

Kimberly Ciaramicoli, Chair
Jillian Miller, Vice Chair
Deborah Cato



Linsie Dillon
Jessica Marino
Jessica Tenzar

Town of North Attleborough
CONSERVATION COMMISSION
43 South Washington Street, North Attleborough, MA 02760
Phone: (508) 699-0100 ext. 2584

PUBLIC MEETING

January 6, 2026 at 6:30 PM
Town Hall - JoAnn Cathcart Conference Room

I. Attendance

II. Hearing And Meeting Items

- a. CONT. Notice of Intent (NOI), 41 Quail Creek Rd, Adeline Newbold, SE 243-1----

Documents:

[*41 QUAIL CREEK RD FOR AGENDA PACKET.PDF*](#)

- b. CONT. Notice of Intent (NOI), 159 Paul Lizotte Dr., Forge Building Corp., SE 243-1010

Documents:

[*CHRISTINA ESTATES LOTS 15, 25 AND 26 - SUBSURFACE DRAINAGE CALCULATIONS.PDF*](#)
[*CLT057-CULTEC-SWS-OPERATION-AND-MAINTENANCE-GUIDELINES.PDF*](#)
[*DISTURBANCE CAL PER LOTS.PDF*](#)
[*2025-12-04 FORGE BG CHRISTINA ESTATES LOT 15 PERMITTING SITE PLAN REV 2.PDF*](#)

- c. CONT. Notice of Intent (NOI), 22 Owen Dolan Rd., Forge Building Corp., SE 243-1011

Documents:

[*2025-12-04 FORGE BG CHRISTINA ESTATES LOT 25 PERMITTING SITE*](#)

[PLAN REV 2.PDF](#)
[CHRISTINA ESTATES LOTS 15, 25 AND 26 - SUBSURFACE DRAINAGE CALCULATIONS.PDF](#)

- d. CONT. Notice of Intent (NOI), 30 Owen Dolan Rd., Forge Building Corp., SE 243-1012

Documents:

[2025-12-04 FORGE BG CHRISTINA ESTATES LOT 26 PERMITTING SITE PLAN REV 2.PDF](#)
[CHRISTINA ESTATES LOTS 15, 25 AND 26 - SUBSURFACE DRAINAGE CALCULATIONS.PDF](#)

III. Commission Business

- a. Discussion on Oak Knoll Pump Station - Mark Hollowell

Documents:

[WETLANDS FOR OAK KNOLL PUMP STATION.PDF](#)

- b. Conservation Administrator Approval Policy

Documents:

[APPLICATION FORM DRAFT.PDF](#)
[DRAFT -NA CONSERVATION ADMIN APPROVAL POLICY.PDF](#)

- c. First draft of Proposed Conservation Wetlands Bylaw

Documents:

[FIRST DRAFT NA WETLAND BYLAW 2026.PDF](#)

IV. Other Business

V. Minutes

VI. Commission Updates

VII. Adjournment

VIII. Executive Session

IX. Site Visit



LOCUS
N.T.S.

N/F
DELAIRE, BRIAN & JANINE
#51 QUAIL CREEK ROAD
ASSESSORS MAP: 21 LOT: 514

N/F
UNKNOWN
ASSESSORS MAP: 21 LOT: 638

BORDERING
VEGETATED
WETLANDS
(SEE SITE NOTE 1.4)

GENERAL NOTES

1. PLAN REFERENCE:
 - 1.1. FOR DEED REFERENCE SEE DEED BOOK: 27239 PAGE: 227 IN THE BRISTOL COUNTY NORTH REGISTRY OF DEEDS.
 - 1.2. FOR PLAN REFERENCE SEE PLAN BOOK: 368 PAGE: 74 IN THE BRISTOL COUNTY NORTH REGISTRY OF DEEDS.
 - 1.3. THE TOPOGRAPHIC INFORMATION SHOWN HEREON IS THE RESULT OF A FIELD SURVEY PERFORMED BY OUTBACK ENGINEERING, INC. ON 8/19/2025. ELEVATIONS ARE BASED ON ASSUMED DATUM.
 - 1.4. THE WETLAND LINE SHOWN HEREON WAS FLAGGED BY GREGORY DRAKE OF OUTBACK ENGINEERING, INC. ON 8/13/2025.
2. THE SITE FALLS WITHIN ZONE "X", AREAS DETERMINED TO BE OUTSIDE THE 0.2 ANNUAL CHANCE FLOODPLAIN, AS SHOWN ON THE FLOOD INSURANCE RATE MAP (MAP NUMBER: 25005C0101G, EFFECTIVE DATE: 7/16/15).
3. THE SITE IS LOCATED WITHIN A ZONE C SURFACE WATER SUPPLY PROTECTION AREA. THIS SITE IS NOT LOCATED WITHIN A GROUNDWATER PROTECTION AREA.
4. THE SITE IS NOT LOCATED WITHIN A PRIORITY HABITAT AND IS NOT LOCATED WITHIN AN ESTIMATED HABITAT ACCORDING TO THE LATEST NATURAL HERITAGE AND ENDANGERED SPECIES PROGRAM ONLINE MAPS.
5. ALL EXISTING UTILITY INFORMATION IS FROM FIELD SURVEY PERFORMED BY OUTBACK ENGINEERING, INC. AND RECORDED PLANS AND IS TO BE CONSIDERED APPROXIMATE. CONTRACTOR SHALL NOTIFY DIGSAFE (811) AT LEAST 72 HOURS PRIOR TO THE ONSET OF ANY CONSTRUCTION TO HAVE ALL EXISTING UTILITIES LOCATED AND CLEARLY MARKED.

REVISIONS

NO.	DATE	DESCRIPTION

OWNER & APPLICANT

JAMES MALMBORG & KATHLEEN
MCDONALD
41 QUAIL CREEK ROAD
NORTH ATTLEBOROUGH, MA 02760
ASSESSORS MAP: 21 LOT: 515

**EXISTING CONDITIONS
PLAN**

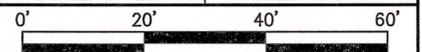
AT
#41 QUAIL CREEK ROAD
IN
NORTH ATTLEBOROUGH
MASSACHUSETTS



165 EAST GROVE STREET
MIDDLEBOROUGH, MA 02346
TEL: (508)-946-9231
www.outback-eng.com

DATE: AUGUST 26, 2025

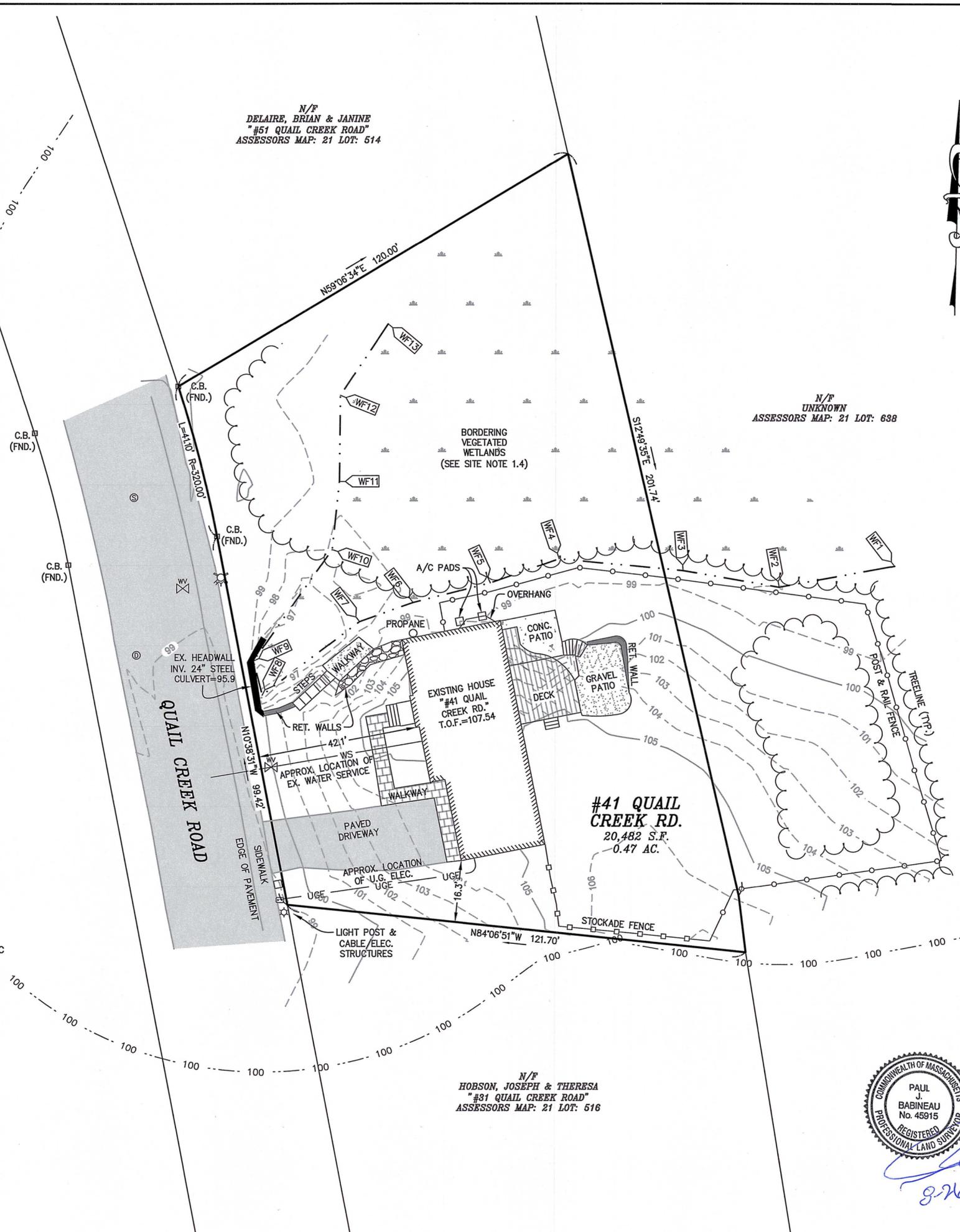
DRAWN BY: J.E.Y. CHECKED BY: J.A.Y.
SCALE: 1"=20' SHEET 1 OF 1



OE-4439

LEGEND

- | | |
|--|----------------------|
| | BUILDING |
| | STOCKADE FENCE |
| | POST & RAIL FENCE |
| | UNDERGROUND ELECTRIC |
| | WATER SERVICE |
| | TREELINE |
| | MAJOR CONTOUR |
| | MINOR CONTOUR |
| | WETLAND LINE |
| | 100' BUFFER |
| | WATER GATE |
| | HYDRANT |
| | SEWER MANHOLE |
| | DRAIN MANHOLE |
| | CATCH BASIN |
| | DOUBLE CATCH BASIN |
| | UTILITY POLE |
| | LIGHT POST |
| | HANDHOLE |
| | CONCRETE BOUND |
| | WETLAND FLAG |



N/F
HOBSON, JOSEPH & THERESA
#31 QUAIL CREEK ROAD
ASSESSORS MAP: 21 LOT: 516



8-26-25



LEGEND

-  wooded marsh
-  hydrologic connection
-  property line

GIS data Source: Office of Geographic Information (MassGIS) Commonwealth of Massachusetts, MassIT



NEW BOLD
LAND DESIGN
ADELINE NEWBOLD
178 KNIGHT STREET
PROVIDENCE, RI 02909

WETLAND OVERLAY

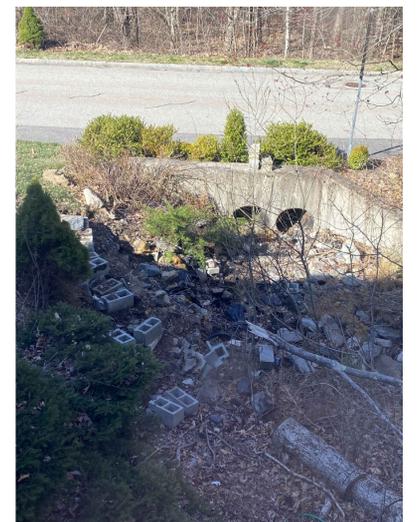
41 QUAIL CREEK RD. NORTH ATTLEBORO, MA



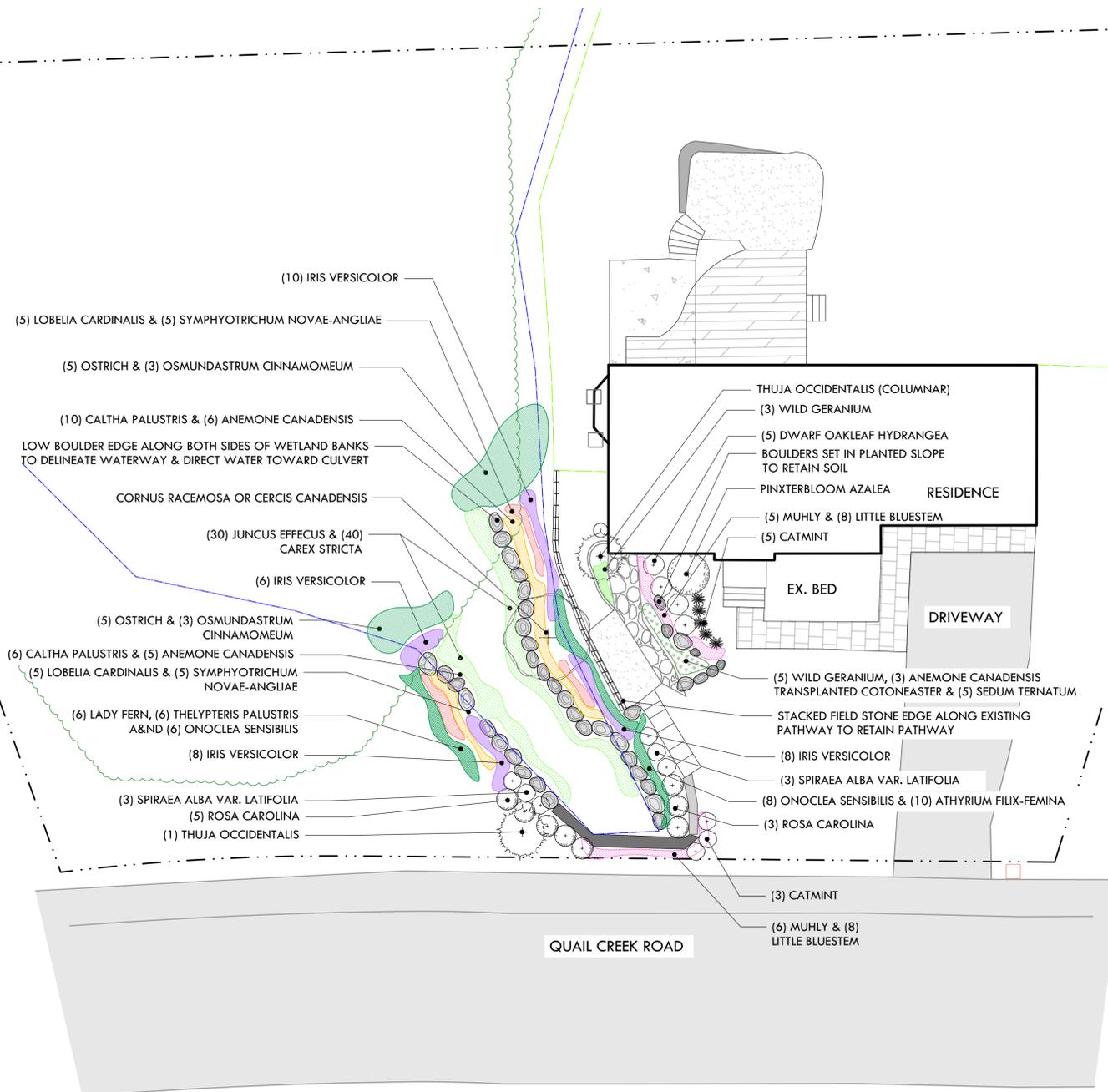
SEPTEMBER 2025

NOTES FOR WETLAND REHABILITATION:

- 1.) ALL EXISTING STYROFOAM, CINDER BLOCK, PLASTIC POND LINER, AND ANY OTHER FOREIGN DEBRIS FROM PREVIOUS OWNER COY POND CONSTRUCTION WILL BE REMOVED BY HAND (SEE PHOTO BELOW)
- 2.) ANY DISRUPTION THAT PREVIOUSLY OCCURED TO THE NATURAL GRADE WILL BE REMEDIATED BY FILLING IN DEPRESSIONS, OR LEVELING MANUFACTURED SOIL PILES FROM PREVIOUS OWNER
- 3.) NATIVE BOULDERS (REPURPOSED FROM SITE OR FROM LOCAL MATERIALS YARD) WILL BE PLACED ALONG THE BANKS OF WETLAND AREA TO SUPPORT NATURAL FLOW OF WATER THROUGH CULVERT AND PREVENT FURTHER EROSION TOWARD FOUNDATION
- 4.) SUBMERGED AND UPPER WETLAND AREAS WILL BE PLANTED WITH MASSACHUSETTS NATIVE WETLAND SPECIES APPROPRIATE TO EACH ZONE TO SUPPORT HEALTHY HABITAT RESTORATION, PLANT BIODIVERSITY, SOIL STABILIZATION, AND WATER REMEDIATION.



LEGEND	
	EX. VEGETATIVE CANOPY
	WETLAND DELINEATION
	100' BUFFER
	PROPERTY LINE



ADDITIONAL NOTES:

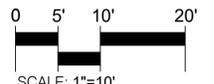
1. ALL PROPERTY LINES, STRUCUTRES, IMPERVIOUS SURFACES, UTUILIES AND WETLAND LINES ARE COPIED FROM SURVEY PROVIDED BY OUTBACK ENGINEERNG, INC.



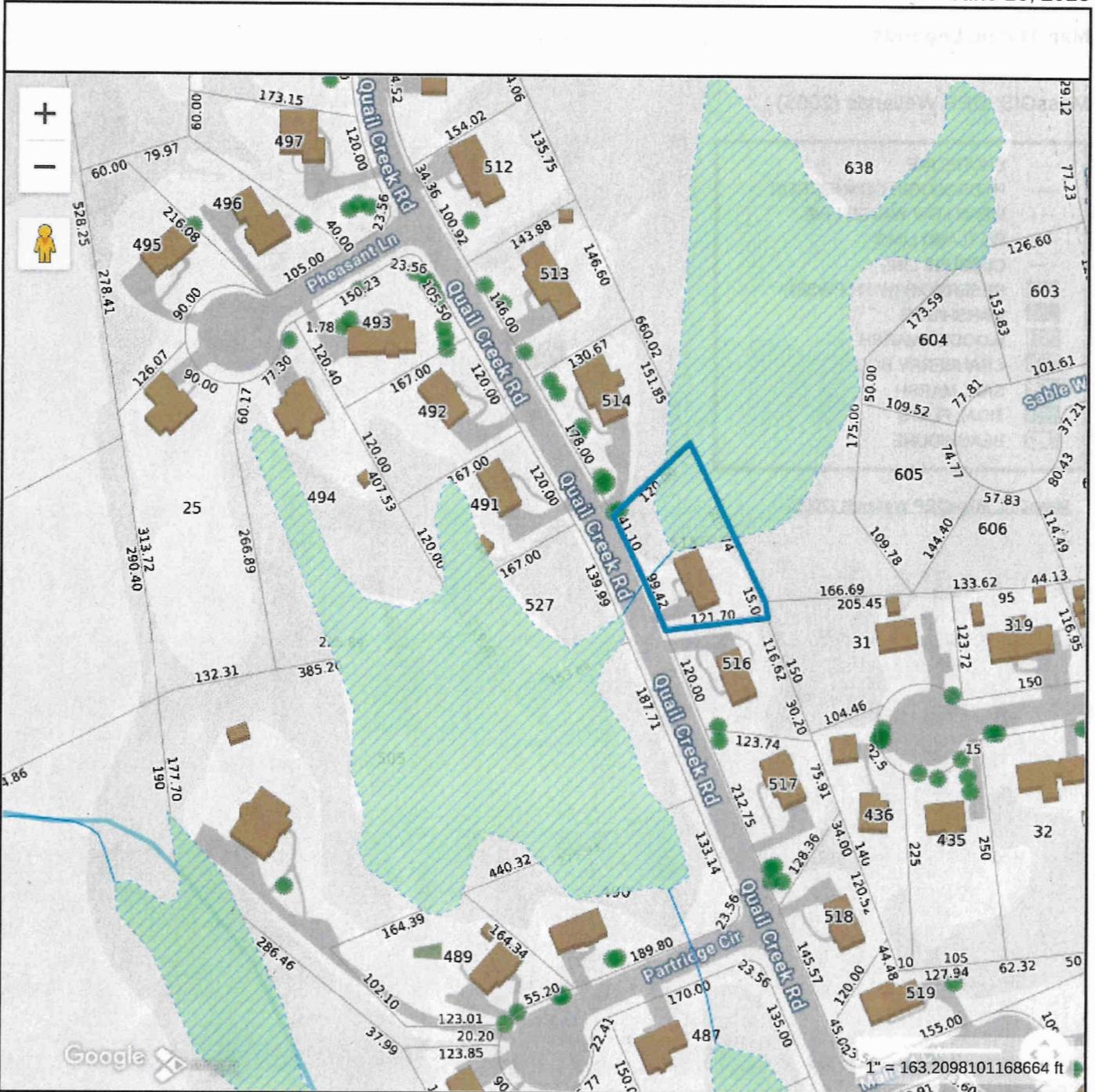
NEW BOLD
LAND DESIGN
ADELINE NEWBOLD
178 KNIGHT STREET
PROVIDENCE, RI 02909

WETLAND REHABILITATION PLAN

41 QUAIL CREEK RD. NORTH ATTLEBORO, MA



SEPTEMBER 2025



Property Information

Property ID 21-515
Location 41 QUAIL CREEK RD
Owner MALMBORG JAMES + McDONALD KATHLEEN



**MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT**

Town of North Attleborough, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated June 2025
Data updated June 2025

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.





Thu Apr 10 2025

Imagery © 2025 Nearmap, HERE

20 ft

Nearmap

Project Number: 043-002
Project Name: Christina Estates
Project Address: North Attleboro
Client: Forge Building
 Lot 15

Calculations by: SMO
Date: 12/9/2025
Checked by: SMO
Checked Date: 12/9/2025



STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,584	0	0	1584
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT³)	0	46	0	0	46

CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME

65% OF IMPERVIOUS AREA	1030	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	130.1%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.77		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	36	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

DRAWDOWN IN 72 HOURS CALCULATION

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE
 Rv = RECHARGE VOLUME
 K= SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

Subsurface Infiltration Facility South

A= 73 SF
 Rv= 46 CF
 K= 0.52 INCHES/HOUR

$$\text{DRAWDOWN TIME } T = \frac{Rv}{K \times A} =$$

14.5 HOURS TO EMPTY THE RECHARGE BMP
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

PROJECT INFORMATION

Project Name: Christina Estates
 City: North Attleboro
 State / Province: MA
 Country: USA

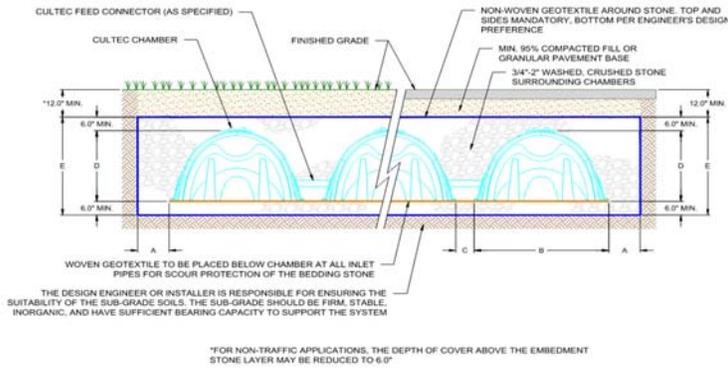
Instructions:

- Step 1: Enter Area of Impervious Cover in "Drainage Area" Cell
- Step 2: Enter Required Depth of Rainfall in "Rainfall Depth" Cell. Use NOAA's National Weather Service Precipitation Frequency Data Server (PFDS) Link to Rainfall Data Map if Required
- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

System Input Parameters

Drainage Area 1584 ft²
 Rainfall Depth 0.35 in [Lookup Rainfall Data HERE](#)
 Storage Required 46 ft³

Typical System Cross-Section Detail



		Specification Table		
		Contactor 100HD	Recharger 180HD	Recharger 330XLHD
REF	Bare Chamber Volume	1.87ft ³ /ft 14.00 ft ³ /unit 105 gal	3.45ft ³ /ft 21.81 ft ³ /unit 163 gal	7.46ft ³ /ft 52.21 ft ³ /unit 391 gal
	A	Stone Border Width (in)	12	12
B	Chamber Width (in)	36	36	
C	Row Spacing (in)	6	6	
D	Chamber Height (in)	12	20	
E	Effective Depth (in)	24	32	
	Chamber Length (ft)	8	7.33	

System Output Table

Storage Required 46 ft³

Chamber Model (choose one)	No. of Chambers Required <i>units</i>	Minimum Installed Storage per Unit <i>ft³</i>	Storage Volume Provided <i>ft³</i>	Minimum Required Area <i>ft²</i>
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[->More information on residential drainage.](#)

Call CULTEC for cost estimates and system design.

[Find a CULTEC Rep near you](#)

This calculator program is for estimation purposes only and should not take the place of a comprehensive engineering design.

System calculations do not include materials required conventional pipe manholes.

The successful application and use of this software product is dependent on the application of skilled engineering judgment supplied by the user and/or their consultant.

The user of this software must select input values suitable to describe their specific engineering situation.

The information presented in the computer output is for review, interpretation, application, and approval by a qualified engineer who must assume full responsibility for verifying that all output is appropriate and correct.

Any implied or expressed warranties covering this software program or user manual including warranties of merchantability or fitness for any particular purpose are expressed excluded.

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Use of this program constitutes acceptance of this liability agreement by the user.

Reconfiguring the bed layout may effect actual storage provided.

Contact CULTEC Technical Services at CT-tech@cultec.com. Or call 1-800-428-5832 or 203-775-4416 for further assistance.

[Email Technical Services](#)

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Project Number: 043-002
Project Name: Christina Estates
Project Address: North Attleboro
Client: Forge Building
 Lot 25 & 26

Calculations by: SMO
Date: 12/9/2025
Checked by: SMO
Checked Date: 12/9/2025



STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,905	0	0	1905
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT ³)	0	56	0	0	56

CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME

65% OF IMPERVIOUS AREA	1238	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	108.2%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.92		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	51	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

DRAWDOWN IN 72 HOURS CALCULATION

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE
 R_v = RECHARGE VOLUME
 K = SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

Subsurface Infiltration Facility South

A= 73 SF
 R_v= 56 CF
 K= 0.52 INCHES/HOUR

DRAWDOWN TIME T = $\frac{R_v}{K \times A}$ = 17.6 HOURS TO EMPTY THE RECHARGE BMP
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

PROJECT INFORMATION

Project Name: Christina Estates
City: North Attleboro
State / Province: MA
Country: USA

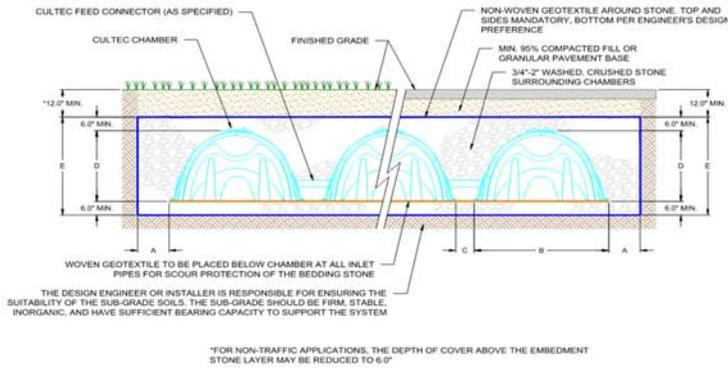
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- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

System Input Parameters

Drainage Area 1905 ft²
 Rainfall Depth 0.35 in [Lookup Rainfall Data HERE](#)
 Storage Required 56 ft³

Typical System Cross-Section Detail



		Specification Table		
		Contactor 100HD	Recharger 180HD	Recharger 330XLHD
REF	Bare Chamber Volume	1.87ft ³ /ft	3.45ft ³ /ft	7.46ft ³ /ft
		14.00 ft ³ /unit 105 gal	21.81 ft ³ /unit 163 gal	52.21 ft ³ /unit 391 gal
A	Stone Border Width (in)	12	12	12
B	Chamber Width (in)	36	36	52
C	Row Spacing (in)	6	6	6
D	Chamber Height (in)	12	20	30
E	Effective Depth (in)	24	32	42
	Chamber Length (ft)	8	7.33	8.5

System Output Table

Storage Required 56 ft³

Chamber Model (choose one)	No. of Chambers Required <i>units</i>	Minimum Installed Storage per Unit <i>ft³</i>	Storage Volume Provided <i>ft³</i>	Minimum Required Area <i>ft²</i>
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[->More information on residential drainage.](#)

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[Email Technical Services](#)

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Search

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Basic Search

Enter keywords

Advanced Search

← → Clear Search

Map Unit Legend

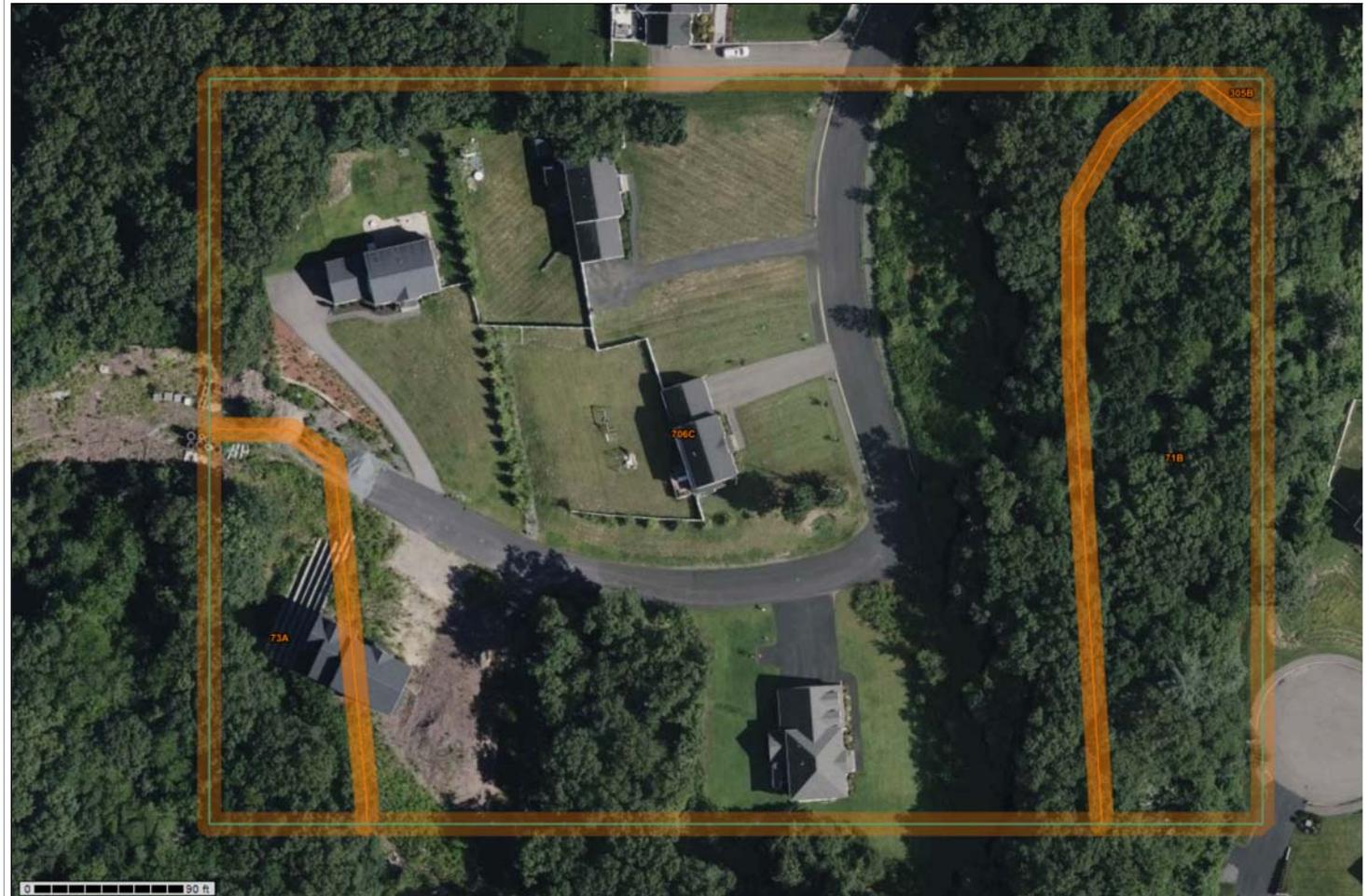
Bristol County, Massachusetts, Northern Part (MA602)

Bristol County, Massachusetts,
Northern Part (MA602)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	1.1	16.2%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	0.5	7.0%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	0.0	0.2%
706C	Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes	5.0	76.6%
Totals for Area of		6.6	100.0%

Soil Map

Scale (not to scale) v



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

Bristol County, Massachusetts, Northern Part

73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695

Elevation: 0 to 1,580 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

Whitman, extremely stony, and similar soils: 81 percent

Minor components: 19 percent

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

Description of Whitman, Extremely Stony

Setting

Landform: Hills, ground moraines, depressions, drainageways, drumlins

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat

A - 1 to 10 inches: fine sandy loam

Bg - 10 to 17 inches: gravelly fine sandy loam

Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 7 to 38 inches to densic material

Drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F144AY041MA - Very Wet Till Depressions

Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent

Landform: Hills, ground moraines, depressions, drainageways, drumlins

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope, head slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent

Landform: Outwash deltas, depressions, drainageways, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent

Landform: Bogs, marshes, swamps

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent

Landform: Hills, ground moraines, drumlins

Landform position (two-dimensional): Summit, backslope, footslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Data Source Information

Soil Survey Area: Bristol County, Massachusetts, Northern Part

Survey Area Data: Version 18, Sep 5, 2025

Bristol County, Massachusetts, Northern Part

706C—Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2x1k5
Elevation: 0 to 340 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton, extremely stony, and similar soils: 35 percent
Rock outcrop: 25 percent
Paxton, extremely stony, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 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 low to high (0.14 to 14.17 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: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, ridges

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent

Depth to restrictive feature: 0 inches to lithic bedrock

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: No

Description of Paxton, Extremely Stony

Setting

Landform: Hills, ground moraines, drumlins

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 10 inches: fine sandy loam

Bw1 - 10 to 17 inches: fine sandy loam

Bw2 - 17 to 28 inches: fine sandy loam

Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 20 to 43 inches to densic material

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 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 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Montauk, extremely stony

Percent of map unit: 7 percent
Landform: Recessional moraines, hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Gloucester, extremely stony

Percent of map unit: 4 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 4 percent
Landform: Hills, ground moraines, depressions, drainageways, drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 18, Sep 5, 2025

Attention must be given to ensure consistency in units. In particular, the Target Depth Factors must be converted to feet.

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	0.6-inch
B	loam	0.35-inch
C	silty loam	0.25-inch
D	clay	0.1-inch

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

When a site contains multiple Hydrologic Soil Groups, determine the *Required Recharge Volume* for each impervious area by Hydrologic Soil Group and then add the volumes together.

Example: Assume a ten (10) acre site. 5.0 acres are proposed to be developed for a retail use. A section of the entrance roadway is to be bridged over a stream that is classified as land under water. As such, the bridging is subject to the Wetlands Protection Act Regulations, and the Stormwater Management Standards apply to stormwater runoff from all proposed roads, parking areas, and rooftops. Of the 5.0 acres proposed to be developed, 2 acres of impervious surfaces are proposed atop Hydrologic Soil Group (HSG) “A” soils, 1 acre of impervious surfaces atop HSG “B” soil, 1.5 acres of impervious surfaces atop HSG “C” soil, and 0.5 acres are proposed to be landscaped area. The remaining 5.0 acres, located on HSG “A” soil, are proposed to remain forested. Determine the *Required Recharge Volume*.

Solution: The *Required Recharge Volume* is determined only for the impervious surfaces. The 5.0-acre forested area and the 0.5-acre landscaped area are not impervious areas. Although converted from forest, landscaped area is pervious area for purposes of Standard 3. Use *Equation (1)* to determine the *Required Recharge Volume* for each Hydrologic Soil Group covered by impervious area. Add together the *Required Recharge Volumes* determined for each HSG.

$$Rv = F \times \text{impervious area}$$

$$Rv = [(F_{\text{HSG "A"}}) (\text{Area}_1)] + [(F_{\text{HSG "B"}}) (\text{Area}_2)] + [(F_{\text{HSG "C"}}) (\text{Area}_3)] + [(F_{\text{HSG "D"}}) (\text{Area}_4)] \text{ Equation (2)}$$

$$Rv = [(0.6\text{-in}/12)(2 \text{ acres})] + [(0.35\text{-in}/12)(1 \text{ acre})] + [(0.25\text{-in}/12)(1.5 \text{ acres})] + [(0.1\text{-in}/12)(0 \text{ acres})]$$

$$Rv = 0.1605 \text{ acre-feet}$$

$$Rv = 0.1605 \text{ acre-feet} \times 43560 \text{ square feet/acre-feet} = 6,991 \text{ cubic feet or } 258.9 \text{ cubic yards}$$

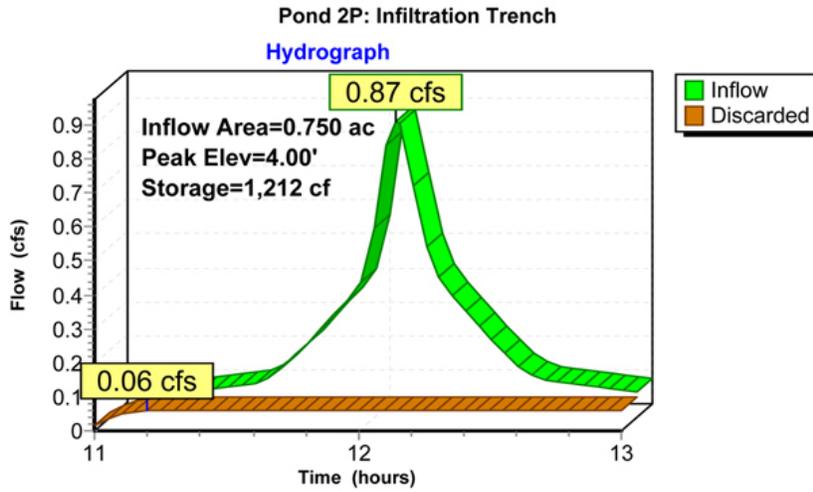


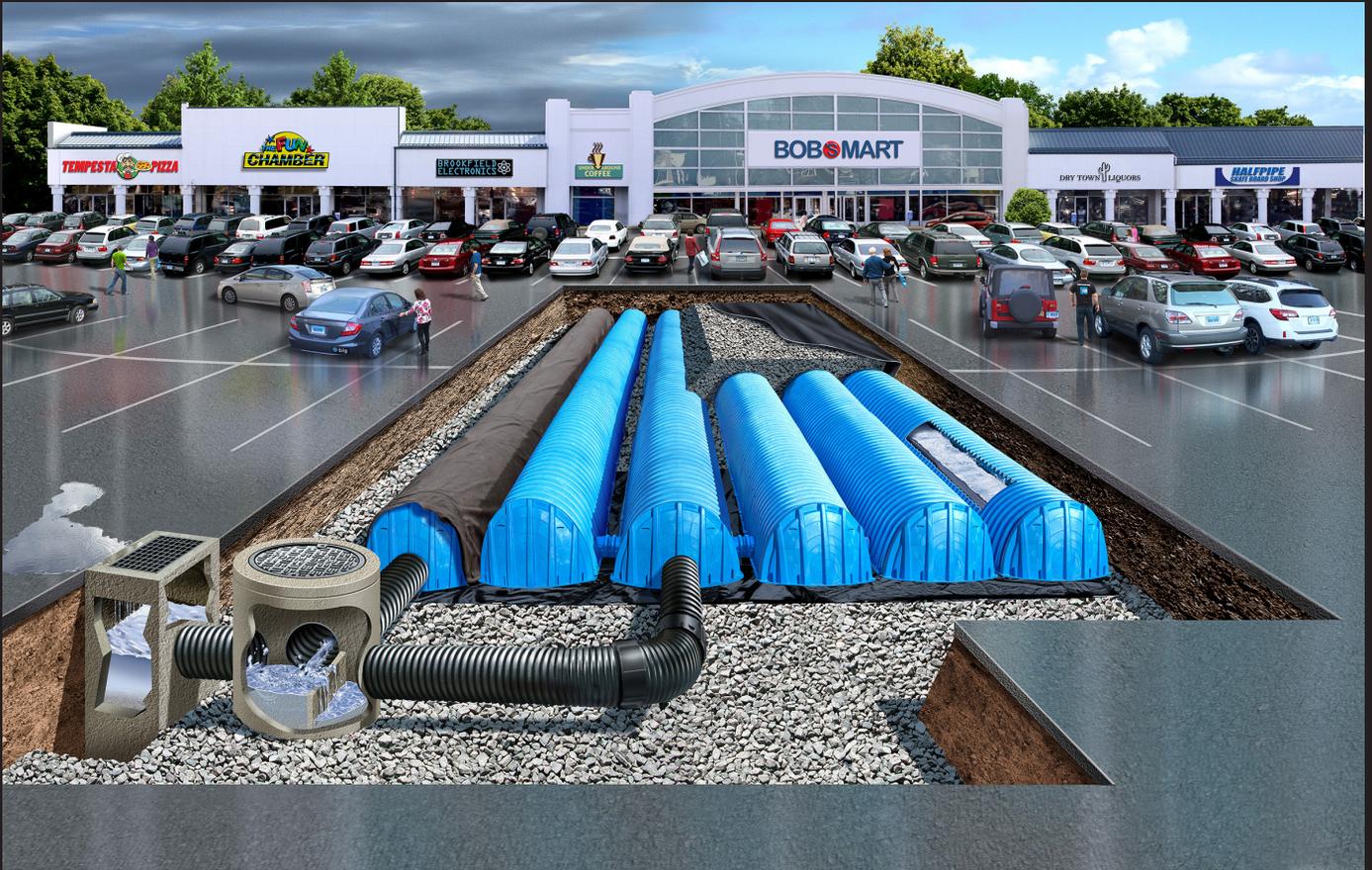
Table 2.3.3. 1982 Rawls Rates¹⁸

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

¹⁸ Rawls, Brakensiek and Saxton, 1982

CONTACTOR® & RECHARGER®

STORMWATER MANAGEMENT SOLUTIONS



OPERATION & MAINTENANCE GUIDELINES FOR CULTEC STORMWATER MANAGEMENT SYSTEMS



OPERATIONS AND MAINTENANCE GUIDELINES

Published by

CULTEC

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For general information on our other products and services, please contact our offices within the United States at (800)428-5832, (203)775-4416 ext. 202, or e-mail us at CT-CustomerService@cultec.com.

For technical support, please call (203)775-4416 ext. 203 or e-mail CT-Tech@cultec.com.

Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CLT057 11-23

November 2023

These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC. All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings. Actual designs may vary.

This manual contains guidelines recommended by CULTEC and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

- A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pretreatment device). CCTV inspection of this row can be deployed through this access port to determine if any sediment has accumulated in the inlet row.
- B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.
 1. **Manhole Access**
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. StormFilter Access

Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

- C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

- A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.
- B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.
- C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.
- D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance

The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. Major Maintenance

The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

	Frequency	Action
Inlets and Outlets	Every 3 years	<ul style="list-style-type: none"> Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	<ul style="list-style-type: none"> Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	<ul style="list-style-type: none"> Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	<ul style="list-style-type: none"> Clean stormwater management chambers and feed connectors of any debris. Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	<ul style="list-style-type: none"> Clean stormwater management chambers and feed connectors of any debris. Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. Attain the appropriate approvals as required. Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1 st year	<ul style="list-style-type: none"> Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	<ul style="list-style-type: none"> Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	<ul style="list-style-type: none"> Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC at 1-800-428-5832.



WQMP Operation & Maintenance (O&M) Plan

Project Name: _____

Prepared for:

Project Name: _____

Address: _____

City, State Zip: _____

Prepared on:

Date: _____

This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer’s maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

Appendix ____

BMP SITE PLAN

Site plan is preferred on minimum 11" by 17" colored sheets, as long as legible.

Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
<input type="checkbox"/> Month 1	Date:	
<input type="checkbox"/> Month 2	Date:	
<input type="checkbox"/> Month 3	Date:	
<input type="checkbox"/> Month 4	Date:	
<input type="checkbox"/> Month 5	Date:	
<input type="checkbox"/> Month 6	Date:	
<input type="checkbox"/> Month 7	Date:	
<input type="checkbox"/> Month 8	Date:	
<input type="checkbox"/> Month 9	Date:	
<input type="checkbox"/> Month 10	Date:	
<input type="checkbox"/> Month 11	Date:	
<input type="checkbox"/> Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
<input type="checkbox"/> Year 1	Date:	
<input type="checkbox"/> Year 4	Date:	
<input type="checkbox"/> Year 7	Date:	
<input type="checkbox"/> Year 10	Date:	
<input type="checkbox"/> Year 13	Date:	
<input type="checkbox"/> Year 16	Date:	
<input type="checkbox"/> Year 19	Date:	
<input type="checkbox"/> Year 22	Date:	

Major Maintenance

Frequency		Action
Inlets and Outlets	Every 3 years	
	Notes	
	<input type="checkbox"/> Year 1	Date:
	<input type="checkbox"/> Year 4	Date:
	<input type="checkbox"/> Year 7	Date:
	<input type="checkbox"/> Year 10	Date:
	<input type="checkbox"/> Year 13	Date:
	<input type="checkbox"/> Year 16	Date:
	<input type="checkbox"/> Year 19	Date:
	<input type="checkbox"/> Year 22	Date:
	Spring and Fall	
	Notes	
	<input type="checkbox"/> Spring	Date:
	<input type="checkbox"/> Fall	Date:
	<input type="checkbox"/> Spring	Date:
	<input type="checkbox"/> Fall	Date:
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
<input type="checkbox"/> Spring	Date:	
<input type="checkbox"/> Fall	Date:	
CULTEC Stormwater Chambers	2 years after commissioning	
	<input type="checkbox"/> Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. <input type="checkbox"/> Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.	
	Notes	
<input type="checkbox"/> Year 2	Date:	

Major Maintenance

Frequency		Action	
CULTEC Stormwater Chambers	9 years after commissioning every 9 years following		
	<ul style="list-style-type: none"> <input type="checkbox"/> Clean stormwater management chambers and feed connectors of any debris. <input type="checkbox"/> Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. <input type="checkbox"/> Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended. 		
	Notes		
	<input type="checkbox"/> Year 9	Date:	
	<input type="checkbox"/> Year 18	Date:	
	<input type="checkbox"/> Year 27	Date:	
	<input type="checkbox"/> Year 36	Date:	
45 years after commissioning			
<ul style="list-style-type: none"> <input type="checkbox"/> Clean stormwater management chambers and feed connectors of any debris. <input type="checkbox"/> Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. <input type="checkbox"/> Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. <input type="checkbox"/> Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. <input type="checkbox"/> Attain the appropriate approvals as required. <input type="checkbox"/> Establish a new operation and maintenance schedule. 			
Notes			
<input type="checkbox"/> Year 45	Date:		

Major Maintenance

Frequency		Action	
Surrounding Site	Monthly in 1st year		
	<input type="checkbox"/> Check for depressions in areas over and surrounding the stormwater management system.		
	Notes		
	<input type="checkbox"/> Month 1	Date:	
	<input type="checkbox"/> Month 2	Date:	
	<input type="checkbox"/> Month 3	Date:	
	<input type="checkbox"/> Month 4	Date:	
	<input type="checkbox"/> Month 5	Date:	
	<input type="checkbox"/> Month 6	Date:	
	<input type="checkbox"/> Month 7	Date:	
	<input type="checkbox"/> Month 8	Date:	
	<input type="checkbox"/> Month 9	Date:	
	<input type="checkbox"/> Month 10	Date:	
	<input type="checkbox"/> Month 11	Date:	
	<input type="checkbox"/> Month 12	Date:	
	Spring and Fall		
	<input type="checkbox"/> Check for depressions in areas over and surrounding the stormwater management system.		
	Notes		
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	<input type="checkbox"/> Spring	Date:	
	<input type="checkbox"/> Fall	Date:	
	Yearly		
	<input type="checkbox"/> Confirm that no unauthorized modifications have been performed to the site.		
Notes			
<input type="checkbox"/> Year 1	Date:		
<input type="checkbox"/> Year 2	Date:		
<input type="checkbox"/> Year 3	Date:		
<input type="checkbox"/> Year 4	Date:		
<input type="checkbox"/> Year 5	Date:		
<input type="checkbox"/> Year 6	Date:		
<input type="checkbox"/> Year 7	Date:		



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RETENTION • DETENTION • INFILTRATION • WATER QUALITY

Sandra McCrory

From: Shane Oates <soates@independence.engineering>
Sent: Tuesday, December 9, 2025 4:02 PM
To: Sandra McCrory
Cc: Kate Ballow
Subject: RE: Updates

External sender <soates@independence.engineering>

Make sure you trust this sender before taking any actions.

And here are the current total disturbance areas for each lot as measured in Cad this afternoon...

Lot 15 - 18,150 sf LOD

Lot 25 - 13,064 sf LOD

Lot 26 - 14,340 sf LOD



Shane M. Oates, New England Branch Manager
161 East Grove Street, Suite 3
Middleborough, MA 02346
(508) 245-2608

From: Shane Oates
Sent: Tuesday, December 9, 2025 4:00 PM
To: 'Sandra McCrory' <smccrory@nattleboro.com>
Cc: 'Kate Ballow' <kballow@nattleboro.com>
Subject: RE: Updates
Importance: High

Good afternoon Sandra,

Please see the attached O & M for the recharge system as well as the calculations package for the three (3) lots.

Thank you.



Shane M. Oates, New England Branch Manager
161 East Grove Street, Suite 3
Middleborough, MA 02346
(508) 245-2608

From: Shane Oates
Sent: Thursday, December 4, 2025 5:33 PM
To: 'Sandra McCrory' <smccrory@nattleboro.com>

Cc: Kate Ballow <kballow@nattleboro.com>

Subject: RE: Updates

Good evening Sandra,

Please see the attached revised Site Plans as previously discussed for next Tuesday's hearings.

Thank you.



Shane M. Oates, New England Branch Manager
161 East Grove Street, Suite 3
Middleborough, MA 02346
(508) 245-2608

From: Sandra McCrory <smccrory@nattleboro.com>

Sent: Wednesday, December 3, 2025 10:52 AM

To: Shane Oates <soates@independence.engineering>

Cc: Kate Ballow <kballow@nattleboro.com>

Subject: Updates

Good Morning Shane,

Just checking on the updates for Stormwater for the Christina Estates NOI applications the commission requested for the upcoming meeting.

Will you have those to us by first thing Friday morning so I can send them to the Commission?

Thank you,

Sandra

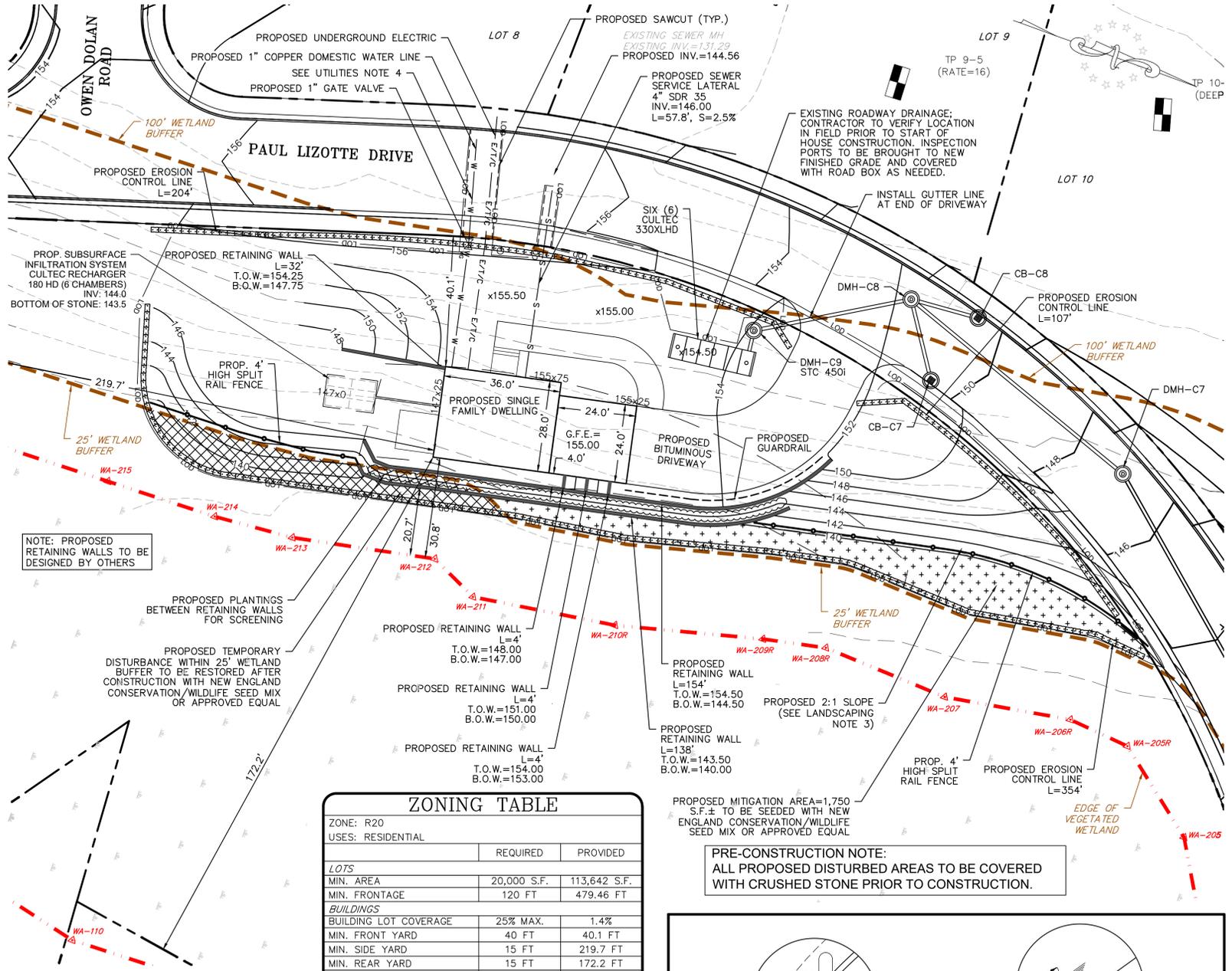
Sandra A. McCrory

Conservation Administrator

Town of North Attleboro

43 South Washington St. North Attleboro, MA 02760

P: 508.699.0100 x2583



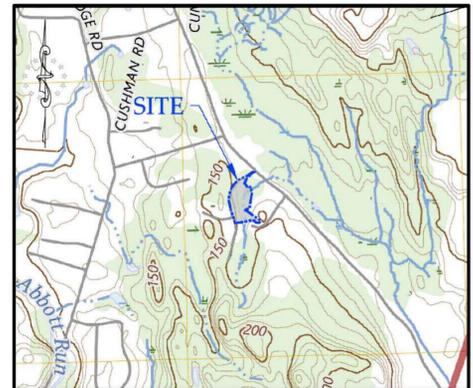
- GENERAL:**
1. THE CONTRACTOR SHALL NOTIFY "DIGSAFE" (1-888-DIGSAFE) AT LEAST 72 HOURS (3 BUSINESS DAYS) BEFORE EXCAVATING.
 2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
 3. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
 4. AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
 5. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.

- LAYOUT & MATERIALS:**
1. DIMENSIONS ARE FROM THE FACE OF CURB AND FACE OF BUILDING, UNLESS OTHERWISE NOTED.
 2. CONCRETE BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.

- EXISTING CONDITIONS INFORMATION:**
1. UNDERGROUND UTILITY LOCATION AS SHOWN HEREON ARE TAKEN FROM AVAILABLE RECORD AND FIELD INFORMATION AND ARE APPROXIMATE ONLY. BEFORE PLANNING ANY CONSTRUCTION, DIGSAFE AND THE VARIOUS UTILITY COMPANY ENGINEERING DEPARTMENTS SHOULD BE CONSULTED.
 2. ELEVATIONS REFER TO NAVD 88.
 3. ON-THE-GROUND SURVEY WAS COMPLETED BY CONECO ENGINEERS & SCIENTISTS.
 4. THE WETLANDS BOUNDARY WAS APPROVED THROUGH AN ORDER OF CONDITIONS ISSUED ON JULY 11, 2006 BY THE NORTH ATTLEBORO CONSERVATION COMMISSION FOR DEP FILE NO. SE 243-0647.

- LANDSCAPING:**
1. ALL AREAS CLEARED AND/OR DISTURBED SHALL BE BROUGHT TO WITHIN 4 INCHES OF FINAL GRADE AND FINISHED WITH INCHES OF LOAM AND SEED EXCEPT WHERE OTHER FINISHES ARE PROPOSED (REFER TO PLANS).
 2. CONTRACTOR IS RESPONSIBLE FOR REPLACING (IN KIND) ALL DEAD OR DYING PLANT MATERIAL FOR A PERIOD OF 2 YEARS AFTER INITIAL PLANTING.
 3. INSTALL SLOPE STABILIZATION BLANKETS ON ALL SLOPES GREATER THAN 3:1.

- UTILITIES:**
1. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
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 4. CONTRACTOR SHALL LOCATE EXISTING WATER LINE IN FIELD AND SHALL EITHER INSTALL NEW SEWER WITH A MINIMUM OF 18" OF FACE-TO-FACE CLEARANCE UNDERNEATH EXISTING WATER LINE, OR CONCRETE ENCASE WATER LINE.
 5. CONTRACTOR IS RESPONSIBLE FOR UTILITY TIE-INS. CONTRACTOR SHALL COORDINATE UTILITY TIE-INS WITH APPROPRIATE UTILITY PURVEYORS.



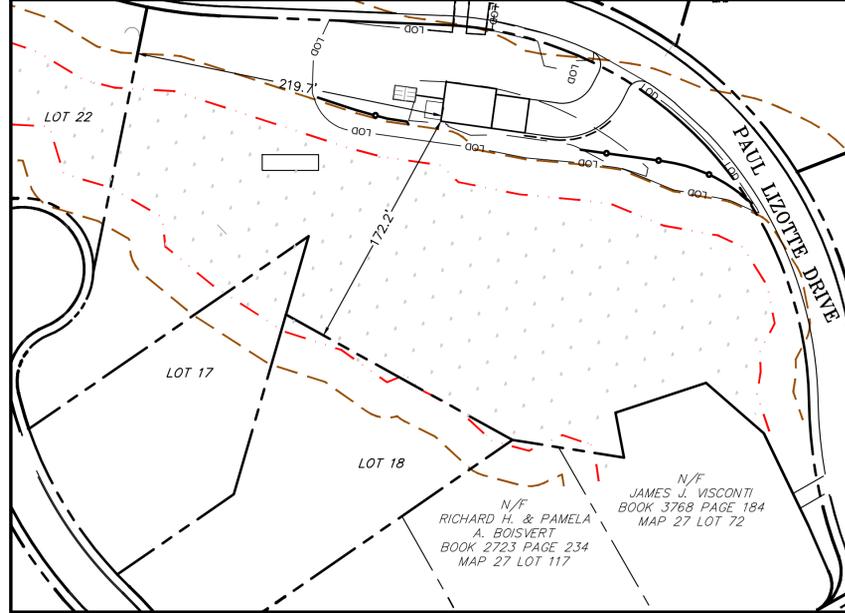
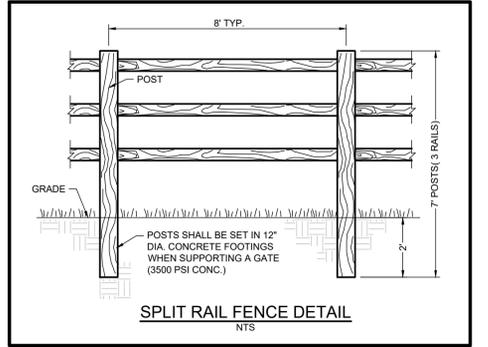
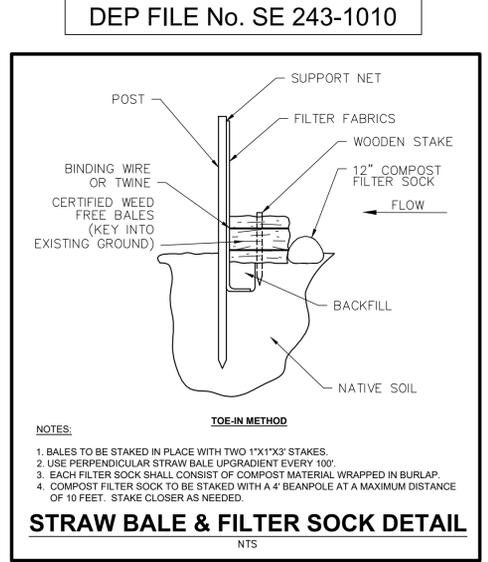
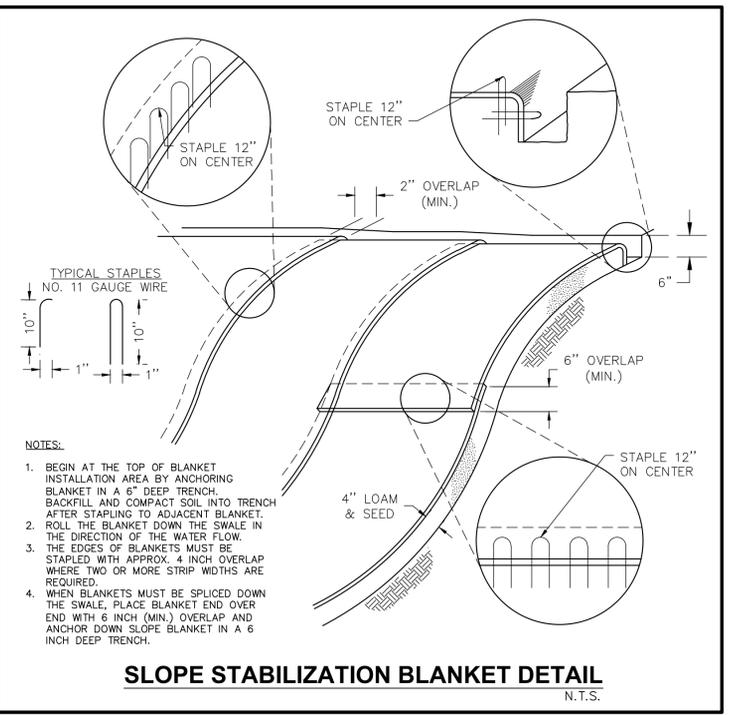
LEGEND

---	PROPERTY LINE
---	ABUTTER PROPERTY LINE
-140-	EXISTING MAJOR CONTOUR
-142-	EXISTING MINOR CONTOUR
-140-	PROPOSED MAJOR CONTOUR
-142-	PROPOSED MINOR CONTOUR
x142	PROPOSED SPOT ELEVATION
- - - -	EDGE OF WETLAND
- - - -	25' WETLAND BUFFER
- - - -	100' WETLAND BUFFER
---	EXISTING TREE LINE
---	EDGE OF DRIVEWAY
---	CURB LINE
---	PROPOSED BUILDING
---	PROPOSED WALKWAY
W - - - W	EXISTING WATER LINE
E/T/C - - - E/T/C	EXISTING UNDERGROUND UTILITIES
S - - - S	EXISTING SEWER LATERAL
W - - - W	PROPOSED WATER LINE
E/T/C - - - E/T/C	PROPOSED UNDERGROUND UTILITIES
S - - - S	PROPOSED SEWER LATERAL
⊙	EXISTING SEWER MANHOLE
⊙	DRAINAGE MANHOLE
⊙	DRAINAGE CATCH BASIN
⊙	PROPOSED GATE VALVE
⊙	PROPOSED STEPS
---	EROSION CONTROL LINE
△	WETLAND FLAG
---	WETLAND AREA
B.F.E.	BASEMENT FLOOR ELEVATION
B.O.W.	BOTTOM OF WALL
F.F.E.	FIRST FLOOR ELEVATION
G.F.E.	GARAGE FLOOR ELEVATION
L	LENGTH
S	SLOPE
T.O.F.	TOP OF FOUNDATION
T.O.W.	TOP OF WALL
INV.	INVERT
Loc	LIMIT OF CLEARING

ZONING TABLE

ZONE: R20	REQUIRED	PROVIDED
USES: RESIDENTIAL		
LOTS		
MIN. AREA	20,000 S.F.	113,642 S.F.
MIN. FRONTAGE	120 FT	479.46 FT
BUILDINGS		
BUILDING LOT COVERAGE	25% MAX.	1.4%
MIN. FRONT YARD	40 FT	40.1 FT
MIN. SIDE YARD	15 FT	219.7 FT
MIN. REAR YARD	15 FT	172.2 FT
MAX. BUILDING HEIGHT	2.5 STORIES	2 STORIES

PRE-CONSTRUCTION NOTE:
ALL PROPOSED DISTURBED AREAS TO BE COVERED WITH CRUSHED STONE PRIOR TO CONSTRUCTION.



BY: SMO SMO

REVISIONS:

REV	DATE	DESCRIPTION
1	11/20/2025	REVISED PER PREVIEW & COMMISSION COMMENTS
2	12/02/2025	REVISED PER COMMISSION COMMENTS

Independence ENGINEERING LLC
161 EAST GROVE STREET, SUITE 3
MIDDLEBOROUGH, MASSACHUSETTS 02346
(508) 245-2608
INDEPENDENCE@INDEPENDENCEENGINEERING.COM
NEW JERSEY • PENNSYLVANIA • MASSACHUSETTS

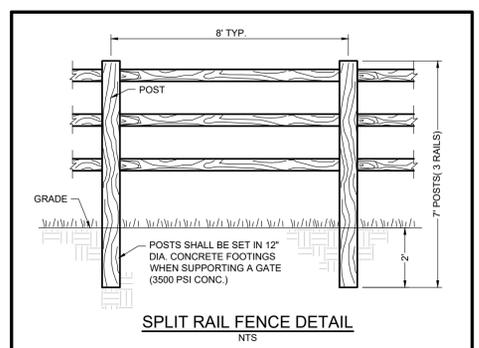
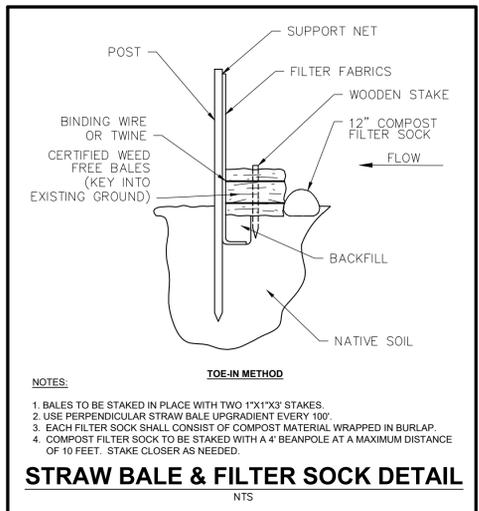
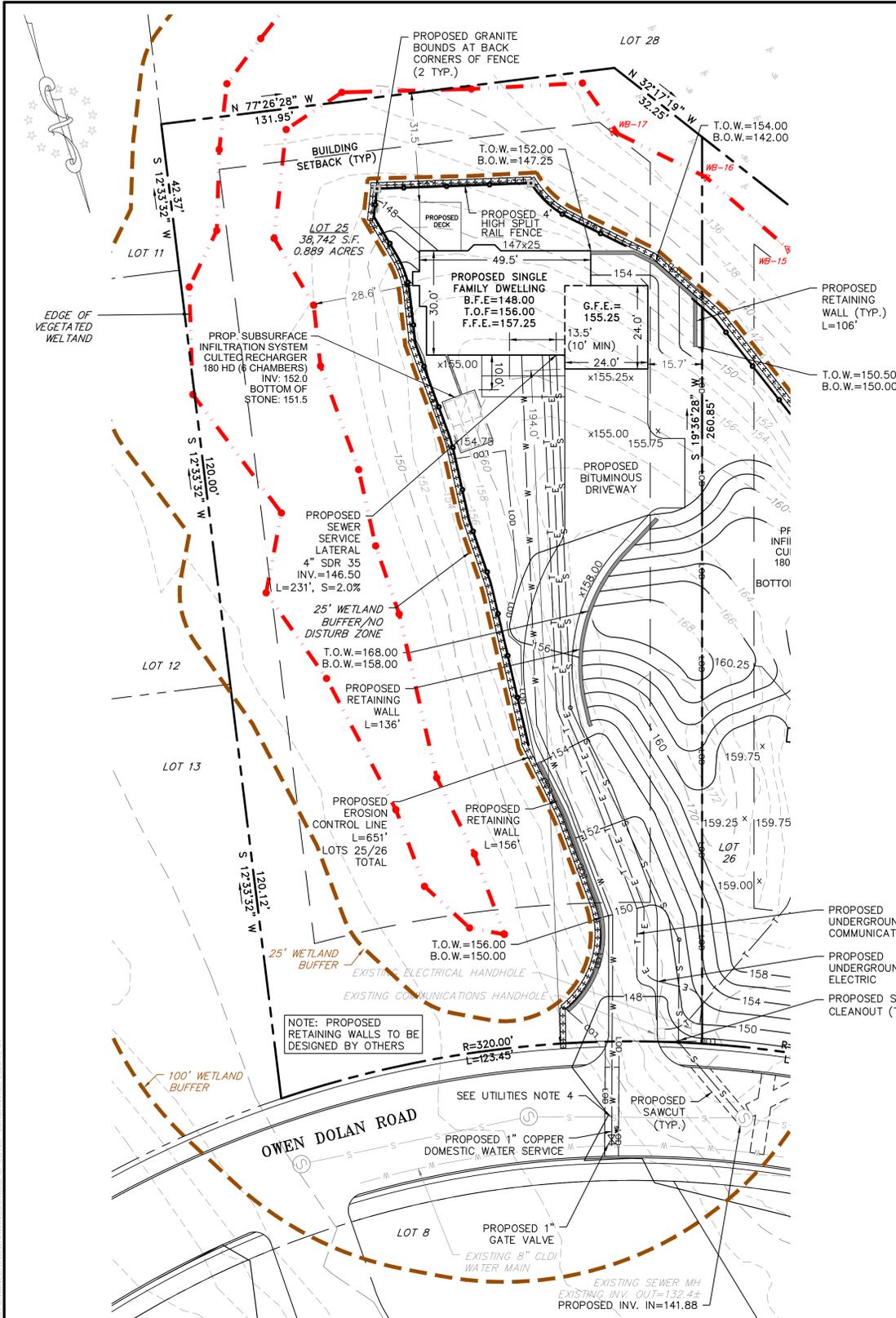
PERMITTING SITE PLAN
FOR
LOT 15 - 159 PAUL LIZOTTE DRIVE

FORGE BUILDING GROUP - CHRISTINA ESTATES
CUMBERLAND AVENUE, TOWN OF NORTH ATTLEBORO
BRISTOL COUNTY, MASSACHUSETTS

PROJECT: 043-002
DATE: 08/11/2025
SCALE: 1" = 20'
DESIGNED: SMO
CHECKED: NES

NEIL E. SANDER CIVIL No. 48863
08/11/2025

C400
SHEET 1 OF 1



- GENERAL:**
1. THE CONTRACTOR SHALL NOTIFY "DIGSAFE" (1-888-DIGSAFE) AT LEAST 72 HOURS (3 BUSINESS DAYS) BEFORE EXCAVATING.
 2. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
 3. UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
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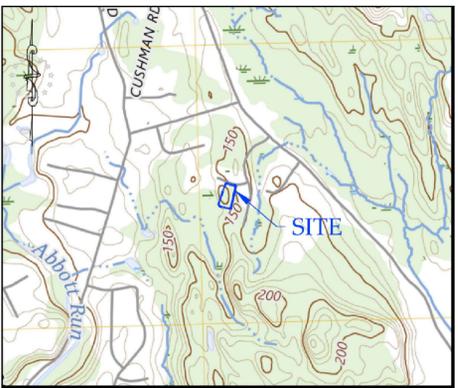
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DEP FILE No. SE 243-1011



LOCATION MAP
SCALE: 1"=1000'

ZONING TABLE		
ZONE:	REQUIRED	PROVIDED
R20		
USES: RESIDENTIAL		
LOTS		
MIN. AREA	20,000 S.F.	38,742 S.F.
MIN. FRONTAGE	120 FT	123.45 FT
BUILDINGS		
BUILDING LOT COVERAGE	25% MAX.	5.4%
MIN. FRONT YARD	40 FT	194.0 FT
MIN. SIDE YARD	15 FT	15.7 FT
MIN. REAR YARD	15 FT	31.5 FT
MAX. BUILDING HEIGHT	2.5 STORIES	2 STORIES

LEGEND

---	PROPERTY LINE
---	ABUTTER PROPERTY LINE
---140---	EXISTING MAJOR CONTOUR
---142---	EXISTING MINOR CONTOUR
---140---	PROPOSED MAJOR CONTOUR
---142---	PROPOSED MINOR CONTOUR
x142	PROPOSED SPOT ELEVATION
---	EDGE OF WETLAND
---	25' WETLAND BUFFER
---	100' WETLAND BUFFER
---	EXISTING TREE LINE
---	EDGE OF DRIVEWAY
---	CURB LINE
---	PROPOSED BUILDING
---	EXISTING COMMUNICATIONS
---	EXISTING ELECTRIC
---	EXISTING SEWER LATERAL
---	EXISTING WATER LINE
---	PROPOSED COMMUNICATIONS
---	PROPOSED EROSION CONTROL LINE
---	PROPOSED GATE VALVE
---	PROPOSED ELECTRIC
---	PROPOSED SEWER LATERAL
---	PROPOSED STAIRS
---	PROPOSED WATER LINE
---	EXISTING DRAIN CATCH BASIN
---	EXISTING DRAIN MANHOLE
---	EXISTING SEWER MANHOLE
---	EXISTING LIGHT POLE
---	WETLAND FLAG
---	EXISTING HYDRANT
---	WETLAND AREA
B.F.E.	BASEMENT FLOOR ELEVATION
B.O.W.	BOTTOM OF WALL
F.F.E.	FIRST FLOOR ELEVATION
G.F.E.	GARAGE FLOOR ELEVATION
L	LENGTH
S	SLOPE
T.O.F.	TOP OF FOUNDATION
T.O.W.	TOP OF WALL
INV.	INVERT
---	LIMIT OF CLEARING

BY: SMO SMO

DESCRIPTION: REVISED PER PER REVIEW & COMMISSION COMMENTS

DATE: 11/20/2025

REV: 1 11/20/2025

2 12/02/2025

Independence ENGINEERING LLC
161 EAST GROVE STREET, SUITE 3
MIDDLEBOROUGH, MASSACHUSETTS 02946
(508) 245-2668
INDEPENDENCE@INDEPENDENCEENGINEERING.COM
NEW JERSEY PENNSYLVANIA MASSACHUSETTS

FOR: **PERMITTING SITE PLAN**
LOT 25 - 22 OWEN DOLAN ROAD

FORGE BUILDING GROUP - CHRISTINA ESTATES
CUMBERLAND AVENUE, TOWN OF NORTH ATTLEBORO
BRISTOL COUNTY, MASSACHUSETTS

0 10 20
GRAPHIC SCALE: 1" = 20'

PROJECT: 043-002
DATE: 08/11/2025
SCALE: 1" = 20'
DRAWN: SMO
DESIGNED: SMO
CHECKED: NES

NEIL E. SANDER
CIVIL
No. 48863
08/11/2025

C400
SHEET 1 OF 1

Project Number: 043-002
Project Name: Christina Estates
Project Address: North Attleboro
Client: Forge Building
 Lot 15

Calculations by: SMO
Date: 12/9/2025
Checked by: SMO
Checked Date: 12/9/2025



STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,584	0	0	1584
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT³)	0	46	0	0	46

CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME

65% OF IMPERVIOUS AREA	1030	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	130.1%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.77		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	36	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

DRAWDOWN IN 72 HOURS CALCULATION

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE
 R_v = RECHARGE VOLUME
 K = SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

Subsurface Infiltration Facility South

A= 73 SF
 R_v= 46 CF
 K= 0.52 INCHES/HOUR

$$\text{DRAWDOWN TIME } T = \frac{R_v}{K \times A} =$$

14.5 HOURS TO EMPTY THE RECHARGE BMP
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

PROJECT INFORMATION

Project Name: Christina Estates
City: North Attleboro
State / Province: MA
Country: USA

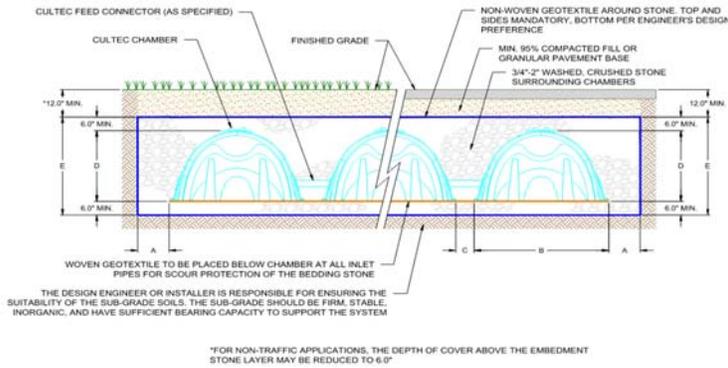
Instructions:

- Step 1: Enter Area of Impervious Cover in "Drainage Area" Cell
- Step 2: Enter Required Depth of Rainfall in "Rainfall Depth" Cell. Use NOAA's National Weather Service Precipitation Frequency Data Server (PFDS) Link to Rainfall Data Map if Required
- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

System Input Parameters

Drainage Area 1584 ft²
 Rainfall Depth 0.35 in [Lookup Rainfall Data HERE](#)
 Storage Required 46 ft³

Typical System Cross-Section Detail



		Specification Table		
		Contactor 100HD	Recharger 180HD	Recharger 330XLHD
REF	Bare Chamber Volume	1.87ft ³ /ft 14.00 ft ³ /unit 105 gal	3.45ft ³ /ft 21.81 ft ³ /unit 163 gal	7.46ft ³ /ft 52.21 ft ³ /unit 391 gal
	A	Stone Border Width (in)	12	12
B	Chamber Width (in)	36	36	52
C	Row Spacing (in)	6	6	6
D	Chamber Height (in)	12	20	30
E	Effective Depth (in)	24	32	42
	Chamber Length (ft)	8	7.33	8.5

System Output Table

Storage Required 46 ft³

Chamber Model (choose one)	No. of Chambers Required <i>units</i>	Minimum Installed Storage per Unit <i>ft³</i>	Storage Volume Provided <i>ft³</i>	Minimum Required Area <i>ft²</i>
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[->More information on residential drainage.](#)

Call CULTEC for cost estimates and system design.

[Find a CULTEC Rep near you](#)

This calculator program is for estimation purposes only and should not take the place of a comprehensive engineering design.

System calculations do not include materials required conventional pipe manholes.

The successful application and use of this software product is dependent on the application of skilled engineering judgment supplied by the user and/or their consultant.

The user of this software must select input values suitable to describe their specific engineering situation.

The information presented in the computer output is for review, interpretation, application, and approval by a qualified engineer who must assume full responsibility for verifying that all output is appropriate and correct.

Any implied or expressed warranties covering this software program or user manual including warranties of merchantability or fitness for any particular purpose are expressed excluded.

CULTEC and any of its affiliates shall not be held liable for any special, incidental, consequential, indirect or other similar damages resulting from the use of this software.

Use of this program constitutes acceptance of this liability agreement by the user.

Reconfiguring the bed layout may effect actual storage provided.

Contact CULTEC Technical Services at CT-tech@cultec.com. Or call 1-800-428-5832 or 203-775-4416 for further assistance.

[Email Technical Services](#)

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Project Number: 043-002
Project Name: Christina Estates
Project Address: North Attleboro
Client: Forge Building
 Lot 25 & 26

Calculations by: SMO
Date: 12/9/2025
Checked by: SMO
Checked Date: 12/9/2025



STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,905	0	0	1905
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT ³)	0	56	0	0	56

CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME

65% OF IMPERVIOUS AREA	1238	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	108.2%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.92		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	51	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

DRAWDOWN IN 72 HOURS CALCULATION

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE
 R_v = RECHARGE VOLUME
 K = SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

Subsurface Infiltration Facility South

A= 73 SF
 R_v= 56 CF
 K= 0.52 INCHES/HOUR

DRAWDOWN TIME T = $\frac{R_v}{K \times A}$ = 17.6 HOURS TO EMPTY THE RECHARGE BMP
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

PROJECT INFORMATION

Project Name: Christina Estates
City: North Attleboro
State / Province: MA
Country: USA

Instructions:

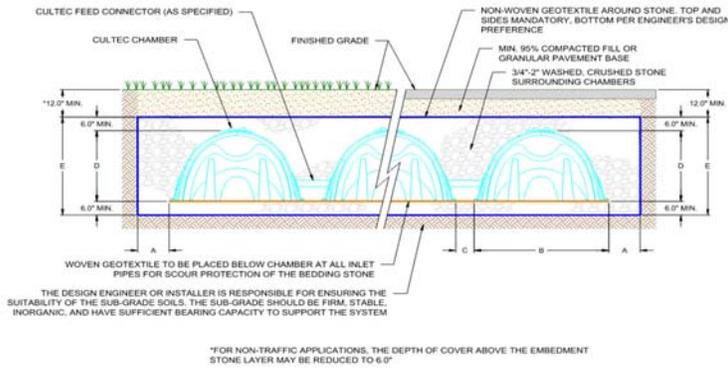
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- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

System Input Parameters

Drainage Area: 1905 ft²
 Rainfall Depth: 0.35 in
 Storage Required: 56 ft³

[Lookup Rainfall Data HERE](#)

Typical System Cross-Section Detail



		Specification Table		
		Contactor 100HD	Recharger 180HD	Recharger 330XLHD
REF	Bare Chamber Volume	1.87ft ³ /ft 14.00 ft ³ /unit 105 gal	3.45ft ³ /ft 21.81 ft ³ /unit 163 gal	7.46ft ³ /ft 52.21 ft ³ /unit 391 gal
	A	Stone Border Width (in)	12	12
B	Chamber Width (in)	36	36	
C	Row Spacing (in)	6	6	
D	Chamber Height (in)	12	20	
E	Effective Depth (in)	24	32	
	Chamber Length (ft)	8	7.33	

System Output Table

Storage Required: 56 ft³

Chamber Model (choose one)	No. of Chambers Required units	Minimum Installed Storage per Unit ft ³	Storage Volume Provided ft ³	Minimum Required Area ft ²
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[->More information on residential drainage.](#)

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The user of this software must select input values suitable to describe their specific engineering situation.

The information presented in the computer output is for review, interpretation, application, and approval by a qualified engineer who must assume full responsibility for verifying that all output is appropriate and correct.

Any implied or expressed warranties covering this software program or user manual including warranties of merchantability or fitness for any particular purpose are expressed excluded.

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Use of this program constitutes acceptance of this liability agreement by the user.

Reconfiguring the bed layout may effect actual storage provided.

Contact CULTEC Technical Services at CT-tech@cultec.com. Or call 1-800-428-5832 or 203-775-4416 for further assistance.

[Email Technical Services](#)

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Map Unit Legend

Bristol County, Massachusetts, Northern Part (MA602)

Bristol County, Massachusetts,
Northern Part (MA602)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	1.1	16.2%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	0.5	7.0%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	0.0	0.2%
706C	Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes	5.0	76.6%
Totals for Area of		6.6	100.0%

Soil Map

Scale (not to scale) v



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

Bristol County, Massachusetts, Northern Part

73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695

Elevation: 0 to 1,580 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

Whitman, extremely stony, and similar soils: 81 percent

Minor components: 19 percent

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

Description of Whitman, Extremely Stony

Setting

Landform: Hills, ground moraines, depressions, drainageways, drumlins

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat

A - 1 to 10 inches: fine sandy loam

Bg - 10 to 17 inches: gravelly fine sandy loam

Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 7 to 38 inches to densic material

Drainage class: Very poorly drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 0 to 6 inches

Frequency of flooding: None

Frequency of ponding: Frequent

Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)

Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: F144AY041MA - Very Wet Till Depressions

Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent

Landform: Hills, ground moraines, depressions, drainageways, drumlins

Landform position (two-dimensional): Footslope, toeslope

Landform position (three-dimensional): Base slope, head slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent

Landform: Outwash deltas, depressions, drainageways, outwash terraces

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent

Landform: Bogs, marshes, swamps

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent

Landform: Hills, ground moraines, drumlins

Landform position (two-dimensional): Summit, backslope, footslope

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

Data Source Information

Soil Survey Area: Bristol County, Massachusetts, Northern Part

Survey Area Data: Version 18, Sep 5, 2025

Bristol County, Massachusetts, Northern Part

706C—Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2x1k5
Elevation: 0 to 340 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Charlton, extremely stony, and similar soils: 35 percent
Rock outcrop: 25 percent
Paxton, extremely stony, and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Extremely Stony

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 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 low to high (0.14 to 14.17 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: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: B

Ecological site: F144AY034CT - Well Drained Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Hills, ridges

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 15 percent

Depth to restrictive feature: 0 inches to lithic bedrock

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: No

Description of Paxton, Extremely Stony

Setting

Landform: Hills, ground moraines, drumlins

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Crest, side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material

A - 2 to 10 inches: fine sandy loam

Bw1 - 10 to 17 inches: fine sandy loam

Bw2 - 17 to 28 inches: fine sandy loam

Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 15 percent

Surface area covered with cobbles, stones or boulders: 9.0 percent

Depth to restrictive feature: 20 to 43 inches to densic material

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 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 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY007CT - Well Drained Dense Till Uplands
Hydric soil rating: No

Minor Components

Montauk, extremely stony

Percent of map unit: 7 percent
Landform: Recessional moraines, hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge, extremely stony

Percent of map unit: 5 percent
Landform: Hills, ground moraines, drumlins
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Gloucester, extremely stony

Percent of map unit: 4 percent
Landform: Ground moraines
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 4 percent
Landform: Hills, ground moraines, depressions, drainageways, drumlins
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Bristol County, Massachusetts, Northern Part
Survey Area Data: Version 18, Sep 5, 2025

Attention must be given to ensure consistency in units. In particular, the Target Depth Factors must be converted to feet.

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	0.6-inch
B	loam	0.35-inch
C	silty loam	0.25-inch
D	clay	0.1-inch

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

When a site contains multiple Hydrologic Soil Groups, determine the *Required Recharge Volume* for each impervious area by Hydrologic Soil Group and then add the volumes together.

Example: Assume a ten (10) acre site. 5.0 acres are proposed to be developed for a retail use. A section of the entrance roadway is to be bridged over a stream that is classified as land under water. As such, the bridging is subject to the Wetlands Protection Act Regulations, and the Stormwater Management Standards apply to stormwater runoff from all proposed roads, parking areas, and rooftops. Of the 5.0 acres proposed to be developed, 2 acres of impervious surfaces are proposed atop Hydrologic Soil Group (HSG) “A” soils, 1 acre of impervious surfaces atop HSG “B” soil, 1.5 acres of impervious surfaces atop HSG “C” soil, and 0.5 acres are proposed to be landscaped area. The remaining 5.0 acres, located on HSG “A” soil, are proposed to remain forested. Determine the *Required Recharge Volume*.

Solution: The *Required Recharge Volume* is determined only for the impervious surfaces. The 5.0-acre forested area and the 0.5-acre landscaped area are not impervious areas. Although converted from forest, landscaped area is pervious area for purposes of Standard 3. Use *Equation (1)* to determine the *Required Recharge Volume* for each Hydrologic Soil Group covered by impervious area. Add together the *Required Recharge Volumes* determined for each HSG.

$$Rv = F \times \text{impervious area}$$

$$Rv = [(F_{\text{HSG "A"}}) (\text{Area}_1)] + [(F_{\text{HSG "B"}}) (\text{Area}_2)] + [(F_{\text{HSG "C"}}) (\text{Area}_3)] + [(F_{\text{HSG "D"}}) (\text{Area}_4)] \text{ Equation (2)}$$

$$Rv = [(0.6\text{-in}/12)(2 \text{ acres})] + [(0.35\text{-in}/12)(1 \text{ acre})] + [(0.25\text{-in}/12)(1.5 \text{ acres})] + [(0.1\text{-in}/12)(0 \text{ acres})]$$

$$Rv = 0.1605 \text{ acre-feet}$$

$$Rv = 0.1605 \text{ acre-feet} \times 43560 \text{ square feet/acre-feet} = 6,991 \text{ cubic feet or } 258.9 \text{ cubic yards}$$

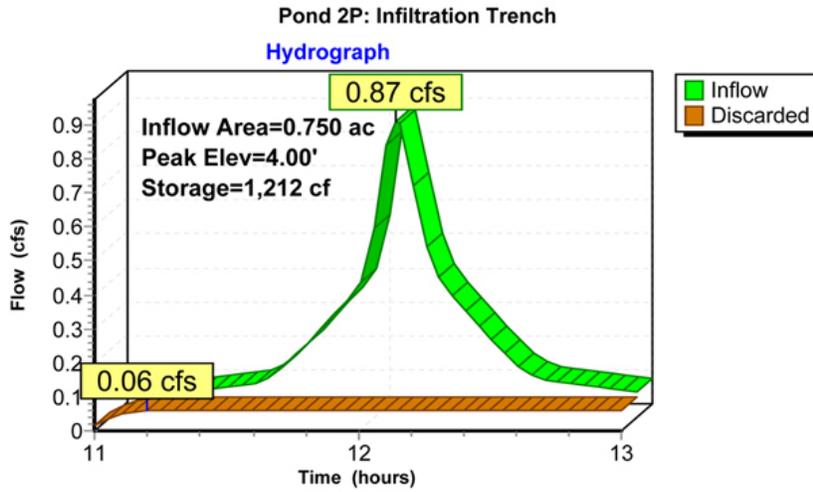
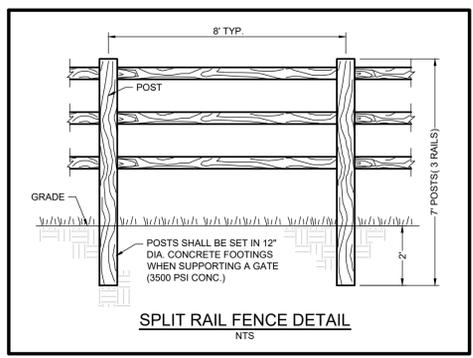
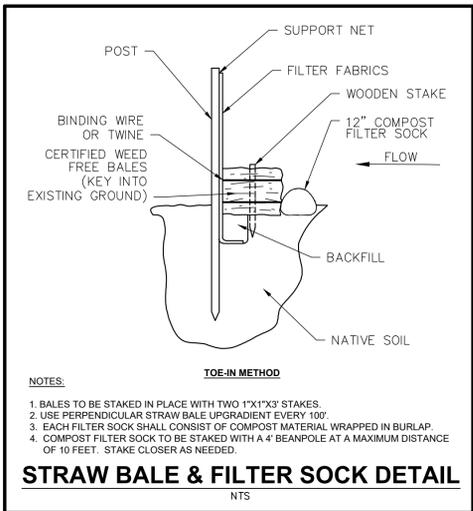
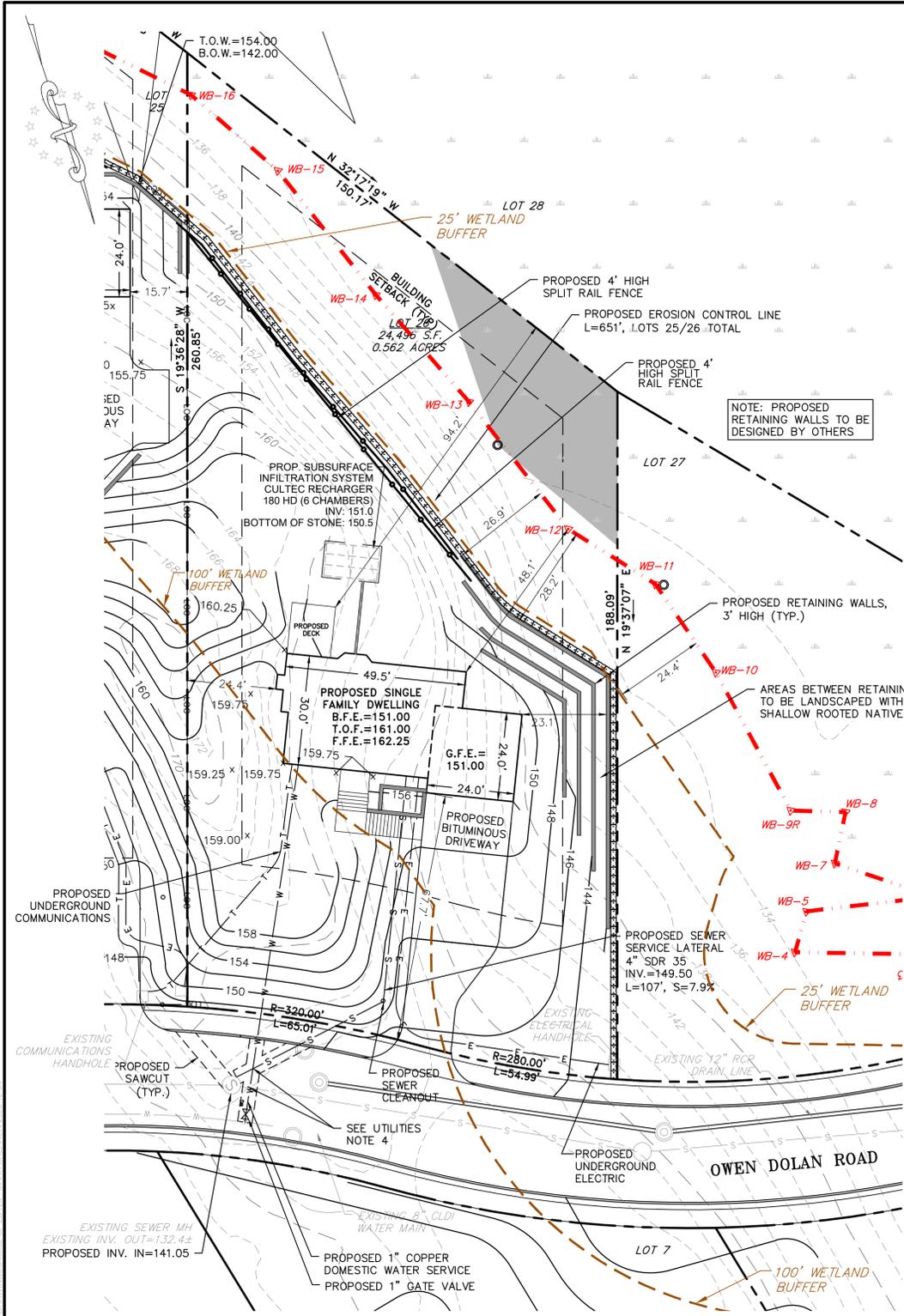


Table 2.3.3. 1982 Rawls Rates¹⁸

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

¹⁸ Rawls, Brakensiek and Saxton, 1982



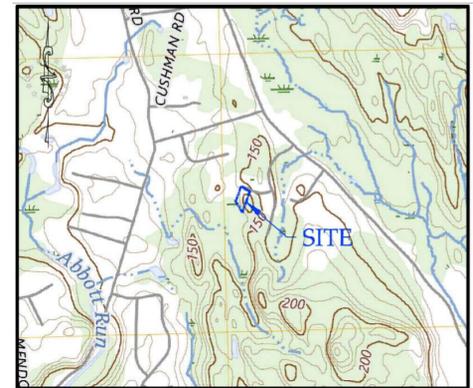
- GENERAL:**
- THE CONTRACTOR SHALL NOTIFY "DIGSAFE" (1-888-DIGSAFE) AT LEAST 72 HOURS (3 BUSINESS DAYS) BEFORE EXCAVATING.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS.
 - UPON AWARD OF CONTRACT, CONTRACTOR SHALL MAKE NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN NECESSARY PERMITS, PAY FEES, AND POST BONDS ASSOCIATED WITH THE WORK INDICATED ON THE DRAWINGS, IN THE SPECIFICATIONS, AND IN THE CONTRACT DOCUMENTS.
 - AREAS OUTSIDE THE LIMITS OF PROPOSED WORK DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED BY THE CONTRACTOR TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
 - IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER OR OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.

- LAYOUT & MATERIALS:**
- DIMENSIONS ARE FROM THE FACE OF CURB AND FACE OF BUILDING. UNLESS OTHERWISE NOTED.
 - CONCRETE BOUNDS AND ANY EXISTING PROPERTY LINE MONUMENTATION DISTURBED DURING CONSTRUCTION SHALL BE SET OR RESET BY A PROFESSIONAL LAND SURVEYOR.

- EXISTING CONDITIONS INFORMATION:**
- UNDERGROUND UTILITY LOCATION AS SHOWN HEREON ARE TAKEN FROM AVAILABLE RECORD AND FIELD INFORMATION AND ARE APPROXIMATE ONLY. BEFORE PLANNING ANY CONSTRUCTION, DIGSAFE AND THE VARIOUS UTILITY COMPANY ENGINEERING DEPARTMENTS SHOULD BE CONSULTED.
 - ELEVATIONS REFER TO NAVD 88.
 - ON-THE-GROUND SURVEY WAS COMPLETED BY CONECO ENGINEERS & SCIENTISTS.
 - THE WETLANDS BOUNDARY WAS APPROVED THROUGH AN ORDER OF CONDITIONS ISSUED ON JULY 11, 2006 BY THE NORTH ATTLEBORO CONSERVATION COMMISSION FOR DEP FILE NO. SE 243-0647.
 - THE CONSERVATION RESTRICTION BOUNDARY WAS TAKEN FROM "CONSERVATION RESTRICTION EASEMENT PLAN OF LAND," BY TILTON AND ASSOCIATES, INC. DATED AUGUST 25, 2006.
 - THE AREA WITHIN THE CONSERVATION RESTRICTION BOUNDARY PROVIDES HABITAT FOR THE TINY-FLOWERED BUTTERCUP (RANUNCULUS MICRANTHUS, PRIORITY HABITAT ID: PH 1085), WHICH IS LISTED AS "ENDANGERED" (NHESP TRACKING NUMBER: 04-16275).

- LANDSCAPING:**
- ALL AREAS CLEARED AND/OR DISTURBED SHALL BE BROUGHT TO WITHIN 4 INCHES OF FINAL GRADE AND FINISHED WITH 4 INCHES OF LOAM AND SEED EXCEPT WHERE OTHER FINISHES ARE PROPOSED (REFER TO PLANS).
 - CONTRACTOR IS RESPONSIBLE FOR REPLACING (IN KIND) ALL DEAD OR DYING PLANT MATERIAL FOR A PERIOD OF 2 YEARS AFTER INITIAL PLANTING.

- UTILITIES:**
- WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, OR EXISTING CONDITIONS DIFFER FROM THOSE SHOWN SUCH THAT THE WORK CANNOT BE COMPLETED AS INTENDED, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED IN WRITING TO THE OWNER'S REPRESENTATIVE FOR THE RESOLUTION OF THE CONFLICT. FAILURE TO PROVIDE OR PERFORM THE ABOVE PRIOR TO PERFORMING ANY WORK SHALL NOT BE GROUNDS FOR EXTRA PAYMENTS TO THE CONTRACTOR.
 - THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY, AND APPROVED BY, THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE, ELECTRIC, FIRE ALARM, ETC.). FINAL DESIGN LOADS AND LOCATIONS TO BE COORDINATED WITH OWNER AND ARCHITECT.
 - THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND SHALL BE RESPONSIBLE FOR PAYING FEES FOR POLE RELOCATION AND FOR THE ALTERATION AND ADJUSTMENT OF GAS, ELECTRIC, TELEPHONE, FIRE ALARM, AND ANY OTHER PRIVATE UTILITIES, WHETHER WORK IS PERFORMED BY CONTRACTOR OR BY THE UTILITY COMPANY.
 - CONTRACTOR SHALL LOCATE EXISTING WATER LINE IN FIELD AND SHALL EITHER INSTALL NEW SEWER WITH A MINIMUM OF 18" OF FACE-TO-FACE CLEARANCE UNDERNEATH EXISTING WATER LINE, OR CONCRETE ENCASE WATER LINE.
 - CONTRACTOR IS RESPONSIBLE FOR UTILITY TIE-INS. CONTRACTOR SHALL COORDINATE UTILITY TIE-INS WITH APPROPRIATE UTILITY PURVEYORS.



LOCATION MAP
SCALE: 1"=1000'

ZONING TABLE

	REQUIRED	PROVIDED
ZONE: R20		
USES: RESIDENTIAL		
LOTS		
MIN. AREA	20,000 S.F.	24,496 S.F.
MIN. FRONTAGE	120 FT	120.00 FT
BUILDINGS		
BUILDING LOT COVERAGE	25% MAX.	7.8 %
MIN. FRONT YARD	40 FT	67.7 FT
MIN. SIDE YARD	15 FT	24.4 FT
MIN. REAR YARD	15 FT	94.2 FT
MAX. BUILDING HEIGHT	2.5 STORIES	2 STORIES

LEGEND

---	PROPERTY LINE
- - - -	ABUTTER PROPERTY LINE
---140---	EXISTING MAJOR CONTOUR
---142---	EXISTING MINOR CONTOUR
---140---	PROPOSED MAJOR CONTOUR
---142---	PROPOSED MINOR CONTOUR
x142	PROPOSED SPOT ELEVATION
- - - -	EDGE OF WETLAND
- - - -	25' WETLAND BUFFER
- - - -	100' WETLAND BUFFER
~~~~~	EXISTING TREE LINE
=====	EDGE OF DRIVEWAY
=====	CURB LINE
=====	PROPOSED BUILDING
=====	PROPOSED WALKWAY
W - - - W	EXISTING WATER LINE
E - - - E	EXISTING UNDERGROUND UTILITIES
S - - - S	EXISTING SEWER LATERAL
W - - - W	PROPOSED WATER LINE
E/T/C - - - E/T/C	PROPOSED UNDERGROUND UTILITIES
S - - - S	PROPOSED SEWER LATERAL
⊙	EXISTING SEWER MANHOLE
⊙	DRAINAGE MANHOLE
⊙	DRAINAGE CATCH BASIN
⊙	PROPOSED GATE VALVE
⊙	PROPOSED STEPS
-----	EROSION CONTROL LINE
▲	WETLAND FLAG
▨	WETLAND AREA
B.F.E.	BASEMENT FLOOR ELEVATION
B.O.W.	BOTTOM OF WALL
F.F.E.	FIRST FLOOR ELEVATION
G.F.E.	GARAGE FLOOR ELEVATION
L	LENGTH
S	SLOPE
T.O.F.	TOP OF FOUNDATION
T.O.W.	TOP OF WALL
INV.	INVERT
Loc	LIMIT OF CLEARING

DEP FILE No. SE 243-1012

BY: SMO SMO

DESCRIPTION: REVISED PER PERMITS REVIEW & COMMISSION COMMENTS

DATE: 11/20/2025

REV: 1

DATE: 11/20/2025

REV: 2

FOR: PERMITTING SITE PLAN LOT 26 - 30 OWEN DOLAN ROAD

FORGE BUILDING GROUP - CHRISTINA ESTATES CUMBERLAND AVENUE, TOWN OF NORTH ATTLEBORO BRISTOL COUNTY, MASSACHUSETTS

INDEPENDENCE ENGINEERING LLC  
 161 EAST GROVE STREET, SUITE 3  
 MIDDLEBOROUGH, MASSACHUSETTS 02346  
 (508) 245-2608  
 INDEPENDENCE@INDEPENDENCEENGINEERING.COM  
 NEW JERSEY PENNSYLVANIA MASSACHUSETTS

GRAPHIC SCALE: 1" = 20'

PROJECT: 043-002

DATE: 08/11/2025

SCALE: 1" = 20'

DESIGNED: SMO

CHECKED: NES

NEIL E. SANDER CIVIL No. 48863

08/11/2025

C400

SHEET 1 OF 1

**Project Number:** 043-002  
**Project Name:** Christina Estates  
**Project Address:** North Attleboro  
**Client:** Forge Building  
 Lot 15

**Calculations by:** SMO  
**Date:** 12/9/2025  
**Checked by:** SMO  
**Checked Date:** 12/9/2025



**STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME**

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,584	0	0	1584
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT ³ )	0	46	0	0	46

**CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME**

65% OF IMPERVIOUS AREA	1030	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	130.1%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.77		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	36	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

**DRAWDOWN IN 72 HOURS CALCULATION**

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE  
 R_v = RECHARGE VOLUME  
 K = SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR  
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

**Subsurface Infiltration Facility South**

A= 73 SF  
 R_v= 46 CF  
 K= 0.52 INCHES/HOUR

DRAWDOWN TIME T=  $\frac{R_v}{K \times A}$  =

**14.5 HOURS TO EMPTY THE RECHARGE BMP**  
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

**PROJECT INFORMATION**

**Project Name:** Christina Estates  
**City:** North Attleboro  
**State / Province:** MA  
**Country:** USA

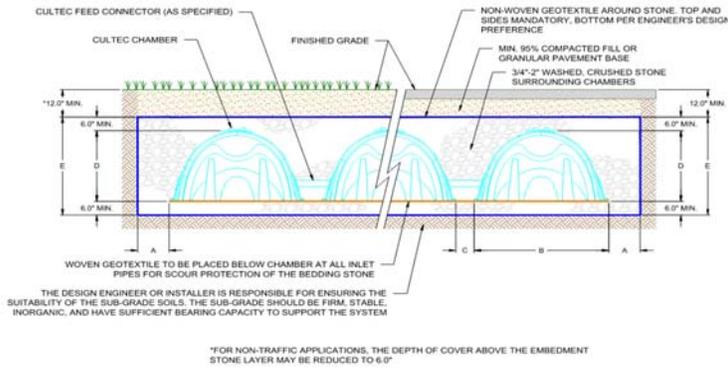
**Instructions:**

- Step 1: Enter Area of Impervious Cover in "Drainage Area" Cell
- Step 2: Enter Required Depth of Rainfall in "Rainfall Depth" Cell. Use NOAA's National Weather Service Precipitation Frequency Data Server (PFDS) Link to Rainfall Data Map if Required
- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

**System Input Parameters**

Drainage Area 1584 ft²  
 Rainfall Depth 0.35 in [Lookup Rainfall Data HERE](#)  
 Storage Required 46 ft³

**Typical System Cross-Section Detail**



		<b>Specification Table</b>		
		<b>Contactor 100HD</b>	<b>Recharger 180HD</b>	<b>Recharger 330XLHD</b>
<b>REF</b>	Bare Chamber Volume	1.87ft ³ /ft	3.45ft ³ /ft	7.46ft ³ /ft
		14.00 ft ³ /unit 105 gal	21.81 ft ³ /unit 163 gal	52.21 ft ³ /unit 391 gal
<b>A</b>	Stone Border Width (in)	12	12	12
<b>B</b>	Chamber Width (in)	36	36	52
<b>C</b>	Row Spacing (in)	6	6	6
<b>D</b>	Chamber Height (in)	12	20	30
<b>E</b>	Effective Depth (in)	24	32	42
	Chamber Length (ft)	8	7.33	8.5

**System Output Table**

Storage Required 46 ft³

Chamber Model (choose one)	No. of Chambers Required <i>units</i>	Minimum Installed Storage per Unit <i>ft³</i>	Storage Volume Provided <i>ft³</i>	Minimum Required Area <i>ft²</i>
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[->More information on residential drainage.](#)

Call CULTEC for cost estimates and system design.

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The user of this software must select input values suitable to describe their specific engineering situation.

The information presented in the computer output is for review, interpretation, application, and approval by a qualified engineer who must assume full responsibility for verifying that all output is appropriate and correct.

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Reconfiguring the bed layout may effect actual storage provided.

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[Email Technical Services](#)

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**Project Number:** 043-002  
**Project Name:** Christina Estates  
**Project Address:** North Attleboro  
**Client:** Forge Building  
 Lot 25 & 26

**Calculations by:** SMO  
**Date:** 12/9/2025  
**Checked by:** SMO  
**Checked Date:** 12/9/2025



**STORMWATER MANAGEMENT STANDARD 3 - RECHARGE VOLUME**

	HYDROLOGIC SOIL GROUP				TOTAL
	A	B	C	D	
IMPERVIOUS AREA (S.F.)	0	1,905	0	0	1905
INCHES OF RUNOFF TO BE RECHARGED	0.60	0.35	0.25	0.10	
REQUIRED RECHARGE VOLUME (FT ³ )	0	56	0	0	56

**CAPTURE AREA ADJUSTMENT - ADJUSTED MINIMUM REQUIRED RECHARGE VOLUME**

65% OF IMPERVIOUS AREA	1238	SF	A MINIMUM OF 65% OF IMPERVIOUS AREA MUST BE DIRECTED TO SITE RECHARGE BMPS	
TOTAL IMPERVIOUS SITE AREA DIRECTED TO RECHARGE BMP	2061	SF	108.2%	CALCULATED PERCENTAGE OF TOTAL IMPERVIOUS AREA
RATIO OF TOTAL IMPERVIOUS AREA / IMPERVIOUS AREA DIRECTED TO RECHARGE	0.92		CALCULATED RATIO IS APPLIED TO REQUIRE RECHARGE VOLUME TO DETERMINE ADJUSTED VOLUME	
ADJUSTED REQUIRED RECHARGE VOLUME	51	CF	RATIO OF IMPERVIOUS AREA x REQUIRED RECHARGE VOLUME	
PROPOSED RECHARGE VOLUME	0	CF	PER HYDROCAD CALCULATIONS FOR 2-YEAR STORM	

**DRAWDOWN IN 72 HOURS CALCULATION**

A = BOTTOM AREA OF PROPOSED LEACHING STRUCTURE  
 R_v = RECHARGE VOLUME  
 K = SATURATED HYDRAULIC CONDUCTIVITY (RAWLS RATE) = 0.52 INCHES/HOUR  
 VALUE IS BASED ON B HYDRAULIC SOIL GROUP

**Subsurface Infiltration Facility South**

A= 73 SF  
 R_v= 56 CF  
 K= 0.52 INCHES/HOUR

DRAWDOWN TIME T =  $\frac{R_v}{K \times A}$  = 17.6 HOURS TO EMPTY THE RECHARGE BMP  
 +/-72 HOURS, SO DRAWDOWN IS OK

Date: December 9, 2025

**PROJECT INFORMATION**

**Project Name:** Christina Estates  
**City:** North Attleboro  
**State / Province:** MA  
**Country:** USA

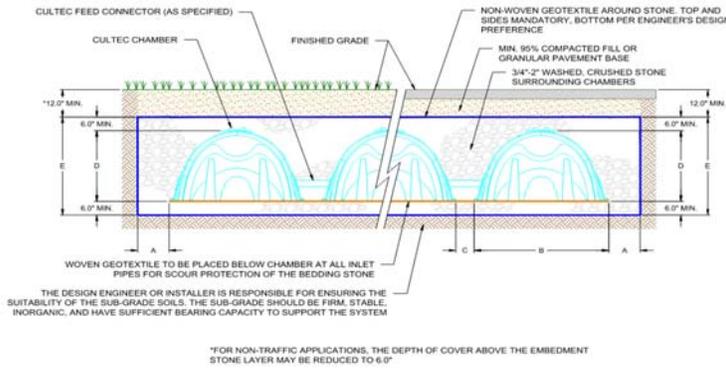
**Instructions:**

- Step 1: Enter Area of Impervious Cover in "Drainage Area" Cell
- Step 2: Enter Required Depth of Rainfall in "Rainfall Depth" Cell. Use NOAA's National Weather Service Precipitation Frequency Data Server (PFDS) Link to Rainfall Data Map if Required
- Step 3: Reference Output Table to Determine Number of Chambers and System Area Required for Each Available Chamber Model

**System Input Parameters**

Drainage Area 1905 ft²  
 Rainfall Depth 0.35 in [Lookup Rainfall Data HERE](#)  
 Storage Required 56 ft³

**Typical System Cross-Section Detail**



		Specification Table		
		Contactor 100HD	Recharger 180HD	Recharger 330XLHD
REF	Bare Chamber Volume	1.87ft ³ /ft 14.00 ft ³ /unit 105 gal	3.45ft ³ /ft 21.81 ft ³ /unit 163 gal	7.46ft ³ /ft 52.21 ft ³ /unit 391 gal
	A	Stone Border Width (in)	12	12
B	Chamber Width (in)	36	36	
C	Row Spacing (in)	6	6	
D	Chamber Height (in)	12	20	
E	Effective Depth (in)	24	32	
	Chamber Length (ft)	8	7.33	

**System Output Table**

Storage Required 56 ft³

Chamber Model (choose one)	No. of Chambers Required <i>units</i>	Minimum Installed Storage per Unit <i>ft³</i>	Storage Volume Provided <i>ft³</i>	Minimum Required Area <i>ft²</i>
Contactor 100HD or Recharger 180HD or Recharger 330XLHD	2	32.00	64	60
	2	40.00	80	50
	1	84.00	84	37

[>>More information on residential drainage.](#)

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Search

← → Clear Search

Basic Search

Enter keywords

Advanced Search

← → Clear Search

Map Unit Legend

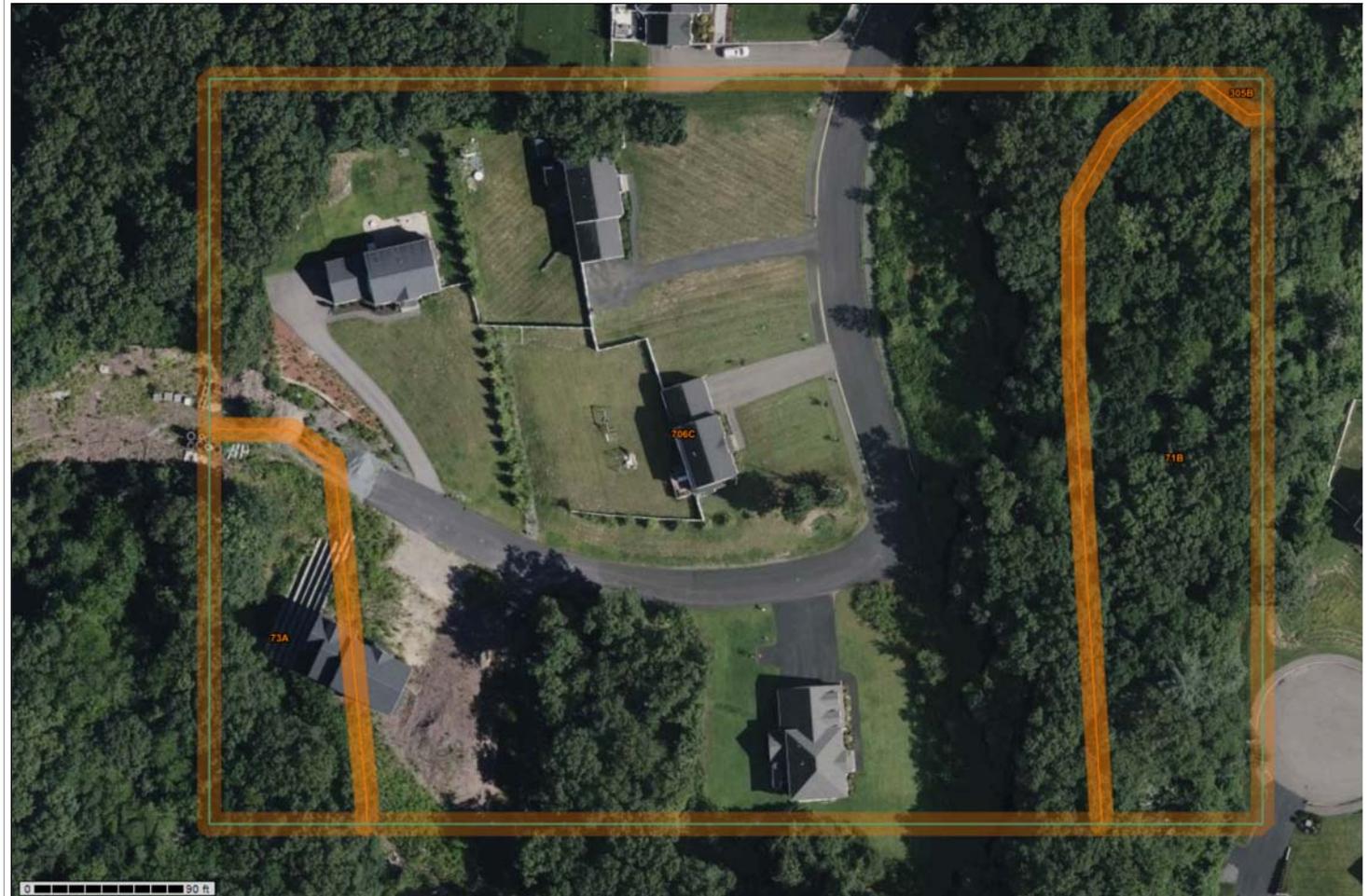
**Bristol County, Massachusetts, Northern Part (MA602)**

Bristol County, Massachusetts,  
Northern Part (MA602)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
71B	Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony	1.1	16.2%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	0.5	7.0%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	0.0	0.2%
706C	Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes	5.0	76.6%
<b>Totals for Area of</b>		<b>6.6</b>	<b>100.0%</b>

Soil Map

Scale (not to scale)



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

## Bristol County, Massachusetts, Northern Part

### 73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

#### Map Unit Setting

*National map unit symbol:* 2w695

*Elevation:* 0 to 1,580 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

*Whitman, extremely stony, and similar soils:* 81 percent

*Minor components:* 19 percent

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

#### Description of Whitman, Extremely Stony

##### Setting

*Landform:* Hills, ground moraines, depressions, drainageways, drumlins

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

##### Typical profile

*Oi - 0 to 1 inches:* peat

*A - 1 to 10 inches:* fine sandy loam

*Bg - 10 to 17 inches:* gravelly fine sandy loam

*Cdg - 17 to 61 inches:* fine sandy loam

##### Properties and qualities

*Slope:* 0 to 3 percent

*Surface area covered with cobbles, stones or boulders:* 9.0 percent

*Depth to restrictive feature:* 7 to 38 inches to densic material

*Drainage class:* Very poorly drained

*Runoff class:* Negligible

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)

*Depth to water table:* About 0 to 6 inches

*Frequency of flooding:* None

*Frequency of ponding:* Frequent

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 3.0 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Ecological site:* F144AY041MA - Very Wet Till Depressions

*Hydric soil rating:* Yes

### **Minor Components**

#### **Ridgebury, extremely stony**

*Percent of map unit:* 10 percent

*Landform:* Hills, ground moraines, depressions, drainageways, drumlins

*Landform position (two-dimensional):* Footslope, toeslope

*Landform position (three-dimensional):* Base slope, head slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### **Scarboro**

*Percent of map unit:* 5 percent

*Landform:* Outwash deltas, depressions, drainageways, outwash terraces

*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### **Swansea**

*Percent of map unit:* 3 percent

*Landform:* Bogs, marshes, swamps

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

#### **Woodbridge, extremely stony**

*Percent of map unit:* 1 percent

*Landform:* Hills, ground moraines, drumlins

*Landform position (two-dimensional):* Summit, backslope, footslope

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Hydric soil rating:* No

## **Data Source Information**

Soil Survey Area: Bristol County, Massachusetts, Northern Part

Survey Area Data: Version 18, Sep 5, 2025

## Bristol County, Massachusetts, Northern Part

### 706C—Charlton-Rock outcrop-Paxton complex, 3 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2x1k5  
*Elevation:* 0 to 340 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 145 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Charlton, extremely stony, and similar soils:* 35 percent  
*Rock outcrop:* 25 percent  
*Paxton, extremely stony, and similar soils:* 20 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Charlton, Extremely Stony

##### Setting

*Landform:* Hills, ridges  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Side slope, crest  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex  
*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

##### Typical profile

*Oe - 0 to 2 inches:* moderately decomposed plant material  
*A - 2 to 4 inches:* fine sandy loam  
*Bw - 4 to 27 inches:* gravelly fine sandy loam  
*C - 27 to 65 inches:* gravelly fine sandy loam

##### Properties and qualities

*Slope:* 3 to 15 percent  
*Surface area covered with cobbles, stones or boulders:* 9.0 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 low to high (0.14 to 14.17 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:* Moderate (about 8.7 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* B

*Ecological site:* F144AY034CT - Well Drained Till Uplands

*Hydric soil rating:* No

### **Description of Rock Outcrop**

#### **Setting**

*Landform:* Hills, ridges

*Parent material:* Igneous and metamorphic rock

#### **Typical profile**

*R - 0 to 79 inches:* bedrock

#### **Properties and qualities**

*Slope:* 3 to 15 percent

*Depth to restrictive feature:* 0 inches to lithic bedrock

*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:* No

### **Description of Paxton, Extremely Stony**

#### **Setting**

*Landform:* Hills, ground moraines, drumlins

*Landform position (two-dimensional):* Summit, shoulder, backslope

*Landform position (three-dimensional):* Crest, side slope

*Down-slope shape:* Convex, linear

*Across-slope shape:* Linear, convex

*Parent material:* Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

#### **Typical profile**

*Oe - 0 to 2 inches:* moderately decomposed plant material

*A - 2 to 10 inches:* fine sandy loam

*Bw1 - 10 to 17 inches:* fine sandy loam

*Bw2 - 17 to 28 inches:* fine sandy loam

*Cd - 28 to 67 inches:* gravelly fine sandy loam

#### **Properties and qualities**

*Slope:* 3 to 15 percent

*Surface area covered with cobbles, stones or boulders:* 9.0 percent

*Depth to restrictive feature:* 20 to 43 inches to densic material

*Drainage class:* Well drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.14 in/hr)  
*Depth to water table:* About 18 to 37 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 4.8 inches)

#### **Interpretive groups**

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* C  
*Ecological site:* F144AY007CT - Well Drained Dense Till Uplands  
*Hydric soil rating:* No

#### **Minor Components**

##### **Montauk, extremely stony**

*Percent of map unit:* 7 percent  
*Landform:* Recessional moraines, hills, ground moraines, drumlins  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Crest, side slope  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

##### **Woodbridge, extremely stony**

*Percent of map unit:* 5 percent  
*Landform:* Hills, ground moraines, drumlins  
*Landform position (two-dimensional):* Summit, backslope, footslope  
*Landform position (three-dimensional):* Crest, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

##### **Gloucester, extremely stony**

*Percent of map unit:* 4 percent  
*Landform:* Ground moraines  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Side slope, crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

##### **Ridgebury, extremely stony**

*Percent of map unit:* 4 percent  
*Landform:* Hills, ground moraines, depressions, drainageways, drumlins  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope, head slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave

*Hydric soil rating: Yes*

## **Data Source Information**

Soil Survey Area: Bristol County, Massachusetts, Northern Part  
Survey Area Data: Version 18, Sep 5, 2025

Attention must be given to ensure consistency in units. In particular, the Target Depth Factors must be converted to feet.

NRCS HYDROLOGIC SOIL TYPE	APPROX. SOIL TEXTURE	TARGET DEPTH FACTOR (F)
A	sand	<b>0.6-inch</b>
B	loam	<b>0.35-inch</b>
C	silty loam	<b>0.25-inch</b>
D	clay	<b>0.1-inch</b>

Table 2.3.2: Recharge Target Depth by Hydrologic Soil Group

When a site contains multiple Hydrologic Soil Groups, determine the *Required Recharge Volume* for each impervious area by Hydrologic Soil Group and then add the volumes together.

*Example:* Assume a ten (10) acre site. 5.0 acres are proposed to be developed for a retail use. A section of the entrance roadway is to be bridged over a stream that is classified as land under water. As such, the bridging is subject to the Wetlands Protection Act Regulations, and the Stormwater Management Standards apply to stormwater runoff from all proposed roads, parking areas, and rooftops. Of the 5.0 acres proposed to be developed, 2 acres of impervious surfaces are proposed atop Hydrologic Soil Group (HSG) “A” soils, 1 acre of impervious surfaces atop HSG “B” soil, 1.5 acres of impervious surfaces atop HSG “C” soil, and 0.5 acres are proposed to be landscaped area. The remaining 5.0 acres, located on HSG “A” soil, are proposed to remain forested. Determine the *Required Recharge Volume*.

*Solution:* The *Required Recharge Volume* is determined only for the impervious surfaces. The 5.0-acre forested area and the 0.5-acre landscaped area are not impervious areas. Although converted from forest, landscaped area is pervious area for purposes of Standard 3. Use *Equation (1)* to determine the *Required Recharge Volume* for each Hydrologic Soil Group covered by impervious area. Add together the *Required Recharge Volumes* determined for each HSG.

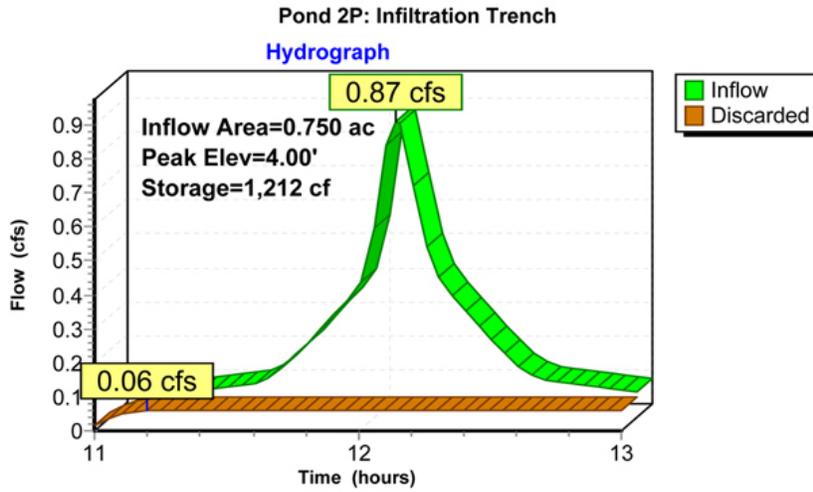
$$Rv = F \times \text{impervious area}$$

$$Rv = [(F_{\text{HSG "A"}}) (\text{Area}_1)] + [(F_{\text{HSG "B"}}) (\text{Area}_2)] + [(F_{\text{HSG "C"}}) (\text{Area}_3)] + [(F_{\text{HSG "D"}}) (\text{Area}_4)] \text{ Equation (2)}$$

$$Rv = [(0.6\text{-in}/12)(2 \text{ acres})] + [(0.35\text{-in}/12)(1 \text{ acre})] + [(0.25\text{-in}/12)(1.5 \text{ acres})] + [(0.1\text{-in}/12)(0 \text{ acres})]$$

$$Rv = 0.1605 \text{ acre-feet}$$

$$Rv = 0.1605 \text{ acre-feet} \times 43560 \text{ square feet/acre-feet} = 6,991 \text{ cubic feet or } 258.9 \text{ cubic yards}$$



**Table 2.3.3. 1982 Rawls Rates¹⁸**

Texture Class	NRCS Hydrologic Soil Group (HSG)	Infiltration Rate Inches/Hour
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	B	1.02
Loam	B	0.52
Silt Loam	C	0.27
Sandy Clay Loam	C	0.17
Clay Loam	D	0.09
Silty Clay Loam	D	0.06
Sandy Clay	D	0.05
Silty Clay	D	0.04
Clay	D	0.02

¹⁸ Rawls, Brakensiek and Saxton, 1982



**Property Information**

**Property ID** 22-368  
**Location** S WASHINGTON ST  
**Owner** INHABITANTS OF TOWN OF NORTH ATTLEBOROUGH



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

Town of North Attleborough, MA makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated June 2025  
Data updated June 2025

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

## Map Theme Legends

### MassGIS: National Wetlands Inventory

	ESTUARINE AND MARINE DEEPWATER
	ESTUARINE AND MARINE WETLAND
	FRESHWATER EMERGENT WETLAND
	FRESHWATER FORESTED/SHRUB WETLAND
	FRESHWATER POND
	LAKE
	RIVERINE
	OTHER

[MassGIS: National Wetlands Inventory, Nov 2020](#)

### MassGIS: DEP Wetlands (2005)

	SHORELINE
	HYDROLOGIC CONNECTION
	MEAN LOW WATER LINE
	WETLAND LIMIT
	CLOSURE LINE
	RESERVOIR (WITH PWSID)
	MARSH/BOG
	WOODED MARSH
	CRANBERRY BOG
	SALT MARSH
	TIDAL FLATS
	BEACH/DUNE

[MassGIS: MassDEP Wetlands \(2005\)](#)



Town of North Attleborough  
**CONSERVATION COMMISSION**

---

**ADMINISTRATIVE REVIEW APPLICATION**

**APPLICANT INFORMATION** *(To be completed by Applicant and/or Representative)*

Applicant Name: _____ Date: _____

Mailing Address: _____

Town/State: _____

Phone: _____

Email: _____

Representative Name (if any): _____

Phone: _____

**PROJECT / TREE REMOVAL LOCATION**

Project Location (Street Address): _____ Map/Parcel: _____

Property Parcel Number (if different): Map: _____ Lot: _____

*Please attach a map showing the exact location of proposed work and/or trees to be removed.*

---

**DESCRIPTION OF PROJECT**

Describe Proposed Work *(attach additional pages if needed)*:

_____

_____

Describe Resource Area Affected *(e.g., pond, marsh, buffer zone)*:

_____

Tree Removal Details *(if applicable)*

- Total Number of Trees to be Removed: _____
- Tree Diameter (DBH): _____
- Tree Species and Reason for Removal:

**REQUIRED ATTACHMENTS FOR TREE REMOVAL REQUESTS** *(Check all that apply)*

- Photograph of entire tree silhouette
- Photograph of damaged area on tree (if applicable)
- Replacement tree details (if applicable)
- Emergency narrative signed by property owner (if applicable)
- Tree removal and replacement list (if applicable)

---

**APPLICANT CERTIFICATION**

I hereby certify that the information provided is accurate and complete to the best of my knowledge.

Applicant Signature: _____ Date: _____

Owner's Signature (if different): _____ Date: _____

## **TO BE COMPLETED BY CONSERVATION ADMINISTRATOR**

**Date of Site Visit:** _____

**Pictures Attached:**     YES     NO

### Buffer Zone / Work Area Review

- Distance from Limit of Work to Resource Area (ft): _____
- Area of Buffer Zone Affected (sq. ft): _____
- Work Limit Established?         YES     NO

---

### **PROJECT QUALIFICATION CHECKLIST**

- |                                                                                                |                                                                 |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <input type="checkbox"/> No work is proposed in any Resource Area (WPA 310 CMR / Local Bylaws) | <input type="checkbox"/> Tree removal on property               |
| <input type="checkbox"/> Work is located within the 50'-100' Buffer Zone                       | <input type="checkbox"/> Arborist Report regrading Tree removal |
| <input type="checkbox"/> No adverse impact to state-listed wildlife habitat                    |                                                                 |
| <input type="checkbox"/> Proposed work will not indirectly adversely impact a Resource Area    |                                                                 |
| <input type="checkbox"/> Ordinary (not substantial) repair on a single-family dwelling         |                                                                 |

*If any items above are unchecked, provide explanation:*

---

### **TREE REMOVAL DETERMINATION**

**APPROVED** – The following conditions shall apply:

**DENIED**

*If approved, tree removal must occur within **45 days**. The Conservation Administrator reserves the right to modify or revoke this approval and will notify the applicant verbally and/or in writing.*

---

### **ADMINISTRATIVE REVIEW DETERMINATION**

- It is my understanding and professional opinion that the proposed work does not adversely impact the resource area and does not violate 310 CMR 10.00–10.99.
- Despite qualifying for Administrative Review, the proposed work may alter a protected area and therefore requires the filing of a Request for Determination of Applicability or Permit Application.

**Conservation Administrator Signature:** _____

**Date:** _____

***THIS ADMINISTRATIVE REVIEW PERMIT IS VALID FOR ONE YEAR FROM THE DATE RATIFIED***

# Town of North Attleborough

## Conservation Commission – Administrative Review Policy

---

### 1. Policy Intent

It is the intent of this policy to provide a clear and efficient process for reviewing minor projects while upholding the protection afforded by the Massachusetts Wetlands Protection Act (M.G.L. c. 131, §40) and its implementing regulations (310 CMR 10.00), and the Massachusetts Stormwater Standards.

### 2. Purpose

The North Attleborough Conservation Commission has established this Administrative Review Policy to streamline permitting for small-scale projects that pose no threat to the interests protected under the Wetlands Protection Act or local stormwater bylaws. Such projects, due to their limited scope and negligible impact, do not require a formal public hearing before the Commission. Instead, they may be reviewed and approved by the Conservation Administrator. This process promotes efficiency while maintaining compliance with all applicable environmental protections.

### 3. Applicability

- Conservation staff are available to assist applicants in determining whether a Request for Determination of Applicability (RDA) or Notice of Intent (NOI) is required.
- If eligible for Administrative Review, applicants must complete an Administrative Review Form. Staff will review the form with the applicant, and, if approved, the Conservation Administrator will sign and validate the form.
- A \$25.00 fee is due at the time of signing. No fee is charged if a formal filing is required.
- Approvals are valid for **one (1) year from the date of issuance** unless otherwise specified.
- The Conservation staff may inspect the property to verify the work is complete within the scope of the approved project.
- Any work beyond the scope of the Administrator Review Decision shall be subject to enforcement action.

### 4. Review Procedures

Applicants must submit:

- A description of the proposed work,
- A sketch or site plan (GIS maps may be provided by staff if needed), and
- Photographs of the site (required for tree removal; strongly encouraged for other projects).

When reviewing projects, the following criteria will be considered:

- Is the work within 100 ft of a wetland or 50 ft of a resource area?
- Is excavation or foundation work proposed?
- Will soil be removed, added, or regraded?
- Will vegetation or trees be removed (photos required)?
- Is planting proposed (species list required)?
- Is invasive species removal or herbicide use proposed?
- Will impervious surface area be increased? If so, does it remain below stormwater thresholds?

A site visit and staking/flagging may be required.

### 5. Eligible Activities

#### A. Minor Projects

May be approved if within the 100-ft buffer zone, provided impacts are minimized and stabilization measures are used:

1. Fencing, stonewalls, or cordwood stacks in existing lawn  $\geq 25$  ft from wetlands, provided wildlife passage is maintained.
2. Planting of native trees, shrubs, or groundcover (not turf lawn).

3. In-kind replacement of residential driveways, without expansion. *Permeable materials are encouraged where practicable.*
4. In-kind replacement of decks on existing or helical pier footings (no excavation). Limited expansions may be considered  $\geq 50$  ft from wetlands. Projects larger than these thresholds require an RDA/NOI.
5. Second-story additions or dormers within existing roof area (roof expansion  $\leq 100$  sq. ft.). Larger expansions require an RDA/NOI.
6. Small accessory uses (sheds, porous patios, playgrounds  $\leq 100$  sq. ft.),  $\geq 50$  ft from wetlands, with erosion controls. Larger projects require an RDA/NOI.
7. Conversion of impervious surfaces to native vegetation (not lawns), with erosion controls.
8. Installation of irrigation conduit within existing lawns (no new wells within jurisdictional areas).

**Cumulative Impact Note:** Properties adding more than 500 sq. ft. of new impervious surface through multiple small projects must file an RDA/NOI.

#### B. Tree Work

1. Healthy Trees – Removal or pruning of up to 3 healthy trees, with 1:1 replacement of native trees within the buffer zone or another approved area. Photographs of each tree must be submitted. Replacement species should provide comparable canopy/cover value where feasible.
2. Risk Assessed, Dying, or Diseased Trees – Removal may be approved if they pose imminent risk to people, structures, or utilities. Requires a letter from a Certified/Qualified Arborist.
3. Storm-Damaged Trees – May be flush cut with dated photographs showing the storm event and damage.
 

Conditions of Approval

  - Stumps must remain unless otherwise authorized.
  - Replacement trees must be native; planting must be documented with photos.
  - Deviations from approved work require a new filing.
  - Site visit required from Conservation staff.

#### **6. Activities Not Eligible for Administrative Review**

The following require an RDA or NOI:

- Work within a wetland resource area (as defined in 310 CMR 10.00).
- Excavation or heavy equipment in a resource area.
- Regrading, filling, or foundation work.
- Uprooting or root grappling of trees.
- Mowing or clear-cutting vegetation.
- Construction of decks, stairs, walkways, or hardscaping within 0–50 ft of wetlands (unless in existing hardscape area, at Conservation Administrator’s discretion).
- Removal of more than 3 healthy trees.
- Projects creating greater than 500 sq. ft. of new impervious area.

#### **7. Filing & Decision Procedure**

1. Submit a completed Administrative Review Form with required documentation. Incomplete applications will delay processing.
2. A site visit may be scheduled by the Conservation Staff.
3. The Conservation Administrator will issue a written decision (by email):
  - a. Approval: includes conditions.
  - b. Denial: with instructions for filing an RDA or NOI.

**TOWN OF NORTH ATTLEBOROUGH  
WETLANDS PROTECTION BYLAW  
1/6/2025**

**SECTION 1. PURPOSE**

The purpose of this bylaw is to protect the wetlands, water resources, flood prone areas, and adjoining upland areas in the Town of North Attleborough by controlling activities deemed by the Conservation Commission likely to have a significant or cumulative effect on resource area values, including but not limited to the following: public or private water supply, groundwater supply, flood control, erosion and sedimentation control, storm damage prevention, water quality, prevention and control of pollution, fisheries, wildlife habitat, rare species habitat including rare plant and animal species, agriculture, and recreation values, deemed important to the community (*collectively, the “resource area values protected by this bylaw”*).

This bylaw is intended to utilize the Home Rule authority of this municipality so as to protect the resource areas under the Wetlands Protection Act (G.L. Ch.131 §40; the Act) to a greater degree, to protect additional resource areas beyond the Act recognized by the Town as significant, to protect all resource areas for their additional values beyond those recognized in the Act, and to impose in local regulations and permits additional standards and procedures stricter than those of the Act and regulations thereunder (310 CMR 10.00), subject, however, to the rights and benefits accorded to agricultural uses and structures of all kinds under the laws of the Commonwealth and other relevant bylaws of the Town of North Attleborough.

**SECTION 2. JURISDICTION**

Except as permitted by the Conservation Commission no person shall commence to remove, fill, dredge, build upon, degrade, discharge into, or otherwise alter the following resource areas (collectively the “resource areas protected by this bylaw”):

- any freshwater wetlands, marshes, wet meadows, bogs, swamps, vernal pools, banks, reservoirs, lakes, ponds as defined in this bylaw, and lands adjoining these resource areas out to a distance of 100 feet, known as the buffer zone;
- lands under water bodies, intermittent streams, brooks and creeks, and lands adjoining these resource areas out to a distance of 100 feet;
- lands subject to flooding or inundation by groundwater or surface water;
- perennial rivers, streams, brooks and creeks; lands adjoining these resource areas out to a distance of 200 feet, known as the riverfront area

Said resource areas shall be protected whether or not they border surface waters. The jurisdiction of this bylaw shall not extend to uses and structures of agriculture that enjoy the rights and privileges of laws and regulations of the Commonwealth governing agriculture, including work performed for normal maintenance or improvement of land in agricultural or aquacultural uses as defined by the Wetlands Protection Act regulations, found at 310 CMR 10.04.

### SECTION 3. EXEMPTIONS AND EXCEPTIONS

- A. The applications and permits required by this bylaw shall not be required for work performed for normal maintenance or improvement of land in agricultural and aquacultural use as defined by the Wetlands Protection Act regulations at 310 CMR 10.04.
- B. The applications and permits required by this bylaw shall not be required for maintaining, repairing, or replacing, but not substantially changing or enlarging, an existing and lawfully located structure or facility used in the service of the public to provide electric, gas, water, sewer, telephone, telegraph, or other telecommunication services, provided that written notice has been given to the Conservation Commission prior to commencement of work, and provided that the work conforms to any performance standards and design specifications in regulations adopted by the Commission.
- C. The applications and permits required by this bylaw shall not be required for emergency projects necessary for the protection of the health and safety of the public, provided that the work is to be performed by or has been ordered to be performed by an agency of the Commonwealth or a political subdivision thereof; provided that advance notice, oral or written, has been given to the Commission prior to commencement of work or within 24 hours after commencement; provided that the Commission or its agent certifies the work as an emergency project; provided that the work is performed only for the time and place certified by the Commission for the limited purposes necessary to abate the emergency; and provided that within 21 days of commencement of an emergency project a permit application shall be filed with the Commission for review as provided by this bylaw. Upon failure to meet these and other requirements of the Commission, the Commission may, after notice and a public hearing, revoke or modify an emergency project approval and order restoration and mitigation measures.
- D. The following minor activities within the buffer zone and outside any other resource area protected by this bylaw (*except the 200-foot riverfront area*) are exempt from the requirements of this bylaw:
  - (1) Unpaved pedestrian walkways for private use.
  - (2) Fencing, provided it will not constitute a barrier to wildlife movement or encroach into the 25 foot no disturbance zone (see Section 6.A); stonewalls; stacks of cordwood.
  - (3) Vista pruning provided the activity is located more than 50 feet from the mean annual high-water line within a riverfront area or from a resource area protected by this bylaw, whichever is farther. (Pruning of landscaped areas is not subject to jurisdiction under this bylaw):
  - (4) Plantings of native species of trees, shrubs, or groundcover, but excluding turf lawns;
  - (5) The conversion of lawn to uses accessory to residential structures such as decks, sheds, patios, and above ground pools, provided the activity is located more than 50 feet from the mean annual high-water line within the riverfront area or from a resource area protected by this bylaw, whichever is farther, and erosion and sedimentation controls are implemented during construction. The conversion of such accessory uses to lawn is also allowed. (Mowing of lawns is not subject to jurisdiction under this bylaw);
  - (6) The conversion of impervious to vegetated surfaces, provided erosion and sedimentation controls are implemented during construction, and;

- (7) Activities that are temporary in nature, have insignificant impacts, and are necessary for planning and design purposes (e.g. installation of monitoring wells, exploratory borings, sediment sampling and surveying).

Other than stated in this bylaw, the exceptions provided in the Wetlands Protection Act (G.L. Ch. 131 §40) and regulations (310 CMR 10.00) shall not apply under this bylaw.

#### **SECTION 4. APPLICATIONS AND FEES**

- A. Written application shall be filed with the Conservation Commission to perform activities affecting resource areas protected by this bylaw. The permit application shall include such information and plans as are deemed necessary by the Commission to describe proposed activities and their effects on the resource areas protected by this bylaw. No activities shall commence without receiving and complying with a permit issued pursuant to this bylaw.
- B. The Commission in an appropriate case may accept as the application and plans under this bylaw any application and plans filed under the Wetlands Protection Act (G.L. Ch. 131 §40) and regulations (310 CMR 10.00), but the Commission is not obliged to do so. Any person desiring to know whether or not a proposed activity or an area is subject to this bylaw may in writing request a determination from the Commission. Such a Request for Determination of Applicability (RDA) or Abbreviated Notice of Resource Area Delineation (ANRAD) filed under the Act shall include information and plans as are deemed necessary by the Commission.
- C. At the time of an application, the applicant shall pay a filing fee payable to the Town of North Attleboro. The fee is in addition to that required by the Wetlands Protection Act and regulations. No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth. The fee schedule is as follows:

Permit Application.....	\$100.00
Request for Determination.....	\$25.00

- D. Pursuant to G.L. Ch. 44 §53G and regulations promulgated by the Commission, the Commission may impose reasonable fees upon applicants for the purpose of securing outside consultants including engineers, wetlands scientists, wildlife biologists or other experts in order to aid in the review of proposed projects. This fee is called the “consultant fee”. The specific consultant services may include, but are not limited to, performing or verifying the accuracy of resource area survey and delineation; analyzing resource area functions and values, including wildlife habitat evaluations, hydrogeological and drainage analysis. The exercise of discretion by the Commission in making its determination to require the payment of a consultant fee shall be based on its reasonable finding that additional information acquirable only through outside consultants would be necessary for making an objective decision.

Such funds shall be deposited with the town treasurer, who shall create an account specifically for this purpose. Additional consultant fees may be requested where the requisite review is more expensive than originally calculated or where new information requires additional consultant

services. Only costs relating to consultant work done in connection with a project for which a consultant fee has been collected shall be paid from this account, and expenditures may be made at the sole discretion of the Commission. Any unused portion of the consultant fee shall be returned to the applicant by a vote of the Commission after completion of the consultant review.

Any consultant hired under this provision shall be selected by, and report exclusively to, the Commission. The Commission shall provide applicants with written notice of the selection of a consultant, identifying the consultant, the amount of the fee to be charged to the applicant, and a request for payment of that fee. Notice shall be deemed to have been given on the date it is mailed or delivered. The applicant may withdraw the application or request within five (5) business days of the date notice is given without incurring any costs or expenses. The entire fee must be received before the initiation of consulting services. Failure by the applicant to pay the requested consultant fee within ten (10) business days of the request for payment may be cause for the Commission to declare the application administratively incomplete and deny the permit without prejudice, except in the case of an appeal. The Commission shall inform the applicant and Department of Environmental Protection (DEP) of such a decision in writing. The applicant may appeal the selection of an outside consultant to the Board of Selectmen, who may disqualify the consultant only on the grounds that the consultant has a conflict of interest or is not properly qualified. The minimum qualifications shall consist of either an educational degree or three or more years of practice in the field at issue, or a related field. The applicant shall make such an appeal in writing, and must be received within ten (10) business days of the date that request for consultant fees was made by the Commission. Such appeal shall extend the applicable time limits for action upon the application. Any applicant aggrieved by the imposition of, or the size of, the consultant fee, or any act related thereto, may appeal according to the provisions of the Massachusetts General Laws.

## **SECTION 5. NOTICE AND HEARINGS**

- A. Any person filing a permit or other application or RDA or ANRAD or other request with the Conservation Commission at the same time shall give written notice thereof, by certified mail (return receipt requested), certificates of mailing or hand delivered, to all abutters and any property owner within 100 feet of the property line of the land where the activity is proposed at their mailing addresses shown on the most recent applicable tax list of the assessors. This requirement shall include owners of land directly opposite on any public or private street or way, in another municipality or across a body of water, not unreasonably distant from the project site. The notice shall state a brief description of the project or other proposal and the date of any Commission hearing or meeting date if known. The notice to abutters also shall include a copy of the application or request, with plans, or shall state where copies may be examined and obtained by abutters. An affidavit of the person providing such notice, with a copy of the notice mailed or delivered, shall be filed with the Commission. When a person requesting a determination is other than the owner, the request, the notice of the hearing and the determination itself shall be sent by the Commission to the owner as well as to the person making the request.
- B. The Commission shall conduct a public hearing on any permit application, RDA, or ANRAD with written notice given at the expense of the applicant, at least five business days prior to the hearing, in a newspaper of general circulation in the municipality. The Commission shall commence the public

hearing within 21 days from receipt of a completed permit application, RDA, or ANRAD unless an extension is authorized in writing by the applicant. The Commission shall have authority to continue the hearing to a specific date announced at the hearing, for reasons stated at the hearing, which may include the need for additional information from the applicant or others as deemed necessary by the Commission in its discretion. The Commission in an appropriate case may combine its hearing under this bylaw with the hearing conducted under the Wetlands Protection Act (G.L. Ch.131 §40) and regulations (310 CMR 10.00). The Commission shall issue its permit, other order, or determination in writing within 21 days of the close of the public hearing thereon unless an extension is authorized in writing by the applicant.

## **SECTION 6. PRESUMPTIONS**

- A. In reviewing activities within the buffer zone, the Commission shall presume the buffer zone is important to the protection of other resource areas because activities undertaken in close proximity have a high likelihood of adverse impact, either immediately, as a consequence of construction, or over time, as a consequence of daily operation or existence of the activities. These adverse impacts from construction and use can include, without limitation, erosion, siltation, loss of groundwater recharge, poor water quality, and loss of wildlife habitat. The Commission therefore designates the inner portion of the buffer zone extending 25 feet from the resource area boundary as a No-Disturbance Zone for protection of such lands, which shall consist of a 25 foot wide strip of continuous, undisturbed vegetative cover. The 25 Foot No-Disturbance Zone shall be required for all projects unless the applicant presents credible evidence, prepared by a qualified professional, which, in the judgment of the Commission, demonstrates that the area or part of it may be disturbed without harm to the values protected by this bylaw. Consideration shall be given to the characteristics of the 25 foot inner buffer, including but not limited to, vegetation type, percent slope and adjacent wetland functionality. The Commission may establish, in its regulations, further design specifications, performance standards, and other measures and safeguards for protection of said area. The requirement for a no disturbance zone shall not apply to existing and lawful lawn areas.
- B. In reviewing activities within the riverfront area, the Commission shall presume the riverfront area is important to all the resource area values unless demonstrated otherwise, and no permit issued hereunder shall permit any activities unless the applicant, in addition to meeting the otherwise applicable requirements of this bylaw, has proved by a preponderance of the evidence that: (1) there is no practicable alternative to the proposed project with less adverse effects, and that (2) such activities, including proposed mitigation measures, will have no significant adverse impact on the areas or values protected by this bylaw. The Commission shall regard as practicable an alternative which is reasonably available and capable of being done after taking into consideration the proposed property use, overall project purpose (e.g., residential, institutional, commercial, or industrial), logistics, existing technology, costs of the alternatives, and overall project costs.
- C. The Commission shall presume that all areas meeting the definition of “vernal pools” under §9 of this bylaw, including the adjacent area, perform essential habitat functions. This presumption may be overcome only by the presentation of credible evidence which, in the judgment of the Commission, demonstrates that the basin or depression does not provide essential habitat functions. Any formal

evaluation should be performed by an individual who at least meets the qualifications under the wildlife habitat section of the Wetlands Protection Act regulations (310 CMR 10.60).

- D. The Commission may require a wildlife habitat study of the project area, to be paid for by the applicant, whenever it deems appropriate, regardless the type of resource area or the amount or type of alteration proposed. The decision shall be based upon the Commission's estimation of the importance of the habitat area considering (but not limited to) such factors as proximity to other areas suitable for wildlife, importance of wildlife "corridors" in the area, or actual or possible presence of rare plant or animal species in the area. The work shall be performed by an individual who at least meets the qualifications set out in the wildlife habitat section of the Wetlands Protection Act regulations (310 CMR 10.60).

## **SECTION 7. PERMITS AND CONDITIONS**

- A. If the Conservation Commission, after a public hearing, determines that the activities which are subject to the permit application, or the land and water uses which will result therefrom, are likely to have a significant individual or cumulative effect on the resource area values protected by this bylaw, and where no conditions are adequate to protect said resource area values, the Commission, within 21 days of the close of the hearing, shall issue or deny a permit for the activities requested. The Commission shall take into account the extent to which the applicant has avoided, minimized and mitigated any such effect. The Commission also shall take into account any loss, degradation, isolation, and replacement or replication of such protected resource areas elsewhere in the community and the watershed, resulting from past activities, whether permitted, unpermitted or exempt.
- B. The Commission is empowered to deny a permit for failure to meet the requirements of this bylaw. It may also deny a permit for: (1) failure to submit necessary information and plans requested by the Commission; (2) failure to comply with the procedures, design specifications, performance standards, and other requirements in regulations of the Commission; or, (3) failure to avoid, minimize or mitigate unacceptable significant or cumulative effects upon the resource area values protected by this bylaw.
- C. If the Conservation Commission, after a public hearing, issues a permit, it shall impose conditions which the Commission deems necessary or desirable to protect said resource area values, and all activities shall be conducted in accordance with those conditions. The Commission may waive specifically identified and requested procedures, design specifications, performance standards, or other requirements set forth in its regulations, provided that: (1) the Commission finds in writing after said public hearing that there are no reasonable conditions or alternatives that would allow the proposed activity to proceed in compliance with said regulations; (2) that avoidance, minimization and mitigation have been employed to the maximum extent feasible; and (3) that the waiver is necessary to accommodate an overriding public interest or to avoid a decision that so restricts the use of the property as to constitute an unconstitutional taking without compensation.
- D. To prevent resource area loss, the Commission shall require applicants to avoid alteration wherever feasible; to minimize alteration; and, where alteration is unavoidable and has been minimized, to

provide full mitigation. The Commission may authorize or require replication of wetlands as a form of mitigation, but only with specific plans, professional design, proper safeguards, adequate security, and professional monitoring and reporting to assure success, because of the high likelihood of failure of replication.

- E. A permit, Determination of Applicability (DOA), or Order of Resource Area Delineation (ORAD) shall expire three years from the date of issuance. Notwithstanding the above, the Commission in its discretion may issue a permit expiring five years from the date of issuance for recurring or continuous maintenance work, provided that annual notification of time and location of work is given to the Commission. A permit or ORAD (not including a DOA) may be renewed for an additional one-year period, up to three times, provided that a request for a renewal is received in writing by the Commission prior to expiration. Notwithstanding the above, a permit may identify requirements which shall be enforceable for a stated number of years, indefinitely, or until permanent protection is in place, and shall apply to all present and future owners of the land.
- F. The Commission in an appropriate case may combine the decision issued under this bylaw with the permit, DOA, ORAD, or Certificate of Compliance (COC) issued under the Wetlands Protection Act and regulations.
- G. Amendments to permits and ORADs shall be handled in the manner set out in the Wetlands Protection Act regulations and policies thereunder.
- H. No work proposed in any application shall be undertaken until the permit (not including a DOA or ORAD) issued by the Commission with respect to such work has been recorded in the registry of deeds or, if the land affected is registered land, in the registry section of the land court for the district wherein the land lies, and until the holder of the permit certifies in writing to the Commission that the document has been recorded. If the applicant fails to perform such recording, the Commission may record the documents itself and require the Applicant to furnish the recording fee therefore, either at the time of recording or as a condition precedent to the issuance of a COC.
- I. For good cause the Commission may revoke any permit, DOA, or ORAD or any other order, determination or other decision issued under this bylaw after notice to the holder, the public, abutters, and town boards, pursuant to §5, and after a public hearing.

## **SECTION 8. REGULATIONS**

After public notice and public hearing, the Conservation Commission may promulgate rules and regulations to effectuate the purposes of this bylaw, effective when voted and filed with the town clerk. Failure by the Commission to promulgate such rules and regulations or a legal declaration of their invalidity by a court of law shall not act to suspend or invalidate the effect of this bylaw. At a minimum these regulations shall reiterate the terms defined in this bylaw and define additional terms not inconsistent with the bylaw.

## **SECTION 9. DEFINITIONS**

Except as otherwise provided in this bylaw or in associated regulations of the Conservation Commission, the definitions of terms and the procedures in this bylaw shall be as set forth in the Wetlands Protection Act (G.L. Ch. 131 §40) and regulations (310 CMR 10.00). The following definitions shall apply in the interpretation and implementation of this bylaw:

**AGRICULTURE:** shall refer to the definition as provided by G.L. Ch. 128 §1A.

**ALTER:** shall include, without limitation, the following activities when undertaken to, upon, within or affecting resource areas protected by this bylaw:

- A. removal, excavation, or dredging of soil, sand, gravel, or aggregate materials of any kind;
- B. changing of preexisting drainage characteristics, flushing characteristics, salinity distribution, sedimentation patterns, flow patterns, or flood retention characteristics;
- C. drainage or other disturbance of water level or water table;
- D. dumping, discharging, or filling with any material which may degrade water quality
- E. placing of fill, or removal of material, which would alter elevation;
- F. driving of piles, erection, expansion or repair of buildings, or structures of any kind
- G. placing of obstructions or objects in water;
- H. destruction of plant life including cutting or trimming of trees and shrubs;
- I. changing temperature, biochemical oxygen demand, or other physical, biological, or chemical characteristics of any waters;
- J. any activities, changes, or work which may cause or tend to contribute to pollution of any body of water or groundwater;
- K. incremental activities which have, or may have, a cumulative adverse impact on the resource areas protected by this bylaw;
- L. changes to the rate or volume of stormwater runoff into or out of any resource area.

**BANK:** shall include the land area which normally abuts and confines a water body; the lower boundary being the mean annual low flow level, and the upper boundary being the first observable break in the slope or the mean annual flood level, whichever is higher.

**BUFFER ZONE:** The area of land extending 100 feet horizontally outward from the outer boundary of a resource area as listed in Section 2 “Jurisdiction” (any freshwater wetland, marsh, wet meadow, bog, swamp, vernal pool, bank, reservoir, lake, pond, intermittent stream, **or land under water bodies**).

**PERSON:** shall include any individual, group of individuals, association, partnership, corporation, company, business organization, trust, estate, the Commonwealth or political subdivision thereof to the extent subject to town bylaws, administrative agency, public or quasi-public corporation or body, this municipality, and any other legal entity, its legal representatives, agents, or assigns.

**POND:** shall follow the definition of 310 CMR 10.04 except that the size threshold shall be reduced to **at least 5,000 square feet**.

**RARE SPECIES:** shall include, without limitation, all vertebrate and invertebrate animals and all plant species listed as endangered, threatened, or of special concern by the Massachusetts Division of Fisheries and Wildlife, **regardless whether the site in which they occur has been previously identified by the Division.**

**VERNAL POOL:** shall include, in addition to scientific definitions found in the regulations under the Wetlands Protection Act, any confined basin or depression not occurring in existing lawns, gardens, landscaped areas or driveways which, at least in most years, holds water for a minimum of two continuous months during the spring and/or summer, **contains at least 200 cubic feet of water at some time during most years**, is free of adult predatory fish populations, and provides essential breeding and rearing habitat functions for amphibian, reptile or other vernal pool community species, **regardless of whether the site has been certified by the Massachusetts Division of Fisheries and Wildlife.** The boundary of the resource area for vernal pools shall be the mean annual high-water line defining the depression.

## **SECTION 10. SECURITY**

As part of a permit issued under this bylaw, in addition to any security required by any other municipal or state board, agency, or official, the Conservation Commission may require that the performance and observance of the conditions imposed thereunder (including conditions requiring mitigation work) be secured wholly or in part by accepting a conservation restriction, easement, or other covenant enforceable in a court of law, executed and duly recorded by the owner of record, running with the land to the benefit of this municipality whereby the permit conditions shall be performed and observed before any lot may be conveyed other than by mortgage deed. This method shall be used only with the consent of the applicant.

## **SECTION 11. ENFORCEMENT**

No person shall remove, fill, dredge, build upon, degrade, or otherwise alter resource areas protected by this bylaw, or cause, suffer, or allow such activity, or leave in place unauthorized fill, or otherwise fail to restore illegally altered land to its original condition, or fail to comply with a permit or an enforcement order issued pursuant to this bylaw.

The Conservation Commission, its agents, officers, and employees shall have authority to enter upon privately owned land for the purpose of performing their duties under this bylaw and may make or cause to be made such examinations, surveys, or sampling as the Commission deems necessary, subject to the constitutions and laws of the United States and the Commonwealth.

The Commission shall have authority to enforce this bylaw, its regulations, and permits issued thereunder by letters, phone calls, electronic communication and other informal methods. The Commission may also issue violation notices, non-criminal citations with specific penalties as set forth under G.L. Ch. 40 §21D, which has been adopted by the Town in Article XXI § 3 of the Town By-laws, and undertake civil and criminal court actions. Any person who violates provisions of this bylaw may be

ordered to restore the property to its original condition and take other action deemed necessary to remedy such violations, or may be fined, or both.

Any person who violates any provision of this bylaw, or regulations, permits, or administrative orders issued thereunder, shall be punished by a fine of up to \$100 in accordance with Article VIII § 6 and Article XXI § 3 of the Town By-laws. Each day or portion thereof during which a violation continues, or unauthorized fill or other alteration remains in place, shall constitute a separate offense, and each provision of the bylaw, regulations, permits, or administrative orders violated shall constitute a separate offense. Police officers, Commission members, and its agent have authority to issue non-criminal citations for violations of this bylaw.

Upon request of the Commission, the Board of Selectmen and town counsel shall take legal action for enforcement under civil law. Upon request of the Commission, the chief of police shall take legal action for enforcement under criminal law. Municipal boards and officers, including any police officer or other officer having police powers, shall have authority to assist the Commission in enforcement.

## **SECTION 12. BURDEN OF PROOF**

The applicant for a permit shall have the burden of proving by a preponderance of the credible evidence that the work proposed in the permit application will not have unacceptable significant or cumulative effect upon the resource area values protected by this bylaw. Failure to provide adequate evidence to the Conservation Commission supporting this burden shall be sufficient cause for the Commission to deny a permit or grant a permit with conditions.

## **SECTION 13. APPEALS**

A decision of the Conservation Commission may be appealed to the Superior Court in accordance with G.L. Ch. 249 §4.

## **SECTION 14. RELATION TO THE WETLANDS PROTECTION ACT**

This bylaw is adopted under the Home Rule Amendment of the Massachusetts Constitution and the Home Rule statutes, independent of the Wetlands Protection Act (G.L. Ch. 131 §40) and regulations (310 CMR 10.00) thereunder. It is the intention of this bylaw that the purposes, jurisdiction, authority, exemptions, regulations, specifications, standards, and other requirements shall be interpreted and administered as stricter than those under the Wetlands Protection Act and regulations.

## **SECTION 15. SEVERABILITY**

The invalidity of any section or provision of this bylaw shall not invalidate any other section or provision thereof, nor shall it invalidate any permit, approval or determination which previously has been issued.