TOWN OF VERNON
CONSERVATION COMMISSION
Vernon, CT
Meeting Notice
Monday, January 25, 2021, 7:00 P.M.
VIA TELECONFERENCE

Join Zoom Meeting
https://us02web.zoom.us/j/86492563340?pwd=ejVXeldPdGFKY3ZqVEo0STNrL2g1dz09
Meeting ID: 864 9256 3340
Passcode: 98NA2z
Or Dial In:
(646) 876 9923
Meeting ID: 864 9256 3340
Passcode: 430552

AGENDA

1. Call to Order and roll call

2. Administrative Actions/Requests

   2.1 Amendment(s) to Agenda, if any
   2.2 Approval of the Minutes of the November 16, 2020 meeting
   2.3 Election of Officers
   2.4 Communications received not related to Agenda items, if any
   2.5 Letters sent by Conservation Commission last month, if any
   2.6 Organizational considerations

3. Open Space Program Update

4. New Business

   4.1 Review of Pending Planning & Zoning Applications or Inland Wetlands

   IWC-2020-08 Application of Krause Realty Trust, for a Wetlands Permit to create additional parking for inventory storage (new cars), to include installation of pavement, security fencing, lighting, grading and drainage improvements at 6 Hartford Turnpike (Assessor ID: Map 1, Block 0159, Parcel 0001B), 34 Acorn Road (Assessor ID: Map 01, Block 159A, Parcel 00002) and 42 Acorn Road (Assessor ID: Map 01, Block 0159A, Parcel 00001).

   4.2 Natural Resources
   - Vernal Pools
   - Bolton Lakes Issues
   - Non-Point Source Pollution

5. Other Business/Goals/Discussion

   5.1 Future Activities
   a) Annual Goals
   b) Potential Activities
   5.2 POCD updates

6. Adjournment

C. Ryan Goad, Chairman - Conservation Commission

DRAFT MINUTES

Town of Vernon, CT Conservation Commission
Regular Meeting via Zoom Teleconference
Monday, November 16, 2020 at 7:00 PM

Weblink Information
https://us02web.zoom.us/j/89185480335?pwd=eStSYnN4b0NuSno5VkljR05DWmxCQT09
Meeting ID: 891 8548 0335 **Passcode:** 3jPryz
Dial In Information:
Phone Number: (646) 876-9923 **Meeting ID:** 891 8548 0335 **Passcode:** 400854

DRAFT MEETING MINUTES

1. **Call to Order and Roll Call** Chairperson Ryan Goad called the meeting to order at 7:02 PM.
   Regular members present: Ryan Goad, Richard Clark, James Simon
   Members absent: Jason Seacat
   Staff members present: George McGregor, Town Planner
   Recording Secretary: Kathleen Minor

2. **Administrative Actions/Requests**
   2.1. Amendment(s) to Agenda

Ryan Goad, seconded by Richard Clark, made a motion to add the review and approval of the January 1, 2021 through January 31, 2022 Schedule of Meetings for the Conservation Commission to the agenda under item 2.2 as 2.2.b. Motion carried unanimously.

2.2. Approval of the Minutes of the September 21, 2020 Meeting

Ryan Goad, seconded by Richard Clark, made a motion to approve the minutes of the September 21, 2020 meeting as presented. Motion carried unanimously.

2.2.b Approval of the Schedule of Meetings

James Simon, seconded by Richard Clark, made a motion to accept the January 1, 2021 through January 31, 2022 Schedule of Meetings for the Conservation Commission as presented. Town Planner McGregor presented the schedule. Discussion ensued. Motion carried unanimously.

Town Planner George McGregor will sign the Schedule of Meetings on behalf of Chairman Ryan Goad and return to the Town Clerk.

2.3. Communications received not related to Agenda items - None

2.4. Letters sent by Conservation Commission last month – A response was sent to the Planning and Zoning Commission in September regarding PZ-2020-11 of CT Golf Land LLC at 95 Hartford Tpke.

2.5. Organizational considerations – No discussion

3. **Open Space Program Update** – No discussion

4. **New Business**
   4.1. Review of Pending Planning & Zoning Applications – Nothing to Present

   4.2. Natural Resources – No Discussion
   4.2.1. Vernal Pools
   4.2.2. Bolton Lake Issues
   4.2.3. Non-Point Source Pollution

5. **Other Business/Goals/Discussion**
   5.1. Future Activities – No Discussion
   5.1.1. Annual Goals

5.1.2. Potential Activities

5.2. POCD Updates – Town Planner George McGregor provided updates and discussed the implementation timeline. The public survey was closed on November 1, 2020 with 1,057 responses received.

6. Adjournment - Ryan Goad, seconded by Richard Clark, made a motion to adjourn the meeting at 7:14PM. Motion carried unanimously.

Respectfully submitted,

Kathleen Minor

Kathleen Minor
Recording Secretary

APPLICATION

1

ADDENDUM TO WETLANDS APPLICATION

Applicant: Krause Realty Trust
Property: 6 Hartford Turnpike
34 Acorn Road
42 Acorn Road
Date: December 16, 2020; **Revised January 15, 2021**

Properties involved:

6 Hartford Turnpike	Zone: Commercial
Assessor's Parcel:	01-0159-0001B
Vernon Land Records:	Volume 1962, Page 1
34 Acorn Road	Zone: R-27
Assessor's Parcel:	01-159A-00002
Vernon Land Records:	Volume 2662, Page 61
42 Acorn Road	Zone: R-27
Assessor's Parcel:	01-159A-00001
Vernon Land Records:	Volume 2662, Page 61

The Krause Realty Trust (the "Applicant") is the owner of the three (3) above referenced properties. Applicant presently owns and operates a Subaru car dealership on the property at 6 Hartford Turnpike (as well as on properties at 14 and 24 Hartford Turnpike, however these latter 2 properties are not part of this application). Applicant acquired the properties at 34 and 42 Acorn Road in June, 2020 in order to provide additional parking area for the car dealership.

Applicant proposes to expand the parking area behind the building at 6 Hartford Turnpike onto a portion of the land at 34 and 42 Acorn Road. Portions of the new parking area are within the Upland Review Area (the "URA"). Consequently, Applicant seeks a permit to conduct all regulated activities associated with the creation of the expanded parking area, as shown on the attached site plans.

No activities are proposed within the wetlands or watercourses. The only improvements will be within the URA. Those improvements consist of the installation of pavement (33,689 SF of permeable/porous pavement), security fencing, lighting and drainage facilities. Details of these improvements are shown on the attached site plans, as well as details regarding the proposed erosion controls.

The total disturbance within the URA is 23,617 SF and includes some areas for which wetlands mitigation has been proposed.

Also included with this application is the report of REMA Ecological, which analyzes the impacts of the upland review area activities and concludes that the same will not have an adverse impact on the wetlands. The supplemental report of REMA also addresses the wetlands mitigation measures being proposed.

Applicant and its consultants will make a full presentation of the application and report at the public hearing on this application.

SEE NOTES

WETLAND

LIMIT OF REDESIGNATED WETLANDS

INLAND WETLAND BOUNDARIES AS APPROVED BY THE IWC ON 4/25/2012.

EXISTING EDGE OF VEGETATION (TYP.)

EDGE OF EXISTING PAVEMENT

EXISTING 6' CHAIN-LINK FENCE

BITUMINOUS PAVED AREA

20' SANITARY SEWER EASEMENT IN FAVOR OF THE TOWN OF VERNON

EXISTING EDGE OF BITUMINOUS PAVEMENT

1" WATER SERVICE

EXISTING 6' CHAIN-LINK FENCE

PROPERTY LINE

EXISTING PERMEABLE PAVEMENT

RECIPROCAL EASEMENT FOR DRIVEWAY USE GRANTED TO 6 HARTFORD TURNPIKE AND 14 HARTFORD TURNPIKE

20' WATER EASEMENT IN FAVOR OF #6 HARTFORD TURNPIKE (Vol. 2363 / Pg. 225 OF THE VERNON LAND RECORDS)

END OF CURB

2" WATER SERVICE

EXISTING EDGE OF PAVEMENT BITUMINOUS CONCRETE LIP CURBING

CATCH BASIN

EXISTING ERODED DRAINAGE DITCH

EXISTING RIP-RAP DITCH

RECIPROCAL USE EASEMENTS

WATER EASEMENT IN FAVOR OF #6 & #14 HARTFORD TURNPIKE (Vol. 2363 / Pg. 225 OF THE VERNON LAND RECORDS)

6' CHAIN-LINK FENCE

METAL SIGN

WATER MAIN

8" SANITARY SEWER

SANITARY MANHOLE T.F.= 176.04

SANITARY MANHOLE T.F.= 178.92

SANITARY MANHOLE T.F.= 190.45

SANITARY MANHOLE T.F.= 191.50

20' SANITARY SEWER EASEMENT IN FAVOR OF THE TOWN OF VERNON

100' REGULATED AREA FROM WETLANDS (TYP.)

LIMIT OF FIELD DELINEATED WETLANDS (TYP.)

36" MAPLE

50" OAK

30" OAK

EDGE OF PAVEMENT

EXISTING STONE RETAINING WALL

BITUMINOUS DRIVEWAY

EXISTING RESIDENTIAL STRUCTURE

DECK

PORCH

EXISTING DETACHED GARAGE

EXISTING CHAIN-LINK FENCE

EXISTING 6" STOCKADE FENCE

ACORN ROAD

ALLISON ROAD

339.63' N 55°-44'-32" E

175.37' N 55°-44'-32" E

23.29' N 55°-44'-32" E

84.25' N 53°-52'-44" E

257.36' N 56°-16'-24" E

127.66' S 56°-16'-24" W

TOTAL=53.62' S 11°-53'-04" E

172.27' N 05°-43'-15" W

228.00' N 05°-43'-15" W

236.12' N 24°-22'-28" W

150.00' S 34°-13'-07" E

110.21' S 34°-56'-13" E

118.12' S 56°-17'-13" W

111.90' S 80°-53'-33" W

138.72' S 80°-53'-33" W

138.01' S 16°-44'-21" W

141 TAYLOR STREET

N/F
TOLLAND TURNPIKE REALTY LLC
Vol. 2130 / Pg. 244
PARCEL I.D. = 01-159A-00013

6 HARTFORD TURNPIKE

N/F
PETER B. KRAUSE & JAMES F. MARTIN, TRUSTEES, THE KRAUSE REALTY TRUST
Vol. 1962 / Pg. 1
PARCEL I.D. = 01-0159-0001B
ZONE: COMMERCIAL

14 HARTFORD TURNPIKE

N/F
SUB PEAK OF CONNECTICUT, INC.
Vol. 2363 / Pg. 215
PARCEL I.D. = 01-0159-0001A
ZONE: COMMERCIAL

24 HARTFORD TURNPIKE

N/F
SUB PEAK OF CONNECTICUT, INC.
Vol. 2363 / Pg. 215
PARCEL I.D. = 01-0159-001AA
ZONE: COMMERCIAL

5 ALLISON ROAD

N/F
MICHAEL SERVEDIO
Vol. 1907 / Pg. 75
PARCEL I.D. = 01-159A-00004

11 ALLISON ROAD

N/F
EARL S. & LOIS E. LEIGHTON
Vol. 124 / Pg. 368
PARCEL I.D. = 01-159A-00005

42 ACORN ROAD (PARCEL I.D. = 01-159A-00001)

LOT AREA = 1.2108± Ac.
52,740± S.F.

N/F
PETER B. KRAUSE & JAMES F. MARTIN, TRUSTEES, THE KRAUSE REALTY TRUST
34 & 42 ACORN ROAD
ZONE: R-27

34 ACORN ROAD (PARCEL I.D. = 01-159A-00002)

LOT AREA = 1.1756± Ac.
51,210± S.F.

145 TAYLOR STREET

N/F
ABDUL-RAHMAAN I. MUHAMMAD
Vol. 2021 / Pg. 261
PARCEL I.D. = 01-159A-00012

149 TAYLOR STREET

N/F
MICHAEL T. & CAROL S. RAMSEY
Vol. 2200 / Pg. 128
PARCEL I.D. = 01-159A-00011

155 TAYLOR STREET

N/F
ESTATE OF ARTHUR LEE BURTON & BEVERLY B. BURTON
Vol. 1226 / Pg. 44
PARCEL I.D. = 01-159A-00010

W.F. 100, 101, 102, 103, 14 START, 15, 16, 17, 18, 19, 20, 21, 22

EX. I.P.

LEGEND

- EXISTING IRON PIN
- PROPERTY CORNER
- PROPERTY OR EASEMENT BOUNDARY ANGLE POINT
- UTILITY POLE
- 182 EXISTING CONTOUR
- W.F. WETLAND BOUNDARY FLAG
- LIMIT OF FIELD DETERMINED WETLANDS
- SANITARY SEWER MANHOLE

GRAPHIC SCALE
0 40 80
20 60
(FEET)

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300B-1 THROUGH 20-300B-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996, AND CONFORMS TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC SURVEY ACCURACY CLASS T-2.

SURVEY TYPE: IMPROVEMENT LOCATION PLAN - EXISTING

BOUNDARY DETERMINATION CATEGORY: NONE

SURVEYORS SIGNATURE | 01/2021 DATE | 70278 LICENSE NUMBER

REV.	DATE	DESCRIPTION
1	01-09-2021	ADDED SHEET

DAVID A. SIMLER
L.S. #70278

MESSIER SURVEY LLC
LAND SURVEYORS
61 SCHOOL BROOK LANE
VERNON, CT (860) 646-6013
WWW.MESSIERSURVEY.COM

SURVEY-CONSTRUCTION LAYOUT

EXISTING CONDITIONS PLAN

PREPARED FOR:
PETER B. KRAUSE & JAMES F. MARTIN, TRUSTEES
34 & 42 ACORN ROAD
VERNON, CONNECTICUT

(COMP. FILE #12-003-REVISED PARKING LOT DEVELOPMENT SHEET 1 2020.DWG)

DATE : 01/2021
SCALE : 1"=20 FT.
DRAWN : DAS
CHECK : DAS
SHEET 1 OF 3

PROJECT No. 11-079PL
PLAN No. 12-003-PK

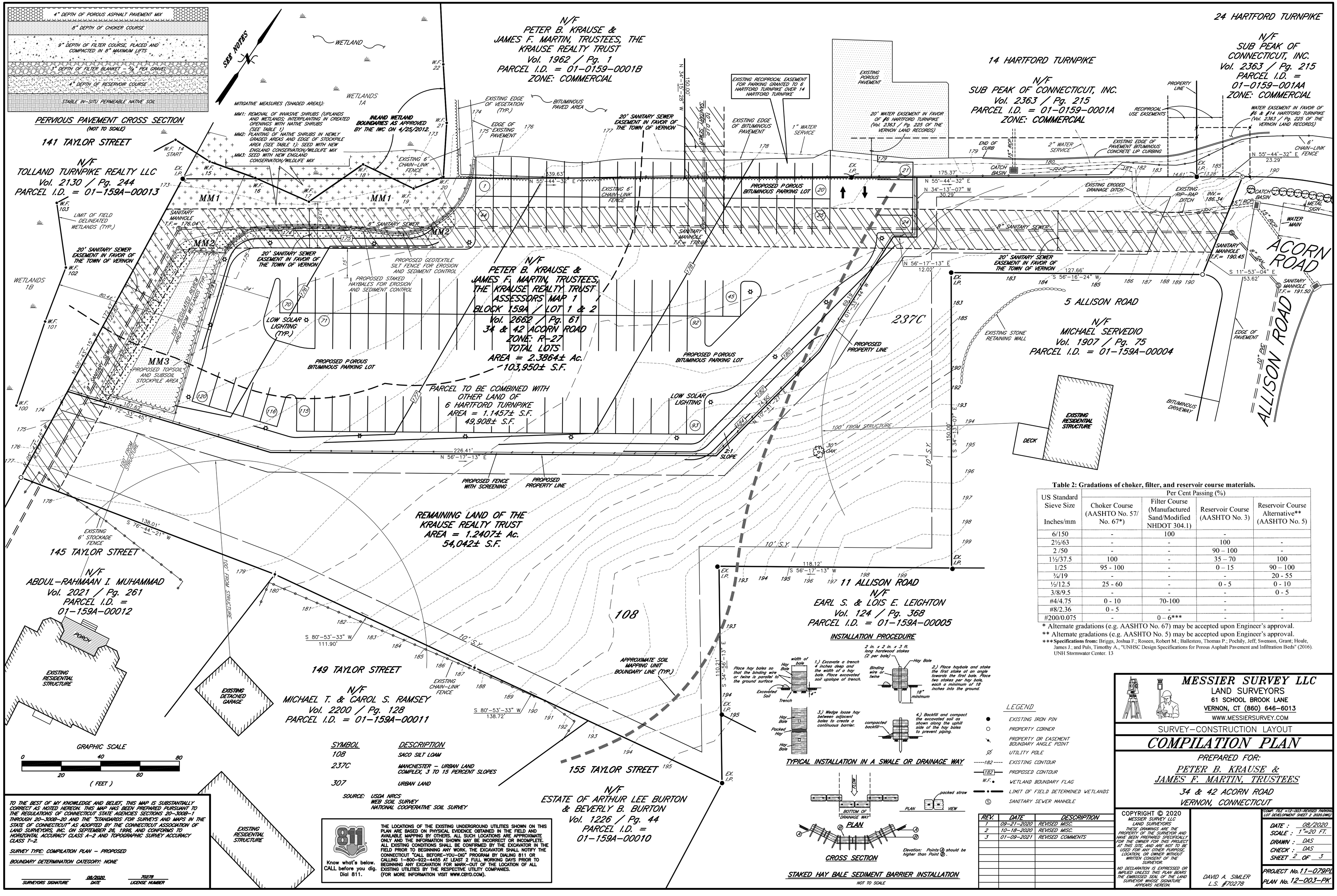


Table 2: Gradations of choker, filter, and reservoir course materials.

US Standard Sieve Size Inches/mm	Per Cent Passing (%)			
	Choker Course (AASHTO No. 57/ No. 67*)	Filter Course (Manufactured Sand/Modified NHDOT 304.1)	Reservoir Course (AASHTO No. 3)	Reservoir Course Alternative** (AASHTO No. 5)
6/150	-	100	-	
2½/63	-	-	100	-
2 /50	-	-	90 – 100	-
1½/37.5	100	-	35 – 70	100
1/25	95 - 100	-	0 – 15	90 – 100
¾/19	-	-	-	20 - 55
½/12.5	25 - 60	-	0 - 5	0 - 10
3/8/9.5	-	-	-	0 - 5
#4/4.75	0 - 10	70-100	-	
#8/2.36	0 - 5	-	-	-
#200/0.075	-	0 – 6***	-	-

* Alternate gradations (e.g. AASHTO No. 67) may be accepted upon Engineer's approval.
** Alternate gradations (e.g. AASHTO No. 5) may be accepted upon Engineer's approval.
*** **Specifications from:** Briggs, Joshua F.; Roseen, Robert M.; Ballestero, Thomas P.; Pochily, Jeff; Swenson, Grant; Houle, James J.; and Puls, Timothy A., "UNHSC Design Specifications for Porous Asphalt Pavement and Infiltration Beds" (2016). UNH Stormwater Center. 13

MESSIER SURVEY LLC
LAND SURVEYORS
61 SCHOOL BROOK LANE
VERNON, CT (860) 646-6013
WWW.MESSIERSURVEY.COM

SURVEY-CONSTRUCTION LAYOUT

COMPILATION PLAN

PREPARED FOR:
PETER B. KRAUSE &
JAMES F. MARTIN, TRUSTEES
34 & 42 ACORN ROAD
VERNON, CONNECTICUT

REV.	DATE	DESCRIPTION
1	09-21-2020	REVISED MISC.
2	10-18-2020	REVISED MISC.
3	01-09-2021	REVISED COMMENTS

DAVID A. SIMLER
L.S. #70278

COMP. FILE #12-003-REVISED PARKING LOT DEVELOPMENT SHEET 2 2020.DWG
DATE : 08/2020
SCALE : 1"=20 FT.
DRAWN : DAS
CHECK : DAS
SHEET 2 OF 3

PROJECT No. 11-079PL
PLAN No. 12-003-PK

CONNECTICUT ROUTES 30 & 83
A/K/A HARTFORD TURNPIKE (VERNON)

N/F
SHAWMUT EQUIPMENT COMPANY INC.
MANCHESTER ASSESSORS PARCEL 103/5490/20
20 TOLLAND TURNPIKE
ZONE: GENERAL BUSINESS

SEE NOTES

HARTFORD COUNTY
TOLLAND COUNTY

TOWN OF MANCHESTER
TOWN OF VERNON

N/F
PETER B. KRAUSE & JAMES F. MARTIN, TRUSTEES;
THE KRAUSE REALTY TRUST
MANCHESTER ASSESSORS
PARCEL 102/5490/2
2 TOLLAND TURNPIKE
MANCHESTER ZONE: GENERAL BUSINESS

N/F
PETER B. KRAUSE & JAMES F. MARTIN, TRUSTEES,
THE KRAUSE REALTY TRUST
VERNON ASSESSORS MAP 1
BLOCK 159
LOT 1B
Vol. 1962 /Pg. 1
6 HARTFORD TURNPIKE

EXISTING STRUCTURE

N/F
SUB PEAK OF CONNECTICUT INC.
ASSESSORS MAP 1
BLOCK 159 LOT 1A
Vol. 2363 / Pg. 215
LOT AREA = 1.8424± Ac.
14 HARTFORD TURNPIKE

EXISTING MASONRY
TWO-STORY BUILDING

ZONE: COMMERCIAL

"SUBURBAN SUBARU"

N/F
SUB PEAK INC.
ASSESSORS MAP 1
BLOCK 159 / LOT 1AA
Vol. 1632 / Pg. 119
24 HARTFORD TURNPIKE

EXISTING STRUCTURE

N/F
SHAWMUT EQUIPMENT COMPANY INC.
VERNON ASSESSORS MAP 1
BLOCK 159A, LOT 1.3A
Vol. 1041 / Pg. 157
20 TOLLAND TURNPIKE
MANCHESTER
ZONE: COMMERCIAL

N/F
ANTHOS ACORN 32-34 LLC
ASSESSORS MAP 1
BLOCK 159A / LOT 1
Vol. 2139 / Pg. 68
42 ACORN ROAD
ZONE: R-27

EXISTING SOLAR CARPORT

EXISTING EDGE OF PAVEMENT

12" RCP STORM DRAIN

CL&P 17759 ϕ

CL&P 35091

SNET 2217

ISLAND

CL&P 35090

LIGHT POLE

BITUMINOUS CONCRETE SURFACE

GAS GATE

GV

N 55°-44'-32" E 204.97'

CONCRETE LIGHT POLE BASE

BITUMINOUS SAWCUT (EXTENT OF NEW PAVEMENT)

BITUMINOUS PAVED AREA

CONCRETE STEPS WITH METAL HANDRAILS

EXISTING RECIPROCAL EASEMENT FOR DRIVEWAY USE AND UTILITIES GRANTED TO 6 HARTFORD TURNPIKE ON 14 HARTFORD TURNPIKE

UNDERGROUND ELECTRICAL SERVICE

EX. MAG. NAIL

EX. I.P.

EX. C.I.P. CONCRETE BLOCK

FIRE HYDRANT

WOODEN BOLLARD

TYPE "C" CATCH BASIN

CABLE

UNDERDRAIN WITH 24" PERFORATED C.C.M. PIPE

BITUMINOUS CURBING (TYP.)

EXISTING WATER MAIN

MANCHESTER TOWN LINE SIGN / UTILITY POLE

STORM DRAIN

GRASS AREA

PARCEL "A"

EDGE OF EXISTING PAVEMENT

WOOD PLANTER RETAINING WALL

GRAVEL/GRASS AREA

YARD DRAIN

6" GATE

HANDHOLE (OIL FILLER CAP)

GAS METER

GAS SERVICE

END OF CONCRETE RETAINING WALL

BOLLARDS (TYP.)

50' B.L.

S 55°-44'-32" W 50.00'

HEIGHT OF BUILDING=22.0±' (HEIGHT VARIES)

METAL HANDICAP SIGN

CONCRETE PAD

6' CHAIN-LINK FENCE

WOODED AREA

METAL BEAM GUARD RAIL

EX. I.P.

76.44±

11" CSP SANITARY SEWER

SANITARY SEWER LATERAL

2-4" CONDUITS

1-4" CONDUIT

ELECTRICAL METER

TRANSFORMER ON CONCRETE PAD

BOLLARD (TYP.)

GARAGE DOOR (TYP.)

EXISTING PERMANENT 20' SANITARY SEWER EASEMENT IN FAVOR OF THE TOWN OF VERNON (Vol. 402 / Pg. 350 OF THE VERNON LAND RECORDS)

N 65°-30'-21" E 129.78'

CONCRETE RETAINING WALL WITH 6' CHAIN-LINK FENCE

20' S.E.

TYPE "CL" CATCH BASIN T.F.=175.04

RIP-RAP

86.00'

S 55°-44'-32" W

BITUMINOUS CONCRETE CURBING

N 34°-15'-28" W 32.00'

30" RCP

S 34°-15'-28" E 32.00'

CONCRETE HEADWALL

INV.= 170.86

EXISTING EDGE OF BITUMINOUS PAVEMENT

TYPE "CL" CATCH BASIN T.F.=176.13 INV.=170.83 (IN & OUT)

EXISTING DRAINAGE EASEMENT AND RIGHT TO DRAIN GRANTED TO #14 & #24 HARTFORD TURNPIKE ON #6 HARTFORD TURNPIKE

EXISTING CONCRETE ENCASEMENT AROUND PIPE (APPROXIMATE EXTENT)

EXISTING BITUMINOUS PAVED AREA

50' R.Y.

20' PERMANENT SANITARY SEWER EASEMENT IN FAVOR OF THE TOWN OF VERNON

EXISTING RECIPROCAL EASEMENT FOR PARKING GRANTED TO 6 HARTFORD TURNPIKE OVER 14 HARTFORD TURNPIKE

EXISTING EDGE OF BITUMINOUS PAVEMENT

N 34°-15'-28" W 20.00'

GRASS AREA

PROPOSED POROUS BITUMINOUS PAVEMENT PARKING LOT.

6' CHAIN-LINK FENCE

TYPE "CL" CATCH BASIN T.F.=176.65 INV.=171.40

24" RCP

30" RCP

6" PVC DRAIN PIPE

12" HDPE PIPE

TYPE "CL" CATCH BASIN T.F.=175.72 INV.=172.77 (IN & OUT)

TYPE "CL" CATCH BASIN T.F.=176.20 INV.=172.55 (6" IN) INV.=172.30 (12" IN S) INV.=171.50 (24" IN & OUT)

6" PVC DRAIN PIPE

24" RCP

N 55°-44'-32" E 14.61'

RIGHT TO DRAIN IN FAVOR OF 24 HARTFORD TURNPIKE ON 14 HARTFORD TURNPIKE, VIA EXISTING STORM DRAIN

BITUMINOUS PAVED AREA

S 10°-34'-00" E 60.40'

N 55°-44'-32" E 3.44'

DOOR (TYP.)

RECIPROCAL EASEMENT FOR DRIVEWAY USE AND UTILITIES INSTALLATION, USE AND MAINTENANCE IN FAVOR OF #14 HARTFORD TURNPIKE AND #24 HARTFORD TURNPIKE

EXISTING WATER EASEMENT IN FAVOR OF #6 HARTFORD TURNPIKE FOR 1 INCH WATER SERVICE INSTALLATION AND MAINTENANCE AND IN FAVOR OF #14 HARTFORD TURNPIKE FOR 2 INCH WATER SERVICE INSTALLATION AND MAINTENANCE

DRYWELLS (APPROXIMATE LOCATION)

DRYWELL WITH MANHOLE

DRAIN MANHOLE T.F.=177.35 INV.=172.60

2" WATER SERVICE

EDGE OF PAVEMENT (B.C.L.C.)

N 34°-15'-28" W 5.00'

N 55°-44'-32" E 27.05'

S 34°-15'-28" E 25.00'

S 55°-44'-32" W 175.37'

END OF BITUMINOUS CURBING

TYPE "CL" CATCH BASIN T.F.=178.90 INV.=174.65

6" CHAIN-LINK FENCE (TYP.)

S 55°-44'-32" W 142.14'

N 34°-13'-07" W 30.29'

EXISTING 20' WATER EASEMENT IN FAVOR OF 6 HARTFORD TURNPIKE FOR 1 INCH WATER SERVICE INSTALLATION AND MAINTENANCE

S 55°-44'-32" W 27.05'

EXISTING EDGE OF VEGETATION (TYP.)

100' REGULATED REVIEW AREA FROM WETLANDS (TYP.)

INLAND WETLAND BOUNDARIES AS APPROVED BY THE IWC ON 4/25/2012.

BITUMINOUS PAVED AREA

6' CHAIN-LINK FENCE

N 05°-29'-39" W 171.25'

WETLANDS 1A

EXISTING 6' CHAIN-LINK FENCE

VEGETATED AREA

EXISTING BITUMINOUS CONCRETE CURBING

CONCRETE HEADWALL

INV.= 171.04

EXISTING 2'-1" X 3'-15" ARCH PIPE

WATERCOURSE

W.F. 28 STOP

W.F. 27

W.F. 26

W.F. 25

W.F. 24

W.F. 23

W.F. 22

W.F. 21

W.F. 20

W.F. 19

W.F. 18

W.F. 17

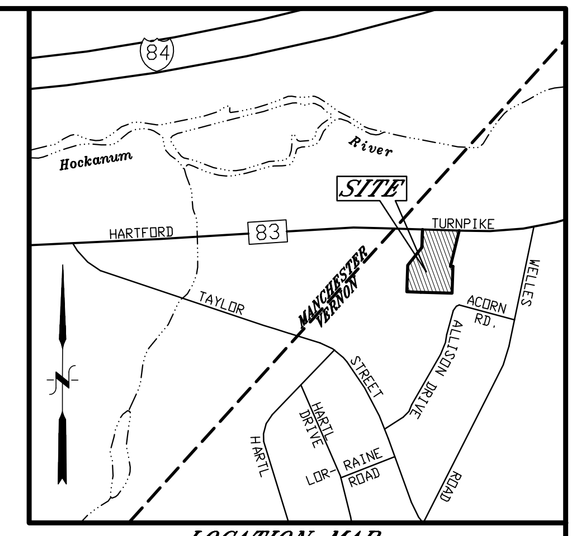
W.F. 16

WATER SERVICE

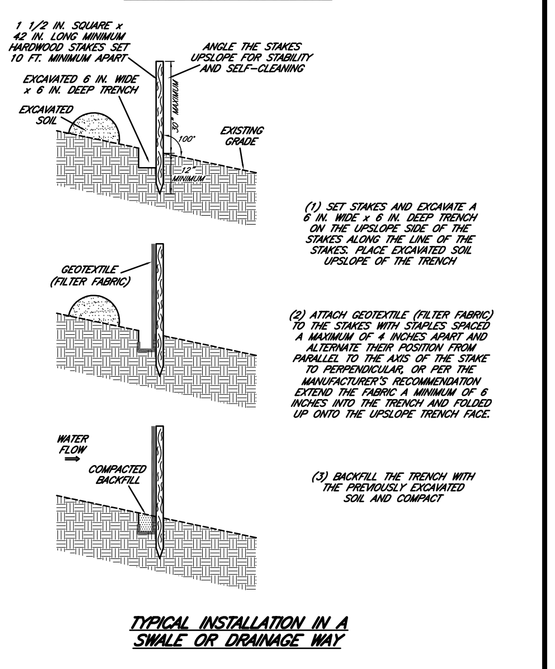
8" DUCTILE IRON SANITARY SEWER

1 2 44 20 25

LOCATION MAP
SCALE: 1"=600



INSTALLATION PROCEDURE

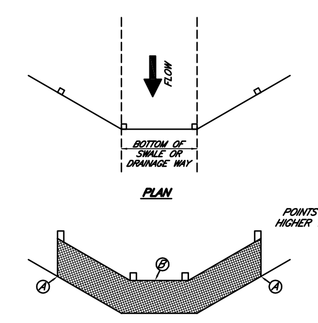


(1) SET STAKES AND EXCAVATE A 6 IN. WIDE x 6 IN. DEEP TRENCH ON THE UPSLOPE SIDE OF THE STAKES ALONG THE LINE OF THE STAKES. PLACE EXCAVATED SOIL UPSLOPE OF THE TRENCH

(2) ATTACH GEOTEXTILE (FILTER FABRIC) TO THE STAKES WITH STAPLES SPACED A MAXIMUM OF 4 INCHES APART AND ALTERNATE THEIR POSITION FROM PARALLEL TO THE AXIS OF THE STAKE TO PERPENDICULAR, OR PER THE MANUFACTURER'S RECOMMENDATION EXTEND THE FABRIC A MINIMUM OF 6 INCHES INTO THE TRENCH AND FOLDED UP ONTO THE UPSLOPE TRENCH FACE.

(3) BACKFILL THE TRENCH WITH THE PREVIOUSLY EXCAVATED SOIL AND COMPACT

TYPICAL INSTALLATION IN A SWALE OR DRAINAGE WAY



GEOTEXTILE SILT FENCE SEDIMENT BARRIER INSTALLATION
NOT TO SCALE

GRAPHIC SCALE

0 40 80
20 60
(1"=20 FEET)

LEGEND

- EXISTING IRON PIN
- PROPERTY CORNER
- PROPERTY OR EASEMENT BOUNDARY ANGLE POINT
- EXISTING CATCH BASIN
- UTILITY POLE
- SANITARY SEWER MANHOLE
- DRAINAGE MANHOLE

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON. THIS MAP HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300B-1 THROUGH 20-300B-20 AND THE "STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996, AND CONFORMS TO HORIZONTAL ACCURACY CLASS A-2 AND TOPOGRAPHIC SURVEY ACCURACY CLASS T-2.

SURVEY TYPE: COMPILATION PLAN – PROPOSED

BOUNDARY DETERMINATION CATEGORY: NONE

SURVEYORS SIGNATURE — 08/2020 DATE — 70278 LICENSE NUMBER

811 Know what's below. CALL before you dig. Dial 811.

THE LOCATIONS OF THE EXISTING UNDERGROUND UTILITIES SHOWN ON THIS PLAN ARE BASED ON PHYSICAL EVIDENCE OBTAINED IN THE FIELD AND AVAILABLE MAPPING BY OTHERS. ALL SUCH LOCATIONS ARE APPROXIMATE ONLY AND THE INFORMATION SHOWN MAY BE INCORRECT OR INCOMPLETE. ALL EXISTING CONDITIONS SHALL BE CONFIRMED BY THE EXCAVATOR IN THE FIELD PRIOR TO BEGINNING ANY WORK. THE EXCAVATOR SHALL NOTIFY THE CONNECTICUT "CALL BEFORE-YOU-DIG" PROGRAM BY DIALING 811 OR CALLING 1-800-922-4455 AT LEAST 2 FULL WORKING DAYS PRIOR TO BEGINNING ANY EXCAVATION FOR MARK-OUT OF THE LOCATION OF ALL EXISTING UTILITIES BY THE RESPECTIVE UTILITY COMPANIES. (FOR MORE INFORMATION VISIT WWW.CBYD.COM).

ZONING DATA
COMMERCIAL ZONE

ITEM	REQUIRED (R) / PERMITTED (P)	6 HARTFORD TURNPIKE EXISTING (E)	14 HARTFORD TURNPIKE EXISTING (E)
IMPERVIOUS LOT COVERAGE	60% (P)	65.4%	95.56%
		PROPOSED WITH SOME PERVIOUS PAVEMENT AND SOME IMPERVIOUS PAVEMENT (P) 59.0%	

REV.	DATE	DESCRIPTION
1	09-21-2020	REVISED MISC.
2	10-18-2020	REVISED MISC.
3	01-09-2021	REVISED COMMENTS

DAVID A. SIMLER
L.S. #70278

MESSIER SURVEY LLC
LAND SURVEYORS
61 SCHOOL BROOK LANE
VERNON, CT (860) 646-6013
WWW.MESSIERSURVEY.COM

SURVEY-CONSTRUCTION LAYOUT

COMPILATION PLAN

PREPARED FOR:
PETER B. KRAUSE &
JAMES F. MARTIN, TRUSTEES
34 & 42 ACORN ROAD
VERNON, CONNECTICUT

COMP. FILE #12-003-REVISED PARKING LOT DEVELOPMENT SHEET 3 2020.DWG

DATE : 08/2020
SCALE : 1"=20 FT.
DRAWN : DAS
CHECK : DAS
SHEET 3 OF 3

PROJECT No.11-079PL
PLAN No.12-003-PK

TOWN OF VERNON

55 West Main St., VERNON, CT 06066-3291
(860) 870-3640
gmcgregor@vernon-ct.gov

OFFICE OF THE
TOWN PLANNER

MEMORANDUM

TO: Inland Wetlands Commission

FROM: George K. McGregor, AICP, Town Planner

SUBJECT: IWC 2020-08, Suburban Subaru, 6 Hartford Tpke.

DATE: January 26, 2021

Request

Application of Krause Realty Trust, for a Wetlands Permit to create additional parking for inventory storage (new cars), to include installation of pavement, security fencing, lighting, grading and drainage improvements at 6 Hartford Turnpike (Assessor ID: Map 1, Block 0159, Parcel 0001B), 34 Acorn Rd. (Assessor ID: Map 01, Block 159A, Parcel 00002) and 42 Acorn Rd. (Assessor ID: Map 01, Block 0159A, Parcel 00001).

Suburban Subaru proposes to expand a rear parking area and inventory lot behind the dealership located at 6 Hartford Tpke. The expansion would allow for 116 additional, all-pervious parking spaces for inventory.

The area of expansion is currently zoned R-27; a zoning change and a site plan would proceed for Planning and Zoning Commission review after an IWC decision. A wetlands permit is required as the regulated activities fall within 100 feet of a designated wetland.

Note: Nothing contained herein should be considered an endorsement of any future Zone Change request or Site Plan Application. Once submitted, those reviews will take place separately and independently, based on the merits.

Staff Comments

Town Staff initially generated comments and concerns related to several aspects of the project including but not limited to the proposed use of dual surfaces on the parking lot, separation distances from impacted wetland areas, treatment of invasive species/clearing, and other areas needing stabilization.

The Applicant has responded with a resubmission which addresses these issues with a series of mitigation measures:

- Redesign which moves the proposed improvements further away from any wetland area.
- Removal of invasive species and introduction of supplemental plantings.
- A commitment to utilize a 100% porous surface across the new parking area.
- An annual maintenance plan.

On balance, these mitigation measures significantly reduce the project's impact on the nearby wetland's areas. The proposed plan now effectively addresses its wetland impacts.

Draft Motions

MOVED, that the Vernon Inland Wetlands and Watercourses Commission does hereby APPROVE, the application **(IWC-2020-08)** Krause Realty (Suburban Subaru) for a Wetlands permit by Commission based on the following findings:

1. The project will have no adverse impacts on wetlands or watercourses;
2. The mitigation measures are acceptable;
3. There are no prudent or feasible alternatives.

AND, Subject to the following conditions of approval:

1. The property shall be developed in conformance to plan set (3 pages) dated January 9, 2021, prepared by Messier Survey, LLC.
2. The property shall be developed in conformance with the mitigation measures and maintenance steps contained in a letter (5 pages) prepared by Rema Ecological Services, LLC, and dated January 15, 2021.

Or,

MOVED, an Alternate Motion

GKM

● Ecology
● Soil & Wetland Studies
● Water Quality Monitoring ● GPS
● Environmental Planning & Management
● Ecological Restoration & Habitat Mitigation
● Aquatic, Wildlife and Listed Species Surveys
● Application Reviews ● Permitting & Compliance

VIA EMAIL & HAND-DELIVERY

January 15, 2021

Town of Vernon
Inland Wetlands Commission
Memorial Building, 14 Park Place
Vernon, CT 06066

RE: ***WETLANDS ASSESSMENT & IMPACTS ANALYSIS: SUPPLEMENTAL***
Proposed Parking Lot Expansion, 34 & 42 Acorn Road, Vernon, CT
REMA Job # 20-2329-VER52

Dear Chairperson Stansel and Commissioners:

On behalf of the applicant, the Krause Realty Trust, REMA ECOLOGICAL SERVICES, LLC (REMA) has prepared this brief *Wetlands Assessment & Impacts Analysis: Supplemental* report, to address comments found in a January 4th, 2021 memorandum to Mr. George McGregor, Town Planner, from Mr. David Smith, Town Engineer and Mr. Craig Perry, Inland Wetland Officer. This report addresses those comments that pertain to wetlands and watercourses. Other non-wetland related comments, such property line matters, are addressed elsewhere. The memorandum contains six (6) main paragraphs, and our responses are keyed to each one of them, in the same sequence.

1. Revised plans (3 sheets) have been submitted separately, which now include an existing conditions plan (Sheet 1).

2. The parking lot has been reconfigured, now giving much wider setbacks to both Wetland 1A (northwesterly) and Wetland 1B (westerly). For Wetland 1A, the setback distance is now a minimum of 23.6 feet, while for Wetland 1B it is 80.4 feet (see Plan Sheet 2).

3. A double erosion and sedimentation control barrier, consisting of silt fence and haybales is now included on the revised plans, where construction related grading is within 25-feet of a wetland boundary.

4. The revised plans (Sheet 2) show three separate areas were wetland-related mitigative measures are proposed:

    a. **MM1**: In this roughly 6,875 square foot area, which includes both wetlands (i.e., Wetland 1A) and uplands, invasives shrub species will be tagged by a wetlands professional, and be eradicated using the protocols promulgated by the Connecticut Invasive Plant Working Group (CIPWG) for the specific invasive plant (e.g., multiflora rose, Morrow's honeysuckle, Japanese barberry, etc.). Typical techniques included mechanical removal, and the "cut-paint" basal treatment technique using a triclopyr herbicide (e.g., Brush-B-Gone). In the areas where significant gaps are left after invasives removal, and where existing native species are not likely to quickly spread into, supplemental shrub planting will take place (see Table 1, attached).

    b. **MM2**: This is a roughly 1,700 square foot area, where native shrub clusters will be planted to enhance the permanent buffer to the wetland. These Plantings are specified in Table 1 (attached). This mitigation area will also be seeded with the New England Conservation/Wildlife Mix available at New England Wetland Plants, Inc., of Amherst, Massachusetts, and will be left to naturalize. We should note that a 5 to 6 foot wide mowed grassy strip will be maintained adjacent to the paved surface of the proposed parking lot.

    c. **MM3**: This is a roughly 2,560 square foot area, which will initially be used, as needed, for the stockpiling of excess topsoil and subsoil during parking lot construction. Once the parking lot is in place this area will be graded to its pre-existing topography, ensuring that at least 6 inches of topsoil are in place. Roughly 1,760 square feet of this area will be seeded with the same Conservation/Wildlife Mix as specified for MM2, while the balance will become a portion of MM2. This created moist meadow will be allowed to naturalize, but will also be mowed, no closer than 4 inches to the ground surface, every other year, either in the late spring or late fall of "even" years (e.g., 2022, 2024, etc.). This will provide a small oasis for pollinator species

including lepidopterans (i.e., butterflies, moths), and will also attract avians that prefer forest edge-meadow ecotones.

5. In reconfiguring the parking lot to address staff comments and suggestions (i.e., ¶ 2), the northwest aisle was reduced to a width of 15 feet. Formulation of the vehicle that would set aside the remainder of the land is being further discussed, and will presented to the Commission during the hearing for this application.

6. The applicant has headed the advice of staff, of not blending two different approaches for paving (i.e., pervious and impervious), and is proposing to go forward with porous pavement for the entire parking lot. Also, in recognizing that additional detail was necessary regarding the materials that would be used for each of the layers shown on the "pervious pavement cross section" on Sheet 2, we have provided Table 2 on plan Sheet 2, which is a direct excerpt from the University of New Hampshire Stormwater Center document from which came the "cross section" on the plan. Table 2 provides standard engineering specification (e.g., AASHTO[1]). As mentioned above, a stockpile area for excess topsoil and subsoil materials is now shown on plan Sheet 2.

Recognizing that the long-term success of the porous pavement parking lot depends on proper monitoring and maintenance, we researched Connecticut sources in putting together specific monitoring and maintenance procedures. The 2004 CT DEEP Stormwater Quality Manual (SWQM) in Chapter 11 (page II-56-4) only states the following: *"permeable pavement should be regularly cleaned of tracked mud or sediment and leaves."* The 2012 Low Impact Development Appendix to the SWQM, in Section 4.3.5 states: *"regular maintenance is performed (sweeping, vacuum cleaning)."*

A more recent publication (2018), entitled: *"Development of a Specification for Porous Asphalt Pavements*[2]" provides the following relevant maintenance considerations:

1. Signs intended primarily for maintenance personnel should be posted at porous pavement locations to indicate the following:

[1] American Association of State Highway and Trasportation Officials.
[2] Zinke, S. and J. Mahoney. Development of a Specification for Porous Pavements. Final Report: CT-2300-F-18-3. Connecticut Advanced Pavement Laboratory, Connecticut Transportation Institute, School of Engineering, University of Connecticut. Prepared for: Connecticut DOT, Bureau of Policy and Planning, Research and Implemenation Unit.

- Abrasives such as sand shall not be used for winter maintenance.
- Pavement surface shall not be seal coated.
- Deposits of mulch or soil and debris on the porous surface should be reported to the appropriate maintenance personnel.
- Ponded water on the porous pavement surface should be reported to the appropriate maintenance personnel.

2. Vacuuming of the parking lot surface should take place annually, and whenever clogging or potential clogging is suspected.

To the above we would add the following:

3. De-icing compounds may be used as needed.
4. Quarterly inspections for the first year, during and immediately after significant precipitation events (i.e., > 0.5 inch).
5. Annual inspections after the first year in early to mid-fall.

In conclusion, it is our professional opinion that with the latest revisions to the plans, the on-site and off-site wetlands and watercourses will be further protected both during the construction phase, and in the long-term.

Please feel free to contact our office with any questions on the above.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

George T. Logan, MS, PWS, CSE
Registered Soil Scientist/Professional Wetland Scientist
Certified Senior Ecologist

Attachments: Table 1: Planting Materials

Table 1. Mitigation Plantings

Scientific Name	Common Name	Size	Shade tolerant?	Form	MM1	MM2
SMALL TREES/LARGE SHRUBS						
Hamamelis virginiana	Witch hazel	3'-4'	Y	nursery pot	4	5
Amelanchier canadensis	Shadblow	3'-4'	Y/N	nursery pot		5
MEDIUM TO LOW SHRUBS						
Vaccinium corymbosum	Highbush blueberry	3'-4'	Y	nursery pot	6	6
Viburnum dentatum	Arrowwood viburnum	3'-4'	Y	nursery pot	8	4
Ilex verticillata	Winterberry holly	3'-4'	Y	nursery pot	8	6
Corylus americana	American hazelnut	3'-4'	Y	nursery pot	6	6
Clethra alnifolia	Sweet pepperbush	3'-4'	Y	nursery pot	12	6
Swida racemosa	Gray dogwood	3'-4'	Y	nursery pot	12	6
Viburnum lentago	Nannyberry	3'-4'	Y	nursery pot	8	6
Total:					**64**	**50**

NOTE: 1. Plant numbers for MM1 are estimated and will depend on the gaps left by invasives removal

● Ecology
● Soil & Wetland Studies
● Water Quality Monitoring ● GPS
● Environmental Planning & Management
● Ecological Restoration & Habitat Mitigation
● Aquatic, Wildlife and Listed Species Surveys
● Application Reviews ● Permitting & Compliance

VIA EMAIL & HAND-DELIVERY

December 15, 2020

Town of Vernon
Inland Wetlands Commission
Memorial Building, 14 Park Place
Vernon, CT 06066

RE: ***WETLANDS ASSESSMENT & IMPACTS ANALYSIS: SUMMARY OF FINDINGS***
Proposed Parking Lot Expansion, 34 & 42 Acorn Road, Vernon, CT

REMA Job # 20-2329-VER52

Dear Chairperson Stansel and Commissioners:

On behalf of the applicant, the Krause Realty Trust, REMA ECOLOGICAL SERVICES, LLC (REMA) has prepared this brief *Wetlands Assessment & Impacts Analysis* report, to be submitted with an application to conduct regulated activities at the above-referenced property. This is pursuant to the provisions of the Inland Wetlands and Watercourses Act, Connecticut General Statutes Section 22a-28 through 22a-45d, inclusive, and the Inland Wetlands and Watercourses Regulations of the Town of Vernon (adopted September 22, 2009, effective October 8, 2009, and amended through April 4, 2013).

The primary objective of this report is to provide the Commission with a brief description and characterization of the regulated wetlands associated with the subject site, an assessment of their ability to provide various functions and values, and to analyze potential short-term and long-term impacts to these resources from the proposed development. The plans reviewed for this report were prepared by Messier Survey, LLC, of Vernon, CT, and are dated August 2020, and revised through October 18th, 2020 (2 sheets).

1.0 INTRODUCTION & OVERVIEW

The overall property that is the subject of the application (i.e., "site," "study area") can be accessed from Acorn Road to the east (see Figures 1 and 2, attached). To the north the site

abuts an existing commercial establishment (i.e., Suburban Subaru) also owned by the applicant. The site encompasses roughly 2.386 acres of land, the majority of which is in second growth deciduous woodlands. A sanitary sewer easement runs along the northern and western portions of the site. The regulated wetlands associated with the site include Wetland 1A, located in part at the northwestern section of the site, as well as Wetland 1B, located off-site to the west (see Figure 2, attached).

The proposed regulated activity is for the construction of a parking lot with 116 spaces, to serve primarily for vehicle inventory for Suburban Subaru to the north of the site, with which it will connect. The parking area will occupy approximately 1.108 acres, with the remaining land (i.e., +/- 1.277 acres) to be permanently restricted from development.

Wetland delineations were conducted by Certified Soil Scientist, John Ianni, in December 2011 and March 2012. These wetland delineations, which appear on the submitted plans, were accepted by the Town of Vernon, through its wetland map amendment process (a.k.a., wetland redesignation) in 2012. REMA has reviewed these delineations in the field and has verified that they are substantially correct, and have not changed in the intervening years. For this application, REMA soil and wetland scientists conducted baseline natural resource inventories at the site on November 4th, 2020. However, it should be noted that REMA had previously inventoried the site on March 11th, and August 22nd, 2006, as part of a two-lot residential subdivision that created the subject parcels (see attached Photos 1 through 7).

We should note that we have evaluated the proposal for consistency with the Connecticut Inland Wetlands and Watercourses Act (Section 22a-36 through 22a-45 of the Connecticut General Statutes), and the Town's Inland Wetland & Watercourses Regulations.

Appended to this report are several figures (i.e., Figures 1 through 4), including a recent aerial photograph (e.g., 2019), as well as annotated photographs of the site's regulated areas (i.e., Photos 1 through 7, and A through F, attached).

2.0 SUMMARY OF EXISTING CONDITIONS

Introduction

- The subject site occupies roughly 2.386 acres of level to moderately steep terrain to the west and southwest of Acorn Road and to the north of Taylor Street in Vernon, CT. It is located within a small block of undeveloped, but previously disturbed land surrounded by

residential and commercial uses to the north, east, and south. A sanitary easement traverses the site both along its western and northern property boundaries. The Town of Manchester municipal boundary is about 50 to 75 feet to the west of the site.

Past Land Use

- Review of archived aerials and topographic maps (i.e., 1934, 1965, 1970, 1986, 1990, 1995, and 2004) show that the site was once mostly open field, with the exception of a wooded swath, south of the sewer easement at the northern edge of the property (see Figure 4, attached).

Surficial Geology & Soils

- Soils within the uplands are derived from glaciofluvial deposits (i.e., outwash, stratified sands and gravel) and are classified primarily as the moderately well drained Ninigret and Tisbury (21) soils series complex and the well-drained Manchester (37) soil series. Disturbed upland soils are mapped predominately as Udorthents (306), and encompass roughly one quarter of the site, especially along and near the sewer easement. The wetland-type soils are predominately mapped as Aquents (308w), that is, disturbed wetlands soils, which are associated with Wetland 1A, and the very poorly drained Saco (108) soil series, associated with Wetland 1B, which occurs off-site to the west. The Saco soil series are derived from alluvial deposits (i.e., stratified sand and silt). Also see the State of Connecticut Soil Survey (attached).

Uplands

- Maturing second-growth, oak-maple upland forest can be found in the southeastern portion of the site. Dominant vegetation includes red, white, and black oak, red maple, sugar maple, slippery elm, black cherry, white ash, cottonwood, multiflora rose (invasive), Morrow's honeysuckle (invasive), firebush (invasive), shadblow, blackberries, wood and Christmas ferns, Canada mayflower, grasses, partridgeberry, poison ivy, Asiatic bittersweet, and Virginia creeper.

- A few large diameter trees occur on the site. These appear to be along an old hedgerow between two fields as seen on the 1934 aerial photograph. One of these is an over four-foot diameter white oak, a "wolf tree," typically used to provide shade for livestock.

- A large portion of the site, particularly its northernmost and western sections (where the parking expansion is proposed), have much less mature vegetation and are characterized

by tangles and thickets a more open woody overstory and invasive plant species such as Asiatic bittersweet, firebush, Japanese barberry, multiflora rose, and Morrow's honeysuckle.

Wetlands/Watercourse

- The site's regulated resources are located within one watershed (i.e., local basin #4500-00-3-R5). The site's ditched intermittent watercourse flows westerly to join an unnamed perennial watercourse, tributary to the Hockanum River.

- The surface water quality classification of the site's waters, namely of unnamed perennial watercourse to which the site's ditched watercourse flows, is a Class A surface water, according to Connecticut Environmental Conditions Online (CTECO). However, it is likely that surface waters are somewhat impaired since much of this watercourse's watershed is developed, and it receives direct runoff from several commercial establishments, built in the 1950s and 1960s.

- ***Wetland 1A***, includes the easterly section of the off-site ditched watercourse, with both poorly and very poorly drained soils. Its hydrologic regimes includes *seasonally flooded*, *seasonally saturated*, and *temporarily flooded*. The wetlands' hydrogeomorphic classification (HGM)[1] is predominately *surface water depression* and *groundwater depression* (see attached wetland classification definitions).

- This wetland encompasses approximately 0.28 acres, occurring off-site and to the north of the site (see Figure 2, attached). Only +/- 320 square feet of Wetland 1A extends onto the subject site. Based on review of archival aerial photographs, as well as our site investigation, this wetland was excavated in the past, likely to act as a detention basin. It's "outlet," which consists of the ditched intermittent watercourse, is the restriction that keeps surface waters within Wetland 1A, which is somewhat depressional and will retain up to two feet of water, particularly after storm events. A roughly 2' x 3' arch pipe discharges runoff directly in Wetland 1A, at the eastern end of the ditched intermittent watercourse.

- ***Wetland 1A*** is much less diverse, vegetatively, than Wetland 1B. Dominant or common overstory trees include red maple, cottonwood, and American elm. Its woody understory includes such species as multiflora rose (invasive), Morrow's honeysuckle

[1] Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands, Technical Report WRP–DE–4, U.S. Army Corps of Engineers Engineer Waterways Experiment Station, Vicksburg, MS

(invasive), glossy buckthorn (invasive), and spicebush. Herbaceous species observed include skunk cabbage, smartweeds, and jewelweed.

- ***Wetland 1B***, occurring entirely off-site to the west, is a predominately *very poorly drained, seasonally flooded* to *saturated, palustrine, broad-leaved deciduous forested wetland* (PFO1F), per the National Wetland Inventory (NWI) classification. The wetlands' hydrogeomorphic classification (HGM)[2] is predominately *groundwater slope*.

- ***Wetland 1B*** is roughly 2.3 acres in size, and drains to the unnamed perennial tributary of the Hockanum River at its far western extent, behind the Sherman-Williams paint store (see Figure 4).

- ***Wetland 1B*** is characterized by a somewhat more open overstory (canopy closure: +/- 65 - 70%). Its woody overstory is dominated by red maple, but also includes green ash, American and slippery elm, black cherry, and sycamore. Its woody understory is relatively open, but diverse, and incudes such species as multiflora rose, Japanese barberry (invasive), Morrow's honeysuckle (invasive), glossy buckthorn (invasive), gray dogwood, nannyberry, northern arrowwood, elderberry, highbush blueberry, maleberry, shadblow, meadowsweet, and winterberry. Herbaceous species are moderately diverse and dense. Those observed during the off-season included skunk cabbage, sedges, including tussock, fringed, and bladder, white avens, ferns (i.e., sensitive, crested, royal, cinnamon, New York, marsh, wood), goldenrods including rough-stemmed and swamp, jewelweed, smartweeds, water horehound, mad-dog skullcap, bittercress, New York aster, soft rush, violets, and false nettle.

Wetland Functions & Values

The evaluation units for the *Functions and Values Assessment* were Wetlands 1A and 1B. We have used best professional judgment in this assessment, while relying on the rationales found in the US Army Corps of Engineers' (USACE) *Descriptive Approach* (1995), the assessment methodology most commonly used in our region. Results are summarized below in Table 1.

Overall, ***Wetland 1B*** confers several principal functions predominately due to its size, relative undisturbed nature, which has been somewhat preserved by the fact that the ditched watercourse, which runs along its northern boundary, bypasses the bulk of the wetland,

[2] Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands, Technical Report WRP–DE–4, U.S. Army Corps of Engineers Engineer Waterways Experiment Station, Vicksburg, MS

general lack of invasive species, likely due to its very poorly drained soils that are at least saturated year round, and also its good floristic diversity and habitat structure, including microtopography. ***Wetland 1A***, however, is quite disturbed, directly receiving stormwater, has low vegetative diversity and structure, is replete with invasive species, and is small compared to Wetland 1B. It provides two principal functions due to the fact that it acts to polish stormwater.

Table 1: Summary of Wetland Function-Value Assessment

Function/Value	Wetland 1A	Wetland 1B
1.Groundwater Recharge/ Discharge	Y	**P**
2. Floodflow Alteration	Y	**P**
3. Fish and Shellfish Habitat	N/A	N/A
4. Sediment/Toxicant/ Pathogen Retention	**P**	**P**
5. Nutrient Removal	**P**	**P**
6. Production Export	N	Y
7. Sediment/Shoreline Stabilization	N	Y
8. Wildlife Habitat	Y	**P**
9. Recreation (Passive, Active)	N	Y
10. Educational/Scientific Value	N	Y
11. Uniqueness/Heritage	N	N
12 Visual Quality/Aesthetics	N	Y
13. Endangered Species Habitat[3]	N	N
14. Fish & Shellfish habitat (Marine)	N/A	N/A

Notes: *P = Principal function; Y = function present; N = function not appreciably present*

3.0 SUMMARY OF PROPOSED CONDITIONS

3.1 DIRECT WETLAND IMPACTS & URA ENCROACHMENT

Direct permanent wetland or watercourse impacts are not proposed. Encroachment within the site's 100-foot upland review area (URA), from wetland boundaries, consists of 21,670 square feet (i.e., 0.497 acres), as measured to the perimeter silt fence shown on the submitted plans.

3.2 POTENTIAL INDIRECT WETLAND IMPACTS

Indirect or secondary impacts to a wetland or watercourse can occur as a result of activities outside of wetlands or watercourses. Such impacts can be *short-term* or *long-term*, and are

typically associated with erosion and sedimentation, mostly during the construction period, the removal or disturbance of vegetation in upland areas but adjacent to wetlands or watercourses, the alteration of wetland hydrology or the flow regime of a watercourse, and the discharge of degraded surface water or groundwater, which may adversely impact the water quality of the regulated resources.

The potential for any of these indirect impacts to occur at the site as a result of the proposal depends on the regulated resources themselves, their ecological sensitivity, and their ecological and physical characteristics. These potential impacts are discussed below.

3.2.1 Erosion and Sedimentation

The potential for soil erosion and subsequent deposition in wetlands or watercourses exists at every construction site that involves soil disturbance. At this site the overall risk or the potential for adverse impacts from erosion and sedimentation is considered to be *moderate*. The primary reasons for this assessment are as follows: (1) a detailed erosion and sedimentation control plan has been prepared, which complies with the CT DEEP's 2002 *Connecticut Guidelines for Erosion and Sediment Control*; (2) the dominant soils in the areas to be graded and/or exposed, have *low* to *low-moderate* erodibility; and (3) for the most part slopes are nearly flat to gentle in the areas proposed for development. We note that the moderately steep slope in the southeasterly section of the site has been avoided and will be permanently restricted from development.

3.2.2 Removal of Native Vegetation and Habitat Loss

Habitat loss associated with land clearing is an unavoidable consequence of land development, which has the potential of impacting wetlands and watercourses. At the subject site, however, all of the on-site upland areas adjacent to wetlands are already encumbered by a sanitary sewer easement, have been cleared in the past, and contain invasive species and only young pole-size trees. Therefore, they do not contribute much as complimentary habitat to the wetlands. Wetland 1A is already up against development, while Wetland 1B, which is off-site, will still have a sufficient upland buffer to complement and protect its functions and values post-construction. Therefore, the potential of adverse impacts from land clearing to the regulated areas is minimal.

[3] Review of CT DEEP's Natural Diversity Database did not reveal any estimated habitats for listed species (i.e.,

3.2.3 Potential Impacts to Wetland Hydrology and Stream Flow

To the extent that the hydrologic and flow regimes of the wetlands and watercourse depend on the site, this will be mitigated by providing a permeable pavement surface within the parking lot's western section. This will allow for infiltration to the underlying sandy soils, recharging the groundwater table associated with these wetlands, specifically Wetland 1B, off-site. Furthermore, more than half of the site will remain undeveloped and will continue to recharge the groundwater regime that governs wetland hydrology. Therefore, the potential for adverse impacts to the hydrologic and flow regimes of the regulated resources is negligible.

3.2.4 Potential Water Quality Impacts

Stormwater runoff from impervious surfaces of commercial sites has the potential of degrading the water quality (i.e., surface and groundwater) of regulated resources. Generation of potential pollutants on impervious surfaces typically results from vehicular traffic over them. The more the "axle-miles" or the movements of vehicles over impervious surfaces, the higher is the loading of runoff constituents, including sediment, nutrients, heavy metals, and the like.

The proposed parking lot is not considered a significant generator of runoff constituents, as for example would be a parking lot of a commercial establishment, such as a grocery store or other retailer. The parking lot will used predominately for inventory of vehicles, most of them new, to be sold at the dealership. The primary best management practice (BMP) for water quality control is the proposed permeable pavement to be constructed at the western section of the parking lot. Runoff generated at the eastern section will sheet flow to the permeable pavement where it will be infiltrated and treated before interacting with the subsurface soil strata and the local water table associated with the regulated wetlands.

Permeable pavement (or porous asphalt) is largely recognized as a low impact development (LID) practice able to provide excellent water quantity and water quality control/treatment. The University of New Hampshire Stormwater Center has developed specifications based on multi-year testing showing the benefits of the stormwater treatment practice (see attached fact sheet and submitted plans). This BMP is suitable for cold-climate applications and also allows for reduced sand and salt usage. It can be introduced and function efficiently in areas where the permeability of the underlying soils is above 0.5 inch per hour. At this site, the

endangered, threatened, special concern) associated with the subject site.

soil parent materials are sandy outwash, capable of permeabilities in the 1.0 to 1.5 inch per hour range. Therefore, the existing water quality of the off-site downgradient wetlands and watercourses will be maintained in the long-term. No significant adverse impacts to the water quality of the regulated resources is expected.

4.0 CONCLUSION

It is our professional opinion that that the proposal will have no direct impacts and minimal indirect impacts to wetlands and watercourses. Following implementation of the proposed mitigation strategies, such as the proposed LID practice of utilizing permeable pavement, and including a carefully maintained erosion and sedimentation control plan, there will be no long-term significant or adverse impacts to regulated wetlands and watercourses that occur off-site and downstream.

Please feel free to contact our office with any questions on the above.

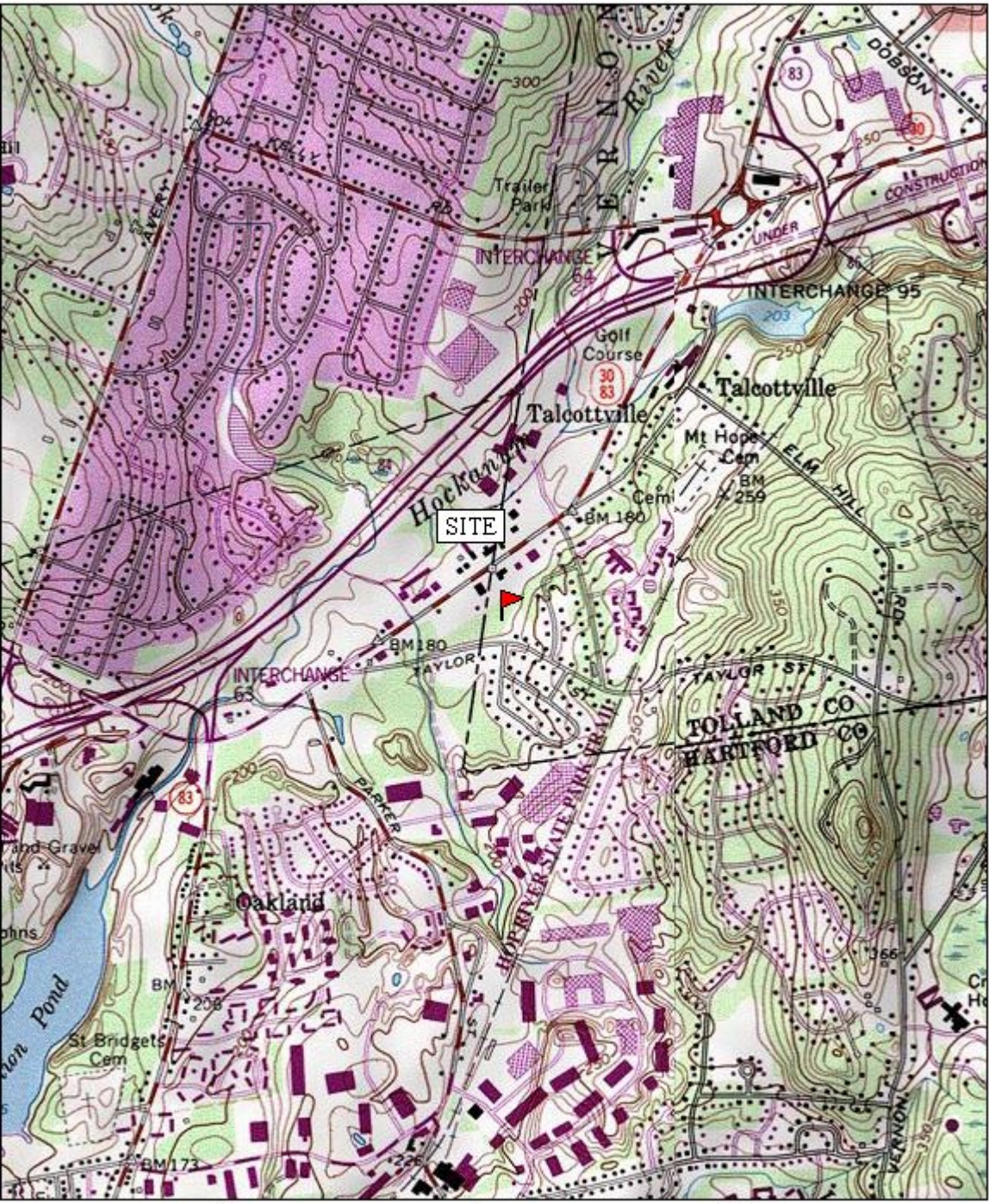
Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

George T. Logan, MS, PWS, CSE
Registered Soil Scientist/Professional Wetland Scientist
Certified Senior Ecologist

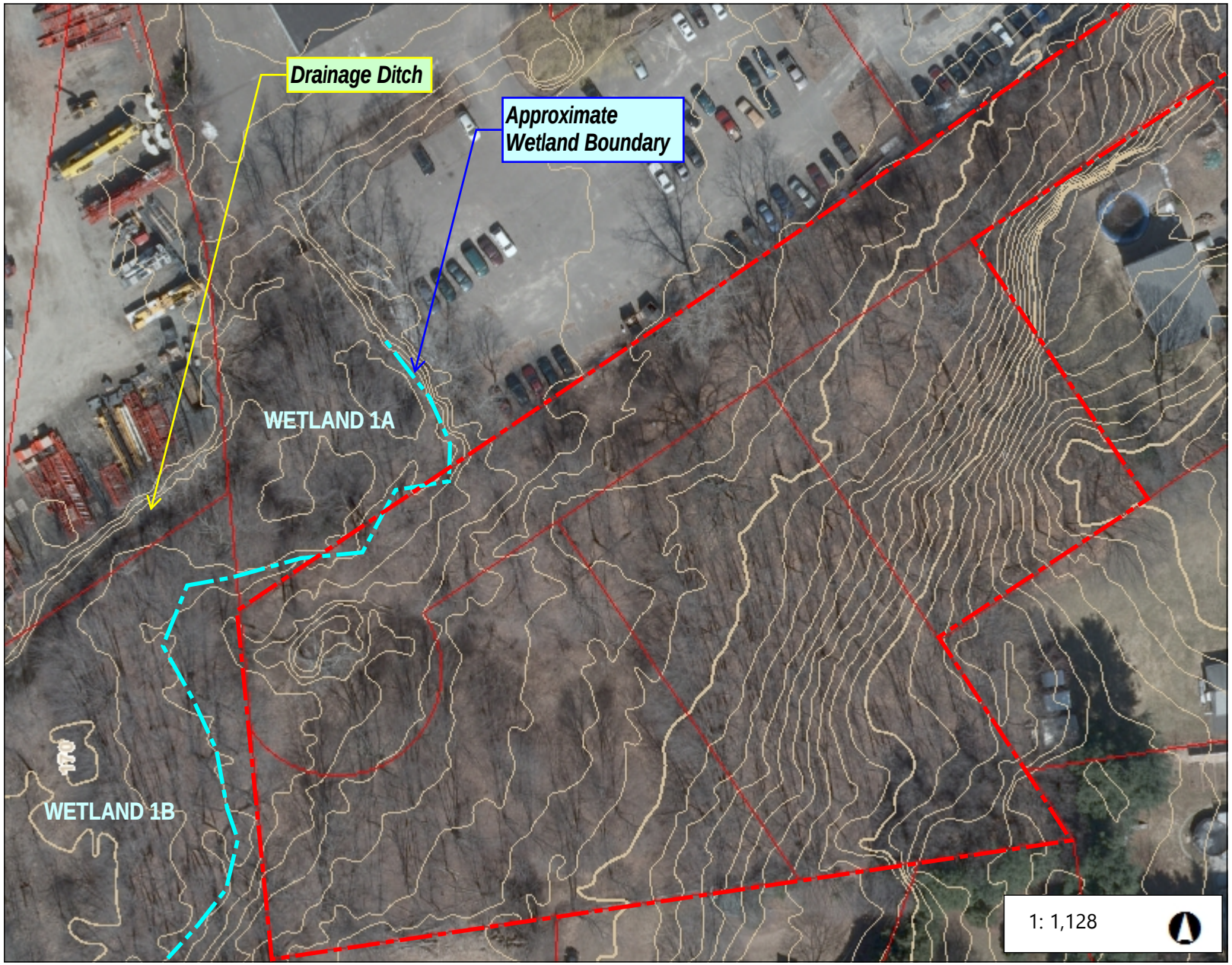
Attachments: Figures 1 through 4
Photos 1-7, A-F
Web Soil Survey of Subject Site
Wetland Classification/Characterization Definitions
UNH-SC Permeable Pavement Fact Sheet

Figure 1: Site Locus, Acorn Road, Vernon, CT



CT Environmental Conditions Online

FIGURE 2: 34 & 42 Acorn Road, Vernon, CT
as seen on a 2009 aerial with 2016 State topography



Legend

- Parcels for Protected Open Sp
- DEEP Property
  - State Forest
  - State Park
  - State Park Scenic Reserve
  - State Park Trail
  - Natural Area Preserve
  - Historic Preserve
  - Wildlife Area
  - Wildlife Sanctuary
  - DEP Owned Waterbody
  - Water Access
  - Flood Control
  - Fish Hatchery
  - Other
- Protected Open Space Mappin
  - Federal
  - Land Trust
  - Municipal
  - Private
  - State
- Light Gray Canvas Base

Notes

0.0 0 0.02 0.0 Miles

THIS MAP IS NOT TO BE USED FOR NAVIGATION

This map is intended for general planning, management, education, and research purposes only. Data shown on this map may not be complete or current. The data shown may have been compiled at different times and at different map scales, which may not match the scale at which the data is shown on this map.


FIGURE 3:
34 & 42 Accorn Road, Vernon, CT
(as seen on February 2020 aerial photograph)
Legend
42 Acorn Rd
Tolland Turnpike
83
Hartford Turnpike
42 Acorn Rd
Acorn Rd
Allison Rd
Taylor St
Hartl Dr
Google Earth
Image © 2020 Maxar Technologies
N
500 ft

FIGURE 4: 34 & 42 Acorn Road, Vernon, CT as seen on a 1965 aerial (CT State Library)

Photo 1: Typical wooded uplands; lower well drained to moderately well drained portion of site; facing northeasterly

Photo 2: Invasive plants along existing sewer line through site; facing northerly

Photo 3: Off-site (mostly) northerly wetland; receives storm drainage from surrounding landuses; facing northwesterly

Photo 4: Off-site (northerly) forested wetland; facing northeasterly

Photo 5: Portion of off-site (mostly) northerly wetland; receives storm drainage from surrounding landuses; facing northwesterly

Photo 6: Off-site (northerly) wetland drains out behind area businesses to the west; facing northeasterly

Photo 7: Off-site (west) young forested swamp; approximately 175 feet from western property boundary; facing westerly

Proposed Parking Lot Expansion, Acorn Road, Vernon, CT
Photos taken November 4, 2020, by REMA Ecological Services, LLC

Photo A: Wetland 1A; previously excavated detention basin; facing southerly

Photo B: Drainage ditch (i.e., intermittent watercourse) connecting Wetlands 1A and 1B; facing easterly

Proposed Parking Lot Expansion, Acorn Road, Vernon, CT
Photos taken November 4, 2020, by REMA Ecological Services, LLC

Photo C: Drainage ditch (i.e., intermittent watercourse) connecting Wetlands 1A and 1B; facing westerly

Photo D: Wetland 1B (off-site) as viewed from near western property boundary; facing westerly

Proposed Parking Lot Expansion, Acorn Road, Vernon, CT
Photos taken November 4, 2020, by REMA Ecological Services, LLC

Photo E: Wetland 1B, roughly 120 feet west of western property boundary; this wetland had a more open habit 30 – 40 years ago; facing westerly

Photo F: Central property uplands; note young pole-sized trees; facing southwesterly

Soil Map—State of Connecticut
(34 & 42 Accorn Road, Vernon, CT)

Map Scale: 1:2,610 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 35 70 140 210

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 20, Jun 9, 2020

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

Date(s) aerial images were photographed: Jul 15, 2019—Oct 22, 2019

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
33A	Hartford sandy loam, 0 to 3 percent slopes	1.9	6.0%
108	Saco silt loam	9.4	30.2%
237A	Manchester-Urban land complex, 0 to 3 percent slopes	2.0	6.5%
237C	Manchester-Urban land complex, 3 to 15 percent slopes	11.4	36.4%
306	Udorthents-Urban land complex	1.1	3.5%
307	Urban land	5.5	17.6%
Totals for Area of Interest		**31.3**	**100.0%**

WETLANDS: *The Physical Environment*

WETLAND HYDROGEOMORPHIC CLASSIFICATION

Surface-Water Depression Wetlands: In these wetlands, precipitation and overland flow (surface runoff) collect in a depression where there is little or no groundwater discharge. Water leaves the wetland principally by evaporotranspiration and infiltration (groundwater recharge). The wetland hydrologic system lies above the local or regional groundwater system and is isolated from it by an unsaturated zone; thus, it is said to be "perched." In the glaciated Northeast, surface-water depression wetlands are most likely to form over bedrock or till deposits in topographically elevated areas of landscape; however, they may develop in lowland kettles or ice-block basins that formed in glaciolacustrine or fine-textured glaciofluvial deposits.

Surface-Water Slope Wetlands: These wetlands are located along the edge of stream or lake or on the sloping surface of a floodplain. They may occur on till or stratified drift but are commonly found on alluvium. While precipitation and overland flow also feed these wetlands, the principal source of water is the overflow of the adjacent water body. The sloping surface of the wetland permits water to drain readily back to the lake or river as its stage falls. As was the case with the previous class, the wetland surface usually lies well above the local water table, so groundwater discharge to the wetland is negligible or nonexistent. Groundwater recharge from the wetland is possible, depending on the permeability of underlying surficial deposits.

Groundwater Depression Wetlands: These wetlands occur where a basin intercepts the local groundwater table, so that groundwater discharge as well as precipitation and overland flow feed the wetland. Classic groundwater depression wetlands have no surface drainage leaving the site; however, occasional streamflow out may occur form basin overflow. Groundwater inflow may be continuous or seasonal, depending upon the depth of the basin and the degree of fluctuation of the local water table. During periods when the wetland water level is higher than the local groundwater table (e.g., after major precipitation events in dry season), groundwater recharge may occur. Groundwater may enter the wetland basin from all directions, or it may discharge in one area and recharge in another. In the glaciated Northeast, groundwater depression wetlands are most likely to occur in stratified drift, particularly in coarse-textured glaciofluvial deposits where relatively rapid movement between groundwater and surface water can occur.

Groundwater Slope Wetlands: These wetlands occur where groundwater discharges as springs or seeps at the land surface and drains away as streamflow. Most commonly, these wetlands occur on hillsides over till deposits or at the base of hills where stratified drift and till come into contact. Headwater wetlands are typically groundwater slope wetlands. The local water table slopes toward the wetland surface. Where groundwater flow is continuous, the soil remains saturated. At many sites, however, groundwater inputs cease during late summer or early fall as evaporotranspiration depletes soil moisture in the root zone, in which case the soil is only seasonally saturated. Permanent ponding of water is prevented by the sloping land surface, but water may collect temporarily in isolated depressions. Precipitation and overland flow provide additional water to the wetland on an intermittent basis. Groundwater recharge may occur in the wetland after such events, but amounts are likely to be negligible, especially where wetland soils have formed over dense lodgment till deposits. Where such deposits are present, groundwater slope wetlands may be fed primarily by shallow groundwater systems perched above the regional system.

Reference:

Golet, C.G., A.J.K. Calhoun, W.R. DeRagon, D.J. Lowry, and A.J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. USFWS. Biological Report No. 12

WETLANDS: *The Physical Environment*

SOIL DRAINAGE CLASSES

Excessively drained: Brightly colored; usually coarse-textured; rapid permeability; very low water-holding capacity; subsoil free of mottles

Somewhat excessively drained: Brightly colored; rather sandy; rapid permeability; low water-holding capacity; subsoil free of mottles

Well drained: Color usually bright yellow, red, or brown; drain excess water readily, but contain sufficient fine material to provide adequate moisture for plant growth; subsoil is free of mottles to a depth of at least 36 inches.

Moderately well drained: Generally any texture, but internal drainage is restricted to some degree; mottles common in the lower part of the subsoil, generally at a depth of 18 to 36 inches; may remain wet and cold later in spring; generally suited for agricultural use.

Somewhat poorly drained: Remain wet for long periods of time due to slow removal of water; generally have a slowly permeable layer within the profile or a high water table; mottles common in the subsoil at a depth of 8 to 18 inches.

Poorly drained: Dark, thick surface horizons commonly; gray colors usually dominate subsoil; water table at or near the surface during a considerable part of the year; mottles frequently found within 8 inches of the soil surface.

Very poorly drained: Generally thick black surface horizons and gray subsoil; saturated by high water table most of the year; usually occur in level or depressed sites and are frequently ponded with water.

Reference:

Wright, W. R., and E. H. Sautter. 1979. Soils of Rhode Island landscapes. R.I. Agric Exp. Station Bull. 429. 42 pp.

WETLANDS: *The Plant Community*

WETLAND CLASSES AND SUBCLASSES IN THE GLACIATED NORTHEAST

WETLAND CLASS	WETLAND SUBCLASS
Open Water	(OW-1) Vegetated (OW-2) Floating-leaved (OW-3) Non-vegetated
Deep Marsh	(DM-1) Dead Woody (DM-2) Shrub (DM-3) Sub-shrub (DM-4) Robust (DM-5) Narrow-leaved (DM-6) Broad-leaved
Shallow Marsh	(SM-1) Robust (SM-2) Narrow-leaved (SM-3) Broad-leaved
Meadow	(M-1) Ungrazed (M-2) Grazed
Shrub Swamp	(SS-1) Sapling (SS-2) Bushy (SS-3) Compact (SS-4) Aquatic
Wooded Swamp	(WS-1) Deciduous (WS-2) Evergreen
Bog	(BG-1A) Compact Shrub (BG-1B) Bushy Shrub (BG-2) Wooded (BG-3) Emergent

Note: Subclass (OW-2) has replaced (SM-4)
Seasonally Flooded Class (SF-1 & SF-2) has been removed

Reference:

Golet, F.C., and J.S. Larson. 1974. Classification of freshwater wetlands in the glaciated Northeast. USFWS Resour. Publ. 116. 56 pp.

WETLANDS: *The Physical Environment*

COMMON WATER REGIMES OF NORTHEASTERN WETLANDS

Seasonally flooded: Surface water is present for extended periods, especially early in the growing season, but is absent by the end of the season in most years. When surface water is absent, the water table is often near the land surface.

Temporarily flooded: Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface for most of the season.

Seasonally saturated: The soil is saturated to the surface, especially early in the growing season, but unsaturated conditions prevail by the end of the season in most years. Surface water is absent except for groundwater seepage and overland flow.

Semi-permanently flooded: Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land surface.

Permanently flooded: Water covers the land surface throughout the year in all years. Vegetation is composed of obligate hydrophytes.

Saturated: The substratum is saturated to the surface for extended periods during the growing season, but surface water is seldom present. This water regime applies to permanently saturated, non-flooded wetlands such as bogs.

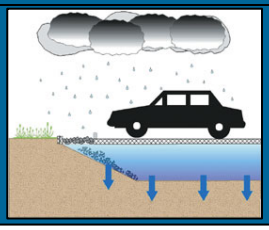
References:

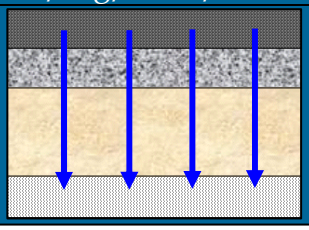
Golet, F. C., A. J. K. Calhoun, W. R. DeRagon, D. J. Lowry and A. J. Gold. 1993. Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile. U. S. Dep. Int. Fish Wild. Serv. Biol. Rep. 12, 152 pp.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U. S. Fish Wild. Serv. Biol. Serv. Program FWS-OBS 79/31. 103 pp.

Porous Asphalt Pavement for Stormwater Management

The UNH Stormwater Center Web: www.unh.edu/erg/cstev/





Benefits and Uses

Porous Asphalt can be used in replace of traditional stormwater management measures given the proper conditions. Porous Asphalt's primary advantages are:

1. Quantity and Flood Control
2. Water Quality Treatment
3. Recharges Groundwater to Underlying Aquifers
4. Allows for Reduction of Stormwater Infrastructure (Piping, Catch-Basins, Retention Ponds, Curbing, etc.)
5. Suitable for Cold-Climate Applications, Maintains Recharge Capacity When Frozen
6. Allows for Reduced Salt and Sand Usage Due to Low/No Black Ice Development
7. Maintains Traction While Wet
8. Reduced Spray from Traveling Vehicles, Reduced Roadway Noise
9. Extended Pavement Life Due to Well Drained Base and Reduced Freeze-Thaw

Disadvantages

- Requires Routine (Quarterly) Vacuum Sweeping (Vac-Assisted Dry Sweeper Only)
- Proper Construction Stabilization and Erosion Control are Required to Prevent Clogging
- Quality Control for Material Production and Installation are Essential for Success
- Accidental Seal-Coating or Similar Surface Treatment Will Cause Failure

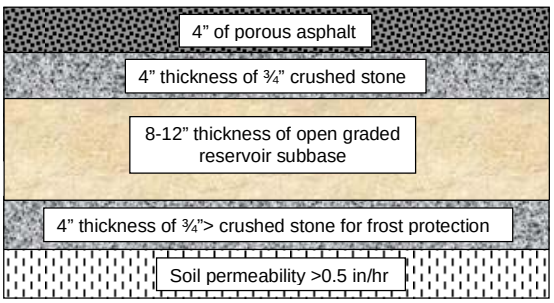
Cost & Maintenance

- Total Project Cost is Comparable for Porous Asphalt with Reduced Stormwater Infrastructure VS. Standard Pavement Applications where Stormwater Infrastructure is Required
- Materials Cost is ~20-25% More Than Traditional Asphalt
- Long-term Maintenance is Required by Routine Quarterly Vacuum Sweeping
- Sweeping Cost May Be Off-set by Reduced Deicing Costs
- Repairs Can be Made with Standard Asphalt Not to Exceed 10% of Surface Area

Design Criteria

- Soil Permeability is Recommended Between 0.25-3.0 Inches Per Hour
- Recommended Drainage Time of 24-48 Hours
- Sub-Drains Should be Used Where Proper Drainage May be an Issue to Minimize Frost Damage
- Most Appropriate for use with Low-Use Roadways and Parking Lots—Without a Modified Asphalt Binder
- 3-5 Feet of Vertical Separation is Needed from Seasonal High Groundwater

TYPICAL POROUS ASPHALT CROSS-SECTION



Additional Resources

- The UNH Stormwater Center, Porous Asphalt Specs - General Porous Bituminous Paving and Groundwater Infiltration Beds, http://www.unh.edu/erg/cstev/
- Federal Highway Administration (2006) Porous Pavement Fact Sheet http://www.fhwa.dot.gov/environment/ultraurb/3fs15.htm
- Ferguson, B. (2005), Porous Pavements, CRC Press.
- Porous Asphalt Pavements (2004) Information Series 131. The National Asphalt Pavement Association, Lanham, MD.