HIGHLANDS SUBDIVISION

OSSIPEE TRAIL
STANDISH, MAINE

FINAL SITE PLAN AND SUBDIVISION APPLICATION

PREPARED FOR:

LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, ME 04084

PREPARED BY:

TERRADYN CONSULTANTS LLC
41 CAMPUS DRIVE, SUITE 101
NEW GLOUCESTER, ME 04260

JANUARY 21, 2020
REVISED APRIL 15, 2020

Pineland
Cumberland Hall
41 Campus Drive, Suite 101
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 201
Portland, ME 04101

Highlands Subdivision – Final Subdivision & Site Plan Application

CONTENTS

Preliminary Application Cover Letter	November 13, 2018
Subdivision & Site Plan Application Forms	November 13, 2018
Revised Village Housing Cover Letter	January 22, 2019
Final Subdivision and Site Plan Application	January 21, 2020
Blasting Application	February 20, 2020
Peer Review Comment Response	March 26, 2020
Septic System Comment Response	April 13, 2020
Peer Review & Public Works Comment Response	April 15, 2020
Condominium Association By-Laws - Draft	April, 2020
Plan Set	April 15, 2020

PRELIMINARY APPPLICATION COVER LETTER 11/13/2018

TERRADYN
CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

1804

November 13, 2018

Mr. Alton Benson, Town Planner
Town of Standish Municipal Building
175 Northeast Road
Standish, ME 04085

Preliminary Subdivision & Site Plan Application: Highlands Subdivision and Village Housing

Dear Mr. Benson,
On behalf of Leavitt-Tompson, LLC we are pleased to submit the Preliminary Subdivision and Site Plan Application for the Highlands, an eighty (80) unit Village Housing Site Plan and 20-lot residential subdivision.

The development parcel is located on the north side of Route 25, approximately 1.2 miles west of Standish Corner, and extends northeasterly to Oak Hill Road. The property is shown as lots 11 and 19C on Town of Standish Tax Map #10. The 53.11-acre property is located within the Standish Corner District. The Standish Corner District (SCD) Regulating Plan requires a Town Residential (TR) street frontage type for the public right-of-way within the proposed development. A section of Town Avenue (TA) street is also proposed for the access onto Route 25.

Because the property is located within the Form Based Code Village District (FBCVD), we met with the Town Planner on April 18 and May 3, 2018 to review the required permitting process and standards for the FBCVD. We discussed the components of the FBCVD including the intent of mixed-use, interconnected and walkable neighborhoods as well as the requirements for a Connectivity Master Plan to reserve areas for future rights-of-way as potential connections to abutting developable land.

Project History
We submitted the Sketch Plan application on May 14, 2018, met with the Planning Board at the June 4, 2018 meeting, and discussed the project in a Planning Board workshop on June 13, 2018. The Sketch Plan included 80 two-bedroom multi-family units and 17 single family lots, with a new TR street extending from Leavitt Earthworks' existing entrance on Route 25 to Oak Hill Road. Two abutting property owners at the Planning Board meeting expressed concerns about providing buffers around the development. One of the abutters (Mrs. Jamison) expressed concern that existing private wells could be affected. At the workshop meeting, the Planning Board provided the following input:

- The roadway, subdivision and village housing layout generally appeared reasonable to proceed to a preliminary application.
- The connectivity plan for providing future rights-of-way to abutting properties appeared adequate, except that the plan should consider options to provide future road and water main access to the Jamison property (map 6, lot 31).
- The plan should include a community meeting building.

Current Development Plan

The plan set included with this application incorporates the input received from the Sketch Plan process, as well as other significant changes and refinements as explained below.

The most significant change to the plan is the location of the proposed intersection of Highlands Drive and Route 25. The new plan establishes this entrance approximately 350 feet west of the existing Leavitt Earthworks driveway. This change resulted from consultations with Maine DOT and their determination that the proposed driveway could not be approved at the Leavitt Earthworks driveway because it does not meet minimum sight distance standards looking to the west (right). Route 25 is classified by Maine DOT as a mobility arterial and requires 840' sight distance for the posted 50 mph speed limit. As a result, Terradyn filed a Highway Entrance Permit Application and the applicant received an Entrance Permit for the revised location in September 2018. A copy of the approved entrance permit is included in Attachment 4.

The net residential density calculations show that the property can support 81 two-bedroom Village Housing dwelling units (at 1 unit/16,000 SF), 18 single-family lots (30,000 SF minimum lot size on TR Street) and four duplex units (20,000 SF minimum lot size on TA Street). Net residential calculations are shown on the enclosed Preliminary Subdivision Plan.

The Village Housing Standards (181-28.1) require a 100-foot continuous vegetative buffer to the front and 50-foot continuous vegetative buffer to the sides and rear of improved areas in the development.

Proposed Road Network

Leavitt-Tompson, LLC proposes to construct Highlands Drive from Route 25 to Oak Hill Road, a total distance of approximately 4,720 feet. The first section from Route 25 to +/- station 9+40 is proposed as a TA Street. This section provides frontage for two (2) duplex residential lots. A TR Street is proposed from station 9+40 to Oak Hill Road. Five (5) private roads provide access to the 80 two-bedroom village housing units in the southwest portion of the site closer to Route 25. Vegetative buffers are required by the Ordinance to provide screening from abutting properties. The single family lots are proposed in the central and northeastern areas of the site with frontage on the new TR street.

Connectivity Master Plan

The Subdivision Plan reserve future 50' rights-of-way to allow connection to abutting properties as required in the Standish Corner District. One of these is a range way that crosses the property in a northwest-southeast direction about 1200 feet northeast of Route 25. Other future ROW locations are reserved based on the block length requirements in the FBCVD. The Plan also provides future driveway easements to the rear of three lots on Oak Hill Road. Proposed future access connections are shown on the Connectivity Master Plan.

Project Utilities

The development will be served by a 12" public water main extended from the existing Portland Water District main on Oak Hill Road. The applicant met with PWD on May 30 and October 4, 2018 to discuss the main extension, anticipated schedule and review detailed construction plans. PWD has indicated to the applicant that they intend to replace the 8" water main in Oak Hill Road with a new 12" main in early Spring 2019 if project approvals are on track. The Town of Standish

also agreed to defer new pavement on this section of Oak Hill Road until after the water main is replaced.

The Village Housing area will be served by on-site septic systems sized for either four (4) or eight (8) two-bedroom units. Mark Hampton Associates and Mark Cenci Associates provided soil test pits demonstrating suitable soils for subsurface wastewater disposal systems for the Village Housing area and on each of the single-family lots. Test pit logs are attached to the application and locations are shown on the plans. Electric power and telecommunications utilities will be installed underground within the development.

The project plans are based upon a boundary survey performed by Richard W. Hamilton, P.L.S. Topographic information was obtained from the State of Maine Office of GIS, and from ground topographic survey. The wetland delineation was completed by Mark Hampton Associates - wetlands are shown on the attached plan.

Project Team

The applicant has hired the following project consultants:

Engineer:	Jeff Amos, P.E. #10167 Terradyn Consultants, LLC P.O. Box 339 New Gloucester, ME 04260 (207) 926-5111	Surveyor:	Richard W. Hamilton, P.L.S. #2336 Boundary Engineering Survey Technology 25 Tubros Lane Buxton, ME 04093 (207) 929-2378
Soil Survey & Wetlands:	Mark Hampton Mark Hampton Associates P.O. Box 1931 Portland, ME 04104 (207) 756-2900	Site Evaluator:	Mark Cenci Mark Cenci Geologic, Inc. 93 Mill Road Cumberland, ME 04021 (207) 329-3524

Waiver Request

We are requesting a waiver of the requirement for sidewalk on both sides of the proposed TA and TR Streets on the basis that the Village Housing area is all on one side of the street and 13 of the 18 single family lots are located on one side of the street. Sidewalks on one side of the street will also reduce the total impervious area that requires phosphorus treatment in the Sebago Lake watershed.

Attachments **-REFER TO ORIGINAL APPLICATION FOR ATTACHMENTS 3 THROUGH 17 BELOW**

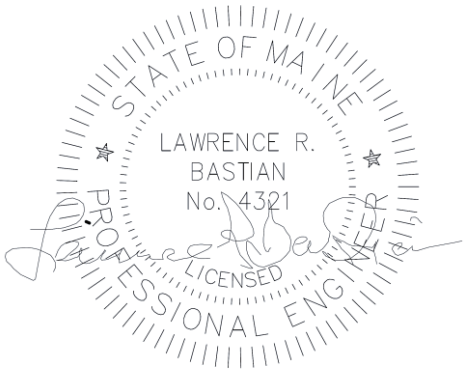
~~The following items are attached to this application:~~

- Attachment 1 – Preliminary Subdivision Application
- Attachment 2 – Site Plan Application
- Attachment 3 – Property Deeds
- Attachment 4 – List of Required Permits & Copy of Maine DOT Entrance Permit
- Attachment 5 – Information for finding of fact Sections 181-90 to 181-99
- Attachment 6 – Information for finding of fact Title 30-A Section 4404

- Attachment 7 – High Intensity Soil Survey
- Attachment 8 – Portland Water District Ability to Serve
- Attachment 9 – Septic System Soil Test Pits
- Attachment 10 – Stormwater Management Plan
- Attachment 11 – Homeowners' Association Documents
- Attachment 12 – Conformance to Section 181-73 Site Plan Standards
- Attachment 13 – Conformance to Article IV – General Standards
- Attachment 14 – Resource Agency Letters
- Attachment 15 – Financial Capacity
- Attachment 16 – Village Housing Floor Plan & Elevations
- Attachment 17 – Blasting Plan
- Check for Subdivision & Site Plan Application Fee and Peer Review Escrow Account
- Preliminary Plan Set (44 Sheets)

We are hopeful that this application can be placed on the agenda for the December 3, 2018 Planning Board Meeting. Thank you for your consideration, and please contact us if you have any questions as you review the enclosed plans and information.

Prepared by:
Terradyn Consultants, LLC



Lawrence R. Bastian, P.E.

SUBDIVISION & SITE PLAN APPLICATION FORMS

This section filled out by town. Standish land use code may be found at " www.Standish.org

"Application #_____ Date filed: _____ Fee Paid: _____

APPLICANT & OWNER INFORMATION

1) Name of Applicant: Leavitt-Tompson, LLC

Address: P.O. Box 703

Standish, ME 04084

Phone: (207) 642-3675 Fax: (207) 642-2426 E-Mail: brian@leavittearthworks.com

Name of applicant's authorized agent: Larry Bastian, P.E., Terradyn Consultants, LLC

Address: 41 Campus Dr., Suite 101

New Gloucester, ME 04260

Telephone: (207) 926 - 5111

Name and registration # of Land Surveyor, Engineer, Architect or others preparing plan:

Larry Bastian, P.E. #4321

Address: same as above

Telephone: (207) 926 - 5111

Person and Address to which all correspondence regarding this application should be sent:

Larry Bastian, address same as above

Phone: _____ Fax: _____ E-Mail: _____

2) What legal interest does applicant have in this property? Submit copy of right title or interest . Attachment 3

☒ Ownership ☐ option ☐ purchase and sales contract ☐ other _____

2b) What interest does the applicant have in any abutting property? Leavitt Development LLC is record owner of Lot 11A, Map 10 (Leavitt Earthworks, Inc)

2c) Name of Property Owner: Leavitt Earthworks, Inc -map 10, lot 11; Tompson Development, Inc - map 10, lot 11

Address: same as above

Telephone: (207) 642 - 3675

LAND INFORMATION

3) Location of Property (Street Location) 191 Ossippee Trail, Standish, ME 04084

(From County Registry of Deeds): Book 33450, 33294, 32929 Page 41, 157, 157 (from Tax Maps): Map 10 Lot(s) 11, 19C

4a) Current zoning of property: Standish Corner District

Is any portion of the property within 250 feet of a great pond or river? ☐ Yes ☒ No

Is any portion of the property within the direct watershed of great pond? ☒ Yes ☐ No

4b) Total Acreage of Parcel: 53.1 Ac Acreage to be developed: 53.1 Ac

Has this land been part of a prior approved subdivision? ☒ Yes ☐ No ×

Or other divisions within the past 5 years? ☐ Yes ☒ No

Does parcel include waterbodies? ☐ Yes ☒ No - Does parcel include any wetlands? ☒ Yes ☐ No

Is any portion of the property within a special flood hazard area as identified by the Federal Emergency Management Agency? ☐ Yes ☒ No

GENERAL INFORMATION

4c) Proposed name of development: Highlands Subdivision

4d) Number of lots or units: 80 multifamily units Village Housing, 18 single family lots, 4 duplexes

Does this development propose the extension of public infrastructure? ☒ Yes ☐ No

☒ roads ☒ storm drainage ☒ sidewalks ☒ fire protection equipment ☐ other

Estimated cost for infrastructure improvements $ *. Complete separate estimate with unit costs.

*from Leavitt Earthworks under separate cover

Power/telephone/cable placement: ☒ Underground ☐ Overhead

Type of structures proposed ☒ single-family residential ☒ duplex ☒ other 4-unit multifamily

Type(s) of Waste Disposal: On-site septic systems

Solid Waste Disposal Method(s): Licensed private haulers

Water supply Source(s): Portland Water District main extension

Identify method of fire protection for the proposed development per § 142-10:

☒ Hydrants from public water main ☐ Dry hydrants located on an existing pond or water body

☐ Existing fire pond ☐ other, please state alternative.

5) Does applicant intend to request waivers of any subdivision submission requirements? ☐ Yes ☒ No

If yes, list them and state reasons for the request per code § 181-108.

6) Nonconformities present in the proposal, if any: None known

7). List all local, state and federal approvals required: See Attachment 4

☒ Previously obtained MDOT Entrance Permit ☒ not yet obtained Maine DEP & US Army Corps

Information needed per PART 3 Standish subdivision regulations

8) Submitted 12 copies of Subdivision plan with information per §181-78 & §181-80 ☒ yes ☐ no

9) Please provide the following:

- Check list of information to accompany plan
- Development review escrow account established 181-81 B) Amount: $ 6,000 Date: __/___/
  Initial amount per Town Planner
  ☐ Established at application $200/lot ☐ not yet established to be determined by Board
- infrastructure improvements Performance Bond estimate included per 181-83 A) Total Amount: $_____ see attached cost estimate spreadsheet form
  ☐ Spreadsheet estimate submitted w/ unit costs ☒ not yet submitted _____ @ Final
- Subdivision improvements inspection escrow account (3% of performance bond)
- Impact fees estimates submitted per §181-121: @ Final
  ☐ roads ☐ streetlight ☐ fire protection equipment ☐ other _____

10) Standish town code is available at www.standish.org. Provide adequate information such that the Planning Board is able to make a positive finding of fact for the following sections of town code: See Attachment 5

- §181-90 Conformance to comprehensive plan
- §181-91 Preservation of natural and historic features
- §181-92 Land not suitable for development
- §181-93 Lots
- §181-94 Easements for natural drainage ways
- §181-95 Utilities
- §181-96 Street trees esplanades and open spaces
- §181-97 required improvements
- §181-97.1 Interior roads items A, B and C
- §181-98 Separate sewerage disposal sites
- §181-99 Municipal consultant fees

11) Provide adequate information such that the Planning Board is able to make a positive finding of fact for the following State subdivision law review criteria title 30-A §4404. Please refer to the "Standish finding of fact form" (NoticeofDecisionform2.doc) for a more complete description of following items: See Attachment 6

§4404 review criteria 1. Pollution

§4404 review criteria 2. Sufficient water

§4404 review criteria 3. Municipal water supply

§4404 review criteria 4. Erosion

§4404 review criteria 5. Traffic

§4404 review criteria 6. Sewerage disposal

§4404 review criteria 7. Municipal solid waste disposal

§4404 review criteria 8. aesthetic, cultural and natural values

§4404 review criteria 9. Conformity with local ordinances

§4404 review criteria 10. Financial and technical capacity

§4404 review criteria 11. Surface water; outstanding river segments

§4404 review criteria 12. Ground water

§4404 review criteria 13. Flood areas

§4404 review criteria 14. Freshwater wetlands

§4404 review criteria 15. River, stream or brook

§4404 review criteria 16. Storm water

§4404 review criteria 17. Spaghetti-lots prohibited

§4404 review criteria 18. Lake phosphorus concentration

§4404 review criteria 19. Impact on adjoining municipality

To the best of my knowledge, all the above stated information submitted in this application is correct.

_____ - Terradyn Consultants, Larry Bastian- Agent Nov. 13, 2018

(Signature and printed name of applicant) (Date)

APPLICATION GUIDELINES

Application fee is non-refundable.

Submissions shall comply with the provisions of Standish Land Use Code Subdivision Regulations part 3 §181-74 thru §181-99. § 181-82.

A.The subdivider shall, within six months after the preliminary approval of the preliminary plan, file with the Planning Board an application for approval of the final subdivision plan in the form described herein. If the final plan is not submitted to the Planning Board within six months after the approval of the preliminary plan, the Planning Board may refuse without prejudice to act on the final plan and require resubmission of the preliminary plan. All applications for final plan approval for subdivision shall be accompanied by a fee set by the Town of Standish, payable by check to the Town of Standish.

B.**If the proposed subdivision in any way is subject to review by the State of Maine, Department of Environmental Protection, then the approval of the State of Maine, Department of Environmental Protection, shall be secured in writing before official submission of the final plan.**

Town of Standish
175 Northeast Road Standish, ME - 04084
Phone: (207)642-3461 – Fax: (207) 642-5181

Highlands Subdivision / Development / Plan

AGENT AUTHORIZATION

PROPERTY DESCRIPTION	**Physical Address**	191 OSSIPPEE TRAIL STANDISH, ME 04084		**Tax Map**	10
				Lot	11 & 19C
OWNERS INFORMATION	**Name**	Brian Leavitt, Jamie Thompson	**Name of Business**	LEAVITT-THOMPSON, LLC	
	Phone	207-642-3675	**Mailing Address**	P.O. Box 703 Standish, ME 04084	
	Fax				
	Email	brian@leavittearthworks.com			
APPLICANT'S AGENT INFORMATION	**Name**	Jeffrey D. Amos, PE	**Name of Business**	TERRADYN CONSULTANTS, LLC	
	Phone	207-926-5111	**Mailing Address**	41 CAMPUS DRIVE, SUITE 101 NEW GLOUCESTER, ME 04260	
	Fax	N/A			
	Email	jeff@terradynconsults.com			

I / we being the owners of the property described above do hereby appoint the above mentioned firm or individual as an agent on my / our behalf as the owners of proposed land development plan. The agent(s) for the above plan may represent me/us before the Standish Town Officers and Planning Board to expedite and complete the approval of the proposed development for this parcel.

SIGNED BY:	SIGNATURE /	TYPE OR PRINT NAME	DATE
OWNER #1		/ Brian Leavitt	
OWNER #2	Jamie Thompson	/ Jamie Thompson	5-14-18
APPLICANT		/	
CO-APPLICANT		/	
APPLICANT'S AGENT	Consultants, LLC	/ Jeffrey D. Amos, Terradyn	5-14-2018

PLEASE INCLUDE COPY OF CURRENT DEED.

Scanned by CamScanner

Larry Bastian

From: Brian Leavitt <brian@leavittearthworks.com>
Sent: Monday, May 14, 2018 9:16 AM
To: Larry Bastian
Cc: Jamie Thompson (jtompson18227@roadrunner.com); Jeff Amos
Subject: Re: Highlands Project Sketch Plan Submittal - Authorization

I am good with that.

Sent from my iPhone

On May 14, 2018, at 8:38 AM, Larry Bastian <larry@terradynconsultants.com> wrote:

Brian and Jamie,
We are submitting the sketch plan application the Town today.

Please reply to this e-mail to authorize Terradyn Consultants, LLC to sign the attached Agent Authorization form on your behalf.

Thank you,

Larry Bastian, PE
Terradyn Consultants, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260
Ph. 207-926-5111
Cell 207-838-6882
Fax 207-221-1317

<1804_pb-agentauthorization.doc>

Subdivision Application Appendix #1 <u>Preliminary</u> Subdivision Application Checklist

This checklist has been prepared to assist applicants in developing their applications. It should be used as a guide in assembling the information necessary for a complete application. However, the checklist does not substitute for the requirements of the Subdivision Regulations (or Ordinance). The Planning Board also will be using the checklist to make sure that your application is complete. Indicate if the information has been submitted or if it is requested to be waived.

Note that this checklist only covers the submission requirements for a preliminary plan for major subdivision. It does not address the standards that the preliminary plan must meet. There are two other checklists which address the performance standards and the design guidelines which the applicant may find of assistance.

Information to accompany plan - Section 181-80

The preliminary subdivision shall be submitted in 12 copies of one or more maps or drawings which may be printed or reproduced on paper, with all dimensions shown in feet or decimals of a foot, drawn to a scale of 50 feet to the inch, except that if the subdivision includes 20 acres or more, the scale shall be 100 feet to the inch, showing or accompanied by the following information:

Shaded boxes indicate that the action is not recommended to be taken by the Applicant.

	SUBDIVISION REGULATIONS	Submitted by Applicant	Not Applicable	Applicant Requests to be Waived	Received by Planning Board	Waived by Planning Board
7.2.A.	**Twelve copies of application plus accompanying information**	X				
181-79	**LOCATION MAP**					
A	Map showing all adjacent properties & owners within (1000 ft.) of proposed subdivision property lines.	X				
B	Locations and names of existing and proposed streets, easements & building lines both adjacent & within subdivision.	X				
C	Zoning boundaries, parks, public spaces and designations	X				
D	Outline of proposed subdivision and owner's remaining contiguous land	X				
181-80	**PRELIMINARY PLAN @ 50'=1" or 1"=100' if over 20 ac**					
A	Twelve copies of all maps and/or drawings showing: Name of subdivision, name of town and assessor's Map and Lot Number(s) all dimensions in decimal feet showing subdivision & street names	X				
B	Name & address record owner, subdivider and designer	X				
C	Total acres in subdivision , proposed lot lines, gross and net lot areas within each subdivision lot excluding undevelopable areas per 181-92, property lines easements, buildings, watercourses and other essential physical features.	X				
D.	Names of adjacent subdivisions and names of owners of record of adjacent acreage.	X				
E.	Zoning district boundaries and provisions of applicable zoning ordinance.	X				
F.	Location and size of sewers and water mains, culverts & drains.	X				
G.	Location, names and widths of existing and proposed streets, easements, building lines, alleys, parks and other public open spaces.	X				
H.	Location of any streets within area to be subdivided and the width, location, grades and street profiles of all streets or other public ways proposed.	X				
I	Contour lines at intervals of five feet or at such intervals as the Planning Board may require, based on United States Geological Survey datum.	X				
J	Soils report identifying ; all wetlands, soils boundaries and names in the proposed development with the soils info. superimposed upon plot plan in accord with USDA -SCS National Cooperative Soil Classification. For Cluster subdivisions a High intensity soil survey by Soil Scientist	X	Attachment 7			

Subdivision Application Appendix #1

	SUBDIVISION REGULATIONS	Submitted by Applicant	Not Applicable	Applicant Requests to be Waived	Received by Planning Board	Waived by Planning Board
K	Typical cross sections of the proposed grading for roadways and sidewalks.	X				
L	Date plan prepared and date of any revision, true North point and graphic scale.	X				
M	Deed description and map of survey of tract boundary made and certified by a registered land surveyor, tied into Standish GIS parcel base map.	X				
N	Connection with the existing water supply or an alternative means of providing water supply to the proposed subdivision. Water Company letter of capacity	X	Attachment 8			
O	Location and results of tests to ascertain subsurface soil and groundwater conditions for sewage disposal systems.	X	Attachment 9			
P	Provisions for collecting and discharging storm drainage, in the form of a drainage plan.	X	Attachment 10			
Q	Preliminary designs of required culverts.	X				
R	Proposed lot lines with dimensions and suggested locations of buildings.	X				
S	Location of temporary markers adequate to enable the Board to locate readily and appraise the basic layout in the field. Copies of the plans and drawings on 8.5" x 11" or 11" x 17" sheets					
T	All parcels of land proposed to be dedicated to public use and the conditions of such dedication	X				
U	Location of all natural features or site elements to be preserved.	X				
V	A grading plan as may be required for any or all lots as determined by the Planning Board.					
W	The preliminary layout of any bridges required.	N/A				
X	Full extent of floodplain(s) as shown on the most current version of the FEMA maps. 100-year flood elevations	N/A				
Y	Any areas within the proposed subdivision that may be used for a stump dump or for gravel or fill removal. The size of these areas and the expected extent of time these areas will be utilized shall be included with the application.	X				
	Planning Board may require additional information where it is determined necessary by the Board to meet criteria of the State Subdivision Statute Title 30-A M.R.S.A., ¤4404.					
181	**ADDITIONAL INFORMATION**					
	Legal review information including Agent authorization form, Deed restrictions on proposed new lots or dwellings, homeowners association documents and incorporation.	X	Attachment 11			
	Verification of right, title or interest in property, Copy of most recently recorded deed; all restrictions, easements, rights-of-way and other encumbrances	X				
181-81	Professional review fees (peer review escrow account)	X				

ATTACHMENT 2

Town of Standish

175 Northeast Road Standish, ME - 04084
Phone: (207)642-3461 – Fax: (207) 642-5181

Application for Site Plan Review & Approval

APPLICANT OWNER INFORMATION

1) Name of Applicant: Leavitt-Tompson, LLC

Address: P.O. Box 703, Standish, ME 04084

E-mail: brian@leavittearthworks.com Telephone: (207) 642-3675

Name and address of owner's authorized agent: Larry Bastian, P.E., Terradyn Consultants, LLC
41 Campus Dr., Suite 101, New Gloucester, ME 04260

e-mail: larry@terradynconsultants.com Telephone: (207) 926-5111

Name address and registration # of Land Surveyor, Engineer, Architect or others preparing plan:

Larry Bastian, #4321

e-mail: larry@terradynconsultants.com Telephone: (207) 926-5111

Person and address to which all correspondence regarding this application should be sent:

Larry Bastian, at above address

E-Mail: Telephone:

LAND INFORMATION

2) What legal interest does applicant have in this property? Submit copy of right title or interest. Ownership option purchase and sales contract other:

Deed ownership - see Attachment 3

3) Property Location (Street address) 191 Ossippee Trail, Standish, ME 04084

[Deed recorded at County Registry of Deeds (CCRD)] - [From Standish Tax Maps]

CCRD - Book # 33450, 33294, 32929 Page 41, 157, 157 Tax Map 10 Lot 11, 19C

4a) Property zoned: SCR Street Frontage Type TR Street, TA Street

Is any portion of property within 250' of a pond or river? ◯ Yes ◯ No

Is any portion of the property within the direct watershed of great pond? ◯ Yes ◯ No

4b) Total Acreage of Parcel: 53.11

Acreage to be developed: 53.11

Does parcel include water bodies? ◯ Yes ◯ No

Has this land been part of a subdivision? ◯ Yes ◯ No

Has lot been divided or split within the past 5 years? ☐ Yes ☑ No

Does parcel include any wetlands? ◯ Yes ◯ No

Is any portion of the property within a flood hazard area identified by Federal Emergency Management Agency? ◯ Yes ◯ No

GENERAL INFORMATION

4c) Proposed name of business: Highlands Subdivision

4d) Proposed land use as defined in Standish Land Use Code 181-3 and confirmed with town CEO.

Dwelling Units and Dwelling, Multifamily

Does this development propose the extension of public infrastructure?

◯ Yes ◯ No

If yes then complete a separate estimate with unit costs for roads, storm drainage, sidewalks, water main, Fire protection equipment or other estimated cost for infrastructure improvements.

Power/telephone/cable placement: Underground Overhead

Structures proposed: twenty (20) 4-unit multi-family buildings, 18 single family lots, 4 duplexes

Waste Disposal type: on-site subsurface disposal systems

Water supply Source: Portland Water District main extension

Identify method of fire protection for the proposed development per § 142-10. Hydrants from public water main, Dry hydrants located on an existing pond or water body, Existing fire pond other, please state alternative.:

hydrants from public water main

5) Does applicant intend to request waivers of any site plan submission requirements?

◯ Yes ◯ No

If yes, list and state reasons for the request per code 181-108.

6) Non-conformities present in the proposal, if any:

None known

7). List all local, state and federal approvals required if any:

See Attachment 4

Previously obtained MDOT Entrance Permit not yet obtained: Town, MDEP

8) Submit 12 copies of the site plan with all plan element and information per §181-69 - §181-73.4
9) Please provide the following per consultation with the Town Planner:
Development review escrow account 181-70 F&G)

Amount: Date:

Impact fees estimates submitted per §181-70 E roads ,streetlight, fire protection equipment, other

10) On a separate attachments please provide adequate information such that the Planning Board is able to make a judgment that the applicant has proven that the site plan meets all standards outlined in § 181-73 "Site plan standards and conditions of approval" or in Article IV "General Standards" or Towers. See Attachments 12 & 13

The application fee is non-refundable. The time limit on this application is 90 days from the first meeting. No extensions will be given unless the delay is caused by a governmental agency. Pursuant to Standish Land Use Code, § 181-70.1, Following the issuance of site plan approval for a specified use by the Planning Board, the applicant shall make a substantial start, as defined in Part 1, § 181-3, and determined by the Code Enforcement Officer, on the approved use within three years from the original date of approval. If no such substantial start is made, the Planning Board approval shall lapse and become void. Standish Land Use Code, § 181-3 defines substantial start as completion of 30% of a permitted structure or use, measured as a percentage of total estimated value to complete.

By either typing or signing your name below the applicant / applicant's agent is declaring that the information submitted for this application is true and accurate to the best of his / her knowledge.

Printed Name: Terradyn Consultants, Agent Date Signed
Lawrence Bastian, PE

Signature / 11/13/2018
Date Signed

The above pages with a site plan constitute a complete site plan or site plan amendment application. An agent authorization form must be completed if the property owner has others representing them at the Planning Board meetings. The site plan should contain all elements outlined in §181-71 Site Plan elements checklist included in site plan appendix. When necessary attach separate sheets proving the application meets the standards outlined in §181-73 listed below or other relevant sections listed under general standards.

APPLICATION GUIDELINES

Please fill out the above application using the guidelines as listed in the site plan appendix. Return the completed application with site plan and relevant additional information requested to the Planning Department at least 21 days prior the scheduled Planning Board business meeting at which you wish to be reviewed. If you need assistance or have any questions please contact the Planning Department at 642-3661. To expedite your application through the Planning Board process, please read the following pages

REVISED VILLAGE HOUSING COVER LETTER – 1/22/1019

TERRADYN
CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

1804.01

January 22, 2019

Mr. Zach Mosher, Town Planner
Town of Standish Municipal Building
175 Northeast Road
Standish, ME 04085

Highlands Preliminary Subdivision & Site Plan – Revised Village Housing Plan

Dear Zach,
On behalf of Leavitt-Tompson, LLC we are pleased to submit the revised Preliminary Subdivision and Site Plan Application for the Highlands, an 84-unit Village Housing Site Plan and 18-lot residential subdivision. We revised the Village Housing portion of the project based on discussions at the Planning Board meeting on December 3, 2018 and at the Planning Board site walk and workshop on December 20, 2018.

The development parcel is located on the north side of Route 25, approximately 1.2 miles west of Standish Corner, and extends northeasterly to Oak Hill Road. The property is shown as lots 11 and 19C on Town of Standish Tax Map #10. The 53.11-acre property is located within the Standish Corner District. The Standish Corner District (SCD) Regulating Plan requires a Town Residential (TR) street frontage type for the public right-of-way within the proposed development. A section of Town Avenue (TA) street is also proposed for the access onto Route 25.

Village Housing Revisions
The project configuration discussed at the December 3 and December 20 meetings with the Planning Board included 80 two-story Village Housing condo units and four duplex units on two 40,000 SF lots along Highland Drive. That layout was based on 4-unit, 88-ft. long buildings. There was a general consensus that the unit size (22 ft. wide) seemed tight. Jamie Tompson and Brian Leavitt also stated their intention to include some single-story buildings in the development to offer a variety of housing options and appeal to a wider range of homeowners. In that context, there was discussion of Section 181-28.1.C (7)(a) Village Housing Standards that requires a 100-ft. vegetated buffer for two-story buildings and a 50-ft. vegetated buffer for one-story buildings along Highlands Drive. It was the general consensus of the Board and the Town Planner that a 50-ft. vegetated buffer is required for any one-story buildings and that two-story buildings require a 100-ft. buffer.

Based on guidance from the workshop, we revised the Village Housing plan to include ten (10) single-story, two-bedroom units and eleven (11) two-story, two-bedroom units. We also enlarged the two-story buildings to 96 ft. long, making each unit 24 ft. wide. The single-story buildings all have at least a 50-ft. vegetated buffer along Highlands Drive. The two duplex lots shown on the previous site plan have been eliminated and their associated land area assigned to the Village Housing development. Preliminary floor plans for the proposed single-story buildings are attached.

41 Campus Drive • New Gloucester, ME • 04260 •Phone 926-5111 • Email: info@terradynconsultants.com

The net residential density calculations show that the property can support 87 two-bedroom Village Housing dwelling units (at 1 unit/16,000 SF) and 18 single-family lots (30,000 SF minimum lot size on Town Residential Street). Updated net residential calculations are provided on the enclosed Preliminary Subdivision Plan.

The Town Planner's memo for the December 3 meeting also recommended that the clubhouse be relocated because it fell within the Village Housing vegetated buffer. The revised plans show the clubhouse on the right (east) side of Highlands Drive between the first two Village Housing pods.

Other plan revisions made in conjunction with the changes to the buildings include the following:

- The section of Town Avenue Street on Highlands Drive extends from Route 25 to station 5+50, just past the driveway to the future self-storage facility on Leavitt Earthworks property. This driveway also provides access to the clubhouse.
- The Town Avenue Street cross section has been revised to conform to the Ordinance (44' pavement width, including parking).
- Septic systems have been resized to smaller footprints using Elgin In-Drain infiltrators. System locations use the previous soil test pits.
- Site grading, storm drains and utilities have been revised based on the revised building footprints.
- The tree line has been adjusted based on the revised grading plan.
- Frontage on Highlands Drive is provided for Leavitt Earthworks property at +/- station 8+50 for service by Portland Water District.

The above changes are shown on the enclosed plan set.

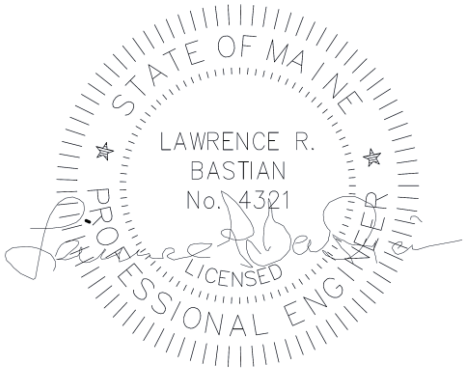
Attachments **- REFER TO 1/22/2019 SUBMITTAL FOR THE FOLLOWING ATTACHMENTS**

~~The following items are attached to this letter:~~

- Single-Story Building Preliminary Floor Plan
- Traffic Impact Study
- Revised Preliminary Plan Set (44 Sheets)

I believe that this information addresses the comments provided to date on the project. We are hopeful that this application can be placed on the agenda for the February 4, 2019 Planning Board meeting. Thank you for your consideration, and please contact us if you have any questions as you review the enclosed plans and information.

Prepared by:
Terradyn Consultants, LLC



Lawrence R. Bastian, P.E.

ATTACHMENT 1

FINAL SUBDIVISION AND SITE PLAN APPLICATION
JANUARY 21, 2020

Pineland
Cumberland Hall
41 Campus Drive, Suite 101
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 310
Portland, ME 04101

January 21, 2020 JN 1804

Mr. Zach Mosher Planner
Town of Standish
175 Northeast Road
Standish, Maine 04085

Subject: Highlands Subdivision – Final Subdivision & Site Plan Application and Response to Peer Review Comments

Dear Zach:

On behalf of Leavitt-Tompson, LLC, we are pleased to submit the Final Subdivision & Site Plan Application for the Highlands Subdivision, a residential development with 84 Village Housing units and 18 single-family lots. The development parcel is located on the north side of Route 25, approximately 1.2 miles west of Standish Corner, and extends northeasterly to Oak Hill Road. The property is shown as lots 11 and 19C on Town of Standish Tax Map #10. The 53.11-acre property is located within the Standish Corner District.

The project received preliminary Subdivision and Site Plan approval with conditions on March 4, 2019. Terradyn Consultants submitted the Site Location and NRPA Tier 1 wetland alteration permit applications to the Maine DEP and U.S. Army Corps of Engineers following preliminary approval. The Maine General Permit approval has been received from the Corps and DEP staff has informed us that they expect to issue the Stormwater and NRPA permits in the next few weeks.

This submission includes our response to Town Engineer peer review comments as well as revisions resulting from the Maine DEP permitting review process. Notable revisions from the DEP engineering review were to re-configure Filter Basins #1, #2 and #3 with two treatment cells vs. one cell as shown on the preliminary plans. The DEP geology review resulted in updated soils maps, additional test pits, and nitrate-nitrogen analyses for the single-family lots as well as the Village Housing condominiums.

Updated plans and revised information as noted above are included as attachments to this submission.

RESPONSE TO TOWN ENGINEER REVIEW COMMENTS

Our office received peer review comments for the above referenced project from Peter B. Tubbs at P.B. Tubbs Consulting dated February 6, 2019. We have reviewed the comments and have prepared the responses presented below. For clarity, each comment is repeated below, followed by our response in italics.

Sheet C-1.0 – Subdivision and Site Plan for Village Housing

- There appears to be a metes and bounds missing on the boundary with Parcel 6-31A, refer to the Boundary Survey plans.

Response: Revised Plan

Sheet C-1.2 – Subdivision and Site Plan for Village Housing

- The symbol for the 30' drainage easement is for the future Right of Way easement.

Response: Revised symbol

Sheet C-2.0 – Highlands Drive Layout Plan

- The sight distance along Route 25, both ways from the intersection should be shown.

Response: Added sight distance at Route 25 and Oak Hill Road

- The 6'sidewalk, 5'wide esplanade, and sloped curb for the Town Ave. Street Section should be noted as 'both sides".

Response: Sidewalk on both sides was waived in Preliminary approval – now shown on left (northwest) side only.

- The street widths should be noted.

Response: Noted as typical

- Notes to clarify the extent of different street types and the taper would be helpful.

Response: Noted on plan

- We question if the 20' radius at the subdivision entrances are adequate for service vehicles.

Response: The 20' radii are adequate with the 44' wide roadway.

Sheet C-2.1 – Highlands Drive Layout Plan

- Why does the driveway and paved shoulder widths of the access drives vary?

Response: Driveways are now all the same (12' and 24' wide) and paved shoulder is 5'.

Sheet C-2.3 – Highlands Drive Layout Plan

- The traffic report recommends minor re-shaping of the Oak Hill road ditch to the left of the intersection (in front of 130 Oak Hill Road) to improve sight distance. That re-grading should be shown on Sheet C-3.3.

Response: Noted on plan

Sheet C-3.0 – Highlands Drive Grading Plan

- The grading over the 15" storm drain westerly of the entrance should be shown.

Response: Revised plan

- Ditto the 15" outlet to the level spreader left of Sta. 2+50

Response: Revised plan

- Underdrain as shown on the Typical Road Sections (sheet C- 6.0) should be shown on all the Grading Plans, (sheets C-3.0 through C-3.7).

Response: Notes requiring Type B 6" underdrain and Type C underdrain are added to Sheet C-3.0.

- The finish Floor elevation of the buildings and access points should be shown.

Response: Walks and porches are now shown at all units. Elevations are provided on the 20 scale plans for clarity.

Sheet C-3.1 – Highlands Drive Grading Plan

- The comments concerning drainage and the buildings apply here also.

Response: Revised as noted above

- There does not appear to be appropriate cover over the west end of the 24" stormdrain out letting easterly of units 53-56.

Response: Revised pipe elevations and grading

- The leader for the invert elevation at the westerly end of the same pipe does not point to the end of the pipe.

Response: Revised plan

Sheet C-3.3 – Highlands Drive Grading Plan

- A 20' section of the 18" entrance culvert will be exposed, it might be better to shorten the pipe and ditch out to elevation 381.5.

Response: Revised plan and shortened pipe

- See note on S C-2.3 for grading to the left of the intersection.

Response: Note on ditch and backslope grading added to plan

Sheet C-3.5 – Highlands Drive Grading Plan

- We believe the "Gravel Wetland" shown is now Treatment Cell # 2.

Response: Gravel wetland is labeled on plan.

- A portion of the outlet end of the 18" stormdrain from CB-G-1 will be exposed. The pipe should be shortened to a point where there is at least 1.0' of cover over the pipe, and the outlet ditch and riprap extended back to the end of the pipe.

Response: Revised pipe inverts and grading

- Ditto for the 15" pipe outlet from CB-L-2.

Response: Revised inverts and grading

Sheet C-3.6 – Highlands Drive Grading Plan

- The 24" SD from CB-G-3 does not extend to the outlet invert shown.

Response: Revised pipe inverts and grading

- A note is needed to define the abbreviations FFE, BFE, & GFE.

Response: Legend added to plan

- The second note on Sheet 3.5 applies to the 18' SD from CB-G-1 and the 24"SD from CB-G-3 (when extended) also.

Response: Revised plan

Sheet C-3.7 – Highlands Drive Grading Plan

- The Stormdrain north of units 57 to 68 needs to be defined.

Response: This pipe is detailed on sheet C-3.2.

- The piping in and out of Filter Basin #2 should be defined, or a note added referencing the drainage information on Sheet C-3.1.

Response: Piping is defined on the detail sheet C-6.4.

Sheet C-4.0 through C 4.3 – Highlands Drive Utility Plans

- Specify the offset of the water line from the centerline of Highlands Drive.

Response: Noted as "typical"

- Ditto the offset in the Units drives

Response: Noted as "typical"

- Call out the symbol for the septic tanks, force mains, transformers as (Typ.)

Response: Septic tank noted as typical. Force main and transformer symbol is in legend.

Sheet C-5.0 through C 5.4 – Highlands Drive and Village Housing Roadway Profiles

The storm drain piping needs to be checked to insure there is 3.9' of cover over the top of the pipe in the Town Residential Street section and 4.2' of cover over the top of the pipe in the Town Avenue Street section. These depths provide for 1.0' of cover between subgrade and the top of the pipes

Response: Revised plans to provide 1' separation at all water main crossings as required by Portland Water District. This results in top of storm drain pipe at depth of 0.5' to 1.0' below roadway subgrade. Also, the 24" storm drain pipe to Filter Basin #2 is controlled by the elevations in the filter basin and could not be lowered; top of pipe is at least 0.5' below subgrade.

Sheet C- 6.2 Gravel Wetland Details and Notes

- The 391 contours should connect on either side of the primary spillways on the interior berms.

Response: Revised plan.

- Ditto the 393 contours on either side of the Cell 2 spillway.

Response: Revised plan

- The detail for the outlet control structure shows the 6" underdrain outlet at elevation 387.33 while the plan note specifies elevation 386.33

Response: Revised to elevation 386.33.

- A manufacturer should be specified for the P-300 LW Turf Reinforcement Mat.

Response: North American Green (mfr.) noted on plan

Sheet C- 6.3 Filter Basin # 1 Details and Notes

- Won't the 4" underdrain outlet pipe with 2' of cover, and the 1" diameter hole in the end cap be subject to freezing?

Response: Added underdrain outlet MH to plan.

- Bullet note 4 above applies here also.

Response: Changed spillway to riprap.

Sheet C- 6.4 Filter Basin # 2 Details and Notes

- The note in the section specifies the HDPE liner extend up to elevation 392 which is lower than the bottom of the basin.

Response: Revised plan

- There are two leaders pointing to the outlet structure with conflicting information.

Response: Revised to eliminate conflict

Sheet C- 6.5 Filter Basin # 3 & 4 Details and Notes

Filter Basin #3

- The section of the Filter Basin shows the underdrain pipe to be 6” vs. the 4” shown in plan.

Response: Revised to 4”

- The 382 contours should connect on the west side of the emergency spillway.

Response: Revised plan

- The 382 through 386 contours should connect to the existing contours on the easterly side of the spillway.

Response: Revised plan

Filter Basin # 4

- Bullet note 1 on sheet C- 6.3 applies here also

Response: Added underdrain outlet MH to plan.

- Based on the Basin Section the underdrain inverts shown are <u>not</u> at the specified depth below the basin floor.

Response: The required depth is provided at the upstream-most end of the UD pipe within the basin.

Sheets C- 6.7 through C- 6.9

- These sheets reflect standard details of the various components of site construction. As standard details they are accepted /approved by most municipalities, and are acceptable here.

Response: Acknowledged

- The drive culvert shown on sheet C- 6.6 should be a minimum of 15” diameter.

Response: Revised detail

Sheets L-1.1 and L-1.2

These sheets reflect street trees along the length of the project. The species of trees, planting details and specifications, landscaping along the drives and around to the residential Units, and treatment of adjacent areas should specified.

Response: The landscape plans are revised to note species.

We trust that the above responses and attached materials address the comments. Please contact me directly if you have additional questions or comments.

ATTACHMENTS

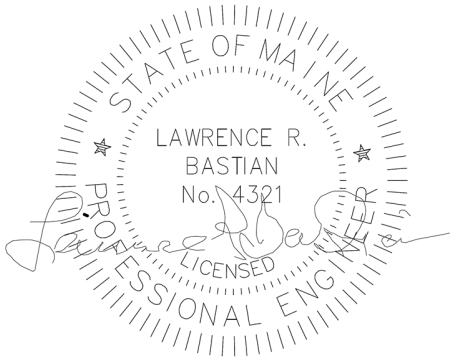
- Revised Plan Set
- 1. Army Corps Maine General Permit, Wetlands
- 2. Updated Stormwater Report as reviewed by Maine DEP
- 3. Correspondence with Portland Water District re. Ability to Serve
- 4. Nitrate-Nitrogen Assessment for Multi-Family Housing Units
- 5. Response to Maine DEP Site Location Application Geology Review. Includes:
    - Form E (Soil Conditions Summary Table) & Form F (Soil Profile / Classification) – Test Pits TP-99 to TP-138
    - Form E (Soil Conditions Summary Table) & Form F (Soil Profile / Classification) – Probes P-1 to P-20
    - HHE-200 Forms for Condominiums
    - Nitrate-Nitrogen Assessment for Single-Family Lots
    - 500' Blasting Radius Diagram
- 6. Soil Survey Map (Revised 11/26/2019)
- 7. Nitrate Analysis Map (Revised 11/26/2019)

CLOSING

As noted above, we expect to receive Maine DEP permits within the next few weeks and will provide copies of permits when received.

We are hopeful that this application can be placed on the agenda for the February 3, 2020 Planning Board meeting. Thank you for your consideration, and please call us if you have any questions as you review the enclosed plans and information.

Sincerely,
TERRADYN CONSULTANTS, LLC



Larry Bastian, P.E.
Civil Engineer

Attachments: As noted above

cc. Brian Leavitt
Jamie Tompson

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO
ATTENTION OF

MAINE GENERAL PERMIT (GP)
AUTHORIZATION LETTER AND SCREENING SUMMARY

BRIAN LEAVITT & JAMIE TOMPSON
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

CORPS PERMIT # NAE-2019-02253
CORPS GP ID# non-screen
STATE ID# L-28172-TB-N

DESCRIPTION OF WORK:
Place permanent fill in 7,192 s.f. of freshwater wetland off Route 25 (Ossipee Trail) and Oak Hill Road at Standish, Maine in order to construct associated infrastructure for a residential subdivision with 21 condominium buildings containing a total of 84 units, a clubhouse and 18 single family residences. This work is shown on the attached plans entitled "U.S.G.S. QUADRANGLE MAP" in one sheet dated "1/29/2019", "HIGHLANDS DRIVE GRADING PLAN" in four sheets dated ""3/29/2019" and "A.C.O.E. WETLANDS ALTERATION MAP" in four sheets dated "4/01/2019". See ADDITIONAL CONDITIONS attached.

LAT/LONG COORDINATES: 43.737533° N -70.570178° W **USGS QUAD:** STANDISH, ME

I. CORPS DETERMINATION:
Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. **Your work is therefore authorized by the U.S. Army Corps of Engineers under the Federal Permit, the Maine General Permit which can be found at: https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/** Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the enclosed GP carefully, including the GP conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 37 of the GP (page 16) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP on October 13, 2020. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 13, 2021.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [X], ISSUED [ ], DENIED [ ] DATE_____

APPLICATION TYPE: PBR:___, TIER 1: X, TIER 2 :____, TIER 3:____, LURC: ____ DMR LEASE: ____ NA: ____

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: non-screen LEVEL OF REVIEW: CATEGORY 1:____ CATEGORY 2: X

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10____, 404 X 10/404____, 103____

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA n/a, USF&WS n/a, NMFS n/a

If you have any questions on this matter, please contact my staff at 978-318-8676 at our Augusta, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0

COLIN M. GREENAN
PROJECT MANAGER
MAINE PROJECT OFFICE

FOR **FRANK J. DEL GIUDICE** 12/4/19 **DATE**
CHIEF, PERMITS & ENFORCEMENT BRANCH
REGULATORY DIVISION

US Army Corps
of Engineers®
New England District

PLEASE NOTE THE FOLLOWING ADDITIONAL CONDITIONS FOR DEPARTMENT OF THE ARMY GENERAL PERMIT NO. NAE-2019-02253

1. This authorization requires you to 1) notify us before beginning work so we may inspect the project, and 2) submit a Compliance Certification Form. You must complete and return the enclosed Work Start Notification Form to this office at least two weeks before the anticipated starting date. You must complete and return the enclosed Compliance Certification Form within one month following the completion of the authorized work. **These forms are attached after the plans.**

2. The permittee shall assure that a copy of this permit is at the work site whenever work is being performed and that all personnel performing work at the site of the work authorized by this permit are fully aware of the terms and conditions of the permit. This permit, including its drawings and any appendices and other attachments, shall be made a part of any and all contracts and sub-contracts for work which affects areas of Corps of Engineers' jurisdiction at the site of the work authorized by this permit. This shall be done by including the entire permit in the specifications for the work. If the permit is issued after construction specifications but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. The term "entire permit" includes permit amendments. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions of the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps of Engineers jurisdiction.

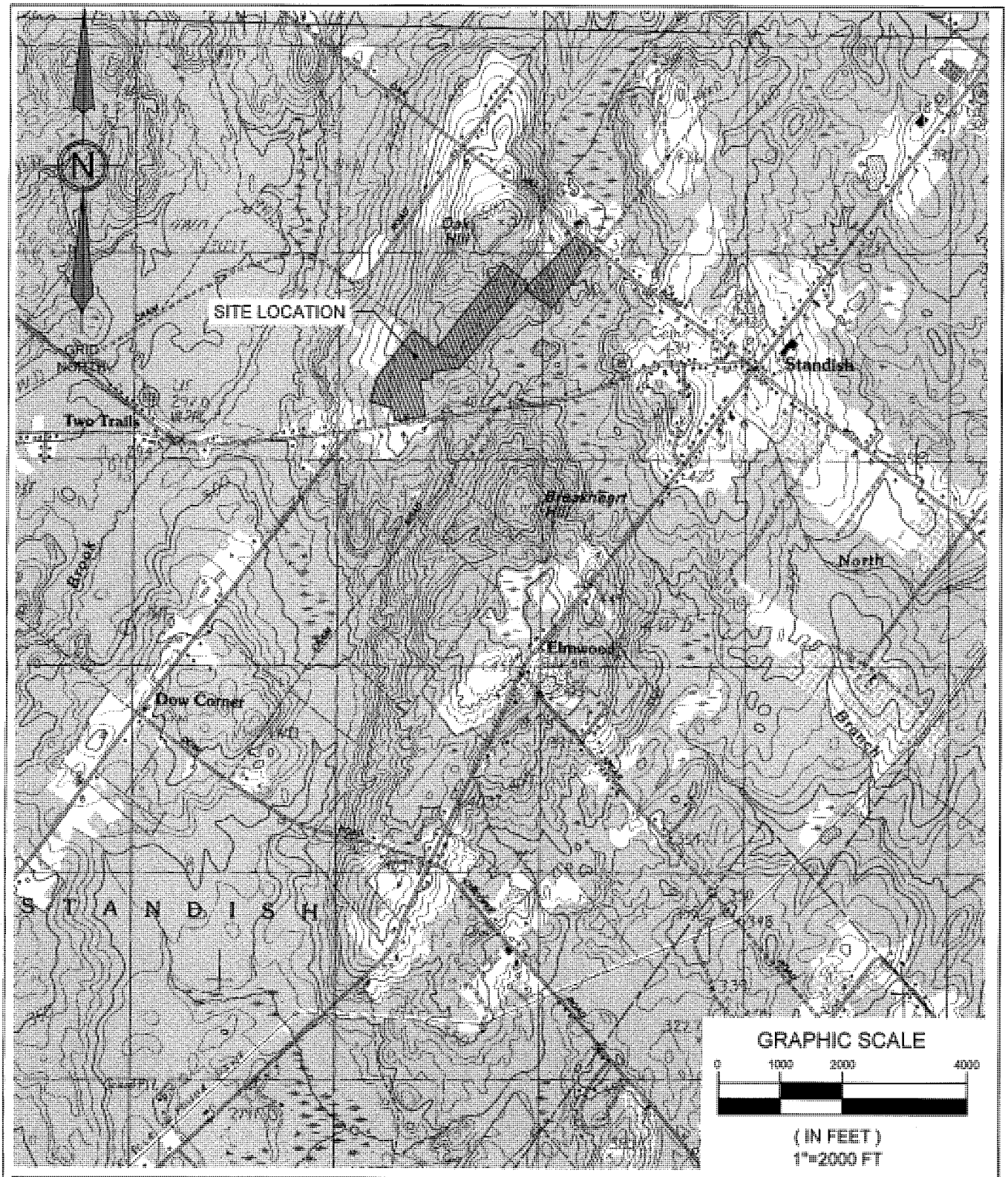
3. Adequate sedimentation and erosion control devices, such as geotextile silt fences or other devices capable of filtering the fines involved, shall be installed and properly maintained to minimize impacts during construction. These devices must be removed upon completion of work and stabilization of disturbed areas. The sediment collected by these devices shall be removed and placed upland, in a manner that will prevent its later erosion and transport to a waterway or wetland.

4. All exposed soils resulting from the construction shall be promptly seeded and mulched in order to achieve vegetative stabilization.

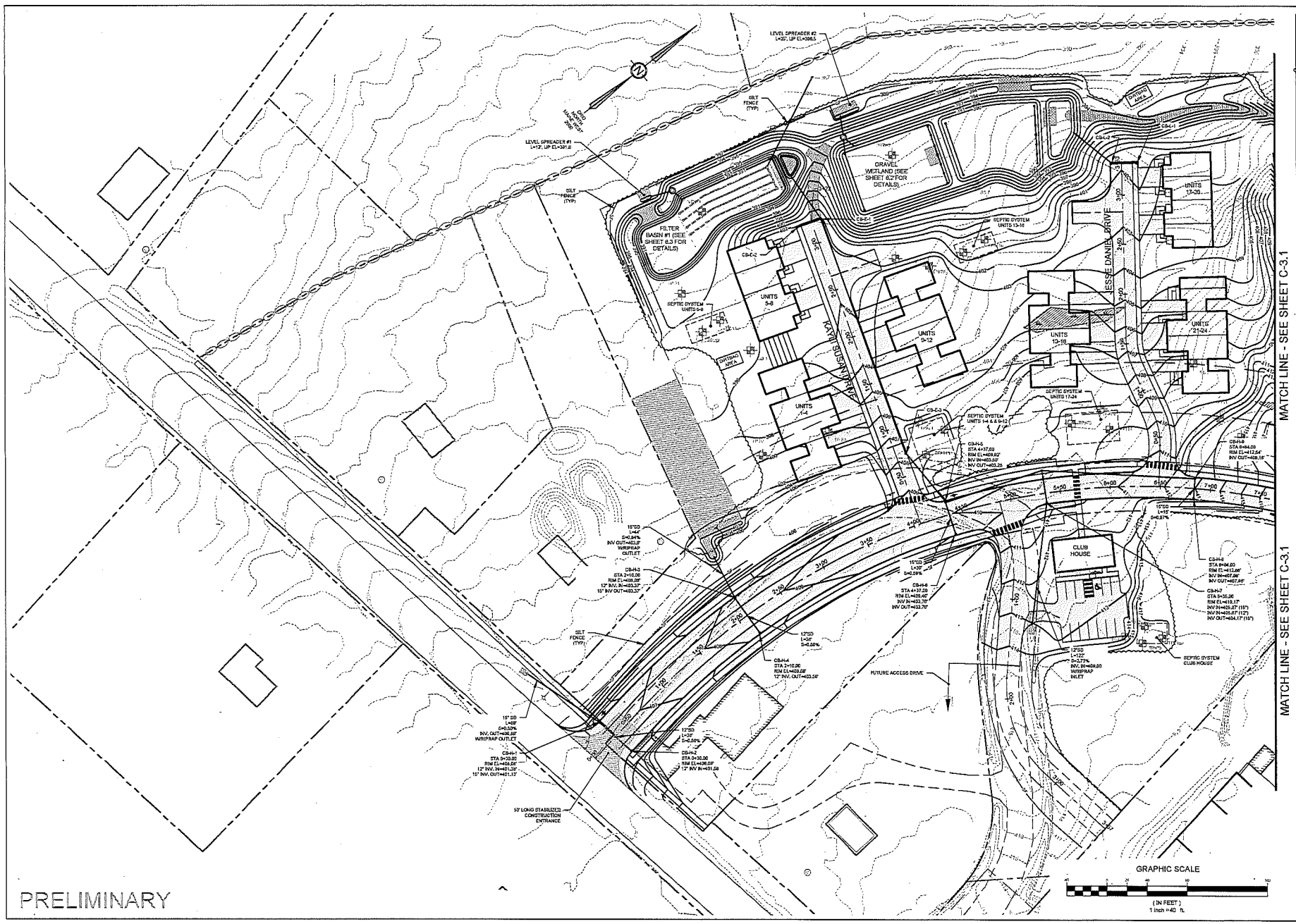
5. This permit authorizes impacts to only those areas of wetlands/waterway shown on the attached plans. No other filling, clearing or other disturbance in waters of the United States shall occur without the necessary authorization from the Corps.

6. In the event additional wetland/waterway fill is authorized and the cumulative impacts exceed the more than minimal threshold of the Maine General Permit, the permittee may be responsible to provide appropriate compensatory mitigation to compensate for these impacts.

7. No tree cutting shall occur between June 1st and July 31st of any year and to the maximum extent practicable, tree cutting shall occur between October 16th and April 9th of any year in order to minimize potential impacts to federally threatened northern long-eared bats.



SHEET DESCRIPTION U.S.G.S. QUADRANGLE MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1347 www.terradynconsultants.com	JOB NO. 1804	SHEET 1
PREPARED FOR LEAVITT-TOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	DATE 1/29/2019	OF 1
		SCALE 1"=2,000'	



PRELIMINARY

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 10262
PROFESSIONAL ENGINEER

SIGNATURE DATE: 12/12/2019

NO.	DATE	REVISIONS	APPD BY
3	3/25/2019	WCBP SITE LOCATION APPLICATION	
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	

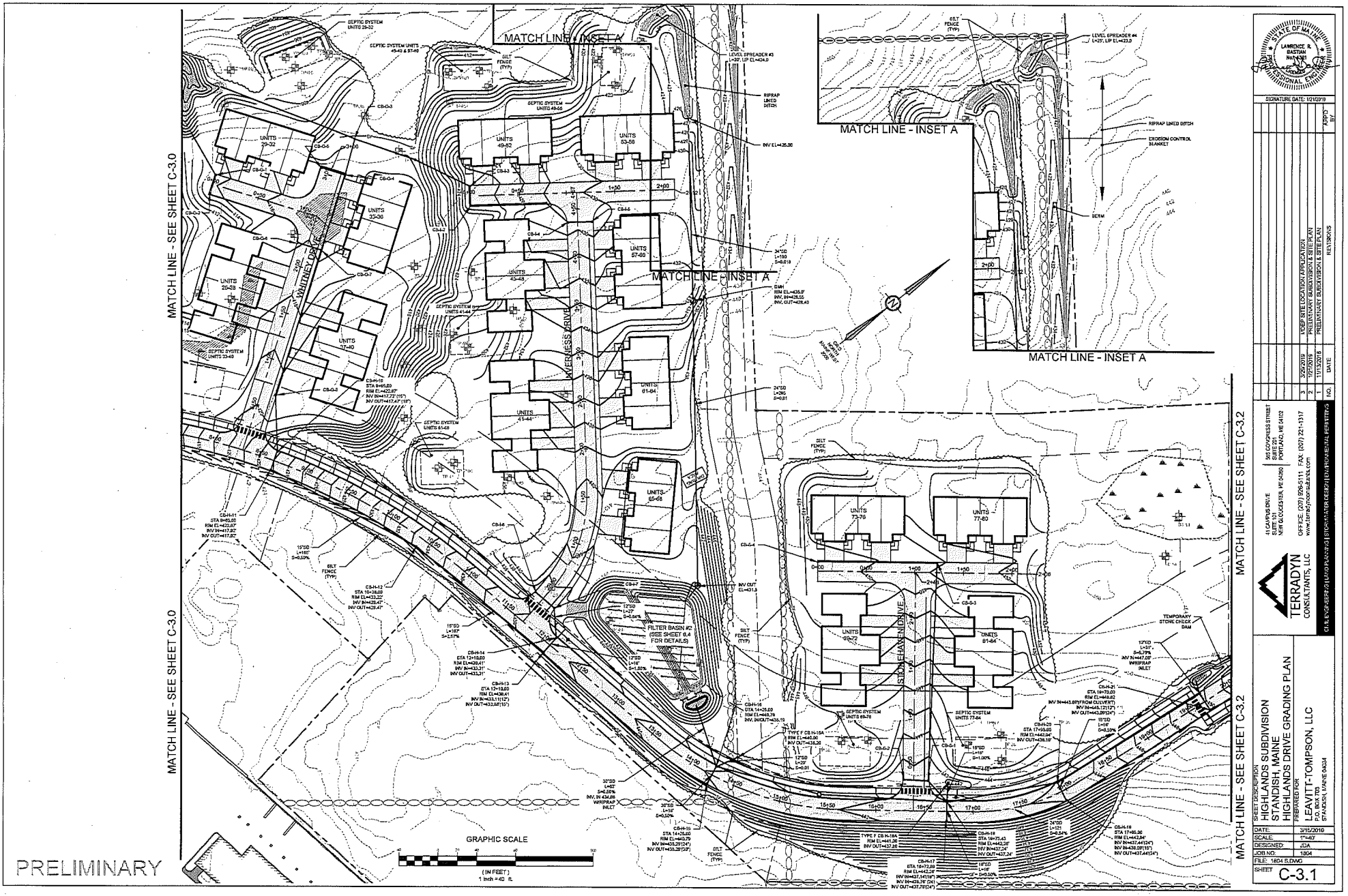
TERRADYN CONSULTANTS, LLC
41 CAPPS CLOVER DRIVE, SUITE 101, NEW GLOUCESTER, ME 04260
565 CONGRESS STREET, SUITE 201, PORTLAND, ME 04102
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

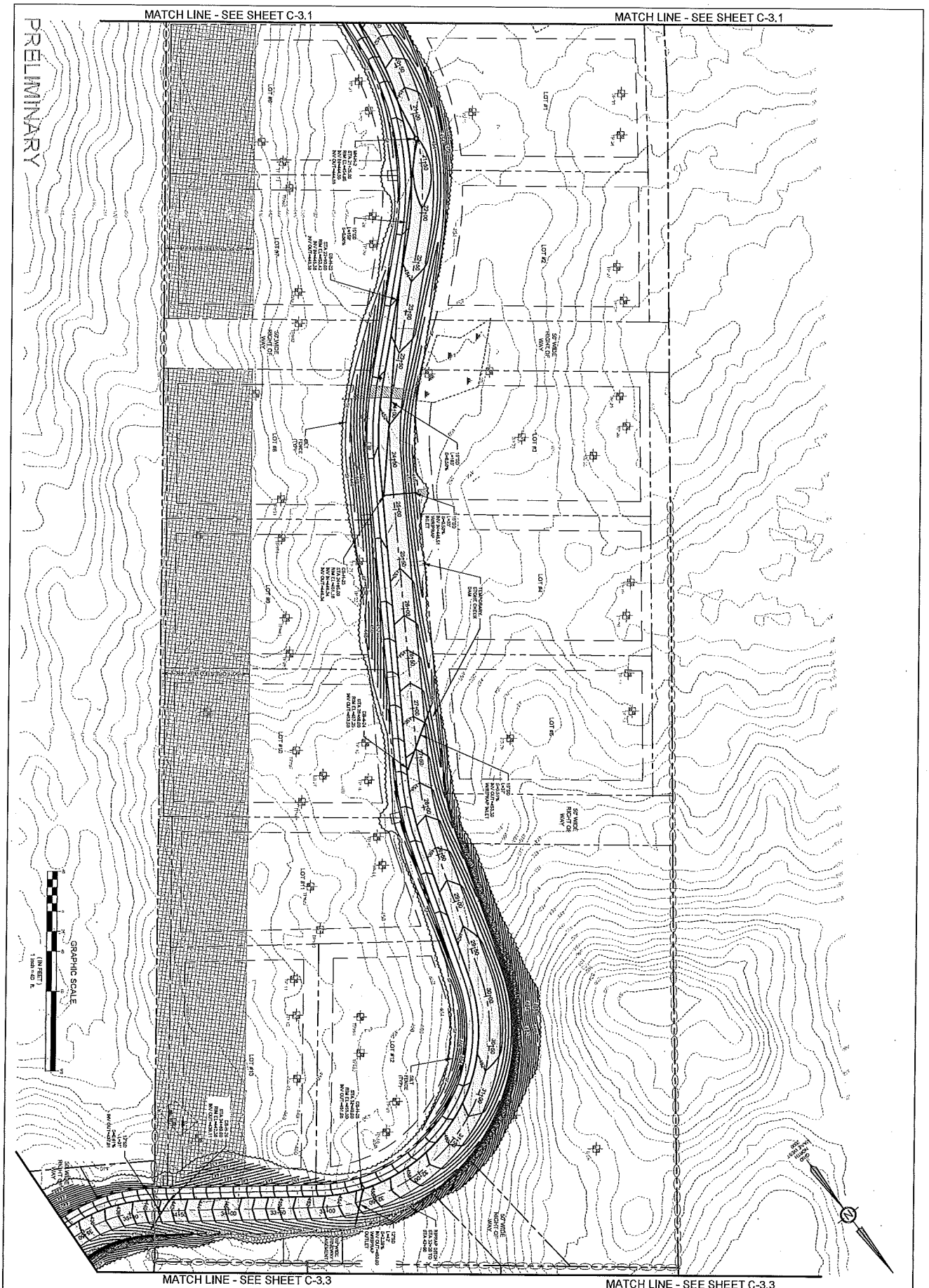
C:\PROJECTS\TERRADYN\1604 HIGHLANDS\DWG\1604 HIGHLANDS - PRELIMINARY.DWG

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 700
STANDISH, MAINE 04084

DATE	3/15/2018
SCALE	1"=40'
DESIGNED	JSA
JOB NO.	1604
FILE	1604 S.DWG
SHEET	C-3.0


MATCH LINE - SEE SHEET C-3.0
MATCH LINE - SEE SHEET C-3.2
MATCH LINE - INSET A
WHITNEY DRIVE
INVERNESS DRIVE
STONEHAVEN DRIVE
UNITS 25-28
UNITS 29-32
UNITS 33-36
UNITS 37-40
UNITS 41-44
UNITS 45-48
UNITS 49-52
UNITS 53-56
UNITS 57-60
UNITS 61-64
UNITS 65-68
UNITS 69-72
UNITS 73-76
UNITS 77-80
FILTER BASIN #2 (SEE SHEET 9.4 FOR DETAILS)
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.
PRELIMINARY
STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14532
PROFESSIONAL ENGINEER
SIGNATURE DATE: 1/21/2019
NO. | DATE | REVISIONS | BY
1 | 11/13/2018 | PRELIMINARY SUBDIVISION & SITE PLAN
2 | 1/21/2019 | PRELIMINARY SUBDIVISION & SITE PLAN
3 | 3/26/2019 | NCEP SITE LOCATION APPLICATION
TERRADYN CONSULTANTS, LLC
11 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradyncontsultants.com
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN
PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 170
STANDISH, MAINE 04084
DATE: 3/15/2019
SCALE: 1"=40'
DESIGNED: JDA
JOB NO.: 1804
FILE: 1804 S.DWG
SHEET: C-3.1



SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

TERRADYN CONSULTANTS, LLC

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com

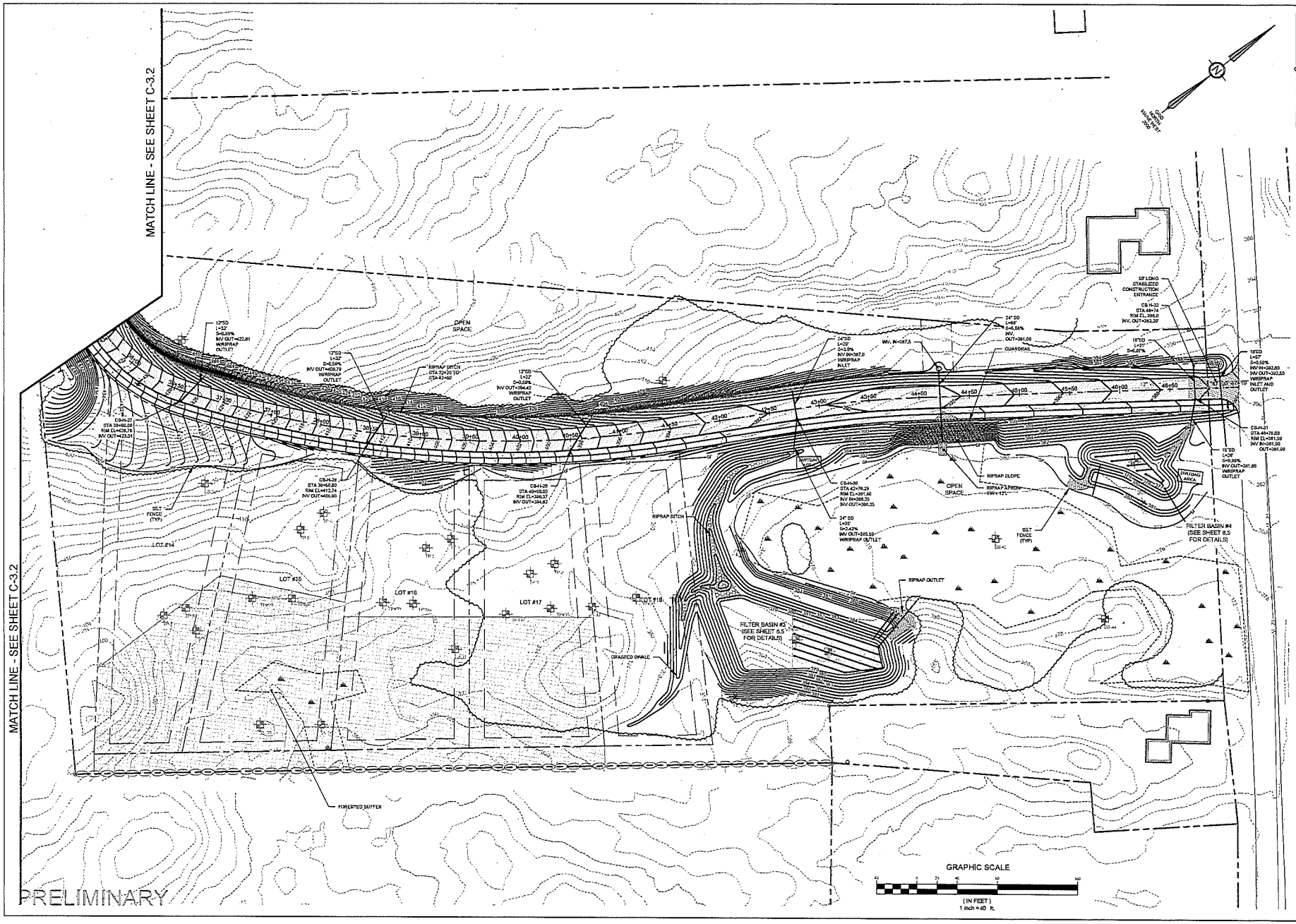
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

NO.	DATE	REVISIONS	APP'D BY
3	3/29/2019	MDEP SITE LOCATION APPLICATION	
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	

SIGNATURE DATE: 12/12/18

STATE OF MAINE
LAWRENCE R. BOUCHARD
No. 9421
PROFESSIONAL ENGINEER

SHEET	C-3.2
FILE	1904.5.DWG
JOB NO.	1904
DRAWN BY	TTH/RP
CHECKED BY	LRB
SCALE	1"=40'
DATE	3/15/2019



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 13321
PROFESSIONAL ENGINEER

SIGNATURE DATE: 12/12/2019

NO.	DATE	REVISIONS	BY
3	3/26/2019	TECHNICAL REVIEW APPLICATION	
2	12/12/2019	PRELIMINARY SUBDIVISION & SITE PLAN	
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	

TERRADYN CONSULTANTS, LLC
41 CAMPUS CIRCLE
SUITE 1
KENNEBUNKPORT, ME 04046
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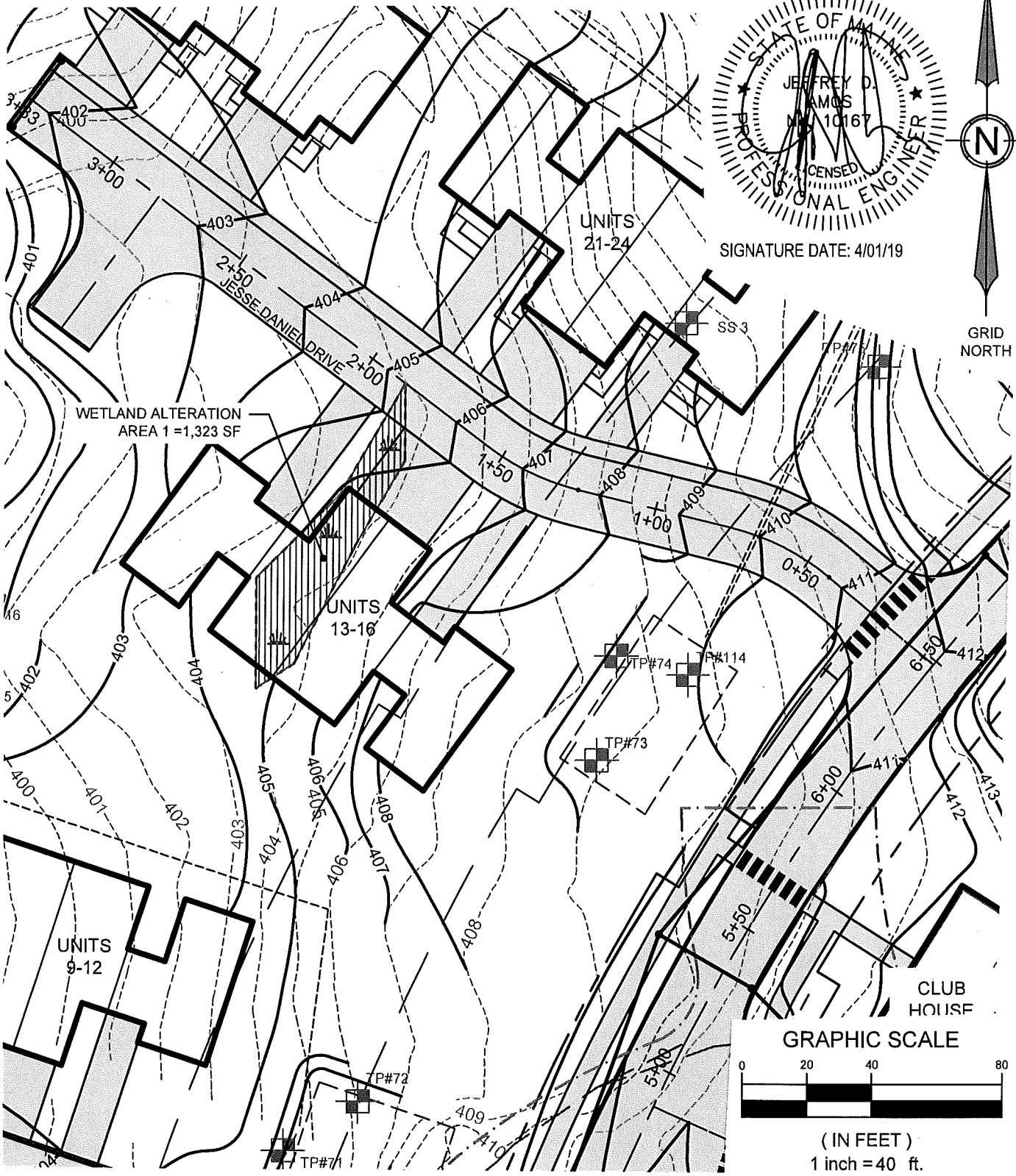
555 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

G:\LEAVITT-TOMPSON\HIGHLANDS\PLANS\SITE\WATER DESIGN\EIP\ENVIRONMENTAL PERMITTING

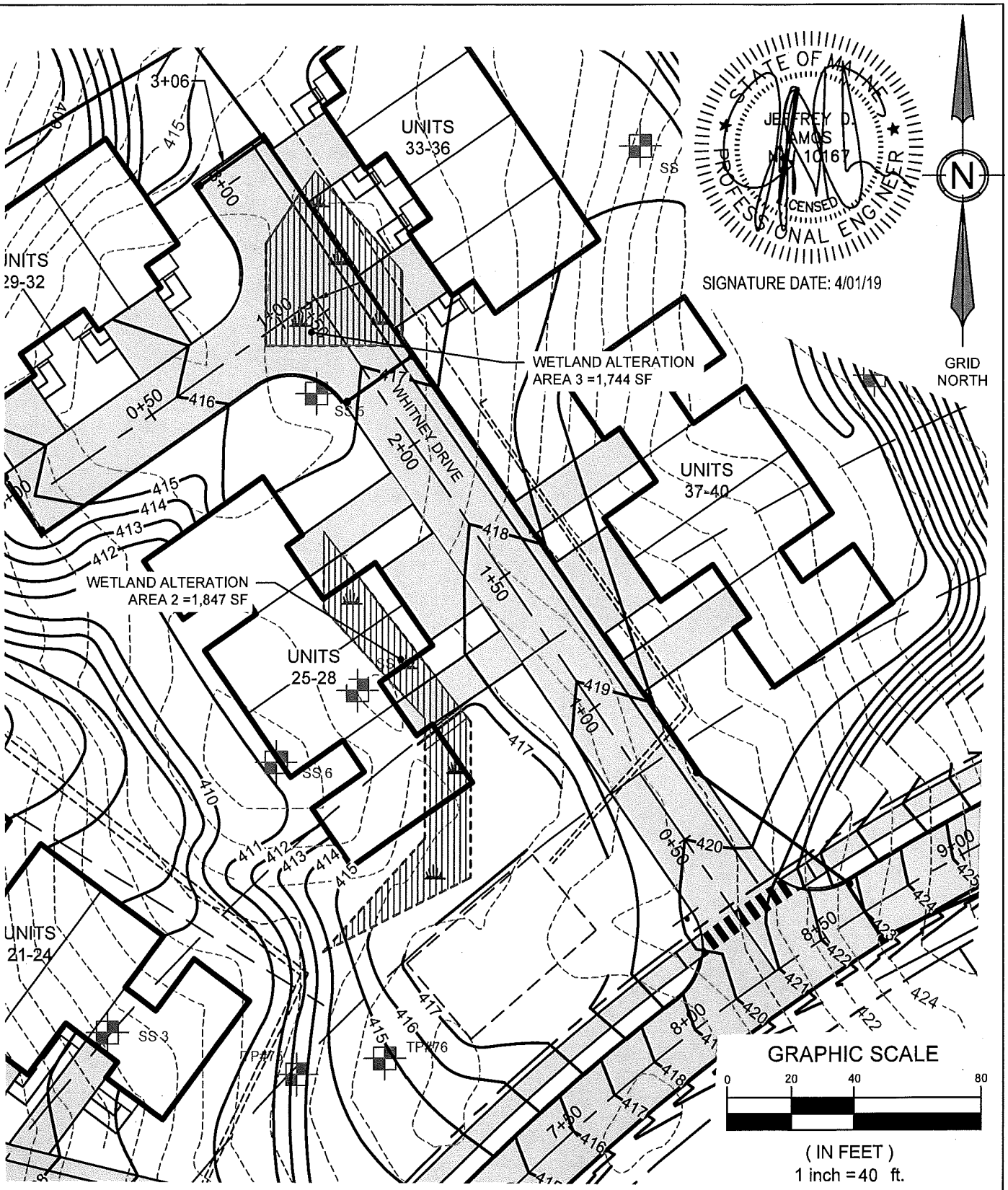
SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

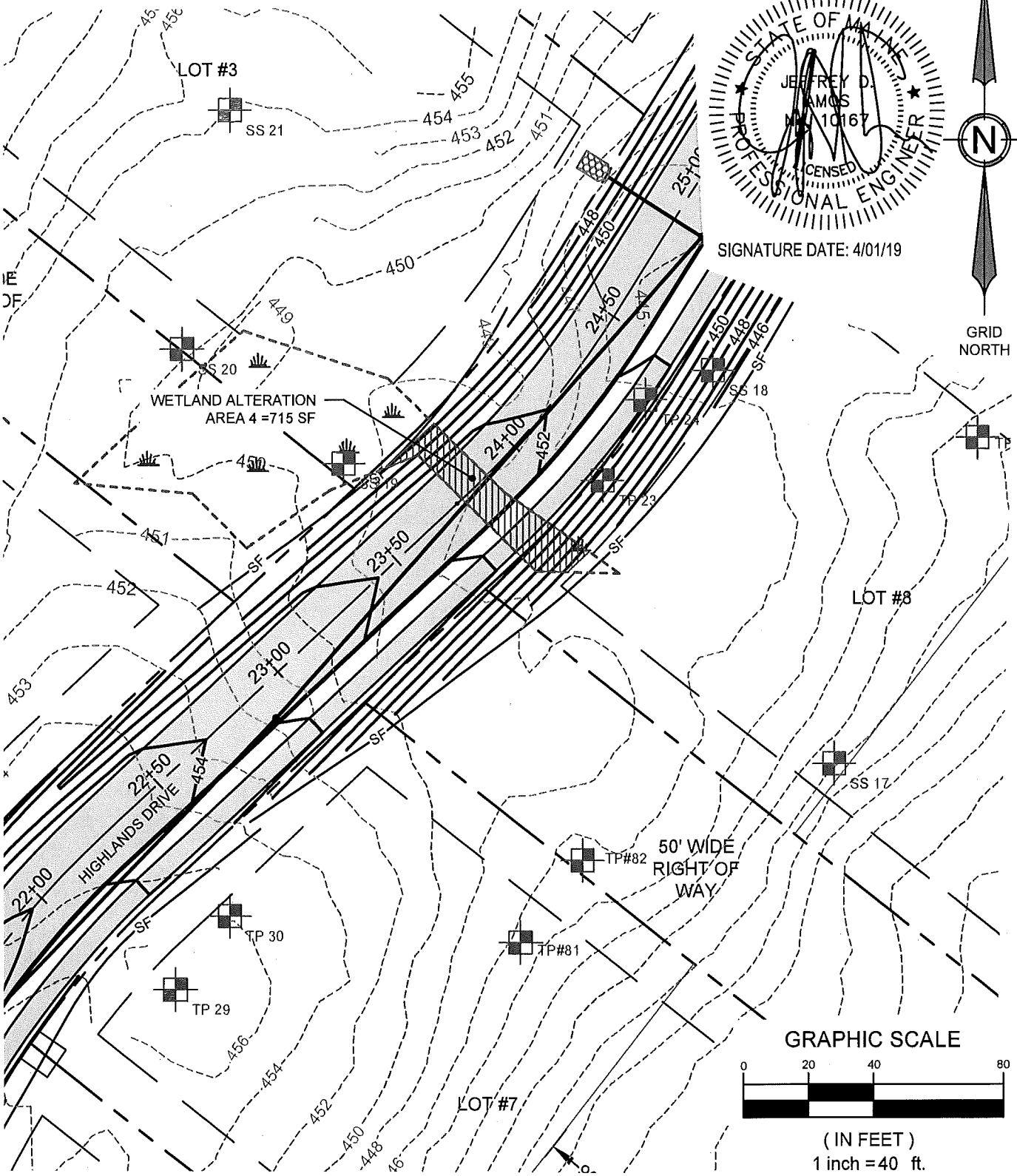
DATE	3/15/2019
SCALE	1"=40'
DESIGNED	JDA
JOB NO	1804
FILE	1804 S.DWG
SHEET	C-3.3



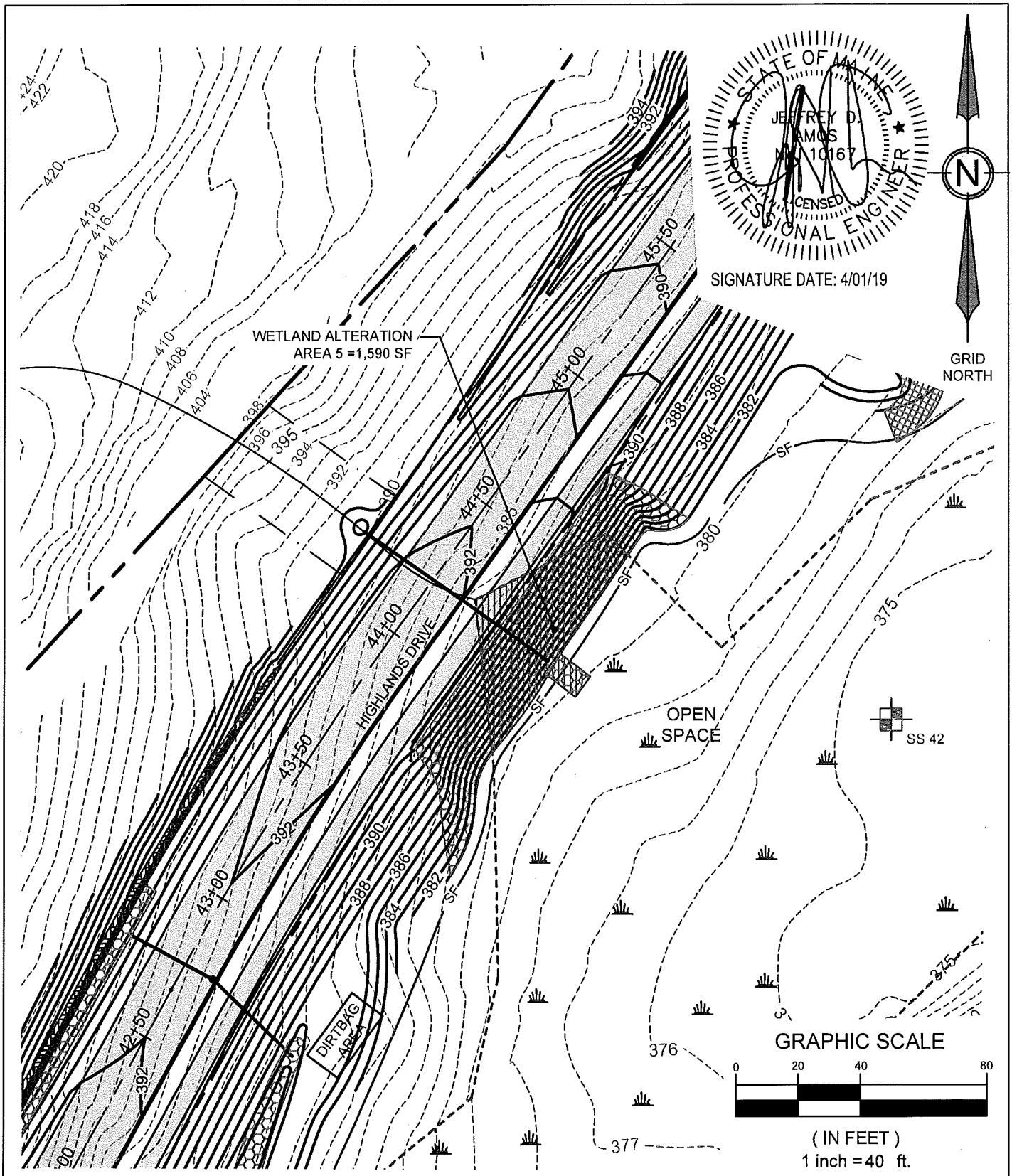
SHEET DESCRIPTION A.C.O.E. WETLANDS ALTERATION MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com	JOB NO. 1804	SHEET 1
PREPARED FOR LEAVITT - TOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	DATE 4/01/2019 SCALE 1"=40'	OF 4



SHEET DESCRIPTION		JOB NO.	SHEET
A.C.O.E. WETLANDS ALTERATION MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com	1804	2
PREPARED FOR LEAVITT - TOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	DATE 4/01/2019 SCALE 1"=40'	OF 4



SHEET DESCRIPTION		JOB NO.	SHEET
A.C.O.E. WETLANDS ALTERATION MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com	1804	3
PREPARED FOR LEAVITT - TOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	DATE 4/01/2019 SCALE 1"=40'	OF 4



SHEET DESCRIPTION		JOB NO.	SHEET
A.C.O.E. WETLANDS ALTERATION MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com	1804	4
PREPARED FOR LEAVITT - TOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	DATE 4/01/2019	OF 4
		SCALE 1"=40'	

US Army Corps of Engineers®
New England District

GENERAL PERMIT
WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

MAIL TO: Colin M. Greenan
U.S. Army Corps of Engineers, New England District
Maine Project Office
442 Civic Center Drive, Suite 350
Augusta, Maine 04330

A Corps of Engineers Permit (No. NAE-2019-02253) was issued to Brian Leavitt & Jamie Tompson, Tompson-Leavitt, LLC. The permit authorized the permittee to place permanent fill in 7,192 s.f. of freshwater wetland off Route 25 (Ossipee Trail) and Oak Hill Road at Standish, Maine in order to construct associated infrastructure for a residential subdivision with 21 condominium buildings containing a total of 84 units, a clubhouse and 18 single family residences.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

_____

_____

Business Address: _____

_____

_____

Telephone: (____) _____ (____) _____

Proposed Work Dates: Start: _____

Finish: _____

PERMITTEE'S SIGNATURE: _____ DATE: _____

PRINTED NAME: _____ TITLE: _____

FOR USE BY THE CORPS OF ENGINEERS

Project Manager: GREENAN Submittals Required: No

Inspection Recommendation: random Maine General Permit compliance

US Army Corps of Engineers®
New England District

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

COMPLIANCE CERTIFICATION FORM

Corps of Engineers Permit No: NAE-2019-02253

Name of Permittee: Brian Leavitt & Jamie Tompson, Tompson-Leavitt, LLC

Permit Issuance Date: 12/4/2019

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

```
*********************************************************************
* MAIL TO:  U.S. Army Corps of Engineers, New England District      *
*           Policy & Technical Support Branch                       *
*           Regulatory Division                                     *
*           696 Virginia Road                                       *
*           Concord, Massachusetts 01742-2751                       *
*********************************************************************
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Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee	Date
Printed Name	Date of Work Completion
( ) Telephone Number	( ) Telephone Number

STORMWATER MANAGEMENT PLAN

Highlands Subdivision
Standish, Maine
Revised November 27, 2019

The following Stormwater Management Plan has been prepared for the Highlands Subdivision and Village Housing Project to evaluate stormwater runoff and erosion control for the proposed eighty-four (84) unit Village Housing Site Plan and 18-lot residential subdivision.

Site Calculations

Total Property Area	53.11 Ac (+/-)
Total New Impervious Area	9.70 Ac
Landscaped Area	19.10 Ac
Total Developed Area	28.80 Ac

Existing Conditions

The development parcel is located on the north side of Route 25, approximately 1.2 miles west of Standish Corner, and extends northeasterly to Oak Hill Road. Existing structures on the property include an existing farmhouse and barn just west of Leavitt Earthworks, Inc. on Route 25. The farmhouse existed prior to 1970. There is an existing gravel road on the property west of Leavitt Earthworks as well as a +/- 0.4-acre area being used for occasional construction stockpile activity. The boundaries of the development site are shown on the attached USGS 7.5-minute topographic map.

The majority of the property is wooded, with a meadow area at the easterly end near Oak Hill Road. The westerly portion of the site (+/-23.6 ac.) drains to Josie's Brook in the Saco River watershed. The easterly portion of the site (+/-29.5 ac.) drains to the Stickey River in the Sebago Lake watershed. Existing freshwater wetlands with a total area of +/- 1.81 acres have been delineated on the property.

Proposed Development

The project includes 84 two-bedroom condominium units in 21 buildings ("Village Housing" per the Standish Ordinance), and an 18-lot residential subdivision. All 18 lots have frontage on the proposed subdivision road (Highlands Drive) while the condominium buildings are accessed by five proposed driveways. The single-family lots range in size from approximately 30,100 SF to 40,100 SF. Future street rights-of-way are included to connect the subdivision with developable land on neighboring parcels, as required by the Town of Standish. Highlands Drive, the Village Housing access drives and single-family lots #1 through #5 will drain to a piped storm drain system draining to a gravel wetland and two underdrained soil filters. The single-family lots (#6 - #18) within the Sebago Lake watershed will be treated by a combination of underdrained soil filters, roof drain filter strips and forested buffers.

Flooding

The development area is not located within an area of flood hazard according to the Federal Insurance Rate Map 230207 0040 B. See attached map.

Modeling Assumptions

The onsite stormwater facilities were sized utilizing the USDA Soil Conservation Service (SCS) TR-20 Runoff Simulation Model, as contained in the HydroCAD computer software program (Version 10.00). Runoff curve numbers were determined for each direct watershed by measuring the area of each hydrologic soil group within each type of land cover. Weighted curve numbers were then calculated using curve numbers for various cover types and hydrologic soil groups, assuming "good" conditions as defined in U.S Soil Conservation Service (SCS) publications. Times of concentration and travel times were determined from site topographic maps in accordance with SCS procedures. A maximum length of 150 feet was used for sheet flow.

All of the watersheds' peak runoff rates were analyzed for the 2, 10, and 25-year frequency, 24-hour duration storm events. A Type III rainfall distribution was applied to these storms. The rainfall amounts for this area of Cumberland County are as follows:

Storm Frequency Precipitation (in./24 hr)	
2-year	3.1
10-year	4.6
25-year	5.8

Soil Delineation

The onsite soils were delineated from a Class A High Intensity Soil Survey that was conducted by Mark Hampton Associates, Inc. The offsite soils were found from the Cumberland County Medium Intensity Soil Survey as shown on the Soil Data Viewer on the NRCS website (See attached map). The soil survey reports that the watershed soils are generally hydrologic group C and D soils. Since the High Intensity Soil Survey showed only HSG C and HSG C/D soils, the analysis models all non-wetland soils as HSG C soils and all wetland soil as HSG D. Soils boundaries are delineated on the attached pre- and post-development watershed maps.

Water Quantity (Flooding Standard)

The following table summarizes the results of stormwater calculations for the design storm events for the project areas. HydroCAD calculations are provided as an appendix to this report.

Table 1 - Stormwater Runoff Summary Table Pre-Development vs. Post-Development						
Study Point #	2Yr/24Hr (cfs)		10Yr/24Hr (cfs)		25Yr/24Hr (cfs)	
	Pre	Post	Pre	Post	Pre	Post
1	1.9	1.2	3.9	3.5	5.6	5.2
2	8.2	7.5	19.7	19.5	30.1	29.1
3	7.9	7.3	19.5	15.2	30.2	22.0
4	0.7	0.7	1.8	1.8	2.8	2.8
5	5.4	5.0	13.1	13.1	20.2	20.0
6	3.0	3.0	7.5	6.6	11.6	9.9
7	2.6	1.6	5.3	3.1	7.6	4.4
8	0.9	0.9	2.0	1.9	3.0	2.8

As shown in the above table, the post-development peak flow rates for the 2, 10, and 25-year/24 hour design storm events do not exceed the pre-development peak flow rates at points of discharge from the site, except for the 2-year storm at study point #6. This is considered an insignificant increase because actual post-development flows at this study point will be lower than calculated in HydroCAD due to the use of forested buffers on lots #14 through #17.

Water Quality (BMP Standard)

The water quality requirements will be met by the construction of a gravel wetland and four underdrained soil filter basins. Additionally, roof drain filter strips will be used on lots #12 and #13 in the subdivision to meet the phosphorus standard. For the water quality calculations, all single-family residential lots were assumed to have 5,000 SF of impervious area and 15,000 SF of landscaped area. The Subdivision Plan notes that lots #1 to #5 in the Saco River watershed are deed-restricted to a maximum of 5,000 SF impervious area and 15,000 SF landscaped area; lots #6 to #18 in the Sebago Lake watershed are deed-restricted to 4,000 SF impervious area and 12,000 SF landscaped area to reduce phosphorus export, so the treatment percentages noted below are conservative.

The impervious and developed treatment percentages are summarized below:

New Impervious Area: The project will result in the creation of approximately 422,694 SF of impervious area in the form of roadway, walkways, driveways & roof. A combination

of different BMPs will result in the treatment of approximately 404,469 SF of impervious area resulting in a treatment percentage of (404,469/422,694) x 100%= 95.69%.

Percentage of Treatment of the Impervious Area =95.6% (95% req'd)

Project Developed Area: The project will result in the creation of approximately 1,254,742 SF of developed area. The combination of BMPs will result in the treatment of approximately 1,096,172 SF of the developed area resulting in a treatment percentage of (1,096,172/1,254,742) x 100%= 87.36%.

Percentage of Treatment of the Developed Area = 87.4% (80% required)

Water quality percentage treatment calculations are detailed in Attachment A.

Water Quality (Phosphorus Export Calculations)

Best Management Practices (BMPs) will be implemented to reduce the impacts of site development on downstream water quality. The northeasterly portion of the property is located in the Sebago Lake Watershed. Sebago Lake is identified by the MDEP as a lake most at risk from development.

Sebago Lake Watershed

The allowable per acre allocation of phosphorus export for the portion of the site that is within the Sebago Lake Watershed is 0.061 lbs/acre/year of developable land. There are approximately 28.53 developable acres on the site within the Sebago Lake watershed for a total Project Phosphorus Budget of 1.74 lb./year (See Attachment B, Worksheet 1).

Phosphorus export calculations are provided on Worksheet 2 in Attachment B. Forested buffers, two underdrained soil filter basins, and roof drain filter strips on two house lots are used to reduce the total predicted phosphorus export to 1.71 lbs/year. This value is less than total Phosphorus Budget of 1.74 lb./year, as summarized on Worksheet 4 in Attachment B.

BMP Sizing

Roof Dripline Filter Bed
We propose to provide treatment for some of the development roof runoff on two lots (Lots 12 & 13). The bed is required to provide volume for 1" of runoff from the contributing area and store it within a reservoir bed. The bed sizing per foot of roof length is as follows:

Area of Watershed: = 15 SF (assuming 15' to ridge line)
Treatment Volume Required: Area x runoff depth: 15 SF x 1/12 FT = 1.25 CF
Bed Sizing:
Porosity = 40% Bed Length = 1' Bed Width = 3' Bed Depth = 1.5
Available Volume= 1' x 3' x 1.5' x 0.40 = 1.8 CF.

Proposed Filter Beds will be 3' wide x 1.5' deep.

Level Spreaders #1, #2, #3 and #4
These level spreaders are sized based on the Redistribution of Stormwater Discharges Standard from Chapter 500, which requires the flow rate from a 10-year, 24-hour storm to be less than 0.25 cfs per foot length of level spreader lip.

Level Spreader #1
Level spreader receives flow from the Filter Basin #1 primary outlet pipe. Q10 peak flow rate = 1.5 cfs.
Standard Sizing: Length = 1.5 cfs / (0.25 cfs / ft) = 6 ft.
Proposed Length = 12 ft.

Level Spreader #2
Level spreader receives flow from the gravel wetland primary outlet pipe. Q10 peak flow rate = 5.4 cfs.
Standard Sizing: Length = 5.4 cfs / (0.25 cfs / ft) =22 ft.
Proposed Length = 25 ft.

Level Spreader #3
Level spreader receives flow from the Filter Basin #2 and subcatchment S2-1C, which contains the rear roof and yards of four 4-unit condo buildings. Q10 peak flow rate = 7.0 cfs.
Standard Sizing: Length = 7.0 cfs/ (0.25 cfs / ft) = 28 ft.
Proposed Length = 30 ft.

Level Spreader #4
Level spreader receives flow from a swale constructed to divert off-site runoff from subcatchment S2-1A around the development site. Q10 peak flow rate = 6.0 cfs.
Standard Sizing: Length = 6.0 cfs/ (0.25 cfs / ft) = 24 ft.
Proposed Length = 25 ft.

Level Spreader #5
The buffer contains soils that are consistent with hydrologic soil group C sandy loam or loamy sand soils. Table 5.5 in the BMP Manual, *Berm and Flow Path Length Per Acre of Impervious Area* shows that standard sizing for a forested buffer with 150' flow path over slopes of 6% must be 75' per acre of impervious area and 25' per acre of lawn. Evaluation of the watershed shows the following:

Impervious Area = 0.292 Ac
Lawn Area = 0.864 Ac.

Standard Sizing: 75(0.292) +25(0.864) = 44 ft
Proposed Length = 45 ft.

Gravel Wetland

WATERSHED IMPERVIOUS AREA=	130201	SF
WATERSHED LANDSCAPED AREA=	189922	SF
REQUIRED WQV=	17181	CF
PROVIDED WQV=	17664	CF
REQUIRED FILTER AREA=	10308	SF
PROVIDED FILTER AREA=	11724	SF

Forebay

	STAGE (FT)	AREA (SF)	STORAGE (CF)
	390	1007	0
	391	1469	1238
WQV	391.25	1585	1620
	391.5	1700	2030

Cell #1

	STAGE (FT)	AREA (SF)	STORAGE (CF)
	390	5863	0
	391	6828	6345
WQV	391.25	7069	8082
	391.5	7310	9880

Cell #2

	STAGE (FT)	AREA (SF)	STORAGE (CF)	
	390	5863	0	
	391	6674	6268	
WQV	391.25	6876	7962	45%
	391.5	7079	9707	

Total Pond

	STAGE (FT)	AREA (SF)	STORAGE (CF)
	390	12733	0
	391	14970	13852
WQV	391.25	15530	17664
	391.5	16089	21617
	392	17209	29941
	393	19450	48270
	394	21690	68842

Filter Basin #1

WATERSHED IMPERVIOUS AREA=	56280	SF
WATERSHED LANDSCAPED AREA=	65166	SF
REQUIRED WQV=	6862	CF
PROVIDED WQV=	7091	CF
REQUIRED FILTER AREA=	4117	SF
PROVIDED FILTER AREA=	4139	SF

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)
390.4	115	0
391	196	93
391.9	324	327

Cell #1
west

STAGE (FT)	AREA (SF)	STORAGE (CF)
390.4	2519	0
391	2932	1635
WQV 391.55	3506	3406
391.9	3872	4697

Cell #2
east

STAGE (FT)	AREA (SF)	STORAGE (CF)
390.4	2702	0
391	3124	1748
WQV 391.55	3581	3592
391.9	3872	4896

Total Pond

STAGE (FT)	AREA (SF)	STORAGE (CF)
390.4	5221	0
391	6056	3476
WQV 391.55	7088	7091
391.9	7744	9920
392	7744	10695
393	9241	19187
394	10477	28276

Filter Basin #2

WATERSHED IMPERVIOUS AREA=	97269	SF
WATERSHED LANDSCAPED AREA=	86031	SF
REQUIRED WQV=	10973	CF
PROVIDED WQV=	11278	CF
MINIMUM REQ'D FILTER SURFACE AREA=	6584	SF
PROVIDED FILTER SURFACE AREA=	6613	SF

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)
434.5	100	0
435	121	55
436	196	214

Cell #1
north

STAGE (FT)	AREA (SF)	STORAGE (CF)
434.5	3307	0
435	3718	1756
WQV 435.95	4354	5591
436	4388	5809

Cell #2
south

STAGE (FT)	AREA (SF)	STORAGE (CF)
434.5	3306	0
435	3773	1770
WQV 435.95	4357	5632
436	4388	5850

Total Pond

STAGE (FT)	AREA (SF)	STORAGE (CF)
434.5	6613	0
435	7491	3581
WQV 435.95	8712	11278
436	8776	11873
436.01	9395	11964
437	11340	22228
438	12659	34227

Filter Basin #3

WATERSHED IMPERVIOUS AREA=	42898	SF
WATERSHED LANDSCAPED AREA=	79105	SF
REQUIRED WQV=	6212	CF
PROVIDED WQV=	6267	CF
REQUIRED FILTER AREA=	3727	SF
PROVIDED FILTER AREA=	4133	SF

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)
379.5	60	0
380	230	73
380.5	400	230

Cell #1
west
WQV

STAGE (FT)	AREA (SF)	STORAGE (CF)
379.2	2066	0
380	4362	2571
380.1	4532	3016
380.5	5210	4964

Cell #2
east
WQV

STAGE (FT)	AREA (SF)	STORAGE (CF)
379.2	2472	0
380	4362	2734
380.1	4532	3178
380.5	5210	5127

Total Pond
WQV

STAGE (FT)	AREA (SF)	STORAGE (CF)
379.2	4538	0
380	8724	5377
380.1	9063	6267
380.5	10420	10321
382	12670	27638
383	14630	41288
384	16806	57006
384.25	17367	60821

Filter Basin #4

WATERSHED IMPERVIOUS AREA=	8233	SF
WATERSHED LANDSCAPED AREA=	32626	SF
REQUIRED WQV=	1774	CF
PROVIDED WQV=	1959	CF
MINIMUM REQ'D FILTER SURFACE AREA=	1064	SF
PROVIDED FILTER SURFACE AREA=	1245	SF

	STAGE (FT)	AREA (SF)	STORAGE (CF)
	377	1245	0
	378	1891	1568
WQV	378.2	2020	1959
	379	2537	3782
	380	3183	6642

The required water quality volume for the gravel wetland and filter basins was calculated by multiplying the impervious area by 1.0” and the landscaped area by 0.4”. BMP Sizing calculations are provided in Attachment C.

A soil test pit was excavated within each of the four filter basins and within the gravel wetland to identify soil conditions and depth to groundwater. Test pit logs are provided in Attachment D; test pit locations are shown on the Post-Development Watershed Maps and on the Grading Plans.

Summary

Based on the results of this evaluation, the proposed stormwater design is not expected to cause flooding, erosion or other significant adverse effects downstream of the site.

Submitted by:

Terradyn Consultants, LLC

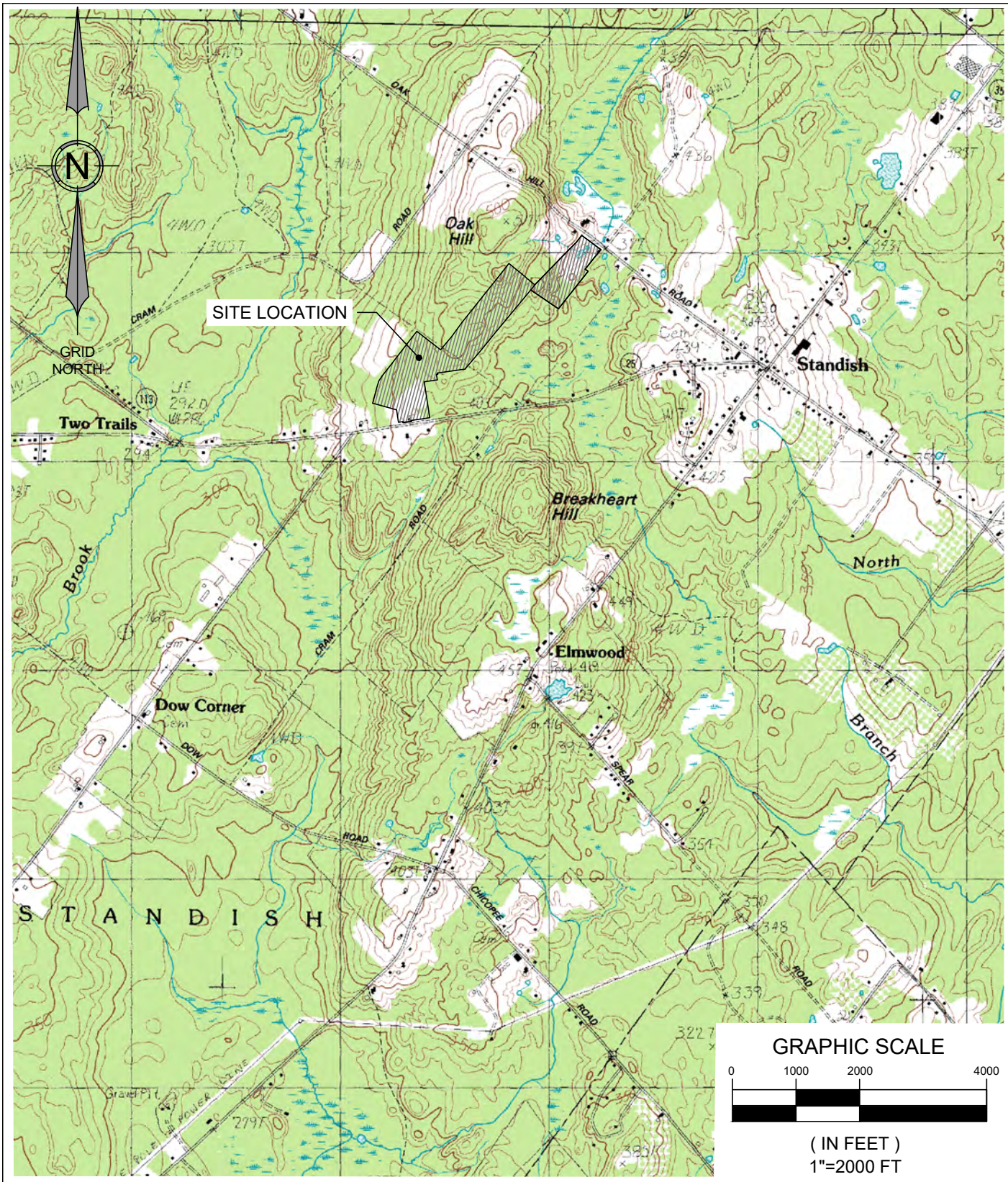
Lawrence Bastian, P.E.

Attachments:

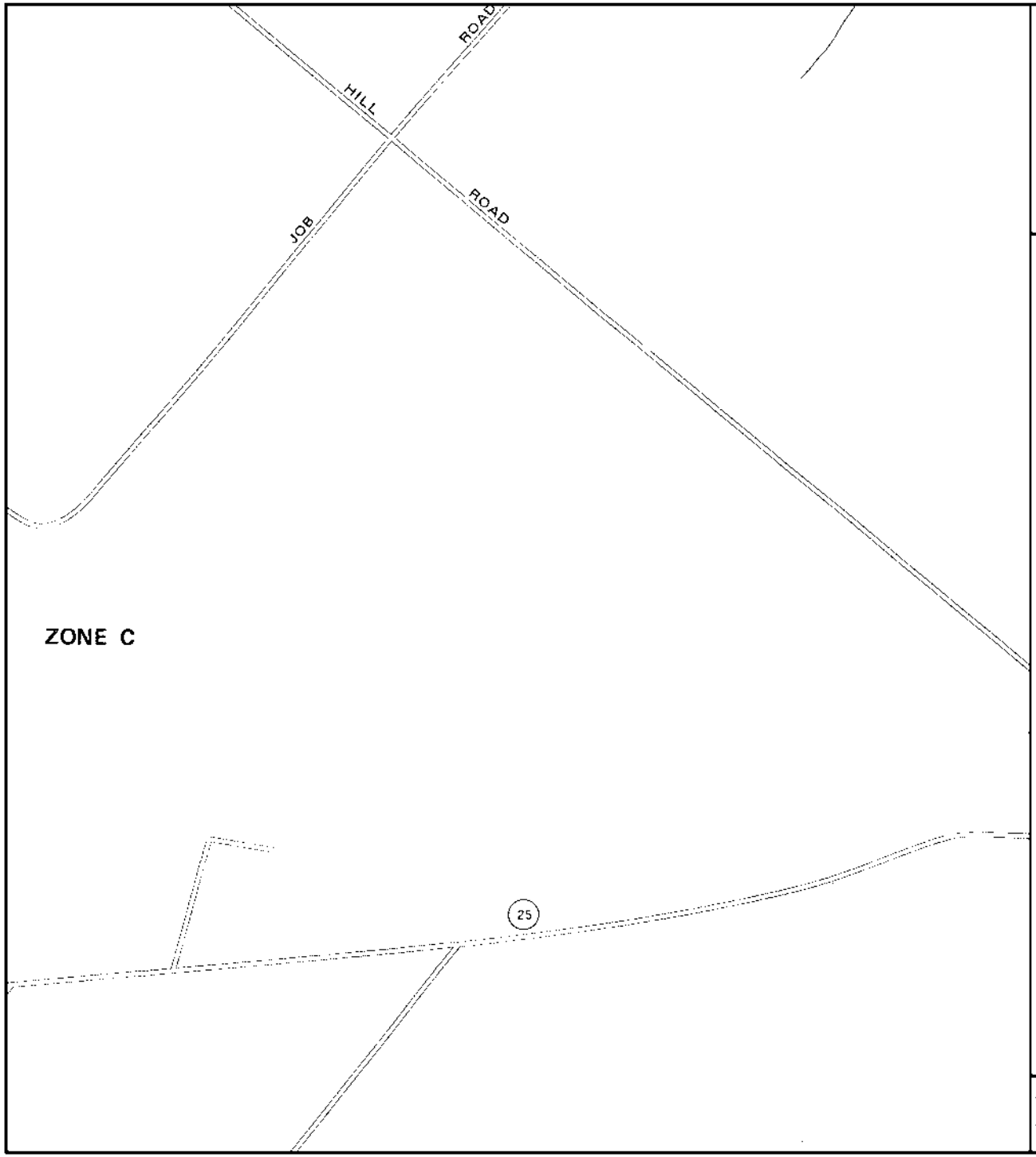
U.S.G.S. Quadrangle Map
FEMA Flood Hazard Map
NRCS Medium Intensity Soil Map
Attachment A – Water Quality Percentage Treatment Calculations
Attachment B – Phosphorus Export Calculations
Attachment C – BMP Sizing Calculations
Attachment D – Stormwater BMP Soil Test Pit Logs
Housekeeping Plan
Maintenance & Inspection of Stormwater Facilities
Forested Buffer Deed Restrictions
Pre Development Watershed Map
Post Development Watershed Map

Appendix:

HydroCAD Stormwater Calculations
Pre-Development HydroCAD Calculations
Post Development Hydrocad Calculations
Spillway Calculations – 25 & 100 year storms
Storm Drain Sizing Calculations – 10-year Storm



SHEET DESCRIPTION		JOB NO.	SHEET
U.S.G.S. QUADRANGLE MAP HIGHLANDS SUBDIVISION	TERRADYN CONSULTANTS, LLC 41 Campus Drive, Suite 101 New Gloucester, ME 04260 Office: (207) 926-5111 Fax: (207) 221-1317 www.terradynconsultants.com	1804	1
PREPARED FOR		DATE	OF
LEAVITT-THOMPSON, LLC. P.O. BOX 703 STANDISH, MAINE 04084	Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting	1/29/2019	1
		SCALE 1"=2,000'	



APPROXIMATE SCALE

800 0 800 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
STANDISH, MAINE
CUMBERLAND COUNTY

PANEL 40 OF 45
(SEE MAP INDEX FOR PANELS NOT PRINTED)

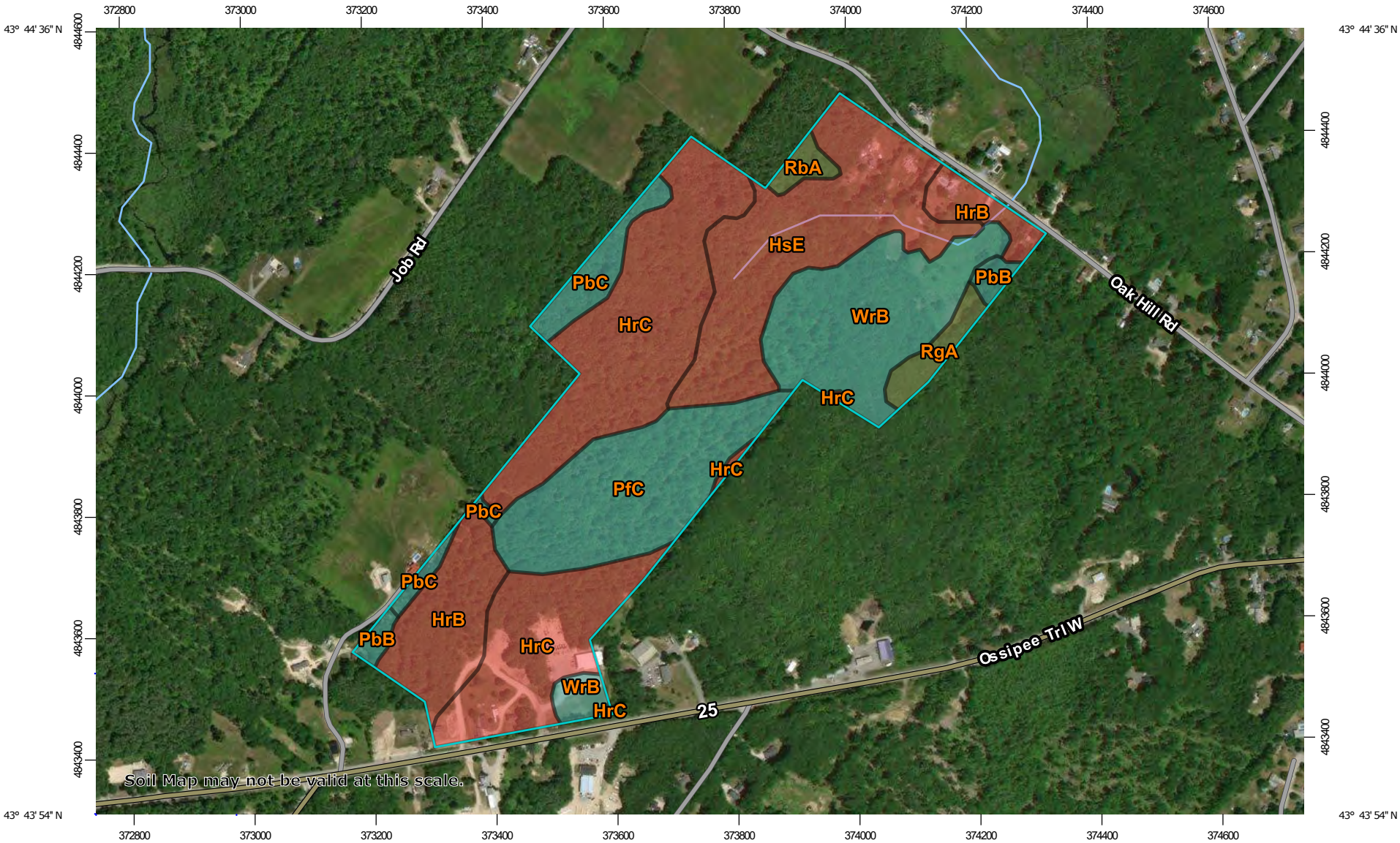
COMMUNITY-PANEL NUMBER
230207 0040 B

EFFECTIVE DATE:
MAY 19, 1981

federal emergency management agency
federal insurance administration

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine



Map Scale: 1:9,130 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 400 800 1600 2400

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 Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

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 1:24,000.

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: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 15, Sep 6, 2018

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

Date(s) aerial images were photographed: Apr 29, 2012—Jun 26, 2016

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	12.3	10.4%
HrC	Lyman-Tunbridge complex, 8 to 15 percent slopes, rocky	D	36.3	30.8%
HsE	Lyman-Abram complex, 15 to 35 percent slopes, very rocky	D	22.4	19.0%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	1.7	1.5%
PbC	Paxton fine sandy loam, 8 to 15 percent slopes	C	4.6	3.9%
PfC	Paxton very stony fine sandy loam, 8 to 15 percent slopes	C	18.1	15.4%
RbA	Ridgebury fine sandy loam, 0 to 3 percent slopes	C/D	1.3	1.1%
RgA	Ridgebury very stony fine sandy loam, 0 to 3 percent slopes	C/D	2.4	2.1%
WrB	Woodbridge fine sandy loam, 0 to 8 percent slopes	C	18.6	15.8%
Totals for Area of Interest			**117.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment A – Water Quality Percentage Treatment Calculations

HIGHLANDS SUBDIVISION, STANDISH - WQ TREATMENT

Revised Building Layout 2/2019 *Based on Preliminary Subdivision Plan Approved 3/4/2019*

New Impervious Area (SF) =	422694
Total New Landscaped Area (SF)=	832048
Total Developed Area (SF) =	1254742

95% = 401559 SF

Study Point	Watershed	New Impervious Area (SF)	Total Impervious Area Treated (SF)	New Landscaped Area	Total Landscaped Area Treated (SF)	Developed Area (SF)	Total Developed Area Treated (SF)	Incremental Treatment % (Impervious)	Incremental Treatment % (Developed)	BMP	See Note Below
SP-7	S7-1	-1,932	0	6,700	0	4,768	0	0.00%	0.00%	Untreated	3
	S7-2	61	0	2,400	0	2,461	0	0.00%	0.00%	Untreated	
	S-H-1	5,211	0	808	0	6,019	0	0.00%	0.00%	Untreated	
	S-H-2	2,092	0	21,406	0	23,498	0	0.00%	0.00%	Untreated	3
SP-8	S8-1	-9,962	0	0	0	-9,962	0	0.00%	0.00%	Untreated	4
SP-1	S1-1	-700	0	9,000	0	8,300	0	0.00%	0.00%	Untreated	
	S-H-4	6,181	6,181	3,450	32,591	9,631	38,772	1.46%	3.09%	Level Spreader Sta 2+50 L	
	S-H-3	4,932	4,932	742	742	5,674	5,674	1.17%	0.45%	Level Spreader Sta 2+50 L	
	S-E-5	0	0	4,317	1,350	4,317	1,350	0.00%	0.11%	Level Spreader Sta 2+50 L	
	S-FB-3	4,590	4,590	24,500	24,500	29,090	29,090	1.09%	2.32%	Filter Basin #1	
	S-H-5	4,831	4,831	780	780	5,611	5,611	1.14%	0.45%	Filter Basin #1	
	S-H-6	14,359	14,359	9,299	9,299	23,658	23,658	3.40%	1.89%	Filter Basin #1	
	S-E-2	13,600	13,600	6,977	6,977	20,577	20,577	3.22%	1.64%	Filter Basin #1	
	S-E-1	10,560	10,560	8,941	8,941	19,501	19,501	2.50%	1.55%	Filter Basin #1	
	S-D-1	2,670	2,670	4,183	4,183	6,853	6,853	0.63%	0.55%	Filter Basin #1	
	S-H-7	2,584	2,584	4,302	4,302	6,886	6,886	0.61%	0.55%	Filter Basin #1	
	S-H-8	2,029	2,029	4,161	4,161	6,190	6,190	0.48%	0.49%	Filter Basin #1	
	S-H-9	2,864	2,864	2,768	2,768	5,632	5,632	0.68%	0.45%	Filter Basin #1	
SP-2	S2-1A	13,379	0	41,250	0	54,629	0	0.00%	0.00%	Untreated	
	S2-1B	6,379	6,311	42,968	0	49,347	6,311	1.49%	0.50%	Untreated	
	S-L-1	13,898	13,898	9,227	9,227	23,125	23,125	3.29%	1.84%	Gravel Wetland	
	S-L-2	9,389	9,389	8,323	8,323	17,712	17,712	2.22%	1.41%	Gravel Wetland	
	S-GW-1	4,304	4,304	50,423	50,423	54,727	54,727	1.02%	4.36%	Gravel Wetland	
	S-FB-1	11,210	11,210	46,844	46,844	58,054	58,054	2.65%	4.63%	Gravel Wetland	
	S-G-1	4,912	4,912	785	785	5,697	5,697	1.16%	0.45%	Gravel Wetland	
	S-G-2	4,777	4,777	2,641	2,641	7,418	7,418	1.13%	0.59%	Gravel Wetland	
	S-I-2	9,033	9,033	2,651	2,651	11,684	11,684	2.14%	0.93%	Gravel Wetland	
	S-I-1	3,320	3,320	1,899	1,899	5,219	5,219	0.79%	0.42%	Gravel Wetland	
	S-I-3	11,977	11,977	4,470	4,470	16,447	16,447	2.83%	1.31%	Gravel Wetland	
	S-I-4	12,441	12,441	6,263	6,263	18,704	18,704	2.94%	1.49%	Gravel Wetland	
	S-F-1	10,433	10,433	41,889	41,889	52,322	52,322	2.47%	4.17%	Gravel Wetland	
	S-G-4	5,084	5,084	410	410	5,494	5,494	1.20%	0.44%	Gravel Wetland	
	S-G-5	9,476	9,476	5,373	5,373	14,849	14,849	2.24%	1.18%	Gravel Wetland	
	S-H-10	6,442	6,442	4,006	4,006	10,448	10,448	1.52%	0.83%	Gravel Wetland	
	S-H-11	1,849	1,849	978	978	2,827	2,827	0.44%	0.23%	Gravel Wetland	
	S-H-12	1,978	1,978	0	0	1,978	1,978	0.47%	0.16%	Gravel Wetland	
	S-H-13	2,360	2,360	0	0	2,360	2,360	0.56%	0.19%	Gravel Wetland	
	S-H-14	3,545	3,545	1,469	1,469	5,014	5,014	0.84%	0.40%	Gravel Wetland	
	S-I-5	3,783	3,783	2,307	2,307	6,090	6,090	0.89%	0.49%	Gravel Wetland	

HIGHLANDS SUBDIVISION, STANDISH - WQ TREATMENT

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SP-2	S-H-15	2,767	2,767	0	0	2,767	2,767	0.65%	0.22%	Filter Basin #2	
	S-H-16A	4,861	4,861	4,942	4,942	9,803	9,803	1.15%	0.78%	Filter Basin #2	
	S-H-16B	3,695	3,695	23,062	23,062	26,757	26,757	0.87%	2.13%	Filter Basin #2	
	S-H-17	1,361	1,361	0	0	1,361	1,361	0.32%	0.11%	Filter Basin #2	
	S-H-18	3,873	3,873	12,223	12,223	16,096	16,096	0.92%	1.28%	Filter Basin #2	
	S-S-1	9,860	9,860	6,235	6,235	16,095	16,095	2.33%	1.28%	Filter Basin #2	
	S-S-2	7,987	7,987	5,541	5,541	13,528	13,528	1.89%	1.08%	Filter Basin #2	
	S-S-3	3,657	3,657	925	925	4,582	4,582	0.87%	0.37%	Filter Basin #2	
	S-S-4	4,428	4,428	1,900	1,900	6,328	6,328	1.05%	0.50%	Filter Basin #2	
	S-H-19	2,072	2,072	245	245	2,317	2,317	0.49%	0.18%	Filter Basin #2	
	S-H-20	2,842	2,842	1,826	1,826	4,668	4,668	0.67%	0.37%	Filter Basin #2	
	S-H-21A	3,099	3,099	1,091	1,091	4,190	4,190	0.73%	0.33%	Filter Basin #2	
	S-H-21B	5,007	5,007	9,516	9,516	14,523	14,523	1.18%	1.16%	Filter Basin #2	5
	S-H-22	2,069	2,069	742	742	2,811	2,811	0.49%	0.22%	Filter Basin #2	
	S-H-23A	8,317	8,317	2,885	2,885	11,202	11,202	1.97%	0.89%	Filter Basin #2	
	S-H-23B	11,047	11,047	34,505	34,505	45,552	45,552	2.61%	3.63%	Filter Basin #2	6
	S-H-23C	10,323	10,323	24,289	24,289	34,612	34,612	2.44%	2.76%	Filter Basin #2	7
	S-H-24B	5,357	5,357	9,950	9,950	15,307	15,307	1.27%	1.22%	Filter Basin #2	8
	S-H-24A	3,995	3,995	1,427	1,427	5,422	5,422	0.95%	0.43%	Filter Basin #2	
SP-3	S-3-1	40,000	30,000	112,912	86,181	152,912	116,181	7.10%	9.26%	Wooded Buffer C soils	9
SP-4	S-4-1	0	0	6,204	0	6,204	0	0.00%	0.00%	Untreated	10
SP-5	S-H-25A	3,951	3,951	1,400	1,400	5,351	5,351	0.93%	0.43%	Filter Basin #3	
	S-H-25B	3,168	3,168	9,515	9,515	12,683	12,683	0.75%	1.01%	Filter Basin #3	
	S-H-26A	3,242	3,242	1,140	1,140	4,382	4,382	0.77%	0.35%	Filter Basin #3	
	S-H-26B	2,016	2,016	3,688	3,688	5,704	5,704	0.48%	0.45%	Filter Basin #3	
	S-H-27A	3,591	3,591	1,298	1,298	4,889	4,889	0.85%	0.39%	Filter Basin #3	
	S-H-27B	2,159	2,159	5,165	5,165	7,324	7,324	0.51%	0.58%	Filter Basin #3	
	S-H-28A	3,408	3,408	1,196	1,196	4,604	4,604	0.81%	0.37%	Filter Basin #3	
	S-H-28B	2,060	2,060	5,641	5,641	7,701	7,701	0.49%	0.61%	Filter Basin #3	
	S-H-29A	3,473	3,473	1,218	1,218	4,691	4,691	0.82%	0.37%	Filter Basin #3	
	S-H-29B	2,144	2,144	5,914	5,914	8,058	8,058	0.51%	0.64%	Filter Basin #3	
	S-H-30A	3,448	3,448	7,800	7,800	11,248	11,248	0.82%	0.90%	Filter Basin #3	
	S-H-30B	6,249	6,249	2,185	2,185	8,434	8,434	1.48%	0.67%	Filter Basin #3	
	S-H-32	5,000	5,000	34,895	34,895	39,895	39,895	1.18%	3.18%	Filter Basin #3	11
SP-5	S-H-31A	2,596	3,476	9,448	18,896	12,044	22,372	0.82%	1.78%	Filter Basin #4	12
	S-H-31B	4,745	4,745	1,675	1,675	6,420	6,420	1.12%	0.51%	Filter Basin #4	
	S-H-33	0	0	12,040	12,040	12,040	12,040	0.00%	0.96%	Filter Basin #4	

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SP-5	S5-1	0	0	10,000	0	10,000	0	0.00%	0.00%	Untreated	
	S5-2	888	0	2,000	0	2,888	0	0.00%	0.00%	Untreated	
SP-6	S6-1	20,000	20,000	66,500	60,000	86,500	80,000	4.73%	6.38%	Wooded Buffer C soils	13
	Subtotal	422,694	404,469	832,048	691,703	1,254,742	1,096,172	95.69%	87.36%		

NOTES:

1. Roof drain filter strips (RDFS) - assume treating 1500 SF of roof per lot
2. Single-family lots assumed to have 5000 SF roof and 15000 SF driveways/pavement - Deed Restricted
3. Subtract ex farmhouse & barn from new impervious
4. Subtract existing gravel road for credit - till gravel & re-seed
5. Imp SF/lawn SF = 2500/3000 Lot 1
6. Imp SF/lawn SF = 5000/15000 Lots 2 & 3
7. Imp SF/lawn SF = 5000/15000 Lot 4, 2500/5749 Lot 5
8. Imp SF/lawn SF = 2500/3047 Lot 5
9. Treat lots 6-11
10. 6204 SF imp Lot 5
11. Treat lot 18
12. Treats off-site roof & lawn
13. Lots 14/15/16/17

Attachment B – Phosphorus Export Calculations

Worksheet 1 - PPB calculations

Project Name: Highlands Subdivision

Lake Watershed: Sebago Lake

Town: Standish

Standard Calculations

Watershed per acre phosphorus budget (Appendix C)	**PAPB**	0.061	lbs P/acre/year
Total acreage of development parcel:	**TA**	29.53	acres
NWI wetland acreage (> 1 ac on NWI maps):	**WA**	0	acres
Steep slope acreage:	**SA**	1	acres
Project acreage: A = TA - (WA+ SA)	**A**	28.53	acres
Project Phosphorus Budget: PPB = P x A	**PPB**	1.74033	**lbs P/year**

Small Watershed Adjustment

If Project Acreage (A) is greater than the threshold acreage for the small watershed threshold (SWT, from pertinent lake and town info in the table in Appendix C), calculate an alternative PPB using the analysis below and use this value if it is less than the the Standard Calculation PPB.

Small Watershed Threshold (Appendix C):	**SWT**	660	acres
Project acreage:	**A**	29.53	acres
Allowable increase in town's share of annual phosphorus load to lake (Appendix C):	**FC**	160.29	lbs P/year
Area available for development (Appendix C):	**AAD**	7543	acres
Ratio of A to AAD (R=A/AAD)	**R**	N/A	

Project Phosphorus Budget

If R < 0.5, PPB = [(FC x R)/2] + [FC/4]	**PPB**	N/A	**lbs P/year**
If R> 0.5, PPB = FC x R	**PPB**	N/A	**lbs P/year**

1-15-09

Worksheet 2

Pre-PPE and Post-PPE Calculations - HIGHLANDS SUBDIVISION - Roadway and Single-family Lots

Calculate phosphorus export from development for before and after treatment
Use as many sheets as needed for each development type (commercial, roads, residential lots, etc.)

Project name: HIGHLANDS SUBDIVISION, STANDISH **Development type:** single-family lots Sheet #1

Land Surface Type or Lot #(s) with description	Acres or # of lots	Export Coefficient from Table 3.1 or Table 3.2	Pre-treatment Algal Av. P Export (lbs P/year)	Treatment Factor for BMP(s) from Chapter 6	Post- treatment Algal Av. P Export (lbs P/year)	Description of BMPs	L	W	Area
Town Residential Street: 22' pavement, 6' sidewalk, 1.5' shoulder at non-curb locations									
Sta 30+00 to sta 43+75 L & R - Road & sidewalk	0.931	1.25	1.1640	0.36	0.4190	Filter Basin #3	1375	29.5	40562.5
Same location - Landscaped area in ROW	0.647	0.3	0.1941	0.36	0.0699	Filter Basin #3	1375	20.5	28187.5
Sta 43+75 to sta 44+50 R - Road & sidewalk	0.029	1.25	0.0366	0.36	0.0132	Filter Basin #3	75	17	1275
Same location - Landscaped area in ROW	0.014	0.3	0.0041	0.36	0.0015	Filter Basin #3	75	8	600
Sta 43+75 to sta 44+50 L - Road & 1.5' shoulder	0.022	1.25	0.0269	1	0.0269	No Treatment	75	12.5	937.5
Same location - Landscaped area in ROW	0.022	0.3	0.0065	1	0.0065	No Treatment	75	12.5	937.5
Sta 44+50 to sta 46+75 - Road & sidewalk	0.152	1.25	0.1905	0.36	0.0686	Filter Basin #4	225	29.5	6637.5
Same location - Landscaped area in ROW	0.106	0.3	0.0318	0.36	0.0114	Filter Basin #4	225	20.5	4612.5
Sta 46+75 to sta 47+19 - Road & Sidewalk	0.030	1.25	0.0372	1	0.0372	No Treatment	44	29.5	1298
Same location - Landscaped area in ROW	0.021	0.3	0.0062	1	0.0062	No Treatment	44	20.5	902
Single Family Lots							# EA	Area EA	Area
Lots #6 - 11, 14 - Roofs	0.321	0.5	0.1607	0.4	0.0643	Forested buffer, C soils	7	2000	14000
Lots #6 - 11, 14 - Driveways	0.321	1.25	0.4017	0.4	0.1607	Forested buffer, C soils	7	2000	14000
Lots #6 - 11, 14 - Landscaped areas	1.928	0.3	0.5785	0.4	0.2314	Forested buffer, C soils	7	12000	84000
Lot #15 - Roof	0.046	0.5	0.0230	0.48	0.0110	75' Forested buffer, C soils	1	2000	2000
Lots #15 - Driveways	0.046	1.25	0.0574	0.48	0.0275	75' Forested buffer, C soils	1	2000	2000
Lots #15 - Landscaped areas	0.275	0.3	0.0826	0.48	0.0397	75' Forested buffer, C soils	1	12000	12000
Lots 12 &13 - Homes with Roof Drain Filter Strips	0.069	0.5	0.0344	0.4	0.0138	Roof Drain Filter Strips	2	1500	3000
Lot #12 & 13 - Driveway	0.092	1.25	0.1148	1	0.1148	No Treatment	2	2000	4000
Lot #12 & 13 - Landscaped areas	0.551	0.3	0.1653	1	0.1653	No Treatment	2	12000	24000
Lot 16 - Roof	0.046	0.5	0.0230	0.72	0.0165	50' Forested buffer, C soils	1	2000	2000
Lot #16 - Driveway	0.046	1.25	0.0574	0.72	0.0413	50' Forested buffer, C soils	1	2000	2000
Lot #16 - Landscaped areas	0.275	0.3	0.0826	0.72	0.0595	50' Forested buffer, C soils	1	12000	12000
Lot #17 - Roof	0.046	0.5	0.0230	0.3	0.0069	150' Forested buffer, C soils	1	2000	2000
Lot #17 - Driveways	0.046	1.25	0.0574	0.3	0.0172	150' Forested buffer, C soils	1	2000	2000
Lot #17 - Landscaped areas	0.275	0.3	0.0826	0.3	0.0248	150' Forested buffer, C soils	1	12000	12000
Lot #18 - Roofs	0.046	0.5	0.0230	0.36	0.0083	Filter Basin #3	1	2000	2000
Lot #18 - Driveways	0.046	1.25	0.0574	0.36	0.0207	Filter Basin #3	1	2000	2000
Lot #18 - Landscaped areas	0.275	0.3	0.0826	0.36	0.0298	Filter Basin #3	1	12000	12000
		Total Pre-PPE (lbs P/year)	3.8053	**Total PostPPE (lbs P/year)**	1.7138				

NOTES:
NEW ROAD UP TO STA 30+00 DRAINS TO SACO RIVER WATERSHED
LOTS #1-5 DRAIN TO SACO RIVER WATERSHED
EXPORT COEFFICIENTS FROM TABLE 3.1, PHOSPHORUS MANUAL
SINGLE-FAMILY LOTS SHALL BE DEED RESTRICTED TO 4,000 SF IMPERVIOUS AREA & 12,000 SF LANDSCAPED AREA
FILTER BASINS #3 AND #4 OVERSIZED
TREATMENT FACTORS FOR NON-STANDARD SIZED BMPs CALCULATED PER MDEP BMP MANUAL, VOLUME II, SECTION 4.3

WORKSHEET 4 - PROJECT PHOSPHORUS EXPORT SUMMARY

Summarizing the project's algal available phosphorus export (PPE)

Project Name: Highlands Subdivision

Project Phosphorus Budget - Worksheet 1	**PPB**	1.74	lbs P/year
Total Pre-Treatment Phosphorus Export - Worksheet 2	**Pre-PPE**	3.81	lbs P/year
Total Post-Treatment Phosphorus Export - Worksheet 2	**Post-PPE**	1.71	lbs P/year
Total Phosphorus Mitigation Credit - Worksheet 3	**TMC**		lbs P/year
Project Phosphorus Export (Post-PPE - TMC)	**PPE**	1.71	lbs P/year

Is the Project Phosphorus Export ≤ the Project Phosphorus Budget? (PPE≤PPB)

*If **YES**, PPE is less than or equal to PPB and the project meets its phosphorus budget .* *If **NO,** PPE is greater than PPB, more reduction in phosphorus export is required or the payment of a compensation fee may be an option*	YES
The amount of phosphorus that needs further treatment or compensation	0.00 lbs P/year

Has Project Phosphorus Export been sufficiently reduced? *Is (Pre-PPE - Post-PPE)/Pre-PPE greater than 0.60?*

*If **YES**, in some watersheds the compensation fee is an available option.* *If **NO**, more treatment must be provided. PPE must be further reduced.*	
*The post-treatment phosphorus export must be less than 40% of the pre-treatment export (Post-PPE < 0.4*Pre-PPE)*	%

If the project is located in a watershed that is eligible for a compensation fee (or is a residential subdivision with buffers), a compensation fee may be appropriate as follows:

If Project Export has been reduced by greater than 60% and less than 75%, $25,000 per pound minus $833 per 1% Percent Export	
If Project Export has been reduced by greater than 75%, $12,500 per pound minus $500 per 1% Project Export	

Attachment C – BMP Sizing Calculations

TERRADYN CONSULTANTS, LLC
41 Campus Dr. Suite 101
New Gloucester, ME 04260
(207)926-5111 Fax (207)221-1317

Job:
Sheet Number: 1
Calculated By: LRB
Date: 11/5/2019

STAGE STORAGE CALCULATIONS

FILTER BASIN #1 - STAGE STORAGE

WATERSHED IMPERVIOUS AREA=	56280	SF
WATERSHED LANDSCAPED AREA=	65166	SF
REQUIRED WQV=	6862	CF
PROVIDED WQV=	7091	CF
REQUIRED FILTER AREA=	4117	SF
PROVIDED FILTER AREA=	4139	SF

FROM HYDROCAD OUTPUT

IMPERVIOUS AREAS

Paved	0.949 AC	41338 SF
Roofs	0.343 AC	14941 SF
Total	1.292 AC	56280 SF

LANDSCAPED AREAS

Grass C	1.496 AC	65166 SF
Total	1.496 AC	65166 SF

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
390.4	115	0	
391	196	93	
391.9	324	327	

Cell #1 west

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
390.4	2519	0	2064
391	2932	1635	
391.55	3506	3406	
391.9	3872	4697	

WQV

Cell #2 east

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
390.4	2702	0	2075
391	3124	1748	
391.55	3581	3592	
391.9	3872	4896	

WQV

Total Pond

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
390.4	5221	0	4139
391	6056	3476	
391.55	7088	7091	
391.9	7744	9920	
392	7744	10695	
393	9241	19187	
394	10477	28276	

WQV

FOREBAY SIZING:

10 storms x Sanded Area x 500 lbs. : 90 lbs. = annual cubic feet per year (acres) per acre-storm ft3 of collected sediment

Volume = 53 Cubic Ft

TERRADYN CONSULTANTS, LLC
41 Campus Dr. Suite 101
New Gloucester, ME 04260
(207)926-5111 Fax (207)221-1317

Job:
Sheet Number: 1
Calculated By: LRB
Date: 11/5/2019

STAGE STORAGE CALCULATIONS

FILTER BASIN #2 - STAGE STORAGE

WATERSHED IMPERVIOUS AREA=	97269	SF
WATERSHED LANDSCAPED AREA=	86031	SF
REQUIRED WQV=	10973	CF
PROVIDED WQV=	11278	CF
MINIMUM REQ'D FILTER SURFACE AREA=	6584	SF
PROVIDED FILTER SURFACE AREA=	6613	SF

2 BEDS

FROM HYDROCAD OUTPUT

Paved	1.183	AC	51531	SF	
Paved	0.228	AC	9932	SF	w/curbs & sewers
Roofs	0.348	AC	15159	SF	
1 ac lots C	0.467	AC	20334	SF	2.334 AC
1 ac lots D	0.007	AC	314	SF	0.036 AC
Total	2.233	AC	97269	SF	

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
434.5	100	0	
435	121	55	
436	196	214	

Cell #1 north

STAGE (FT)	AREA (SF)	STORAGE (CF)	
434.5	3307	0	3307
435	3718	1756	
435.95	4354	5591	
436	4388	5809	

WQV

LANDSCAPED AREAS

Grass C	1.969	AC	85770	SF
Grass D	0.006	AC	261	SF
Total	1.975	AC	86031	SF

Cell #2 south

STAGE (FT)	AREA (SF)	STORAGE (CF)	
434.5	3306	0	3306
435	3773	1770	
435.95	4357	5632	
436	4388	5850	

WQV

Total Pond

STAGE (FT)	AREA (SF)	STORAGE (CF)	
434.5	6613	0	6613
435	7491	3581	
435.95	8712	11278	
436	8776	11873	
436.01	9395	11964	
437	11340	22228	
438	12659	34227	

WQV

FOREBAY SIZING:

10 storms x Sanded Area x 500 lbs. : 90 lbs. = annual cubic feet per year (acres) per acre-storm ft3 of collected sediment

Volume = 79 Cubic Ft

TERRADYN CONSULTANTS, LLC
41 Campus Dr. Suite 101
New Gloucester, ME 04260
(207)926-5111 Fax (207)221-1317

Job:
Sheet Number: 1
Calculated By: LRB
Date: 11/5/2019

STAGE STORAGE CALCULATIONS

FILTER BASIN #3 - STAGE STORAGE

WATERSHED IMPERVIOUS AREA=	42898	SF
WATERSHED LANDSCAPED AREA=	79105	SF
REQUIRED WQV=	6212	CF
PROVIDED WQV=	6267	CF
REQUIRED FILTER AREA=	3727	SF
PROVIDED FILTER AREA=	4133	SF

FROM HYDROCAD OUTPUT

IMPERVIOUS AREAS

Paved	0.256	AC	11151	SF
Paved	0.637	AC	27748	SF
Roofs	0.000	AC	0	SF
1 ac lots C	0.092	AC	3999	SF
Total	0.985	AC	42898	SF

Forebay

STAGE (FT)	AREA (SF)	STORAGE (CF)	FILTER AREA (SF)
379.5	60	0	
380	230	73	
380.5	400	230	

Cell #1 west

STAGE (FT)	AREA (SF)	STORAGE (CF)	
379.2	2066	0	2066
380	4362	2571	
380.1	4532	3016	
380.5	5210	4964	

WQV

LANDSCAPED AREAS

Grass C	1.816	AC	79105	SF
Total	1.816	AC	79105	SF

Cell #2 east

STAGE (FT)	AREA (SF)	STORAGE (CF)	
379.2	2472	0	2067
380	4362	2734	
380.1	4532	3178	
380.5	5210	5127	

WQV

Total Pond

STAGE (FT)	AREA (SF)	STORAGE (CF)	
379.2	4538	0	4133
380	8724	5377	
380.1	9063	6267	
380.5	10420	10321	
382	12670	27638	
383	14630	41288	
384	16806	57006	
384.25	17367	60821	

WQV

FOREBAY SIZING:

10 storms x Sanded Area x 500 lbs. : 90 lbs. = annual cubic feet per year (acres) per acre-storm ft3 of collected sediment

Volume = 50 Cubic Ft

TERRADYN CONSULTANTS, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260
(207)926-5111 Fax (207)221-1317

Job:
Sheet Number: 1
Calculated By: LB
Date: 3/6/2019

STAGE STORAGE CALCULATIONS

FILTER BASIN #4

WATERSHED IMPERVIOUS AREA=	8233	SF
WATERSHED LANDSCAPED AREA=	32626	SF
REQUIRED WQV=	1774	CF
PROVIDED WQV=	1959	CF
MINIMUM REQ'D FILTER SURFACE AREA=	1064	SF
PROVIDED FILTER SURFACE AREA=	1245	SF

	STAGE (FT)	AREA (SF)	STORAGE (CF)
	377	1245	0
	378	1891	1568
WQV EL=	378.2	2020	1959
	379	2537	3782
	380	3183	6642

FROM HYDROCAD OUTPUT
IMPERVIOUS AREAS

Paved	0.169	AC	7362	SF		
Roofs	0.020	AC	871	SF		
1 ac lots C	0.000	AC	0	SF	AC	20 % imperv.
1 ac lots D	0.000	AC	0	SF	AC	20 % imperv.
Total	0.189	AC	8233	SF		

LANDSCAPED AREAS

Grass C	0.749	AC	32626	SF
Grass D	0.000	AC	0	SF
Total	0.749	AC	32626	SF

FILTER BASIN SIZING FOR MAXIMUM PHOSPHORUS TREATMENT:

TF = 0.4 BMPTF (standard sizing) / BMP (actual sizing) = **0.36 Treatment Factor**

FOREBAY SIZING:

10 storms x Sanded Area x 500 lbs. : 90 lbs. = annual
cubic feet per year (acres) per acre-storm ft3
of collected sediment

Volume = 10 Cubic Ft PROVIDED IN TWO 4' DIA CATCH BASINS

TERRADYN CONSULTANTS, LLC
41 Campus Dr. Suite 101
New Gloucester, ME 04260
(207)926-5111 Fax (207)221-1317

Job:
Sheet Number: 1
Calculated By: LRB
Date: 2/21/2019

STAGE STORAGE CALCULATIONS

GRAVEL WETLAND - STAGE STORAGE

WATERSHED IMPERVIOUS AREA=	130201	SF
WATERSHED LANDSCAPED AREA=	189922	SF
REQUIRED WQV=	17181	CF
PROVIDED WQV=	17664	CF
REQUIRED FILTER AREA=	10308	SF
PROVIDED FILTER AREA=	11724	SF

FROM HYDROCAD OUTPUT

IMPERVIOUS AREAS

Paved	1.667	AC	72615	SF
Paved sub S-H-13	0.054	AC	2352	SF
Roofs	1.268	AC	55234	SF
Total	2.989	AC	130201	SF

Forebay

	STAGE (FT)	AREA (SF)	STORAGE (CF)		Req WQV
	390	1007	0		
	391	1469	1238		
WQV	391.25	1585	1620	10%	1718
	391.5	1700	2030		

Cell #1

	STAGE (FT)	AREA (SF)	STORAGE (CF)		
	390	5863	0		
	391	6828	6345		
WQV	391.25	7069	8082	45%	7731
	391.5	7310	9880		

Cell #2

	STAGE (FT)	AREA (SF)	STORAGE (CF)		
	390	5863	0		
	391	6674	6268		
WQV	391.25	6876	7962	45%	7731
	391.5	7079	9707		

Total Pond

	STAGE (FT)	AREA (SF)	STORAGE (CF)	
	390	12733	0	
	391	14970	13852	
WQV	391.25	15530	17664	17181
	391.5	16089	21617	
	392	17209	29941	
	393	19450	48270	
	394	21690	68842	

LANDSCAPED AREAS

Grass C	4.343	AC	189181	SF
Grass D	0.017	AC	741	SF
Total	4.360	AC	189922	SF

Highlands Subdivision, Standish
STORMWATER BUFFER / STONE BERM LEVEL SPREADER CALCULATIONS
Reference: Maine Stormwater BMP Manual, Table 5.5

	Location	Subcatchments	Drainage Area, Ac	Imperv. Ac	Lawn, Ac	Buffer flow path, ft	Buffer slope, ft/ft	Stone berm length, ft	Soils
Level Spreader #5	Sta. 2+50 Left	S-E-5, S-H-3, S-H-4	1.156	0.292	0.864	150	0.06	43.5	HSG C - Dixfield, stony sandy loam

HIGHLANDS SUBDIVISION
LEVEL SPREADER SIZING CALCULATIONS

Level spreaders are sized per Maine DEP Redistribution of Stormwater discharges standard:
Discharge to a level spreader. The peak stormwater flow rate to a level spreader due to runoff from a 10-year, 24-hour storm must be less than 0.25 cubic feet per second (0.25 cfs) per foot length of level spreader lip.

Location		Q-10, cfs		Length, ft
Level Spreader #1	FB#1 outlet	1.46		5.8
Level Spreader #2	Gravel wetland outlet	5.41		21.6
Level Spreader #3	FB#3 & sub S2-1C	6.95		27.8
Level Spreader #4	S2-1A	5.93		23.7

Attachment D – Stormwater BMP Soil Test Pit Logs

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

4474

March 12, 2019

Mr. Larry Bastian
Terradyne Consultants LLC
41 Campus Drive Suite 101
New Gloucester, ME 04260

Re: Soil Evaluation, Proposed Stormwater Devices, Highlands Subdivision Standish, ME

Dear Larry,

I completed a soil evaluation for the proposed stormwater treatment program for the Highlands Subdivision Standish, ME. The soil evaluation was conducted in accordance with the Maine Subsurface Wastewater Disposal Rules dated August 2015, as amended. I evaluated five backhoe excavated soil test pits in the center of the proposed stormwater treatment devices. The soils found on the parcel are moderately well drained glacial till soils over ledge. There is a seasonal high watertable at approximately 20 to 28 inches. There was observed groundwater table in two of the soil test pits. The soil test pit log descriptions are attached.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton L.S.E., C.S.S.
Licensed Site Evaluator #263
Certified Soil Scientist #216

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

4474

FORM F Rev. 11/09

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson LLC	Standish

Exploration Symbol # STW-1 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

22 " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–24	Sandy Loam	Friable	Brown	None Noted
24–30		Ledge		
30–60				No Water Found

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	2 Percent	22 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric
			Hydrologic Soil Group: ____

Exploration Symbol # STW-2 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

75 " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–24	Sandy Loam	Friable	Brown	
24–36	Sandy Loam	Firm	Olive	Common and Distinct
36–75				No Water Found

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	2 Percent	20 " Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric
			Hydrologic Soil Group: ____

Exploration Symbol # STW-3 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

59 " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–24	Sandy Loam	Friable	Brown	
24–36	Sandy Loam	Firm	Olive	Common and Distinct
36–54				No Water Found
54–60		Ledge		

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	5 Percent	20 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric
			Hydrologic Soil Group: ____

Exploration Symbol # STW-4 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

100 " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–12	Fill Material			
12–18	Coarse Stony Sand	Friable	Dark Brown	
18–54				
54–100	Loamy Sand	Friable	Red Brown	
100	Loamy Sand	Firm	Gray	Groundwater

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	3 Percent	57 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric
			Hydrologic Soil Group: ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton	Date: 3/11/2019
Name Printed/typed: Mark J Hampton	Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

affix professional seal

4474

FORM F Rev. 11/09

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson LLC	Standish

Exploration Symbol # STW-5 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

66 " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–12			Gray	
12–18	Sandy Loam	Friable	Red Brown	
30–36	Sandy Loam	Firm	Gray	Common and Distinct
48–66				Groundwater
66		Ledge		

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	4 Percent	28 " Depth	☒ Groundwater ☒ Restrictive Layer ☒ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric; Hydrologic Soil Group: ____

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth (inches)	Texture	Consistency	Color	Mottling
0–60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	Percent: ____	" Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric; Hydrologic Soil Group: ____

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth (inches)	Texture	Consistency	Color	Mottling
0–60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	Percent: ____	" Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric; Hydrologic Soil Group: ____

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth (inches)	Texture	Consistency	Color	Mottling
0–60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile: ____ Condition: ____	Percent: ____	" Depth	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
Soil series/phase name:			☐ Hydric ☐ Non-hydric; Hydrologic Soil Group: ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton	Date: 3/11/2019
Name Printed/typed: Mark J Hampton	Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

affix professional seal

HOUSEKEEPING PERFORMANCE STANDARDS
FOR:
HIGHLANDS SUBDIVISION
STANDISH, MAINE

Project Developer: Leavitt-Tompson, LLC
PO Box 703
Standish, ME 04084

Responsible Party: Highlands Subdivision Homeowners Association
PO Box 703
Standish, ME 04084

Introduction:
The contractor shall be responsible for maintaining proper housekeeping standards throughout the construction phase of the project. After the construction phase has been completed, the owner or operator of the project will be responsible.

Standards:
In accordance with the housekeeping performance standards required by MDEP chapter 500 stormwater regulations, the following standards shall be met:

1. **Spill prevention.** Controls must be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
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.

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.

   Operations during wet periods that experience tracking of mud off the site onto public roads should provide for sweeping of road areas at least once a week and prior to significant storm events. Where chronic mud tracking occurs, a stabilized construction entrance should be provided. Operations during dry months, that experience fugitive dust problems, should wet down the access roads once a week or more frequently as needed.

4. **Debris and other materials.** Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

   To prevent these materials from becoming a source of pollutants, construction and post-construction activities related to a project may be required to comply with applicable

provision of rules related to solid, universal, and hazardous waste, including, but not limited to, the Maine solid waste and hazardous waste management rules; Maine hazardous waste management rules; Maine oil conveyance and storage rules; and Maine pesticide requirements.

5. **Trench or foundation de-watering.** Trench de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and 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. **Non-stormwater discharges.** Identify and prevent contamination by non-stormwater discharges.

MAINTENANCE PLAN OF STORMWATER MANAGEMENT FACILITIES
FOR:
HIHGHLANDS SUBDIVISION
STANDISH, MAINE

Project Developer: Leavitt-Tompson, LLC
PO Box 703
Standish, ME 04084

Responsible Party: Highlands Subdivision Homeowners Association
PO Box 703
Standish, ME 04084

Prepared By: Terradyn Consultants, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260

LIST OF STORMWATER MEASURES:

Conveyance & Distribution System (Stormwater Channels & Culverts)
Level Spreaders
Roadways & Parking Surfaces
Catch Basin Systems
Stormwater Impoundment
Gravel Wetland
Underdrained Filter Basin
Forested Buffers

INTRODUCTION:

The owner or operator of the proposed project will be responsible for the maintenance of all stormwater management structures except the rain gardens located on individual lots, the establishment of any contract services required to implement the program, and the keeping of records and maintenance log book. Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5 year time span. The maintenance log book will be made available to the DEP upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

INSPECTION & MAINTENANCE TASKS:

Inspections should be performed by qualified erosion control professional. NOTE: The following instruction are excerpts from the Maine Department of Environmental Protection's *Stormwater Management for Maine, Volume III BMPs Technical Design Manual*, dated January 2006.

CONVEYANCE & DISTRIBUTION SYSTEMS: (STORMWATER CHANNELS & CULVERTS, ETC.)

1. **Inspection schedule:**
   - **1.1.** Inspect ditches, swales and other open stormwater channels in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion of the ditch lining.

Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side-slopes.

1.2. Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.

1.3. Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

2. **Mowing:** Grass should not be trimmed extremely short, as this will reduce the filtering effect of the swale (MPCA, 1989). The cut vegetation should be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale. The mowed height of the grass should be 2-4 inches taller than the maximum flow depth of the design water quality storm. A minimum mow height of 6 inches is generally recommended (Galli, 1993).

3. **Erosion:** It is important to install erosion and sediment control measures to stabilize this area as soon as possible and to retain any organic matter in the bottom of the trench.

4. **Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

5. **Sediment Removal:** The level of sediment deposition in the channel should be monitored regularly, and removed from grassed channels before permanent damage is done to the grassed vegetation, or if infiltration times are longer than 12 hours. Sediment should be removed from riprap channels when it reduces the capacity of the channel.

<u>LEVEL SPREADERS:</u>

1. **Inspections:** At least once a year and following major storms, the level spreader pool should be inspected for sand accumulation and debris that may reduce its capacity.

2. **Sediment Removal:** Sediment build-up within the swale should be removed when it has accumulated to approximately 25% of design volume or channel capacity. Dispose of the sediments appropriately.

3. **Debris:** Remove debris such as leaf litter, branches and tree growth from the spreader.

4. **Mowing***:* Vegetated spreaders may require mowing.

5. **Snow Storage:** Do not store snow within the area of the level spreader.

6. **Level Spreader Replacement:** The reconstruction of the level spreader may be necessary when sheet flow from the spreader channelize into the buffer.

ROADWAYS & PARKING SURFACES:

1. Paved surfaces shall be swept or vacuumed at least twice annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events.

CATCH BASIN SYSTEMS:

1. Catch basins are designed with a deep sump to trap larger sediment. Catch basins shall be inspected for sediment depth in the spring and fall, and accumulated sediment shall be removed and disposed of lawfully when it reaches 50% of the design capacity of the sump.

STORMWATER IMPOUNDMENT:

1. **Inspection schedule:** Inspect impoundment in the spring, in late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, to control vegetated growth that could obstruct flow, and to repair any erosion to the bottom or sides of the impoundment. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side-slopes.

   During the first year, the impoundment will be inspected semi-annually and following major storm events. Debris and sediment buildup shall be removed from the forebay and basin as needed. Mowing of a grassed basin can occur semiannually to a height no less than 6 inches. Any bare area or erosion rills shall be repaired with new sandy loam then seeded and mulched.

   Inspect culverts in the spring, in late fall, and after heavy rains to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.

   Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

2. **Mowing:** Grass should not be trimmed extremely short. The cut vegetation should be removed to prevent the decaying organic litter from adding pollutants to the discharge from the swale. A minimum mow height of 6 inches is generally recommended.

3. **Fertilization:** Routine fertilization and/or use of pesticides is strongly discouraged. If complete re-seeding is necessary, half the original recommended rate of fertilizer should be applied with a full rate of seed.

4. **Sediment Removal:** The level of sediment deposition in the forebay and pond bottom should be monitored regularly, and removed before permanent damage is done to the grassed vegetation.

GRAVEL WETLANDS (FROM UNH SUBSURFACE GRAVEL WETLAND DESIGN SPECIFICATIONS MANUAL):

1ST YEAR POST-CONSTRUCTION: Inspection frequency should be after every major storm in the first year following construction.

1. Inspect to be certain system drains within 24-48 hours.
2. Watering plants as necessary during the first growing season
3. Re-vegetating poorly established areas as necessary
4. Quarterly inspection of soil and repairing eroded areas, especially on slopes & make timely repairs.
5. Checking inlets, outlets, and overflow spillway for blockage, structural integrity, and evidence of erosion. Risers may need to be cleaned.

POST-CONSTRUCTION: Inspection frequency should be at least every 6 months and after every major storm. Activities are expected to include:

1. Check the basin for a dense root mat establishment of wetland vegetation.
2. Check and clean the risers if there is evidence of standing water, discolored water or accumulated sediments in the cells.
3. Check and clean the forebay for sediments, trash and debris. When sediments have accumulated to a depth of 12 inches, standing water is persistent or wetland vegetation become established, the forebay will need to be excavated and reformed.
4. Verify that the cells drain within 24-48 hours. Sediment will need to be removed when an accumulation of 4 inches is evident over the wetland surface.
5. Check and clean all outlets and overflow spillway if blocked or there is evidence of structural damage or erosion.
6. Remove decaying vegetation, litter and debris.
7. Check for foreign species. Particular care must be used to avoid the unintended introduction of invasive species such as purple loosestrife (Lythrum salicaria) and common reed (Phragmites australis). It is recommended that a qualified wetland biologist be consulted when these are found in the area of the gravel wetland.

CLEANING CRITERIA FOR SEDIMENTATION FOREBAY: Sediment should be removed from the sedimentation chamber (forebay) when it accumulates to a depth of more than 12 inches (30 cm) or 10 percent of the pretreatment volume. The sedimentation forebay should be cleaned of vegetation if persistent standing water and wetland vegetation becomes dominant. The cleaning interval is approximately every 4 years. A dry sedimentation forebay is the optimal condition while in practice this condition is rarely achieved. The sedimentation chamber, forebay, and treatment cell outlet devices should be cleaned when drawdown times exceed 60 to 72 hours. Materials can be removed with heavy construction equipment; however, this equipment should not track on the wetland surface. Revegetation of disturbed areas as necessary. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.

CLEANING CRITERIA FOR GRAVEL WETLAND TREATMENT CELLS: Sediment should be removed from the gravel wetland surface when it accumulates to a depth of several inches (>10 cm) across the wetland

surface. Materials should be removed with rakes rather than heavy construction equipment to avoid compaction of the gravel wetland surface. Heavy equipment could be used if the system is designed with dimensions that allow equipment to be located outside the gravel wetland, while a backhoe shovel reaches inside the gravel wetland to remove sediment. Removed sediments should be dewatered (if necessary) and disposed of in an acceptable manner.

Grassed Underdrained Soil Filter

During the first year, the basin will be inspected semi-annually and following major storm events. Debris and sediment buildup shall be removed from the forebay and basin as needed. Mowing of a grassed basin can occur semiannually to a height no less than 6 inches. Any bare area or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. Maintaining good grass cover will minimize clogging with fine sediments and if ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity.

Maintenance Agreement: A legal entity should be established with responsibility for inspecting and maintaining any underdrained filter. The legal agreement establishing the entity should list specific maintenance responsibilities (including timetables) and provide for the funding to cover long-term inspection and maintenance.

Soil Filter Inspection: The soil filter should be inspected after every major storm in the first year to be sure it is functioning properly. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 48 hours following a one inch storm or greater. And that following a storms that fill the system to overflow, it drains in no less than 36 to 6o hours. If the system drains too fast, an orifice may need to be added on the underdrain outlet or, if already present, may need to be modified. Soil

Filter Replacement: The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours. The removed sediments should be disposed of in an acceptable manner.

Sediment Removal: Sediment and plant debris should 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 should 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 should be avoided unless absolutely necessary to establish vegetation.

Harvesting and Weeding: Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary. Add new mulch only as necessary for bioretention cell.

VEGETATED STORMWATER BUFFERS

Buffers should be inspected annually for evidence of erosion or concentrated flows through or around the buffer. All eroded areas should be repaired, seeded and mulched.

1. Mowing: Meadow buffers may be mown no more than twice per year. They may not be maintained as a lawn.

2. Access and Use: Buffers should not be traversed by all-terrain vehicles or other vehicles. Activities within buffers should be conducted so as not to damage vegetation, disturb any organic duff layer, or expose soil.

3. Inspections: Conduct periodic "buffer walks" to inspect the condition of the buffer areas.

SAMPLE MAINTENANCE LOG SHEET:

Maintenance Log Sheet			
BMP's	**Date Inspected**	**Repairs Needed?**	**Date Repaired**
Example	8/17/2017	Y	8/27/2017
1. Conveyance & Distribution System			
2. Level Spreaders			
3. Roadways & Parking			
4. Catch Basin Systems			
5. Stormwater Impoundment			
6. Gravel Wetland			
7. Underdrained Filter Basin			
8. Vegetated Stormwater Buffer			

Detailed Repair Notes:		
BMP Type	**Date**	**Description of Repair Made**
3	8/27/2017	Removed sediment from sump

APPENDIX G. Suggested templates for deed restrictions and conservation easements for use under the Stormwater Management Law

1. Forested buffer, limited disturbance

DECLARATION OF RESTRICTIONS (Forested Buffer, Limited Disturbance)

THIS DECLARATION OF RESTRICTIONS is made this _____day of _____, 20___,
by Leavitt-Tompson, LLC , _____,
(name) (street address)
Standish, Cumberland County, Maine, 04084, (herein referred to as the
(city or town) (county) (zip code)
"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near 191 Ossipee Trail (Route 25) and Oak Hill Road, Standish .
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in Standish, Maine
(town)
described in a deed from_____ to _____dated
(name) 31665 / 345 (name of Declarant)
_____, 20____, and recorded in Book 32638 Page 233 at the Cumberland County Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") described as follows: (Note: Insert description of restricted buffer area location here)

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. **Restrictions on Restricted Buffer Area**. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

   a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material may be placed, stored or dumped on the Restricted Buffer Area, nor may the topography of the area be altered or manipulated in any way;

   b. Any removal of trees or other vegetation within the Restricted Buffer Area must be limited to the following:

      (i) No purposefully cleared openings may be created and an evenly distributed stand of trees and other vegetation must be maintained. An "evenly distributed stand of trees" is defined as maintaining a minimum rating score of 24 points in any 25 foot by 50 foot rectangle (1,250 square feet) area, as determined by the rating scheme in Table 11:

Table 11.
Point System for Determining an Evenly Distributed Stand of Trees

Diameter of tree at 4½ feet above ground level	Points
2 - 4 inches	1
4 - 8 inches	2
8 - 12 inches	4
>12 inches	8

      Where existing trees and other vegetation result in a rating score less than 24 points, no trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;

      (ii) No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;

   c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole (whether constructed of wood, steel or other materials) and appurtenant equipment such as guys and guy anchors, or fence;

   d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;

   e. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. **Enforcement**. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. **Binding Effect**. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. **Amendment**. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. **Effective Provisions of Declaration**. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. **Severability**. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.

7. **Governing Law**. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

_____
(NAME)

STATE OF MAINE_____ County, _____, 20__.
(County) (date)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

_____
Notary Public

_____

Highlands Subdivision, Standish

APPENDIX - *Available Upon Request*

<u>HydroCAD Stormwater Calculations</u>

- **2-, 10- and 25-year Pre-development Flows**
- **2-, 10- and 25-year Post-development Flows**
- **Emergency Spillway Check – Filter Ponds & Gravel Wetland**
- **10-year Storm Drain Calculations**

<u>Watershed Maps</u>

- **SWP-1.0 Pre-Development Watershed – S1, S2, S7 & S8**
- **SWP-1.1 Pre-Development Watershed – S2, S3 & S4**
- **SWP-1.2 Pre-Development Watershed – S4, S5 & S6**
- **SWP-1.0 Post-Development Watershed – S1, S2, S7 & S8**
- **SWP-1.1 Post-Development Watershed – S3 & S4**
- **SWP-1.2 Post-Development Watershed – S5 & S6**
- **BMP-1.0 Treatment Map**
- **BMP-1.1 Treatment Map**
- **BMP-1.2 Treatment Map**
- **BMP-1.3 Treatment Map**

CORRESPONDENCE WITH PORTLAND WATER DISTRICT re. ABILITY TO SERVE

Larry Bastian

NOTE: Portland Water District policy is to issue ability to serve letter during final plan approval by Town.

From: Larry Bastian
Sent: Tuesday, March 5, 2019 9:57 AM
To: 'Robert Bartels'
Cc: Brian Leavitt (brian@leavittearthworks.com); Jamie Tompson (jtompson18227@roadrunner.com); Jeff Amos
Subject: RE: Highlands Subdivision, Standish

Hi Robert,
The Highlands project received preliminary subdivision and site plan approval at the Standish Planning Board last night, so Brian and Jamie would be ready to move ahead on the Oak Hill main renewal as soon as the District is ready.

Thanks,

Larry Bastian, PE
Terradyn Consultants, LLC

From: Robert Bartels <rbartels@pwd.org>
Sent: Wednesday, February 27, 2019 3:28 PM
To: Larry Bastian <larry@terradynconsultants.com>
Cc: Brian Leavitt (brian@leavittearthworks.com) <brian@leavittearthworks.com>; Jamie Tompson (jtompson18227@roadrunner.com) <jtompson18227@roadrunner.com>; Jeff Amos <jeff@terradynconsultants.com>
Subject: RE: Highlands Subdivision, Standish

Larry,

We are looking into the status of the Oak Hill Road water main renewal and will get back to you shortly.

Once the design is finalized we will need to enter into an 3-party agreement with the developer and contractor. The details of that agreement, and the PWD contribution, will be figured out shortly.

Thanks,

Robert Bartels
Senior Project Engineer
Portland Water District
Phone:
E-mail: rbartels@pwd.org
http://www.pwd.org

From: Larry Bastian <larry@terradynconsultants.com>
Sent: Wednesday, February 27, 2019 3:13 PM
To: Robert Bartels <rbartels@pwd.org>
Cc: Brian Leavitt (brian@leavittearthworks.com) <brian@leavittearthworks.com>; Jamie Tompson (jtompson18227@roadrunner.com) <jtompson18227@roadrunner.com>; Jeff Amos <jeff@terradynconsultants.com>
Subject: Highlands Subdivision, Standish

CAUTION:This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Robert,
Following up on our conversation last week…
This project is on the Standish Planning Board agenda for next Monday, March 4th. We are hoping to receive preliminary subdivision & site plan approval at that time. We understand the Planning Board will condition FINAL plan approval upon receiving the ability to serve determination from Portland Water District, so we will provide final review plans to you after we receive preliminary approval from the Town.

Regarding the Oak Hill Road water main renewal as it relates to this project… Is there any information you need from Terradyn or the developers in order to move forward with construction early this spring?

Thanks,

Larry Bastian, PE
Terradyn Consultants, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260
Ph. 207-926-5111
Cell 207-838-6882
Fax 207-221-1317

Larry Bastian

From: Larry Bastian
Sent: Monday, November 12, 2018 11:19 PM
To: Robert Bartels (rbartels@pwd.org)
Cc: Brian Leavitt (brian@leavittearthworks.com); Jamie Tompson (jtompson18227@roadrunner.com)
Subject: Highlands Subdivision, Standish - Ability to Serve letter
Attachments: Highlands_Standish-Water Plans_11-13-2018.pdf

Robert,
Attached please find the utility plans as prepared for preliminary subdivision plan submission to the Town of Standish. These plans contain the latest revisions to the on-site water main and services that you and I discussed in our most recent meeting on October 4th. Please review these plans and if acceptable to the District, provide a letter of ability to serve the development.

Please contact me if you have any questions.

Thank you,

Larry Bastian, PE
Terradyn Consultants, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260
Ph. 207-926-5111
Cell 207-838-6882
Fax 207-221-1317

Mark Cenci
Geologic, Inc.

CERTIFIED GEOLOGIST/LICENSED SITE EVALUATOR

93 Mill Road • North Yarmouth, Maine 04097
Cell: 207.329.3524 • mark@markcenci.com
www.markcenci.com

Nitrate-nitrogen Impact Assessment
Highlands Subdivision
Oak Hill Road and Route 25, Standish

Date: April 3, 2019

Purposes of the assessments:

The purposes of the assessments are to predict the locations and possible effects of wastewater plumes on groundwater from the septic systems planned for the multi-family portion of a development that also includes single family residences on individual lots. This assessment is done to satisfy Sections 15 and 17 of the DEP Site Location of Development rules. A preliminary review of site conditions and wastewater disposal options by John Hopeck, DEP Geologist, led to this observation by Mr. Hopeck:

> *...depending on design flow and other design features, and the locations for the disposal systems serving 25 – 32, 45 – 48 and 57 – 60, and 49 – 56 do not appear to acceptable without significant wastewater pretreatment due to their proximity to the downgradient property line.*

Information used:

Information used in this study includes library research of published literature, a plan of the development by Terradyn Consultants, and soil test pit information, a high-intensity soil report and a wetlands report by Mark Hampton, C.S.S, L.S.E.

Project summary:

The property investigated is comprised of lots 11 and 19C on Standish Tax Map 10. The project is a residential housing subdivision of 53.11 acres. It is proposed to be comprised of 17 individual residential lots and 80 multi-family residential units. Wastewater disposal will be by on-site subsurface wastewater disposal systems. Water will be provided by the public water supply.

Summary of geology:

The property is located on the southerly and southeasterly facing slopes of Oak Hill (see Figure 1). There is a surface and groundwater divide on the property at the approximate 450 foot elevation. Flow is radial, with a portion of the property flowing to the southeast and Sticky River, which flows to Sebago Lake and a portion flowing to the southwest to Josies Brook and Saco River (see Figure 4). Surface slopes are gentle to moderate in the areas investigated, ranging from 3% to 10%.

The entire property is mapped as glacial till on the *Surficial Geology of the Standish Quadrangle, Maine* (see Figure 2). This map depicts the site as having shallow bedrock. The *Soil Narrative Report* by Mark Hampton Associates, Inc. is submitted separately as a Class A High-Intensity Soil Map and report. Soils are depicted as Lyman-Tunbridge Complex, Dixfield, Colonel and Brayton. These are soils formed in sandy, loamy glacial lodgment till. The published mapping agrees with this report and the soil logs.

Bedrock beneath the site is mapped as two units of the Sebago Lake Sequence, the Standish and Steep Falls Formations, on the *Bedrock Geology of the Portland 1:100,000 Quadrangle, Maine and New Hampshire* (see Figure 3). These are medium to high grade metamorphic granofels and schists.

The property is not mapped as an aquifer on the *Significant Sand and Gravel Aquifers of the Standish Quadrangle, Maine* (see Figure 4).

Summary of hydrogeology:

The source of groundwater on this site is precipitation. Precipitation falling on this site seeps into the soil and descends until restrictive soil layers or the water table is encountered. Thereupon, the flow of groundwater is down gradient toward wetlands and streams. Where groundwater encounters open fractures on the bedrock surface, a portion of the water will seep downward into the bedrock to recharge the bedrock aquifer.

On this site the soils are sandy loams. Slopes are gentle in the area investigated. Recharge is greater than average over the entire property. This assumption is based on the textures reported in soil logs. Based on the guidelines for nitrogen impact assessment published by the Maine DEP, it is reasonable to assume that 30 to 40% of all precipitation recharges the soil, except in mapped wetland areas, which are areas of groundwater discharge.

The groundwater flow directions on this property can be assumed to be perpendicular to the topographic contour lines. The estimated hydraulic conductivity of the till deposit is 6 feet per day. The hydraulic gradients are assumed to be 3% (0.03). The assumed effective porosity is assumed to be 30%.

The laboratory results of a bedrock well sample are enclosed. The sample was taken from the well at 191 Ossipee Trail West. The results reveal potable drinking water with nitrate-

nitrogen and nitrate concentrations below 0.2 mg/liter. As the site is undeveloped and forested, the assumption is that background soil NO3-N is of similar quality.

Impact on Groundwater Quality:

Nitrate-nitrogen is the chemical to assess for impact on groundwater. Nitrate-nitrogen is generated by subsurface wastewater disposal systems. It is a conservative contaminant, meaning it does not readily degrade in groundwater, nor does it attenuate or attach itself to soil particles. Nitrate-nitrogen is limited to 10 mg/liter in public drinking water supplies by the Primary Drinking Water Standard and is the limit placed by the Maine DEP at the property boundaries of a project. The DEP also asks for an estimate of the 8 mg/L NO3-N isocon.

The analysis of nitrate-nitrogen impacts was calculated by SOLUTRANS, a 32-bit Windows program for modeling three-dimensional solute transport written by Dr. Charles R. Fitts of Fitts Geosolutions and the University of Southern Maine. The program is based on the analytical solutions of Liej *et. al.* (1991 and 1993). The solutions in SOLUTRANS all assume a uniform one-dimensional flow field, and allow three-dimensional dispersion, retardation and first-order decay.

Variables entered into the calculations include a hydraulic conductivity value of 6 feet per day, a hydraulic gradient of 3% and an assumed porosity of 30%. This leads to a Seepage Velocity of 0.6 feet per day. Additional variables include an initial wastewater concentration of 40 mg/L NO3-N, retardation of 1, a decay constant of zero and longitudinal, lateral and vertical dispersivities of 40 feet, 13.3 feet and 1.3 feet, respectively.

Calculations were made and reveal the 10 mg/L NO3-N plume will be approximately 95 feet in length and the 8 mg/L plume will be approximately 132 feet in length. The graph of these results in enclosed and is labelled, "Standard System". Using the topographic contour information as a determinant of groundwater flow direction, the calculated 10 and 8 mg/L plumes were drawn on the plan of the project by Mark Cenci Geologic, Inc. and forwarded to Terradyn Consultants.

As suggested by Mr. Hopeck, the estimated 10mg/L plumes of the three disposal areas serving the multi-family units 25-32, 45-48 & 57-60 and 49-56 are too lengthy to remain within the project property boundary. Aerating, denitrifying pre-treatment of the wastewater disposed into these three areas is recommended.

Denitrification Systems:

Each of the three disposal areas to be served by denitrification systems has a design flow of 1,440 gallons per day. The recommended treatment unit for these three systems is the Singulair 960-TNT-1500. This is a unit designed to treat 1,500 gallons per day. The

TNT (Total Nitrogen Treatment) series of products meets the provisions of NSF/ANSI (National Sanitary Foundation/American National Standards Institute) Standard 245 for Wastewater Treatment Systems – Nitrogen Reduction (March 2007).

Attached to this report are a copy of a product cut sheet, the *Norweco Singulair Bio-Kinetic wastewater treatment system with Service Pro Control Center Models 960 and TNT system Owner's Manual* and the *Evaluation Report* from the *Final Report: Norweco, Inc. Singulair Model TNT-500 Wastewater Treatment System 05/06/2015/060.*

The Executive Summary of the *Final Report* states:

> Over the course of the Standard 245 evaluation the influent averages 240 mg/L BOD5, 270 mg/L TSS, 38 mg/L Total Nitrogen, 310 mg/L alkalinity, 28 degree C and a median pH of 6.7, meeting the requirements of the Standard. The effluent averages over the course of the test were 3 mg/L CBOD5, 8 mg/L TSS and 12 mg/L Total Nitrogen, representing a 68% reduction, and the effluent pH ranged between 6.3 and 7.4 SU. The effluent values met the requirements of the Standard.

The performance of the denitrification system was also modelled using Solutrans. Input variables remained the same, with the initial concentration of NO3-N assumed to be 15 mg/L. The product cut sheet lists the performance of the TNT unit as producing effluent of 7 mg/L NO3-N, however an assumption of 15 mg/L was made to be conservative. The curve of the results is attached and reveal the 10 mg/L plume is approximately 10 feet in length and the 8 mg/L plume is approximately 18 feet in length.

Section 17. B. 4. c. of the *Site Location of Development Permit Application* requires a Monitoring Plan be provided, as outlined in Section 15(C). A waiver of this requirement is requested and is justified because the Singulair product has met the provisions of NSF 245 through rigorous field and laboratory testing, and will be maintained, serviced and inspected. The maintenance requirements and an operation and maintenance plan for the systems is attached, as required by 17. B. 4 d.

A waiver of the requirements of 17. B. 4. e. for a backup system to be located and delineated is requested and justified because the addition of the aerating pretreatment units to these systems will result in clarified wastewater being disposed into the soil. The Singulair TNT-500 met the performance requirements established by NSF/ANSI Standard 40 for Class 1 effluent. With lowered BOD5, COD5 and TSS, the effluent is clarified to the point where a clogging bio-mat will not form within the disposal area, meaning the disposal area will not fail, so long as the aerating pre-treatment is in operation. With a Maintenance Agreement in place and operational, the system will continue to function properly.

An idealized HHE-200 (pages 1 and 3) is attached, depicting the disposal area, typical of the system to serve Units 25-32. This system will be comprised of the Singulair TNT 1500, a pump station if required by finished construction elevations, and a Moundbuster

disposal area comprised of 1380 linear feet of piping. Moundbuster is an approved disposal system when coupled with approved aerating pre-treatment. It is comprised of 4-inch diameter land drain type piping, with sock, spaced 12 inches on center. The separation distance to water table, bedrock and hardpan is in all cases 12 inches. The enclosed cross section shows the Moundbuster piping set at grade on a 10% slope.

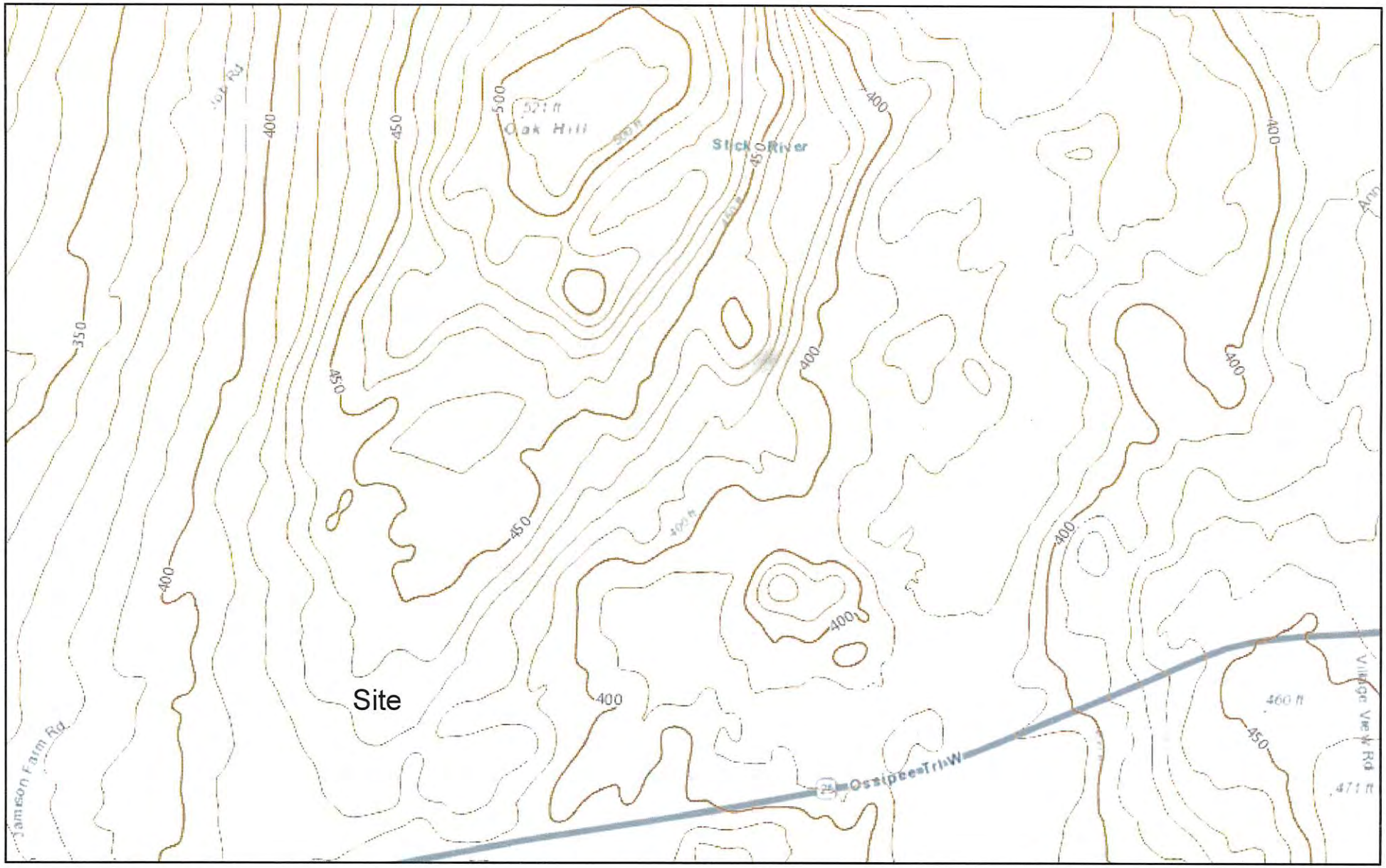
Conclusions:

The development of this parcel meets the requirements of the Site Location of Development Rules regarding groundwater quality. Three of the wastewater disposal areas will require the use of dentrification, aerating treatment units in order to meet the Rules. These units meet the provisions of NSF Standard 245 and 40 and produce an effluent quality with lower BOD5, COD5, TSS, NO3-N and certain pathogens than anaerobic wastewater disposal systems.

A Maintenance Agreement will be in place and regular inspections of the systems' performance will ensure that water quality standards will remain in compliance.

Mark Cenci
Certified Maine Geologist #467

Figure 1. Topographic Locus Map



4/1/2019 11:02:13 AM

1:9,028

0 0.05 0.1 0.2 mi

0 0.07 0.15 0.3 km

Normal Intermediate Contours

Normal Index Contours

USGS The National Map: 3D Elevation Program. Data Refreshed January,

USGS

USGS The National Map: Orthoimagery | Garrity, C.P., Soller, D.R. | USGS National Map 3D Elevation Program (3DEP). Data refreshed July, 2018. | USGS TNM - 3D Elevation Program (3DEP). Data refreshed weekly. | USGS The National Map: 3D Elevation

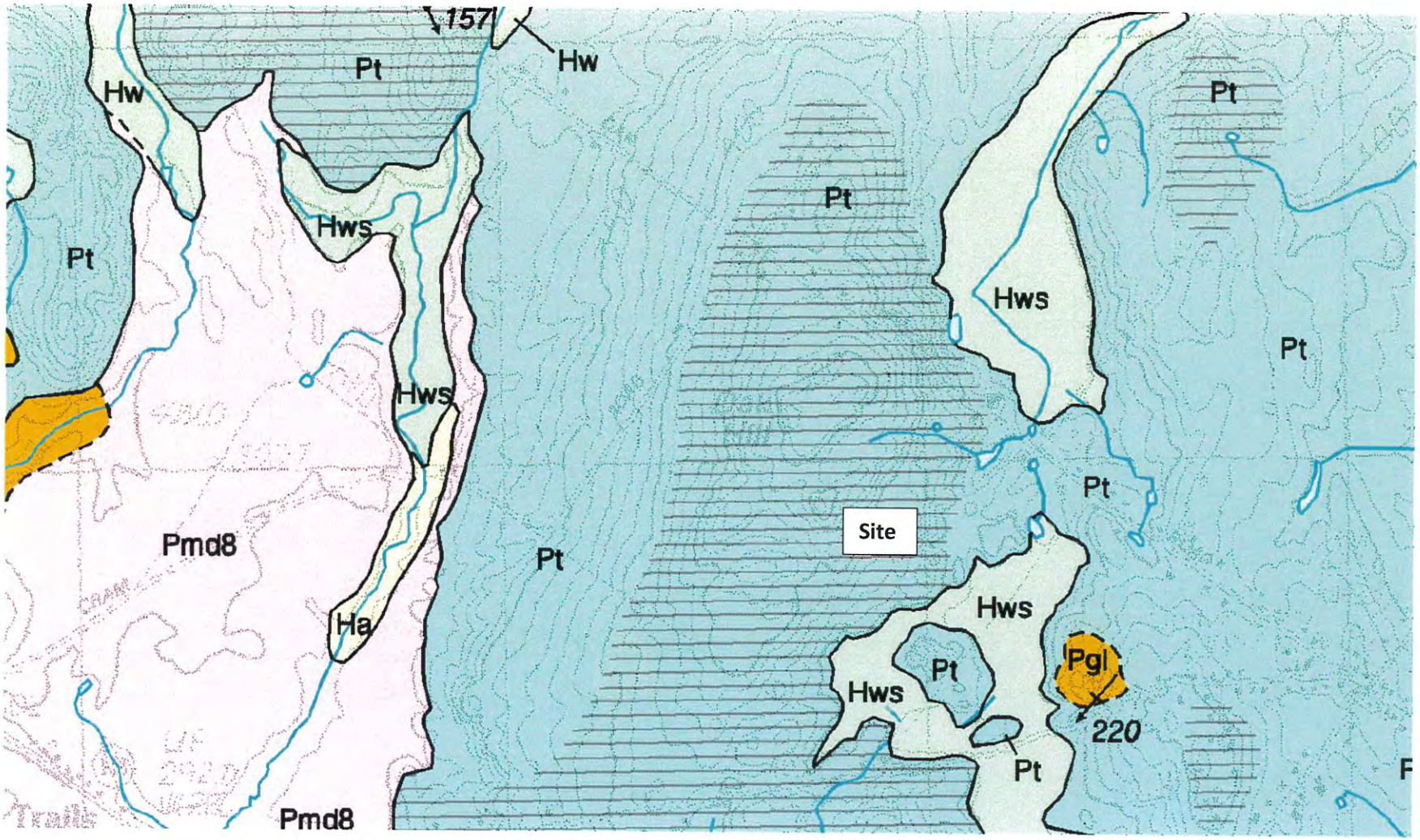


Figure 2.

Detail from *Surficial Geology of the Standish Quadrangle, Maine*
Maine Geological Survey, 1999, Open-File No. 99-101

Where Pt = Glacial Till (shallow bedrock) and Hws = Holocene wetland swamp

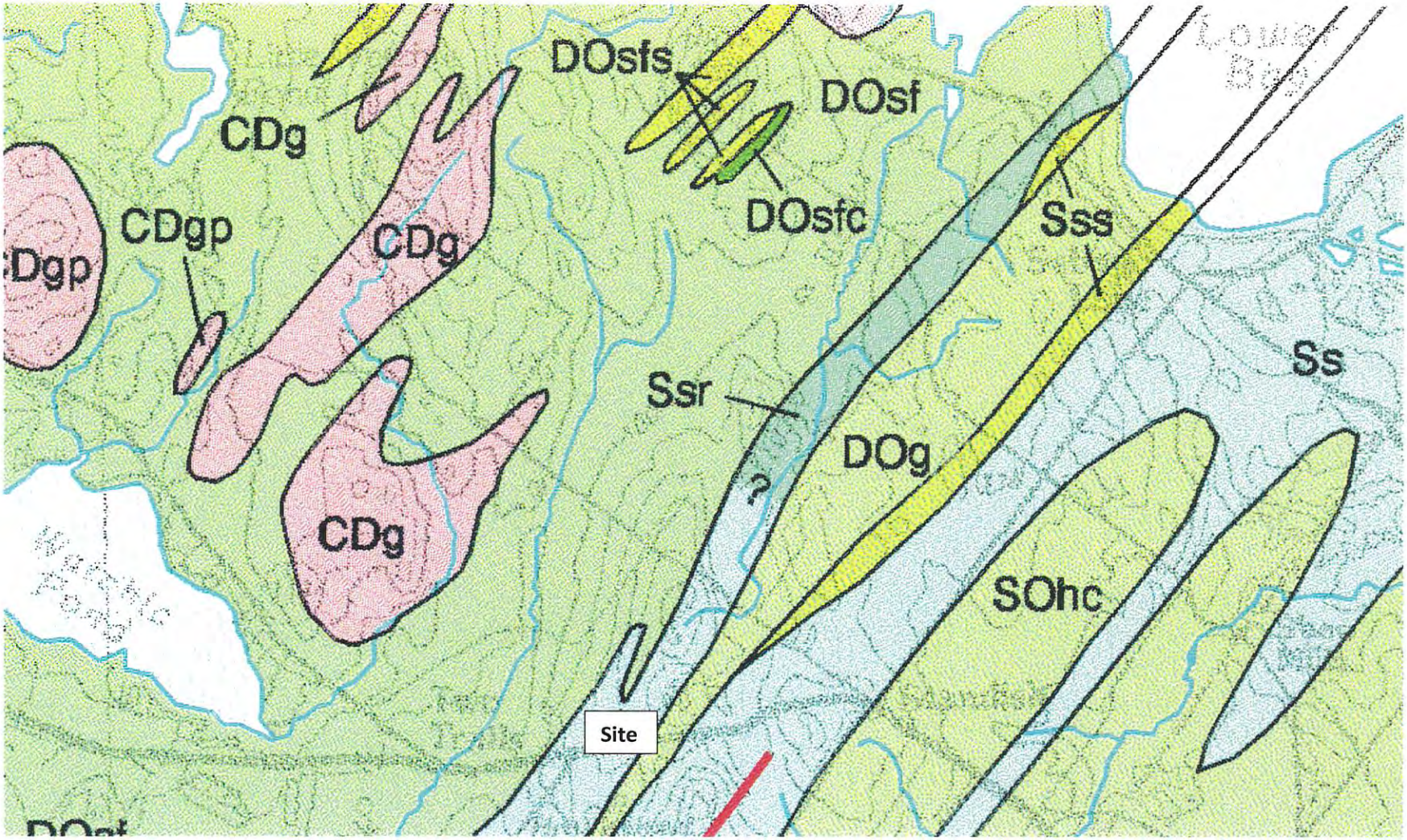


Figure 3.

Detail from *Bedrock Geology of the Portland 1:100,000 Quadrangle Maine and New Hampshire* 1998, Maine Geological Survey, Open-File No. 98-1

Where Ss = Standish Formation and DOsf = Steep Falls Formation

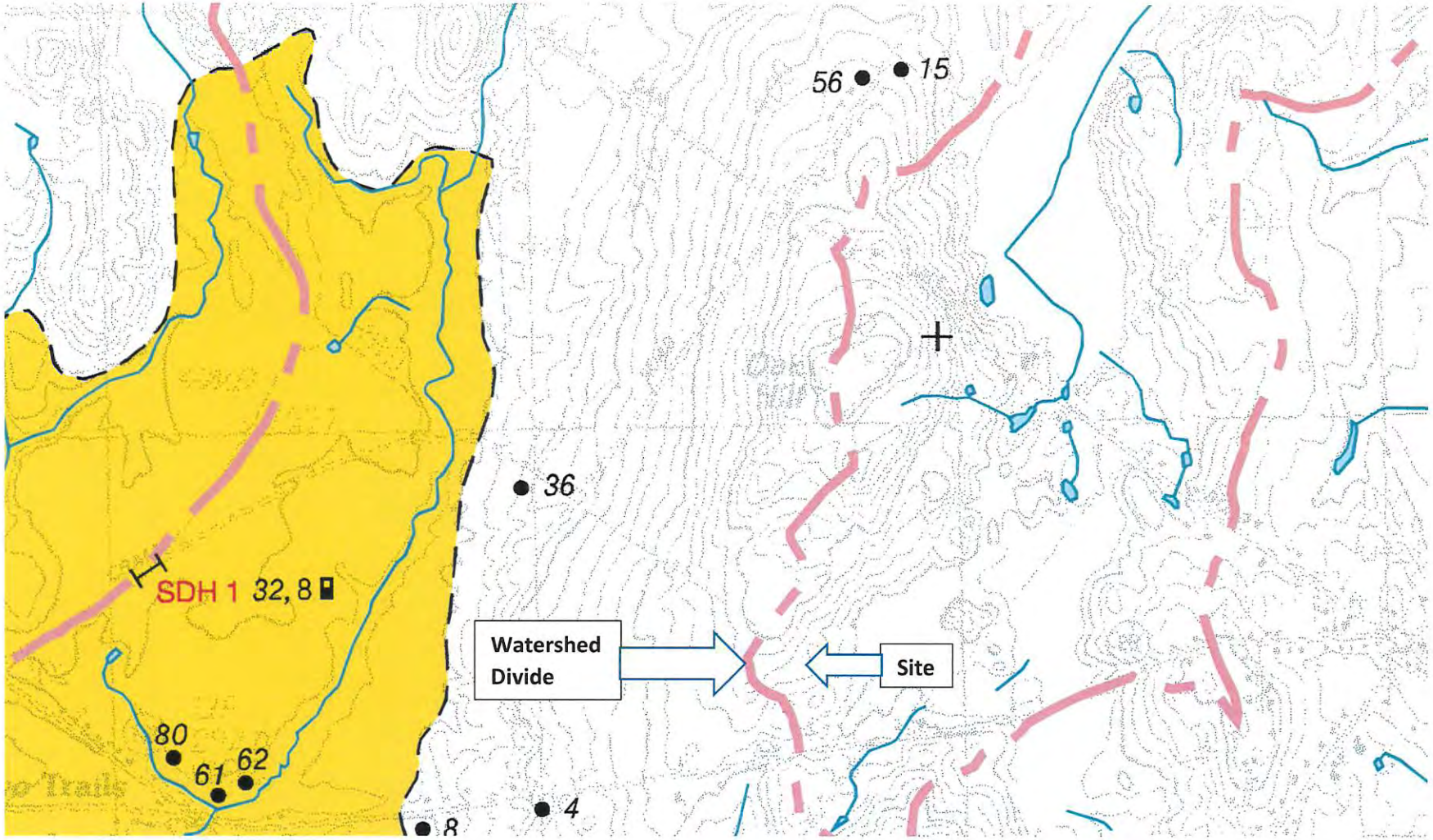


Figure 4.

Detail from *Significant Sand and Gravel Aquifers, Standish Quadrangle, Maine*.

1998. Maine Geological Survey, Open-File Report No. 98-142

A & L LABORATORY
a division of Granite State Analytical Services, LLC
155 Center Street, Building C, PO Box 1507, Auburn, ME 04210
http://www.allaboratory.com/ – (207) 784-5354

CERTIFICATE OF ANALYSIS FOR DRINKING WATER

Legend	
Passes	✓
Fails EPA Primary	⊗
Fails EPA Secondary	▽
Fails State Guideline	✕
Attention	⚠

DATE PRINTED: 11/12/2018

CLIENT NAME: Mark Cenci

CLIENT ADDRESS: 93 Mill Road
North Yarmouth, ME 04097

SAMPLE ID#: 1811-00817-001

SAMPLED BY: Mark Cenci

DATE AND TIME COLLECTED: 11/07/2018 3:18PM

DATE AND TIME RECEIVED: 11/08/2018 8:56AM

SAMPLE ADDRESS: Mark Cenci Geologic
191 Osippee Trail West
Standish ME 04071

ANALYSIS PACKAGE: A & L-IC-Basic+As-ME

RECEIPT TEMPERATURE: 18° CELSIUS

MORE LOC INFO: Breakroom

CLIENT JOB #

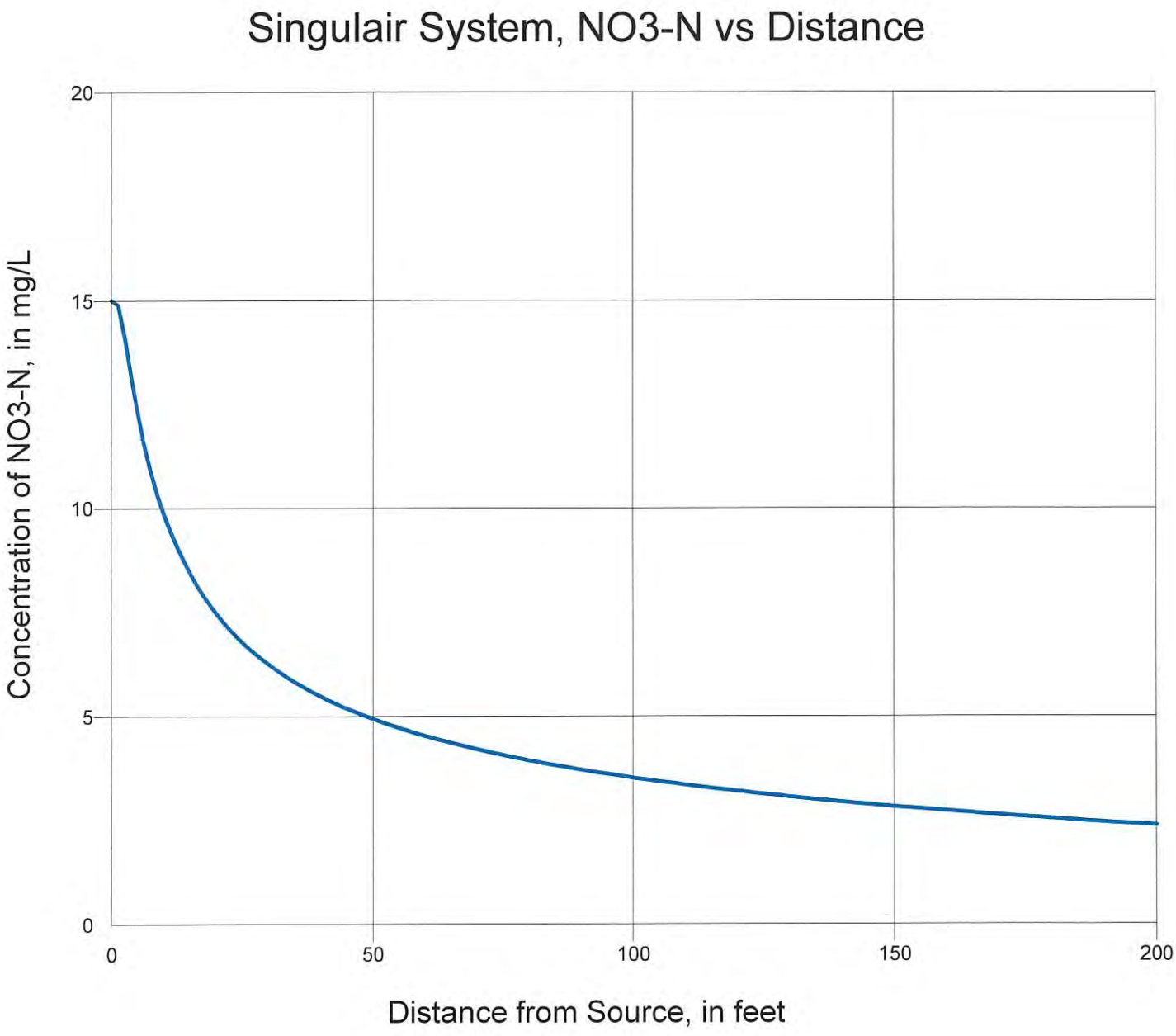
Test Description	Results	Test Units	Pass /Fail	DQ Flag	RL	Limit	Method	Analyst	Date-Time Analyzed
Arsenic*	0.0287	mg/L	⊗		0.001	0.010 mg/L	EPA 200.8	JLR-NH	11/09/18 1:07PM
Calcium	27.8	mg/L			0.1	No Limit	EPA 200.8	JLR-NH	11/09/18 1:07PM
Copper*	<0.001	mg/L	✓		0.001	1.3 mg/L	EPA 200.8	JLR-NH	11/09/18 1:07PM
Hardness (calc.)	77.6	mg CaCO3/L			0.25	No Limit	EPA 200.8	JLR-NH	11/09/18 1:07PM
Iron	0.37	mg/L	▽		0.1	0.3 mg/L	EPA 200.8	JLR-NH	11/09/18 1:07PM
Magnesium	1.98	mg/L			0.1	No Limit	EPA 200.8	JLR-NH	11/09/18 1:07PM
Manganese*	0.0708	mg/L	▽		0.001	0.05 mg/L	EPA 200.8	JLR-NH	11/09/18 1:07PM
Sodium	6.92	mg/L			0.1	No limit	EPA 200.8	JLR-NH	11/09/18 1:07PM
Chloride*	2	mg/L	✓		2	250 mg/L	EPA 300.0	JR-ME	11/08/18 12:34PM
Fluoride*	0.39	mg/L	✓		0.2	4.0 mg/L	EPA 300.0	JR-ME	11/08/18 12:34PM
Nitrate as N*	<0.2	mg/L	✓		0.2	10 mg/L	EPA 300.0	JR-ME	11/08/18 12:34PM
Nitrite as N*	<0.2	mg/L	✓		0.2	1 mg/L	EPA 300.0	JR-ME	11/08/18 12:34PM
pH*	7.67	SU	✓	H	--	6.5 - 8.5 SU	SM 4500-H+ B	JR-ME	11/08/18 1:55PM
Coliform Bacteria*	Present	P-A/100mL	⚠		Absent	No Limit	SM 9223 B	JR-ME	11/08/18 9:55AM
E. coli Bacteria*	Absent	P-A/100mL	✓		Absent	Absent	SM 9223 B	JR-ME	11/08/18 9:55AM

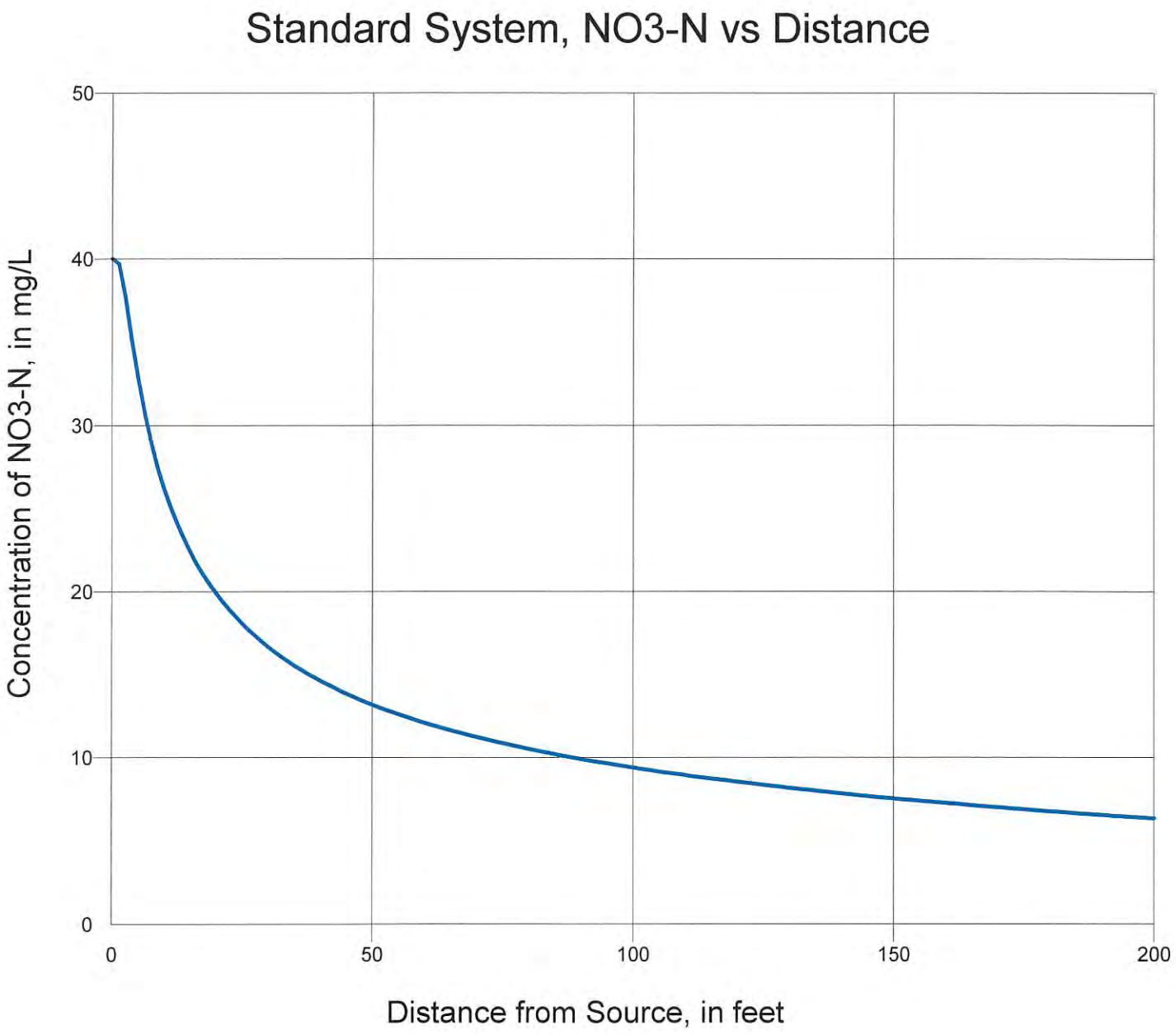
The results presented in this report relate to the samples listed above in the condition in which they were received.
RL: "Reporting limit" means the lowest level of an analyte that can be accurately recovered from the matrix of interest.
The thermal preservation requirement of 4ºC for nitrate & nitrite has been waived by the Maine CDC for all samples submitted to the Drinking Water Program.
Data Qualifier (DQ) Flags: H = Hold time non-compliant.

*** ME Certified Analysis**

Rebecca L. Labranche
Laboratory Director

This analysis meets State of Maine requirements except as noted.
State Certifications: | A & L Laboratory: ME ME00021 | Granite State Analytical Services LLC: NH NH00003 |
This certificate shall not be reproduced, except in full, without the written approval of Granite State Analytical Services, LLC


Singulair System, NO3-N vs Distance
Concentration of NO3-N, in mg/L
20
15
10
5
0
0
50
100
150
200
Distance from Source, in feet


Standard System, NO3-N vs Distance
Concentration of NO3-N, in mg/L
50
40
30
20
10
0
0
50
100
150
200
Distance from Source, in feet

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept.Health & Human Services
Div of Environmental Health , 11 SHS
(207) 287-5672 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	STANDISH
Street or Road	HIGHLANDS
Subdivision, Lot #	

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____

Local Plumbing Inspector Signature

☐ Owner ☐ Town ☐ State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson, LLC ☑Owner ☑Applicant
Mailing Address of Owner/Applicant	P.O. Box 703 Standish, ME 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant _____ Date _____

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

Local Plumbing Inspector Signature _____ (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION

☒ 1. First Time System
☐ 2. Replacement System
Type replaced: _____
Year installed: _____
☐ 3. Expanded System
☐ a. <25% Expansion
☐ b. >25% Expansion
☐ 4. Experimental System
☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

☒ 1. No Rule Variance
☐ 2. First Time System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 3. Replacement System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 4. Minimum Lot Size Variance
☐ 5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

☒ 1. Complete Non-engineered System
☐ 2. Primitive System (graywater & alt. toilet)
☐ 3. Alternative Toilet, specify: _____
☐ 4. Non-engineered Treatment Tank (only)
☐ 5. Holding Tank, _____ gallons
☐ 6. Non-engineered Disposal Field (only)
☐ 7. Separated Laundry System
☐ 8. Complete Engineered System (2000 gpd or more)
☐ 9. Engineered Treatment Tank (only)
☐ 10. Engineered Disposal Field (only)
☒ 11. Pre-treatment, specify: SINAULAIR
☐ 12. Miscellaneous Components TNT

SIZE OF PROPERTY

☐ SQ. FT.
☐ ACRES

SHORELAND ZONING

☐ Yes ☒ No

DISPOSAL SYSTEM TO SERVE

☐ 1. Single Family Dwelling Unit, No. of Bedrooms: ____
☒ 2. Multiple Family Dwelling, No. of Units: 8
☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ☐ Undeveloped

TYPE OF WATER SUPPLY

☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
☒ 4. Public ☐ 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

☐ 1. Concrete SINAULAIR
☐ a. Regular TNT
☐ b. Low Profile 1500
☐ 2. Plastic
☐ 3. Other: _____
CAPACITY: _____ GAL.

DISPOSAL FIELD TYPE & SIZE

☐ 1. Stone Bed ☐ 2. Stone Trench
☐ 3. Proprietary Device
☐ a. cluster array ☐ c. Linear
☐ b. regular load ☐ d. H-20 load
☒ 4. Other: MOUNDBUSTER
SIZE: 1380 ☐ sq. ft. ☒ lin. ft.

GARBAGE DISPOSAL UNIT

☒ 1. No ☐ 2. Yes ☐ 3. Maybe
If Yes or Maybe, specify one below:
☐ a. multi-compartment tank
☐ b. ___ tanks in series
☐ c. increase in tank capacity
☐ d. Filter on Tank Outlet

DESIGN FLOW

1440 gallons per day
BASED ON:
☒ 1. Table 4A (dwelling unit(s))
☐ 2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
8 UNITS @ 180 GPD EACH
☐ 3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
3 / C
at Observation Hole # TP54
Depth 15-22"
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

☐ 1. Medium—2.6 sq. ft. / gpd
☒ 2. Medium—Large 3.3 sq. f.t / gpd
☐ 3. Large—4.1 sq. ft. / gpd
☐ 4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

☐ 1. Not Required
☐ 2. May Be Required
☒ 3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area

Lat. _____d _____m _____s
Lon. _____d _____m _____s
if g.p.s, state margin of error: _____

SITE EVALUATOR STATEMENT

I certify that on X (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

[signature]	262	4-3-19
Site Evaluator Signature	SE #	Date
MARK CENCI	329-3524	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the design should be confirmed with the Site Evaluator.

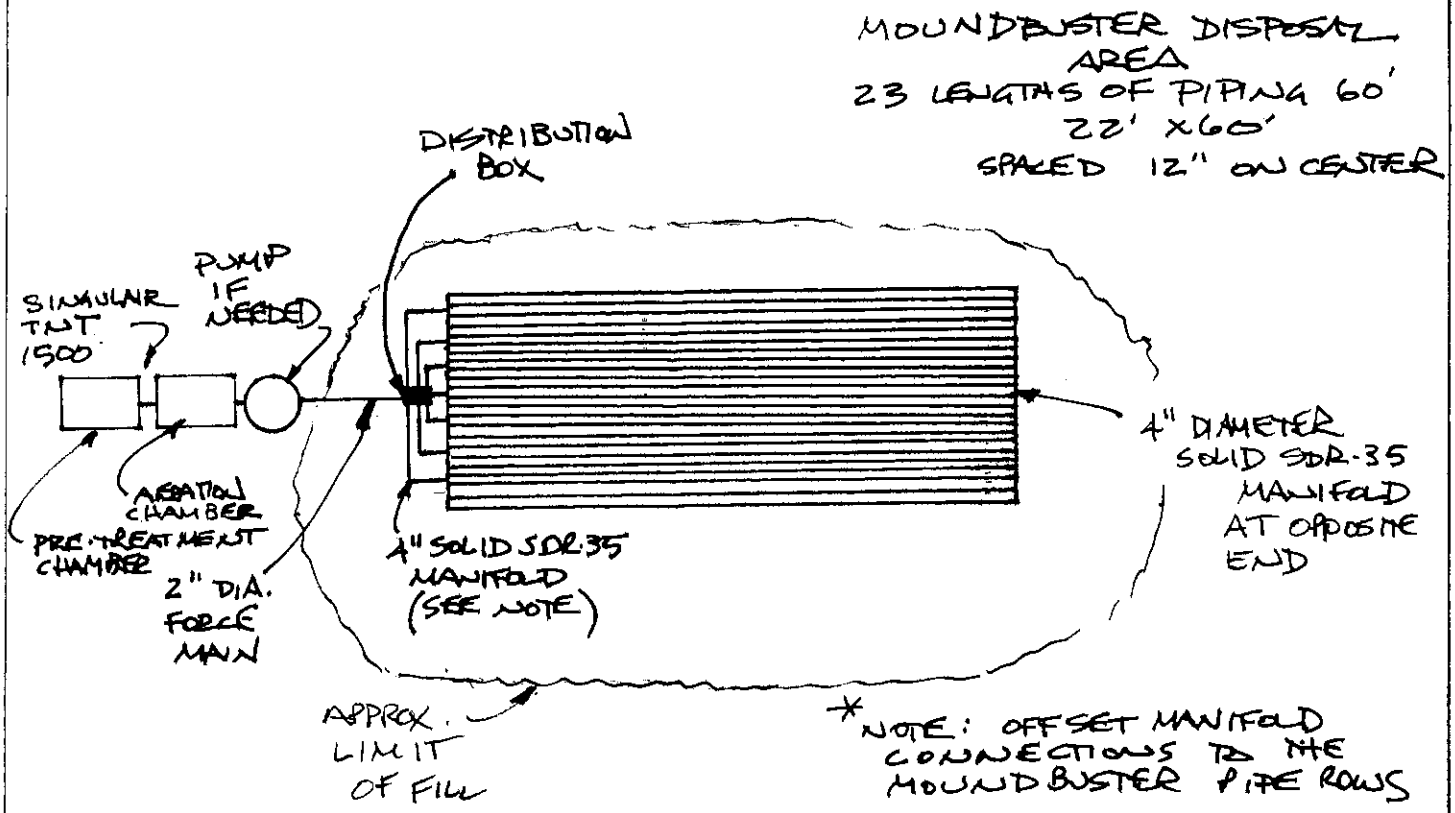
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
STANDISH	HIGHLANDS	HIGHLANDS DEVELOPMENT

SUBSURFACE WASTEWATER DISPOSAL PLAN

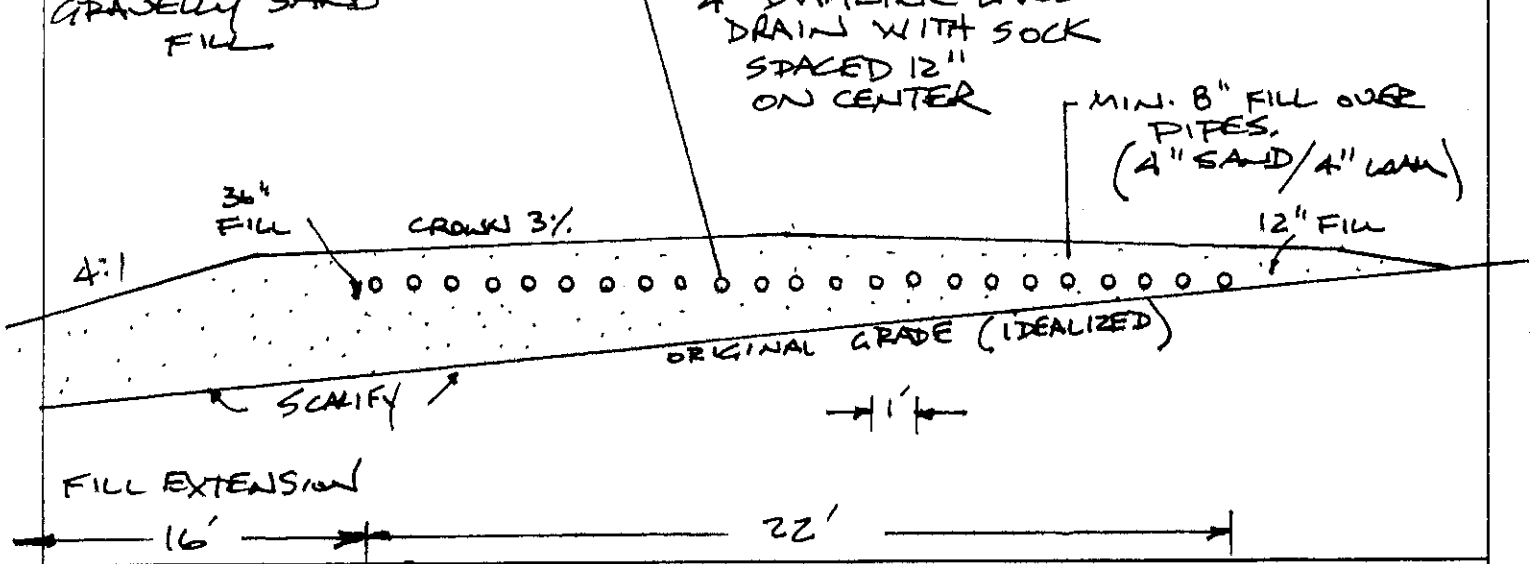
Scale: 1" = 20 ft



BACKFILL REQUIREMENTS	CONSTRUCTION ELEVATIONS	ELEVATION REFERENCE POINT
ABOVE GRADE		Location & Description: TO BE SET
Depth of Backfill (upslope) 12"	Finished Grade Elevation (at Row 1) —	
Depth of Backfill (downslope) 36"	Top of Proprietary Device (at Row 1) —	
	Bottom of Disposal Field (at Row 1) —	Reference Elevation is 0.0" or:

DISPOSAL FIELD CROSS SECTION

Scales:
Verticle: 1" = 5
Horizontal: 1" = 5



Site Evaluator Signature	SE #	Date
[signature]	262	4-2-19

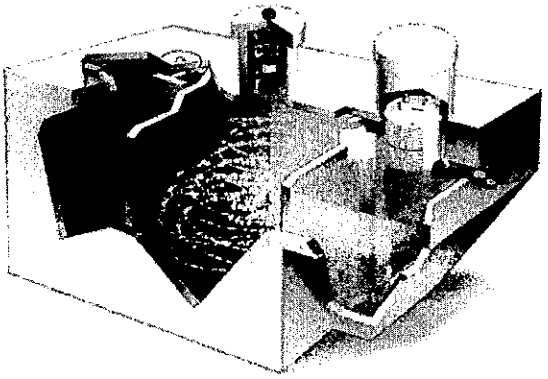
SINGULAIR® TNT®
ADVANCED TREATMENT UNIT

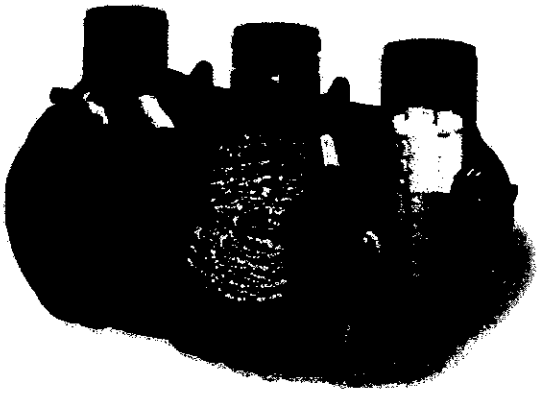
NITROGEN REDUCING WASTEWATER TREATMENT SYSTEM
ACCOMPLISHES NITRIFICATION AND DENITRIFICATION
GREATER THAN 68% REDUCTION IN TOTAL NITROGEN

If regulations in your area are demanding nutrient reduction for onsite treatment and disposal systems, install a Singulair Model TNT! Total Nitrogen Treatment you can rely on from the leader in advanced treatment unit technology.

NSF STANDARD 245 CERTIFIED PERFORMANCE
AFFORDABLE DOMESTIC WASTEWATER TREATMENT
COMPLIES WITH THE MOST STRINGENT EFFLUENT CRITERIA

The Singulair Model TNT system biologically oxidizes nitrogen compounds without requiring complicated and expensive equipment. Designed to be easily operated and maintained, the TNT system does not require the addition of chemicals or the recirculation of effluent. The Singulair TNT blows away the competition!





PERFORMANCE THAT PROTECTS THE ENVIRONMENT!
7 mg/L NITRATE
12 mg/L TOTAL NITROGEN
4 mg/L $CBOD_5$
9 mg/L TSS

NSF CSA® FC
c UL US LISTED NAT

SINGULAIR® TNT FEATURES

- Precast concrete tank or high density polyethylene tank
- Low electrical usage
- Surge flows equalized
- No chemicals to add
- Lifetime warranty and exchange
- Sold and serviced by local distributors
- Made in the U.S.A.

norweco®

Engineering the future of water and wastewater treatment

220 REPUBLIC STREET
NORWALK, OHIO, USA 44857-1156
TELEPHONE (419) 668-4471
FAX (419) 663-5440
email@norweco.com
www.norweco.com

norweco®

SINGULAIR® BIO-KINETIC®

WASTEWATER TREATMENT SYSTEM WITH SERVICE PRO® CONTROL CENTER

MODELS 960 AND TNT® OWNER'S MANUAL

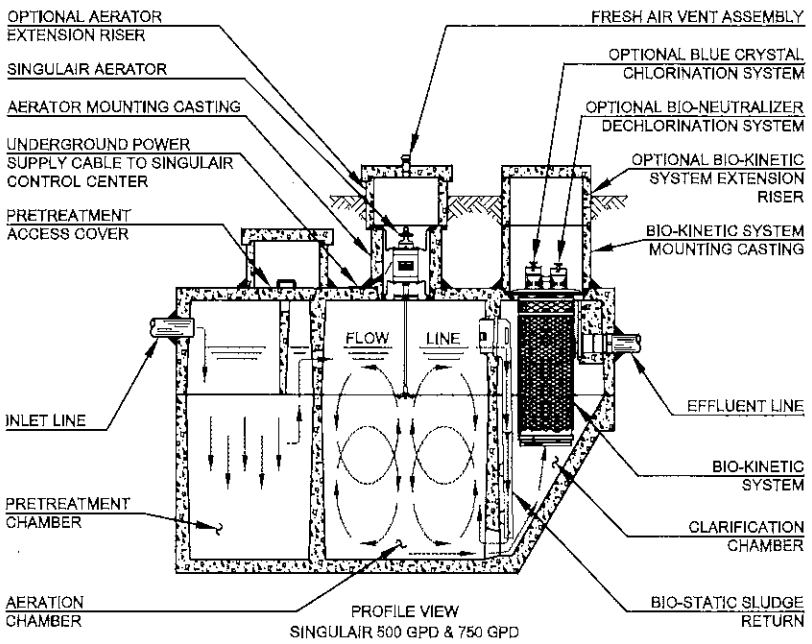
INTRODUCTION

The Singulair system is the finest equipment available and utilizes the most up-to-date wastewater treatment technology. It is a sound investment that protects you and the environment. Please take the time to familiarize yourself with the contents of this manual.

HOW THE SINGULAIR® SYSTEM WORKS

Developed to serve homes and small businesses beyond the reach of city sewers, the Singulair system employs the extended aeration process. Similar to the treatment method used by most municipal wastewater treatment facilities, this process involves a natural, biological breakdown of the organic matter in wastewater.

Wastewater enters the pretreatment chamber where anaerobic bacterial action combines with the effects of gravity to precondition the waste before it flows into the aeration chamber. Once in the aeration chamber, aerobic bacteria utilize the organic matter in the wastewater to biologically convert the waste into stable substances. Following aeration, flow is transferred to the clarification chamber where the effects of gravity settle out biologically active material. The Bio-Static sludge return, located in the clarification chamber, creates hydraulic currents that gently transfer settled particles back to the aeration chamber. As clarified liquids pass through the Bio-Kinetic system, they are filtered, settled and flow equalized. As a result, complete pretreatment, aeration, clarification and final filtration are assured. The Singulair system reliably protects you, your property and the environment.



PROFILE VIEW
SINGULAIR 500 GPD & 750 GPD

FEATURES AND ADVANTAGES

Singulair tanks are reinforced precast concrete, manufactured by the licensed Norweco distributor. Internal walls and baffles are cast-in-place to insure uniformity and maximum strength. Risers and access covers are either heavy duty plastic or concrete construction. All components within the system that will contact the wastewater are constructed entirely of molded plastic, stainless steel or rubber.

The Singulair aerator is powered by a 1725 RPM, 115 volt, 60 hertz, single-phase, fractional horsepower motor. It is the only electrically powered component in the Singulair system. The aerator has been designed specifically for use in the Singulair system. It costs less to operate and consumes fewer kilowatt hours of electricity than most major appliances.

Singulair aerators are supplied with a Service Pro control center with MCD technology. The NEMA rated control center contains a power switch and time clock that control aerator operation. The local distributor's name, address and telephone number are displayed on the control center cover. All system controls and necessary owner information are conveniently located at your fingertips.

Non-mechanical flow equalization and final filtration are accomplished within the Singulair tank by the Bio-Kinetic system. This revolutionary device is installed in the clarification chamber and connected to the system outlet. Optional chlorination and dechlorination may be included in the Bio-Kinetic system if required. All Singulair components work together to assure complete pretreatment, aeration, clarification and final filtration.

SINGULAIR® SYSTEM PERFORMANCE

Rivaling the performance of the most advanced wastewater treatment plants in the world, the Singulair system complies with USEPA wastewater treatment guidelines for secondary treatment systems and meets all requirements of NSF/ANSI Standard 40. In ecologically sensitive areas, the most stringent effluent standards are 10 mg/L CBOD and 10 mg/L TSS. Rated Class I after successfully completing the 6 month Standard 40 test protocol, the Model 960 system averaged effluent of 6 mg/L CBOD and 10 mg/L TSS. The Model TNT system averaged effluent of 4 mg/L CBOD, 9 mg/L TSS and 12 mg/L Total Nitrogen and met all requirements of NSF/ANSI Standard 245.

OPERATIONAL REQUIREMENTS

The Singulair system is designed to treat only domestic wastewater. Domestic wastewater is defined as the waste generated from a typical residence. This includes flows originating from: bathtubs, clothes washers, dishwashers, drinking fountains, water coolers, food grinders, kitchen sinks, lavatories, mop basins, service sinks, shower stalls, sinks, wash sinks, water closets and whirlpool baths. While the use of bio-degradable detergents is recommended, the Singulair system has been designed to handle any reasonable amount of bathroom, kitchen or laundry waste. However, some care should be exercised to insure that non-biodegradable and/or toxic materials are not disposed of via the domestic wastewater plumbing. Do not use the plumbing system for disposal of lint, cooking grease, scouring pads, diapers, sanitary napkins, cotton balls, cotton swabs, cleaning rags, dental floss, strings, cigarette filters, rubber or plastic products, paints and thinning agents, gasoline, motor oil, drain cleaners or other harsh chemicals. These items could plug portions of the plumbing and/or adversely affect system performance. Never connect roofing down spouts, footer drains, sump pump piping, garage and basement floor drains or water softener backwash to the domestic wastewater plumbing or the treatment system. Water softener backwash will interfere with biological treatment and must be disposed of separately.

ELECTRICAL REQUIREMENTS

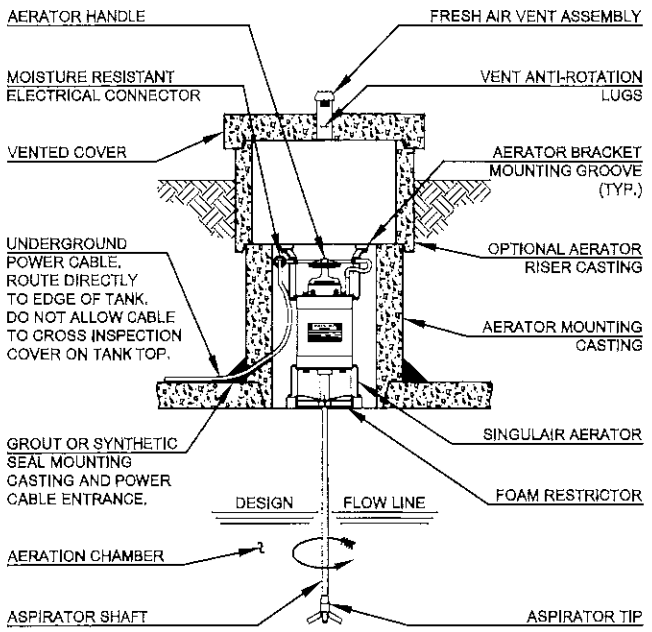
Each Singulair control center must be wired to a dedicated 115 VAC, single-phase circuit at the main electrical service panel. A 15 amp circuit is recommended (10 amp minimum). A pictorial wiring diagram is provided inside the control center enclosure. All electrical work must be performed in accordance with the requirements of the National Electrical Code and all applicable local codes. Electrical connections should be made only by a qualified electrician following proper procedures and using safe tools.

CAUTION: Any time service is required, first shut off the dedicated circuit breaker in the main electrical service panel. Next, shut off the power switch in the Singulair control center. Failure to do so could result in personal injury or equipment damage.

SINGULAIR® AERATOR

The aerator has been specifically designed for use in the Singulair system and includes special alloy and molded plastic parts to prolong aerator life. Aerator bearings are pre-lubricated and sealed. Singulair aerators are installed in a concrete mounting casting above the aeration chamber. Fresh air enters the aerator through four intake ports located under the aerator handle. The air is drawn down the hollow aspirator shaft where it is introduced below the liquid surface. Only the molded plastic aspirator and the lower portion of the stainless steel aspirator shaft are submerged.

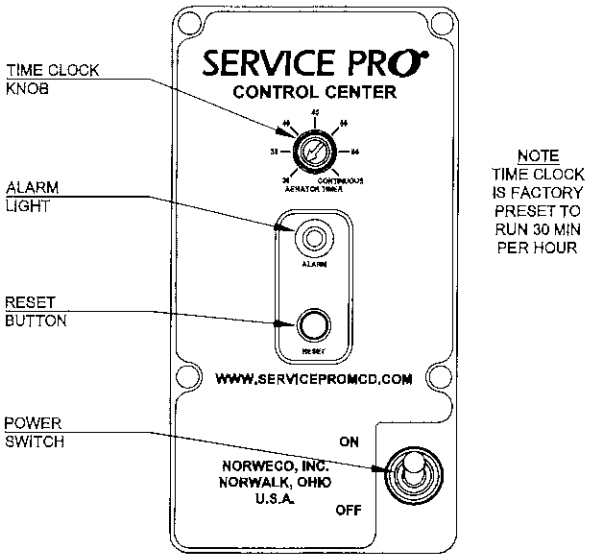
The aerator is not designed to run under water and will automatically shut off if a high water condition occurs. If the liquid rises to the level of the foam restrictor, the control center will shut off power to the aerator. Next, an automatic diagnostic sequence begins, as outlined in the section titled "Service Pro Control Center".



Each Singulair aerator is a precision engineered electro-mechanical device. Do not remove it from its installed position. Do not attempt any type of repair. Contact your Singulair service provider if service is needed. Unauthorized tampering or repair will void important provisions of the limited warranty and exchange program.

FRESH AIR VENTING SYSTEM

An aerator vent assembly is cast into the concrete access cover above each aerator. The vent assembly supplies fresh air to the aerator, which is drawn through the aspirator and into the wastewater. Finished landscaping should be maintained six inches below the top of the vented access cover and graded to drain runoff away from the cover. Do not allow plants, shrubbery, mulch or landscaping of any type to restrict the flow of air to the vent assembly or obstruct the access cover.



SERVICE PRO® CONTROL CENTER

Prewired controls are supplied in a sealed NEMA rated enclosure for your safety and the protection of components and wiring. The controls should be located so the alarm light can be seen and the audible alarm heard, while minimizing exposure to harsh weather or conditions that might prevent routine access. If an issue with the aerator is detected, the red alarm light will flash and the control center will attempt to restart the aerator every five minutes for two hours. For an open motor or under current condition, the alarm light will display two short flashes followed by a pause. For an over current condition, the alarm light will flash evenly. If the aerator does not restart after two hours, the audible alarm will sound. To silence the audible alarm and attempt to restart the aerator, push the reset button. If the alarm condition is not resolved, the audible alarm will be silenced for 48 hours, but the alarm light will continue to flash. In this case, contact your service provider. Model 960 systems are supplied with a time clock adjustable in five minute increments up to continuous run. This clock is factory preset to run 30 minutes per hour and should only be adjusted by an authorized Singulair service provider. Model TNT systems are supplied with a non-adjustable time clock.

SERVICE PRO® MONITORING CENTER

An optional Service Pro MCD control center is available for use with the Singulair system. Designed to connect to a standard telephone line or internet connection, this control center provides MONITORING, COMPLIANCE and DIAGNOSTIC functions complete with telemetry for communication with the Service Pro monitoring center. Once your Service Pro MCD control center is connected to a telephone line or internet connection, commissioned, and covered by a remote monitoring agreement, your service provider will be immediately notified of any alarm condition. The Service Pro monitoring center will automatically log the time and date of alarm conditions, as well as service performed, and store them in your system history record for viewing at **www.servicepromcd.com**.

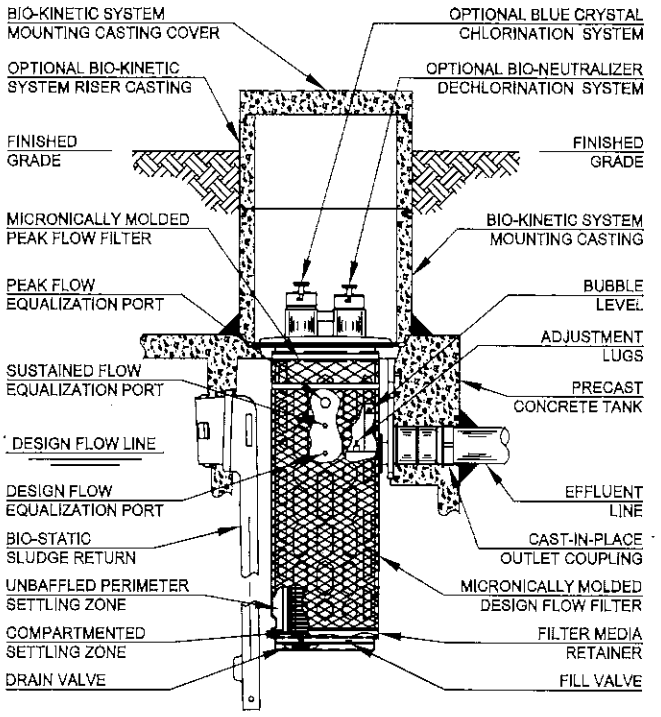
NOTE: The control center regularly communicates with the Service Pro monitoring center using your telephone line or an internet connection. If the control center is using the telephone line when you attempt to place a call, a high pitched digital communication signal will be heard. Hang up all telephones sharing the line and wait a few seconds. This will automatically disconnect the control center and make the line available for use.

BIO-STATIC® SLUDGE RETURN

Each Bio-Static sludge return is installed in the aeration/ clarification chamber wall. Aeration chamber hydraulic currents enter the sludge return(s) and transfer solids from the clarification chamber back to the aeration chamber for additional treatment. The Bio-Static sludge return accomplishes resuspension and return of settled solids without disturbing the contents of the clarification chamber.

BIO-KINETIC® SYSTEM

Bio-Kinetic systems provide non-mechanical flow equalization through all plant processes. The Bio-Kinetic system contains 3 separate filtration zones, 8 independent settling zones, optional chlorination and dechlorination tablet feed systems and serves as its own chlorine contact chamber. When used with Blue Crystal disinfecting tablets, the performance of the Bio-Kinetic system as a disinfection device is certified to NSF/ANSI Standard 46, Section 11. All components are manufactured from plastic or rubber. Your service provider has the necessary training, tools and equipment for removal and cleaning. If your Bio-Kinetic system is in need of service, contact your service provider. During each semi-annual service inspection, your service provider will remove and clean the Bio-Kinetic system or replace it with a unit from their service stock.



NON-MECHANICAL FLOW EQUALIZATION

The patented design of the Bio-Kinetic system provides non-mechanical flow equalization for the Singulair wastewater treatment plant. Equalization reduces incoming hydraulic surges (e.g. typical shower of 10 minutes duration, bathtub discharge of 5 minutes duration, clothes washer discharge of 2 minutes duration and dishwasher discharge of 2 minutes duration) throughout the system. The flow equalization provided by the Bio-Kinetic system causes wastewater to be held upstream of the final outlet during hydraulic surges, which preserves treatment integrity and enhances system operation. The actual rate of equalization varies and depends upon specific loading patterns and the duration of each flow surge. At the design loading pattern used during the NSF/ANSI Standard 40 performance evaluation, the Singulair system equalizes all flow an average of 50%. As a result, hydraulic surges and periods of high wastewater flow are automatically reduced to protect the environment and all treatment plant processes on a demand use, as needed, basis.

BLUE CRYSTAL® RESIDENTIAL DISINFECTING TABLETS

If local regulations require, an initial supply of Blue Crystal disinfecting tablets will be placed in the Bio-Kinetic system chlorine feed tube(s) at system start-up. Manufactured from calcium hypochlorite, Blue Crystal disinfecting tablets provide effective, economical bacteria killing power. Liquid entering the Bio-Kinetic system contacts the installed Blue Crystal disinfecting tablets, just downstream of the equalization ports. A fully charged feed tube will last an average of six months. During each semi-annual inspection, your Singulair service provider will check system operation and install tablets as needed.

NOTE: USEPA guidelines state "On the average, satisfactory disinfection of secondary wastewater effluent can be obtained when the chlorine residual is 0.5 ppm after 15 minutes contact." Retention time must comply with the controlling regulatory jurisdiction.

BIO-NEUTRALIZER® DECHLORINATION TABLETS

In environmentally sensitive areas, regulations may require the use of Bio-Neutralizer dechlorination tablets. Manufactured to chemically neutralize both free and combined chlorine, Bio-Neutralizer dechlorination tablets provide consistent reduction or elimination of chlorine residual without unnecessarily reducing the level of dissolved oxygen in the treatment system effluent. As liquid passes through the final discharge zone of the Bio-Kinetic system, the flow contacts the tablets and residual chlorine is removed from the system effluent. A fully charged feed tube will last an average of six months. During each semi-annual inspection, your Singulair service provider will check system operation and install tablets as needed.

CAUTION: The improper handling of Blue Crystal and Bio-Neutralizer tablets may cause personal injury or property damage. Keep out of the reach of children and do not allow the tablets or feed tubes to contact skin, eyes, or clothing. Blue Crystal tablets may be fatal if swallowed and tablet dust is irritating to the eyes, nose and throat. Do not handle the tablets or feed tubes without first carefully reading the product container label, MSDS information and the handling and storage instructions. Mixing of chemicals may cause a violent reaction leading to fire or explosion. For additional information about Blue Crystal and Bio-Neutralizer tablets contact your Singulair service provider.

ACCESS RISERS AND COVERS

Concrete access covers are recommended and must be secured after each service visit. A concrete plug should be installed in the access openings of the tank to prevent accidental entry. Access covers should be inspected during service visits and replaced as necessary. If plastic risers and/or covers are utilized, they must be approved for your application and secured as instructed by the manufacturer. Refer to state and local regulations for applicable codes that may apply to your installation.

DANGER: Make sure your service provider does not leave access risers uncovered or partially covered. Failure to properly secure access covers and safety nets could result in bodily injury, illness or death. Do not allow children to play on or around the treatment system. Riser safety nets are available from Norweco for concrete or plastic risers.

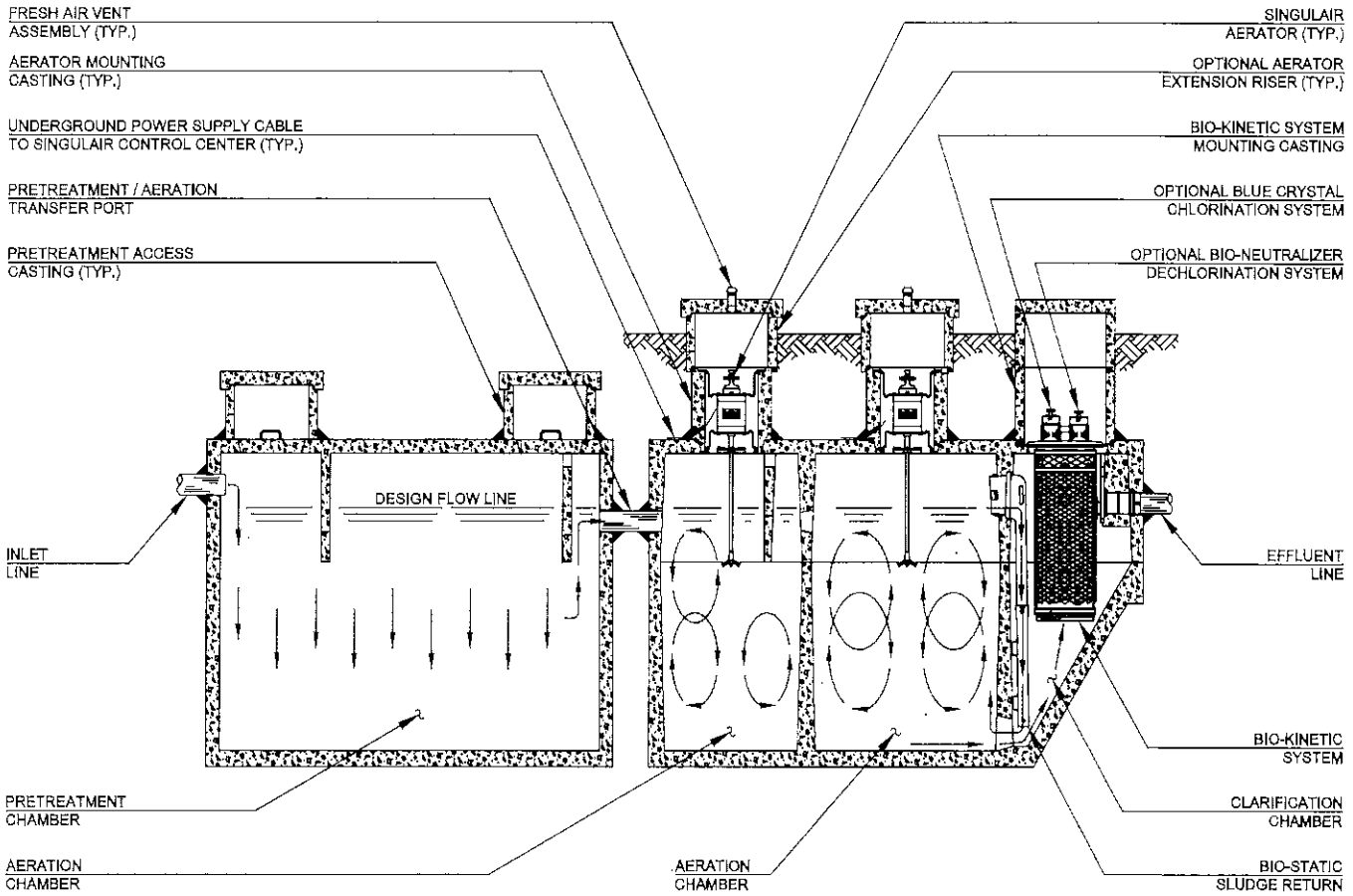
NO OWNER MAINTENANCE

The Singulair system is inspected and serviced by a local, factory-trained service provider, therefore, no owner maintenance is required during the warranty period. The Singulair system does not require pumping as often as a septic tank. Under normal use only the pretreatment chamber should be pumped. How often pumping is necessary depends on system use. The local Singulair service provider will inspect the aeration chamber contents and plant effluent at six month intervals to determine if the pretreatment chamber is discharging excessive solids. Every three years, the pretreatment chamber should be inspected. The pretreatment chamber will normally require pumping at three to five year intervals. Contact your local service provider prior to tank pumping for complete information on removal of equipment, access to individual chambers, coordination of services and proper disposal of tank contents.

If a period of intermittent use, or an extended period of non-use of the system is anticipated, contact your service provider for instructions. Your service provider has detailed service instructions and has been factory-trained in troubleshooting procedures. Contact your service provider if you require service or tank pumping information.

SINGULAIR® SERVICE PROGRAM

Semi-annual service inspections, at six month intervals for the first two years of system operation, are provided by your local Norweco distributor and are included in the original purchase price of the Singulair system. Costs for travel and labor are not charged to the owner. During an inspection, each mechanical aerator, Bio-Kinetic system and other plant components are serviced as outlined in the Singulair Product Manual and effluent quality is evaluated for color, turbidity, scum overflow and odor. After the initial two year service program is completed, the local service provider will provide continued service at the owner's option. The service program should be renewed by the owner to insure maximum system performance.



PROFILE VIEW
SINGULAIR 1000 GPD, 1250 GPD & 1500 GPD

Ask your Singulair service provider about a renewable service contract. If you allow service coverage to expire, you can still obtain the professional assistance of a factory-trained technician. However, these special service calls will be performed on a time and materials basis. Professional service is important to proper system operation and should not be allowed to lapse. Be sure to consider the advantages of a renewable service contract.

The Singulair service provider will perform the following services during each service inspection:

- ✓ Check aerator operation
- ✓ Check aerator power consumption
- ✓ Check aerator air delivery
- ✓ Clean stainless steel aspirator shaft
- ✓ Clean aspirator tip
- ✓ Clean fresh air vent in concrete cover
- ✓ Inspect aeration chamber contents
- ✓ Check operation of control center
- ✓ Adjust time clock when required
- ✓ Remove the Bio-Kinetic system
- ✓ Scrape the clarification chamber
- ✓ Inspect the Bio-Static sludge return
- ✓ Inspect outlet coupling
- ✓ Install a clean Bio-Kinetic system
- ✓ Fill Blue Crystal feed tube
- ✓ Fill Bio-Neutralizer feed tube
- ✓ Inspect effluent quality
- ✓ Inspect outlet line
- ✓ Inspect ground water relief point
- ✓ Inspect effluent disposal system
- ✓ Complete 3-part service record
- ✓ Hang owner's record on front door
- ✓ Enter record into **www.servicepromcd.com**
- ✓ Mail health department notification

WARRANTY REGISTRATION

A Warranty Registration Card was included with the Model 206C aerator before it was shipped from the factory. If this card has not been returned to Norweco, complete and mail it immediately. If it is not returned within thirty days of the installation date, the three year limited warranty and lifetime aerator exchange program will begin on the date of component shipment from the factory.

Remove the aerator model number and serial number record card and store it in a safe location with this Owner's Manual for future reference. If it is necessary to call your service provider for service, make note of the information on the control center data plate and the aerator serial number before calling. Warranty and service records are cross-indexed by owner name, aerator serial number or control center serial number. Supplying the aerator serial number and control center serial number with the service request will give the service provider a ready reference so that changes in system ownership will not delay service.

SINGULAIR® LIMITED WARRANTY

The Singulair aerator enjoys the distinction of being the only aerator on the market today backed by a lifetime warranty and exchange program. Each Singulair aerator, Service Pro control center, Bio-Kinetic system and any other components manufactured by Norweco, are warranted to be free from defects in material and workmanship, under normal use and service, for a period of three years from the date of purchase. The three year limited warranty is included in the original purchase price of every Singulair system. The comprehensive aerator exchange program offers Singulair owners a lifetime of protection. Owners with a Singulair system may exchange any aerator of any age for a replacement unit at a prorated cost. If the Singulair aerator or Service Pro control center fails, do not use or dismantle the unit. The local, licensed distributor has detailed warranty and exchange information and should be contacted for service or replacement instructions.

SERVICE PRO® SECURITY LOG IN

For your convenience, record your **www.servicepromcd.com** access information here:

User name:	Password:

SUPPLEMENTAL SERVICE RECORD

For your reference, please document service performed on the following chart:

DATE	DESCRIPTION

norweco®

Engineering the future of water and wastewater treatment

DISTRIBUTED LOCALLY BY:

220 REPUBLIC STREET
NORWALK, OHIO, U.S.A. 44857-1156
TELEPHONE (419) 668-4471
FAX (419) 663-5440
www.norweco.com

Norweco®, Norweco.com®, Singulair®, Modulair®, Travalair®, Singulair Green®, Ribbit Rivet®, Hydro-Kinetic®, Hydro-Kinetic Bio-Film Reactor®, Evenair®, Lift-Rail®, Microsonic®, Bio-Dynamic®, Bio-Sanitizer®, Bio-Neutralizer®, Bio-Kinetic®, Bio-Static®, Bio-Gem®, Bio-Max®,Bio-Perc®, Blue Crystal®, Phos-4-Fade®, Envlro-C®, ClearCheck®, ChemCheck®, Tri-Max®, Hydra-Max®, Service Pro®, MCD®, TNT®, WASP®, Grease Buster® and "BUSTER" logo® are registered trademarks of Norwalk Wastewater Equipment Company, Inc.

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SINGULAIR®

OWNER PROTECTION SERVICE PROGRAM

AT NO ADDITIONAL OWNER EXPENSE	POSSIBLE EXPENSE	
☑	☐	A. Regular service inspections conducted at six month intervals throughout the year.
☑	☐	B. Special service inspections as requested by owner.
☑	☐	C. Labor and transportation expenses for travel on regular service inspections.
☑	☐	D. Labor and transportation expenses for travel on special service inspections.
☑	☐	E. Singulair plant maintenance including Bio-Kinetic system service, visual inspection of effluent quality and cleaning of hopper section using squeegee scraper in clarification tank (where applicable).
☑	☐	F. Inspection of outlet line or disposal system (where accessible).
☑	☐	G. Singulair mechanical aerator maintenance including cleaning of the stainless steel aspirator shaft, power consumption check, noise check, and visual inspection for vibration of the unit while in operation.
☑	☐	H. Visual check of Service Pro control center for Singulair unit (when accessible).
☑	☐	I. Labor expenses required at the site to service or repair, or to remove any part of the control center or Singulair mechanical aerator to be returned for factory repair.
☑	☐	J. Labor required at the site to service, repair or reinstall any part of the Service Pro control center or Singulair mechanical aerator returned from factory repair.
☐	☑	K. Service Pro remote monitoring service (where applicable).
☐	☑	L. Freight costs to and from the factory and lifetime exchange program costs when factory repairs are needed.
☐	☑	M. Costs for replacing missing parts or repairing equipment not eligible for the lifetime exchange program.

CONTRACT FEE $ _____

(To Be Paid In Advance By Owner)

OWNER ACCEPTANCE

NAME: _____

ADDRESS: _____

_____

EMAIL: _____

DATE: _____

NORWECO SINGULAIR DISTRIBUTOR

NAME: _____

BY: _____

DATE: _____

COMPLETE AND RETURN TO YOUR LOCAL NORWECO DISTRIBUTOR

©MMIX

norweco® Lifetime 3 Year Limited Warranty | Lifetime Exchange Program

To:

Local Dist.

Place Stamp Here
Post Office Will Not Deliver Without Proper Postage

norweco® SINGULAIR®

SERVICE CONTRACT

OWNER NAME: _____

ADDRESS: _____ (street) EFFECTIVE DATE: _____ 20 ____

_____ (city) (state) (zip) EXPIRATION DATE: _____ 20 ____

TELEPHONE NO.: (____) _____ SYSTEM INSTALLED ON: _____ 20 ____

DIRECTIONS: _____

_____

This one year service contract for the Singulair Bio-Kinetic wastewater treatment system located at the site described above, is intended to enable the owner to economically obtain regular service inspections for the Singulair unit, as well as non-scheduled or special service that may be required by a qualified technician. When this contract is in force, the owner will not be charged for any routine service labor. Under the terms of this service agreement, a technician will regularly inspect the plant at six month intervals. It will also be inspected following each special owner service request within a 48-hour period. If improper system operation cannot be remedied at time of inspection, the owner will be notified in writing of an estimated date of correction. The contract shall remain in effect for a period of one year, as specified in the effective and expiration dates listed above.

WASTEWATER TECHNOLOGY

NSF/ANSI Standard 245 - *Wastewater Treatment Systems – Nitrogen Reduction*

Final Report:

Norweco, Inc.
Singulair Model TNT-500 Wastewater Treatment System
05/06/2015/060

NSF International
789 N. Dixboro Road
PO Box 130140
Ann Arbor, Michigan 48113-0140 USA

Evaluation Report:
Norweco, Inc.
Singulair Model TNT-500
Wastewater Treatment System

Under the provisions of NSF/ANSI Standard 245
Wastewater Treatment Systems – Nitrogen Reduction

November 2007

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EXECUTIVE SUMMARY

Testing of the Norweco Singulair Model TNT-500 was conducted under the provisions of NSF/ANSI Standard 245 for Wastewater Treatment Systems – Nitrogen Reduction (March 2007). NSF/ANSI Standard 245 was developed by the NSF Joint Committee on Wastewater Technology.

The performance evaluation was conducted at the NSF Wastewater Technology Test Facility located in Waco, Texas using predominantly residential wastewater diverted from the Waco municipal wastewater collection system. The evaluation consisted of sixteen weeks of dosing at design flow, seven and one half weeks of stress testing, and two and one half weeks of dosing at design flow. Dosing was initiated on June 27, 2005. After a three-week start up period, sample and data collection for the test was officially started on July 18, 2005. Sampling started in the summer and continued into the winter, covering a range of operating temperatures.

Over the course of the evaluation, the average influent Total Nitrogen was 38 mg/L, ranging between 15 and 58 mg/L. The Norweco Singulair Model TNT-500 produced an average effluent Total Nitrogen of 12 mg/L, which results in a 68% reduction in the influent Total Nitrogen.

The Norweco Singulair Model TNT-500 was previously certified as an NSF/ANSI Standard 40 Class I system, producing an average effluent $CBOD_5$ of 3 mg/L (ranging between <2 and 11 mg/L) and an average effluent total suspended solids was 8 mg/L (ranging between <2 mg/L and 48 mg/L). The effluent successfully met the performance requirements established by NSF/ANSI Standard 40 for Class I effluent.

> The maximum 7-day arithmetic mean was 15 mg/L for $CBOD_5$ and 30 mg/L for total suspended solids, both below the allowed maximums of 40 and 45 mg/L respectively. The maximum 30-day arithmetic mean was 7 mg/L for $CBOD_5$ and 17 mg/L for total suspended solids, both below the allowed maximums of 25 mg/L and 30 mg/L respectively. The effluent pH during the entire evaluation ranged between, 6.3 and 7.4, within the required range of 6.0 to 9.0. The Model TNT-500 met the requirements for noise levels (less than 60 dbA at a distance of 20 feet), color, threshold odor, oily film and foam.

Over the course of the Standard 245 evaluation the influent averaged 240 mg/L BOD_5, 270 mg/L TSS, 38 mg/L Total Nitrogen, 310 mg/L alkalinity, 28 °C and a median pH of 6.7, meeting the requirements of the Standard. The effluent averages over the course of the test were 3 mg/L $CBOD_5$, 8 mg/L TSS and 12 mg/L Total Nitrogen, representing a 68% reduction, and the effluent pH ranged between 6.3 and 7.4 SU. The effluent values met the requirements of the Standard.

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PREFACE

Performance evaluation of nitrogen reduction for residential wastewater treatment systems is achieved within the provisions of NSF/ANSI Standard 245: Wastewater Treatment Systems – Nitrogen Reduction (March 2007), prepared by the NSF Joint Committee on Wastewater Technology and adopted by the NSF Board of Trustees.

Conformance with the Standard is recognized by issuance of the NSF Mark. This is not to be construed as an approval of the equipment, but a certification of the data provided by the test and an indication of compliance with the requirements expressed in the Standard.

Systems conforming to Standard 245 are classified as having met the requirements of the Standard. Permission to use the NSF Mark is granted only after the equipment has been tested and found to perform satisfactorily, and all other requirements of the Standard have been satisfied. Continued use of the Mark is dependent upon evidence of compliance with the Standard and NSF General and Program Specific Policies, as determined by periodic reinspection of the equipment at the factory, distributors and reports from the field.

NSF Standard 245 requires the testing laboratory to provide the manufacturer of a residential wastewater treatment system, a report including significant data and appropriate commentary relative to the performance evaluation of the system. NSF policy specifies provision of performance evaluation reports to appropriate state regulatory agencies at publication. Subsequent direct distribution of the report by NSF is made only at the specific request or by permission of the manufacturer.

The following report contains results of the entire testing program, a description of the system, its operation and key process control equipment, and a narrative summary of the test program, including test location, procedures and significant occurrences. The system represented herein reflects the equipment authorized to bear the NSF Mark.

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CERTIFICATION

NSF International has determined by performance evaluation under the provisions of NSF/ANSI Standard 245 (March 2007) that the Singulair Model TNT-500 manufactured by Norweco, Inc. has fulfilled the requirements of NSF/ANSI Standard 245. The Singulair Model TNT-500 has therefore been authorized to bear the NSF Mark so long as Norweco, Inc. continues to meet the requirements of Standard 245 and the NSF General and Program Specific Policies.

General performance evaluation and stress tests were performed at the NSF Wastewater Technology Test Facility located in Waco, Texas. The raw wastewater used in the test was municipal wastewater. The characteristics of the wastewater during the test are included in the tabulated data of this report.

The observations and analyses included in this report are certified to be correct and true copies of the data secured during the performance tests conducted by NSF on the wastewater treatment system described herein. The manufacturer has agreed to present the data in this certification in its entirety whenever it is used in advertising, prospectuses, bids or similar uses.

Thomas J. Bruursema
General Manager
Wastewater Treatment Unit Certification

Thomas Stevens
Technical Manager
Federal Programs

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TABLE OF CONTENTS

Page

Executive Summary 2
Preface 3
Certification 4
Table of Contents 5

1.0 Process Description 6

2.0 Performance Evaluation 6

2.1 Description of Unit Evaluated 6
2.2 Test Protocol 7
2.3 Test Chronology 8

3.0 Analytical Results 9

3.1 Summary 9
3.2 Biochemical Oxygen Demand 11
3.3 Total Suspended Solids 12
3.4 pH 13
3.5 Temperature 13
3.6 Dissolved Oxygen 13
3.7 Alkalinity 14
3.8 TKN 15
3.9 Ammonia-N 16
3.10 Nitrite/nitrate-N 16
3.11 Total Nitrogen 17

4.0 References 18

Appendices

Appendix A - Plant Specifications and Drawings
Appendix B - Standard 245 Section 8 - Performance testing and evaluation
Appendix C - Analytical Results – BOD_5, $CBOD_5$, TSS, pH and Temperature
Appendix D - Analytical Results – Nitrogen Analyses
Appendix E - Owner's Manual

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1.0 PROCESS DESCRIPTION

The Singulair Model TNT-500 wastewater treatment system utilizes extended aeration activated sludge and filtration processes to achieve treatment. In the activated sludge process, microorganisms remove soluble contaminants from the wastewater, utilizing them as a source of energy for growth and production of new microorganisms. The organisms tend to be flocculent and form clumps, or floc, that physically entrap particulate organic matter. The organic matter is attacked by extracellular enzymes that solubilize the solids to make them available to the microorganisms as a food source. The conversion of the organic matter from soluble to biological solids allows the removal of the organic matter by settling of the solids in the treatment process. [2]

Extended aeration is a modification of the activated sludge process in which the microorganisms are allowed to remain in the treatment process for long periods of time. The large inventory of biological solids in the process provides a buffer for shock loading of organic matter. The long aeration period allows for the organisms in the system to consume themselves, reducing the total amount of solids produced by the treatment process.

The organisms responsible for the degradation of the organic matter are primarily aerobic bacteria. As such, the transfer of oxygen into the wastewater by an aeration system is critical to the treatment process. The aeration system also provides for the mixing of the wastewater and organisms to provide contact between the organic contaminants in the wastewater and the organisms that provide for removal of the contaminants. For this reason, an activated sludge process is referred to as a suspended growth system. The Norweco Singulair Model TNT-500 wastewater treatment system incorporates a timed aeration cycle, providing an environment for the development of facultative bacteria to assist in the reduction of total nitrogen.

2.0 PERFORMANCE EVALUATION

2.1 Description of Plant Evaluated

The Norweco Singulair Model TNT-500 system tested in this evaluation has a rated hydraulic capacity of 500 gallons per day (gpd). Specifications and drawings are included in Appendix A. The system achieves treatment by a flow equalized, flow through process, starting with a pretreatment chamber, followed by an aeration chamber provided with an infused air system operating on a timed run cycle. Settling is accomplished in a clarification chamber following the aeration chamber. A Bio-Kinetic® System, located in the clarification chamber, provides flow equalization, final filtration, and settling prior to effluent discharge.

The Singulair Model TNT-500 system is made up of four treatment stages. Incoming wastewater flows into the pretreatment chamber for removal of easily separated solids. Anaerobic bacteria break down the solids and begin to solubilize organic particles. A tee at the chamber outlet provides for retention of floating solids in the chamber. Wastewater is transferred from the pretreatment chamber by hydraulic displacement into the aeration chamber through the transfer tee.

The aeration chamber provides a retention time of at least 24 hours at design flow. Aeration is achieved by release of air through a rapidly spinning aspirator submerged in the aeration chamber. The spinning of the

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aspirator in the wastewater draws air down the aspirator shaft, releasing small bubbles that cause the wastewater to rise in the chamber, establishing a circulation pattern. The infused air provides oxygen for the aerobic bacteria, as well as mixing of the wastewater with the bacteria.

The aerator run cycle is controlled by the use of a time clock. The six month test was performed at full design load (500 gpd), with the aerator running for 60 minutes on and 60 minutes off.

From the aeration chamber, the wastewater passes by hydraulic displacement into the clarification chamber through a cast-in-place transfer port located at the bottom of the wall between the aeration chamber and the clarification chamber. Initial separation of solids takes place in the clarification chamber. The quiescence provided in the clarification chamber allows gravity settling of the solids and sludge. Three of the four side walls in the clarifier are sloped to form a hopper. These 60° sloped walls direct material down to the transfer opening. A stationary sludge return device, located in the clarifier, utilizes hydraulic currents to return settled activated sludge from the bottom of the clarifier back to the aeration chamber.

A Bio-Kinetic® System, connected to an outlet coupling cast in the concrete tank, provides the final treatment stage. The Bio-Kinetic® System is located in the center of the clarification chamber and extends down into the chamber. The outlet coupling allows for installation and service of the System from the ground level. The System is made up of three filtration zones, seven settling zones and three pairs of flow equalization ports. Wastewater from the aeration chamber flows up through the clarification chamber to the Bio-Kinetic® System where it passes through the design flow filter media that extends around the baffled perimeter settling zone. The design flow filter media provides for initial filtration and entrapment of solids. Peak flow filter media is located above the design flow media. Flow control through the System is provided by two design flow equalization ports and two sustained flow equalization ports. The ports become submerged orifices as the water level in the chamber rises, equalizing the flow rate through the entire plant. Extreme hydraulic flows are handled through a pair of peak flow equalization ports, which act to return the plant to normal operating levels. All flow passing through the flow equalization ports drops to a deck that directs flow through an optional chlorine tablet feeder and vertically downward to the unbaffled perimeter settling zone. From this area, flow is displaced to the contact basin and then onto the baffled chamber plates. A continuous baffle on each of 42 plates acts as a kinetic filtration weir with a 1/16-inch opening provided between plates. A larger open area immediately downstream of the baffle provides for settling and storage of solids. The clarified water then passes to an effluent stilling well, final settling zone, adjustable outlet weir, optional dechlorination tablet feeder and discharge zone.

2.2 Test Protocol

Section 8 of NSF/ANSI Standard 245 protocol, "Performance Testing and Evaluation", is included in Appendix B. Start up of the plant was accomplished by filling the plant with 2/3 water and 1/3 raw sewage. The plant was then dosed at the design loading rate of 500 gpd as follows:

6 a.m. to 9 a.m. - 35 percent of daily rated capacity (175 gallons)
11 a.m. to 2 p.m. - 25 percent of daily rated capacity (125 gallons)
5 p.m. to 8 p.m. - 40 percent of daily rated capacity (200 gallons)

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Dosing was accomplished by opening an electrically actuated valve to feed wastewater to the test plant. Five gallon doses were spread uniformly over each dosing period to comprise the total dose volume for the period.

After a start up period (up to three weeks at the manufacturer's discretion), the plant is subjected to the following loading sequence:

Design loading	-	16 weeks
Stress loading	-	7.5 weeks
Design loading	-	2.5 weeks

During the design loading periods, flow proportioned 24-hour composite influent and effluent samples are collected three times per week. The influent samples are analyzed for five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), alkalinity, total Kjeldahl nitrogen (TKN), and ammonia-N. The effluent samples are analyzed for carbonaceous five-day biochemical oxygen demand ($CBOD_5$), TSS, alkalinity, TKN, ammonia-N and nitrite/nitrate-N concentrations. Onsite determinations of the influent and effluent pH, temperature and dissolved oxygen are made five days per week on grab samples.

Stress testing is designed to evaluate how the plant performs under non-ideal conditions, including varied hydraulic loadings and electrical or system failure. The test sequence includes (1) Wash Day stress, (2) Working Parent stress, (3) Power/Equipment Failure stress, and (4) Vacation stress. Detailed descriptions of the stress sequences are shown in Appendix B.

During the stress test sequences, 24-hour composite samples are collected twice during each stress recovery period (the week following completion of each of the stress simulations described). The analyses and onsite determinations completed on the samples are the same as described for the design load testing. Each stress is followed by seven consecutive days of dosing at design rated capacity before beginning the next stress test. Sample collection is initiated twenty-four hours after completion of Wash Day, Working Parent and Vacation stresses, and beginning 48 hours after completion of the Power/Equipment Failure stress.

In order for the system to successfully pass the Standard 245 evaluation:

(1) $CBOD_5$: The average of all effluent samples shall not exceed 25 mg/L.

(2) TSS: The average of all effluent samples shall not exceed 30 mg/L.

(3) Total Nitrogen: The average total nitrogen concentration of all effluent samples shall be less than 50% of the average total nitrogen concentration of all influent samples.

(3) pH: Individual effluent values shall remain between 6.0 and 9.0 SU.

2.3 Test Chronology

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The system was installed under the direction of the manufacturer on January 21, 2005. The infiltration/exfiltration test, during which the entire system was tested for leaks, was completed on January 22, 2005. The unit was filled with 2/3 fresh water and 1/3 raw sewage, and dosing was initiated at the rate of 500 gallons per day beginning June 27, 2005. Sampling was initiated on July 18, 2005. The stress test sequence was started on November 7, 2005 and ended on December 28, 2005. Testing was completed on January 27, 2006.

3.0 ANALYTICAL RESULTS

3.1 Summary

Chemical analyses of samples collected during the evaluation were completed using the procedures in *Standard Methods for the Examination of Water and Wastewater*[3] and USEPA methods[4]. Copies of the data generated during the evaluation are included in Appendix C. Results of the chemical analyses and onsite observations and measurements made during the design loading period of the evaluation are summarized in Table I. Data collected during stress loading and recovery is not included in the overall averages, as outlined in Section 8.4.3 of the Standard. For a complete summary of the results, please see Appendix C.

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TABLE I. SUMMARY OF ANALYTICAL RESULTS

	Average	Std. Dev.	Minimum	Maximum	Median	Interquartile Range
Biochemical Oxygen Demand (mg/L)						
Influent (BOD_5)	240	74	85	380	230	190 - 300
Effluent ($CBOD_5$)	3	2	<2	11	<2	2 - 4
Total Suspended Solids (mg/L)						
Influent	270	130	42	680	250	190 - 310
Effluent	8	9	<2	48	5	3 - 10
pH						
Influent	-	-	5.9	7.3	6.7	6.5 – 7.0
Effluent	-	-	6.3	7.4	6.9	6.8 – 7.0
Temperature (°C)						
Influent	28	3	21	30	29	28 – 30
Effluent	27	4	19	31	28	24 – 30
Dissolved Oxygen (mg/L)						
Effluent	1.9	0.5	0.8	3.4	1.9	1.5 – 2.1
Alkalinity (mg/L)						
Influent	310	38	200	410	300	280 - 320
Effluent	210	32	160	280	200	190 - 230
Total Kjeldahl Nitrogen						
Influent	38	10	15	58	38	30 – 44
Effluent	3.8	3.1	0.5	14	2.8	1.9 – 3.9
Ammonia-N						
Influent	19	4.8	10	30	18	15 – 22
Effluent	2.2	2.1	0.1	10	1.5	2.0 – 1.1
Nitrite/nitrate-N (mg/L)						
Effluent	8.3	4.1	1.5	20	8.0	3.9 – 12
Total Nitrogen						
Influent	38	10	15	58	38	30 - 44
Effluent	12	4.5	4.8	25	11	8.4 - 15

Notes: The median is the point where half of the values are greater and half are less.
The interquartile range is the range of values about the median between the upper and lower 25 percent of all values.
Alkalinity data covers the period from July 18 through October 14 only.

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Criteria for evaluating the analytical results from the testing are described in Section 8.4 of NSF/ANSI Standard 245. Section 8.4.1 of the Standard provides guidance addressing the impact of unusual testing conditions, including system upset, improper sampling, improper dosing, or influent characteristics outside the ranges specified in 8.2.1. This section indicates that an assessment shall be conducted to determine the extent to which these conditions adversely affected the performance of the system. Based on this assessment, specific data points may be excluded from the averages. The median influent pH range is between 6.5 and 9.0. While the median value of 6.7 fell within the range, the influent pH ranged from 5.9 and 7.3 during the evaluation. A review of the data determined that no adverse effect resulted from the pH values falling outside the 6.5 to 9.0 range.

Section 8.4.2 of the Standard addresses catastrophic site problems that may occur including, but not limited to, influent characteristics, malfunctions of test site apparatus and acts of God. If these problems jeopardize the validity of the performance testing, manufacturers shall be given the choice to perform maintenance and reinitiate start up of the test, or have the system brought back to pre-existing conditions with no routine maintenance within 3 wks after the site problem has been identified and corrected. No such conditions were observed during this test.

3.2 Biochemical Oxygen Demand

The five-day biochemical oxygen demand (BOD_5) and carbonaceous five-day biochemical oxygen demand ($CBOD_5$) analyses were completed using the EPA Method 405.1. The results of the analyses completed on the samples collected during the testing are shown in Figure 1.

Influent BOD_5:

The influent BOD_5 ranged from 85 to 380 mg/L during the evaluation, with an average concentration of 240 mg/L and a median concentration of 230 mg/L. The average influent BOD_5 delivered to the treatment unit was within the influent characteristics defined under Section 8.2.1 of NSF/ANSI Standard 245.

Effluent $CBOD_5$:

The effluent $CBOD_5$ concentrations ranged from <2 to 11 mg/L over the course of the evaluation, with an average concentration of 3 mg/L. The median effluent $CBOD_5$ concentration was <2 mg/L.

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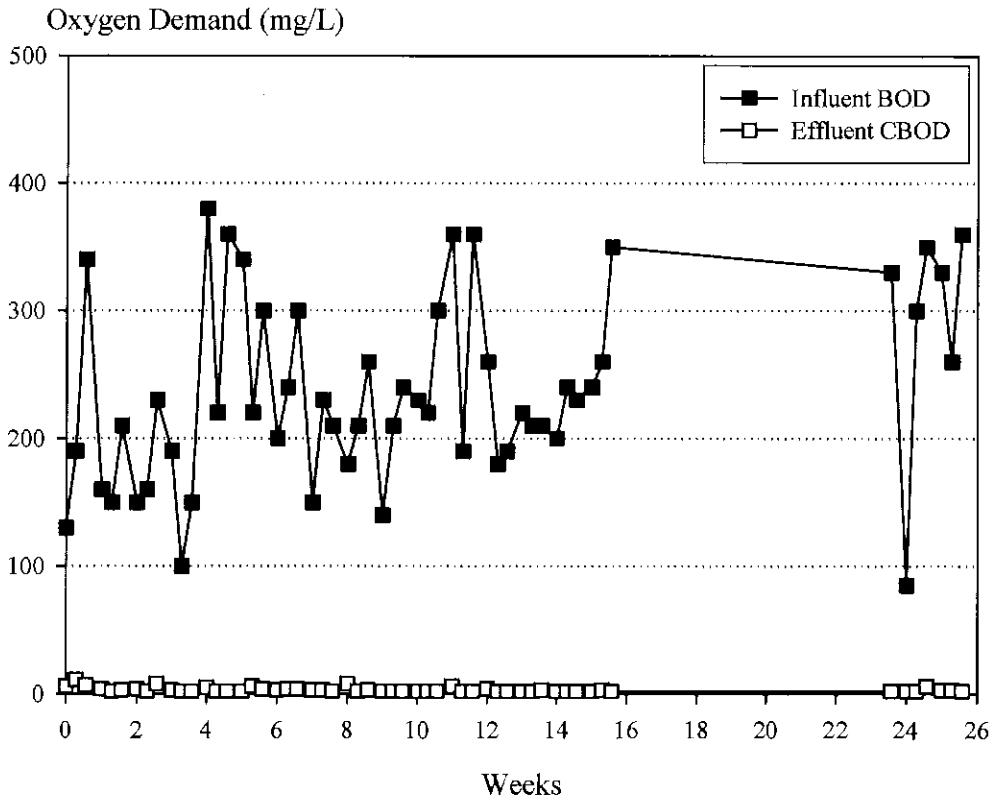

Figure 1. Biochemical Oxygen Demand

3.3 Total Suspended Solids

TSS analyses were completed using Methods 209C of *Standard Methods*. The TSS results over the entire evaluation are shown in Figure 2.

Influent TSS:

The influent TSS ranged from 42 to 680 mg/L during the evaluation, with an average concentration of 270 mg/L and a median concentration of 250 mg/L. The average influent TSS delivered to the treatment unit was within the influent characteristics defined under Section 8.2.1 of NSF/ANSI Standard 245.

Effluent TSS:

The effluent TSS concentration ranged from <2 to 48 mg/L during the evaluation, with an average concentration of 8 mg/L and a median concentration of 5 mg/L.

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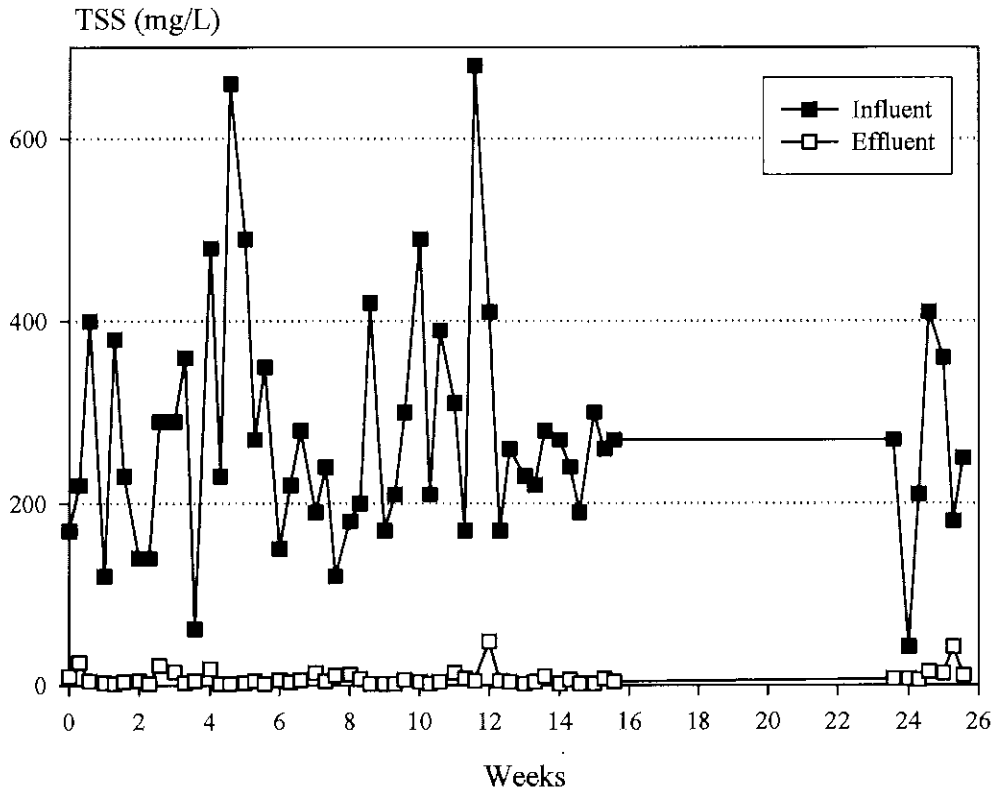

Figure 2. Total Suspended Solids

3.4 pH

Over the entire evaluation period, the influent pH ranged from 5.9 to 7.3 (median of 6.7). The effluent pH ranged from 6.3 to 7.4 during the evaluation (median of 6.9); within the 6 to 9 range required by NSF/ANSI Standard 245. The pH data for the evaluation are shown in Appendix C.

3.5 Temperature

Influent temperatures over the evaluation period ranged from 21 to 30°C, with an average temperature of 28°C (median of 29°C). The temperature data are shown in Appendix C. The Standard requires that the average influent temperature fall within 10 to 30°C. The average influent temperature was within the characteristics defined under Section 8.2.1 of NSF/ANSI Standard 245.

3.6 Dissolved Oxygen

Dissolved Oxygen (DO) was measured in the effluent during the evaluation. The effluent DO ranged between 0.8 to 3.4 mg/L, averaging 1.9 mg/L (median of 1.9 mg/L). All dissolved oxygen data are shown in Appendix C.

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3.7 Alkalinity

Alkalinity analyses were completed using Method 310.10 from *EPA Methods.* The alkalinity results over the entire evaluation are shown in Figure 3. It should be noted that alkalinity data was taken from July 18, 2006 through October 14, 2006. Sampling was stopped due to a miscommunication with site personnel. While the influent and effluent alkalinities were not collected over the entire test, the range of the samples that were collected were all well within the range required by the Standard, and review of the nitrogen data indicates that alkalinity was not a limiting factor for nitrification in the system.

Influent Alkalinity:

Over the period during which the influent alkalinity was collected, the influent averaged 310 mg/L, ranging from 200 to 410 mg/L, with a median concentration of 300 mg/L. The influent alkalinity delivered to the treatment unit was within the influent characteristics defined under Section 8.2.1 of NSF/ANSI Standard 245.

Effluent Alkalinity:

The effluent Alkalinity concentration ranged from 160 to 280 mg/L during the period when alkalinity samples were collected, with an average concentration of 210 mg/L and a median concentration of 200 mg/L.

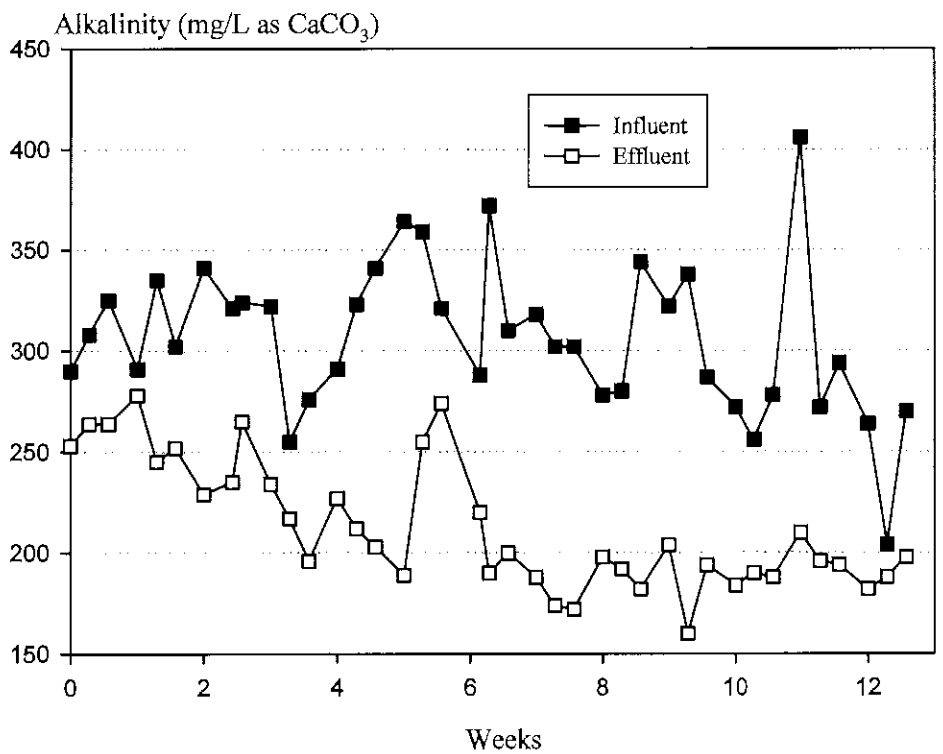

Figure 3: Alkalinity

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3.8 Total Kjeldahl Nitrogen (TKN)

TKN analyses were completed using Method 351.2 from *EPA Methods.* The TKN results over the entire evaluation are shown in Figure 4.

Influent TKN:

The influent TKN ranged from 15 to 58 mg/L during the evaluation, with an average concentration of 38 mg/L and a median concentration of 38 mg/L. The influent TKN delivered to the treatment unit was within the influent characteristics defined under Section 8.2.1 of NSF/ANSI Standard 245.

Effluent TKN:

The effluent TKN concentration ranged from 0.50 to 14 mg/L during the evaluation, with an average concentration of 3.8 mg/L and a median concentration of 2.8 mg/L.

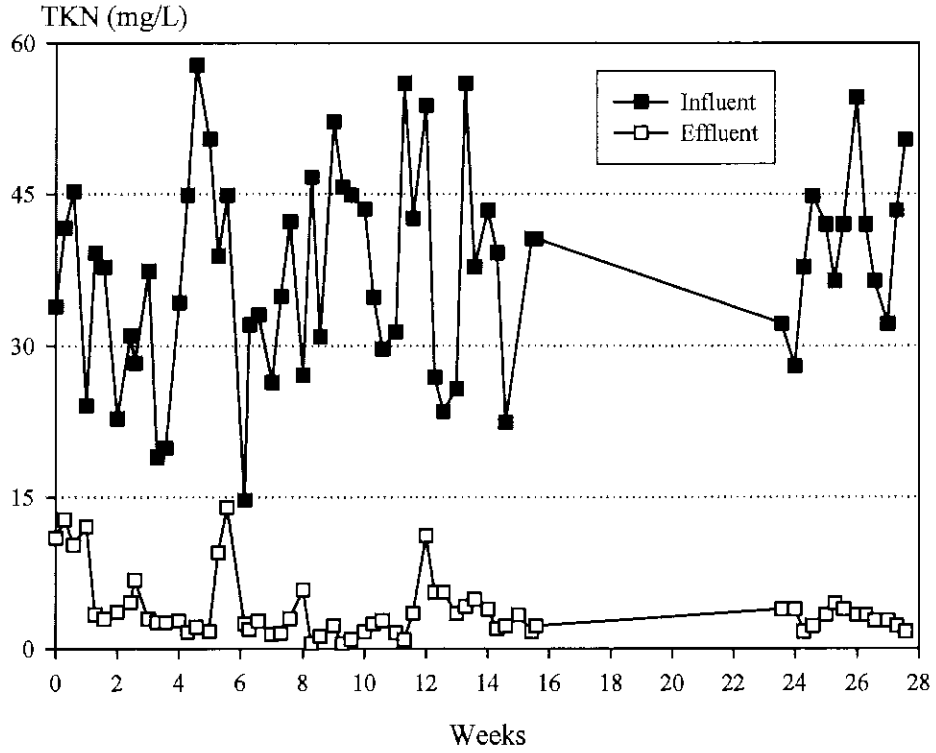

Figure 4: Total Kjeldahl Nitrogen

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3.9 Ammonia-N

Ammonia-N analyses were completed using Method 350.1 from *EPA Methods*. The Ammonia-N results over the entire evaluation are shown in Figure 5.

Influent Ammonia-N:

The influent Ammonia-N ranged from 10 to 30 mg/L during the evaluation, with an average concentration of 19 mg/L and a median concentration of 18 mg/L.

Effluent Ammonia-N:

The effluent Ammonia-N concentration ranged from 0.1 to 10 mg/L during the evaluation, with an average concentration of 2.2 mg/L and a median concentration of 1.5 mg/L.

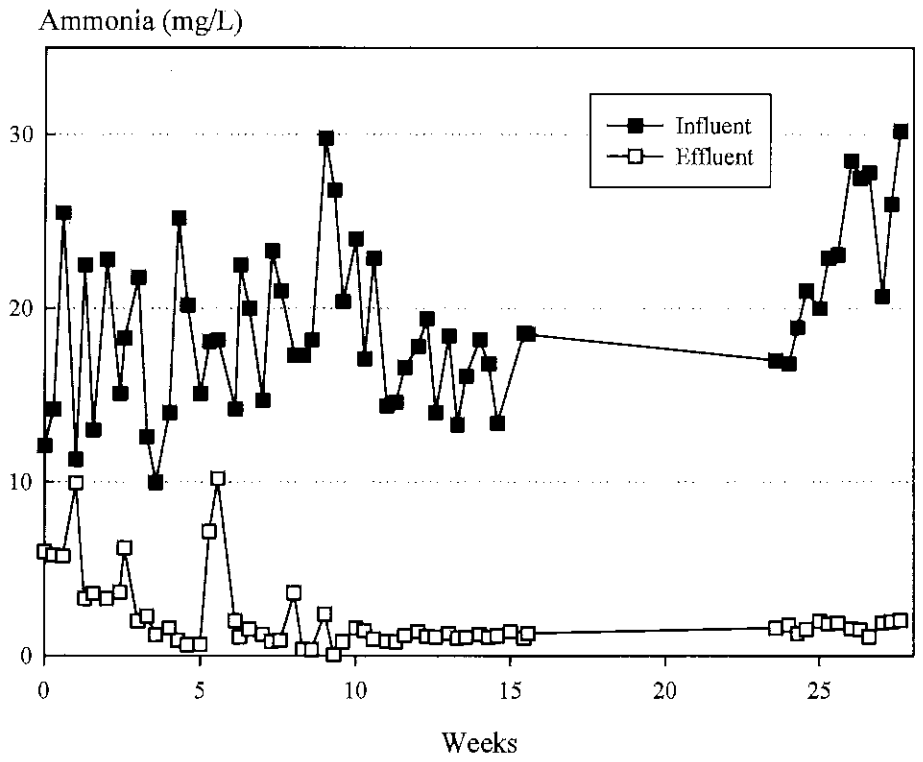

Figure 5: Ammonia

3.10 Nitrite/nitrate-N

Nitrite/nitrate-N analyses were completed using Method 353.2 from *EPA Methods*. The Nitrite/nitrate-N results over the entire evaluation are shown in Figure 6.

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Effluent Nitrite/nitrate-N:

The effluent Nitrite/nitrate-N concentration ranged from 1.5 to 20 mg/L during the evaluation, with an average concentration of 8.3 mg/L and a median concentration of 8.0 mg/L.

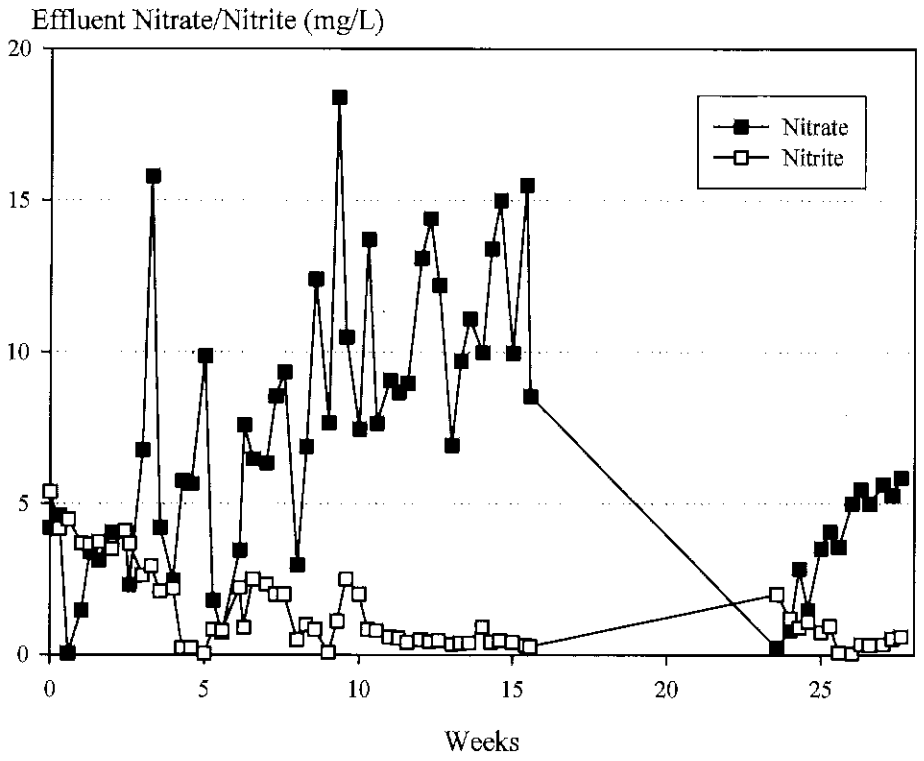

Figure 6: Effluent Nitrate/Nitrite

3.11 Total Nitrogen

Total Nitrogen (TN) is the sum of the total Kjeldahl nitrogen (TKN), nitrite (NO_2) and nitrate (NO_3) in a sample, and is expressed as mg/L as N. The TN results over the entire evaluation are shown in Figure 7.

Influent Total Nitrogen

The influent TN ranged from 15 to 58 mg/L during the evaluation, with an average concentration of 38 mg/L and a median concentration of 38 mg/L.

Effluent Total Nitrogen:

The effluent TN concentration ranged from 4.8 to 25 mg/L during the evaluation, with an average concentration of 12 mg/L and a median concentration of 11 mg/L. The Singulair Model TNT-500

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successfully met the requirements of Standard 245 by reducing the influent TN by 68%, which exceeds the pass/fail criteria of 50%.

Nitrogen Loading:

Over the course of the evaluation the influent Total Nitrogen loading averaged 0.15 lb/day. The Norweco Singulair Model TNT-500 achieved an average reduction of 0.10 lbs/day.

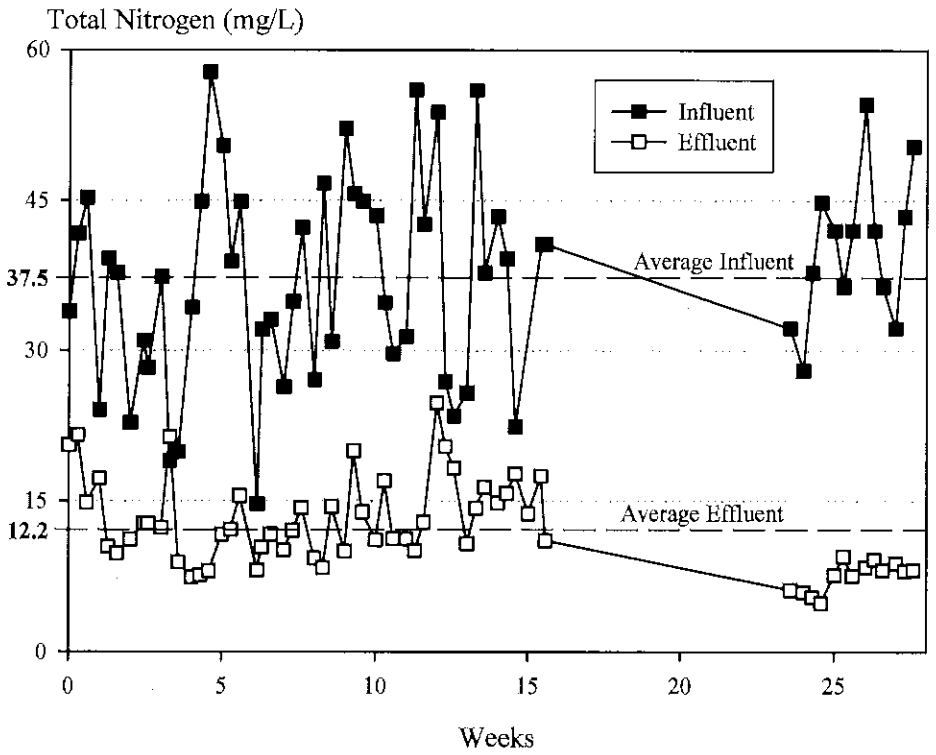

Figure 7: Total Nitrogen

4.0 REFERENCES

1. "Environmental Protection Agency Guidelines for Secondary Treatment", Federal Register, Volume 28, No. 159, 1973.

2. Grady, Jr. C.P., and H.C. Lim, Biological Wastewater Treatment: Theory and Applications, Marcel Dekker Publishers, New York, 1980.

3. APHA, AWWA, WPCF, Standard Methods for the Examination of Water and Wastewater, 20th Edition, American Public Health Association, Washington, D.C.

4. U.S. EPA, Methods for Chemical Analysis of Water and Wastes, U.S. Environmental Protection Agency, Washington, D.C.

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December 10, 2019

Shannon Smith, Project Manager
Maine Department of Environmental Protection
Bureau of Land Resources
Eastern Maine Regional Office – Bangor
106 Hogan Road
Bangor, ME 04401

Subject: Highlands Subdivision, Standish
Response to Engineering Review Comments

Dear Shannon:

Our office received comments from William Noble, C.G. for the above referenced project. We have prepared the responses presented below in consultation with Mark Hampton Associates, Inc. and Mark Cenci Geologic, Inc. For clarity, each comment is repeated in italics, followed by our response.

1. *The soil survey maps (plan sheets SS-1.0, SS-1.1, SS-1.2) should be revised or corrected as noted:*

   a.) *On sheet SS-1.2, NOTE 1 refers to a Class B soil survey and Longhill Road subdivision rather than a Class A survey and Highlands subdivision.*

   Response: The note is revised.

   b.) *Soil label description in NOTE 3 of sheet SS-1.2 does not coincide with labels shown within the soil mapping units (only HSG designations are included instead of slope and drainage class).*

   Response: The former note 3 is removed from the plan to eliminate this inconsistency. Former note 4 is now note 3.

   c.) *The soil name Tunbridge is misspelled as Turnbridge on sheets SS-1.1 and SS-1.2.*

   Response: The spelling is corrected.

   d.) *Test pit SS-40 was not found and should be identified (likely misidentified as TP-40 on sheet SS-1.2, and on sheet C-3.3, since another TP-40 is shown at filter basin #2 on plan sheets SS-1.0, C-3.1 and C-6.4).*

   Response: TP-40 on sheet SS-1.2 is now correctly labeled as SS-40.

   e.) *For consistency with the other sheets with the prefix "SS" showing soils mapping, the title block of sheet SS-1.2 should include the label "Soil Boundaries".*

However, it is suggested that "Soil Boundaries" on all these "SS" sheets be revised to "Soil Survey Map".

Response: Drawings are renamed “Soil Survey Map”.

2. *There are many test pits on the plan sheets (with prefix TP, SS, and STW) which have the identification number obscured by either lines or other lettering -- these test pit designations should be clearly identified.*

Response: Drawings are revised for clarity.

3. *All plan sheets have a "preliminary" designation (in the lower left-hand corner) which should be removed unless there are other plan sheets that can be submitted which are the final versions.*

Response: Removed “preliminary’

4. *The soil report for stormwater treatment basins, dated 3-12-19, refers to the Subsurface Wastewater Disposal Rules. The appropriate reference is Section **7.D.4** of the Stormwater Management Rules. The investigating soil scientist should be aware of this citation for future projects.*

Response: Comment acknowledged

5. *Test pits (TPs) at proposed underdrained soil filter (UDSF) basins 3 and 4, and the gravel wetland, did not extend at least 3 feet below the basin bottoms, as required by Section **7.D.4** of the Stormwater Management (SM) Rules. The investigating soil scientist should be aware of this requirement for future site location and stormwater projects.*

Response: Comment acknowledged

6. *The cross-section in plan sheet C-6.5 for UDSF basins 3 and 4 should include a NOTE indicating that sidewalls of the impermeable liners are to extend to above the seasonal high watertable or bedrock, whichever is highest, and the elevation of the top edges of the impermeable liners should also be specified as was done for the cross-sections for UDSF basins 1 and 2.*

Response: The note is added to sheet C-6.5 as suggested. The top edge of the impermeable liner is set at 2’ above bottom of each basin, providing minimum 0.5’ freeboard above the water quality volume.

7. *The wastewater design flow for the proposed clubhouse, and how it was determined, should be stated. This information was not found in Section **17** of the site application exhibit.*

Response: The clubhouse is assumed to be an assembly area (meeting hall) with capacity for 168 persons (84 condo units). Design flow is calculated as 2 GPD/person x 168 persons = 336 GPD. This system is conservatively sized for 500 GPD.

8. *Part **II**, Section **17.A.6.d** of the site application indicates a minimum of 5 TPs at disposal fields handling wastewater design flows greater then 500 gallons-per-day, which applies to the condominium disposal systems, but will not be required for this project due to consistent soil conditions revealed by TP data in the area. However, TP data must be provided from within the footprint of the disposal field to*

*serve condominium units 33-40 in accordance with Section **17.A.6.d** (the soil map indicates somewhat poorly-drained Colonel soil at the site of disposal field 33-40).*

Response: TP-117 and TP-118 are provided at the system for units 33-40 – See sheets C-3.0 and C-3.1.

9. *Design information on the subsurface wastewater disposal systems to serve the condominiums should be provided, as outlined in Part **II**, Section **17.A.6** of the site application. Generally, the information included in subsurface wastewater disposal system applications (HHE-200 forms) should satisfy this requirement.*

Response: HHE-200 forms for the condo units and clubhouse are attached.

10. *Footprints of proposed subsurface wastewater disposal fields at the 18 single-family subdivision lots should be shown on site plans C-3.2 and C-3.3. See Part **II**, Section **17.A.1** of the site application. Depending on soil conditions or proposed field design at any lot, more than one TP may be required within the footprints, as outlined in Part **II**, Section **17.A.4** of the site application. Note that there are areas of shallow-to-bedrock soil at lots 2, 3, 5, 14, and 15 that will need additional TP data per Section **17.A.4.a** if those areas are selected for a disposal field.*

Response: Disposal field footprints and test pits are now shown on sheets C-3.2 and C-3.3.

11. *A nitrate-nitrogen impact assessment should be conducted on the single-family subdivision lots. This comment may not apply to lots 1-3, 10-12, and 14-18, depending on proposed locations of subsurface wastewater disposal fields at these lots which can meet setback distances in the exemption table in Part **II**, Section **17.B.1.a** of the site application.*

Response: The nitrate-nitrogen impact assessment for single family lots is contained in a memo from Mark Cenci Geologic, Inc., dated November 22, 2019. Disposal field locations and nitrate plumes are shown on the Nitrate Analysis Plans N-1.2 and N-1.3.

12. *A copy of a signed long-term maintenance contract for the condominium disposal systems with advanced wastewater treatment units should be provided, when available. Maintenance is essential for long-term performance of the proposed Singulair® advanced treatment units.*

Response: We request that this requirement be addressed as a condition of approval.

13. *Although there is a handwritten version included with the soil survey report, DEP Form **E** (Soil Conditions Summary Table) in Section **17** of the application exhibit should be revised as follows: **a.**) provide lot numbers where applicable (1st column), **b.**) indicate subsurface explorations only at proposed subsurface wastewater disposal field locations (3rd column), **c.**) include information on "P" series of explorations (probes), and **d.**) include signature of site evaluator at bottom of form. Note that the "SS" and "STW" series of subsurface explorations do not need to be included.*

Response: The requested information is contained in revised Form E for both test pits (TPs) and Probes (P).

14. *Item 20 in the General Notes on sheet C-1.1 should state that DEP review and approval is also required for revisions to subsurface wastewater disposal field locations shown on plan sheets.*

Response: General Note #20 on sheet C-1.1 is revised as requested.

15. *Plan sheets which show TPs should include a NOTE identifying the soil investigator responsible for the location and evaluation of these TPs, and which references the reports (by title and date) wherein subsurface data and narrative regarding the explorations can be found. In addition, the symbol used to show TP locations should be identified in a LEGEND on the plan sheets. This applies to plan sheets C-3.0 though C-3.8. Alternatively, this information could be included with the General Notes on plan sheet C-1.1.*

Response: This information is now included in General Note #23 on sheet C-1.1.

16. *Plan sheets which show wetlands should include a NOTE identifying the investigator responsible for their delineation, and which references the report (by title and date) wherein wetlands mapping information can be found. In addition, the symbol used to show wetlands should be identified in a LEGEND on the plan sheets. This applies to plan sheets C-2.1 through C-2.3, and C-3.1 through C-3.7. Alternatively, this information could be included with the General Notes on plan sheet C-1.1.*

Response: This information is now included in General Note #24 on sheet C-1.1.

17. *If blasting for construction will occur within 500 feet of non-owned off-site structures (buildings and wells), then a map showing anticipated blast locations, and blasting plan, prepared and sign-ed by a qualified blaster, must be provided. See Part **II**, Sections **20.A** and **20.B** of the application. The blasting plan must include blasting standards in the statute: 38 MRSA §490-Z (14). The blasting plan must be provided prior to any blasting, and include an anticipated blast design/shot pattern specifically tailored to the project site. Submittal of the blasting plan, and a map showing anticipated blast locations, could be required as a condition of site approval.*

Response: We request that submittal of the blasting plan provided by a licensed professional blasting contractor be addressed as a condition of approval. The attached Exhibit 20 shows the approximate area within 500' of anticipated blasting for bedrock removal.

The following items are attached:

- Updated Soil Conditions Summary Table (Form E) for test pits TP-1 to TP-138
- Soil Profile/Classification (Form F) for test pits TP-99 to TP-138
- Soil Conditions Summary Table (Form E) for probes P-1 to P-20
- Soil Profile/Classification (Form F) for probes P-1 to P-20
- HHE-200 forms for condominium and clubhouse septic systems
- Nitrate-Nitrogen Impact Assessment memo, Mark Cenci Geologic, Inc.
- Exhibit 20, 500' Blasting Radius

- Revised plan sheets: C-1.1 (Subdivision Plan); C-3.0, C-3.1, C-3.2, C-3.3 (grading plans); C-6.5 (filter basin details)
- Revised Soil Survey Map: SS-1.0, SS-1.1, SS-1.2
- Revised Nitrate Analysis Plan for single-family lots: N-1.2, N-1.3

We trust that the above responses and attached materials address the comments. Please contact me directly with additional questions or concerns.

Sincerely,
TERRADYN CONSULTANTS LLC

Jeffrey D. Amos, P.E.
President

Attachments:
As listed above

FORM E (SOIL CONDITIONS SUMMARY TABLE) & FORM F (SOIL PROFILE / CLASSIFICATION) – TEST PITS TP-99 TO TP-138

4474

FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Highland Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✗ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
17	TP-1	1	3C	24		24	38	2	
17	TP-2		3C	22		22	38	2	
16	TP-3		3C	22		22	40	2	
16	TP-4		3C	22		22	40	2	
15	TP-5	1	2AIII		22		22	10	
15	TP-6		2AIII		22		22	10	
14	TP-7		3C	18		18	36	2	
14	TP-8		3C	16		16	38	2	
12	TP-9		3C	16		16	38	4	
12	TP-10		3C	18		18	40	4	
13	TP-11		3C	16		16	40	6	
13	TP-12		3C	17		17	38	6	
11	TP-13		3C	18		18	38	6	
11	TP-14		3C	18		18	38	6	
10	TP-15		3C	18		18	36	4	
10	TP-16		3C	20		20	40	4	
5	TP-17		3C	18		18	38	3	
5	TP-18		3C	20		20	38	3	
4	TP-19		3C	22		22	40	4	
4	TP-20		3C	22		22	38	4	
9	TP-21		3C	21		21	40	3	
9	TP-22		3C	18		18	40	4	
8	TP-23		3C	16		16	36	4	
8	TP-24		3C	16		16	36	4	
3	TP-25		2AIII		18		18	4	
3	TP-26		2AIII		18		18	4	
2	TP-27		2AIII		15		15	2	
2	TP-28		2AIII		17		17	2	
7	TP-29		3C	20		20	38	2	
7	TP-30		3C	18		18	36	2	
6	TP-31		3C	18		18	36	2	
6	TP-32		3C	18		18	36	2	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/06/2018

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

affix professional seal

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FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✗ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
1	TP-33		3C	18		18	38	2	
1	TP-34		3C	16		16	38	2	
	TP-35		3C	20		20	40	2	
77-84	TP-36	☒	3C	20		20	40	2	
	TP-37		3C	22		22	38	2	
69-76	TP-38	☒	3C	20		20	40	2	
	TP-39		3C	18		18	38	2	
	TP-40		3C	18		18	38	2	
61-68	TP-41	☒	3C	16		16	40	4	
	TP-42		3C	16		16	40	4	
	TP-43		3C	18		18	36	4	
	TP-44		3C	18		18	38	4	
49-56	TP-45	☒	3C	15		15	40	8	
	TP-46		3C	15		15	38	8	
	TP-47		3C	18		18	40	4	
	TP-48		3C	17		17	36	6	
	TP-49		3C	15		15	38	10	
	TP-50		3C	15		15	36	10	
	TP-51		3C	16		16	38	2	
5-8	TP-52	☒	3C	16		16	38	2	
	TP-53		3C	20		20	40	6	
	TP-54		3C	20		20	40	6	
25-32	TP-55	☒	3C	15		15	36	8	
25-32	TP-56	☒	3C	15		15	38	8	
45-48 57-60	TP-57	☒	3C	16		16	38	6	
45-48 57-60	TP-58	☒	3C	15		15	38	6	
49-56	TP-59	☒	3C	16		16	40	8	
49-56	TP-60	☒	3C	15		15	36	8	
	TP-61		3C	17		17	40	4	
	TP-62		3C	15		15	40	6	
	TP-63		3C	16		16	38	4	
	TP-64		3C	16		16	38	4	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J Hampton

Date: 11/6/2018

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

affix professional seal

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FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✘ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
	TP-65	☐	3C	20		20	38	4	
64-76	TP-66	☒	3C	20		20	38	4	
	TP-67	☐	3C	18		18	38	4	
	TP-68	☐	3C	18		18	42	4	
	TP-69	☐	3C	16		16	40	2	
	TP-70	☐	3C	16		16	40	2	
1-4 9-12	TP-71	☒	3C	18		18	38	6	
1-4 9-12	TP-72	☒	3C	18		18	38	6	
17-24	TP-73	☒	3C	16		16	36	4	
17-24	TP-74	☒	3C	16		16	38	4	
	TP-75	☐	3C	18		18	40	4	
	TP-76		3C	15		15	40	4	
club	TP-77	☒	3C	15		15	38	4	
club	TP-78	☒	3C	15		15	38	4	
6	TP-79		3C	15		15	38	12	
7	TP-80		3C	15		15	36	12	
7	TP-81		3C	15		15	36	14	
	TP-82	1	3C	15		15	40	16	
8	TP-83	1	3C	16		16	40	10	
9	TP-84		3C	16		16	38	10	
9	TP-85		3C	18		18	38	8	
9	TP-86		3C	18		18	38	8	
10	TP-87		3C	16		16	36	14	
10	TP-88		3C	15		15	36	8	
11	TP-89		3C	18		18	40	6	
11	TP-90		3C	18		18	40	6	
12	TP-91		3C	16		16	42	4	
12	TP-92		3C	16		16	42	4	
15	TP-93		2AIII		18		18	6	
15	TP-94		2AIII		18		18	6	
16	TP-95		3C	18		18	40	4	
16	TP-96		3C	15		15	38	4	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J Hampton

Date: 11/06/2018

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

affix professional seal

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FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✗ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
	TP-97		3C	17		17	38	2	
	TP-98		3C	16		16	38	2	
18	TP-99		3C	15		15	36	4	
	TP-100		3C	15		15	40	4	
	TP-101		3C	16		16	36	4	
CW	TP-102	☒	3C	16		16	36	4	
	TP-103		3C	15		15	37	3	
25-32	TP-104	☒	3C	15		15	36	3	
45-48 57-60	TP-105	☒	3C	16		16	40	4	
61-68	TP-106	☒	3C	16		16	39	4	
77-84	TP-107	☒	3C	18		18	41	4	
25-32	TP-108	☒	3C	15		15	37	3	
45-48 57-60	TP-109	☒	3C	15		15	37	3	
41-44	TP-110	☒	3C	17		17	38	2	
41-44	TP-111	☒	3C	17		17	40	2	
5-8	TP-112	☒	3C	16		16	36	3	
114 9-12	TP-113	☒	3C	16		16	36	4	
17-24	TP-114	☒	3C	17		17	37	4	
13-16	TP-115	☒	3C	17		17	36	4	
13-16	TP-116	☒	3C	16		16	38	3	
33-40	TP-117	☒	3D	14		14	39	2	
33-40	TP118	☒	3D	12		12	40	2	
33-40	TP 119	☒	3D	13		13	38	2	
33-40	TP 120	☒	3D	14		14	37	2	
33-40	TP 121	☒	3D	14		14	37	2	
4	TP 122	☒	3C	18		18	38	2	
4	TP 123	☒	3C	18		18	38	2	
5	TP 124	☒	2A II	14	14		14	4	
6	TP125	☒	3C	16		16	37	6	
6	TP126	☒	3C	16		16	38	6	
7	TP127	☒	3C	17		17	39	6	
8	TP128	☒	3C	17		17	39	6	

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 3/11/2019

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

affix professional seal

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FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highlands Subdivision	Leavitt-Thompson	Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✗ if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
8	TP129	☒	3C	17		17	38	6	
9	TP130	☒	3C	18		18	38	6	
10	TP131	☒	3C	16		16	38	4	
11	TP132	☒	3C	18		18	40	2	
12	TP133	☒	3C	18		18	40	2	
13	TP134	☒	3C	16		16	38	4	
14	TP135	☒	3C	16		16	40	4	
15	TP136	☒	2A III	22	22		22	2	
16	TP137	☒	3C	24		24	58	2	
18	TP138	☒	3C	16		16	16	2	
		☐							
		☐							
		☐							
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INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton	Date: 11/13/19
Name Printed: Mark J. Hampton	Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Other:

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-99

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-100

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-101

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 16" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-102

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 16" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton

Name Printed: Mark J Hampton

Date: 11/06/2018

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

Cert/Lic/Reg. #: 263/216

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4474

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-103

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 3 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-104

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 3 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-105

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 16" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-106

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: 3 (Profile) C (Condition)

Slope: 4 Percent

Limiting Factor: 16" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name:

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton

Date: 03/11/2019

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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4474

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-107

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ S.S. ▶▶

Soil Classification: Profile 3, Condition C

Slope: 4 Percent

Limiting Factor: 18" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-108

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ S.S. ▶▶

Soil Classification: Profile 3, Condition C

Slope: 3 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-109

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ S.S. ▶▶

Soil Classification: Profile 3, Condition C

Slope: 3 Percent

Limiting Factor: 15" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-110

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ S.S. ▶▶

Soil Classification: Profile 3, Condition C

Slope: 2 Percent

Limiting Factor: 17" Depth ☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J Hampton

Date: 03/11/2019

Name Printed: Mark J Hampton

Cert/Lic/Reg. #: 263/216

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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4474

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-111

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ / S.S. ▶▶

Soil Classification		Slope	Limiting Factor	
3 (Profile)	C (Condition)	2 (Percent)	17 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-112

☑ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ / S.S. ▶▶

Soil Classification		Slope	Limiting Factor	
3 (Profile)	C (Condition)	3 (Percent)	16 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-113

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ / S.S. ▶▶

Soil Classification		Slope	Limiting Factor	
3 (Profile)	C (Condition)	4 (Percent)	16 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-114

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▶▶ / S.S. ▶▶

Soil Classification		Slope	Limiting Factor	
3 (Profile)	C (Condition)	4 (Percent)	17 (Depth)	☑ Groundwater ☑ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton

Name Printed: Mark J Hampton

Date: 03/11/2019

Cert/Lic/Reg. #: 263/216

Title: ■ Licensed Site Evaluator ■ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-115

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	4 Percent	17" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-116

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	3 Percent	16" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-117

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive gray	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	D Condition	2 Percent	14" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-118

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive gray	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	D Condition	2 Percent	12" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/12/19

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 236/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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4474

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-119

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive Gray	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 (Profile)	D (Condition)	2 (Percent)	13 " (Depth)	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # TP-120

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive Gray	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 (Profile)	D (Condition)	2 (Percent)	14 " (Depth)	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # TP-121

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive Gray	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 (Profile)	D (Condition)	2 (Percent)	14 " (Depth)	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # TP-122

■ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 (Profile)	C (Condition)	2 (Percent)	18 " (Depth)	■ Groundwater ■ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group: _____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/12/19

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 236/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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4474

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-123

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	Condition	2 Percent	18 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-124

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	None noted
20	[illegible]		[illegible]	
30		Large		
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
2 Profile	All Condition	4 Percent	14 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-125

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-126

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/19/19

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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4474

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-127

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features
Sandy loam	Friable	Dark Brown	
Sandy loam	Friable	Brown	
Sandy loam	Firm	Olive	Common Distinct

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	17" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-128

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features
Sandy loam	Friable	Dark Brown	
Sandy loam	Friable	Brown	
Sandy loam	Firm	Olive	Common Distinct

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	17" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-129

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features
Sandy loam	Friable	Dark Brown	
Sandy loam	Friable	Brown	
Sandy loam	Firm	Olive	Common Distinct

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	17" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-130

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features
Sandy loam	Friable	Dark Brown	
Sandy loam	Friable	Brown	
Sandy loam	Firm	Olive	Common Distinct

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	6 Percent	18" Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/19/19

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-131

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Friable	Olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	4 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-132

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	2 Percent	18 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-133

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	2 Percent	18 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

Exploration Symbol # TP-134

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	Olive	Common Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	4 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric

Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/19/19

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Exploration Symbol # TP-135

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	common distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	4 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-136

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	none noted
20				
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
2 Profile	AIII Condition	2 Percent	22 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-137

☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20				
30	Sandy loam	Firm	olive	common distinct
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	2 Percent	24 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # TP-138

☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0	Sandy loam	Friable	Dark Brown	
10	Sandy loam	Friable	Brown	
20	Sandy loam	Firm	olive	common distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
3 Profile	C Condition	2 Percent	16 " Depth	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ☐ Hydric ☐ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton Date: 11/19/19

Name Printed: Mark J. Hampton Cert/Lic/Reg. #: 263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

affix professional seal

FORM E (SOIL CONDITIONS SUMMARY TABLE) & FORM F (SOIL PROFILE / CLASSIFICATION) – PROBES P-1 TO P-20

4474

FORM E Rev. 07/11

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name: Highlands Subdivision

Applicant Name: Leavitt-Thompson

Project Location (municipality): Standish

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	X if at SSWD Field	Description of subsurface materials by: • Soil profile/condition (if by S.E.), • Soil series name (if by C.S.S.), or by • Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
2	P-1	☒	2A III		15		15		
2	P-2	☒	2A III		16		16		
2	P-3	☒	2A III		16		16		
2	P-4	☒	2A III		15		15		
2	P-5	☒	2A III		15		15		
3	P-6	☒	2A III		17		17		
3	P-7	☒	2A III		17		17		
3	P-8	☒	2A III		16		16		
3	P-9	☒	2A III		16		16		
3	P-10	☒	2A III		17		17		
5	P-11	☒	2A II		14		14		
5	P-12	☒	2A II		14		14		
5	P-13	☒	2A III		15		15		
5	P-14	☒	2A III		15		15		
5	P-15	☒	2A II		14		14		
15	P-16	☒	2A III		23		23		
15	P-17	☒	2A III		22		22		
15	P-18	☒	2A III		22		22		
15	P-19	☒	2A III		24		24		
15	P-20	☒	2A III		23		23		
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							
		☐							

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: [signature]

Date: 11/19/20

Name Printed: Mark J. Hampton

Cert/Lic/Reg. #: 263/216

Qualification: ☒ Licensed Site Evaluator ☐ Certified Geologist ☒ Certified Soil Scientist ☐ Other:

affix professional seal

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson	Standish

Exploration Symbol # P-1

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	15 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-2

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	16 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-3

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	16 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-4

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches): 0, 10, 20, 30, 40, 50, 60

Texture	Consistency	Color	Redox Features

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	15 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton	Date: 11/19/19
Name Printed: Mark J. Hampton	Cert/Lic/Reg. #: 263/216
Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	*affix professional seal*

4474

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson	Standish

Exploration Symbol # P-5

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile / Condition	Percent	15 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol # P-6

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile / Condition	Percent	17 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol # P-7

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile / Condition	Percent	17 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol # P-8

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile / Condition	Percent	16 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date 11/19/19
Name Printed Mark J. Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	*affix professional seal*

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson	Standish

Exploration Symbol # P-9 ☐ Test Pit ☐ Boring ☒ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	16 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-10 ☐ Test Pit ☐ Boring ☒ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	17 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-11 ☐ Test Pit ☐ Boring ☒ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	14 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-12 ☐ Test Pit ☐ Boring ☒ Probe

____ " Organic horizon thickness Ground surface elev. ____

____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	14 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature [signature]	Date 11/19/19
Name Printed Mark J. Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	*affix professional seal*

4474

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson	Standish

Exploration Symbol # P-13

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ___ Condition ___	Percent ___	15 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ___

Exploration Symbol # P-14

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ___ Condition ___	Percent ___	15 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ___

Exploration Symbol # P-15

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ___ Condition ___	Percent ___	14 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ___

Exploration Symbol # P-16

☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30				
40				
50				
60				

ledge

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ___ Condition ___	Percent ___	23 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ___

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark Hampton	Date: 11/19/19
Name Printed: Mark J. Hampton	Cert/Lic/Reg. #: 263/216
Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	*affix professional seal*

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Highland Subdivision	Leavitt-Thompson	Standish

Exploration Symbol # P-17 ☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30		ledge		
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	22 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-18 ☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30		ledge		
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	22 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-19 ☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30		ledge		
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	24 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

Exploration Symbol # P-20 ☐ Test Pit ☐ Boring ☒ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Redox Features
0				
10				
20				
30		ledge		
40				
50				
60				

Soil Details by S.E. ▸▸ / S.S. ▸▸

Soil Classification	Slope	Limiting Factor	
Profile ____ Condition ____	Percent ____	23 " Depth	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
Soil Series/Phase Name:		☐ Hydric ☐ Non-hydric	Hydrologic Soil Group ____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date 11/19/19
Name Printed Mark J. Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	*affix professional seal*

HHE-200 FORMS FOR CONDOMINIUMS

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Kayli Susan Drive
Subdivision, Lot #	Highlands Subdivision Units 1-4, 9-12

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI) Leavitt-Tompson LLC — Owner [✓] Applicant [ ]

Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: ____
3. Other: 8 2-bedroom units (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 5184 sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP113
Depth 16 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 05 s
Lon. 70 d 34 m 22 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263 SE #	11/14/2019 Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

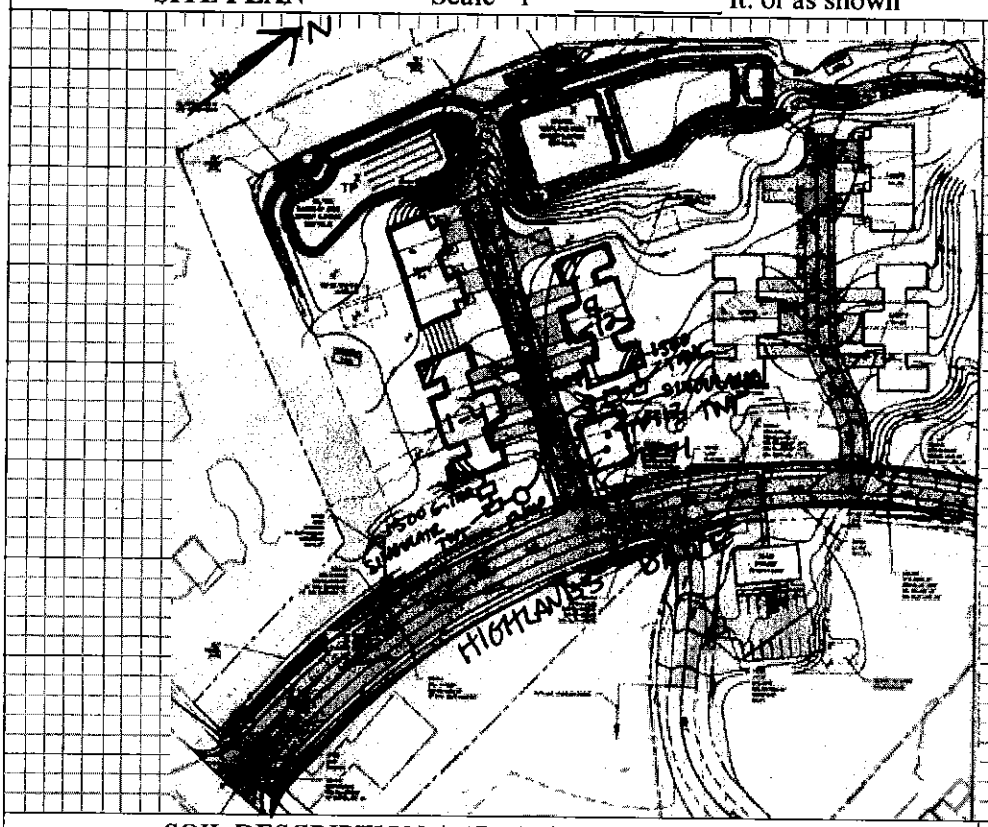
4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

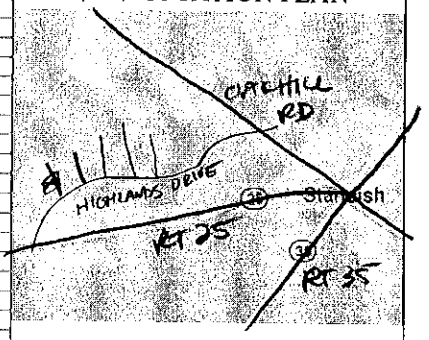
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Kayli Susan Drive Highlands Subdivision Units 1-4, 9-12	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP113 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification		Slope	Limiting Factor	
3	C	4 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth
Profile	Condition			

Observation Hole TP71 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30		Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification		Slope	Limiting Factor	
3	C	4 %	18 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth
Profile	Condition			

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

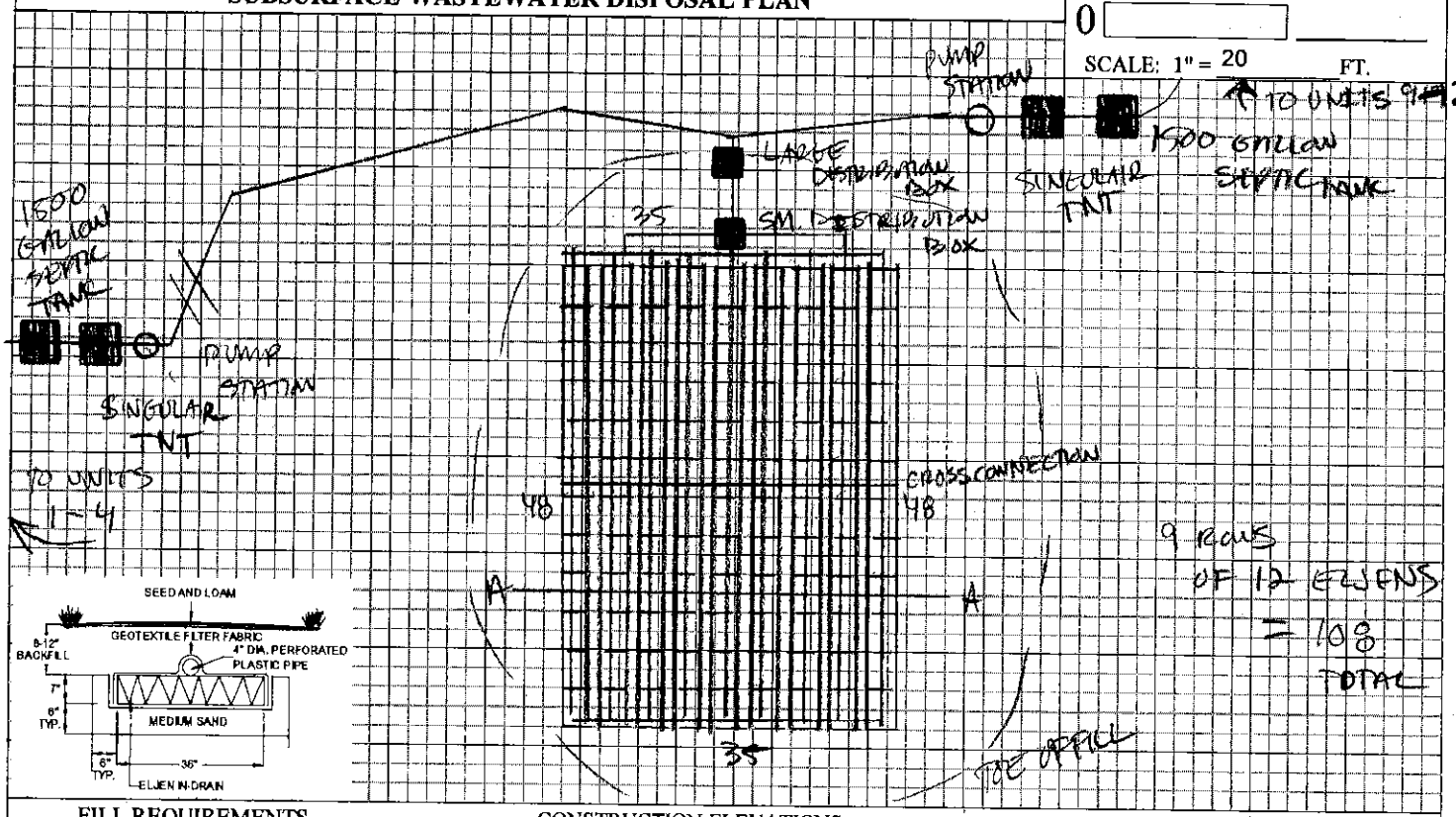
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Kayli Susan Drive Highlands Subdivision Units 1-4, 9-12	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



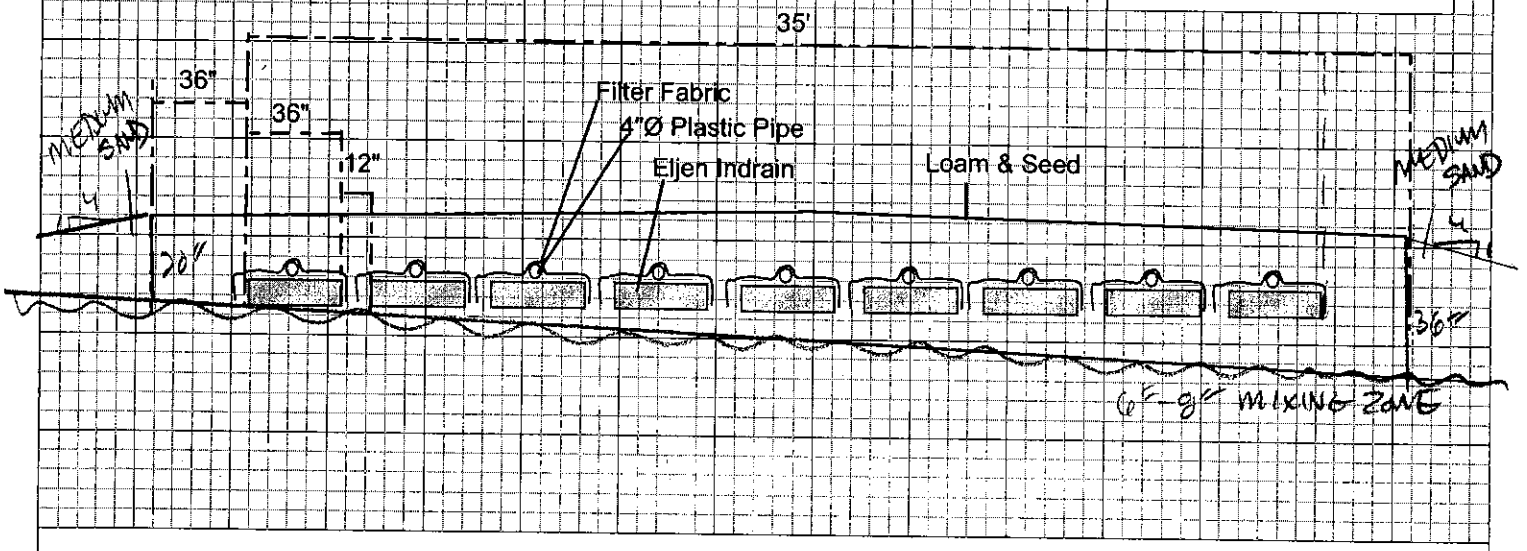
FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation		Location & Description:
		Top of Distribution Pipe or Proprietary Device		
Depth of Fill (Downslope)	36	Bottom of Disposal Area		Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Kayli Susan Drive
Subdivision, Lot #	Highlands Subdivision Units 5-8

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703 Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: ____
3. Other: 4 2-bedroom units (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 1x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 2400 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
720 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP52
Depth 16 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 05 s
Lon. 70 d 34 m 22 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

_____ 263 11/14/2019
Site Evaluator Signature SE # Date

Mark J Hampton 207-756-2900
Site Evaluator Name Printed Telephone Number E-mail Address

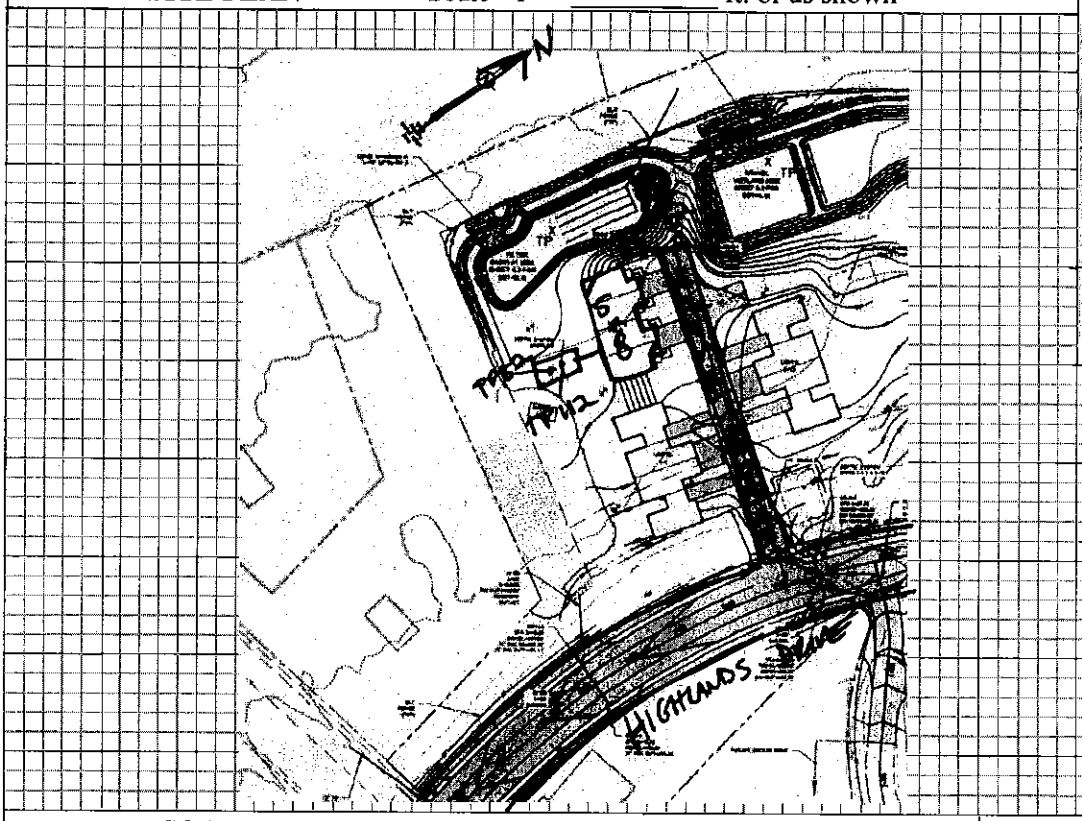
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

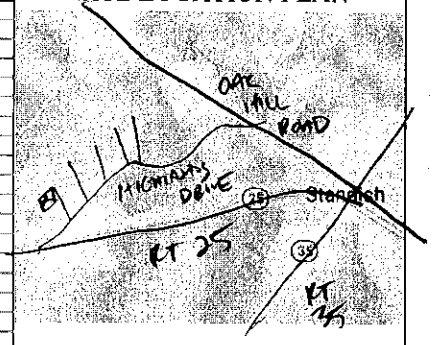
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Kayli Susan Drive Highlands Subdivision Units 5-8	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP52 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	4 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP112 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	3 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

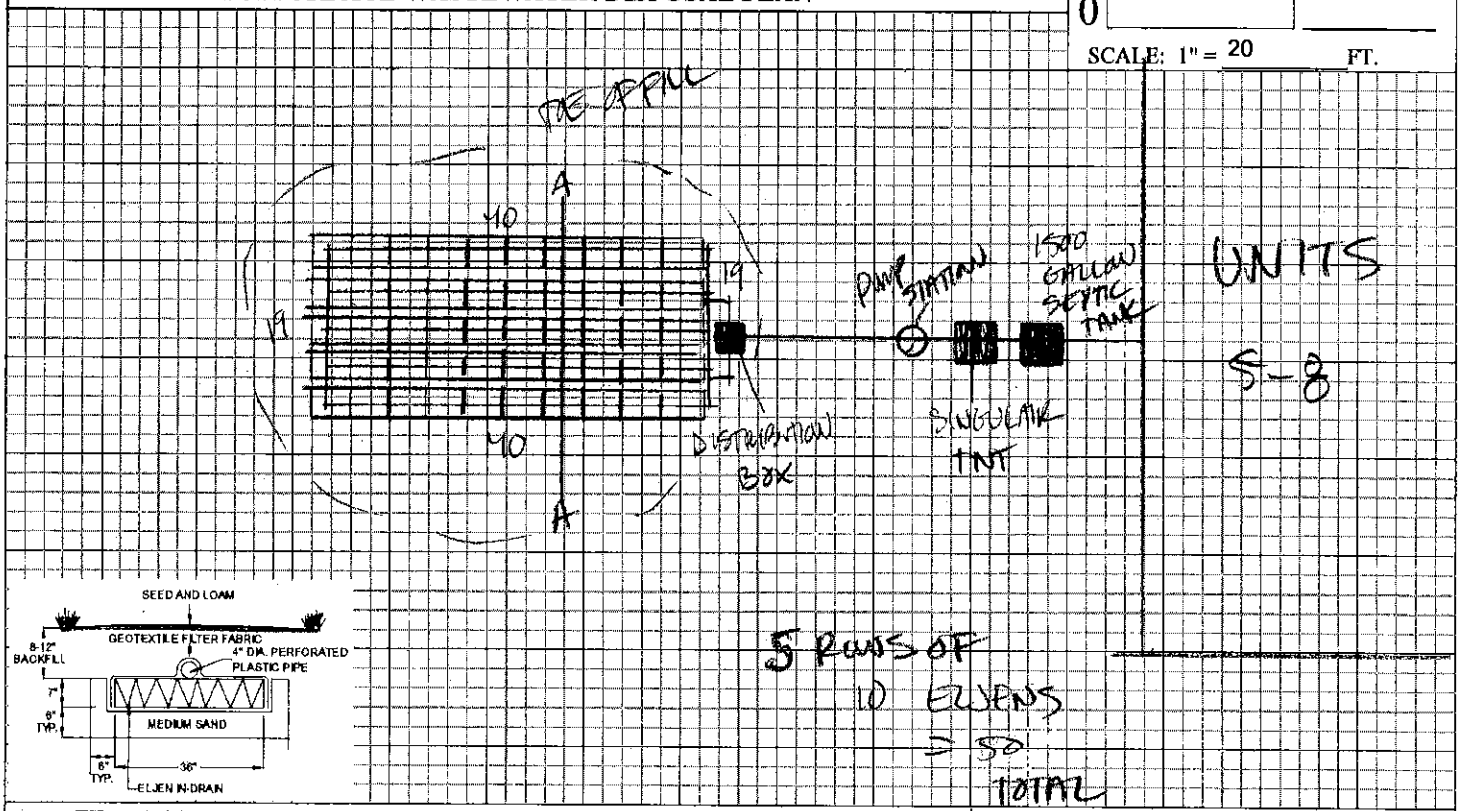
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Kayli Susan Drive Highlands Subdivision Units 5-8	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation		Location & Description:
		Top of Distribution Pipe or Proprietary Device		
Depth of Fill (Downslope)	29	Bottom of Disposal Area		Reference Elevation: 0

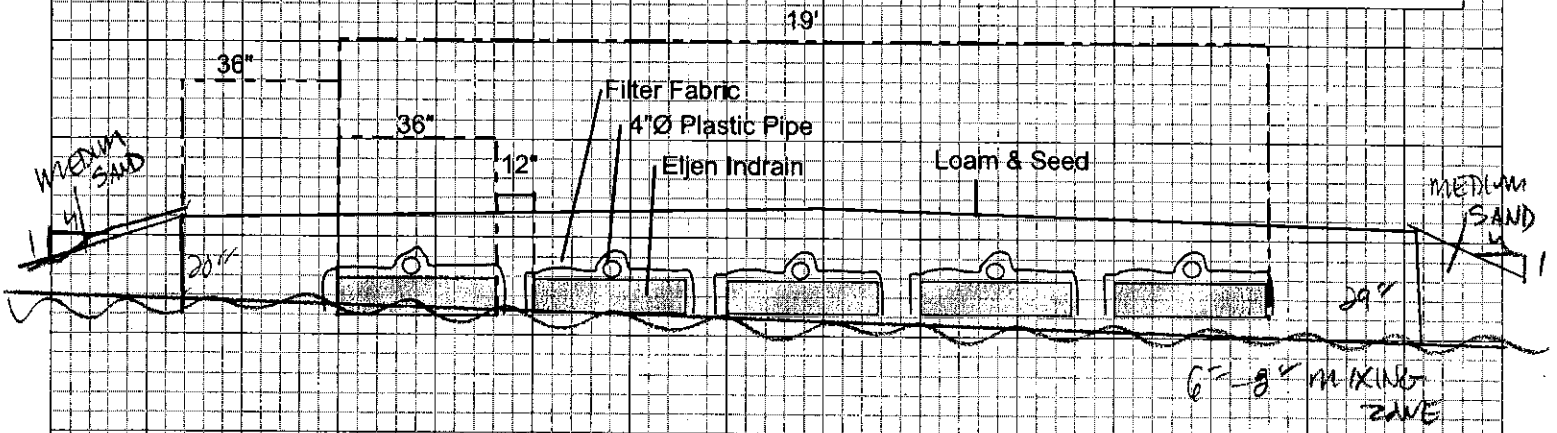
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A - A

Scale
Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



263 — Site Evaluator Signature — SE #

11/14/2019 — Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Jesse Daniel Drive
Subdivision, Lot #	Highlands Subdivision Units 13-16

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703 Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 4 2-bedroom units (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 1x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 2400 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
720 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP116
Depth 16 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 10 s
Lon. 70 d 34 m 16 s
If g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

_____ 263 11/14/2019
Site Evaluator Signature SE # Date

Mark J Hampton 207-756-2900
Site Evaluator Name Printed Telephone Number E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

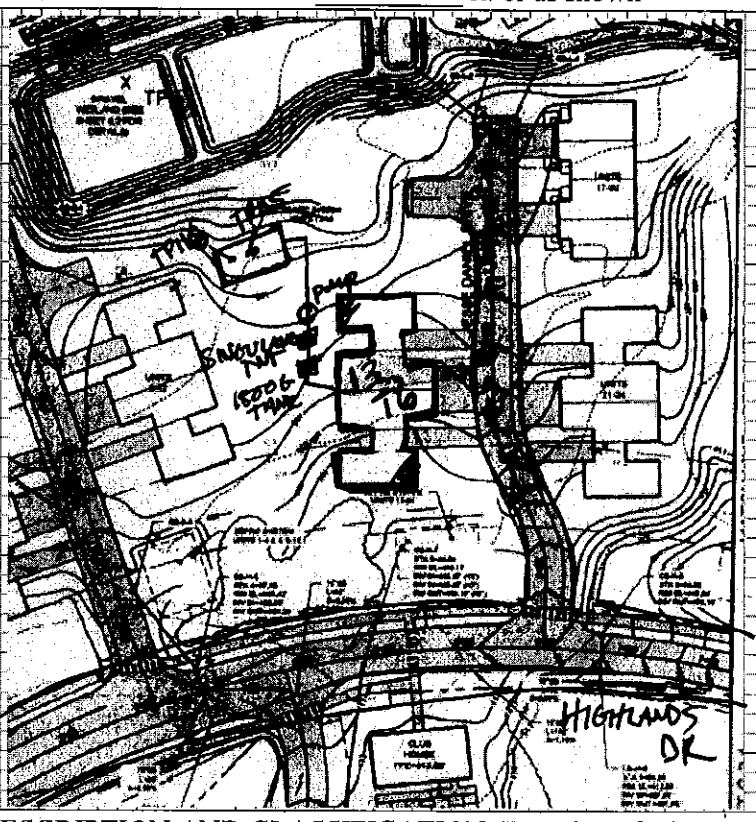
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

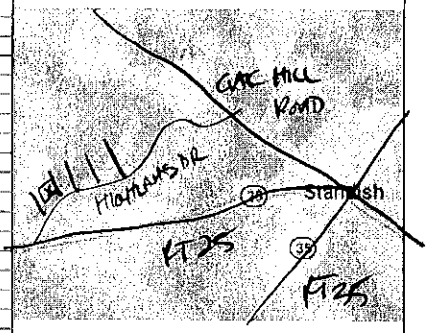
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Jesse Daniel Drive Highlands Subdivision Units 13-16	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP116 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	3 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP115 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	4 %	17 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature: [signature] | SE #: 263 | Date: 11/14/2019

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

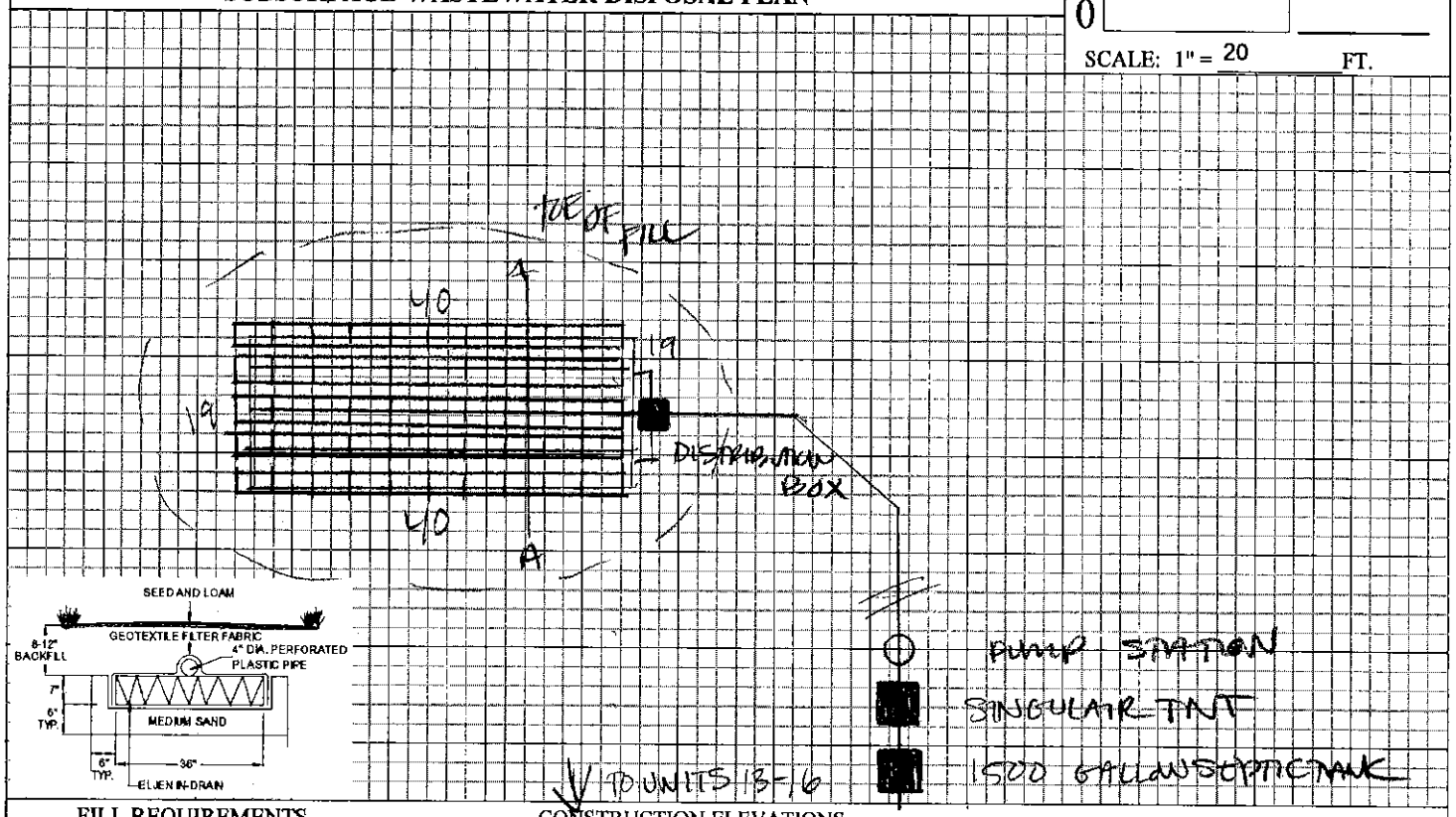
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Jesse Daniel Drive — Highlands Subdivision Units 13-16	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



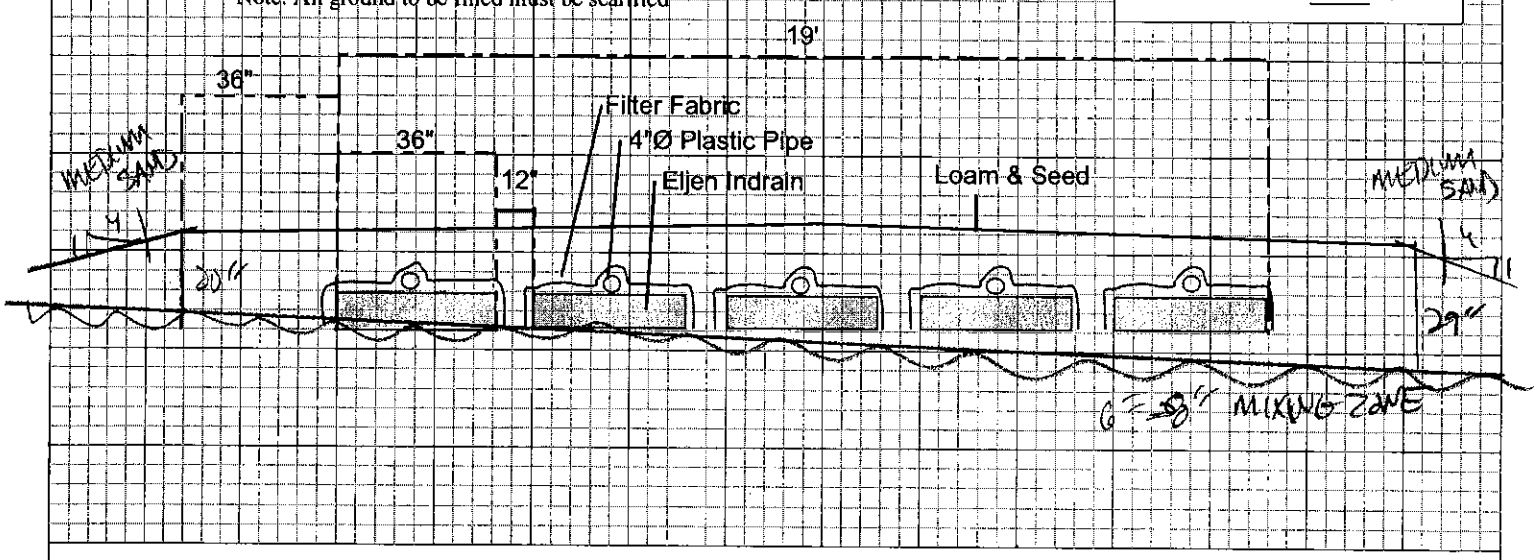
FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	
Depth of Fill (Downslope)	29	Bottom of Disposal Area	_____	Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

Scale
Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Jesse Daniel Drive
Subdivision, Lot #	Highlands Subdivision Units 17-24

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703 Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. >25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4992 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP73
Depth 16 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 10 s
Lon. 70 d 34 m 16 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263 SE #	11/14/2019 Date
Mark J Hampton Site Evaluator Name Printed	207-756-2900 Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

4474

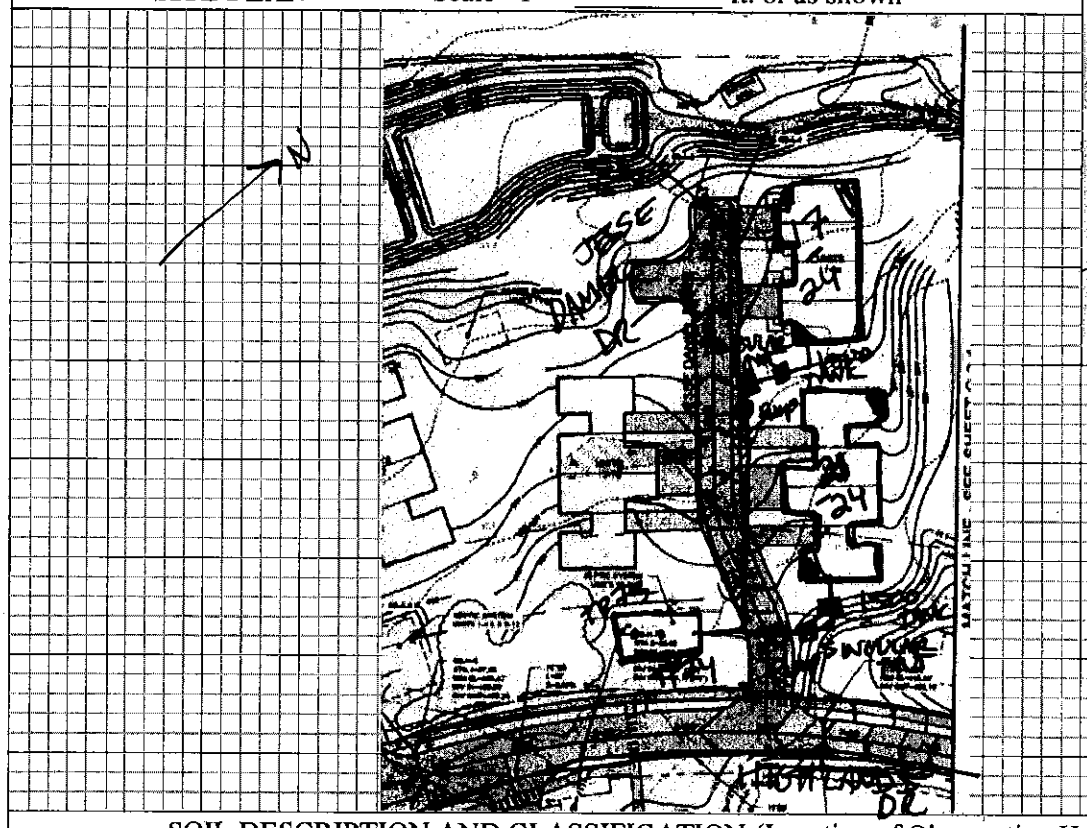
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

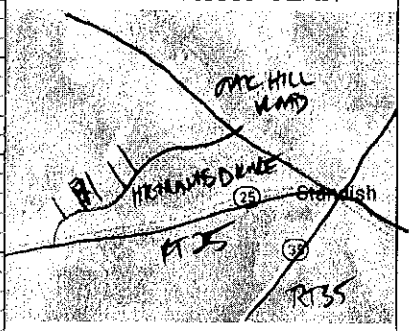
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Jesse Daniel Drive Highlands Subdivision Units 17-24	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP73 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	4 %	16 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP74 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	4 %	16 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

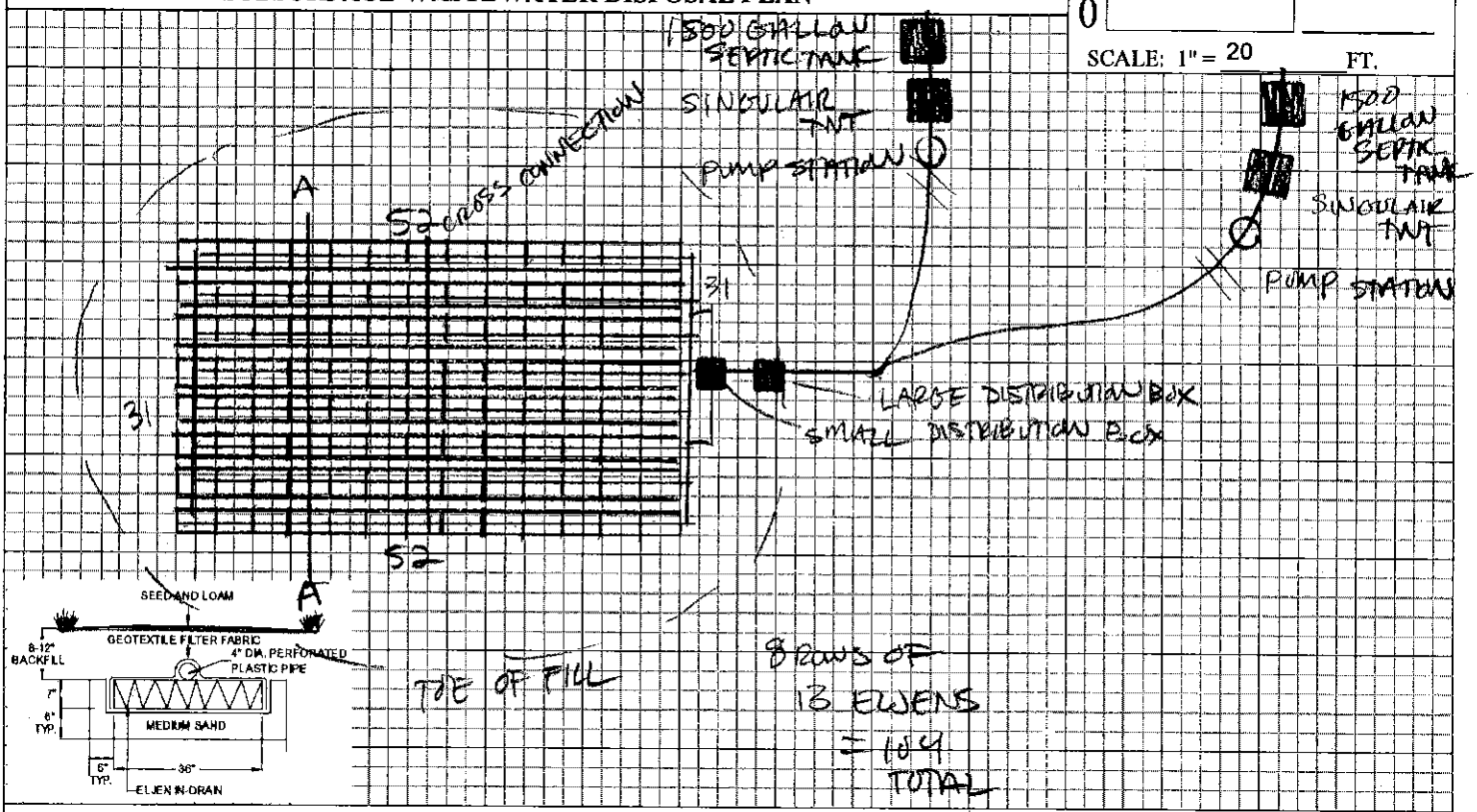
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Jesse Daniel Drive Highlands Subdivision Units 17-24	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



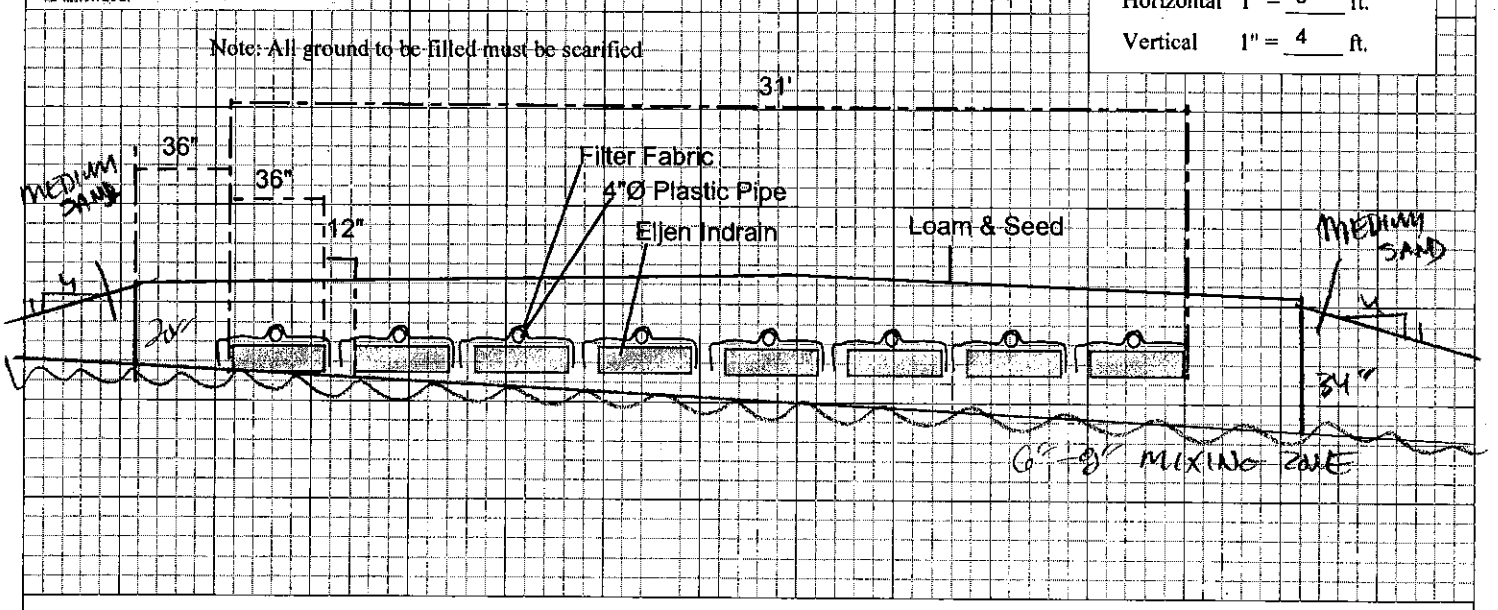
FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation		Location & Description:
		Top of Distribution Pipe or Proprietary Device		
Depth of Fill (Downslope)	34	Bottom of Disposal Area		Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Whitney Drive
Subdivision, Lot #	Highlands Subdivision Unit 25-32

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4896 sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP55
Depth 15 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 09 s
Lon. 70 d 34 m 16 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

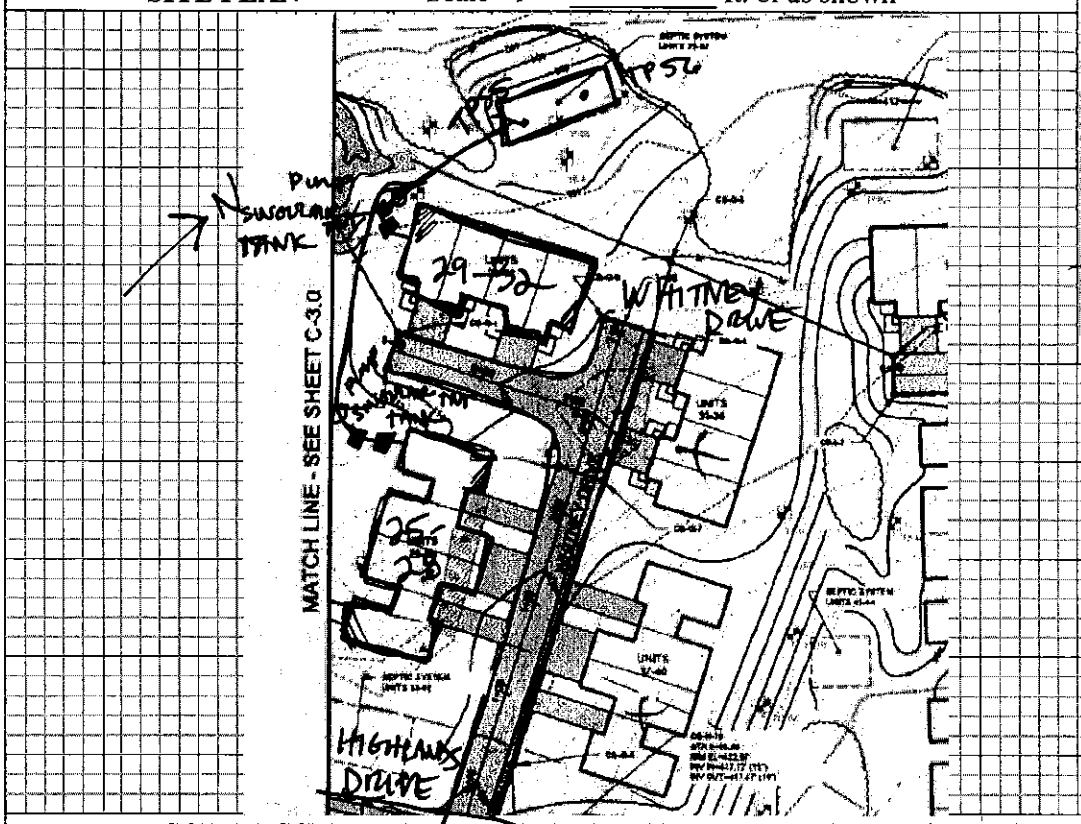
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

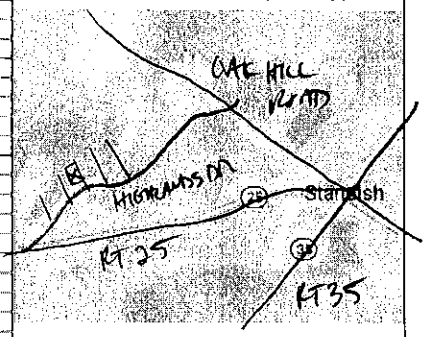
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Whitney Drive Highlands Subdivision Unit 25-32	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP55 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	8 %	15 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP56 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	8 %	15 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature: [signature] SE #: 263 Date: 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

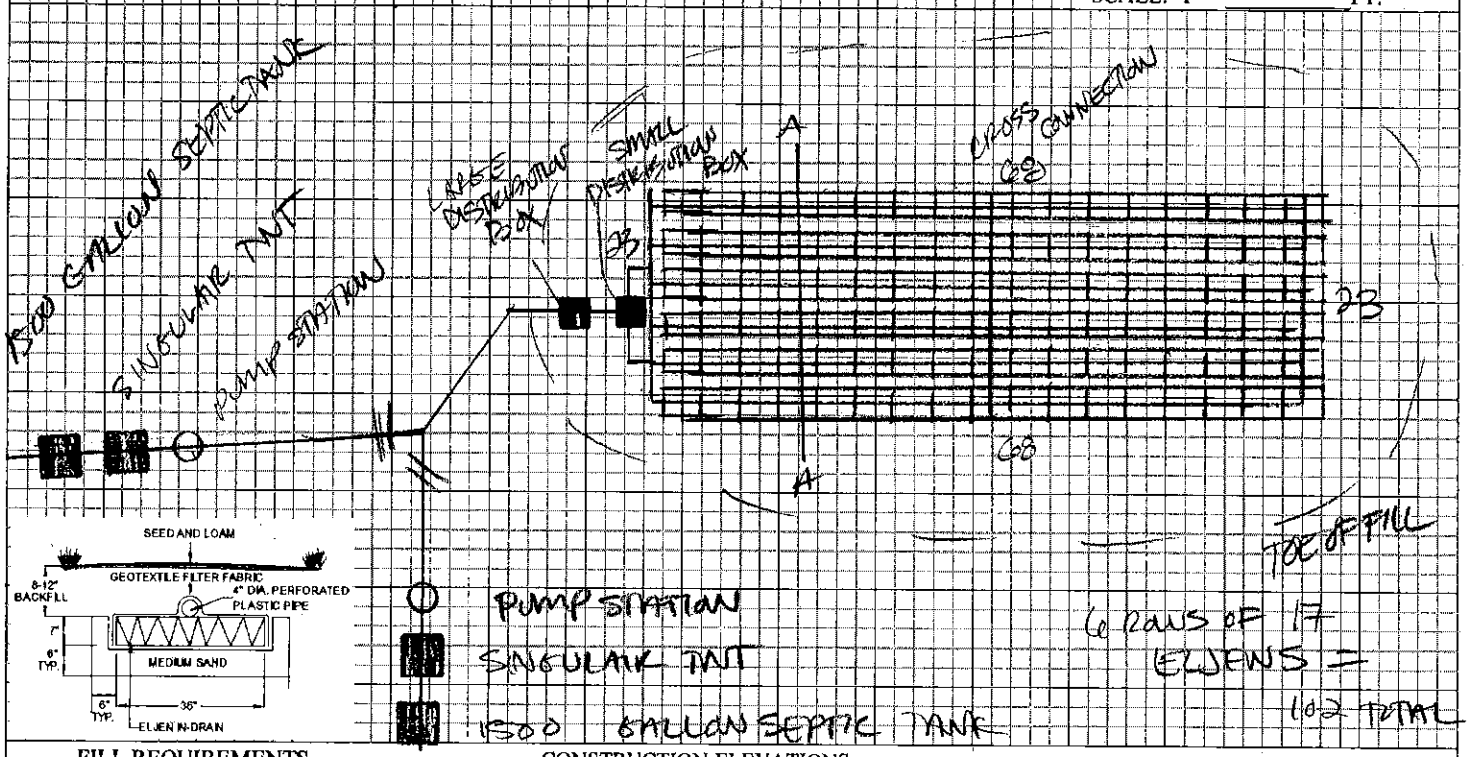
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Whitney Drive — Highlands Subdivision Unit 25-32	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 [ ] _____

SCALE: 1" = 20 FT.



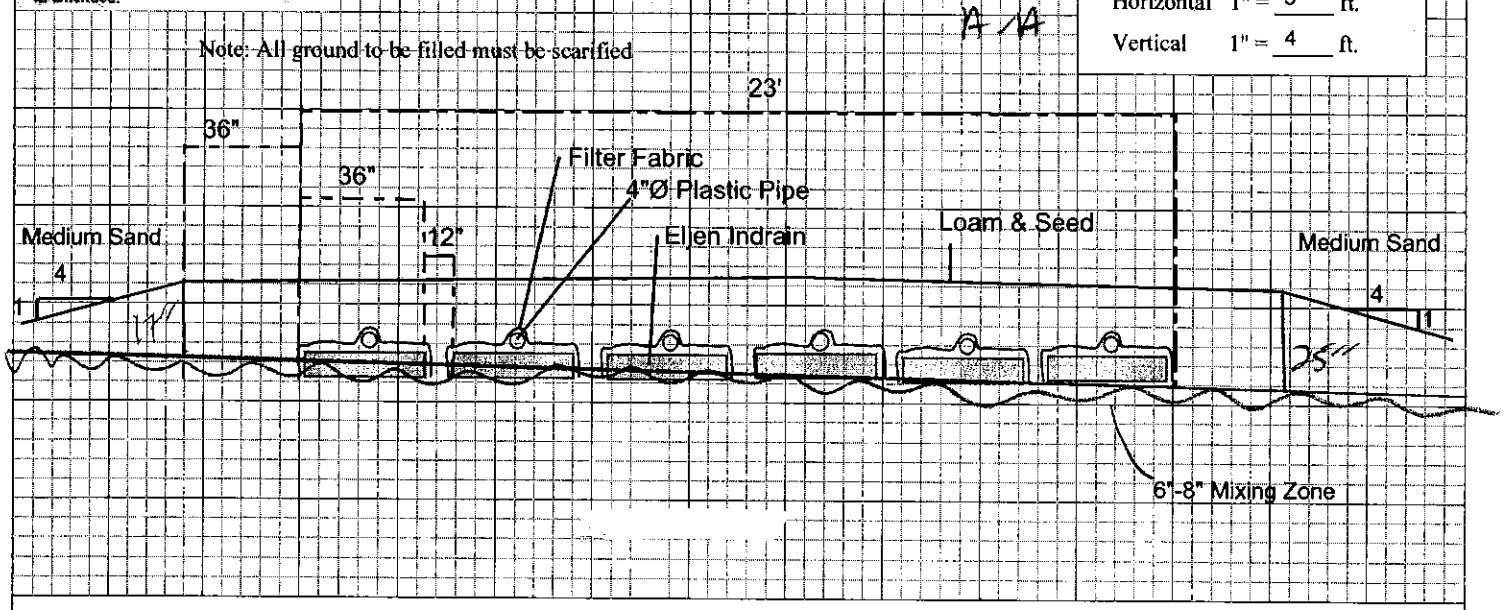
FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	17	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	
Depth of Fill (Downslope)	25	Bottom of Disposal Area	_____	Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A/A

Scale
Horizontal 1" = 5 ft.
Vertical 1" = 4 ft.



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Whitney Drive
Subdivision, Lot #	Highlands Subdivision Units 33-40

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, Mi)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4992 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / D
at Observation Hole # TP118
Depth 12 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 09 s
Lon. 70 d 34 m 16 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

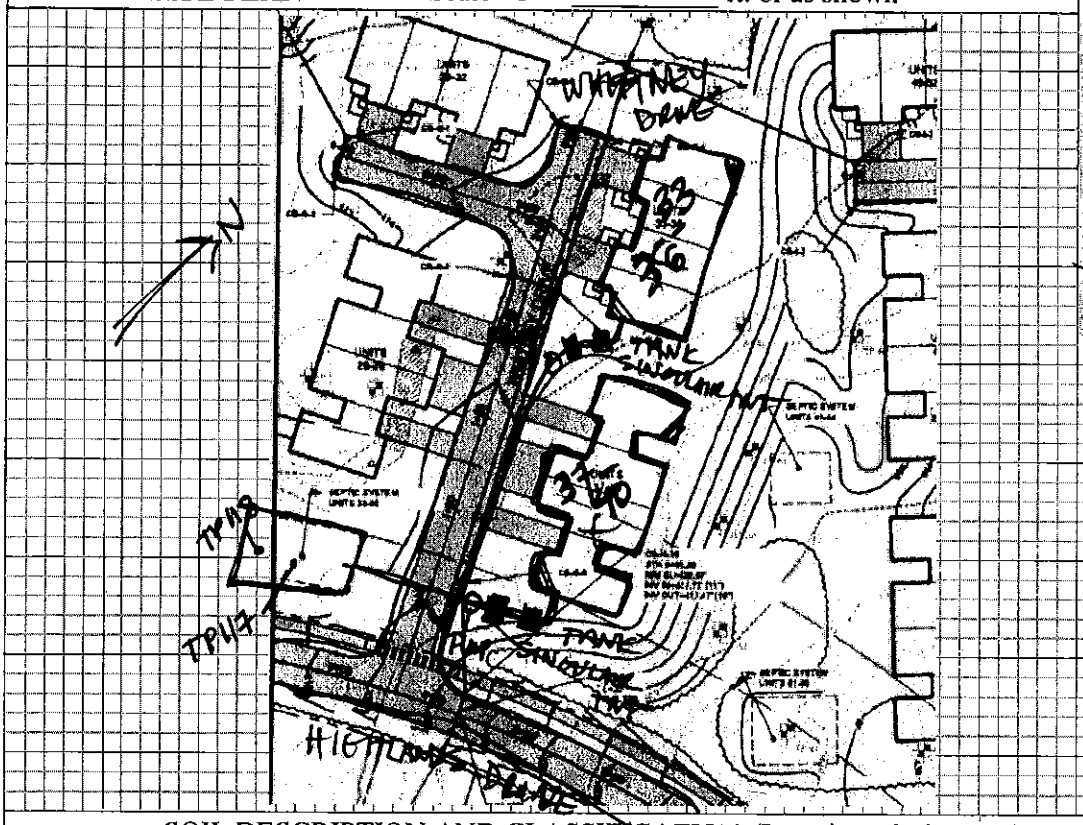
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

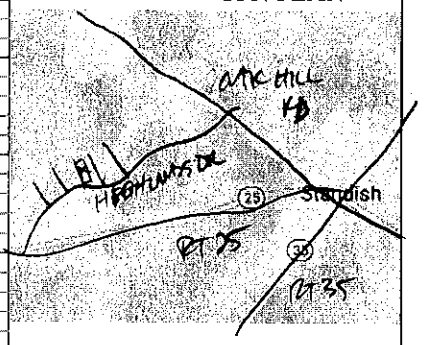
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish Whitney Drive	Highlands Subdivision Units 33-40	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP118 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 D (Profile / Condition)	2 %	12 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP117 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 D (Profile / Condition)	2 %	14 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

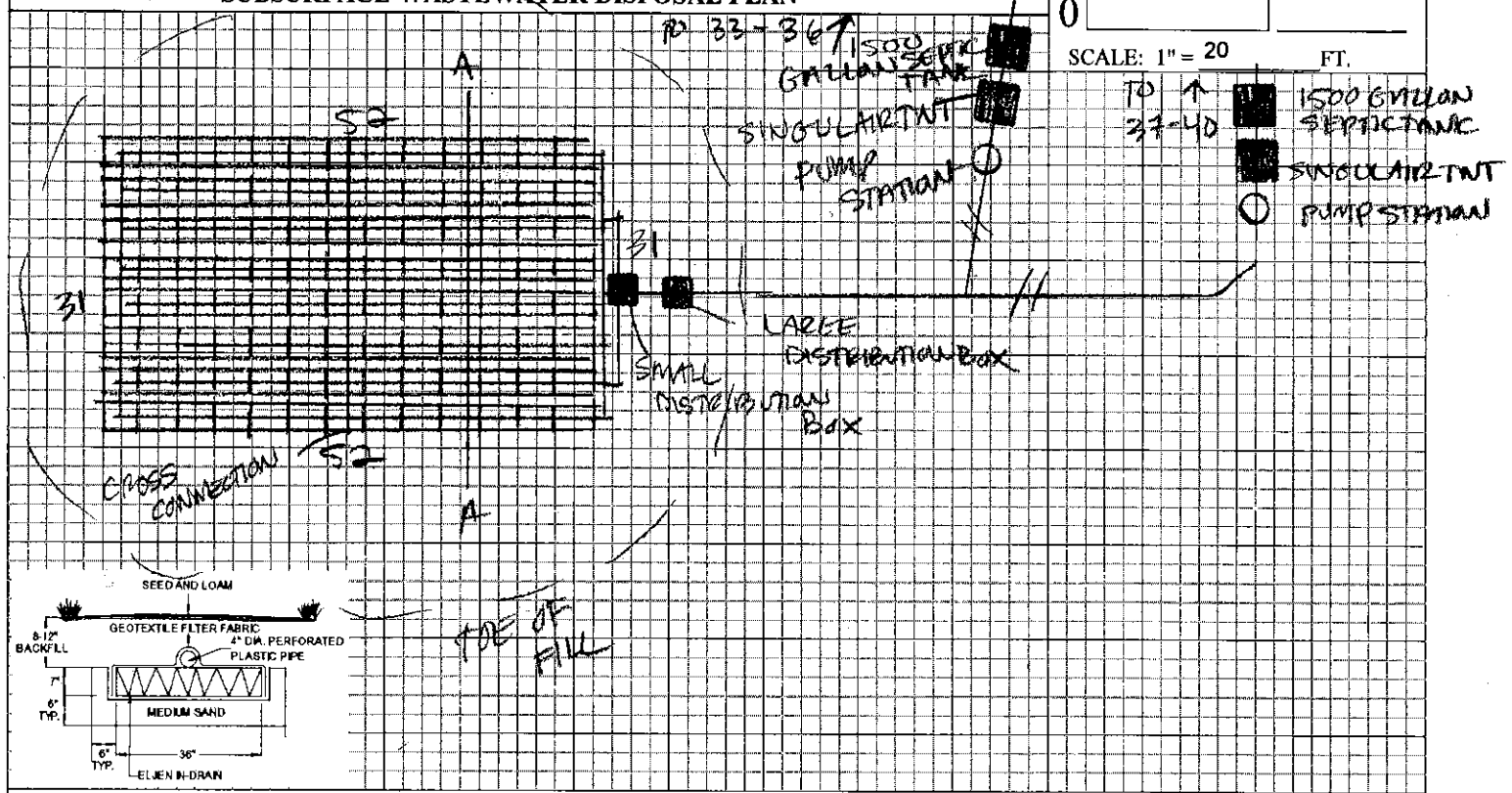
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish Whitney Drive	Highlands Subdivision Units 33-40	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	30	Finished Grade Elevation		Location & Description:
		Top of Distribution Pipe or Proprietary Device		
Depth of Fill (Downslope)	37	Bottom of Disposal Area		Reference Elevation: 0

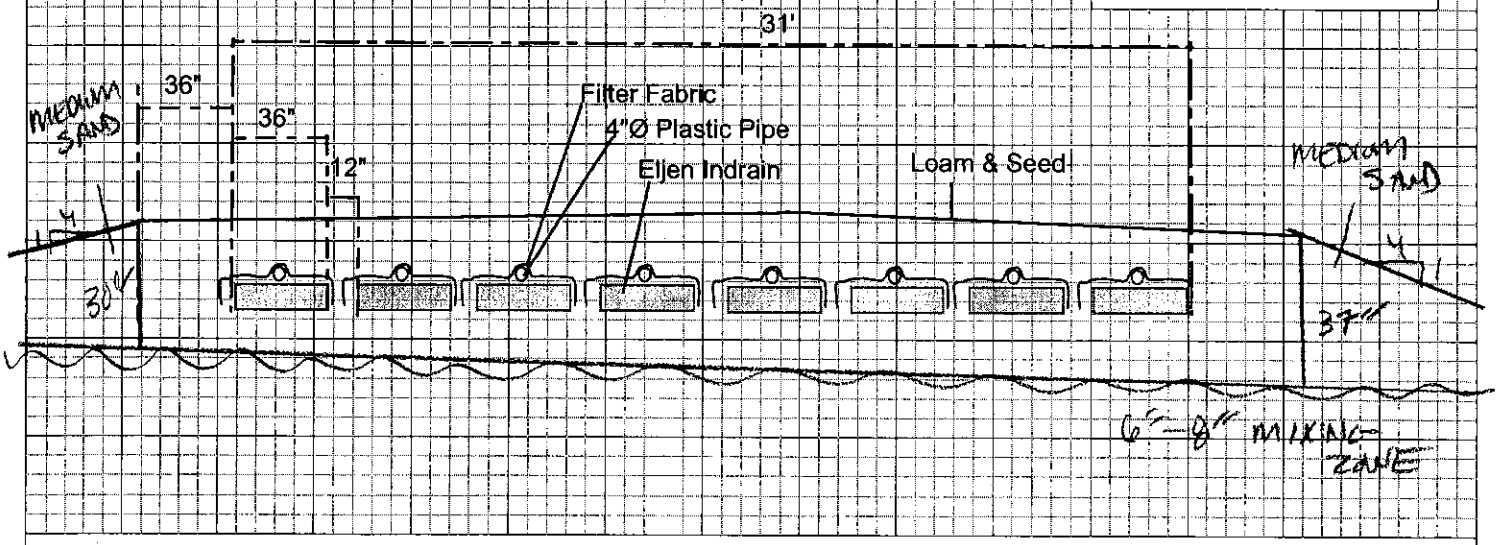
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Inverness Drive
Subdivision, Lot #	Highlands Subdivision Units 41-44

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 4 2-bedroom units (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 1x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 2400 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
720 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP110
Depth 17 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 12 s
Lon. 70 d 34 m 14 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

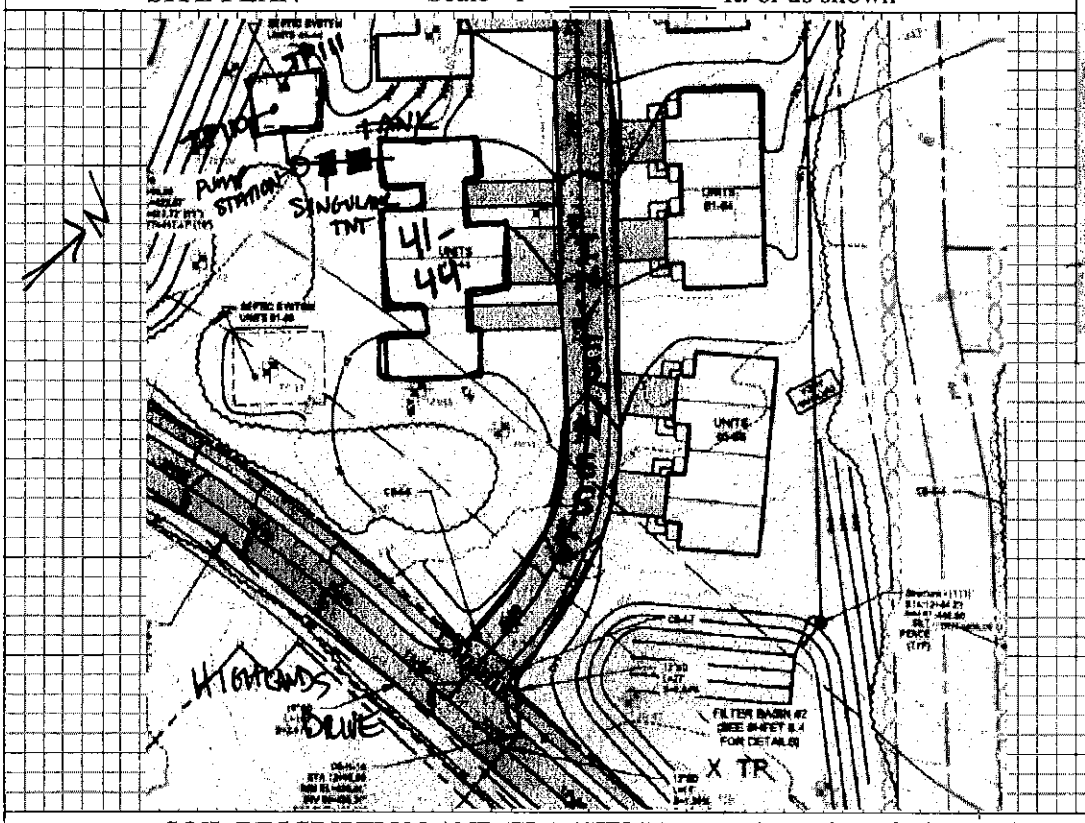
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

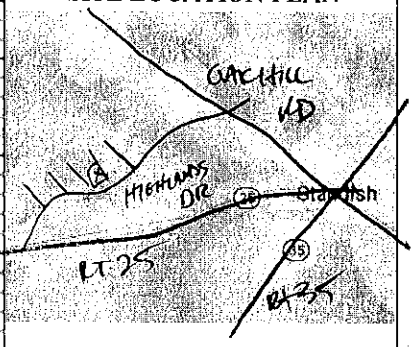
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive Highlands Subdivision Units 41-44	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP110 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	2 %	17 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP111 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	2 %	17 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

4474

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

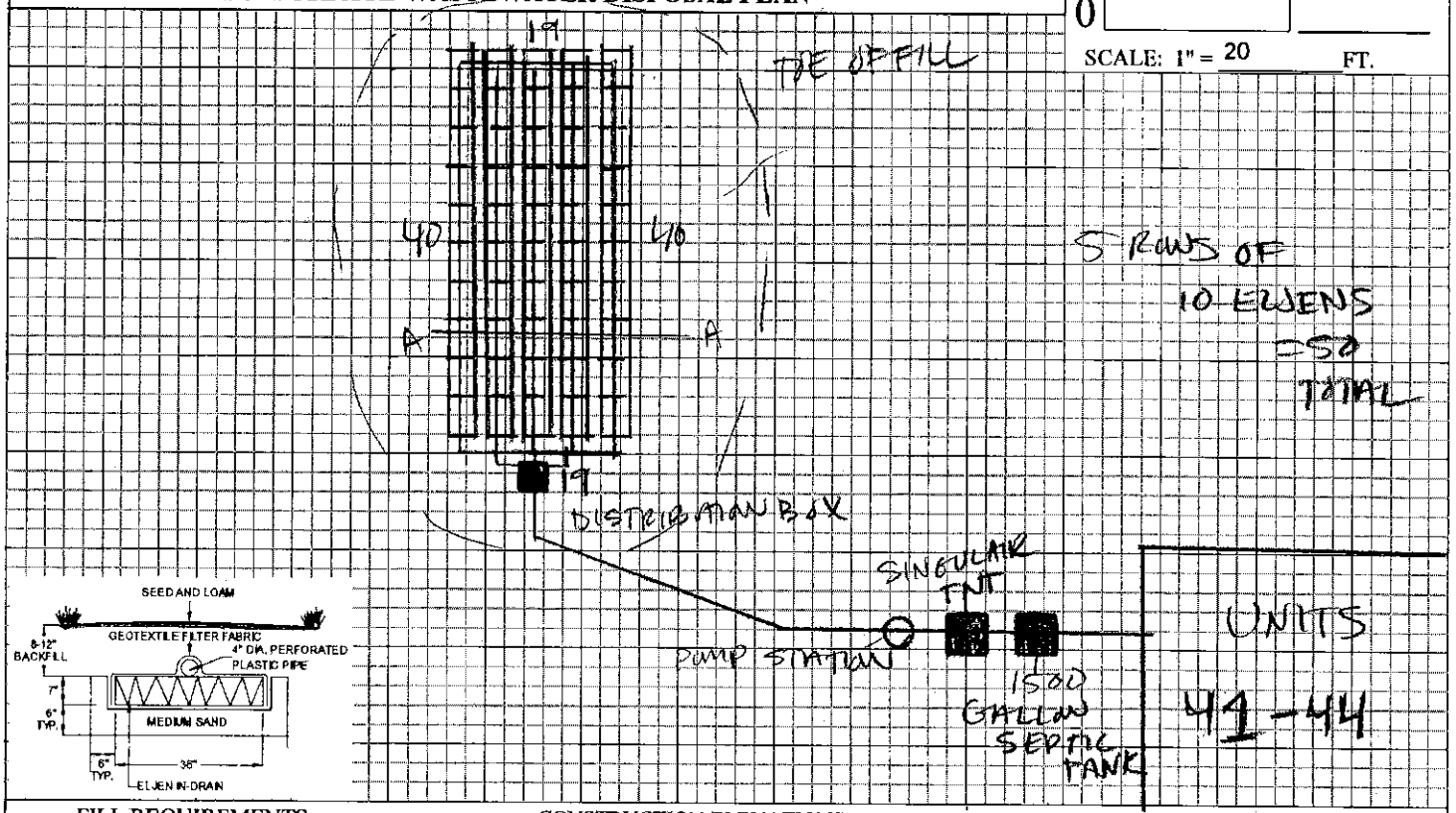
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish Inverness Drive	Highlands Subdivision Units 41-44	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	19	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	
Depth of Fill (Downslope)	24	Bottom of Disposal Area	_____	Reference Elevation: 0

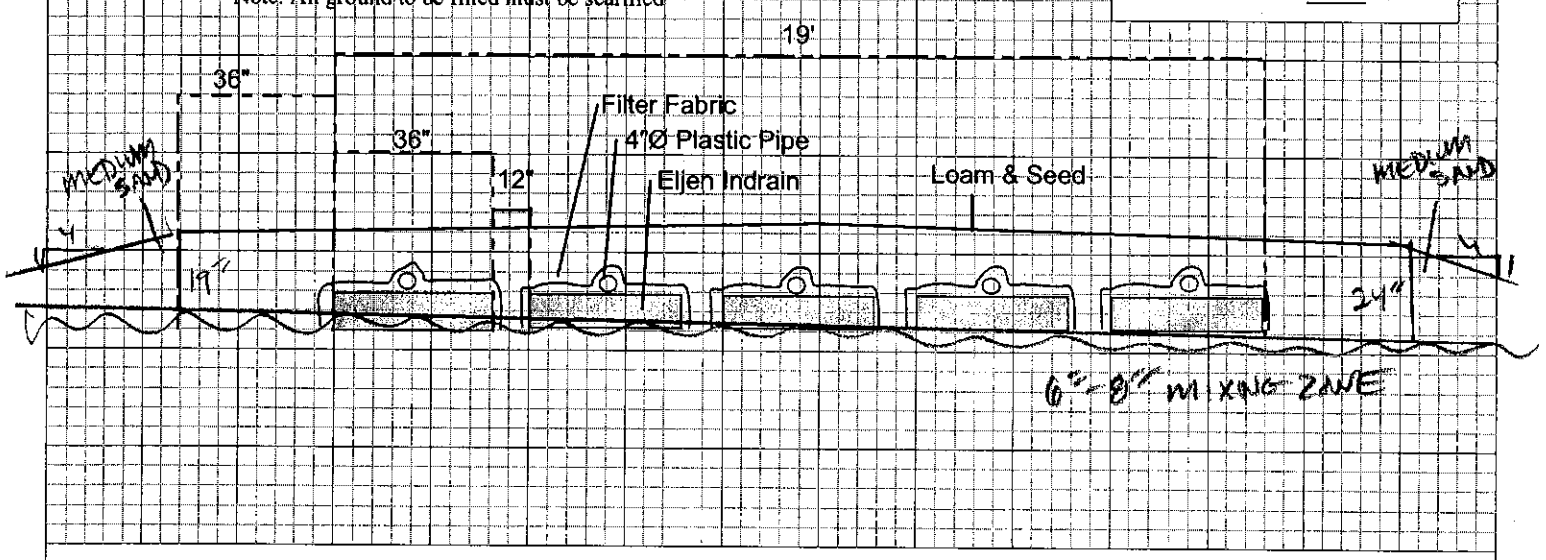
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale	
Horizontal	1" = 4 ft.
Vertical	1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Inverness Drive
Subdivision, Lot #	Highlands Subdivision Unit 45-48,57-60

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: ____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4992 sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP58
Depth 15 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 12 s
Lon. 70 d 34 m 14 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

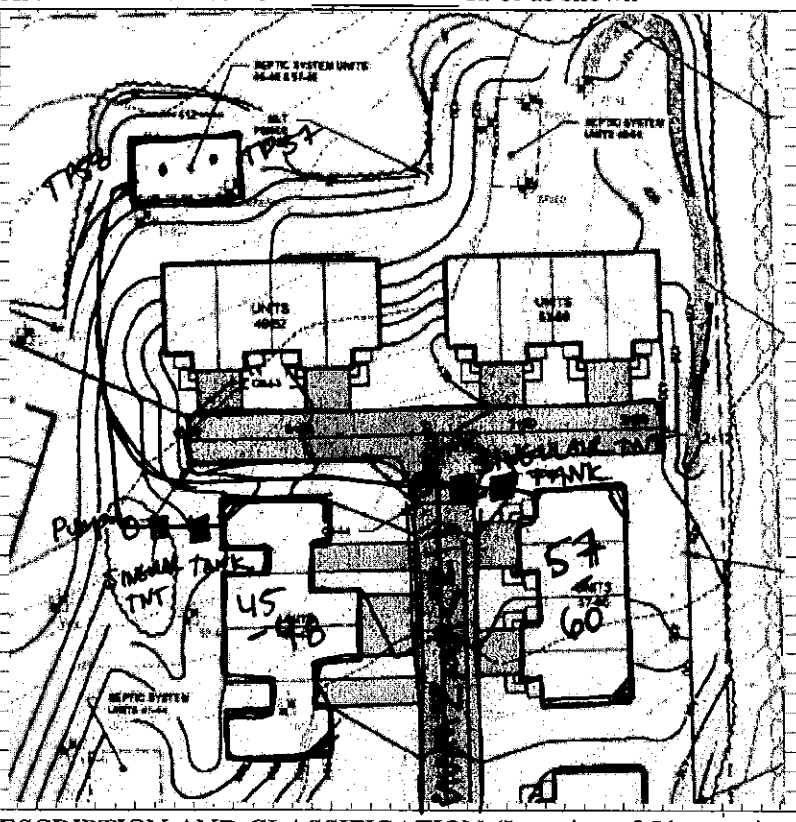
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

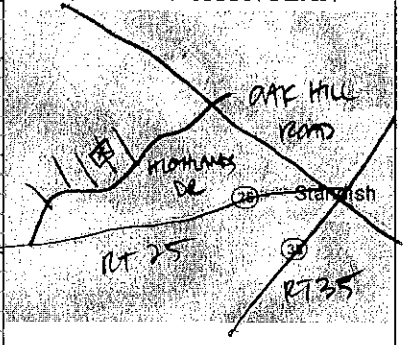
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive Highlands Subdivision Unit 45-48,57-60	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP58 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification		Slope	Limiting Factor	
3	C	6 %	15 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth
Profile	Condition			

Observation Hole TP57 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification		Slope	Limiting Factor	
3	C	6 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth
Profile	Condition			

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

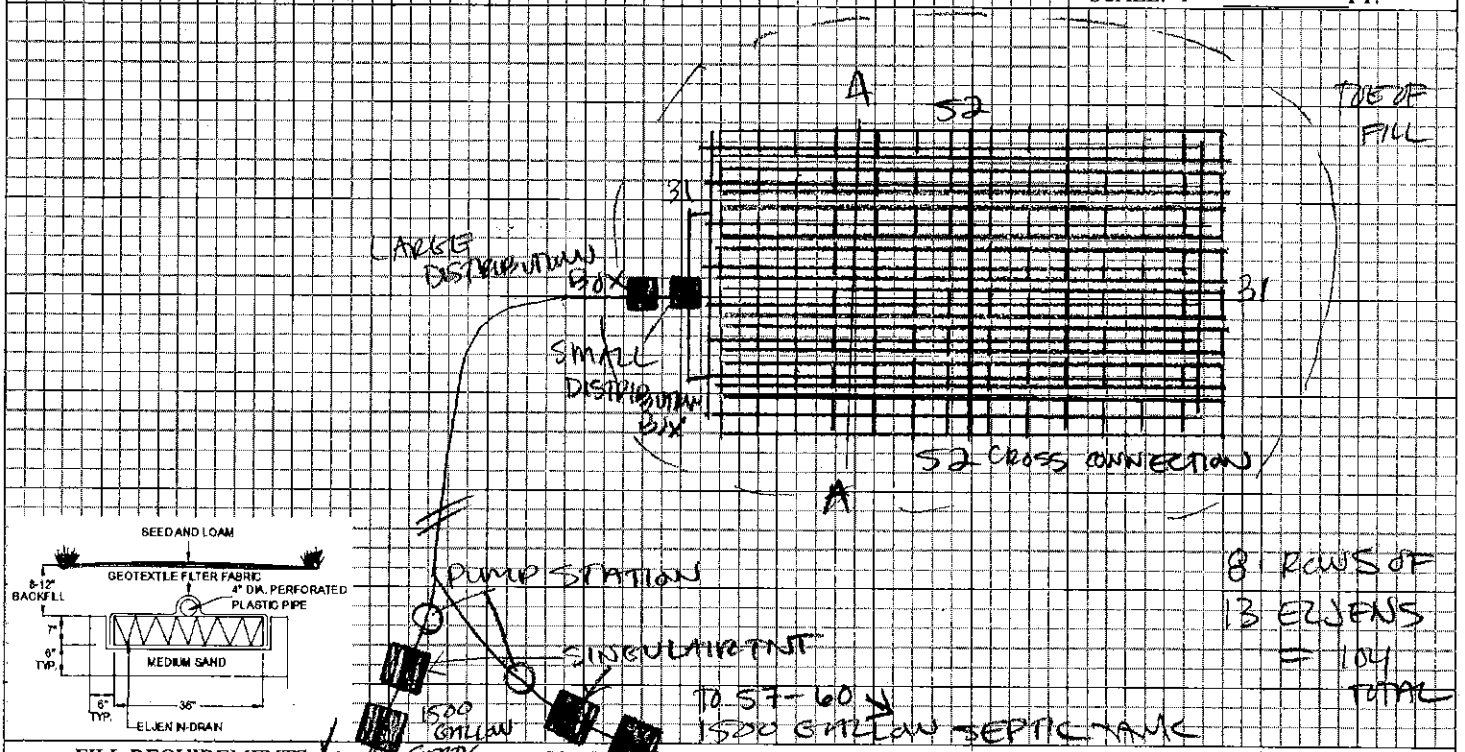
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive Highlands Subdivision Unit 45-48,57-60	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



TO 45-48

FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	21	Finished Grade Elevation	_____	Location & Description:
Depth of Fill (Downslope)	43	Top of Distribution Pipe or Proprietary Device	_____	Reference Elevation: 0
		Bottom of Disposal Area	_____	

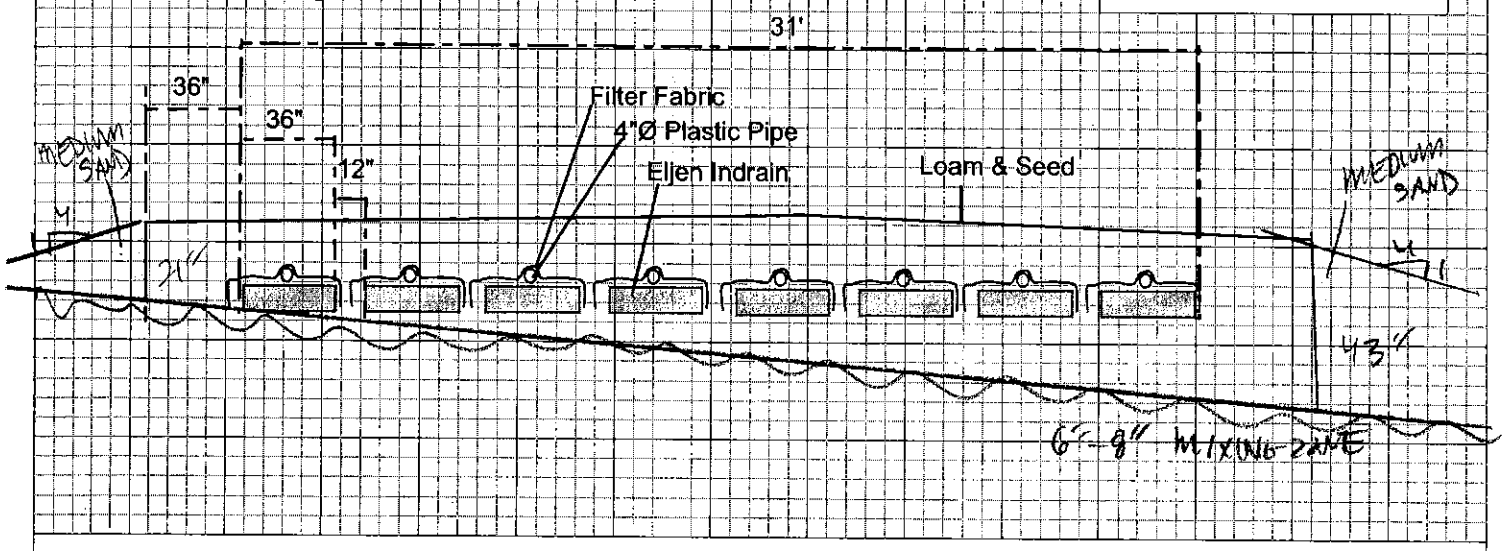
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Inverness Drive
Subdivision, Lot #	Highlands Subdivision Unit 49-56

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703 Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. / ACRES

SHORELAND ZONING
Yes / No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: ____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4896 sq. ft. / lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP60
Depth 15 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 09 s
Lon. 70 d 34 m 16 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263 SE #	11/14/2019 Date
Mark J Hampton Site Evaluator Name Printed	207-756-2900 Telephone Number	E-mail Address

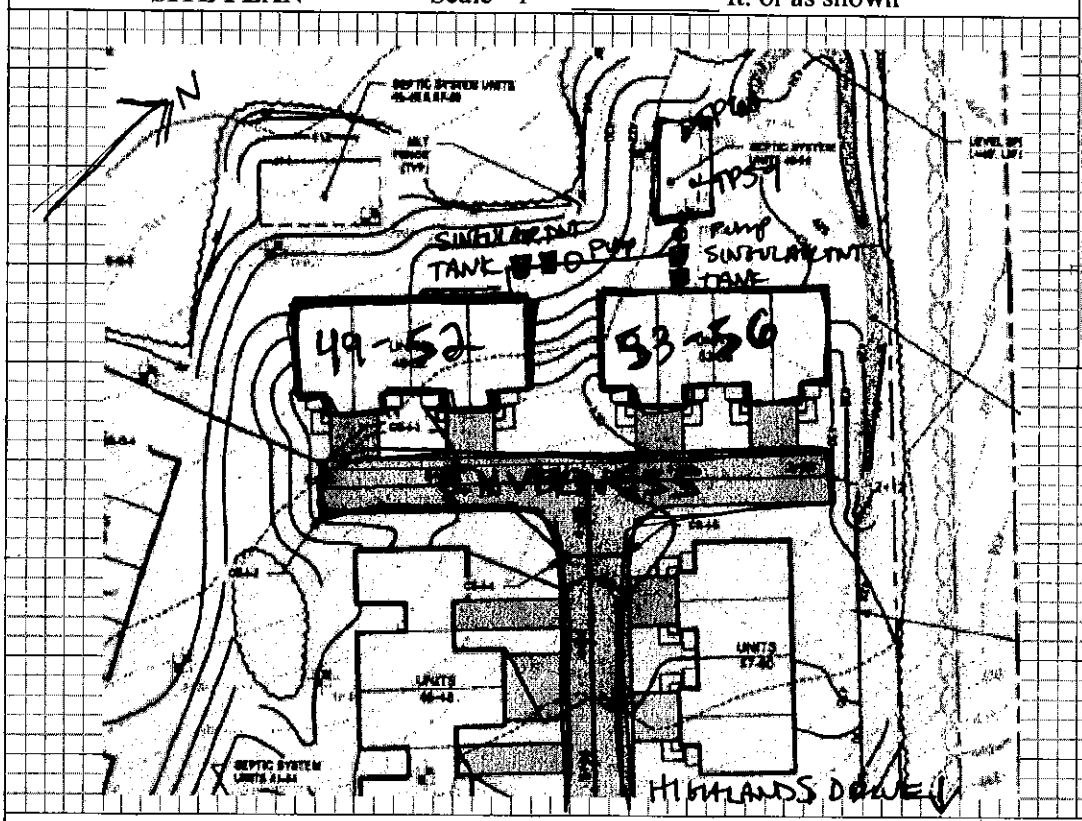
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

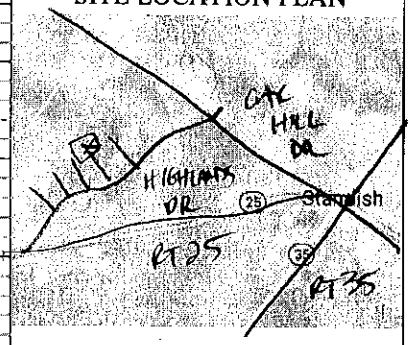
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive — Highlands Subdivision Unit 49-56	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP60 ☑ Test Pit ☐ Boring
_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	Sandy Loam
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	8 %	15 "	[X] Ground Water [X] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP59 ☑ Test Pit ☐ Boring
_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10		Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	8 %	16 "	[X] Ground Water [X] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

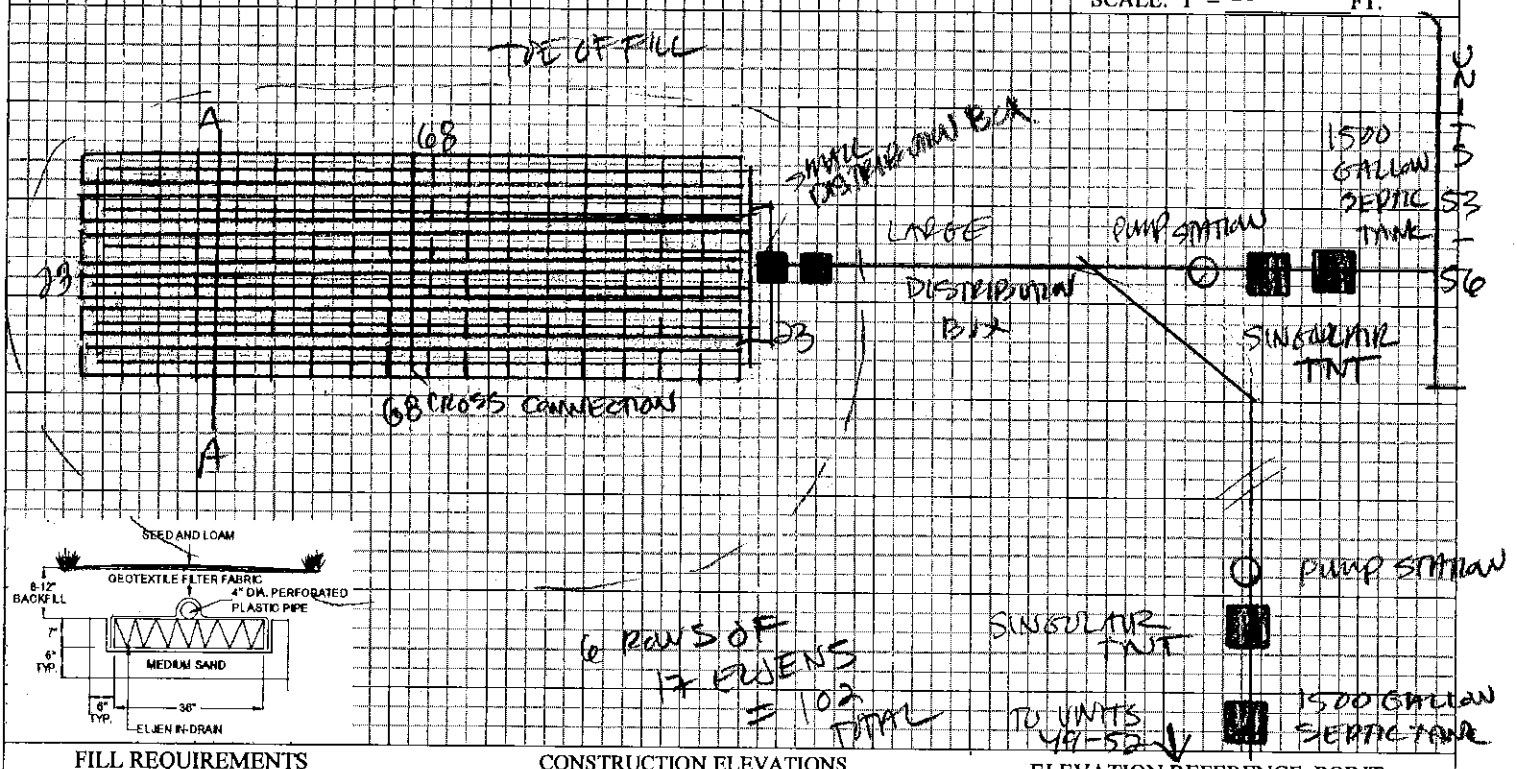
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive Highlands Subdivision Unit 49-56	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	
Depth of Fill (Downslope)	42	Bottom of Disposal Area	_____	Reference Elevation: 0

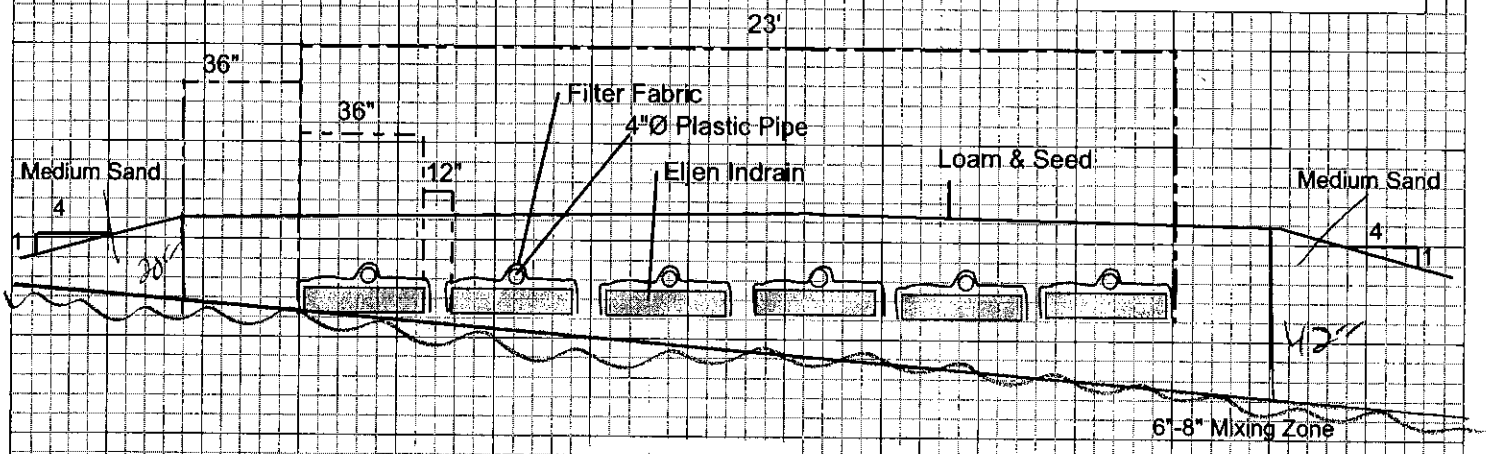
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Note: All ground to be filled must be scarified

Scale
Horizontal 1" = 5 ft.
Vertical 1" = 4 ft.



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Inverness Drive
Subdivision, Lot #	Highlands Subdivision Units 61-68

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703 Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: ____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 5184 sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. Increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP41
Depth 16 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 12 s
Lon. 70 d 34 m 13 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

_____ 263 11/14/2019
Site Evaluator Signature SE # Date

Mark J Hampton 207-756-2900
Site Evaluator Name Printed Telephone Number E-mail Address

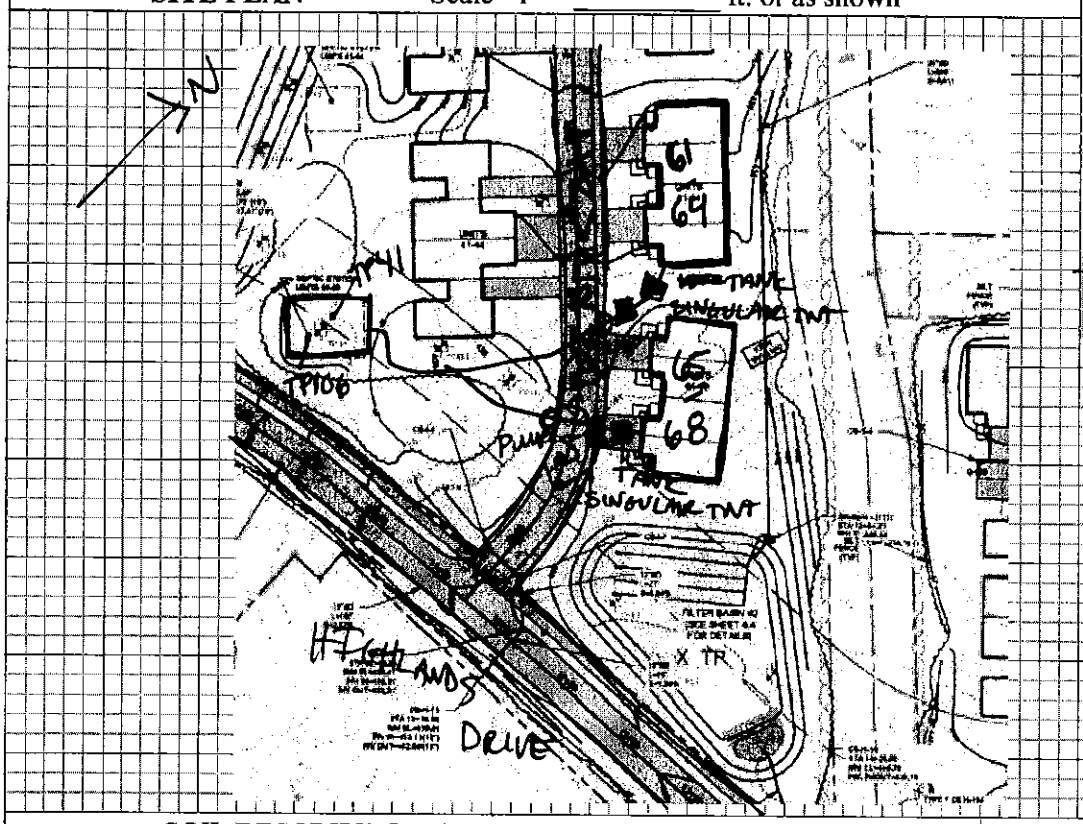
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

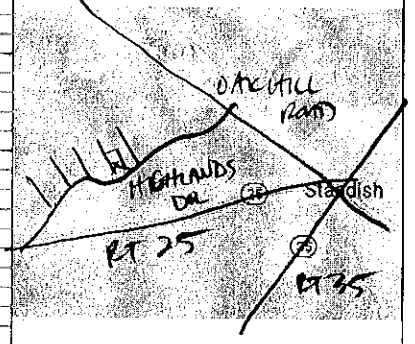
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive Highlands Subdivision Units 61-68	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP41 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile, C Condition	4 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP106 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–30	Sandy Loam	Firm	Olive	Common and Distinct
30–40				
40–50				

Soil Classification	Slope	Limiting Factor	
3 Profile, C Condition	4 %	16 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

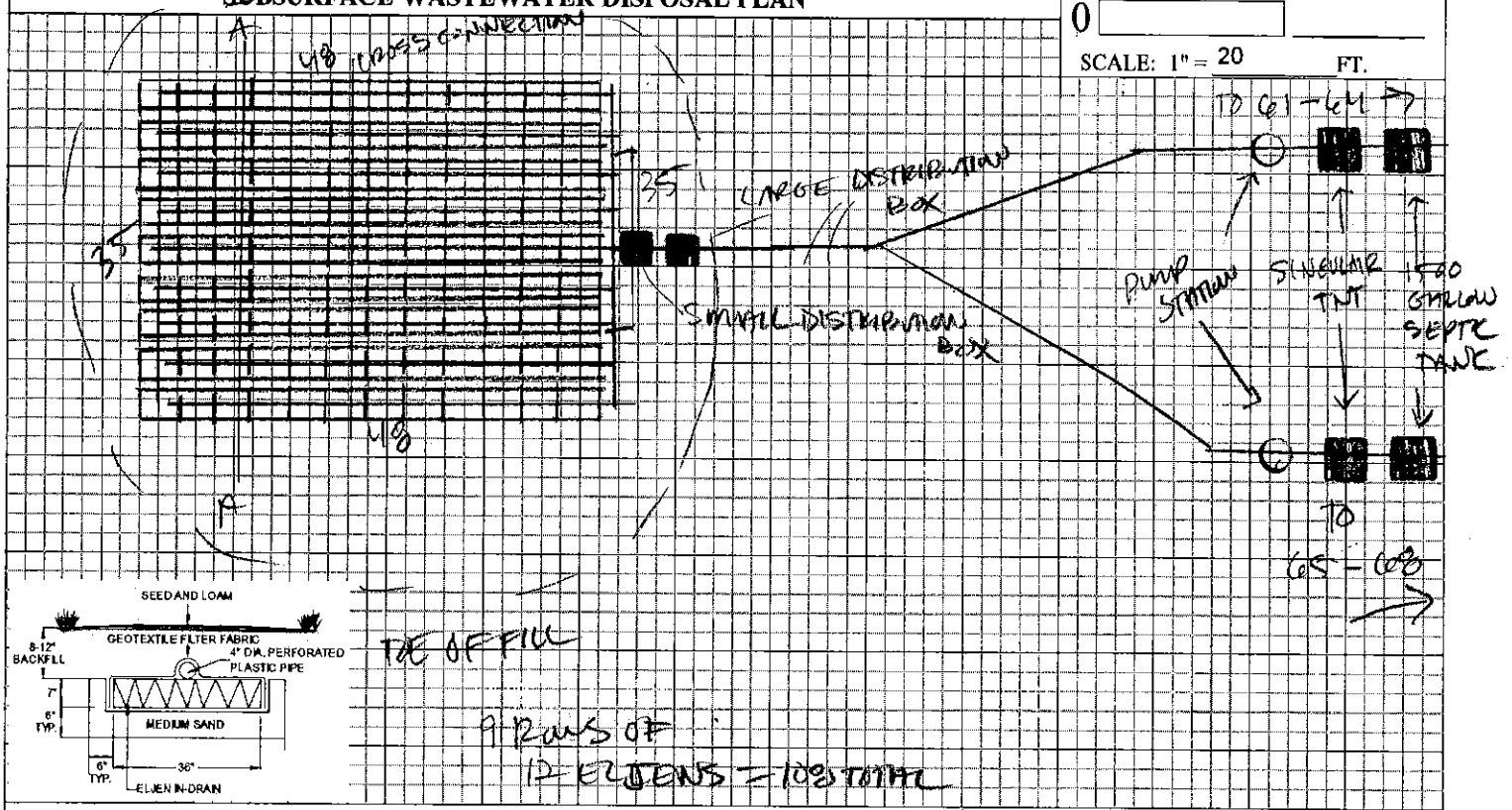
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Inverness Drive — Highlands Subdivision Units 61-68	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	
Depth of Fill (Downslope)	36	Bottom of Disposal Area	_____	Reference Elevation: 0

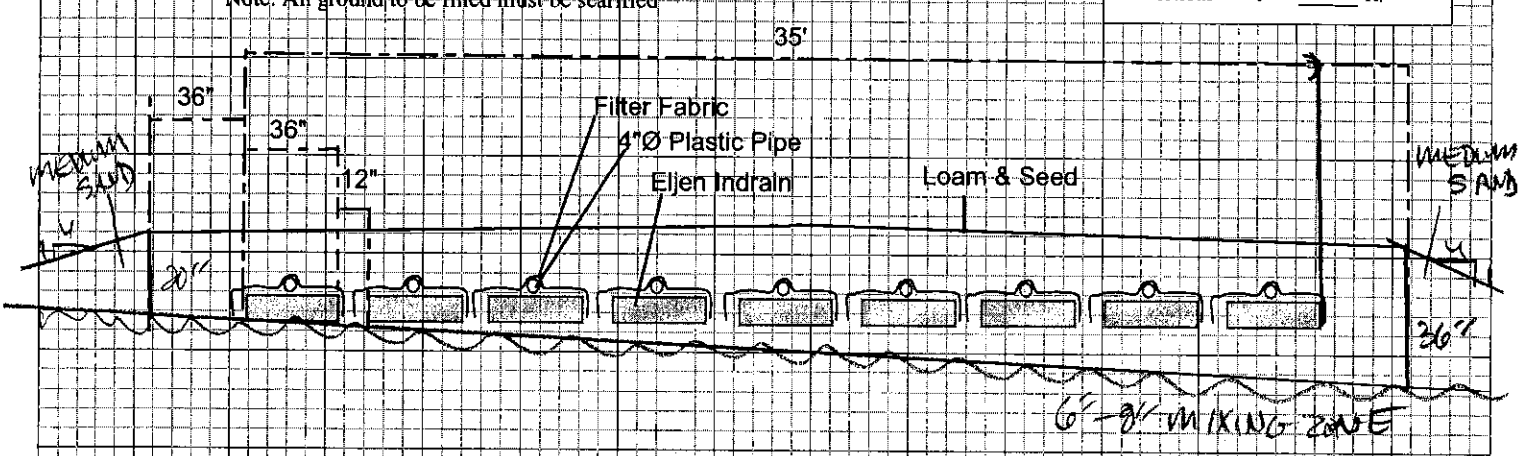
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Stonehaven Drive
Subdivision, Lot #	Highlands Subdivision Unit 69-76

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 8 2-bedroom units
(specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4992 sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP66
Depth 18 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 12 s
Lon. 70 d 34 m 12 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

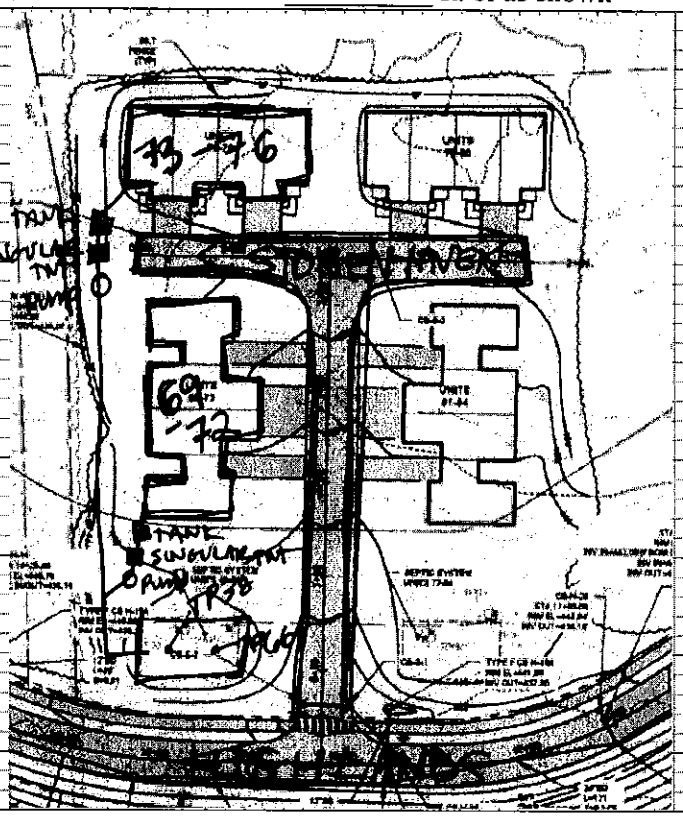
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

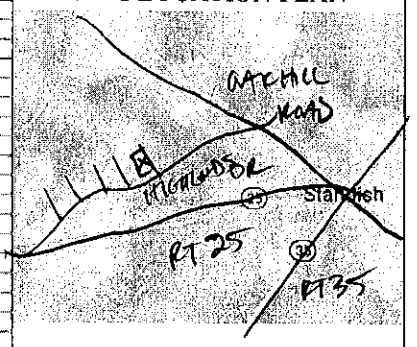
Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Stonehaven Drive	Highlands Subdivision Unit 69-76	Leavitt-Tompson LLC

SITE PLAN

Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP66 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	2 %	18 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP38 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	2 %	20 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

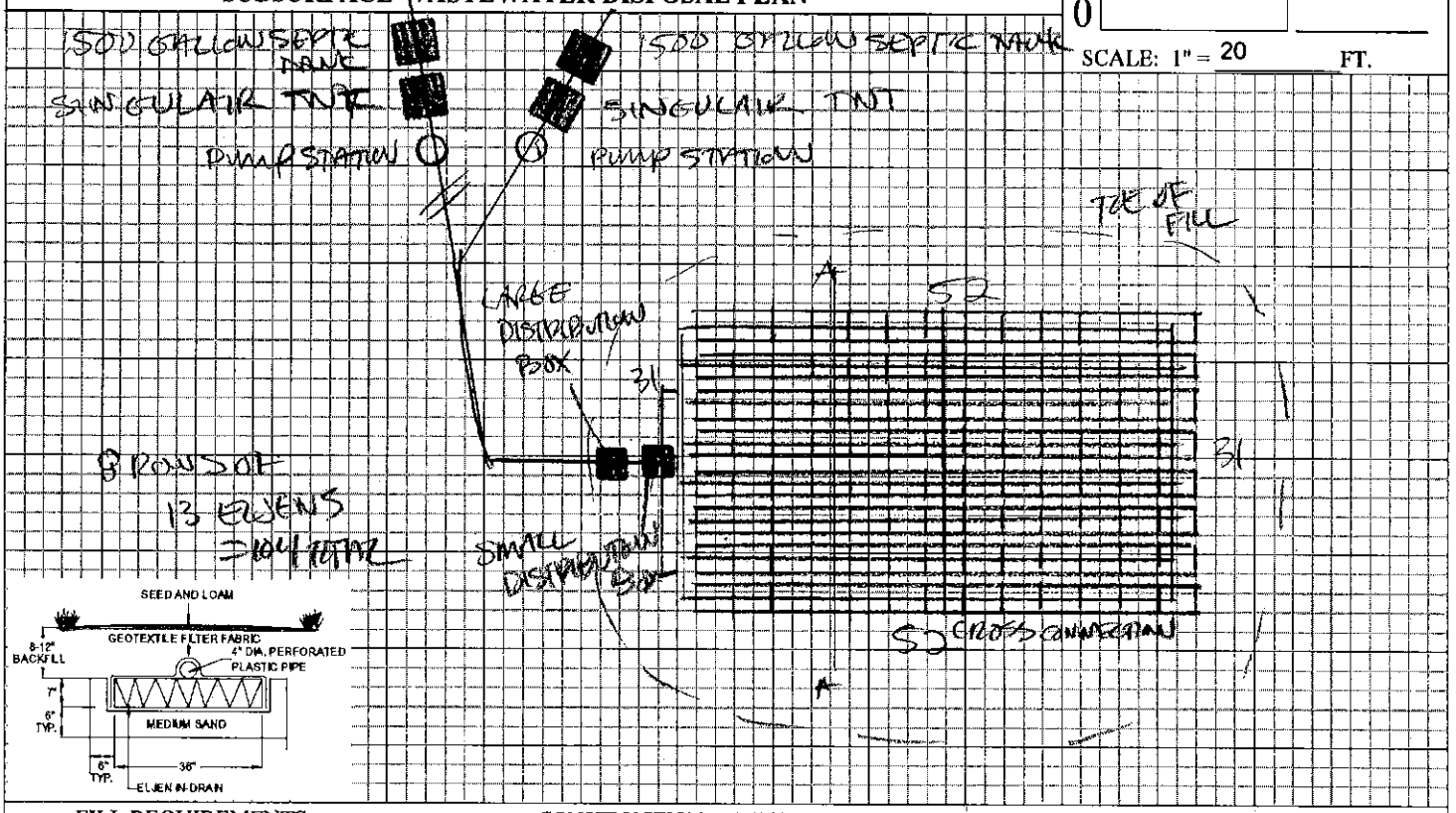
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish Stonehaven Drive	Highlands Subdivision Unit 69-76	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	17	Finished Grade Elevation		Location & Description:
		Top of Distribution Pipe or Proprietary Device		
Depth of Fill (Downslope)	25	Bottom of Disposal Area		Reference Elevation: 0

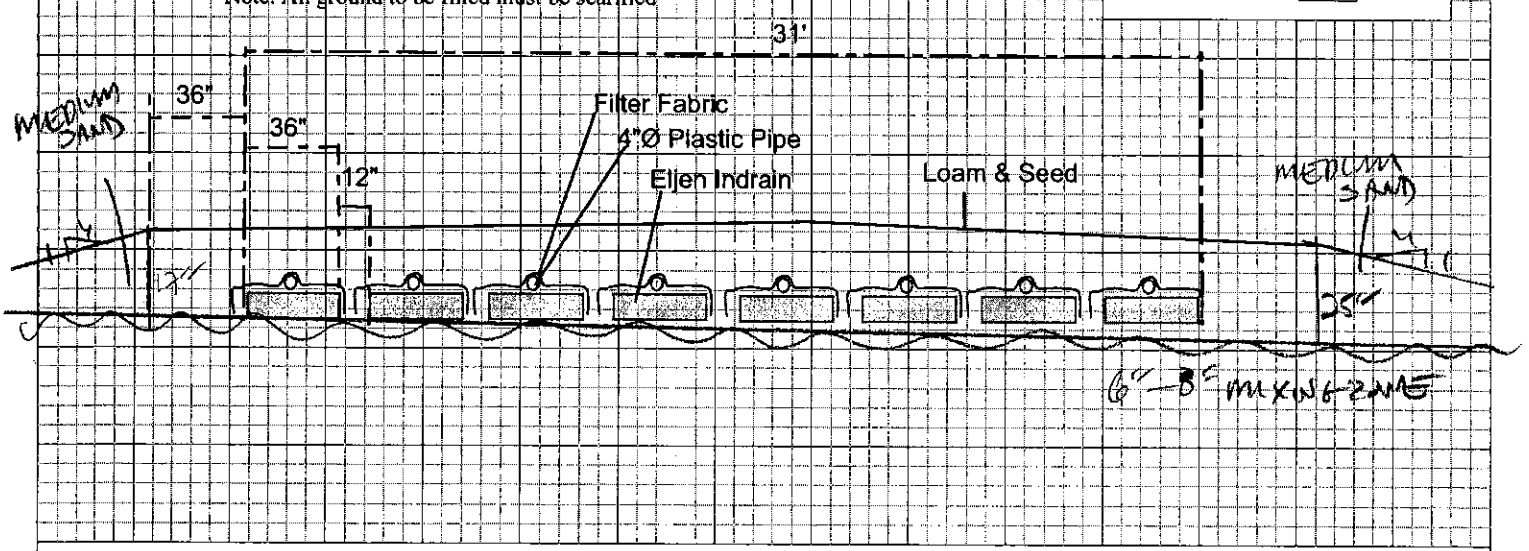
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Stonehaven Drive
Subdivision, Lot #	Highlands Subdivision Unit 77-84

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. >25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: 8 2-bedroom units (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 2x1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 4992 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
1440 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP107
Depth 18 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium—2.6 sq. ft. / gpd
2. Medium—Large 3.3 sq. f.t / gpd
3. Large—4.1 sq. ft. / gpd
4. Extra Large—5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 12 s
Lon. 70 d 34 m 12 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature	263	11/14/2019
	SE #	Date
Mark J Hampton	207-756-2900	
Site Evaluator Name Printed	Telephone Number	E-mail Address

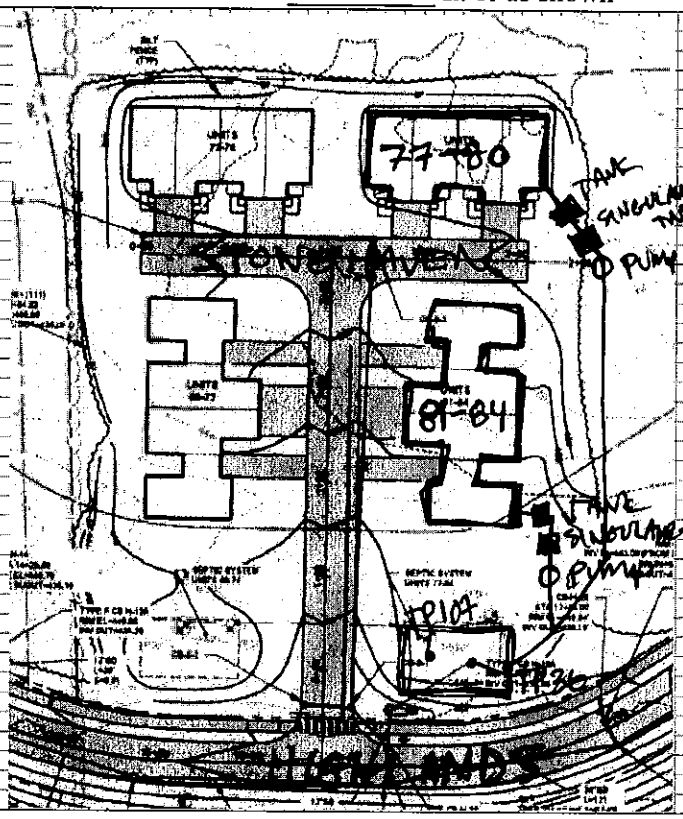
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

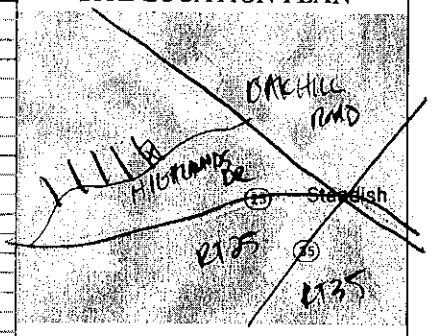
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Stonehaven Drive — Highlands Subdivision Unit 77-84	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP107 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	2 %	18 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP36 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20	Sandy Loam	Firm	Olive	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	2 %	20 "	[x] Ground Water [x] Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature: [signature] SE #: 263 Date: 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

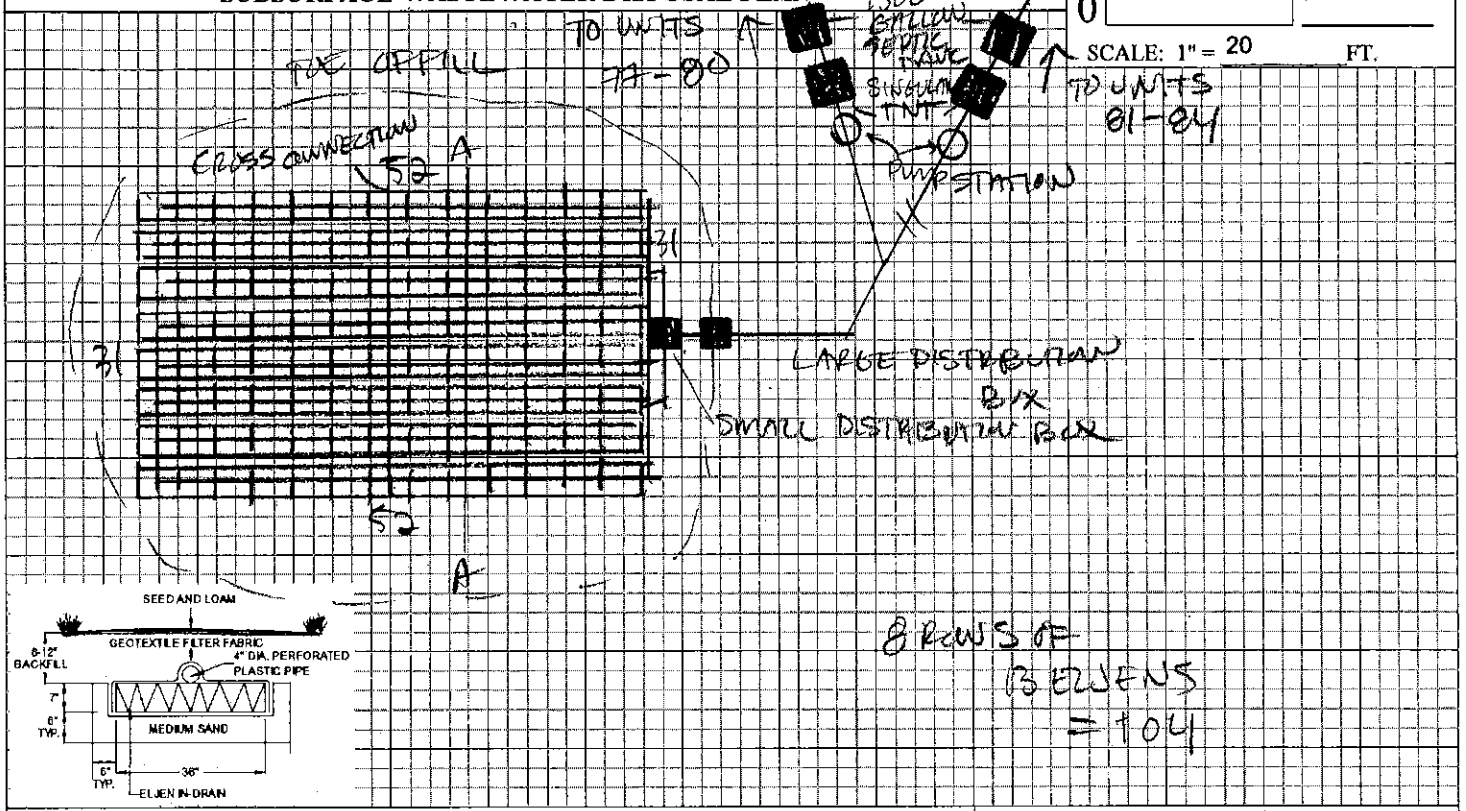
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish Stonehaven Drive	Highlands Subdivision Unit 77-84	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	17	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	Reference Elevation: 0
Depth of Fill (Downslope)	25	Bottom of Disposal Area	_____	

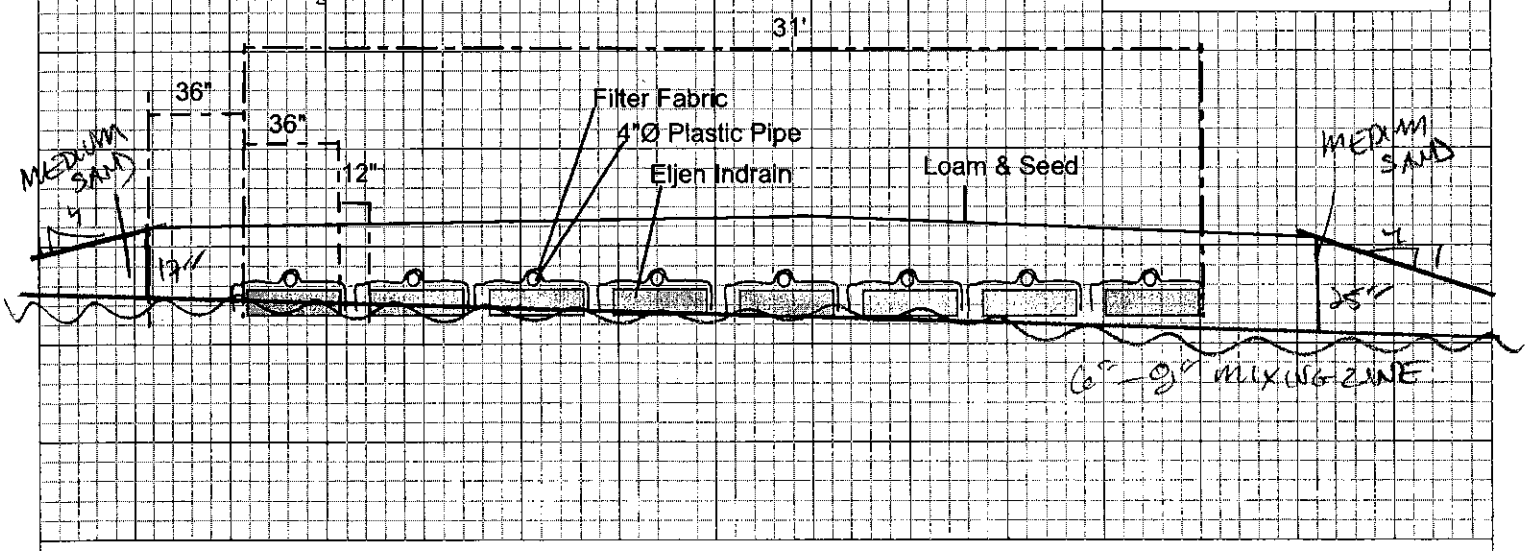
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 6 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

City, Town, or Plantation	Standish
Street or Road	Highlands Drive
Subdivision, Lot #	Highlands Subdivision Clubhouse

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____

Date Permit Issued ___/___/___ Fee: $_____ Double Fee Charged [ ]

_____ L.P.I. # _____
Local Plumbing Inspector Signature

Fee: $_____ state min fee $_____ Locally adopted fee
Copy: [ ] Owner [ ] Town [ ] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER/APPLICANT INFORMATION

Name (last, first, MI)	Leavitt-Tompson LLC — Owner [✓] Applicant [ ]
Mailing Address of Owner/Applicant	PO Box 703
	Standish 04084
Daytime Tel. #	

OWNER OR APPLICANT STATEMENT
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

_____ _____
Signature of Owner or Applicant Date

CAUTION: INSPECTION REQUIRED
I have inspected the installation authoirzed above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. _____ (1st) date approved

_____ _____
Local Plumbing Inspector Signature (2nd) date approved

PERMIT INFORMATION

TYPE OF APPLICATION
1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES
1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS
1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY
91 SQ. FT. ACRES

SHORELAND ZONING
Yes No

DISPOSAL SYSTEM TO SERVE
1. Single Family Dwelling Unit, No. of Bedrooms: ____
2. Multiple Family Dwelling, No. of Units: _____
3. Other: Clubhouse (specify)
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY
1. Drilled Well 2. Dug Well 3. Private
4. Public 5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK
1. Concrete
a. Regular
b. Low Profile
2. Plastic
3. Other: _____
CAPACITY: 1500 GAL.

DISPOSAL FIELD TYPE & SIZE
1. Stone Bed 2. Stone Trench
3. Proprietary Device
a. cluster array c. Linear
b. regular load d. H-20 load
4. Other: _____
SIZE: 1680 sq. ft lin. ft.

GARBAGE DISPOSAL UNIT
1. No 2. Yes 3. Maybe
If Yes or Maybe, specify one below:
a. multi-compartment tank
b. ___ tanks in series
c. increase in tank capacity
d. Filter on Tank Outlet

DESIGN FLOW
500 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C(other facilities)
SHOW CALCULATIONS for other facilites
3. Section 4G (meter readings)
ATTACH WATER METER DATA

SOIL DATA & DESIGN CLASS
PROFILE CONDITION
3 / C
at Observation Hole # TP77
Depth 15 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING
1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. f.t / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP
1. Not Required
2. May Be Required
3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE
at center of disposal area
Lat. 43 d 44 m 07 s
Lon. 70 d 34 m 11 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 11/14/2019 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

_____ 263 11/14/2019
Site Evaluator Signature SE # Date

Mark J Hampton 207-756-2900
Site Evaluator Name Printed Telephone Number E-mail Address

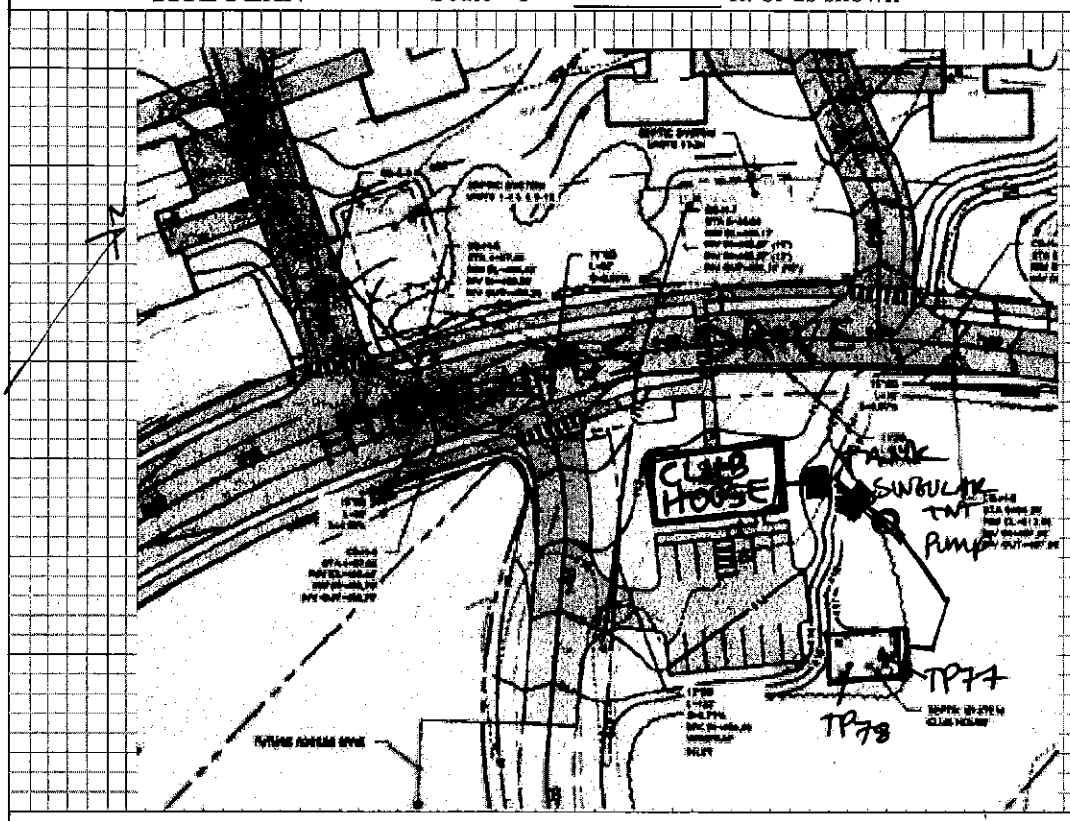
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

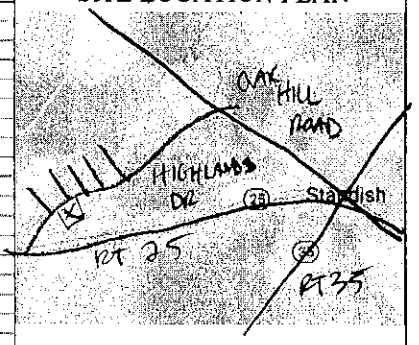
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Highland Drive	Highlands Subdivision Clubhouse	Leavitt-Tompson LLC

SITE PLAN Scale 1" = _____ ft. or as shown



SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP77 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	4 %	15 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Observation Hole TP78 ☑ Test Pit ☐ Boring

_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0–10	Sandy Loam	Friable	Dark Brown	
10–20	Sandy Loam	Friable	Brown	
20–50	Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification	Slope	Limiting Factor	
3 Profile / C Condition	4 %	15 "	☑ Ground Water ☑ Restrictive Layer [ ] Bedrock [ ] Pit Depth

Site Evaluator Signature _____ SE # 263 Date 11/14/2019

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

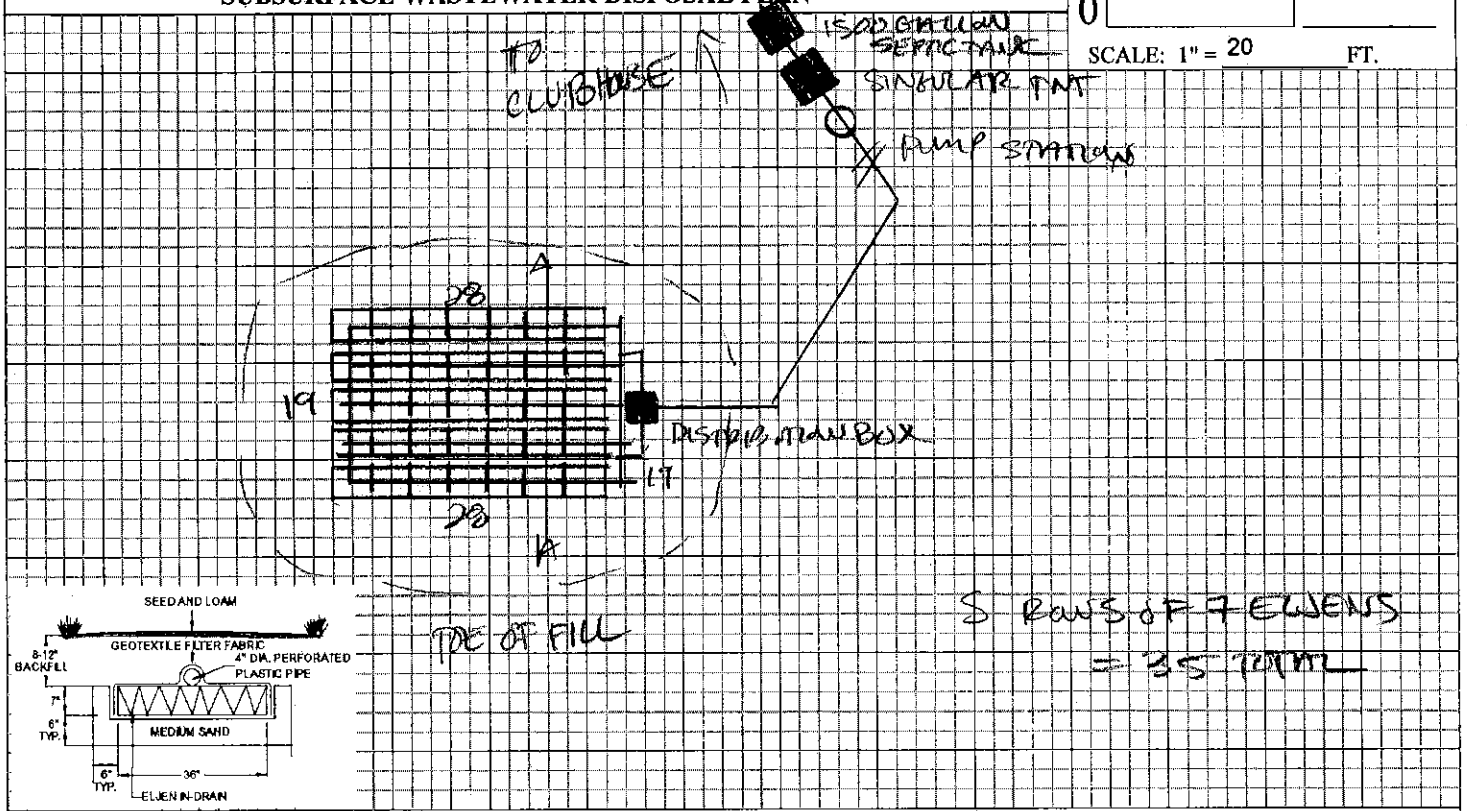
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
Standish	Highland Drive	Highlands Subdivision Clubhouse	Leavitt-Tompson LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 _____ _____

SCALE: 1" = 20 FT.



FILL REQUIREMENTS		CONSTRUCTION ELEVATIONS		ELEVATION REFERENCE POINT
Depth of Fill (Upslope)	20	Finished Grade Elevation	_____	Location & Description:
		Top of Distribution Pipe or Proprietary Device	_____	Reference Elevation: 0
Depth of Fill (Downslope)	26	Bottom of Disposal Area	_____	

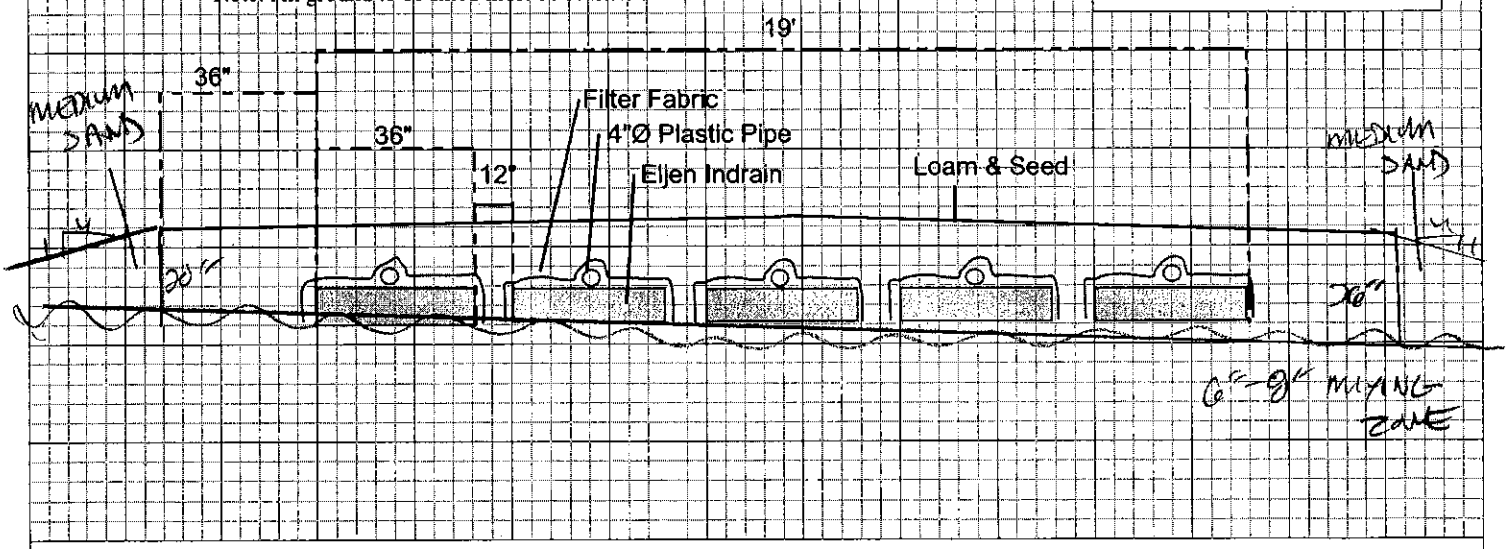
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale
Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature	SE #	Date
	263	11/14/2019

NITRATE-NITROGEN ASSESSMENT FOR SINGLE-FAMILY LOTS

Mark Cenci
Geologic, Inc.

CERTIFIED GEOLOGIST/LICENSED SITE EVALUATOR

93 Mill Road • North Yarmouth, Maine 04097
Cell: 207.329.3524 • mark@markcenci.com
www.markcenci.com

Response to DEP Project Memorandum Dated September 12, 2019 Highlands Subdivision, Standish

Date: November 22, 2019

Purpose:

The purpose of this response is to satisfy comment 11 of the DEP Memo which states:

> *"A nitrate-nitrogen impact assessment should be conducted on the single-family subdivision lots. This comment may not apply to lots 1-3, 10-12 and 14-18, depending on proposed locations of subsurface wastewater disposal fields at these lots which can meet setback distances in the exemption table in Pact II section 17.B.4.a. of the site application."*

Discussion:

The *Nitrate-Nitrogen Assessment, Highlands Subdivision* by Mark Cenci Geologic, dated April 3, 2019, was done in response to comments by John Hopeck regarding the need for pretreatment of wastewater from systems serving lots 25-32, 45-48 and 57-60 and 49-56. In that assessment assumptions about groundwater flow were made by a review of on-site soil information, topographic slope data, a wetland delineation, a sample of groundwater from the neighborhood and published literature.

The same information was used in this review of the single-family residential lots. The same ground water flow assumptions and analytical program were used to estimate the 10 mg/liter NO3-N plume lengths.

The analysis is not a mass-balance evaluation based upon precipitation dilution, but rather the behavior of the NO3-N in groundwater. Therefore, drought condition analysis is not applicable.

The estimated 10 mg/liter NO3-N plume length is 95 feet. A review was made of each of the 18 single-family lots to ensure each lot has a suitable septic system location that is more than 95 feet from the down gradient property line.

On this project the home locations must be 15 to 25 feet from the road right-of-way. Therefore, the placement of wastewater disposal areas in the space between the road and the homes is not possible, due to the setback distances required by the Maine Subsurface Wastewater Disposal Rules.

Lots on ground higher than the road will likely require pump stations, although it may be possible to site disposal areas adjacent to homes to avoid pumping. Homes centered on the lots at setback distances of 25 feet from the road were assumed, as were 20' x 45' pipe and stone beds.

Where possible, locations of septic systems were placed on existing test pits by Mark Hampton, LSE, CSS. Several lots had no suitable test pit, so additional soil test pits logs were provided by Hampton.

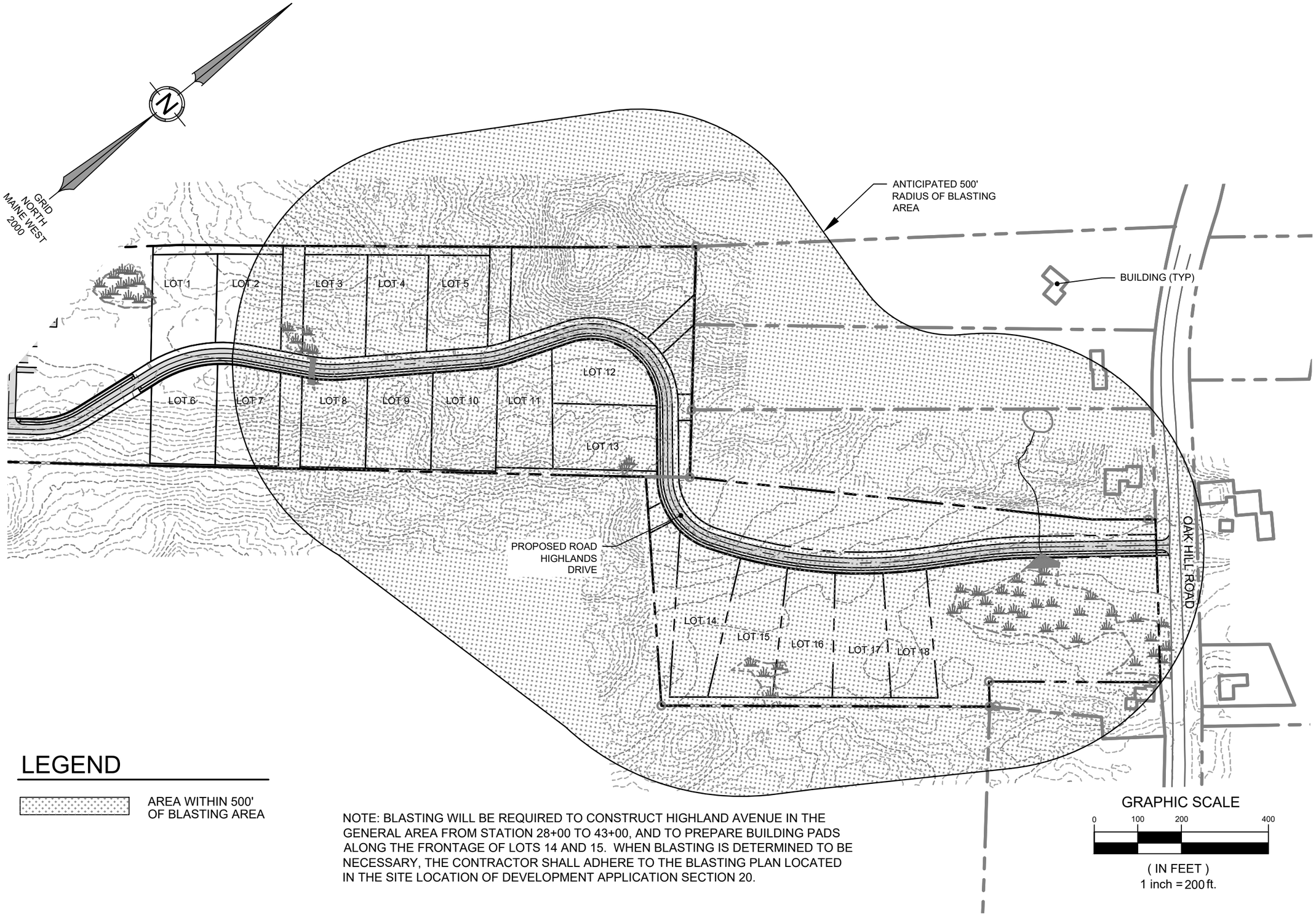
Plumes were drawn on the site plan, based on topographic information and were sent to Terradyn Consultants, LLC to be included on a plan.

Conclusions:

Each of the 18 single-family lots of the Highlands Subdivision can meet the requirement of Section 17.B of the site application. The NO3-N in the groundwater does not exceed 10 mg/liter at the project property line based on the analysis of this assessment..

Mark Cenci, CG #467

EXHIBIT 20 – 500’ BLASTING RADIUS



LEGEND

AREA WITHIN 500' OF BLASTING AREA

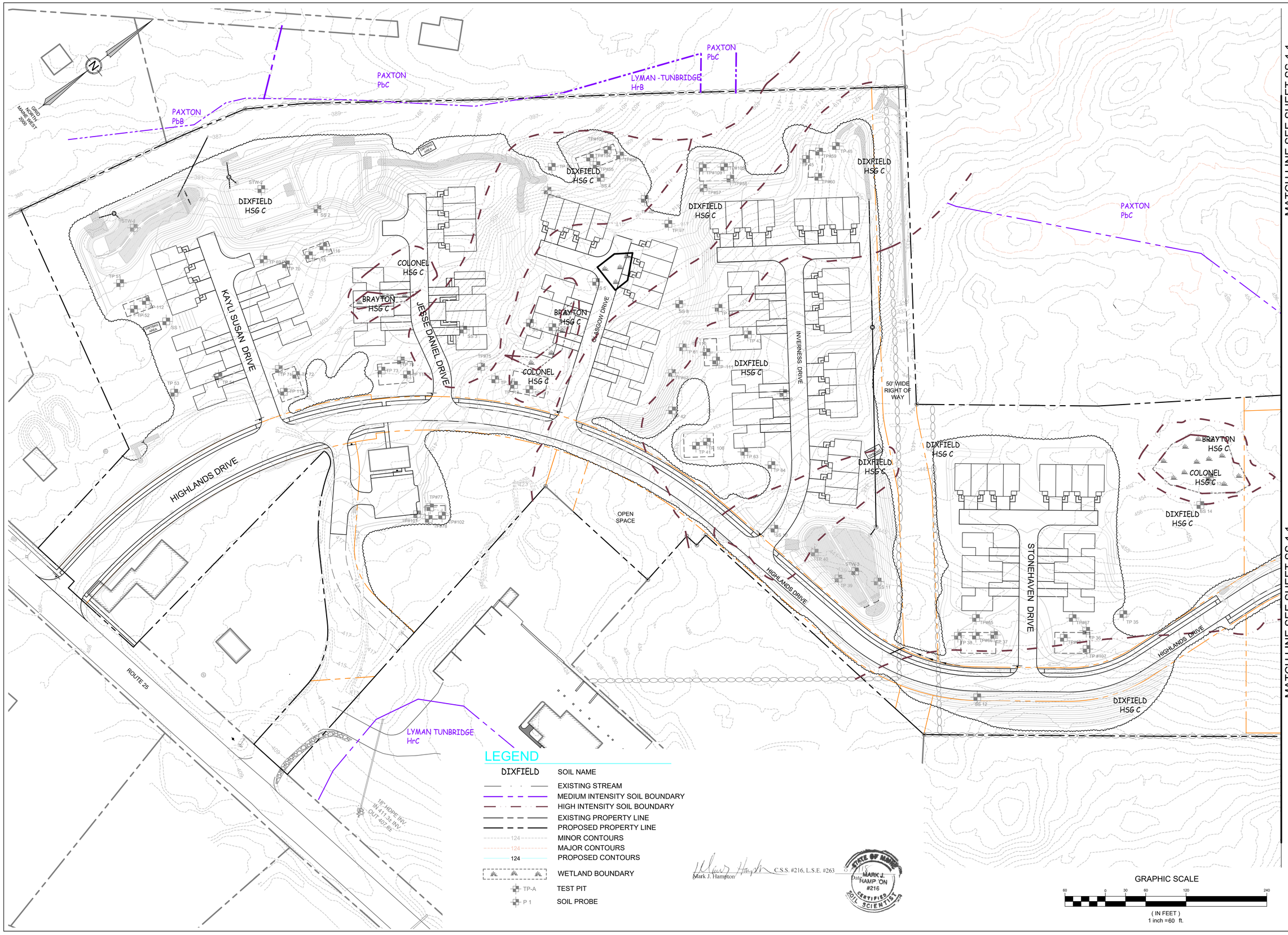
NOTE: BLASTING WILL BE REQUIRED TO CONSTRUCT HIGHLAND AVENUE IN THE GENERAL AREA FROM STATION 28+00 TO 43+00, AND TO PREPARE BUILDING PADS ALONG THE FRONTAGE OF LOTS 14 AND 15. WHEN BLASTING IS DETERMINED TO BE NECESSARY, THE CONTRACTOR SHALL ADHERE TO THE BLASTING PLAN LOCATED IN THE SITE LOCATION OF DEVELOPMENT APPLICATION SECTION 20.

41 Campus Drive, Suite 101
New Gloucester, ME 04260
565 Congress Street, Suite 310
Portland, ME 04101
(207) 926-5111
www.terradynconsultants.com
TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
EXHIBIT 20
HIGHLANDS - 500' BLASTING RADIUS

PREPARED FOR
LEAVITT-TOMPSON, LLC.
P.O. BOX 703
STANDISH, MAINE 04084

JOB NO.	1804-G
DATE	11/29/2019
SCALE	1"=200'
SHEET	1
OF	1



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/21/2019

NO.	DATE	REVISIONS	APP'D BY
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

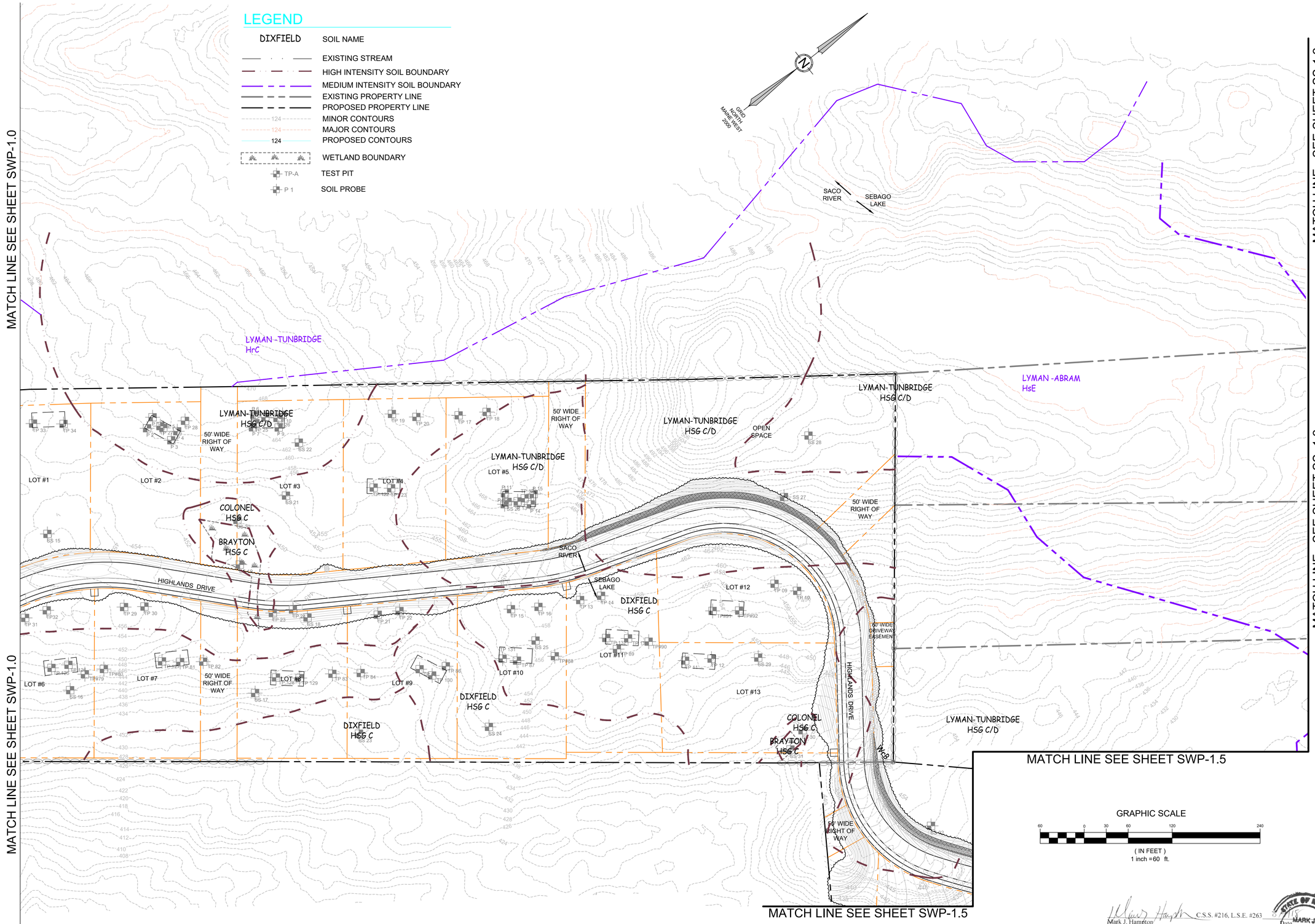
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIROMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
SOIL SURVEY MAP

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 SWP POST.DWG	

SHEET SS-1.0



Mark J. Hampton C.S.S. #216, L.S.E. #263 Date

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

STATE OF MAINE LAWRENCE R. BASTIAN No. 4321 LICENSED PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/21/2019

NO.	DATE	REVISIONS	APP'D BY
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
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TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
SOIL SURVEY MAP

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 SWP POST.DWG	

SHEET SS-1.1

GRID NORTH MAINE WEST 2000

LEGEND

DIXFIELD	SOIL NAME
	EXISTING STREAM
	MEDIUM INTENSITY SOIL BOUNDARY
	HIGH INTENSITY SOIL BOUNDARY
	EXISTING PROPERTY LINE
	PROPOSED PROPERTY LINE
124	MINOR CONTOURS
124	MAJOR CONTOURS
124	PROPOSED CONTOURS
	WETLAND BOUNDARY
TP-A	TEST PIT
P 1	SOIL PROBE

NOTES:

1. THIS SOILS MAP IS PART OF A CLASS A HIGH INTENSITY SOIL SURVEY ON THE HIGHLANDS SUBDIVISION CALLED "SOIL NARRATIVE REPORT", PREPARED BY MARK HAMPTON ASSOCIATES, INC., DATED JULY 7, 2018. THE FULL REPORT CAN BE FOUND IN SECTION 11 OF THE SITE LOCATION OF DEVELOPMENT APPLICATION FOR THE HIGHLANDS SUBDIVISION.

2. THE SOIL MAP WAS DONE IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.

3. OFFSITE SOILS WERE OBTAINED FROM THE CUMBERLAND COUNTY SOIL SURVEY AS SHOWN ON THE USDA WEB SOIL SURVEY. THE FULL OUTPUT CAN BE FOUND IN SECTION 12. THE SOIL SURVEY IS OF MEDIUM INTENSITY. THE SOILS ARE SUMMARIZED BELOW:

MAP UNIT SYMBOL	MAP UNIT NAME	HSG RATING
HrB	LYMAN-TUNBRIDGE COMPLEX	D
HsC	LYMAN - ABAM COMPLEX	D
HsE	LYMAN - ABRAM COMPLEX	D
PbB	PAXTON FINE SANDY LOAM	C
PbC	PAXTON FINE SANDY LOAM	C
RbA	RIDGEBURY FINE SANDY LOAM	C/D

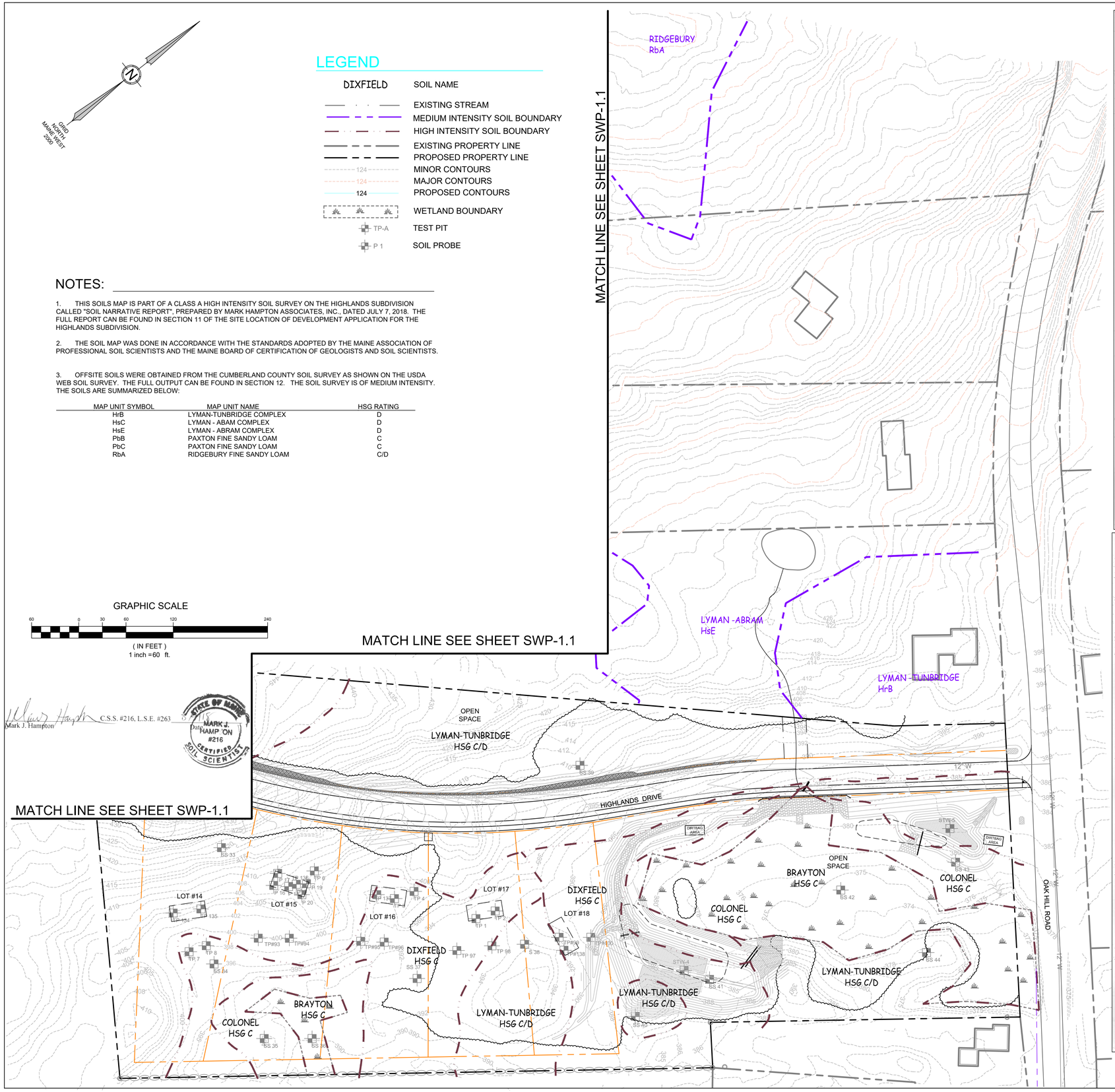
GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch = 60 ft.

Mark J. Hampton C.S.S. #216, L.S.E. #263 Date

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST



PAGE 1 OF 2 FORM F Rev. 11/89

SOIL PROFILE / CLASSIFICATION INFORMATION — DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision | Applicant Name: Leavitt-Thompson LLC | Project Location (municipality): Standish

Exploration Symbol # STW-1 ☒ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal 22"

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–18	Sandy Loam	Friable	Brown	None Noted
18–22	Ledge			
			No Water Found	

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: 2 Percent; Limiting Factor: 22 Depth; ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # STW-2 ☒ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal 75"

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–18	Sandy Loam	Friable	Brown	
18–75	Sandy Loam	Firm	Olive	Common and Distinct
			No Water Found	

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: 2 Percent; Limiting Factor: 20 Depth; ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # STW-3 ☒ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal 59"

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–18	Sandy Loam	Friable	Brown	
18–36	Sandy Loam	Firm	Olive	Common and Distinct
			No Water Found	
36–59	Ledge			

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: 8 Percent; Limiting Factor: 20 Depth; ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # STW-4 ☒ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal 100"

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–12	Fill Material			
12–16	Coarse Sandy Sand	Friable	Dark Brown	
16–100	Loamy Sand	Friable	Red Brown	
100	Loamy Sand	Firm	Gray	Groundwater

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: 3 Percent; Limiting Factor: 57 Depth; ☒ Groundwater ☒ Restrictive Layer ☒ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton | Date: 3/11/2019
Name Printed/typed: Mark J Hampton | Cert/Lic/Reg. #: 263/216
Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer | affix professional seal

PAGE 2 OF 2 FORM F Rev. 11/89

SOIL PROFILE / CLASSIFICATION INFORMATION — DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Highland Subdivision | Applicant Name: Leavitt-Thompson LLC | Project Location (municipality): Standish

Exploration Symbol # STW-5 ☒ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal 66"

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0–6	Sandy Loam	Friable	Dark Brown	
6–18			Gray	
18–36	Sandy Loam	Friable	Red Brown	
36–66	Sandy Loam	Firm	Gray	Common and Distinct
				Groundwater
66	Ledge			

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: 4 Percent; Limiting Factor: 28 Depth; ☒ Groundwater ☒ Restrictive Layer ☒ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # ___ ☐ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal ___"

Texture | Consistency | Color | Mottling

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: Percent; Limiting Factor: Depth; ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # ___ ☐ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal ___"

Texture | Consistency | Color | Mottling

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: Percent; Limiting Factor: Depth; ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

Exploration Symbol # ___ ☐ Test Pit ☐ Boring — Organic horizon thickness ___" Ground surface elev. ___ — Depth of exploration or to refusal ___"

Texture | Consistency | Color | Mottling

Soil Details by S.E. / S.S.: Soil Classification — Profile: Condition: Soil series/phase name: Slope: Percent; Limiting Factor: Depth; ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock; ☐ Hydric ☐ Non-hydric; Hydrologic Soil Group:

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark J. Hampton | Date: 3/11/2019
Name Printed/typed: Mark J Hampton | Cert/Lic/Reg. #: 263/216
Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer | affix professional seal

STATE OF MAINE LAWRENCE R. BASTIAN No. 4321 LICENSED PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/21/2019

NO.	DATE	REVISIONS	APP'D BY
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

PERMITTING

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

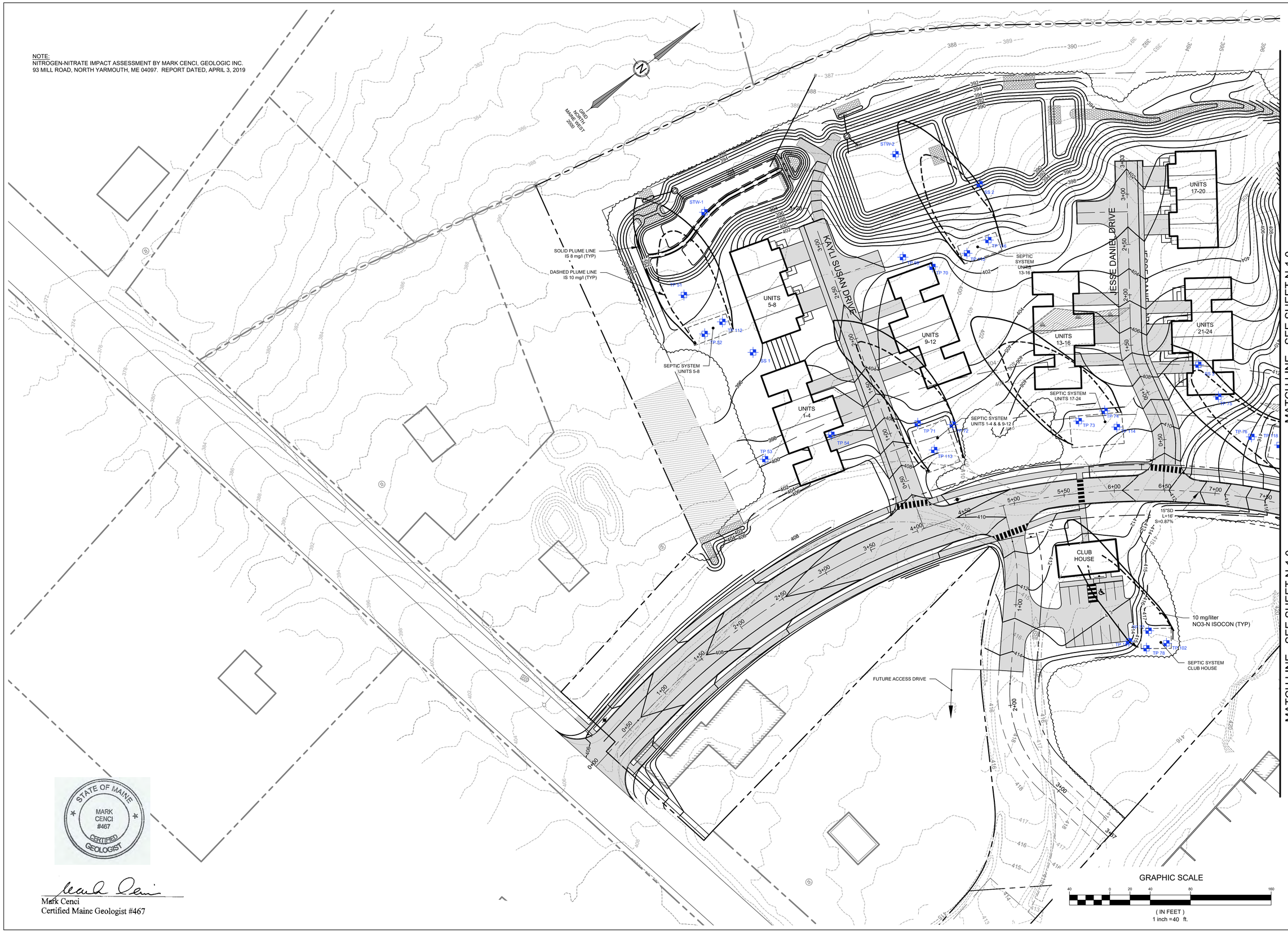
SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
SOIL SURVEY MAP

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 SWP POST.DWG	

SHEET SS-1.2

NOTE:
NITROGEN-NITRATE IMPACT ASSESSMENT BY MARK CENCI, GEOLOGIC INC.
93 MILL ROAD, NORTH YARMOUTH, ME 04097. REPORT DATED, APRIL 3, 2019



STATE OF MAINE
MARK CENCI
#467
CERTIFIED GEOLOGIST

Mark Cenci
Certified Maine Geologist #467

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LAWRENCE R. BASTIAN
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SUITE 201
PORTLAND, ME 04102

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
NITRATE ANALYSIS PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	N-1.0

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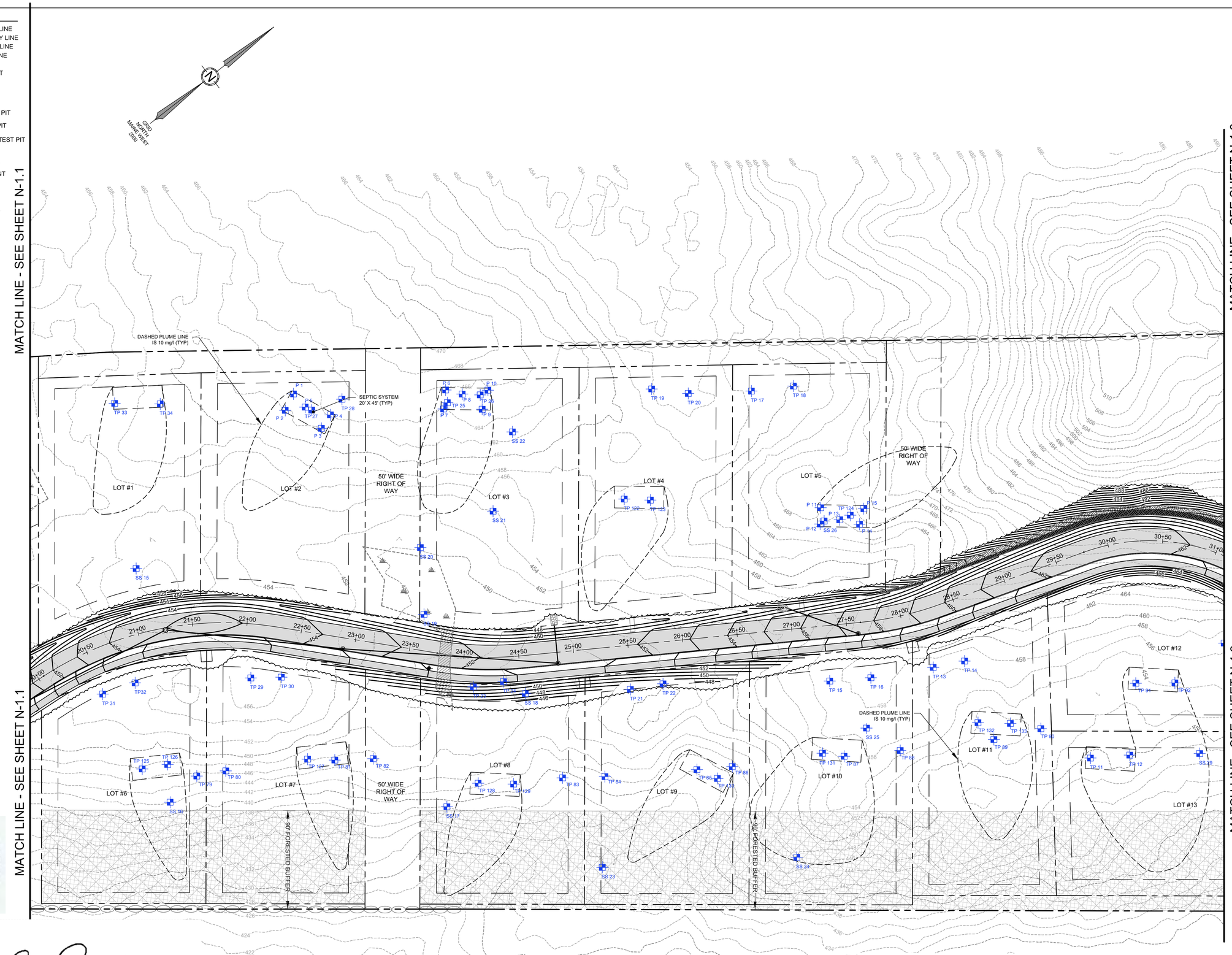
HIGHLANDS SUBDIVISION
STANDISH, MAINE
NITRATE ANALYSIS PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE:	1804 S.DWG
SHEET	N-1.1

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- STONE WALL
- STREAM
- SOIL BOUNDARY
- TP-A SEPTIC SYSTEM TEST PIT
- SS-A SOILS SURVEY TEST PIT
- STW-A STORMWATER POND TEST PIT
- P 1 SOIL PROBE
- EXISTING MONUMENT
- PROPOSED MONUMENT
- EXISTING IRON PIPE
- EXISTING REBAR
- EXISTING DRILL HOLE
- PROPOSED IRON PIPE
- WETLAND AREA



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NOTE:
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93 MILL ROAD, NORTH YARMOUTH, ME 04097. REPORT DATED, APRIL 3, 2019

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch =40 ft.

STATE OF MAINE
LAWRENCE R. BASTIAN
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PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/21/2019

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STANDISH, MAINE
NITRATE ANALYSIS PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
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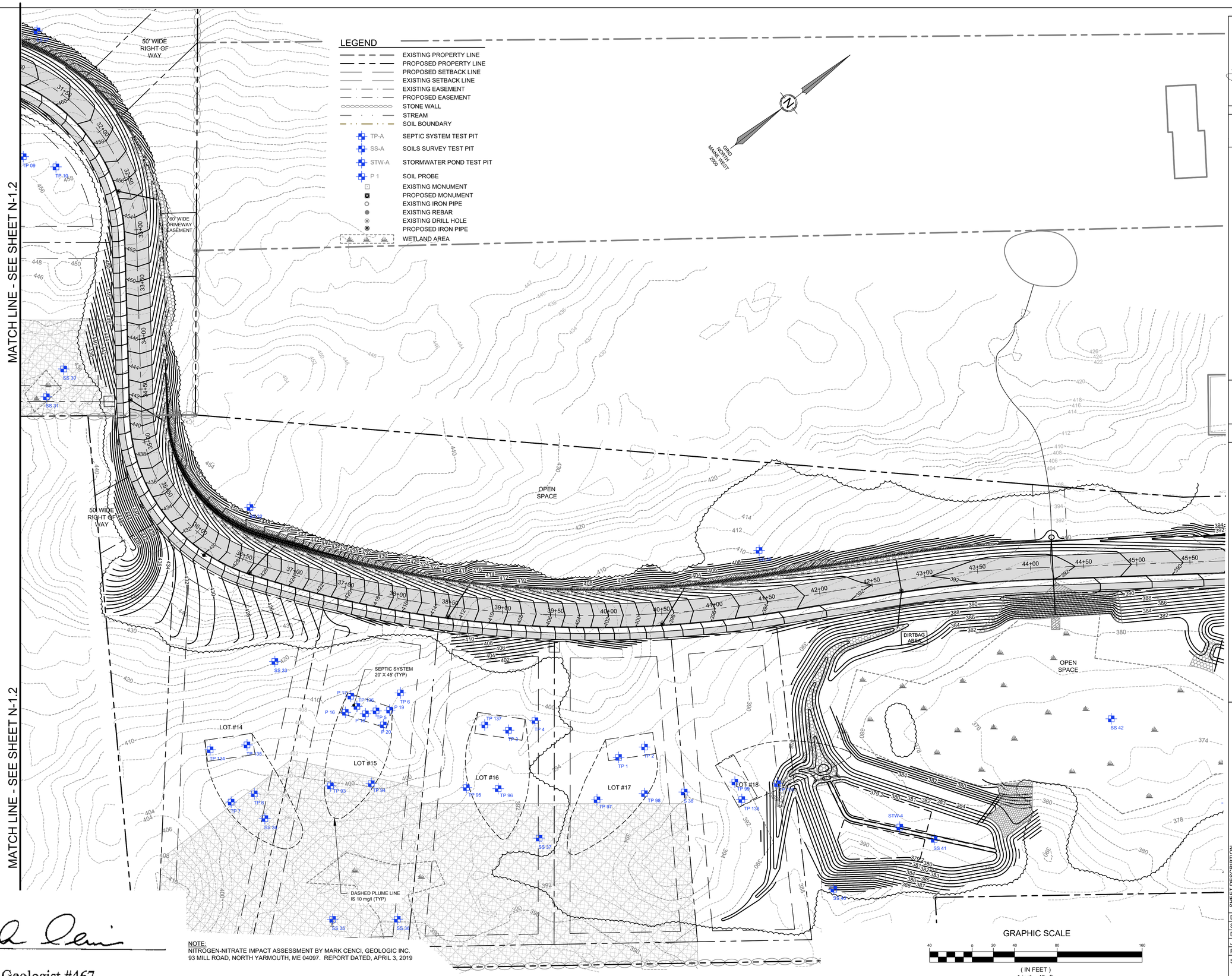
SHEET	N-1.2



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SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
NITRATE ANALYSIS PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE:	1804 S.DWG
SHEET	N-1.3

ATTACHMENT 2

BLASTING APPLICATION
FEBRUARY 20, 2020

TOWN OF STANDISH

PLANNING DEPARTMENT

175 Northeast Road
Standish, Maine 04084
Phone : (207) 642-3461 Fax (207) 642-5181

This Standish **Blasting Application** form must be completed and accompany the application material at time of submission to the Standish Planning Board. Incomplete/inaccurate applications will not be accepted.

§ 181-16.1 Blasting. [Added 8-12-2008 by Order No. 57-08]

Purpose:

(1) The purpose of this section is to minimize the effects of airblast overpressure, ground vibration, dust and noise associated with blasting which may be detrimental to individuals and the community in the enjoyment of life, property and the conduct of business through the establishment of standards and notice requirements of blasting operations.

(2) It is also the intent of this section to prevent permanent damage to the geologic, hydrogeologic and wildlife resources and ecological balance in the region and to have a process which can be effectively and efficiently administered without causing undue financial and administrative hardship to blasting operators.

A) Name of Applicant: Leavitt-Tompson, LLC

Address: P.O. Box 703

Town /State /zip: Standish, ME 04084

Phone: 207-642-3675 Fax: 207-642-2426 E-Mail: brian@leavittearthworks.com

Address to which all correspondence regarding this application should be sent if other than above:

Name Terradyn Consultants, LLC, Jeff Amos, PE

Address 41 Campus Drive, Suite 101

Town /State /zip: New Gloucester, ME 04260

Phone: 207-926-5111 Fax: _____ E-Mail: jeff@terradynconsultants.com

B) Name of property owner: Leavitt Development LLC- Map 10, Lot 11; Tompson Development Inc- Map 10, Lot 19C

Name _____

Address Same as above

Town /State /zip: _____

Phone: above Fax: _____ E-Mail: _____

[X] Ownership [ ] option [ ] purchase and sales contract [ ] other _____

C) Locations of the proposed blasting activity. 233 Ossippee Trail West, Standish
80 Oak Hill Road, Standish

Location of Property (Street Location)

(From County Registry of Deeds): Book 31661 / 32638 Page 345 / 233 (from Tax Maps): Map 10 / 10 Lot(s) 11 / 19C

D) Name of General contractor: Leavitt Earthworks, Inc.

Address: P.O. Box 703

Town /State /zip: Standish, ME 04084

Phone: 207-642-3675 Fax: 207-642-2426 E-Mail: _____(E) brian@leavittearthworks.com

The total number of cubic yards of material to be removed by blasting.
Approximately 50,000 cubic yards

(F) An estimate of the number of blasts required to remove the specified amount of material.
All blasting will be done in conformance with the attached "Section 20 - Blasting" as submitted to Maine DEP. The specific The number of blasts required to remove the anticipated quantity of material will be determined by the licensed blasting contractor based on site specific conditions.

(G) A description of the project for which the blasting is being undertaken. Attach site plan if applicable.
Construct +/-4,750' Town road with underground utilities to serve 18-lot residential subdivision and 84-lot condominium development. Blasting is anticipated to meet required roadway elevations in a +/-1,500' long section and for utility trenching and stormwater facilities.

(H) Adjacent land uses
A church, commercial and residential properties on Ossippee Trail;
Residential properties on Oak Hill Road

(I) The location of adjacent structures and distance to those structures.
Four (4) existing structures on Oak Hill Road are located within 500' of the anticipated area of blasting - See Attached plan titled "Highlands - 500' Blasting Radius".

(J) The projected dates work is to be undertaken. Construction of roadway, water main and associated blasting within 500' of Oak Hill Road is anticipated to begin during summer 2020 and continue intermittently through winter 2021-22 to a distance +/-1,500' southwest of Oak Hill Road. Additional blasting for utility trenches and stormwater facilities will follow, subject to lot/unit sales & market conditions.

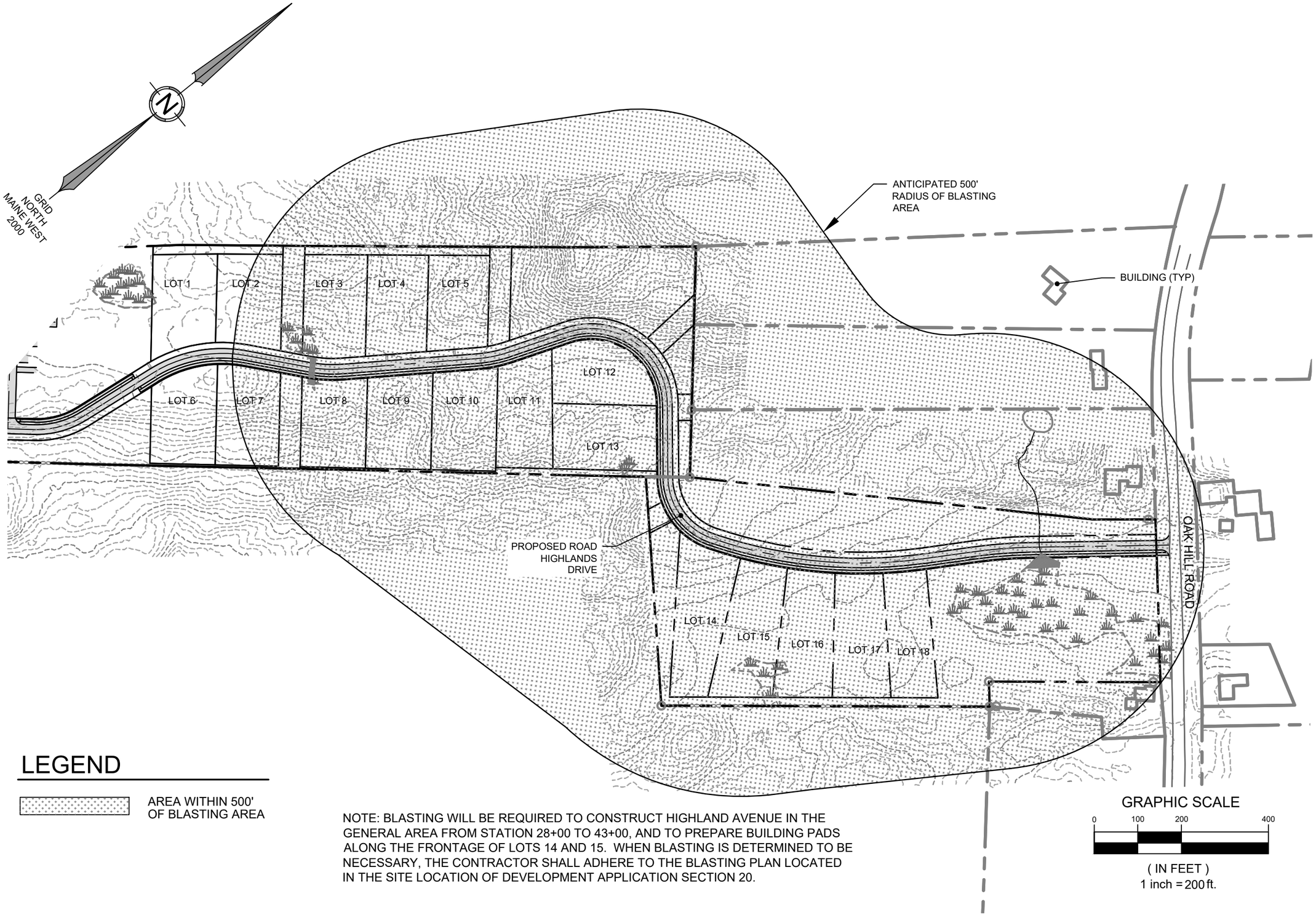
I certify that the information submitted for this application is true and correct. All proposed uses will be in conformance with the application and the Standish Zoning Ordinance.

_____ Signature _____ Date

For: Leavitt-Tompson, LLC
Company

Approved by _____ Standish Code Enforcement Officer _____ Date

_____ Standish Town Planner _____ Date



LEGEND

AREA WITHIN 500' OF BLASTING AREA

NOTE: BLASTING WILL BE REQUIRED TO CONSTRUCT HIGHLAND AVENUE IN THE GENERAL AREA FROM STATION 28+00 TO 43+00, AND TO PREPARE BUILDING PADS ALONG THE FRONTAGE OF LOTS 14 AND 15. WHEN BLASTING IS DETERMINED TO BE NECESSARY, THE CONTRACTOR SHALL ADHERE TO THE BLASTING PLAN LOCATED IN THE SITE LOCATION OF DEVELOPMENT APPLICATION SECTION 20.

41 Campus Drive, Suite 101
New Gloucester, ME 04260
565 Congress Street, Suite 310
Portland, ME 04101
(207) 926-5111
www.terradynconsultants.com
TERRADYN CONSULTANTS, LLC
Civil Engineering - Land Planning - Stormwater Design - Environmental Permitting

SHEET DESCRIPTION
EXHIBIT 20
HIGHLANDS - 500' BLASTING RADIUS

PREPARED FOR
LEAVITT-TOMPSON, LLC.
P.O. BOX 703
STANDISH, MAINE 04084

JOB NO.	1804-G
DATE	11/29/2019
SCALE	1"=200'
SHEET	1
OF	1

Section 20 - Blasting

Introduction

There are several known areas of shallow Bedrock located throughout the site. Blasting will be required to construct Highland Avenue in the general area from station 28+00 to 43+00, and to prepare building pads along the frontage of lots 14 and 15. When blasting is determined to be necessary, the contractor shall adhere to the following plan.

A professional blasting contractor (licensed in the State of Maine) will be employed to conduct any blasting work in accordance with applicable State and local laws. At a minimum, the blasting contractor shall conduct his work in accordance with the following criteria:

1. "Manual of Accident Prevention in Construction" issued by Associated General Contractors of America, Inc.
2. "Construction Safety Rules and Regulations" as adopted by the State Board of Construction Safety, Augusta, Maine.
3. Section 107.12 of the "Standard Specifications" Maine Department of Transportation.
4. Title 38 MRSA § 490-Z (14).

Requirements

A. The owner or operator shall use sufficient stemming, matting or natural protective cover to prevent flyrock from leaving property owned or under control of the owner or operator or from entering protected natural resources or natural buffer strips. Crushed rock or other suitable material must be used for stemming when available; native gravel, drill cuttings or other material may be used for stemming only if no other suitable material is available.

B. The maximum allowable airblast at any inhabited building not owned or controlled by the developer may not exceed 129 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over the range of 5 to 200 hertz.

C. The maximum allowable airblast at an uninhabited building not owned or controlled by the developer may not exceed 140 decibels peak when measured by an instrument having a flat response (+ or - 3 decibels) over the range of 5 to 200 hertz.

D. Monitoring of airblast levels is required in all cases for which a preblast survey is required by paragraph F. The department may waive the monitoring requirement if the owner or operator secures the permission of affected property owners to increase allowable airblast levels on their property and the department determines that no protected natural resource will be adversely affected by the increased airblast levels.

E. If a blast is to be initiated by detonating cord, the detonating cord must be covered by crushed rock or other suitable cover to reduce noise and concussion effects.

F. A preblast survey is required for all production blasting and must extend a minimum radius of 1/2 mile from the blast site. The preblast survey must document any preexisting damage to structures and buildings and any other physical features within the survey radius that could

reasonably be affected by blasting. Assessment of features such as pipes, cables, transmission lines and wells and other water supply systems must be limited to surface conditions and other readily available data, such as well yield and water quality. The preblast survey must be conducted prior to the initiation of blasting at the operation. The owner or operator shall retain a copy of all preblast surveys for at least one year from the date of the last blast on the development site.

(1) The owner or operator is not required to conduct a preblast survey if the department determines that no protected natural resource within the limits of the otherwise required survey is likely to be affected by blasting and production blasting will not occur within 2000 feet of any building not owned or under the control of the developer.

(2) The owner or operator is not required to conduct a preblast survey on properties for which the owner or operator documents the rejection of an offer by registered letter, return receipt requested, to conduct a preblast survey. Any person owning a building within a preblast survey radius may voluntarily waive the right to a survey.

(3) The owner or operator is not required to conduct a preblast survey if the owner or operator agrees to design all blasts so that the weight of explosives per 8 millisecond or greater delay does not exceed that determined by the equation $W=(D/Ds)^2$, where W is the maximum allowable weight of explosives per delay of 8 milliseconds or greater, D is the shortest distance between any area to be blasted and any inhabitable structure not owned or controlled by the developer and Ds equals 70 ft./(lb.) $^{1/2}$.

G. Blasting may not occur in the period between sundown and sunrise the following day or in the period between 7:00 p.m. and 7:00 a.m., whichever is greater. Routine production blasting is not allowed in the daytime on Sunday. Detonation of misfires may occur outside of these times but must be reported to the department within 5 business days of the misfire detonation. Blasting may not occur more frequently than 4 times per day. Underground production blasting may be exempted from these requirements provided that a waiver is granted by the department.

H. Sound from blasting may not exceed the following limits at any protected location:

Number of Blasts Per Day	Sound Level Limit
1	129 decibels
2	126 decibels
3	124 decibels
4	123 decibels

I. The maximum peak particle velocity at inhabitable structures not owned or controlled by the developer may not exceed the levels established in Table 1 in paragraph K and the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1. The department may grant a variance to allow ground vibration levels greater than 2 inches per second on undeveloped property not owned or controlled by the

applicant if the department determines that no protected natural resource, unusual natural area or historic site will be adversely affected by the increased ground vibration levels. If inhabitable structures are constructed on the property after approval of the development and prior to completion of blasting, the developer immediately must notify the department and modify blasting procedures to remain in compliance with the standards of this subsection.

J. Based upon an approved engineering study, the department may grant a variance to allow higher vibration levels for certain buildings and infrastructures. In reviewing a variance application, the department shall take into account that the standards in this paragraph and paragraph I are designed to protect conventional low-rise structures such as churches, homes and schools. In cases of practical difficulty, the department may grant a variance from paragraph I if it can be demonstrated that no adverse impacts on existing infrastructures or protected natural resources, unusual natural areas or historic sites will result.

K. Table 1 of this paragraph or the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1 must be used to evaluate ground vibration effects for those blasts for which a preblast survey is required.

(1) Either Table 1 of this paragraph or the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1 may be used to evaluate ground vibration effects when blasting is to be monitored by seismic instrumentation.

(2) Blasting measured in accordance with Table 1 of this paragraph must be conducted so that the peak particle velocity of any one of the 3 mutually perpendicular components of motion does not exceed the ground vibration limits at the distances specified in Table 1 of this paragraph.

(3) Seismic instruments that monitor blasting in accordance with Table 1 of this paragraph must have the instrument's transducer firmly coupled to the ground.

(4) An owner or operator using Table 1 of this paragraph must use the scaled-distance equation, $W=(D/Ds)^2$, to determine the allowable charge weight of explosives to be detonated in any 8 millisecond or greater delay period without seismic monitoring, where W is equal to the maximum weight of explosives, in pounds, and D and Ds are defined as in Table 1 of this paragraph. The department may authorize use of a modified scaled-distance factor for production blasting if the owner or operator can demonstrate to a 95% confidence level, based upon records of seismographic monitoring at the specific site of the mining activity covered by the permit, that use of the modified scaled-distance factor will not cause the ground vibration to exceed the maximum allowable peak particle velocities of Table 1 of this paragraph.

(5) Blasting monitored in accordance with the graph published by the United States Department of the Interior in "Bureau of Mines Report of Investigations 8507," Appendix B, Figure B-1 must be conducted so that the continuously variable particle velocity criteria are not exceeded.

The owner or operator may apply for a variance of the ground vibration monitoring requirement prior to conducting blasting at the development site if the owner or operator agrees to design all blasts so that the weight of explosives per 8 millisecond or greater delay does not exceed that

determined by the equation W=(D/Ds)2, where W is the maximum allowable weight of explosives per delay of 8 milliseconds or greater, D is the shortest distance between any area to be blasted and any inhabitable structure not owned or controlled by the developer and Ds equals 70 ft./lb.$^{1/2}$. As a condition of the variance, the department may require submission of records certified as accurate by the blaster and may require the owner or operator to document compliance with the conditions of this paragraph.

TABLE 1

Distance versus Peak Particle Velocity Method

Distance (D) from the blast area (feet)	Maximum allowable peak particle velocity (Vmax) for ground vibration (in./sec.)	Scaled-distance factor (Ds) to be applied without seismic monitoring
0 to 300	1.25	50
301-5000	1.00	55
Greater than 5000	0.75	65

L. A record of each blast, including seismographic data, must be kept for at least one year from the date of the last blast, must be available for inspection at the development or at the offices of the owner or operator if the development has been closed, completed or abandoned before the one-year limit has passed and must contain at a minimum the following data:

(1) Name of blasting company or blasting contractor;

(2) Location, date and time of blast;

(3) Name, signature and social security number of blaster;

(4) Type of material blasted;

(5) Number and spacing of holes and depth of burden or stemming;

(6) Diameter and depth of holes;

(7) Type of explosives used;

(8) Total amount of explosives used;

(9) Maximum amount of explosives used per delay period of 8 milliseconds or greater;

(10) Maximum number of holes per delay period of 8 milliseconds or greater;

(11) Method of firing and type of circuit;

(12) Direction and distance in feet to the nearest dwelling, public building, school, church or commercial or institutional building neither owned nor controlled by the developer;

(13) Weather conditions, including factors such as wind direction and cloud cover;

(14) Height or length of stemming;

(15) Amount of mats or other protection used;

(16) Type of detonators used and delay periods used;

(17) The exact location of each seismograph and the distance of each seismograph from the blast;

(18) Seismographic readings;

(19) Name and signature of the person operating each seismograph; and

(20) Names of the person and the firm analyzing the seismographic data.

M. All field seismographs must record the full analog wave form of each of the 3 mutually perpendicular components of motion in terms of particle velocity. All seismographs must be capable of sensor check and must be calibrated according to the manufacturer's recommendations.

N. If any blasting activity exceeds the standards in this subsection, the department must be notified within 48 hours of the blast event. Notification must include the name of the blasting operator, the location, date and time of the blasting event and a description of the specific occurrence that is in noncompliance with this subsection. Use of explosives at the quarry may be suspended by the department until the cause of the noncompliance is identified and appropriate steps are implemented to reduce, prevent or eliminate reoccurrence.

O. Prior to blasting, the owner or operator shall develop and implement a plan that provides an opportunity for prior notification of a planned blast for all persons located within 1,000 feet of the blast site. Notification may be by telephone, in writing, by public notice in a newspaper of general circulation in the area affected or by other means identified in the plan. The plan must be in writing and available for inspection by the department.

ATTACHMENT 3

PEER REVIEW COMMENT RESPONSE
MARCH 26, 2020

Pineland
Cumberland Hall
41 Campus Drive, Suite 101
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 310
Portland, ME 04101

March 26, 2020

Mr. Zach Mosher Planner
Town of Standish
175 Northeast Road
Standish, Maine 04085

Subject: Highlands Subdivision Final Subdivision & Site Plan
Response to Peer Review Comments

Dear Zach:

Our office received peer review comments for the above referenced project from Peter Tubbs, P.E. dated January 29, 2020. We also received verbal comments in a meeting with Roger Mosley, James Paul, Peter Tubbs and you on March 2, 2020. We have reviewed the comments and prepared the responses presented below. For clarity, each comment is repeated in italics, followed by our response.

<u>Sheet C-1.0 – Subdivision and Site Plan for Village Housing</u>

Comment 1: The proposed land use of the undefined open spaces should be shown, i.e. the Clubhouse lot, the area occupied by the existing farmhouse, and other undefined spaces.

Response: These areas are now noted on the plan as “common space”.

<u>Sheet C-1.1 – Subdivision and Site Plan for Village Housing</u>

Comment 2: The proposed land use of the undefined open space northerly of Lot 5 should be shown.

Response: This area is now noted as “common space”.

Sheet C-1.2 – Subdivision and Site Plan for Village Housing

Comment 3: The proposed land use of the undefined open spaces should be shown, i.e. the lot northeasterly of Lot 18 should be labeled as Wetland and Stormwater Area.

Response: This area is now labeled "common space – wetland & stormwater area".

Sheet C-2.0 – Highlands Drive Layout Plan

Comment 4: The radii of the curb line at the intersection with Route 25 is labeled as 20' but scales as 30', this discrepancy should be corrected.

Response: Radius is redrawn at 30' with the roadway revised to 26' wide.

Comment 5: The 20' radii at the intersection of the residential side streets with Highlands Drive are likely adequate for service vehicles if the total width of the 22' traveled way is utilized in the turn.

Response: No Response Necessary.

Comment 6: The dimensions and notes of the residential streets differ from the typical sections shown on sheet C-6.0 as the curbing is omitted.

Response: Typical section, Sheet C-6.0 revised to match 22' traveled way with 5' shoulder as noted on plan.

Sheet C-2.1 – Highlands Drive Layout Plan

Comment 7: Acknowledge 22' traveled way with 5' paved shoulder / walkway for a total paved width of 27' for the side streets

Response: No Response Necessary

Sheet C-2.3 – Highlands Drive Layout Plan

Comment 8: We question if the 20' radii at the Oak Hill intersection is adequate for service vehicles, as a minimum we suggest the radii be increased to 30'.

Response: Revised to 30' radius

<u>Sheets C-3.0 thru C-3.8 – Highlands Drive Grading Plans, General</u>

Comment 9: The lack of shoulder and immediate inslope to the ditch from Sta. 19+60 to Oak Hill Road is a matter of concern from a safety standpoint. We suggest a minimum of a 3' shoulder or curbing needs to be added to the section.

Response: Plan is revised to a 3' gravel shoulder, while keeping the roadside ditch to intercept runoff from relatively large drainage areas uphill of the roadway. This design exceeds the Local Street standard in Ch. 252 which allows a 1.5' wide gravel shoulder with open ditch drainage.

Comment 10: Some of the storm drain is difficult to find without shuffling back and forth between these sheets and the profile sheets. A tabulation of catch basins, storm manholes, and connecting piping; including, storm and underdrain pipe sizes, invert elevations, slopes, and rim elevations would enhance both review and construction so the contractor would have the pertinent information on a single sheet/ location.

Response: Storm drain pipe and structure data are provided on both the plan and profile sheets. We have checked plans vs. profiles for consistency. In addition we are developing a separate tabulation of structures and pipes (Sheet C-7.0) that we will provide under separate cover after we cross-check it with the plans.

Comment 11: Considering the large extent of riprap we wonder if one of the geo-textiles might be an adequate substitute in some locations.

Response: The applicant prefers to use riprap for these locations since they will be producing it from blasting activity on the property.

Comment 12: We have NOT checked these plans for utility conflicts with the stormdrain.

Response: Comment acknowledged. Our office checked the storm drain / water main / water service crossings for adequate clearance.

Sheet C-3.0 – Highlands Drive Grading Plan

Comment 13: We note the grading over the 15" storm drain (sidewalk) westerly of the entrance has been added, however there appears to be a lack of cover as approximately 10' of the top of the pipe will be exposed.

Response: Grading and pipe invert elevations are revised to provide sufficient cover (> 2' just upstream from the outlet).

Comment 14: We note the Dwg. notes concerning the underdrain.

Response: Type B and Type C underdrain locations are now shown on the plans and a typical detail is included.

Comment 15: The pipe under the Club House drive needs to be extended to accommodate the slope to the invert.

Response: Lengthened pipe and added contours

Sheet C-3.1 – Highlands Drive Grading Plan

Comment 16: Refer to General notes above concerning catch basins and piping.

Response: See response to Comment 10.

Sheet C-3.3 – Highlands Drive Grading Plan

Comment 17: Refer to General notes above concerning adequate cover and Catch Basin information.

Response: See response to Comment 10.

Comment 18: There are redundant notes concerning the cross pipes Stas. 36+75, 38+60, 42+75, 44+25, and 46+75.

Response: Removed extra notes

Sheet C-3.5 – Highlands Drive Grading Plan

Comment 19: Refer to General notes above concerning catch basins and piping.

Response: See response to Comment 10.

Comment 20: Approximately 10' of the 18" pipe outlet from CB –G1 will be exposed with the proposed grading.

Response: Revised pipe inverts and grading to provide sufficient cover

Sheet C-3.6 – Highlands Drive Grading Plan

Comment 21: Refer to General notes above concerning adequate cover and Catch Basin information.

Response: See response to Comment 10.

Comment 22: Approximately 100' of the 24" of the outlet end of the 24" pipe from CB-G-3 will be exposed or lack adequate cover with the proposed grading.

Response: The area behind units 29-32 is regraded to provide sufficient cover (Sheet C-3.6).

Sheet C-3.7 – Highlands Drive Grading Plan

Comment 23: Refer to General notes above concerning adequate cover and Catch Basin information.

Response: See response to Comment 10.

Sheet C-3.8 – Highlands Drive Grading Plan

Comment 24: Refer to General notes above concerning adequate cover and Catch Basin information.

Response: See response to Comment 10.

Sheet C-5.0 through C 5.4 – Highlands Drive and Village Housing Roadway Profiles

Comment 25: We note that some of the catch basins are larger than the standard 4' diameter to accommodate the number of drain pipes entering and outletting.

Response: Comment acknowledged

Comment 26: The elevations on the bottom of each sheet should be labeled as existing and centerline profile.

Response: Done

Sheet C- 6.0 Details.

Comment 27: The pavement width in the Typical Road Section - Private Road does not reflect the sum of the components. Where does this section apply??

Response: Revised dimensions to add up to 27' total pavement width – applies to five private side roads into Village Housing.

Comment 28: Where does the Typical Road Section – Town Residential Street with Gravel Shoulders apply?

Response: We revised the typical road sections to note the specific road stations where they apply.

Comment 29: Typical Road Section – Town Avenue Street reflects a curb, esplanade, and sidewalk on the right side while the plan does not. The section should be revised to reflect the current proposed section.

Response: The Town Avenue Street section has been replaced by a Town Residential Street section with 2' shoulders total pavement width of 26'. Roger Mosley requested a narrower street section due to Town maintenance considerations.

Comment 30: An additional typical road section is needed for the Town Residential Street beyond Sta. 19+60 where the sidewalk is on the right and the ditch

and slope is on the left. Refer to first bullet comment under Sheets C-3.0 thru C-3.8

Response: This section has been added.

Comment 31: The note for the fill below subgrade should be expanded to include grubbing for the entire width of the right-of-way and borrow refill to subgrade.

Response: The typical cross sections are revised to require grubbing in fill sections where the depth of embankment measured vertically below subgrade is less than 5' per MDOT Specifications Section 203.09.

Comment 32: The Typical Road Section at Wetland Crossings should reflect the curb and sidewalk on the right side instead of the left. The left side should reflect the inslope and ditch.

Response: The typical road section at wetland crossing has been revised.

Sheet C- 6.2 Gravel Wetland Details and Notes

Comment 33: The stormwater treatment cells and filter basin are way to proximate to the residential building, leaving little or no space for maintenance at the perimeter of the buildings.

Response: This sheet and the Grading Plans are revised to provide a 5' wide gently sloped area around all building for maintenance access.

Comment 34: The 391 contours should connect on either side of the primary spillways on the interior berms.

Response: Plan is revised.

Comment 35: Ditto the 393 contours on either side of the Cell 2 spillway.

Response: Plan is revised.

Comment 36: We note there is only 0.35' of freeboard between the primary spillway and the top of the interior berm and question if this is adequate to pass the expected flows.

Response: The plan is revised to extend turf reinforcement mat the full length of the berm and up to elevation 392.0, for 1.1' freeboard.

Comment 37: The primary spillway should be shown in the Cross Section View.

Response: The spillways are shown in the cross section view. The emergency spillway is located at Cell #1 as shown in the plan view to allow construction on native soil, not fill.

Comment 38: There is a discrepancy in the elevations of the emergency spillway shown in the plan view from that shown in the Cross Section View.

Response: Discrepancy corrected

Comment 39: There is a discrepancy between the sectional view of Outlet Control Structure and the detail of the Weir Wall as the Outlet Control Structure does not show a base slab on a gravel base.

Response: Discrepancy corrected

Comment 40: There is also a discrepancy in the elevation of the 15" outlet pipe specified in the plan view and the Outlet Control Structure (OCS). The outlet piping of all (OCS) should be fitted with a grate to prohibit entry of small animals, including pets from entering the structure.

Response: Elevation discrepancy corrected. Detail now notes animal guard.

Comment 41: The sectional view of the (OCS) shows an 8.0' diameter structure, we question if a smaller diameter structure might be adequate.

Response: Revised to 6' diameter

Comment 42: We question where the 6" underdrain outlet shown in Outlet Control Structure detail at elevation 386.33 will outlet.

Response: The underdrain outlet enters the outlet control structure at elevation 387.33 on the upstream side of the weir wall to maintain the required saturated depth in the gravel wetland per the Maine DEP BMP Manual.

Comment 43: The arrow/leader for the note referring to the distribution line in Cell 1 does not connect to the pipe it's referring to. Ditto the arrow/leaders referring to the spillway crests in the Spillway Cross Sections.

Response: Arrow/leaders now revised

Comment 44: The length of the distribution pipe in the same note is shown as 26'. We believe it should be 56' as scaled.

Response: Length corrected to 56'

Comment 45: There is a discrepancy in the compaction requirement between the notes for the pond construction and the notes for the embankment construction.

Response: All notes now state 90% compaction per the Maine DEP BMP Manual.

Comment 46: A manufacturer should be specified for the P-300 LW Turf Reinforcement Mat.

Response: Manufacturer is North American Green – now noted on plans.

<u>Sheet C- 6.3 Filter Basin # 1 Details and Notes</u>

Comment 47: We suggest the 4" underdrain outlet pipe terminate at the toe of the embankment with a shallow swale graded out to the elevation 387.0. The 1" diameter orifice (that will likely be plugged within a year) should be made in a cap installed on the outlet pipe inside the manhole.

Response: The underdrain outlet pipe is revised to discharge to a shallow swale as suggested. We do not anticipate that the orifice drilled in the underdrain

outlet cap will plug since it will discharge clear filtered water. The stormwater maintenance plan requires that the outlet be inspected and kept clear of vegetation etc. that could cause a blockage.

Comment 48: The 30 mil HDPE liner is difficult to work with considering the bends necessary to form the proposed section. A flexible liner like hypalon would be easier to work.

Response: In our experience, the 30 mil HDPE material as noted on the detail is commonly used for lining stormwater ponds. The material generally comes in 20' +/- widths and can be cut and seam-sealed to conform to the pond bottom shape with reasonable care by the contractor. Hypalon is more commonly used for landfill liners and other more stringent applications.

Comment 49: We suggest the 2" pressure treated plank would also be adequate for the inlet weir in lieu of the precast concrete, and might be less susceptible to frost action.

Response: Plan is revised to show 2" PT boards

Comment 50: We recognize the design of the stormwater basins are driven by DEP approved design; however some of the details are fundamentally flawed, i.e. the 6" of topsoil on top of the HDPE liner introduces a slip plane for a saturated top soil to slid into the bottom of the basin, the liner also inhibits penetration of the slope vegetation into the embankment sides. We suggest limiting the liner to the filter material area.

Response: The top of the liner is set at 2' above the pond bottom as specifically required by the Maine DEP geologist review. We do not anticipate a significant risk of slip plane failure with 6 inches of loam on a shallow 3:1 slope if vegetation is fully established before any water is directed to the basin. For the limited slopes steeper than 3:1 we have specified erosion control mats in the detail.

<u>Sheet C- 6.4 Filter Basin # 2 Details and Notes</u>

Comment 51: A note in the plan view specifies the HDPE liner extend up to elevation 400 which is lower than the bottom of the basin.

Response: The plan is revised to set the top of liner 2' above the basin floor as noted above.

Comment 52: The 6" pond underdrain at invert elevation 431.67 should be shown on the outlet side of the Outlet Control Structure (OCS) section/detail.

Response: The 6" pond underdrain connects on the outlet side of the OCS. The 6" UD invert elevation is revised to 431.55 to provide positive slope.

Comment 53: The 7.5" and 12" diameter orifices shown in the detail for the (OCS) weir wall should be shown in the (OCS) section/detail. We suggest these modifications would clarify the operation of the (OCS).

Response: The OCS section/detail now has a note referring to the weir wall detail below for this information.

Comment 54: Note 2 of the underdrain filter notes implies the filter soil bed material will be compacted. We suggest compaction of this material will inhibit infiltration, reducing the effectiveness of the filter.

Response: Agreed. We removed notes requiring compaction of the soil filter bed material.

Comment 55: What is the purpose of the emergency spillway at the southwesterly end of the end of the basin?

Response: The emergency spillway is provided at this location to direct overflow away from proposed housing in the event the spillway were activated.

Comment 56: Refer to bullet # 7 Sheet C- 6.3 concerning the details of the (OCS) and the weir wall.

Response: The base slab for the OCS is removed from the detail.

<u>Sheet C- 6.5 Filter Basin # 3 & 4 Details and Notes</u>

Filter Basin #3

Comment 57: The section of the Filter Basin shows the underdrain pipe to be 6" vs. the 4" shown in plan.

Response: The filter basin section is revised to show 4" UD pipe, same as the plan view.

Comment 58: The 382 contours should connect on the west side of the emergency spillway.

Response: Done

Comment 59: The 382 through 386 contours should connect to the existing contours on the easterly side of the spillway.

Response: Done

Comment 60: Refer to bullet notes under C-6.3 concerning the HDPE lining.

Response: See response to Comment 48.

Filter Basin # 4

Comment 61: We suggest the 4" underdrain outlet pipe terminate at the 378 contour with a shallow swale graded out to the elevation 374.0.

Response: Plan is revised as suggested.

Comment 62: Refer to bullet notes under C-6.3 concerning the HDPE lining.

Response: See response to Comment 48.

Comment 63: We question the need for the 1.0' sump as nothing but clear filtered water will contribute to the structure.

Response: On further review of the plan have eliminated the UD outlet manhole.

Sheets C- 6.6 through C- 6.9

Comment 64: These sheets reflect standard details of the various components of site construction. As standard details they are accepted /approved by most agencies, and are acceptable here.

Response: No Response Necessary

Sheets L-1.1 and L-1.2

Comment 65: These sheets reflect street trees along the length of the project. We question the trees planted in the esplanade, will impact the sidewalk due to the root system.

Response: At Roger Mosley's request we have eliminated most of the street trees along the proposed Town Street.

STORMWATER MANAGEMENT:

Comment 66: We have not reviewed the management facilities for the project as MDEP has reviewed this component of the Project.

Response: No Response Necessary

From Peter Tubbs e-mail on 2/3/2020

Comment 67: There is an additional significant issue that I failed to include in my comments i.e. the lack of a relatively flat perimeter area 4 to 6' wide adjacent to the buildings for maintenance of the structure, and access to the adjacent slope.

Response: The grading plans are revised to provide a gently sloped maintenance area around all buildings.

Comments Summarized from Meeting with Roger Mosley, Zach Mosher, J. Paul and Peter Tubbs on 3/2/2020

Comments are summarized based on meeting notes by Larry Bastian:

Comment 1: *The Town Avenue street section at the Route 25 entrance is too wide at 44' wide and will be difficult for the Town to maintain. A narrower street section is recommended.*

Response: Highlands Avenue from Route 25 to the proposed driveway to the clubhouse and Leavitt Earthworks property is revised to a Town Residential street, upgraded with 2' paved shoulders for a total pavement width of 26'.

Comment 2: *Public Works would prefer to have the sidewalk located directly adjacent to the curb for ease of maintenance, instead of with a grass esplanade separating the curb and sidewalk.*

Response: The plans are revised to show the first section of Highlands Avenue off of Route 25 (as noted in Comment 1) with the sidewalk directly abutting the curb. On behalf of the applicant, we request that the Town Residential Street requirement for a grass esplanade between the sidewalk and curb be waived for the entire length of Highland Avenue. We will revise the rest of the plans after the waiver is approved.

Comment 3: *Does the MaineDOT Entrance Permit on Route 25 need to be amended if road width changes?*

Response: The recorded Entrance Permit is described as "entrance 28 feet in width plus radii". We would notify MaineDOT of the revised road width after this waiver is approved by the Planning Board.

Comment 4: *Need to provide a construction phasing plan*

Response: Added to plan set as Sheet 0.3

Comment 5: *J. Paul is reviewing fire hydrant locations and will provide proposed locations to Terradyn.*

Response: We will revise the plans when we receive the required locations.

Comment 6: *Sheet C-3.2 - CB H-24 at sta. 26+85 should be piped directly to CB H-23, not discharged into the ditch across the road.*

Response: Plan is revised as requested.

Comment 7: *Sheets C-3.1, C-3.2 & C-3.3 - From sta. 19+66 to Oak Hill Road, left side of road - Change from gravel shoulder with open ditch to a curbed section. Roger noted concern with road runoff getting into the ditch in the winter. Larry said we would review the design and discuss further with Roger if we have questions.*

Response: The typical section in this location is revised to a 3' gravel shoulder, while keeping the roadside ditch to intercept runoff from relatively large drainage areas uphill of the roadway. In our opinion, the open shoulder and >3' deep ditch will provide greater ability to clear snow compared to a 22' wide curbed road section. This design exceeds the Local Street standard in Ch. 252 which allows a 1.5' wide gravel shoulder with open ditch drainage. We hereby request to waive curbing on one side of the street (curb required both sides by Town Residential Street section).

Comment 8: *Label proposed access easements across from Lots 12 and 13 consistently where they appear on the various plan sheets – currently labeled easement on subdivision plan and right-of-way on site plan.*

Response: Plans are revised

Comment 9: *Subdivision Plan Sheet C-1.1 – Remove reference to Homeowners' Association maintenance of fire protection system, since the main within the Town ROW will be owned by Portland Water District.*

Response: Notes 17 & 18 are updated. The fire protection system outside of the Town ROW (serving condominiums) will be maintained by the HO Association.

Comment 10: *The Town requires granite monuments on one side of the ROW only, with pins on the opposite side.*

Response: Plans now show granite monuments on the right side and pins on the left side of the ROW.

Comment 11: Add crosswalk at entrance on Route 25.

Response: Done

Comment 12: Most of the proposed street names may conflict with existing street names in Town. Zach will provide the existing Town street inventory list.

Response: Street names will be submitted separately for confirmation by Town Officials. We will then revise names on the plan set.

Comment 13: Provide road name for driveway to clubhouse. Note maintenance of this driveway by homeowners' association (front portion) and by others (past driveway to parking lot).

Response: See response to comment 12. Maintenance responsibility is noted on the Site Plan C-2.0.

Comment 14: Sheet C-3.0 - CB-H-7B is located in a sidewalk – should be a drain manhole.

Response: Revised

Comment 15: Sheet C-3.1 – CB-H-12 – Invert elevation out is higher than invert in. CB-H-19 – Invert out is higher than next downstream structure.

Response: Revised plan

Comment 16: Sheet C-3.3 – It appears grassed swale on Lot 18 should be in a drainage easement.

Response: This swale is only collects runoff from Lot 18 and is needed for phosphorus treatment. An easement is not needed.

Comment 17: *Sheets L-1.0 to L-1.3, Landscaping Plan:*

- *The number of street trees shown along Highland Avenue is excessive and will be difficult for the Town to maintain. They also pose potential future conflicts with underground utilities. It is recommended to remove the street trees and place trees in clusters at the entrances to each of the condo access drives, and at the clubhouse.*
- *The Town does not want to use Oaks as street trees because of the acorns.*
- *Additional trees could be provided within each of the condo housing areas.*
- *Assuming the sidewalk is built directly abutting the curb under the waiver as noted in Comment 2 above, standard Town light poles and fixtures should be located in the ROW behind the sidewalk. Roger provided the vendor detail for the Town's standard light pole and fixture. Light poles should be placed up to 100' apart along the entire length of Highland Avenue.*
- *The plans should note that street lighting will be on a metered CMP control box, and that the lighting plan will be submitted for Town approval prior to construction.*
- *The light poles shown on the plan opposite each of the five condo access drives and at the intersections with Oak Hill Road and Route 25 are OK. .*

Response: The landscape plans are revised with the changes noted above.

Attachments

- Revised Plan Set dated March 25, 2020

Waiver Requests

As noted within this letter, we request the following waivers on behalf of the applicant:

- Waive the Town Residential Street requirement for sidewalk to be separated from curb by a 6' wide grassed esplanade, for the entire length of Highlands Drive.

- Waive the Town Residential Street requirement for curbing on the left side of Highlands Drive from +/- station 19+66 to Oak Hill Road, to be replaced by a 3' wide gravel shoulder and ditch conforming to Local Street Standards in Chapter 252.

We trust that the above responses and attached materials address the comments. Please contact me directly with any additional questions.

Sincerely,
TERRADYN CONSULTANTS LLC

Larry Bastian, P.E.

Attachments:

cc.

ATTACHMENT 4

SEPTIC SYSTEM COMMENT RESPONSE
APRIL 13, 2020

TERRADYN
CONSULTANTS, LLC

Pineland
Cumberland Hall
41 Campus Drive, Suite 101
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 310
Portland, ME 04101

April 13, 2020

Mr. Zach Mosher Planner
Town of Standish
175 Northeast Road
Standish, Maine 04085

Subject: Highlands Subdivision Final Subdivision & Site Plan
Response to Septic System Peer Review Comments

Dear Zach:

Our office received peer review comments for proposed septic systems from Peter Tubbs, P.E. dated January 31, 2020. We have reviewed the comments and prepared the responses presented below. For clarity, each comment is repeated in italics, followed by our response.

General

Comment 1: The treatment and disposal of the wastewater is addressed in Section 5 of the supplemental information. The location of the proposed systems are shown on the utility plans.

Response: No response necessary

Individual Systems

Comment 2: The following areas reflected on the utility plans do not conform to the dimensions specified in the HHE-200 forms (the disposal areas on the plans are generally smaller than specified.):

System Numbers 25-32, (mislabeled as 29-32), 1-4 & 9-12, 45-48 & 57-60, 49-56, and 61-68.

Response: These disposal areas are redrawn so that the dimensions match the HHE-200 forms. The system for units 49-56 is revised to 31' x 52' (104 Elgin Indrain units) which has the same capacity as the previous layout (23' x 68' and 102 Elgin units).

Nitrate Assessment

Comment 3: The nitrate plumes are shown on the plans N-1.0 thru N-1.3 in Section 7 of the supplemental information.

Response: No response necessary

Comment 4: A number of plumes extend into the stormwater treatment systems or drainage channels. We question if there is a possibility the nitrite effluent will contaminate the treated stormwater?

Response: See below

Comment 5: A substantial number of the plumes are shown entering the building footprints. Does this fact have the potential of entering the foundation drains and ultimately contaminating the treated stormwater?

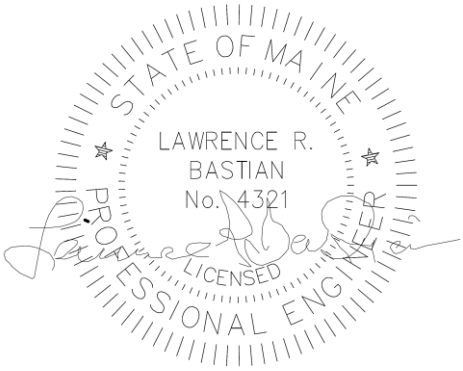
Response: Please see the attached letter from Mark Cenci Geologic, Inc. which responds to these questions.

Attachments:

- Revised Utility Plans, Sheets C-4.0 and C-4.1
- Letter from Mark Cenci Geologic, Inc.

We trust that the above responses and attached materials address the comments. Please contact me directly with any additional questions.

Sincerely,
TERRADYN CONSULTANTS LLC



Larry Bastian, P.E.

Attachments:

cc.

Mark Cenci
Geologic, Inc.

CERTIFIED GEOLOGIST/LICENSED SITE EVALUATOR

93 Mill Road • North Yarmouth, Maine 04097
Cell: 207.329.3524 • mark@markcenci.com
www.markcenci.com

Date: February 4, 2020

To: Larry Bastian
Terradyn Consultants, LLC
41 Campus Drive, Suite 101
New Gloucester, ME 04260

RE: Review comments of Highlands Subdivision, by P.B. Tubbs Consulting, dated 1/31/20

Larry:

P.B. Tubbs questions the possibility of adverse effects on treated stormwater by nitrate nitrogen in groundwater entering stormwater treatment systems, drainage channels and/or perimeter drains of buildings.

In short, there are no adverse effects, because nitrate-nitrogen in wastewater is regulated as a component of groundwater, not surface water, as groundwater is a possible source of potable water for human consumption. There are no regulations at the Federal, State or local levels concerning nitrate-nitrogen concentrations in storm water or surface water.

The Maine Subsurface Wastewater Disposal Rules do regulate the minimum separation distances between building foundations, open channels and stormwater control features, and all the septic systems on this site comply with those setback requirements.

Please contact me if I can be of further assistance.

Mark Cenci, CG # 467

ATTACHMENT 5

PEER REVIEW & PUBLIC WORKS COMMENT RESPONSE
APRIL 15, 2020

Pineland
Cumberland Hall
41 Campus Drive, Suite 101
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 310
Portland, ME 04101

April 15, 2020

Mr. Zach Mosher Planner
Town of Standish
175 Northeast Road
Standish, Maine 04085

Subject: Highlands Subdivision Final Subdivision & Site Plan
Response to Peer Review Comments

Dear Zach:

Our office received peer review comments for the above referenced project from Peter Tubbs, P.E. dated April 8, 2020, as well as comments from Public Works dated April 6, 2020. We have reviewed the comments and prepared the responses presented below. For clarity, each comment is repeated in italics, followed by our response.

<u>Response to Comments from Peter Tubbs, P.E.</u>

Sheet C-3.0 – Highlands Drive Grading Plan

Comment 1: The contours at the inlet of the pipe under the Club House drive do not reflect the grading needed to accommodate the slope to the invert.

Response: We revised the pipe inlet elevation and the contours in this area to accommodate the slope to the invert.

Comment 2: The note concerning regrading the Oak Hill Road ditch northwesterly of the intersection should specify the channel lining to prevent erosion northwesterly of the riprap protection.

Response: The note is revised to specify erosion control mesh in the ditch that is regraded to improve sight distance to the left of the new intersection.

Sheet C-3.6 – Whitney Drive Grading Plan

Comment 3: Approximately 110' of the westerly end of the 24" storm drain westerly of units 29 to 32 still reflects shallow cover (1.0' to 1.5'), shouldn't this be a

concern from the standpoint of frost heaving and damage from maintenance equipment?

Response: We added a drain manhole and adjusted the storm drain invert elevations to provide adequate cover.

Sheet C- 6.0 Details.

Comment 4: Typical Road Sections with curb should reflect underdrain.

Response: Underdrain is now noted on the typical road sections with curbing.

Comment 5: All Typical Road Sections should reflect grubbing and refill below subgrade.

Response: The note concerning grubbing and refill is now on all the Town road sections.

Comment 6: The note under the Wetland Crossing specifies granular borrow for fill below all driving surfaces (we presume reference to roadway paved area) while the section show common borrow.

Response: The typical section is revised to clarify the requirement for granular borrow below pavement.

Comment 7: The aggregate subbase on the left (ditch side) in the Typical Road Section from Sta. 19+65 to Oak Hill Road should extend out to the slope line.

Response: The typical section is revised to show this.

Sheet C- 6.2 Gravel Wetland Details and Notes

Comment 8: We understand why the 6" underdrain outlet is at the level specified but it's still not clear where it ultimately outlets. Is the outlet the 1" diameter orifice in the control panel?

Response: We revised the 6" underdrain to discharge on the outlet side of the concrete baffle wall inside the outlet control structure (OCS). The detail requires a cap on the 6" UD with a 1" hole drilled at the invert. The 15" outlet pipe from the OCS maintains the water level 4" below the gravel wetland surface as required by DEP. The 1" orifice in the control panel is eliminated.

Comment 9: We've noted plugging of the smaller sized orifices (2"- 4") in the control panel with algae. So we expect plugging of the 1" orfice here also, defeating the purpose of slowly draining the filtration beds. We don't have a good solution but are willing to listen to, and work with you on any alternative. This comment applies to the remainder of the structures/outlet piping in the other stormwater management devices.

Response: We eliminated the 1" orifice in the gravel wetland control panel as noted above to avoid the potential for clogging. The 6" underdrain with a 1" orifice outlet flows with filtered water from the underdrain system in the gravel wetland, so we do not anticipate clogging. Routine maintenance of the outlet control structure should minimize any potential clogging due to sediment or debris buildup on the outlet side of the underdrain.

The underdrain outlets for filter basins FB-1, FB-2, FB-3 and FB-4 also use a 1" drilled orifice in the UD outlet cap. These outlets receive filtered water from each basin underdrain system so we do not anticipate clogging. Routine maintenance of each outlet should minimize potential clogging due to vegetation or sediment buildup on the outlet side.

<u>Response to Comments from Public Works</u>

Sheets C-2.2, C-3.2 and C-4.2

Comment 1: The Station numbers 33+00 to 35+00 are upside down.

Response: The plan is revised.

Sheet 0.3

Comment 2: Construction Phase Plan. The Temporary Turnaround for Phase 2 is well laid out using a Section of the Future Right-of-Way. If possible, move the turnaround to the North side of Highlands Drive. This enables the plow truck to have a snow dump on the right. The leader for the Temporary Turnaround for Phase I points to the travel lane of Highlands Drive. The proposed terminus for Phase I is Sta: 35+75. At this point and from Sta: 41+00 to 31+00 the road has a 7% incline. With this incline it is not acceptable for a Plow Truck turnaround. I recommend the Phase I minus be moved to Sta: 31+50 and use the 50' Access Easement for the turnaround. The incline is better and having the snow dump on the right is preferred.

Response: We acknowledge Public Works' concerns as noted above. Relocating the temporary turnaround for Phase 2 to the north side of Highlands Drive at the future ROW location would place it in wetlands, which is not allowable under the Maine DEP and Army Corps permit for the project. Relocating the temporary turnaround for Phase 1 to station 31+50 would require extending the roadway about 500' into the area which requires significant blasting for road and utility construction.

We propose a condition of approval be included on the plans that requires the applicant to submit design of the Phase 1 and Phase 2 temporary turnarounds for approval by Public Works prior to starting construction of each phase. We have added a note to this effect to Sheet 0.3. We are confident that a mutually agreeable solution can be achieved to address Public Works' concerns.

Sheet C-1.0

Comment 3: At the existing entrance to Leavitt Earthworks, the Property Line N34° 06'53" E/96.24' would appear to create an under sized lot cutting off the old entrance.

Response: The plan is revised to note conveyance of this area to Leavitt Earthworks.

Sheet C-1.1

Comment 4: #2 in the General Note references York County Registry. I believe it should be Cumberland County.

Response: We have updated this plan to include the most recent recorded deed information from Cumberland County Registry of Deeds.

Comment 5: #19 in the General Notes. Allows the Town to acquire areas for future ROW's for $1.00. Is that $1.00 for all areas or for each?

Response: We would defer to the Town to provide the answer to this question.

Sheet C-2.0

Comment 6: Shouldn't both ends of the sidewalk at the intersection of Highlands Drive and Route 25 have the Detectable Warning Panel?

Response: The plan is revised to note warning panels at each end of the crosswalk.

Comment 7: At the end of Kayli Susan Drive by the Stormwater Area there is a section shaded but I don't see this type in the Legend.

Response: This is the stabilized access path to the gravel wetland. We added a note to refer to the detail sheet where this is shown.

Comment 8: What is the width of the walkway to the Club House – shouldn't it have a Detectable Warning Panel at Highlands Drive?

Response: The width is now noted as 5' and we have added a detectable warning panel.

Sheet 3.3

Comment 9: At the Wetlands Crossing what is the length of the 42" High Fence. Sta: # to Sta: #'s. Should there be details for the type of fence?

Response: We changed the fence to a wooden guardrail which provides a barrier to both pedestrian and vehicular traffic. Stations are now noted on the plan and there is a detail on Sheet C-6.1.

Sheet C-6

Comment 10: I think the Typical Road Section should label the underdrain as "Perf. Underdrain see plan for Type, Size and Locations" the 6" is misleading as other sizes are proposed. The Typical Road Sections for Sta: 19+65 to Sta: 43+67 should also include the detail for the underdrain.

Response: We revised the plan to label the underdrain as noted above, and added it to the typical section for station 19+65 to station 43+67.

Comment 11: The details for the Light Pole Base references a 5/8" dia x 8' Ground Road. It should be "Rod".

Response: The plan is revised as noted.

Comment 12: On March 26, 2020 I received a text from Jamie Tompson regarding some of the road names. He asked to change Whitney Drive to Waylon Drive. He will also be changing Inverness to something else but hasn't forwarded anything. He states that Stacey Leavitt is going to address Jesse Daniel and Stonehaven. Jamie was also checking on the time frame that these names changes need to be done. I will be texting him back to remind him that Highlands Drive will also have to be changed and the road to Leavitt Earthworks will need a name.

Response: Comment acknowledged. We will revise the road names on the plans after they are confirmed by the Town.

Attachments

- Revised Plan Set dated April 15, 2020

We trust that the above responses and attached materials address the comments. We are hopeful that the Planning Board will consider final approval of the plans with appropriate conditions at the upcoming remote meeting on May 4th. Please contact me directly with any additional questions.

Sincerely,
TERRADYN CONSULTANTS LLC

Larry Bastian, P.E.

Attachments:

cc.

ATTACHMENT 6

CONDOMINIUM ASSOCIATION BY-LAWS – DRAFT
APRIL 2020

HIGHLANDS CONDOMINIUM
HOMEOWNERS ASSOCIATION
BYLAWS

ARTICLE I
Definitions

Section 1. "Association" shall mean and refer to Highlands Condominium Homeowners Association, a non-profit corporation organized and existing under the laws of the State of Maine.

Section 2. "Highlands Condominium" shall mean and refer to a Condominium situated in the Town of Standish, in the County of Cumberland and State of Maine and designated as _____, approved by the Town of Standish Planning Board on _____ and recorded in the Cumberland County Registry of Deeds in Plan Book _____, Page _____, (the "Plan").

Section 3. A "Member" shall mean and refer to each owner (whether an individual person, corporation, partnership or other legal entity) of record of said units in _____ as shown on the aforesaid Plan, but shall not mean and refer to an owner of record whose only interest in such unit or parcel of land is as mortgagee under a real estate mortgage as security for the performance of an obligation, until and unless such owner shall have commenced proceedings under the laws of the State of Maine to foreclose such mortgage and shall have delivered a certificate to that effect to the Secretary of the Association.

ARTICLE II
Location

The principal office of the Association shall be located at 85 Hi Vu Drive, Standish, in the County of Cumberland and State of Maine or at such other address as the Directors shall designate.

ARTICLE III
Membership and Voting Rights

Each owner of a unit as designated in Article I, Section 3, shall be a Member of the Association. However, each unit is allocated only one (1) vote regardless of whether the owner of the unit is one or more individuals, a corporation, partnership or other legal entity.

DRAFT

ARTICLE IV
Purpose and Funding of Association

Section 1. Purpose. The purpose of the Association shall be to protect, preserve and conserve the Open Space and common areas of the Highlands Condominium, and to insure the perpetual maintenance of the fire protection system, along with stormwater quality and quantity management infrastructure and associated easements, as depicted on Plan of Highland Subdivision dated_____and recorded_____in the Cumberland County Registry of Deeds in Plan Book____, Page_____. The Association shall also perform all functions and responsibilities as set forth in the Declaration of Highland Condominium, dated_____and recorded in said Registry in Book_____, Page_____.

Section 2. Funding. The Association's funds shall be used for the purposes described in Article IV, Section 1. The Association shall have the authority to levy annual charges against all Association members to defray the reasonable expenses associated with the maintenance of the Private Way and the above-referenced open spaces. Any annual charge levied pursuant to this paragraph shall be subordinate to the lien of a recorded first mortgage on any lot.

ARTICLE V
Board of Directors

Section 1. Board of Directors. The affairs of the Association shall be governed by a Board of Directors consisting of not less than three (3) and not more than Five (5) Directors who shall be members of the Association, and who shall hold office until the election of their successors. Such directors are to be elected by the member(s) at the annual meeting of the members.

Section 2. Powers and Duties. The Board of Directors shall have the powers and duties necessary for the administration of the affairs of the Association and shall do all such acts and things except those which by law or by these Bylaws may not be delegated to the Board of Directors by the members. Such powers and duties of the Board of Directors shall include, but shall not be limited to, the following:

(a) Enforcement of the terms of the aforesaid Declaration;

(b) Employment and dismissal of the personnel necessary for such enforcement;

(c) Adoption and amendment of reasonable rules and regulations governing use of the real property protected by the aforesaid Declaration;

DRAFT

(d) Opening of bank accounts on behalf of the association and designating the signatories required therefor;

Section 3. Regular Meetings. Regular meetings of the Board of Directors may be held at such time and place as shall be determined from time to time by a majority of the members of the Board of Directors, but at least one (1) such meeting shall be held during each fiscal year to elect the officers of the Association and to transact such other business as may be necessary. Notice of regular meetings of the Board of Directors shall be given to each member of the Board of Directors, by ordinary first-class mail or e-mail, at least five (5) business days prior to the day named for such meeting.

Section 4. Special Meetings. Special meetings of the Board of Directors may be called by the President on three (3) business days' notice to each member of the Board of Directors, given by telephone or e-mail, or on five (5) business days' notice given by ordinary first-class mail, which notice shall state the time, place and purpose of the meeting. Special meetings of the Board of Directors shall be called by the President or Secretary in like manner and on like notice on the written request of at least three (3) members of the Board of Directors.

Section 5. Waiver of Notice. Any member of the Board of Directors may at any time waive notice of any meeting of the Board of Directors in writing, and such waiver shall be deemed equivalent to the giving of such notice. Attendance by a member of the Board of Directors at any meeting of the Board shall constitute a waiver of notice by him or the time and place thereof. If all the members of the Board of Directors are present at any meeting of the Board, no notice shall be required and any business may be transacted at such meeting.

Section 6. Quorum of Board of Directors. At all meetings of the Board of Directors, a majority of the voting interests thereof shall constitute a quorum for the transaction of business, and the votes of a majority of the voting interest of the Board of Directors present at a meeting at which a quorum is present shall constitute the decision of the Board of Directors. If at any meeting of the Board of Directors there shall be less than a quorum present, a majority of those present may adjourn the meeting from time to time. At any such adjourned meeting at which a quorum is present any business which might have been transacted at the meeting originally called may be transacted without further notice.

Section 7. Informal Action by Board of Directors. Any action required to be taken at a meeting of the Board of Directors or any other action which may be taken at a meeting of the Board of Directors, may be taken without a meeting if a consent in writing setting forth the action so taken shall be signed by all of the members of the Board of Directors entitled to vote with respect to the subject matter thereof.

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Section 8. Compensation. No member of the Board of Directors shall receive any compensation from the Association for acting as a director, except that members of the Board of Directors may be reimbursed for expenses they incur in connection with their services of Directors, as the Board may from time to time determine

Section 9. Fiscal Year. The fiscal year of the Association shall be the calendar year.

ARTICLE VI
Members

Section 1. Annual Meetings. The first annual meeting of the Members shall be held within 210 days after the closing of the sale of Unit_____ or on _____, whichever is first. Thereafter, the annual meeting of the Association shall be held each year on the second Tuesday of December or, in the event that day is a legal holiday, then on the first day thereafter which is not a holiday.

Section 2. Parliamentary Procedure. At all meetings of the members or of the Board of Directors, Roberts Rules of Order, as on then amended, shall be followed, except in the event of conflict, in which case these Bylaws shall prevail.

Section 3. Proxies. Votes may be cast in person or by proxy. Proxies must be filed with the Secretary at or before the time of each meeting. A member or Director may designate any person, who need not be an owner, to act as proxy. The designation of any such proxy shall be made in writing, signed by the member or Director and shall be revocable at any time by written notice to the Secretary by the person designating the proxy.

ARTICLE VII
Officers

Section 1. Designation. The principal officers of the Association shall be the President, the Secretary/Clerk and the Treasurer, all of whom shall be elected by the Board of Directors. The Board of Directors may appoint such other officers as in its judgment may be necessary.

Section 2. Election of Officers. The officers of the Association shall be elected annually by the Board of Directors at the annual meeting of the Board of Directors and shall hold office at the pleasure of the Board of Directors.

Section 3. Removal of Officers. Upon the affirmative vote of a majority of the members of the Board of Directors, any officer may be removed, either with or without cause, and his or her successor may be elected at any regular meeting of the Board of Directors or at any special meeting of the Board of Directors called for that purpose.

DRAFT

Section 4. President. The President shall be the chief executive officer of the Association. He or she shall preside at all meetings of the members and of the Board of Directors. He or she shall have all of the general powers and duties which are incident to the office of president of a non-profit corporation organized under the laws of the State of Maine, including but not limited to the power to appoint committees from among the members from time to time as he or she may in his or her discretion decide is appropriate to assist in the conduct of the affairs of the Association.

Section 5. Secretary/Clerk. The secretary/Clerk shall keep the minutes of all meetings of the members and of the Board of Directors; he or she shall have charge of such books and papers as the Board of Directors may direct; and he or she shall, in general, perform all the duties incident to the office of secretary/clerk of a non-profit corporation organized under the laws of the State of Maine.

Section 6. Treasurer. The Treasurer shall have the responsibility for Association funds and securities and shall be responsible for keeping full and accurate financial records and books of accounts showing all receipts and disbursements and for the preparation of all required financial data. He or she shall be responsible for the deposit of all monies and other valuable effects in the name of the Association, or the managing agent, in such depositories as may from time to time be designated by the Board of Directors, and he or she shall, in general, perform all the duties incident to the office of Treasurer of a non-profit corporation organized under the laws of the State of Maine.

Section 7. Agreements. Contracts. Checks, etc. All agreements, contracts, checks and other instruments of the Association shall be executed by two officers of the Association or by such other person or persons as may be designated by the Board of Directors.

Section 8. Compensation of Officers. No officer shall receive any compensation from the Association for acting as such, except that officers may be reimbursed for expenses incurred by them for their services as officers of the Association, as the Board of Directors may from time to time determine.

ARTICLE VIII
Records

Section 1. Records and Audits. The Board of Directors or its agent shall keep detailed records of the actions of the Board of Directors and its agent, minutes of the meetings of the Board of Directors, and financial records and books of account for the Association.

DRAFT

Section 2. Statement. A written report summarizing all receipts and expenditures of the Association shall be rendered by the Board of Directors to all members at least annually.

ARTICLE IX
Miscellaneous

Section 1. Notices. All notices hereunder shall be sent registered or certified mail to the Board of Directors, care of the President to the office of the Board of Directors or to such other address as the Board of Directors may hereafter designate from time to time by notice in writing to all members. All notices to any unit owner shall be sent by ordinary prepaid mail to the unit address or to such other address as may have been designated by them from time to time, in writing, to the Board of Directors. All notices shall be deemed to have been given when mailed, except notices of change of address which shall be deemed to have been given when received.

Section 2. Invalidity. The invalidity of any part of these Bylaws shall not impair or affect in any manner the validity, enforceability or effect of the balance of these Bylaws.

ARTICLE X
Amendments to Bylaws

These Bylaws may be altered, amended or added to at any duly called meeting of members, provided: (1) that the notice of the meeting shall contain a full statement of the proposed amendment; and (2) that the amendment shall be approved by at least 75% of the total votes in the Association.

ARTICLE XI
Dissolution

Upon dissolution or final liquidation of the Association, all assets of the Association shall become the sole and exclusive property of the then existing members of the Association in proportion to their respective membership interests.

DRAFT

Filing Fee $40.00

DOMESTIC
NONPROFIT CORPORATION

STATE OF MAINE

ARTICLES OF INCORPORATION

Deputy Secretary of State

A True Copy When Attested By Signature

Deputy Secretary of State

Pursuant to 13-B MRSA §403, the undersigned incorporator(s) execute(s) and deliver(s) the following Articles of Incorporation:

FIRST: The name of the corporation is HIGHLANDS CONDOMINIUM HOMEOWNERS ASSOCIATION.

SECOND: ("X" one box only. Attach additional page(s) if necessary.)

☐ The corporation is organized as a public benefit corporation for the following purpose or purposes:

☑ The corporation is organized as a mutual benefit corporation for all purposes permitted under Title 13-B or, if not for all such purposes, then for the following purpose or purposes:

THIRD: The Registered Agent is a: (select **either** a Commercial or Noncommercial Registered Agent)

☐ Commercial Registered Agent CRA Public Number: _____

(name of commercial registered agent)

☑ Noncommercial Registered Agent

James N. Tompson

(name of noncommercial registered agent)

85 Hi Vu Drive, Standish, ME 04084

(physical location, not P.O. Box – street, city, state and zip code)

(mailing address if different from above)

FOURTH: Pursuant to 5 MRSA §108.3, the new commercial registered agent as listed above has consented to serve as the registered agent for this nonprofit corporation.

FIFTH: The number of directors (not less than 3) constituting the initial board of directors of the corporation, if the number has been designated or if the initial directors have been chosen, is 3.

The minimum number of directors (not less than 3) shall be 3 and the maximum number of directors shall be 3.

SIXTH: Members: ("X" one box only.)

☐ There shall be no members.
☑ There shall be one or more classes of members and the information required by 13-B MRSA §402 is attached.

SEVENTH: **(Optional)** ☐ (Check if this article is to apply.)

No substantial part of the activities of the Corporation shall be the carrying on of propaganda, or otherwise attempting to influence legislation, and the Corporation shall not participate in or intervene in (including the publication or distribution of statements) any political campaign on behalf of any candidate for public office.

EIGHTH: **(Optional)** ☐ (Check if this article is to apply.)

Other provisions of these articles including provisions for the regulation of the internal affairs of the corporation, distribution of assets on dissolution or final liquidation and the requirements of the Internal Revenue Code section 501(c) are set out in Exhibit _____ attached hereto and made a part hereof.

Incorporators

Dated _____

(signature)

Street 55 Stroudwater Street
(address)

Christopher J. Ryer, duly authorized
(type or print name)

Westbrook, ME 04092
(city, state and zip code)

(signature)

Street _____
(address)

(type or print name)

(city, state and zip code)

(signature)

Street _____
(address)

(type or print name)

(city, state and zip code)

For Corporate Incorporators*

Name of Corporate Incorporator _____

By _____ (signature of officer)

Street _____ (principal business location)

_____ (type or print name and capacity)

_____ (city, state and zip code)

Name of Corporate Incorporator _____

By _____ (signature of officer)

Street _____ (principal business location)

_____ (type or print name and capacity)

_____ (city, state and zip code)

***Articles are to be executed as follows:**

If a corporation is an incorporator (13-B MRSA §401), the name of the corporation should be typed or printed and signed on its behalf by an officer of the corporation. The articles of incorporation must be accompanied by a certificate of an appropriate officer of the corporation, not the person signing the articles, certifying that the person executing the articles on behalf of the corporation was duly authorized to do so.

Please remit your payment made payable to the Maine Secretary of State.

Submit completed form to:

Secretary of State
Division of Corporations, UCC and Commissions
101 State House Station
Augusta, ME 04333-0101
Telephone Inquiries: **(207) 624-7752** Email Inquiries: CEC.Corporations@Maine.gov

Filer Contact Cover Letter

To: Department of the Secretary of State
Division of Corporations, UCC and Commissions
101 State House Station
Augusta, ME 04333-0101

Tel. (207) 624-7752

Name of Entity (s):

HIGHLANDS CONDOMINIUM HOMEOWNERS ASSOCIATION

List type of filing(s) enclosed (i.e. Articles of Incorporation, Articles of Merger, Articles of Amendment, Certificate of Correction, etc.) Attach additional pages as needed.

ARTICLES OF INCORPORTION

Special handling request(s): (check all that apply)

- ☐ Hold for pick up
- ☐ Expedited filing - 24 hour service ($50 additional filing fee per entity, per service)
- ☐ Expedited filing - Immediate service ($100 additional filing fee per entity, per service)

Total filing fee(s) enclosed: $ 40.00

Contact Information – questions regarding the above filing(s), please call or email: (failure to provide a contact name and telephone number or email address will result in the return of the erroneous filing (s) by the Secretary of State's office)

Christopher J. Ryer, Esq
(Name of contact person)

207-854-1218
(Daytime telephone number)

chris@desmondrand.com
(Email address)

The enclosed filing(s) and fee(s) are submitted for filing. Please return the attested copy to the following address:

Christopher J. Ryer, Esq.
(Name of attested recipient)

Desmond & Rand
(Firm or Company)

55 Stroudwater Street
(Mailing Address)

Westbrook, ME 04092
(City, State & Zip)

ATTACHMENT 7

PLAN SET
APRIL 15, 2020

HIGHLANDS SUBDIVISION

OSSIPEE TRAIL, STANDISH, MAINE

PREPARED BY:

CIVIL ENGINEER:
TERRADYN CONSULTANTS, LLC
41 CAMPUS DR. SUITE 101
NEW GLOUCESTER, MAINE 04260
(207)926-5111

SURVEYOR:
BOUNDARY ENGINEERING
SURVEYING TECHNOLOGY
25 TUBROS LANE
BUXTON, MAINE 04093
(207) 929-2378

HIGH INTENSITY SOIL SURVEY & WETLAND DELINEATION:
MARK HAMPTON ASSOCIATES
PO BOX 1931
PORTLAND, MAINE 04104
(207) 757-2900

SEPTIC EVALUATION:
MARK CENCI GEOLOGIC INC.
NORTH YARMOUTH, MAINE 04097
(207) 329-3524

APPLICANT:

LEAVITT - TOMPSON, LLC.
P.O. BOX 703
STANDISH, MAINE 04084

OWNERS:

LEVITT EARTHWORKS, LLC.
191 OSSIPEE TRAIL
STANDISH, MAINE 04084

TOMPSON DEVELOPMENT, INC.
85 HI VU DRIVE
STANDISH, MAINE 04084

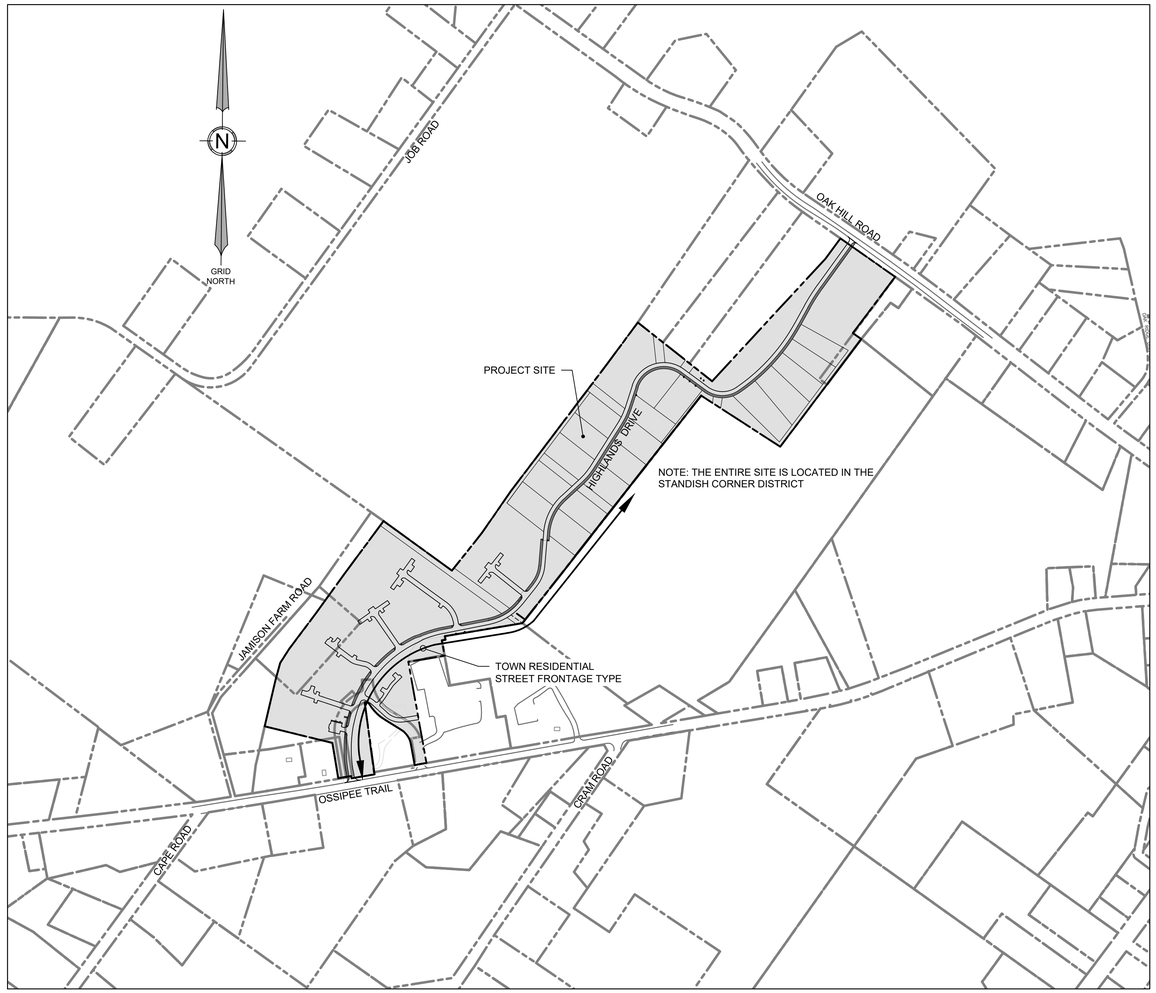
PROJECT PARCEL SITE

TOWN OF STANDISH TAX ASSESSOR'S MAP & LOT NUMBERS

MAP	LOTS
10	11 & 19C

LEGEND

- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- 124 EXISTING MINOR CONTOUR
- 124 EXISTING MAJOR CONTOUR
- 124 PROPOSED CONTOUR
- SD EXISTING STORMDRAIN
- SD PROPOSED STORMDRAIN
- S PROPOSED SANITARY SEWER
- W EXISTING WATER LINE
- W PROPOSED WATER LINE
- PROPOSED UNDERDRAIN
- OHE EXISTING OVERHEAD ELECTRIC & TEL.
- OHE PROPOSED OVERHEAD ELECTRIC & TEL.
- UGE EXISTING UNDERGROUND ELECTRIC & TEL.
- UGE PROPOSED UNDERGROUND ELECTRIC & TEL.
- EXISTING EDGE OF PAVEMENT
- PROPOSED EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- PROPOSED EDGE OF GRAVEL
- EXISTING CURB
- PROPOSED CURB
- EDGE OF WATER
- EXISTING TREE LINE
- PROPOSED TREE LINE
- CHAIN LINK FENCE
- PROPOSED FENCE
- EXISTING GUARDRAIL
- PROPOSED GUARDRAIL
- SF SILT FENCE
- EXISTING VALVE
- PROPOSED VALVE
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING TRANSFORMER
- PROPOSED TRANSFORMER
- EXISTING LIGHT POLE
- PROPOSED LIGHT POLE
- EXISTING UTILITY POLE
- PROPOSED UTILITY POLE
- EXISTING CATCH BASIN
- PROPOSED CATCH BASIN
- EXISTING SEWER MANHOLE
- PROPOSED SEWER MANHOLE
- 30.20 EXISTING SPOT GRADE
- 30.20 PROPOSED SPOT GRADE
- EXISTING SIGN
- PROPOSED SIGN
- TP-A TEST PIT
- P-1 SOIL PROBE



LOCATION MAP

1" = 400'

GRAPHIC SCALE

400 0 200 400 800 1600

(IN FEET)
1 inch = 400 ft.

LEGEND CONT.

- EXISTING BUILDING
- PROPOSED BUILDING
- WETLAND AREA
- PROPOSED PAVEMENT
- RIPRAP
- PROPOSED WETLAND ALTERATION AREA
- FUTURE RIGHT OF WAY EASEMENT
- PROPOSED DRAINAGE EASEMENT
- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE

SHEET INDEX

0.0	COVER SHEET & LOCATION MAP
0.1	OVERALL PLAN & GENERAL NOTES
0.2	CONNECTIVITY MASTER PLAN
0.3	CONSTRUCTION PHASE PLAN
S-1.0	BOUNDARY SURVEY
S-1.1	BOUNDARY SURVEY
C-1.0	SUBDIVISION PLAN AND SITE PLAN FOR VILLAGE HOUSING
C-1.1	SUBDIVISION PLAN AND SITE PLAN FOR VILLAGE HOUSING
C-1.2	SUBDIVISION PLAN AND SITE PLAN FOR VILLAGE HOUSING
C-2.0	HIGHLANDS DRIVE LAYOUT PLAN
C-2.1	HIGHLANDS DRIVE LAYOUT PLAN
C-2.2	HIGHLANDS DRIVE LAYOUT PLAN
C-2.3	HIGHLANDS DRIVE LAYOUT PLAN
C-3.0	HIGHLANDS DRIVE GRADING PLAN
C-3.1	HIGHLANDS DRIVE GRADING PLAN
C-3.2	HIGHLANDS DRIVE GRADING PLAN
C-3.3	HIGHLANDS DRIVE GRADING PLAN
C-3.4	KAYLI SUSAN DRIVE GRADING PLAN
C-3.5	JESSE DANIEL DRIVE GRADING PLAN
C-3.6	WHITNEY DRIVE GRADING PLAN
C-3.7	INVERNESS DRIVE GRADING PLAN
C-3.8	STONEHAVEN DRIVE GRADING PLAN
C-4.0	HIGHLANDS DRIVE UTILITY PLAN
C-4.1	HIGHLANDS DRIVE UTILITY PLAN
C-4.2	HIGHLANDS DRIVE UTILITY PLAN
C-4.3	HIGHLANDS DRIVE UTILITY PLAN
C-5.0	HIGHLANDS DRIVE ROADWAY PROFILE
C-5.1	HIGHLANDS DRIVE ROADWAY PROFILE
C-5.2	HIGHLANDS DRIVE ROADWAY PROFILE
C-5.3	HIGHLANDS DRIVE ROADWAY PROFILE
C-5.4	VILLAGE HOUSING ROADWAY PROFILES
C-6.0	DETAILS
C-6.1	DETAILS
C-6.2	GRAVEL WETLAND DETAILS AND NOTES
C-6.3	FILTER BASIN #1 DETAILS AND NOTES
C-6.4	FILTER BASIN #2 DETAILS AND NOTES
C-6.5	FILTER BASIN #3 & #4 DETAILS AND NOTES
C-6.6	DRAINAGE DETAILS
C-6.7	EROSION CONTROL DETAILS AND NOTES
C-6.8	STANDARD WATER DETAILS
C-6.9	STANDARD WATER DETAILS
L-1.0	LANDSCAPING PLAN
L-1.1	LANDSCAPING PLAN
L-1.2	LANDSCAPING PLAN
L-1.3	LANDSCAPING PLAN

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
COVER/LOCATION MAP

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	AS SHOWN
DESIGNED:	JDA
JOB NO:	1804
FILE: 1811 COVER.DWG	

SHEET 0.0

PRECONSTRUCTION MEETING

PRIOR TO ANY CONSTRUCTION ON THE PROJECT THE OWNER SHALL COORDINATE A PRECONSTRUCTION MEETING INVOLVING HIMSELF, HIS SITE CONTRACTOR, THE DIRECTOR OF PUBLIC WORKS AND TOWN'S CONSULTANT ENGINEER. AT THE TIME OF THE MEETING THE SITE CONTRACTOR SHALL PRESENT THE FOLLOWING:

1. A COPY OF THE MAINE CONSTRUCTION GENERAL PERMIT.
2. A COPY OF STREET OPENING PERMIT.
3. TWO COPIES OF THE PROPOSED CONSTRUCTION SCHEDULE
4. TWO COPIES OF HIS EROSION AND SEDIMENTATION CONTROL PLAN IN THE FORM OF RED LINED PRINTS SHOWING THE SEQUENCE OF THE EARTH MOVING, INCLUDING DATES OF INITIAL DISTURBANCE, AND COMPLETION OF FINISHED SURFACES, AND AREAS THAT WILL RECEIVE TEMPORARY PROTECTION BETWEEN THESE DATES.

CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIM OR HERSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIM OR HERSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.

4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

5. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.

6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.

7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.

8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

9. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 2004 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.

10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.

11. CONTRACTOR SHALL BE AWARE THAT DIG SAFE ONLY NOTIFIES ITS "MEMBER" UTILITIES ABOUT THE DIG. WHEN NOTIFIED, DIG SAFE WILL ADVISE CONTRACTOR OF MEMBER UTILITIES IN THE AREA. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING AND CONTACTING NON-MEMBER UTILITIES DIRECTLY. NON-MEMBER UTILITIES MAY INCLUDE TOWN OR CITY WATER AND SEWER DISTRICTS AND SMALL LOCAL UTILITIES, AS WELL AS USG PUBLIC WORKS SYSTEMS.

12. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

13. ALL PAVEMENT MARKINGS AND DIRECTIONAL SIGNAGE SHOWN ON THE PLAN SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS.

14. ALL PAVEMENT JOINTS SHALL BE SAWCUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.

15. NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.

16. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A M.D.O.T. PERMIT AS WELL AS PERMITS FROM THE TOWN AS APPLICABLE.

17. THE PROPOSED LIMITS OF CLEARING SHOWN HEREON ARE APPROXIMATE BASED UPON THE PROPOSED LIMITS OF SITE GRADING. THE APPLICANT RESERVES THE RIGHT TO PERFORM NORMAL FOREST MANAGEMENT ACTIVITIES OUTSIDE OF THE CLEARING LIMIT AS SHOWN. TREE REMOVAL OUTSIDE OF THE LIMITS OF CLEARING MAY BE NECESSARY TO REMOVE DEAD OR DYING TREES OR TREE LIMBS. THIS REMOVAL IS DUE TO POTENTIAL SAFETY HAZARDS AND TO PROMOTE PROPER FOREST GROWTH.

18. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

19. THE CONTRACTOR SHALL BE FULLY AND SOLELY RESPONSIBLE FOR THE REMOVAL, REPLACEMENT AND RECTIFICATION OF ALL DAMAGED AND DEFECTIVE MATERIAL AND WORKMANSHIP IN CONNECTION WITH THE CONTRACT WORK. THE CONTRACTOR SHALL REPLACE OR REPAIR AS DIRECTED BY THE OWNER ALL SUCH DAMAGED OR DEFECTIVE MATERIALS WHICH APPEAR WITHIN A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION.

20. ALL WORK PERFORMED BY THE GENERAL CONTRACTOR AND/OR TRADE SUBCONTRACTOR SHALL CONFORM TO THE REQUIREMENTS OF LOCAL, STATE OR FEDERAL LAWS, AS WELL AS ANY OTHER GOVERNING REQUIREMENTS, WHETHER OR NOT SPECIFIED ON THE DRAWINGS.

21. WHERE THE TERMS "APPROVED EQUAL", "OTHER APPROVED", "EQUAL TO", "ACCEPTABLE" OR OTHER GENERAL QUALIFYING TERMS ARE USED IN THESE NOTES, IT SHALL BE UNDERSTOOD THAT REFERENCE IS MADE TO THE RULING AND JUDGMENT OF TERRADYN CONSULTANTS, LLC.

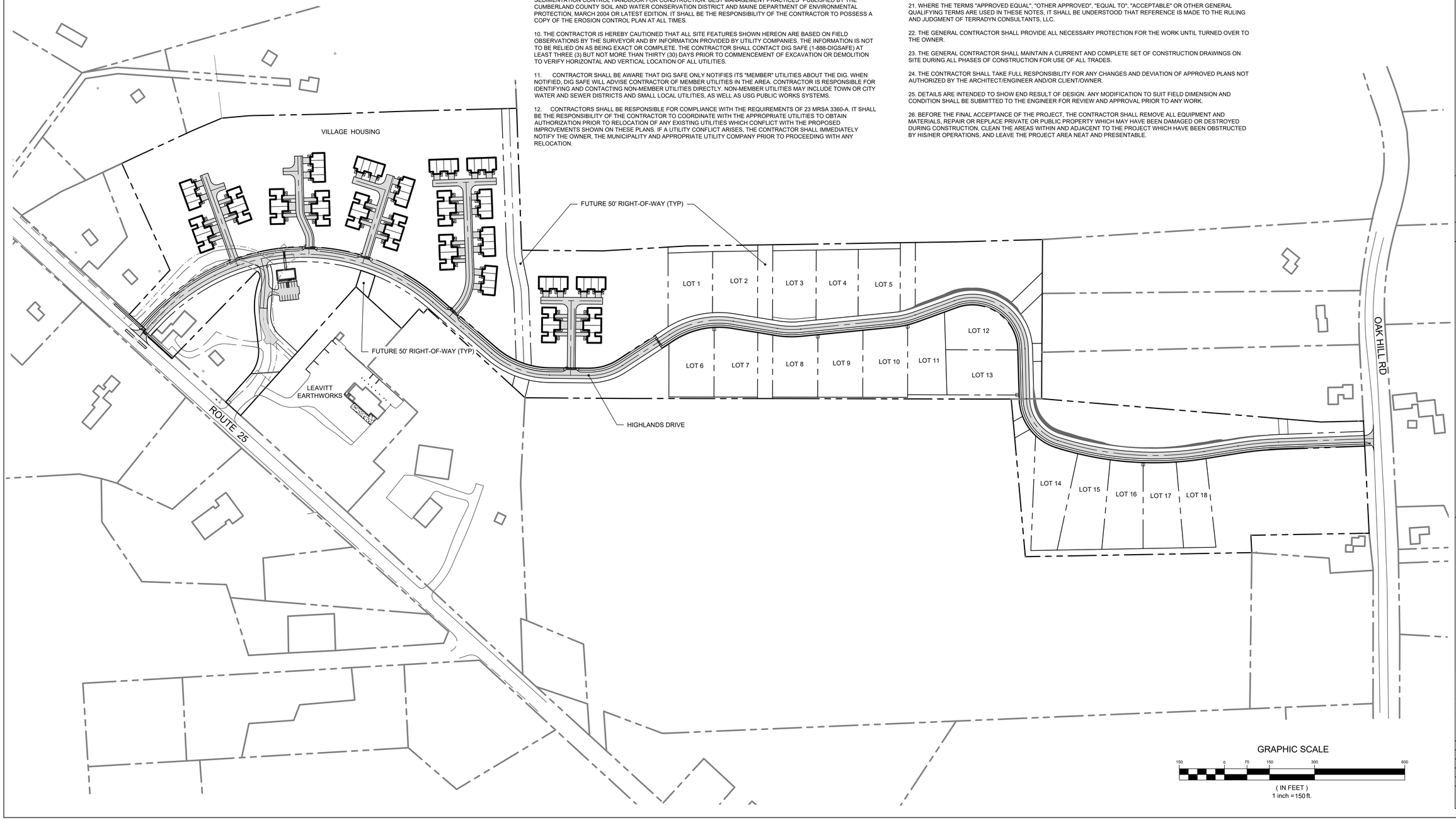
22. THE GENERAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTION FOR THE WORK UNTIL TURNED OVER TO THE OWNER.

23. THE GENERAL CONTRACTOR SHALL MAINTAIN A CURRENT AND COMPLETE SET OF CONSTRUCTION DRAWINGS ON SITE DURING ALL PHASES OF CONSTRUCTION FOR USE OF ALL TRADES.

24. THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.

25. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. ANY MODIFICATION TO SUIT FIELD DIMENSION AND CONDITION SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY WORK.

26. BEFORE THE FINAL ACCEPTANCE OF THE PROJECT, THE CONTRACTOR SHALL REMOVE ALL EQUIPMENT AND MATERIALS, REPAIR OR REPLACE PRIVATE OR PUBLIC PROPERTY WHICH MAY HAVE BEEN DAMAGED OR DESTROYED DURING CONSTRUCTION, CLEAN THE AREAS WITHIN AND ADJACENT TO THE PROJECT WHICH HAVE BEEN OBSTRUCTED BY HIS/HER OPERATIONS, AND LEAVE THE PROJECT AREA NEAT AND PRESENTABLE.



NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

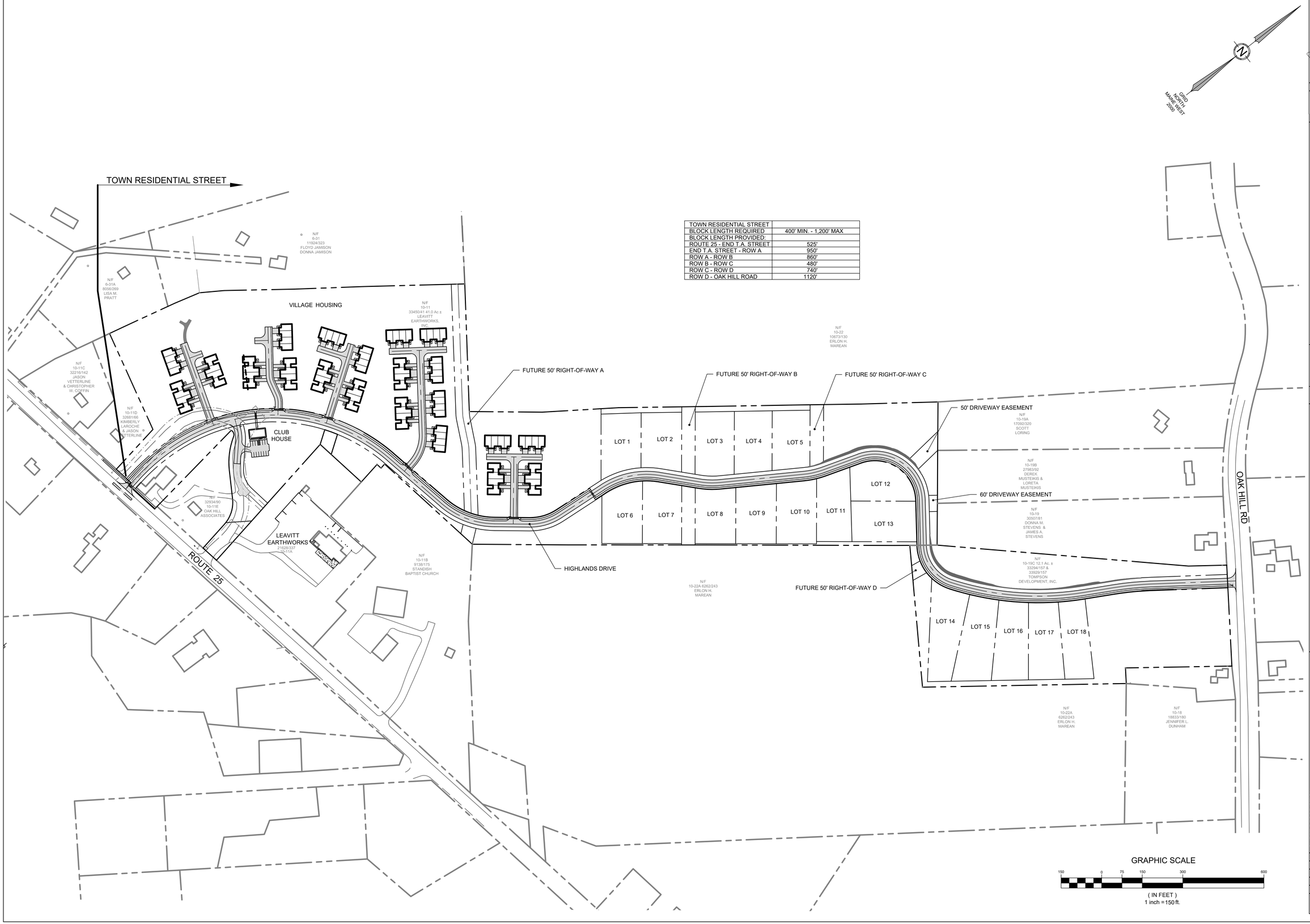
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
OVERALL PLAN & GENERAL NOTES

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=150'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 B.DWG	
SHEET	0.1

TOWN RESIDENTIAL STREET	
BLOCK LENGTH REQUIRED	400' MIN. - 1,200' MAX
BLOCK LENGTH PROVIDED:	
ROUTE 25 - END T.A. STREET	525'
END T.A. STREET - ROW A	950'
ROW A - ROW B	860'
ROW B - ROW C	480'
ROW C - ROW D	740'
ROW D - OAK HILL ROAD	1120'



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
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7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
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3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111
www.terradynconsultants.com

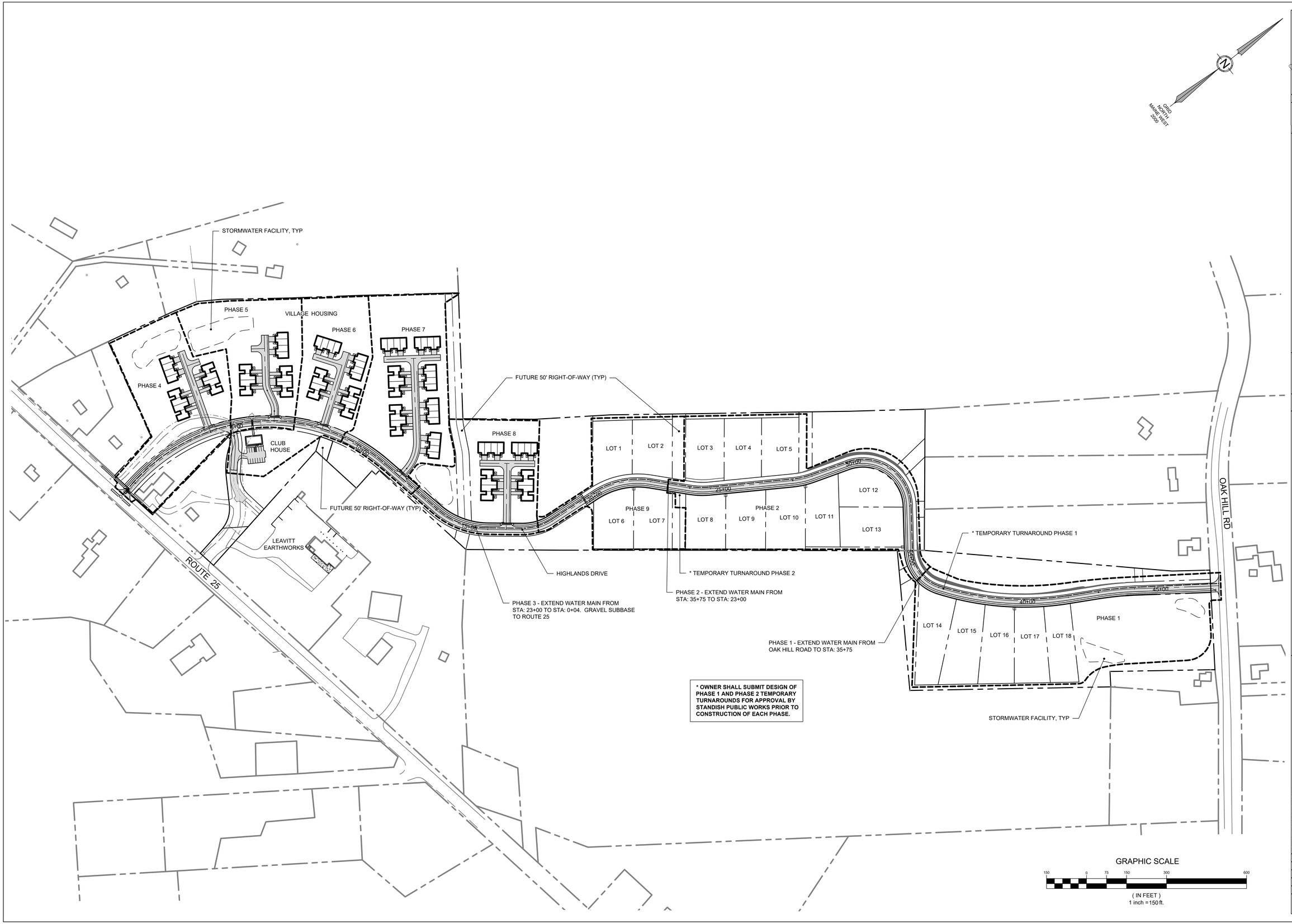
TERRADYN CONSULTANTS, LLC

CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
CONNECTIVITY MASTER PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=150'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 B.DWG	
SHEET	0.2



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

OFFICE: (207) 926-5111
www.terradynconsultants.com

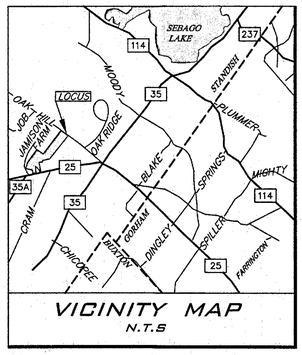
TERRADYN CONSULTANTS, LLC

CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

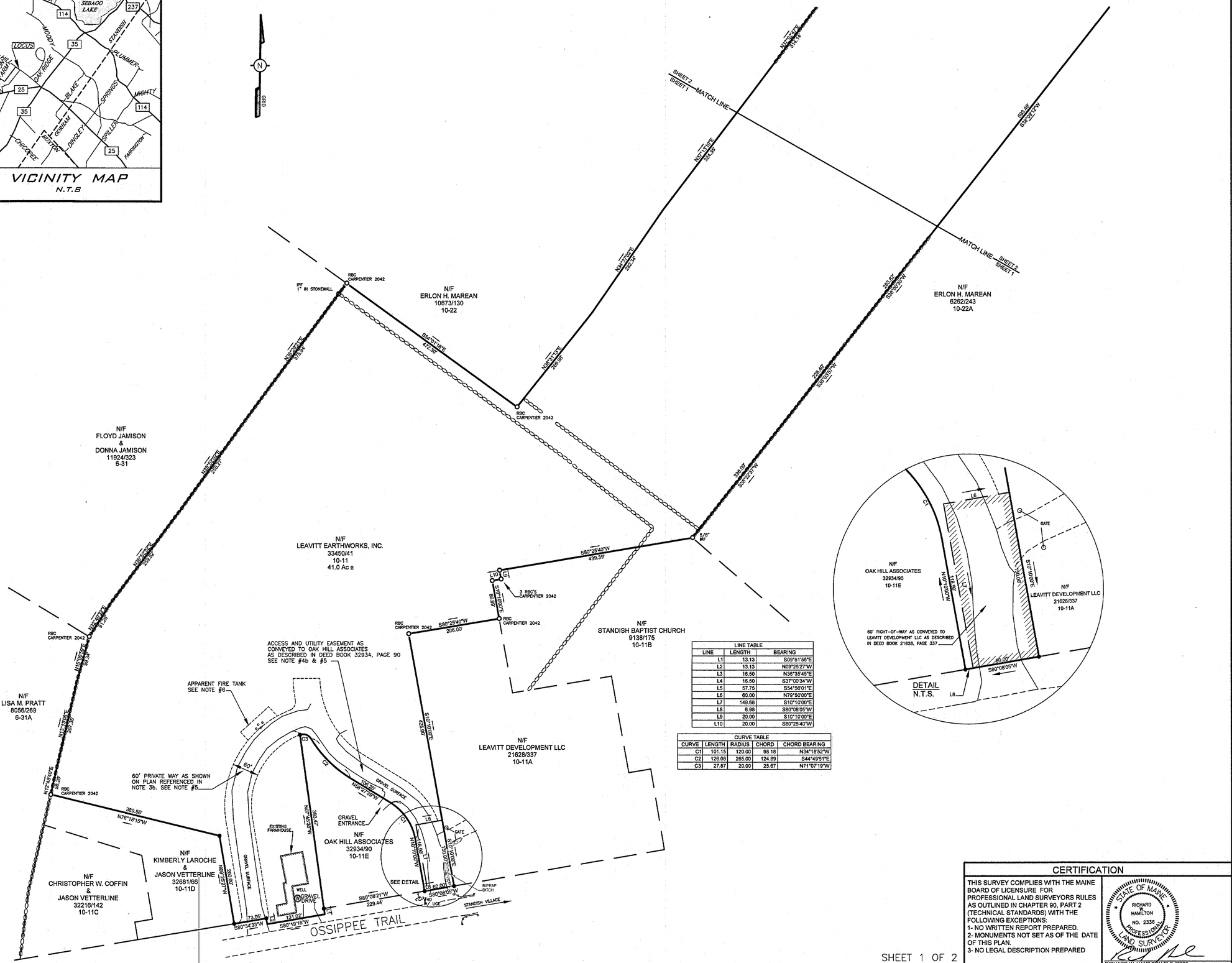
SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
CONSTRUCTION PHASE PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=150'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 B.DWG	
SHEET	0.3



VICINITY MAP
N.T.S



LINE TABLE		
LINE	LENGTH	BEARING
L1	13.13	S09°51'55"E
L2	13.13	N09°25'27"W
L3	16.50	N36°35'45"E
L4	16.50	S37°00'34"W
L5	57.75	S54°56'01"E
L6	60.00	N79°50'00"E
L7	149.68	S10°10'00"E
L8	6.98	S80°08'05"W
L9	20.00	S10°10'00"E
L10	20.00	S80°25'40"W

CURVE TABLE				
CURVE	LENGTH	RADIUS	CHORD	CHORD BEARING
C1	101.15	120.00	98.18	N34°16'52"W
C2	126.08	265.00	124.89	S44°49'51"E
C3	27.87	20.00	25.67	N71°07'19"W

LEGEND

●	#5 REBAR WITH PLASTIC CAP STAMPED "BEST 2336" TO BE SET
○	FOUND REBAR WITH CAP (RBC) STAMPING AS NOTED
○	FOUND IRON PIPE (IPF) IRON ROD (IRF) SIZE AS NOTED
	UTILITY POLE (NUMBERED AS SHOWN)
(123.45)	PARENTHESES DENOTE RECORD DATA
	STONE WALL
	ABUTTER OR RIGHT-OF-WAY LINE
	BOUNDARY LINE
N/F	NOW OR FORMERLY OWNED BY
	TRAVELED WAY
1234/567	DEED BOOK AND PAGE CUMBERLAND COUNTY REGISTRY OF DEEDS
45-6-78	TAX MAP-BLOCK-LOT

NOTES

1. BEARINGS BASED UPON GRID NORTH AS ESTABLISHED BY STATIC GPS OBSERVATIONS AND POST PROCESSING.

2. OWNERSHIP OF THE PROPERTY'S SHOWN CAN BE FOUND IN THE FOLLOWING DEEDS OF RECORD;

a. DEED OF #1 NORTHEAST ROAD, LLC TO LEAVITT EARTHWORKS DATED SEPTEMBER 26, 2016 AND RECORDED IN DEED BOOK 33450, PAGE 41 AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS (CCRD).

b. DEED OF MICHAEL A. KENISON TO TOMPSON DEVELOPMENT INC. DATED JULY 20, 2016 AND RECORDED IN DEED BOOK 33294, PAGE 157 CCRD.

c. DEED OF THE TOWN OF STANDISH TO TOMPSON DEVELOPMENT, INC. DATED MARCH 22, 2017 AND RECORDED IN DEED BOOK 33929, PAGE 157 CCRD.

3. PLAN REFERENCES:

a. PLAN ENTITLED STATE OF MAINE DEPARTMENT OF TRANSPORTATION RIGHT-OF-WAY MAP STATE HIGHWAY "12" (ROUTE 25) STANDISH CUMBERLAND COUNT. FEDERAL AID PROJECT NO. STP-2847(12)X. D.O.T.FILE NO. 3-474, DATED JULY 2001.

b. PLAN ENTITLED RT. 25 BUSINESS PARK ROUTE 25 STANDISH, MAINE, DATED NOVEMBER 17, 2006. PREPARED BY SYTDESIGN CONSULTANTS. UNRECORDED, ON FILE AT THE TOWN OF STANDISH.

4. THE PARCEL OF LAND AS DESCRIBED IN NOTE 2a IS SUBJECT TO CERTAIN EASEMENTS AS DESCRIBED IN THE FOLLOWING DEEDS:

a- ACCESS AND UTILITY EASEMENT GRANTED TO LEAVITT DEVELOPMENT , LLC DATED JULY 29, 2004 AND DESCRIBED IN DEED BOOK 21628, PAGE 337.

b- ACCESS AND UTILITY EASEMENT GRANTED TO OAK HILL ASSOCIATES, LLC DATED FEBRUARY 23, 2016 AND DESCRIBED IN DEED BOOK 32934, PAGE 90 CCRD. THIS EASEMENT IS DESCRIBED AS " THIS CONVEYANCE IS MADE WITH RIGHTS IN COMMON WITH OTHERS IN AND TO A PRIVATE RIGHT OF WAY RUNNING NORTHERLY AND NORTHWESTERLY FROM SAID OSSIPEE TRAIL ALONG THE ENTIRE EASTERLY AND NORTHEASTERLY SIDELINE OF THE ABOVE DESCRIBED LOT. THIS RIGHT OF WAY IS INTENDED TO BE USED FOR ANY AND ALL PURPOSES FOR WHICH A TOWN ROAD WOULD BE USED INCLUDING UTILITIES." OUR RESEARCH DID NOT FIND ADDITIONAL DOCUMENTS REGARDING THIS PRIVATE WAY. IT IS OUR OPINION THAT A PORTION OF THE PRIVATE RIGHT OF WAY AS SHOWN ON PLAN REFERENCED IN NOTE 3b WAS INTENDED TO SERVE AS THIS EASEMENT.WE ARE UNABLE TO DETERMINE THE EXACT SIZE OR LIMITS OF THIS EASEMENT.

5. THIS 60' PRIVATE WAY AS SHOWN IS DEPICTED ON THE PLAN REFERENCED IN NOTE 3b. OUR RESEARCH INDICATES THAT THIS PLAN WAS NOT APPROVED BY THE TOWN OF STANDISH PLANNING BOARD AND NO ADDITIONAL DOCUMENTS WERE FOUND REGARDING THE STATUS OF THIS PRIVATE WAY.

6. THE TOWN OF STANDISH PLANNING DEPARTMENT INDICATES THAT THE FIRE TANK WAS INSTALLED AS A REQUIREMENT FOR A PRIOR PROPOSED DEVELOPMENT AS SHOWN ON PLAN REFERENCED IN NOTE 3b. THIS PROPOSED DEVELOPMENT DID NOT RECEIVE APPROVAL FROM THE TOWN OF STANDISH PLANNING BOARD. OUR RESEARCH DID NOT REVEAL ANY DOCUMENTS REGARDING THE USE OF THE FIRE TANK.

BOUNDARY SURVEY
ON
ROUTE 25 & OAK HILL ROAD
IN
STANDISH
CUMBERLAND COUNTY
MAINE

SCALE: 1"=100' AUGUST 25, 2017

OWNERS OF RECORD:

LEAVITT EARTHWORKS, LLC
191 OSSIPEE TRAIL
STANDISH, MAINE 04084

TOMPSON DEVELOPMENT, INC.
85 HI VU DRIVE
STANDISH, MAINE 04084

CERTIFICATION

THIS SURVEY COMPLIES WITH THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS RULES AS OUTLINED IN CHAPTER 90, PART 2 (TECHNICAL STANDARDS) WITH THE FOLLOWING EXCEPTIONS:
1- NO WRITTEN REPORT PREPARED.
2- MONUMENTS NOT SET AS OF THE DATE OF THIS PLAN.
3- NO LEGAL DESCRIPTION PREPARED

STATE OF MAINE
RICHARD W. HAMILTON
NO. 2336
PROFESSIONAL LAND SURVEYOR

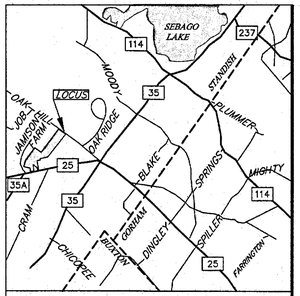
RICHARD W. HAMILTON PLS #2336

BOUNDARY ENGINEERING SURVEY TECHNOLOGY
25 TUBROS LANE
BUXTON, MAINE 04093
TELEPHONE 929-BEST
FAX 929-2379

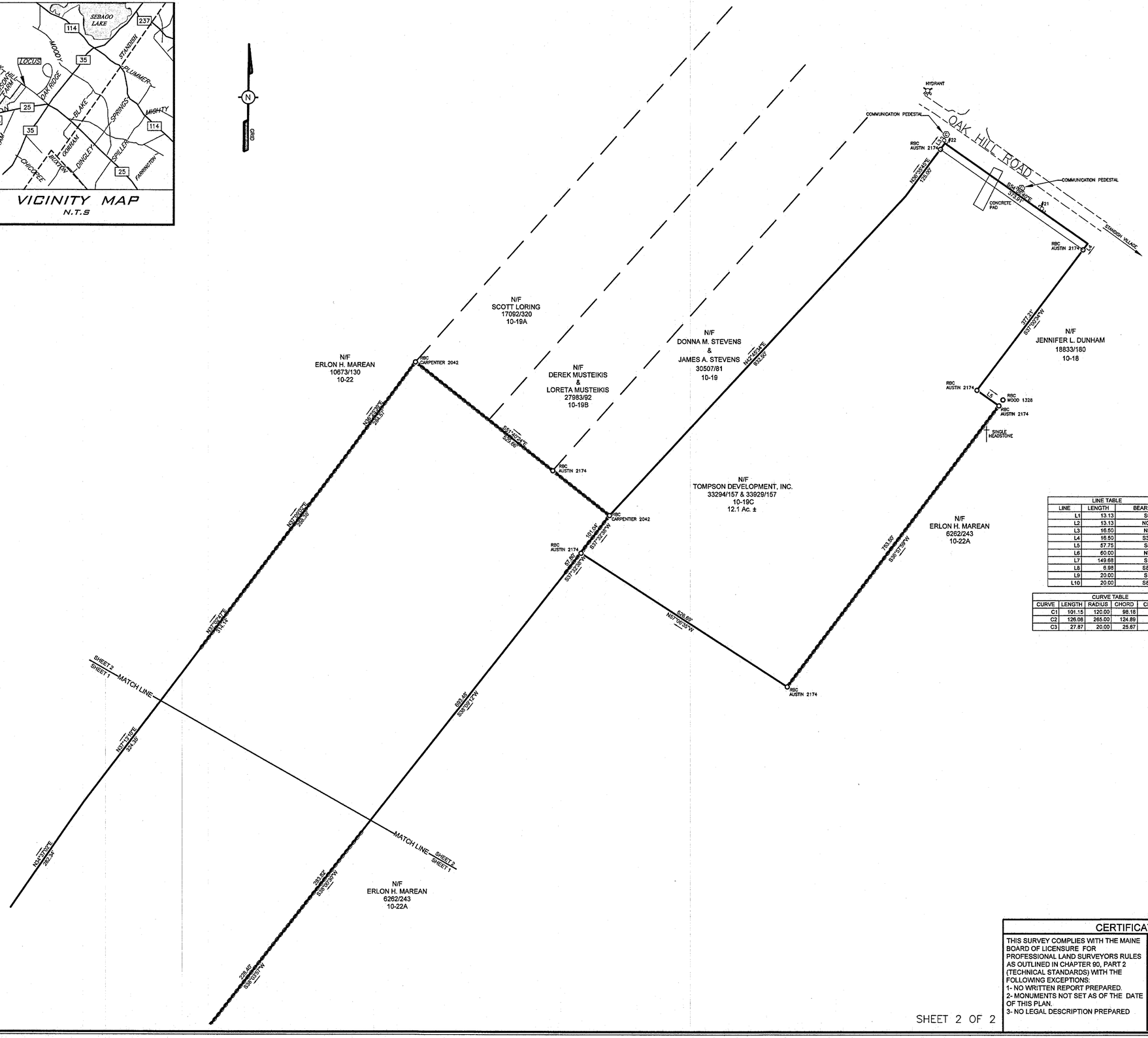
JOB NUMBER: 016-029

DRAWING FILE: FINAL BOUNDARY

0 100' 200' 400'



VICINITY MAP
N.T.S



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LEGEND

- ● #5 REBAR WITH PLASTIC CAP STAMPED "BEST 2336" TO BE SET
- ○ FOUND REBAR WITH CAP (RBC) STAMPING AS NOTED
- ○ FOUND IRON PIPE (IPF) IRON ROD (IRF) SIZE AS NOTED
- UTILITY POLE (NUMBERED AS SHOWN)
- (123.45) PARENTHESES DENOTE RECORD DATA
- STONE WALL
- ABUTTER OR RIGHT-OF-WAY LINE
- BOUNDARY LINE
- N/F NOW OR FORMERLY OWNED BY
- TRAVELED WAY
- 1234/567 DEED BOOK AND PAGE CUMBERLAND COUNTY REGISTRY OF DEEDS
- 45-6-78 TAX MAP-BLOCK-LOT

NOTES

SEE SHEET 1 FOR COMPLETE NOTES PERTAINING TO THIS PLAN

CERTIFICATION

THIS SURVEY COMPLIES WITH THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS RULES AS OUTLINED IN CHAPTER 90, PART 2 (TECHNICAL STANDARDS) WITH THE FOLLOWING EXCEPTIONS:
1- NO WRITTEN REPORT PREPARED.
2- MONUMENTS NOT SET AS OF THE DATE OF THIS PLAN.
3- NO LEGAL DESCRIPTION PREPARED

STATE OF MAINE
RICHARD W. HAMILTON
NO. 2336
PROFESSIONAL LAND SURVEYOR

RICHARD W. HAMILTON PLS #2336

SHEET 2 OF 2

BOUNDARY SURVEY
ON
ROUTE 25 & OAK HILL ROAD
IN
STANDISH
CUMBERLAND COUNTY
MAINE

SCALE: 1"=100' AUGUST 25, 2017

OWNERS OF RECORD:

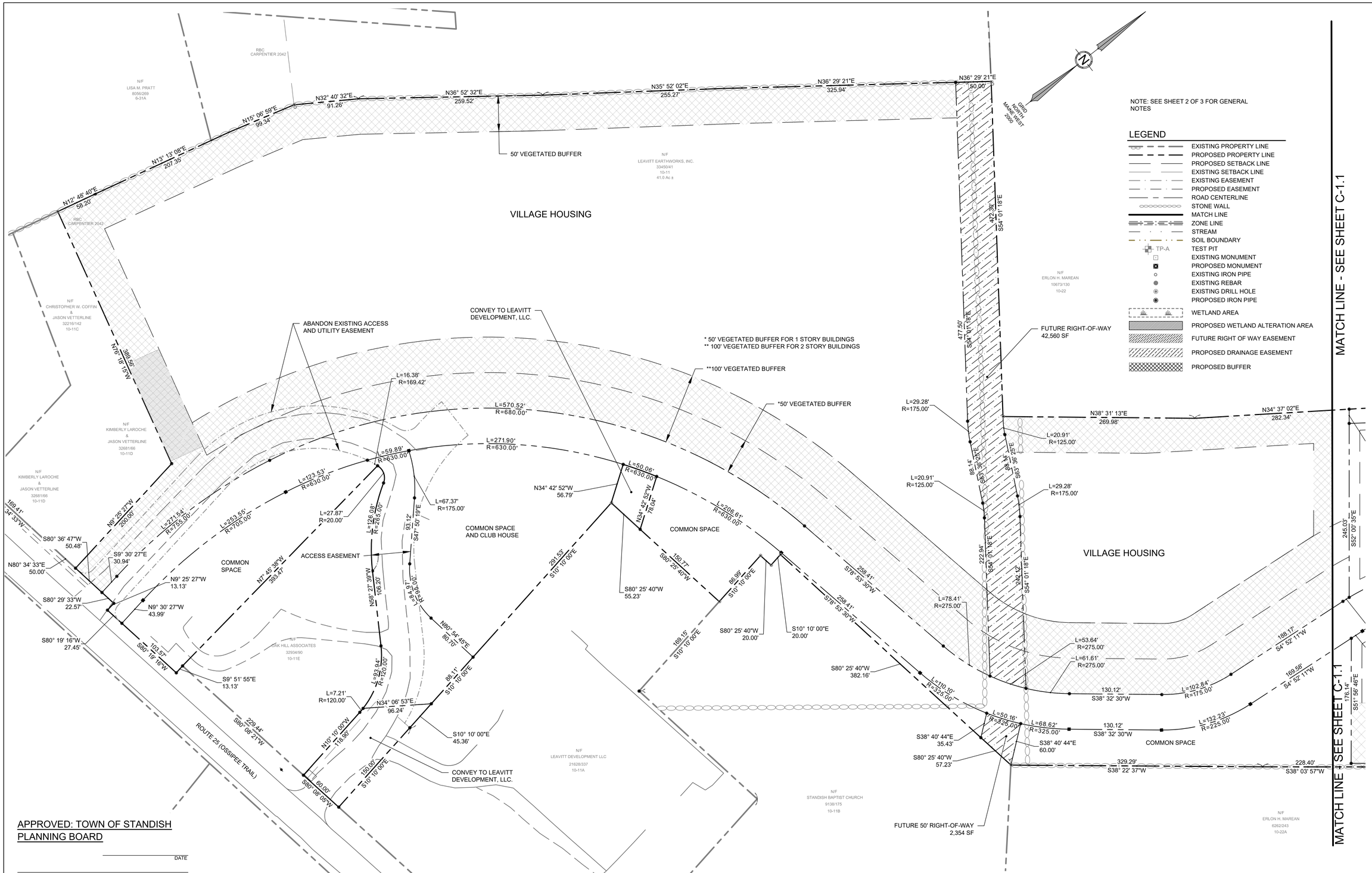
LEAVITT EARTHWORKS, LLC
191 OSSIPEE TRAIL
STANDISH, MAINE 04084

TOMPSON DEVELOPMENT, INC.
85 HI VU DRIVE
STANDISH, MAINE 04084

BOUNDARY ENGINEERING SURVEY TECHNOLOGY
25 TUBROS LANE
BUXTON, MAINE 04093
TELEPHONE 929-BEST
FAX 929-2379

JOB NUMBER: 016-029 | DRAWING FILE: FINAL BOUNDARY

0 100' 200' 400'



NOTE: SEE SHEET 2 OF 3 FOR GENERAL NOTES

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- STONE WALL
- MATCH LINE
- ZONE LINE
- STREAM
- SOIL BOUNDARY
- TP-A TEST PIT
- EXISTING MONUMENT
- PROPOSED MONUMENT
- EXISTING IRON PIPE
- EXISTING REBAR
- EXISTING DRILL HOLE
- PROPOSED IRON PIPE
- WETLAND AREA
- PROPOSED WETLAND ALTERATION AREA
- FUTURE RIGHT OF WAY EASEMENT
- PROPOSED DRAINAGE EASEMENT
- PROPOSED BUFFER

APPROVED: TOWN OF STANDISH PLANNING BOARD

_____ DATE

STATE OF MAINE

_____ COUNTY SS REGISTRY OF DEEDS
RECEIVED _____ 20__
AT ___h _____m _____M. AND RECORDED IN
PLAN BOOK _____ PAGE _____

ATTEST _____ REGISTRAR

SHEET 1 OF 3

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
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1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
SUBDIVISION AND SITE PLAN FOR VILLAGE HOUSING

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 B.DWG	
SHEET	C-1.0

NET RESIDENTIAL AREA CALCULATIONS

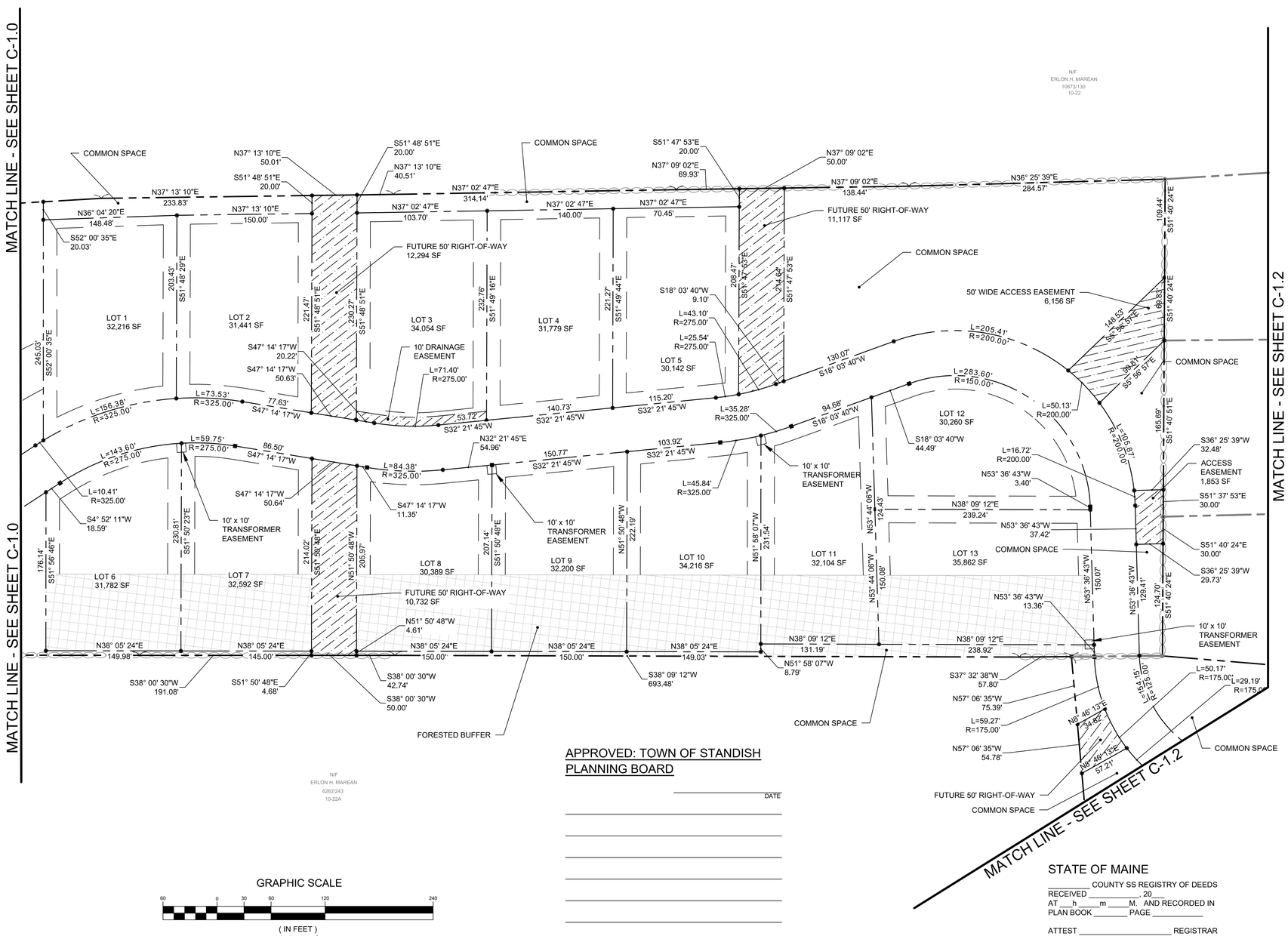
GROSS AREA:	2,313,384 SF
WETLANDS:	78,600 SF
ROW AREA:	288,274 SF
NET RESIDENTIAL AREA:	1,946,510 SF
VILLAGE HOUSING	
MINIMUM AREA FOR DWELLING UNIT:	16,000 SF (TWO-BEDROOM UNITS)
AREA USED FOR VILLAGE HOUSING	1,393,422 SF
MAXIMUM # DWELLING UNITS:	87
PROPOSED # DWELLING UNITS:	84
SINGLE FAMILY LOTS	
MINIMUM LOT SIZE:	30,000 SF
AREA USED FOR SINGLE FAMILY LOTS:	553,088 SF
PROPOSED # LOTS:	18

* NOTE: "COMMON SPACE" AND "CLUB HOUSE" ARE INCLUDED IN AREAS USED FOR VILLAGE HOUSING.

GRID NORTH NAD 1983 MAINE WEST 1000

PERMITS REQUIRED:

- TOWN OF STANDISH:
  - SUBDIVISION APPROVAL
  - SITE PLAN APPROVAL
- MAINE DOT HIGHWAY ENTRANCE PERMIT #26188 ON ROUTE 25, ISSUED SEPTEMBER 20, 2018 AND RECORDED IN CUMBERLAND COUNTY REGISTRY OF DEEDS BOOK 49527, PAGE 59.
- MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION:
  - SITE LOCATION OF DEVELOPMENT ACT PERMIT
  - NATURAL RESOURCES PROTECTION ACT PERMIT, TIER 1 WETLAND FILL
  - MAINE CONSTRUCTION GENERAL PERMIT
- U.S. ARMY CORPS OF ENGINEERS: GENERAL PERMIT FOR STATE OF MAINE, CATEGORY 1 (WETLANDS)



GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS LEAVITT-TOMPSON, LLC. BY DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 34548/PAGE 188.
2. THE PRIOR RECORD OWNER OF THE PARCEL ON ROUTE 25 IS LEAVITT EARTHWORKS, INC. BY DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 33450/PAGE 41. THE RECORD OWNER OF THE PARCEL ON OAK HILL ROAD IS TOMPSON DEVELOPMENT, INC BY DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 32929/PAGE 157 AND BOOK 33294/PAGE 157.
3. THE PROPERTY IS SHOWN AS LOTS 11 AND 19C ON THE TOWN OF STANDISH TAX MAP 10 AND IS LOCATED IN THE STANDISH CORNER DISTRICT, TOWN RESIDENTIAL STREET.
4. BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON A STANDARD BOUNDARY SURVEY BY BOUNDARY ENGINEERING SURVEY TECHNOLOGY ENTITLED "BOUNDARY SURVEY ON ROUTE 25 & OAK HILL ROAD IN STANDISH", DATED AUGUST 25, 2017.
5. TOPOGRAPHIC INFORMATION SHOWN HEREIN IS BASED UPON AN EXISTING CONDITIONS TOPOGRAPHIC SURVEY BY BOUNDARY ENGINEERING SURVEY TECHNOLOGY ENTITLED "BOUNDARY SURVEY ON ROUTE 25 & OAK HILL ROAD IN STANDISH", DATED AUGUST 25, 2017.
6. THE TOTAL AREA OF PARCEL= 2,313,384 SF (53.11 AC).
7. SPACE AND BULK CRITERIA STANDISH CORNER DISTRICT:

	TOWN RESIDENTIAL STREET	TOWN AVENUE STREET
MIN. LOT SIZE:	30,000 SF	20,000 SF
MIN. LOT WIDTH:	80'	N/A
MAX. LOT WIDTH:	150'	N/A
MIN. FRONT SETBACK:	15'	N/A
MAX. FRONT SETBACK	25'	N/A
REQUIRED BUILD-TO-LINE	N/A	15'
MIN. SIDE SETBACK:	15'	10'
MIN. REAR SETBACK:	10'	10'
MIN. BUILDING HEIGHT	22'	16'
MAX. BUILDING HEIGHT:	35'	35'

8. LOCATIONS OF BUILDINGS, WELLS, AND OTHER FEATURES ON ABUTTING PROPERTIES ARE APPROXIMATE AND WERE OBTAINED FROM AVAILABLE RECORDS AT THE TOWN OF STANDISH AND FROM THE GEOLOCATION SPACIAL FEATURE IN AUTOCAD.
9. VILLAGE HOUSING CRITERIA:
10. VEGETATED BUFFERS ARE SHOWN ON THE PLAN PER ARTICLE IV, SECTION 181-28.1 VILLAGE HOUSING.
11. MULTI-FAMILY UNITS WILL BE SERVED BY COMMON SEPTIC SYSTEMS SIZED FOR 4 UNITS OR 8 UNITS AS SHOWN ON PLAN.
12. SINGLE FAMILY LOTS WILL BE SERVED BY PRIVATE ON-LOT SEPTIC SYSTEMS.
13. WATER SERVICE TO THE DEVELOPMENT SHALL BE PROVIDED BY EXTENSION OF A 12" PORTLAND WATER DISTRICT MAIN ON OAK HILL ROAD. WATER SERVICE SHALL CONFORM TO DISTRICT STANDARDS.
14. ELECTRICAL POWER, CABLE TV, AND TELECOMMUNICATIONS UTILITIES SHALL BE UNDERGROUND.
15. ALL DRIVEWAY ENTRANCES SHALL BE AS APPROVED THROUGH A STREET OPENING PERMIT BY THE PUBLIC WORKS DEPARTMENT.
16. THE STANDISH PUBLIC WORKS DEPARTMENT RESERVES THE RIGHT TO REQUIRE ADDITIONAL WORK BEYOND, AND IN ADDITION TO THE IMPROVEMENTS SHOWN ON THIS PLAN AS FIELD CONDITIONS REQUIRE. ANY CHANGES MADE DURING CONSTRUCTION SHALL BE COORDINATED WITH AND APPROVED BY THE STANDISH PUBLIC WORKS DEPARTMENT.
17. THE ESTABLISHMENT OF A HOMEOWNER'S ASSOCIATION WAS REQUIRED BY THE STANDISH PLANNING BOARD FOR APPROVAL OF THIS SUBDIVISION ONLY TO THE EXTENT SAID ASSOCIATION WAS NECESSARY TO ENSURE PERPETUAL MAINTENANCE OF THE FIRE PROTECTION SYSTEM OUTSIDE OF THE STREET RIGHT-OF-WAY, STORMWATER QUALITY AND QUANTITY MANAGEMENT INFRASTRUCTURE, AND ASSOCIATED EASEMENTS. THIS ENDORSEMENT SPECIFICALLY EXCLUDES: APPROVAL OF DEED RESTRICTIONS THAT ARE UNRELATED TO THE AFOREMENTIONED MAINTENANCE RESPONSIBILITIES, PROTECTIVE COVENANTS, HOMEOWNER'S ASSOCIATION BY-LAWS, ANY AND ALL OTHER FUNCTIONS OF SAID ASSOCIATION.
18. THE TOWN OF STANDISH SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE ROADWAYS AND ROADSIDE DITCHES AND CULVERTS WITHIN RIGHT OF WAY UPON MUNICIPAL ACCEPTANCE OF HIGHLANDS DRIVE. THE HOMEOWNERS ASSOCIATION SHALL BE RESPONSIBLE FOR MAINTENANCE FIRE PROTECTION SYSTEM OUTSIDE OF THE STREET RIGHT-OF-WAY, PLUS ALL STORMWATER QUANTITY AND QUALITY MANAGEMENT INFRASTRUCTURE, AND ASSOCIATED EASEMENTS. THE TOWN OF STANDISH RESERVES THE RIGHT TO DIRECT STORMWATER RUNOFF TO THE ASSOCIATION'S DRAINAGE AND STORMWATER QUANTITY AND QUALITY MANAGEMENT INFRASTRUCTURE, AND ASSOCIATED EASEMENTS AS DEPICTED ON SUBDIVISION PLANS.
19. TOWN OF STANDISH RESERVES THE RIGHT TO ACQUIRE THE AREAS SHOWN AS FUTURE RIGHT-OF-WAY FOR $1 IN DAMAGES.
20. SEPTIC SYSTEM LOCATIONS AS SHOWN IN THE ACCOMPANYING PLAN SET REPRESENT POSSIBLE LOCATIONS THAT MEET APPLICABLE LOCAL AND STATE STANDARDS. FINAL SUBSURFACE DISPOSAL SYSTEM LOCATIONS MAY BE ADJUSTED PROVIDED THAT THE NEW LOCATIONS ARE REVIEWED AND APPROVED BY THE CODE ENFORCEMENT OFFICER WITH SUPPORTING DOCUMENTATION BY A MAINE CERTIFIED SITE EVALUATOR. IN ADDITION, MAINE DEP REVIEW AND APPROVAL IS REQUIRED FOR REVISIONS TO SUBSURFACE WASTEWATER DISPOSAL FIELD LOCATIONS SHOWN ON PLAN SHEETS.
21. LOTS 1 THROUGH 5 IN THE SACO RIVER WATERSHED SHALL BE DEED RESTRICTED TO ALLOW A MAXIMUM OF 5,000 SQUARE FEET (SF) OF IMPERVIOUS AREA AND 15,000 SF OF LANDSCAPED AREA ON EACH LOT.
22. LOTS 6 THROUGH 18 IN THE SEBAGO LAKE WATERSHED SHALL BE DEED RESTRICTED TO ALLOW A MAXIMUM OF 4,000 SQUARE FEET (SF) OF IMPERVIOUS AREA AND 12,000 SF OF LANDSCAPED AREA ON EACH LOT.
23. ALL TEST PITS AND SOIL EXPLORATIONS WERE LOCATED AND EVALUATED BY MARK HAMPTON ASSOCIATES, INC., P.O. BOX 1931, PORTLAND, MAINE 04104-1931. SUBSURFACE DATA AND NARRATIVES ARE CONTAINED IN THE FOLLOWING REPORTS:
    - "PRELIMINARY SOIL EVALUATION AND SOIL NARRATIVE REPORT, HIGHLANDS SUBDIVISION STANDISH, MAINE", DATED JULY 7 2018. INCLUDES SOIL SURVEY EXPLORATIONS SS1-SS44 AND TEST PITS TP-1 TO TP-54.
    - SUPPLEMENTAL TEST PITS TP-55-TP-102, DATED NOVEMBER 6, 2018.
    - SUPPLEMENTAL TEST PITS TP-103-TP-114, DATED MARCH 11, 2019.
    - "SOIL EVALUATION, PROPOSED TREATMENT DEVICES, HIGHLANDS SUBDIVISION STANDISH, MAINE", DATED MARCH 12 2019. INCLUDES TEST PITS STW-1 TO STW-5.
    - SUPPLEMENTAL TEST PITS TP-115 TO TP-122, DATED NOVEMBER 12, 2019.
    - SUPPLEMENTAL TEST PITS TP-123 TO TP-138, DATED NOVEMBER 19, 2019.
    - SOIL PROBES P-1 TO P-20 DATED NOVEMBER, 19 2019.
24. WETLAND DELINEATIONS ARE BY MARK HAMPTON ASSOCIATES, INC., P.O. BOX 1931, PORTLAND, MAINE 04104-1931 . MAPPING INFORMATION IS CONTAINED IN THE REPORT TITLED "DELINEATION OF WETLANDS ON 50+ ACRE LEAVITT PARCEL, OAK HILL ROAD, STANDISH, MAINE" DATED JUNE 28, 2016.
25. ON SOUTHEASTERLY RIGHT OF WAY BOUNDARY USE GRANITE MONUMENTS AT RADIUS POINTS AS SHOWN ON PLAN. ON NORTHWESTERLY RIGHT OF WAY BOUNDARY USE IRON PIPES/RODS AT RADIUS POINTS AS SHOWN ON PLAN.

APPROVED: TOWN OF STANDISH PLANNING BOARD

_____ DATE

GRAPHIC SCALE

60 0 30 60 120 240

(IN FEET)
1 inch =60 ft.

STATE OF MAINE

_____ COUNTY SS REGISTRY OF DEEDS
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SHEET 2 OF 3

STATE OF MAINE LAWRENCE R. BASTIAN No. 4321 LICENSED PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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PERMITTING

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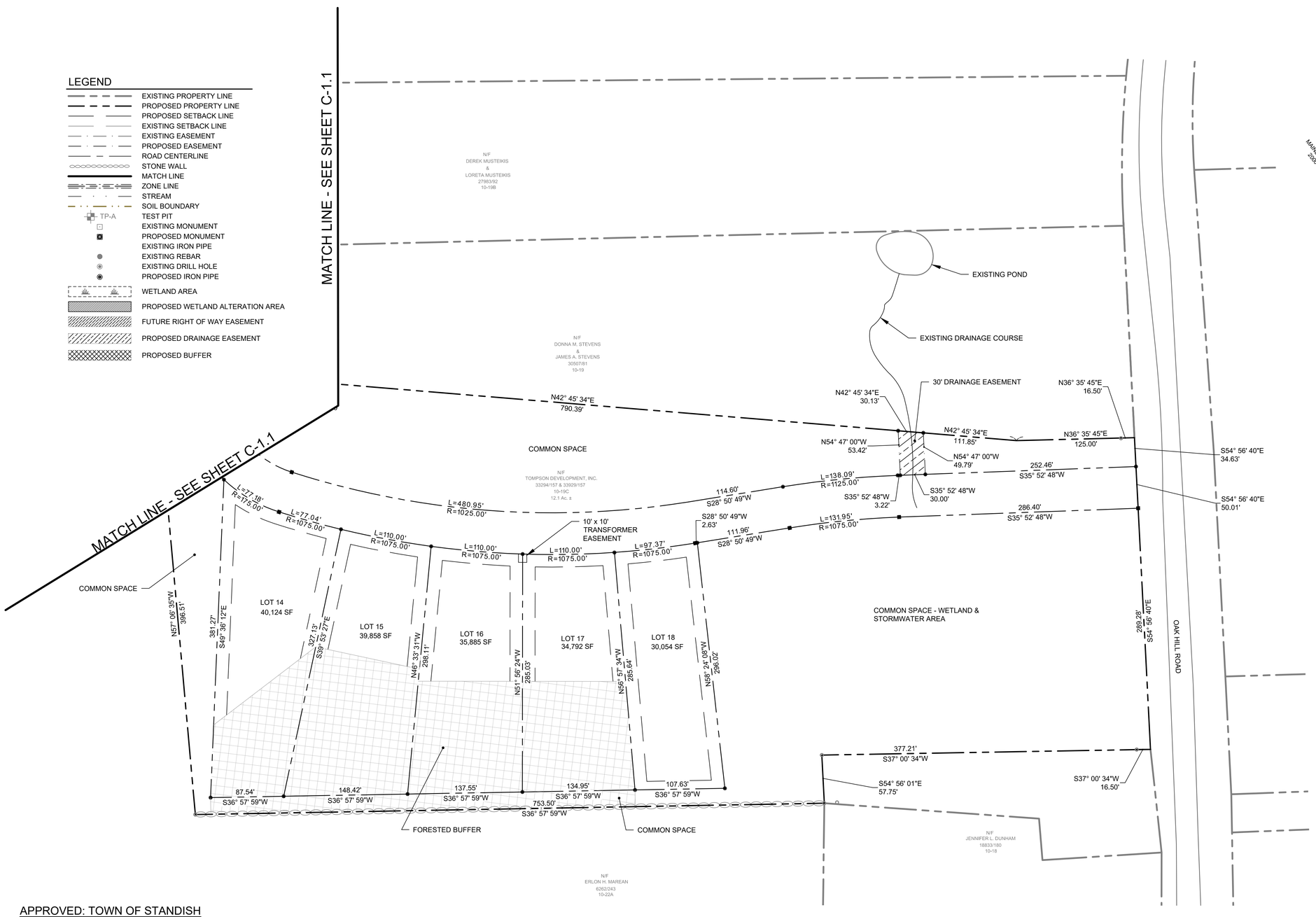
PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=60'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 B.DWG	

SHEET C-1.1

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK LINE
- EXISTING SETBACK LINE
- EXISTING EASEMENT
- PROPOSED EASEMENT
- ROAD CENTERLINE
- STONE WALL
- MATCH LINE
- ZONE LINE
- STREAM
- SOIL BOUNDARY
- TP-A TEST PIT
- EXISTING MONUMENT
- PROPOSED MONUMENT
- EXISTING IRON PIPE
- EXISTING REBAR
- EXISTING DRILL HOLE
- PROPOSED IRON PIPE
- WETLAND AREA
- PROPOSED WETLAND ALTERATION AREA
- FUTURE RIGHT OF WAY EASEMENT
- PROPOSED DRAINAGE EASEMENT
- PROPOSED BUFFER



NOTE: SEE SHEET 2 OF 3 FOR GENERAL NOTES

APPROVED: TOWN OF STANDISH
PLANNING BOARD

_____ DATE

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SHEET 3 OF 3

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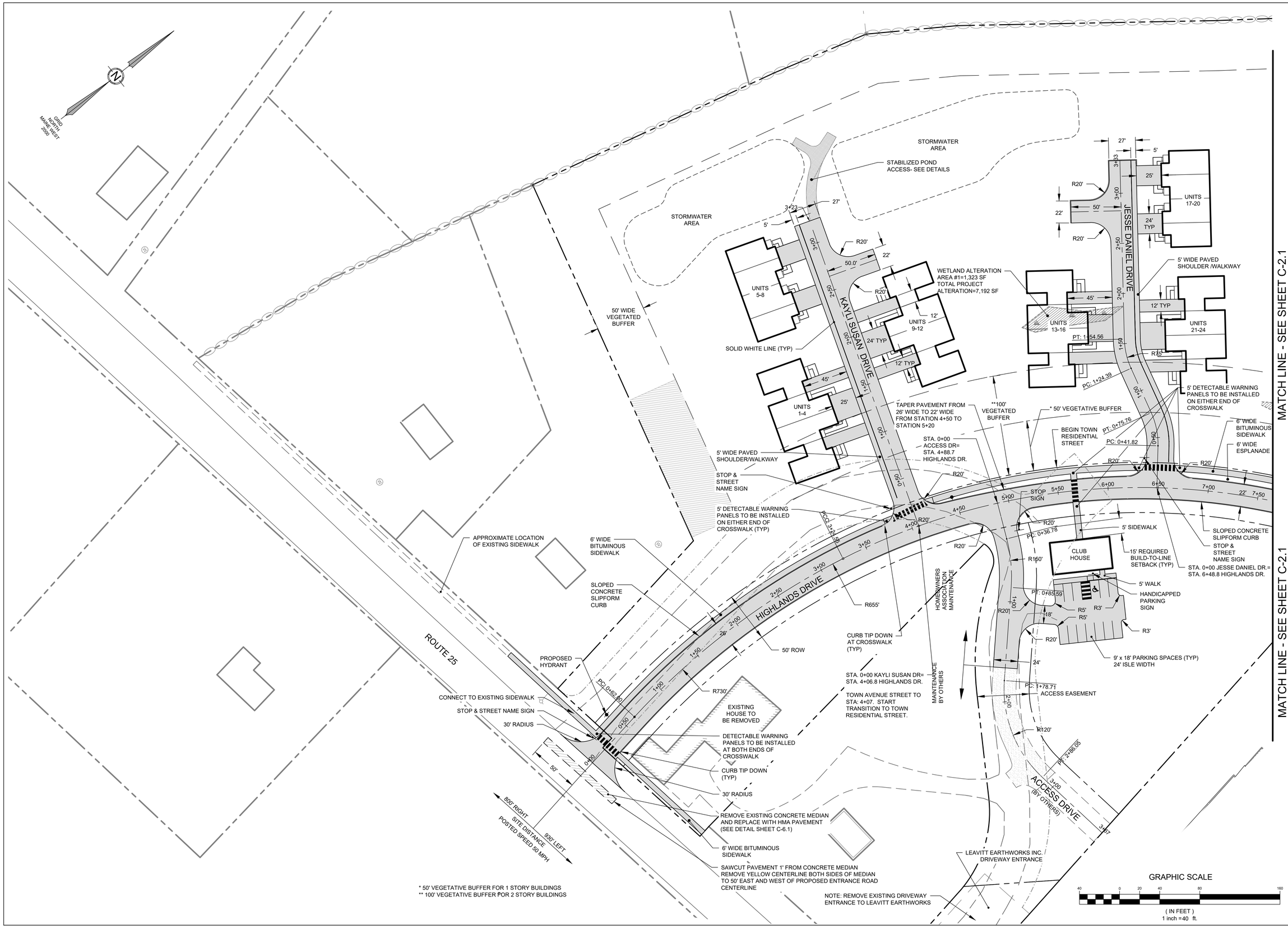
SHEET	C-1.2



MATCH LINE - SEE SHEET C-2.1

MATCH LINE - SEE SHEET C-2.1

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HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE LAYOUT PLAN

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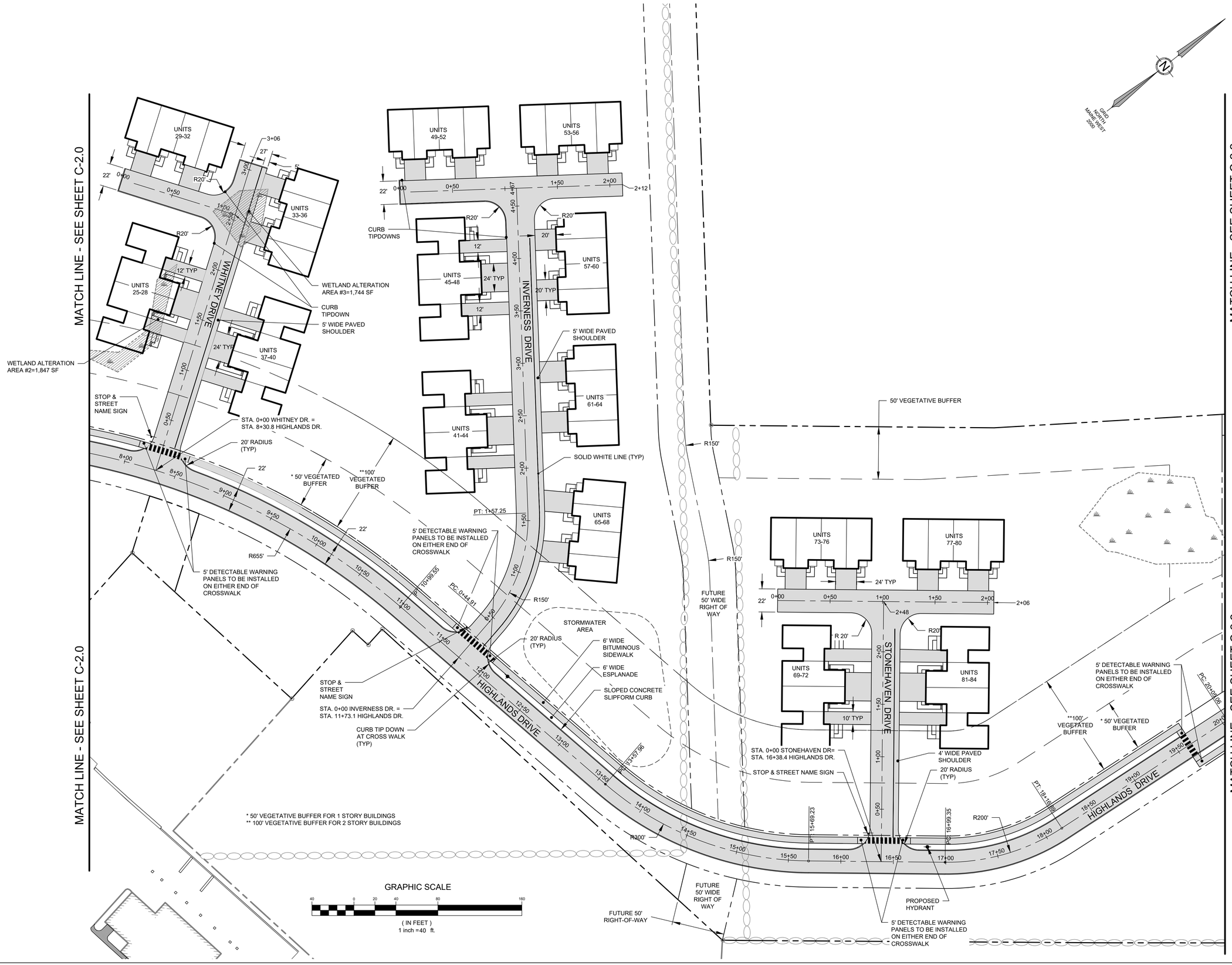

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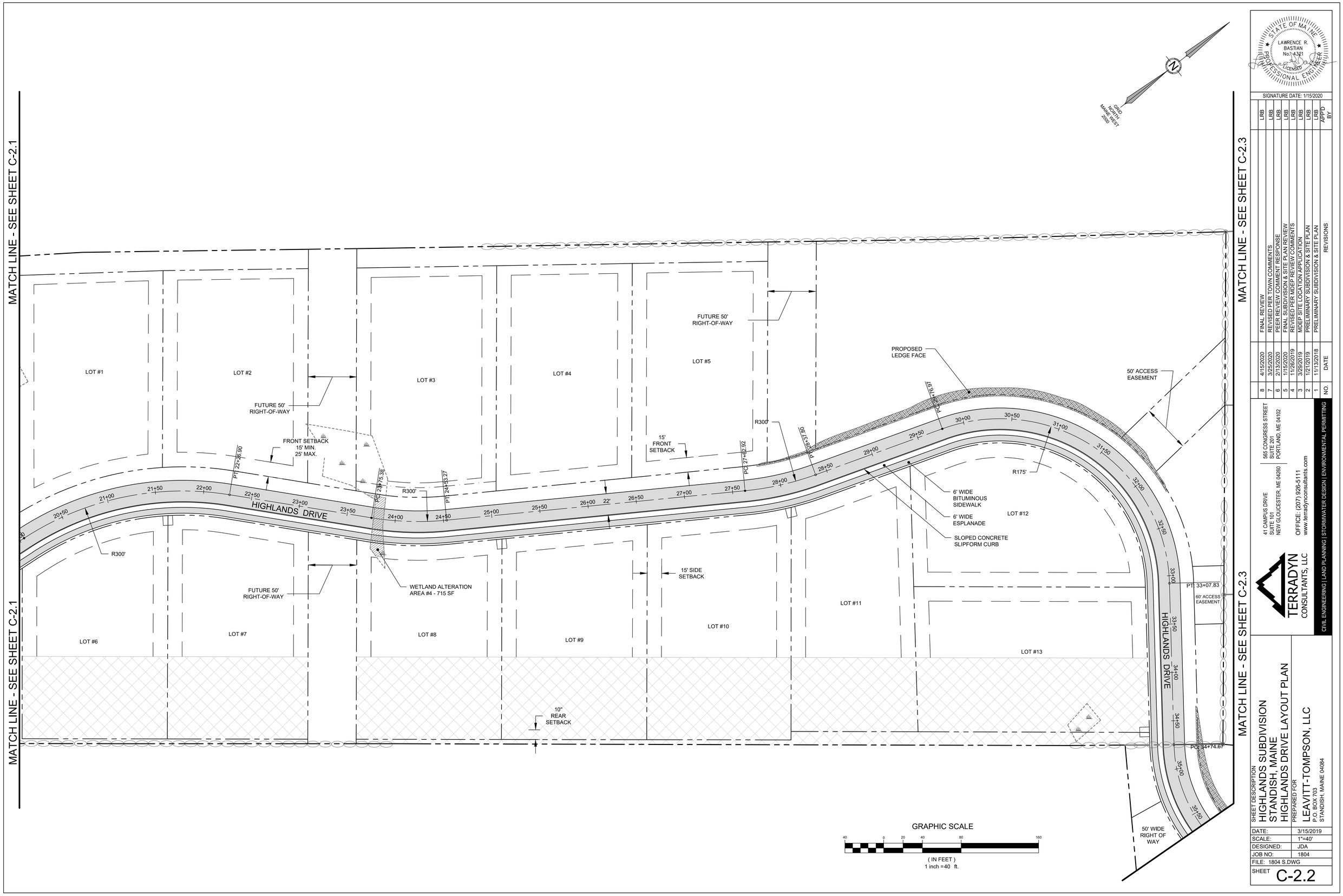

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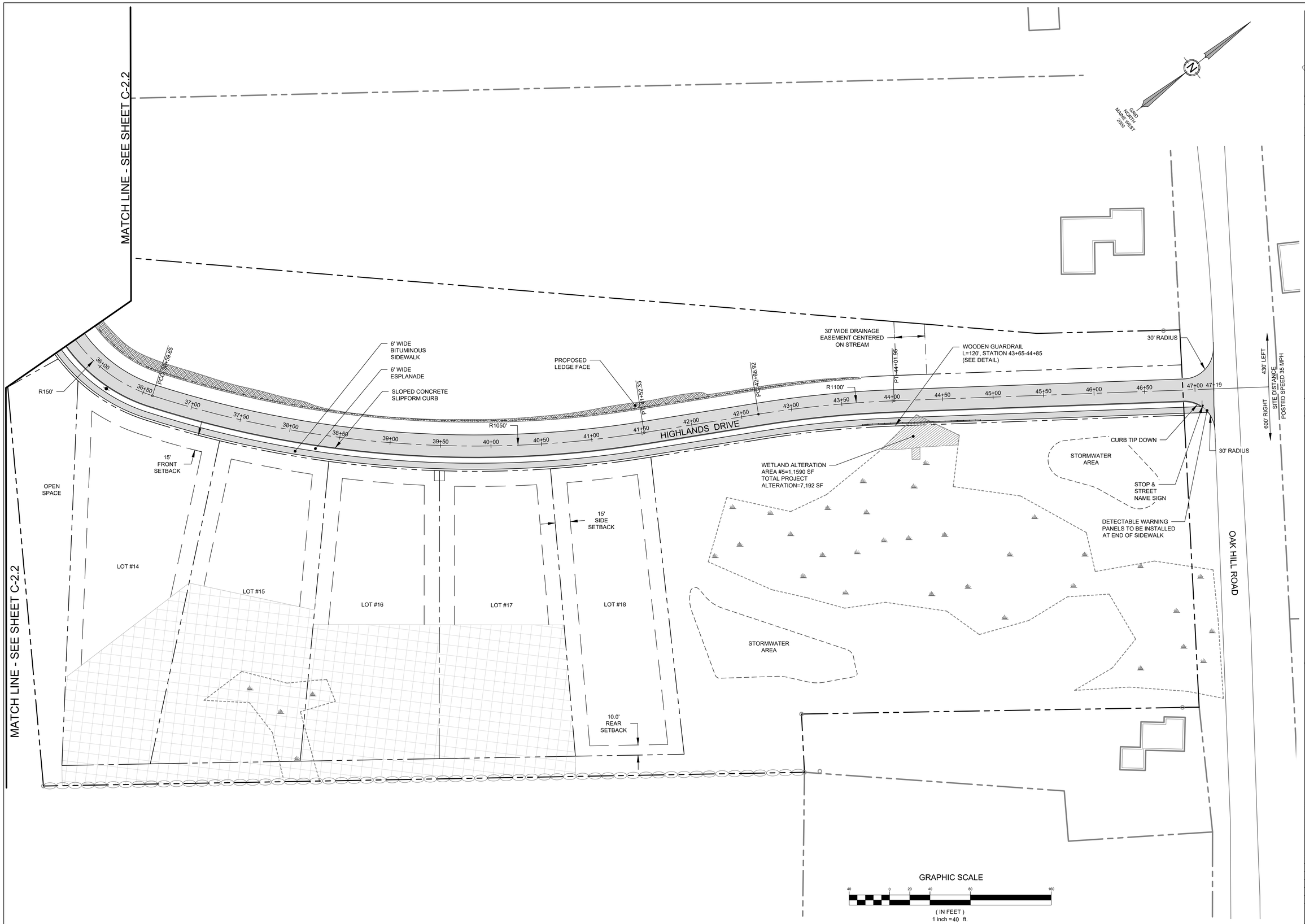

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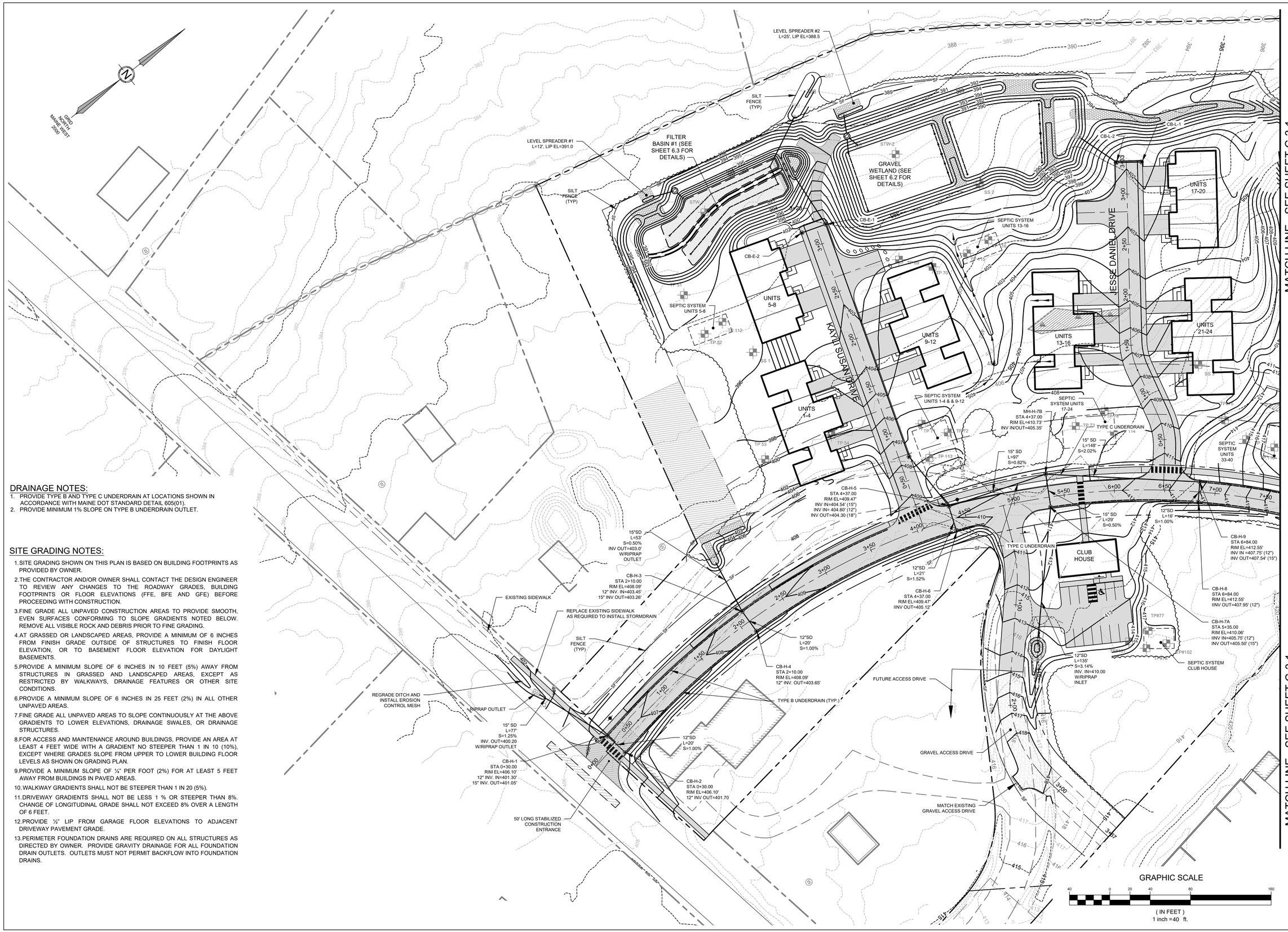


DRAINAGE NOTES:

1. PROVIDE TYPE B AND TYPE C UNDERDRAIN AT LOCATIONS SHOWN IN ACCORDANCE WITH MAINE DOT STANDARD DETAIL 605(01).
2. PROVIDE MINIMUM 1% SLOPE ON TYPE B UNDERDRAIN OUTLET.

SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
3. FINE GRADE ALL UNPAVED CONSTRUCTION AREAS TO PROVIDE SMOOTH, EVEN SURFACES CONFORMING TO SLOPE GRADIENTS NOTED BELOW. REMOVE ALL VISIBLE ROCK AND DEBRIS PRIOR TO FINE GRADING.
4. AT GRASSED OR LANDSCAPED AREAS, PROVIDE A MINIMUM OF 6 INCHES FROM FINISH GRADE OUTSIDE OF STRUCTURES TO FINISH FLOOR ELEVATION, OR TO BASEMENT FLOOR ELEVATION FOR DAYLIGHT BASEMENTS.
5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
7. FINE GRADE ALL UNPAVED AREAS TO SLOPE CONTINUOUSLY AT THE ABOVE GRADIENTS TO LOWER ELEVATIONS, DRAINAGE SWALES, OR DRAINAGE STRUCTURES.
8. FOR ACCESS AND MAINTENANCE AROUND BUILDINGS, PROVIDE AN AREA AT LEAST 4 FEET WIDE WITH A GRADIENT NO STEEPER THAN 1 IN 10 (10%), EXCEPT WHERE GRADES SLOPE FROM UPPER TO LOWER BUILDING FLOOR LEVELS AS SHOWN ON GRADING PLAN.
9. PROVIDE A MINIMUM SLOPE OF ¼" PER FOOT (2%) FOR AT LEAST 5 FEET AWAY FROM BUILDINGS IN PAVED AREAS.
10. WALKWAY GRADIENTS SHALL NOT BE STEEPER THAN 1 IN 20 (5%).
11. DRIVEWAY GRADIENTS SHALL NOT BE LESS 1 % OR STEEPER THAN 8%. CHANGE OF LONGITUDINAL GRADE SHALL NOT EXCEED 8% OVER A LENGTH OF 6 FEET.
12. PROVIDE ½" LIP FROM GARAGE FLOOR ELEVATIONS TO ADJACENT DRIVEWAY PAVEMENT GRADE.
13. PERIMETER FOUNDATION DRAINS ARE REQUIRED ON ALL STRUCTURES AS DIRECTED BY OWNER. PROVIDE GRAVITY DRAINAGE FOR ALL FOUNDATION DRAIN OUTLETS. OUTLETS MUST NOT PERMIT BACKFLOW INTO FOUNDATION DRAINS.

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

MATCH LINE - SEE SHEET C-3.1

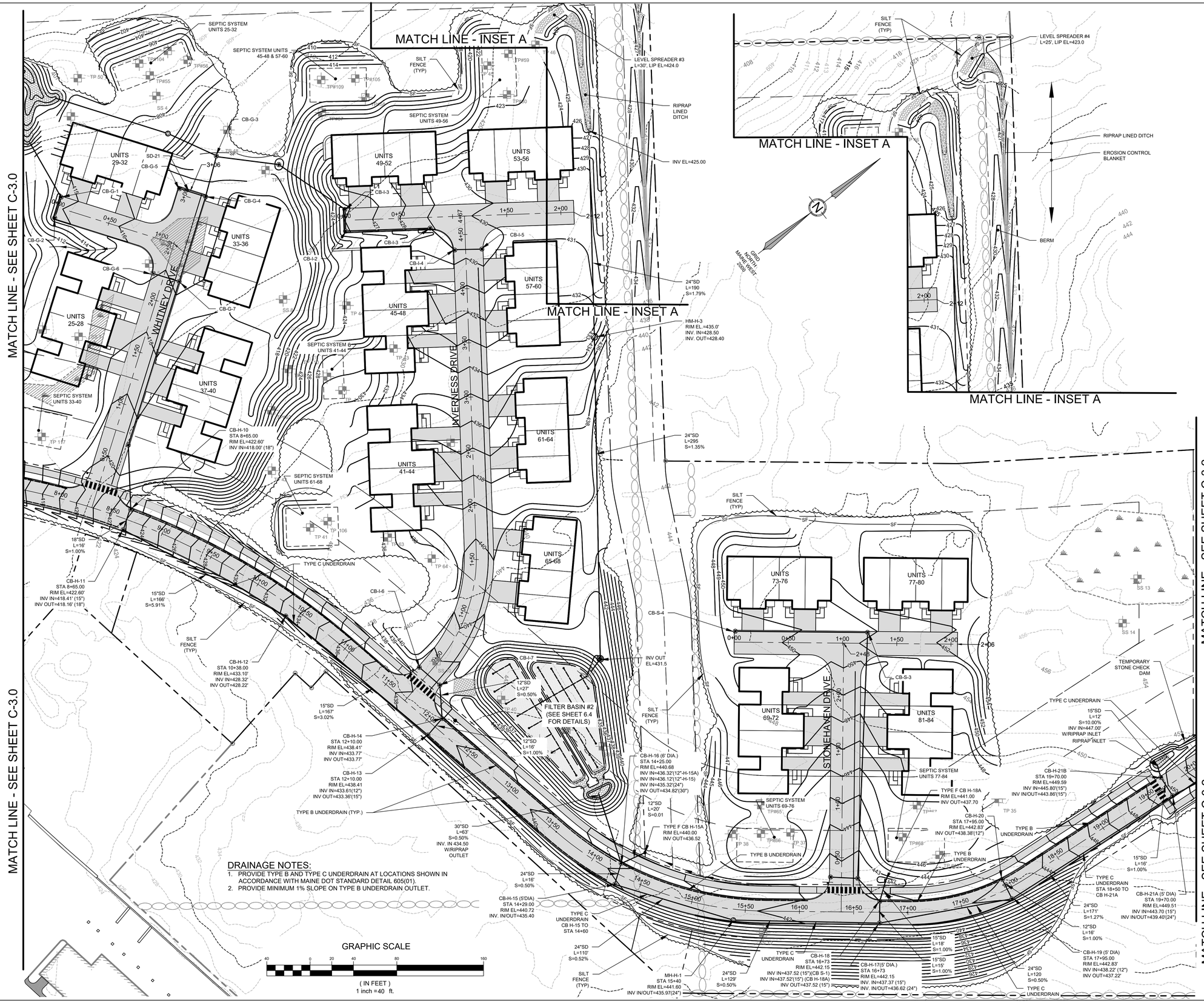
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	

SHEET C-3.0



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
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7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
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4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

FOR PERMITTING

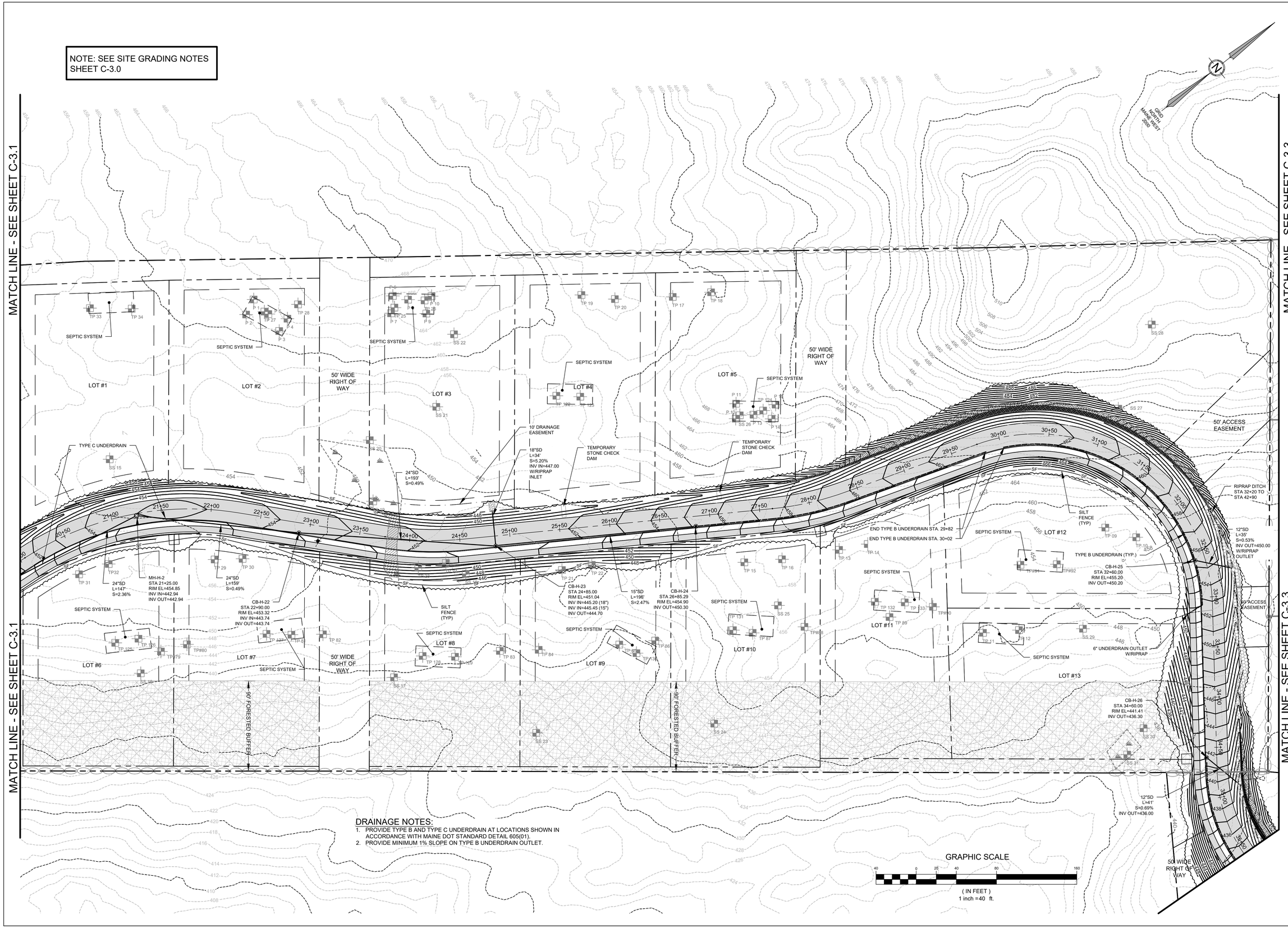
TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE:	1804 S.DWG
SHEET	C-3.1

NOTE: SEE SITE GRADING NOTES
SHEET C-3.0



DRAINAGE NOTES:

1. PROVIDE TYPE B AND TYPE C UNDERDRAIN AT LOCATIONS SHOWN IN ACCORDANCE WITH MAINE DOT STANDARD DETAIL 605(01).
2. PROVIDE MINIMUM 1% SLOPE ON TYPE B UNDERDRAIN OUTLET.

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

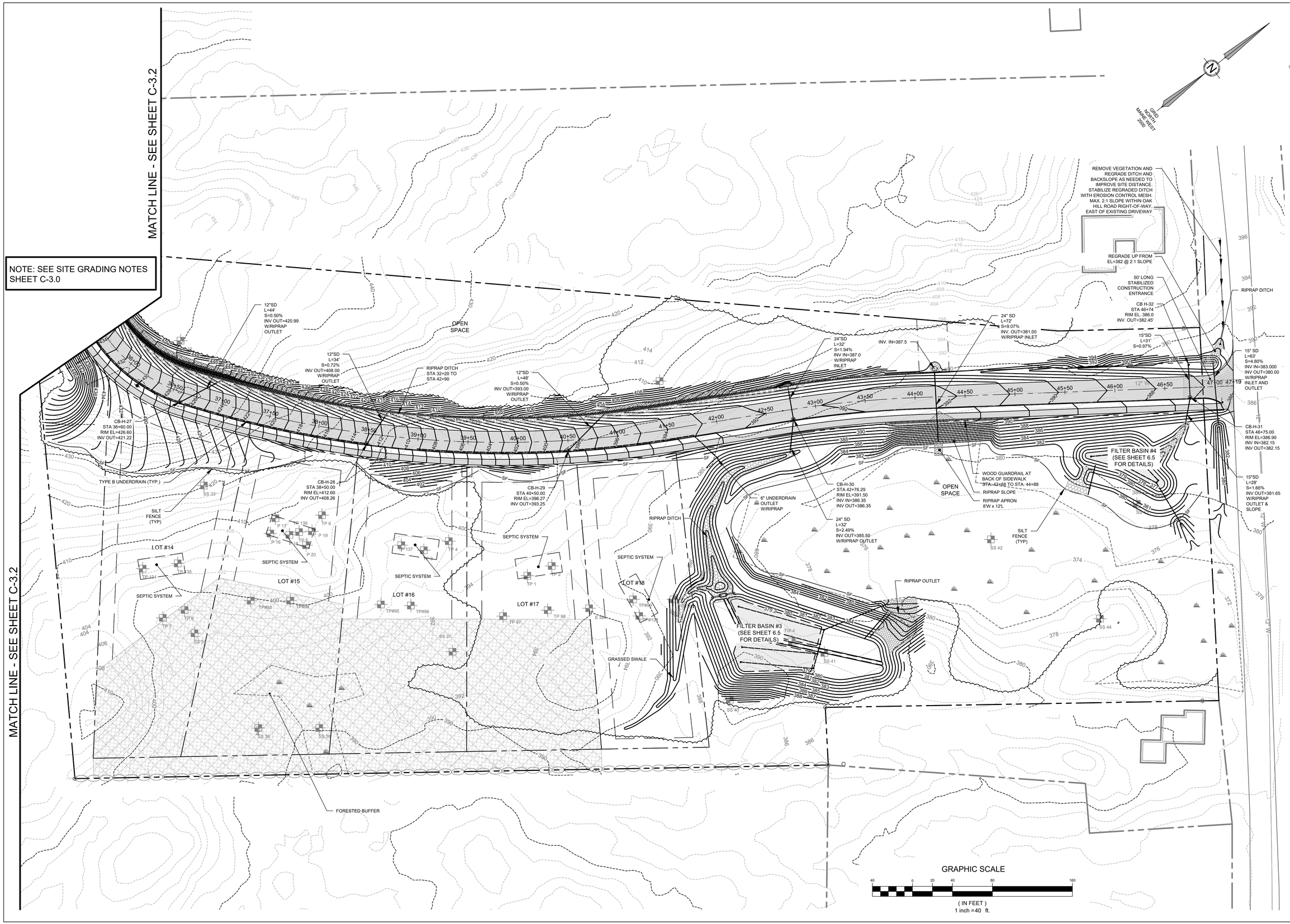
FOR PERMITTING

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	C-3.2



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

OFFICE: (207) 926-5111
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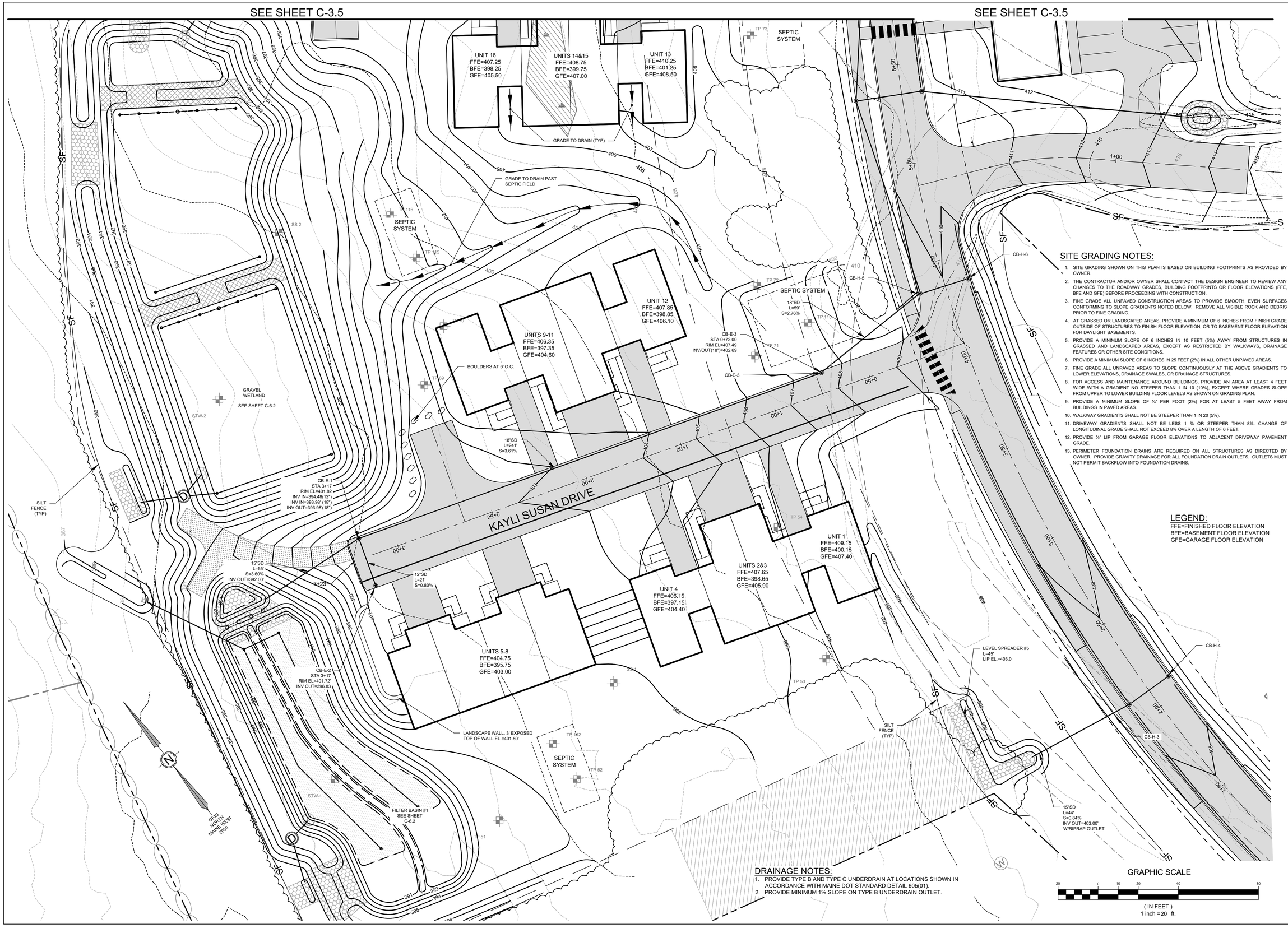
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	C-3.3



SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
3. FINE GRADE ALL UNPAVED CONSTRUCTION AREAS TO PROVIDE SMOOTH, EVEN SURFACES CONFORMING TO SLOPE GRADIENTS NOTED BELOW. REMOVE ALL VISIBLE ROCK AND DEBRIS PRIOR TO FINE GRADING.
4. AT GRASSED OR LANDSCAPED AREAS, PROVIDE A MINIMUM OF 6 INCHES FROM FINISH GRADE OUTSIDE OF STRUCTURES TO FINISH FLOOR ELEVATION, OR TO BASEMENT FLOOR ELEVATION FOR DAYLIGHT BASEMENTS.
5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
7. FINE GRADE ALL UNPAVED AREAS TO SLOPE CONTINUOUSLY AT THE ABOVE GRADIENTS TO LOWER ELEVATIONS, DRAINAGE SWALES, OR DRAINAGE STRUCTURES.
8. FOR ACCESS AND MAINTENANCE AROUND BUILDINGS, PROVIDE AN AREA AT LEAST 4 FEET WIDE WITH A GRADIENT NO STEEPER THAN 1 IN 10 (10%), EXCEPT WHERE GRADES SLOPE FROM UPPER TO LOWER BUILDING FLOOR LEVELS AS SHOWN ON GRADING PLAN.
9. PROVIDE A MINIMUM SLOPE OF ¼" PER FOOT (2%) FOR AT LEAST 5 FEET AWAY FROM BUILDINGS IN PAVED AREAS.
10. WALKWAY GRADIENTS SHALL NOT BE STEEPER THAN 1 IN 20 (5%).
11. DRIVEWAY GRADIENTS SHALL NOT BE LESS 1 % OR STEEPER THAN 8%. CHANGE OF LONGITUDINAL GRADE SHALL NOT EXCEED 8% OVER A LENGTH OF 6 FEET.
12. PROVIDE ½" LIP FROM GARAGE FLOOR ELEVATIONS TO ADJACENT DRIVEWAY PAVEMENT GRADE.
13. PERIMETER FOUNDATION DRAINS ARE REQUIRED ON ALL STRUCTURES AS DIRECTED BY OWNER. PROVIDE GRAVITY DRAINAGE FOR ALL FOUNDATION DRAIN OUTLETS. OUTLETS MUST NOT PERMIT BACKFLOW INTO FOUNDATION DRAINS.

LEGEND:

FFE=FINISHED FLOOR ELEVATION
BFE=BASEMENT FLOOR ELEVATION
GFE=GARAGE FLOOR ELEVATION

DRAINAGE NOTES:

1. PROVIDE TYPE B AND TYPE C UNDERDRAIN AT LOCATIONS SHOWN IN ACCORDANCE WITH MAINE DOT STANDARD DETAIL 605(01).
2. PROVIDE MINIMUM 1% SLOPE ON TYPE B UNDERDRAIN OUTLET.

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
KAYLI SUSAN DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=20'
DESIGNED:	JDA
JOB NO:	1804
FILE:	1804 S.DWG
SHEET	C-3.4

SEE SHEET C-3.6

SEE SHEET C-3.6

SEE SHEET C-3.4

SEE SHEET C-3.4

SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
3. FINE GRADE ALL UNPAVED CONSTRUCTION AREAS TO PROVIDE SMOOTH, EVEN SURFACES CONFORMING TO SLOPE GRADIENTS NOTED BELOW. REMOVE ALL VISIBLE ROCK AND DEBRIS PRIOR TO FINE GRADING.
4. AT GRASSED OR LANDSCAPED AREAS, PROVIDE A MINIMUM OF 6 INCHES FROM FINISH GRADE OUTSIDE OF STRUCTURES TO FINISH FLOOR ELEVATION, OR TO BASEMENT FLOOR ELEVATION FOR DAYLIGHT BASEMENTS.
5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
7. FINE GRADE ALL UNPAVED AREAS TO SLOPE CONTINUOUSLY AT THE ABOVE GRADIENTS TO LOWER ELEVATIONS, DRAINAGE SWALES, OR DRAINAGE STRUCTURES.
8. FOR ACCESS AND MAINTENANCE AROUND BUILDINGS, PROVIDE AN AREA AT LEAST 4 FEET WIDE WITH A GRADIENT NO STEEPER THAN 1 IN 10 (10%), EXCEPT WHERE GRADES SLOPE FROM UPPER TO LOWER BUILDING FLOOR LEVELS AS SHOWN ON GRADING PLAN.
9. PROVIDE A MINIMUM SLOPE OF ¼" PER FOOT (2%) FOR AT LEAST 5 FEET AWAY FROM BUILDINGS IN PAVED AREAS.
10. WALKWAY GRADIENTS SHALL NOT BE STEEPER THAN 1 IN 20 (5%).
11. DRIVEWAY GRADIENTS SHALL NOT BE LESS 1 % OR STEEPER THAN 8%. CHANGE OF LONGITUDINAL GRADE SHALL NOT EXCEED 8% OVER A LENGTH OF 6 FEET.
12. PROVIDE ½" LIP FROM GARAGE FLOOR ELEVATIONS TO ADJACENT DRIVEWAY PAVEMENT GRADE.
13. PERIMETER FOUNDATION DRAINS ARE REQUIRED ON ALL STRUCTURES AS DIRECTED BY OWNER. PROVIDE GRAVITY DRAINAGE FOR ALL FOUNDATION DRAIN OUTLETS. OUTLETS MUST NOT PERMIT BACKFLOW INTO FOUNDATION DRAINS.

LEGEND:

FFE=FINISHED FLOOR ELEVATION
BFE=BASEMENT FLOOR ELEVATION
GFE=GARAGE FLOOR ELEVATION

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
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7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
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2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
JESSE DANIEL DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=20'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	

SHEET C-3.5

LEGEND:

FFE=FINISHED FLOOR ELEVATION
BFE=BASEMENT FLOOR ELEVATION
GFE=GARAGE FLOOR ELEVATION

SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
3. FINE GRADE ALL UNPAVED CONSTRUCTION AREAS TO PROVIDE SMOOTH, EVEN SURFACES CONFORMING TO SLOPE GRADIENTS NOTED BELOW. REMOVE ALL VISIBLE ROCK AND DEBRIS PRIOR TO FINE GRADING.
4. AT GRASSED OR LANDSCAPED AREAS, PROVIDE A MINIMUM OF 6 INCHES FROM FINISH GRADE OUTSIDE OF STRUCTURES TO FINISH FLOOR ELEVATION, OR TO BASEMENT FLOOR ELEVATION FOR DAYLIGHT BASEMENTS.
5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
7. FINE GRADE ALL UNPAVED AREAS TO SLOPE CONTINUOUSLY AT THE ABOVE GRADIENTS TO LOWER ELEVATIONS, DRAINAGE SWALES, OR DRAINAGE STRUCTURES.
8. FOR ACCESS AND MAINTENANCE AROUND BUILDINGS, PROVIDE AN AREA AT LEAST 4 FEET WIDE WITH A GRADIENT NO STEEPER THAN 1 IN 10 (10%), EXCEPT WHERE GRADES SLOPE FROM UPPER TO LOWER BUILDING FLOOR LEVELS AS SHOWN ON GRADING PLAN.
9. PROVIDE A MINIMUM SLOPE OF ¼" PER FOOT (2%) FOR AT LEAST 5 FEET AWAY FROM BUILDINGS IN PAVED AREAS.
10. WALKWAY GRADIENTS SHALL NOT BE STEEPER THAN 1 IN 20 (5%).
11. DRIVEWAY GRADIENTS SHALL NOT BE LESS 1 % OR STEEPER THAN 8%. CHANGE OF LONGITUDINAL GRADE SHALL NOT EXCEED 8% OVER A LENGTH OF 6 FEET.
12. PROVIDE ½" LIP FROM GARAGE FLOOR ELEVATIONS TO ADJACENT DRIVEWAY PAVEMENT GRADE.
13. PERIMETER FOUNDATION DRAINS ARE REQUIRED ON ALL STRUCTURES AS DIRECTED BY OWNER. PROVIDE GRAVITY DRAINAGE FOR ALL FOUNDATION DRAIN OUTLETS. OUTLETS MUST NOT PERMIT BACKFLOW INTO FOUNDATION DRAINS.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch =20 ft.

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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TERRADYN CONSULTANTS, LLC
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41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
WHITNEY DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=20'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	C-3.6

SEE SHEET C-3.8

SEE SHEET C-3.8

SEE SHEET C-3.6

SEE SHEET C-3.6

SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
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5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
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GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
INVERNESS DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=20'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	

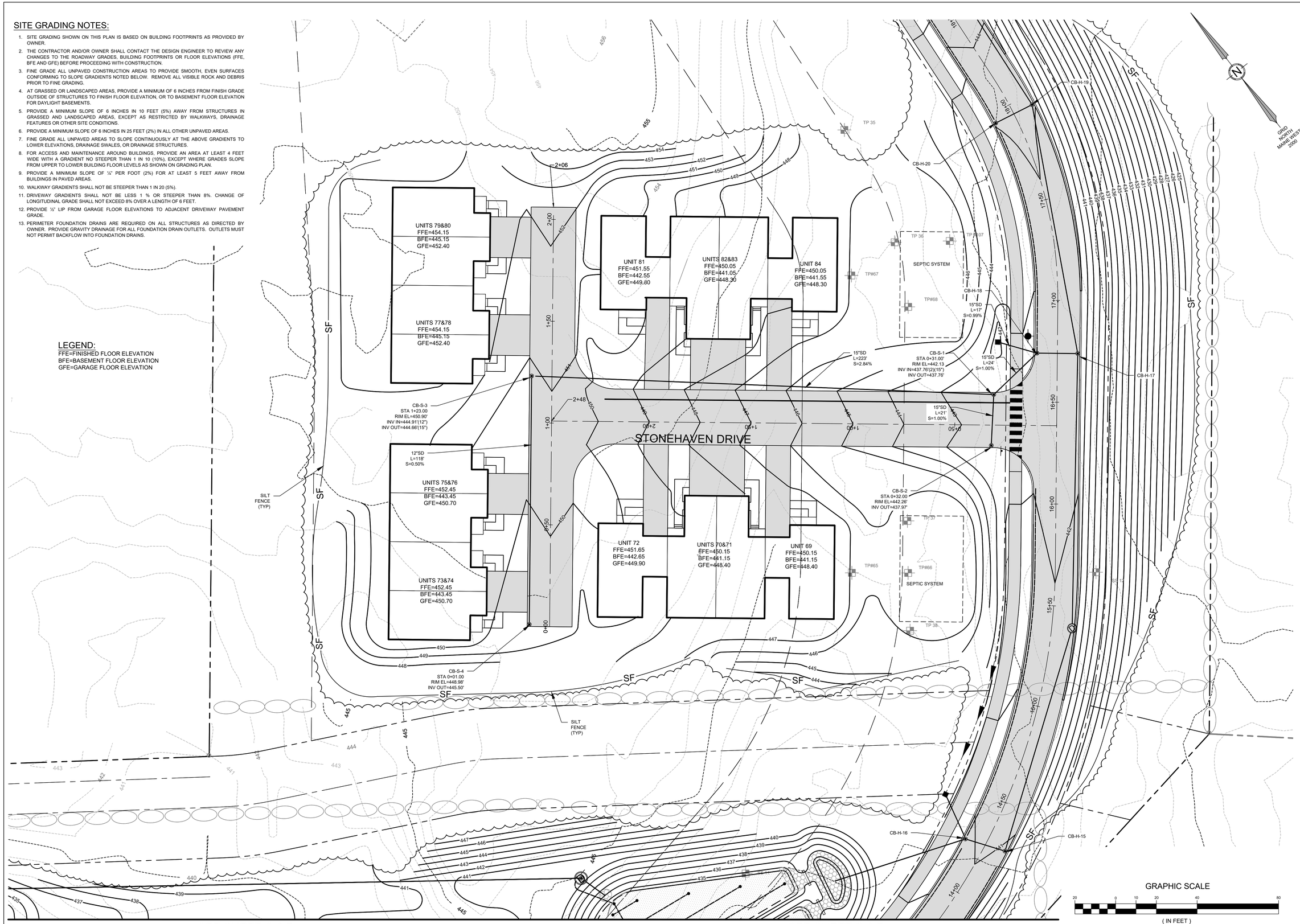
SHEET C-3.7

SITE GRADING NOTES:

1. SITE GRADING SHOWN ON THIS PLAN IS BASED ON BUILDING FOOTPRINTS AS PROVIDED BY OWNER.
2. THE CONTRACTOR AND/OR OWNER SHALL CONTACT THE DESIGN ENGINEER TO REVIEW ANY CHANGES TO THE ROADWAY GRADES, BUILDING FOOTPRINTS OR FLOOR ELEVATIONS (FFE, BFE AND GFE) BEFORE PROCEEDING WITH CONSTRUCTION.
3. FINE GRADE ALL UNPAVED CONSTRUCTION AREAS TO PROVIDE SMOOTH, EVEN SURFACES CONFORMING TO SLOPE GRADIENTS NOTED BELOW. REMOVE ALL VISIBLE ROCK AND DEBRIS PRIOR TO FINE GRADING.
4. AT GRASSED OR LANDSCAPED AREAS, PROVIDE A MINIMUM OF 6 INCHES FROM FINISH GRADE OUTSIDE OF STRUCTURES TO FINISH FLOOR ELEVATION, OR TO BASEMENT FLOOR ELEVATION FOR DAYLIGHT BASEMENTS.
5. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 10 FEET (5%) AWAY FROM STRUCTURES IN GRASSED AND LANDSCAPED AREAS, EXCEPT AS RESTRICTED BY WALKWAYS, DRAINAGE FEATURES OR OTHER SITE CONDITIONS.
6. PROVIDE A MINIMUM SLOPE OF 6 INCHES IN 25 FEET (2%) IN ALL OTHER UNPAVED AREAS.
7. FINE GRADE ALL UNPAVED AREAS TO SLOPE CONTINUOUSLY AT THE ABOVE GRADIENTS TO LOWER ELEVATIONS, DRAINAGE SWALES, OR DRAINAGE STRUCTURES.
8. FOR ACCESS AND MAINTENANCE AROUND BUILDINGS, PROVIDE AN AREA AT LEAST 4 FEET WIDE WITH A GRADIENT NO STEEPER THAN 1 IN 10 (10%), EXCEPT WHERE GRADES SLOPE FROM UPPER TO LOWER BUILDING FLOOR LEVELS AS SHOWN ON GRADING PLAN.
9. PROVIDE A MINIMUM SLOPE OF ¼" PER FOOT (2%) FOR AT LEAST 5 FEET AWAY FROM BUILDINGS IN PAVED AREAS.
10. WALKWAY GRADIENTS SHALL NOT BE STEEPER THAN 1 IN 20 (5%).
11. DRIVEWAY GRADIENTS SHALL NOT BE LESS 1 % OR STEEPER THAN 8%. CHANGE OF LONGITUDINAL GRADE SHALL NOT EXCEED 8% OVER A LENGTH OF 6 FEET.
12. PROVIDE ½" LIP FROM GARAGE FLOOR ELEVATIONS TO ADJACENT DRIVEWAY PAVEMENT GRADE.
13. PERIMETER FOUNDATION DRAINS ARE REQUIRED ON ALL STRUCTURES AS DIRECTED BY OWNER. PROVIDE GRAVITY DRAINAGE FOR ALL FOUNDATION DRAIN OUTLETS. OUTLETS MUST NOT PERMIT BACKFLOW INTO FOUNDATION DRAINS.

LEGEND:

FFE=FINISHED FLOOR ELEVATION
BFE=BASEMENT FLOOR ELEVATION
GFE=GARAGE FLOOR ELEVATION



SEE SHEET C-3.7
SEE SHEET C-3.7

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04101

OFFICE : (207) 926-5111
www.terradynconsultants.com

TERRADYN
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CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

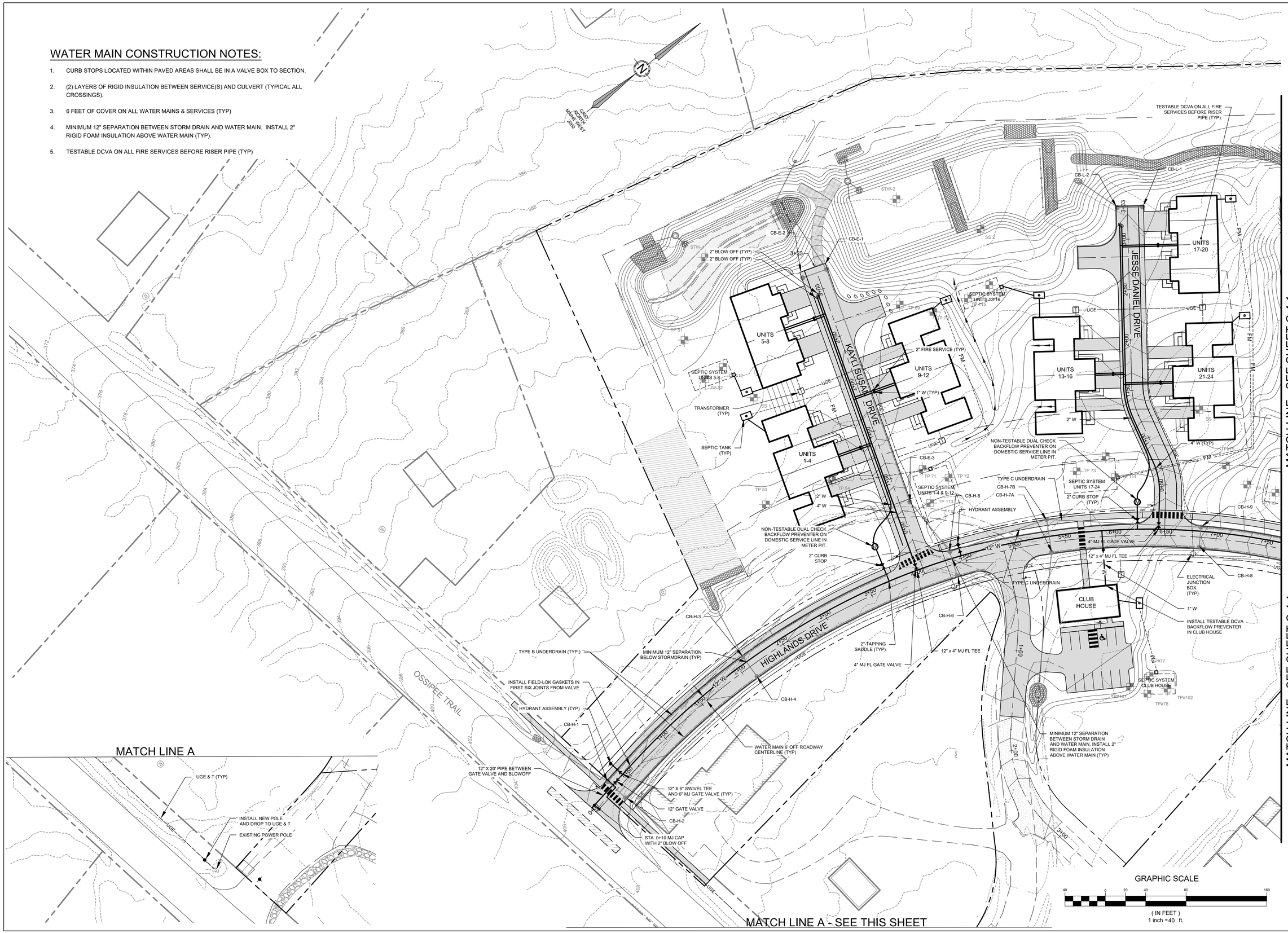
SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
STONEHAVEN DRIVE GRADING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=20'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	C-3.8

WATER MAIN CONSTRUCTION NOTES:

1. CURB STOPS LOCATED WITHIN PAVED AREAS SHALL BE IN A VALVE BOX TO SECTION.
2. (2) LAYERS OF RIGID INSULATION BETWEEN SERVICE(S) AND CULVERT (TYPICAL ALL CROSSINGS).
3. 6 FEET OF COVER ON ALL WATER MAINS & SERVICES (TYP)
4. MINIMUM 12" SEPARATION BETWEEN STORM DRAIN AND WATER MAIN. INSTALL 2" RIGID FOAM INSULATION ABOVE WATER MAIN (TYP).
5. TESTABLE DCVA ON ALL FIRE SERVICES BEFORE RISER PIPE (TYP)



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PERMITTING

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE UTILITY PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
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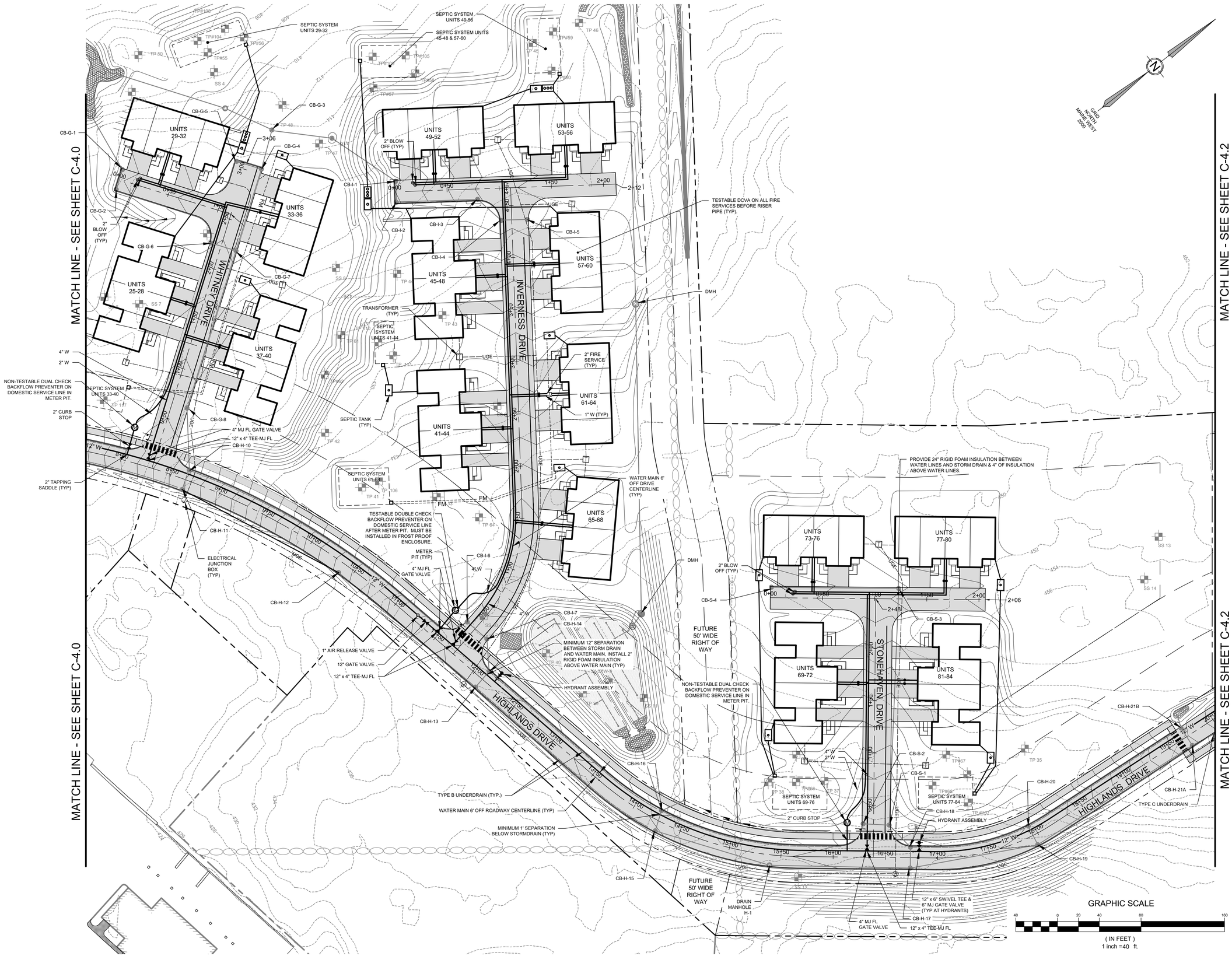
SHEET C-4.0



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565 CONGRESS STREET
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HIGHLANDS DRIVE UTILITY PLAN

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P.O. BOX 703
STANDISH, MAINE 04084

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SHEET C-4.1

MATCH LINE - SEE SHEET C-4.1

MATCH LINE - SEE SHEET C-4.3

HIGHLANDS DRIVE

LOT #1
LOT #2
LOT #3
LOT #4
LOT #5
LOT #6
LOT #7
LOT #8
LOT #9
LOT #10
LOT #11
LOT #12
LOT #13

FUTURE 50' WIDE RIGHT OF WAY

CURB STOPS AT PROPERTY LINE (TYP)
12" GATE VALVE (TYP)
1" AIR RELEASE VALVE
12" x 6" SWIVEL TEE AND 6" GATE VALVE. PROVIDE 3-5' OF 12" PIPE BETWEEN TEE AND VALVES (TYP)
12" GV (TYP)
MINIMUM 12" SEPARATION BELOW STORMDRAIN (TYP)
1" SERVICE (TYP)
MH-H-1
TYPE C UNDERDRAIN
CB-H-22
MINIMUM 12" SEPARATION BETWEEN STORM DRAIN AND WATER MAIN, INSTALL 2" RIGID FOAM INSULATION ABOVE WATER MAIN (TYP)
HYD ASSEMBLY (TYP)
PROVIDE MIN. 6' SEPARATION EDGE -TO-EDGE BETWEEN DUCT BANK AND HYDRANT (TYP)
INSTALL FIELD-LOK GASKETS IN SLIP JOINS ON LONG SIDE OF HYDRANT BRANCH
CB-H-23
CB-4-24
TRANSFORMER (TYP)
END TYPE B UNDERDRAIN STA. 29+82
END TYPE B UNDERDRAIN STA. 30+02
WATER MAIN 6' OFF ROADWAY CENTERLINE (TYP)
TYPE B UNDERDRAIN (TYP.)
CB-H-25
6" UNDERDRAIN OUTLET W/RIPRAP
CB-H-26
50' ACCESS EASEMENT
60' ACCESS EASEMENT
50' WIDE RIGHT OF WAY
GRID NORTH NAD 83 WEST 2900

GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft.

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565 CONGRESS STREET
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41 CAMPUS DRIVE
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HIGHLANDS DRIVE UTILITY PLAN

PREPARED FOR
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P.O. BOX 703
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SHEET	C-4.2

STATE OF MAINE
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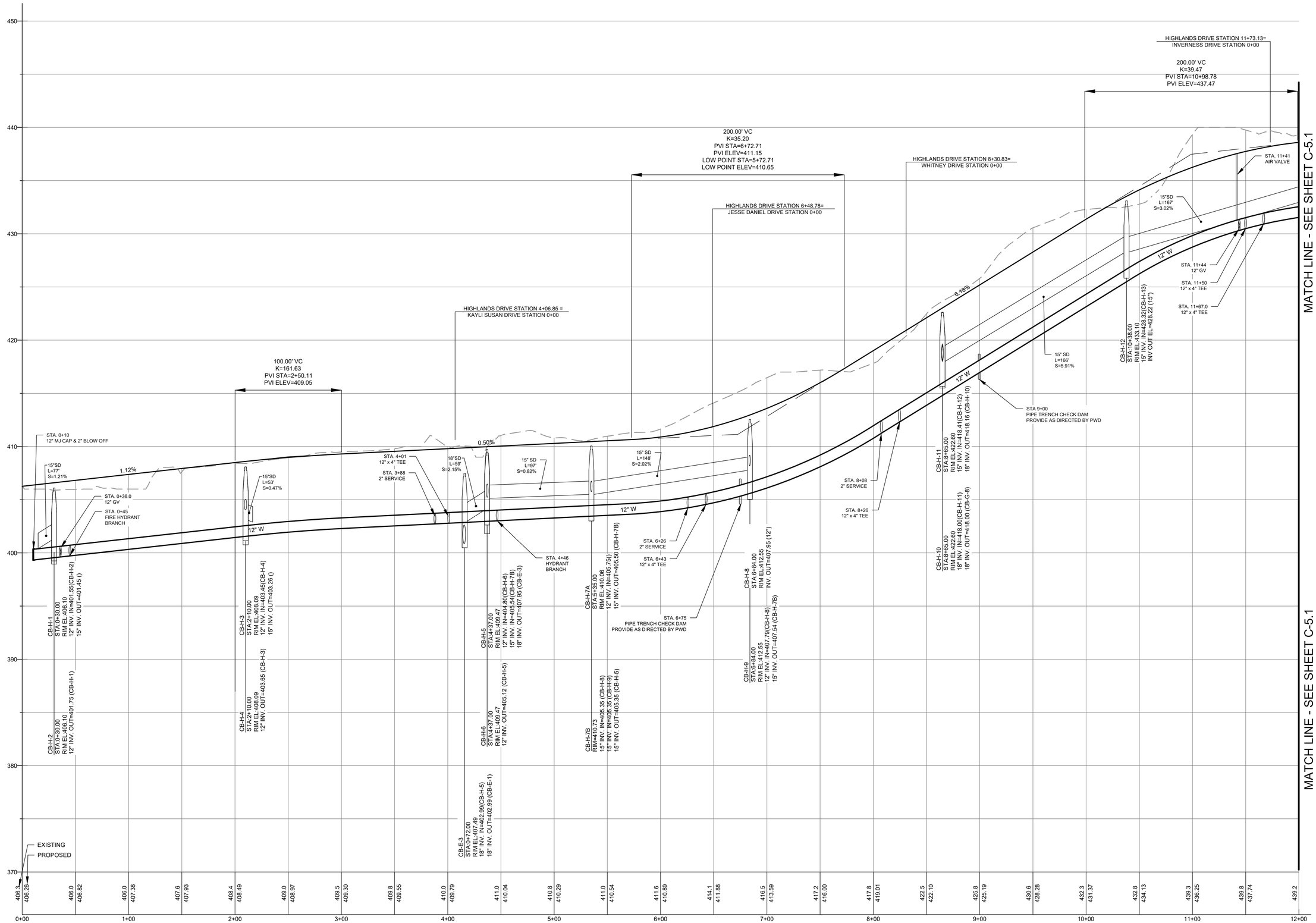

PROFILE: HIGHLANDS DRIVE - STA 0+00 - 12+00

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL

STATE OF MAINE
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SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE ROADWAY PROFILE

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

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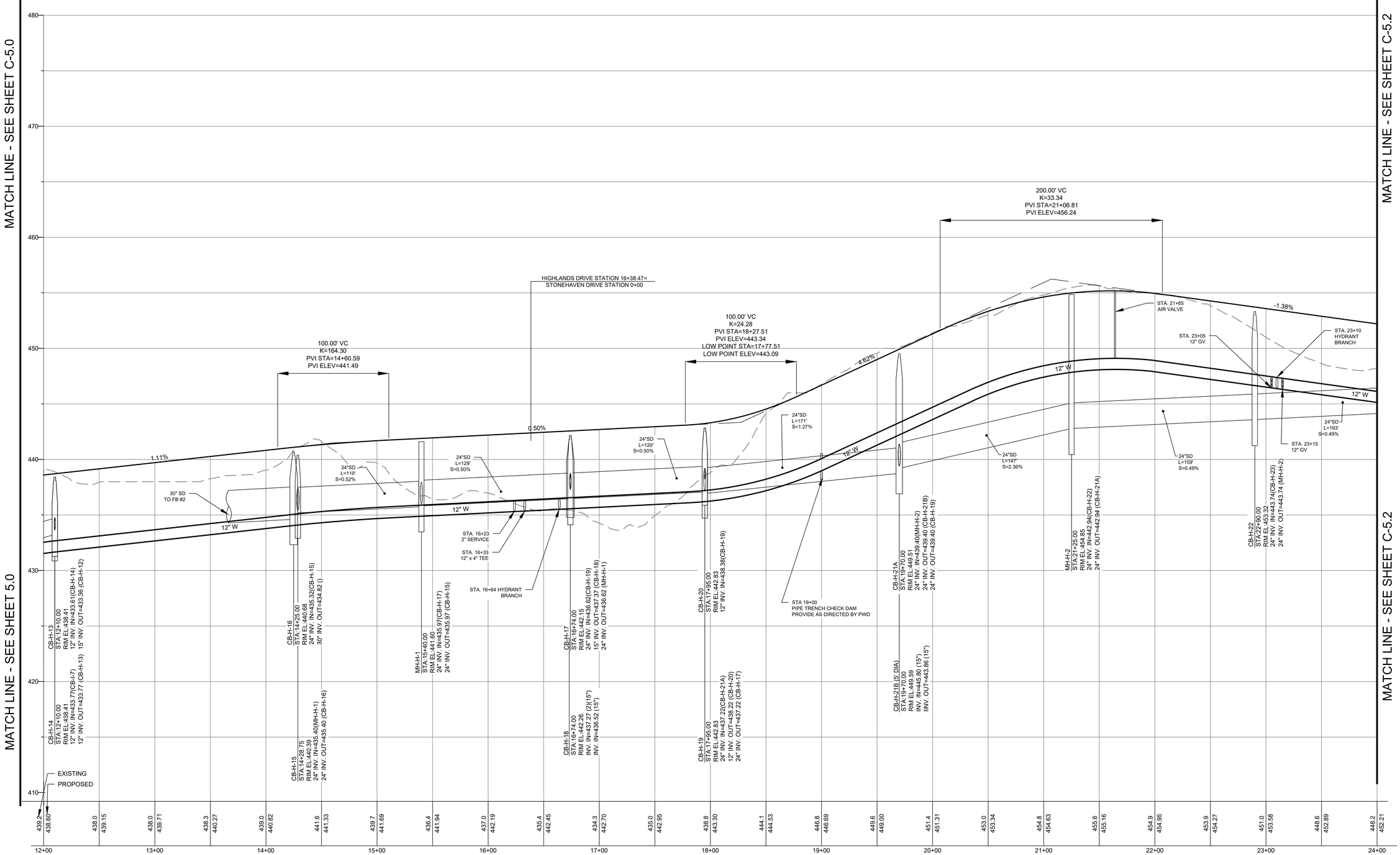
SHEET	C-5.0



PROFILE: HIGHLANDS DRIVE - STA 12+00 - 24+00

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL

STATE OF MAINE
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SHEET DESCRIPTION
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HIGHLANDS DRIVE ROADWAY PROFILE

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P.O. BOX 703
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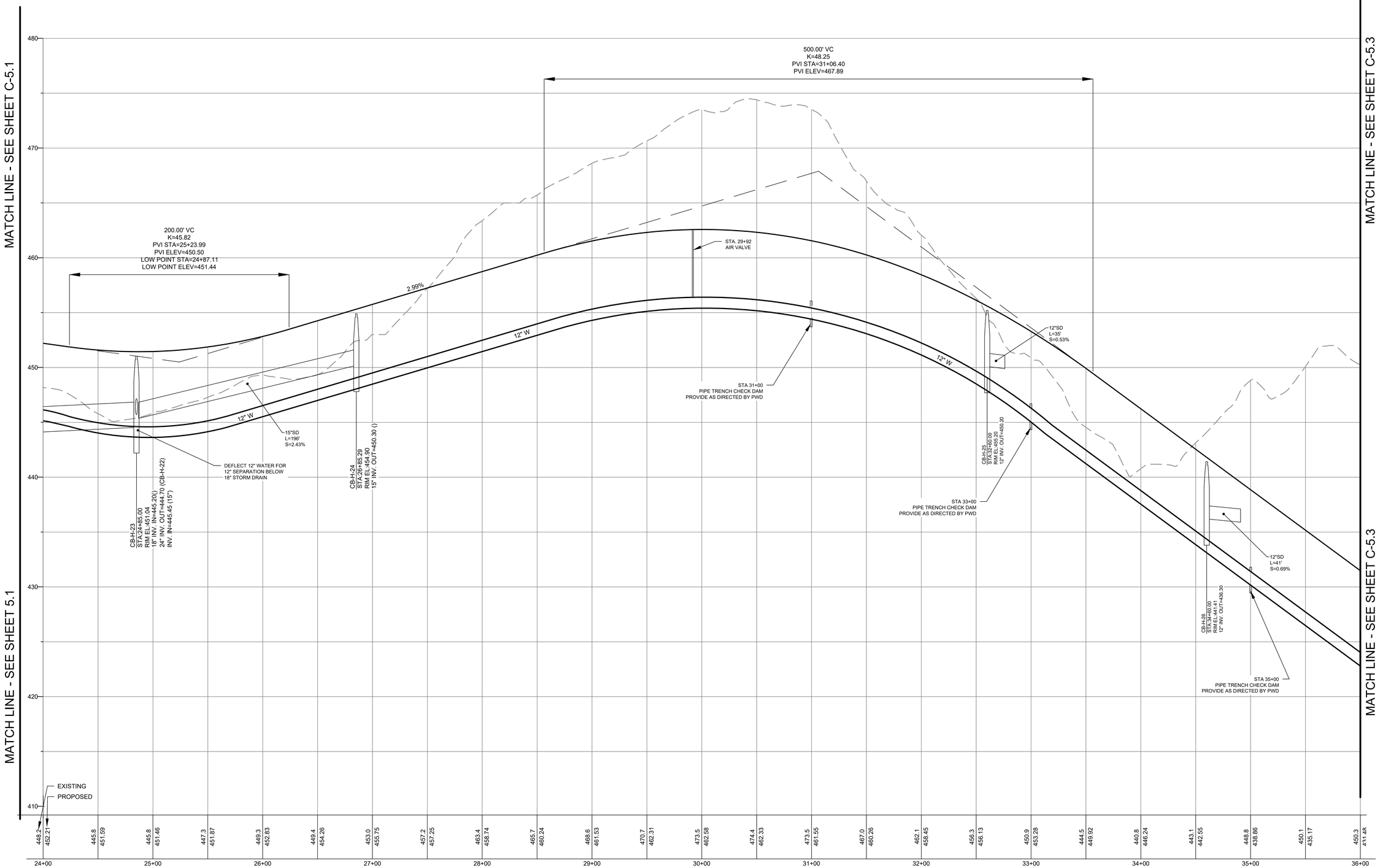
SHEET	C-5.1



PROFILE: HIGHLANDS DRIVE - STA 24+00 - 36+00

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL

STATE OF MAINE
LAWRENCE R. BASTIAN
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CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

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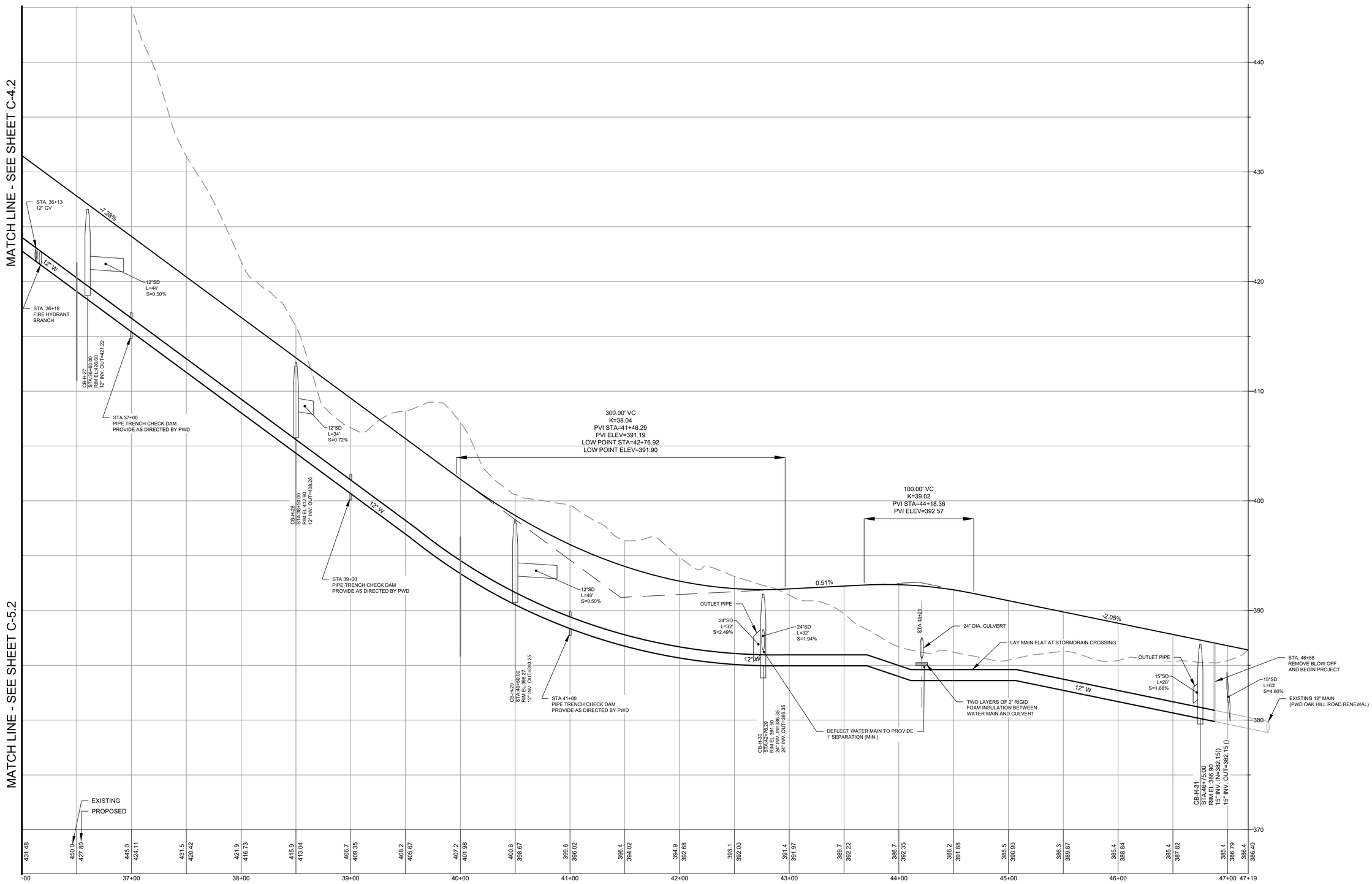
SHEET	C-5.2



PROFILE: HIGHLANDS DRIVE - STA 36+00 - END

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL

STATE OF MAINE
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HIGHLANDS DRIVE ROADWAY PROFILE

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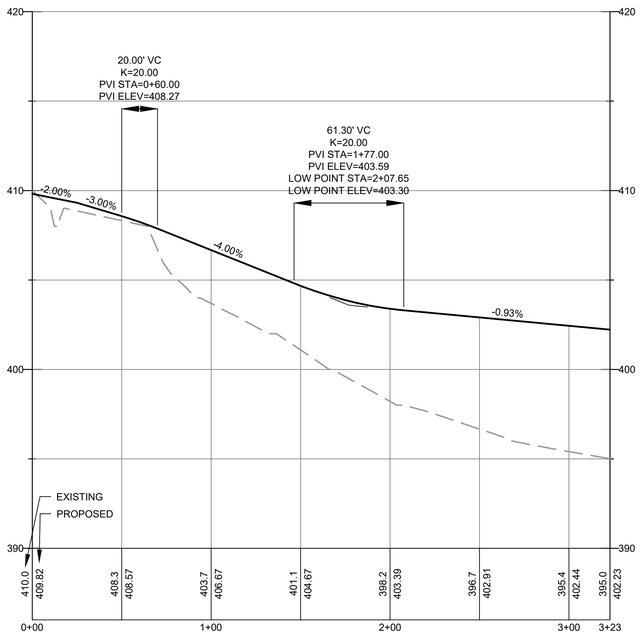
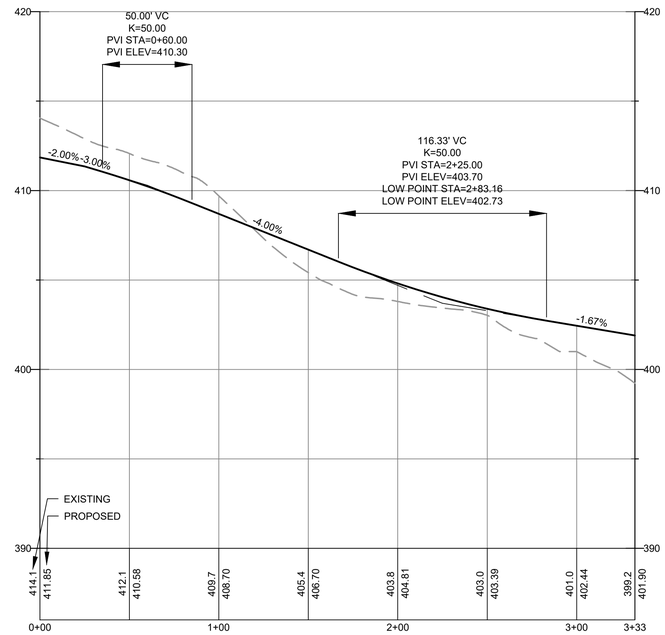


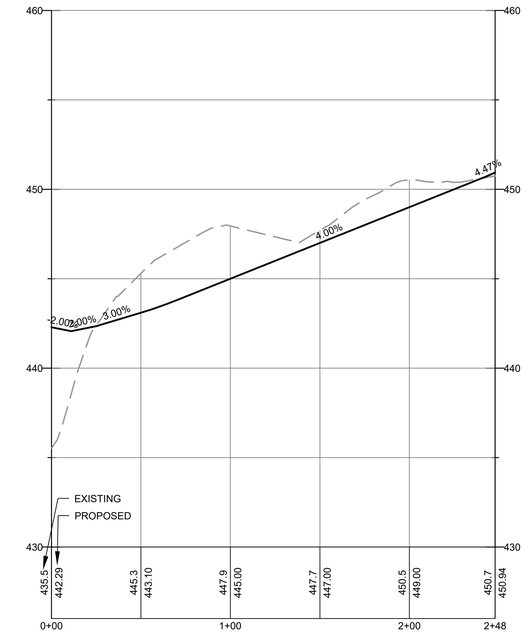
PROFILE OF KAYLI SUSAN DRIVE

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL



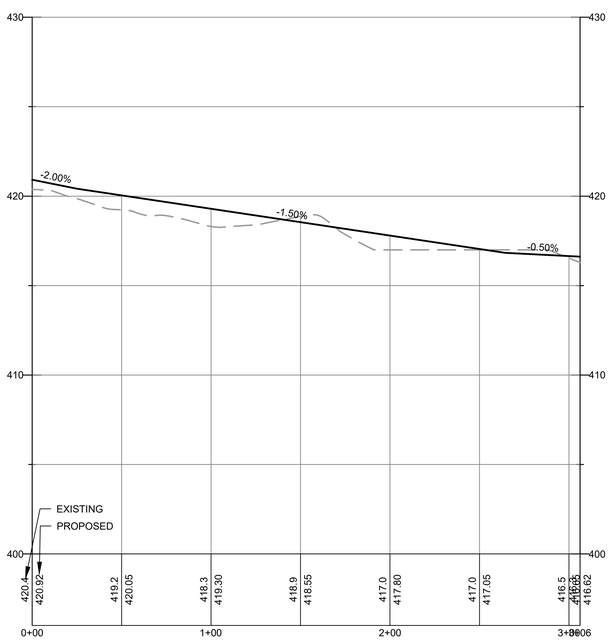
PROFILE OF JESSE DANIEL DRIVE

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL



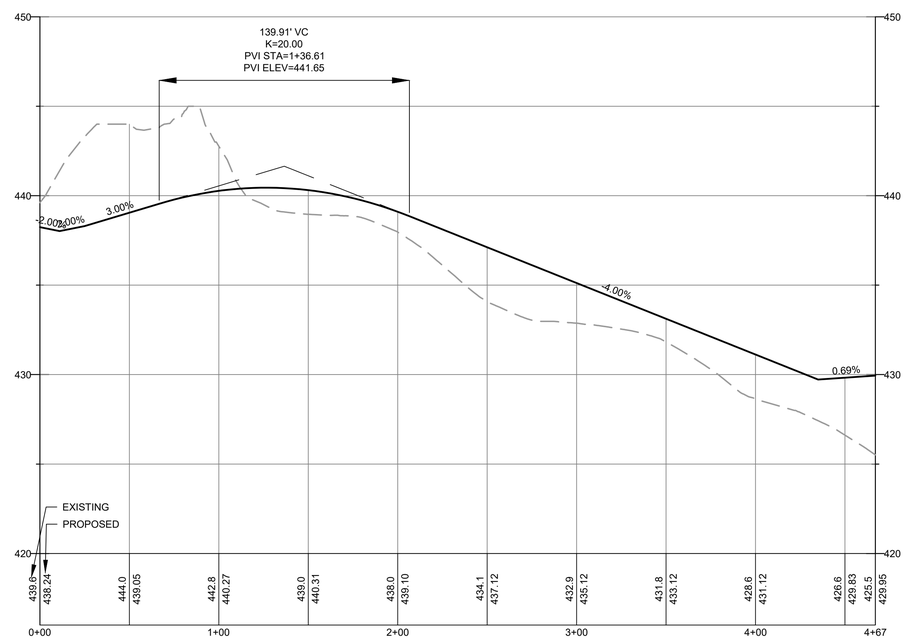
PROFILE OF STONEHAVEN DRIVE

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL



PROFILE OF WHITNEY DRIVE

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL



PROFILE OF INVERNESS DRIVE

SCALE: 1"=4' HORIZONTAL
1"=40' VERTICAL

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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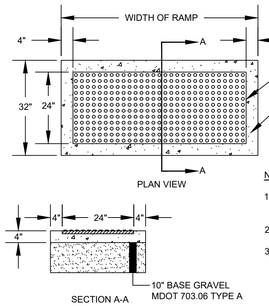
TERRADYN CONSULTANTS, LLC
41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260
565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
VILLAGE HOUSING ROADWAY PROFILES

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	AS SHOWN
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	C-5.4

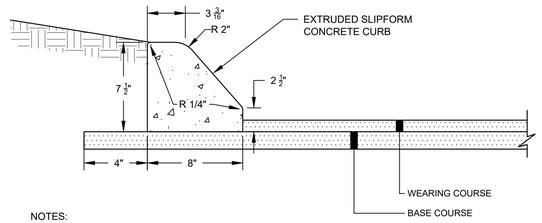


NOTES:

1. DETECTABLE WARNING PLATES TO BE DURALAST® AS MANUFACTURED BY EJ.
2. PLATES SHALL HAVE A NATURAL FINISH
3. PLATE SHALL BE ORIENTED SO THAT THE DOMES ARE PARALLEL AND PERPENDICULAR TO THE PRIMARY DIRECTION OF TRAVEL

DETECTABLE WARNING PLATE DETAIL

NOT TO SCALE

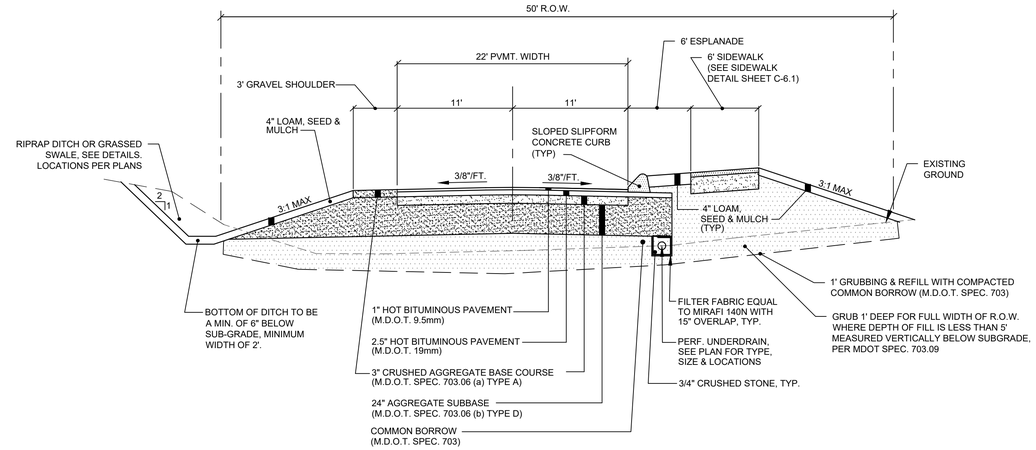


NOTES:

1. APPLY EPOXY BETWEEN BINDER PAVEMENT AND CURB
2. 1" TO 2" SLUMP
3. 5% TO 7% AIR ENTRAINMENT
4. 4,000 PSI CONCRETE WITH FIBER REINFORCEMENT

SLOPED SLIPFORM CONCRETE CURB DETAIL

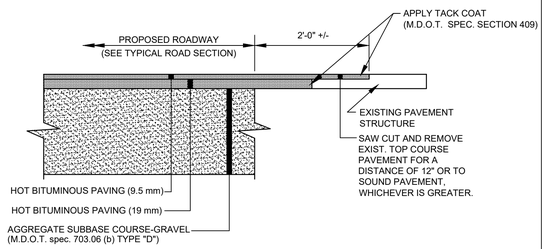
NOT TO SCALE



TYPICAL ROAD SECTION - TOWN RESIDENTIAL STREET

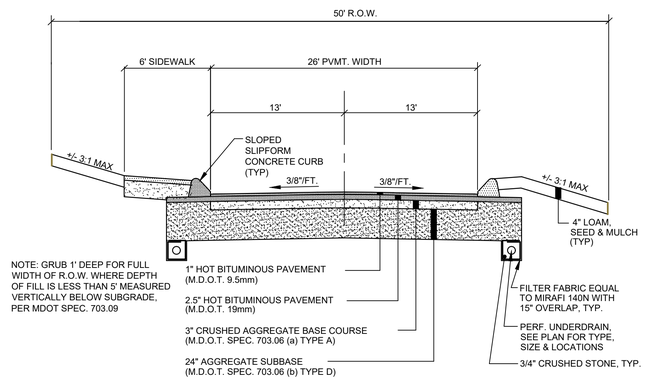
STA: 19+65 TO STA: 43+67 & STA: 44+85 TO END

NOT TO SCALE



TYPICAL PAVEMENT JOINT

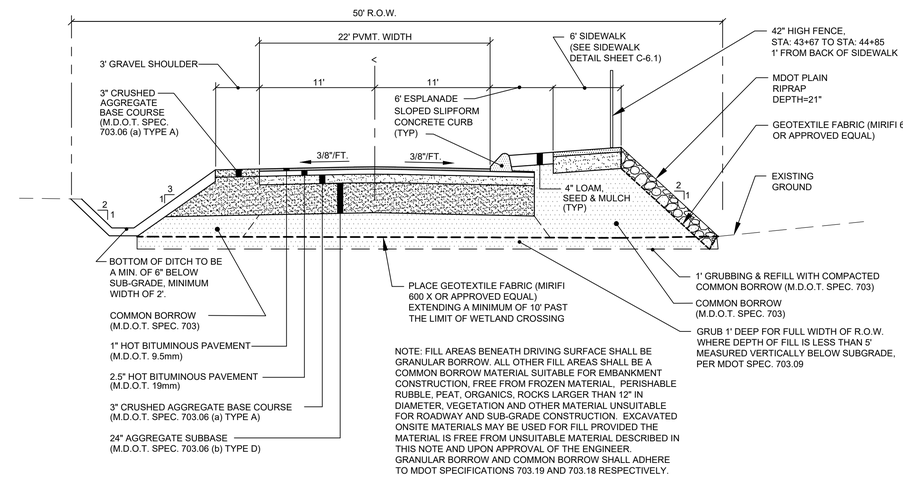
NOT TO SCALE



TYPICAL ROAD SECTION - TOWN RESIDENTIAL STREET STA: 0+00 TO STA: 5+50

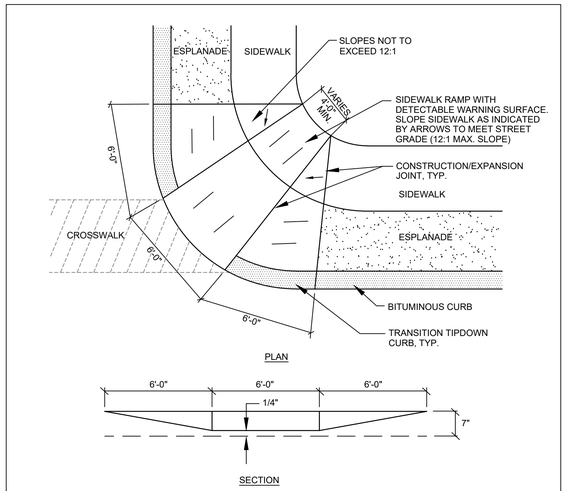
NOTE: INCLUDES TRANSITION TO TOWN RESIDENTIAL STREET

NOT TO SCALE



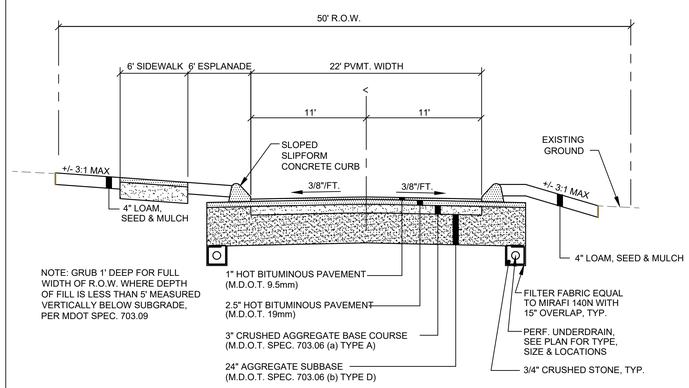
TYPICAL ROAD SECTION AT WETLAND CROSSING STA: 43+67 TO STA: 44+85

NOT TO SCALE



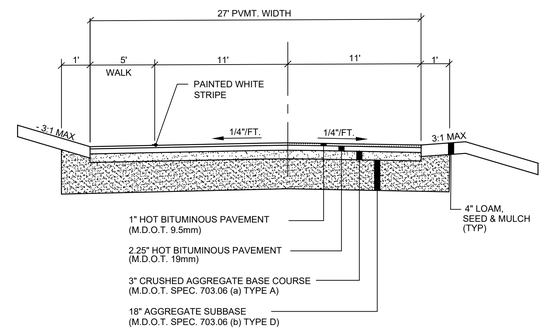
HANDICAP SIDEWALK RAMP WITH ESPLANADE

NOT TO SCALE



TYPICAL ROAD SECTION - TOWN RESIDENTIAL STREET STA: 5+50 TO STA:19+65

NOT TO SCALE



TYPICAL ROAD SECTION - PRIVATE ROAD

KAYLI SUSAN DR., JESSE DANIEL DR., WHITNEY DR., INVERNESS DR. & STONEHAVEN DR. & CLUBHOUSE DRIVE

NOT TO SCALE

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
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PROFESSIONAL ENGINEER

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ENVIRONMENTAL PERMITTING

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
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SHEET DESCRIPTION
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STANDISH, MAINE
DETAILS

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

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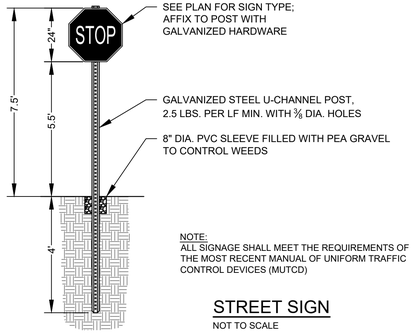
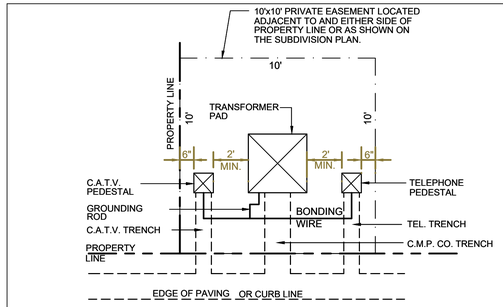
SHEET	C-6.0



NOTE:
ALL SIGNAGE SHALL MEET THE REQUIREMENTS OF THE MOST RECENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

STREET SIGN
NOT TO SCALE

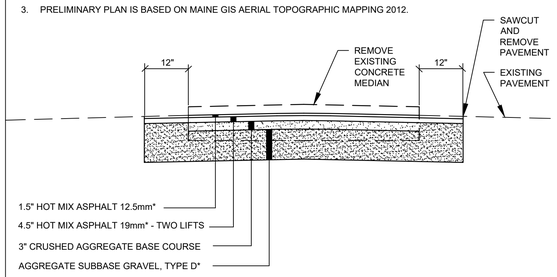


NOTE:
TRANSFORMER PAD AND COVER TO BE FIBERGLASS MEETING CENTRAL MAINE POWER SPECIFICATIONS.

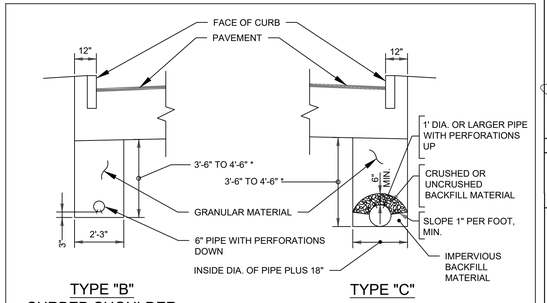
TRANSFORMER DETAIL
NOT TO SCALE

NOTES

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO MAINE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, NOVEMBER 2014.
2. CONSTRUCTION SHALL CONFORM TO CONDITIONS OF MAINE DEPARTMENT OF TRANSPORTATION ENTRANCE PERMIT.
3. PRELIMINARY PLAN IS BASED ON MAINE GIS AERIAL TOPOGRAPHIC MAPPING 2012.

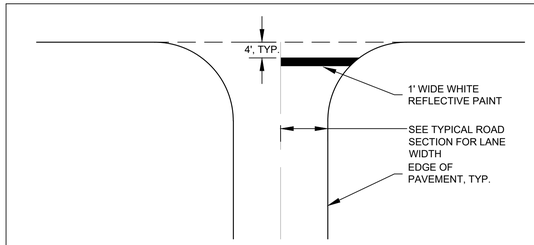


CONCRETE MEDIAN REMOVAL
NOT TO SCALE

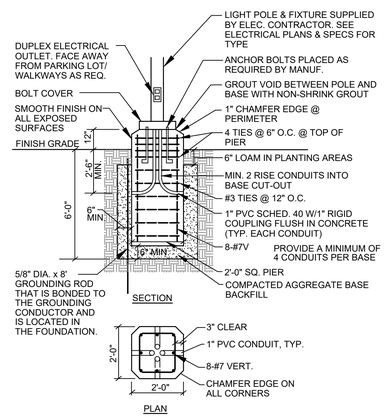


* UNLESS OTHERWISE SHOWN ON THE PLANS

UNDERDRAIN - MDOT 605(01)
NOT TO SCALE

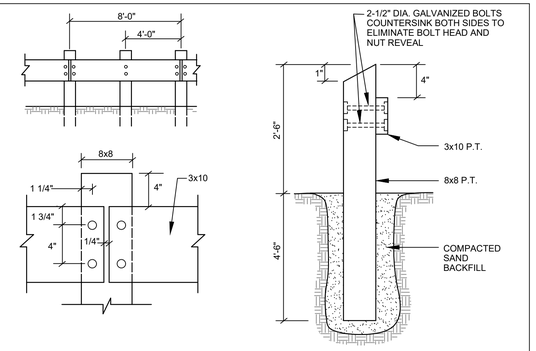


STOP BAR DETAIL
NOT TO SCALE

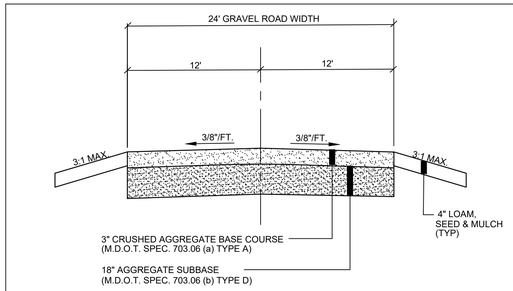


NOTES:
1. CONCRETE f'c=4000 psi.
2. REINF. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" AGG., 6 +/- 1% ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
5. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
6. BID ALT - CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE LIGHT POLE BASE EQUAL TO ABOVE SPEC.

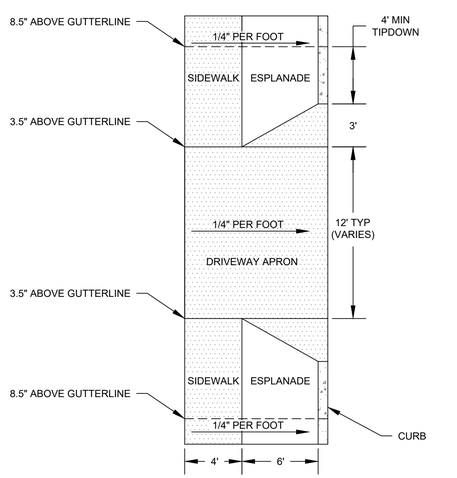
LIGHT POLE BASE
NOT TO SCALE



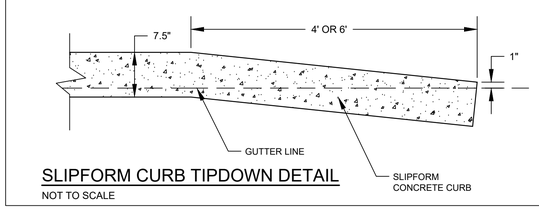
PRESSURE TREATED WOODEN GUARDRAIL
NOT TO SCALE



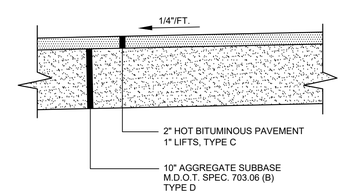
TYPICAL ROAD SECTION - GRAVEL ACCESS DRIVE
NOT TO SCALE



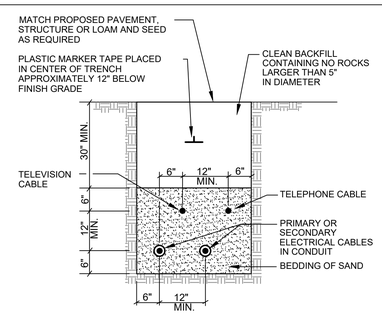
DRIVEWAY APRON LAYOUT DETAIL
NOT TO SCALE



SLIPFORM CURB TIPDOWN DETAIL
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE



CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE

STATE OF MAINE
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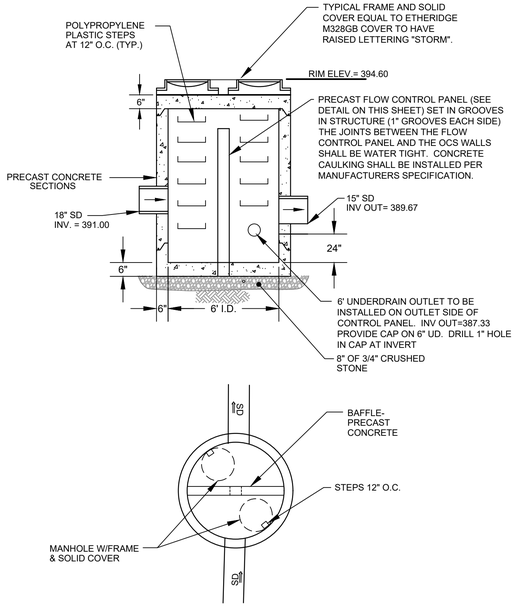
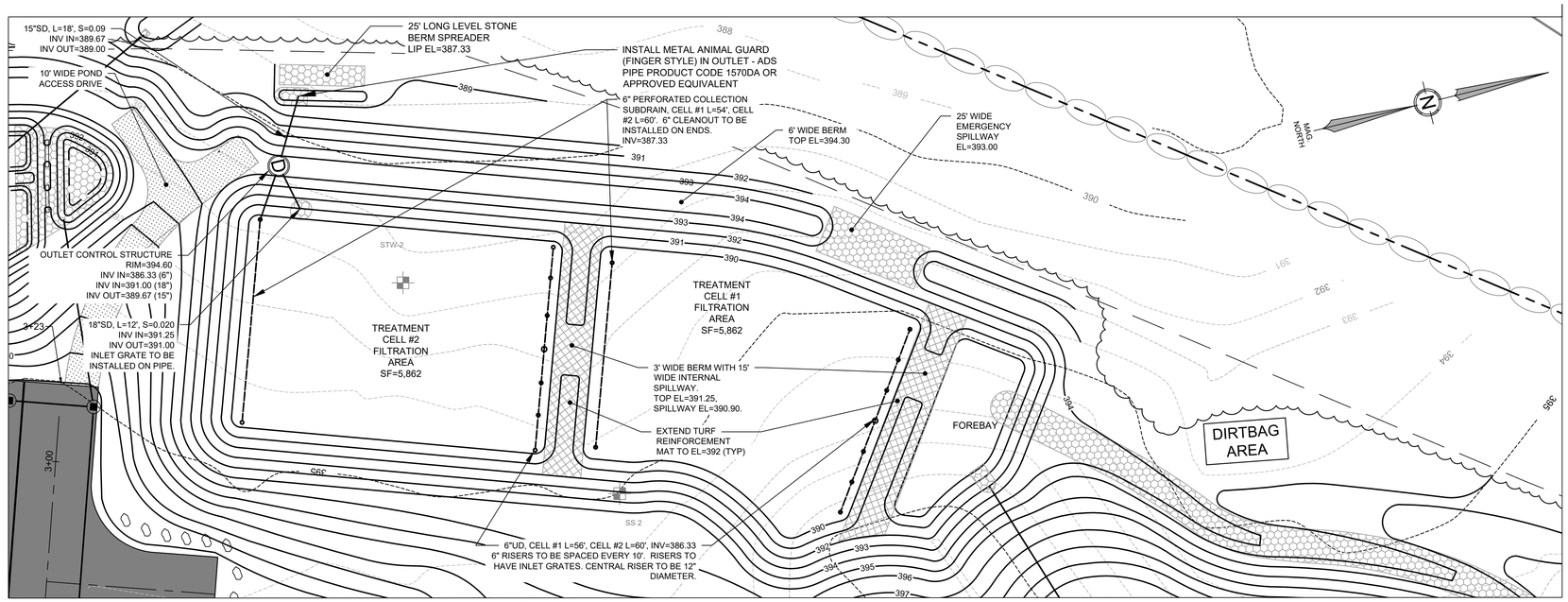


NOTE:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.

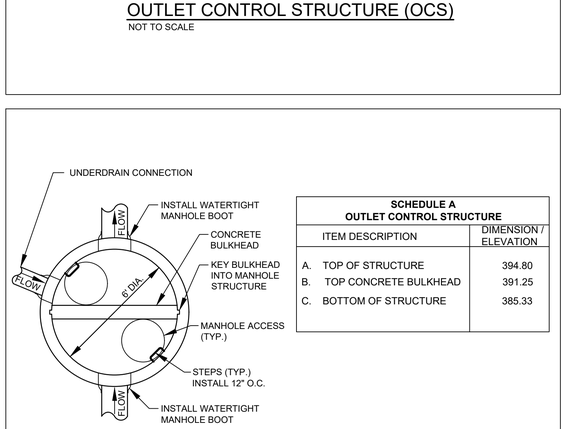
OUTLET CONTROL STRUCTURE (OCS)

NOT TO SCALE

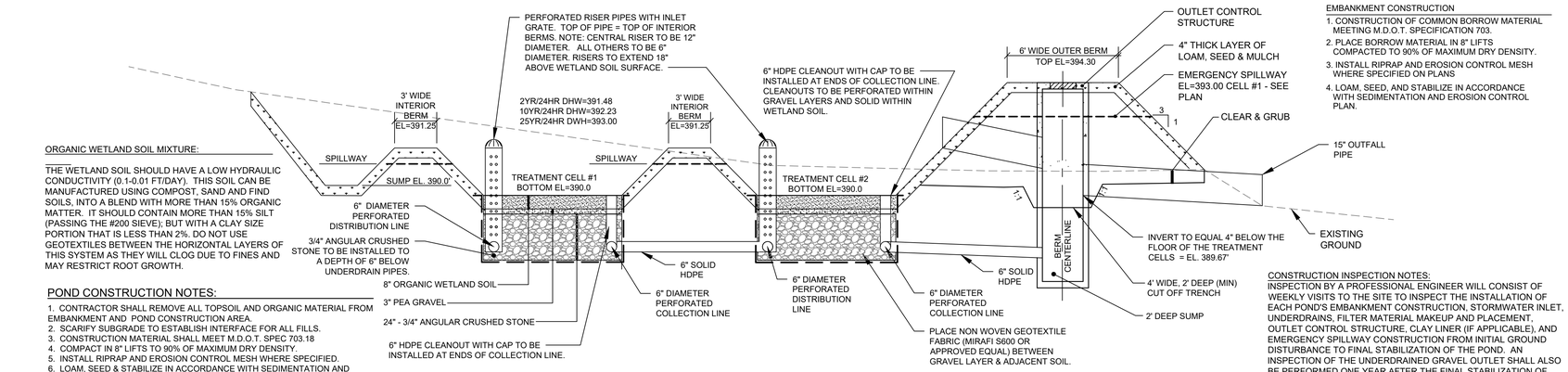


GRAVEL WETLAND #1 PLAN VIEW

SCALE: 1"=20'



SCHEDULE A OUTLET CONTROL STRUCTURE	
ITEM DESCRIPTION	DIMENSION / ELEVATION
A. TOP OF STRUCTURE	394.80
B. TOP CONCRETE BULKHEAD	391.25
C. BOTTOM OF STRUCTURE	385.33



ORGANIC WETLAND SOIL MIXTURE:

THE WETLAND SOIL SHOULD HAVE A LOW HYDRAULIC CONDUCTIVITY (0.1-0.01 FT/DAY). THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND AND FIND SOILS, INTO A BLEND WITH MORE THAN 15% ORGANIC MATTER. IT SHOULD CONTAIN MORE THAN 15% SILT (PASSING THE #200 SIEVE); BUT WITH A CLAY SIZE PORTION THAT IS LESS THAN 2%. DO NOT USE GEOTEXTILES BETWEEN THE HORIZONTAL LAYERS OF THIS SYSTEM AS THEY WILL CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH.

POND CONSTRUCTION NOTES:

1. CONTRACTOR SHALL REMOVE ALL TOPSOIL AND ORGANIC MATERIAL FROM EMBANKMENT AND POND CONSTRUCTION AREA.
2. SCARIFY SUBGRADE TO ESTABLISH INTERFACE FOR ALL FILLS.
3. CONSTRUCTION MATERIAL SHALL MEET M.D.O.T. SPEC 703.18
4. COMPACT IN 8" LIFTS TO 90% OF MAXIMUM DRY DENSITY.
5. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED.
6. LOAM, SEED & STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN & NOTES.

EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION 703.
2. PLACE BORROW MATERIAL IN 8" LIFTS COMPACTED TO 90% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

CONSTRUCTION INSPECTION NOTES:
INSPECTION BY A PROFESSIONAL ENGINEER WILL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE INSTALLATION OF EACH POND'S EMBANKMENT CONSTRUCTION, STORMWATER INLET, UNDERDRAINS, FILTER MATERIAL MAKEUP AND PLACEMENT, OUTLET CONTROL STRUCTURE, CLAY LINER (IF APPLICABLE), AND EMERGENCY SPILLWAY CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO FINAL STABILIZATION OF THE POND. AN INSPECTION OF THE UNDERDRAINED GRAVEL OUTLET SHALL ALSO BE PERFORMED ONE YEAR AFTER THE FINAL STABILIZATION OF THE POND.

CROSS SECTION VIEW - GRAVEL WETLAND

NOT TO SCALE

GRAVEL WETLAND INSTALLATION NOTES:

1. THE MINIMUM SPACING BETWEEN THE SUBSURFACE PERFORATED DISTRIBUTION LINE AND THE SUBSURFACE PERFORATED COLLECTION DRAIN AT EITHER END OF THE GRAVEL IN EACH TREATMENT CELL IS 15 FT.

2. THERE SHOULD BE A MINIMUM HORIZONTAL TRAVEL DISTANCE OF 15 FT WITHIN THE GRAVEL LAYER IN EACH CELL.

3. VERTICAL PERFORATED OR SLOTTED RISER PIPES DELIVER WATER FROM THE SURFACE DOWN TO THE SUBSURFACE, PERFORATED OR SLOTTED DISTRIBUTION LINES. THESE RISERS SHALL HAVE A MAXIMUM SPACING OF 10 FEET.

4. SLOTTED VERTICAL RISERS SHALL HAVE A MINIMUM DIAMETER OF 12" FOR THE CENTRAL RISER AND 6" FOR END RISERS. THE VERTICAL RISERS SHALL NOT BE CAPPED, BUT RATHER COVERED WITH AN INLET GRATE.

5. VERTICAL CLEANOUTS CONNECTED TO THE DISTRIBUTION AND COLLECTION SUBDRAINS, AT EACH END, SHALL BE PERFORATED OR SLOTTED ONLY WITHIN THE GRAVEL LAYER, AND SOLID WITHIN THE WETLAND SOIL AND STORAGE AREA ABOVE.

6. TREATMENT CELL FLOOR TO BE GRADED FLAT.

7. BERMS AND WEIRS SEPARATING THE FOREBAY AND TREATMENT CELLS SHOULD BE CONSTRUCTED WITH CLAY, OR NON-CONDUCTIVE SOILS, AND/OR A FINE GEOTEXTILE, OR SOME COMBINATION THEREOF, TO AVOID WATER SEEPAGE AND SOIL PIPING THROUGH THESE EARTHEN DIVIDERS.

8. THE SYSTEM SHOULD BE PLANTED TO ACHIEVE A RIGOROUS ROOT MAT WITH GRASSES, FORBS, AND SHRUBS WITH OBLIGATE AND FACULTATIVE WETLAND SPECIES.

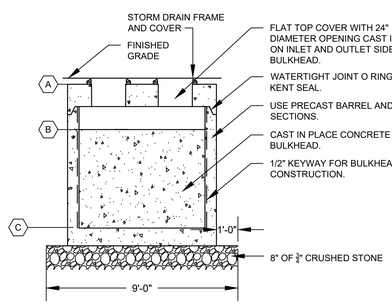
9. THE SUBAREA DRAINING TO A CREATED WETLAND MUST BE COMPLETELY STABLE BEFORE RUNOFF IS DIRECTED TO THE BASIN TO PREVENT SEDIMENTATION OF THE DRAINAGE LAYER; OR ALL RUNOFF SHOULD BE RE-DIRECTED UNTIL CONSTRUCTION IS FINALIZED. THE VEGETATION WITHIN THE STRUCTURE IS EQUALLY IMPORTANT AND MUST BE WELL ESTABLISHED BEFORE IT CAN ACCEPT ANY RUNOFF.

10. GRAVEL WETLAND STORMWATER AREA TO BE SEEDED WITH "NEW ENGLAND WETMIX" AS DISTRIBUTED BY NEW ENGLAND WETLAND PLANTS, INC., 820 WEST STREET, AMHERST, MA 01002, PHONE 413-548-8000, EMAIL INFO@NEWP.COM, OR APPROVED EQUIVALENT. APPLY AT A RATE OF 1 LB/2,500 SF.

11. THE SEEDS WILL NOT GERMINATE UNDER INUNDATED CONDITIONS. IF PLANTED DURING THE FALL MONTHS THE SEED MIX WILL GERMINATE THE FOLLOWING SPRING. DURING THE FIRST SEASON OF GROWTH SEVERAL SPECIES WILL PRODUCE SEEDS WHILE OTHER SPECIES WILL PRODUCE SEEDS AFTER THE SECOND GROWING SEASON. NOT ALL SPECIES WILL GROW IN ALL WETLAND SITUATIONS. THIS MIX IS COMPRISED OF THE WETLAND SPECIES MOST LIKELY TO GROW IN CREATED/RESTORED WETLANDS AND SHOULD PRODUCE MORE THAN 75% GROUND COVER IN TWO FULL GROWING SEASONS.

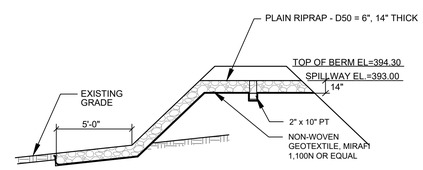
12. THE WETLAND SEEDS IN THIS MIX CAN BE SOWN BY HAND, WITH A HAND-HELD SPREADER, OR HYDRO-SEEDED ON LARGE OR HARD TO REACH SITES. LIGHTLY RAKE TO ENSURE GOOD SEED-TO-SOIL CONTACT. SEEDING CAN TAKE PLACE ON FROZEN SOIL, AS THE FREEZING AND THAWING WEATHER OF LATE FALL AND LATE WINTER WILL WORK THE SEED INTO THE SOIL. IF SPRING CONDITIONS ARE DRIER THAN USUAL, WATERING MAY BE REQUIRED. IF SOWING DURING THE SUMMER MONTHS, SUPPLEMENTAL WATERING WILL LIKELY BE REQUIRED UNTIL GERMINATION. A LIGHT MULCH OF CLEAN, WEED FREE STRAW IS RECOMMENDED.

13. THE POND CONSTRUCTION SHOULD BE ONLY CONSTRUCTED UNDER THE SUPERVISION OF THE DESIGN ENGINEER.



OUTLET CONTROL STRUCTURE - WEIR WALL

NOT TO SCALE

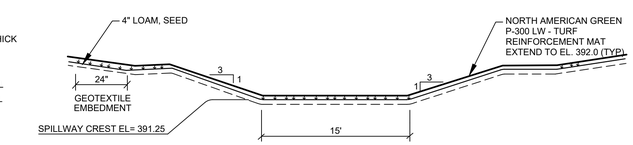


EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION 703.
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

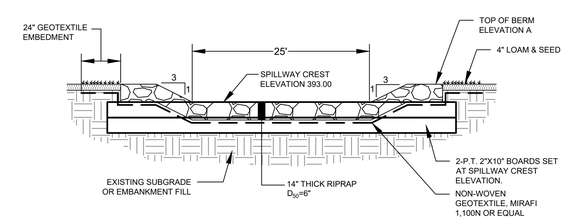
PRIMARY SPILLWAY EMBANKMENT SECTION

NOT TO SCALE



INTERNAL BERM SPILLWAY CROSS-SECTIONS

NOT TO SCALE



EMERGENCY SPILLWAY CROSS SECTION

NOT TO SCALE

STATE OF MAINE LAWRENCE R. BASTIAN No. 4321 LICENSED PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

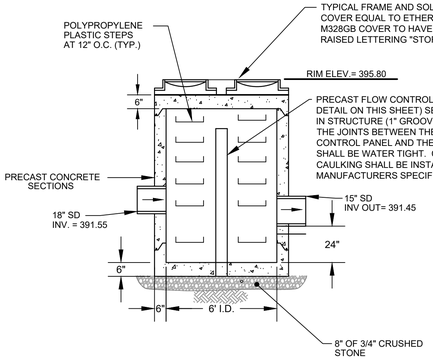
NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

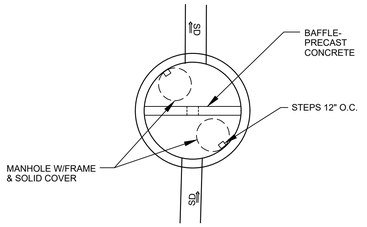
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
GRAVEL WETLAND DETAILS & NOTES

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE:	
SHEET	C-6.2



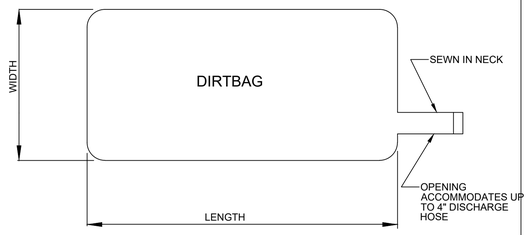


NOTE:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.

OUTLET CONTROL STRUCTURE (OCS)

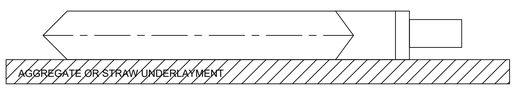
NOT TO SCALE

TOP VIEW



NOTES:
1) DIRTBAG TO BE PLACED ON AGGREGATE OR STRAW
2) SEAMS MUST BE HIGH STRENGTH DOUBLE STITCHED "J" SEAMS
3) SEAM MUST BE TESTED UNDER ASTM D-4884. ACF TEST RESULTS AVAILABLE UPON REQUEST

CROSS SECTION

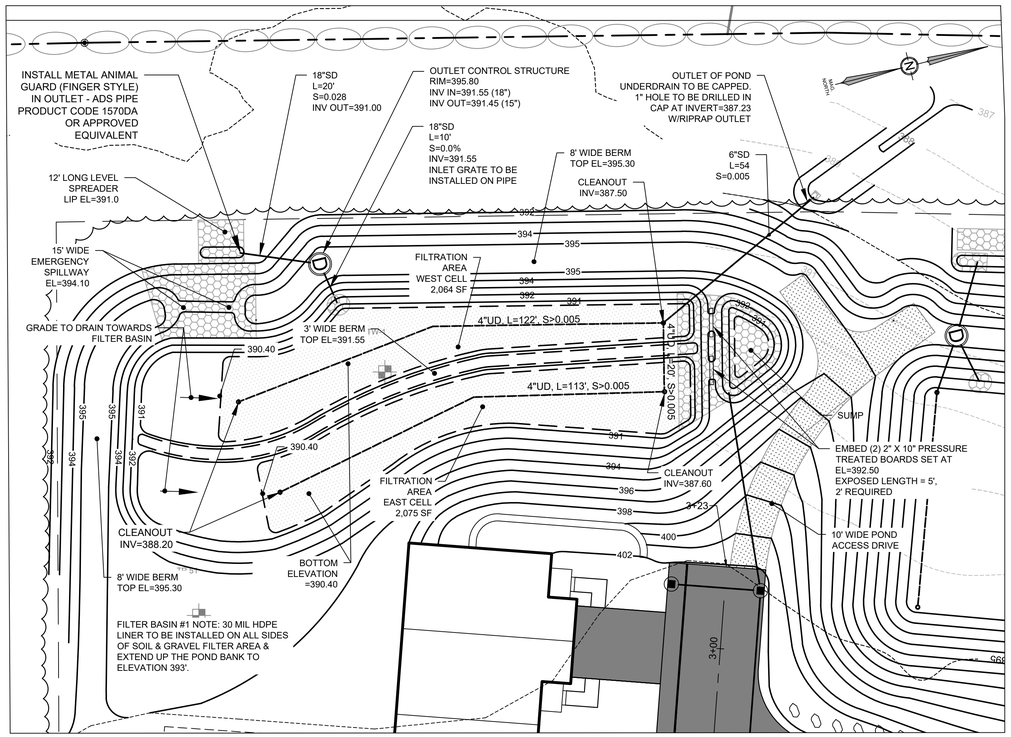


DB55 FABRIC PROPERTIES		
PROPERTY	TEST METHOD	MARV
TENSILE STRENGTH	ASTM D-4632	205 LBS
ELONGATION	ASTM D-4632	50%
CBR PUNCTURE	ASTM D-6241	525 LBS
UV RESISTANCE	ASTM D-4355	70%
AOS	ASTM D-4751	80 US SIEVE
PERMITTIVITY	ASTM D-4491	1.4 SEC-1
FLOW RATE	ASTM D-4491	90 GPM/SF

ACF ENVIRONMENTAL
LET'S GET IT DONE

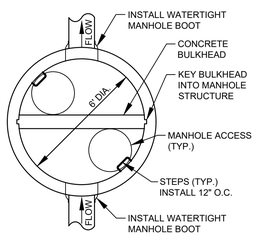
ACF DB55 DIRTBAG

FOR ADDITIONAL INFORMATION PLEASE CONTACT ACF ENVIRONMENTAL
PH: 800-448-3636 / WWW.ACFENVIRONMENTAL.COM

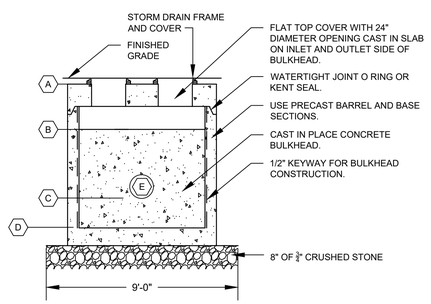


FILTER BASIN #1 PLAN VIEW

SCALE: 1"=20'

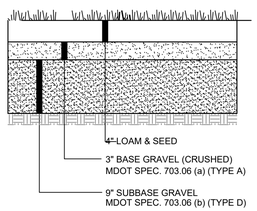


SCHEDULE A OUTLET CONTROL STRUCTURE		
	ITEM DESCRIPTION	DIMENSION / ELEVATION
A.	TOP OF STRUCTURE	395.80
B.	TOP CONCRETE BULKHEAD	394.10
C.	ORIFICE INVERT	391.55
D.	BOTTOM OF STRUCTURE	389.55
E.	ORIFICE DIAMETER	7"



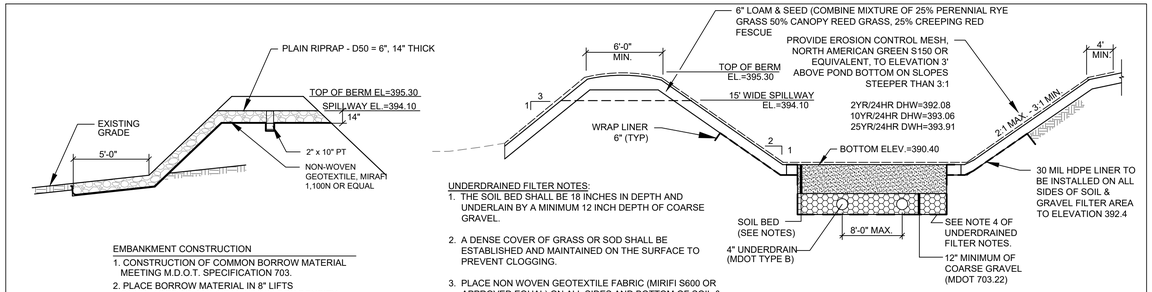
OUTLET CONTROL STRUCTURE - WEIR WALL

NOT TO SCALE



STABILIZED GRASS STORMWATER AREA & POND ACCESS CROSS-SECTION

NOT TO SCALE



EMBANKMENT CONSTRUCTION
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION 703.
2. PLACE BORROW MATERIAL IN 8" LIFTS COMPACTED TO 90% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

EMERGENCY SPILLWAY SECTION - FILTER BASIN

NOT TO SCALE

UNDERDRAINED FILTER NOTES:
1. THE SOIL BED SHALL BE 18 INCHES IN DEPTH AND UNDERLAIN BY A MINIMUM 12 INCH DEPTH OF COARSE GRAVEL.
2. A DENSE COVER OF GRASS OR SOD SHALL BE ESTABLISHED AND MAINTAINED ON THE SURFACE TO PREVENT CLOGGING.
3. PLACE NON WOVEN GEOTEXTILE FABRIC (MIRIFI S600 OR APPROVED EQUAL) ON ALL SIDES AND BOTTOM OF SOIL & GRAVEL FILTER AREA.
4. SOIL FILTER BED SHALL MEET THE SPECIFICATIONS SHOWN IN SOIL FILTER MEDIA TABLE.

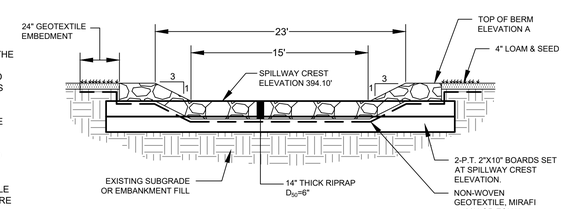
NOTE: SIDEWALLS OF THE IMPERMEABLE LINERS ARE TO EXTEND TO ABOVE THE SEASONAL HIGH WATERTABLE OR BEDROCK, WHICHEVER IS HIGHEST, AND TO THE ELEVATION OF THE TOP EDGES, AS SPECIFIED.

FILTER BASIN

NOT TO SCALE

CONSTRUCTION PHASE NOTES:
CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
PLACEMENT OF SOIL FILTER: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE SOIL BED SHALL BE INSTALLED IN 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA, NOT COMPACTED.
CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
- AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA,
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED. BIO-RETENTION CELLS MUST BE STABILIZED PER THE PROVIDED PLANTING SCHEME AND DENSITY FOR THE CANOPY COVERAGE OF 30 AND 50%.
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
- SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.



EMERGENCY SPILLWAY CROSS SECTION

NOT TO SCALE

SOIL FILTER MEDIA TABLE		
FILTER MEDIA	MIXTURE BY VOLUME	SPECIFICATION
SAND	50%-55%	MEDOT SPEC. 703.01 FINE AGGREGATE FOR CONCRETE
TOPSOIL	20%-30%	LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15-25% FINES PASSING THE #200 SIEVE.
MULCH	20%-30%	MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE

FILTER BASIN #1 DETAILS

NOT TO SCALE

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
2	1/21/2019	PRELIMINARY SUBDIVISION & SITE PLAN	LRB
1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

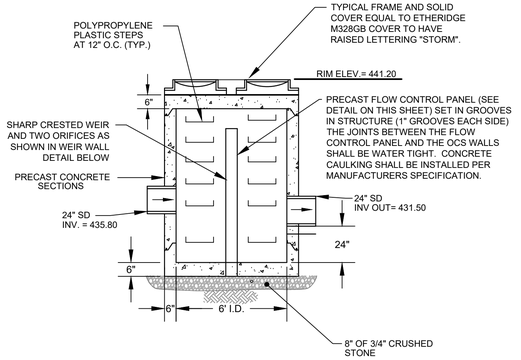
OFFICE: (207) 926-5111
www.terradynconsultants.com

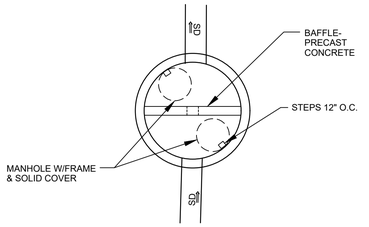
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
FILTER BASIN #1 DETAILS & NOTES

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE:	
SHEET	C-6.3

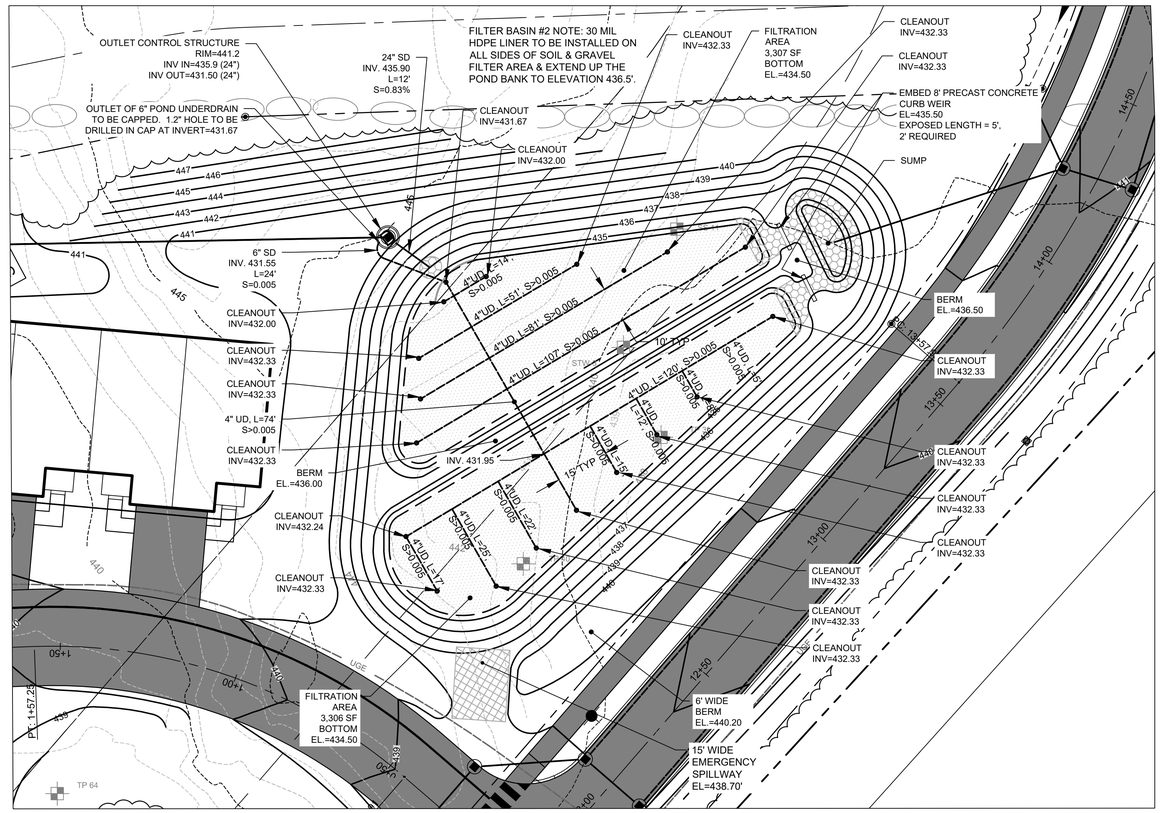




NOTE:
1. SUBMIT SHOP DRAWINGS FOR OWNER/ENGINEER APPROVAL.
2. STRUCTURE SHALL BE DESIGNED FOR H-20 LOADING.

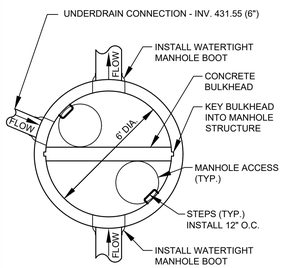
OUTLET CONTROL STRUCTURE (OCS)

NOT TO SCALE

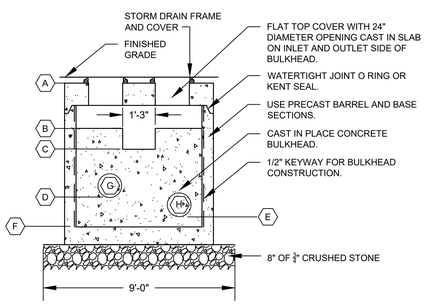


FILTER BASIN #2 PLAN VIEW

SCALE: 1"=20'

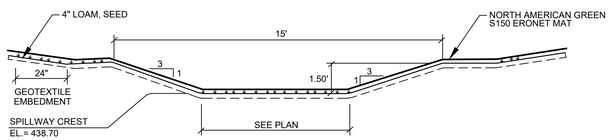


SCHEDULE A OUTLET CONTROL STRUCTURE	
ITEM DESCRIPTION	DIMENSION / ELEVATION
A. TOP OF STRUCTURE	441.20
B. TOP CONCRETE BULKHEAD	438.50
C. SHARP CRESTED WEIR	437.90
D. ORIFICE INVERT	436.65
E. ORIFICE INVERT	435.90
F. BOTTOM OF STRUCTURE	429.50
G. ORIFICE DIAMETER	12"
H. ORIFICE DIAMETER	7.5"



OUTLET CONTROL STRUCTURE - WEIR WALL

NOT TO SCALE



SPILLWAY CROSS-SECTION - FILTER BASIN

NOT TO SCALE

CONSTRUCTION PHASE NOTES:
CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
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CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
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- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
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TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
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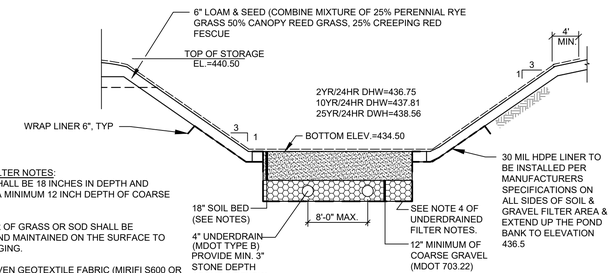
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.



NOTE: SIDEWALLS OF THE IMPERMEABLE LINERS ARE TO EXTEND TO ABOVE THE SEASONAL HIGH WATERTABLE OR BEDROCK, WHICHEVER IS HIGHEST, AND TO THE ELEVATION OF THE TOP EDGES, AS SPECIFIED.

UNDERDRAINED FILTER NOTES:
1. THE SOIL BED SHALL BE 18 INCHES IN DEPTH AND UNDERLAIN BY A MINIMUM 12 INCH DEPTH OF COARSE GRAVEL.
2. A DENSE COVER OF GRASS OR SOD SHALL BE ESTABLISHED AND MAINTAINED ON THE SURFACE TO PREVENT CLOGGING.
3. PLACE NON WOVEN GEOTEXTILE FABRIC (MIRIFI S600 OR APPROVED EQUAL) ON ALL SIDES AND BOTTOM OF SOIL & GRAVEL FILTER AREA.
4. SOIL FILTER BED SHALL MEET THE SPECIFICATIONS SHOWN IN SOIL FILTER MEDIA TABLE.

FILTER BASIN

NOT TO SCALE

BERM STONE SIZE	
SIEVE	% BY WEIGHT PASSING
12"	100%
6"	84-100%
3"	68-83%
1"	42-55%
No.4	8-12%

REFERENCE: MDEP STORMWATER BMP MANUAL, SECTION 5.2

SOIL FILTER MEDIA TABLE		
FILTER MEDIA	MIXTURE BY VOLUME	SPECIFICATION
SAND	50%-55%	MEDOT SPEC. 703.01 FINE AGGREGATE FOR CONCRETE
TOPSOIL	20%-30%	LOAMY SAND TOPSOIL WITH MINIMAL CLAY CONTENT AND BETWEEN 15-25% FINES PASSING THE #200 SIEVE.
MULCH	20%-30%	MODERATELY FINE, SHREDDED BARK OR WOOD FIBER MULCH WITH LESS THAN 5% PASSING THE #200 SIEVE

FILTER BASIN #2 DETAILS

NOT TO SCALE

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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41 CAMPUS DRIVE
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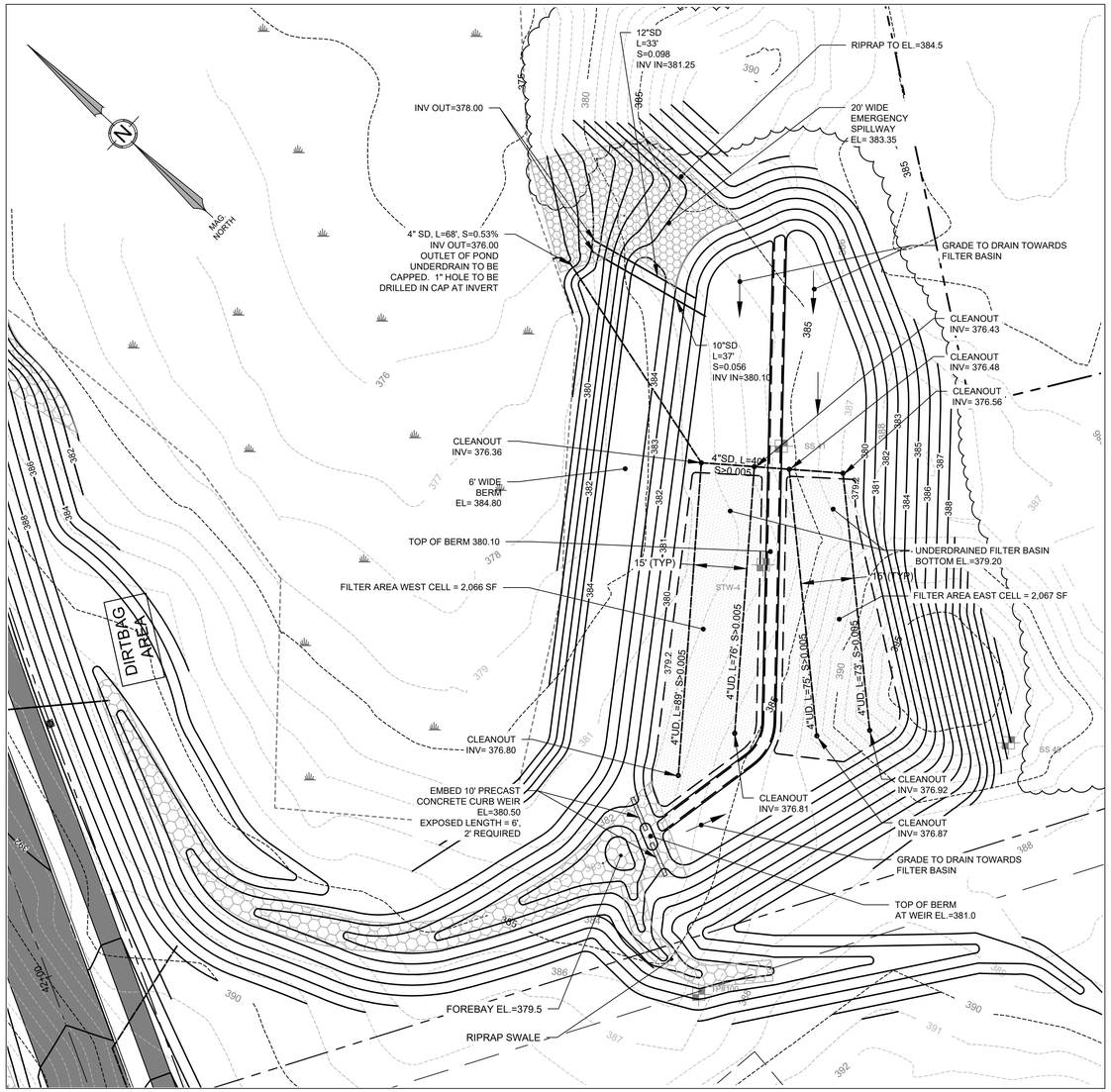
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
FILTER BASIN #2 DETAILS & NOTES

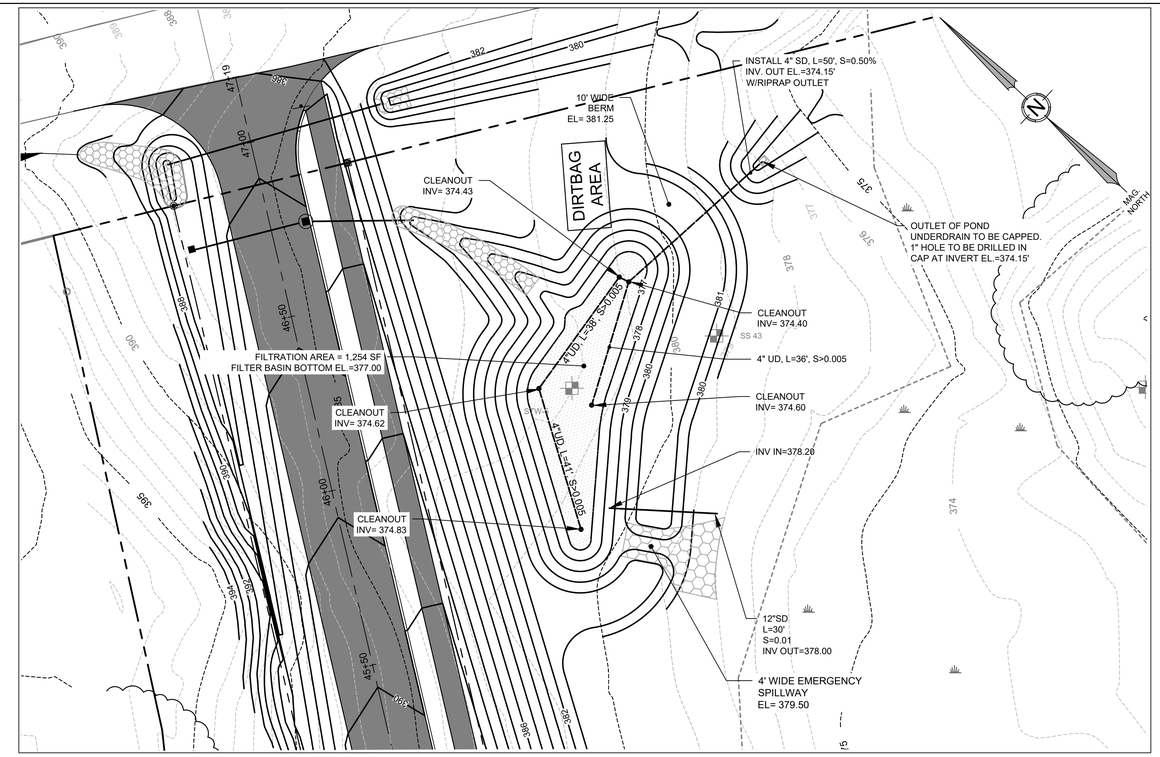
PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE:	
SHEET	C-6.4



FILTER BASIN #3 - PLAN VIEW

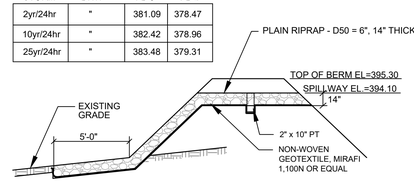
SCALE: 1"=20'



FILTER BASIN #4 - PLAN VIEW

SCALE: 1"=20'

STORM	DHW	FB 3	FB 4
2yr/24hr	"	381.09	378.47
10yr/24hr	"	382.42	378.96
25yr/24hr	"	383.48	379.31



EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION 703.
2. PLACE BORROW MATERIAL IN 8" LIFTS COMPACTED TO 90% OF MAXIMUM DRY DENSITY.
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

EMERGENCY SPILLWAY SECTION - FILTER BASIN

NOT TO SCALE

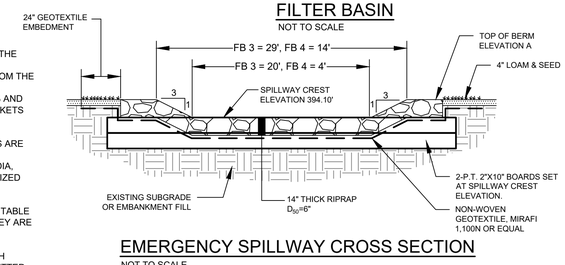
UNDERDRAINED FILTER NOTES:

1. THE SOIL BED SHALL BE 18 INCHES IN DEPTH AND UNDERLAIN BY A MINIMUM 12 INCH DEPTH OF COARSE GRAVEL.
2. A DENSE COVER OF GRASS OR SOD SHALL BE ESTABLISHED AND MAINTAINED ON THE SURFACE TO PREVENT CLOGGING.
3. PLACE NON WOVEN GEOTEXTILE FABRIC (MIRIFI S600 OR APPROVED EQUAL) ON ALL SIDES AND BOTTOM OF SOIL & GRAVEL FILTER AREA.
4. SOIL FILTER BED SHALL MEET THE SPECIFICATIONS SHOWN IN SOIL FILTER MEDIA TABLE.

NOTE: SIDEWALLS OF THE IMPERMEABLE LINERS ARE TO EXTEND TO ABOVE THE SEASONAL HIGH WATERTABLE OR BEDROCK, WHICHEVER IS HIGHEST, AND TO THE ELEVATION OF THE TOP EDGES, AS SPECIFIED.

FILTER BASIN

NOT TO SCALE



EMERGENCY SPILLWAY CROSS SECTION

NOT TO SCALE

CONSTRUCTION PHASE NOTES:

CONSTRUCTION SEQUENCE: THE SOIL FILTER MEDIA AND VEGETATION MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE FILTER HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE FILTER UNTIL STABILIZATION IS COMPLETED.
PLACEMENT OF SOIL FILTER: UNDERDRAIN BEDDING MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 92% STANDARD PROCTOR. THE SOIL BED SHALL BE INSTALLED IN 2 LIFTS OF 9 INCHES TO PREVENT POCKETS OF LOOSE MEDIA, NOT COMPACTED.
CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:

- AFTER THE PRELIMINARY CONSTRUCTION OF THE FILTER GRADES AND ONCE THE UNDERDRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
- AFTER THE DRAINAGE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE FILTER MEDIA,
- AFTER THE FILTER MEDIA HAS BEEN INSTALLED AND SEEDED. BIO-RETENTION CELLS MUST BE STABILIZED PER THE PROVIDED PLANTING SCHEME AND DENSITY FOR THE CANOPY COVERAGE OF 30 AND 50%.
- AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS, AND
- ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DEP SPECIFICATIONS.

TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE FILTER MEDIA. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE PROJECT ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:

- SELECT SAMPLES FOR SAMPLING OF EACH TYPE OF MATERIAL TO BE BLENDED FOR THE MIXED FILTER MEDIA AND SAMPLES OF THE UNDERDRAIN BEDDING MATERIAL. SAMPLES MUST BE A COMPOSITE OF THREE DIFFERENT LOCATIONS (GRABS) FROM THE STOCKPILE OR PIT FACE. SAMPLE SIZE REQUIRED WILL BE DETERMINED BY THE TESTING LABORATORY.
- PERFORM A SIEVE ANALYSIS CONFORMING TO STM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COURSE AGGREGATES 1996A) ON EACH TYPE OF THE SAMPLE MATERIAL. THE RESULTING SOIL FILTER MEDIA MIXTURE MUST HAVE 8% TO 12% BY WEIGHT PASSING THE #200 SIEVE, A CLAY CONTENT OF LESS THAN 2% (DETERMINED HYDROMETER GRAIN SIZE ANALYSIS) AND HAVE 10% DRY WEIGHT OF ORGANIC MATTER.
- PERFORM A PERMEABILITY TEST ON THE SOIL FILTER MEDIA MIXTURE CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90-92% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.

FILTER BASIN DETAILS

NOT TO SCALE

SOIL FILTER MEDIA TABLE

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SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
FILTER BASIN 3 & 4 DETAILS & NOTES

PREPARED FOR
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P.O. BOX 703
STANDISH, MAINE 04084

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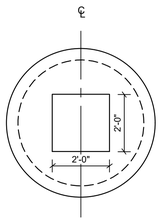
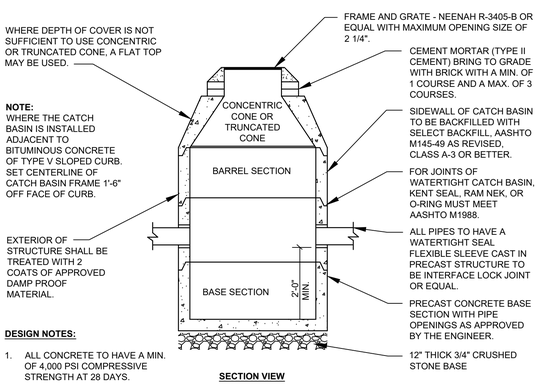


PLAN VIEW



NOTE:
WHERE THE CATCH BASIN IS INSTALLED ADJACENT TO BITUMINOUS CONCRETE OF TYPE V SLOPED CURB. SET CENTERLINE OF CATCH BASIN FRAME 1'-6" OFF FACE OF CURB.

EXTERIOR OF STRUCTURE SHALL BE TREATED WITH 2 COATS OF APPROVED DAMP PROOF MATERIAL.

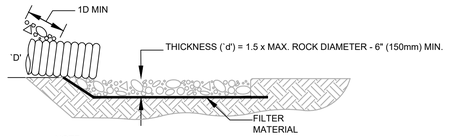
DESIGN NOTES:

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF..

SECTION VIEW

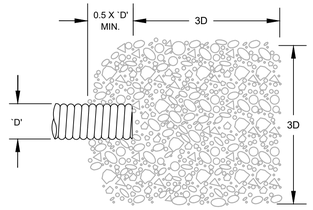
NOTE:
CASCADE GRATES SHALL BE INSTALLED ON GRADIENT OF GUTTER IF PROFILE GRADE EXCEEDS 5% GRATES SHALL BE DEPRESSED 2" BELOW NORMAL GUTTER GRADE UNLESS THIS DEPRESSION INTERFERES WITH TRAFFIC. PARALLEL BAR GRATES SHALL BE INSTALLED ON A LEVEL GRADIENT.

TYPICAL CATCH BASIN
NOT TO SCALE



NOTE:
1. GEOTEXTILE FILTER FABRIC BENEATH STONE BASED ON UNDISTURBED SOILS, OR 6" OF 4" MINUS BAN RUN GRAVEL FREE OF FINES, CLAYS, SILTS.
2. GEOTEXTILE TO BE MIRAFI 600X OR APPROVED EQUAL.

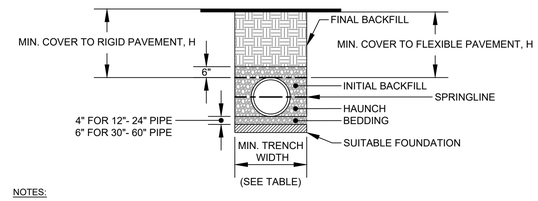
SECTION



PLAN

NOTES:
1. IN DEFINED CHANNELS, APRON SHALL EXTEND FULL WIDTH OF BOTTOM AND ONE FOOT ABOVE MAX. HEADWATER OR UP TO BANK FULL, WHICHEVER IS LESS.

PIPE INLET PROTECTION
NOT TO SCALE



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

RECOMMENDED MINIMUM TRENCH WIDTHS

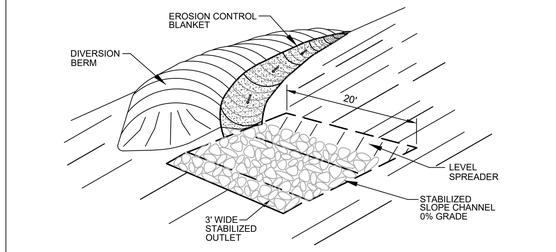
PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

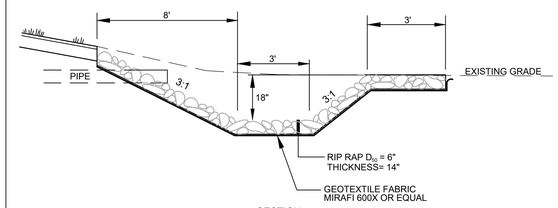
	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

TYPICAL TRENCH DETAIL
NOT TO SCALE



ELEVATION



SECTION

CONSTRUCTION SPECIFICATIONS:

1. CONSTRUCT THE LEVEL SPREADER LIP ON A ZERO PERCENT GRADE TO ENSURE UNIFORM SPREADING OF RUNOFF.

2. LEVEL SPREADER SHALL BE CONSTRUCTED ON UNDISTURBED SOIL - NOT ON FILL MATERIAL.

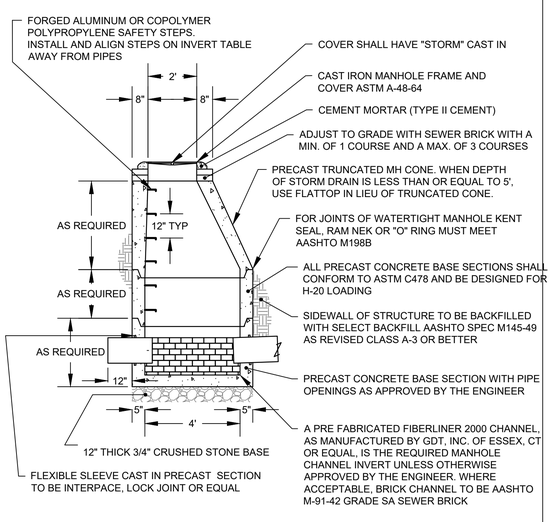
3. DIVERSION BERM SHALL BE CONSTRUCTED OF COMMON BORROW MATERIAL MEETING M.D.O.T. spec 703.18. MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 90% MAX. DRY DENSITY.

4. THE ENTRANCE CHANNEL TO THE LEVEL SPREADER SHALL NOT EXCEED A ONE PERCENT GRADE AT LEAST 20 FEET BEFORE ENTERING INTO THE SPREADER.

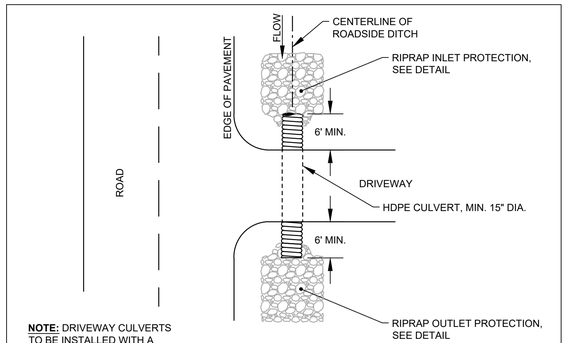
5. THE FLOW FROM THE LEVEL SPREADER SHALL OUTLET ONTO STABILIZED AREAS. WATER SHOULD NOT RECONCENTRATE IMMEDIATELY BELOW THE SPREADER.

6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE SHALL BE PERFORMED.

DITCH TURNOUT/ LEVEL SPREADER
NOT TO SCALE



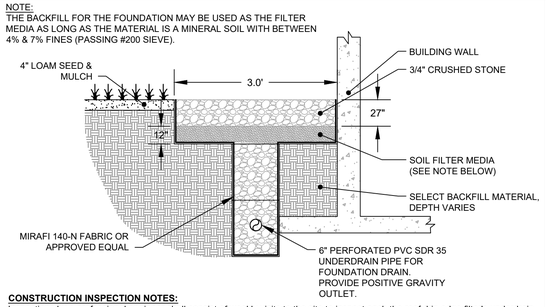
4' DIAMETER PRECAST STORM DRAIN MANHOLE
NOT TO SCALE



NOTE: DRIVEWAY CULVERTS TO BE INSTALLED WITH A MINIMUM COVER OF 24". ADJUST DITCH GRADING IF NECESSARY

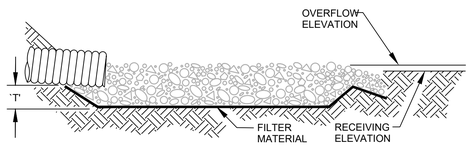
DRIVEWAY CULVERT
NOT TO SCALE

NOTE:
THE BACKFILL FOR THE FOUNDATION MAY BE USED AS THE FILTER MEDIA AS LONG AS THE MATERIAL IS A MINERAL SOIL WITH BETWEEN 4% & 7% FINES (PASSING #200 SIEVE).



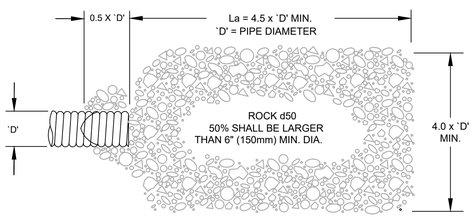
CONSTRUCTION INSPECTION NOTES:
Inspections by a professional engineer shall consist of weekly visits to the site to inspect each the roof drip edge filter's underdrain construction, filter material placement, and overflow from initial ground disturbance to final stabilization of the filter.

ROOF DRIPLINE FILTER BED
NOT TO SCALE



THICKNESS ('T') = 1.5 x MAX. ROCK DIAMETER - 6" (150mm) MIN.

SECTION



PLAN

PIPE OUTLET PROTECTION SIZING TABLE

PIPE SIZE (IN)	LENGTH (FT)	WIDTH (FT)
6	2.5	2.0
12	5.0	4.0
15	6.25	5.0
18	7.5	6.0
24	10.0	8.0
30	13.0	10.0
36	15.0	12.0
42	17.5	14.0
48	20.0	16.0
60	25.0	20.0

NOTES:
1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC (MIRAFI 600X OR APPROVED EQUAL) OR 6" (150mm) THICK MINIMUM GRADED GRAVEL LAYER.

PIPE OUTLET PROTECTION
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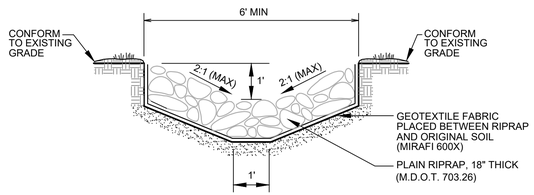
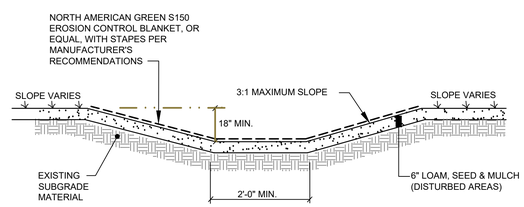


RIPRAP DITCH
NOT TO SCALE



NOTE: REFER TO GRADING PLAN FOR DITCH WIDTH AND SIDE SLOPES

GRASSED SWALE
NOT TO SCALE

STATE OF MAINE
LAWRENCE R. BASTIAN
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DRAINAGE DETAILS

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JOB NO:	1804
FILE:	
SHEET	C-6.6

EROSION AND SEDIMENT CONTROL PLAN

INTRODUCTION:
A PERSON WHO CONDUCTS, OR CAUSES TO BE CONDUCTED, AN ACTIVITY THAT INVOLVES FILLING, DISPLACING OR EXPOSING SOIL OR OTHER EARTHEN MATERIALS SHALL TAKE MEASURES TO PREVENT UNREASONABLE EROSION OF SOIL OR SEDIMENT BEYOND THE PROJECT SITE OR INTO A PROTECTED NATURAL RESOURCE AS DEFINED IN 38 MRSA § 480-B. EROSION CONTROL MEASURES MUST BE IN PLACE BEFORE THE ACTIVITY BEGINS. MEASURES MUST REMAIN IN PLACE AND FUNCTIONAL UNTIL THE SITE IS PERMANENTLY STABILIZED. ADEQUATE AND TIMELY TEMPORARY AND PERMANENT STABILIZATION MEASURES MUST BE TAKEN. THE SITE MUST BE MAINTAINED TO PREVENT UNREASONABLE EROSION AND SEDIMENTATION. MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE.

GENERAL REQUIREMENTS
A. POLLUTION PREVENTION: MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRADIENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE.

WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.

TEMPORARY EROSION CONTROL BMPS
A. SEDIMENT BARRIERS. PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE EDGE OF ANY DOWNGRADIENT DISTURBED AREA AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE PROPOSED DISTURBED AREA. MAINTAIN THE SEDIMENT BARRIERS UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.

B. CONSTRUCTION ENTRANCE: PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE SHALL BE CONSTRUCTED AT THE INTERSECTION WITH THE PROPOSED ACCESS DRIVE AND THE EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

C. INLET PROTECTION: PRIOR TO DISTURBANCE, INSTALL SILT SACK SEDIMENT BARRIERS OR OTHER INLET PROTECTION AT CATCH BASIN INLETS RECEIVING RUNOFF FROM DISTURBED AREAS. INLET PROTECTION SHALL BE INSPECTED WEEKLY AND SEDIMENT SHALL BE REMOVED AND LEGALLY DISPOSED OF WHEN IT REACHES 1/2 OF THE HEIGHT OR DEPTH OF THE BARRIER.

D. RIPRAP: SINCE RIPRAP IS USED WHERE EROSION POTENTIAL IS HIGH, CONSTRUCTION MUST BE SEQUENCED SO THAT THE RIPRAP IS PUT IN PLACE WITH THE MINIMUM DELAY. DISTURBANCE OF AREAS WHERE RIPRAP IS TO BE PLACED SHOULD BE UNDERTAKEN ONLY WHEN FINAL PREPARATION AND PLACEMENT OF THE RIPRAP CAN FOLLOW IMMEDIATELY BEHIND THE INITIAL DISTURBANCE. WHERE RIPRAP IS USED FOR OUTLET PROTECTION, THE RIPRAP SHOULD BE PLACED BEFORE OR IN CONJUNCTION WITH THE CONSTRUCTION OF THE PIPE OR CHANNEL SO THAT IT IS IN PLACE WHEN THE PIPE OR CHANNEL BEGINS TO OPERATE. MAINTAIN TEMPORARY RIPRAP, SUCH AS TEMPORARY CHECK DAMS UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED.

E. TEMPORARY STABILIZATION. STABILIZE WITH TEMPORARY SEEDING, MULCH, OR OTHER NON-ERODABLE COVER ANY EXPOSED SOILS THAT WILL REMAIN UNWORKED FOR MORE THAN 7 DAYS EXCEPT, STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OR PRIOR TO A PREDICTED STORM EVENT, WHICHEVER COMES FIRST. IF HAY OR STRAW MULCH IS USED, THE APPLICATION RATE MUST BE 2 BALES (70-90 POUNDS) PER 1000 SF OR 1.5 TO 2 TONS (90-100 BALES) PER ACRE TO COVER 75 TO 90% OF THE GROUND SURFACE. HAY MULCH MUST BE KEPT MOIST OR ANCHORED TO PREVENT WIND BLOWING. AN EROSION CONTROL BLANKET OR MAT SHALL BE USED AT THE BASE OF GRASSED WATERWAYS, STEEP SLOPES (15% OR GREATER) AND ON ANY DISTURBED SOIL WITHIN 100 FEET OF LAKES, STREAMS AND WETLANDS. GRADING SHALL BE PLANNED SO AS TO MINIMIZE THE LENGTH OF TIME BETWEEN INITIAL SOIL EXPOSURE AND FINAL GRADING. ON LARGE PROJECTS THIS SHOULD BE ACCOMPLISHED BY PHASING THE OPERATION AND COMPLETING THE FIRST PHASE UP TO FINAL GRADING AND SEEDING BEFORE STARTING THE SECOND PHASE, AND SO ON.

F. TEMPORARY SEDIMENT SUMP: THE PROPOSED GRAVEL WETLAND SHALL BE EXCAVATED TO SUBGRADE DEPTH AND USED AS A SEDIMENT SUMP DURING CONSTRUCTION OF THE ROAD. THE RIPRAP SWALE, INTERNAL BERM AND SPILLWAY, EMBANKMENT, AND RIPRAP EMERGENCY SPILLWAY SHALL BE CONSTRUCTED PRIOR TO GRUBBING FOR THE ROADWAY CONSTRUCTION. WHEN THE ROADWAY AND ROADSIDE SWALES ARE STABILIZED, ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE BASIN, AND THE GRAVEL WETLAND SHALL BE COMPLETED IN ACCORDANCE WITH THE DETAILS LOCATED IN THE PLAN SET. IF THE BASIN MUST BE DEWATERED FOR CONSTRUCTION, SEDIMENT LADEN WATER SHALL BE PUMPED THROUGH A DIRTBAG SEDIMENT REMOVAL DEVICE.

PERMANENT STABILIZATION
IF AN AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOD, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SODDING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS. NEWLY SEEDED OR SODDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.

A. SEEDED AREAS. FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS AN 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.

B. SODDED AREAS. FOR SODDED AREAS, PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOD ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOD OR DIE-OFF.

C. PERMANENT MULCH. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.

D. RIPRAP. FOR AREAS STABILIZED WITH RIPRAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. DETAILS ARE PROVIDED IN THE PLAN SET.

E. PAVED AREAS. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUBBASE IS COMPLETED.

F. DITCHES, CHANNELS, AND SWALES. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIPRAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN-CUTTING OF THE CHANNEL.

GENERAL CONSTRUCTION REQUIREMENTS
THE FOLLOWING EROSION CONTROL MEASURES SHALL BE FOLLOWED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION OF THIS PROJECT:

A. ALL TOPSOIL SHALL BE COLLECTED, STOCKPILED, SEEDED WITH RYE AT 3 POUNDS/1,000 SF AND MULCHED, AND REUSED AS REQUIRED. SILT FENCING SHALL BE PLACED DOWN GRADIENT FROM THE STOCKPILED LOAM. STOCKPILE TO BE LOCATED BY DESIGNATION OF THE OWNER AND INSPECTING ENGINEER.

B. THE INSPECTING ENGINEER AT HIS/HER DISCRETION, MAY REQUIRE ADDITIONAL EROSION CONTROL MEASURES AND/OR SUPPLEMENTAL VEGETATIVE PROVISIONS TO MAINTAIN STABILITY OF EARTHWORKS AND FINISH GRADED AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ANY SUPPLEMENTAL MEASURES AS DIRECTED BY THE INSPECTING ENGINEER. FAILURE TO COMPLY WITH THE ENGINEER'S DIRECTIONS WILL RESULT IN DISCONTINUATION OF CONSTRUCTION ACTIVITIES.

C. EROSION CONTROL MESH SHALL BE APPLIED IN ACCORDANCE WITH THE PLANS OVER ALL FINISH SEEDED AREAS AS SPECIFIED ON THE DESIGN PLANS.

D. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE ADEQUATELY STABILIZED.

E. ALL EROSION, AND SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE DETAILS PROVIDED ON THE PLANS AND MANUFACTURER'S RECOMMENDATIONS.

F. AREAS SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF TOPSOIL.

G. REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

PERMANENT VEGETATION
PERMANENT VEGETATIVE COVER SHOULD BE ESTABLISHED ON DISTURBED AREAS WHERE PERMANENT, LONG LIVED VEGETATIVE COVER IS NEEDED TO STABILIZE THE SOIL, TO REDUCE DAMAGES FROM SEDIMENT AND RUNOFF, AND TO ENHANCE THE ENVIRONMENT.

PERMANENT LAWN SEED MIXTURE SHALL CONTAIN THE FOLLOWING PERCENTAGES OF SEED TYPES:
- 50% BARON BLUEGRASS
- 35% PENNLAWN FESCUE
- 15% MANHATTAN II PERENNIAL RYE

SEE THE PROJECT SPECIFICATIONS FOR ADDITIONAL SEED REQUIREMENTS.

SEEDBED PREPARATION
A. GRADE AS FEASIBLE TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION AND ANCHORING, AND MAINTENANCE.

B. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TESTS SUCH AS THOSE OFFERED BY THE UNIVERSITY OF MAINE SOIL TESTING LABORATORY. SOIL SAMPLE MAILERS ARE AVAILABLE FROM THE LOCAL COOPERATIVE EXTENSION SERVICE OFFICE. IF SOIL TESTING IS NOT FEASIBLE ON SMALL OR VARIABLE SITES, OR WHERE TIMING IS CRITICAL FERTILIZER MAY BE APPLIED AT THE RATE OF 800 POUNDS PER ACRE OR 18.4 POUNDS PER 1,000 SQUARE FEET USING 10-20-20 (N-P2O5-K2O) OR EQUIVALENT. APPLY GROUND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT
A RATE OF 3 TONS PER ACRE (138 LB. PER 1,000 SQ. FT).

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.D. REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE, CLODS, LUMPS OR OTHER UNSUITABLE MATERIAL.

D. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.

E. PERMANENT SEEDING SHOULD BE MADE 45 DAYS PRIOR TO THE FIRST KILLING FROST OR AS A DORMANT SEEDING WITH MULCH AFTER THE FIRST KILLING FROST AND BEFORE SNOWFALL. WHEN CROWN VETCH IS SEEDED IN LATER SUMMER, AT LEAST 35% OF THE SEED SHOULD BE HARD SEED (UNSCARIFIED). IF SEEDING CANNOT BE DONE WITHIN THE SEEDING DATES, MULCH ACCORDING TO THE TEMPORARY MULCHING BMP AND OVERWINTER STABILIZATION AND CONSTRUCTION TO PROTECT THE SITE AND DELAY SEEDING UNTIL THE NEXT RECOMMENDED SEEDING PERIOD.

F. FOLLOWING SEED BED PREPARATION, SWALE AREAS, FILL AREAS AND BACK SLOPES SHALL BE SEEDED AT A RATE OF 3 LBS./1,000 S.F. WITH A MIXTURE OF 35% CREEPING RED H. FESCUE, 6% RED TOP, 24% KENTUCKY BLUEGRASS, 10% PERENNIAL RYEGRASS, 20% ANNUAL RYEGRASS AND 5% WHITE DUTCH CLOVER.

G. AREAS WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING.

H. 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.

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

A. PERMANENT STABILIZATION CONSISTS OF AT LEAST 90% VEGETATION, PAVEMENT/GRAVEL BASE OR RIPRAP.

B. DO NOT EXPOSE SLOPES OR LEAVE SLOPES EXPOSED OVER THE WINTER OR FOR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS FULLY PROTECTED WITH MULCH.

C. APPLY HAY MULCH AT TWICE THE STANDARD RATE (150 LBS. PER 1,000 SF). THE MULCH MUST BE THICK ENOUGH SUCH THAT THE GROUND SURFACE WILL NOT BE VISIBLE AND MUST BE ANCHORED.

D. USE MULCH AND MULCH NETTING OR AN EROSION CONTROL MULCH BLANKET OR ALL SLOPES GREATER THAN 8 % OR OTHER AREAS EXPOSED TO DIRECT WIND.

E. INSTALL AN EROSION CONTROL BLANKET IN ALL DRAINAGEWAYS (BOTTOM AND SIDES) WITH A SLOPE GREATER THAN 3 %.

F. SEE THE VEGETATION MEASURES FOR MORE INFORMATION ON SEEDING DATES AND TYPES.

G. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SO THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.

H. AN AREA WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIER.

I. TEMPORARY MULCH MUST BE APPLIED WITHIN 7 DAYS OF SOIL EXPOSURE OR PRIOR TO ANY STORM EVENT, BUT AFTER EVERY WORKDAY IN AREAS WITHIN 100 FEET FROM A PROTECTED NATURAL RESOURCE.

J. AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE PERMANENTLY MULCHED THAT SAME DAY.

K. IF SNOWFALL IS GREATER THAN 1 INCH (FRESH OR CUMULATIVE), THE SNOW SHALL BE REMOVED FROM THE AREAS DUE TO BE SEEDED AND MULCHED.

L. LOAM SHALL BE FREE OF FROZEN CLUMPS BEFORE IT IS APPLIED.

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

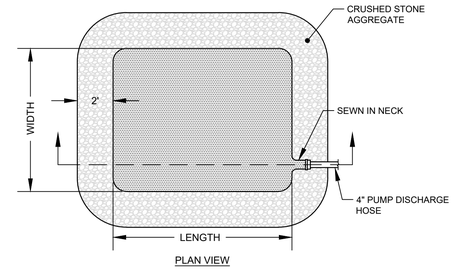
MAINTENANCE AND INSPECTION
A. MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE APPLICANT WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

B. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. INSPECT THESE AREAS AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A STORM EVENT (RAINFALL), AND PRIOR TO COMPLETING PERMANENT STABILIZATION MEASURES. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT THE INSPECTIONS.

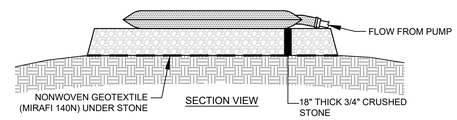
C. A LOG (REPORT) MUST BE KEPT SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE: BMPS THAT NEED TO BE MAINTAINED; LOCATION(S) OF BMPS THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION; AND LOCATION(S) WHERE ADDITIONAL BMPS ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION. FOLLOW-UP TO CORRECT DEFICIENCIES OR ENHANCE CONTROLS MUST ALSO BE INDICATED IN THE LOG AND DATED, INCLUDING WHAT ACTION WAS TAKEN AND WHEN.

THE LOG MUST BE MADE ACCESSIBLE TO DEPARTMENT STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

DEWATERING
A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWNGRADIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE.

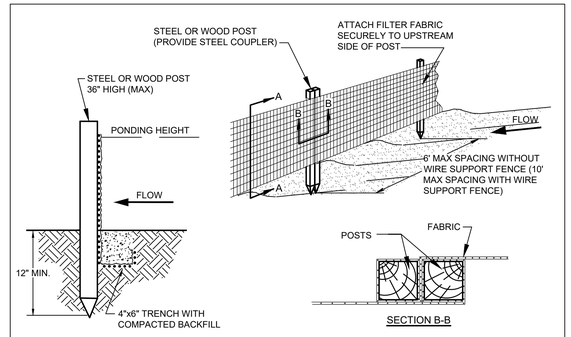


PLAN VIEW



NOTES:
1. DIRTBAG BY ACF ENVIRONMENTAL
2. SEAMS MUST BE HIGH STRENGTH DOUBLE STITCHED "J" SEAMS.
3. CONSTRUCTION DEWATERING OF TURBID WATER SHALL BE PUMPED THROUGH A DIRTBAG AND RELEASED THROUGH A VEGETATED BUFFER AT LEAST 50' UPSTREAM OF WETLAND AREAS.
4. THE LOCATION OF THE DIRTBAG SHALL BE DETERMINED BY THE CONTRACTOR, BUT SHALL IT SHALL NOT BE SITED IN CRITICAL AREAS, SUCH AS WETLANDS.

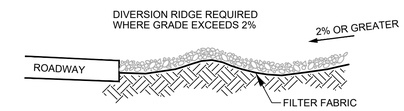
DIRTBAG DETAIL
NOT TO SCALE



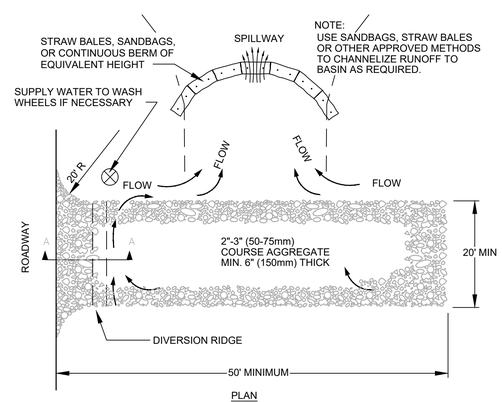
SECTION A-A

SECTION B-B

SILT FENCE
NOT TO SCALE



SECTION A - A



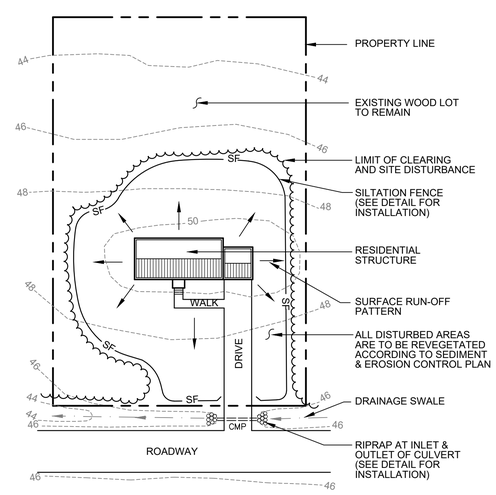
PLAN

NOTES:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.

2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

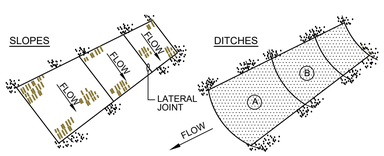
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



Inspection Notes for Lot Grading and Driveway location
Inspections by a professional engineer shall consist of a visit to the site prior to construction to consult with the earthwork contractor and a post construction meeting to confirm grading on lots and for all driveways to ensure runoff is directed according to plans and to oversee the re-stabilization of the lot into a vegetated cover.

TYPICAL EROSION CONTROL MEASURES FOR DWELLING UNITS
NOT TO SCALE



NOTES:
1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.

2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.

3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.

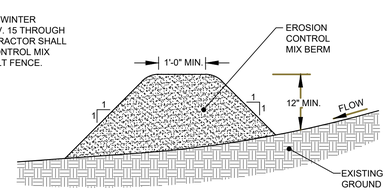
4. STAPLE OUTSIDE LATERAL EDGE 2' ON CENTER.

5. WIRE STAPLES TO BE MIN. OF #11 WIRE, 6" LONG & 1-1/2" WIDE.

6. USE NORTH AMERICAN GREEN DS 150 (OR APPROVED EQUAL) ON SLOPES BETWEEN 4:1-2:1. USE NORTH AMERICAN GREEN VMAX SC250 PERMANENT TURF REINFORCEMENT MAT (OR APPROVED EQUAL) ON SLOPES 2:1 AND STEEPER..

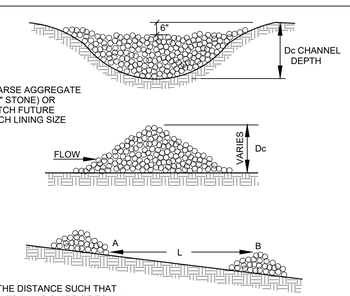
EROSION CONTROL BLANKET
NOT TO SCALE

NOTE:
DURING PERIODS OF WINTER CONSTRUCTION (NOV. 15 THROUGH APRIL 15), THE CONTRACTOR SHALL INSTALL EROSION CONTROL MIX BERMS IN LIEU OF SILT FENCE.



EROSION CONTROL MIX:
EROSION CONTROL MIX SHALL CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES & 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% - 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.
- SOLUBLE SALTS CONTENT SHALL BE < 4.0 mmhos/cm.
- ph SHALL FALL BETWEEN 5.0 - 8.0.

EROSION CONTROL MIX BERM
NOT TO SCALE



L= THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION

STONE CHECK DAM
NOT TO SCALE

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

NO.	DATE	REVISIONS	APP'D BY
8	4/15/2020	FINAL REVIEW	LRB
7	3/25/2020	REVISED PER TOWN COMMENTS	LRB
6	2/13/2020	PEER REVIEW COMMENT RESPONSE	LRB
5	1/15/2020	FINAL SUBDIVISION & SITE PLAN REVIEW	LRB
4	11/26/2019	REVISED PER MDEP REVIEW COMMENTS	LRB
3	3/29/2019	MDEP SITE LOCATION APPLICATION	LRB
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1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

565 CONGRESS STREET
SUITE 201
PORTLAND, ME 04102

41 CAMPUS DRIVE
SUITE 101
NEW GLOUCESTER, ME 04260

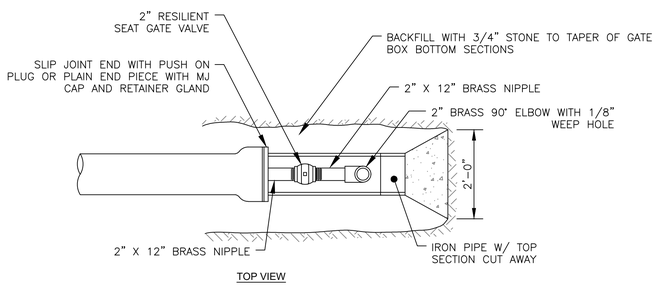
OFFICE: (207) 926-5111
www.terradynconsultants.com

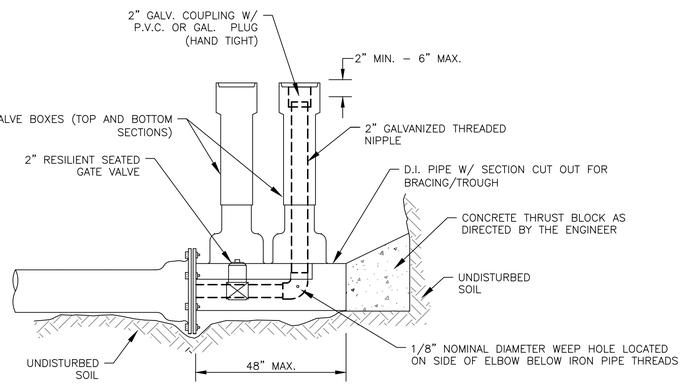
TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL PERMITTING

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
EROSION CONTROL DETAILS & NOTES

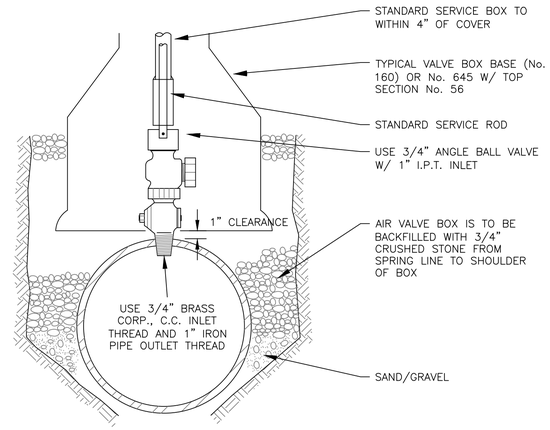
PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE:	
SHEET	C-6.7

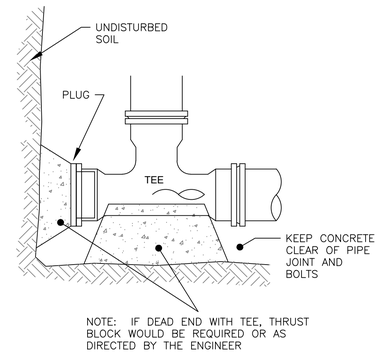


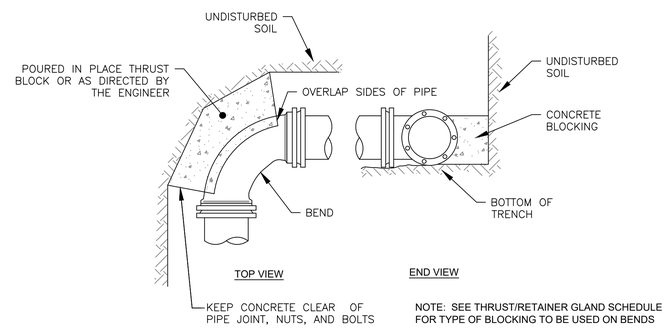


STANDARD 2" BLOW OFF



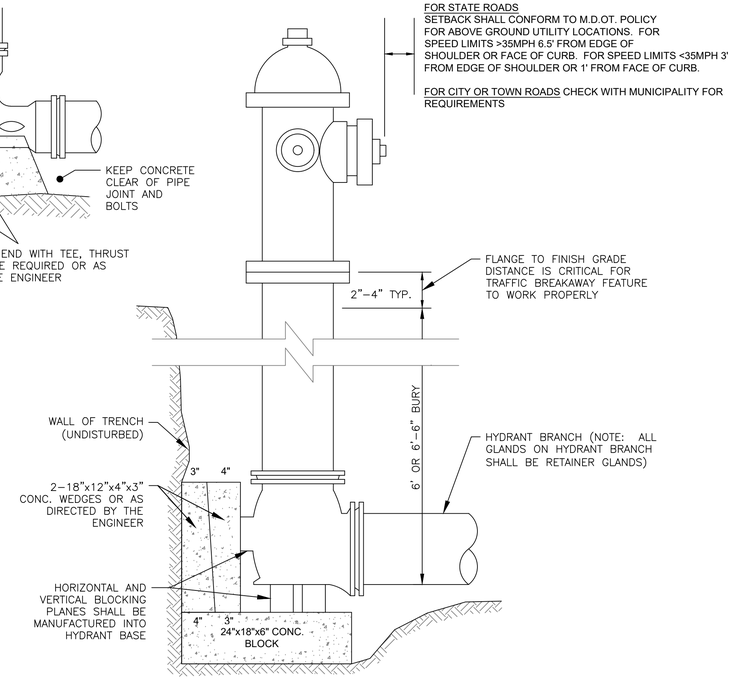
TYPICAL AIR VALVE (1)





NOTE: SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

STANDARD BEND BLOCKING



TYPICAL HYDRANT INSTALLATION DETAIL

STANDARD WATER DETAILS PROVIDED BY THE PORTLAND WATER DISTRICT

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

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SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
STANDARD WATER DETAILS

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

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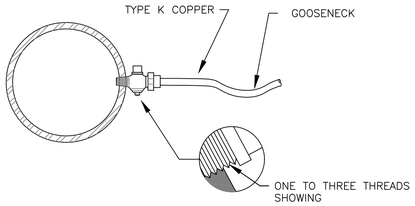
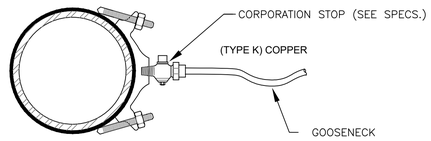
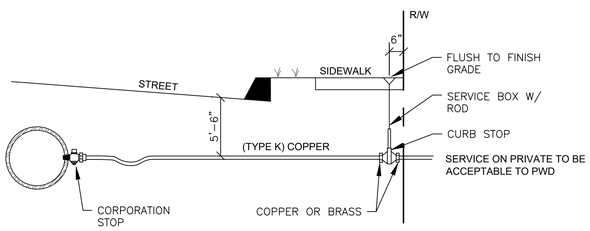
SHEET	C-6.8



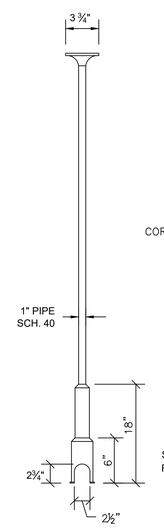
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



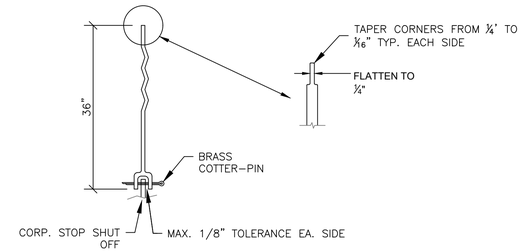
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



TYPICAL SERVICE CONNECTION

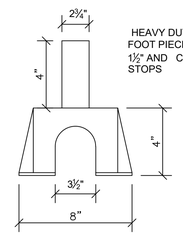


SERVICE BOX



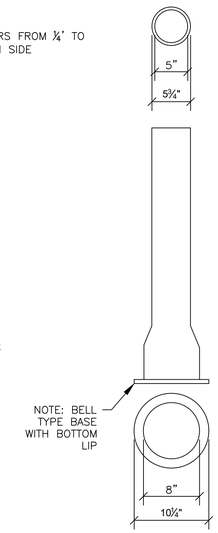
SERVICE ROD

COVER

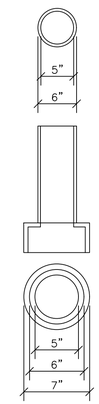


FOOT PIECE

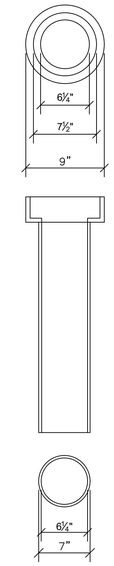
NOTE: ANY EXTENSION OF SERVICE BOX REQUIRES:
1. 1" FEMALE IRON PIPE COUPLING
2. 1" THREADED PIPE (THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



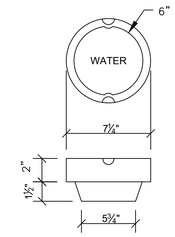
BASE SECTION NO. 645



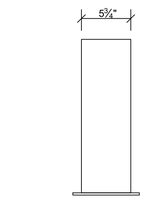
INTERMEDIATE SECTION NO.58



TOP SECTION NO.56

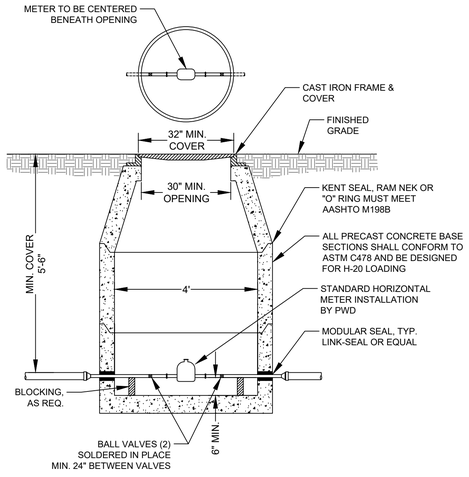


DROP STYLE COVER



(NUMBERS ARE FOR 5 ¼" BUFFALO VALVE BOXES)
(BASE SECTION MAY BE USED AS INTERMEDIATE SECTION)

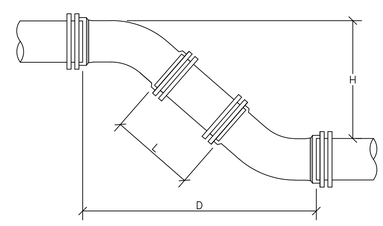
VALVE BOX COVER



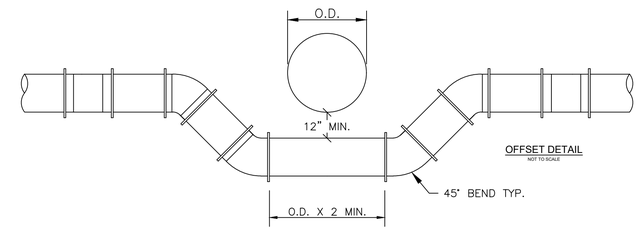
NOTES:
1. THE METER PIT SHALL BE LOCATED ON PRIVATE PROPERTY BETWEEN 10' AND 20' FROM THE PROPERTY LINE.
2. COVER SHALL HAVE "WATER" CAST IN
3. ALL PIPING INSIDE AND EXTENDING THROUGH THE METER PIT SHALL BE MADE OF COPPER, WITH A MINIMUM OF 6" CLEARANCE FROM THE METER PIT FLOOR. BLOCKING SHALL BE INSTALLED AS NECESSARY TO SUPPORT THE PIPE.
4. WALL-MOUNTED LADDER RUNGS SHALL NOT BE INSTALLED.
5. ONLY PWD PERSONNEL ARE AUTHORIZED TO INSTALL WATER METERS. PWD PERSONNEL AREA ADDITIONALLY AUTHORIZED TO OPERATE METER VALVES AS NEEDED FOR INSTALLATION AND MAINTENANCE.
6. PWD WILL SUPPLY THE WATER METER. ALL OTHER FITTINGS, INCLUDING A METER RESETTER FOR 1" OR SMALLER METERS, SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
7. FOR 1.5" AND 2" METERS, CONTRACTOR SHALL INSTALL A FLANGED METER SPOOL PIECE, SUPPLIED BY PWD AT NO ADDITIONAL CHARGE, PRIOR TO METER BEING SET. THE METER SPOOL WILL BE MADE AVAILABLE FOR CUSTOMER PICKUP AT PWD CUSTOMER SERVICE, 225 DOUGLASS STREET, PORTLAND, MAINE DURING NORMAL BUSINESS HOURS.
8. CONTRACTOR TO INSTALL TWO BALL VALVES AT LEAST 24" APART FOR METER INSTALLATION, ALLOWING FOR THE WATER METER TO BE CENTERED UNDER THE METER PIT OPENING. THE BALL VALVES SHALL BE SOLDERED IN PLACE.
9. THE METER PIT MAY HOUSE UP TO TWO ⅝", ¾", OR 1" METERS WITH PRIOR APPROVAL FROM PWD.

TYPICAL WATER METER PIT (5/8" TO 2" METER)

NOT TO SCALE



	6" PIPE		8" PIPE		12" PIPE	
H	D	L	D	L	D	L
12"	1' 6-1/2"	0' 10-1/2"	1' 7-1/2"	0' 9-1/2"	1' 11-1/2"	0' 5-1/2"
13"	1' 7-1/2"	0' 11-7/8"	1' 8-1/2"	0' 10-7/8"	2' 0-1/2"	0' 6-7/8"
14"	1' 8-1/2"	1' 1-5/16"	1' 9-1/2"	1' 0-5/16"	2' 1-1/2"	0' 8-5/16"
15"	1' 9-1/2"	1' 2-11/16"	1' 10-1/2"	1' 1-11/16"	2' 2-1/2"	0' 9-11/16"
16"	1' 10-1/2"	1' 4-1/8"	1' 11-1/2"	1' 3-1/8"	2' 3-1/2"	0' 11-1/8"
17"	1' 11-1/2"	1' 5-9/16"	2' 0-1/2"	1' 4-9/16"	2' 4-1/2"	1' 0-9/16"
18"	2' 0-1/2"	1' 6-15/16"	2' 1-1/2"	1' 5-15/16"	2' 5-1/2"	1' 1-15/16"
19"	2' 1-1/2"	1' 8-3/8"	2' 2-1/2"	1' 7-3/8"	2' 6-1/2"	1' 3-3/8"
20"	2' 2-1/2"	1' 9-13/16"	2' 3-1/2"	1' 8-13/16"	2' 7-1/2"	1' 4-13/16"
21"	2' 3-1/2"	1' 11-3/16"	2' 4-1/2"	1' 10-3/16"	2' 8-1/2"	1' 6-3/16"
22"	2' 4-1/2"	2' 0-5/8"	2' 5-1/2"	1' 11-5/8"	2' 9-1/2"	1' 7-5/8"
23"	2' 5-1/2"	2' 2"	2' 6-1/2"	2' 1"	2' 10-1/2"	1' 9"
24"	2' 6-1/2"	2' 3-7/16"	2' 7-1/2"	2' 2-7/16"	2' 11-1/2"	1' 10-7/16"
25"	2' 7-1/2"	2' 4-7/8"	2' 8-1/2"	2' 3-7/8"	3' 0-1/2"	1' 11-7/8"
26"	2' 8-1/2"	2' 6-1/4"	2' 9-1/2"	2' 5-1/4"	3' 1-1/2"	2' 1-1/4"
27"	2' 9-1/2"	2' 7-11/16"	2' 10-1/2"	2' 6-11/16"	3' 2-1/2"	2' 2-11/16"
28"	2' 10-1/2"	2' 9-1/8"	2' 11-1/2"	2' 8-1/8"	3' 3-1/2"	2' 4-1/8"
29"	2' 11-1/2"	2' 10-1/2"	3' 0-1/2"	2' 9-1/2"	3' 4-1/2"	2' 5-1/2"
30"	3' 0-1/2"	2' 11-15/16"	3' 1-1/2"	2' 10-15/16"	3' 5-1/2"	2' 6-15/16"
31"	3' 1-1/2"	3' 1-5/16"	3' 2-1/2"	3' 0-5/16"	3' 6-1/2"	2' 8-5/16"
32"	3' 2-1/2"	3' 2-3/4"	3' 3-1/2"	3' 1-3/4"	3' 7-1/2"	2' 9-3/4"
33"	3' 3-1/2"	3' 4-3/16"	3' 4-1/2"	3' 3-3/16"	3' 8-1/2"	2' 11-3/16"
34"	3' 4-1/2"	3' 5-9/16"	3' 5-1/2"	3' 4-9/16"	3' 9-1/2"	3' 0-9/16"
35"	3' 5-1/2"	3' 7"	3' 6-1/2"	3' 6"	3' 10-1/2"	3' 2"
36"	3' 6-1/2"	3' 8-7/16"	3' 7-1/2"	3' 7-7/16"	3' 11-1/2"	3' 3-7/16"
37"	3' 7-1/2"	3' 9-13/16"	3' 8-1/2"	3' 8-13/16"	4' 0-1/2"	3' 4-13/16"
38"	3' 8-1/2"	3' 11-1/4"	3' 9-1/2"	3' 10-1/4"	4' 1-1/2"	3' 6-1/4"
39"	3' 9-1/2"	4' 0-11/16"	3' 10-1/2"	3' 11-11/16"	4' 2-1/2"	3' 7-11/16"
40"	3' 10-1/2"	4' 2-1/16"	3' 11-1/2"	4' 1-1/16"	4' 3-1/2"	3' 9-1/16"
41"	3' 11-1/2"	4' 3-1/2"	4' 0-1/2"	4' 2-1/2"	4' 4-1/2"	3' 10-1/2"
42"	4' 0-1/2"	4' 4-7/8"	4' 1-1/2"	4' 3-7/8"	4' 5-1/2"	3' 11-7/8"
43"	4' 1-1/2"	4' 6-5/16"	4' 2-1/2"	4' 5-5/16"	4' 6-1/2"	4' 1-5/16"
44"	4' 2-1/2"	4' 7-3/4"	4' 3-1/2"	4' 6-3/4"	4' 7-1/2"	4' 2-3/4"
45"	4' 3-1/2"	4' 9-1/8"	4' 4-1/2"	4' 8-1/8"	4' 8-1/2"	4' 4-1/8"
46"	4' 4-1/2"	4' 10-9/16"	4' 5-1/2"	4' 9-9/16"	4' 9-1/2"	4' 5-9/16"
47"	4' 5-1/2"	4' 11-15/16"	4' 6-1/2"	4' 10-15/16"	4' 10-1/2"	4' 6-15/16"
48"	4' 6-1/2"	5' 1-3/8"	4' 7-1/2"	5' 0-3/8"	4' 11-1/2"	4' 8-3/8"
49"	4' 7-1/2"	5' 2-13/16"	4' 8-1/2"	5' 1-13/16"	5' 0-1/2"	4' 9-13/16"
50"	4' 8-1/2"	5' 4-3/16"	4' 9-1/2"	5' 3-3/16"	5' 1-1/2"	4' 11-3/16"
51"	4' 9-1/2"	5' 5-5/8"	4' 10-1/2"	5' 4-5/8"	5' 2-1/2"	5' 0-5/8"
52"	4' 10-1/2"	5' 7-1/16"	4' 11-1/2"	5' 6-1/16"	5' 3-1/2"	5' 2-1/16"
53"	4' 11-1/2"	5' 8-7/16"	5' 0-1/2"	5' 7-7/16"	5' 4-1/2"	5' 3-7/16"
54"	5' 0-1/2"	5' 9-7/8"	5' 1-1/2"	5' 8-7/8"	5' 5-1/2"	5' 4-7/8"
55"	5' 1-1/2"	5' 11-5/16"	5' 2-1/2"	5' 10-5/16"	5' 6-1/2"	5' 6-5/16"



OFFSET DETAIL
NOT TO SCALE

NOTE: DIMENSIONS APPLICABLE FOR SIGMA COMPACT BENDS. FOR TYLER COMPACT BENDS, ADD 1/2" TO "D" DIMENSION AND SUBTRACT 1/2" FROM "L" DIMENSION. FOR OTHER FITTINGS REFER TO MANUFACTURER'S RECOMMENDATIONS.

TYPICAL MAIN OFFSET

STANDARD WATER DETAILS PROVIDED BY THE PORTLAND WATER DISTRICT

STATE OF MAINE
LAWRENCE R. BASTIAN
No. 14321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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FOR PERMITTING

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STANDISH, MAINE
STANDARD WATER DETAILS

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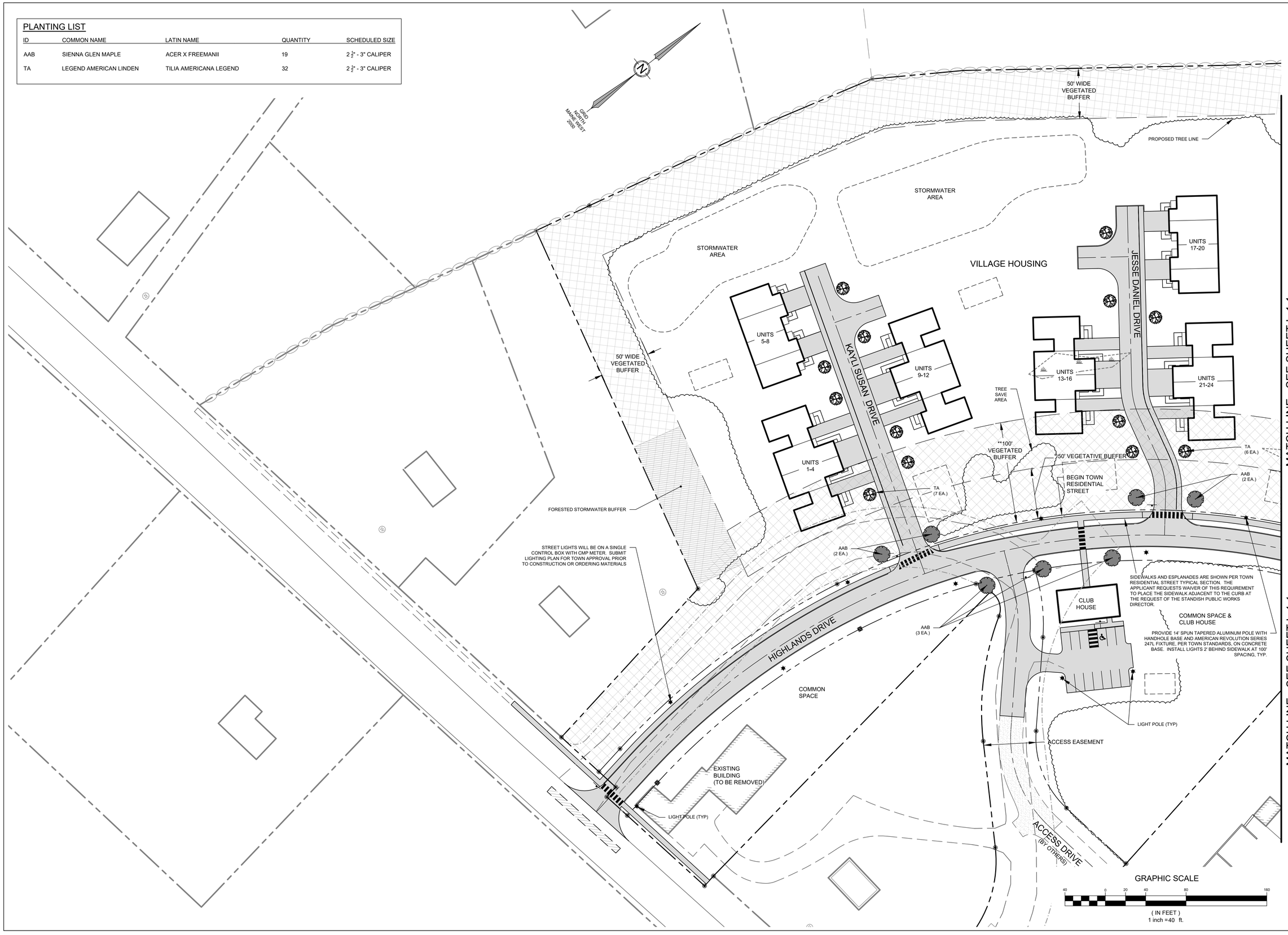
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	
DESIGNED:	JDA
JOB NO:	1804
FILE:	
SHEET	C-6.9

PLANTING LIST

ID	COMMON NAME	LATIN NAME	QUANTITY	SCHEDULED SIZE
AAB	SIENNA GLEN MAPLE	ACER X FREEMANII	19	2 1/2" - 3" CALIPER
TA	LEGEND AMERICAN LINDEN	TILIA AMERICANA LEGEND	32	2 1/2" - 3" CALIPER



STATE OF MAINE
LAWRENCE R. BASTIAN
No. 4321
LICENSED
PROFESSIONAL ENGINEER

SIGNATURE DATE: 1/15/2020

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1	11/13/2018	PRELIMINARY SUBDIVISION & SITE PLAN	LRB

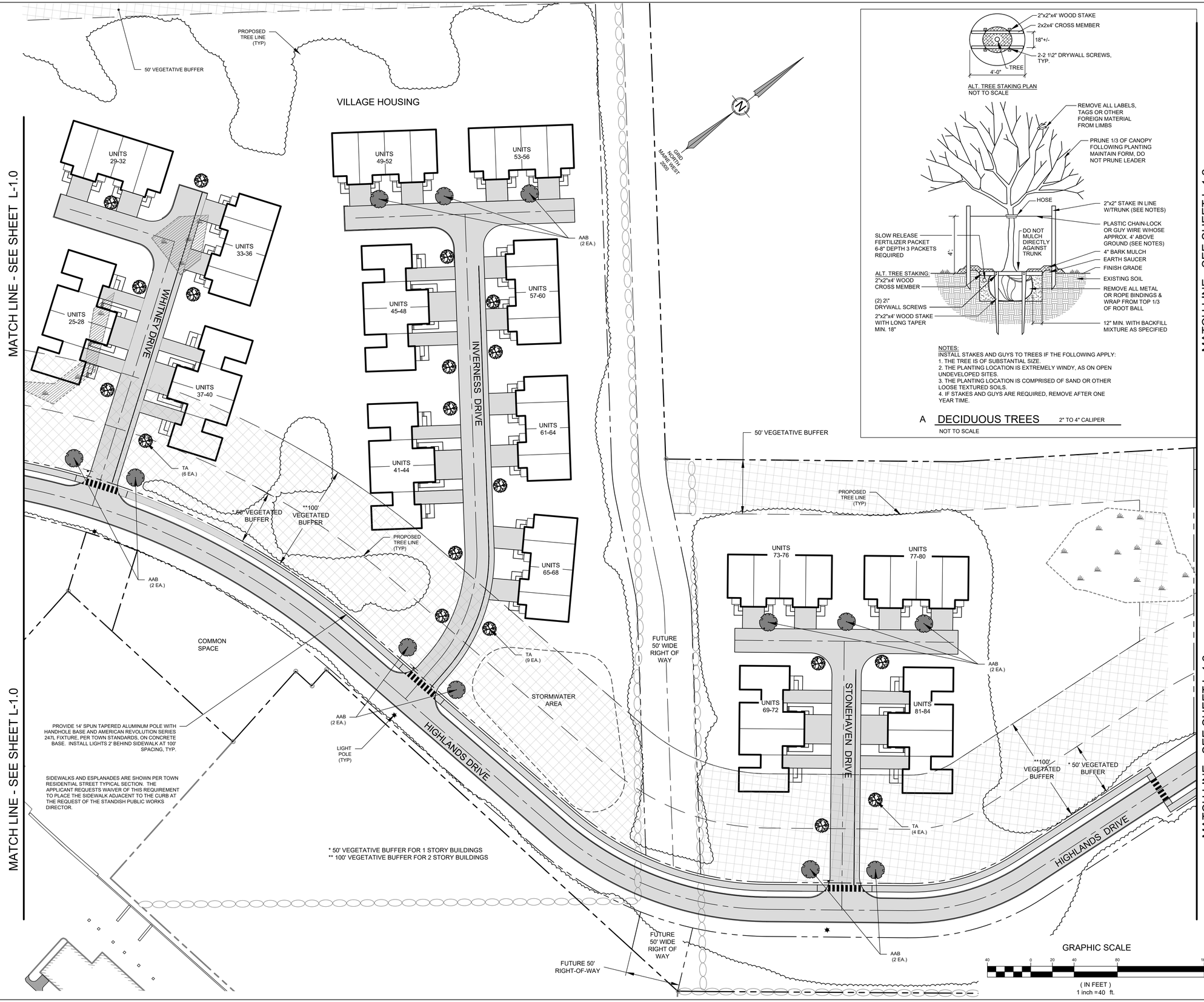
FOR PERMITTING

TERRADYN CONSULTANTS, LLC
CIVIL ENGINEERING | LAND PLANNING | STORMWATER DESIGN | ENVIRONMENTAL
41 CAMPUS DRIVE SUITE 101 NEW GLOUCESTER, ME 04260
565 CONGRESS STREET SUITE 201 PORTLAND, ME 04102
OFFICE: (207) 926-5111
www.terradynconsultants.com

SHEET DESCRIPTION
HIGHLANDS SUBDIVISION
STANDISH, MAINE
HIGHLANDS DRIVE LANDSCAPING PLAN

PREPARED FOR
LEAVITT-TOMPSON, LLC
P.O. BOX 703
STANDISH, MAINE 04084

DATE:	3/15/2019
SCALE:	1"=40'
DESIGNED:	JDA
JOB NO:	1804
FILE: 1804 S.DWG	
SHEET	L-1.0



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MATCH LINE - SEE SHEET L-1.1

MATCH LINE - SEE SHEET L-1.3

COMMON SPACE

COMMON SPACE

COMMON SPACE

LOT #1

LOT #2

LOT #3

LOT #4

LOT #5

SEPTIC AREA (TYP)

FUTURE 50' RIGHT-OF-WAY

FUTURE 50' RIGHT-OF-WAY

PROPOSED TREE LINE (TYP)

FRONT SETBACK 15' MIN. 25' MAX.

HIGHLANDS DRIVE

PROVIDE 14' SPUN TAPERED ALUMINUM POLE WITH HANDHOLE BASE AND AMERICAN REVOLUTION SERIES 247L FIXTURE, PER TOWN STANDARDS, ON CONCRETE BASE. INSTALL LIGHTS 2' BEHIND SIDEWALK AT 100' SPACING, TYP.

SIDEWALKS AND ESPLANADES ARE SHOWN PER TOWN RESIDENTIAL STREET TYPICAL SECTION. THE APPLICANT REQUESTS WAIVER OF THIS REQUIREMENT TO PLACE THE SIDEWALK ADJACENT TO THE CURB AT THE REQUEST OF THE STANDISH PUBLIC WORKS DIRECTOR.

LOT #12

SEPTIC AREA (TYP)

PROPOSED TREE LINE (TYP)

15' SIDE SETBACK

FUTURE 50' WIDE DRIVEWAY EASEMENT

LOT #6

LOT #7

LOT #8

LOT #9

LOT #10

LOT #11

LOT #13

HIGHLANDS DRIVE

COMMON SPACE

COMMON SPACE

COMMON SPACE

FORESTED STORMWATER BUFFER

50' WIDE RIGHT OF WAY

GRID NORTH MAINE WEST 2000

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

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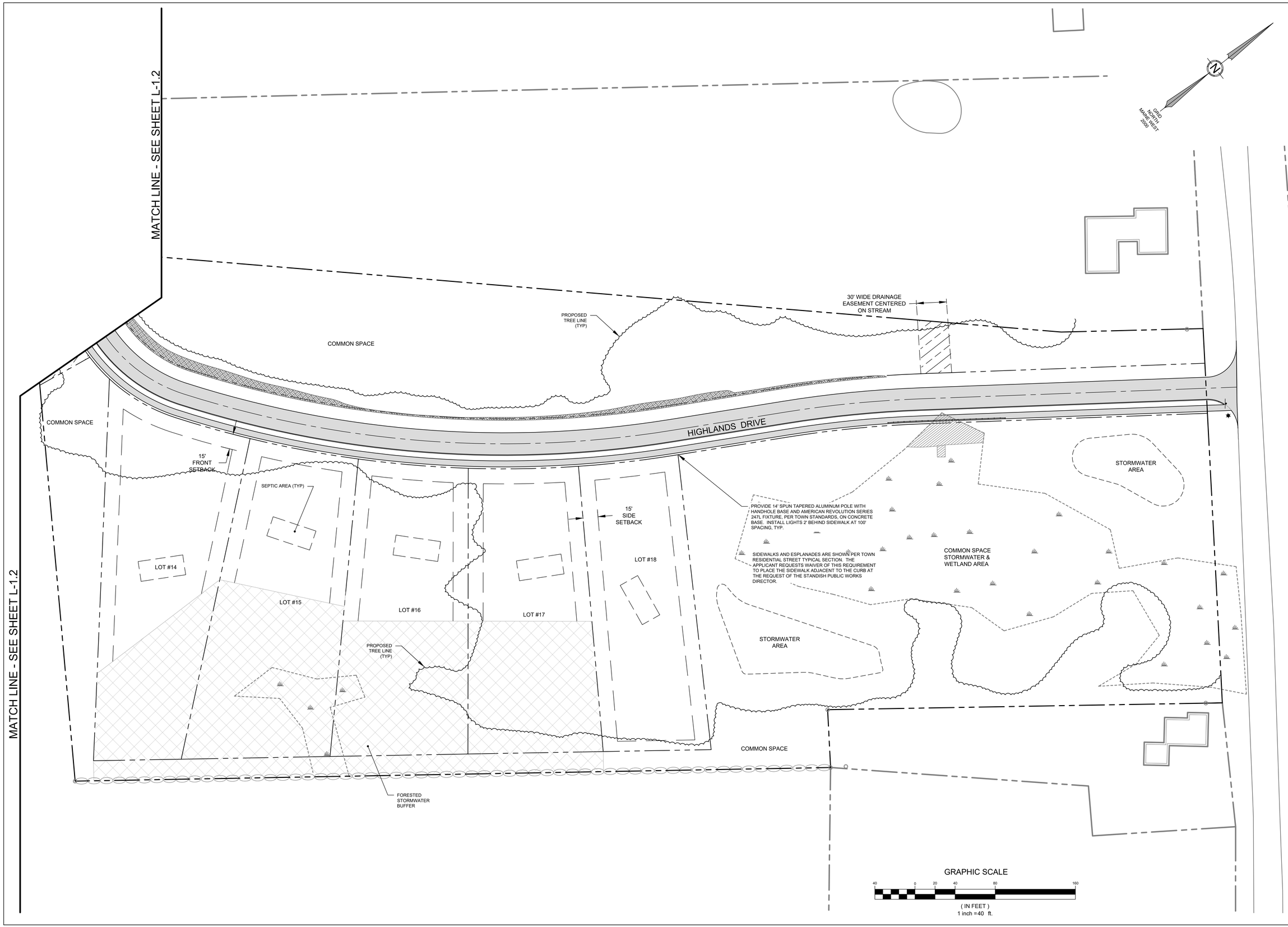

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