



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects

48 Constitution Drive
Bedford, NH 03110
Phone: (603) 472-4488
Fax: (603) 472-9747

LETTER OF TRANSMITTAL

☒ **Certified Mail** ☐ 2nd Day ☐ Overnight ☒ Electronic ☐ Hand Carry ☐ To Be Picked Up

TO: Upper Merrimack River LAC
PO Box 3019
Penacook, NH 03303

DATE	8/26/2025	JOB NO.	96159-01
ATTENTION	Michele Tremblay, UMR LAC Chair		
RE:	Unitil West Concord Substation Relocation		
	NHDES AoT Project Notification		
	1-7 McGuire Street, Concord, NH 03301		
	Tax Map 494Z Lot 44		

PHONE:
WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ Other

COPIES	DATE	NO.	DESCRIPTION
1	8/26/25	-	Cover Letter
1	8/20/25	16	Site Plans – Full Size
1	8/20/25	-	Stormwater Management Report (Parts 1 & 2)
1	-	-	Electronic PDF (submitted via email to MLT@naturesource.net)

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☒ For review and comment ☐
☐ FOR BIDS DUE _____ 20 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

Please see attached materials associated with an NHDES AoT Permit Application. Should there be any comments or questions please contact Nick Golon (603) 472-4488 or Jeremy Belanger at (603) 491-3362.

COPY: _____ SIGNED: Jeremy Belanger

If enclosures are not as noted, kindly notify us at once.

Jeremy Belanger, P.E.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

August 26, 2025

Michele L. Tremblay, Chair
Upper Merrimack River Local Advisory Committee
PO Box 3019
Penacook, NH 03303

**Re: NHDES Alteration of Terrain Permit Application – Project Notification
Unitil West Concord Substation Relocation
1-7 McGuire Street, Concord, NH 03301
Tax Map 494Z, Lot 44**

Dear Michele:

On behalf of our Client, Unitil Energy Systems, Inc. (Unitil), please see the attached New Hampshire Department of Environmental Services (NHDES) Alteration of Terrain (AoT) Permit Application for the Unitil West Concord Substation Relocation project at the above noted address.

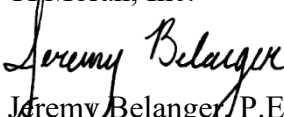
The parcel is located within ¼-mile of the Upper Merrimack River, and the southeastern portion lies within the 250-foot NH Protected Shoreland Buffer. In accordance with Env-Wq 1503.05(c)(6), please consider this submission of project notification for your consideration.

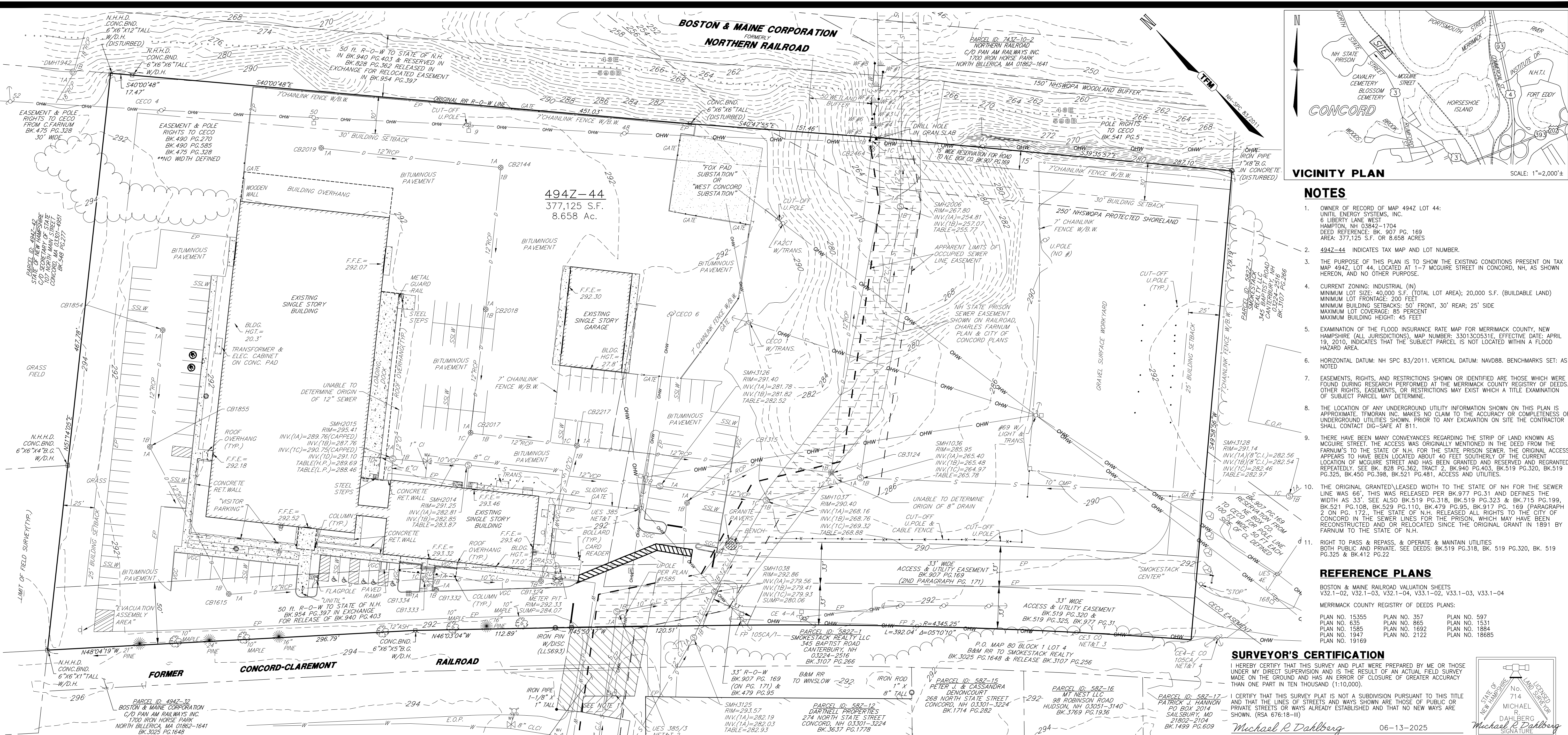
The project consists of retiring vintage substation equipment, installing new current technology to meet the growing electrical demand in the Concord area, and provide further redundancy for service reliability. In order to accommodate the substation relocation, an existing pole storage area will be relocated, and access and stormwater management improvements will be incorporated.

Additional permits required beyond the NHDES AoT Permit include a NHDES Shoreland Permit-by-Notification (PBN), a City of Concord Major Site Plan Approval, a City of Concord Conditional Use Permit (CUP) for Shoreland Buffer Impacts, and a City of Concord CUP for Use as an essential public utility.

Should there be any questions or concerns regarding this submittal or the project in general please do not hesitate to contact the undersigned at (603) 491-3362 or jbelanger@tfmoran.com or Principal Nicholas Golon at (603) 472-4488 or ngolon@tfmoran.com.

Sincerely,
TFMoran, Inc.


Jeremy Belanger, P.E.
Senior Project Engineer



N.R.C.S. SOIL LEGEND

- 25% WINDSOR LOAMY SAND, 15 TO 60 PERCENT SLOPES
50% WINDSOR URBAN LAND COMPLEX, 0 TO 8 PERCENT SLOPES

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CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION "IT'S THE LAW"

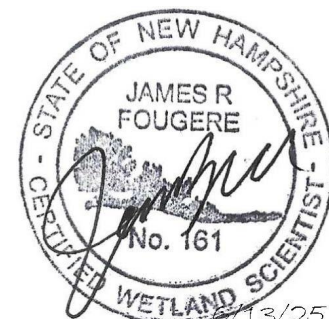
811
Dig Safe
MA-ME-NH-NY-VT

LEGEND

- | | | | |
|-------------------------|---|-------------------------|---|
| CONCRETE BOUND | □ | SEWER MANHOLE | ⊙ |
| IRON PIPE | ○ | DRAIN MANHOLE | ○ |
| IRON PIN | ● | CATCH BASIN | ⊙ |
| DRILL HOLE | ○ | WATER GATE | ⊙ |
| SLOPED GRANITE CURB | — | UTILITY POLE | — |
| VERTICAL GRANITE CURB | — | INDEX CONTOUR | — |
| EDGE OF PAVEMENT | — | INTERMEDIATE CONTOUR | — |
| EDGE OF GRAVEL | — | N.S.C.S. SOILS BOUNDARY | — |
| SINGLE SOLID WHITE LINE | — | EDGE OF WATER | — |
| RETAINING WALL | — | TREELINE | — |
| WIRE FENCE | — | TREES | — |
| CHAIN LINK FENCE | — | SEWER LINE | — |
| SIGN | — | WATER LINE | — |
| GAS VALVE | — | DRAIN LINE | — |
| LIGHT POLE | — | GAS LINE | — |
| HYDRANT | — | OVERHEAD UTILITIES | — |
| GUY ANCHOR | — | BOLLARD | — |
| ELECTRIC METER | — | | |

WETLAND SCIENTIST CERTIFICATION:

JURISDICTIONAL WETLANDS SHOWN ON THIS PLAN WERE DELINEATED BY JAMES FOUGERE CWS #161. THE WETLANDS WERE DELINEATED ACCORDING TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (1987) AND THE REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHEAST REGION, VERSION 2, JANUARY 2012. DOMINANT HYDRIC SOILS WITHIN THE WETLAND(S) WERE IDENTIFIED USING "FIELD INDICATORS OF HYDRIC SOILS OF THE UNITED STATES" A GUIDE FOR IDENTIFYING AND DELINEATING HYDRIC SOILS, NRCRS, VERSION 8.1, 2017. DOMINANCE OF HYDROPHYTIC VEGETATION WAS DETERMINED USING THE USACE NATIONAL WETLAND PLANT LIST, NWPL 2016 VERSION 3.3. <http://wetland.plants.usace.army.mil>



DRAINAGE TABLE

STRUCTURE	RIM	INV 1A	INV 1B	INV 1C	INV 1D	SUMP/TABLE
CB 1854	290.68	287.43				285.46
CB 1855	290.56	286.37	286.72			285.05
CB 1615	290.81	285.02	285.30			283.11
CB 1332	291.02	286.48	287.03			286.16
CB 1334	291.01	287.77				
CB 1324	291.57	283.03	283.05			280.88
CB 1315	290.53	285.21	285.31			282.45
CB 2019	290.41	287.33				285.34
CB 2144	290.95	286.24	285.93			283.95
CB 2018	291.00	285.19	284.96			282.91
CB 2017	291.01	284.17	283.79	283.96		281.47
CB 2217	291.07	280.14	281.24	280.97		278.20
CB 2464	257.07	252.99				
CB 3124	286.18	271.78	270.80	270.79		271.56
DMH 1333	291.27	283.33	285.20	284.37	283.88	281.74
DMH 1942	280.06	276.29	266.44			265.91

TAX MAP 494Z LOT 44 EXISTING CONDITIONS SURVEY PLAN

1 - 7 MCGUIRE STREET
CONCORD, NEW HAMPSHIRE
OWNED BY & PREPARED FOR:
UNITIL ENERGY SYSTEMS, INC.

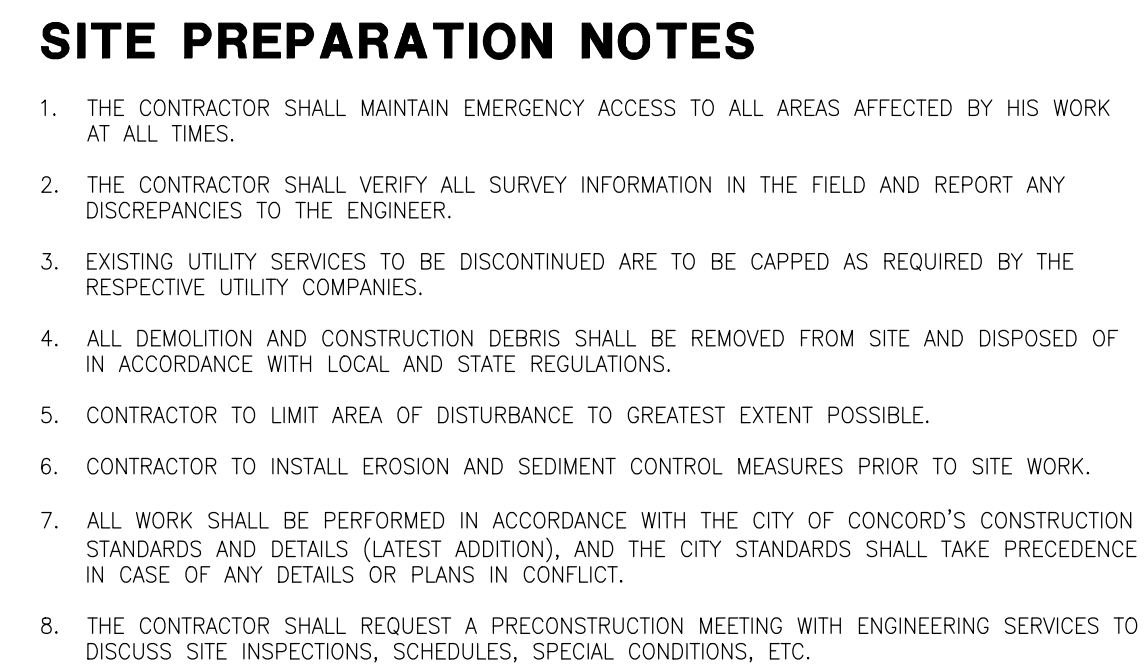
SCALE: 1" = 40' APRIL 22, 2025



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Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	96159.00	DR	LR	FB	2202	
CHK	MRD	CADFILE			96159.00 Survey	SHEET 1 OF 1



SOIL LEGEND (PER USDA NRCS WEB SOIL SURVEY)			
SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
598B	WINDSOR—URBAN LAND COMPLEX, 0—8% SLOPES	A	EXCESSIVELY

SHORELAND IMPACT NOTES

 PERMANENT SHORELAND IMPACTS = 5,133 SF

 CITY OF CONCORD SHORELAND BUFFER IMPACTS = 6,645 SF



SITE DEVELOPMENT PLANS

TAX MAP 494Z LOT 44
SITE PREPARATION & DEMOLITION PLAN
UNTIL WEST CONCORD SUBSTATION
1-7 MCGUIRE STREET, CONCORD, NH 03301
 OWNED BY/PREPARED FOR
UNITIL ENERGY SYSTEMS, INC.
6 LIBERTY LANE WEST, HAMPTON, NH 03824
 APPLICANT
UNITIL ENERGY SYSTEMS, INC.
30 ENERGY WAY, EXETER, NH 03833

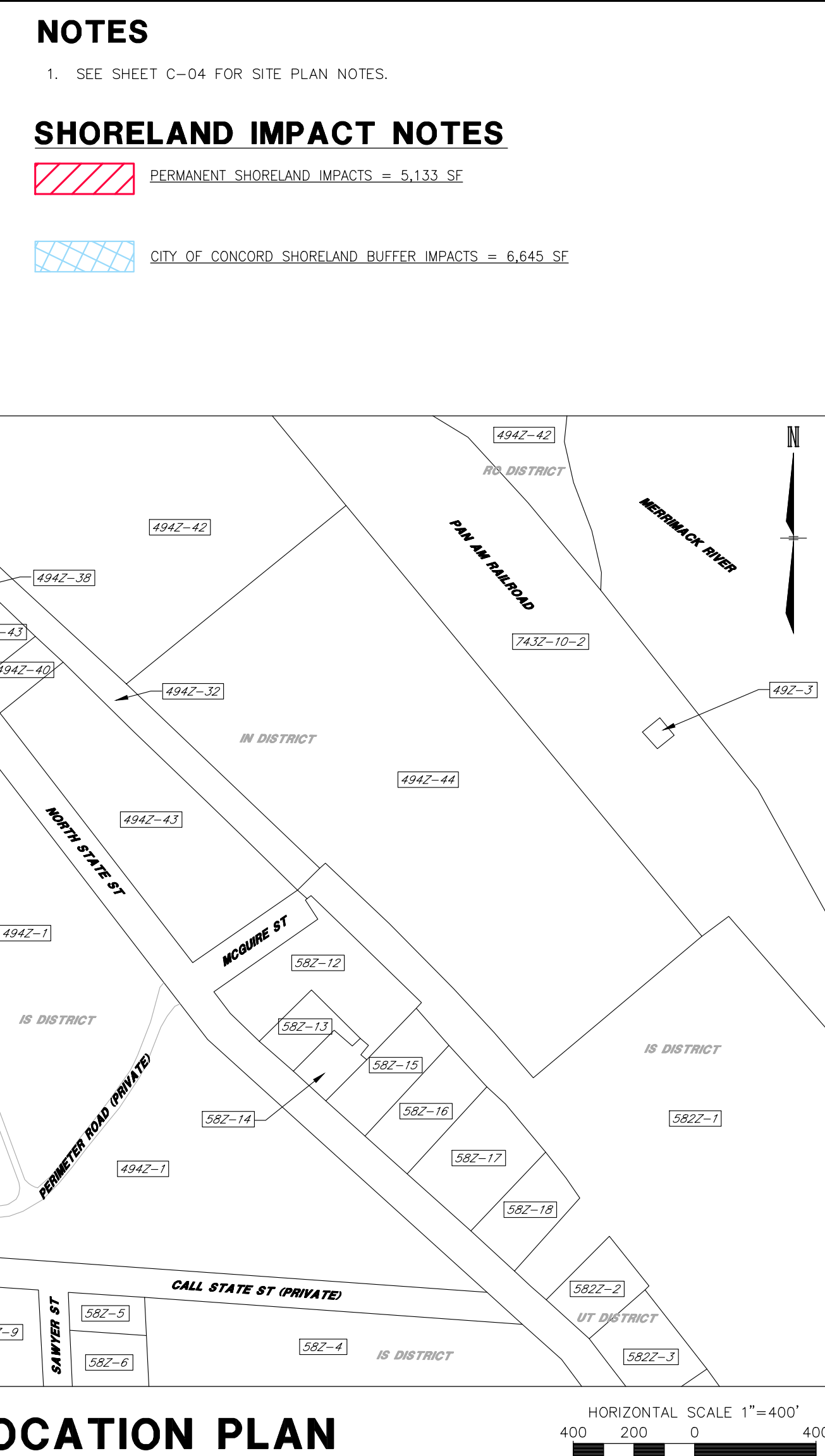
SCALE: 1"=20' **AUGUST 20, 2025**



- Civil Engineers
- Structural Engineers
- Traffic Engineers
- Land Surveyors
- Registered Landscape Architects
- Scientists

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www.tfmorgan.com

FILE	96159-01	DR	FB	C-04
		CK	CADFILE 96159-01 DESIGN_LAYOUT	



NOTES

- SEE SHEET C-04 FOR SITE PLAN NOTES.

PERMANENT SHORELAND IMPACTS = 5,133 SF

CITY OF CONCORD SHORELAND BUFFER IMPACTS = 6,645 SF

LOCATION PLAN

HORIZONTAL SCALE 1"=400'

400 200 0 400


Unitil

SITE DEVELOPMENT PLANS

TAX MAP 494Z LOT 44

SITE LAYOUT PLAN

UNITIL WEST CONCORD SUBSTATION

1-7 MCGUIRE STREET, CONCORD, NH 03301

OWNED BY/PREPARED FOR
UNITIL ENERGY SYSTEMS, INC.
6 LIBERTY LANE WEST, HAMPTON, NH 03824
APPLICANT
UNITIL ENERGY SYSTEMS, INC.
30 ENERGY WAY, EXETER, NH 03833

SCALE: AS NOTED

AUGUST 20, 2025



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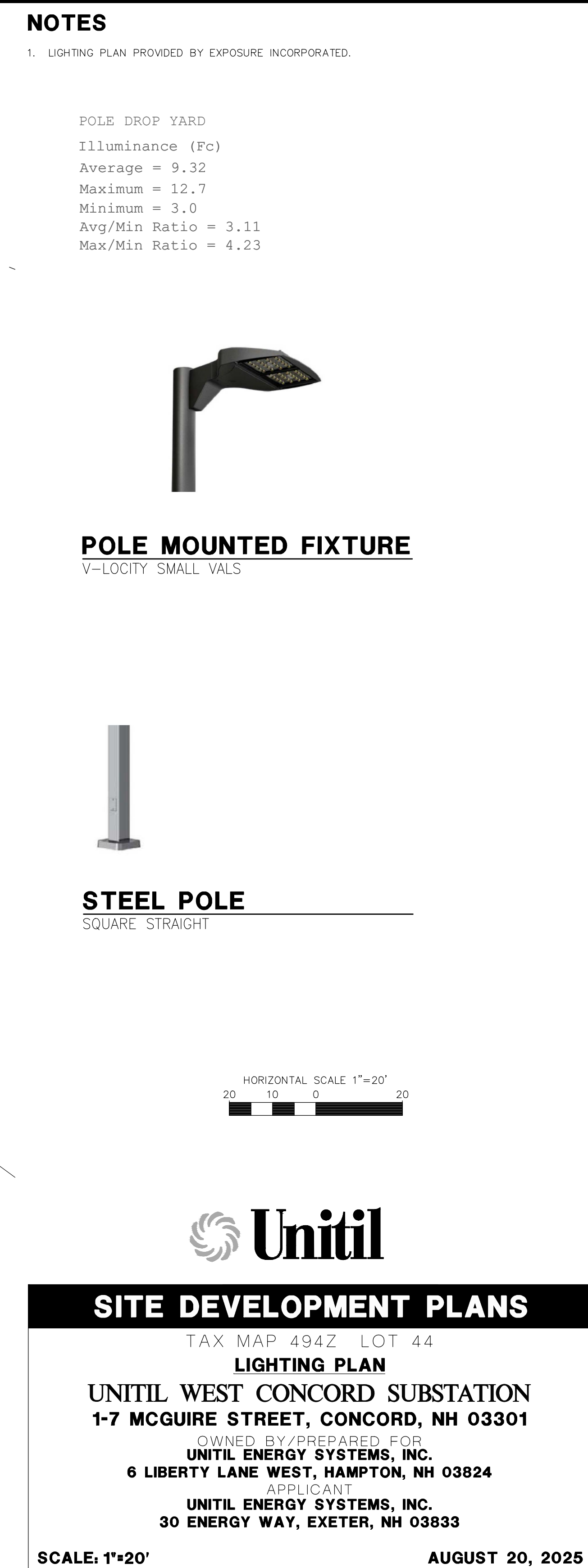
HORIZONTAL SCALE 1"=20'



A horizontal scale bar with alternating black and white segments. The segments are labeled 20, 10, and 0 from left to right, indicating distances in feet.

[illegible]

FILE	96159-01	DR		FB		C-06
		CK		CADFILE	96159-01 DESIGN_LAYOUT	

[illegible]

<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 8px; margin-right: 5px;">TYPED BY</div> <div style="border: 1px solid black; padding: 2px 10px; font-size: 18px; font-weight: bold;">96159-01</div> </div>	<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px 5px; font-size: 10px; font-weight: bold;">DR</div> <div style="border: 1px solid black; padding: 2px 10px; font-size: 10px;">OK</div> </div>	<div style="border: 1px solid black; padding: 2px 10px; font-size: 10px; font-weight: bold;">FB</div>	<div style="border: 1px solid black; padding: 2px 10px; font-size: 10px;">96159-01 DESIGN_LAYOUT</div>	<div style="border: 1px solid black; padding: 2px 10px; font-size: 10px;">L-01</div>
	<div style="border: 1px solid black; padding: 2px 10px; font-size: 10px;">CADFILE</div>			

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	EPSC	
--	--	--	CONSTRUCTION ENTRANCE DETAIL	DRAWING NO.	E-1	
--	--	--		DATE:	01/08	PAGE: 1
--	--	--				
--	--	--				
--	--	--				

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	EPSC	
-	-	-	STONE & BLOCK GRATE INLET PROTECTION DETAILS	DRAWING NO.	E-2	
-	-	-		DATE:	01/09	PAGE: 1
-	-	-				
-	-	-				
-	-	-				

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION:	SITE/STREET	
1	DRAWING NO.	11.11	SAWCUT REQUIREMENTS	DRAWING NO.	R-12	
2	MULTIPLE	12.15		DATE:	12/08	PAGE: 1
--	--	--				
--	--	--				
--	--	--				

1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE BLANKET END OVER END WITH 6 INCH (MIN.) OVERLAP AND ANCHOR DOWN SLOPE BLANKET IN A 6 INCH DEEP TRENCH.
5. BLANKET SHALL BE NORTH AMERICAN GREEN SC-150 OR APPROVED EQUAL.

BLANKET SLOPE PROTECTION

EROSION CONTROL FOR SLOPE GREATER THAN 5' IN HEIGHT

NOT TO SCALE

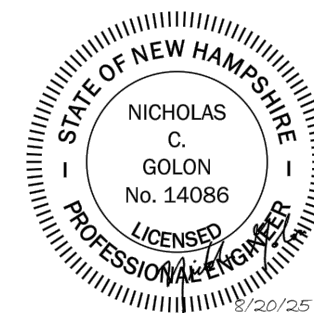
1. SILT SOCK SHALL BE FILTREXTM SILTOSXTM OR APPROVED EQUIVALENT
2. SEE MANUFACTURER FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT SOCK

NOT TO SCALE

LOAM & SEED DETAIL

NOT TO SCALE

[illegible]

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SITE DEVELOPMENT PLANS

TAX MAP 494Z LOT 44

DETAILS

UNITIL WEST CONCORD SUBSTATION

1-7 MCGUIRE STREET, CONCORD, NH 03301

OWNED BY/PREPARED FOR
UNITIL ENERGY SYSTEMS, INC.

6 LIBERTY LANE WEST, HAMPTON, NH 03824

APPLICANT
UNITED ENERGY SYSTEMS, INC.

UNITIL ENERGY SYSTEMS, INC.
30 ENERGY WAY, EXETER, NH 03833

SCALE: NOT TO SCALE

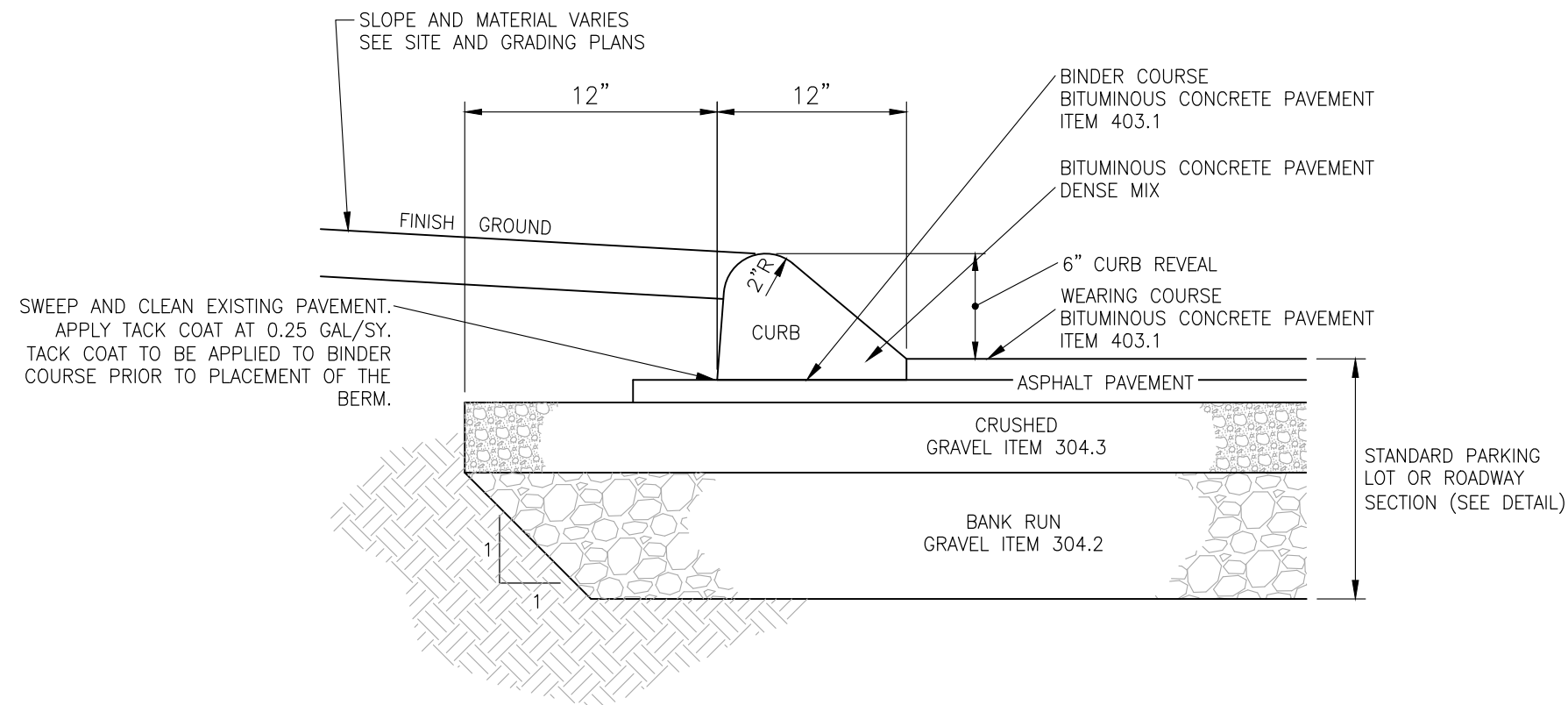
AUGUST 20, 2025



- Civil Engineers
- Structural Engineers
- Traffic Engineers
- Land Surveyors
- Landscape Architects
- Scientists

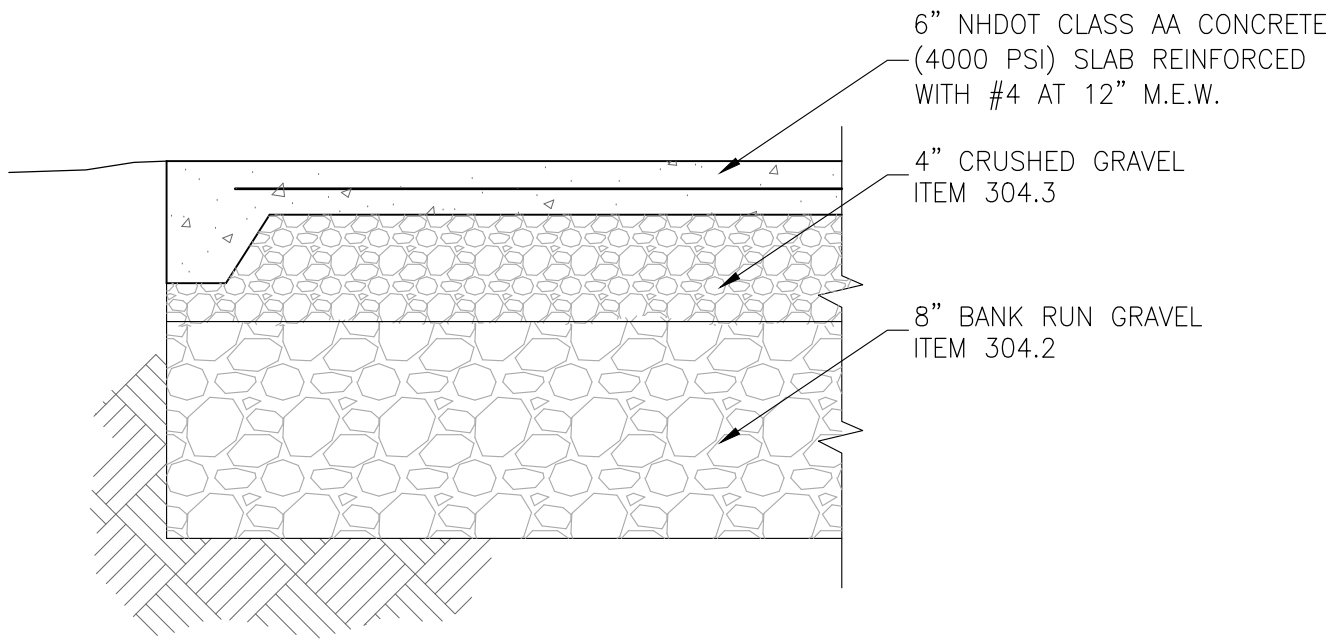
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Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	96159-01	DR	FB	96159-01 COVER & DETAILS	D-01
		CK	CADFILE		



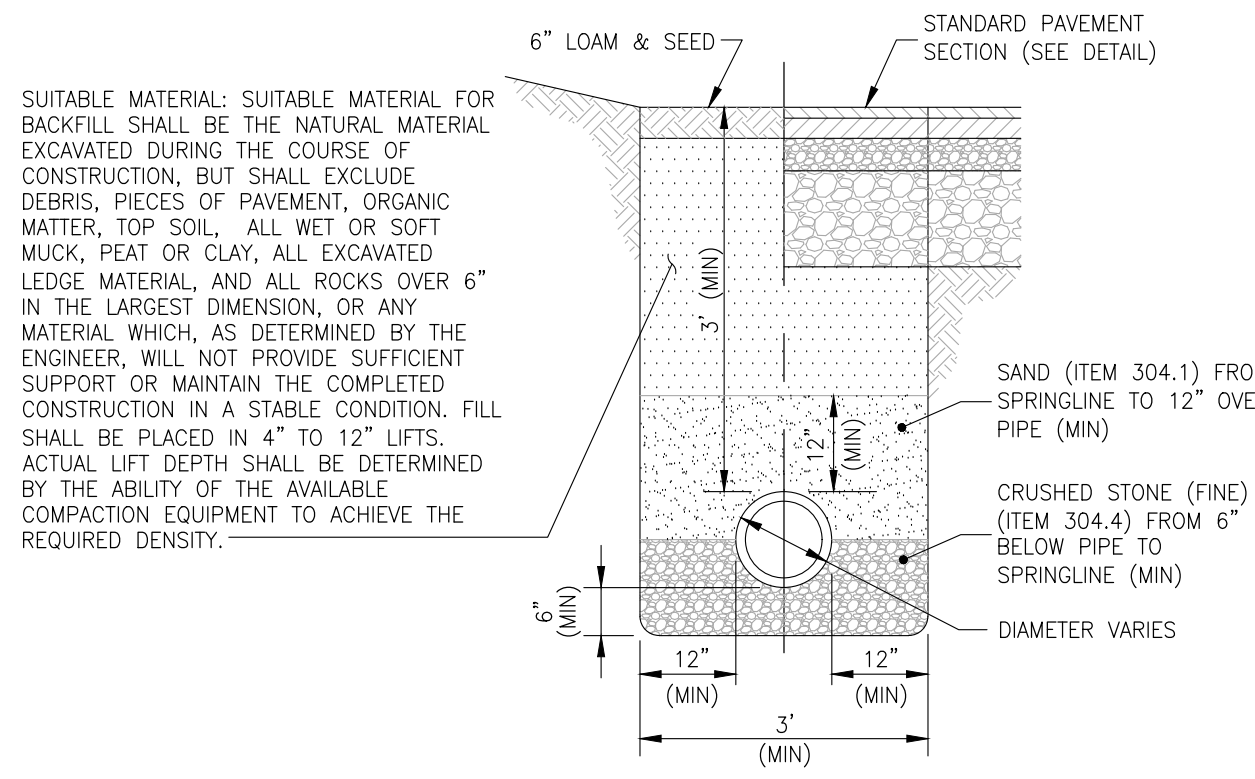
BITUMINOUS CONCRETE CURB

NOT TO SCALE



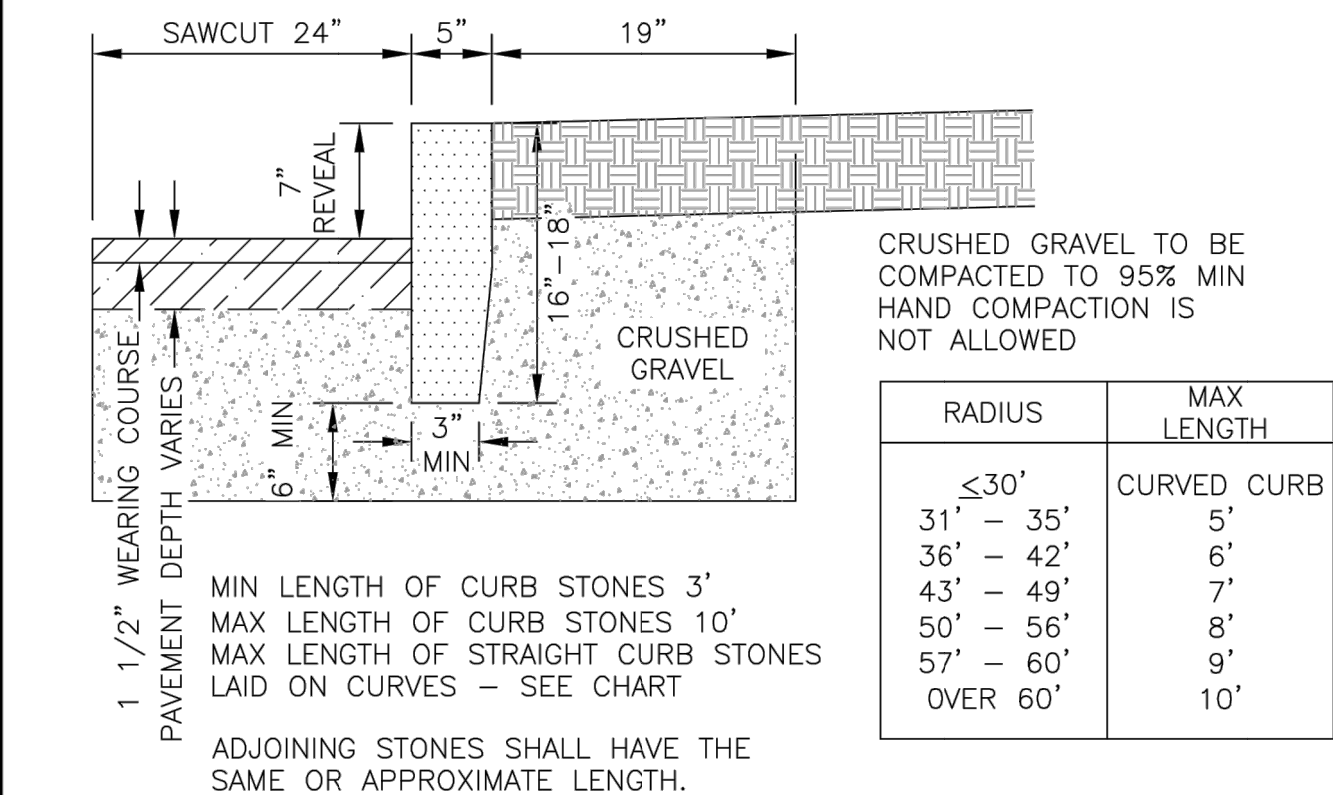
CONCRETE PAD

NOT TO SCALE



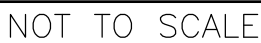
STORM DRAIN TRENCH

NOT TO SCALE

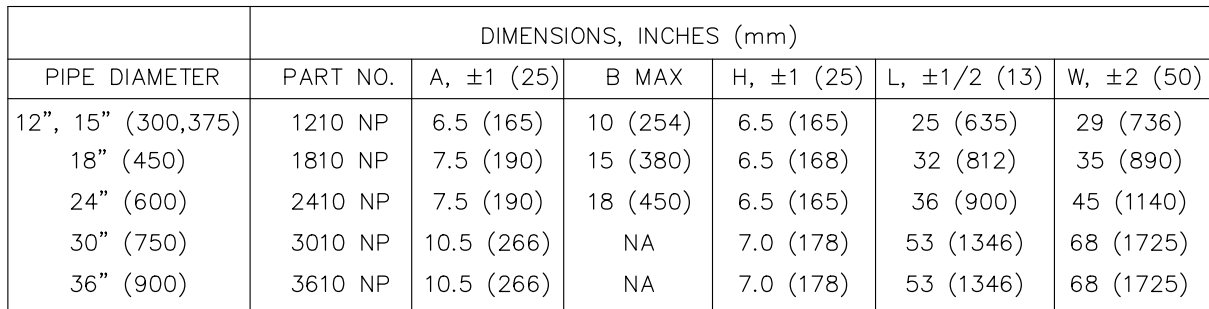


FINISH SURFACE AND TOLERANCES FOR VERTICAL GRANITE CURB		
AREA	FINISH SURFACE	TOLERANCE
TOP	5" WIDE OR AS OTHERWISE SHOWN, SAWN TRUE PLANE.	+1/8" TO +3/8"
	FRONT AND BACK ARRIS LINES PITCHED STRAIGHT AND PARALLEL.	+1/8" TO +3/8"
FRONT FACE	RIGHT ANGLE TO TOP, APPROXIMATELY TRUE PLANE. NO DRILL HOLES SHOWING IN TOP 10"	+1" TO -1/2"
BACK FACE EXPOSED	PLANE PARALLEL WITH FRONT FACE. STRAIGHT SPLIT TO 1 1/2" BELOW EXPOSED SURFACE. NO LARGER THAN 1/4" SEGMENT OF DRILL HOLES SHOWING IN ARRIS LINES.	+1" TO -1"
CONCEALED	BELOW 1 1/2" FROM EXPOSED SURFACE.	+1 1/2" TO -1 1/2"
BOTTOM	APPROXIMATELY PARALLEL TO TOP. MINIMUM WIDTH: 3"	SEE PLANS
ENDS EXPOSED PORTION	SQUARE WITH PLANES OF TOP AND FACE	
JOINTS EXPOSED	OPTIMUM WIDTH: 1"	
CONCEALED	TO BREAK BACK NO MORE THAN 4"	+3/4" TO -3/4"

NO.	REVISION	DATE	City of Concord Engineering Services Division	SECTION: SITE/STREET
1	DRAFTING	12.15		
2	SAWCUT	5.19		



1. THE INSTALLER SHALL NOT ALLOW ANY VEHICULAR OR CONSTRUCTION EQUIPMENT TRAVEL TO OCCUR ACROSS THE PROPOSED BASIN AREA AT ANY TIME EXCEPT DURING EXCAVATION OF TOPSOIL, SUBSOIL AND OTHER MATERIALS NOT SUITABLE FOR BED BOTTOM CONDITIONS.
2. CAUTION SHOULD BE EXERCISED DURING SITE PREPARATION TO AVOID COMPACTION OF THE INFILTRATIVE SURFACE.
3. SEED MIX
NEW ENGLAND ROADSIDE MATRIX WET MEADOW SEED MIX (MIN. 35 LBS/ACRE)
4. FILTER MEDIA SOIL SAMPLE TO BE PROVIDED TO THE ENGINEER PRIOR TO PLACEMENT, ON SITE MIXING OF MANUFACTURED SOIL MAY BE ACCEPTABLE PENDING ENGINEER APPROVAL.
5. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BASIN.
6. AFTER THE BASIN IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
7. VEGETATION SHOULD BE ESTABLISHED IMMEDIATELY.
8. DO NOT PLACE FILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
9. FILTRATION MEDIA SHALL BE INSTALLED ALONG INTERIOR SIDE SLOPES TO ELEVATION EQUAL TO OUTLET STRUCTURE RIM OR WEIR ELEVATION, WHICHEVER IS LOWER.
10. FILL TO BRING EMBANKMENT AREAS TO GRADE SHALL BE EXISTING SIDE MATERIALS OR IMPORTED MATERIAL CONSISTENT WITH THE GEOTECHNICAL REPORT RECOMMENDATIONS FOR COMMON FILL (SEE NOTE 21 AND 22 ON SHEET C-02).
11. FILTER MEDIA SHALL BE PLACED IN BOTTOM OF SEDIMENT FOREBAY.



PREPARE BEDDING:

BACKFILL MATERIAL AROUND THE END SECTION MAY BE THE SAME AS THE MATERIAL AROUND THE PIPE. PLACE A FEW INCHES OF BACKFILL MATERIAL IN THE TRENCH OR DITCH WHERE THE END SECTION WILL BE PLACED. COMPACT AND CONTOUR THIS BEDDING MATERIAL TO GENERALLY MATCH THE END SECTION. EXCAVATE AN AREA IN THE BEDDING WHERE THE TROUGH WILL SEAT SO THAT THE END SECTION WILL BE LEVEL WITH THE BOTTOM OF THE TRENCH OR DITCH IN THE FINISHED INSTALLATION.

PLACE END SECTION OF PIPE:

OPEN THE END SECTION COLLAR AND SEAT IT OVER THE TWO PIPE CONNECTIONS. ONCE THE END SECTION IS POSITIONED, CHECK TO MAKE SURE THAT THE INVERT OF THE END SECTION MATCHES THE INVERT OF THE PIPE AND THAT THE END SECTION IS LEVEL WITH THE TRENCH OR DITCH BOTTOM.

SECURE THE END SECTION:

SLIP THE STAINLESS STEEL ROD THROUGH THE PRE-DRILLED HOLES AT THE TOP OF THE COLLAR. THE ROD SHOULD BE BETWEEN THE CROWNS OF THE TWO PIPE CONNECTIONS. PLACE A WASHER ON EITHER END OF THE ROD. PLACE A NUT ON EITHER END OF THE ROD AND TIGHTEN WITH A WRENCH.

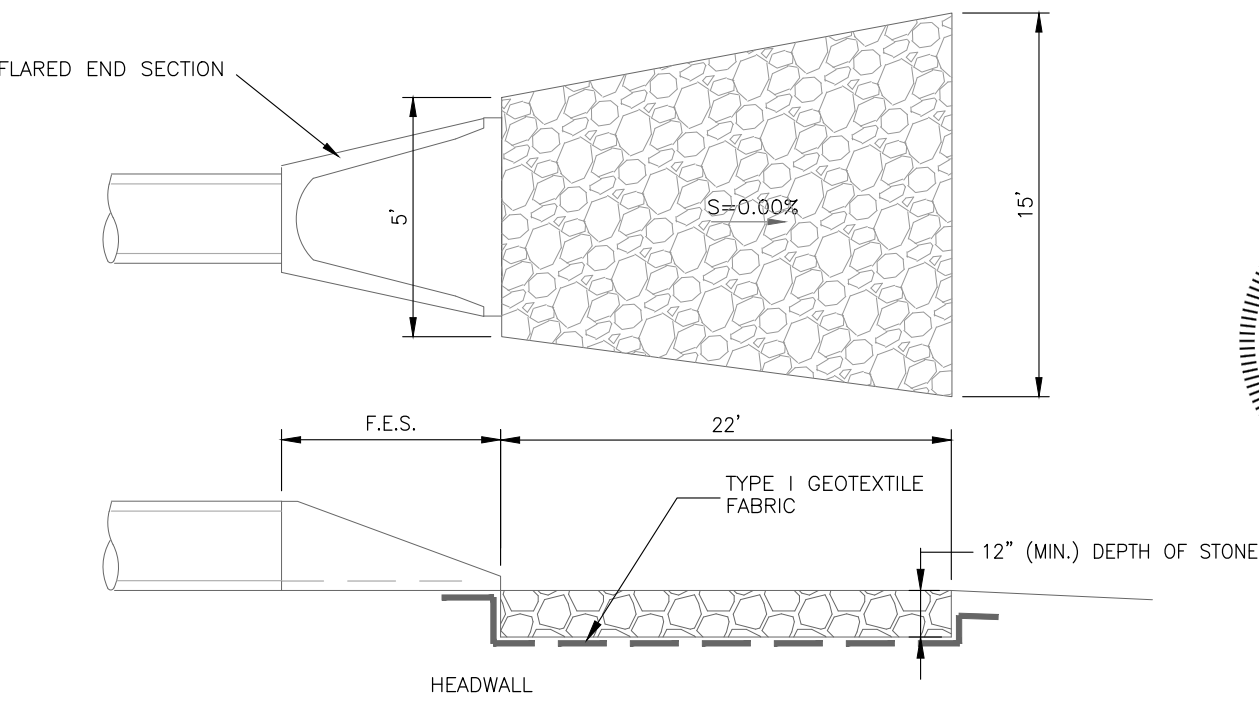
SECURE THE TOE TROUGH:

TO PREVENT WASHOUTS FROM HIGH VELOCITY FLOW, IT IS RECOMMENDED THAT THE TROUGH BE SECURED WITH CONCRETE. POUR CONCRETE IN THE TROUGH UP TO THE LEVEL OF THE TRENCH OR DITCH BOTTOM AND ALONG THE ENTIRE LENGTH OF THE TROUGH.

FINISH BACKFILL:

SHOVEL BACKFILL AROUND THE END SECTION IN 6 TO 9 INCH LAYERS EQUALLY ON BOTH SIDES, KNIFING IT TO ELIMINATE VOIDS. TAMP WITH A SMALL-FACED COMPACTOR OR OTHER EQUIPMENT SUITABLE FOR SMALL AREAS. CONTINUE PLACING, KNIFING, AND COMPACTING BACKFILL LAYERS TO THE TOP OF THE END SECTION TO SEAT IT WELL INTO THE BACKFILL.

HIGH DENSITY POLYETHYLENE (HDPE)



1. THE SUBGRADE FOR THE GEOTEXTILE FABRIC AND RIP-RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK USED FOR RIP-RAP SHALL CONFORM TO NHDOT CLASS C STONE. D50 = 6"
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP-RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. THE OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP-RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

NOT TO SCALE

[illegible]

NOT TO SCALE

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FROM FOREBAYS

NOT TO SCALE

The seal is circular with a double-lined border. The outer ring contains the text "STATE OF NEW HAMPSHIRE" at the top and "PROFESSIONAL ENGINEER" at the bottom, separated by two small vertical lines. The inner circle contains the text "NICHOLAS C. GOLON" and "No. 14086". Below the inner circle, the words "LICENSED" and "ENGINEER" are written in a semi-circle. A date stamp "8/20/25" is located at the bottom right of the seal.



TAX MAP 494Z LOT 44

DETAILS

UNITIL WEST CONCORD SUBSTATION

1-7 MCGUIRE STREET, CONCORD, NH 03301

OWNED BY/PREPARED FOR

UNITIL ENERGY SYSTEMS, INC.

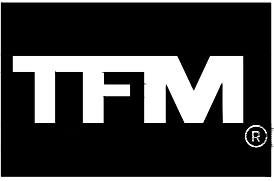
WEST, HAM
APPLICANT

UNITII ENERGY SYSTEMS INC

30 ENERGY WAY EXETER NH 03833

SCALE: NTS

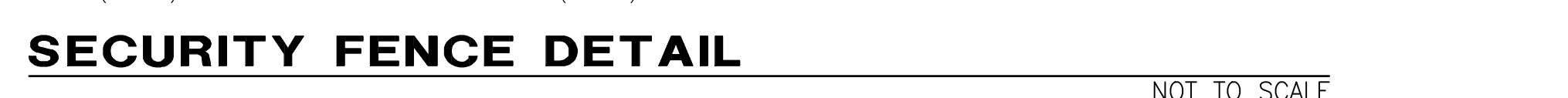
AUGUST 20, 2025



- Civil Engineers
- Structural Engineers
- Traffic Engineers
- Land Surveyors
- Landscape Architects
- Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

D-03



1. FINAL DESIGN IS TO BE COORDINATED WITH THE OWNER.
2. CONTRACTOR TO COORDINATE LOCATION OF GROUNDING GRID WITH UTIL.
3. SAMPLE OF CRUSHED GRANITE SHALL BE PROVIDED BY CONTRACTOR. UTIL WILL HAVE SAMPLE TESTED TO VERIFY RESISTANCE MEETS SPECIFICATIONS PRIOR TO DELIVERY & INSTALLATION.

[illegible]

This plan is not effective unless signed by a duly authorized officer of TFMorgan, Inc.

SITE DEVELOPMENT PLANS

AUGUST 20, 2025

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

STORMWATER MANAGEMENT REPORT

Unitil West Concord Substation Relocation

1-7 McGuire Street
Concord, NH 03301
Tax Map 494Z Lot 44

Prepared On:

August 20, 2025

Prepared for:

Unitil Energy Systems, Inc.

30 Energy Way
Exeter, NH 03833

TFM Project Number:

96159-01

Prepared by:



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive, Bedford, NH 03110

Tel: (603) 472-4488 **Fax:** (603) 472-9747

www.tfmoran.com



Unitil West Concord Substation Relocation

1-7 McGuire Street, Concord, NH 03301

Tax Map 494Z Lot 44

August 20, 2025

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Area & Soil Listings

Node Listing: 2-yr, 10-yr, 25-yr, 50-yr, and 100-yr (Per AoT & Concord)

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Pre-development & Post-development Drainage Plans (Full size in pocket)



ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division / Land Resources Management

[Check the status of your application](#)



RSA / Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)

Applicant Name:	Contact Name:	
Email:	Daytime Telephone:	
Mailing Address:		
Town/City:	State:	ZIP Code:

2. APPLICANT'S AGENT INFORMATION If none, check here: ☐

Agent's Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	ZIP Code:

3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT) Check here if more than one property owner, and attach additional sheets as necessary: ☐

Owner's Name:	Contact Name:	
Email:	Daytime Telephone:	
Mailing Address:		
Town/City:	State:	ZIP Code:

4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☐

Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	ZIP Code:

5. CONSULTANT INFORMATION If none, check here: ☐

Engineering Firm:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	ZIP Code:

6. PROJECT TYPE

☐ Excavation Only ☐ Residential ☐ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☐ Other:

7. PROJECT LOCATION INFORMATION

Project Name:

Street/Road Address:

Town/City:

County:

Tax Map:

Block:

Lot Number:

Unit:

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge
2. Artificial pond created by impounding a stream or wetland Purpose:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge
3. Unlined pond dug into the water table Purpose:	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Withdrawal	<input type="checkbox"/> Discharge

Post-development, will the proposed project discharge to:

- Within one-quarter mile of a surface water impaired for phosphorus and/or nitrogen? ☐ No ☐ Yes
- Within one-quarter mile of a Class A surface water or within the watershed area of an Outstanding Resource Water?
☐ No ☐ Yes
- Within one-quarter mile of a lake or pond not covered previously? ☐ No ☐ Yes

Is the project a High Load area? ☐ Yes ☐ No

If yes, specify the type of high load land use or activity:

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☐ No

Is the project within a Groundwater Protection Area (GPA)? ☐ Yes ☐ No

Will the well setbacks identified in Env-Wq 1508.02 be met? ☐ Yes ☐ No

For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☐ No

If yes: Cut volume: cubic feet within the 100-year floodplain.

Fill volume: cubic feet within the 100-year floodplain.

☐ Project is within ¼ mile of a designated river Name of River:

☐ Project is not within ¼ mile of a designated river.

☐ Project is within a Coastal/Great Bay Region community.

☐ Project is not within a Coastal/Great Bay Region community.

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT.**10. ADDITIONAL REQUIRED INFORMATION**

- A. Date a copy of the application was sent to the municipality, as required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed):
(Attach proof of delivery)
- B. Date a copy of the application was sent to the local river advisory committee, if required by Env-Wq 1503.05(e) (Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river):
(Attach proof of delivery)
- C. Type of plan required: ☐ Land Conversion ☐ Detailed Development ☐ Excavation, Grading and Reclamation
☐ Steep Slope
- D. Additional plans required: ☐ Stormwater Drainage and Hydrologic Soil Groups ☐ Source Control
☐ Chloride Management
- E. Total area of disturbance, in square feet
- F. Additional impervious cover as a result of the project, in square feet (use “-” to indicate a net reduction in impervious coverage). +21,213
Total final impervious cover, in square feet
- G. Total undisturbed cover, in square feet
- H. Number of lots proposed:
- I. Total length of roadway, in linear feet:
- J. Name(s) of receiving water(s):
- K. Identify all other NHDES permits required for the project. For each, indicate whether an application has been filed and is pending. If the required approval has been issued, provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Pending?	If Issued
1. Water Supply Approval	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
2. Wetlands Permit	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
3. Shoreland Permit	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Registration date:
4. UIC Registration	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Approval letter date:
5. Large/Small Community Well Approval	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
6. Large Groundwater Withdrawal Permit	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<input type="checkbox"/>	Permit number:
7. Other:	<input type="checkbox"/> Yes <input type="checkbox"/> No		

- L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern:

M. Using the NHDES [OneStop Data Mapper](#) with the [Surface Water Impairment layer](#) turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."

N. Did the applicant or applicant's agent have a pre-application meeting with Alteration of Terrain Bureau staff?

☐

Yes

☐

No

If yes, name of staff member:

O. Will blasting of bedrock be required? ☐ Yes ☐ No If yes, estimated quantity of blast rock in cubic yards:

If yes, [standard blasting Best Management Practices](#) notes must be placed on the plans.

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact Alteration of Terrain Bureau staff for additional detail.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN THE ORDER LISTED BELOW)**LOOSE:**

- ☐ Signed application form, with attached proof(s) of delivery.
- ☐ Check for the application fee, calculated using the [fee schedule](#) available on the NHDES [Land Development page](#).
- ☐ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale).

☐ N/A If the applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BOUND, IN A REPORT, IN THE FOLLOWING ORDER:

- ☐ Copy of the signed application form and application checklist.
- ☐ Copy of the check.
- ☐ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale).
- ☐ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points.
- ☐ Printout of NHDES [OneStop Mapper](#) with "Surface Water Impairments" layer turned on.
- ☐ Printout of NHDES [OneStop Mapper](#) with Alteration of Terrain screening layers turned on.
- ☐ Printout of Natural Heritage Bureau [DataCheck Tool](#) letter and any relevant correspondence with New Hampshire Fish and Game.
- ☐ USDA [Web Soil Survey Map](#) with project's watershed outlined.
- ☐ Aerial photograph (1" = 2,000' scale with the site boundaries outlined).
- ☐ Photographs representative of the site.
- ☐ Groundwater recharge volume calculations (include one [Best Management Practices worksheet](#) per permit application).
- ☐ Drainage analysis, stamped by a professional engineer (see "Application Checklist" at the end of this document).
- ☐ Riprap apron or other energy dissipation or stability calculations.
- ☐ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the [Site Specific Soil Mapping standards](#) of the Society of Soil Scientists of Northern New England.
- ☐ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)].

☐ N/A [Registration and Notification Form](#) for [Stormwater](#) Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches).

- ☐ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)].

☐ N/A Source control plan.

PLANS:

- ☐ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).
- ☐ Pre- and post-development color-coded soil plans on 11" x 17" (see Application Checklist for details).
- ☐ Pre- and post-construction drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details).

100-YEAR FLOODPLAIN REPORT:

☐ N/A All information required in Env-Wq 1503.09, submitted as a separate report.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

☐ N/A See Application Checklist (Attachment A) for details.

- ☐ **REVIEW APPLICATION FOR COMPLETENESS. CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

12. REQUIRED SIGNATURES

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641:3.

☐ **APPLICANT**

☐ **APPLICANT'S AGENT:**

Signature: Nicholas Golan

Date:

Name (print or type):

Title:

☐ **PROPERTY OWNER**

☐ **PROPERTY OWNER'S AGENT:**

Signature: Nicholas Golan

Date:

Name (print or type):

Title:

ALTERATION OF TERRAIN PERMIT ATTACHMENT A: APPLICATION CHECKLIST

Check each box to indicate the item has been provided, or indicate why it does not apply.

DESIGN PLANS

- ☐ Plans printed on 34 - 36" by 22 - 24" white paper.
- ☐ Professional Engineer stamp.
- ☐ Wetland delineation.
- ☐ Temporary erosion control measures.
- ☐ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and nonresidential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the New Hampshire Stormwater Management Manual.
- ☐ Pre-existing 2-foot contours.
- ☐ Proposed 2-foot contours.
- ☒ N/A Drainage easements protecting the drainage/treatment structures.
- ☐ Compliance with state statute governing fill and dredge in [wetlands](#), RSA 482- A. Note that artificial detention in wetlands is prohibited.
- ☐ Compliance with the New Hampshire [Shoreland Protection Act](#), RSA 483-B.
- ☒ N/A Benching – needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.
- ☐ Check to see if any proposed ponds require [state dam permits](#).

DETAILS

- ☒ N/A Typical roadway cross-section.
- ☐ Detention basin with inverts noted on the outlet structure.
- ☒ N/A Stone berm level spreader.
- ☐ Outlet protection – riprap aprons.
- ☐ A general installation detail for an erosion control blanket.
- ☐ Silt fences or mulch berm.
- ☐ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.
- ☒ N/A Hay bale barriers.
- ☒ N/A Stone check dams.
- ☐ Gravel construction exit.
- ☒ N/A Temporary sediment trap.
- ☐ The treatment BMPs proposed.
- ☒ N/A Any innovative BMPs proposed.

CONSTRUCTION SEQUENCE / EROSION CONTROL

- ☐ Note that the project must be managed to meet the requirements and intent of RSA 430:53 and Agr 3800 relative to [invasive species](#).
- ☐ Note that perimeter controls shall be installed prior to earth moving operations.
- ☐ Note that temporary water diversion (swales, basins, etc.) must be used as necessary until areas are stabilized.
- ☐ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).
- ☐ Note that all ditches and swales shall be stabilized prior to directing runoff to them.
- ☐ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
- ☐ Note that all cut and fill slopes shall be seeded or loamed within 72 hours of achieving finished grade
- ☐ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.
- ☐ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

- ☐ Note the definition of the word “stable.”

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

- ☐ Note the limit of time an area may be exposed.

Example note: All areas shall be stabilized within 45 days of initial disturbance.

- ☐ Provide temporary and permanent seeding specifications. Note that although reed canary grass is listed in the Green Book; it is a problematic species according to the Wetlands Bureau and therefore should not be specified.
- ☐ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
- After October 15, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

- ☒ Note at the end of the construction sequence that “Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable.” – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please provide double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

- ☐ Professional Engineer stamp.
- ☐ Rainfall amount obtained from the [Northeast Regional Climate Center](#). Include extreme precipitation table as obtained from this source.
- ☐ Drainage analyses, in the following order:
 - Pre-development analysis: Drainage diagram.
 - Pre-development analysis: Area Listing and Soil Listing.
 - Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
 - Pre-development analysis: Full summary of the 10-year storm.
 - Post-development analysis: Drainage diagram.
 - Post-development analysis: Area Listing and Soil Listing.
 - Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
 - Post-development analysis: Full summary of the 10-year storm.
- ☐ Review the Area Listing and Soil Listing reports
 - Hydrologic Soil Groups (HSG) match the HSGs on the soil maps provided.
 - There is the same or less HSG A soil area after development (check for each HSG).
 - There is the same or less "woods" cover in the post-development.
 - Undeveloped land was assumed to be in "good" condition.
 - The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre-analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses or units proposed. Do these numbers make sense?

- ☐ Check the storage input used to model the ponds.
- ☐ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.
- ☐ Check the outlet structure proposed and make sure it matches that modeled.
- ☐ Check to see if the total areas in the pre and post analyses are same.
- ☐ Confirm the correct NRCS storm type was modeled (Coos, Carroll and Grafton counties are Type II, all others Type III).

PRE- AND POST-CONSTRUCTION DRAINAGE AREA PLANS

- ☐ Plans printed on 34 - 36" by 22 - 24" on white paper.
- ☐ Submit these plans separate from the soil plans.
- ☐ A north arrow.
- ☐ A scale.
- ☐ Labeled subcatchments, reaches and ponds.

☐ Tc lines.

☐ A clear delineation of the subcatchment boundaries.

☐ N/A Roadway station numbers.

☐ Culverts and other conveyance structures.

PRE- AND POST-CONSTRUCTION COLOR-CODED SOIL PLANS

☐ 11" × 17" sheets suitable, as long as it is readable.

☐ Submit these plans separate from the drainage area plans.

☐ A north arrow.

☐ A scale.

☐ N/A Name of the soil scientist who performed the survey and date the soil survey took place.

☐ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☐ Delineation of the soil boundaries and wetland boundaries.

☐ Delineation of the subcatchment boundaries.

☐ Soil series symbols (e.g., 26).

☐ A key or legend identifying each soil series symbol and its associated soil series name (for example: 26 = Windsor).

☐ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, and Impervious = gray).

Please note that excavation projects (including gravel pits) have similar requirements to those above, with the following common exceptions or additions:

☐ N/A Drainage report is not needed if site does not have off-site flow.

☐ N/A 5-foot contours are allowed rather than 2-foot.

☐ N/A No Professional Engineer stamp is needed on the plans.

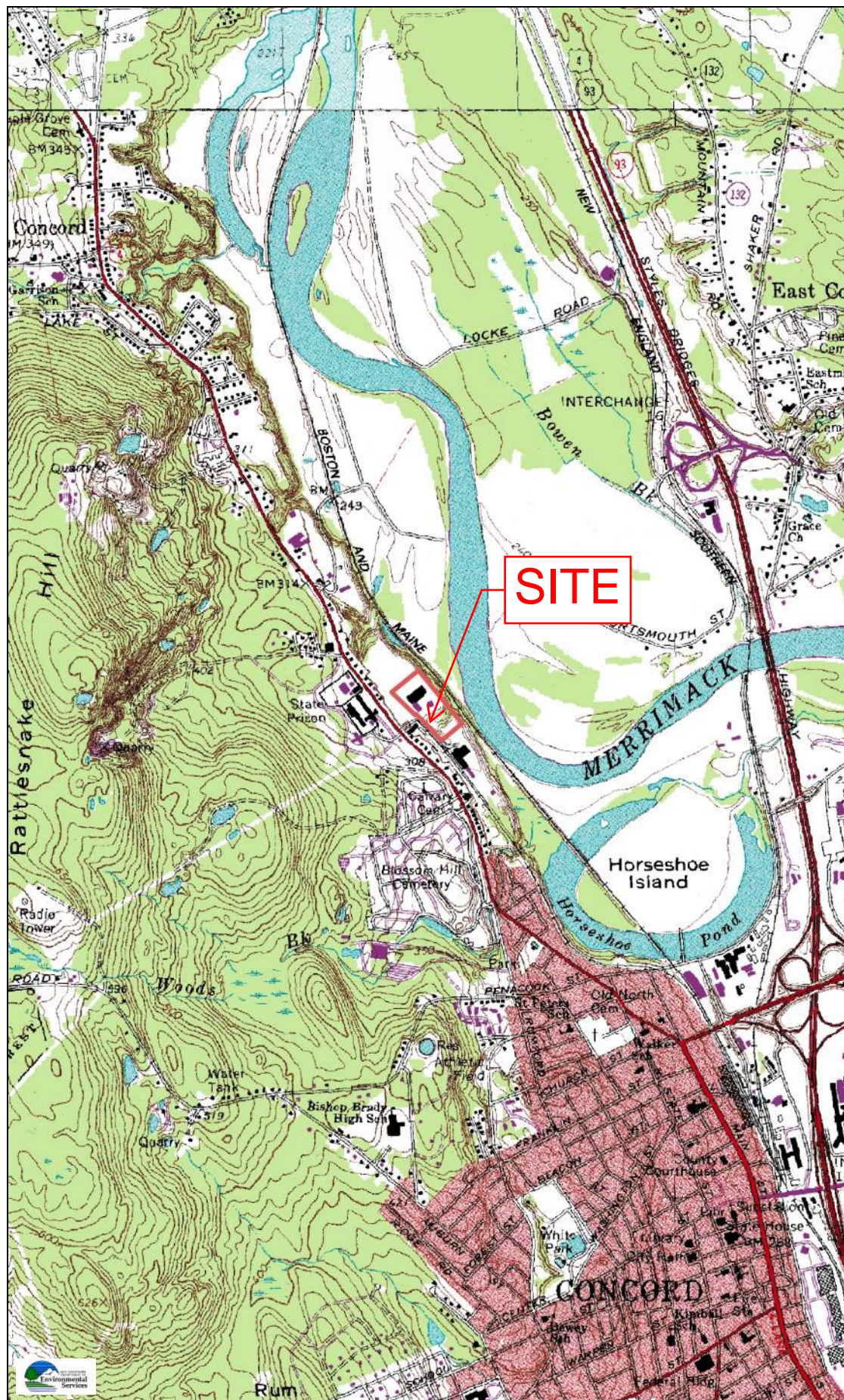
☐ N/A Add a note to the plans that the applicant must provide NHDES a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

☐ N/A Add reclamation notes.

☐ N/A A description of the subsurface conditions to the planned depth of excavation, including the elevation of the location of the Seasonal High Water Table (SHWT), as observed and described by a certified soil scientist, or an individual holding a valid permit as a permitted designer as issued by the department's Subsurface Systems Bureau.

For more resources, refer to the Natural Resources Conservation Service's [Vegetating New Hampshire Sand and Gravel Pits](#) publication.

96159-00 - Unitil West Concord - USGS Map



Legend

- State
- County
- Town Boundaries

Map Scale

1: 24,000

© NH DES, <http://des.nh.gov>

Map Generated: 9/13/2023



Notes

Prepared by: TFMoran, Inc.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

August 20, 2025

City of Concord Planning Department
City Hall
41 Green Street
Concord, NH 03301

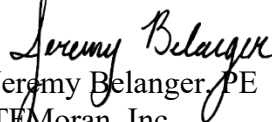
New Hampshire Department of Environmental Services
29 Hazen Drive
PO Box 95
Concord, New Hampshire 03301-0095

**RE: Certification Statement
Unitil West Concord Substation Relocation
1-7 McGuire Street, Concord, NH 03301
Tax Map 494Z Lot 44**

To whom it may concern;

In accordance with Env-Wq 1503.05(c)(6)(c), I hereby certify that the attached transmittal was delivered by hand and electronic format to the City of Concord Planning Department on August 20, 2025.

Sincerely,


Jeremy Belanger, PE
TF Moran, Inc.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects

48 Constitution Drive
Bedford, NH 03110
Phone: (603) 472-4488
Fax: (603) 472-9747

LETTER OF TRANSMITTAL

☐ Standard Mail ☐ 2nd Day ☐ Overnight ☒ Electronic ☐ Hand Carry ☐ To Be Picked Up

TO: Concord City Hall
Planning Department
41 Green Street
Concord, NH 03301
PHONE:

DATE	8/20/2025	JOB NO.	96159-01
ATTENTION	Anne-Marie Skinner – City Planner		
RE:	Unitil West Concord Substation Relocation		
	Major Site Plan Application		
	1-7 McGuire Street, Concord, NH 03301		
	Tax Map 494Z Lot 44		

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☒ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐

COPIES	DATE	NO.	DESCRIPTION
1	8/20/25	-	Cover Letter
1	8/20/25	-	Major Site Plan Application Checklist
1	8/20/25	1	Waiver Request
1	8/20/25	-	Letter of Authorization
1	8/20/25	-	Conditional Use Permit Application (Shoreland Buffer Impact)
1	8/20/25	-	Conditional Use Permit Application (Use)
1	8/19/25	-	Abutters List
1	8/20/25	16	Site Plans – Full Size
1	8/20/25	-	Stormwater Management Report
1	8/20/25	-	Colored Overall Site Layout Plan – Full Size
-	-	-	Electronic Submittal via City of Concord Citizen Portal

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☒ For review and comment ☐
☐ FOR BIDS DUE _____ 20 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS:

Please see attached materials for review at the **September 17, 2025** Planning Board Meeting. For questions or comments please contact Nicholas Golon at (603) 472-4488 or Jeremy Belanger at (603) 491-3362.

COPY: _____ SIGNED: Jeremy Belanger

*If enclosures are not as noted, kindly notify us at once.

Jeremy Belanger, PE

PART 1

Executive Summary

Unitil Energy Systems, Inc. (Unitil) is proposing to relocate the existing West Concord Substation from the current location to the southern portion of the parcel. The existing substation is in need of electrical upgrades to accommodate current and future load growth of residents and businesses of West Concord. The existing Unitil Facility is located at 1-7 McGuire Street, Tax Map 494Z, Lot 44.

An open and closed drainage system is proposed to attenuate, convey, and treat stormwater runoff from the area of proposed re development. The site will be designed with a series of underdrains within the substation yard and sheet flow to a curb break in the paved storage yard. Two (2) sediment forebays and one (1) filtration basin will provide pretreatment/treatment and manage runoff for this project.

The system has been designed to maintain peak flows during all storm conditions up to and including the 100-year storm event.

- Best Management Practices are proposed to manage the stormwater from the development and provide treatment, recharge and maintain existing flow rates leaving the site.
 - One (1) proposed filtration basin system will collect and recharge stormwater from proposed impervious surfaces on the site. This basin is required to provide pre-treatment prior to stormwater entering the main cell of the basin. The proposed forebay allows sediment to settle out of the stormwater. Filtration basins remove pollutants, reduce the peak rates of flow, and flow volume by allowing evaporation and infiltration of the stormwater. The stormwater receives treatment as it percolates through the 18 inches of filter media as specified by Env-Wq 1508.08(k)(4). Infiltration below the filter media also provides groundwater recharge.
- The Water Quality Volume (WQV) has been met by providing the required storage below the lowest outlet in the basin.

Description of Project

Unitil is proposing to relocate the existing West Concord Substation from the current location to the southern portion of the parcel. The existing substation is in need of electrical upgrades to accommodate current and future load growth of residents and businesses of West Concord. The existing Unitil Facility is located at 1-7 McGuire Street,.

The subject parcel is located at 1-7 McGuire Street, Tax Map 494Z, Lot 44, in the City of Concord, NH. Underlying zoning designations include Industrial (IN) and City Shoreland Overlay Zoning Districts. The site is currently occupied by the existing Unitil Facility, comprised of office and garage facilities, paved and gravel storage yards, the existing West Concord Substation, access, parking and a central undeveloped portion of land. The site contains an existing sewer easement in favor of the NH State Prison, and several existing access and utility easements for electrical support.

The site is abutted by vacant parcel to the north, the State of NH Department of Corrections Warehouse, residential and commercial properties, and McGuire Street to the west, commercial development to the south, and Boston & Maine Corporation property and the Merrimack River to the east.

Existing drain flow paths will be maintained within the area of redevelopment, generally flowing to the east and ultimately the Merrimack River.

The existing parcel currently consists of a combination of gravel, varying qualities of grasses, wooded vegetation and sewer utilities within the area of work. Photographs of existing site features can be found in Section 2 of this report.

An open and closed drainage system is proposed to attenuate, convey, and treat stormwater runoff from the area of proposed re development. The site will be designed with a series of underdrains within the substation yard and sheet flow to a curb break in the paved storage yard. Two (2) sediment forebays and one (1) filtration basin will provide pretreatment/treatment and manage runoff for this project.

Existing drainage discharge points will be maintained throughout the site. The proposed filtration basin with sediment forebay will be utilized to maintain peak runoff flows and volume in post-development conditions.

The site is approximately 8.7± acres, of which approximately 2.0± acres will be disturbed as part of the proposed redevelopment.

A NHDES Alteration of Terrain (AoT) Permit, NHDES Shoreland Permit-By-Notification (PBN), and local approval will be required for the redevelopment project.

The objectives for the post-development drainage design are to use best management practices to attenuate flows, provide pretreatment and treatment to collected stormwater runoff and maintain groundwater recharge.

The intent of this report is: 1) to analyze the rate of runoff from the site for the pre-development conditions and for the post-development conditions. The drainage system will be designed to maintain the current peak rate of runoff from the site, and 2) to provide storm water treatment and recharge for the runoff from the development prior to discharging runoff from the site in accordance with the requirements of the NHDES Alteration of Terrain and the City of Concord.

Storm Water Methodology

Pre-Development Conditions

The existing lot is approximately 8.7± acres, of which approximately 2.0± acres will be disturbed as part of the proposed redevelopment.

The site is abutted by vacant parcel to the north, the State of NH Department of Corrections Warehouse, residential and commercial properties, and McGuire Street to the west, commercial development to the south, and Boston & Maine Corporation property and the Merrimack River to the east. Access to the site is via existing paved and gravel drives along McGuire Street.

The project area contains varying degrees of elevation change, with the general topography sloping west to east. The existing pole storage yard contains minimal elevational change prior to a steep decline in elevation on the eastern side of the site. Between the storage yard and Until Facility there is an existing depression decreasing in elevation from 290 along McGuire Street to 256 along the eastern property line. The existing groundcover consists of a combination of gravel, varying qualities of grasses, and wooded vegetation within the area of work.

Evaluation points (Point-of-Interest, POI) have been defined by abutting parcels with identifying HydroCAD Links as follows:

- POI-1: Abutting Parcel Lot 743Z-10-2;
- POI-2: Abutting Parcel Lot 743Z-10-2;
- POI-3: Abutting Parcel Lot 582Z-1;
- POI-4: Abutting Parcel Lot 582Z-1;
- POI-5: Abutting Parcel Lot 582Z-1; and
- POI-6: Abutting Parcel Lot 494Z-32.;

NRCS Soil Survey mapping was referenced for the subject property which resulted in hydrologic soils group type "B" soils. No wetlands are located within the limits of work.

To model the site drainage, the HydroCAD Version 10.20-6a program has been used. The software is based on the SCS TR-20 technique used for modeling the hydrology and hydraulics of stormwater runoff. The 2-year, 10-year, 25-year, 50-year, and 100-year storm events are included per the requirements of the NHDES AoT and the City of Concord.

Post-Development Conditions

The relocated substation proposes to utilize the area of the existing gravel pole storage yard, provide paved storage and access from McGuire Street. In addition to the relocated substation yard there are proposed access, storage and stormwater management improvements proposed under this project.

Stormwater runoff from the proposed area of redevelopment will be conveyed via an open and closed drainage system to attenuate, convey, and treat runoff. The site will be designed with a series of underdrains within the substation yard and sheet flow to a curb break in the paved storage yard. Two (2) sediment forebays and one (1) filtration basin will provide pretreatment/treatment and manage runoff for this project. This will allow for removal of pollutants and infiltration of stormwater prior to recharge to the aquifer. A riprap weir has been provided to attenuate discharge from the basin, which will discharge to the existing flow path in the central depression of the site.

The objectives for the post-development drainage design is to use best management practices to attenuate the flow, provide treatment to collected stormwater and propose groundwater recharge.

All pre-development evaluation points have been analyzed in the post-development conditions. The post-development drainage model represents the site divided into multiple subcatchments based on the layout of the proposed stormwater management system. There is no proposed increase in discharge from the site up to and including the 100-year storm event.

Groundwater Recharge

The required Groundwater Recharge (GRV) for the Type A soils that have been replaced by impervious cover per the AoT regulations has been provided within the proposed filtration system, below the lowest outlet orifice. Supporting calculations have been provided on the GRV and Best Management Practices (BMP) Worksheets included in Section 3 of this report.

Stormwater Treatment

Best Management Practices are proposed to manage the stormwater from the area of redevelopment and provide treatment, recharge and maintain existing flow rates leaving the site.

The proposed filtration system is designed to maintain existing recharge rates and to preserve groundwater levels. Pollutant removal is achieved as stormwater percolates through the existing subsurface material of the filtration basin. Pretreatment will be provided prior to stormwater entering the main cell of the basin by sediment forebays, which allow sediment to settle out of the stormwater.

The Water Quality Volume (WQV) is fully detained within the proposed filtration basin providing the stormwater treatment.

Test pits and infiltration testing were performed as part of the project design to identify Estimated Seasonal High-Water Table (ESHWT) and subgrade Infiltration Rates. The infiltration rates used in these calculations are based on those values obtained, with a factor of safety of 2 per AoT regulations.

The stormwater receives treatment as it percolates through the 18 inches of filter media as specified by Env-Wq 1508.08(k)(4). Infiltration below the filter media also provides groundwater recharge. Filter media specifications have been included on the Site Plan Detail Sheets.

Erosion Control Measures

Erosion Control Measures are found on the Site Preparation and Stormwater Management Plans within the Site Plan Set. The erosion control and construction sequence notes on the Notes Sheets contain specifications for stabilizing disturbed areas and limiting the length of time these areas are exposed.

Temporary Erosion Control Measures

Silt sock is proposed along the edges and downslope of site work to prevent sediment from discharging from the project area. A stabilized construction entrance is proposed at the driveway entrance to keep sediment from being tracked onto the street during construction. Erosion protection is proposed around the filtration basin area to protect the drainage practices during construction until the site has stabilized, and flow can be directed to the basin.

Permanent Erosion Control Measures

A combination of open and closed drainage system is proposed on the site to capture the runoff from the project. Areas of concentrated flow will be stabilized with riprap and discharged to centralized stable discharge points. Areas disturbed during construction which will not be impervious or stabilized with riprap in post-development conditions will be loam and seeded to restore the areas upon completion of construction.

Flood Protection

Examination of the Flood Insurance Rate Map for Merrimack County, New Hampshire (All Jurisdictions), Map Number 33013C0531E, Effective Date April 19, 2010, indicates that the subject parcel is not located within a Flood Hazard Area.

Conclusion

Peak Rate Flows

There is no increase in the peak rate of runoff or volume at the discharge points from the project site.

FLOW (CFS)	2-YR		10-YR		25-YR		50-YR		100-YR	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
POI-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
POI-2	9.2	9.2	15.9	14.5	21.7	18.8	27.3	23.0	34.2	28.7
POI-3	0.5	0.0	0.8	0.0	1.0	0.0	1.3	0.0	1.6	0.0
POI-4	0.0	0.0	0.1	0.0	0.2	0.0	0.2	0.0	0.3	0.0
POI-5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
POI-6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

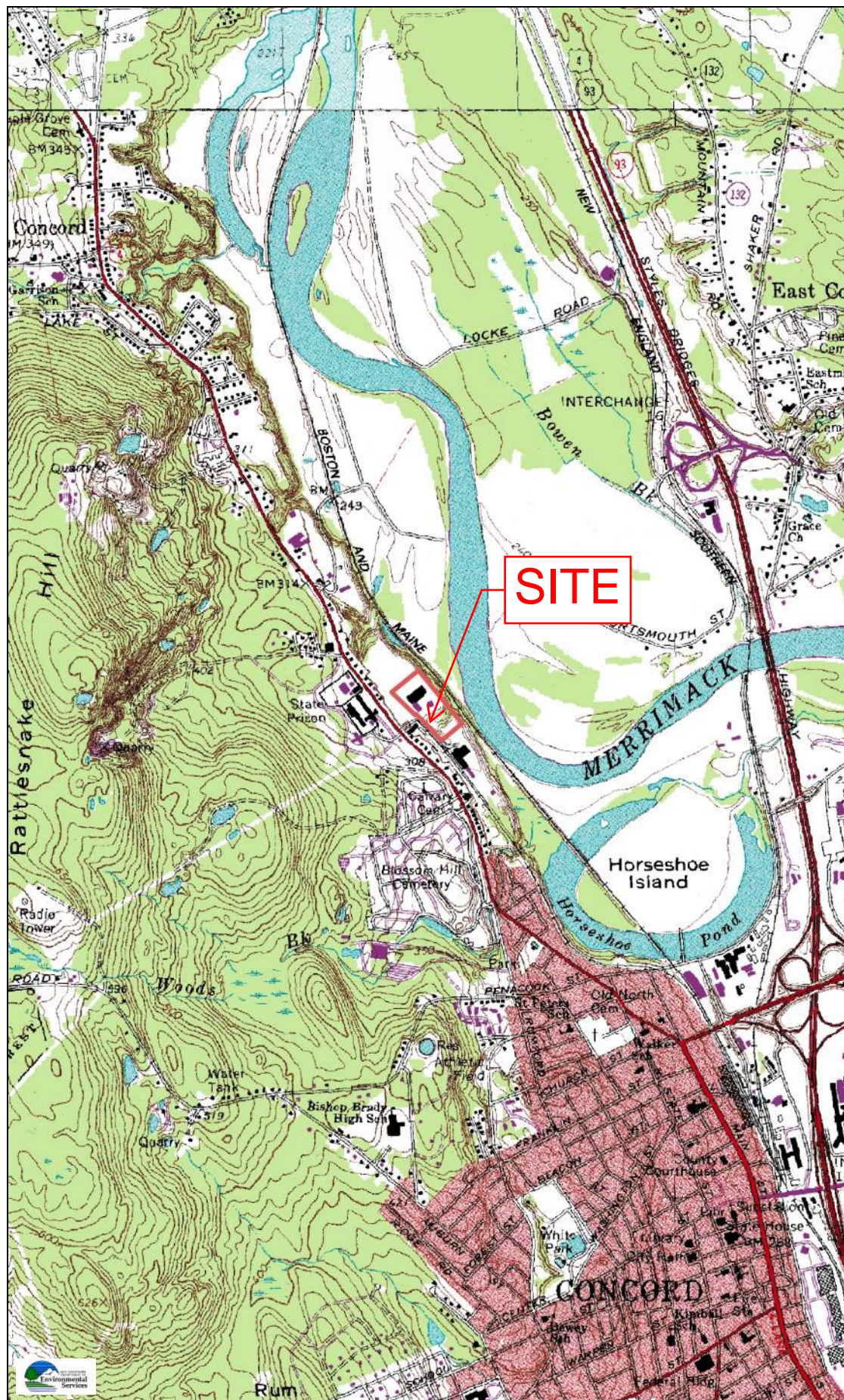
Volume (cf)	2-YR		10-YR		25-YR		50-YR		100-YR	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST	PRE	POST
POI-1	0	0	48	48	217	217	468	468	858	858
POI-2	35,523	32,168	61,543	51,915	83,719	73,683	105,504	95,917	132,042	123,017
POI-3	1,479	0	2,546	0	3,399	0	4,206	0	5,161	0
POI-4	159	0	360	0	540	0	721	0	943	0
POI-5	0	0	25	0	84	0	166	0	290	0
POI-6	0	0	0	0	0	0	1	1	4	4

Treatment

The filtration basin system, with pretreatment forebay, has been designed to provide adequate treatment for stormwater runoff associated with the proposed redevelopment.

PART 2

96159-00 - Unitil West Concord - USGS Map



Legend

- State
- County
- Town Boundaries

Map Scale

1: 24,000

© NH DES, <http://des.nh.gov>

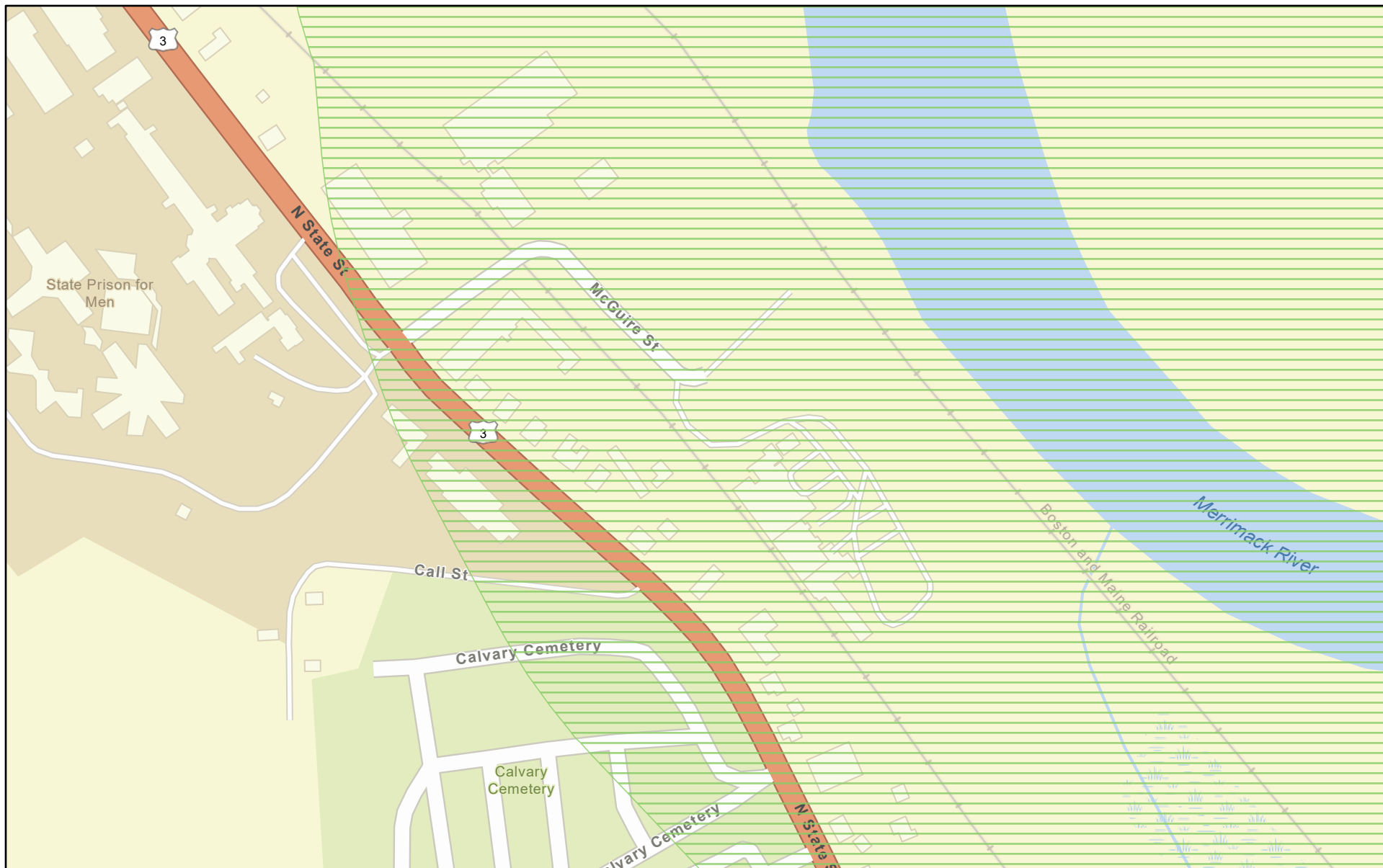
Map Generated: 9/13/2023



Notes

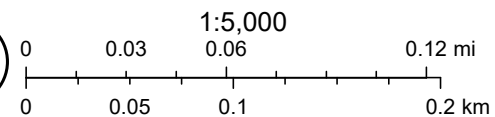
Prepared by: TFMoran, Inc.

NHDES Surface Water Impairments



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 Surface Waters with Impairments with Quarter Mile Buffer



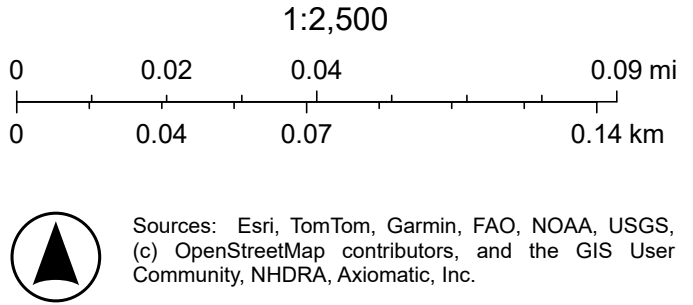
Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Unitil West Concord SS NHDES AoT Screening Layers



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- * Remediation Sites
- Designated Rivers Quarter Mile Buffer
- Parcels



New Hampshire Natural Heritage Bureau

NHB DataCheck Results Letter

To: Jeremy Belanger
48 Consitution Dr
Bedford, NH 03110

From: NH Natural Heritage Bureau

Date: 5/12/2025 (This letter is valid through 5/12/2026)

Re: Review by NH Natural Heritage Bureau of request dated 5/12/2025

Permit Types: Shoreland Standard Permit
Concord
Stormwater Pollution Prevention

NHB ID: NHB25-1423

Applicant: Jeremy Belanger

Location: Concord
Tax Map: 494Z, Tax Lot: 44
Address: 1-7 McGuire Street

Proj. Description: The project proposes to relocate the existing Unitil West Concord Substation and pole storage yard at the above noted property. In addition to the substation and storage yard, the scope includes access, utility, and stormwater management area improvements. Based on historic aerial imagery, plans of record, and subsurface test pit investigations it appears the proposed area of work lies entirely within areas of prior disturbance.

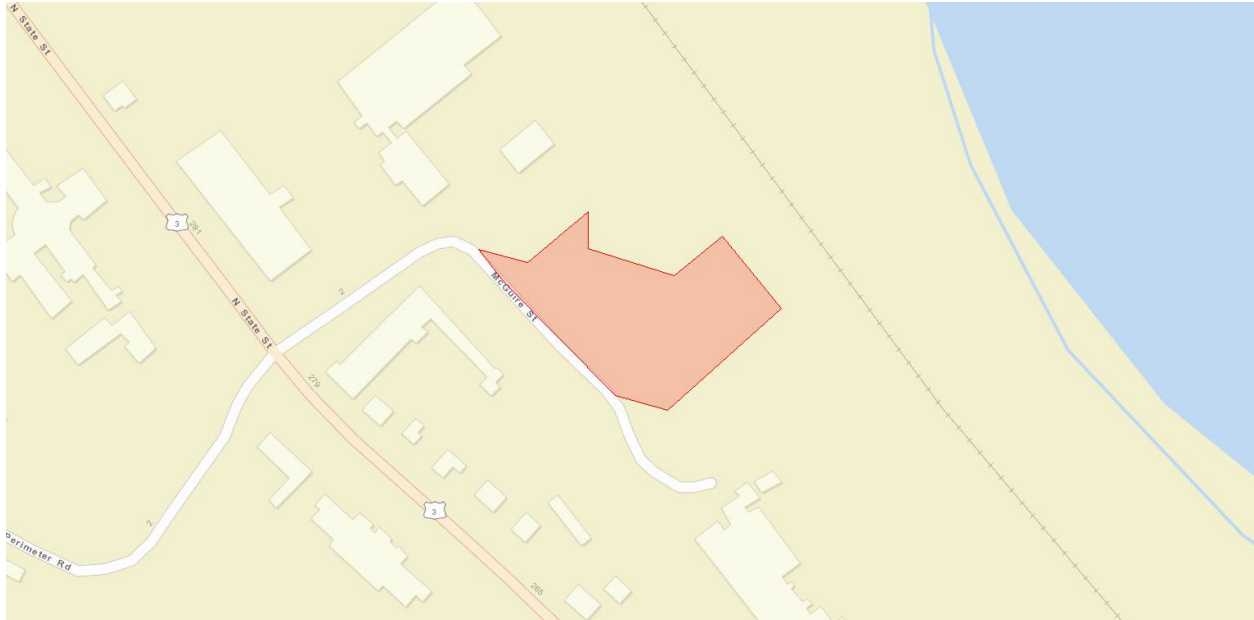
The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: NHB25-1423





United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Merrimack and Belknap Counties, New Hampshire

UNITIL WEST CONCORD SUBSTATION



June 12, 2025

Custom Soil Resource Report Soil Map



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
6A	Saco mucky silt loam, 0 to 2 percent slopes, frequently flooded	0.0	0.1%
26E	Windsor loamy sand, 15 to 60 percent slopes	5.0	19.7%
401A	Occum very fine sandy loam, 0 to 3 percent slopes, occasionally flooded	2.4	9.5%
598B	Windsor-Urban land complex, 0 to 8 percent slopes	15.6	61.0%
W	Water	2.5	9.7%
Totals for Area of Interest		25.5	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Merrimack and Belknap Counties, New Hampshire

6A—Saco mucky silt loam, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 9dm3
Elevation: 200 to 790 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 37 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Saco, frequently flooded, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Saco, Frequently Flooded

Setting

Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy and/or coarse-loamy alluvium derived from granite, gneiss or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
H1 - 2 to 8 inches: mucky silt loam
H2 - 8 to 35 inches: silt loam
H3 - 35 to 65 inches: fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F144AY016MA - Very Wet Low Floodplain
Hydric soil rating: Yes

Minor Components

Rippowam

Percent of map unit: 10 percent
Landform: Flood plains

Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: Yes

Timakwa

Percent of map unit: 10 percent
Landform: Bogs
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Pootatuck

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

26E—Windsor loamy sand, 15 to 60 percent slopes

Map Unit Setting

National map unit symbol: 2w2ws
Elevation: 0 to 760 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Windsor and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 15 to 60 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Hinckley

Percent of map unit: 10 percent
Landform: Eskers, deltas, kames, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Deerfield

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

401A—Occum very fine sandy loam, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 9dkn
Elevation: 200 to 1,000 feet
Mean annual precipitation: 40 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 160 days

Custom Soil Resource Report

Farmland classification: All areas are prime farmland

Map Unit Composition

Occum, occasionally flooded, and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Occum, Occasionally Flooded

Setting

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite, gneiss or schist

Typical profile

H1 - 0 to 9 inches: very fine sandy loam

H2 - 9 to 17 inches: fine sandy loam

H3 - 17 to 29 inches: sandy loam

H4 - 29 to 65 inches: sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)

Depth to water table: About 48 to 72 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Ecological site: F144AY010NH - Sandy High Floodplain

Hydric soil rating: No

Minor Components

Suncook

Percent of map unit: 5 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Pootatuck

Percent of map unit: 3 percent

Landform: Flood plains

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Occum, frequently flooded

Percent of map unit: 3 percent

Custom Soil Resource Report

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Occum, protected

Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: No

Agawam

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

598B—Windsor-Urban land complex, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w2wq
Elevation: 0 to 920 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Windsor and similar soils: 45 percent
Urban land: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

Typical profile

A - 0 to 3 inches: loamy sand
Bw - 3 to 25 inches: loamy sand
C - 25 to 65 inches: sand

Properties and qualities

Slope: 0 to 8 percent

Custom Soil Resource Report

Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Description of Urban Land

Typical profile

M - 0 to 10 inches: cemented material

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 0 inches to manufactured layer
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 10 percent
Landform: Dunes, deltas, outwash terraces, outwash plains
Landform position (three-dimensional): Tread, riser
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Hydric soil rating: No

Hinckley

Percent of map unit: 5 percent
Landform: Eskers, deltas, kames, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest, head slope, rise
Down-slope shape: Convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Custom Soil Resource Report

Deerfield

Percent of map unit: 5 percent

Landform: Deltas, outwash plains, terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread, talf

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

W—Water

Map Unit Setting

National map unit symbol: wm74

Elevation: 200 to 2,610 feet

Farmland classification: Not prime farmland

Map Unit Composition

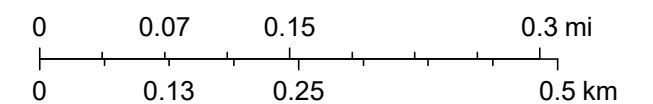
Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

This is an aerial map of a section of Merrimack, New Hampshire. The map displays property boundaries in yellow, streets in white, and the Merrimack River in blue. The State Prison for Men is a large, central facility. Other notable features include Calvary Cemetery and various residential and commercial areas. Numerous parcel numbers are labeled across the map, such as 07046-6913, 07046-6905, 07046-6904, 07046-6901, 07046-6902, 07046-6903, 07046-6904, 07046-6905, 07046-6906, 07046-6907, 07046-6908, 07046-6909, 07046-6910, 07046-6911, 07046-6912, 07046-6913, 07046-6914, 07046-6915, 07046-6916, 07046-6917, 07046-6918, 07046-6919, 07046-6920, 07046-6921, 07046-6922, 07046-6923, 07046-6924, 07046-6925, 07046-6926, 07046-6927, 07046-6928, 07046-6929, 07046-6930, 07046-6931, 07046-6932, 07046-6933, 07046-6934, 07046-6935, 07046-6936, 07046-6937, 07046-6938, 07046-6939, 07046-6940, 07046-6941, 07046-6942, 07046-6943, 07046-6944, 07046-6945, 07046-6946, 07046-6947, 07046-6948, 07046-6949, 07046-6950, 07046-6951, 07046-6952, 07046-6953, 07046-6954, 07046-6955, 07046-6956, 07046-6957, 07046-6958, 07046-6959, 07046-6960, 07046-6961, 07046-6962, 07046-6963, 07046-6964, 07046-6965, 07046-6966, 07046-6967, 07046-6968, 07046-6969, 07046-6970, 07046-6971, 07046-6972, 07046-6973, 07046-6974, 07046-6975, 07046-6976, 07046-6977, 07046-6978, 07046-6979, 07046-6980, 07046-6981, 07046-6982, 07046-6983, 07046-6984, 07046-6985, 07046-6986, 07046-6987, 07046-6988, 07046-6989, 07046-6990, 07046-6991, 07046-6992, 07046-6993, 07046-6994, 07046-6995, 07046-6996, 07046-6997, 07046-6998, 07046-6999, 07046-7000, 07046-7001, 07046-7002, 07046-7003, 07046-7004, 07046-7005, 07046-7006, 07046-7007, 07046-7008, 07046-7009, 07046-7010, 07046-7011, 07046-7012, 07046-7013, 07046-7014, 07046-7015, 07046-7016, 07046-7017, 07046-7018, 07046-7019, 07046-7020, 07046-7021, 07046-7022, 07046-7023, 07046-7024, 07046-7025, 07046-7026, 07046-7027, 07046-7028, 07046-7029, 07046-7030, 07046-7031, 07046-7032, 07046-7033, 07046-7034, 07046-7035, 07046-7036, 07046-7037, 07046-7038, 07046-7039, 07046-7040, 07046-7041, 07046-7042, 07046-7043, 07046-7044, 07046-7045, 07046-7046, 07046-7047, 07046-7048, 07046-7049, 07046-7050, 07046-7051, 07046-7052, 07046-7053, 07046-7054, 07046-7055, 07046-7056, 07046-7057, 07046-7058, 07046-7059, 07046-7060, 07046-7061, 07046-7062, 07046-7063, 07046-7064, 07046-7065, 07046-7066, 07046-7067, 07046-7068, 07046-7069, 07046-7070, 07046-7071, 07046-7072, 07046-7073, 07046-7074, 07046-7075, 07046-7076, 07046-7077, 07046-7078, 07046-7079, 07046-7080, 07046-7081, 07046-7082, 07046-7083, 07046-7084, 07046-7085, 07046-7086, 07046-7087, 07046-7088, 07046-7089, 07046-7090, 07046-7091, 07046-7092, 07046-7093, 07046-7094, 07046-7095, 07046-7096, 07046-7097, 07046-7098, 07046-7099, 07046-7100, 07046-7101, 07046-7102, 07046-7103, 07046-7104, 07046-7105, 07046-7106, 07046-7107, 07046-7108, 07046-7109, 07046-7110, 07046-7111, 07046-7112, 07046-7113, 07046-7114, 07046-7115, 07046-7116, 07046-7117, 07046-7118, 07046-7119, 07046-7120, 07046-7121, 07046-7122, 07046-7123, 07046-7124, 07046-7125, 07046-7126, 07046-7127, 07046-7128, 07046-7129, 07046-7130, 07046-7131, 07046-7132, 07046-7133, 07046-7134, 07046-7135, 07046-7136, 07046-7137, 07046-7138, 07046-7139, 07046-7140, 07046-7141, 07046-7142, 07046-7143, 07046-7144, 07046-7145, 07046-7146, 07046-7147, 07046-7148, 07046-7149, 07046-7150, 07046-7151, 07046-7152, 07046-7153, 07046-7154, 07046-7155, 07046-7156, 07046-7157, 07046-7158, 07046-7159, 07046-7160, 07046-7161, 07046-7162, 07046-7163, 07046-7164, 07046-7165, 07046-7166, 07046-7167, 07046-7168, 07046-7169, 07046-7170, 07046-7171, 07046-7172, 07046-7173, 07046-7174, 07046-7175, 07046-7176, 07046-7177, 07046-7178, 07046-7179, 07046-7180, 07046-7181, 07046-7182, 07046-7183, 07046-7184, 07046-7185, 07046-7186, 07046-7187, 07046-7188, 07046-7189, 07046-7190, 07046-7191, 07046-7192, 07046-7193, 07046-7194, 07046-7195, 07046-7196, 07046-7197, 07046-7198, 07046-7199, 07046-7200, 07046-7201, 07046-7202, 07046-7203, 07046-7204, 07046-7205, 07046-7206, 07046-7207, 07046-7208, 07046-7209, 07046-7210, 07046-7211, 07046-7212, 07046-7213, 07046-7214, 07046-7215, 07046-7216, 07046-7217, 07046-7218, 07046-7219, 07046-7220, 07046-7221, 07046-7222, 07046-7223, 07046-7224, 07046-7225, 07046-7226, 07046-7227, 07046-722

6/17/2025, 3:30:38 PM

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Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, NHDRA, Axiomatic, Inc., Maxar

National Flood Hazard Layer FIRMette



71°33'34"W 43°13'52"N



0 250 500 1,000 1,500 2,000 Feet

1:6,000

71°32'57"W 43°13'26"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/14/2023 at 10:44 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Unitil West Concord Substation – Site Photographs

Photo 1



Existing Unitil Facility and paved storage yard.

Photo 2



Existing Unitil Facility and paved storage yard.



Civil Engineers
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Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Photo 3



Existing Unitil West Concord Substation (right) and area of proposed relocation (left).

Photo 4

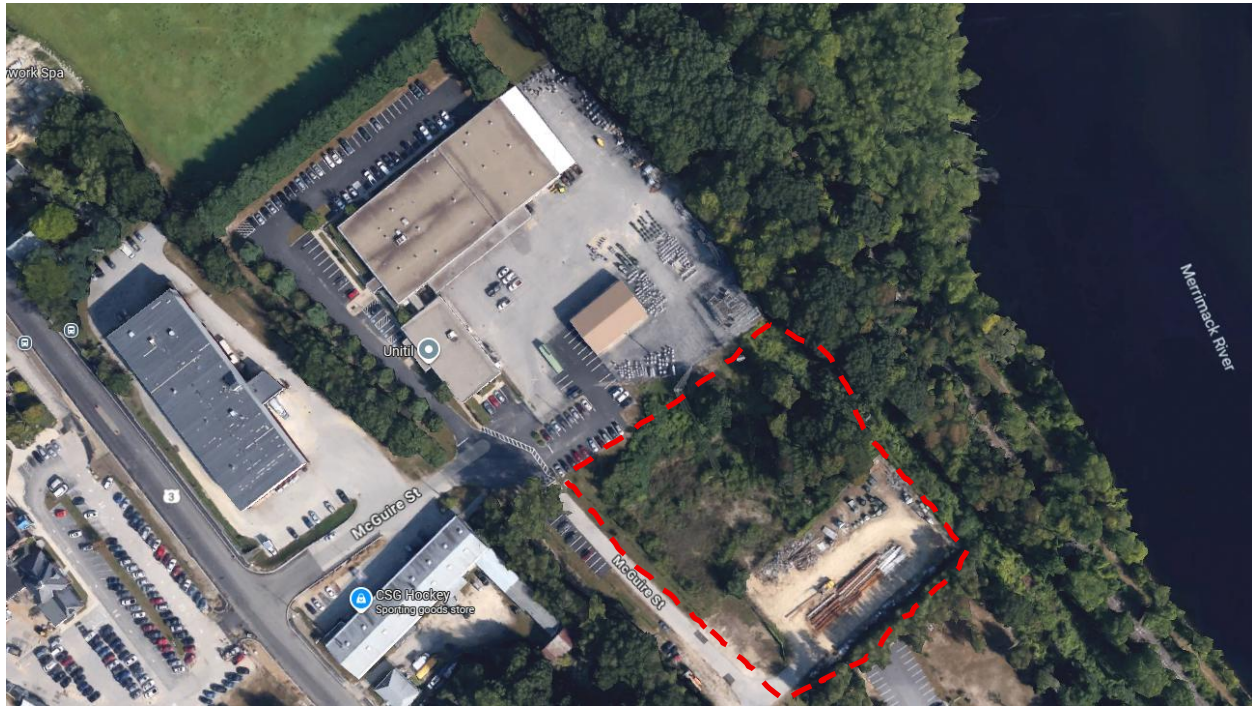


Existing pole storage yard in area of proposed substation relocation.



Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Photo 5



Google Earth Aerial view of approximate area of redevelopment shown in red, Tax Map 494Z, Lot 44.

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.227 degrees North
Longitude	71.555 degrees West
Elevation	80 feet
Date/Time	Mon Jun 16 2025 15:39:21 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.39	0.49	0.64	0.80	1.01	1yr	0.69	0.98	1.17	1.47	1.86	2.36	2.56	1yr	2.09	2.46	2.89	3.59	4.11	1yr
2yr	0.31	0.48	0.60	0.79	1.00	1.25	2yr	0.86	1.15	1.45	1.81	2.25	2.81	3.14	2yr	2.49	3.02	3.50	4.18	4.77	2yr
5yr	0.37	0.58	0.73	0.98	1.25	1.58	5yr	1.08	1.45	1.83	2.28	2.83	3.49	3.97	5yr	3.09	3.82	4.41	5.18	5.88	5yr
10yr	0.42	0.66	0.84	1.14	1.48	1.89	10yr	1.28	1.72	2.19	2.72	3.36	4.12	4.75	10yr	3.65	4.57	5.27	6.11	6.90	10yr
25yr	0.50	0.79	1.01	1.39	1.85	2.38	25yr	1.60	2.16	2.76	3.44	4.22	5.13	6.03	25yr	4.54	5.79	6.66	7.59	8.51	25yr
50yr	0.57	0.91	1.17	1.63	2.20	2.84	50yr	1.90	2.57	3.30	4.10	5.02	6.07	7.22	50yr	5.37	6.94	7.96	8.95	9.99	50yr
100yr	0.65	1.05	1.35	1.91	2.61	3.39	100yr	2.25	3.05	3.95	4.90	5.97	7.17	8.65	100yr	6.35	8.32	9.51	10.56	11.72	100yr
200yr	0.74	1.21	1.57	2.25	3.09	4.04	200yr	2.67	3.64	4.72	5.84	7.09	8.49	10.37	200yr	7.51	9.97	11.36	12.46	13.75	200yr
500yr	0.89	1.47	1.91	2.78	3.88	5.10	500yr	3.35	4.58	5.96	7.37	8.91	10.61	13.18	500yr	9.39	12.68	14.40	15.53	17.01	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.21	0.33	0.40	0.54	0.66	0.88	1yr	0.57	0.87	1.03	1.37	1.59	1.99	2.41	1yr	1.76	2.31	2.64	3.27	3.83	1yr
2yr	0.30	0.47	0.57	0.78	0.96	1.14	2yr	0.83	1.12	1.30	1.72	2.20	2.74	3.04	2yr	2.42	2.92	3.40	4.06	4.65	2yr
5yr	0.34	0.53	0.66	0.90	1.15	1.36	5yr	0.99	1.33	1.53	1.99	2.56	3.27	3.68	5yr	2.90	3.54	4.11	4.85	5.52	5yr
10yr	0.38	0.58	0.72	1.01	1.31	1.54	10yr	1.13	1.51	1.73	2.23	2.86	3.75	4.27	10yr	3.32	4.10	4.73	5.53	6.30	10yr
25yr	0.44	0.66	0.82	1.18	1.55	1.80	25yr	1.34	1.76	2.04	2.58	3.33	4.49	5.17	25yr	3.98	4.97	5.69	6.60	7.49	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.02	50yr	1.52	1.97	2.32	2.90	3.74	5.16	5.97	50yr	4.57	5.74	6.53	7.55	8.56	50yr
100yr	0.54	0.81	1.02	1.47	2.01	2.28	100yr	1.74	2.23	2.63	3.25	4.20	5.92	6.91	100yr	5.24	6.65	7.51	8.63	9.77	100yr
200yr	0.59	0.89	1.13	1.64	2.29	2.54	200yr	1.97	2.49	2.97	3.64	4.72	6.82	7.99	200yr	6.03	7.68	8.62	9.88	11.14	200yr
500yr	0.69	1.02	1.32	1.91	2.72	2.95	500yr	2.35	2.88	3.51	4.24	5.52	8.20	9.69	500yr	7.26	9.32	10.30	11.85	13.31	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.55	0.73	0.90	1.09	1yr	0.78	1.06	1.20	1.59	1.98	2.51	2.74	1yr	2.23	2.64	3.14	3.83	4.35	1yr
2yr	0.33	0.50	0.62	0.84	1.03	1.24	2yr	0.89	1.21	1.40	1.83	2.33	2.89	3.24	2yr	2.56	3.11	3.62	4.30	4.93	2yr
5yr	0.41	0.63	0.78	1.07	1.36	1.59	5yr	1.17	1.55	1.80	2.31	2.93	3.71	4.27	5yr	3.29	4.11	4.74	5.51	6.26	5yr
10yr	0.49	0.75	0.93	1.30	1.68	1.94	10yr	1.45	1.90	2.19	2.74	3.49	4.50	5.27	10yr	3.98	5.07	5.84	6.65	7.54	10yr
25yr	0.63	0.95	1.19	1.69	2.23	2.54	25yr	1.92	2.48	2.83	3.46	4.39	5.79	6.97	25yr	5.13	6.71	7.69	8.54	9.63	25yr
50yr	0.75	1.14	1.42	2.04	2.75	3.12	50yr	2.37	3.05	3.44	4.14	5.23	7.02	8.62	50yr	6.21	8.29	9.48	10.33	11.59	50yr
100yr	0.91	1.38	1.72	2.49	3.42	3.83	100yr	2.95	3.75	4.18	4.94	6.23	8.52	10.67	100yr	7.54	10.26	11.71	12.49	13.96	100yr
200yr	1.10	1.65	2.09	3.03	4.23	4.71	200yr	3.65	4.61	5.09	5.91	7.44	10.33	13.19	200yr	9.14	12.69	14.48	15.11	16.80	200yr
500yr	1.42	2.11	2.72	3.95	5.62	6.22	500yr	4.85	6.08	6.61	7.49	9.41	13.34	17.49	500yr	11.80	16.82	19.18	19.44	21.47	500yr

