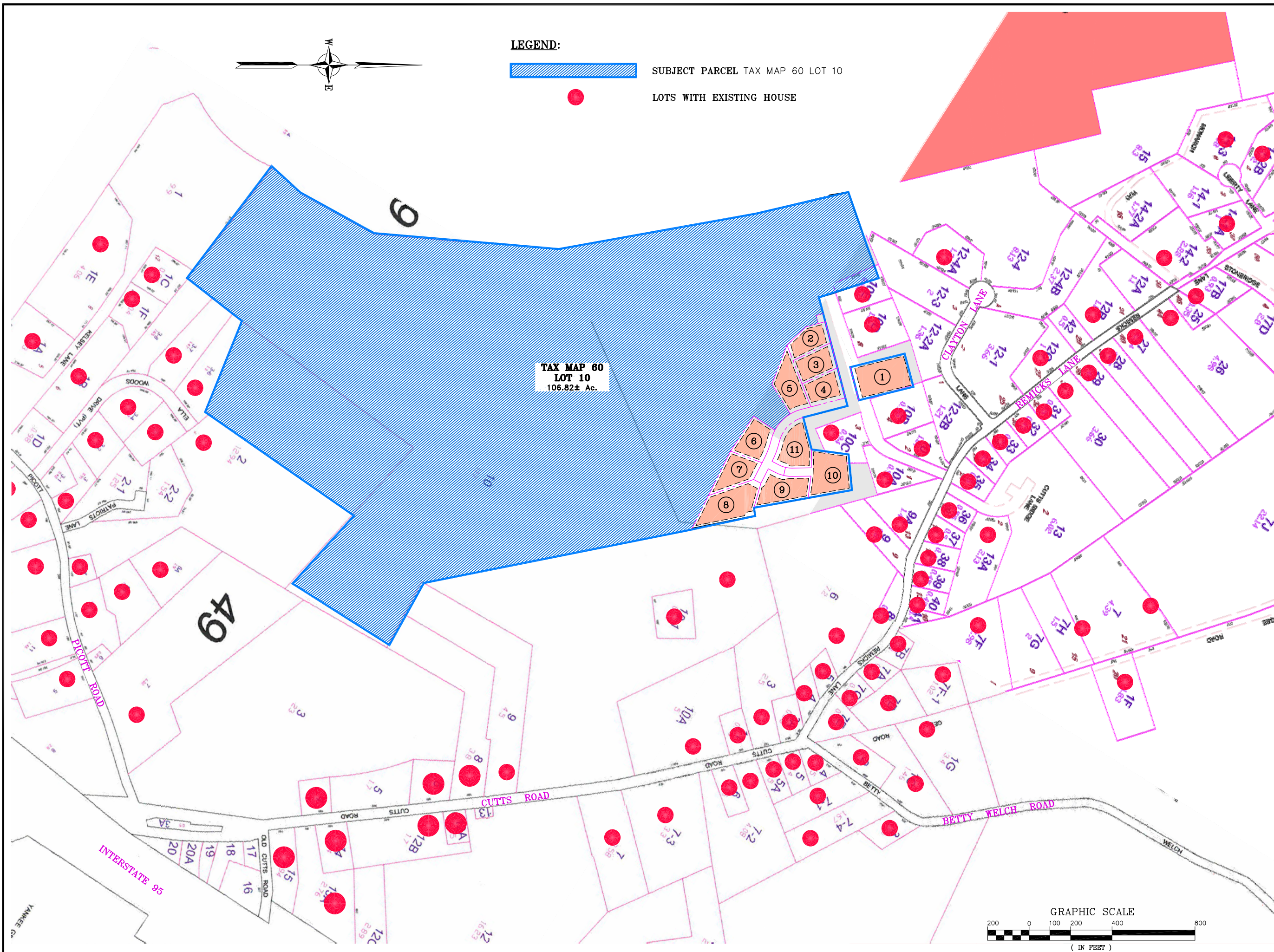
SCALE:  
**1" = 200"**

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON  
8 DEER RIDGE LANE  
KITTERY, MAINE 03904**

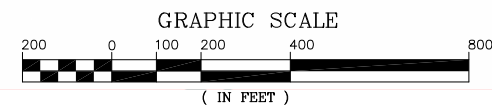
PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
REMICKS LANE  
KITTERY, MAINE**

TITLE:  
**SKETCH REVIEW -  
VICINITY PLAN**

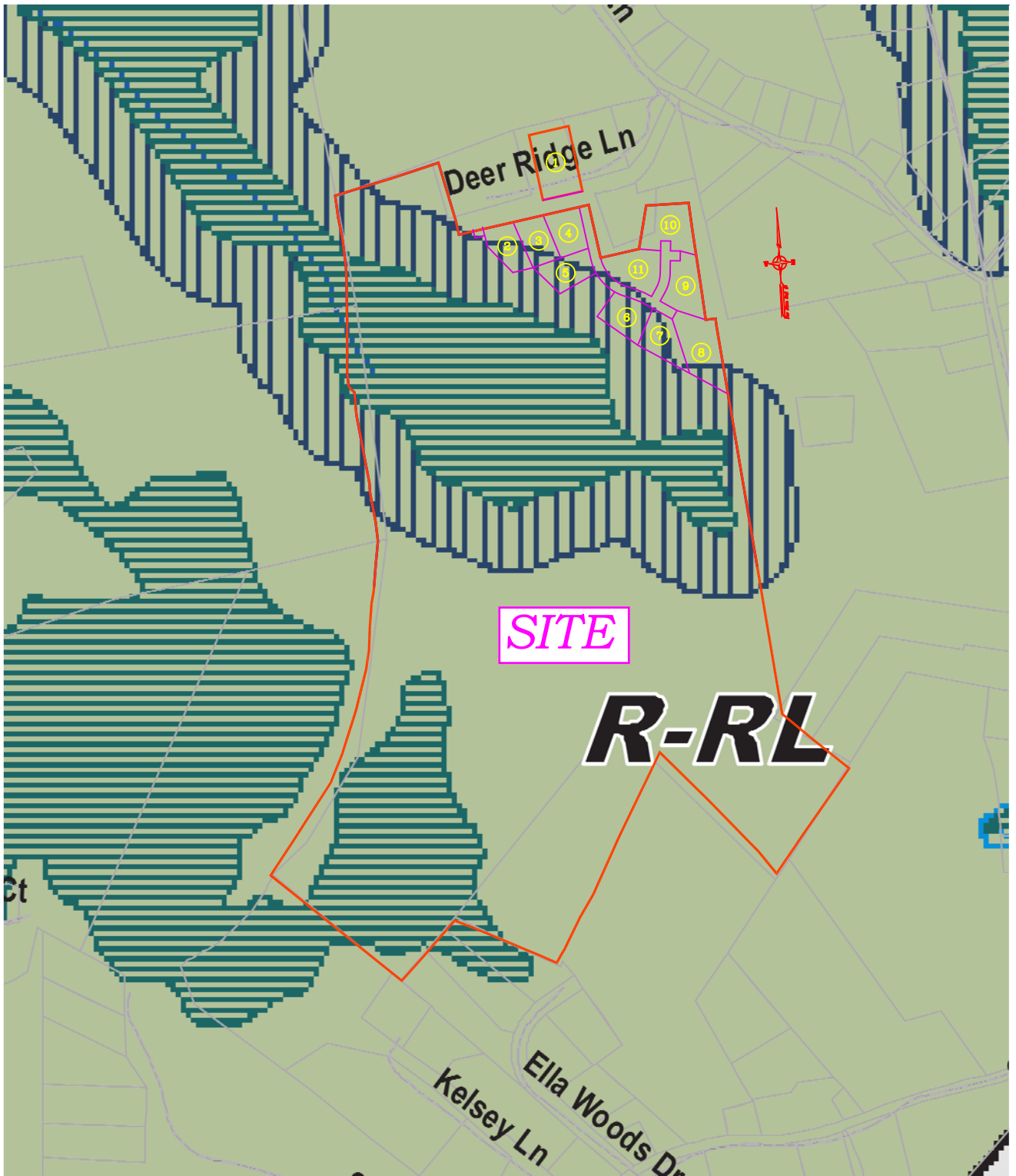
SHEET NUMBER:  
**CC-1**



**TAX MAP 60  
LOT 10  
106.82± Ac.**



P4795

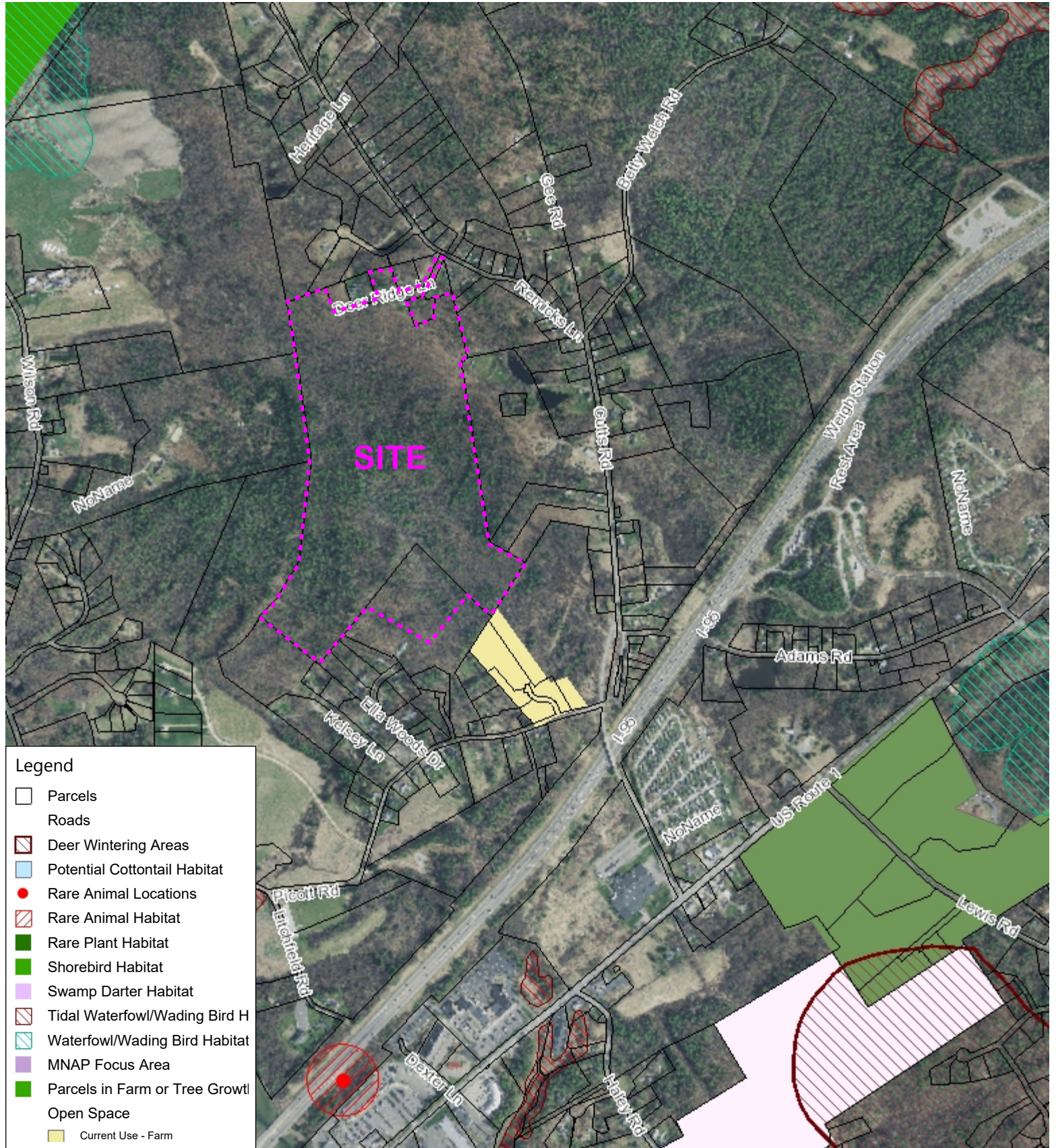


Base Zones		
	Residential - Village (R-V)	
	Residential - Urban (R-U)	
	Residential - Kittery Point Village (R-KPV)	
	Residential - Suburban (R-S)	
	Residential - Rural (R-RL)	
	Residential - Rural Conservation (R-RLC)	
	Commercial 1 (C-1)	
	Commercial 2 (C-2)	
	Commercial 3 (C-3)	
	Industrial (IND)	
	Business - Local 1 (B-L1)	
	Business - Local (B-L)	
	Business - Park (B-PK)	
	Mixed Use - Kittery Foreside (MU-KF)	
	Mixed Use (MU)	
	Mixed Use - Badgers Island (MU-BI)	
	Conservation (CON)	
	Transportation - Maine Turnpike (T-MT)	

Overlay Zones	
	Resource Protection (OZ-RP)
	Shoreland - Water Body / Wetland Protection Area (OZ-SL-250')
	Shoreland - Stream Protection Area (OZ-SL-75')
	Commercial Fisheries / Maritime Uses (OZ-CFMU) are located within the upland area 75 feet of the normal high-water line or to the property boundary line as identified on the Zoning Map.

**LAND USE ZONING MAP**  
 SCALE: 1" = 600'

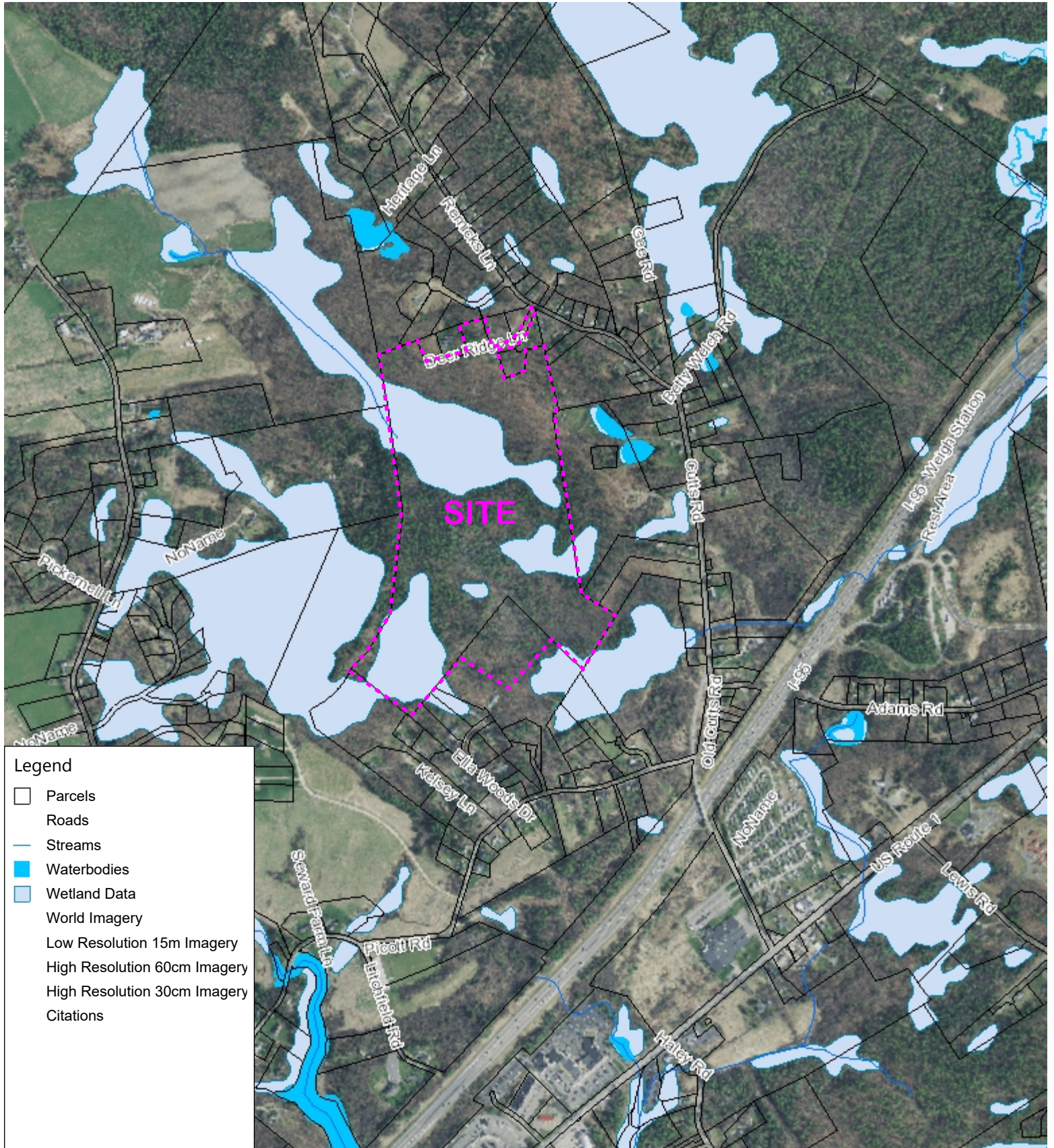
# Natural Resource Map



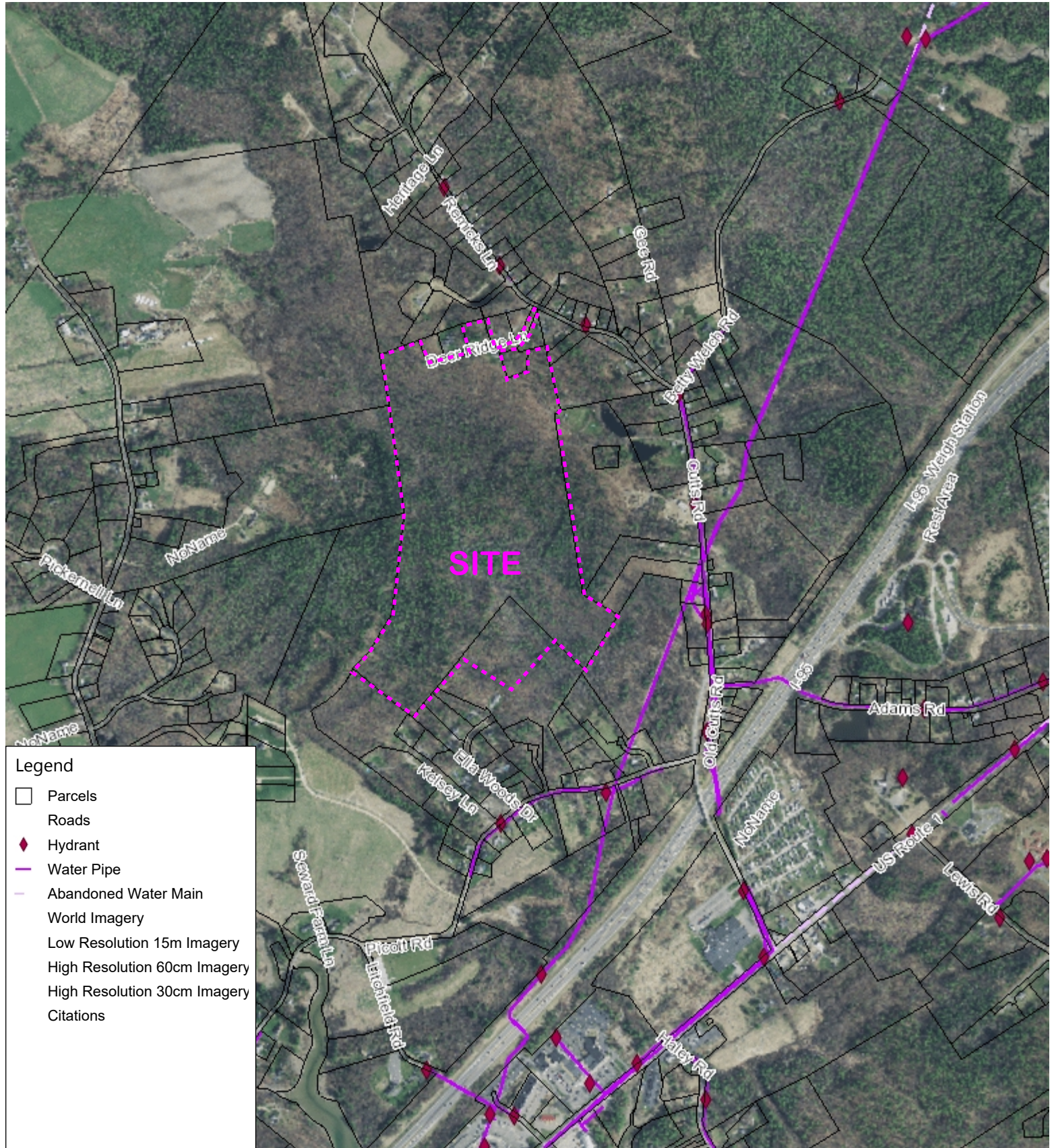
**Legend**

- Parcels
- Roads
- Deer Wintering Areas
- Potential Cottontail Habitat
- Rare Animal Locations
- Rare Animal Habitat
- Rare Plant Habitat
- Shorebird Habitat
- Swamp Darter Habitat
- Tidal Waterfowl/Wading Bird H
- Waterfowl/Wading Bird Habitat
- MNAP Focus Area
- Parcels in Farm or Tree Growth
- Open Space
- Current Use - Farm

# Kittery Wetlands Map



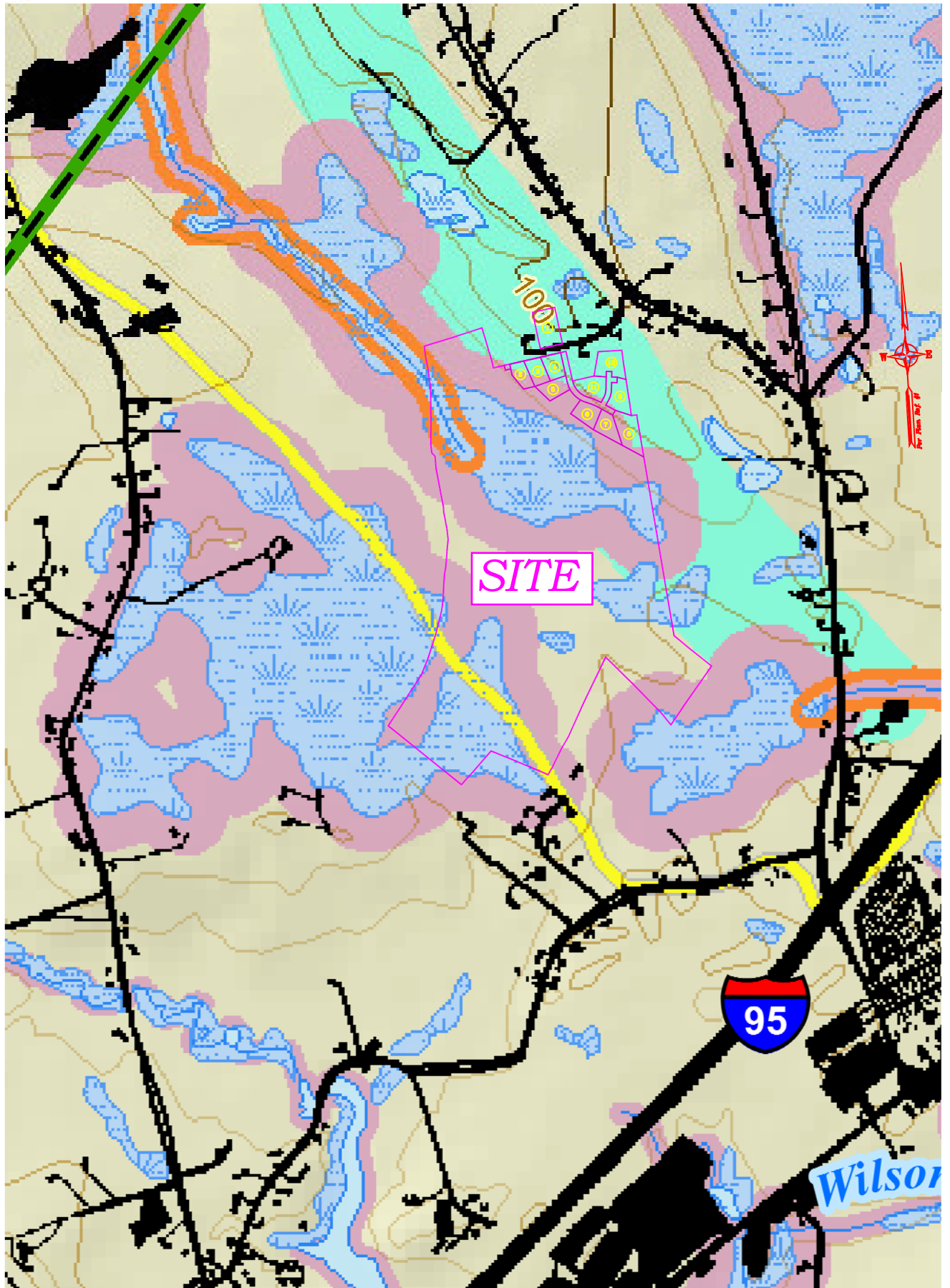
# Kittery Municipal Water System





BEGINNING WITH HABITAT – MAP 1  
WATER RESOURCES & RIPARIAN HABITATS

SCALE: 1" = 1,000'



# BEGINNING WITH HABITAT

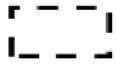
## MAP 1

### LEGEND

This map depicts riparian areas associated with major surface water features and important public water resources. This map does not depict all streams or wetlands known to occur on the landscape and should not be used as a substitute for on the ground surveys. This map should be used as a planning reference only and is intended to illustrate the natural hydrologic connections between surface water features. Protecting riparian habitats protects water quality, maintains habitat connections, and safeguards important economic resources including recreational and commercial fisheries.



**Selected Town or Area**



**Organized Township Boundary**



**Unorganized Township**



**Developed-** Impervious surfaces including buildings and roads



**Drainage divides** - These are the smallest hydrologic units mapped in Maine. They contain watershed boundaries for most ponds and rivers in Maine.



**NWI Wetlands** - National Wetlands Inventory (NWI) uses aerial photographs to approximate wetland locations. NWI data is not a comprehensive mapping of wetland resources and typically under represents the presence of wetlands on the landscape. The presence of wetlands needs to be determined in the field prior to conducting activities that could result in wetland disturbance.



**Riparian Habitat** - depicted using common regulatory zones including a 250-foot-wide strip around Great Ponds (ponds  $\geq 10$  acres), rivers, coastline, and wetlands  $\geq 10$  acres and a 75-foot-wide strip around streams. Riparian areas depicted on this map may already be affected by existing land uses.



**Shellfish Growing Areas** - The Maine Department of Marine Resources maps growing areas for economically important shellfish resources. This map depicts softshell and hard clam resources in order to illustrate the relation of these resources to streams and shoreline areas vital to their conservation.



**Brook Trout Habitat** - Streams and ponds, buffered to 100 feet, where wild Brook Trout populations have been documented, or managed to enhance local fisheries.



**Public Water Supply Wells**



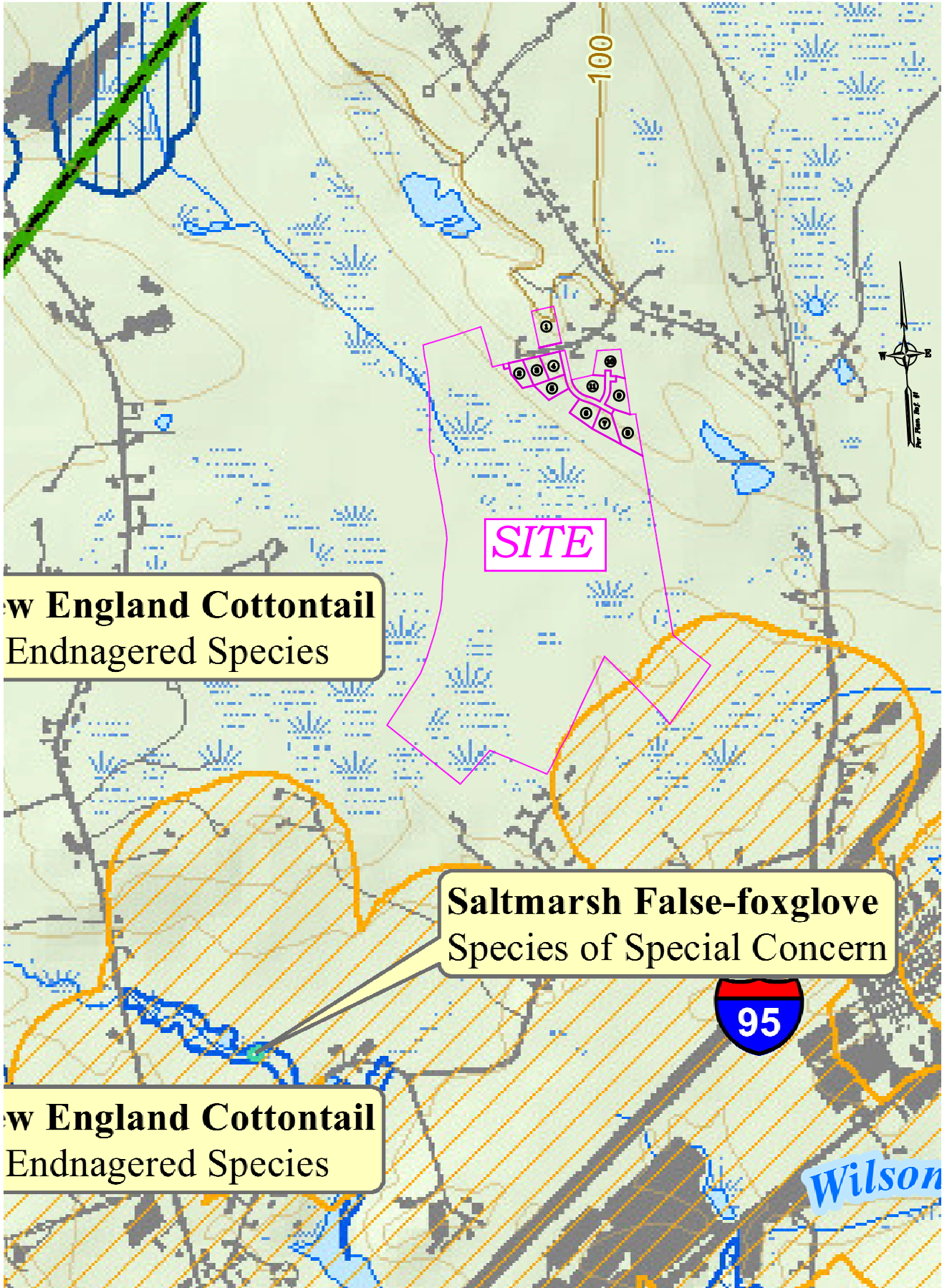
**Source protection area** - Buffers that represent source water protection areas for wells and surface water intakes that serve the public water supply. Their size is proportional to population served and/or by the type of water supply system. These buffers range from 300 to 2,500 feet in radius.



**Aquifers** - flow of at least 10 gallons per minute

**BEGINNING WITH HABITAT MAP 2  
HIGH VALUE MAP & ANIMAL HABITATS**

SCALE: 1" = 1,000'



## BEGINNING WITH HABITAT MAP 2

### LEGEND

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Beginning with Habitat (BwH) is a voluntary tool intended to assist landowners, resource managers, planners, and municipalities in identifying and making informed decisions about areas of potential natural resource concern. This data includes the best available information provided through BwH's coalition partners as of the map date, and is intended for information purposes only. It should not be interpreted as a comprehensive analysis of plant and animal occurrences or other local resources, but rather as an initial screen to flag areas where agency consultation may be appropriate. Habitat data sets are updated continuously as more accurate and current data becomes available. However, as many areas have not been completely surveyed, features may be present that are not yet mapped, and the boundaries of some depicted features may need to be revised. Local knowledge is critical in providing accurate data. If errors are noted in the current depiction of resources, please contact our office. Some habitat features depicted on this map are regulated by the State of Maine through the Maine Endangered Species Act (Essential Habitats and threatened and endangered species occurrences) and Natural Resources Protection Act (Significant Wildlife Habitat). We recommend consultation with MDIFW Regional Biologists or MNAP Ecologists if activities are proposed within resource areas depicted on this map. Consultation early in the planning process usually helps to resolve regulatory concerns and minimize agency review time. For MDIFW and MNAP contact information, visit <http://www.beginningwithhabitat.org/contacts/index.html>.

---



Organized Township Boundary



Unorganized Township



Selected Town or Area of Interest



Developed: Impervious surfaces such as buildings and roads

---

### Rare, Threatened, or Endangered Wildlife



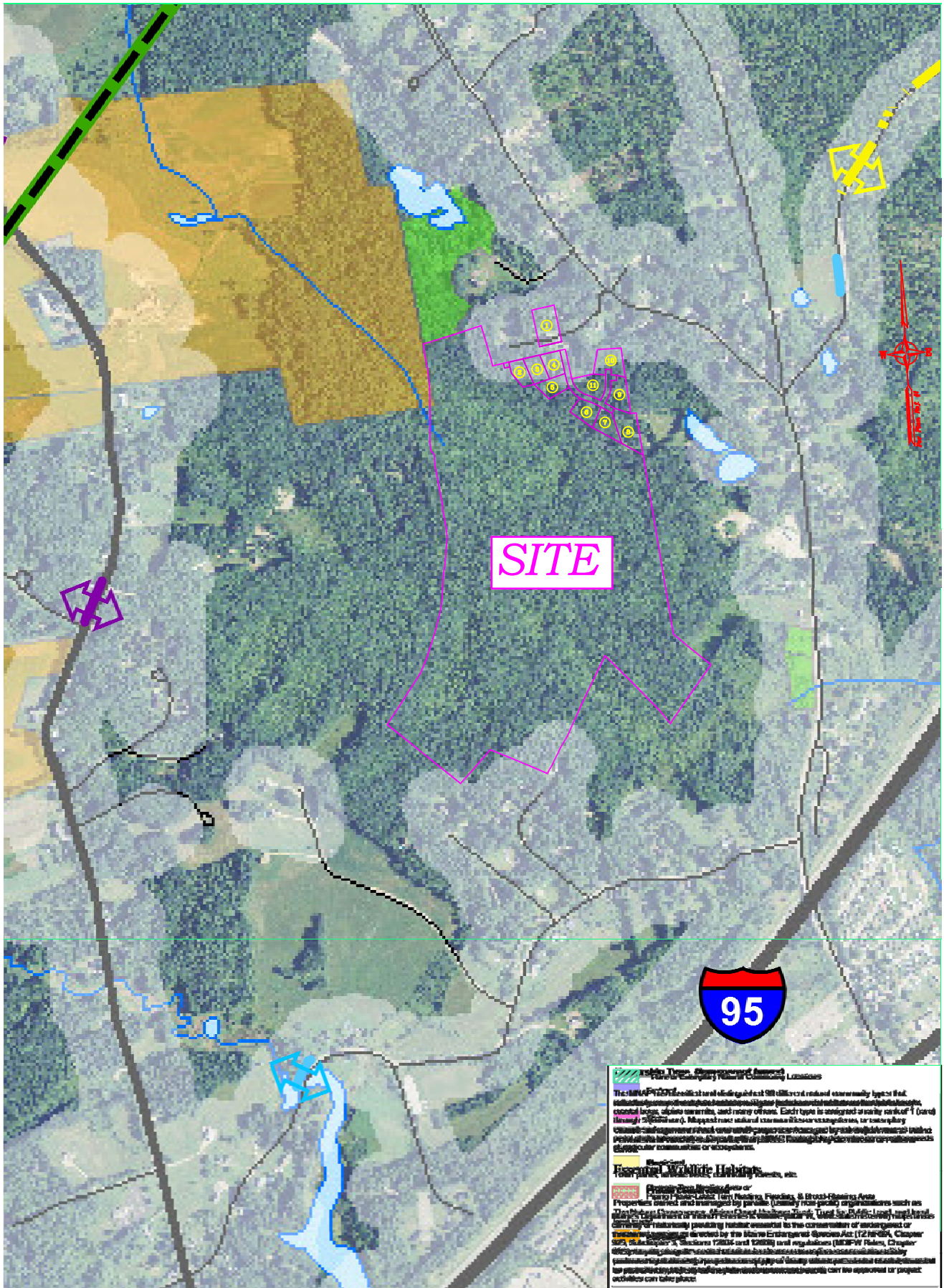
Known rare, threatened, or endangered species occurrence and/or the associated habitats based on species sightings.

Consult with an MDIFW regional biologist to determine the relative importance and conservation needs of the specific location and supporting habitat. For more information regarding individual species visit our website, [http://www.maine.gov/ifw/wildlife/species/endangered\\_species/state\\_list.htm](http://www.maine.gov/ifw/wildlife/species/endangered_species/state_list.htm), for species specific fact sheets.

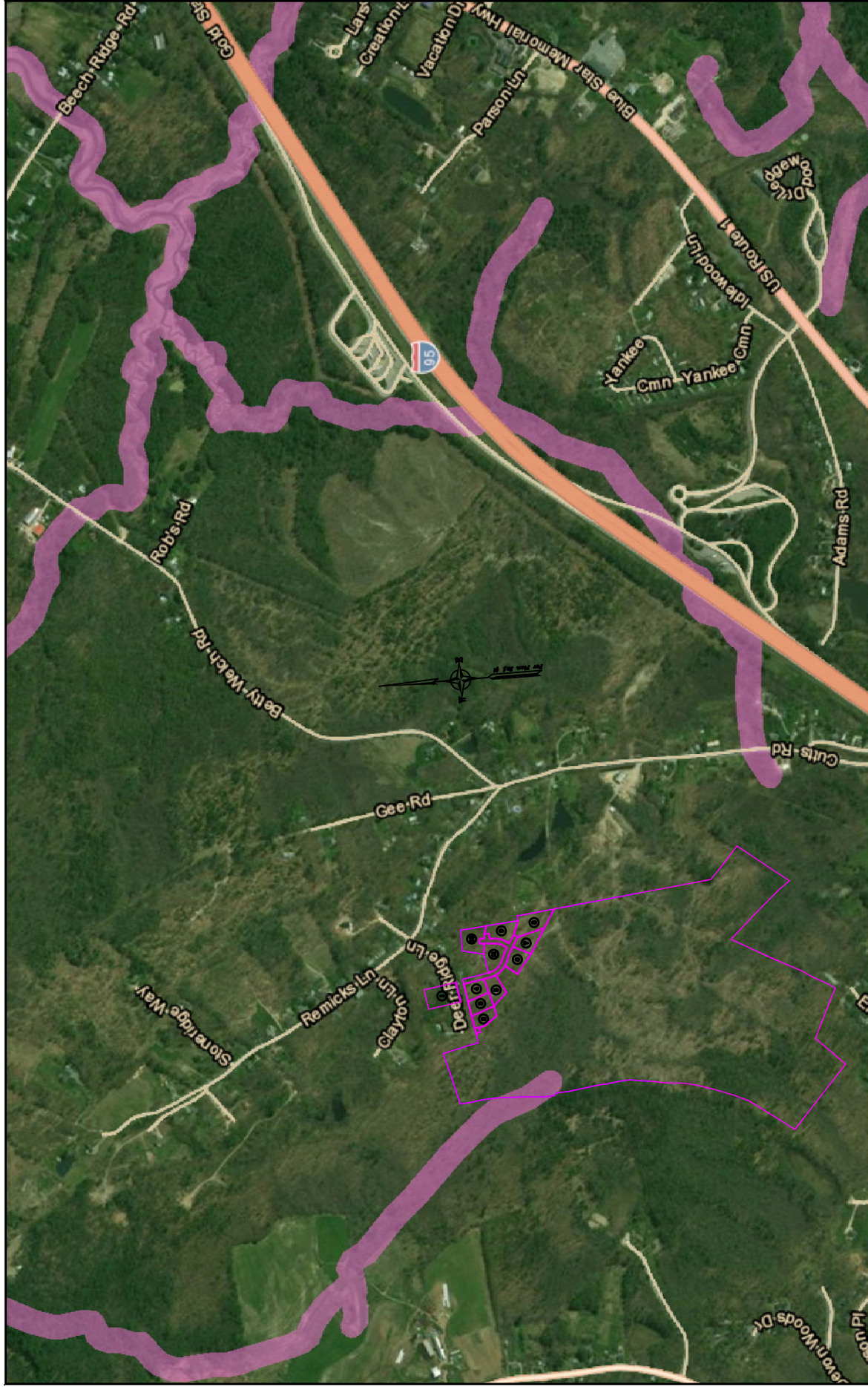
The Federal Endangered Species Act requires actions authorized, funded, or carried out by federal agencies be reviewed by the U. S. Fish and Wildlife Service. If your project occurs near an occurrence of the Atlantic Salmon, Roseate Tern, Piping Plover, Canada Lynx, New England Cottontail, Fubish's Lousewort, or Small-whorled Pagonia contact the Maine Field Office, USFWS, 1168 Main St., Old Town, ME 04468.

# BEGINNING WITH HABITAT MAP 3 UNDEVELOPED HABITAT BLOCKS

SCALE: 1" = 1,000'



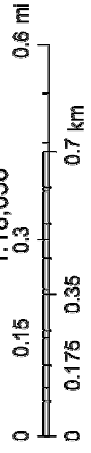
# Andrews Property



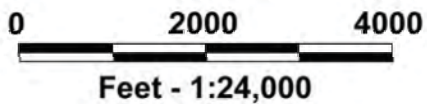
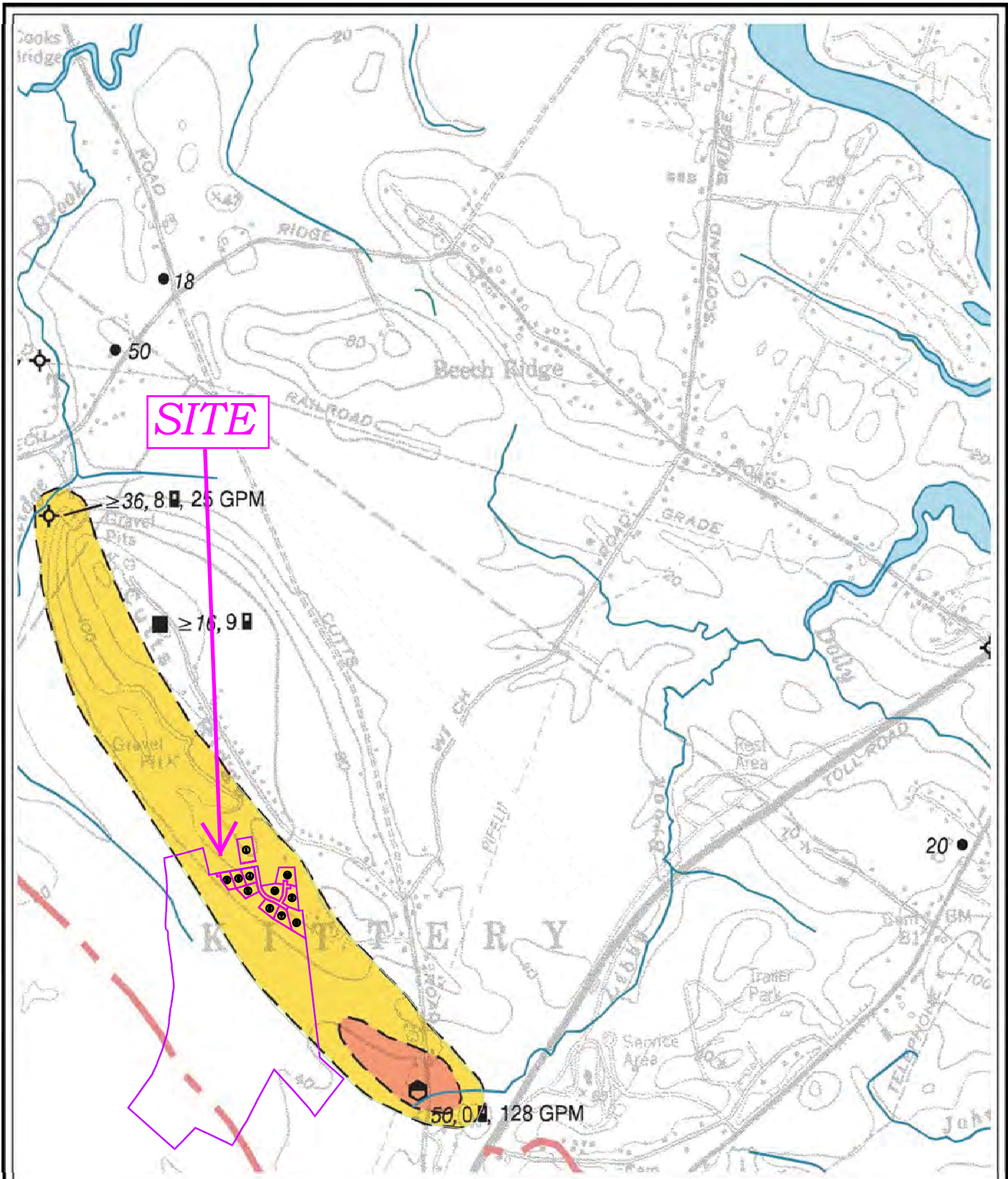
January 29, 2018

trout

1:18,056



Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors  
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus



### Significant Sand and Gravel Aquifer York Harbor Quadrangle

**NOTES TO USERS**

Map is for use in administering the National Flood Insurance Program. It does not identify all areas subject to flooding, particularly from local drainage or ice dam. The community map reporter should be consulted for updated or additional flood hazard information.

For more detailed information on areas where Base Flood Elevations (BFEs) have been determined, users are encouraged to consult the Flood and Floodway Data under Summary of Available Elevations tables contained in the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users are advised that BFEs shown on the FIRM represent rounded elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, elevation data presented in the FIS Report should be utilized in conjunction with the FIS for purposes of construction and floodplain management.

All Base Flood Elevations shown on this map apply only to lands of 0.3 American Vertical Datum of 1988 (AVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Available Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations in the Summary of Available Elevations table should be used for construction floodplain management purposes when they are higher than the elevations on this FIRM.

Lines of the floodways were obtained at cross sections and interpolated an area between. The floodway was based on FEMA's calculations with 1 to 2 foot margins of the National Flood Insurance Program. Floodway width for different roadway data are provided in the Flood Insurance Study Report for this jurisdiction.

A Zone category has been divided by a Limit of Moderate Wave Action (LMWA). The LMWA represents the approximate boundary limit of the 1.5-foot wave. The effects of wave hazards between the VZ Zone and the LMWA across the shoreline and the LMWA for areas where VZ Zones are not defined) similar, but less severe than those in the VZ Zone.

Areas not in Special Flood Hazard Areas may be protected by flood control walls. Refer to Section 3.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

Elevation used in the preparation of this map was Universal Transverse Mercator (UTM) zone 18. The horizontal datum was NAD 83, UTM 1800 scale. Differences in datum, spheroid projection or UTM zone used in the FIS for adjacent jurisdictions may result in slight positional errors in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Elevations on this map are referenced to the North American Vertical Datum of 1988. These elevations must be compared to structure and ground elevations used in the same vertical datum. For information regarding conversion on the National Geospatial Vertical Datum of 1988 and the North American Datum of 1983, visit the National Geospatial Survey website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov) or contact the National Geospatial Survey at the following:

Information Services  
NND31E  
at Coastal Survey  
13, #3000  
Baltimore Highway  
Spring, Maryland 20710-0862  
713-2818

For current elevation, description, and/or location information for bench marks on this map, please contact the Information Services Branch of the National Flood Survey at (301) 753-3344, or visit its website at <http://www.ngs.noaa.gov>.

Map information shown on this FIRM was derived from digital topography, bathymetry, and/or imagery provided in digital form by State of Maine Office of GIS (MOGIS). Ortho imagery was produced at a scale of 1:25,000 and is dated August 2012. The projection used in the preparation of this FIRM is State Plane West (FIPS 5002 NE 1802). The horizontal datum is NAD 83/1983 spheroid.

Ortho basefiles compiled on this map represent the hydraulic modeling conditions and the flood profiles in the FIS report. As a result of increased topographic correlation, ortho basefiles, in some cases, may deviate significantly from the stream line or appear outside the OFPA.

As updated topographic information, this map reflects more detailed and data stream channel configurations and floodplain delineations than shown on the previous FIRM for this jurisdiction. As a result, the Flood and Floodway Data tables for multiple streams in the Flood and Floodway Study Report (which contains authoritative hydraulic data) may reflect a channel delineation that differs from what is shown on the map. Also, the floodplain relationships for unregulated streams may differ from what is on previous maps.

Wave limits shown on this map are based on the best data available at the time of issue. Because changes due to construction or construction may have occurred after this map was published, map users should contact appropriate utility officials to verify current corporate limit locations.

Refer to the separately printed Map Index for an overview map of the FIRM showing the layout of map panels, community map reporter addresses, Listing of Communities table containing National Flood Insurance Program reporter community as well as a listing of the panels on which each community lies.

Information on available products associated with this FIRM visit the Map Reporter (MRO) website at <http://www.fema.gov>. Available products may be provided in various formats including a Flood Insurance Study Report. Digital versions of this map, many of these products can be ordered or accessed directly from the MRO website.

Have questions about this map, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information Page (MIP) at 1-877-FEMA-MAP (1-877-636-6267) or visit the FEMA website at <http://www.fema.gov>.

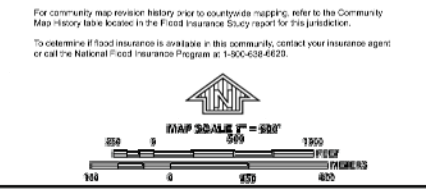
If Using Roadway Data Under the Maine Revised Statutes Annotated (M.R.S.A.), Title 23-A, §3 covers the roadway a not covered on the Flood Insurance Rate Map. This is considered to be the center of a two or more lane roadway and the adjacent land to a distance of 50 feet from the center of the road. If the roadway is a one-lane road, the adjacent land to a distance of 25 feet from the center of the road. The adjacent land to a distance of 25 feet from the center of the road. The adjacent land to a distance of 25 feet from the center of the road. The adjacent land to a distance of 25 feet from the center of the road.

Local structures that are certified to provide protection from the 1-percent-annual-chance flood are shown on this map. However, all structures shown are not shown for the purpose of flood hazard analysis and mapping and are not shown in the OFPA table in § 3.4. Flood.



**LEGEND**

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO FLOODING BY THE 1% ANNUAL CHANCE FLOOD**  
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zone A, AE, AH, AO, AR, AV, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
  - ZONE AE** Base Flood Elevations determined.
  - ZONE AH** Flood depths of 1 to 3 feet (usually areas of seeping); Base Flood Elevations determined.
  - ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
  - ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being replaced to provide protection from the 1% annual chance or greater flood.
  - ZONE AV** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
  - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
  - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
  - OTHER AREAS**
  - ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
  - ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% Annual Chance Floodplain Boundary
  - 0.2% Annual Chance Floodplain Boundary
  - Floodway boundary
  - Zone D boundary
  - CBRS and OPA boundary
  - Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
  - Limit of Moderate Wave Action
  - Limit of Moderate Wave Action coincident with Zone Break
  - Base Flood Elevation line and value; elevation in feet
  - Base Flood Elevation value where uniform within zone; elevation in feet
- \*Referenced to the North American Vertical Datum of 1988
- Cross section line
  - Traverse line
  - Quiver
  - Bridge
  - Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
  - 500-foot scale; Maine State Plane West Zone (FIPS Zone 1802), Transverse Mercator projection
  - 100-meter Universal Transverse Mercator grid values, zone 19
  - Bench mark (see explanation in Notes to Users section of this FIRM panel)
- MAP REPOSITORIES**  
Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**



**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 0663G**

**FIRM**  
FLOOD INSURANCE RATE MAP  
YORK COUNTY,  
MAINE  
(ALL JURISDICTIONS)

**PANEL 063 OF 025**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

COUNTY	SHEET	PANEL	SHEET
YORK COUNTY	0663G	0663G	0
YORK COUNTY	0663G	0663G	1
YORK COUNTY	0663G	0663G	2
YORK COUNTY	0663G	0663G	3
YORK COUNTY	0663G	0663G	4
YORK COUNTY	0663G	0663G	5

**PRELIMINARY**  
**NOVEMBER 5, 2013**

Please Refer to the Map Number shown below should be used when placing map orders. The Community Number shown above should be used as insurance applications for the subject community.

**MAP NUMBER**  
**2301C0663G**  
**EFFECTIVE DATE**

**Federal Emergency Management Agency**





STATE OF MAINE  
DEPARTMENT OF  
ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE    PAUL MERCER  
GOVERNOR

COMMISSIONER

April 13, 2018

Mary Thron  
Arthur W. Andrews Revocable Trust  
PO Box 96  
Kittery Point, ME 03905

Re: Vernal Pool Significance Determination, Pool ID # 3233-Kittery

To Whom It May Concern:

Vernal pools are temporary to semi-permanent wetlands occurring in shallow depressions that typically fill during the spring and dry during the summer or in drought years. They provide important breeding and foraging habitat for a wide variety of specialized wildlife species including several rare, threatened, and endangered species.

After conducting a field survey at your request, it has been determined that the vernal pool identified above on your property is SIGNIFICANT. I have attached a copy of the database printout that verifies the State's findings with respect to our survey.

As a significant vernal pool, all areas on your property within 250 feet of the vernal pool depression, known as the "critical terrestrial habitat", will be subject to the requirements of the Natural Resources Protection Act, 38 M.R.S.A. §§480-A to 480-FF, and the Significant Wildlife Habitat rules, 06-096 CMR 335.

The Department will ensure that the vernal pool's location and status is entered and mapped in the State's vernal pool database. Note that if the pool depression (only) crosses two or more property boundaries the abutter(s) are similarly subject to the requirements of the Natural Resources Protection Act and the Significant Wildlife Habitat rules.

If you have any questions or need further clarification, please contact me at (207) 215-4397 or email at: [Mark.Bergeron@maine.gov](mailto:Mark.Bergeron@maine.gov)

Sincerely,

Mark Bergeron, P.E.  
Bureau of Land Resources

cc. town file

AUGUSTA  
17 STATE HOUSE STATION  
AUGUSTA, MAINE 04333-0017  
(207) 287-7688 FAX: (207) 287-7826

BANGOR  
106 HOGAN ROAD, SUITE 6  
BANGOR, MAINE 04401  
(207) 941-4570 FAX: (207) 941-4584

PORTLAND  
312 CANCO ROAD  
PORTLAND, MAINE 04103  
(207) 822-6300 FAX: (207) 822-6303

PRESQUE ISLE  
1235 CENTRAL DRIVE, SKYWAY PARK  
PRESQUE ISLE, MAINE 04769  
(207) 764-0477 FAX: (207) 760-3143

## IFW Recommendations for Significant Vernal Pool Determinations

The following is a list of pools and IFW's recommendations for whether or not they qualify as Significant Vernal Pools, one of Maine's Significant Wildlife Habitats.

**Data current as of: Friday, April 13, 2018**

---

IFW's Pool ID: 3233	Twp: Kittery	UTM Coordinates of Pool Center: 359268 E, 4776889 N
Observer's ID: VP1 (JWN #16-70)		ProjectType: Portion of 47 Cutts Road
Landowner: Mary Thron - Arthur W. Andrews Revocable Trust	Contact: Joseph Noel - Consultant	
PO Box 96		PO Box 174
Kittery Point, ME 03905		South Berwick, ME 03908
(207) 439-0889		(207) 384-5587 jwnoel@aol.com

---

Survey Date: 4/13/2017

IFW's Recommendation: GREEN: SIGNIFICANT

IFW Comments: Pool provides significant habitat for wood frogs, but hydroperiod is unknown and may have permanent inlet/outlet; pool boundary may need to be refined. Suggest revisiting site in dry part of summer to confirm inlet/outlet permanency and hydroperiod.

UPDATE: C. Adams (DEP) site visit 02/13/2018; the distance of the outlet from the vernal pool suggests it is not a permanent outlet from the pool itself and therefore would not impact the significance determination. Based on observations...recommend significant.

Pool status updated to Significant from Potentially Significant.



DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF LAND RESOURCES

2/22/2018

CONTACT ID 11830

FIELD DETERMINATION FORM

CONTACT

JOE NOEL  
PO BOX 174  
SOUTH BERWICK, ME 03908

DIRECTIONS

Entered property from the end of Deer Ridge lane, but it is listed as 47 Cutts rd.

PROPERTY OWNER

✓ THRON, MARY  
ARTHUR W ANDREWS REV. TRUST  
KITTERY POINT, ME 03905  
PO Box 96

STAFF ADAMS, CAMERON

SITE TOWN      KITTERY  
MAP              LOT

MEMO

On February 13th, 2018, I met with Joe Noel at 47 Cutts Rd in Kittery. I was asked to inspect the site and indicate how the area is regulated under the Natural Resources Protection Act (NRPA).

The lot contains freshwater wetlands as defined by the NRPA, 38 M.R.S. §480-B(4). In addition, there are several vernal pools on the property that Joe identified and surveyed during the 2017 breeding season. Pool #3234 is contained within the wetland complex and has poorly defined limits. Joe also identified a possible permanent outlet from the pool that would potentially preclude it from being considered significant. Upon review by the Department of Inland Fisheries and Wildlife (DIFW), the pool was determined to be potentially significant pending further review of these uncertainties. Joe requested that I assist in constraining the jurisdictional edge of the vernal pool and inspect the outlet to assist DIFW in making final determination about the pool's significance.

Upon inspecting the area and discussing Joe's observations related to the indicator species activity, I was able to better define the limits of the vernal pool. Joe updated the resource survey for the property to reflect my findings. Joe and I also observed the channelized outlet that he had identified at the opposite end of wetland complex from the pool. The outlet was frozen over at the time of inspection and difficult to fully inspect. However, the distance of the outlet from the vernal pool suggests it is not a permanent outlet from the pool itself and therefore would not impact the significance determination. No final judgment was made as to whether the outlet is considered a stream pursuant to the NRPA §480-B(9). Based on my observations, I recommended to DIFW that pool #3234 be considered significant.

The wetland complex that contains the significant vernal pool is considered wetland of special significance as defined by the Wetland and Waterbodies Protection Rules, NRPA Chapter 310 (4). A permit would be required for direct impacts to the wetland area, but the wetland does not have a setback itself. The significant vernal pool is subject to the Significant Wildlife Habitat Rules, NRPA Chapter 355 (9).

Please make sure that all local permits, as well as applicable DEP permits, have been obtained prior to starting any work.

Erosion control devices must be installed and maintained on the project site during any soil disturbance activity. A Stormwater Management Law PBR or Maine Construction General Permit "NOI" and "NOT" must be filed with the Department if more than 1 acre

NAME: 

RECEIVED      2/9/2018      SITE VISIT      2/13/2018      COMPLETED      2/22/2018



**DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF LAND RESOURCES**

2/22/2018

CONTACT ID 11830

**FIELD DETERMINATION FORM**

---

of area is going to be disturbed on the project site at any given time during construction.

NAME: \_\_\_\_\_

---

RECEIVED 2/9/2018 SITE VISIT 2/13/2018 COMPLETED 2/22/2018

---

**JOSEPH W. NOEL  
P.O. BOX 174  
SOUTH BERWICK, MAINE 03908  
(207) 384-5587**

CERTIFIED SOIL SCIENTIST

\*

WETLAND SCIENTIST

\*

LICENSED SITE EVALUATOR

July 24, 2017

Ms. Mary Thron, Trustee  
Arthur W. Andrews Revocable Trust  
P.O. Box 96  
Kittery Point, Maine 03905

RE: Vernal Pool Survey, Portion of 47 Cutts Road, Kittery, Maine, JWN #16-70

Dear Mary:

In the spring of 2017, a vernal pool survey was conducted on the above-referenced property. This service included identifying wetlands that contain vernal pool habitat and providing a recommendation on their vernal pool status. This survey did not include the area that is being conveyed to Arthur W. Andrews, Jr. (20.28 Acre Parcel A).

The wetlands were reviewed by walking the perimeters and making transects through the wetlands. Three visits were conducted on April 13, 2017, April 23, 2017 and May 13, 2017. Two site visits were conducted at each pool during the recommended windows (identification period) for the wood frog (*Lithobates sylvaticus*), spotted salamander (*Ambystoma maculatum*), and blue-spotted salamander (*Ambystoma laterale*) except for VP1 and VP15. VP1 met the criteria for a MDEP Significant Vernal Pool on the initial site visit so a second visit was not necessary. VP15 was not surveyed during the recommended identification period for wood frogs. While the wood frogs had recently hatched in VP15, the egg masses were still intact and could be counted (very small excavated pool at property line). The pools were also checked during all the visits for the presence of fairy shrimp (*Eubranchipus spp.*), and state-listed rare, endangered or threatened species that use vernal pools, none were observed.

Seven natural or natural-modified pools and nine man-made pools were documented in the survey area that contained vernal pool species (i.e., wood frog egg masses or spotted salamander egg masses). VP1 met the egg mass counts to be considered Maine Department of Environmental Protection Significant Vernal Pools (MDEP SVP). The balance of the pools did not meet the criteria to be a MDEP SVP due to egg mass counts along with many being of man-made origin. A Vernal Pool Data Chart is attached that summarizes the information collected during the vernal pool survey. Also attached is a worksheet plan with the approximate pool locations. Maine State Vernal Pool Assessment Forms were only completed for the natural or natural-modified vernal pools.

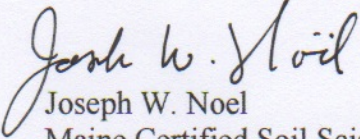
Maine State Vernal Pool Assessment Forms for VP1, VP9, VP10, VP11, VP12, VP13, and VP14 along with the required attachments will be forwarded to the Maine Department of Inland Fisheries & Wildlife (MDIFW) for a definitive vernal determination at the state level. The MDEP will issue an official vernal pool determination report after the MDIFW review the forms. I will also included this report along with photos of the all the pools to MDIFW. If the MDIFW/MDEP requires forms for the man-made pools these can be completed but should not be necessary.

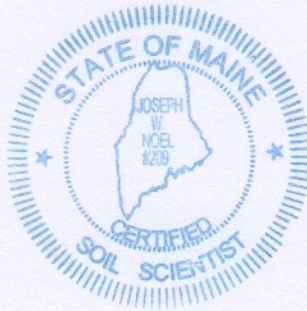
It is important to note that the Army Corps of Engineers (Corps) also regulates vernal pools (natural and man-made) and their criteria/standards differ from the Maine Department of Environmental Protection so projects are reviewed on a case-by-case basis. All sixteen pools would meet the criteria to be Corps vernal pools. The Corps can determine during a review that an area is not a vernal pool based on the available data and/or an on-site. I strongly recommend that a review of these pools be conducted with the Army Corps, as they may determine that many of these pools are not Corps vernal pools (e.g., the skidder rut areas and some are in upland areas). The Corps jurisdiction is triggered if any proposed work is conducted in a wetland or waterway.

I recommend that you discuss these pools with the MDEP and the Army Corps of Engineers early in the planning process to receive a definitive determination on their vernal pool status at the state and federal level.

Please feel free to call with any questions.

Sincerely,

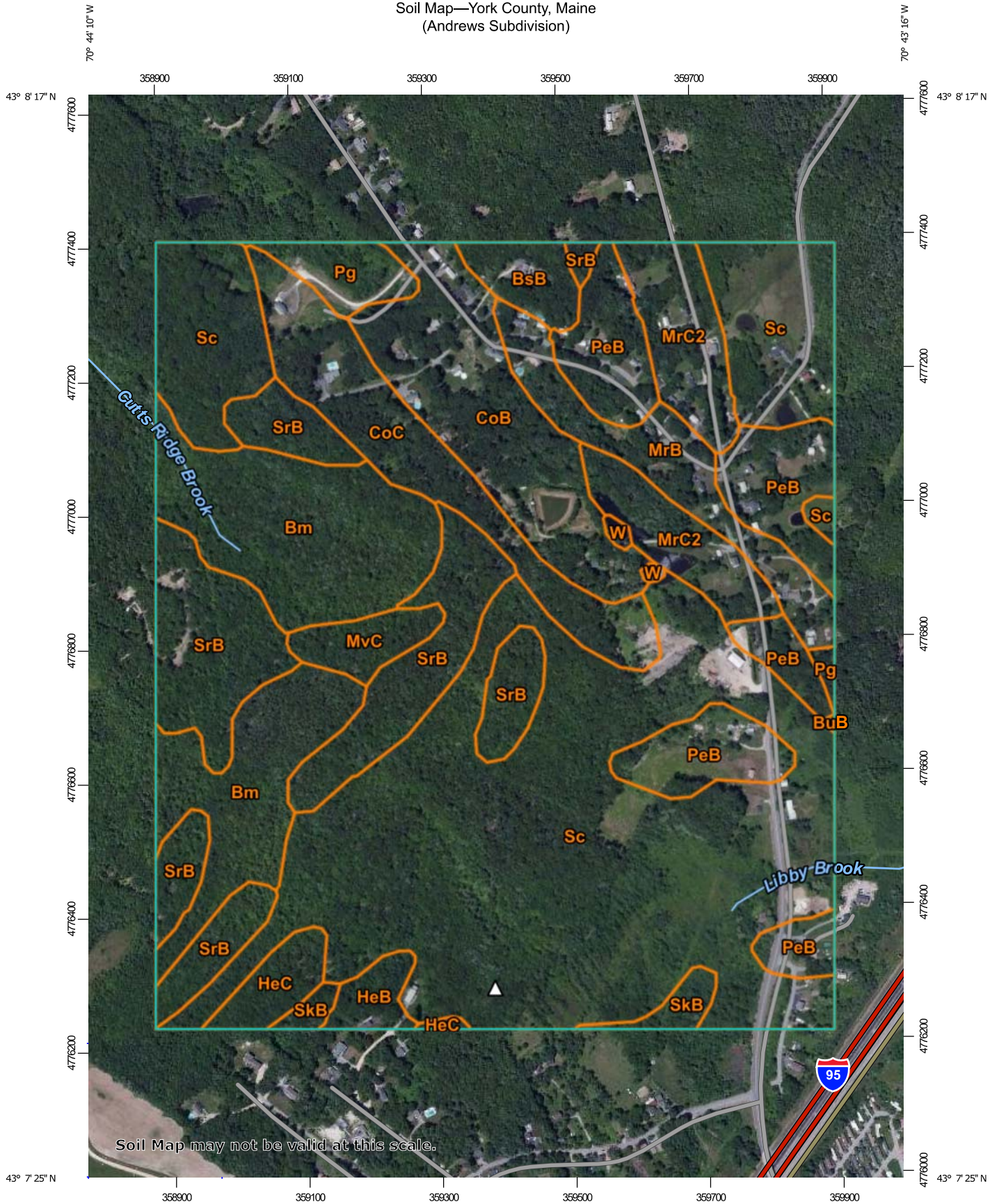
  
Joseph W. Noel  
Maine Certified Soil Scientist #209  
Wetland Scientist



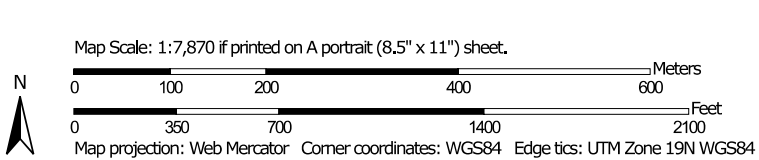
**VERNAL POOL DATA CHART**  
(Portion of 47 Cutts Road, Kittery, Maine)

Pool Id #	GPS Location	Species Abundance Levels					Vernal Pool Status				Comments
		Wood Frog Egg Mass #	Spotted Salamander Egg Mass #	Blue-spotted Salamander Egg Mass #	Presence of Fairy Shrimp	E, T, or SC Species Noted During Field Visits	Man-made Vernal Pool	MDEP Significant Vernal Pool	Corps Vernal Pool		
1	43° 07' 54" 70° 43' 49"	64+	None Observed	None Observed	None Observed	None Observed	No	Yes	Yes	Yes	Natural, 2 <sup>nd</sup> visit for Salamander count not conducted, numerous wood frogs still chorusing during 1 <sup>st</sup> visit, very productive pool, upper reaches of wetland have stream - no stream in vernal pool limits
2	43° 07' 44" 70° 43' 49"	7	"	"	"	"	Yes	No	Yes	Yes	Man-made pool in wetland due to skidder and ATV's, green wood frog tadpoles, observed water depth 12"
3	43° 07' 47" 70° 43' 49"	7	"	"	"	"	Yes	No	Yes	Yes	Man-made pool in skidder ruts in upland, water depths in ruts ~12"
4	43° 07' 50" 70° 43' 43"	4	"	"	"	"	Yes	No	Yes	Yes	Man-made pool in wetland & uplands, was very narrow forested drainage that was enlarged due to skidder & ATV use, observed water depth ~10", silt an issue
5	43° 07' 49" 70° 43' 42"	1	"	"	"	"	Yes	No	Yes	Yes	Man-made pool in upland due to skidder ruts, green frog observed, water depth observed ~35", silt a problem
6	43° 07' 48" 70° 43' 42"	3	"	"	"	"	Yes	No	Yes	Yes	Man-made pool in upland due to skidder ruts, observed water depth ~12"
7	43° 07' 46" 70° 43' 43"	17	9	"	"	"	Yes	No	Yes	Yes	Man-made pool in wetland due to skidder ruts & ATV's, green frog tadpoles noted, observed water depth ~24"
8	43° 07' 50" 70° 43' 40"	1	None Observed	"	"	"	Yes	No	Yes	Yes	Man-made pool in upland due to skidder, pool was very silty due to soil erosion, water depth ~10"
9	43° 07' 50" 70° 43' 43"	27	8	"	"	"	No	No	Yes	Yes	Natural, green frogs noted, vernal pool limits had viable water levels, balance of wetland had some surface water at times but very variable due to rain events
10	43° 07' 48" 70° 43' 43"	31	3	"	"	"	No	No	Yes	Yes	Natural, salamander egg masses were most likely predated - no sign of egg masses on 2 <sup>nd</sup> visit
11	43° 07' 46" 70° 43' 40"	4	None Observed	"	"	"	No	No	Yes	Yes	Natural, adult wood frogs noted, very shallow pool
12	43° 07' 51" 70° 43' 55"	22	13	"	"	"	Portion	No	Yes	Yes	Natural & Man-made, 3 wood frog egg masses were in natural wetland - balance was in skidder ruts - photo is of man-made portion
13	43° 07' 44" 70° 43' 57"	4	3	"	"	"	No	No	Yes	Yes	Natural
14	43° 07' 39" 70° 43' 56"	18	8	"	"	"	No	No	Yes	Yes	Natural
15	43° 07' 56" 70° 44' 03"	14	10	"	"	"	Yes	No	Yes	Yes	Man-made - excavated area - very deep
16	43° 07' 52" 70° 43' 49"	None Observed	9	"	"	"	Yes	No	Yes	Yes	Man-made pool in wetland next to woods road & near VPI, last year had wood frog tadpoles, silty conditions during rain events, water depths ~2', green wood frog

Soil Map—York County, Maine  
(Andrews Subdivision)

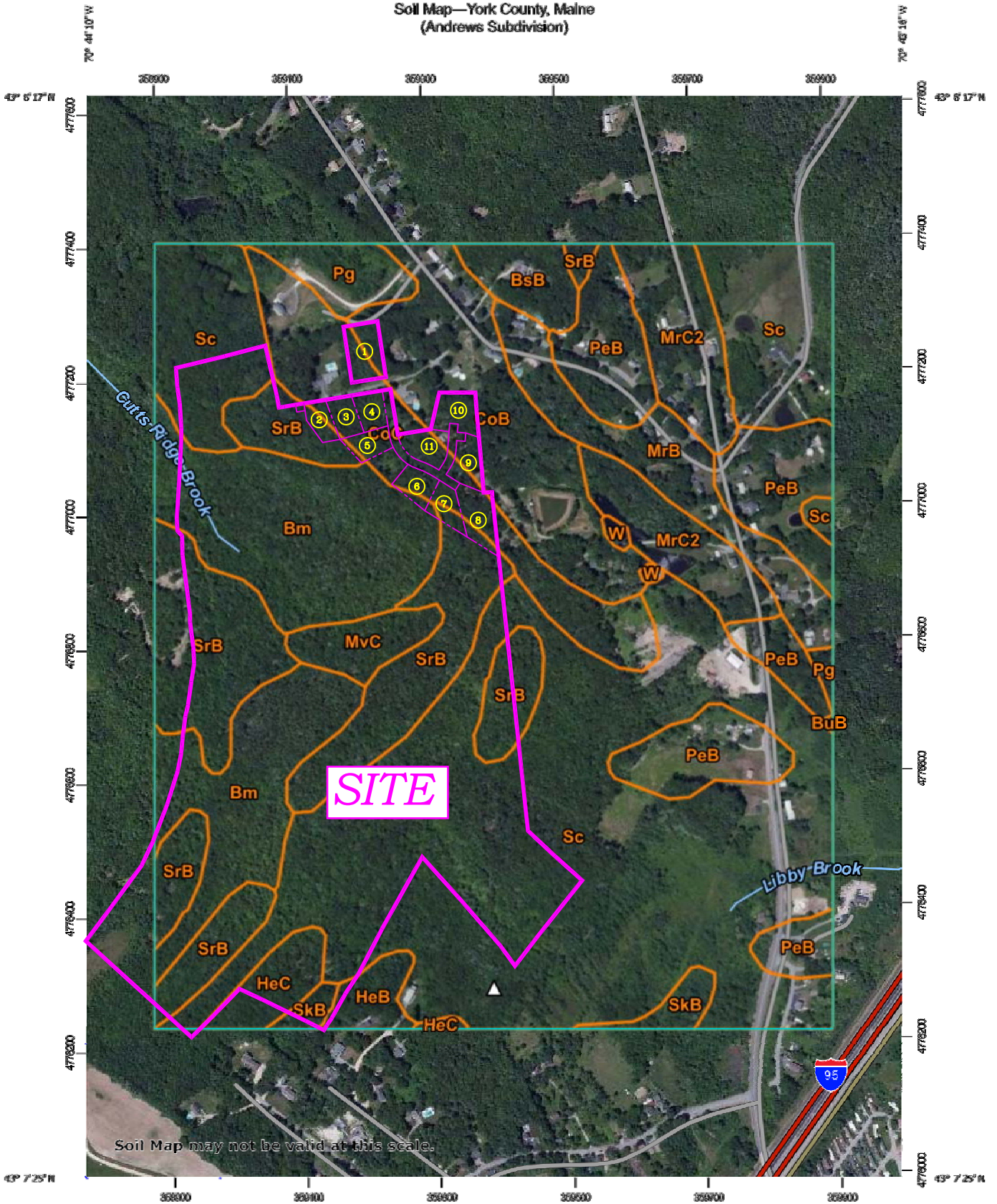


Soil Map may not be valid at this scale.





Soil Map—York County, Maine  
(Andrews Subdivision)

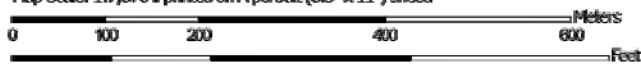


Soil Map may not be valid at this scale.

70° 41' 10" W








































Map Scale: 1:7,870 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

## MAP LEGEND

-  Area of Interest (AOI)
-  Area of Interest (AOI)
- Soils**
-  Soil Map Unit Polygons
-  Soil Map Unit Lines
-  Soil Map Unit Points
- Special Point Features**
-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads
- Background**
-  Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: York County, Maine  
 Survey Area Data: Version 17, Sep 11, 2018

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

Date(s) aerial images were photographed: Jun 20, 2010—Jul 18, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Bm	Biddeford mucky peat, 0 to 3 percent slopes	35.5	12.0%
BsB	Brayton and Westbury very stony fine sandy loams, 0 to 8 percent slopes	4.0	1.3%
BuB	Buxton silt loam, 3 to 8 percent slopes	0.1	0.0%
CoB	Colton gravelly loamy coarse sand, 0 to 8 percent slopes	21.3	7.2%
CoC	Colton gravelly loamy coarse sand, 8 to 15 percent slopes	16.8	5.7%
HeB	Hermon sandy loam, 3 to 8 percent slopes	2.6	0.9%
HeC	Hermon sandy loam, 8 to 15 percent slopes	3.8	1.3%
MrB	Marlow fine sandy loam, 3 to 8 percent slopes	11.2	3.8%
MrC2	Marlow fine sandy loam, 8 to 15 percent slopes	15.2	5.2%
MvC	Marlow fine sandy loam, 8 to 15 percent slopes, very stony	3.8	1.3%
PeB	Peru fine sandy loam, 3 to 8 percent slopes	24.2	8.2%
Pg	Pits, gravel	4.5	1.5%
Sc	Scantic silt loam, 0 to 3 percent slopes	113.6	38.5%
SkB	Skerry fine sandy loam, 0 to 8 percent slopes	2.6	0.9%
SrB	Skerry fine sandy loam, 0 to 8 percent slopes, very stony	35.6	12.0%
W	Water bodies	0.5	0.2%
<b>Totals for Area of Interest</b>		<b>295.4</b>	<b>100.0%</b>

**SOIL SURVEY REPORT**

**CLASS A HIGH INTENSITY  
(WHERE DEVELOPMENT IS PLANNED)  
&  
CLASS C MEDIUM HIGH INTENSITY  
(OUTSIDE DEVELOPMENT AREA)**

**FOR**

**ARTHUR W. ANDREWS TRUST  
ANDREWS SUBDIVISION  
REMICKS LANE & DEER RIDGE LANE  
KITTERY, MAINE**

**PREPARED FOR:**

**ALTUS ENGINEERING, INC.  
133 COURT STREET  
PORTSMOUTH, NEW HAMPSHIRE 03801**

**PREPARED BY:**

**JOSEPH W. NOEL  
P.O. BOX 174  
SOUTH BERWICK, MAINE**

**AUGUST 22, 2018  
JWN #16-70**

**JOSEPH W. NOEL  
P.O. BOX 174  
SOUTH BERWICK, MAINE 03908  
(207) 384-5587**

CERTIFIED SOIL SCIENTIST \* WETLAND SCIENTIST \* LICENSED SITE EVALUATOR

**INTRODUCTION**

**PURPOSE**

This report and the attached high intensity soil survey map were prepared to aid in planning for the proposed residential subdivision. The property is 106.8+/- acres and is located off of Remicks Lane and Deer Ridge Lane in Kittery, Maine. Wetland delineation services and a vernal pool survey were also conducted by the undersigned.

**SOIL SURVEY METHODS**

Fieldwork was conducted from May to August of 2018. Soil mapping procedures followed Maine Association of Professional Soil Scientists (MAPSS) guidelines (revised, March 2009). Thirty-four test pits (backhoe and hand excavated) were conducted on May 25, 2018 and June 12, 2018 (refer to attached test pit logs for details). The test pit information was used to prove-out suitable soils for wastewater disposal and for generating the high intensity soil survey. Additional soil observations were conducted to verify the soil map units (test pit logs were not completed). If additional test pits are conducted, the soil survey may be fine-tuned/updated, if necessary. The hydrologic soil groups for the soil map were taken from the NRCS Web Soil Survey on July 11, 2018.

**SOIL SURVEY CLASS**

Soil surveys are divided into four levels or classes. For this project, a Class A (high intensity) level map was created for the development area and a Class C (medium high intensity) was created for those areas located outside the development.

Characteristics of Class A maps include the following:

1. Map units will not contain dissimilar limiting individual inclusions larger than one-eighth acre. Dissimilar limiting inclusions may total more than one-eighth acre per map unit delineation, in the aggregate, if not continuous.
2. Scale of 1 inch equals 100 feet or larger (e.g., 1" = 50').
3. Ground control – base line and test pits for which detailed data is recorded are accurately located under the direction of a registered land surveyor or qualified professional engineer.
4. Base map with 2-foot contour lines or less with ground survey, or aerial survey with ground control.

Characteristics of Class C maps include the following:

1. Map units will not contain dissimilar limiting individual inclusions larger than 5 acres. Dissimilar limiting inclusions may total more than 5 acres per map unit delineation, in the aggregate, if not continuous.
2. Scale of 1 inch equals 500 feet or larger (e.g., 1" = 400').
3. Ground control – as determined by the mapper.
4. Base map – as determined by the mapper.

### **SOIL MAP UNIT DESCRIPTIONS**

Below are descriptions for each of the soil map units found on the site. Each of the soil map units includes: physical characteristics of the soil, hydrologic soil group, slopes, soil inclusions, soil limitations, etc.

- 1) Map Symbol: Bd  
Soil Series: Biddeford

The very poorly drained Biddeford soils are formed in marine silt and clay deposits. These soils are low on the landscape and are located in four map units in the mapping area. These soils are deep to bedrock and have a high watertable. Typically, the surface horizon is a black sapric/hemic organic material 8 to 16 inches thick. The substratum below the organic horizon is an olive gray to greenish gray silt loam to silty clay loam. The hydrologic soil group is D, the slopes range from 0-3%, and the flood hazard is "none" but is frequently "ponded". Inclusions in this map unit are the Ossipee, Scantic, Swanton, and Wonsqueak soil series comprising 10% of this map unit.

#### **Soil Limitations**

These soils have severe limitations for site development due to wetness and frost action. These soils are unsuitable for development and are being avoided by the proposed project. This is a hydric soil and is indicative of wetland conditions. Their use is governed by local, state and federal wetland regulations.

- 2) Map Symbol: Co  
Soil Series: Colonel

The somewhat poorly drained Colonel soils are formed in dense glacial till. These soils are intermediate to low on the landscape and are scattered throughout the mapping area. No development is being planned on these soils. The surface horizon varies from 10 to 12 inches thick and consists of dark brown to dark yellowish brown cobbly fine sandy loam. The subsoil is a light olive brown cobbly fine sandy loam with redox features. The substratum is a dense lodgement till. The seasonal high watertable is between 7 to 15 inches. These soils are deep to bedrock, the hydrologic soil group is D, the slopes range from 0-8%, and the flood hazard is "none". Inclusions in this map unit are the Lamoine, Peru and Roundabout soil series along with a woods road and small stump pile, comprising 10% of this map unit.

### Soil Limitations

Colonel soils have limitations for site development due to wetness and frost action. These soils are being avoided by the proposed project.

- 3) Map Symbol: La  
Soil Series: Lamoine

The Lamoine soils are somewhat poorly drained and formed in fine textured marine/lacustrine sediments. These soils are found in a low position on the landscape and are nearly level to gently sloping and are of moderate extensive in southeastern portion of the mapping area. Typically, the surface horizon is dark brown very fine sandy loam to silt loam. The subsoil is a light olive brown to olive to olive gray silt loam to silty clay loam. The substratum is a mottled olive to olive gray silt loam to silty clay loam that is restrictive in nature. The seasonal high watertable occurs between 6 and 14 inches. These soils are deep to bedrock, the hydrologic soil group is D, the slopes range from 0-3%, and the flood hazard is "none". Inclusions in this map unit are the Colonel, Roundabout and Scantic soil series soils comprising 10% of this map unit.

### Soil Limitations

Lamoine soils have limitations for development due to wetness and frost action. These soils are being avoided by the proposed project.

- 4) Map Symbol: Lt  
Soils Series: Lyman-Tunbridge Complex

This mapping unit represents a complex where two components could not be mapped separately (i.e., Lyman and Tunbridge soils).

The Lyman soils are somewhat excessively drained and formed in a thin mantle of glacial till overlying bedrock. Typically, the surface layer is a dark brown sandy loam about 4 to 6 inches thick. The subsoil, ranging from 10 to 14 inches thick is a strong brown or dark yellowish brown very fine sandy loam to sandy loam.

The second component is the well drained Tunbridge soil that formed in moderately deep sandy loam glacial till. Typically on this site, the surface horizon varies for 8 to 10 inches thick and consists of dark brown fine sandy loam. The subsoil is a dark yellowish brown fine sandy loam.

It occurs in an intermediate topographic setting and is found in one small area on the property outside of the proposed development. The soil complex contains soils that are shallow to moderately deep to bedrock (i.e., 10" to 40"). The hydrologic soil group is D, the slopes range from 3-8%, and the flood hazard is "none".

### Soil Limitations

The shallow to moderately deep to bedrock feature of the Lyman-Tunbridge Complex represents limitations to site development. These soils are being avoided for the proposed development.

- 5) Map Symbol: Pe  
Soil Series: Peru

The Peru soils are moderately well drained and formed in loamy lodgement till. It occurs on a gently to moderately sloping hill where the development will occur and on elongated till knolls in the balance of the mapping area. It is located on high to intermediate positions on the landscape. Typically, the surface horizon is dark brown fine sandy loam (about 6 to 10 inches thick). The subsoil is dark yellowish brown to strong brown fine sandy loam (about 14 to 18 inches thick). The substratum is a dense brown to light olive brown fine sandy loam to loamy sand with redoximorphic features (i.e., evidence of wetness). These soils are typically deep to bedrock but there may be some limited areas with bedrock closer to the surface (e.g., test pit 18). The hydrologic soil group is D, the slopes range from 3-25%, and the flood hazard is "none". Inclusions in this map unit are the Colonel, Marlow, Roundabout, Skerry, and Tunbridge soil series comprising 15% of this map unit. The existing road (Deer Ridge Lane) is an inclusion in the Peru map unit as this was most likely the Peru soil prior to disturbance. There are also inclusions of small excavated areas located outside the development area.

### Soil Limitations

Limitations to development include: wetness due to perched water on the restrictive subsoil/substratum and "moderate" frost action. These limitations can be overcome by intercepting and diverting water upslope of the construction area, by using coarse fill to raise septic systems, foundation floors, and roads and by using footing drains around buildings. Pretreatment will be used for wastewater disposal.

- 6) Map Symbol: Rd  
Soil Series: Roundabout

The Roundabout series consist of somewhat poorly drained soils on the mapping area and formed in lacustrine and marine deposits. These soils are found throughout the site and are downslope from the project area adjacent to the wetlands. Typically, the surface horizon is dark brown to olive brown very fine sandy loam; the subsoil and the substratum are olive to olive gray very fine sandy loam to silt loam. The soils have a seasonal high watertable at or near the surface. These soils are typically deep to bedrock. The hydrologic soil group is D, the slopes range from 0-8%, and the flood hazard is "none". Inclusions in this map unit are the Lamoine, Colonel, Scantic, and Swanton soil series comprising 15% of this map unit.



### Soil Limitations

These somewhat poorly drained soils have limitations to development due to wetness and frost action. These soils are being avoided by the proposed project.

- 7) Map Symbol: Sc  
Soil Series: Scantic

The poorly drained Scantic soils are formed in marine/lacustrine sediments. These soils are low on the landscape and found in the wetlands. Typically on this site, the surface horizon varies from 8 to 10 inches thick and consists of dark brown silt loam. The substratum is an olive to olive gray silt loam to silty clay loam that is restrictive in nature. These soils are deep to bedrock, the hydrologic soil group is D, the slopes range from 0-3%, and the flood hazard is "none". Inclusions in this map unit are the Biddeford, Swanton, and Wonsqueak soil series comprising 5% of this map unit.

### Soil Limitations

These poorly drained soils have limitations to site development, primarily due to wetness and frost action. These are hydric soils and are found in wetlands on the site. The use/development of the wetland areas would be governed by local, state and federal regulations. These soils are being avoided by the proposed project.

- 8) Map Symbol: Sw  
Soil Series: Swanton

The poorly drained Swanton soils are formed in a thin layer(s) of eolian fine sand underlain by marine/lacustrine sediments. These soils are low on the landscape and found in the wetlands on the site. Typically on this site, the surface horizon is an olive loamy sand & sand. The substratum is an olive to olive gray silt loam that is restrictive in nature. These soils are deep to bedrock, the hydrologic soil group is D, the slopes range from 0-8%, and the flood hazard is "none". Inclusions in this map unit are the Biddeford, Roundabout (somewhat poorly drained), and Scantic soil series comprising 5% of this map unit.

### Soil Limitations

These poorly drained soils have limitations to site development, primarily due to wetness and frost action. These are hydric soils and are found in wetlands on the site. The use/development of the wetland areas would be governed by local, state and federal regulations. These soils are being avoided by the proposed project.

- 1) Map Symbol: Wo  
Soil Series: Wonsqueak

The very poorly drained Wonsqueak soils are formed in decomposed organic soil material and are deep to bedrock. These soils are low on the landscape and are located in one large wetland system that contains Cutts Ridge Brook and a Maine Department of Environmental Protection Significant Vernal Pool. The organic matter is 16 to 51 inches and underlain by

silt loam. The hydrologic soil group is D, the slopes range from 0-3%, and the flood hazard is "none" but is frequently "ponded". Inclusions in this map unit are the Biddeford, Ossipee, Scantic, and Swanton soil series comprising 10% of this map unit.

### Soil Limitations

These soils have severe limitations for site development due to wetness and frost action. These soils are unsuitable for development and are being avoided by the proposed project. This is a hydric soil and is indicative of wetland conditions. Their use is governed by local, state and federal wetland regulations.

### SOIL MAP LIMITATIONS

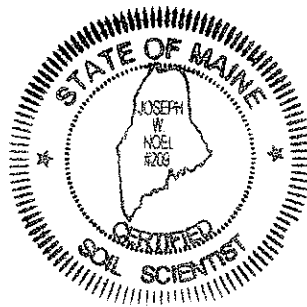
The quality of the soil map produced is affected by the accuracy of the topographic information and location of the wetland flagging by the surveyors along with the quality of the ground control provided. Inaccuracies or deficiencies in the base map may be unknowingly reflected in the soil survey, particularly in the boundary line placement between soil map units.

Each map unit may contain inclusions. Inclusions are soil series within a map unit that are different from the named soil series. In general, the total amount of dissimilar soils is less than twenty-five percent of the named map unit.

It is important to realize that this map was designed for the use in planning for a residential subdivision and that it may not be adequate for other uses.

*Joseph W. Noel*

Joseph W. Noel  
Maine Certified Soil Scientist #209  
Wetland Scientist



**TEST PIT SUMMARY TABLE --  
Andrews Subdivision – Remicks Lane & Deer Ridge Lane – Kittery, Maine**

<b>TEST PIT #</b>	<b>LOT # used for septic</b>	<b>SOIL PROFILE &amp; CONDITON</b>	<b>LIMITING FACTOR DEPTH (inches)</b>	<b>PASS (P) OR FAIL (F)</b>	<b>RESERVE REQUIRED town requirement</b>	<b>COMMENTS</b>
1	1	3 C	27	P	No	
2	1	3 C	25	P	No	
3	4	3 C	20	P	Yes	Primary
4	4	3 C	23	P	Yes	Primary
5	4	3 C	25	P	No	Reserve
6	4	3 C	23	P	Yes	Reserve
7	3	3 C	24	P	No	Primary
8	3	3 C	20	P	Yes	Primary
9	3	3 C	22	P	Yes	Reserve
10	3	3 C	22	P	Yes	Reserve
11	2	3 C	25	P	No	
12	2	3 C	29	P	No	
13		5 E	6	F	N/A	
14		7 E	7	F	N/A	
15	5	3 C	25	P	No	
16	5	3 C	24	P	No	
17	11	3 C	25	P	No	
18	11	3 C/AIII	24	P	No	Potential Bedrock ranging From 28" to 35"
19	10	3 C	29	P	No	
20	10	3 C	25	P	No	
21		7 C	22	P	Yes	
22	9	3 C	30	P	No	
23	9	4 B	45	P	No	Limiting Factor Pit Depth
24		3 C	21	P	Yes	
25		3 C	22	P	Yes	
26	8	3 C	30	P	No	
27	8	3 C	25	P	No	
28	7	3 C	28	P	No	
29	7	3 C	25	P	No	
30	6	3 C	24	P	No	
31		3 C	22	P	Yes	
32	6	3 C	24	P	No	
33		3 C	27	P	No	
34		3 C	30	P	No	

JOSEPH W. NOEL  
P.O. BOX 174  
SOUTH BERWICK, MAINE 03908  
(207) 384-5587

CERTIFIED SOIL SCIENTIST \* WETLAND SCIENTIST \* LICENSED SITE EVALUATOR

September 3, 2018

### **Wastewater Disposal Report & Soil Information**

A separate High Intensity Soil Survey Report has also been completed that provides additional soil information. State regulations require that new wastewater disposal systems be installed over soils that have at least 9 inches of natural mineral soil material free of restrictive features (15 inches in shoreland zone areas) where the natural grade is 20% or less; and that meet all relevant setbacks. Attached is a summary of the test pit results. The Test Pit Summary Table pass or fail column is only for the soil conditions and slope issues. The pass or fail column does not take into account necessary state and local setback requirements. Refer to project plans for setback information. Lot # column designates which test pits are being utilized for the septic systems.

Due to the project area being mapped over a sand and gravel aquifer, the proposed wastewater disposal systems will use pretreatment as required in the Kittery Code Section 16.8.7.2(E). The example provided on the subdivision plan is a Fuji Clean. While the Fuji Clean is used as an example, other pretreatment systems may be utilized depending on the size and configuration of the proposed homes.

#### Wastewater Disposal Sizing:

The sizing of the disposal areas that are depicted on the project plans will require a medium-large disposal rating for all the systems (3.3 sq. ft./gpd.). The example systems are sized for 3 bedroom homes. The Fuji Clean pretreatment product will utilize a Fuji Clean CE-5 tank. The Fuji Clean product allows for a 75% reduction in a conventional stone bed.

$270 \text{ gpd} \times 3.3 \text{ (disposal rating)} = 891 \text{ square feet required}$

$891 \text{ square feet} \div 4 = 223 \text{ square feet required}$

A 10' x 25' stone bed is depicted on the plans (250 square feet provided)



*Civil  
Site Planning  
Environmental  
Engineering*

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Earldean Wells, Chair  
Conservation Commission  
200 Rogers Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Ms. Wells:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to notify you that Arthur W. Andrews Revocable Trust, c/o Mary Thron, Trustee is submitting an application to the Town of Kittery Planning Board for a subdivision on Tax Map 60, Lot 10. The applicant proposes to create an eleven (11) lot single-family cluster subdivision as part of the Deer Ridge Lane Association expansion. The subdivision will preserve approximately 84.6(±) acres or 90% of the lot as common open space from future building lots. The applicant has begun talks with the Kittery Land Trust about management of the common open space. Plans are available for viewing at the Planning Department.

Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in black ink that reads "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25a Dept.CC.ltr.doc

Enclosure (Sheets S-1.2, S-1.3, S-1.4 & C-1.0)

cc: Jamie Steffen, Town Planner



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Chief David O'Brien  
Kittery Fire Department  
3 Gorges Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Chief O'Brien:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to inform you of the pending Cluster Subdivision Review Application before the Planning Board. The applicant, Arthur W. Andrews Revocable Trust, c/o Mary Thron, proposes to permit and construct an 11-lot single-family cluster subdivision on 93.34-acre parcel off Deer Ridge Lane, identified as Tax Map 60, Lot 10. Enclosed for your review is a partial set of the engineered drawings submitted to the Planning Board for preliminary approval. The project is being proposed as a clustered residential development, as per Article XI of Chapter 16.8.11.

The project proposes tapping the existing 8" municipal watermain in Deer Ridge Lane to extend a 6" watermain along the new roadway. Fire protection for the subdivision is available by two (2) existing hydrant located on Remick's Lane, 470' from Deer Ridge Lane entrance. Also, an additional hydrant will be proposed at the intersection of Deer Ridge Lane and the proposed roadway.

Please review and provide a letter of evaluation to Jamie Steffen, Town Planner. Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in black ink, appearing to read "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25c Dept.FD.ltr.doc

Enclosure (Sheets C-1.0, C-2.0, C-2.1 & C-2.2)

cc: Jamie Steffen, Town Planner



**Civil  
Site Planning  
Environmental  
Engineering**

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Stephen Wilson  
Code Enforcement Officer  
200 Rogers Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Mr. Wilson:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to notify you that Arthur W. Andrews Revocable Trust, c/o Mary Thron, Trustee is submitting an application to the Town of Kittery Planning Board for a subdivision on Tax Map 60, Lot 10. The applicant proposes to create an eleven (11) lot single-family cluster subdivision as part of the Deer Ridge Lane Association expansion. The subdivision will preserve approximately 84.6(±) acres or 90% of the lot as common open space from future building lots. The applicant has begun talks with the Kittery Land Trust about management of the common open space. Plans are available for viewing at the Planning Department.

Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in black ink that reads "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25b Dept.CEO.ltr.doc

Enclosure (Sheets S-1.2, S-1.3, S-1.4 & C-1.0)

cc: Jamie Steffen, Town Planner



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Lieutenant John Desjardins  
Kittery Police Department  
200 Rogers Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Lieutenant Desjardins:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to inform you of the pending Cluster Subdivision Review Application before the Planning Board. The applicant, Arthur W. Andrews Revocable Trust, c/o Mary Thron, proposes to permit and construct an 11-lot single-family cluster subdivision on 93.34-acre parcel off Deer Ridge Lane, identified as Tax Map 60, Lot 10. Enclosed for your review is a partial set of the engineered drawings submitted to the Planning Board for preliminary approval. The project is being proposed as a clustered residential development, as per Article XI of Chapter 16.8.11.

Please review and provide a letter of evaluation to Jamie Steffen, Town Planner. Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in blue ink that reads "Ronald M. Beal".

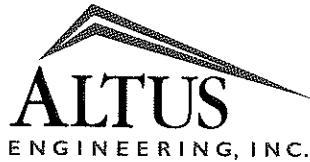
Ronald M. Beal, P.E.  
Project Engineer

4795.25d Dept.PD.ltr.doc

Enclosure (sheet C-1.0)

cc: Jamie Steffen, Town Planner





Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Mr. David Rich  
Public Works Commissioner  
200 Rogers Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Mr. Rich:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to inform you of the pending Cluster Subdivision Review Application before the Planning Board. The applicant, Arthur W. Andrews Revocable Trust, c/o Mary Thron, proposes to permit and construct an 11-lot single-family cluster subdivision on 93.34-acre parcel off Deer Ridge Lane, identified as Tax Map 60, Lot 10. Deer Ridge Lane is a private roadway that is maintained by an existing *Declaration of Rights, Restrictions and Covenants, Deer Ridge Lane Association*, recorded at Y.C.R.D. book 17344 pages 667-676. The roadway will be extended 100± feet to an overall length of 1,033 feet, providing an emergency vehicle turnaround area. A proposed 640 foot private roadway will be constructed off Deer Ridge Lane to service seven (7) proposed lots. The *Declaration of Rights, Restrictions and Covenants* will be updated to include the additional roadway and house lots. Enclosed for your review is a partial set of the engineered drawings submitted to the Planning Board for preliminary approval. The project is being proposed as a clustered residential development, as per Article XI of Chapter 16.8.11.

Please review and provide a letter of evaluation to Jamie Steffen, Town Planner. Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in blue ink that reads "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25e Dept.PW.ltr.doc

Enclosure (Sheets C-1.0, C-2.0, C-2.1 & C-2.2)  
cc: Jamie Steffen, Town Planner



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Mr. Eric F. Waddell  
Superintendent of Schools  
200 Rogers Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Mr. Waddell:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to inform you of the pending Cluster Subdivision Review Application before the Planning Board. The applicant, Arthur W. Andrews Revocable Trust, c/o Mary Thron, proposes to permit and construct an 11-lot single-family cluster subdivision on 93.34-acre parcel off Deer Ridge Lane, identified as Tax Map 60, Lot 10. Enclosed for your review is a partial set of the engineered drawings submitted to the Planning Board for preliminary approval. The project is being proposed as a clustered residential development, as per Article XI of Chapter 16.8.11.

Please review and provide a letter of evaluation to Jamie Steffen, Town Planner. Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in black ink that reads "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25f Dept.SS.ltr.doc

Enclosure (Sheet C-1.0)

cc: Jamie Steffen, Town Planner



Civil  
Site Planning  
Environmental  
Engineering

133 Court Street  
Portsmouth, NH  
03801-4413

October 18, 2018

Michael Rogers, Superintendent  
Kittery Water Department  
17 State Road  
Kittery, Maine 03904

**Re: Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine**

Dear Mr. Rogers:

Per the requirements of the Town of Kittery Land Use and Development 16.10.5.2.C.12.b, this letter is to inform you of the pending Cluster Subdivision Review Application before the Planning Board. The applicant, Arthur W. Andrews Revocable Trust, c/o Mary Thron, proposes to permit and construct an 11-lot single-family cluster subdivision on 93.34-acre parcel off Deer Ridge Lane, identified as Tax Map 60, Lot 10. Enclosed for your review is a partial set of the engineered drawings submitted to the Planning Board for preliminary approval. The project is being proposed as a clustered residential development, as per Article XI of Chapter 16.8.11.

The project proposes tapping the existing 8" municipal watermain in Deer Ridge Lane to extend a 6" watermain along the new roadway. Fire protection for the subdivision is available by two (2) existing hydrant located on Remick's Lane, 470' from Deer Ridge Lane entrance. Also, an additional hydrant is proposed at the intersection of Deer Ridge Lane and the proposed roadway.

Please review and provide a letter of evaluation to Jamie Steffen, Town Planner. Please call if you have any questions, need additional information, or would like to meet to discuss the project.

Sincerely,

A handwritten signature in black ink that reads "Ronald M. Beal".

Ronald M. Beal, P.E.  
Project Engineer

4795.25g Dept.KWD.ltr.doc

Enclosure (Sheets C-1.0, C-2.0, C-2.1 & C-2.2)

cc: Jamie Steffen, Town Planner

# TOWN OF KITTERY

Planning & Code Enforcement  
**COST ESTIMATES**  
 for Improvements to be Covered by  
 PERFORMANCE ASSURANCE

Prior to the issuance of building permits, the applicant shall secure performance assurances and escrow agreements. All conditions of approval shall be included on the record reproducible plan.

<b>Parcel No.</b>	<b>M:</b>	66	<b>B:</b>	10					
<b>Project Name:</b>	Andrews Subdivision								
<b>Project Address / Location</b>	Deer Ridge Lane								
COMPLETE WHERE APPLICABLE	Unit Measure	# Units	ON-SITE		OFF-SITE				
			Unit Cost	Subtotal	Unit Measure	# Units	Unit Cost	Subtotal	
<b>1. STREET/SIDEWALK</b>									
Roads	CY	650	\$20	\$13,000.00					0
Paving	TON	625	\$100	\$62,500.00					0
Granite Curbing				\$0.00					0
Sidewalks				\$0.00					0
Esplanades				\$0.00					0
Monuments	LS	1	\$10,000	\$10,000.00					0
Street Lighting				\$0.00					0
Street Opening Repairs				\$0.00					0
Other: Material Testing	LS	1	\$2,000	\$2,000.00					0
<b>2. EARTH WORK</b>				\$0.00					0
Cut				\$0.00					0
Fill				\$0.00					0
<b>3. SANITARY SEWER</b>				\$0.00					0
Manholes				\$0.00					0
Piping				\$0.00					0
Connections				\$0.00					0
Main Line Piping				\$0.00					0
House Service Piping				\$0.00					0
Pump Stations				\$0.00					0
Other:				\$0.00					0
<b>4. WATER SYSTEM</b>	LF	620	\$60	\$37,200.00					0
Fire Hydrant	EA	1	\$3,500	\$3,500.00					
Fire Hydrant	EA	1	\$1,500	\$1,500.00					

5. Blowoff	LF	620	\$20	\$12,400.00				0
	Unit Measure	# Units	Unit Cost	Subtotal	Unit Measure	# Units	Unit Cost	Subtotal
6. STORM DRAINAGE				\$0.00				0
Manholes				\$0.00				0
Drop Inlet Structure	EA	2	\$1,000	\$2,000.00				0
Piping	LF	110	\$35	\$3,850.00				0
Detention Basin and outlets	EA	1	\$10,000	\$10,000.00				0
Other*:				\$0.00				0
				\$0.00				0
7. EROSION CONTROL				\$0.00				0
Silt Barrier	LS	1	\$5,000	\$5,000.00				0
Check Dams	LS	1	\$2,000	\$2,000.00				0
Pipe Inlet/Outlet Protection	LS	1	\$1,500	\$1,500.00				0
Level Lip Spreader	EA	2	\$1,000	\$2,000.00				0
Soil Stabilization (loam & seed)	LS	1	\$5,000	\$5,000.00				0
Geotextile				\$0.00				0
Hay Bale Barriers				\$0.00				0
Catch Basin Inlet Protection	EA	3	\$150	\$450.00				0
8. RECREATION & OPEN				\$0.00				0
9. LANDSCAPING				\$0.00				0
(Attach detail for landscaping; inc. units & cost)								
10. MISCELLANEOUS				\$0.00				0
TOTAL:				173,900.00				-
Letter of Credit (LOC)				Grand Totals:	\$ 173,900.00	Issued by Bank. Lending Institution		
				Total Required for LOC:	\$ 173,900.00			
INSPECTION FEES = 2% OF GRAND TOTALS:				\$ 3,478.00	Payable to the Town of Kittery; Check, Cash, MO			

\*other

Item 5. Includes connections to the existing system.

Item 7. Includes dust control, tree protection, and cleaning of storm drains/structures upon project completion.

Prepared By: \_\_\_\_\_

Print & Sign

Date: \_\_\_\_\_

- **DRAFT** -

**Plan Findings of Fact  
Planning Board, Town of Kittery, Maine**

*Date of Draft: October 18, 2018*

**Andrews Subdivision**

**Regarding Cluster Subdivision Plan application by  
Arthur W. Andrews Rev. Trust, c/o Mary Thron**

**Tax Map 60 / Lot 10**

**Kittery, Maine**

**A. Development Conforms to Local Ordinances.**

This plan set conforms to the Kittery Land Use and Development Code (LUDC), Article XI. Cluster Residential Development, Section 16.8.11. The project also requires a *Stormwater Law License* from the Maine Department of Environmental Services (MDEP). The rigorous state review process involves a pre-application meeting and detailed analysis of the proposed stormwater management system.

**B. Freshwater Wetlands Identified.**

The wetlands boundaries were delineated/flagged by Joseph W. Noel, Maine Certified Soil Scientist #209, from July to September 2016 and June 2018; surveyed and shown on the “Existing Conditions Plan”, prepared by North Easterly Survey, Inc. The delineation was conducted in accordance with the U.S. Army Corps of Engineers Wetlands Delineation Manual (1987) along with the required regional supplement manual, Northcentral and Northeast Region (Version 2, January 2012).

**C. River, Streams or Brooks Identified.**

Cutts Ridge Brook headwaters begin on the property and flow northwesterly from the parcel onto the abutting Johnson Farm property. The proposed house lots will be greater than 500 feet from the brook; therefore the development should not adversely affect the quality of the water body.

**D. Water Supply Sufficient.**

Municipal water service is proposed for each lot. Domestic water use is conservatively estimated to be 270 gallons per day per dwelling for each of the 11 single-family lots. The total water consumption is estimated to 2,970 total gallons per day for the build-out of the project. Kittery Water District confirmed it has the capacity to service the subdivision.

**E. Municipal Water Supply Available.**

Municipal water system is proposed for each lot. Domestic water use is conservatively estimated to be 270 gallons per day per dwelling for each of the 11 single-family lots. The total water consumption is estimated to 2,790 total gallons per day for the build-out of the project.

**F. Sewage Disposal Adequate.**

Individual septic and leach field systems are proposed on each lot. A minimum two (2) required test pit locations were located on each lot by Joseph W. Noel, Maine Certified Site Evaluator, indicating that the lot can support a septic system. Test pits were also performed at proposed reserved areas, where required.

**G. Municipal Solid Waste Disposal Available.**

The subdivision does not require any changes to municipal solid waste services.

**H. Water Body Quality and Shoreline Protected.**

The eleven (11) proposed lots are within a significant sand and gravel aquifer and/or the Shoreland – Wetlands Protection Area (OZ-SL-250') at the northeasterly end of the project. Therefore the lots will require an advance pre-treatment aeration at each subsurface wastewater disposal system. Therefore, the proposed development should not adversely affect the quality of quantity of surface water. Additionally, a Special Exception is being requested for the eight (8) lots that are partially within the OZ-SL-250' zone.

**I. Groundwater Protected.**

The eleven (11) proposed lots are within a significant sand and gravel aquifer and/or the Shoreland – Wetlands Protection Area (OZ-SL-250') at the northeasterly portion of the project. Therefore the lots will require an advance pre-treatment aeration at each subsurface wastewater disposal system. Therefore, the proposed development should not adversely affect the quality of quantity of groundwater.

**J. Flood Areas Identified and Development Conditioned.**

Flood Hazard Zone A per FIRM Map #23031C0663G, dated preliminary November 5, 2013 is shown along the Cutts Ridge Brook corridor. Zone A has no defined 100-year flood elevation. No buildings will be constructed within this zone.

**K. Stormwater Management.**

Stormwater from impervious and disturbed areas on the site will be treated by the use of stormwater BMPs designed to remove fine particulates and suspended sediments. A grassed underdrain soil filter, “wooded” buffers, grass swales, level spreaders and riprap protection are utilized to obtain the required stormwater treatment. Preliminary stormwater practices were discussed during a MDEP *Stormwater Law License* pre-application meeting. A comprehensive review of the stormwater management plans will be reviewed MDEP. *[pending]*

**L. Erosion Controlled.**

Runoff is primarily maintained as sheet flow and minimized concentrated flow. Other best management practices include the use of undisturbed wooded buffers, grass swales, rip rap protection, minimization of pavement widths, stabilized construction exit and silt barriers. Best management practices for erosion control will be reviewed as part of a MDEP *Stormwater Law License* application. *[pending]*

**M. Traffic Managed.**

The applicant has provided a Traffic Generator Summary for the development and the ADT peak hour and peak day is appropriate for Cutts Road.

**N. Water and Air Pollution Minimized.**

1. No filling or development is proposed with the 100 year floodplain.
2. Applicant has provided a Class A High Intensity Soil Survey, test pit logs, proposed subsurface disposal area locations, and reserve locations for the proposed lots.
3. Proposed subsurface disposal areas are located outside steep slope areas.
4. The headwaters of Cutts Ridge Brook in shown on the site per USGS map. There will be no activity within 500’ of the brook. Therefore, the proposed development should not adversely affect the quality of quantity of the stream.
5. The Applicant has received a MDEP *Stormwater Law License* permit. *[pending]*
6. Handling of hazardous materials is not applicable.

**O. Aesthetic, Cultural and Natural Values Protected.**

The proposed development is maintaining 84.6(±) acres of protected common open space, encompassing 90% of the total site. There are a number of vernal pools on the parcel. MDEP determined that only one (1) vernal pool meets the standards of a significant vernal pool (SVP). All development will be outside the 250 foot MDEP buffer to the SVP. Therefore, the proposed development should not adversely affect the vernal pool habitat. The Applicant has received a MDEP *Stormwater Law License* application. *[pending]*

There will be no wetlands impact or crossings.



**P. Developer is Financially and Technically Capable.**

The standard appears to be met.

**Q. Wireless Communication Facility Development.**

Not applicable.

**R. Shoreland, Resource Protection or Commercial Fisheries/Maritime Use Overlay Zone Development.**

The Shoreland – Wetlands Protection Area (OZ-SL-250') extends into the parcel at the northeasterly end of the project. A Special Exception is requested for the eight (8) lots that are partially within the OZ-SL-250' zone.

**S. Right-of-Way Plan.**

The proposed right-of-way is delineated on the subdivision plans.

**T. Special Exception Use.**

The Shoreland – Wetlands Protection Area (OZ-SL-250') extends into the parcel at the northeasterly end of the project. A Special Exception is requested for the eight (8) lots that are partially within the OZ-SL-250' zone.

**Drainage Analysis**  
**FOR**  
**ANDREWS SUBDIVISION**

**Tax Map 60, Lot 10**

**Deer Ridge Lane  
Kittery, Maine 03904**

**October 2018**

*Prepared For:*

**Arthur W. Andrews Rev. Trust  
c/o Mary Thron**

P.O. Box 96  
Kittery Point, Maine 03905  
(603)-868-5995

*Prepared By:*

**ALTUS ENGINEERING, INC.**

133 Court Street  
Portsmouth, NH 03801-4413  
Telephone: (603) 433-2335  
Fax: (603) 433-4194

## **TABLE OF CONTENTS**

Site Location Plan (USGS Map)

Project Description

Calculation Methods

Summary

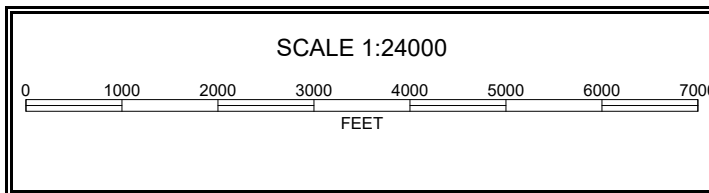
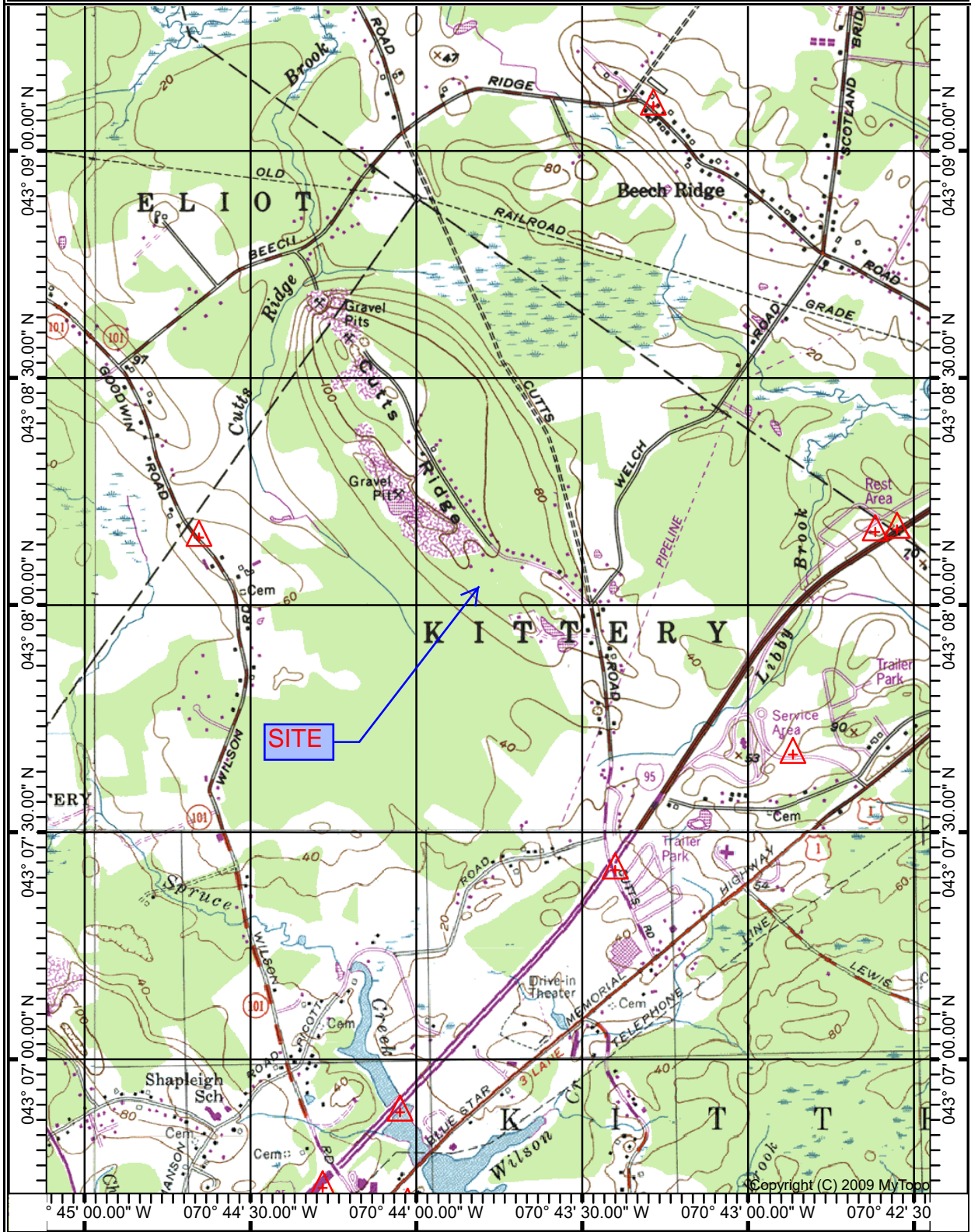
Appendix A: Drainage Analysis

Appendix B: Hydrological Data

Appendix C: Stormwater Management Facility Operation and Maintenance Manual

Map Name: YORK HARBOR  
Scale: 1 inch = 2,000 ft.

Map Center: 043° 08' 02.84" N 070° 43' 47.02" W  
Horizontal Datum: NAD83



## PROJECT DESCRIPTION

Andrews Subdivision is a proposed cluster subdivision creating 11 single family homes on 93.34 acre parcel, located primarily on the south side of Deer Ridge Lane, a private road, off Remick's Lane in Kittery, Maine. The land, vacant woodlands, is abutted on all sides by single family homes.

The proposed clustered subdivision includes 11 single family residential lots. The project has been designed to fit harmoniously into the landscape and maintain the rural woodland character of the surrounding area using concepts and guidelines developed for conservation subdivision design. Through the flexibility provided in the ordinance's cluster provisions, the project team found that carefully locating the house lots respected the land's natural features, provided a community atmosphere.

The project will provide over 84.6(±) acres of protected common open space, encompassing 90% of the total site. The open space is configured to maximize sensitivity to the natural resources within and near the property by providing significant forested buffers to wetlands which connect to woodland tracts on adjacent properties. The open space provides abundant opportunities for nature trails and is protected from further development. The applicant has begun talks with the Kittery Land Trust about management of the common open space.

Deer Ridge Lane is a private roadway that is maintained by an existing *Declaration of Rights, Restrictions and Covenants, Deer Ridge Lane Association*. The roadway will be extended 100± feet to an overall length of 1,033 feet, providing an emergency vehicle turnaround area. A proposed 640 foot roadway will be constructed off Deer Ridge Lane to service seven (7) proposed lots. The *Declaration of Rights, Restrictions and Covenants* will be updated to include the additional roadway and house lots.

Stormwater from impervious and other developed areas on the property will be treated by the use of stormwater best management practices (BMPs) designed to remove fine particulates and suspended sediments. Grassed underground soil filter, "wooded" buffers, grassed swale, level spreader, riprap protection, and other practices will be utilized to achieve the required stormwater management. Vegetative control measures are utilized to the greatest extent possible to address the stormwater quality requirements. Structural controls (grassed underdrain soil filter) are proposed to supplement the vegetative controls.

The project team believes that this development concept has been developed with significant sensitivity to the environment.

## CALCULATION METHODS

The drainage analysis was completed using HydroCAD v.10. The program generates runoff hydrographs for specified storm distributions, and performs reservoir routing using the storage indication method. The criteria used for this drainage analysis are the 2-year, 10-year and 25-year 24-hour Type III frequency storm events based on Northeast Regional Climate Center “extreme precipitation tables” for the Kittery, Maine. These rainfall tabulations reflect a current review of rainfall events and are used in-lieu of the Town of Kittery requirements (Land Use Development, Chapter 16.8.8.1 Stormwater Drainage). Recommended erosion control measures are based upon the “*Maine Erosion and Sediment Control BMPs*” prepared by the Maine Department of Environmental Protection, 2003.

The following conservative modeling approaches and assumptions were incorporated into the analysis:

- A detailed topography survey and a Class A soils survey was performed within the area of the proposed subdivision. A Class C soils survey was performed for the remainder of the site where no development is proposed.
- Conservatively assumed 3,000 square feet impervious for building footprint and driveway, and 6,000 square feet of lawn area at each lot.

Altus Engineering notes that stormwater modeling is limited in its capacity to precisely predict peak flow rates and flood elevations. Results should not be considered absolute due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients ( $n$ ), entrance loss coefficients ( $k_e$ ), velocity factors ( $k_v$ ), time of concentration ( $T_c$ ), and tail water conditions are based on subjective field observations and engineering judgment. For design purposes, curve numbers (CN) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC). Modeling to simulate an actual storm event requires measurement of the pre-storm ARC to adjust the CN for the event. Also, higher flood elevations than predicted by modeling could occur if drainage channels and culverts are not maintained and become blocked by debris before or during the storm event. Siltation, blockage or damage to culverts or storm drains will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within drainage basins.

## SUMMARY

### Drainage Analysis

Joseph Noel, a Maine Soil Scientist #209, completed a Class A high-intensity soil survey (HISS) at the area of proposed development. Utilizing the Town of Kittery topographic data that's based on lidar survey, a Class C soils survey was performed for the remainder of the site where no development is proposed. The survey results are shown in the Soils Survey Report and on Sheet G-1.0, Soils Plan. The site soils are classified as very poorly drained to moderately well drained soil. Natural Resources Conservation Service classification best describes the site as Hydrological Group D soils. Test pits are also shown on the Soils Plan.

The pre-development watersheds are delineated on the accompanying Sheet DS-1, Pre-Development Watershed Plan. Runoff from the site was reviewed at two (2) points of analysis (P.O.A.). P.O.A. #1 flows northwesterly into a large wetland system that drains to Cutts Ridge Brook and eventually the West Branch of Libby Brook; P.O.A. #2 flows southeasterly across an abutting parcel to another larger wetland system before entering Libby Brook. These waterways are part of the York River watershed.

The post-development conditions were analyzed at the same discharge points as the pre-development conditions. The post-development watersheds are delineated on the accompanying Sheet WS-2, Post-Development Watershed Plan. Modifications to the delineated areas and associated ground cover were made to sub-catchments to account for the improvements to the property.

A complete summary of the flow conditions and modeling is included in Appendix A. The following compares pre- and post-development peak flow rates at the point of analysis:

		<b>2-Year Storm (3.21 in.)</b>	<b>10-Year Storm (4.87 in.)</b>	<b>25-Year Storm (6.17 in.)</b>
		<b>Qout (cfs)</b>	<b>Qout (cfs)</b>	<b>Qout (cfs)</b>
<b>POA 1</b>	Pre	9.5	20.3	29.5
	Post	<u>9.5</u>	<u>20.0</u>	<u>29.6</u>
	<b>Net Change</b>	<b>-0.0</b>	<b>-0.3</b>	<b>0.1</b>
<b>POA 2</b>	Pre	5.8	11.7	16.7
	Post	<u>5.8</u>	<u>11.6</u>	<u>16.4</u>
	<b>Net Change</b>	<b>- 0.0</b>	<b>- 0.1</b>	<b>- 0.3</b>

## **Conclusions**

As shown in the summary table, the analysis indicates an overall decrease in runoff leaving the site with the exception of the 25-year storm event for P.O.A. #1. Runoff flow from the developed area will be attenuated by the large wetlands systems on and offsite, minimizing any concerns of flooding on abutting property. Altus believes that no down gradient abutters will be negatively impacted by the proposed development.

## **Stormwater Treatment**

On-site and off-site wetland areas are protected by preserving existing buffers to the extent possible. The design addresses runoff from the developed areas by incorporating several Best Management Practices (BMPs) to treat stormwater discharges and prevent erosion during and after construction. The roadway design intent was to promote sheet flow runoff to “wooded” wherever possible.

Due to the requirement to balance pre- and post-development runoff, the runoff from the house lots and roadway area treated via structural control BMPs (grassed underdrain soil filter) to attenuate post-development runoff. The “wooded” buffers down gradient of the development and grassed swales will promote treatment before runoff enters the area wetlands systems. A large portion of the site (90%) will remain undeveloped, protected by deed restrictions, creating permanent buffer strips for stormwater treatment.

The design also promotes treatment of stormwater prior to release into wetland areas by reducing flow velocities which allows sediment to settle while also increasing the time runoff is in contact with the site’s natural treatment capabilities. Points where concentrated flow could cause concern (e.g. at culverts) are provided with riprap protection at both the drain inlets and outlets. Level spreaders enable any run-off directed towards them to be spread evenly into sheet flow prior to discharge, allowing for better treatment efficiency and less potential for erosive velocities.

Pavement widths have been minimized where practical to reduce the overall increase in impervious area and the roadway itself will be raised to allow sheet flow to buffer areas, avoiding concentration of runoff volumes.



## **EROSION CONTROL MEASURES**

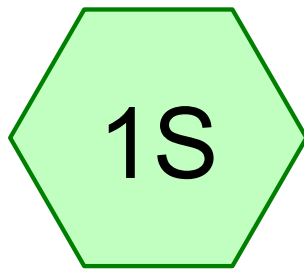
Permanent and temporary measures for erosion and sediment control are shown on the site plans. Temporary erosion control measures include the construction of silt fences, inlet sediment filter, stone check dams, temporary sediment traps and a stabilized construction entrances to minimize the transport of sediments and to prevent erosion during construction. Permanent erosion control measures will include construction of riprap outlet protection, loam and seed side slopes, grassed swale, stone berm level lip spreader, detention basins and naturally vegetated filter strips.

A complete description of the permanent and temporary erosion control measures can be found on the accompanying plans and detail sheets.

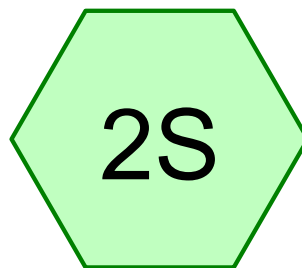
**APPENDIX A:**  
**SUPPORTING CALCULATIONS**



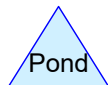
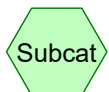
# **PRE-DEVELOPMENT CALCULATIONS**



P.O.A. #1

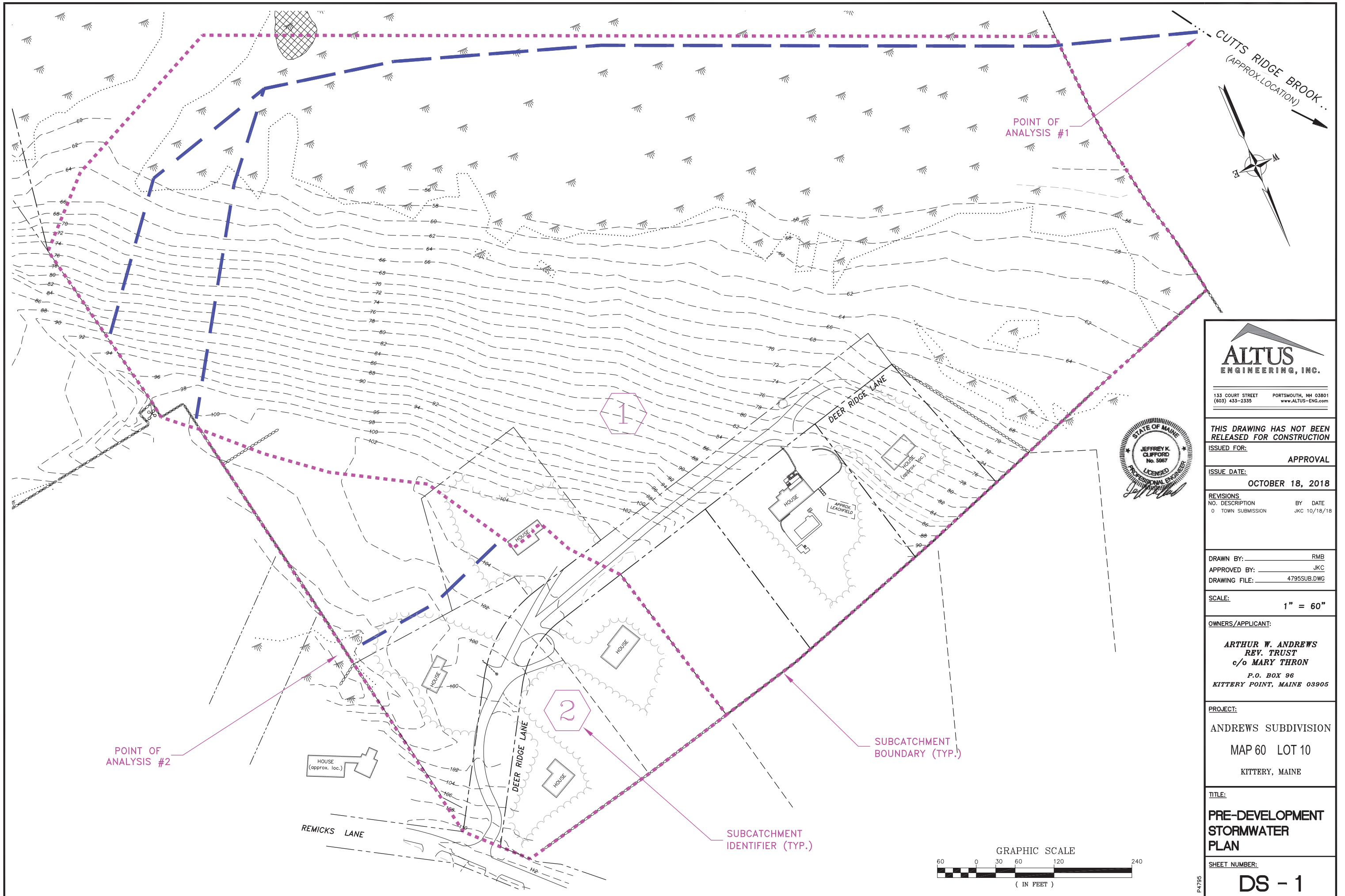


P.O.A. #2



**Routing Diagram for 4795 Pre**

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ISSUE DATE: **OCTOBER 18, 2018**

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: \_\_\_\_\_ RMB  
APPROVED BY: \_\_\_\_\_ JKC  
DRAWING FILE: \_\_\_\_\_ 4795SUB.DWG

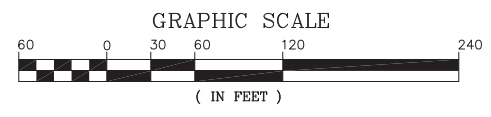
SCALE: **1" = 60"**

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON**  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:  
**PRE-DEVELOPMENT  
STORMWATER  
PLAN**

SHEET NUMBER:  
**DS - 1**



P4795



**4795 Pre**

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**Area Listing (all nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
1.331	80	>75% Grass cover, Good, HSG D (1S, 2S)
0.597	98	Driveway/house/decks, HSG D (1S, 2S)
0.446	98	Ex. road, HSG D (1S, 2S)
0.115	73	Road shoulder, Good, HSG D (1S)
0.129	73	Vegetated shoulder Good, HSG D (2S)
29.545	77	Woods, Good, HSG D (1S, 2S)
<b>32.163</b>	<b>78</b>	<b>TOTAL AREA</b>



**4795 Pre**

*Type III 24-hr 2 Rainfall=3.21"*

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: P.O.A. #1**

Runoff Area=1,158,574 sf 1.78% Impervious Runoff Depth=1.22"  
Flow Length=1,915' Tc=112.6 min CN=77 Runoff=9.49 cfs 2.702 af

**Subcatchment 2S: P.O.A. #2**

Runoff Area=242,425 sf 10.23% Impervious Runoff Depth=1.34"  
Flow Length=250' Tc=20.4 min CN=79 Runoff=5.75 cfs 0.623 af

**Total Runoff Area = 32.163 ac Runoff Volume = 3.325 af Average Runoff Depth = 1.24"**  
**96.76% Pervious = 31.119 ac 3.24% Impervious = 1.043 ac**

**Summary for Subcatchment 1S: P.O.A. #1**

Runoff = 9.49 cfs @ 13.63 hrs, Volume= 2.702 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Rainfall=3.21"

Area (sf)	CN	Description
* 6,630	98	Ex. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
* 14,000	98	Driveway/house/decks, HSG D
31,000	80	>75% Grass cover, Good, HSG D
1,101,944	77	Woods, Good, HSG D
1,158,574	77	Weighted Average
1,137,944		98.22% Pervious Area
20,630		1.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 2S: P.O.A. #2**

Runoff = 5.75 cfs @ 12.30 hrs, Volume= 0.623 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Rainfall=3.21"

Area (sf)	CN	Description
* 12,810	98	Ex. road, HSG D
* 5,600	73	Vegetated shoulder Good, HSG D
* 12,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
185,015	77	Woods, Good, HSG D
242,425	79	Weighted Average
217,615		89.77% Pervious Area
24,810		10.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			

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Type III 24-hr 10 Rainfall=4.87"

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: P.O.A. #1**

Runoff Area=1,158,574 sf 1.78% Impervious Runoff Depth=2.51"  
Flow Length=1,915' Tc=112.6 min CN=77 Runoff=20.29 cfs 5.573 af

**Subcatchment 2S: P.O.A. #2**

Runoff Area=242,425 sf 10.23% Impervious Runoff Depth=2.69"  
Flow Length=250' Tc=20.4 min CN=79 Runoff=11.73 cfs 1.248 af

**Total Runoff Area = 32.163 ac Runoff Volume = 6.821 af Average Runoff Depth = 2.54"**  
**96.76% Pervious = 31.119 ac 3.24% Impervious = 1.043 ac**

**Summary for Subcatchment 1S: P.O.A. #1**

Runoff = 20.29 cfs @ 13.51 hrs, Volume= 5.573 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Rainfall=4.87"

Area (sf)	CN	Description
* 6,630	98	Ex. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
* 14,000	98	Driveway/house/decks, HSG D
31,000	80	>75% Grass cover, Good, HSG D
1,101,944	77	Woods, Good, HSG D
1,158,574	77	Weighted Average
1,137,944		98.22% Pervious Area
20,630		1.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 2S: P.O.A. #2**

Runoff = 11.73 cfs @ 12.28 hrs, Volume= 1.248 af, Depth= 2.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Rainfall=4.87"

Area (sf)	CN	Description
* 12,810	98	Ex. road, HSG D
* 5,600	73	Vegetated shoulder Good, HSG D
* 12,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
185,015	77	Woods, Good, HSG D
242,425	79	Weighted Average
217,615		89.77% Pervious Area
24,810		10.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			

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Type III 24-hr 25 Rainfall=6.17"

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 1S: P.O.A. #1**

Runoff Area=1,158,574 sf 1.78% Impervious Runoff Depth=3.63"  
Flow Length=1,915' Tc=112.6 min CN=77 Runoff=29.46 cfs 8.041 af

**Subcatchment 2S: P.O.A. #2**

Runoff Area=242,425 sf 10.23% Impervious Runoff Depth=3.83"  
Flow Length=250' Tc=20.4 min CN=79 Runoff=16.69 cfs 1.777 af

**Total Runoff Area = 32.163 ac Runoff Volume = 9.818 af Average Runoff Depth = 3.66"**  
**96.76% Pervious = 31.119 ac 3.24% Impervious = 1.043 ac**

**Summary for Subcatchment 1S: P.O.A. #1**

Runoff = 29.46 cfs @ 13.51 hrs, Volume= 8.041 af, Depth= 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Rainfall=6.17"

Area (sf)	CN	Description
* 6,630	98	Ex. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
* 14,000	98	Driveway/house/decks, HSG D
31,000	80	>75% Grass cover, Good, HSG D
1,101,944	77	Woods, Good, HSG D
1,158,574	77	Weighted Average
1,137,944		98.22% Pervious Area
20,630		1.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 2S: P.O.A. #2**

Runoff = 16.69 cfs @ 12.27 hrs, Volume= 1.777 af, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Rainfall=6.17"

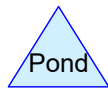
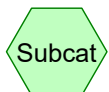
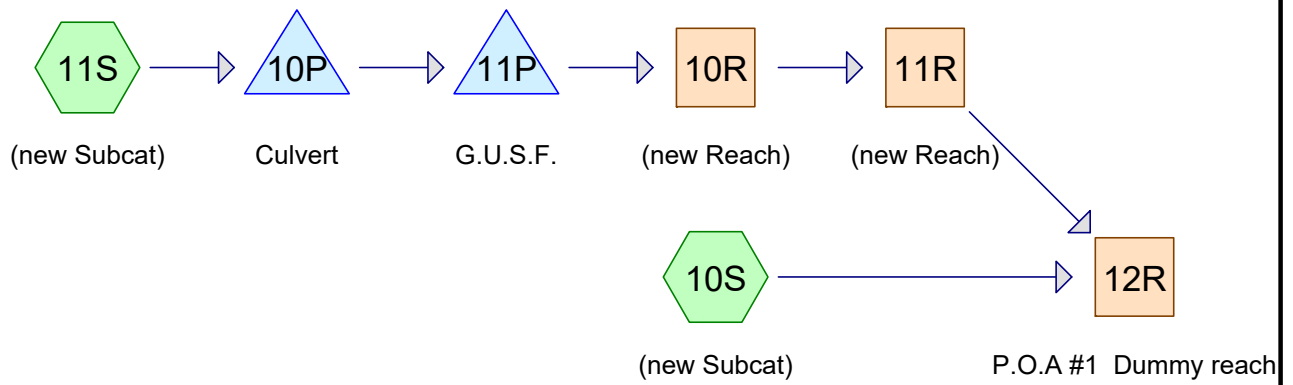
Area (sf)	CN	Description
* 12,810	98	Ex. road, HSG D
* 5,600	73	Vegetated shoulder Good, HSG D
* 12,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
185,015	77	Woods, Good, HSG D
242,425	79	Weighted Average
217,615		89.77% Pervious Area
24,810		10.23% Impervious Area

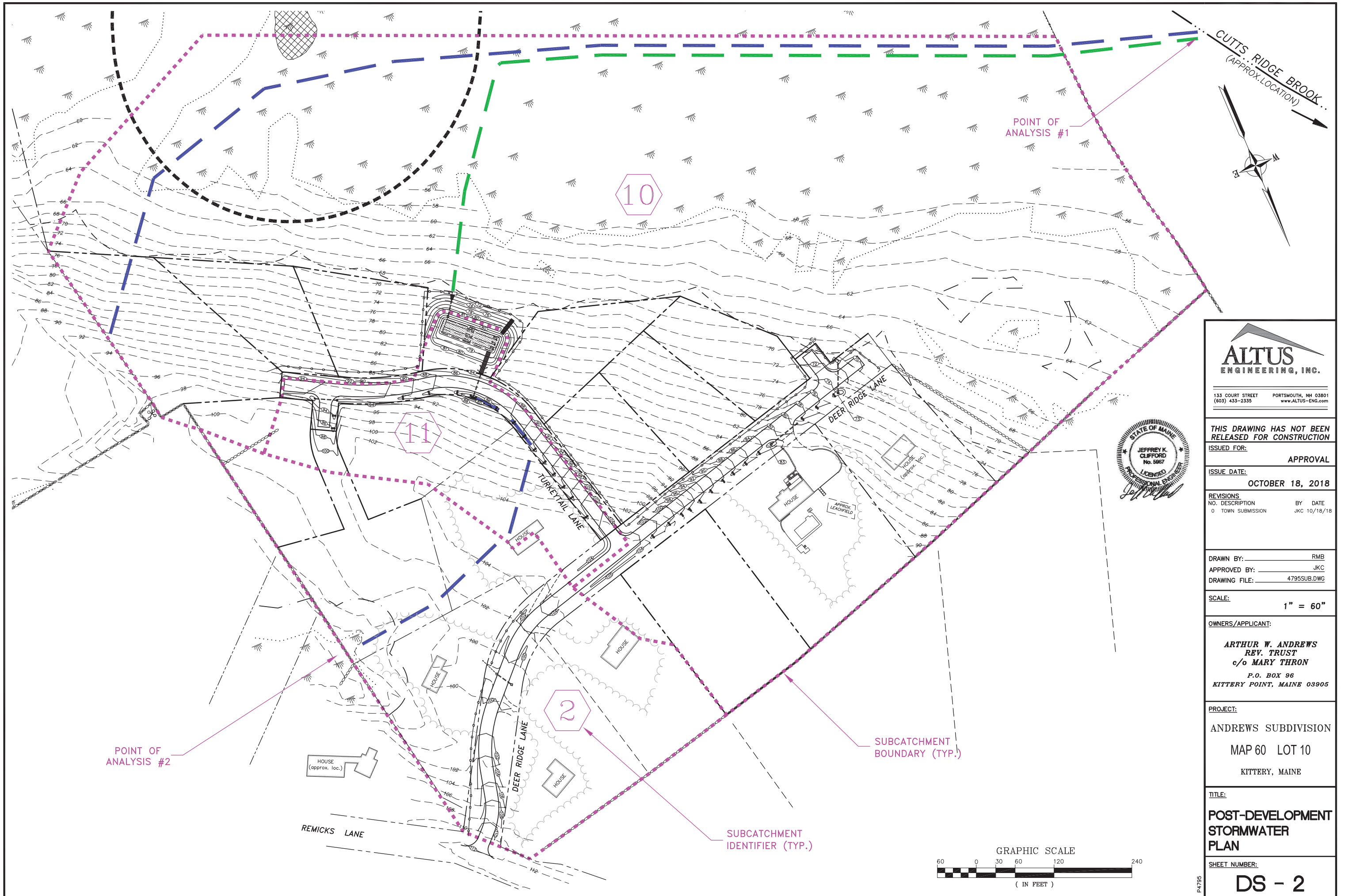
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			



# **POST-DEVELOPMENT CALCULATIONS**







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ISSUE DATE: OCTOBER 18, 2018

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: \_\_\_\_\_ RMB  
APPROVED BY: \_\_\_\_\_ JKC  
DRAWING FILE: 4795SUB.DWG

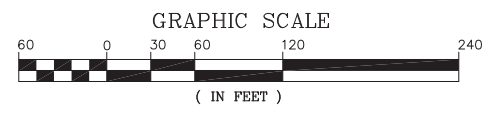
SCALE: 1" = 60"

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS**  
**REV. TRUST**  
c/o MARY THRON  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE

TITLE:  
**POST-DEVELOPMENT**  
**STORMWATER**  
**PLAN**

SHEET NUMBER:  
**DS - 2**



P4795



## 4795 Post

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### Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.331	80	>75% Grass cover, Good, HSG D (2S, 10S, 11S)
0.574	98	Driveway/house/decks, HSG D (2S, 10S, 11S)
0.172	80	Prop. >75% Grass cover, Good, HSG D (11S)
0.568	98	Prop. Bldg. & Drive, HSG D (10S)
0.103	98	Prop. House & Drive, HSG D (2S)
1.343	80	Prop. Lawn >75% Grass cover, Good, HSG D (2S, 10S)
0.086	98	Prop. drive & house, HSG D (11S)
0.263	98	Prop. paved road, HSG D (10S)
0.340	98	Prop. paved, HSG D (11S)
0.246	98	Prop. road, HSG D (2S)
0.147	73	Prop. shoudler Brush, Good, HSG D (11S)
0.115	73	Prop. shouolder Brush, Good, HSG D (10S)
0.115	73	Road shoulder, Good, HSG D (2S)
26.760	77	Woods, Good, HSG D (2S, 10S, 11S)
<b>32.163</b>	<b>79</b>	<b>TOTAL AREA</b>

**4795 Post**

Type III 24-hr 2 Rainfall=3.21"

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: P.O.A #2** Runoff Area=231,823 sf 10.87% Impervious Runoff Depth=1.41"  
 Flow Length=250' Tc=20.4 min CN=80 Runoff=5.79 cfs 0.625 af

**Subcatchment 10S: (new Subcat)** Runoff Area=1,083,543 sf 4.54% Impervious Runoff Depth=1.28"  
 Flow Length=1,915' Tc=112.6 min CN=78 Runoff=9.39 cfs 2.655 af

**Subcatchment 11S: (new Subcat)** Runoff Area=85,633 sf 24.00% Impervious Runoff Depth=1.55"  
 Flow Length=260' Tc=14.8 min CN=82 Runoff=2.69 cfs 0.253 af

**Reach 10R: (new Reach)** Avg. Flow Depth=0.05' Max Vel=1.60 fps Inflow=0.73 cfs 0.248 af  
 n=0.040 L=140.0' S=0.1000 '/' Capacity=38.65 cfs Outflow=0.73 cfs 0.248 af

**Reach 11R: (new Reach)** Avg. Flow Depth=0.07' Max Vel=0.29 fps Inflow=0.73 cfs 0.248 af  
 n=0.040 L=1,300.0' S=0.0023 '/' Capacity=17.98 cfs Outflow=0.62 cfs 0.242 af

**Reach 12R: P.O.A #1 Dummy reach** Avg. Flow Depth=0.22' Max Vel=1.31 fps Inflow=9.51 cfs 2.897 af  
 n=0.040 L=1.0' S=0.0100 '/' Capacity=37.44 cfs Outflow=9.51 cfs 2.897 af

**Pond 10P: Culvert** Peak Elev=85.25' Storage=292 cf Inflow=2.69 cfs 0.253 af  
 Outflow=2.69 cfs 0.248 af

**Pond 11P: G.U.S.F.** Peak Elev=78.38' Storage=3,448 cf Inflow=2.69 cfs 0.248 af  
 Outflow=0.73 cfs 0.248 af

**Total Runoff Area = 32.163 ac Runoff Volume = 3.533 af Average Runoff Depth = 1.32"**  
**93.22% Pervious = 29.983 ac 6.78% Impervious = 2.179 ac**

**4795 Post**

Type III 24-hr 2 Rainfall=3.21"

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**Summary for Subcatchment 2S: P.O.A #2**

Runoff = 5.79 cfs @ 12.29 hrs, Volume= 0.625 af, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Rainfall=3.21"

Area (sf)	CN	Description
* 10,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
165,623	77	Woods, Good, HSG D
* 4,500	98	Prop. House & Drive, HSG D
* 9,000	80	Prop. Lawn >75% Grass cover, Good, HSG D
* 10,700	98	Prop. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
231,823	80	Weighted Average
206,623		89.13% Pervious Area
25,200		10.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			

**Summary for Subcatchment 10S: (new Subcat)**

Runoff = 9.39 cfs @ 13.63 hrs, Volume= 2.655 af, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Rainfall=3.21"

Area (sf)	CN	Description
* 13,000	98	Driveway/house/decks, HSG D
26,000	80	>75% Grass cover, Good, HSG D
953,856	77	Woods, Good, HSG D
* 11,437	98	Prop. paved road, HSG D
* 5,000	73	Prop. shoulder Brush, Good, HSG D
* 24,750	98	Prop. Bldg. & Drive, HSG D
* 49,500	80	Prop. Lawn >75% Grass cover, Good, HSG D
1,083,543	78	Weighted Average
1,034,356		95.46% Pervious Area
49,187		4.54% Impervious Area

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Type III 24-hr 2 Rainfall=3.21"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 11S: (new Subcat)**

Runoff = 2.69 cfs @ 12.21 hrs, Volume= 0.253 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 Rainfall=3.21"

Area (sf)	CN	Description
* 2,000	98	Driveway/house/decks, HSG D
5,000	80	>75% Grass cover, Good, HSG D
46,183	77	Woods, Good, HSG D
* 14,800	98	Prop. paved, HSG D
* 6,400	73	Prop. shoudler Brush, Good, HSG D
* 7,500	80	Prop. >75% Grass cover, Good, HSG D
* 3,750	98	Prop. drive & house, HSG D
85,633	82	Weighted Average
65,083		76.00% Pervious Area
20,550		24.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.8	160	0.0880	1.48		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.8	260	Total			

**Summary for Reach 10R: (new Reach)**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 1.52" for 2 event  
 Inflow = 0.73 cfs @ 12.71 hrs, Volume= 0.248 af  
 Outflow = 0.73 cfs @ 12.75 hrs, Volume= 0.248 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.60 fps, Min. Travel Time= 1.5 min  
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 3.2 min

Peak Storage= 64 cf @ 12.72 hrs  
 Average Depth at Peak Storage= 0.05'  
 Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 38.65 cfs

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Type III 24-hr 2 Rainfall=3.21"

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8.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals  
Side Slope Z-value= 10.0 '/' Top Width= 18.00'  
Length= 140.0' Slope= 0.1000 '/'  
Inlet Invert= 70.00', Outlet Invert= 56.00'



**Summary for Reach 11R: (new Reach)**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 1.52" for 2 event  
Inflow = 0.73 cfs @ 12.75 hrs, Volume= 0.248 af  
Outflow = 0.62 cfs @ 15.53 hrs, Volume= 0.242 af, Atten= 16%, Lag= 167.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 0.29 fps, Min. Travel Time= 73.6 min  
Avg. Velocity = 0.15 fps, Avg. Travel Time= 147.6 min

Peak Storage= 2,729 cf @ 14.31 hrs  
Average Depth at Peak Storage= 0.07'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 17.98 cfs

30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
Length= 1,300.0' Slope= 0.0023 '/'  
Inlet Invert= 56.00', Outlet Invert= 53.00'



**Summary for Reach 12R: P.O.A #1 Dummy reach**

Inflow Area = 26.841 ac, 5.96% Impervious, Inflow Depth > 1.30" for 2 event  
Inflow = 9.51 cfs @ 13.63 hrs, Volume= 2.897 af  
Outflow = 9.51 cfs @ 13.63 hrs, Volume= 2.897 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.31 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 0.55 fps, Avg. Travel Time= 0.0 min

Peak Storage= 7 cf @ 13.63 hrs  
Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 37.44 cfs



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Type III 24-hr 2 Rainfall=3.21"

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30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
 Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
 Length= 1.0' Slope= 0.0100 '/'  
 Inlet Invert= 53.00', Outlet Invert= 52.99'



**Summary for Pond 10P: Culvert**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 1.55" for 2 event  
 Inflow = 2.69 cfs @ 12.21 hrs, Volume= 0.253 af  
 Outflow = 2.69 cfs @ 12.21 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.4 min  
 Primary = 2.69 cfs @ 12.21 hrs, Volume= 0.248 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 85.25' @ 12.21 hrs Surf.Area= 344 sf Storage= 292 cf

Plug-Flow detention time= 16.9 min calculated for 0.248 af (98% of inflow)  
 Center-of-Mass det. time= 5.4 min ( 849.7 - 844.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	83.75'	962 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.75	100	0	0
85.00	250	219	219
86.00	630	440	659
86.44	750	304	962

Device	Routing	Invert	Outlet Devices
#1	Primary	82.50'	<b>15.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.50' / 82.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	85.00'	<b>20.0" x 20.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=2.69 cfs @ 12.21 hrs HW=85.25' (Free Discharge)

- ↑ 1=Culvert (Passes 2.69 cfs of 8.52 cfs potential flow)
- ↑ 2=Orifice/Grate (Weir Controls 2.69 cfs @ 1.63 fps)

**Summary for Pond 11P: G.U.S.F.**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 1.52" for 2 event  
 Inflow = 2.69 cfs @ 12.21 hrs, Volume= 0.248 af  
 Outflow = 0.73 cfs @ 12.71 hrs, Volume= 0.248 af, Atten= 73%, Lag= 29.6 min  
 Primary = 0.73 cfs @ 12.71 hrs, Volume= 0.248 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 78.38' @ 12.71 hrs Surf.Area= 2,737 sf Storage= 3,448 cf

Plug-Flow detention time= 50.0 min calculated for 0.248 af (100% of inflow)  
 Center-of-Mass det. time= 50.0 min ( 899.6 - 849.7 )

Volume	Invert	Avail.Storage	Storage Description	
#1	75.17'	14,643 cf	<b>Custom Stage Data (Prismatic)</b> Listed below	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.17	2,280	0.0	0	0
76.17	2,280	40.0	912	912
77.67	2,280	20.0	684	1,596
78.00	2,280	100.0	752	2,348
79.00	3,475	100.0	2,878	5,226
80.00	4,785	100.0	4,130	9,356
81.00	5,790	100.0	5,288	14,643

Device	Routing	Invert	Outlet Devices
#1	Primary	74.75'	<b>15.0" Round Culvert</b> L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.75' / 74.25' S= 0.0179 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	75.17'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#3	Primary	79.75'	<b>24.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	80.00'	<b>6.0' long x 8.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=0.73 cfs @ 12.71 hrs HW=78.38' (Free Discharge)

- 1=Culvert (Passes 0.73 cfs of 10.25 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.73 cfs @ 8.40 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

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Type III 24-hr 10 Rainfall=4.87"

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: P.O.A #2**

Runoff Area=231,823 sf 10.87% Impervious Runoff Depth=2.78"  
 Flow Length=250' Tc=20.4 min CN=80 Runoff=11.59 cfs 1.233 af

**Subcatchment 10S: (new Subcat)**

Runoff Area=1,083,543 sf 4.54% Impervious Runoff Depth=2.60"  
 Flow Length=1,915' Tc=112.6 min CN=78 Runoff=19.68 cfs 5.393 af

**Subcatchment 11S: (new Subcat)**

Runoff Area=85,633 sf 24.00% Impervious Runoff Depth=2.96"  
 Flow Length=260' Tc=14.8 min CN=82 Runoff=5.19 cfs 0.485 af

**Reach 10R: (new Reach)**

Avg. Flow Depth=0.06' Max Vel=1.71 fps Inflow=0.88 cfs 0.480 af  
 n=0.040 L=140.0' S=0.1000 '/' Capacity=38.65 cfs Outflow=0.88 cfs 0.480 af

**Reach 11R: (new Reach)**

Avg. Flow Depth=0.08' Max Vel=0.33 fps Inflow=0.88 cfs 0.480 af  
 n=0.040 L=1,300.0' S=0.0023 '/' Capacity=17.98 cfs Outflow=0.82 cfs 0.473 af

**Reach 12R: P.O.A #1 Dummy reach**

Avg. Flow Depth=0.35' Max Vel=1.72 fps Inflow=20.04 cfs 5.866 af  
 n=0.040 L=1.0' S=0.0100 '/' Capacity=37.44 cfs Outflow=20.04 cfs 5.866 af

**Pond 10P: Culvert**

Peak Elev=85.38' Storage=343 cf Inflow=5.19 cfs 0.485 af  
 Outflow=5.18 cfs 0.480 af

**Pond 11P: G.U.S.F.**

Peak Elev=79.70' Storage=8,109 cf Inflow=5.18 cfs 0.480 af  
 Outflow=0.88 cfs 0.480 af

**Total Runoff Area = 32.163 ac Runoff Volume = 7.111 af Average Runoff Depth = 2.65"**  
**93.22% Pervious = 29.983 ac 6.78% Impervious = 2.179 ac**

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Type III 24-hr 10 Rainfall=4.87"

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**Summary for Subcatchment 2S: P.O.A #2**

Runoff = 11.59 cfs @ 12.28 hrs, Volume= 1.233 af, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Rainfall=4.87"

Area (sf)	CN	Description
* 10,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
165,623	77	Woods, Good, HSG D
* 4,500	98	Prop. House & Drive, HSG D
* 9,000	80	Prop. Lawn >75% Grass cover, Good, HSG D
* 10,700	98	Prop. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
231,823	80	Weighted Average
206,623		89.13% Pervious Area
25,200		10.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			

**Summary for Subcatchment 10S: (new Subcat)**

Runoff = 19.68 cfs @ 13.51 hrs, Volume= 5.393 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Rainfall=4.87"

Area (sf)	CN	Description
* 13,000	98	Driveway/house/decks, HSG D
26,000	80	>75% Grass cover, Good, HSG D
953,856	77	Woods, Good, HSG D
* 11,437	98	Prop. paved road, HSG D
* 5,000	73	Prop. shouolder Brush, Good, HSG D
* 24,750	98	Prop. Bldg. & Drive, HSG D
* 49,500	80	Prop. Lawn >75% Grass cover, Good, HSG D
1,083,543	78	Weighted Average
1,034,356		95.46% Pervious Area
49,187		4.54% Impervious Area

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Type III 24-hr 10 Rainfall=4.87"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 11S: (new Subcat)**

Runoff = 5.19 cfs @ 12.20 hrs, Volume= 0.485 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 Rainfall=4.87"

Area (sf)	CN	Description
* 2,000	98	Driveway/house/decks, HSG D
5,000	80	>75% Grass cover, Good, HSG D
46,183	77	Woods, Good, HSG D
* 14,800	98	Prop. paved, HSG D
* 6,400	73	Prop. shoudler Brush, Good, HSG D
* 7,500	80	Prop. >75% Grass cover, Good, HSG D
* 3,750	98	Prop. drive & house, HSG D
85,633	82	Weighted Average
65,083		76.00% Pervious Area
20,550		24.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.8	160	0.0880	1.48		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.8	260	Total			

**Summary for Reach 10R: (new Reach)**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 2.93" for 10 event  
 Inflow = 0.88 cfs @ 12.90 hrs, Volume= 0.480 af  
 Outflow = 0.88 cfs @ 12.94 hrs, Volume= 0.480 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 1.71 fps, Min. Travel Time= 1.4 min  
 Avg. Velocity = 0.92 fps, Avg. Travel Time= 2.5 min

Peak Storage= 72 cf @ 12.91 hrs  
 Average Depth at Peak Storage= 0.06'  
 Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 38.65 cfs

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Type III 24-hr 10 Rainfall=4.87"

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8.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals  
Side Slope Z-value= 10.0 '/' Top Width= 18.00'  
Length= 140.0' Slope= 0.1000 '/'  
Inlet Invert= 70.00', Outlet Invert= 56.00'



### Summary for Reach 11R: (new Reach)

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 2.93" for 10 event  
Inflow = 0.88 cfs @ 12.94 hrs, Volume= 0.480 af  
Outflow = 0.82 cfs @ 15.76 hrs, Volume= 0.473 af, Atten= 6%, Lag= 169.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 0.33 fps, Min. Travel Time= 65.8 min  
Avg. Velocity = 0.18 fps, Avg. Travel Time= 118.7 min

Peak Storage= 3,256 cf @ 14.67 hrs  
Average Depth at Peak Storage= 0.08'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 17.98 cfs

30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
Length= 1,300.0' Slope= 0.0023 '/'  
Inlet Invert= 56.00', Outlet Invert= 53.00'



### Summary for Reach 12R: P.O.A #1 Dummy reach

Inflow Area = 26.841 ac, 5.96% Impervious, Inflow Depth > 2.62" for 10 event  
Inflow = 20.04 cfs @ 13.51 hrs, Volume= 5.866 af  
Outflow = 20.04 cfs @ 13.51 hrs, Volume= 5.866 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.72 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 0.68 fps, Avg. Travel Time= 0.0 min

Peak Storage= 12 cf @ 13.51 hrs  
Average Depth at Peak Storage= 0.35'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 37.44 cfs

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Type III 24-hr 10 Rainfall=4.87"

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30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
Length= 1.0' Slope= 0.0100 '/'  
Inlet Invert= 53.00', Outlet Invert= 52.99'



**Summary for Pond 10P: Culvert**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 2.96" for 10 event  
Inflow = 5.19 cfs @ 12.20 hrs, Volume= 0.485 af  
Outflow = 5.18 cfs @ 12.21 hrs, Volume= 0.480 af, Atten= 0%, Lag= 0.3 min  
Primary = 5.18 cfs @ 12.21 hrs, Volume= 0.480 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 85.38' @ 12.21 hrs Surf.Area= 396 sf Storage= 343 cf

Plug-Flow detention time= 10.2 min calculated for 0.480 af (99% of inflow)  
Center-of-Mass det. time= 3.9 min ( 829.4 - 825.5 )

Volume	Invert	Avail.Storage	Storage Description
#1	83.75'	962 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.75	100	0	0
85.00	250	219	219
86.00	630	440	659
86.44	750	304	962

Device	Routing	Invert	Outlet Devices
#1	Primary	82.50'	<b>15.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.50' / 82.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	85.00'	<b>20.0" x 20.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=5.18 cfs @ 12.21 hrs HW=85.38' (Free Discharge)

- ↑ 1=Culvert (Passes 5.18 cfs of 8.87 cfs potential flow)
- ↑ 2=Orifice/Grate (Weir Controls 5.18 cfs @ 2.03 fps)

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Type III 24-hr 10 Rainfall=4.87"

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**Summary for Pond 11P: G.U.S.F.**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 2.93" for 10 event  
 Inflow = 5.18 cfs @ 12.21 hrs, Volume= 0.480 af  
 Outflow = 0.88 cfs @ 12.90 hrs, Volume= 0.480 af, Atten= 83%, Lag= 41.5 min  
 Primary = 0.88 cfs @ 12.90 hrs, Volume= 0.480 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 79.70' @ 12.90 hrs Surf.Area= 4,389 sf Storage= 8,109 cf

Plug-Flow detention time= 89.5 min calculated for 0.480 af (100% of inflow)  
 Center-of-Mass det. time= 89.4 min ( 918.8 - 829.4 )

Volume	Invert	Avail.Storage	Storage Description	
#1	75.17'	14,643 cf	<b>Custom Stage Data (Prismatic)</b> Listed below	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.17	2,280	0.0	0	0
76.17	2,280	40.0	912	912
77.67	2,280	20.0	684	1,596
78.00	2,280	100.0	752	2,348
79.00	3,475	100.0	2,878	5,226
80.00	4,785	100.0	4,130	9,356
81.00	5,790	100.0	5,288	14,643

Device	Routing	Invert	Outlet Devices
#1	Primary	74.75'	<b>15.0" Round Culvert</b> L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.75' / 74.25' S= 0.0179 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	75.17'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#3	Primary	79.75'	<b>24.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	80.00'	<b>6.0' long x 8.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=0.88 cfs @ 12.90 hrs HW=79.70' (Free Discharge)

- 1=Culvert (Passes 0.88 cfs of 12.29 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.88 cfs @ 10.06 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)



**4795 Post**

Type III 24-hr 25 Rainfall=6.17"

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Time span=5.00-30.00 hrs, dt=0.01 hrs, 2501 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment 2S: P.O.A #2** Runoff Area=231,823 sf 10.87% Impervious Runoff Depth=3.93"  
Flow Length=250' Tc=20.4 min CN=80 Runoff=16.37 cfs 1.745 af

**Subcatchment 10S: (new Subcat)** Runoff Area=1,083,543 sf 4.54% Impervious Runoff Depth=3.73"  
Flow Length=1,915' Tc=112.6 min CN=78 Runoff=28.34 cfs 7.731 af

**Subcatchment 11S: (new Subcat)** Runoff Area=85,633 sf 24.00% Impervious Runoff Depth=4.14"  
Flow Length=260' Tc=14.8 min CN=82 Runoff=7.21 cfs 0.679 af

**Reach 10R: (new Reach)** Avg. Flow Depth=0.13' Max Vel=2.71 fps Inflow=3.15 cfs 0.674 af  
n=0.040 L=140.0' S=0.1000 '/' Capacity=38.65 cfs Outflow=3.15 cfs 0.674 af

**Reach 11R: (new Reach)** Avg. Flow Depth=0.12' Max Vel=0.43 fps Inflow=3.15 cfs 0.674 af  
n=0.040 L=1,300.0' S=0.0023 '/' Capacity=17.98 cfs Outflow=1.61 cfs 0.667 af

**Reach 12R: P.O.A #1 Dummy reach** Avg. Flow Depth=0.44' Max Vel=1.97 fps Inflow=29.62 cfs 8.397 af  
n=0.040 L=1.0' S=0.0100 '/' Capacity=37.44 cfs Outflow=29.62 cfs 8.397 af

**Pond 10P: Culvert** Peak Elev=85.48' Storage=382 cf Inflow=7.21 cfs 0.679 af  
Outflow=7.21 cfs 0.674 af

**Pond 11P: G.U.S.F.** Peak Elev=80.13' Storage=10,053 cf Inflow=7.21 cfs 0.674 af  
Outflow=3.15 cfs 0.674 af

**Total Runoff Area = 32.163 ac Runoff Volume = 10.155 af Average Runoff Depth = 3.79"**  
**93.22% Pervious = 29.983 ac 6.78% Impervious = 2.179 ac**

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Type III 24-hr 25 Rainfall=6.17"

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**Summary for Subcatchment 2S: P.O.A #2**

Runoff = 16.37 cfs @ 12.27 hrs, Volume= 1.745 af, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Rainfall=6.17"

Area (sf)	CN	Description
* 10,000	98	Driveway/house/decks, HSG D
27,000	80	>75% Grass cover, Good, HSG D
165,623	77	Woods, Good, HSG D
* 4,500	98	Prop. House & Drive, HSG D
* 9,000	80	Prop. Lawn >75% Grass cover, Good, HSG D
* 10,700	98	Prop. road, HSG D
* 5,000	73	Road shoulder, Good, HSG D
231,823	80	Weighted Average
206,623		89.13% Pervious Area
25,200		10.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.2	100	0.0300	0.09		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
2.2	150	0.0500	1.12		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
20.4	250	Total			

**Summary for Subcatchment 10S: (new Subcat)**

Runoff = 28.34 cfs @ 13.51 hrs, Volume= 7.731 af, Depth= 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Rainfall=6.17"

Area (sf)	CN	Description
* 13,000	98	Driveway/house/decks, HSG D
26,000	80	>75% Grass cover, Good, HSG D
953,856	77	Woods, Good, HSG D
* 11,437	98	Prop. paved road, HSG D
* 5,000	73	Prop. shouolder Brush, Good, HSG D
* 24,750	98	Prop. Bldg. & Drive, HSG D
* 49,500	80	Prop. Lawn >75% Grass cover, Good, HSG D
1,083,543	78	Weighted Average
1,034,356		95.46% Pervious Area
49,187		4.54% Impervious Area

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Type III 24-hr 25 Rainfall=6.17"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	100	0.1700	0.18		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.6	140	0.0900	1.50		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
101.9	1,675	0.0030	0.27		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
112.6	1,915	Total			

**Summary for Subcatchment 11S: (new Subcat)**

Runoff = 7.21 cfs @ 12.20 hrs, Volume= 0.679 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 Rainfall=6.17"

Area (sf)	CN	Description
* 2,000	98	Driveway/house/decks, HSG D
5,000	80	>75% Grass cover, Good, HSG D
46,183	77	Woods, Good, HSG D
* 14,800	98	Prop. paved, HSG D
* 6,400	73	Prop. shoudler Brush, Good, HSG D
* 7,500	80	Prop. >75% Grass cover, Good, HSG D
* 3,750	98	Prop. drive & house, HSG D
85,633	82	Weighted Average
65,083		76.00% Pervious Area
20,550		24.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.0	100	0.0700	0.13		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.21"
1.8	160	0.0880	1.48		<b>Shallow Concentrated Flow,</b> Woodland Kv= 5.0 fps
14.8	260	Total			

**Summary for Reach 10R: (new Reach)**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 4.11" for 25 event  
 Inflow = 3.15 cfs @ 12.54 hrs, Volume= 0.674 af  
 Outflow = 3.15 cfs @ 12.56 hrs, Volume= 0.674 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 2.71 fps, Min. Travel Time= 0.9 min  
 Avg. Velocity = 1.02 fps, Avg. Travel Time= 2.3 min

Peak Storage= 163 cf @ 12.55 hrs  
 Average Depth at Peak Storage= 0.13'  
 Bank-Full Depth= 0.50' Flow Area= 6.5 sf, Capacity= 38.65 cfs

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Type III 24-hr 25 Rainfall=6.17"

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8.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals  
Side Slope Z-value= 10.0 '/' Top Width= 18.00'  
Length= 140.0' Slope= 0.1000 '/'  
Inlet Invert= 70.00', Outlet Invert= 56.00'



### Summary for Reach 11R: (new Reach)

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth > 4.11" for 25 event  
Inflow = 3.15 cfs @ 12.56 hrs, Volume= 0.674 af  
Outflow = 1.61 cfs @ 13.81 hrs, Volume= 0.667 af, Atten= 49%, Lag= 75.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 0.43 fps, Min. Travel Time= 50.9 min  
Avg. Velocity = 0.20 fps, Avg. Travel Time= 106.7 min

Peak Storage= 4,916 cf @ 12.96 hrs  
Average Depth at Peak Storage= 0.12'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 17.98 cfs

30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
Length= 1,300.0' Slope= 0.0023 '/'  
Inlet Invert= 56.00', Outlet Invert= 53.00'



### Summary for Reach 12R: P.O.A #1 Dummy reach

Inflow Area = 26.841 ac, 5.96% Impervious, Inflow Depth > 3.75" for 25 event  
Inflow = 29.62 cfs @ 13.52 hrs, Volume= 8.397 af  
Outflow = 29.62 cfs @ 13.52 hrs, Volume= 8.397 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Max. Velocity= 1.97 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 0.76 fps, Avg. Travel Time= 0.0 min

Peak Storage= 15 cf @ 13.52 hrs  
Average Depth at Peak Storage= 0.44'  
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 37.44 cfs

**4795 Post**

Type III 24-hr 25 Rainfall=6.17"

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30.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides  
Side Slope Z-value= 10.0 '/' Top Width= 40.00'  
Length= 1.0' Slope= 0.0100 '/'  
Inlet Invert= 53.00', Outlet Invert= 52.99'



**Summary for Pond 10P: Culvert**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 4.14" for 25 event  
Inflow = 7.21 cfs @ 12.20 hrs, Volume= 0.679 af  
Outflow = 7.21 cfs @ 12.20 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.4 min  
Primary = 7.21 cfs @ 12.20 hrs, Volume= 0.674 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 85.48' @ 12.20 hrs Surf.Area= 432 sf Storage= 382 cf

Plug-Flow detention time= 7.9 min calculated for 0.674 af (99% of inflow)  
Center-of-Mass det. time= 3.3 min ( 819.3 - 816.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	83.75'	962 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
83.75	100	0	0
85.00	250	219	219
86.00	630	440	659
86.44	750	304	962

Device	Routing	Invert	Outlet Devices
#1	Primary	82.50'	<b>15.0" Round Culvert</b> L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.50' / 82.35' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	85.00'	<b>20.0" x 20.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=7.20 cfs @ 12.20 hrs HW=85.48' (Free Discharge)

- ↑ **1=Culvert** (Passes 7.20 cfs of 9.06 cfs potential flow)
- ↑ **2=Orifice/Grate** (Weir Controls 7.20 cfs @ 2.26 fps)

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Type III 24-hr 25 Rainfall=6.17"

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**Summary for Pond 11P: G.U.S.F.**

Inflow Area = 1.966 ac, 24.00% Impervious, Inflow Depth = 4.11" for 25 event  
 Inflow = 7.21 cfs @ 12.20 hrs, Volume= 0.674 af  
 Outflow = 3.15 cfs @ 12.54 hrs, Volume= 0.674 af, Atten= 56%, Lag= 20.1 min  
 Primary = 3.15 cfs @ 12.54 hrs, Volume= 0.674 af

Routing by Stor-Ind method, Time Span= 5.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 80.13' @ 12.54 hrs Surf.Area= 4,917 sf Storage= 10,053 cf

Plug-Flow detention time= 85.9 min calculated for 0.674 af (100% of inflow)  
 Center-of-Mass det. time= 85.8 min ( 905.1 - 819.3 )

Volume	Invert	Avail.Storage	Storage Description	
#1	75.17'	14,643 cf	<b>Custom Stage Data (Prismatic)</b> Listed below	
Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
75.17	2,280	0.0	0	0
76.17	2,280	40.0	912	912
77.67	2,280	20.0	684	1,596
78.00	2,280	100.0	752	2,348
79.00	3,475	100.0	2,878	5,226
80.00	4,785	100.0	4,130	9,356
81.00	5,790	100.0	5,288	14,643

Device	Routing	Invert	Outlet Devices
#1	Primary	74.75'	<b>15.0" Round Culvert</b> L= 28.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 74.75' / 74.25' S= 0.0179 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	75.17'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600
#3	Primary	79.75'	<b>24.0" W x 24.0" H Vert. Orifice/Grate</b> C= 0.600
#4	Primary	80.00'	<b>6.0' long x 8.0' breadth Broad-Crested Rectangular Weir</b> 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) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

**Primary OutFlow** Max=3.13 cfs @ 12.54 hrs HW=80.13' (Free Discharge)

- 1=Culvert (Passes 0.92 cfs of 12.89 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.92 cfs @ 10.54 fps)
- 3=Orifice/Grate (Orifice Controls 1.51 cfs @ 1.98 fps)
- 4=Broad-Crested Rectangular Weir (Weir Controls 0.70 cfs @ 0.88 fps)



**APPENDIX B:**  
**HYDROLOGICAL DATA**



# Extreme Precipitation Tables

## Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

<b>Smoothing</b>	Yes
<b>State</b>	New Hampshire
<b>Location</b>	
<b>Longitude</b>	70.763 degrees West
<b>Latitude</b>	43.072 degrees North
<b>Elevation</b>	0 feet
<b>Date/Time</b>	Mon, 01 Oct 2018 11:26:19 -0400

### Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.26	0.40	0.50	0.65	0.81	1.04	<b>1yr</b>	0.70	0.98	1.21	1.56	2.03	2.66	2.92	<b>1yr</b>	2.35	2.81	3.22	3.94	4.55	<b>1yr</b>
<b>2yr</b>	0.32	0.50	0.62	0.81	1.02	1.30	<b>2yr</b>	0.88	1.18	1.52	1.94	2.49	3.21	3.57	<b>2yr</b>	2.84	3.43	3.94	4.68	5.33	<b>2yr</b>
<b>5yr</b>	0.37	0.58	0.73	0.98	1.25	1.61	<b>5yr</b>	1.08	1.47	1.89	2.43	3.14	4.07	4.58	<b>5yr</b>	3.60	4.40	5.04	5.94	6.70	<b>5yr</b>
<b>10yr</b>	0.41	0.65	0.82	1.12	1.45	1.89	<b>10yr</b>	1.25	1.73	2.23	2.89	3.75	4.87	5.53	<b>10yr</b>	4.31	5.32	6.09	7.11	7.98	<b>10yr</b>
<b>25yr</b>	0.48	0.76	0.97	1.34	1.77	2.34	<b>25yr</b>	1.53	2.14	2.78	3.63	4.74	6.17	7.10	<b>25yr</b>	5.46	6.83	7.80	9.03	10.05	<b>25yr</b>
<b>50yr</b>	0.54	0.86	1.10	1.54	2.07	2.76	<b>50yr</b>	1.79	2.53	3.29	4.32	5.66	7.39	8.58	<b>50yr</b>	6.54	8.25	9.42	10.81	11.98	<b>50yr</b>
<b>100yr</b>	0.60	0.97	1.25	1.77	2.42	3.26	<b>100yr</b>	2.09	2.98	3.90	5.16	6.77	8.85	10.38	<b>100yr</b>	7.83	9.98	11.38	12.96	14.27	<b>100yr</b>
<b>200yr</b>	0.67	1.10	1.43	2.05	2.82	3.83	<b>200yr</b>	2.44	3.52	4.62	6.13	8.08	10.61	12.55	<b>200yr</b>	9.39	12.07	13.76	15.55	17.02	<b>200yr</b>
<b>500yr</b>	0.80	1.31	1.71	2.48	3.48	4.76	<b>500yr</b>	3.00	4.38	5.76	7.70	10.22	13.48	16.14	<b>500yr</b>	11.93	15.52	17.67	19.78	21.49	<b>500yr</b>

### Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.23	0.36	0.44	0.59	0.72	0.88	<b>1yr</b>	0.63	0.86	0.92	1.33	1.68	2.24	2.49	<b>1yr</b>	1.98	2.40	2.87	3.18	3.90	<b>1yr</b>
<b>2yr</b>	0.31	0.49	0.60	0.81	1.00	1.19	<b>2yr</b>	0.86	1.16	1.37	1.82	2.34	3.06	3.45	<b>2yr</b>	2.71	3.32	3.82	4.55	5.08	<b>2yr</b>
<b>5yr</b>	0.35	0.54	0.67	0.92	1.17	1.40	<b>5yr</b>	1.01	1.37	1.61	2.12	2.73	3.79	4.19	<b>5yr</b>	3.35	4.03	4.72	5.53	6.24	<b>5yr</b>
<b>10yr</b>	0.39	0.59	0.73	1.03	1.33	1.60	<b>10yr</b>	1.14	1.56	1.80	2.39	3.06	4.37	4.86	<b>10yr</b>	3.87	4.67	5.44	6.41	7.20	<b>10yr</b>
<b>25yr</b>	0.44	0.67	0.83	1.19	1.56	1.90	<b>25yr</b>	1.35	1.86	2.10	2.75	3.53	4.72	5.89	<b>25yr</b>	4.18	5.66	6.65	7.79	8.68	<b>25yr</b>
<b>50yr</b>	0.48	0.73	0.91	1.31	1.76	2.17	<b>50yr</b>	1.52	2.12	2.35	3.07	3.93	5.33	6.80	<b>50yr</b>	4.72	6.54	7.72	9.04	10.02	<b>50yr</b>
<b>100yr</b>	0.54	0.81	1.01	1.47	2.01	2.47	<b>100yr</b>	1.73	2.41	2.63	3.41	4.35	6.00	7.85	<b>100yr</b>	5.31	7.55	8.98	10.51	11.56	<b>100yr</b>
<b>200yr</b>	0.59	0.89	1.13	1.63	2.28	2.81	<b>200yr</b>	1.96	2.75	2.93	3.78	4.79	6.72	9.06	<b>200yr</b>	5.95	8.71	10.42	12.22	13.37	<b>200yr</b>
<b>500yr</b>	0.68	1.02	1.31	1.90	2.71	3.36	<b>500yr</b>	2.34	3.29	3.41	4.31	5.45	7.82	10.94	<b>500yr</b>	6.92	10.52	12.69	14.96	16.19	<b>500yr</b>

### Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
<b>1yr</b>	0.28	0.44	0.54	0.72	0.89	1.08	<b>1yr</b>	0.77	1.06	1.26	1.74	2.21	2.98	3.16	<b>1yr</b>	2.64	3.04	3.58	4.37	5.04	<b>1yr</b>
<b>2yr</b>	0.34	0.52	0.64	0.86	1.07	1.27	<b>2yr</b>	0.92	1.24	1.48	1.96	2.51	3.42	3.70	<b>2yr</b>	3.03	3.56	4.09	4.84	5.63	<b>2yr</b>
<b>5yr</b>	0.40	0.62	0.77	1.05	1.34	1.62	<b>5yr</b>	1.15	1.58	1.88	2.53	3.25	4.34	4.96	<b>5yr</b>	3.84	4.77	5.38	6.37	7.16	<b>5yr</b>
<b>10yr</b>	0.47	0.72	0.89	1.25	1.61	1.98	<b>10yr</b>	1.39	1.93	2.28	3.11	3.95	5.34	6.20	<b>10yr</b>	4.72	5.96	6.82	7.84	8.75	<b>10yr</b>
<b>25yr</b>	0.58	0.88	1.09	1.56	2.05	2.57	<b>25yr</b>	1.77	2.51	2.95	4.07	5.15	7.78	8.34	<b>25yr</b>	6.88	8.02	9.15	10.34	11.41	<b>25yr</b>
<b>50yr</b>	0.67	1.02	1.27	1.83	2.46	3.13	<b>50yr</b>	2.12	3.06	3.60	5.00	6.32	9.74	10.46	<b>50yr</b>	8.62	10.06	11.44	12.72	13.96	<b>50yr</b>
<b>100yr</b>	0.79	1.19	1.49	2.16	2.96	3.81	<b>100yr</b>	2.55	3.72	4.37	6.16	7.76	12.18	13.10	<b>100yr</b>	10.78	12.60	14.31	15.69	17.09	<b>100yr</b>
<b>200yr</b>	0.92	1.39	1.76	2.55	3.56	4.65	<b>200yr</b>	3.07	4.55	5.34	7.58	9.54	15.28	16.44	<b>200yr</b>	13.53	15.81	17.92	19.35	20.92	<b>200yr</b>
<b>500yr</b>	1.15	1.71	2.19	3.19	4.53	6.04	<b>500yr</b>	3.91	5.90	6.93	10.02	12.56	20.65	22.20	<b>500yr</b>	18.27	21.34	24.13	25.51	27.34	<b>500yr</b>



TABLE 6-4.1 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION Cover type and hydrologic condition	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP			
	A	B	C	D
<b>FULLY DEVELOPED URBAN AREAS<sup>1</sup> (Vegetation Established)</b>				
Lawns, open spaces, parks, golf courses, cemeteries, etc. good condition; grass cover on 75% or more of the area	39	61	74	80
fair condition; grass cover on 50% to 75% of the area	49	69	79	84
poor condition; grass cover on 50% or less of the area	68	79	86	89
Paved parking lots, roofs, driveways, etc. Streets and roads; paved with curbs and storm sewers	98	98	98	98
gravel	98	98	98	98
dirt	76	85	89	91
paved with open ditches	72	82	87	89
Commercial and business areas Industrial districts	83	89	92	93
Row houses, town houses, and residential with lot-sizes 1/8 acre or less	89	92	94	95
Residential	81	88	91	93
Average lot size	77	85	90	92
1/4 acre	38	75	83	87
1/3 acre	57	72	81	86
1/2 acre	54	70	80	85
1 acre	51	68	79	84
2 acre	46	65	77	82
<b>DEVELOPING URBAN AREAS<sup>3</sup> (No vegetation Established)</b>				
Newly graded area	77	86	91	94

Average percent  
impervious area<sup>2</sup>

1. For land uses with impervious areas, curve numbers are computed assuming that 100% of runoff from impervious areas is directly connected to the drainage system. Pervious areas (lawns) are considered to be equivalent to lawns in good condition and the impervious areas have an RCH of 98.

2. Includes paved streets.

3. Use for the design of temporary measures during grading and construction. Impervious area percent for urban areas varies development vary considerably. The user will determine the percent impervious. Then using the newly graded area RCH and Table 6-4, the composite RCH can be computed for any degree of development.

TABLE 6-4.3 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION	Hydrologic condition <sup>6</sup>	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP			
		A	B	C	D
<u>NON-CULTIVATED AGRICULTURAL LAND</u>					
Pasture, grassland, or range - continuous forage for grazing	poor	68	79	86	89
	fair	49	69	79	84
	good	39	61	74	80
Meadow - continuous grass, protected from grazing and generally mowed for hay	---	30	58	71	78
Woods-grass combination (orchard or tree farm)	poor	57	73	82	86
	fair	43	65	76	82
	good	32	58	72	79
Brush - brush-weed-grass mixture with brush the major element	poor	48	67	77	83
	fair	35	56	70	77
	good	30	48	65	73
Woods	poor	45	66	77	83
	fair	36	60	73	79
	good	30	55	70	77
Farmsteads - buildings, lanes, driveways, and surrounding lots	---	59	74	82	86

6. Poor hydrologic condition has less than 50 percent ground cover density.  
 Fair hydrologic condition has between 50 and 75 percent ground cover density.  
 Good hydrologic condition has more than 75 percent ground cover density.

# **APPENDIX C:**

## **Stormwater Management Facility Operation and Maintenance (O&M) Manual**

*Stormwater Management Facility  
Operation and Maintenance (O&M) Manual*

**For:**

***ANDREWS SUBDIVISION  
Deer Ridge Lane  
Kittery, ME***

*Prepared For:*

**Arthur W. Andrews Rev. Trust  
c/o Mary Thron  
P.O. Box 96  
Kittery Point, Maine 03905  
(603)-868-5995**

Prepared by:

**Altus Engineering, Inc.  
133 Court Street  
Portsmouth, NH 03801-4413**

## **Compliance with Stormwater Facility Maintenance Requirements**

The *Deer Ridge Lane Association* will be the responsible party for ensuring that stormwater facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. The maintenance responsibility for a stormwater facility may be designated within a maintenance agreement for the property. The *Deer Ridge Lane Association* shall be aware of their responsibilities regarding stormwater facility maintenance.

Long term inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on the developed property. Routine inspections will ensure permit compliance; will reduce the potential for deterioration of infrastructure and the high cost to repair/replace, and will reduced the degradation of water quality.

## **Inspection & Maintenance – Annual Reporting**

Requirements for the long term inspection and maintenance of stormwater facilities, as well as reporting requirements are included in this Stormwater Management Facility Operation and Maintenance (O&M) Manual. The attached Long Term Inspection & Maintenance Schedule outlines specific requirements.

## **Preventative Measures to Reduce Maintenance Costs**

The most effective way to maintain the water quality facility is to prevent the pollutants from entering the facility in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system and many others. The maintenance program includes measures to address these potential contaminants, and will save money and time in the long run. Key of the maintenance program includes:

- Educate property owners, staff and patrons to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep the property, driveway, gutters and parking lots free of trash and debris
- Ensure the proper disposal of hazardous wastes and chemicals.
- Lawn care shall be planned to minimize the use of chemicals and pesticides.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Sweep paved surfaces of sediment and lawn clippings; dispose of offsite or in upland areas at least 25 feet from wetlands. Mulching mowers are encouraged.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.
- Clean out the all components of the storm drainage system, including inlets, storm sewer and outfalls. Dispose of catch basin cleanings offsite.

- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff and erosion.

## **Safety**

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

## **Inspecting Stormwater Management Facilities**

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of permanent best management practices. Stormwater management facilities must be periodically inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required for the facility.

### **A. Inspection Procedures**

All stormwater management facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspections should follow the inspection guidance found in O&M manual for the specific type of facility.

### **B. Inspection Report**

The person(s) conducting the inspection activities shall complete the appropriate inspection report for the specific facility. An inspection and maintenance report, *Stormwater Management Facility Inspection Form*, is provided.

## **General Information**

This section identifies the facility location, person conducting the inspection, the date and time the facility was inspected, and approximate days since the last rainfall. The reason for the inspection is also identified on the form depending on the nature of the inspection. All facilities should be inspected on an annual basis at a minimum. In addition, all facilities should be inspected after a significant precipitation event to ensure the facility is draining appropriately and to identify any damage that occurred as a result of the increased runoff. For the purpose of this Stormwater Management Program, a significant rainfall event is considered an event of three (3) inches in a 24-hour period or 0.5 inches in a one-hour period. It is anticipated that a short, intense event is likely to have a higher potential of erosion for this site than a longer, high volume event.

## Inspection Scoring

For each inspection item, a score must be given to identify the urgency of required maintenance. The scoring is as follows:

0 = No deficiencies identified.

1 = Monitor – Although maintenance may not be required at this time, a potential problem exists that will most likely need to be addressed in the future. This can include items like minor erosion, concrete cracks/spalling, or minor sediment accumulation. This item should be revisited at the next inspection.

2 = Routine Maintenance Required – Some inspection items can be addressed through the routine maintenance program (See SOP in appendix A). This can include items like vegetation management or debris/trash removal.

3 = Immediate Repair Necessary – This item needs immediate attention because failure is imminent or has already occurred. This could include items such as structural failure of a feature (outlet works, forebay, etc), significant erosion, or significant sediment accumulation. This score should be given to an item that can significantly affect the function of the facility.

## Inspection Summary/Additional Comments

Additional explanations to inspection items, and observations about the facility not covered by the form, are recorded in this section.

### C. Verification of Inspection and Form Submittal

The *Stormwater Management Facility Inspection Form* provides a record of inspection of the facility. The verification and the inspection form(s) shall be reviewed and maintained by the property owner or property manager. Any transfer in ownership shall be documented in writing to MDEP.

## **Maintaining Stormwater Management Facilities**

Stormwater management facilities must be properly maintained to ensure that they operate correctly and provide the water quality treatment for which they were designed. Routine maintenance performed on a frequently scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. Maintenance personnel must be qualified to properly maintain stormwater management facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs.



The following provides a list of recommendations and guidelines for managing the stormwater facilities.

### **SILT FENCE/ SEDIMENT BARRIER**

Straw/hay bale barriers, silt fence and filter barriers shall be inspected immediately after each rainfall and daily during prolonged rainfall events. These structures shall be inspected for signs of erosion or sedimentation regularly. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, sediment barriers shall be replaced with a temporary stone check dam.

Should the fabric of the silt fence or filter barrier decompose or become ineffective prior to the end of its expected usable life and the barrier is still necessary, the fabric shall be replaced promptly.

Sediment deposits must be removed when deposits reach approximately one third (1/3) the height of the barrier. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, then prepared, loamed and seeded.

### **FOREST BUFFER**

Buffers are natural, undisturbed strips of natural vegetation or planted strips of close-growing vegetation adjacent to and downslope of develop areas. As stormwater runoff travels over the buffer area, vegetation and the organic duff layer slow runoff, trapping particulate pollutants and allowing time for infiltration. Activities that may result in disturbance of the duff layer are prohibited in a buffer.

### **VEGETATED SWALE**

Timely maintenance is important to keep the vegetation in the swale in good condition. Mowing shall be done frequently enough to keep the vegetation in vigorous condition and to control encroachment of weeds and woody vegetation, however it shall not be mowed too closely to reduce the filtering effect. Fertilize on an "as needed" basis to keep the grass healthy, however, over-fertilization can result in the swale becoming a source of pollution and must be avoided.

The swale should be inspected periodically and after every major storm to determine the condition of the swale. Rills and damaged areas shall be promptly repaired and re-vegetated as necessary to prevent further deterioration.

## **LEVEL SPREADERS**

The proposed site plan includes a level spreader at locations of concentrated flows. Level spreaders are six feet or more in width and designed as four feet (4') of length per one (1) c.f.s. of flow, with a minimum length of 10 feet. Level spreaders enable run-off directed towards them to be spread evenly into sheet flow prior to discharge into wetlands or treatment by a filter strip, thus allowing for better filter strip efficiency and a lesser potential for erosion.

After construction, level spreaders shall be carefully inspected for any signs of channelization and immediately repaired. The structure will fail if water exits from it in channelized flow. Vegetated level spreaders may require periodic mowing. Spreaders constructed of wood, asphalt, stone or concrete curbing also require periodic inspection to check for damage and repair as needed.

## **PIPE INLET AND OUTLET PROTECTION**

Periodically check all aprons, plunge pools, pipe inlet and outlet protection (riprap) for damage and repair as needed. If any evidence of erosion or scouring is apparent, modify the design as needed to provide long-term protection.

## **DETENTION BASIN (GRASSED UNDERDRAIN SOIL FILTER)**

Detention basins are only used for water quantity control and must be used with other water quality BMPs (e.g., "wooded" buffer) to improve water quality. Detention facilities consist of a detention structure that temporarily store excess runoff and gradually releases it over a period of time to the receiving watercourse. It is design to control outflow at a rate no greater than the pre-development peak discharge rate.

### **Maintenance**

- Inlet and outlet should be check periodically to ensure that flow structures are not blocked by debris. Inspections shall be conducted monthly during wet weather conditions.
- Embankments shall be maintained to preserve their integrity as impoundment structures, including mowing, control woody vegetation, rodent and outlet maintenance and repair. All accumulated trash and debris shall be removed.
- Sediment shall be removed from the basin bi-annually.

## **CATCH BASIN AND DROP INLET STRUCTURES**

Function – The drop inlet structure is used as an overflow structure for ponds/basins.

### **Maintenance**

- Remove sediment from sump
- Inspect inlet and outlet of the drop inlet structure semi-annually and after major storm events to ensure that flow structures are not blocked by debris.
- The drop inlet structure and adjacent area shall be inspected annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure.

## **CONTRACTOR'S GENERAL CLEAN UP**

Upon completion of the site and permanent stabilization is attained, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.

<b>Long Term Inspection &amp; Maintenance Schedule</b>				
	<b>Spring</b>	<b>Fall or Yearly</b>	<b>After Major Storm</b>	<b>Every 2-5 Years</b>
<b>Resource and Treatment Buffers</b>				
Inspect treatment buffers for evidence of erosion, concentrated flow, or encroachment by development	x			
Manage the buffer's vegetation with the requirements in deed restrictions	x			
Repair any sign of erosion within a buffer	x			
Inspect and repair down-slope of all level spreaders and ditch turn-outs	x			
Install more level spreaders or ditch turn-outs if needed for a better distribution of flow	x			
Clean out any accumulation of sediment within spreader bays or turn-out pools	x			
Mow non-wooded buffers no shorter than six inches no more than twice a year	x	x		
<b>Vegetated Areas</b>				
Inspect all slopes and embankments and replant areas of bare soil or with sparse growth	x		x	
Armor rill erosion areas or divert the erosive flows to on-site stable areas	x		x	
Inspect and repair down-slope of all level spreaders and ditch turn-outs for erosion	x		x	
<b>Ditches, Swales &amp; Open Stormwater Channels</b>				
Remove obstructions, sediments or debris from ditches, swales and other open channels	x	x	x	
Repair any erosion of ditch lining	x	x	x	
Mow grass swales	x	x		
Remove vegetated growth and woody vegetation	x	x	x	
Repair any slumping side slopes	x	x	x	
Repair riprap where underlying filter fabric or gravel is showing or if stones have dislodge	x	x	x	
<b>Catch Basins</b>				
Remove sediment and debris from the bottom of the basin and inlet grates	x	x	x	
Remove floating debris and oils (using oil absorptive pads) from the trap	x	x	x	
<b>Culverts</b>				
Remove accumulated sediments and debris at inlet, outlet	x	x	x	
Repair any erosion damage at the culvert's inlet and outlet	x	x	x	
Remove any obstruction to flow	x	x	x	

<b>Roadways and Parking Surfaces</b>				
Clear and remove accumulated winter sand along roadways	x			
Sweep pavement to remove sediment	x			
Grade road shoulders and remove excess sand	x			
Grade gravel roads and gravel shoulders	x			
Clean out sediment within water bars or open –top culverts	x			
Ensure that stormwater is not impeded by false ditches of sediment in the shoulder	x			
<b>Filtration and Infiltration Basins</b>				
Clean the basin of debris, sediment and hydrocarbons	x	x		
Provide for the removal and disposal of accumulated sediments within the basin	x	x		
Renew the basin media if it fails to drain within 72 hours after a one inch rainfall event	x	x		
Till, seed and mulch the basin if vegetation is sparse	x	x		
Repair riprap where underlying filter fabric or gravel is showing or where stones have dislodged	x	x		

4795.Stormwater.Insp.Table.doc

**STORMWATER MANAGEMENT FACILITY  
INSPECTION FORM**  
(SEE ATTACHED SHEETS C-3.0 FOR LOCATIONS)

**Andrews Subdivision  
Deer Ridge Lane  
Kittery, Maine**

Date: \_\_\_\_\_

Inspector \_\_\_\_\_

Qualifications \_\_\_\_\_

**Current and recent hydrological conditions:**

---

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**Maintenance and Corrective Actions since last Inspection:**

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**VEGETATED SWALE:**

- Is the swale free of debris, litter and/or woody vegetation? \_\_\_\_\_
- Condition of vegetation in waterway? \_\_\_\_\_
- Is vegetation being mowed regularly? \_\_\_\_\_
- Is there evidence of erosion or scour in or near the swale? \_\_\_\_\_
- Is there evidence of sedimentation in swale? \_\_\_\_\_
- Comments \_\_\_\_\_

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**LEVEL SPREADERS:**

- Is there evidence of channelization? \_\_\_\_\_
- Is there evidence of excessive sedimentation? \_\_\_\_\_
- Comments \_\_\_\_\_

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**PIPE INLET AND OUTLET PROTECTION:**

- Is there evidence of erosion or scour near culvert? \_\_\_\_\_
- Is there evidence of damage at the aprons? \_\_\_\_\_
- Is there evidence of damage at the plunge pool? \_\_\_\_\_
- Is there evidence of damage at the inlet or outlet? \_\_\_\_\_
- Comments \_\_\_\_\_

---

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**CATCH BASINS / DROP INLET STRUCTURE:**

*Required Maintenance: Annual Cleaning of Sump:*

- Depth of sediment in CB sumps? \_\_\_\_\_
  - Are the CB grates free of leaves and debris? \_\_\_\_\_
  - Is water flowing into or through CB? \_\_\_\_ Is the outlet water turbid at drain outfalls? \_\_\_\_
  - Is there evidence of damage to structures or at drain outfalls? \_\_\_\_\_
  - Comments \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**GRASS UNDERDRAIN SOIL FILTER:**

- Depth of sediment within basin? \_\_\_\_\_
  - Is there evidence of excessive drainage time? \_\_\_\_\_
  - Status of vegetation \_\_\_\_\_
  - Is there evidence of erosion ? \_\_\_\_\_
  - Comments \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**MDEP "WOODED" BUFFERS:**

- Is there evidence of cutting or disturbance to vegetation? \_\_\_\_\_
  - Comments \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Maintenance or Corrective Action Required:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

To be performed by: \_\_\_\_\_ On or before: \_\_\_\_\_

# ANDREWS SUBDIVISION

MAP 60 LOT 10

DEER RIDGE LANE

KITTERY, MAINE

**Issued:**

October 18, 2018

Preliminary Approval Submission

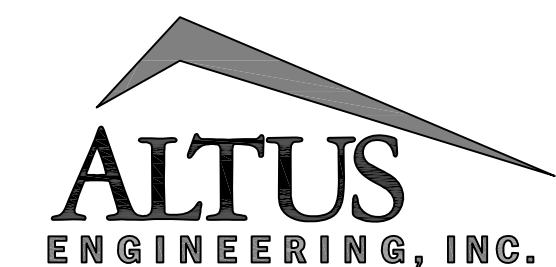
**LEGEND:**

	WETLANDS SYMBOL
	WETLANDS BOUNDARY
	WETLANDS "NO CUT" SETBACK
	APPROX. RESOURCE PROTECTION OVERLAY ZONE (OZ-RP)
	PROPOSED LOT NUMBER
	PROPOSED LOT LINE
	PROPOSED BUILDING SETBACK
	PROPOSED UNDERGROUND ELECTRIC, TELEPHONE & CABLE
	PROPOSED WATERMAIN
	PROPOSED LEVEL SPREADER
	GRASSED UNDERDRAIN SOIL FILTER
	SIGNIFICANT VERNAL POOL
	VERNAL POOL (NOT SIGNIFICANT PER MDEP)
	TEST PIT
	PROPOSED DROP INLET STRUCTURE
	PROPOSED LEVEL SPREADER
	METAL FLARED END SECTION

**Owner/Applicant:**

ARTHUR W. ANDREWS REV. TRUST  
 c/o MARY THRON, TRUSTEE  
 P.O. BOX 96  
 KITTERY POINT, MAINE 03905

**Civil Engineer:**



133 COURT STREET PORTSMOUTH, NH 03801  
 (603) 433-2335 www.ALTUS-ENG.com

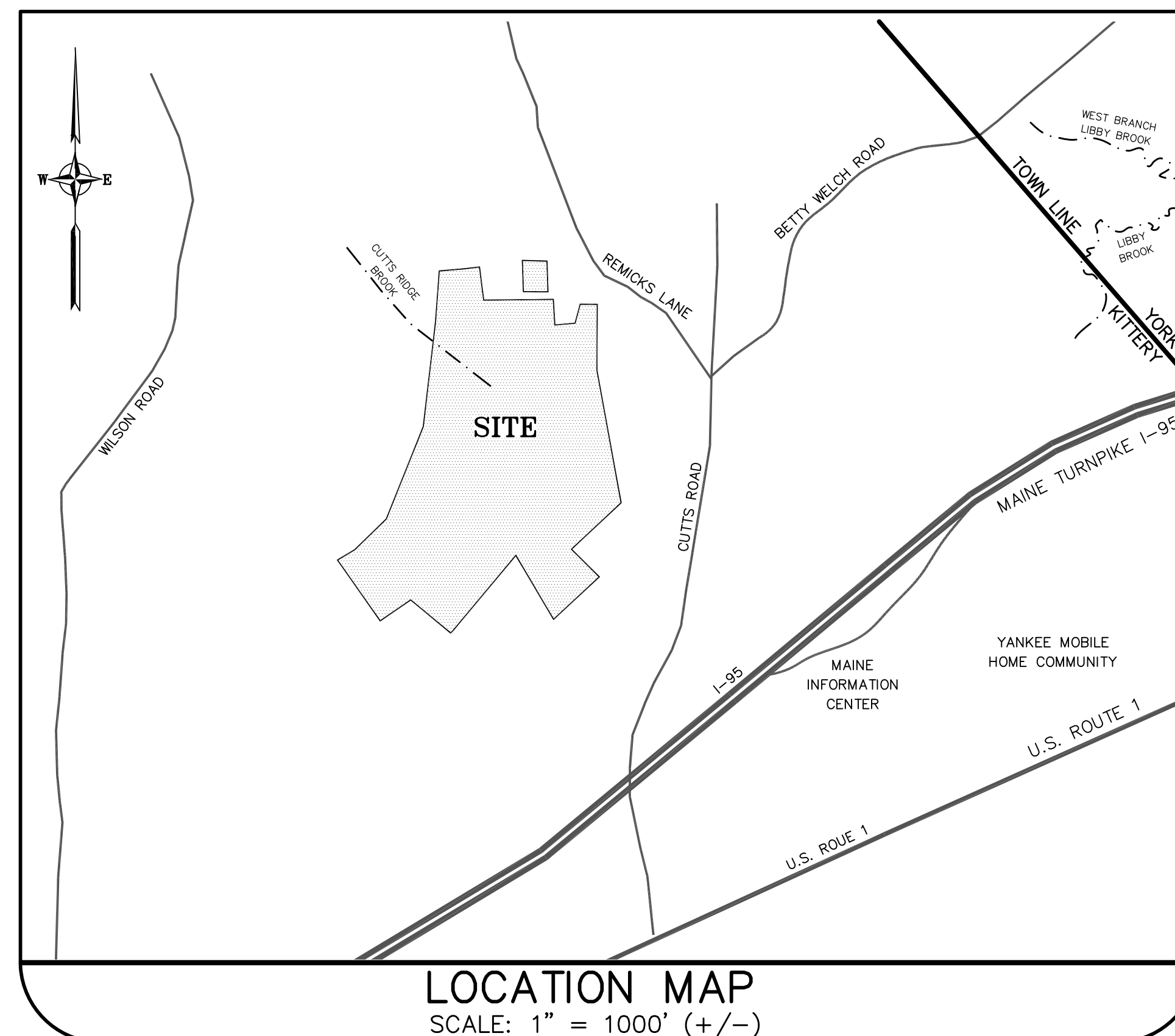
**Soils/Wetlands Scientist:**

Joseph W. Noel, CPSS  
 P.O. Box 174  
 South Berwick, Maine 03908

**Surveyor:**



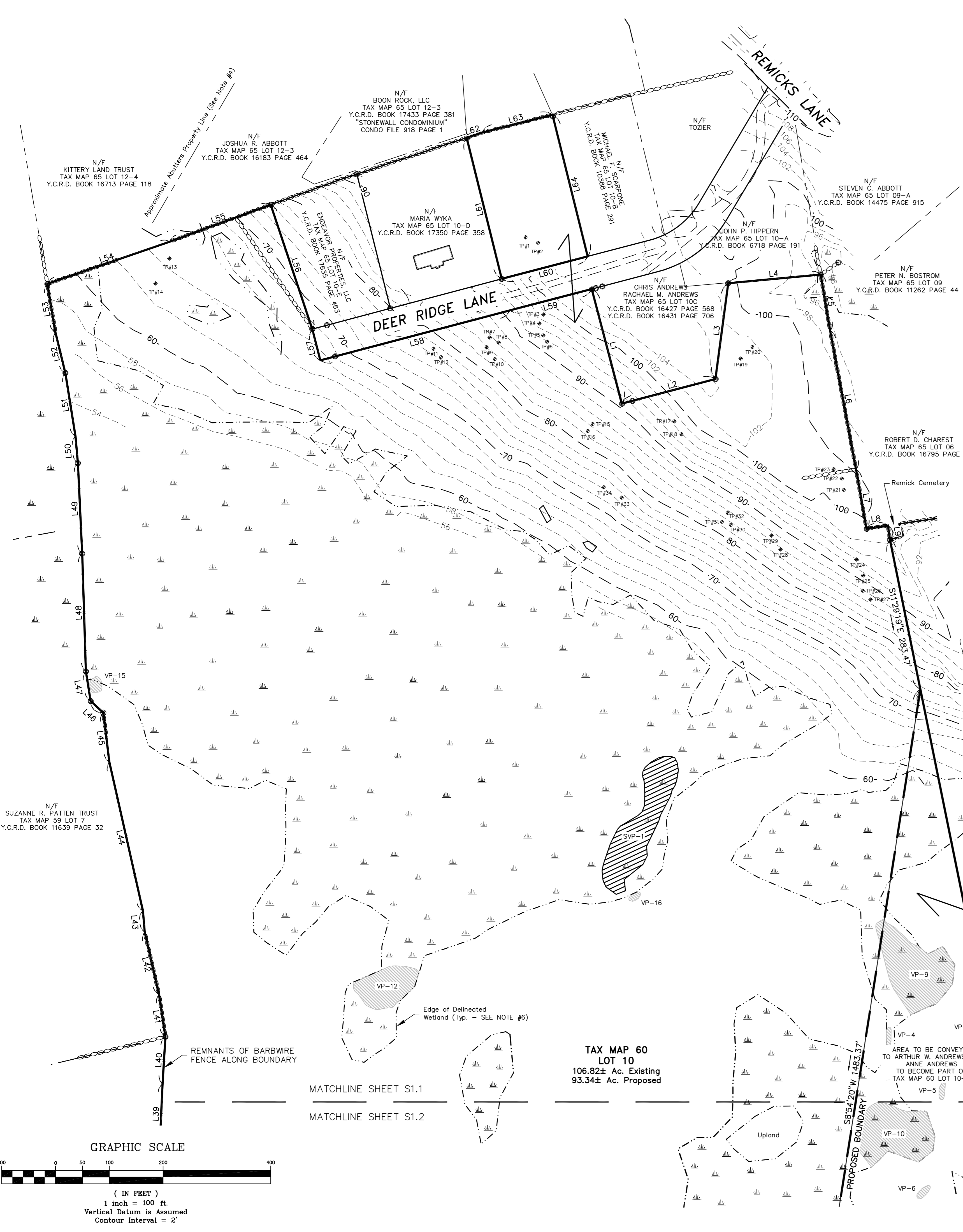
191 STATE ROAD, SUITE #1  
 KITTERY, MAINE 03904  
 (207) 439-6333



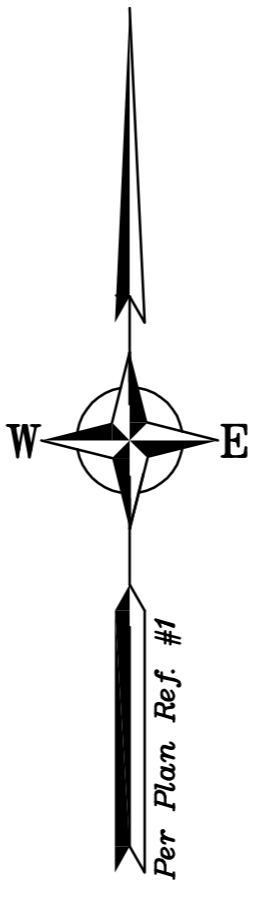
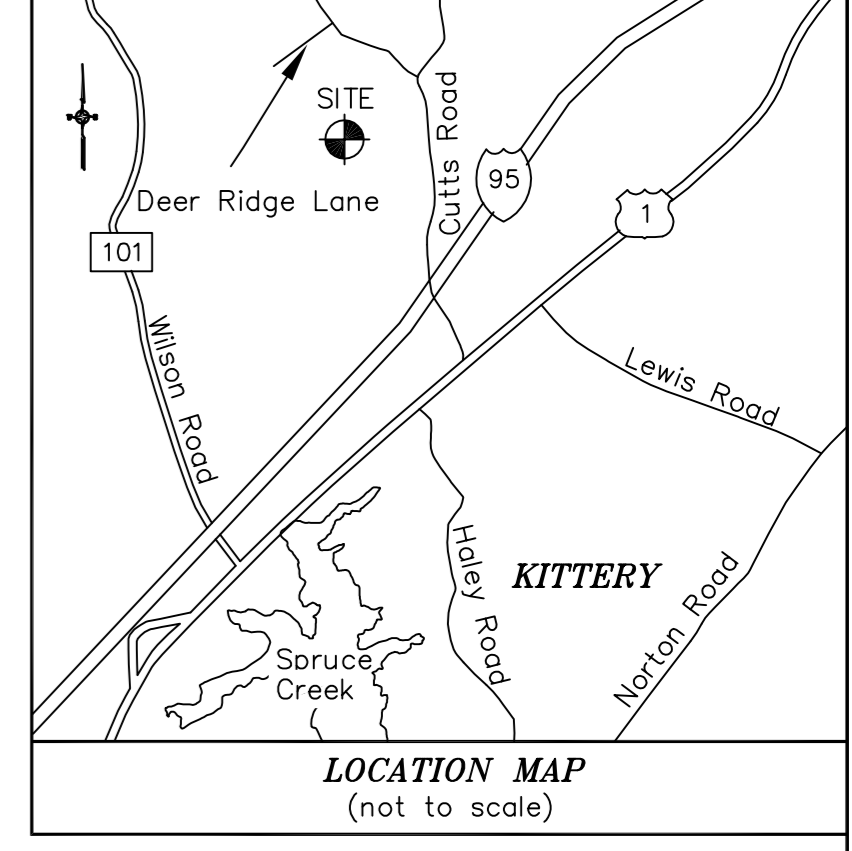
**Sheet Index**

Title	Sheet No.:	Rev.
Standard Boundary Survey and Existing Conditions Plan	S1.0	-
Standard Boundary Survey and Existing Conditions Plan	S1.1	-
Subdivision Plan - A	S1.2	0
Subdivision Plan - B	S1.3	0
Subdivision Plan - Enlargement	S1.4	0
Soils Plan	G-1.0	0
General Notes	G-1.1	0
Lot Plan	C-1.0	0
Deer Ridge Lane Plan & Profile	C-2.0	0
Deer Ridge Lane Plan & Profile	C-2.1	0
Turkeytail Lane Plan & Profile	C-2.2	0
Stormwater Management Plan	C-3.0	0
Erosion Control Notes	C-4.0	0
Erosion Control Details	C-4.1	0
Erosion Control Details	C-4.2	0
Detail Sheet	C-5.0	0
Water Details	C-6.0	0





- PLAN REFERENCES:**
- "STANDARD BOUNDARY SURVEY PLAN OF LAND OF ARTHUR W. & ROSEANN ANDREWS", PREPARED BY CIVIL CONSULTANTS, DATED JULY 28, 2000 AND RECORDED AT THE Y.C.R.D. AS PLAN BOOK 289, PAGE 46.
  - "PLAN OF A PORTION OF LAND OF ARTHUR W. AND ROSEANN ANDREWS, CUTTS ROAD, KITTERY, MAINE", PREPARED BY CIVIL CONSULTANTS, DATED 4/27/81 AND RECORDED AT THE Y.C.R.D. AS PLAN BOOK 114 PAGE 10.
  - "R.O.W. SKETCH PLAN FOR PROPERTY AT 47 & 49 CUTTS ROAD, KITTERY, YORK COUNTY, MAINE, FOR ROSEANN ANDREWS REVOCABLE TRUST", PREPARED BY NORTH EASTERLY SURVEYING, INC., DATED 4/21/09.
  - "PROPOSED LOT LINE ADJUSTMENT FOR PROPERTY AT CUTTS ROAD, JITTERY, YORK COUNTY, MAINE, OWNED BY ARTHUR W. ANDREWS JR. AND ARTHUR W. ANDREWS REVOCABLE TRUST", PREPARED BY NORTH EASTERLY SURVEYING, INC., PROJECT No. 16702, DATED 3/22/17 AND RECORDED AT THE Y.C.R.D. AS PLAN BOOK 387 PAGE 48.
  - "PROPOSED DIVISION OF LAND FOR PROPERTY AT 8 DEER RIDGE LANE, KITTERY, YORK COUNTY, MAINE, OWNED BY ARTHUR W. ANDREWS JR., ANNE L. ANDREWS", PREPARED BY NORTH EASTERLY SURVEYING, INC., PROJECT No. 16666, DATED 10/4/16 AND RECORDED AT THE Y.C.R.D. AS PLAN BOOK 385 PAGE 14.
  - "PLAN SHOWING RIGHT-OF-WAY EXTENSION AND DIVISION OF LAND OF ARTHUR W. & ROSEANN ANDREWS, LOCATED ON REMICK'S LANE, KITTERY, MAINE", PREPARED BY CIVIL CONSULTANTS AND RECORDED AT THE Y.C.R.D. AS PLAN BOOK 258 PAGE 27.



- NOTES:**
- OWNERS OF RECORD:  
TAX MAP 60 LOT 10  
ARTHUR W. ANDREWS REVOCABLE TRUST  
MARY THRON, TRUSTEE  
Y.C.R.D. BOOK 16935 PAGE 411  
DATED NOVEMBER 11, 2014
  - TOTAL PARCEL AREA:  
TAX MAP 60 LOT 10  
106.82± AC.
  - BASIS OF BEARING IS PER PLAN REFERENCE #1.
  - APPROXIMATE ABUTTER'S LINES SHOWN HEREON ARE FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE RELIED UPON AS BOUNDARY INFORMATION.
  - EASEMENTS OR OTHER UNWRITTEN RIGHTS MAY EXIST THAT ENCUMBER OR BENEFIT THE PROPERTY NOT SHOWN HEREON.
  - THE WETLAND BOUNDARY AS DEPICTED ON THIS PLAN WAS DELINEATED/FLAGGED BY JOSEPH W. NOEL, ME CERTIFIED SOIL SCIENTIST #209, FROM JULY TO SEPTEMBER 2016 AND JUNE 2018. THE FLAGS WERE SURVEY LOCATED BY NORTH EASTERLY SURVEYING INC. IN SEPTEMBER 2016 AND JUNE 2018. THE DELINEATION WAS CONDUCTED IN ACCORDANCE WITH THE U.S. ARMY CORPS OF ENGINEERS DOCUMENT CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL, (1987) ALONG WITH THE REQUIRED REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND MANUAL: NORTHCENTRAL AND NORTHEAST REGION, (VERSION 2, JANUARY 2012).
  - HYDRIC SOIL DETERMINATIONS WERE CONDUCTED IN ACCORDANCE WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE DOCUMENT FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 7.0 (2010) ALONG WITH THE MANUAL FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND (VERSION 3, APRIL 2004).
  - PLANT SPECIES INDICATOR STATUS WAS BASED ON THE U.S. ARMY CORPS OF ENGINEERS PUBLICATION THE NATIONAL WETLAND PLANT LIST (VERSION 3.3).
  - PERIMETER BOUNDARY BASED ON PLAN REFERENCE #1. SEE PLAN REFERENCE FOR BOUNDARY INFORMATION.

- MONUMENT LEGEND:**
- MONUMENT FOUND
  - DRILL HOLE FOUND

Line	Length	Bearing
L1	220.06'	S14°42'20"E
L2	179.91'	N75°14'58"E
L3	179.41'	N07°35'56"E
L4	172.53'	N84°35'31"E
L5	105.76'	S09°34'23"E
L6	262.40'	S10°34'45"E
L7	111.97'	S10°01'19"E
L8	40.15'	N81°22'24"E
L9	26.83'	S08°16'33"E
L10	1603.36'	S11°29'19"E
L40	87.99'	N03°30'06"E
L41	79.35'	N08°33'34"W
L42	118.88'	N12°56'06"W
L43	39.83'	N04°58'14"W
L44	282.93'	N12°43'25"W
L45	92.73'	N06°56'43"W
L46	32.04'	N47°26'18"W
L47	55.90'	N09°05'02"W
L48	218.79'	N01°48'39"W
L49	168.35'	N02°42'27"W
L50	50.14'	N05°05'45"W
L51	119.11'	N09°05'21"W
L52	77.22'	N13°44'42"W
L53	91.72'	N09°33'56"W
L54	240.65'	N70°58'59"E
L55	199.70'	N69°53'03"E
L56	243.64'	S18°31'27"E
L57	60.00'	S14°29'31"E
L58	364.18'	N75°13'19"E
L59	157.22'	N75°25'29"E
L60	165.01'	S75°21'14"W
L61	270.23'	N13°58'52"W
L62	30.28'	N71°38'38"E
L63	134.81'	N75°44'27"E
L64	271.28'	S13°58'52"E

**PRELIMINARY**

**CERTIFICATION**

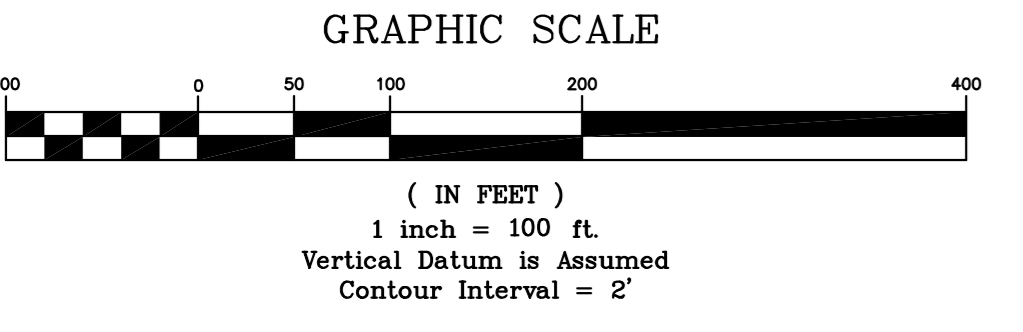
This survey conforms to the standards of practice as set forth in Chapter 90 of the Rules of the Board of Licensure for Professional Land Surveyors, April 2001, except that a separate written report has not been prepared.

Adam M. Pray, P.L.S. #2485 Dated

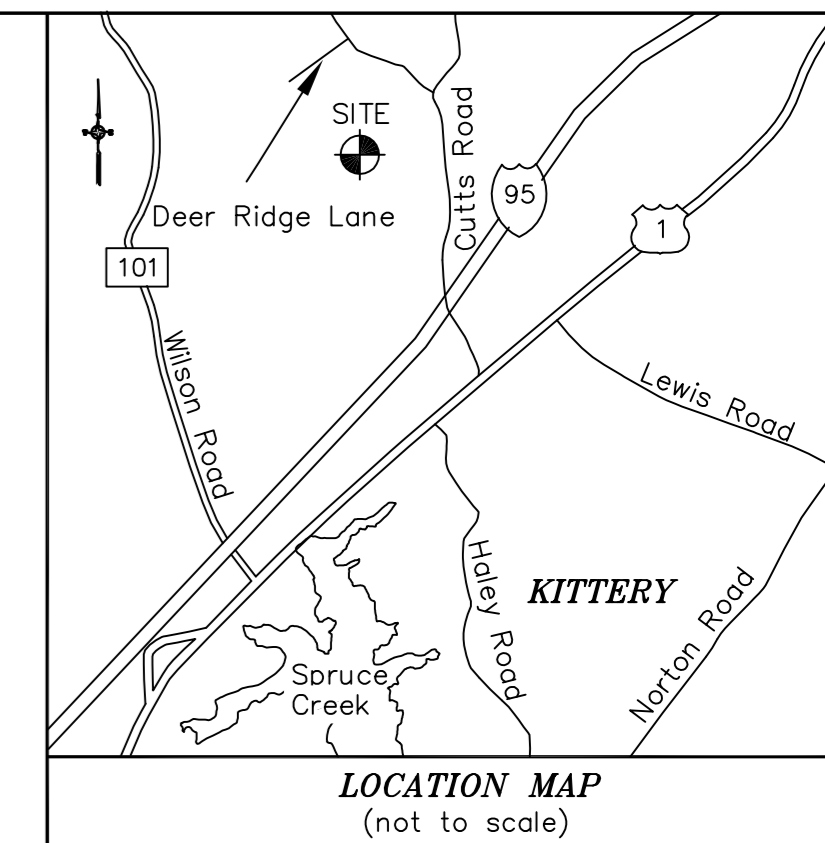
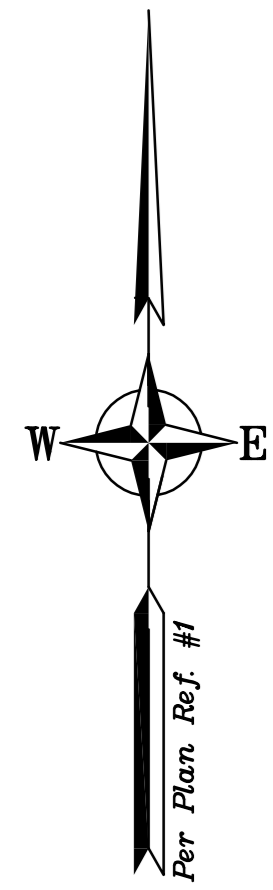
**STANDARD BOUNDARY SURVEY & EXISTING CONDITIONS PLAN**  
 FOR PROPERTY AT  
**Deer Ridge Lane**  
 Kittery, York County, Maine  
 OWNED BY  
**Arthur W. Andrews Revocable Trust**  
 Mary Thron, Trustee  
 P.O. Box 96, Kittery Point, ME 03905

North  
**EASTERLY SURVEYING, Inc.**  
 SURVEYORS IN N.H. & MAINE 191 STATE ROAD, SUITE #1  
 (207) 439-6333 KITTERY, MAINE 03904

SCALE: 1" = 100'	PROJECT NO: 16702	DATE: 10/17/18	SHEET: S1.0	DRAWN BY: A.M.P.	CHECKED BY: P.L.A.
DRAWING No: 16702_Existing_Conditions					<b>Tax Map 60 Lot 10</b>
FIELD BOOK No: "Kittery #33"					



REV.	DATE	STATUS	BY	CHKD	APPD.



**TAX MAP 60  
LOT 10**  
106.82± Ac. Existing  
93.34± Ac. Proposed

MATCHLINE SHEET S1.1  
MATCHLINE SHEET S1.2

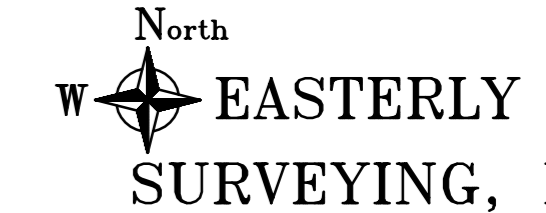
PERIMETER LINE TABLE		
Line	Length	Bearing
L10	1603.36'	S11°29'19"E
L11	176.94'	S52°19'25"E
L12	173.65'	S53°31'28"E
L13	354.15'	S32°58'37"W
L14	165.76'	S32°05'03"W
L15	120.08'	N41°25'57"W
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L18	393.83'	S23°50'47"W
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L28	149.97'	S39°54'01"W
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L33	189.24'	N15°37'53"E
L34	167.84'	N11°56'54"E
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L37	103.22'	N01°54'30"E
L38	57.87'	N07°35'06"E
L39	112.06'	N02°34'22"E
L40	87.99'	N03°30'06"E
L41	79.35'	N08°33'34"W

**MONUMENT LEGEND:**

- MONUMENT FOUND
- DRILL HOLE FOUND

**PRELIMINARY**

**STANDARD BOUNDARY SURVEY  
& EXISTING CONDITIONS PLAN**  
FOR PROPERTY AT  
**Deer Ridge Lane**  
Kittery, York County, Maine  
OWNED BY  
**Arthur W. Andrews Revocable Trust**  
Mary Thron, Trustee  
P.O. Box 96, Kittery Point, ME 03905

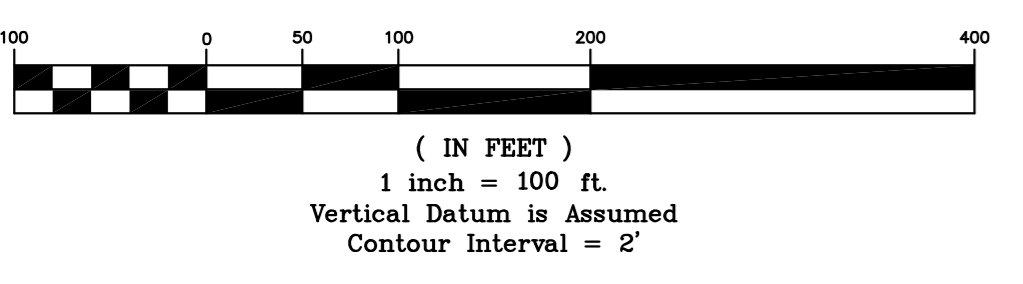


SURVEYORS IN N.H. & MAINE 191 STATE ROAD, SUITE #1  
KITTERY, MAINE 03904  
(207) 439-6333

SCALE: 1" = 100'	PROJECT NO. 16702	DATE: 10/17/18	SHEET: S1.1	DRAWN BY: A.M.P.	CHECKED BY: P.L.A.
---------------------	----------------------	-------------------	----------------	---------------------	-----------------------

DRAWING No: 16702\_Existing\_Conditions  
FIELD BOOK No: "Kittery #33" **Tax Map 60 Lot 10**

REV.	DATE	STATUS	BY	CHKD	APPD.



N/F  
WEBSTER P. KELSEY  
TAX MAP 60 LOT 01  
Y.C.R.D. BOOK 4692 PAGE 56

LINDA N/F KELETT  
TAX MAP 49 LOT 3-5  
Y.C.R.D. BOOK 1031 PAGE 37

RONALD N/F BROWN  
TAX MAP 49 LOT 3-7  
Y.C.R.D. BOOK 1032 PAGE 604

JAMES N/F GORMAN  
TAX MAP 49 LOT 3-8  
Y.C.R.D. BOOK 1033 PAGE 930

N/F  
JODIE L. NIELSEN  
TAX MAP 60 LOT 2  
Y.C.R.D. BOOK 12855 PAGE 135

N/F  
MARSH FAMILY IRREVOCABLE TRUST  
TAX MAP 49 LOT 7  
Y.C.R.D. BOOK 16729 PAGE 837

N/F  
HEIRS OF JOSEPH KOZLOWSKI  
TAX MAP 60 LOT 3  
Y.C.R.D. BOOK 13495 PAGE 284

N/F  
STEPH E. BRAKKE  
TAX MAP 60 LOT 9  
Y.C.R.D. BOOK 153 PAGE 58

N/F  
ELIZABETH A. BELLO  
TAX MAP 60 LOT 8  
Y.C.R.D. BOOK 15123 PAGE 882

AREA TO BE CONVEYED  
TO ARTHUR W. ANDREWS, JR.  
ANNE ANDREWS  
TO BECOME PART OF  
TAX MAP 60 LOT 10-3  
13.48± Ac.

REMNANTS OF BARBWIRE  
FENCE ALONG BOUNDARY

Edge of Delineated  
Wetland (Typ. - SEE NOTE #6)

Upland

BOUNDARY TO BE ABANDONED

PATTI S. P. BOWEN ET. AL.  
TAX MAP 60 LOT 04  
Y.C.R.D. BOOK 16782 PAGE 842

**ZONING SUMMARY**

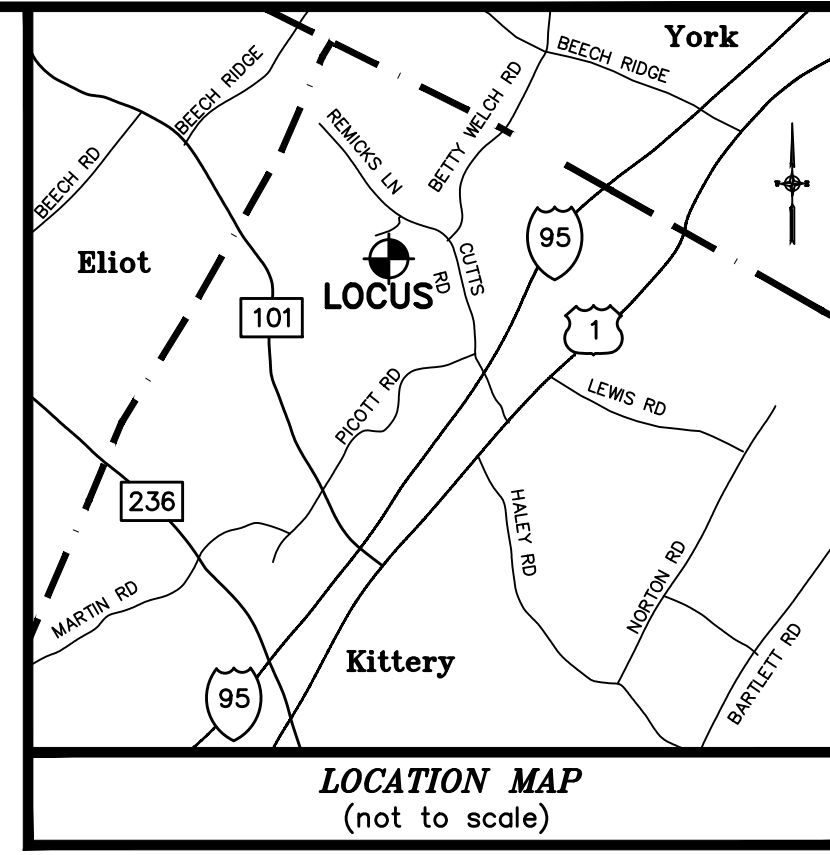
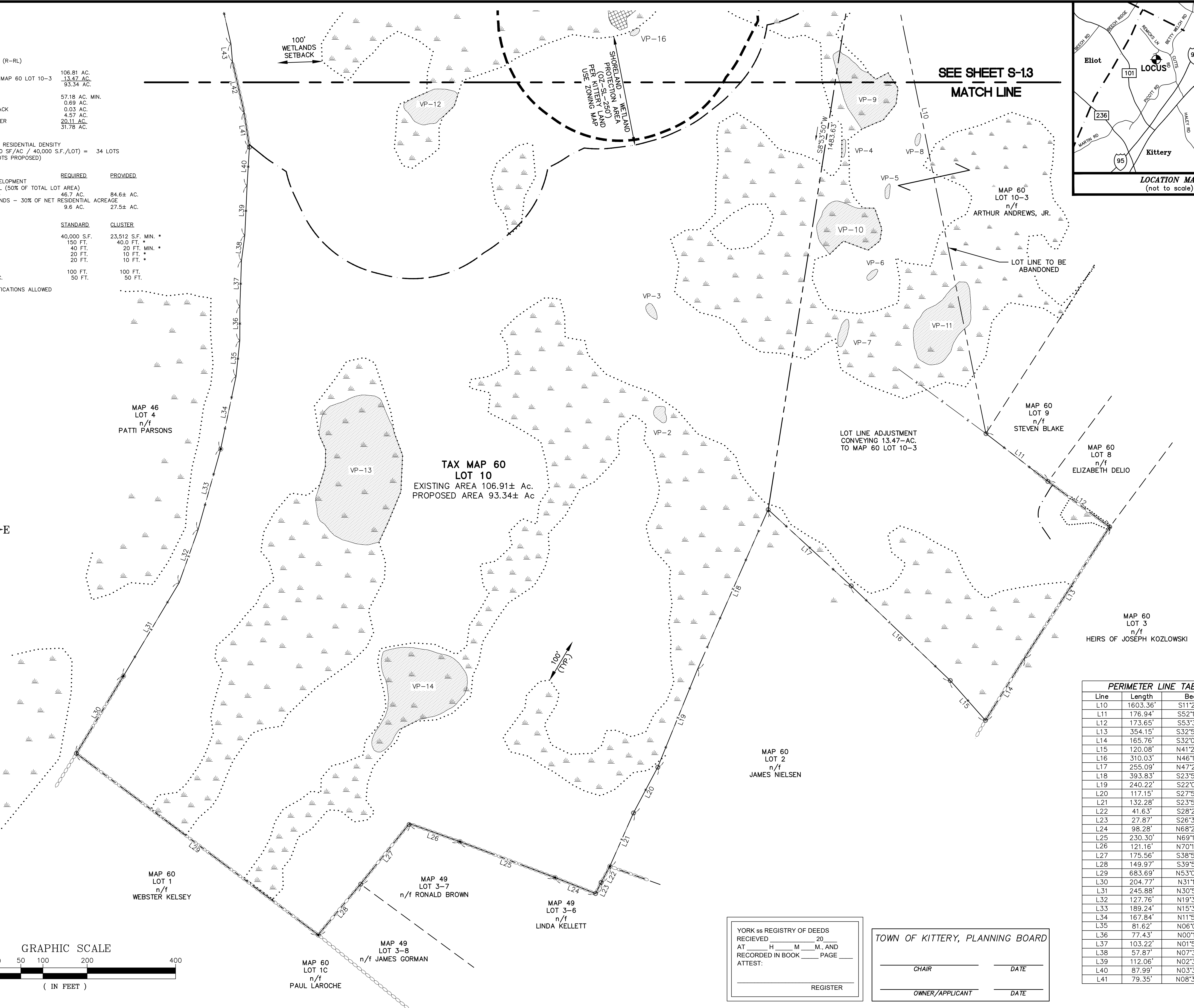
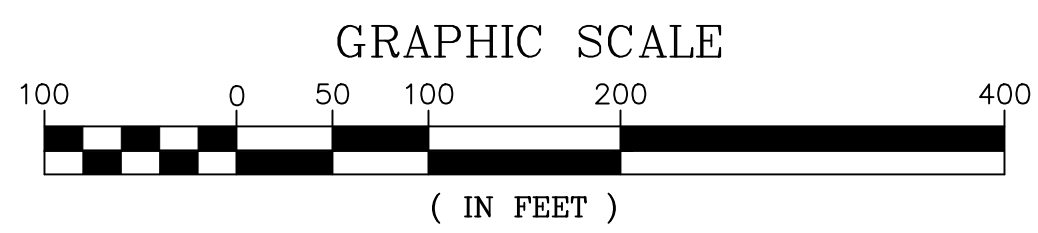
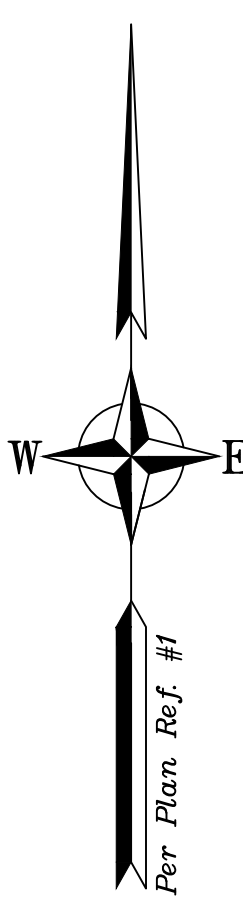
ZONE: RESIDENTIAL RURAL (R-RL)  
 MAP 60 LOT 10 106.81 AC.  
 LOT LINE ADJUSTMENT TO MAP 60 LOT 10-3 13.47 AC.  
 REMAINDER LOT 93.34 AC.  
 TOTAL UPLANDS AREA 57.18 AC. MIN.  
 LESS R.O.W. 0.69 AC.  
 "REMICK" CEMETARY SETBACK 0.03 AC.  
 LESS 50% OF S.P.D. SOILS 4.57 AC.  
 LESS 50% WETLANDS BUFFER 20.11 AC.  
 NET RESIDENTIAL ACREAGE 31.78 AC.

ALLOWABLE LOTS PER NET RESIDENTIAL DENSITY  
 (31.78 AC \* 43,560 SF/AC / 40,000 S.F./LOT) = 34 LOTS  
 (11 RESIDENTIAL LOTS PROPOSED)

	REQUIRED	PROVIDED
CLUSTER RESIDENTIAL DEVELOPMENT		
OPEN SPACE TOTAL (50% OF TOTAL LOT AREA)		84.6± AC.
(0.50 * 93.34 AC.)		46.7 AC.
OPEN SPACE UPLANDS - 30% OF NET RESIDENTIAL ACREAGE		27.5± AC.
(0.30 * 31.78 AC.)	9.6 AC.	

SETBACKS	STANDARD	CLUSTER
LOT SIZE	40,000 S.F.	23,512 S.F. MIN. *
FRONTAGE	150 FT.	40.0 FT. *
FRONT YARD	40 FT.	20 FT. MIN. *
SIDE YARD	20 FT.	10 FT. *
REAR YARD	20 FT.	10 FT. *
WETLANDS		
1 AC. OR MORE	100 FT.	100 FT.
LESS THAN 1 AC.	50 FT.	50 FT.

\* DIMENSIONAL MODIFICATIONS ALLOWED



**ALTUS ENGINEERING, INC.**  
 133 COURT STREET PORTSMOUTH, NH 03801  
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 SURVEYORS IN N.H. & MAINE  
 191 STATE ROAD, SUITE #1  
 KITTERY, MAINE 03904  
 (207) 439-6333

**THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION**  
 ISSUED FOR: **PRELIMINARY APPROVAL**  
 ISSUE DATE: **OCTOBER 18, 2018**

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: \_\_\_\_\_ RMB  
 APPROVED BY: \_\_\_\_\_ JKJ  
 DRAWING FILE: 4795SUB.DWG

SCALE: **1" = 100"**

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS REV. TRUST**  
**c/o MARY THRON, TRUSTEE**  
 P.O. BOX 96  
 KITTERY POINT, MAINE 03905

PROJECT:  
**ANDREWS SUBDIVISION**  
**MAP 60 LOT 10**  
 KITTERY, MAINE

TITLE:  
**SUBDIVISION PLAN - A**  
 SHEET NUMBER:  
**S - 1.2**

SEE SHEET S-13  
MATCH LINE

**TAX MAP 60 LOT 10**  
 EXISTING AREA 106.91± Ac.  
 PROPOSED AREA 93.34± Ac

Line	Length	Bearing
L10	1603.36'	S11°29'19"E
L11	176.94'	S52°19'25"E
L12	173.65'	S53°31'28"E
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L41	79.35'	N08°33'34"W

YORK ss REGISTRY OF DEEDS  
 RECEIVED \_\_\_\_\_ 20\_\_\_\_  
 AT \_\_\_\_\_ H \_\_\_\_\_ M \_\_\_\_\_ A. AND  
 RECORDED IN BOOK \_\_\_\_\_ PAGE \_\_\_\_\_  
 ATTEST:  
 \_\_\_\_\_  
 REGISTER

TOWN OF KITTERY, PLANNING BOARD  
 \_\_\_\_\_ CHAIR \_\_\_\_\_ DATE \_\_\_\_\_  
 \_\_\_\_\_ OWNER/APPLICANT \_\_\_\_\_ DATE \_\_\_\_\_

YORK ss REGISTRY OF DEEDS  
 RECEIVED \_\_\_\_\_ 20\_\_\_\_  
 AT \_\_\_\_\_ H \_\_\_\_\_ M \_\_\_\_\_ A.M. AND  
 RECORDED IN BOOK \_\_\_\_\_ PAGE \_\_\_\_\_  
 ATTEST:  
 \_\_\_\_\_  
 REGISTER

TOWN OF KITTERY, PLANNING BOARD

\_\_\_\_\_  
 CHAIR DATE

\_\_\_\_\_  
 OWNER/APPLICANT DATE

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ISSUED FOR:  
**PRELIMINARY APPROVAL**

ISSUE DATE:  
**OCTOBER 18, 2018**

REVISIONS  
 NO. DESCRIPTION BY DATE  
 0 TOWN SUBMISSION JKC 10/18/18

DRAWN BY: \_\_\_\_\_ RMB  
 APPROVED BY: \_\_\_\_\_ JKC  
 DRAWING FILE: \_\_\_\_\_ 4795SUB.DWG

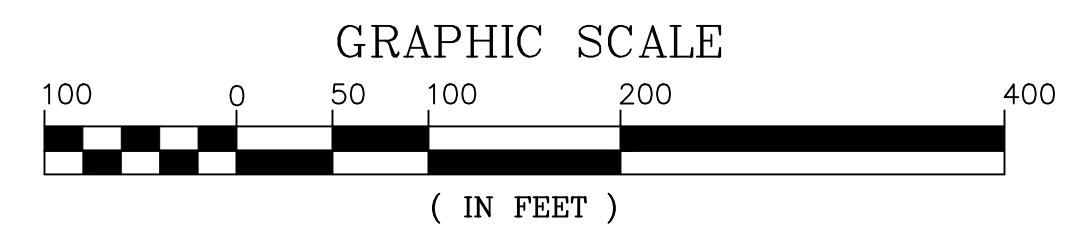
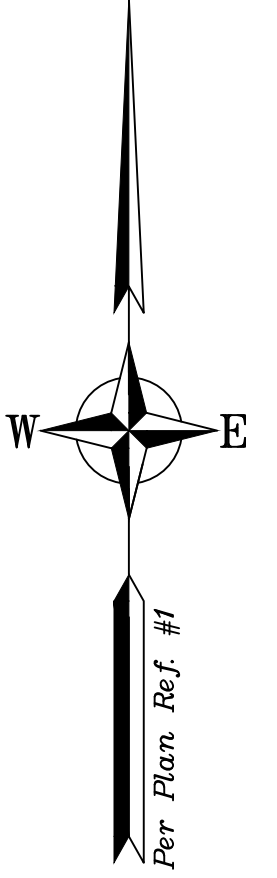
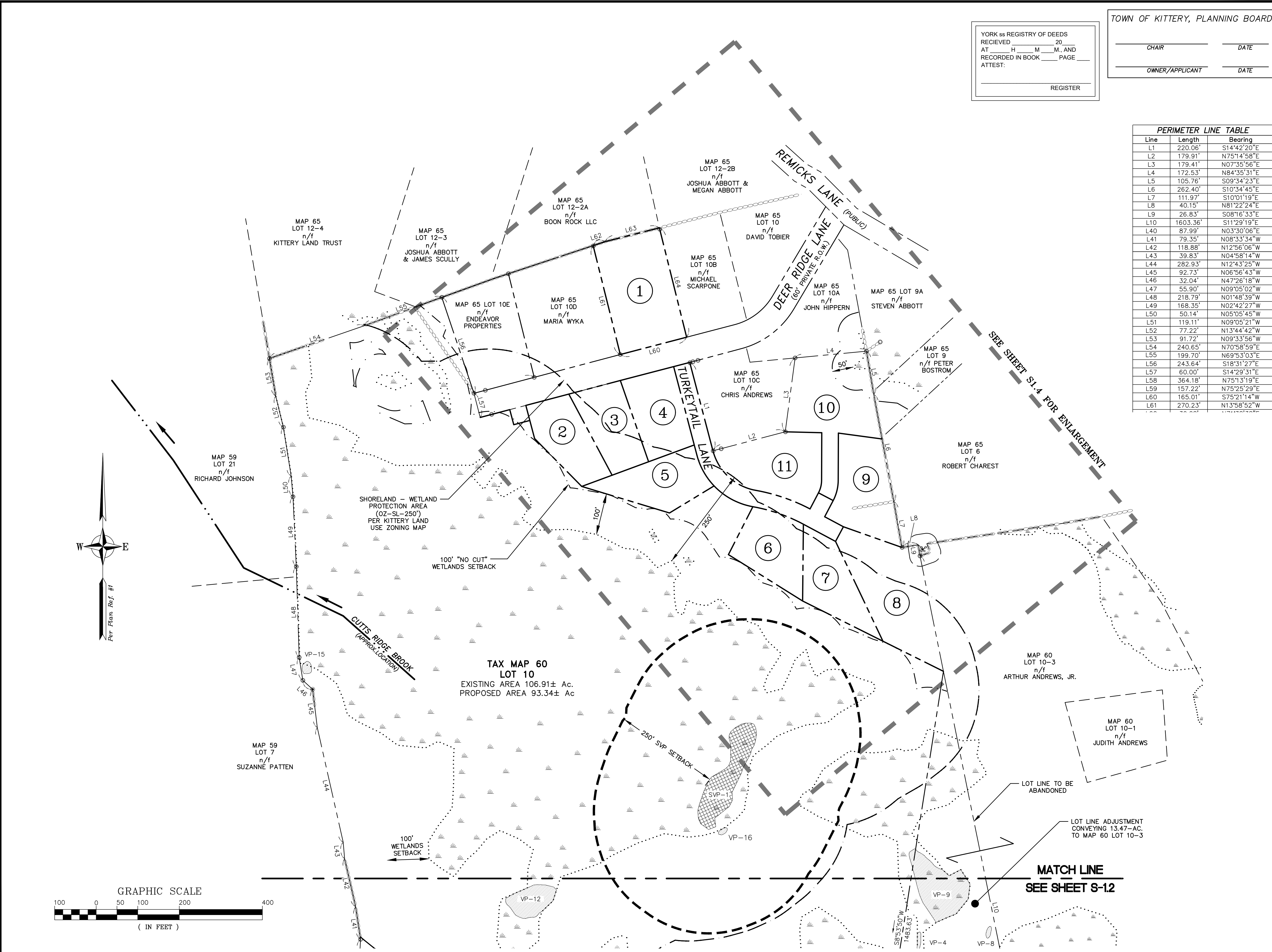
SCALE:  
**1" = 100"**

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
 REV. TRUST  
 c/o MARY THRON, TRUSTEE**  
 P.O. BOX 96  
 KITTERY POINT, MAINE 03905

PROJECT:  
**ANDREWS SUBDIVISION  
 MAP 60 LOT 10**  
 KITTERY, MAINE

TITLE:  
**SUBDIVISION  
 PLAN -B**

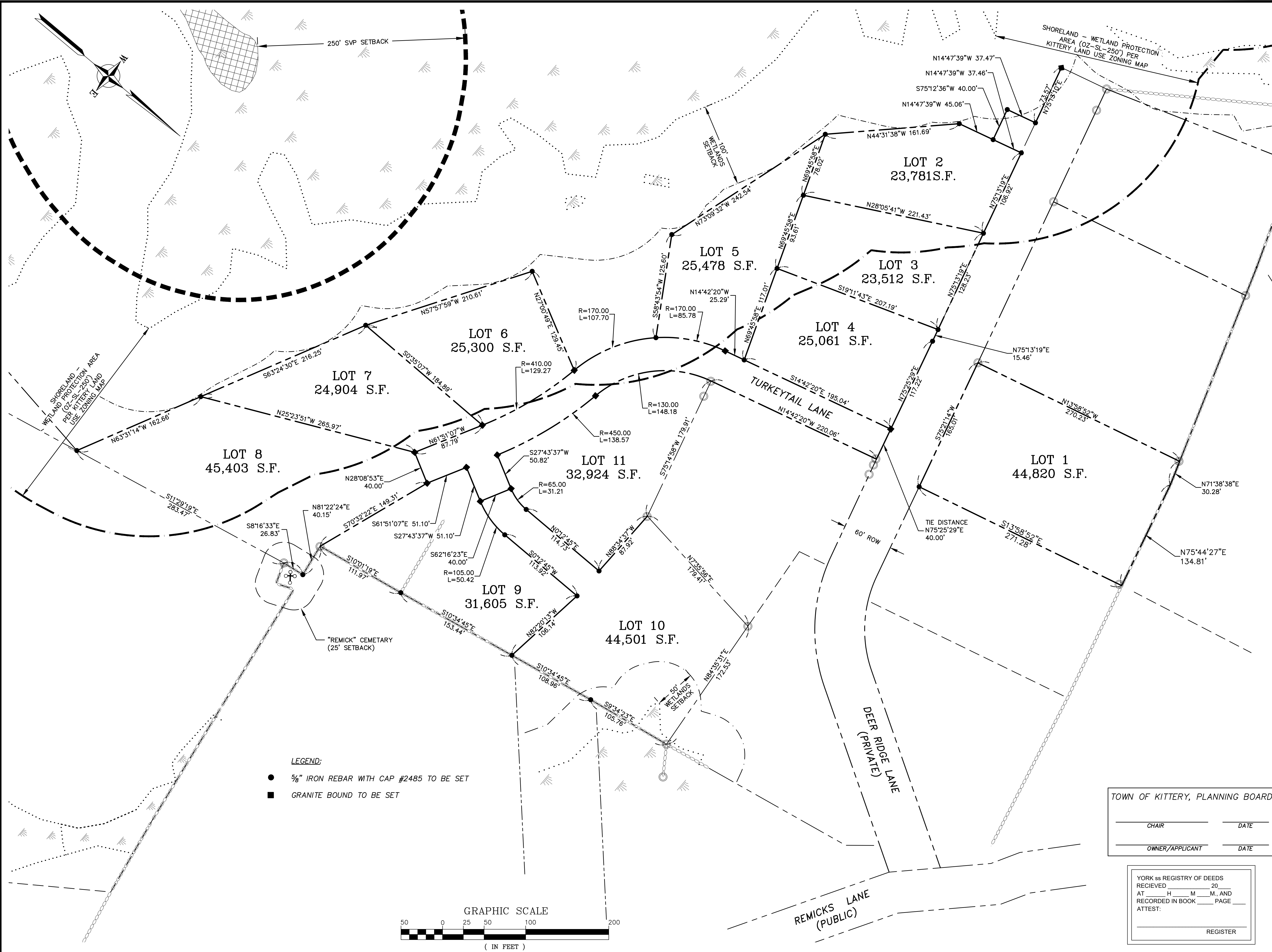
SHEET NUMBER:  
**S - 13**



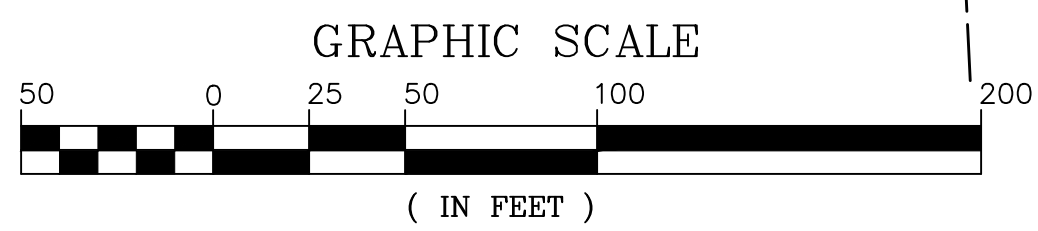
**TAX MAP 60  
 LOT 10**  
 EXISTING AREA 106.91± Ac.  
 PROPOSED AREA 93.34± Ac

**MATCH LINE  
 SEE SHEET S-12**

P4795



**LEGEND:**  
 ● 5/8" IRON REBAR WITH CAP #2485 TO BE SET  
 ■ GRANITE BOUND TO BE SET



TOWN OF KITTELY, PLANNING BOARD

CHAIR	DATE
OWNER/APPLICANT	DATE

YORK ss REGISTRY OF DEEDS  
 RECIEVED \_\_\_\_\_ 20\_\_\_\_  
 AT \_\_\_\_\_ H \_\_\_\_\_ M \_\_\_\_\_ M., AND  
 RECORDED IN BOOK \_\_\_\_\_ PAGE \_\_\_\_\_  
 ATTEST:  
 \_\_\_\_\_  
 REGISTER

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North  
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 ISSUE DATE: OCTOBER 18, 2018

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: RMB  
 APPROVED BY: JKC  
 DRAWING FILE: 4795SUB.DWG

SCALE: 1" = 50'

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS REV. TRUST**  
 c/o MARY THRON, TRUSTEE  
 P.O. BOX 96  
 KITTELY POINT, MAINE 03905

PROJECT:  
 ANDREWS SUBDIVISION  
 MAP 60 LOT 10  
 KITTELY, MAINE

TITLE:  
 SUBDIVISION PLAN - ENLARGEMENT

SHEET NUMBER:  
**S - 14**

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ISSUED FOR: **APPROVAL**

ISSUE DATE: **OCTOBER 18, 2018**

REVISIONS  
NO. DESCRIPTION BY DATE  
0 TOWN SUBMISSION JKC 10/18/18

DRAWN BY: \_\_\_\_\_ RMB  
APPROVED BY: \_\_\_\_\_ JKC  
DRAWING FILE: 4795SUB.DWG

SCALE: **AS SHOWN**

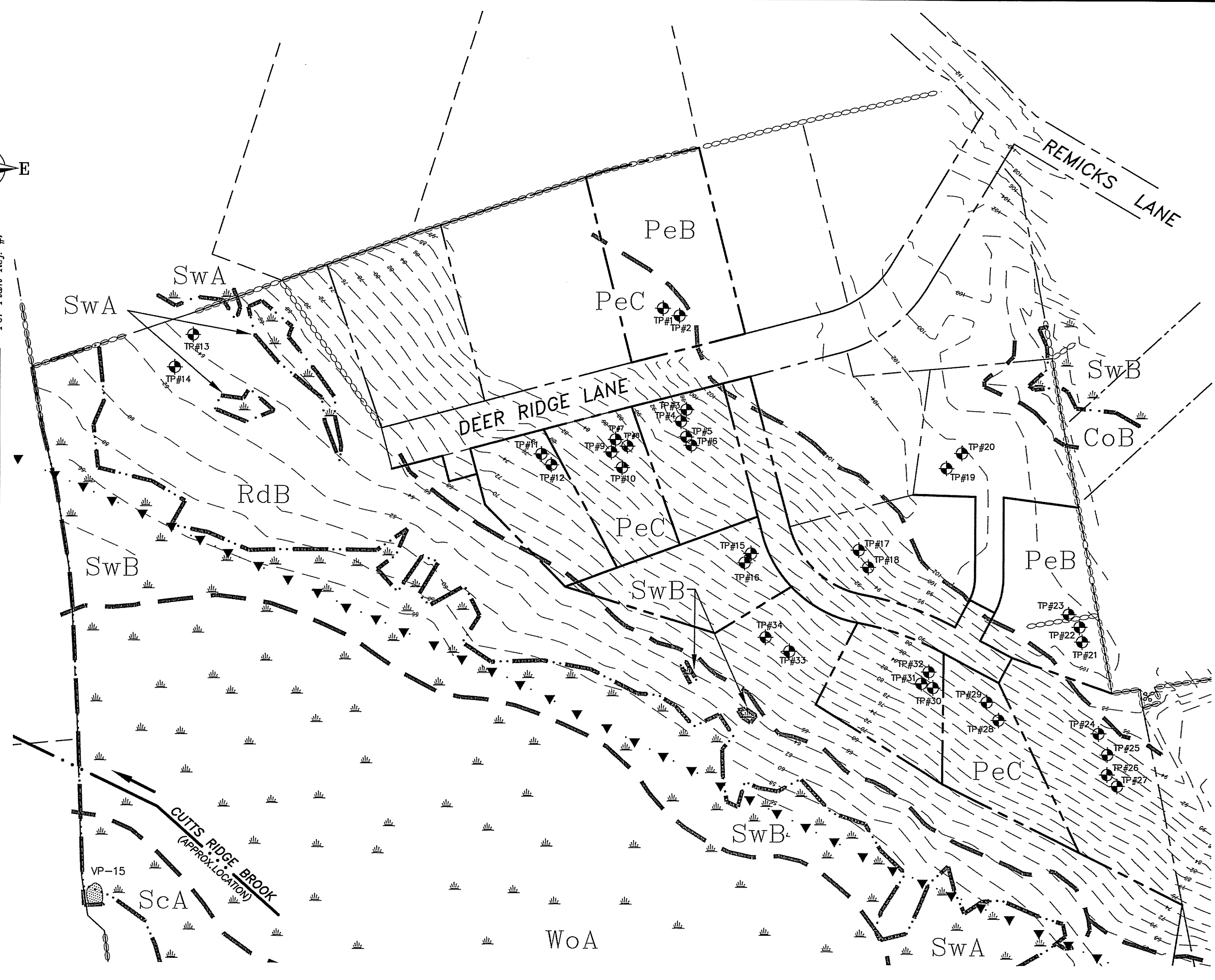
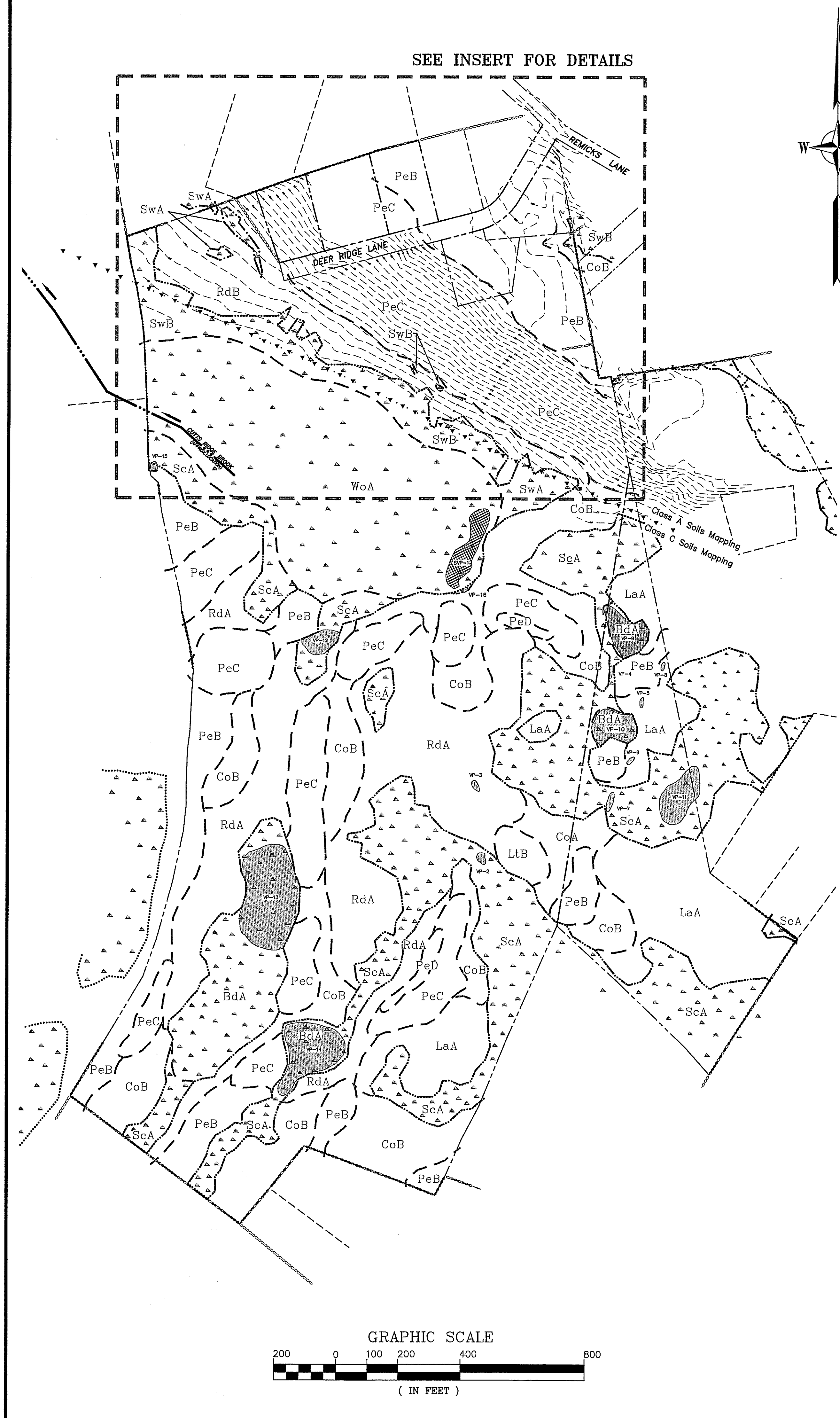
OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
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c/o MARY THRON TRUSTEE  
P.O. BOX 96  
KITTERY POINT, MAINE 03905**

PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:

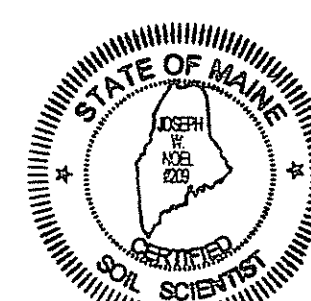
**SOILS PLAN**

SHEET NUMBER:  
**G - 10**



**HIGH INTENSITY SOIL SURVEY**  
CLASS A (WHERE DEVELOPMENT IS PLANNED)  
CLASS C (REMAINING AREAS)

I HEREBY CERTIFY THAT THIS CLASS A HIGH INTENSITY SOIL SURVEY & CLASS C HIGH INTENSITY SOIL SURVEY WAS CONDUCTED IN CONFORMANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS ON MAY AND JUNE 2018.



Joseph W. Wood #209 10/18/18  
NAME M.C.S.S. DATE

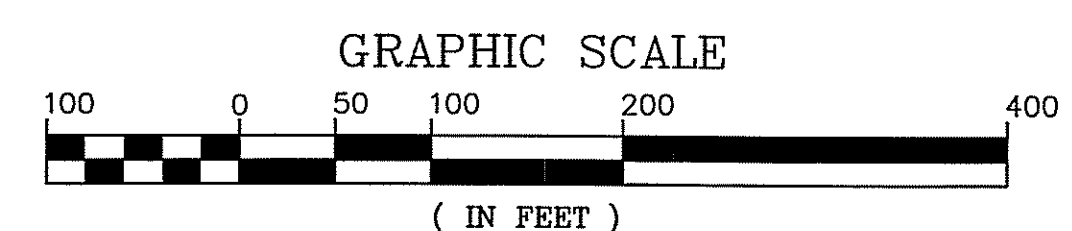
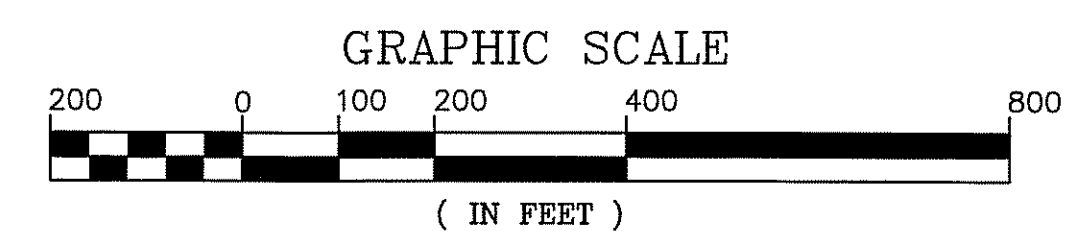
**SOIL LEGEND**

Symbol	Soil Type	Drainage Class	HSG	Slopes
Bd	Biddeford	very poorly drained	D	A 0-3%
Co	Colonel	somewhat poorly drained	D	B 3-8%
La	Lamaine	somewhat poorly drained	D	C 9-15%
Lt	Lyman/Tunbridge	somewhat excessively drained & well drained	D	D 15-25%
Pe	Peru	moderately well drained	D	E >25%
Rd	Roundabout	somewhat poorly drained	D	
Sc	Scantic	poorly drained	D	
Sw	Swanton	poorly drained	D	
Wo	Wonsqueak	very poorly drained	D	

**Notes:**

- Bd, Sc, Sw and Wo are hydric soil types.
- The hydrologic soil groups for the soil map are taken from the NRCS Web Soil Survey on July 11, 2018.
- This soil survey may be revised/fine-tuned as additional test pits are conducted.

- CLASS A / CLASS C SOILS DIVISION LINE
- HISS BOUNDARY
- TP#1 TEST PIT



**SITE NOTES:**

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL PERMITS OBTAINED FOR THIS PROJECT.
- TURKEYTAIL LANE IS PROPOSED AS A PRIVATE ROAD.
- PROPOSED TELEPHONE, ELECTRIC AND CABLE SERVICES AND CONDUITS SHALL BE INSTALLED UNDERGROUND.
- ALL LOT SHALL BE SERVED BY MUNICIPAL WATER AND INDIVIDUAL WASTEWATER DISPOSAL SYSTEM. EACH LOT CONTAINS SUITABLE AREA FOR A SUBSURFACE DISPOSAL SYSTEM IN ACCORDANCE TO MAINE SUBSURFACE WASTEWATER DISPOSAL RULES. RESERVE AREAS ARE SHOWN, WHERE REQUIRED.
- THE ROAD SHALL HAVE A POSTED SPEED LIMIT OF 20 MPH. THE DEVELOPER SHALL CLEAR EXISTING VEGETATION AND TREES WITHIN SIGHT DISTANCE ENVELOPE.
- DURING MAY AND JUNE 2018, WETLANDS WERE DELINEATED BY JOSEPH W. NOEL, MAINE CERTIFIED SOIL SCIENTIST #209, IN CONFORMANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS.
- AS SHOWN ON FIRM FOR THE TOWN OF KITTERY, PANEL NO. 23031C0663G, THE PROPOSED LOTS ARE NOT WITHIN 100-YEAR FLOOD ZONE.
- "BUFFER EASEMENTS" AS REQUIRED BY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, STORMWATER MANAGEMENT LAW, SHALL BE MAINTAINED PER THE PERMIT CONDITIONS AND HOMEOWNER ASSOCIATION DOCUMENTS.
- ACCUMULATED SNOW WILL BE PLOWED TO AREAS ADJACENT TO PAVEMENT. SNOW WILL NOT BE DUMPED INTO WETLAND AREAS.
- COMMON OPEN SPACE SHALL NOT BE USED FOR FUTURE BUILDING LOTS. COMMON OPEN SPACE SHALL BE MANAGED BY THE HOMEOWNER ASSOCIATION OR AN EASEMENT HOLDER AS MAY BY APPROVED BY THE PLANNING BOARD.
- BOUNDARY SURVEY PERFORMED BY NORTH EASTERLY SURVEY, INC., KITTERY, MAINE.
- LOCATION OF NEIGHBORHOOD MAILBOX, IF INSTALLED, IS SUBJECT TO APPROVAL OF THE U.S. POSTAL SERVICE.
- BUFFER AREAS SHALL BE CLEARLY DELINEATED AND PROTECTED DURING CONSTRUCTION. TOWN APPROVED DISKS SHALL BE MOUNTED ON TREES OR BY OTHER SUITABLE MEANS TO PROVIDE LINE OF SIGHT DELINEATION OF BUFFER LIMITS.
- ROADWAY MONUMENTATION SHALL BE A MINIMUM OF FOUR (4) INCHES SQUARE STONE MONUMENTS AND INSTALLED AS SHOWN ON SUBDIVISION PLAN AND PER TOWN STANDARDS.
- ELEVATIONS ARE BASED ON ASSUMED DATUM.

**PHASING NOTE:**

THE PROJECT WILL BE CONSTRUCTED IN ONE PHASE, EXCLUSIVE OF HOUSE CONSTRUCTION AND LOT LANDSCAPING. LOT SHALL BE DEVELOPED SEPARATELY BY INDIVIDUAL LAND OWNERS.

**WASTEWATER DISPOSAL NOTE:**

A HIGH INTENSITY SOIL SURVEY REPORT HAS COMPLETED THAT PROVIDES ADDITIONAL SOIL INFORMATION. STATE REGULATIONS REQUIRE THAT NEW WASTEWATER DISPOSAL SYSTEMS BE INSTALLED OVER SOILS THAT HAVE AT LEAST 9 INCHES OF NATURAL MINERAL SOIL MATERIAL FREE OF RESTRICTIVE FEATURES (15 INCHES IN SHORELAND ZONE AREAS) WHERE THE NATURAL GRADE IS 20% OR LESS; AND THAT MEET ALL RELEVANT SETBACKS. SEE SUMMARY OF THE TEST PITS RESULTS. THE TEST PIT SUMMARY TABLE PASS OR FAIL COLUMN IS ONLY FOR THE SOIL CONDITIONS AND SLOPE ISSUES. THE PASS OR FAIL COLUMN DOES NOT TAKE INTO ACCOUNT NECESSARY STATE AND LOCAL SETBACK REQUIREMENTS. REFER TO PROJECT PLANS FOR SETBACK INFORMATION. LOT # COLUMN DESIGNATES WHICH TEST PITS ARE BEING UTILIZED FOR THE SEPTIC SYSTEM.

DUE TO THE PROJECT AREA BEING MAPPED OVER A SAND AND GRAVEL AQUIFER, THE PROPOSED WASTEWATER DISPOSAL SYSTEMS WILL USE PRETREATMENT AS REQUIRED IN THE KITTERY CODE SECTION 16.8.7.2(E). THE EXAMPLE PROVIDED ON THE SUBDIVISION PLAN IS A FUJI CLEAN. WHILE THE FUJI CLEAN IS USED AS AN EXAMPLE, OTHER PRETREATMENT SYSTEMS, CERTIFIED TO NSF/ANSI STANDARD 40 AND APPROVED FOR USE IN MAINE, MAY BE UTILIZED DEPENDING ON THE SIZE AND CONFIGURATION OF THE PROPOSED HOMES.

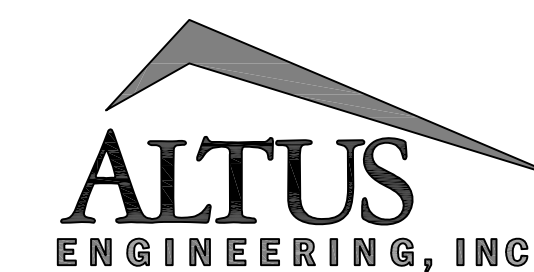
**WASTEWATER DISPOSAL SIZING:**

THE SIZING OF THE DISPOSAL AREAS THAT ARE DEPICTED ON THE PROJECT PLANS (SHEET C-1.0, LOT PLAN) WILL REQUIRE A MEDIUM-LARGE DISPOSAL RATING FOR ALL THE SYSTEMS (3.3 SQ. FT./GPD). THE EXAMPLE SYSTEMS ARE SIZED FOR 3 BEDROOM HOMES. THE FUJI CLEAN PRETREATMENT PRODUCT WILL UTILIZE A FUJI CLEAN CE-5 TANK. THE FUJI CLEAN PRODUCT ALLOWS FOR A 75% REDUCTION IN A CONVENTIONAL STONE BED.

270 GPD x 3.3 (DISPOSAL RATING) = 891 SQUARE FEET REQUIRED  
891 SQUARE FEET / 4 = 223 SQUARE FEET (75% REDUCTION)  
A 10' x 25' STONE BED IS DEPICTED ON THE PLAN (250 SQUARE FEET PROVIDED)

**CONSTRUCTION NOTES:**

- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL PERMITS OBTAINED FOR THE PROJECT. DO NOT BEGIN CONSTRUCTION UNTIL ALL PERMITS HAVE BEEN OBTAINED.
- CONTRACTOR SHALL OBTAIN A "DIGSAFE NUMBER" AT LEAST 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE LOCATION OF EXISTING UNDERGROUND UTILITIES IS APPROXIMATE AND THE LOCATIONS OR COMPLETENESS ARE NOT GUARANTEED BY THE ENGINEER, SURVEYOR OR OWNER/DEVELOPER. THE ABSENCE OF SUBSURFACE STRUCTURES, UTILITIES, ETC., FROM THESE PLANS, BUT IN EXISTENCE IS NOT INTENDED OR IMPLIED. IT IS THE SITE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES AND RELOCATE EXISTING UTILITIES AT NO ADDITIONAL COST TO THE DEVELOPER/OWNER.
- ALL CONSTRUCTION SHALL CONFORM TO THE MINIMUM CONSTRUCTION STANDARDS OF THE TOWN OF KITTERY AND THE M.D.O.T. STANDARD SPECIFICATIONS FOR ROAD CONSTRUCTION, LATEST EDITION.
- ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO ADA REQUIREMENTS AND THE MINIMUM REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" AND "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS," LATEST EDITIONS.
- CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE
- CULVERTS SHALL BE CORRUGATED POLYETHYLENE PIPE (CPE), TYPE ADS N-12 OR HANCOR HI-Q, WITH METAL FLARED END SECTIONS, UNLESS INDICATED OTHERWISE.
- UPON COMPLETION OF THE ROADWAY CONSTRUCTION, THE DRAINAGE INFRASTRUCTURE SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT.
- UPON COMPLETION OF THE SEWER LINES, THE FORCE MAIN AND SEWER SERVICES SHALL BE CLEANED OF ALL DEBRIS AND SEDIMENT, TESTED AND MARKED AT PROPERTY LINE.
- INSTALL UNDERGROUND TELEPHONE, ELECTRIC AND CABLE SERVICES AND CONDUITS TO THE REQUIREMENTS OF THE RESPECTIVE UTILITY. ALL UNDERGROUND CONDUIT SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING OF CABLES.
- GRIND STUMPS AND REUSE GRINDINGS FOR EROSION CONTROL WHERE POSSIBLE. NO STUMPS WILL BE BURIED ON SITE.
- IF ENCOUNTERED, DISPOSE OF EXCESS ROCK AND BOULDERS BY BLASTING, CRUSHING OR BURYING IN APPROVED UPLAND AREAS, OR OFF-SITE DISPOSAL AREAS.
- CONTRACTOR TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS (TBMS) AND PERFORM CONSTRUCTION LAYOUT.
- CONTRACTOR SHALL MAINTAIN AND PROVIDE RECORD DRAWINGS TO THE OWNER/DEVELOPER. CONTRACTOR SHALL PROVIDE TIES FROM PROPERTY BOUNDS TO UTILITY LOCATIONS.
- STORMWATER AND EROSION CONTROL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE INCORPORATED AND MAINTAINED DURING ALL PHASES OF CONSTRUCTION.
- ROADWAY CONSTRUCTION AND LOT DEVELOPMENT ARE SUBJECT THE REQUIREMENTS OF THE MAINE CONSTRUCTION GENERAL PERMIT. CONTRACTORS/OWNERS SHALL FILE A "NOTICE OF INTENT" WITH MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- TEMPORARY EROSION CONTROL MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT CONTAMINATION OF DOWN GRADIENT AREAS SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING ACTIVITIES.
- ALL AREAS OF THE SITE WHICH ARE DISTURBED SHALL BE LOAMED AND SEEDED WITH A MINIMUM OF 4" DEPTH OF TOPSOIL, UNLESS NOTED OTHERWISE.
- BLASTING OPERATIONS, IF USED, SHALL MEET THE AIR BLAST STANDARDS OF THE MDEP RULES, CHAPTER 375.10(C)(4)(C), GROUND VIBRATION AT STRUCTURES NOT OWNED OR CONTROLLED BY THE DEVELOPER MUST BE NO GREATER THAN THE FREQUENCY-DEPENDENT LIMITS DEFINED IN FIGURE B-1 OF APPENDIX B, U.S. BUREAU OF MINES RI 8507, AND THAT FLYROCK MAY NOT LEAVE PROPERTY OWNED OR CONTROLLED BY THE DEVELOPER OR ENTER A PROTECTED RESOURCE.
- THE LOCATION AND CONSTRUCTION OF EACH DRIVEWAY SHALL ENSURE THAT ADEQUATE DRAINAGE IS MAINTAINED. INSTALL 12" MIN. CULVERT WHERE NECESSARY.
- PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES, AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL.
- IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES ARE SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN GROUND. THIS WILL LIKELY REQUIRE REMOVAL OF FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATION. THE FINAL SUBGRADE ELEVATION WOULD ALSO REQUIRE AN APPROPRIATE DEGREE OF INSULATION AGAINST FREEZING.
- EXCAVATED MATERIALS SHALL BE PLACED AS FILL MATERIALS WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN THE 100-YEAR FLOOD ZONE OR BUFFER EASEMENTS.
- CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING ON-SITE STRUCTURES, BITUMINOUS CONCRETE, DEBRIS, AND CONSTRUCTION WASTE PRODUCTS WHICH ARE NOT AUTHORIZED TO BE USED AS PART OF CONSTRUCTION.
- PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION. VOIDS BETWEEN STONES AND CLUMPS OF MATERIAL SHALL BE FILLED WITH FINE MATERIALS.
- WORK HOURS FOR CONSTRUCTION WILL BE AS APPROVED BY TOWN OF KITTERY. STANDARDS WORK HOURS SHALL BE 7AM TO 7PM.



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**PRELIMINARY APPROVAL**

ISSUE DATE:

**OCTOBER 18, 2018**

**REVISIONS**

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

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APPROVED BY: \_\_\_\_\_ JKC

DRAWING FILE: \_\_\_\_\_ 4795SUB.DWG

SCALE:

**N.T.S.**

OWNERS/APPLICANT:

**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON, TRUSTEE  
P.O. BOX 96  
KITTERY POINT, MAINE 03905**

PROJECT:

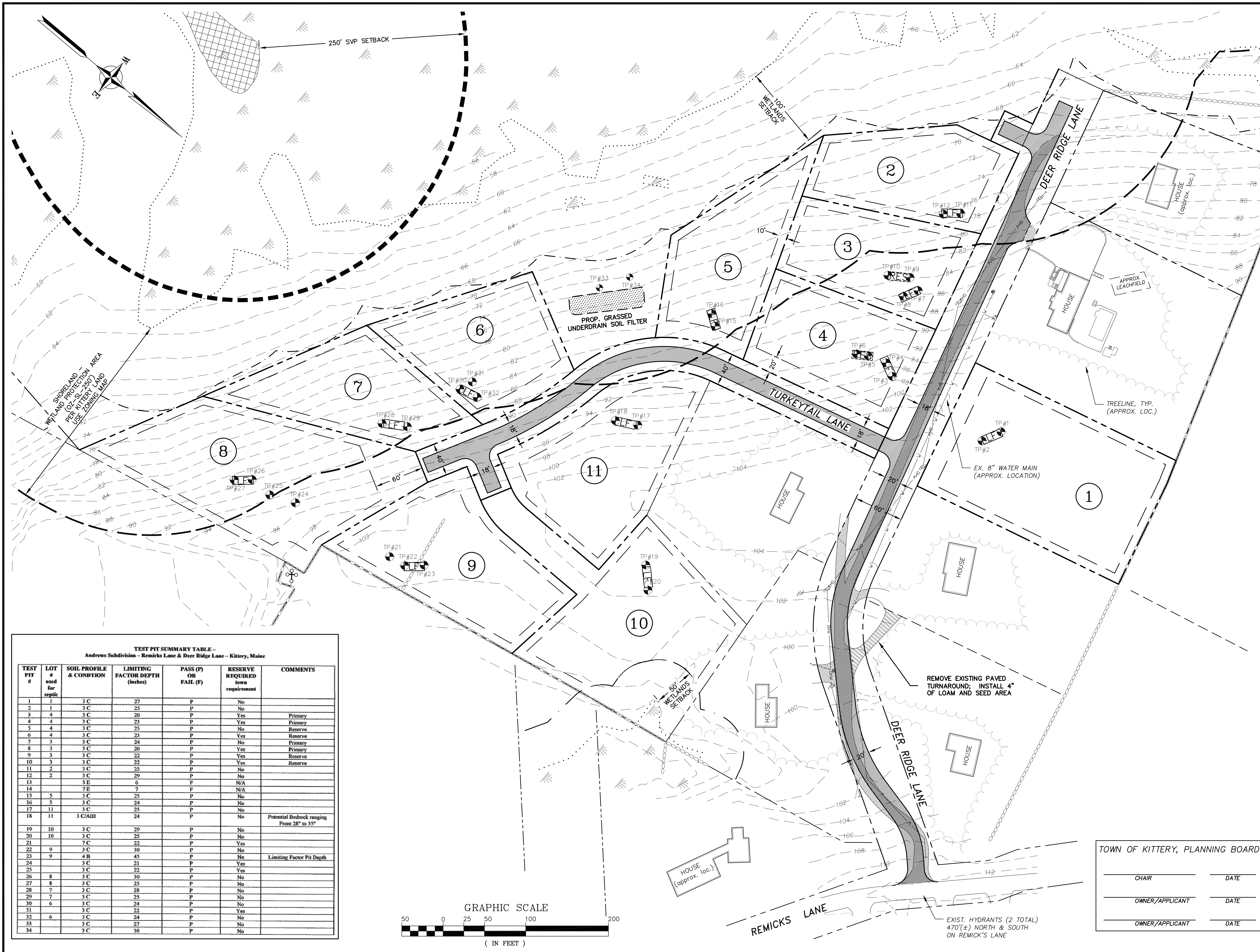
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:

**GENERAL NOTES**

SHEET NUMBER:

**G - 11**



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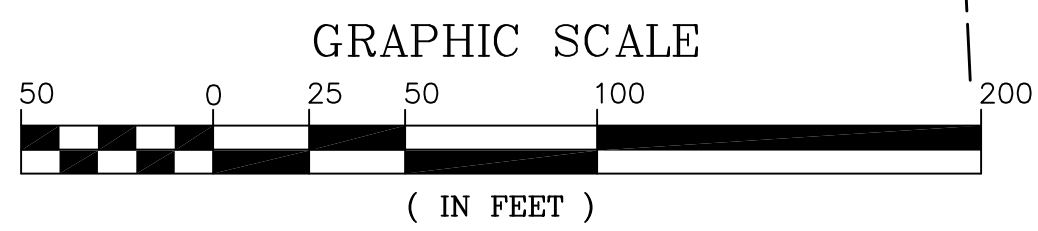
OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON, TRUSTEE**  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:  
**LOT PLAN**  
SHEET NUMBER:  
**C - 10**

**TEST PIT SUMMARY TABLE -**  
Andrews Subdivision - Remicks Lane & Deer Ridge Lane - Kittery, Maine

TEST PIT #	LOT # used for septic	SOIL PROFILE & CONDITION	LIMITING FACTOR DEPTH (inches)	PASS (P) OR FAIL (F)	RESERVE REQUIRED town requirement	COMMENTS
1	1	3C	27	P	No	
2	1	3C	25	P	No	
3	4	3C	20	P	Yes	Primary
4	4	3C	23	P	Yes	Primary
5	4	3C	25	P	No	Reserve
6	4	3C	23	P	Yes	Reserve
7	3	3C	24	P	No	Primary
8	3	3C	20	P	Yes	Primary
9	3	3C	22	P	Yes	Reserve
10	3	3C	22	P	Yes	Reserve
11	2	3C	25	P	No	
12	2	3C	29	P	No	
13		5E	6	F	N/A	
14		7E	7	P	N/A	
15	5	3C	25	P	No	
16	5	3C	24	P	No	
17	11	3C	25	P	No	
18	11	3 CAIII	24	P	No	Potential Bedrock ranging from 28" to 35"
19	10	3C	29	P	No	
20	10	3C	25	P	No	
21		3C	22	P	Yes	
22	9	3C	30	P	No	
23	9	4B	45	P	No	Limiting Factor Pit Depth
24		3C	21	P	Yes	
25		3C	22	P	Yes	
26	8	3C	30	P	No	
27	8	3C	25	P	No	
28	7	3C	28	P	No	
29	7	3C	25	P	No	
30	6	3C	24	P	No	
31		3C	22	P	Yes	
32	6	3C	24	P	No	
33		3C	27	P	No	
34		3C	30	P	No	



TOWN OF KITTERY, PLANNING BOARD

CHAIR	DATE
OWNER/APPLICANT	DATE
OWNER/APPLICANT	DATE





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NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

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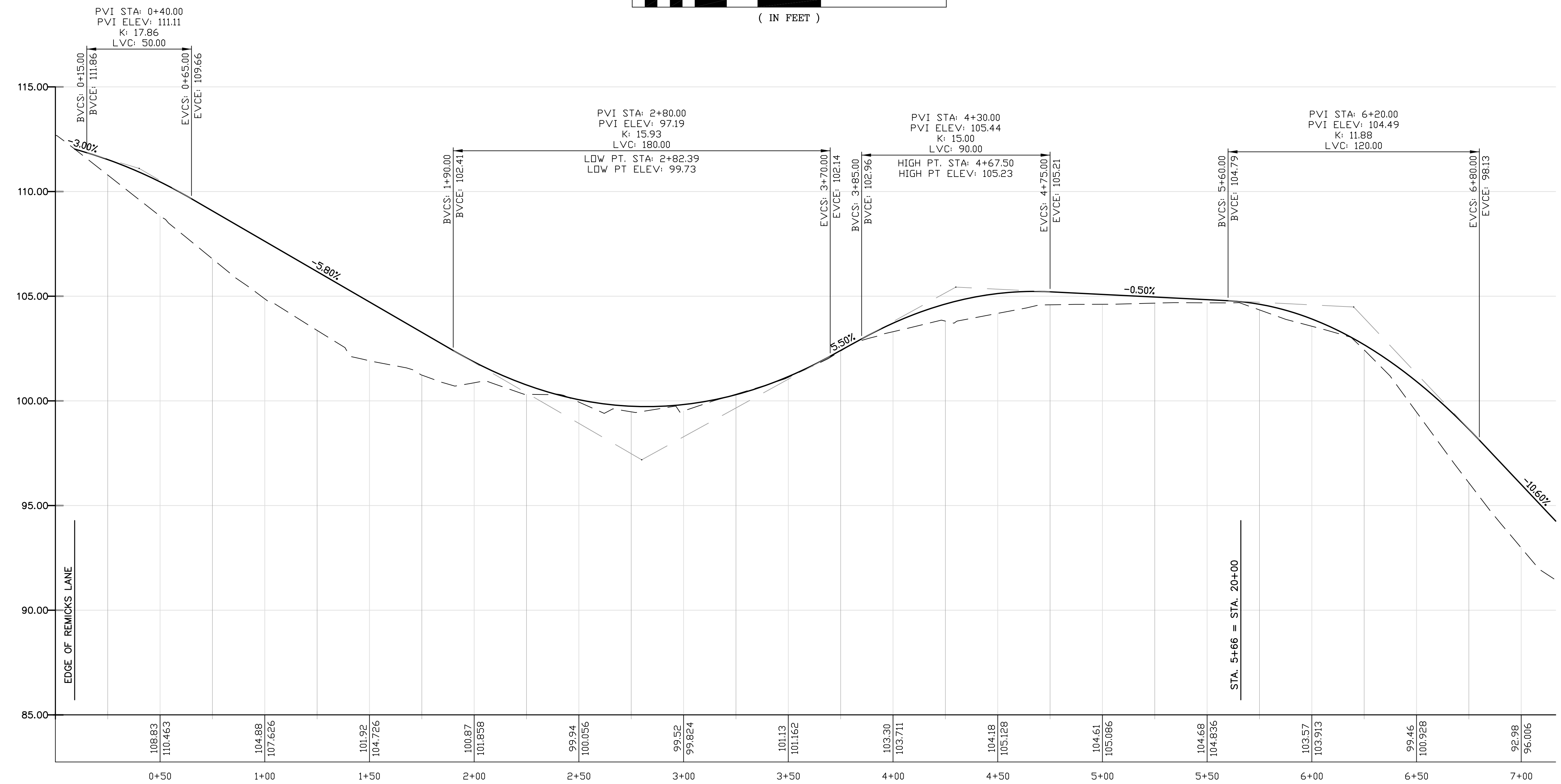
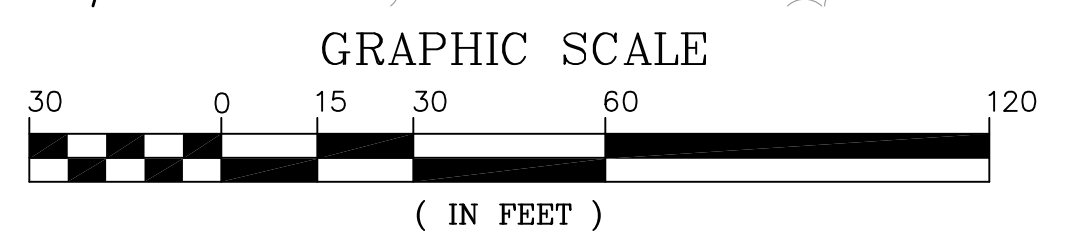
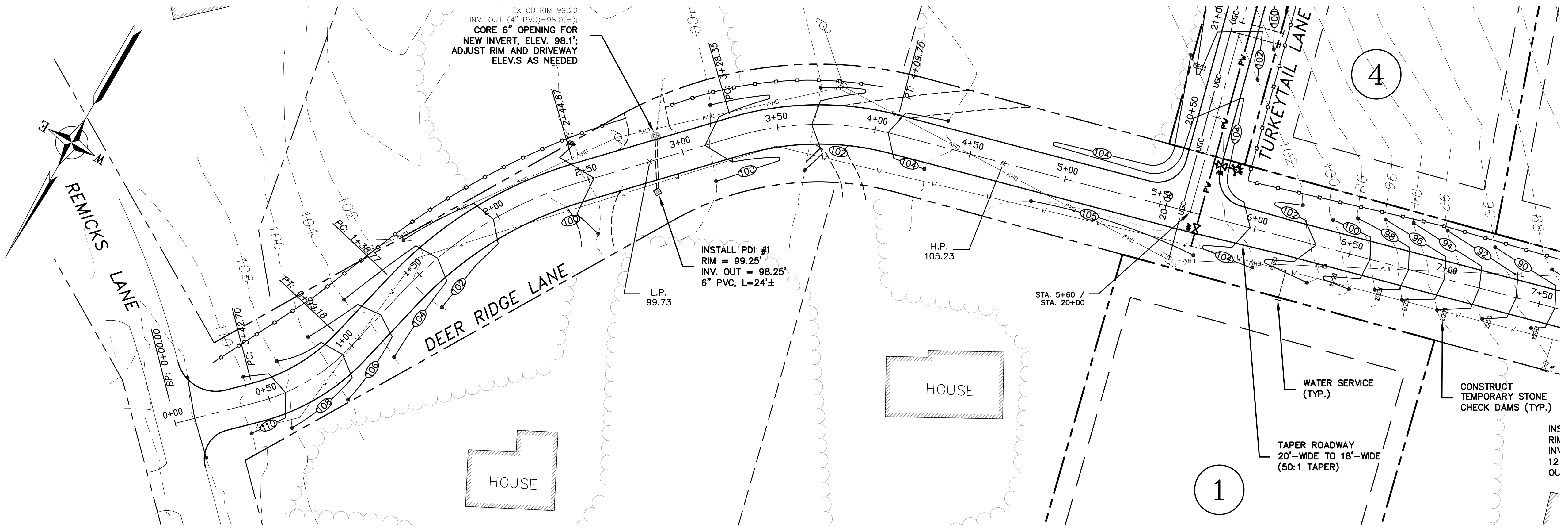
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OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
REV. TRUST**  
c/o MARY THRON, TRUSTEE  
P.O. BOX 96  
KITTEERY POINT, MAINE 03905

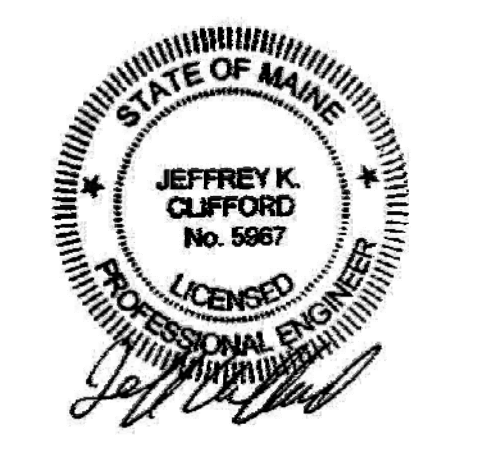
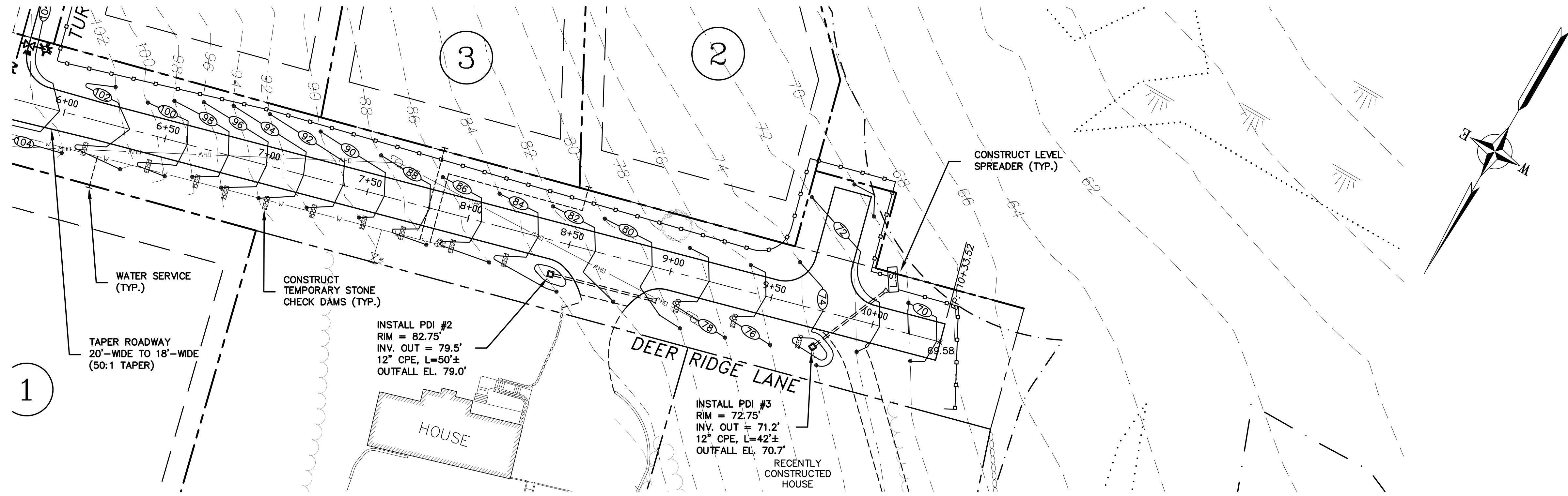
PROJECT:  
ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTEERY, MAINE

TITLE:  
**DEER RIDGE LANE  
PLAN & PROFILE**

SHEET NUMBER:  
**C - 2.0**



HORIZONTAL SCALE: 1" = 30'  
VERTICAL SCALE: 1" = 3'



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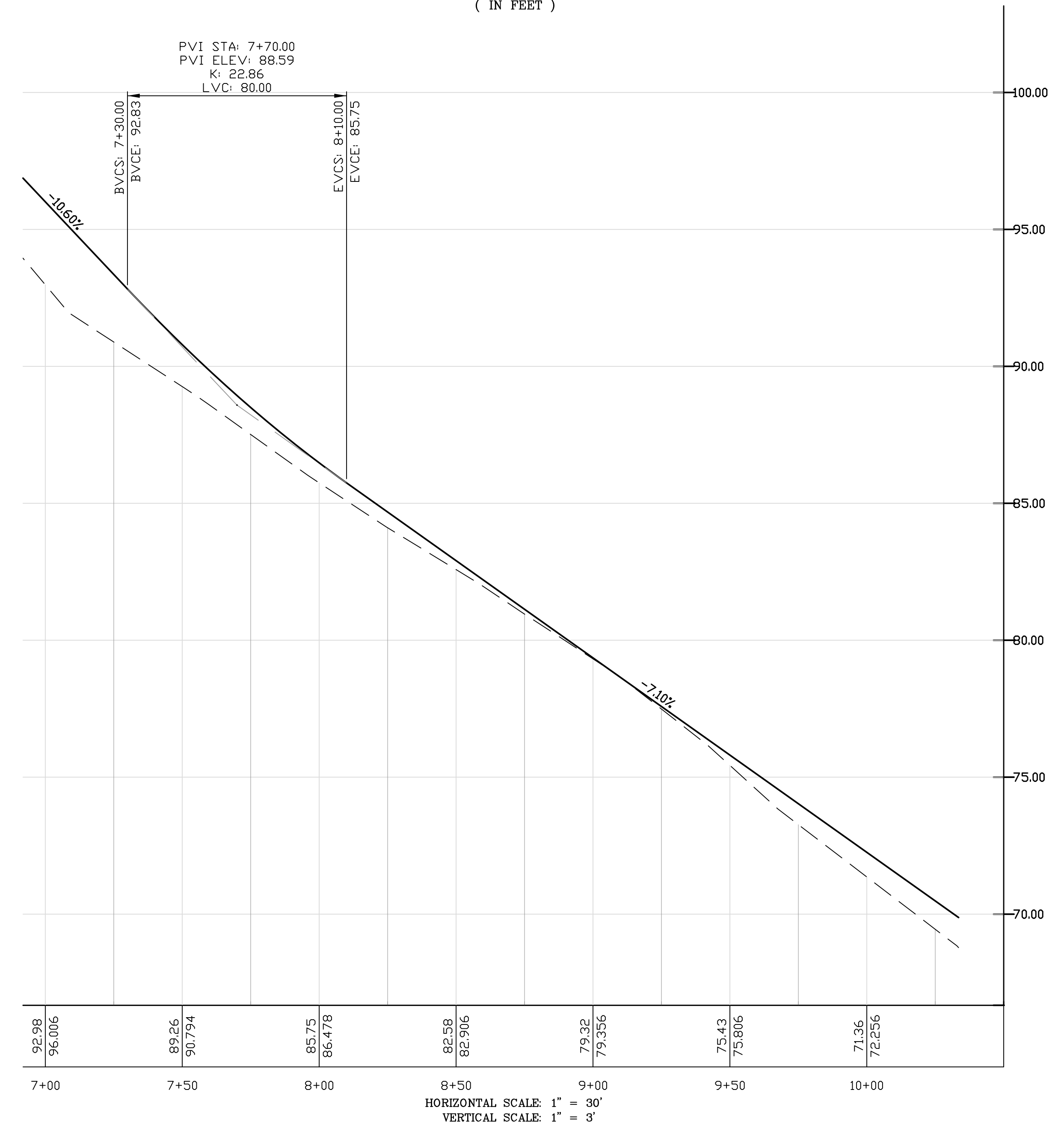
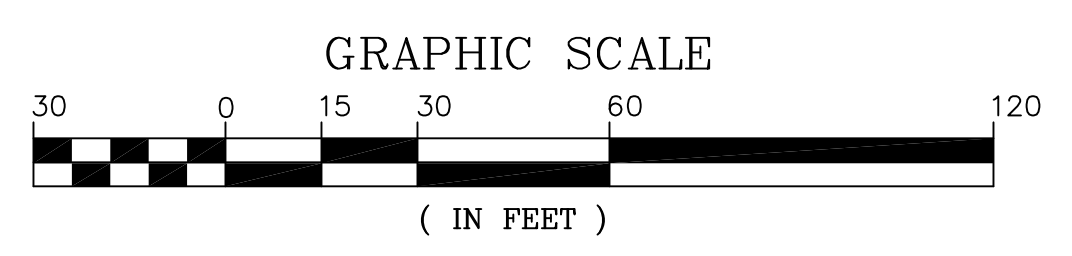
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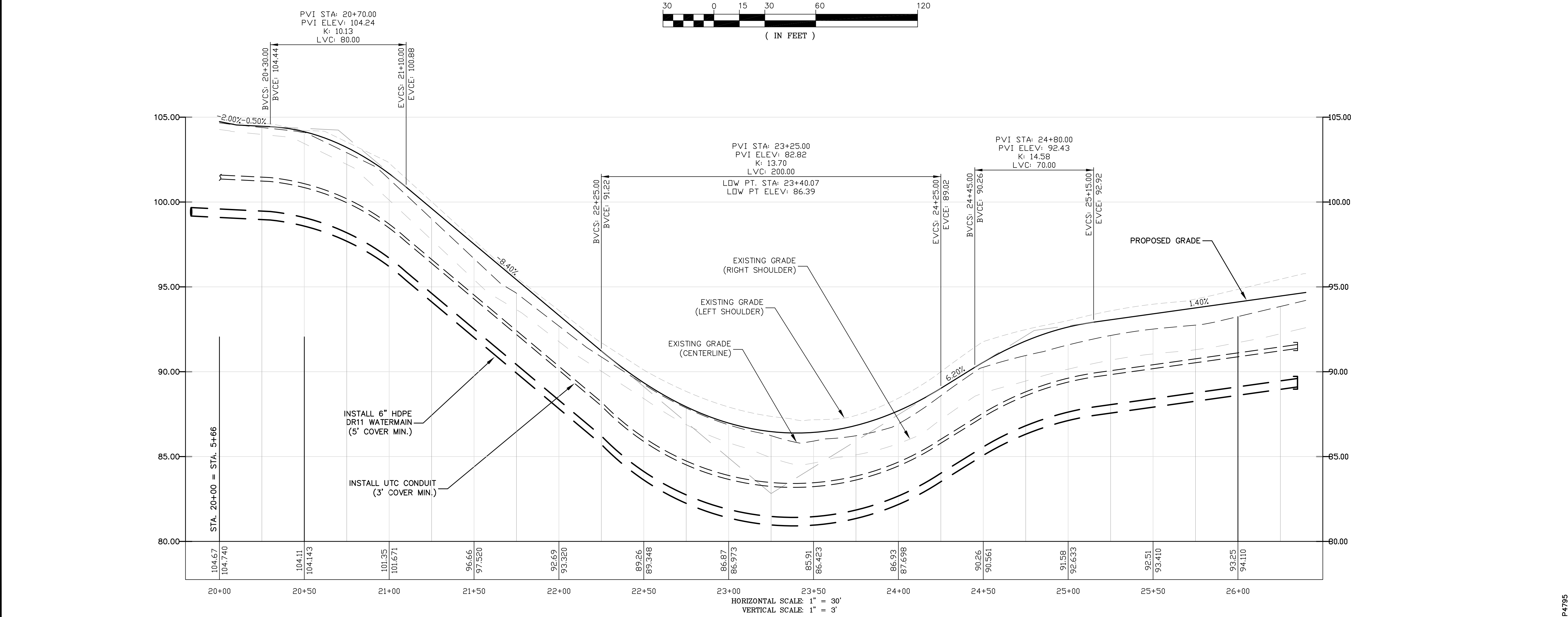
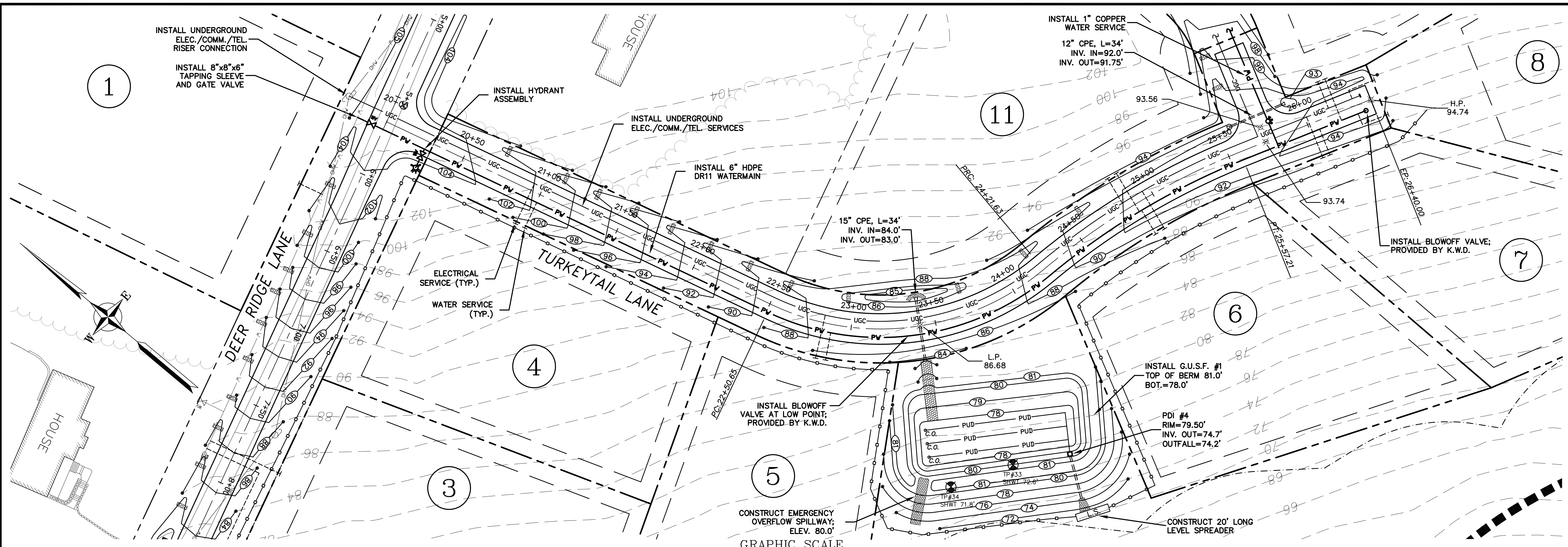
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PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:  
**DEER RIDGE LANE  
PLAN & PROFILE**

SHEET NUMBER:  
**C - 21**





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SCALE: **1" = 30"**

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 REV. TRUST  
 c/o MARY THRON, TRUSTEE**  
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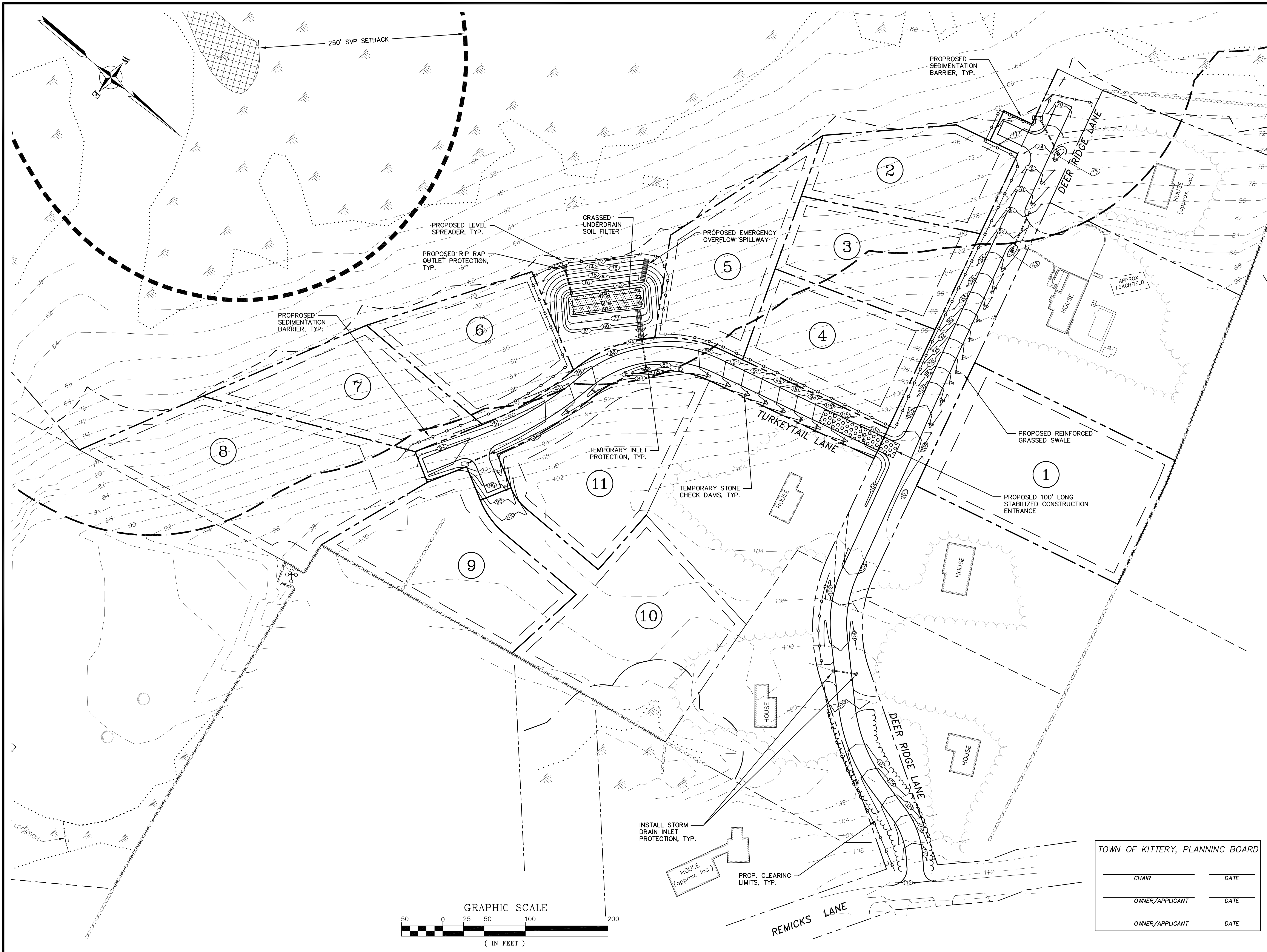
PROJECT:  
**ANDREWS SUBDIVISION  
 MAP 60 LOT 10  
 KITTERY, MAINE**

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TITLE:  
**TURKEYTAIL LANE  
 PLAN & PROFILE**

---

SHEET NUMBER:  
**C - 2.2**



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NO.	DESCRIPTION	BY	DATE
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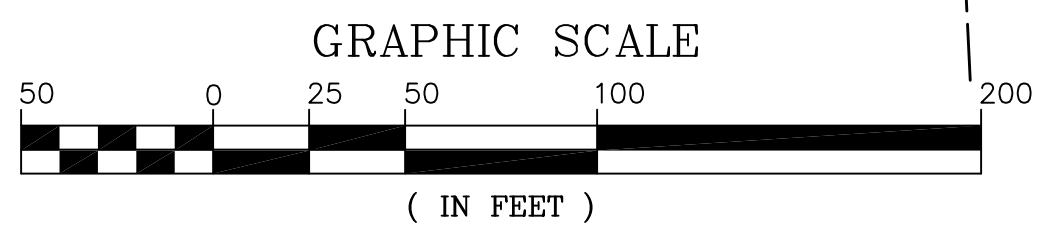
SCALE: **1" = 50"**

OWNERS/APPLICANT:  
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REV. TRUST  
c/o MARY THRON, TRUSTEE**  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
**ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE**

TITLE:  
**STORMWATER  
MANAGEMENT  
PLAN**

SHEET NUMBER:  
**C - 3.0**



TOWN OF KITTERY, PLANNING BOARD	
CHAIR	DATE
OWNER/APPLICANT	DATE
OWNER/APPLICANT	DATE

**PROJECT NAME AND LOCATION**

Andrews Subdivision  
Map 60 Lot 10  
Kittery, Maine  
LATITUDE: 043° 08' 02.8" N  
LONGITUDE: 070° 43' 47.0" W

**DESCRIPTION**

The project consists of a new 11-lot single family subdivision and one (1) common open space lot. The project will be completed in a single phase.

**DISTURBED AREA**

The total area to be disturbed is approximately 2.4 acres (not including lot development). Each lot will be sold to and developed by others.

**SEQUENCE OF MAJOR ACTIVITIES**

- 1. Contractor shall prepare an Erosion and Sediment Control Plan (E.S.C.). Prior to construction, the Contractor and Owner shall each file a Notice of Intent (N.O.I.) to the Maine Department of Environmental Protection (MDEP).
- 2. Install temporary erosion control measures, including silt fences and stabilized construction entrances.
- 3. Upon completion of Items 1 through 2, clear and grub wooded areas, strip and stockpile loam. Stockpiles shall be temporarily stabilized with hay bales mulch and surrounded by a hay bale or silt fence barrier until material is removed and final grading is complete.
- 4. Construct ditches and stabilize prior to them.
- 5. Construct drainage structures, swales & road base materials.
- 6. Ditches and swales with grades over 5% shall have sides and bottom reinforced with excelsior matting.
- 7. Grade and shape lots to finish elevations.
- 8. Stabilize disturbed areas.
- 9. When all construction activity is complete and site is stabilized, remove all hay bales, storm check dams, silt fences and sediment that has been trapped by these devices.
- 10. File a Notice of Termination (N.O.T.) with MDEP.

**NAME OF RECEIVING WATER**

Unnamed wetlands complex to Cutts Ridge Brook and York River.

**TEMPORARY EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES**

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "Maine Erosion and Sediment Control BMPs, 2003" published by the Maine Department of Environmental Protection.

As dictated in the sequence of Major Activities, the hay bales and silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and hay bale barriers and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible channels where possible. Sheet runoff from the site will be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown.

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 desired vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rock work of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion sedimentation measures shall be maintained until permanent vegetation is established.

**INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES**

**A. GENERAL**

These are the general inspection and maintenance practices that will be used to implement the plan.

- 1. The smallest practical portion of the site will be denuded at one time. All disturbed areas must be stabilized by temporary measures within 5 days of initial disturbance and stabilized by permanent measures immediately after final grading.
- 2. All control measures will be inspected at least once each week and following any storm event of 0.50 inches or greater. A maintenance inspection report will be made after each inspection and made available to the Town officials.
- 3. The Contractor's site superintendent will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.
- 4. Built up sediment will be removed from silt fence, stone check dams, or hay bale barriers when it has reached one third the height of the fence, check dam, or bale, or when "bulges" occur.
- 5. All diversion dikes will be inspected and any breaches promptly repaired.
- 6. Temporary seeding and planting will be inspected for bare spots, washouts, and unhealthy growth.
- 7. All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours and completed within 72 hours.

**B. MULCHING**

**Considerations**

- \* In sensitive areas (within 100 ft of streams, wetlands and in lake watersheds) temporary mulch shall be applied within 7 days of exposing soil or prior to any storm event.
- \* Areas, which have been temporarily or permanently seeded, shall be mulched immediately following seeding.
- \* Areas which cannot be seeded within the growing season shall be mulched for over-winter protection and the area should be seeded at the beginning of the growing season.
- \* Mulch anchoring should be used on slopes greater than 5% in late fall (past September 15), and over-winter (September 15 - April 15).

**Types of Mulch**

Hay or Straw Mulches  
Organic mulches, including hay and straw, shall be air-dried, free of undesirable seeds and coarse materials. Application rate shall be 2 bales (70-90 pounds) per 1000 SQ FT or 1.5 to 2 tons (90-100 bales) per acre to cover 75 to 90 % of the ground surface. Hay mulch subject to wind blowing shall be anchored via: netting; peg and twine or tracking.

Erosion Control Mix  
Erosion control mix shall consist primarily of organic material and shall include any of the following: shredded bark, stump grindings, composted or other acceptable products based on a similar raw source. Wood or bark chips, ground construction debris or reprocessed wood products shall not be acceptable as the organic component of the mix. It can be used as a stand-alone reinforcement:

- \* On slopes 2:1 horizontal to 1:1 vertical or less.
  - \* On frozen ground or forested areas.
  - \* At the edge of gravel parking areas and areas under construction.
- Other reinforcement BMPs (i.e. riprap) should be used:
- \* On slopes with groundwater seepage;
  - \* At low points with concentrated flows and in gullies;
  - \* At the bottom of steep perimeter slopes exceeding 100 feet in length;
  - \* Below culvert outlet aprons; and
  - \* Around catch basins and closed storm systems.

Composition  
Erosion control mix shall contain a well-graded mixture of particle sizes and may contain rocks less than 4" in diameter. Erosion control mix must be free of refuse, physical contaminants, and material toxic to plant growth. The mix composition shall meet the following standards:  
\* The organic matter content shall be between 80 and 100%, dry weight basis.  
\* Particle size by weight shall be 100 % passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen.  
\* The organic portion needs to be fibrous and elongated.  
\* Large portions of silts, clays or fine sands are not acceptable in the mix.

**Installation**

- \* Erosion control mix shall not be used on slopes steeper than 2:1.
- \* On slopes of 3:1 or less: 2 inches plus an additional 1/2 inch per 20 feet of slope up to 100 feet.
- \* On slopes between 3:1 and 2:1, 4 inch plus an additional 1/2 inch per 20 feet of slope up to 100 feet.  
The thickness of the mulch at the bottom of the slope needs to be:  
< 3:1 slope slopes between 3:1 and 2:1  
< 20' of slope 2.0" 4.0"  
< 60' of slope 3.0" 5.0"  
< 100' of slope 4.0" 6.0"
- \* It shall be placed evenly and must provide 100 % soil coverage, with the soil totally invisible.

Any required repairs shall be made immediately, with additional erosion control mix placed on top of the mulch to reach the recommended thickness. When the mix is decomposed, clogged with sediment, eroded or ineffective, it shall be replaced or repaired. Erosion control mix mulch shall be left in place. If the mulch needs to be removed spread it out into the landscape.

**Maintenance**

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets shall be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Inspections shall take place until grasses are firmly established (95% soil surface covered with grass). Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repairs as needed.

**C. TEMPORARY VEGETATION**

**Considerations**

- \* Proper seedbed preparation and the use of quality seed are important in this practice just as in permanent seeding. Failure to carefully follow sound agronomic recommendations will often result in an inadequate stand of vegetation that provides little or no erosion control.
- \* Nutrients and pesticides used to establish and maintain a vegetation cover shall be managed to protect the surface and ground water quality.
- \* Temporary seeding shall be used extensively in sensitive areas (ponds and lake watersheds, steep slopes, streambanks, etc.).
- \* Late fall seeding may fail and cause water quality deterioration in spring runoff events, thus other measures such as mulching shall be implemented.

**Specifications**

Seedbed Preparation  
Apply limestone and fertilizer according to soil test recommendations. If soil testing is not feasible on small or variable sites, or where timing is critical, fertilizer may be applied at the rate of 600 pounds per acre or 13.8 pounds per 1,000 square feet of 10-10-10 (N-P2O5-K2O) or equivalent. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of 3 tons per acre (138 lb. per 1,000 square feet).

**Seeding**

- \* Select seed from recommendations in enclosed table.
- \* Where the soil has been compacted by construction operations, loosen soil to a depth of 2 inches before applying fertilizer, lime and seed.
- \* Apply seed uniformly by hand, cyclone seeder, drill, cultipacker type seeder or hydroseeder (slurry including seed and fertilizer). Hydroseeding that includes mulch may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

**Mulching**

Apply mulch over seeded area according to the MULCHING BMP.

**Maintenance**

Temporary seeding shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

Seed	Temporary Seeding Rates and Dates Lb./Ac	Seeding Depth	Recommended Seeding Dates	Remarks
Winter Rye	112 (2.0 bu)	1-1.5 in	8/15-10/1	Good for fall seeding. Select a hardy species, such as Arctostaphylos Rye.
Oats	80 (2.5 bu)	1-1.5 in	4/1-7/1 8/15-9/15	Best for spring seeding. Early fall seeding will die when winter weather moved in, but mulch will provide protection.
Annual Ryegrass	40	.25 in	4/1-7/1	Grows quickly but is of short duration. Use where appearance is important. With mulch, seeding may be done throughout growing season.
Sudangrass	40 (1.0 bu)	.5-1 in	5/15-8/15	Good growth during hot summer periods.
Perennial	40 (2.0 bu)	.25 in	8/15-9/15	Good cover, longer lasting than Annual Ryegrass. Mulching will allow seeding throughout growing season.
Temporary mulch with or without dormant seeding			10/1-4/1	Refer to TEMPORARY MULCHING BMP and/or PERMANENT VEGETATION BMP.

**D. FILTERS**

**Silt Fences**

- a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation **	VTM-52	Extra Strength - 50 lb/in in (min.) Standard Strength - 30 lb/in in (min.)
Flow Rate	VTM-51	0.3 gal/sf/min
** Requirements reduced by 50% after 6 months on installations.		

- Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.
- b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).
- c. A trench shall be excavated approximately six (6) inches wide and six (8) inches deep along the line of posts and upslope from the barrier.
- d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.
- e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.
- f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated.
- g. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.
- g. The trench shall be backfilled and the soil compacted over the filter fabric.
- h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas have been permanently stabilized.

**Straw/Hay Bales**

- \* Bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.
- \* All bales shall be either wire-bound or string-tied. Bales shall be installed so that bindings are oriented around the sides, parallel to the ground surface to prevent deterioration of the bindings.
- \* The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches.
- \* After the bales are staked and chinked, the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be build up to 4 inches against the uphill side of the barrier.
- \* At least two stakes or rebars driven through the bale shall securely anchor each bale. The first stake in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or re-bars shall be driven deep enough into the ground to securely anchor the bales.
- \* The gaps between bales shall be chinked (filled by wedging) with hay to prevent water from escaping between the bales.

**Installation**

- \* Sediment barriers shall be installed prior to any soil disturbance of the contributing drainage upslope of them.
- \* The barrier must be placed along a relatively level contour.

**Maintenance**

- \* Hay bale barriers, silt fences and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired immediately if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam.
- \* Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected useful life and the barrier still is necessary, the fabric shall be replaced promptly.
- \* Sediment deposits should be removed when deposits reach approximately one third (1/3) the height of the barrier.
- \* Filter berms should be reshaped as needed.
- \* Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed or removed to conform to the existing grade, prepared and seeded.
- \* Additional stone may have to be added to the construction stabilized entrance, rock barriers, stone lined swales, etc., periodically to maintain proper function of the erosion control structure.

**E. PERMANENT SEEDING**

- \* Seeding shall be performed in accordance with USDA, Soil Conservation Service guidelines.
- \* Bedding - stones larger than 1 1/8", trash, roots, and other debris that will interfere with seeding and future maintenance of the area shall be removed. Where feasible, the soil should be tilled to a depth of 4" to prepare a seedbed and mix fertilizer into the soil.
- \* Fertilizer - lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer shall be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:  
Limestone @ 3 tons per acre 10-20-20 and fertilizer (N-P2O5-K2O1) @ 800 lbs. per acre
- \* Seed Mixture:

Rate:	Type	LBS. per Acre	LBS per 1,000 sf	Use
	Kentucky Bluegrass	20	0.46	
	Creeping Red Fescue	20	0.46	Lawn Areas /
	Perennial Ryegrass	5	0.11	Loam Areas
	Total	45	1.03	(non-slope work)

Tall Fescue	20	0.46	Drainage Swales
Creeping Red Fescue	20	0.46	All Slope Work
Redtop	2	0.05	(3 : 1 or steeper)
Total	42	0.97	

- \* Sodding - sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the Maine Erosion and Sediment Control BMPs. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt) etc.

**F. OVER WINTER STABILIZATION**

- a. If a construction site is not stabilized with pavement, a road gravel base, 75 % mature vegetation cover or riprap by November 15 then the site shall be protected with over-winter stabilization. An area considered open is any area not stabilized with pavement; vegetation, mulching, erosion control mix, erosion control mats, riprap or gravel base on a road. The winter construction period is from November 1 through April 15.
- b. Winter excavation and earthwork shall be completed such that no more than 1 acre of the site is without stabilization at any one time. Limit the exposed area to those areas in which work is to occur during the following 15 days and that can be mulched in one day prior to any snow event.
- c. During winter construction, a double row of sediment barriers (i.e. silt fence backed with hay bales or erosion control mix) shall be placed between any natural resource and the disturbed area.
- d. During frozen conditions, sediment barriers shall consist of erosion control mix berms or any other recognized sediment barriers.
- e. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix shall be applied with a minimum 4 inch thickness. Mulch shall not be spread on top of snow.
- f. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, asphalt emulsion chemical, tracking or wood cellulose fiber. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.
- g. Stockpiles of soil or subsoil will be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix.
- h. Seeding - Between the dates of October 15 and April 1st, loam or seed will not be required. If the date is after November 1st, and if the exposed area has been loamed, final graded with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched. If dormant seeding is used for the site, all disturbed areas shall receive 4' of loam and seed at an application rate of 5lbs/1000 s.f. All areas seeded during the winter will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75 % catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.
- i. All stone-lined ditches and channels shall be constructed and stabilized by November 15. All grass-lined ditches and channels shall be constructed and stabilized by September 1. If a ditch or channel is not grass-lined by September 1, then one of the following actions must be taken to stabilize the ditch for late fall and winter.  
\* **Install a sod lining in the ditch:** A ditch must be lined with properly installed sod by October 1.  
\* **Install a stone lining in the ditch:** A ditch must be lined with stone riprap by November 15.
- j. All stone-covered slopes must be constructed and stabilized by November 15. And all slopes to be vegetated must be seeded and mulched by September 1. If a slope to be vegetated is not stabilized by September 1, then one of the following actions must be taken to stabilize the slope for late fall and winter.  
\* **Stabilize the soil with temporary vegetation:** By October 1, seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1, then mulch the area for over-winter protection as described below.  
\* **Stabilize the soil with erosion control mix:** Erosion control mix shall be properly installed by November 15. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.  
\* **Stabilize the soil with stone riprap:** Place a layer of stone riprap on the slope by November 15.  
\* **By September 15, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched.** If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter.  
\* **Stabilize the soil with temporary vegetation:** By November 1, seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1000 square feet, and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1, then mulch the area for over-winter protection as described below.  
\* **Stabilize the soil with sod:** Stabilize the disturbed soil with properly installed sod by October 1. Proper installation includes pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.  
\* **Stabilize the soil with mulch:** By November 15, mulch the disturbed soil with hay or straw at a rate of at least 150 pounds per 1000 square feet on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

**HOUSEKEEPING**

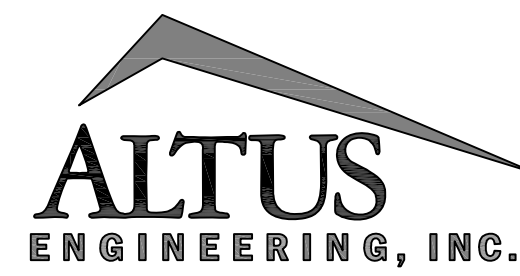
- 1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials stored on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

**NOTE: Any spill or release of toxic or hazardous substances must be reported to the Department.**

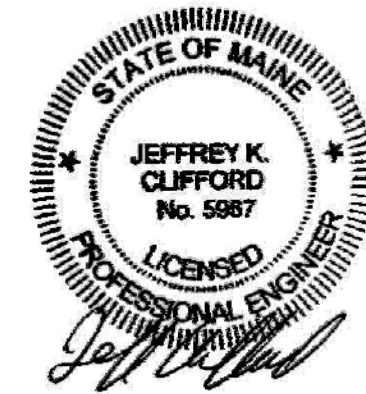
- 2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.
- 3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.
- 4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.
- 5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that collect water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.
- 6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:

- (a) Discharges from firefighting activity;
- (b) Fire hydrant flushings;
- (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
- (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
- (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
- (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
- (g) Uncontaminated air conditioning or compressor condensate;
- (h) Uncontaminated groundwater or spring water;
- (i) Foundation or footer drain-water where flows are not contaminated;
- (j) Uncontaminated excavation dewatering;
- (k) Potable water sources including waterline flushings; and
- (l) Landscape irrigation.

- 7. **Unauthorized non-stormwater discharges:** MDEP's approval does not authorize a discharge that is mixed with a source of nonstormwater, other than those discharges in compliance with item in section 6. Specifically, MDEP's approval does not authorize discharges of the following:
  - (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
  - (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
  - (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
  - (d) Toxic or hazardous substances from a spill or other release.



133 COURT STREET PORTSMOUTH, NH 03801  
(603) 433-2335 www.ALTUS-ENG.com



**THIS DRAWING HAS NOT BEEN RELEASED FOR CONSTRUCTION**

**ISSUED FOR:**

**PRELIMINARY APPROVAL**

**ISSUE DATE:**

**OCTOBER 18, 2018**

**REVISIONS**

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

**DRAWN BY:** RMB

**APPROVED BY:** JKJ

**DRAWING FILE:** 4795SUB.DWG

**SCALE:** N.T.S.

**OWNERS/APPLICANT:**

**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON, TRUSTEE  
P.O. BOX 96  
KITTERY POINT, MAINE 03905**

**PROJECT:**

**ANDREWS SUBDIVISION**

**MAP 60 LOT 10**

**KITTERY, MAINE**

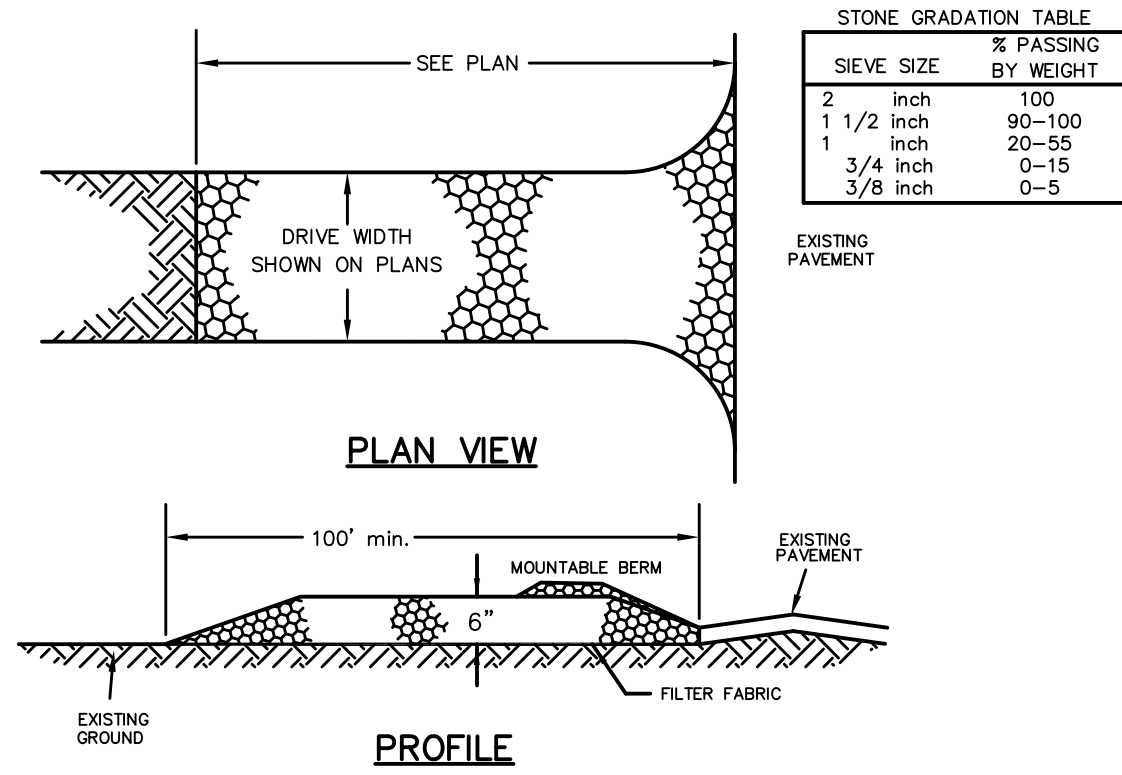
**TITLE:**

**EROSION CONTROL NOTES**

**SHEET NUMBER:**

**C-4.0**

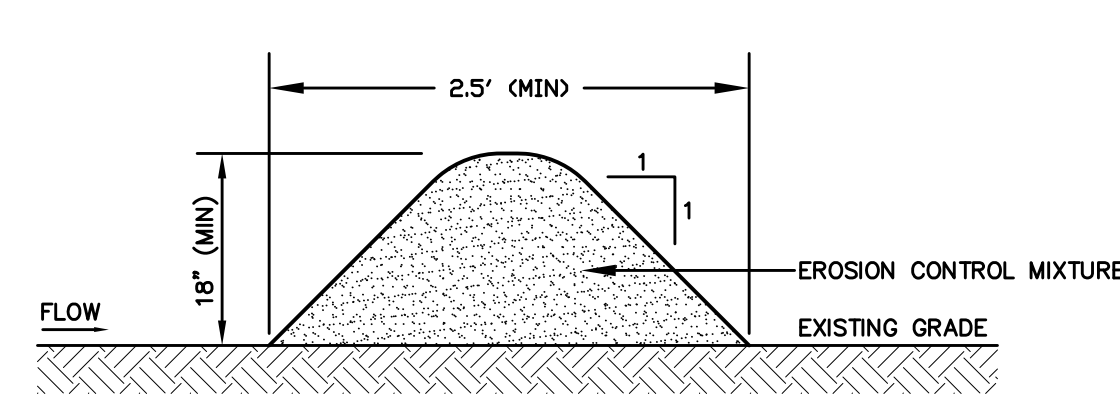
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**CONSTRUCTION SPECIFICATIONS**

1. **STONE SIZE** - SEE GRADATION TABLE
2. **LENGTH** - DETAILED ON PLANS (75 FOOT MINIMUM).
3. **THICKNESS** - SIX (6) INCHES (MINIMUM).
4. **WIDTH** - FULL DRIVE WIDTH
5. **FILTER FABRIC** - MIRAFI 600X OR APPROVED EQUAL.
6. **SURFACE WATER CONTROL** - ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION EXIST SHALL BE PIPED BENEATH THE EXIST. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. **MAINTENANCE** - THE EXIST SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. **WHEELS** SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

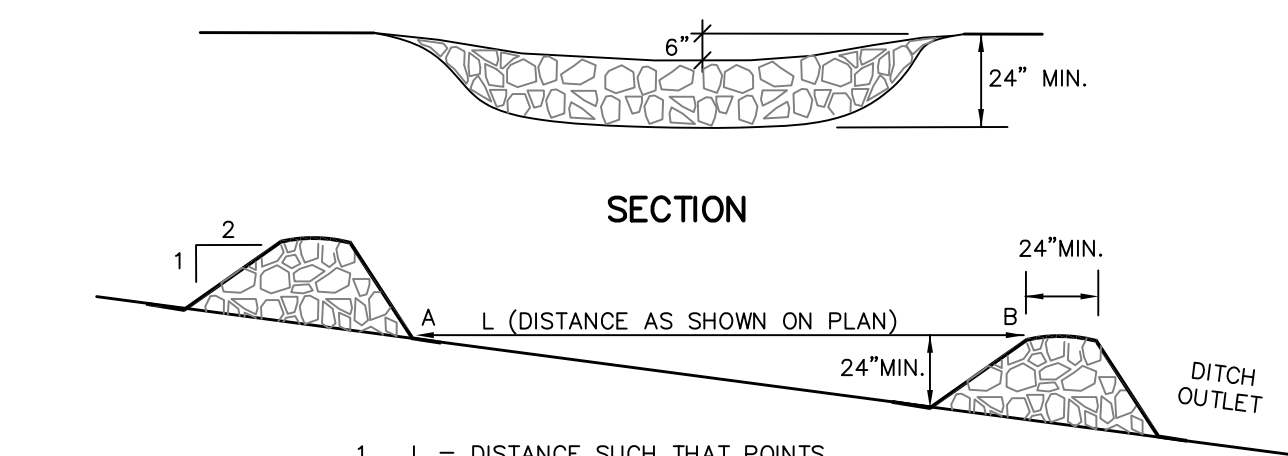
**STABILIZED CONSTRUCTION EXIT**  
NOT TO SCALE



**NOTES**

1. ORGANIC FILTER BERMS MAY BE UTILIZED IN LIEU OF SILT FENCE OR OTHER SEDIMENT BARRIERS.
2. THE EROSION CONTROL MIXTURE USED IN FILTER BERMS SHALL BE A WELL-GRADED MIX OF PARTICLE SIZES THAT MAY CONTAIN ROCKS LESS THAN 4" IN DIAMETER, STUMP GRINDINGS, SHREDDED OR COMPOSTED BARK, AND/OR ACCEPTABLE MANUFACTURED PRODUCTS AND SHALL BE FREE OF REFUSE, PHYSICAL CONTAMINANTS AND MATERIAL TOXIC TO PLANT GROWTH. EROSION CONTROL MIXTURE SHALL MEET THE FOLLOWING STANDARDS:
  - a) THE ORGANIC CONTENT SHALL BE 80-100% OF DRY WEIGHT.
  - b) PARTICLE SIZE BY WEIGHT SHALL BE 100% PASSING A 6" SCREEN, AND 70-85% PASSING A 0.75" SCREEN.
  - c) THE ORGANIC PORTION SHALL BE FIBROUS AND ELONGATED.
  - d) LARGE PORTIONS OF SILTS, CLAYS, OR FINE SANDS SHALL NOT BE INCLUDED IN THE MIXTURE.
  - e) SOLUBLE SALTS CONTENT SHALL BE >4.0mmhos/cm.
  - f) THE PH SHALL BE BETWEEN 5.0 AND 8.0.
3. ORGANIC FILTER BERMS SHALL BE INSTALLED ALONG A RELATIVELY LEVEL CONTOUR. IT MAY BE NECESSARY TO CUT TALL GRASSES OR WOODY VEGETATION TO AVOID CREATING VOIDS AND BRIDGES THAT WOULD ENABLE FINES TO WASH UNDER THE BERM.
4. ON SLOPES LESS THAN 5% OR AT THE BOTTOM OF SLOPES NO STEEPER THAN 3:1 AND UP TO 20' LONG, THE BERM SHALL BE A MINIMUM OF 12" HIGH (AS MEASURED ON THE UPHILL SIDE) AND A MINIMUM OF 36" WIDE. ON LONGER AND/OR STEEPER SLOPES, THE BERM SHALL BE TALLER AND WIDER TO ACCOMMODATE THE POTENTIAL FOR ADDITIONAL RUNOFF (MAXIMUM HEIGHT SHALL NOT EXCEED 2').
5. FROZEN GROUND, OUTCROPS OF BEDROCK, AND VERY ROOTED FORESTED AREAS PRESENT THE MOST PRACTICAL AND EFFECTIVE LOCATIONS FOR ORGANIC FILTER BERMS. OTHER BMP'S SHOULD BE USED AT LOW POINTS OF CONCENTRATED RUNOFF, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP PERIMETER SLOPES THAT HAVE A LARGE CONTRIBUTING AREA.
6. SEDIMENT SHALL BE REMOVED FROM BEHIND THE FILTER BERMS WHEN IT HAS ACCUMULATED TO ONE HALF THE ORIGINAL HEIGHT OF THE BERM.
7. ORGANIC FILTER BERMS MAY BE LEFT IN PLACE ONCE THE SITE IS STABILIZED PROVIDED ANY SEDIMENT DEPOSITS TRAPPED BY THEM ARE REMOVED AND DISPOSED OF PROPERLY.

**ORGANIC FILTER BERM**  
NOT TO SCALE



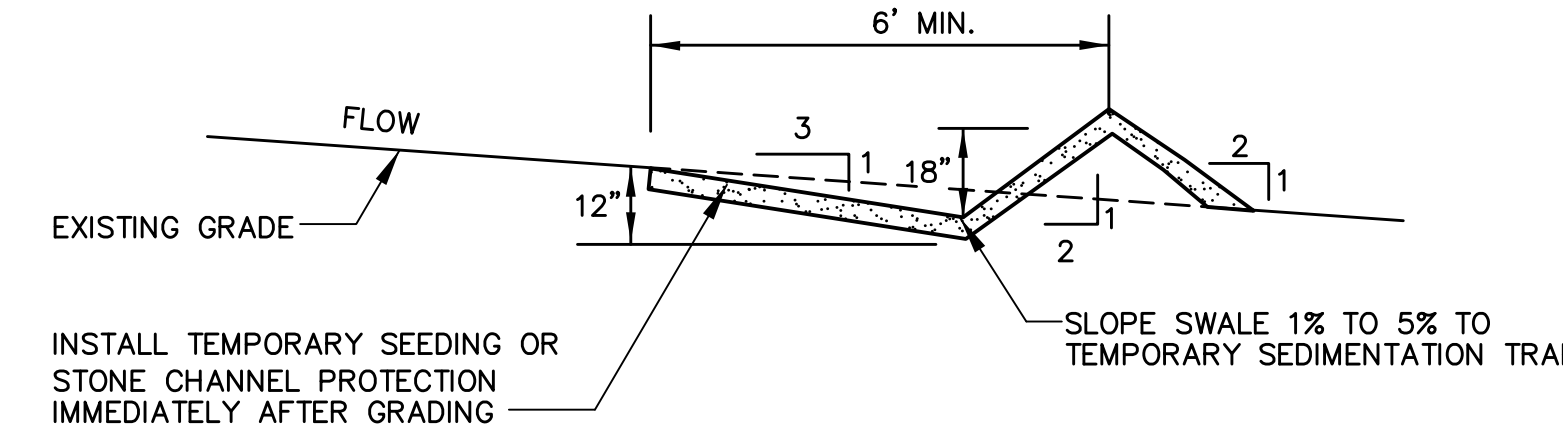
1. L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION
2. CHECK DAM SHALL BE CONSTRUCTED OF 2" TO 3" STONE WITH COMPLETE COVERAGE OF DITCH OR SWALE TO INSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

**STONE CHECK DAM DETAIL**  
NOT TO SCALE

**TEMPORARY EROSION CONTROL BMP's**

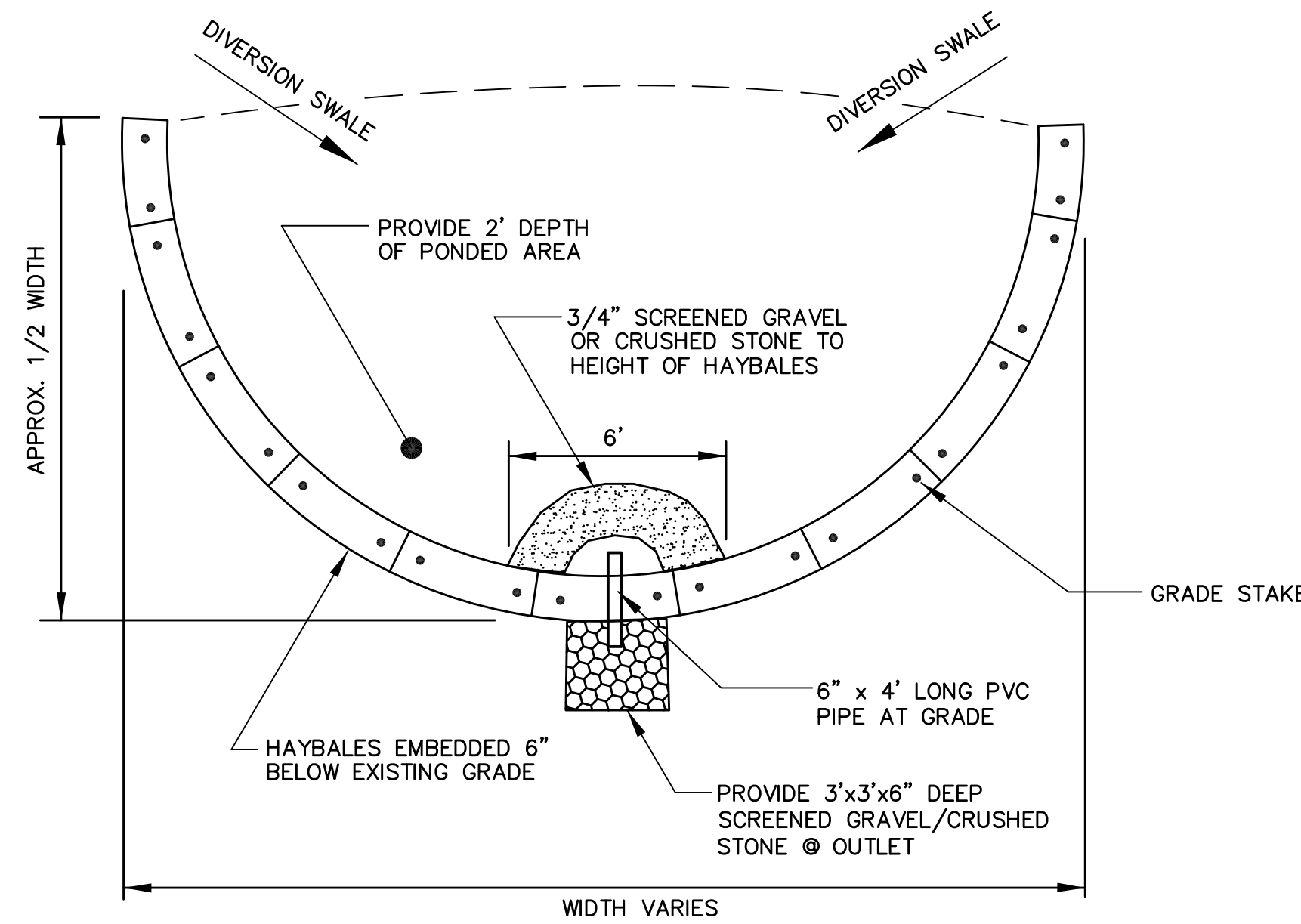
(USE TO CONTROL SEDIMENT AND EROSION AT TEMPORARY CONSTRUCTION LAYDOWN AND STOCKPILE AREAS, OR AS NEEDED TO COMPLY WITH MAINE CONSTRUCTION GENERAL PERMIT)

SWALE SHALL BE FREE OF IRREGULARITIES WHICH MAY CAUSE PONDING. COMPACT FILLS AS NECESSARY TO STABILIZE MATERIAL.

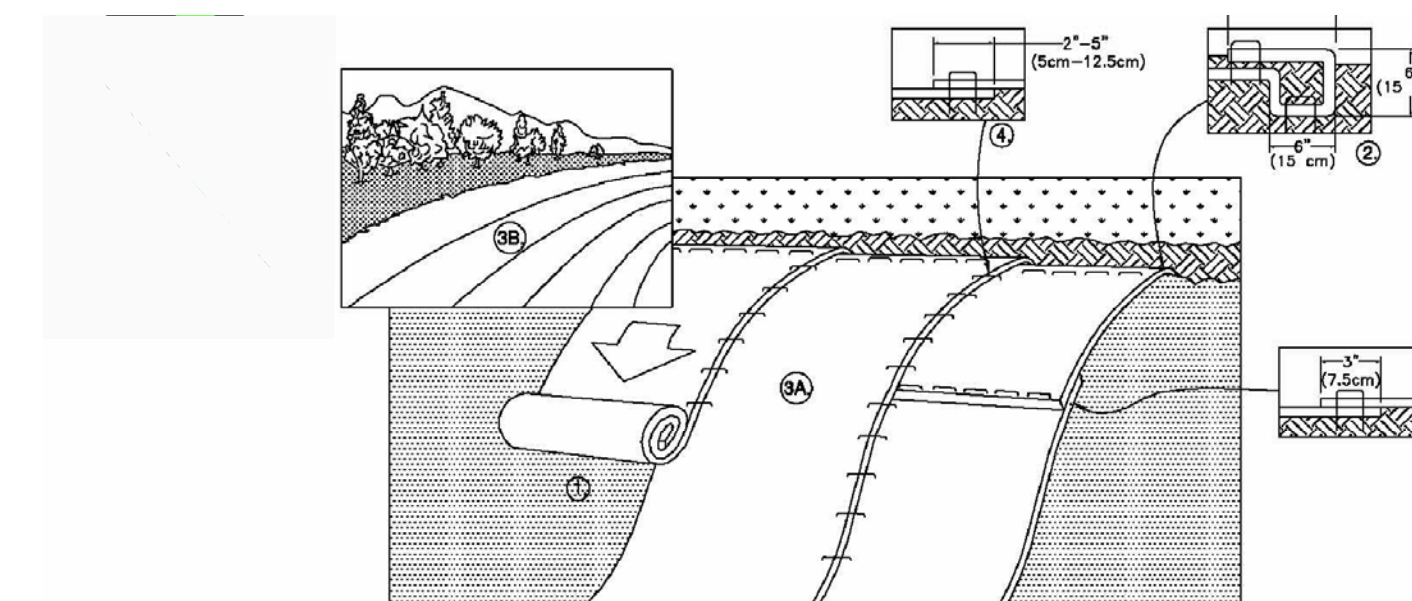


INSTALL TEMPORARY SEEDING OR STONE CHANNEL PROTECTION IMMEDIATELY AFTER GRADING

**TEMPORARY DIVERSION SWALE**  
NOT TO SCALE

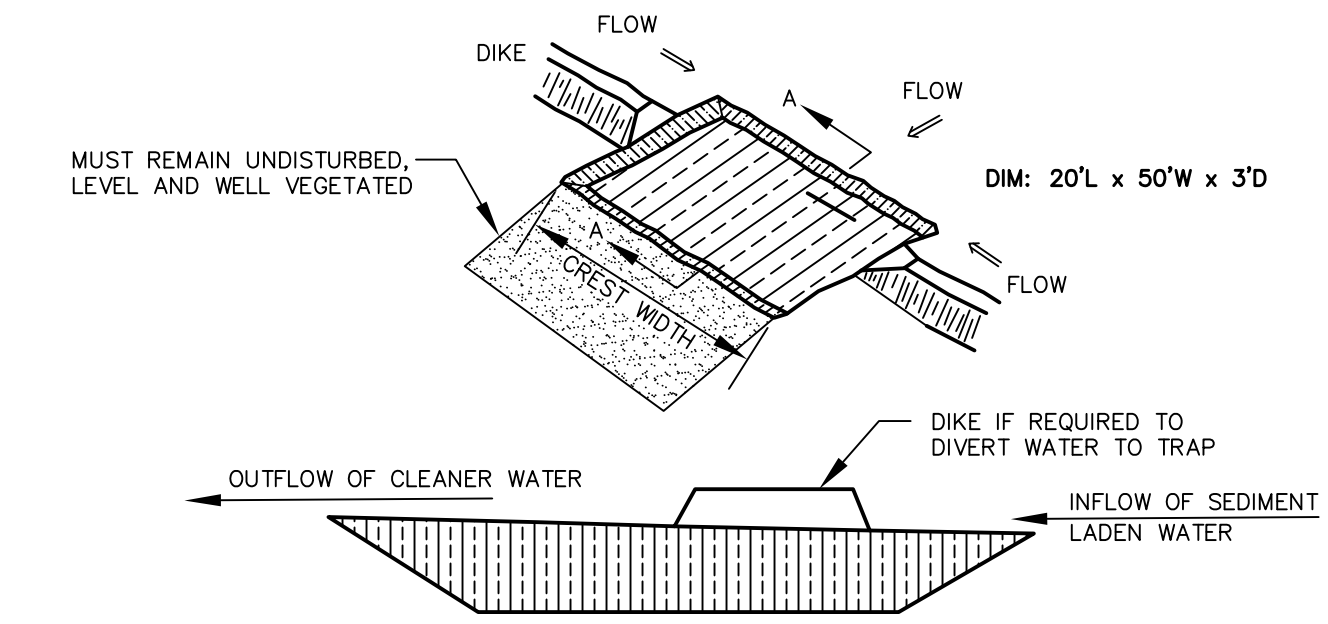


**TYPICAL TEMPORARY SEDIMENT BASIN (TSB)**  
NOT TO SCALE



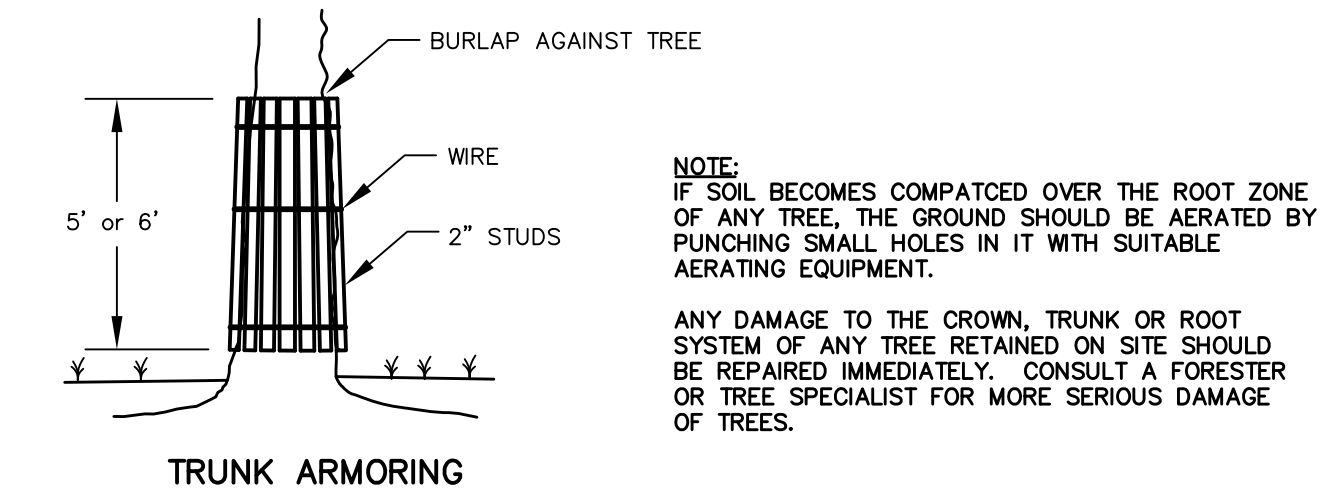
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-0-SEED DO NOT SEED PREPARED AREA. CELL-0-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 8" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30CM) OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP'S.
  3. ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
  4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP'S TYPE.
  5. CONSECUTIVE RECP'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP'S WIDTH.
- NOTE:  
\*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

**EROSION CONTROL BLANKET**  
NOT TO SCALE



SEDIMENT SHALL BE REMOVED AND TRAP RESTORED TO ITS ORIGINAL DIMENSION WHEN SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.

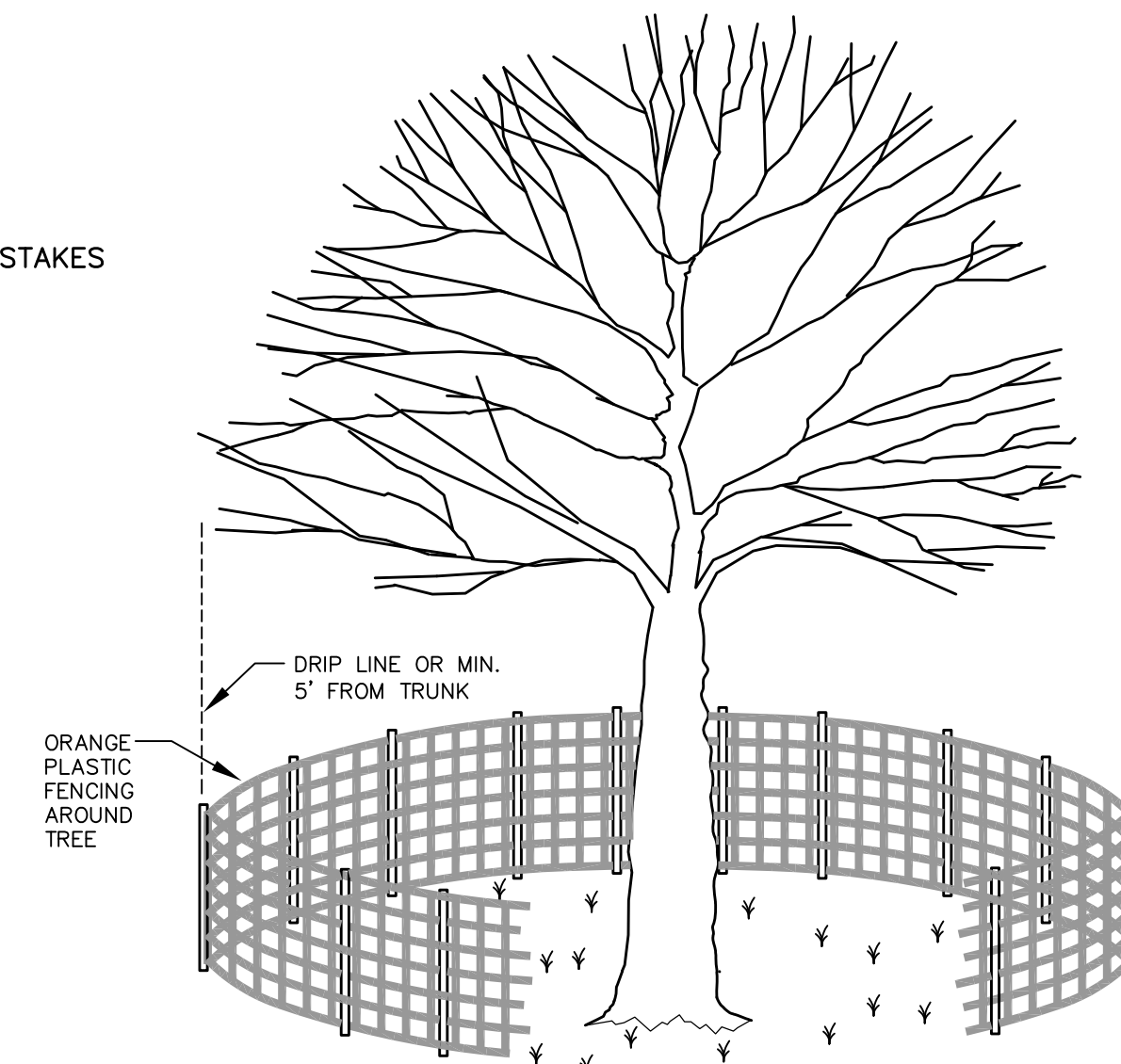
**EXCAVATED GRASS OUTLET SEDIMENT TRAP**  
NOT TO SCALE



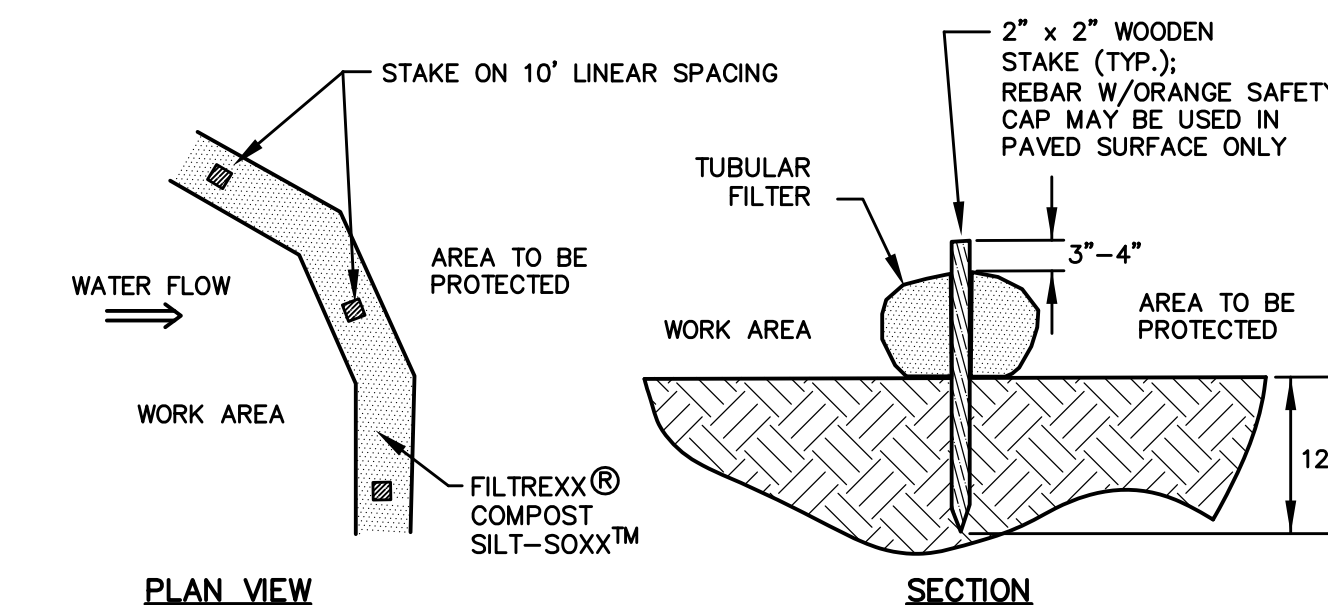
NOTE:  
IF SOIL BECOMES COMPACTED OVER THE ROOT ZONE OF ANY TREE, THE GROUND SHOULD BE AERATED BY PUNCHING SMALL HOLES IN IT WITH SUITABLE AERATING EQUIPMENT.

ANY DAMAGE TO THE CROWN, TRUNK OR ROOT SYSTEM OF ANY TREE RETAINED ON SITE SHOULD BE REPAIRED IMMEDIATELY. CONSULT A FORESTER OR TREE SPECIALIST FOR MORE SERIOUS DAMAGE OF TREES.

**TRUNK ARMORING**

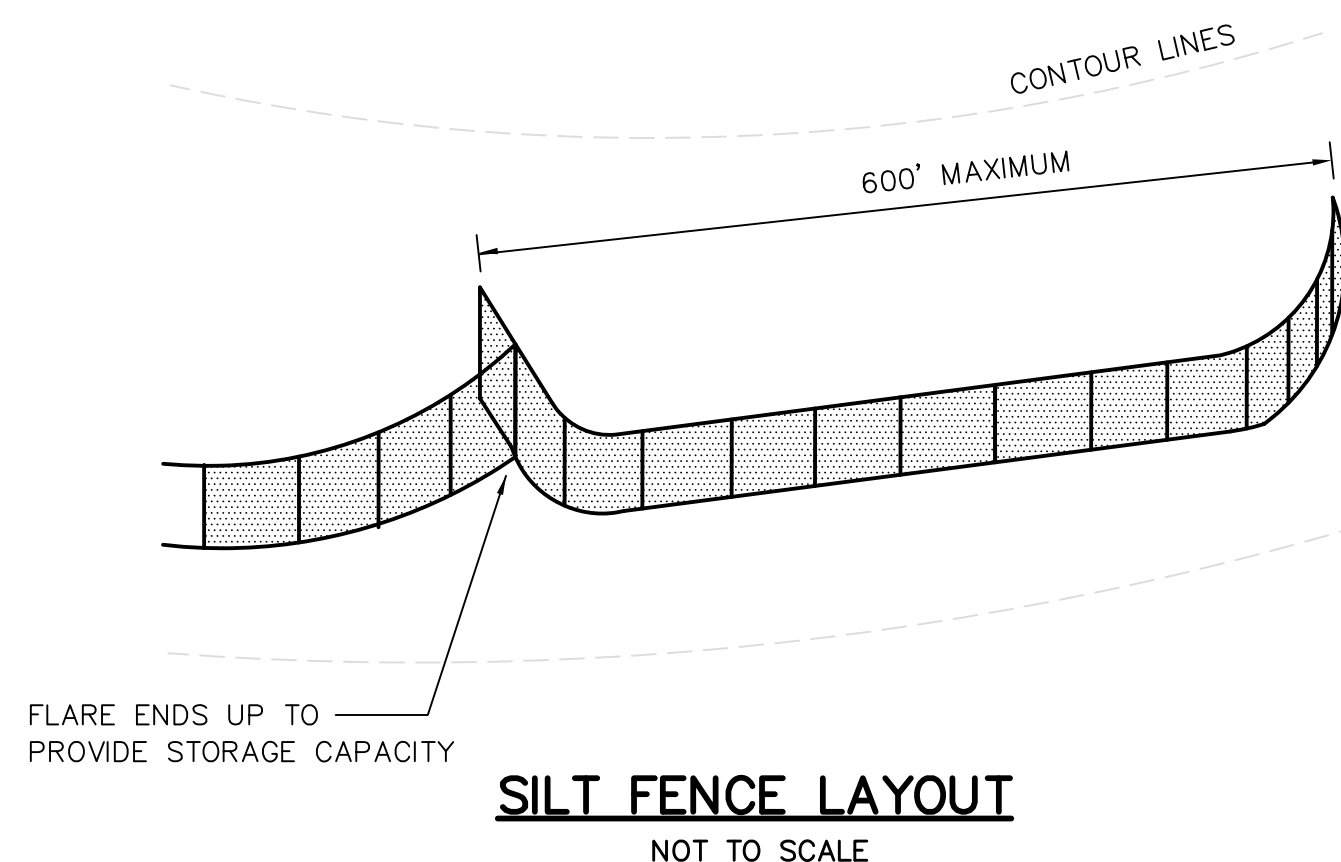


**TREE PROTECTION**  
NOT TO SCALE

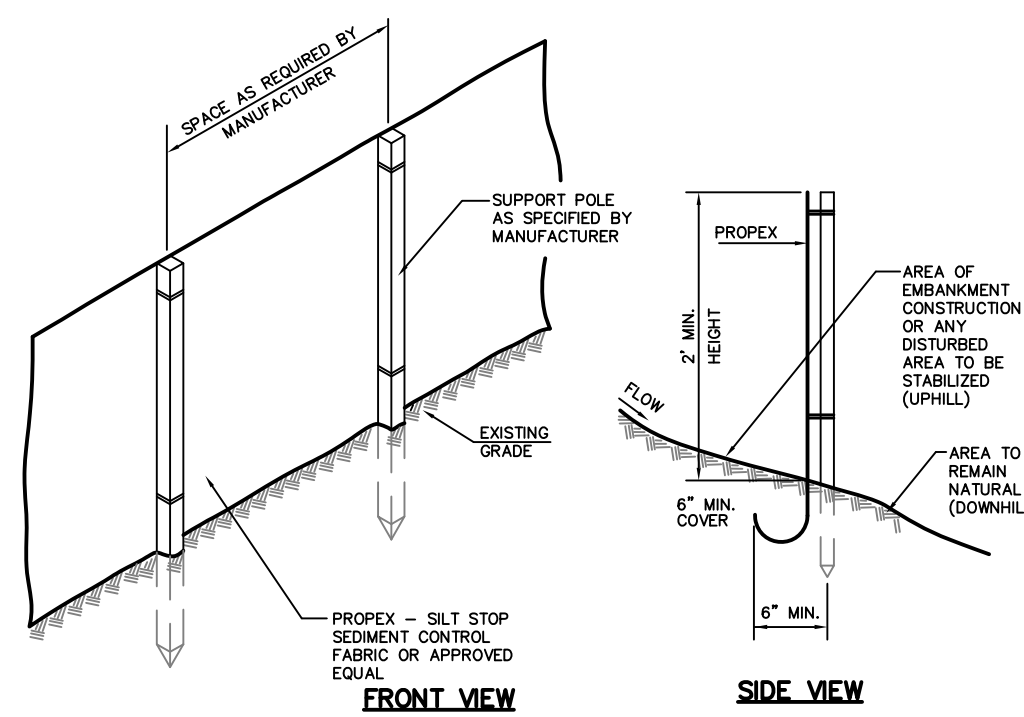


- NOTES:**
1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
  2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
  3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
  4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

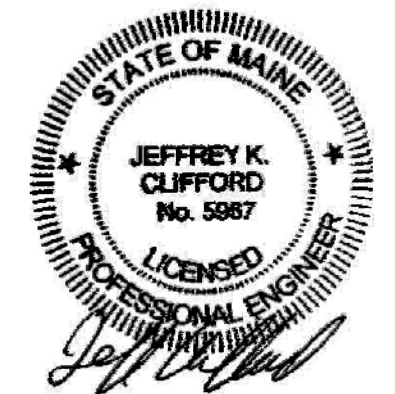
**TUBULAR SEDIMENT BARRIER DETAIL**  
NOT TO SCALE



**SILT FENCE LAYOUT**  
NOT TO SCALE



**SILT FENCE DETAIL**  
NOT TO SCALE



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ISSUED FOR: **PRELIMINARY APPROVAL**

ISSUE DATE: **OCTOBER 18, 2018**

NO.	DESCRIPTION	BY	DATE
0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: **RMB**  
APPROVED BY: **JKC**  
DRAWING FILE: **4795SUB.DWG**

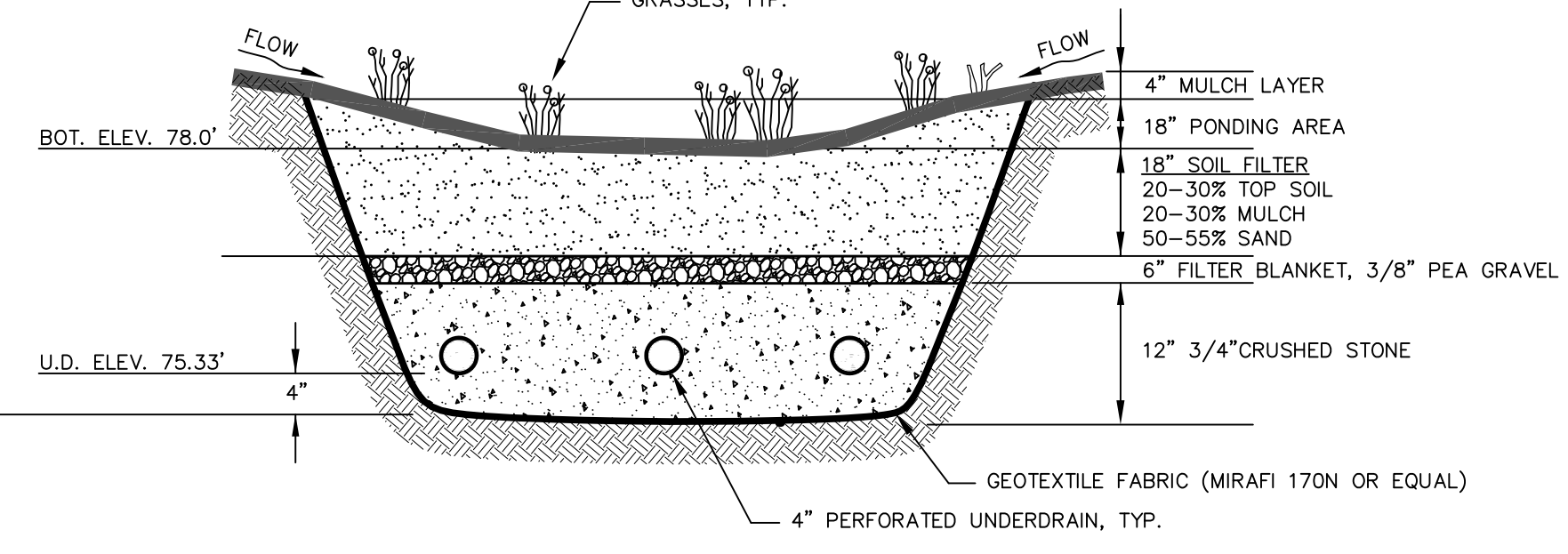
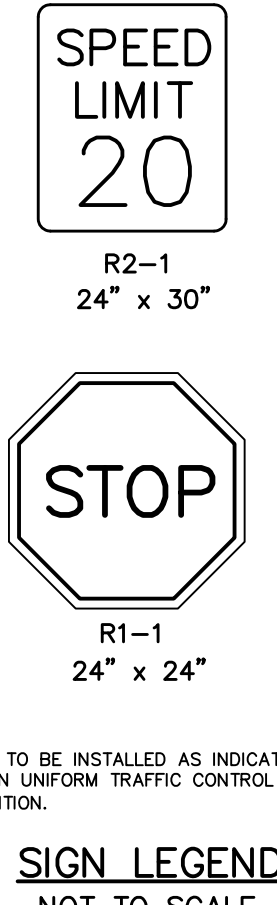
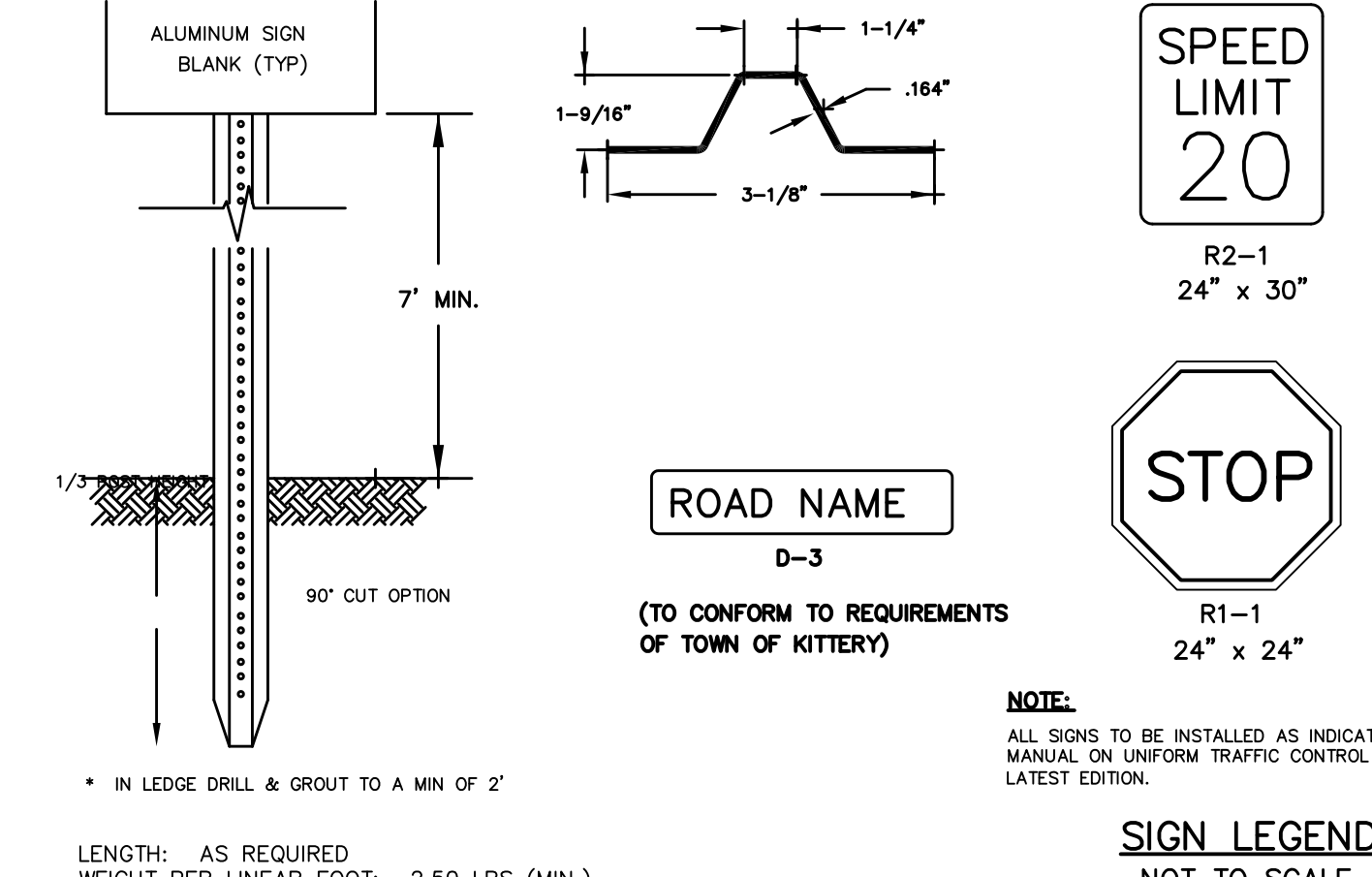
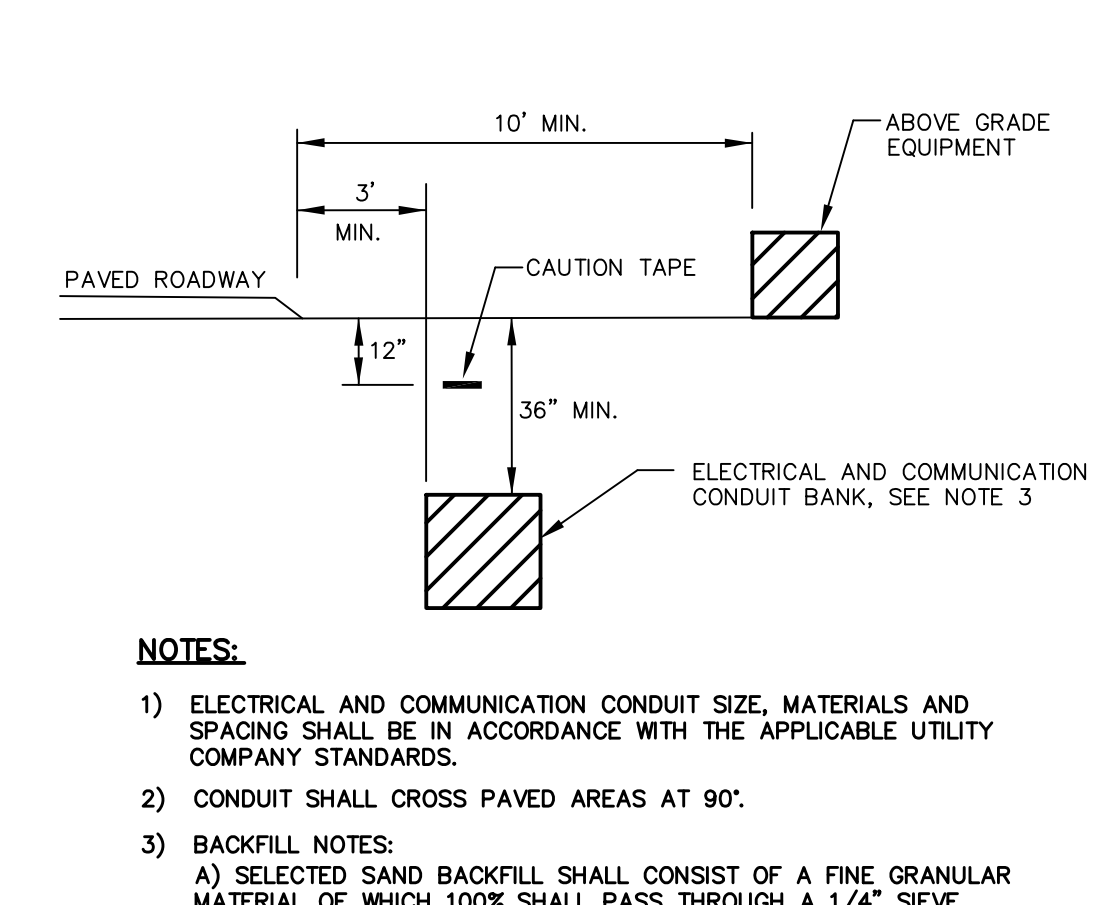
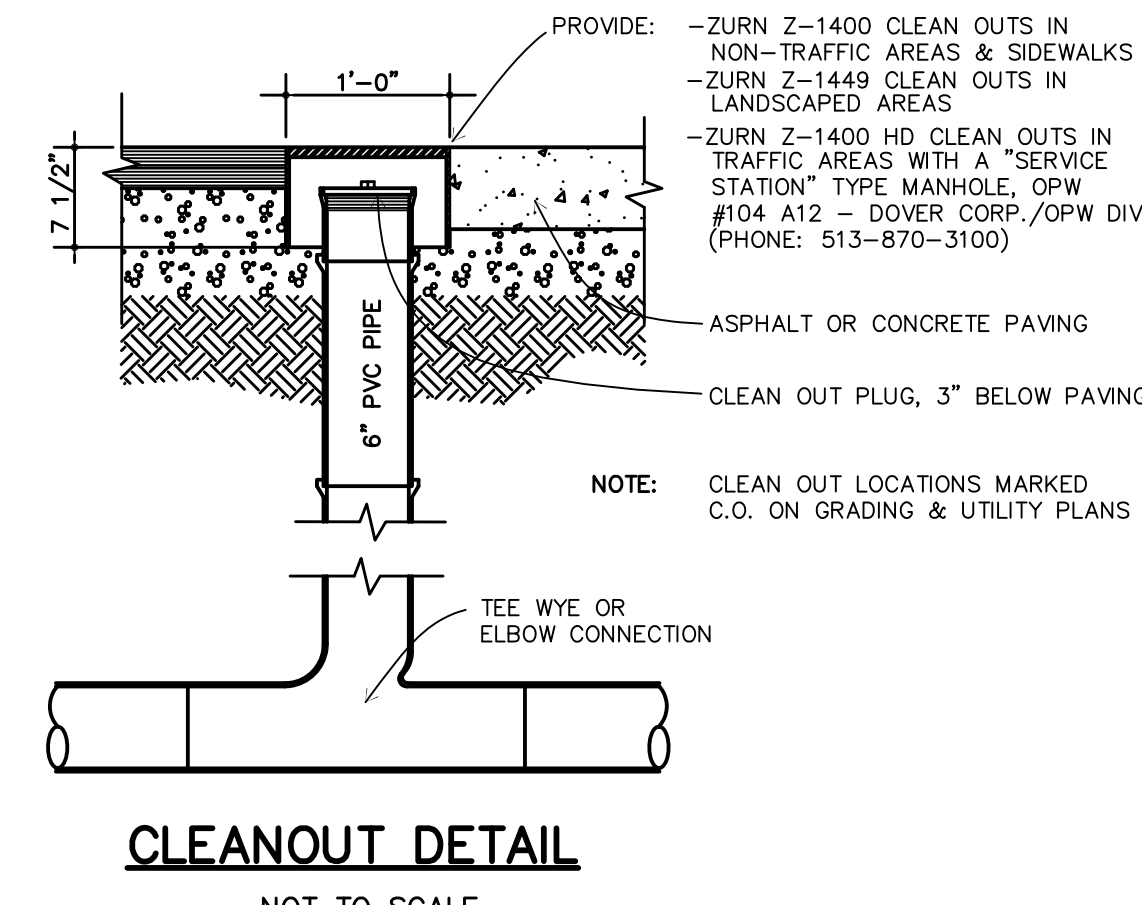
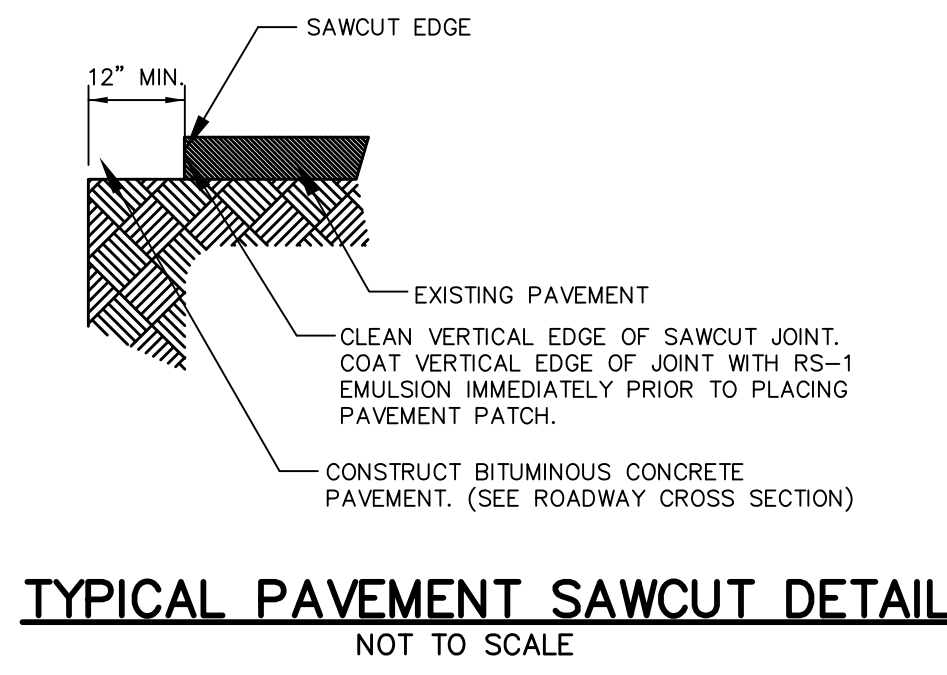
SCALE: **N.T.S.**

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS REV. TRUST**  
**c/o MARY THRON, TRUSTEE**  
**P.O. BOX 96**  
**KITTERY POINT, MAINE 03905**

PROJECT:  
**ANDREWS SUBDIVISION**  
**MAP 60 LOT 10**  
**KITTERY, MAINE**

TITLE:  
**EROSION CONTROL DETAILS**  
SHEET NUMBER:  
**C-4.1**

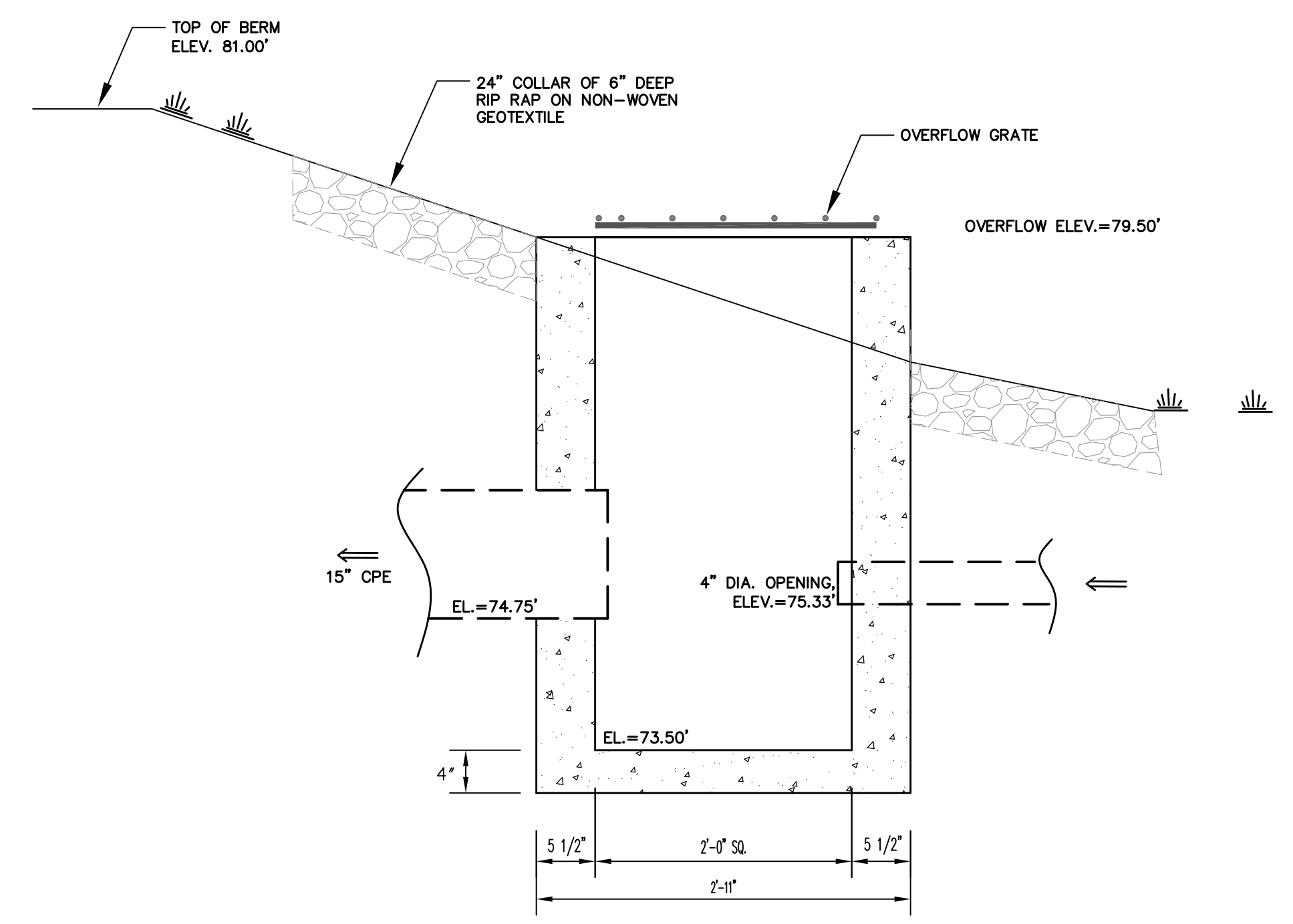




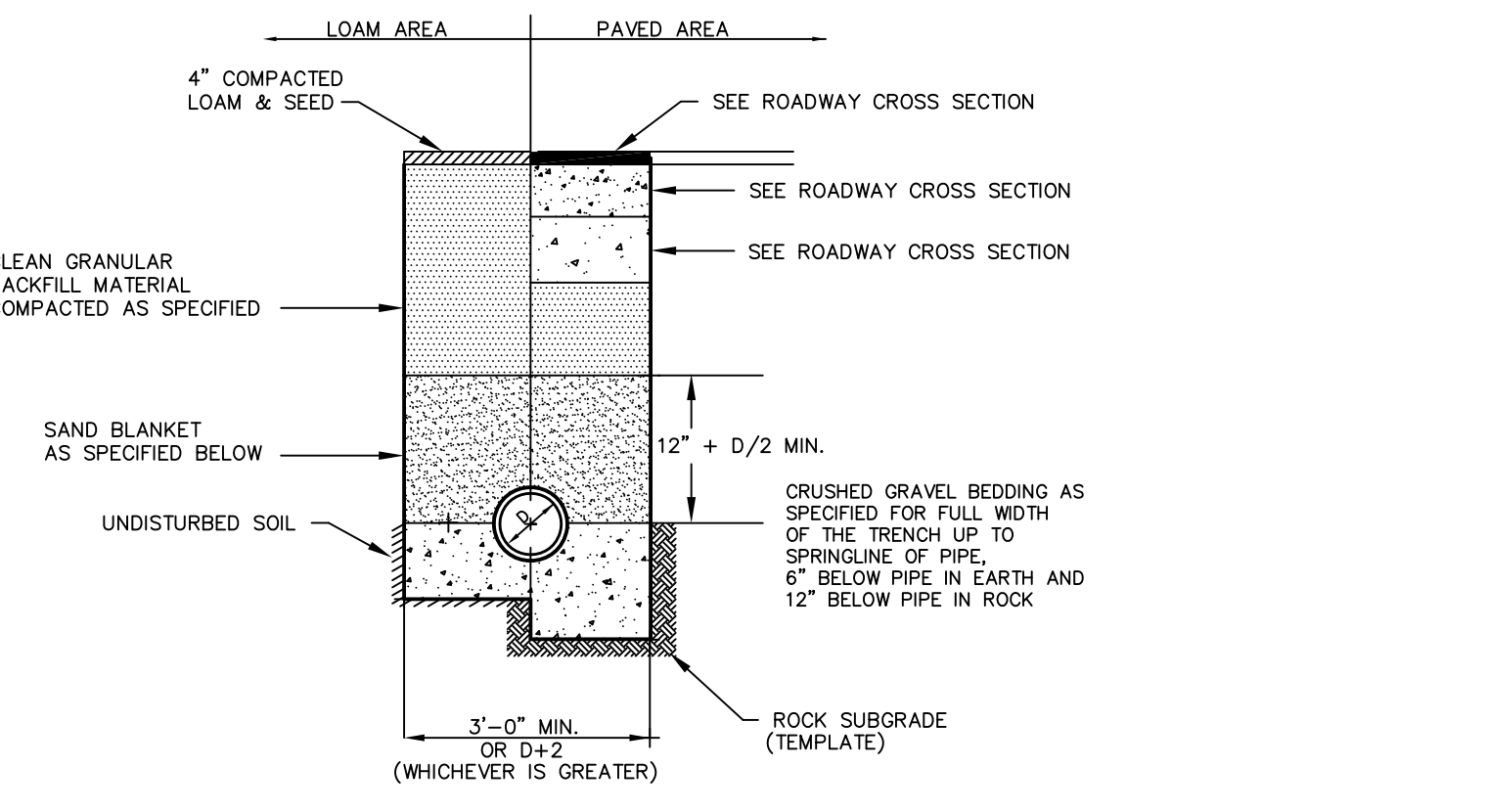
SOIL FILTER MEDIA			MDOT #703.01 AGGREGATE		SEEDING (CONSERVATION MIX)	
FILTER MEDIA	MIXTURE BY VOLUME	SPECIFICATION	SEIVE SIZE	% BY WEIGHT		
SAND	50-55%	MDOT SPECIFICATION #703.01 FINE AGGREGATE FOR CONCRETE	3/8"	100	Creeping red fescue	20 lb/acre
TOPSOIL	20-30%	LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15 TO 25% FINES PASSING THE #200 SIEVE	#4	95-100	Tall fescue	20 lb/acre
			#8	80-100	Bird's foot trefoil	8 lb/acre
			#16	50-85	Annual Rye	20 lb/acre
			#30	25-60	Total	68 lb/acre
			#60	10-30	Straw mulch or erosion control blanket after seeding	
			#100	2-10		
MULCH	20-30%	MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING #200 SIEVE	#200	0-5		

UNDERGROUND CONDUIT BANK DETAIL NOT TO SCALE

SIGN POST DETAIL NOT TO SCALE



PDI #4 OUTLET STRUCTURE NOT TO SCALE



SAND BLANKET		CRUSHED GRAVEL BEDDING	
SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
1/2"	90 - 100	3"	100
200	0 - 15	2"	95 - 100
		1"	55 - 85
		# 4	27 - 52
		# 200	0 - 12

TRENCH SECTION NOT TO SCALE

**GRASSSED UNDERDRAIN SOIL FILTER (GUSF) NOTES**

The applicant will retain the services of a qualified professional to inspect the construction and stabilization of all stormwater management structures. If necessary, the qualified professional shall interpret the pond's construction plan for the contractor. Once all stormwater management structures are constructed and stabilized, the qualified professional will notify the department in writing within 30 days to state that the pond has been completed. Accompanying the notification must be a log of the inspections giving the date of each inspection, the time of each inspection, and the items inspected on each visit, and include any testing data or sieve analysis data of every mineral soil and soil media specified in the plans and used on site.

**Construction Sequence:** Erosion and sedimentation from unstable construction areas is the most common reason for filter failure. The soil filter media shall not be installed until the area that drains to it has been permanently stabilized or unless the runoff is diverted around the filter.

- Basin Excavation: The basin area may be excavated for underdrain installation and can be used as a sediment trap during construction. After excavation of the basin, the outlet structure and piping system may be installed if protected with a sediment barrier.
- Sacrificial Mulch cover: If the basin will be used as a sediment trap, the sides of the embankments must be stabilized and maintained to prevent erosion. The basin will need to be restored for its planned purpose after construction. Before final stabilization of the drainage area to the basin, a 2-inch to 3-inch layer of sandy loam (with less than 2% clay content) shall be spread on the surface of the soil filter media as a sacrificial protection layer. The sacrificial layer will need to be removed at the end of construction, and the soil filter media will need to be seeded and mulched.
- Compaction of Soil Filter: Filter soil media and underdrain bedding material shall be applied to reach a bulk density of between 90% and 92% standard proctor. The soil filter media shall be installed in at least two lifts of 9 inches to prevent pockets of loose media.
- Remedial Loam Cover: If vegetation is not established within the first year, the basin may be rototilled, reseeded and protected with a well-anchored erosion control blanket. Or, a 2-inch to 3-inch layer of fine sandy loam may be applied before seeding and mulching.

**Construction Oversight:** Inspection of the filter basin shall be provided for each phase of construction by a qualified professional with required reporting to the DEP. All material intended for the filter basin must be approved by the qualified professional after tests by a certified laboratory show that the material conforms to all DEP specifications. At a minimum, inspections will occur:

- After the preliminary construction of the filter grades and once the underdrain pipes are installed (not backfilled);
- After the drainage layer is constructed and prior to the installation of the soil filter media;
- After the soil filter media has been installed, seeded and mulched.

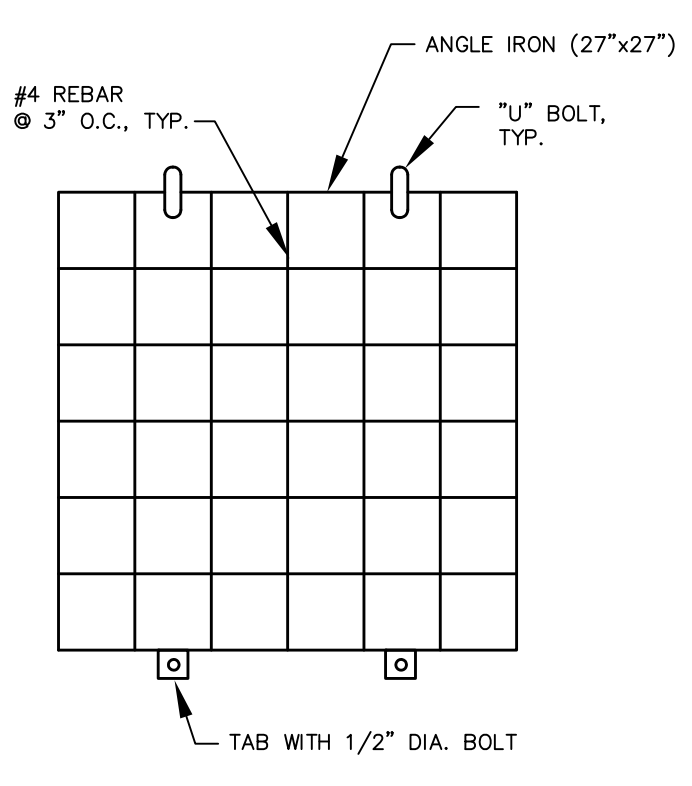
**Testing and Submittals:** The source of each component of the soil filter media needs to be identified prior to construction. All results of field and laboratory testing must be submitted to the DEP for approval.

- Media Source: Samples of each type of material shall be blended for the mixed filter media and underdrain bedding material. Samples must be a composite of three different locations (grabs) from the stockpile or pit face. Sample size requirements will be determined by the testing laboratory.
- Sieve Analysis: A sieve analysis conforming to ASTM C136 shall be performed on each type of the sample material.
- Permeability Testing: Testing the permeability of the soil filter media mixture is recommended with the mixture at a measured bulk dry density of 90-92% based on ASTM D698.

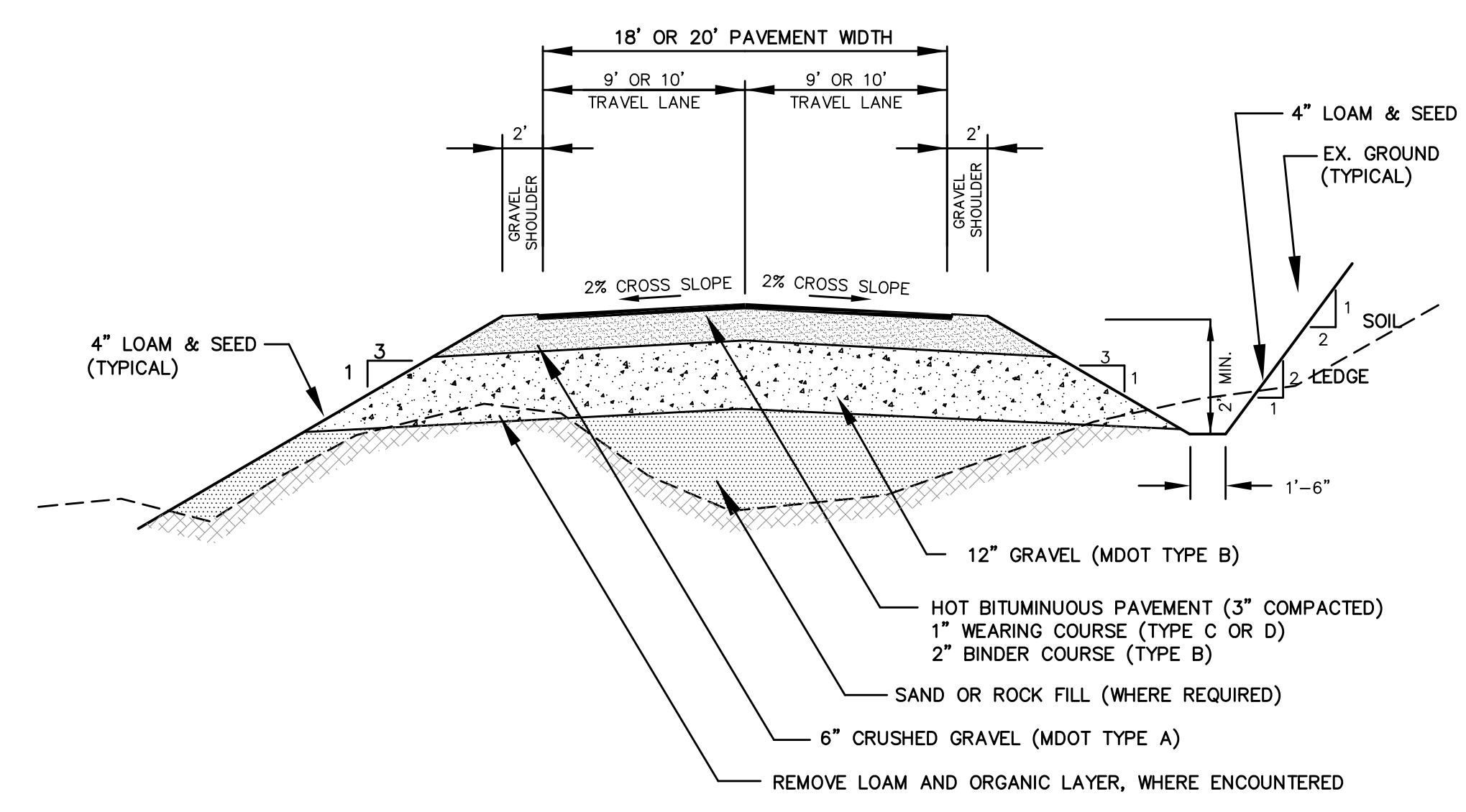
**Maintenance:** The basin shall be inspected semi-annually and following major storm events. debris and sediment buildup shall be removed from the forebay and basin as needed; any bare area or erosion rills shall be repaired with new filter media, seeded and mulched.

- Maintenance Agreement: A legal entity shall be established with responsibility for inspecting and maintaining any underdrained filter. The legal agreement establishing the entity lists the specific maintenance responsibilities (including timetables) and provide for the funding to cover long-term inspection and maintenance. (See Declaration of Covenants, Conditions and Restrictions for Huntington Run Subdivision)
- Inlets and Outlets: The inlets and outlets of the pond shall be checked to ensure that flow structures are not blocked by debris.
- Drainage: The filter shall drain within 24 to 48 hours following a one-inch storm or greater. If the system drains too fast, an orifice may need to be added on the underdrain outlet or may need to be modified if already present.
- Sediment Removal: Sediment and plant debris shall be removed from the pretreatment structure at least annually.
- Mowing: If mowing is desired, only hand-held string trimmers or push-mowers are allowed on the filter (no tractor) and the grass bed shall be mowed no more than 2 times per growing season to maintain grass heights of no less than 6 inches.
- Fertilization: Fertilization of the underdrained filter area shall be avoided unless absolutely necessary to establish vegetation.
- Harvesting and Weeding: Harvesting and pruning of excessive growth shall be done occasionally, weeding to control unwanted or invasive plants may also be necessary.
- Grass Cover: Maintaining a healthy cover of grass will minimize clogging with fine sediments. If ponding exceeds 48 hours, the top of the filter bed shall be rototilled to reestablish the soil's filtration capacity.
- Soil Filter Replacement: The top several inches of the filter shall be replaced with fresh material if water is ponding for more than 72 hours, or the basin can be rototilled, seeded and mulched. Once the filter is mature, adding new material (a 1-inch to 2-inch cover of mature compost) can compensate for subsidence.

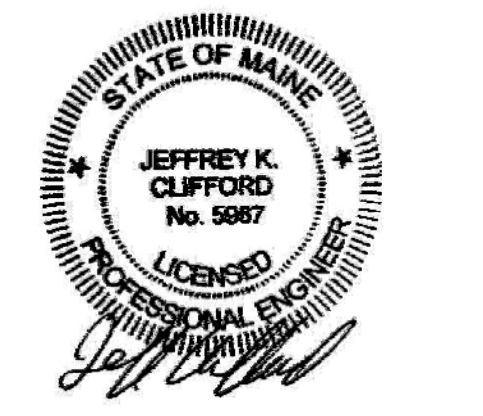
GRASSSED UNDERDRAIN SOIL FILTER NOT TO SCALE



OUTLET STRUCTURE OVERFLOW GRATE NOT TO SCALE



TYPICAL ROADWAY CROSS SECTION NOT TO SCALE



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ISSUE DATE: OCTOBER 18, 2018

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APPROVED BY: JKC  
DRAWING FILE: 4795SUB.DWG

SCALE: N.T.S.

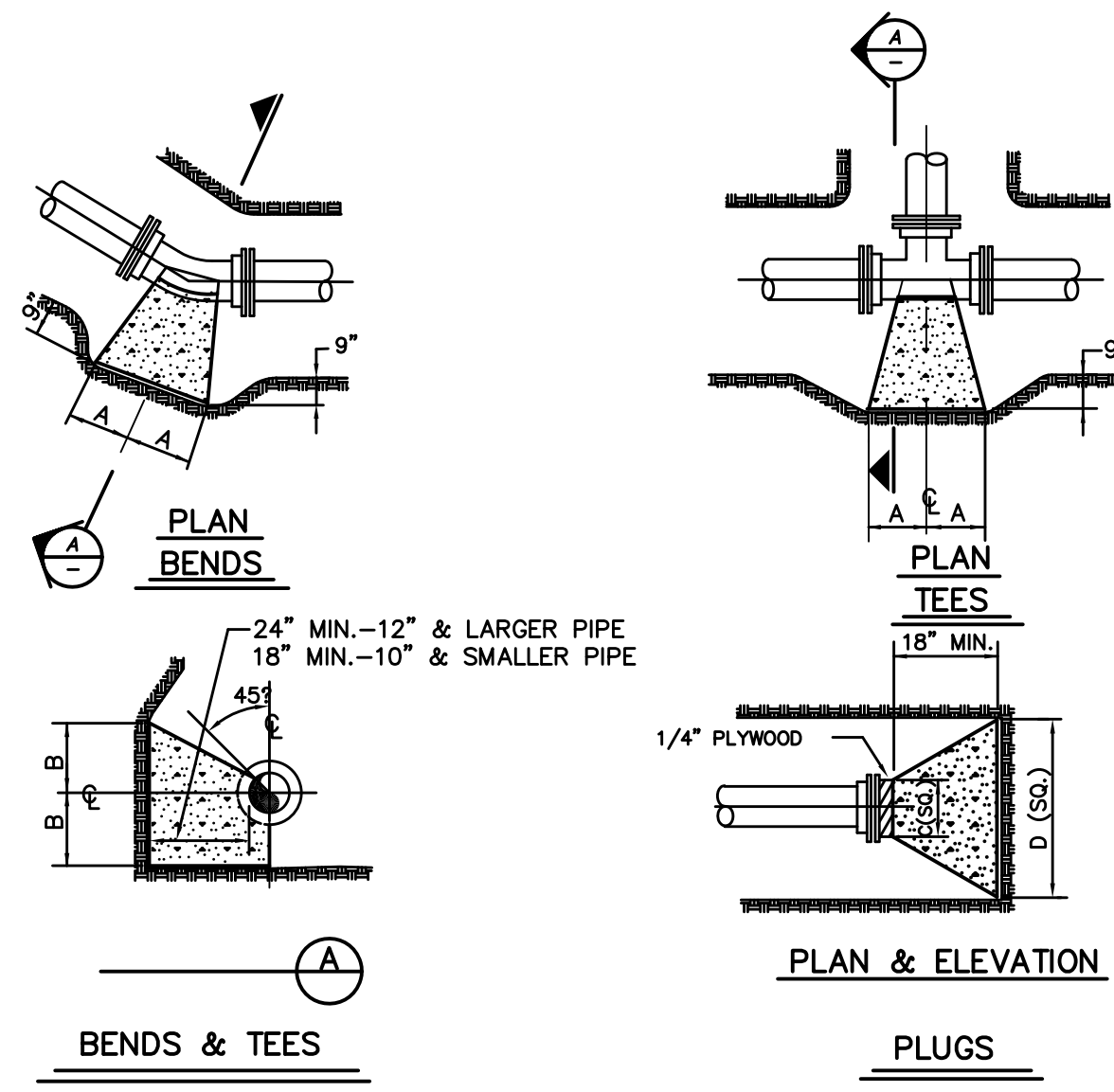
OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS  
REV. TRUST  
c/o MARY THRON, TRUSTEE**  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE

TITLE:  
**DETAIL SHEET**

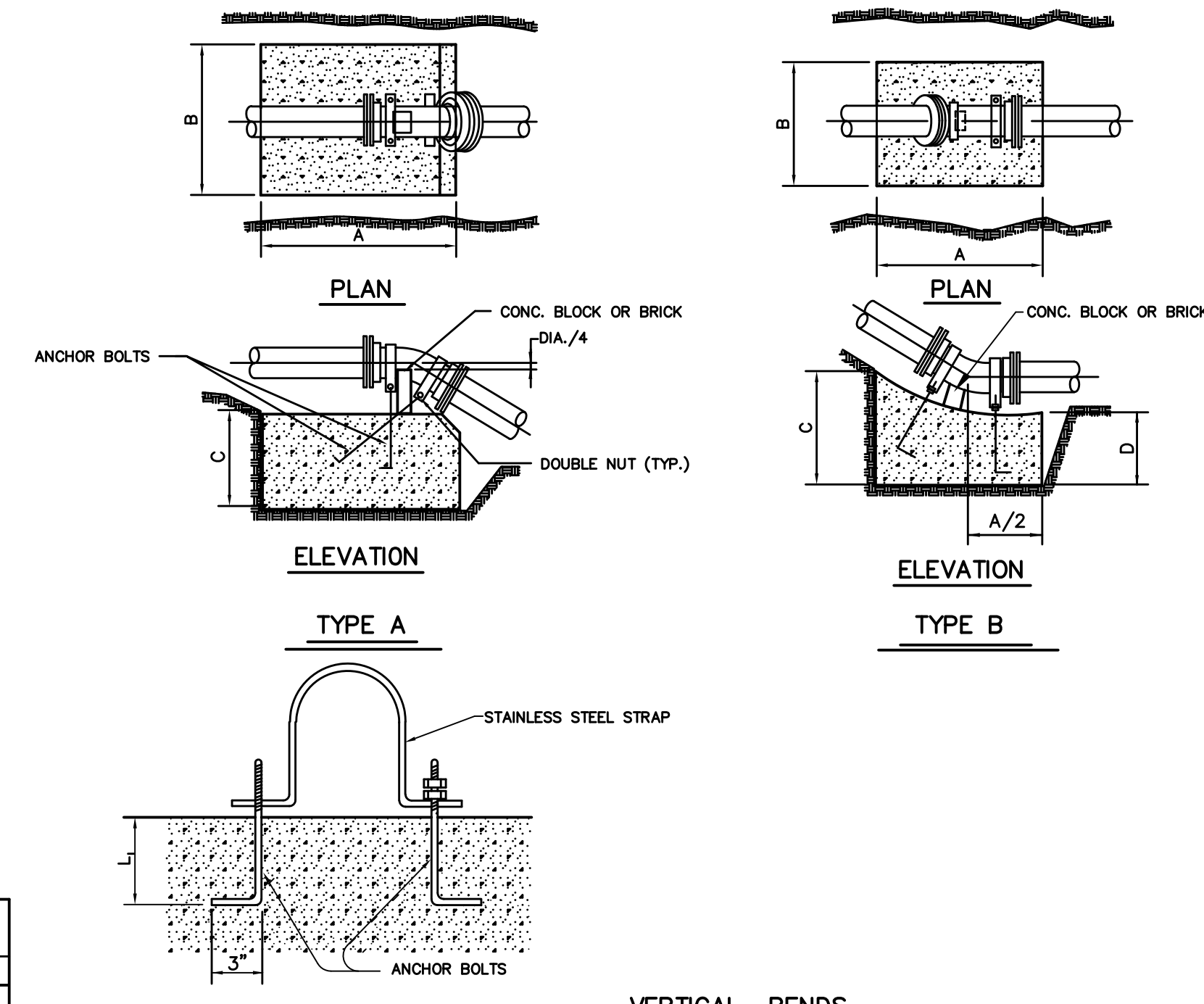
SHEET NUMBER:  
**C-5.0**





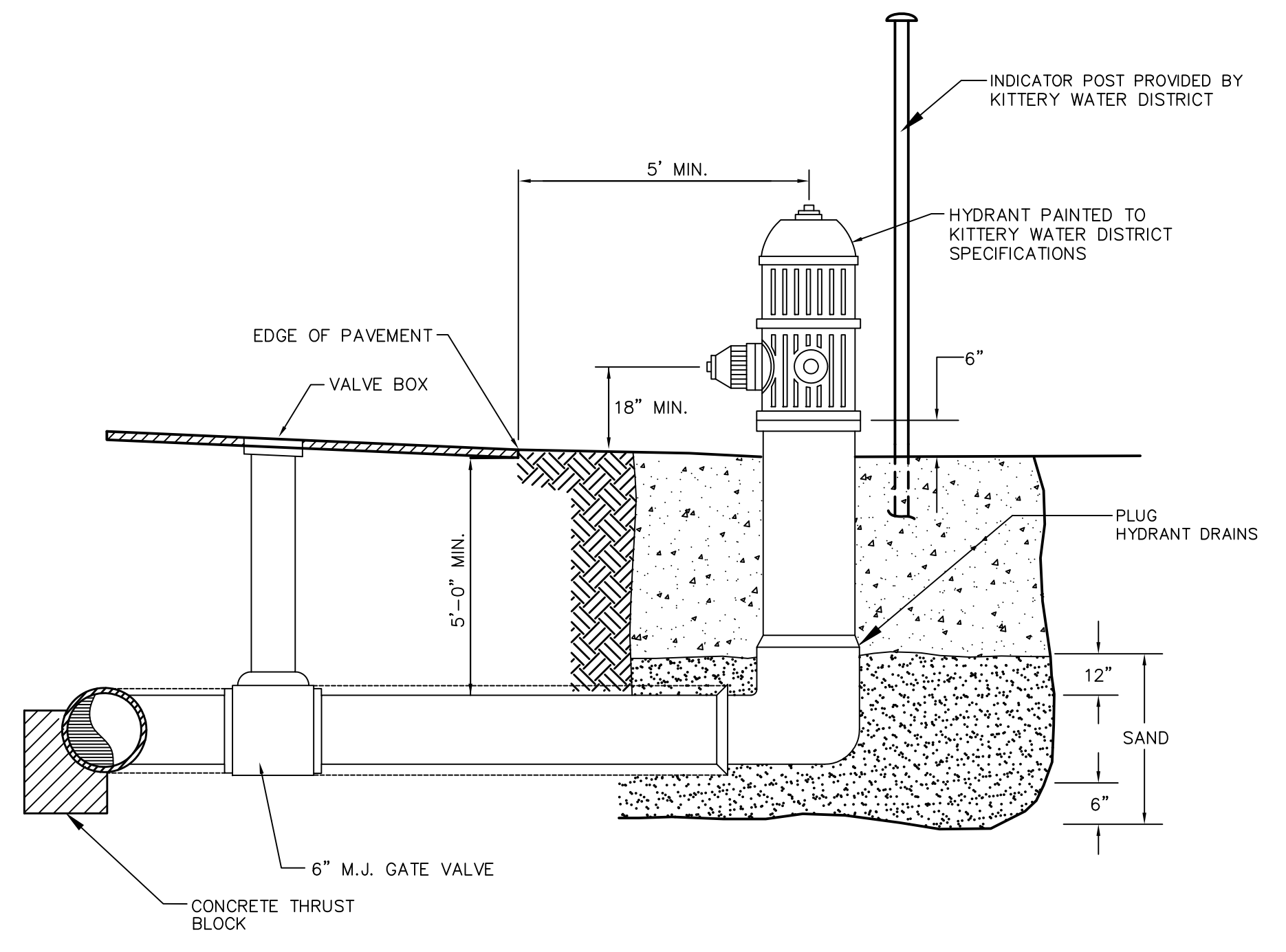
TYPE	SIZE	90° BENDS		45° BENDS		22-1/2° & 11-1/4° BENDS		TEES		PLUGS	
		A	B	A	B	A	B	A	B	C	D
2000 P.S.F. SOIL	6"	18"	11"	10"	11"	6"	9"	11"	13"	10"	24"
	8"	25"	14"	14"	14"	9"	11"	15"	17"	12"	32"
	10"	27"	20"	16"	19"	10"	15"	18"	22"	14"	40"
	12"	33"	23"	18"	23"	12"	18"	21"	26"	16"	47"
	14"	39"	26"	22"	26"	13"	22"	24"	30"	18"	54"
	16"	43"	30"	24"	30"	14"	26"	28"	33"	20"	61"
20"	50"	39"	27"	39"	17"	32"	33"	42"	24"	74"	
24"	60"	45"	33"	45"	20"	38"	40"	49"	28"	88"	

NOTE: BASED ON 150 P.S.I. STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND. \*6" OR LESS



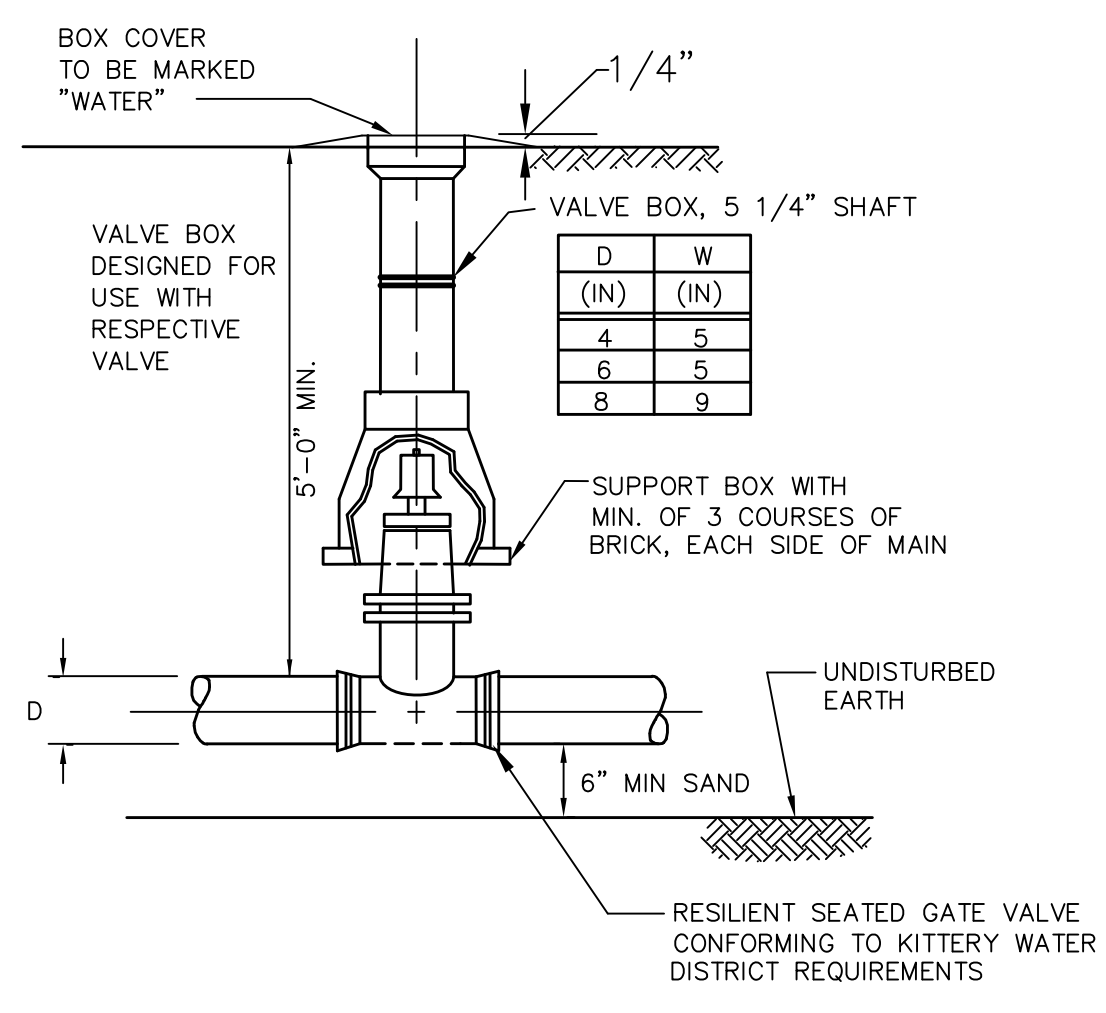
TYPE	SIZE	TYPE A				TYPE B				STRAPS	ANCH. BOLT SIZE (DIA.)	L <sub>1</sub>
		A	B	C	D	A	B	C	D			
2000 P.S.F. SOIL	6"	38"	32"	27"	27"	27"	27"	16"	16"	(1) 1/4" x 1 1/8"	5/8"	1'-0"
	8"	44"	38"	27"	30"	30"	30"	18"	18"	" "	" "	" "
	10"	50"	44"	34"	37"	37"	33"	18"	18"	(2) 1/4" x 1 1/4"	5/8"	1'-0"
	12"	57"	51"	40"	41"	41"	40"	21"	21"	" "	" "	" "
	14"	57"	51"	67"	47"	47"	47"	24"	24"	(2) 3/8" x 1 1/2"	3/4"	1'-0"
	16"	64"	57"	67"	54"	54"	49"	24"	24"	" "	" "	" "
20"	78"	63"	80"	64"	64"	64"	30"	30"	(2) 1/2" x 1 3/4"	7/8"	2'-0"	
24"	93"	75"	83"	78"	78"	78"	36"	36"	(2) 1/2" x 2 1/2"	1"	2'-0"	

NOTE: BASED ON 150 P.S.I. STATIC PRESSURE PLUS A.W.W.A. WATER HAMMER. ALL BEARING SURFACES TO BE CARRIED TO UNDISTURBED GROUND. ALL STRAPS, BOLTS AND ANCHORS SHALL BE MADE OF GALVANIZED STEEL AND SHALL CONFORM TO ASTM 123 AND 153. \*6" OR LESS

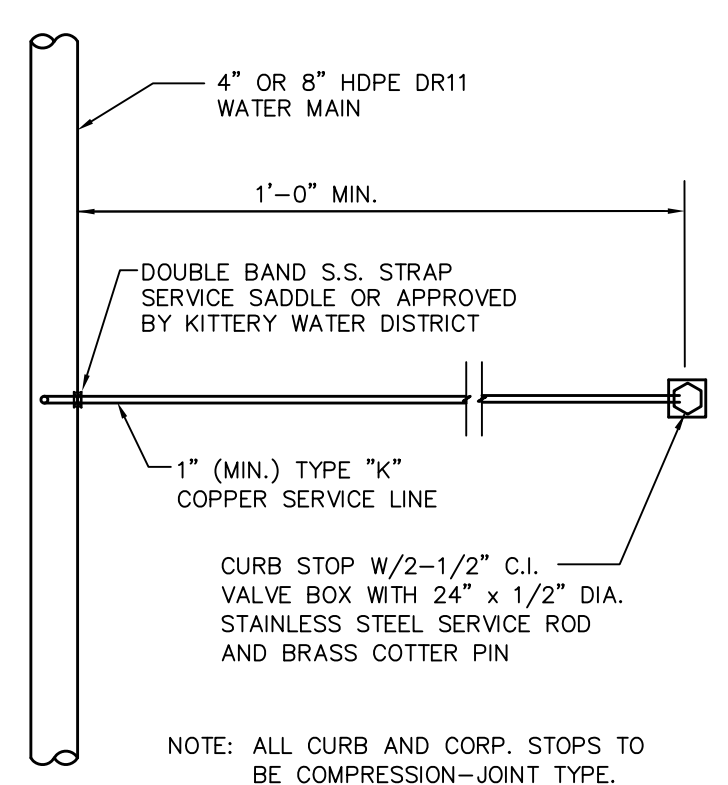


**FIRE HYDRANT**  
NOT TO SCALE

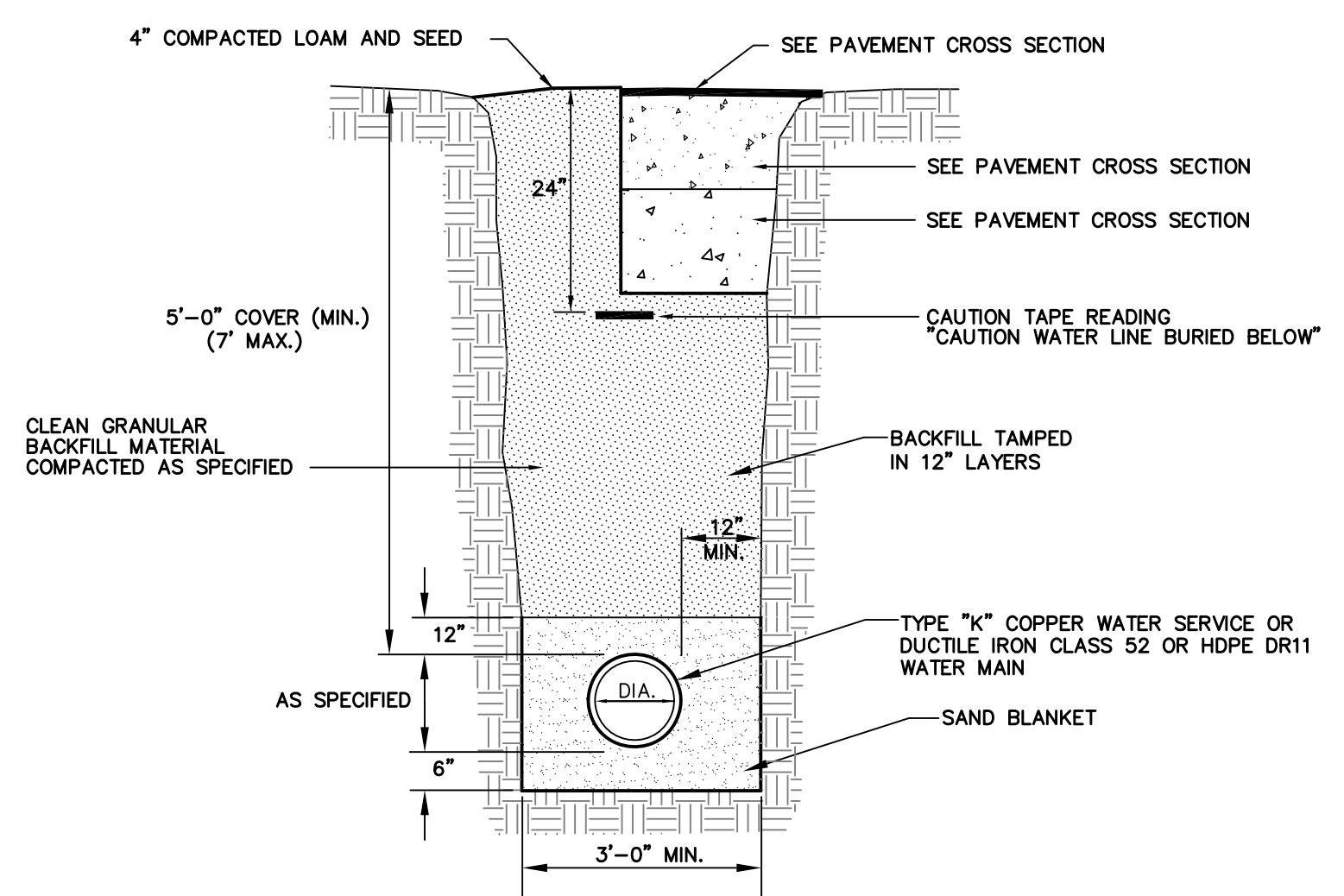
- WATER MAIN NOTES:**
- OPERATION OF HYDRANTS AND VALVES SHALL BE AS DETERMINED BY KITTERY WATER DISTRICT AND KITTERY FIRE DEPARTMENT.
  - ALL WORK SHALL CONFORM TO KITTERY WATER DISTRICT "WATER MAIN MATERIAL AND INSTALLATION SPECIFICATIONS, MARCH 2009". CONTRACTOR SHALL OBTAIN A COPY OF SAID SPECIFICATIONS AND MEET WITH THE KITTERY WATER DISTRICT PRIOR TO PURCHASING MATERIALS OR COMMENCING CONSTRUCTION.
  - MECHANICAL JOINT FITTINGS ARE TO BE CLASS 350 AND HAVE ROMAC "GRIP RING" RETAINER GLANDS WITH CORTEN LOW ALLOY STEEL NUTS AND BOLTS OR MEGALUG RETAINER GLANDS.



**WATER VALVE DETAIL**  
NOT TO SCALE



**TYPICAL SERVICE CONNECTION**  
NOT TO SCALE



**WATER MAIN AND SERVICE TRENCH DETAIL**  
NOT TO SCALE



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0	TOWN SUBMISSION	JKC	10/18/18

DRAWN BY: RMB  
APPROVED BY: JKC  
DRAWING FILE: 4795SUB.DWG

SCALE: N.T.S.

OWNERS/APPLICANT:  
**ARTHUR W. ANDREWS REV. TRUST**  
c/o MARY THRON, TRUSTEE  
P.O. BOX 96  
KITTERY POINT, MAINE 03905

PROJECT:  
ANDREWS SUBDIVISION  
MAP 60 LOT 10  
KITTERY, MAINE

TITLE:  
**WATER DETAILS**  
SHEET NUMBER:  
**C-6.0**