

SECTION 12.0

Compensatory Mitigation Plan

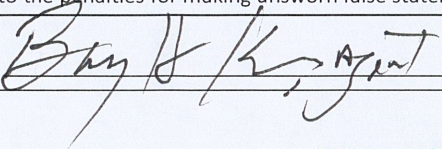


**PERMITTEE RESPONSIBLE
MITIGATION PROJECT WORKSHEET**
Water Division/Land Resources Management
Wetlands Bureau



[Check the Status of your Application](#)

RSA/Rule: 482-A: / Env-Wt 800

SECTION 1. PROPOSED PERMITTEE RESPONSIBLE MITIGATION PROJECT TYPE		
UPLAND BUFFER PRESERVATION: <input checked="" type="checkbox"/> AQUATIC RESOURCE RESTORATION: <input type="checkbox"/> MITIGATION PAYMENT: <input checked="" type="checkbox"/>		
SECTION 2. PROPOSED MITIGATION PROJECT LOCATION INFORMATION (if applicable)		
STREET/ROAD: Trudeau Road/Douglas Drive	TOWN/CITY: Bethlehem/Dalton	TAX MAP/LOT #: 209-27.1/406-1
SECTION 3. APPLICANT INFORMATION		
APPLICANT NAME: Granite State Landfill, LLC		
APPLICANT MAILING ADDRESS: 1855 VT Route 100 Hyde Park, VT 05655		
CONTACT INDIVIDUAL: John Gay		
DAYTIME TELEPHONE: 802-651-5454	EMAIL (IF ANY): John.Gay@casella.com	
SECTION 4. RESOURCE WORKSHEET SUMMARY		
AQUATIC RESOURCES INVOLVED IN PROJECT: See Table Below.		
TOTAL PRESERVATION PROPOSED:	Upland: 171.9 Acres	Wetland: 81.91 Acres
TOTAL LENGTH OF STREAM ON PROPERTY: 4,275 Linear Feet	% having 100-ft wooded zone: 80% in North/West direction	
% upland: %	in direction	
# CONFIRMED VERNAL POOLS: 0	# POTENTIAL VERNAL POOLS: unknown	
AREA OF WETLAND RESTORATION PROPOSED: 0 acres	AREA OF WETLAND CREATION PROPOSED: 0 acres	
AREA OF WETLAND ENHANCEMENT PROPOSED: 0 acres	AREA OF UPLAND ENHANCEMENT PROPOSED: 0 acres	
SECTION 5. BRIEF NARRATIVE DESCRIBING PROPOSED PERMITTEE RESPONSIBLE MITIGATION		
See attached narrative.		
SECTION 6. SIGNATURE AND CERTIFICATION		
<p>- I hereby certify that:</p> <ul style="list-style-type: none"> ▪ The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief; <p>- I understand that:</p> <ul style="list-style-type: none"> - Submitting false, incomplete, or misleading information is grounds for denying the application or revoking any award of ARM Funds that is made based on such information; and - I am subject to the penalties for making unsworn false statements specified RSA 641:3 or any successor New Hampshire statute. 		
SIGNATURE: 	DATE: 11/30/23	

Summary of Aquatic Resource(s) Involved in Project

The following information is required to be provided about the aquatic resources found on the proposed impact site and the mitigation site. New Hampshire RSA 482-A:3 requires a wetland permit for any proposed project that involves dredging and filling wetlands or impacts to the bed or bank surface waters such as rivers and streams. Before NHDES will issue a permit, applicants must demonstrate that their project proposal will avoid adverse impacts to aquatic resources and will minimize and mitigate those impacts that are unavoidable. When impacts to aquatic resources are unavoidable, applicants must identify the wetland and stream(s) resource types that will be lost during the development of the project. Identifying the functions and values of the aquatic resource that will be lost at the project site better ensures that they can be recreated and transferred to the proposed mitigation site. Please use the table formats provided below to document all aquatic resources types on the impact site and the mitigation site. A separate table should be prepared for each site. *Additional rows may be required for projects proposing impacts to multiple resource types.*

Wetland Resources: Wetlands shall be classified by US Fish and Wildlife Service Manual WS/OBS-79/31 Classification of Wetlands and Deepwater Habitats of the United States, Cowardin et al, 1979, reprinted 1992.

Stream Resources: For permittee responsible mitigation projects to restore or improve stream systems, the streams on the project site shall be reviewed and the following information collected to the best extent possible:

Stream order according to New Hampshire Hydrography Dataset (NHHD)	Geomorphology including degradation
Rosgen stream type	Position within the surrounding landscape
Impacts to upstream and downstream flooding	Connectivity improvement for aquatic organism passage
Stream bed materials	Fisheries presence
Sediment Transport capacity	Characterization of the adjacent buffers in terms of vegetative coverage
Channel form	Floodplain connectivity

These general principals are described within the [New Hampshire Stream Crossing Guidelines](#), University of New Hampshire, May 2009.

Wetland Functions & Values: A wetland evaluation is the process of determining the values of a wetland based on an assessment of the functions it performs. The evaluation of wetland functions and values should be determined through use of the [Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire](#), 2015 edition (2015 NH Method) –OR– U.S. Army Corps of Engineers (USACE) New England District [Highway Methodology Workbook Supplement](#), 1999 edition (1999 US ACE Highway Workbook Supplement). The evaluation should focus on the following:

Ecological Integrity (EI), Wetland-Dependent Wildlife Habitat (WH), Fish and Aquatic Habitat (FH), Scenic Quality (SQ), Educational Potential (EP), Wetland-based Recreation (WR), Flood Storage (FS), Groundwater (GW), Sediment Trapping (ST), Nutrient Trapping/Retention/Transformation (NT), Shoreline Anchoring (SA), Noteworthiness (NW).

Secondary Impacts: The [USACE federal mitigation guidance](#) should be consulted if the project involves conversion of forested wetlands to scrub-shrub or emergent wetlands, cutting of riparian buffer and impacts within the buffer to vernal pools.

WETLAND/STREAM RESOURCE SUMMARY

Wetland ID or Stream Number	Cowardin Wetland Class (list all that apply) or Stream Type	Principal Functions & Values	Project Impacts				Vernal Pool Present? ID or Number	Other Comments	
			Permanent Wetland (sq.ft.)	Permanent Stream Bank (lin.ft.)		Temporary (sq.ft.)			Secondary (sq.ft.)
				Bank Left	Bank Right				
See Sections 8.0 and 9.0									

MITIGATION RESOURCE SUMMARY

Wetland ID or Stream Number	Cowardin Wetland Class (list all that apply) or Stream Type	Principal Functions & Values	Wetland/Stream Resources		Vernal Pool Present? ID or Number	Other Comments
			Area of Wetland (sq.ft. or acres)	Streams (lin.ft.)		
See Section 12.0			Length on Property	% having 100 foot wooded zone		

12.0 INTRODUCTION - COMPENSATORY MITIGATION PLAN

A series of off-site and on-site alternatives were explored to avoid and minimize wetland impacts in accordance with Env-Wt 313.03. Alternative 5.3, the preferred alternative, entails an approximate 70 acre lined landfill with associated infrastructure. The total area of disturbance is approximately 150 acres. Whereas alternatives were assessed to minimize wetland impacts as much as possible, the preferred alternative will directly impact 463,759 SF of permanent wetland impact in Dalton with 1,643 linear feet of intermittent and perennial stream impact. Approximately 38,208 SF of permanent wetland impacts will occur in Bethlehem associated with improvements to Route 116 and Douglas Drive. Approximately 222 linear feet of intermittent and perennial stream will be impacted along the improved roadway areas. These impacts include 36,896 SF of After-the-Fact impact associated with Douglas Drive and the gravel pit access roads. The majority of these wetlands were classified as Palustrine Forested (PFO) and Scrub-Shrub (PSS) areas. The principal wetland functions affected by the proposed project center on groundwater recharge and loss of wildlife habitat.

12.1 Compensatory Mitigation Requirements

The project is a "Major Impact" project with non-tidal wetland impacts in excess of 10,000 square feet (SF) requiring mitigation pursuant to Env-Wt 313.04. The project is designed to avoid larger higher functioning wetlands while minimizing unavoidable wetland impacts, consistent with Env-Wt 313.03. In accordance with Env-Wt 800, compensatory mitigation is required "to compensate for the lost functions and values (Section 9) resulting from permitted permanent impacts to jurisdictional areas, including permanent impacts to stream banks and stream channels."

12.2 Compensatory Mitigation Options

As of October 13, 2023, the mitigation hierarchy requiring applicants to demonstrate that there are no local options before opting for in-lieu payment has been removed.

12.3 Compensatory Mitigation Proposal

In order to offset losses to aquatic resource functions and values, the Compensatory Mitigation Approach employed the NHDES Aquatic Resource Mitigation (ARM) Fund Wetland and Stream Payment Calculator as well as considered permittee responsible restoration/land preservation and/or a combination of both to achieve the mitigation requirements.

12.3.1 Preservation

Potential on-site preservation areas are under consideration. The total subject lot area encompasses approximately 713 acres. The total site disturbance is approximately 150 acres. Approximately 146.8 acres situated west of Douglas Drive are proposed for land preservation. This area exhibits potential restoration opportunities and would serve to protect the high functioning wetlands within the Alder Brook watershed. See Sanborn, Head & Associates, Inc. Figures 12 and 13 and the accompanying "Potential Preservation Area" plan (Section 12.5) prepared by Horizons Engineering, Inc.

Other off-site potential compensatory mitigation options center on land preservation of 108 acres with 4,275 linear feet of river frontage along the Ammonoosuc River in Bethlehem, New Hampshire. Upland buffer restoration (former gravel pit reclamation opportunities exist). The subject property borders the USFS White Mountain National Forest and riverlands protected by the Society for the Protection of New Hampshire Forests (SPNHF). See accompanying "Proposed Conservation Area" plans (Section 12.6) prepared by Horizons Engineering, Inc.

12.3.2 In-Lieu Fee Mitigation Payment

Using the NHDES Aquatic Resource Mitigation Fund (ARM Fund) calculator, payment (Section 12.4) to compensate for wetland loss can be determined.

12.3.3 Compensatory Wetland Determination

The in-lieu payment can be considered to compensate for wetland loss. Based on viable land protection options acceptable to state and federal wetland regulators, a combination of mitigation options are under consideration.

12.4 NHDES ARM Fund Calculator

Using the NHDES Arm Fund Calculator, in-lieu payments were determined for wetland and stream impacts in both the Town of Dalton and Town of Bethlehem. In summary, the payment for wetland impacts was determined to be \$2,294,671.01. Stream impact payment was \$1,217,493.29 for a combined total of \$3,512,164.30. See accompanying Summary and the respective ARM fund calculations.

Section 12.4

NHDES Arm Fund Worksheet Summary – Dalton and Bethlehem

12.4

NHDES Aquatic Resource Mitigation Fund Wetland Payment Calculation Summary

Table 12.4 – Summary of ARM Fund Totals

Town	Wetland	Stream	Wetland & Stream Sub-Total
Dalton	\$2,121,147.77	\$1,130,460.41	<i>\$3,251,608.18</i>
Bethlehem	\$173,523.24	\$87,032.88	<i>\$260,556.12</i>
<i>Sub-Total</i>	<i>\$2,294,671.01</i>	<i>\$1,217,493.29</i>	-
<i>Total</i>	<i>\$3,512,164.30</i>		
Notes: 1. Values were calculated using NHDES' ARM fund calculator. 2. Refer to the Wetland Impact Plans included in Section 12.3 for information regarding wetland areas and stream lengths. For the purposes of these calculations, 1 acre of wetland or vernal pools was assigned 1 credit.			

Encl.

NHDES Aquatic Resource Mitigation Fund Wetland Payment Calculation Summary – Dalton

NHDES Aquatic Resource Mitigation Fund Wetland Payment Calculation Summary – Bethlehem

**NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION
INSERT AMOUNTS IN YELLOW CELLS**

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	463759.00
		43560.00
	Acres of impact =	10.6464
	Total Wetland Credits =	10.6464
2 Determine acreage of wetland construction:		
	Forested wetlands:	8.0870
	Tidal wetlands:	0.0000
	All other areas:	7.8827
3 Wetland construction cost:		
	Forested wetlands:	\$876,603.13
	Tidal Wetlands:	\$0.00
	All other areas:	\$854,457.19
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	2290
	Forested wetlands:	\$18,515.29
	Tidal wetlands:	\$0.00
	All other areas:	\$18,047.54
5 Construction + land costs:		
	Forested wetland:	\$895,118.42
	Tidal wetlands:	\$0.00
	All other areas:	\$872,504.72
6 NHDES Administrative cost:		
	Forested wetlands:	\$179,023.68
	Tidal wetlands:	\$0.00
	All other areas:	\$174,500.94
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$1,074,142.11
	Tidal wetlands:	\$0.00
	All other areas:	\$1,047,005.67

**NHDES AQUATIC RESOURCE MITIGATION FUND
STREAM PAYMENT CALCULATION
INSERT AMOUNTS IN YELLOW CELLS**

PERENNIAL STREAMS: INSERT LINEAR FEET OF IMPACT ON BOTH BANKS AND CHANNEL	Right Bank	497.00
	Left Bank	107.00
	Channel	107.00
INTERMITTENT STREAMS: INSERT LINEAR FEET OF IMPACT ALONG THREAD OF CHANNEL	Channel	932.00
	TOTAL IMPACT	1643.00
	TOTAL STREAM CREDITS	1169.00
	Stream Impact Cost:	\$942,050.34
	NHDES Administrative cost:	\$188,410.07
***** TOTAL ARM FUND STREAM PAYMENT*****		
		\$1,130,460.41

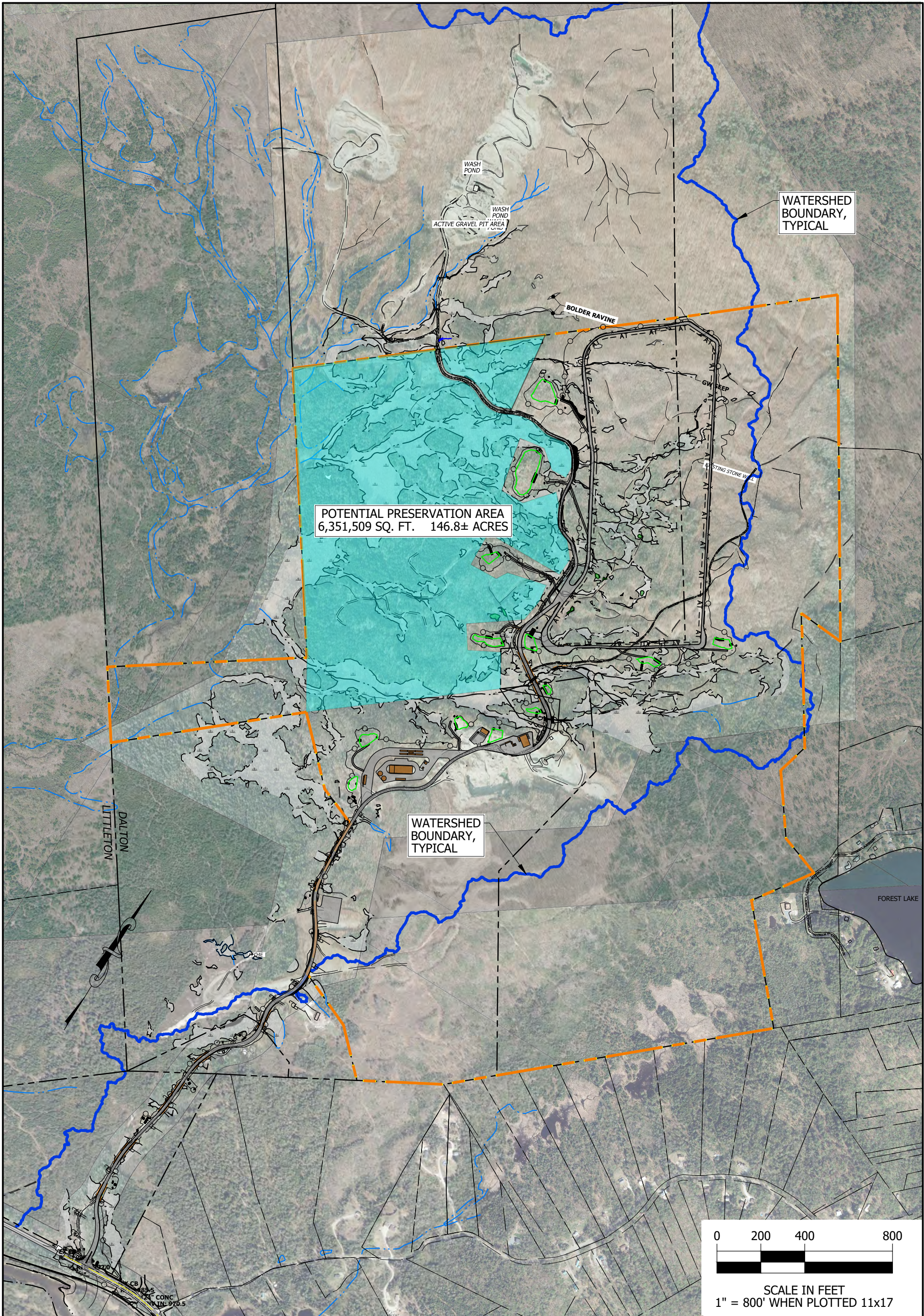
**NHDES AQUATIC RESOURCE MITIGATION FUND
WETLAND PAYMENT CALCULATION
INSERT AMOUNTS IN YELLOW CELLS**

1 Convert square feet of impact to acres:		
INSERT SQ FT OF IMPACT	Square feet of impact =	38208.00
		43560.00
	Acres of impact =	0.8771
	Total Wetland Credits =	0.8771
2 Determine acreage of wetland construction:		
	Forested wetlands:	0.3254
	Tidal wetlands:	
	All other areas:	0.9903
3 Wetland construction cost:		
	Forested wetlands:	\$35,273.75
	Tidal Wetlands:	\$0.00
	All other areas:	\$107,344.19
4 Land acquisition cost (See land value table):		
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)	Town land value:	1509
	Forested wetlands:	\$490.89
	Tidal wetlands:	\$0.00
	All other areas:	\$1,493.87
5 Construction + land costs:		
	Forested wetland:	\$35,764.64
	Tidal wetlands:	\$0.00
	All other areas:	\$108,838.06
6 NHDES Administrative cost:		
	Forested wetlands:	\$7,152.93
	Tidal wetlands:	\$0.00
	All other areas:	\$21,767.61
***** TOTAL ARM PAYMENT*****		
	Forested wetlands:	\$42,917.57
	Tidal wetlands:	\$0.00
	All other areas:	\$130,605.67

NHDES AQUATIC RESOURCE MITIGATION FUND STREAM PAYMENT CALCULATION ***INSERT AMOUNTS IN YELLOW CELLS***		
PERENNIAL STREAMS: INSERT LINEAR FEET OF IMPACT ON BOTH BANKS AND CHANNEL	Right Bank	66.00
	Left Bank	66.00
	Channel	66.00
INTERMITTENT STREAMS: INSERT LINEAR FEET OF IMPACT ALONG THREAD OF CHANNEL	Channel	24.00
	TOTAL IMPACT	222.00
	TOTAL STREAM CREDITS	90.00
	Stream Impact Cost:	\$72,527.40
	NHDES Administrative cost:	\$14,505.48
***** TOTAL ARM FUND STREAM PAYMENT*****		
		\$87,032.88

Section 12.5

Proposed Alder Brook Conservation Area Plan



DRAFT
FOR DISCUSSION

DATE OF PRINT
NOVEMBER 16 2023
HORIZONS ENGINEERING

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EXHIBIT

GRANITE STATE LANDFILL, LLC
DALTON, NEW HAMPSHIRE
WETLAND IMPACT PLANS
UPDATED TO APRIL 2023
PROPOSED LANDFILL LAYOUT (AUGUST 9, 2023)

POTENTIAL PRESERVATION AREA

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PROJECT #:	19045
DATE:	NOVEMBER 2023
SURVEYED BY:	HEI
ENGINEERED BY:	BHK
DRAWN BY:	SJB/BDD/KRP
CHECKED BY:	BHK



Figure 12

Potential Preservation Area Overlay (Wetland Cover Types)

Wetland Permit Application

Granite State Landfill, LLC
Dalton, New Hampshire

Drawn By: D. Heacock / E. Wright
Designed By: L. Corenthal / A. Matthews
Reviewed By: T. White
Project No: 1003.24
Date: November 2023

Figure Narrative

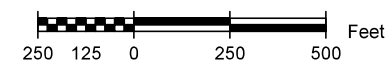
This figure depicts wetland cover types in the vicinity of the proposed Granite State Landfill project site and summarizes impacts within the limits of disturbance for Concept 5.3. Potential preservation lands are also depicted.

Notes

1. USGS Topo Map provided by ESRI through ArcGIS Online.
2. Existing delineated wetlands, streams, and vernal pools features were provided by Horizons Engineering of Littleton, NH on October 30, 2023. Cover types were digitized by Sanborn Head from information provided by B.H. Keith Associates of Freedom, NH in October 2023. Transitions between cover types may be gradual and vary over time based on a variety of factors and are depicted as lines for the purposes of tabulating areas. Refer to information included elsewhere in this package for additional information regarding delineation, survey, and description of wetlands.
3. Limits of disturbance for Concepts 1 through 4, 5.1, 5.2, and 5.3 were provided by CMA Engineers of Portsmouth, NH on October 23 and 25, 2023.
4. Potential Preservation Area was provided by Horizons Engineering on November 15, 2023.
5. Refer to previous figures for additional notes and legend.

Legend

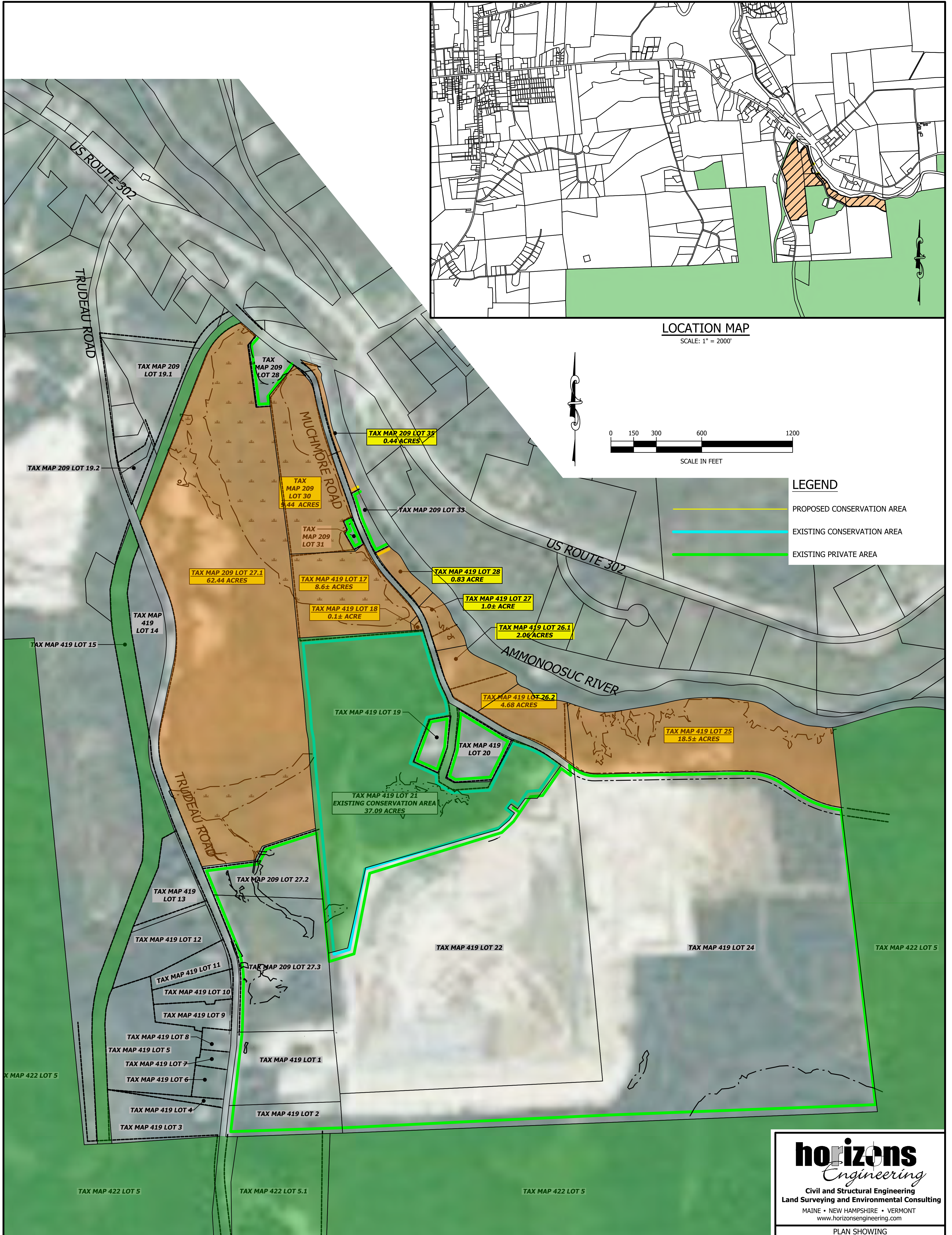
- Wetland Cover Type
- Palustrine Forested
 - Palustrine Scrub/Shrub
 - Palustrine Emergent Scrub/Shrub
 - Palustrine Emergent
 - Vernal Pool
 - Intermittent Stream
 - Perennial Stream
 - Subject Property Line
 - Alder Brook / Hatch Brook Catchment
 - Limit of Disturbance
 - Anchor Trench



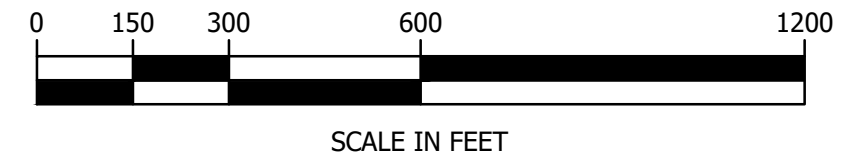
Potential Preservation Area: 146 acres
 Landfill Footprint: 70 acres
 Limit of Disturbance: 148 acres
 Total Wetland Area: 10.7 acres

Section 12.6

Proposed Ammonoosuc River Conservation Area Plan



LOCATION MAP
SCALE: 1" = 2000'



LEGEND

- PROPOSED CONSERVATION AREA
- EXISTING CONSERVATION AREA
- EXISTING PRIVATE AREA

EXISTING CONSERVATION AREA

MAP-LOT	AREA
419-21	37.09 ACRES

PROPOSED CONSERVATION AREAS

MAP-LOT	AREA
209-27.1	62.44 ACRES
209-30	9.44 ACRES
419-17	8.6± ACRES

RIVER LOTS

MAP-LOT	AREA	RIVER FRONTAGE
209-35	0.44 ACRE	858'±
419-25	18.5± ACRES	1,869'±
419-26.1	2.06 ACRES	409'±
419-26.2	4.68 ACRES	443'±
419-27	1± ACRE	346'±
419-28	0.83 ACRE	350'±

TOTAL ADDITIONAL CONSERVATION AREA	108 ± ACRES	4,275'±
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TOTAL CONSERVATION AREA

EXISTING & PROPOSED AREA 145± ACRES

UPLAND BUFFER AREAS

MAP-LOT	AREA
209-27.1	46.80 ACRES
209-30	2.58 ACRES
419-17	2.7 ACRES

RIVER LOTS

MAP-LOT	AREA
209-35	0.44 ACRE
419-25	15.5± ACRES
419-26.1	1.5 ACRES
419-26.2	4.0 ACRES
419-27	0.50 ACRE
419-28	0.83 ACRE

TOTAL UPLAND AREA OF ADD'L CONSERVATION AREA	74.85 ± ACRES
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WETLAND AREA

PROPOSED WETLAND AREA 33.15± ACRES

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PLAN SHOWING
PROPOSED CONSERVATION AREAS
IN BETHLEHEM, NEW HAMPSHIRE
FOR
GRANITE STATE LANDFILL, LLC

TRUDEAU ROAD & MUCHMORE ROAD
BETHLEHEM, NEW HAMPSHIRE

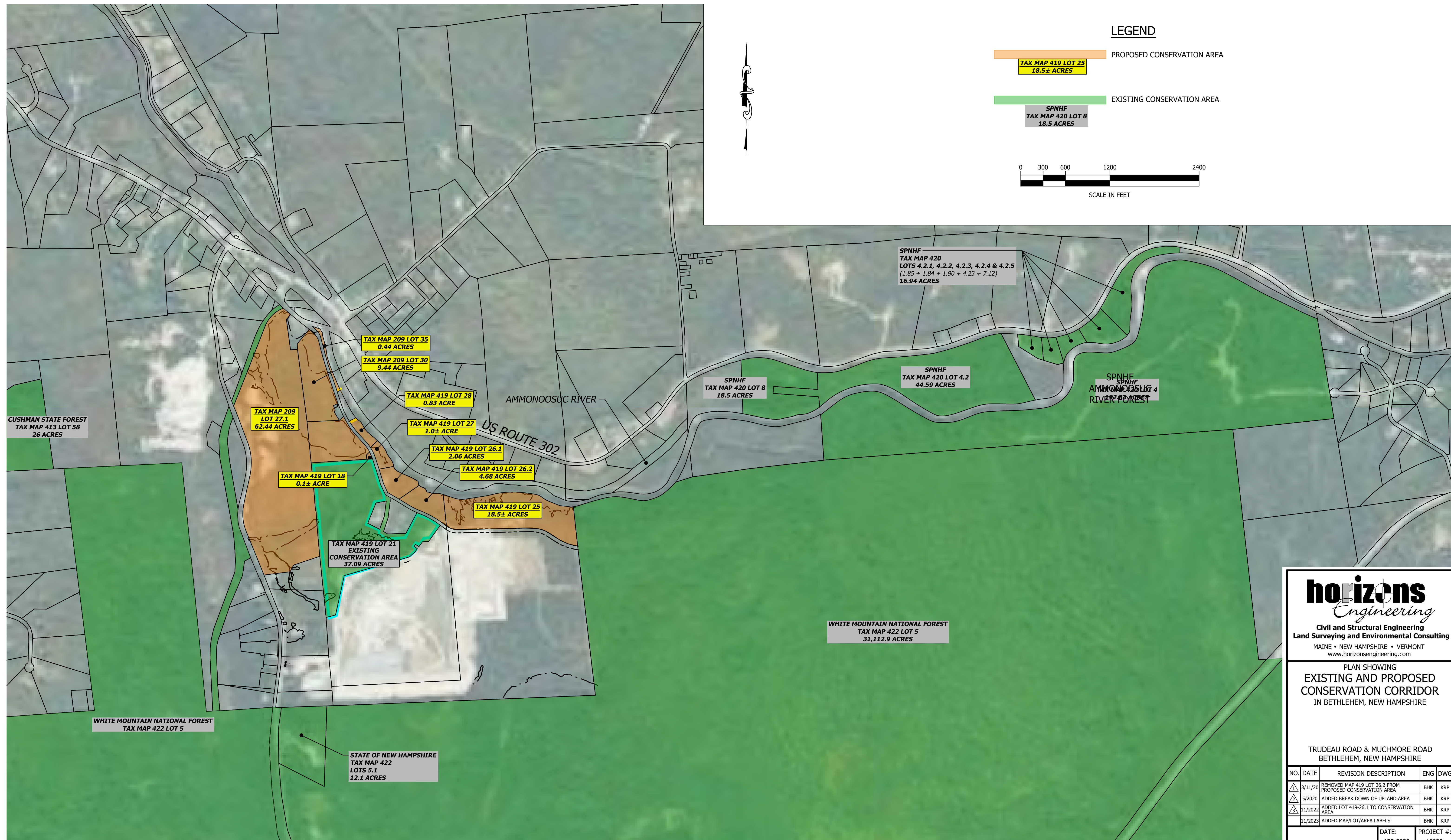
NO.	DATE	REVISION DESCRIPTION	ENG	DWG
1	3/11/20	REMOVED MAP 419 LOT 26.2 FROM PROPOSED CONSERVATION AREA	BHK	KRP
2	5/2020	ADDED BREAK DOWN OF UPLAND AREA	BHK	KRP
3	11/2022	ADDED LOT 419-26.1 TO CONSERVATION AREA	BHK	KRP

DATE:	PROJECT #:
APR 2023	18030
ENGIN'D BY:	DRAWN BY:
KRP	KRP
CHECK'D BY:	ARCHIVE #:
H-EXH	

2023 EXHIBIT

DATE OF PRINT
NOVEMBER 10 2023
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CONSERVATION CORRIDOR
IN BETHLEHEM, NEW HAMPSHIRE

TRUDEAU ROAD & MUCHMORE ROAD
BETHLEHEM, NEW HAMPSHIRE

NO.	DATE	REVISION DESCRIPTION	ENG	DWG
1	3/11/20	REMOVED MAP 419 LOT 26.2 FROM PROPOSED CONSERVATION AREA	BHK	KRP
2	5/2020	ADDED BREAK DOWN OF UPLAND AREA	BHK	KRP
3	11/2022	ADDED LOT 419-26.1 TO CONSERVATION AREA	BHK	KRP
4	11/2023	ADDED MAP/LOT/AREA LABELS	BHK	KRP

DATE:	PROJECT #:
APR 2023	18030
ENG'ND BY:	DRAWN BY:
KRP	KRP
CHECK'D BY:	ARCHIVE #:
H-EXH	H-EXH

DATE OF PRINT
NOVEMBER 10 2023
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2023 EXHIBIT

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