1. Revised Conservation Agenda

   Documents:

   2-26-2026 REVISED CONSERVATION AGENDA.PDF

2. 47 Partridge Street

   Documents:

   2026-01-18 SITE PLANS 47 PARTRIDGE STREET.PDF
   2026-02-12 STORMWATER REPORT-47 PARTRIDGE STREET NOI.PDF
   47 PARTRIDGE STREET NOI APPLICATION.PDF

Tel: (508) 520-4929 Fax: (508) 520 4906

Town of Franklin

Conservation Commission

AGENDA

February 26, 2026

REVISED February 24, 2026

7:00 PM

This Conservation Commission Meeting is available to be attended in person and via the ZOOM platform. In an effort to ensure citizen engagement and comply with open meeting law regulations, citizens will be able to dial into the meeting using the provided phone number (Cell phone or Landline Required) OR citizens can participate by copying the link (Phone, Computer, or Tablet required). Please click/**copy and paste the link** https://us02web.zoom.us/j/82446444342 or call on your phone at 929-205-6099, meeting number is 824 4644 4342. Attendees are muted until they use the 'raise hand' function to indicate that they wish to speak. If you are having trouble accessing through the link, please call on your phone and use *6 to toggle between mute/unmute and *9 to raise your hand. If you wish to attend in person, the meeting is held in the Council Chambers, second floor of the Municipal Building.

0.0 SCHEDULING

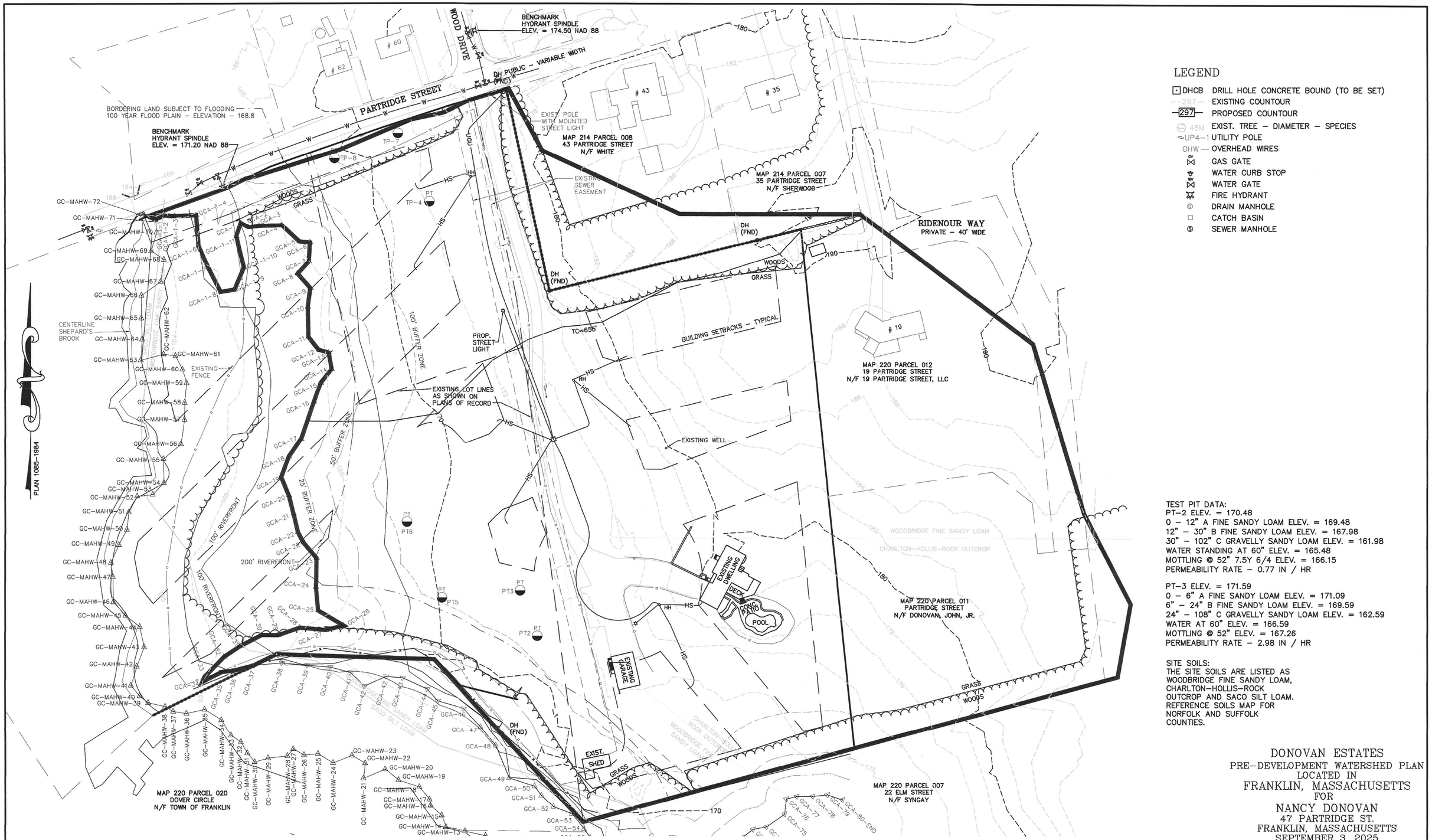
1. PUBLIC HEARINGS:

- **1.1.** 7:01 PM NOI – Nicholas Drive/Prospect Street Culvert Repair
- **1.2.** 7:02 PM NOI – Symphony Drive/Tanglewood Estates II
- **1.3.** 7:03 PM NOI – 670 King Street
- **1.4.** 7:04 PM NOI – Lewis Street
- **1.5.** 7:05 PM NOI – 47 Partridge Street

2. GENERAL BUSINESS

- **2.1 Friendly 40B Lip**
- **2.2 Minor Buffer Zone Activities**
  - **2.2.1** 76 Plain Street
  - **2.2.2** Elm Street-National Grid Pole Project
- **2.3 Request for Determination of Applicability**
- **2.4 Permit Modifications/Extensions**
  - **2.4.1** 47 Southgate Road MBZA
- **2.5 Certificates of Compliance**
  - **2.5.1** 38 Pond Street CE159-1201
- **2.6 Violations/Enforcement**
- **2.7 Minutes**
  - **2.7.1** February 12, 2026
- **2.8 Discussions**
  - **2.8.1** BETA Agent Services

Chair & Commission Comments



LEGEND

- DHCB — DRILL HOLE CONCRETE BOUND (TO BE SET)
- 297 — EXISTING COUNTOUR
- 297 — PROPOSED COUNTOUR
- 48M — EXIST. TREE – DIAMETER – SPECIES
- UP4–1 — UTILITY POLE
- OHW — OVERHEAD WIRES
- GAS GATE
- WATER CURB STOP
- WATER GATE
- FIRE HYDRANT
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE

TEST PIT DATA:
PT–2 ELEV. = 170.48
0 – 12" A FINE SANDY LOAM ELEV. = 169.48
12" – 30" B FINE SANDY LOAM ELEV. = 167.98
30" – 102" C GRAVELLY SANDY LOAM ELEV. = 161.98
WATER STANDING AT 60" ELEV. = 165.48
MOTTLING @ 52" 7.5Y 6/4 ELEV. = 166.15
PERMEABILITY RATE – 0.77 IN / HR

PT–3 ELEV. = 171.59
0 – 6" A FINE SANDY LOAM ELEV. = 171.09
6" – 24" B FINE SANDY LOAM ELEV. = 169.59
24" – 108" C GRAVELLY SANDY LOAM ELEV. = 162.59
WATER AT 60" ELEV. = 166.59
MOTTLING @ 52" ELEV. = 167.26
PERMEABILITY RATE – 2.98 IN / HR

SITE SOILS:
THE SITE SOILS ARE LISTED AS WOODBRIDGE FINE SANDY LOAM, CHARLTON–HOLLIS–ROCK OUTCROP AND SACO SILT LOAM. REFERENCE SOILS MAP FOR NORFOLK AND SUFFOLK COUNTIES.

DONOVAN ESTATES
PRE–DEVELOPMENT WATERSHED PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

DATE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

DATE		INT.
2/18	FIELD BY:	BL
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UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508–384–6560 FAX 508–384–6566

SEPT. 3, 2025
1" = 50'
UC1340
1 of 1

LEGEND

- DHCB — DRILL HOLE CONCRETE BOUND (TO BE SET)
- 297 — EXISTING COUNTOUR
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- 48M — EXIST. TREE – DIAMETER – SPECIES
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DONOVAN ESTATES
POST–DEVELOPMENT WATERSHED PLAN
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UC1340
1 of 1

ABUTTERS WITHIN 300'

220–020
TOWN OF FRANKLIN
355 EAST CENTRAL ST.
FRANKLIN, MA. 02038

220–017
HENRY & MICHELLE BRATCHER
85 PARTRIDGE ST.
FRANKLIN, MA. 02038

220–016
ROBERT & MARLENE OLIVER
81 PARTRIDGE ST.
FRANKLIN, MA. 02038

220–007
EDWARD & MARION SYNGAY
22 ELM ST.
FRANKLIN, MA. 02038

220–011
JOHN DONAVAN JR.
47 PARTRIDGE ST.
FRANKLIN, MA. 02038

220–012
19 PARTRIDGE LLC.
19 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–005
STANLEY & DONNA SYNGAY
24 ELM ST
FRANKLIN, MA. 02038

214–006
MICHAEL & AMY JOHNSON
15 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–007
JOSHUA SHERWOOD
35 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–008
WILLIAM & ALLISON WHITE
43 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–027
CHAD & KRISTEN HESS
46 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–028
FATHIMA SALAHUDEEN
42 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–029
CAROL–ANNE L. PISO REVOCABLE TRUST
40 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–030
JENNIFER & LOUIS BARBA
32 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–010
PATRICK & JULIA WILLIAMS
60 PARTRIDGE ST.
FRANKLIN, MA. 02038

214–009
ROBERT & NANCY HENNESSEY
62 PARTRIDGE ST.
FRANKLIN, MA. 02038

220–056
TOWN OF FRANKLIN
355 EAST CENTRAL ST.
FRANKLIN, MA. 02038

220–055
BENJAMIN & MONA KLIBANOFF
137 MASTRO DR.
FRANKLIN, MA. 02038

220–054
CRAIG & ELLEN MOODIE
82 PARTRIDGE ST.
FRANKLIN , MA. 02038

214–011
JOSEPH & ELAINA COOK
4 HARBORWOOD DR.
FRANKLIN, MA. 02038

214–012
KENNEY REVOCABLE TRUST
6 HARBORWOOD DR.
FRANKLIN, MA. 02038

214–013
JOSEPH & NANCY SCARINGELLO
8 HARBORWOOD DR.
FRANKLIN, MA. 02038

214–014
MARK & NOREEN REARDON
10 HARBORWOOD DR.
FRANKLIN, MA. 02038

220–010
JOHN DONOVAN & ANTHONY CLARIZIO
RIDENOUR WAY
FRANKLIN, MA. 02038

214–025
ROMSEY FAMILY IRREVOCABLE TRUST
6 HARBORWOOD DR.
FRANKLIN, MA. 02038

214–026
HARBOR REALTY TRUST
3 HARBORWOOD DR.
FRANKLIN, MA. 02038

DONOVAN ESTATES

DEFINITIVE SUBDIVISION PLAN OF LAND
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025

FOR REGISTRY USE ONLY

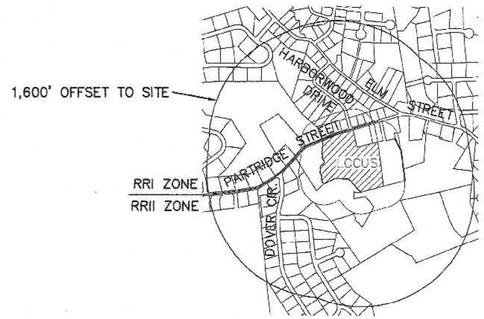
I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

_____

TOWN CLERK – FRANKLIN DATE



VICINITY MAP

SCALE: 1" = 800'

WAIVER REQUESTS:
1. SECTION 330–13.A.(1) A WAIVER IS REQEUSTED TO CONSTRUCT A SIDEWALK ON ONE SIDE OF THE ROADWAY.
2. SECTION 330–11.B.(1) A WAIVER IS REQEUSTED TO ALLOW LESS THAN 42" OF COVER OVER THE DRAIN PIPES. DRAIN PIPES TO BE CLASS V RCP.
3. SECTION 330–11.A.(4) A WAIVER IS REQEUSTED TO ALLOW THE WATER QUALITY SWALE ON LOT 8 TO BE LOCATED WITHIN AN EASEMENT.

REFERENCES:
ASSESSORS PARCELS 220–013,
220–014 AND 220–015
DEED BOOK 39210 PAGE 372
PLAN 1085 OF 1984
PLAN 1469 OF 1987
PLAN 800 OF 1987
PLAN 1557 OF 1985
PLAN 427 OF 1994
PLAN 430 OF 1995
ANORAD RECORDED IN BOOK 42515 PAGE 133

DRAWING INDEX

OWNER:
DONOVAN FAMILY REALTY TRUST
47 PARTRIDGE ST.
FRANKLIN, MA

APPLICANT:
DONOVAN FAMILY REALTY TRUST
C/O ATTORNEY RICHARD CORNETTA
47 PARTRIDGE ST.
FRANKLIN, MA

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

CARLOS A. QUINTAL P.E. #30812

DONOVAN ESTATES
COVER SHEET
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 800'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

DATE

GRAPHIC SCALE
800 0 400 800 1600 3200
(IN FEET)
1 inch = 800 ft.

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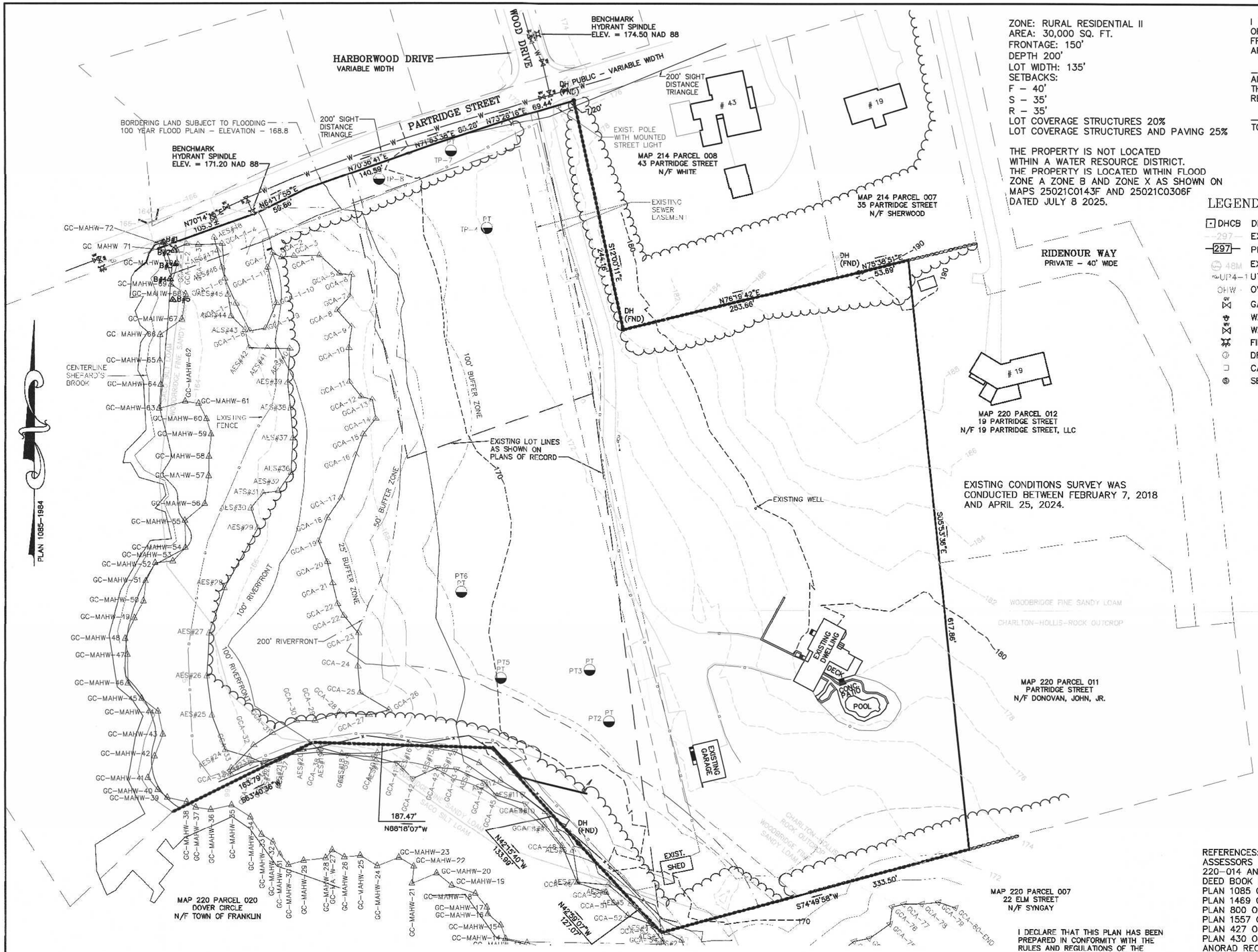
UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508–384–6560 FAX 508–384–6566

DATE	SEPT. 3, 2025
SCALE	1" = 800'
PROJECT	UC1340
SHEET	1 of 11



ZONE: RURAL RESIDENTIAL II
AREA: 30,000 SQ. FT.
FRONTAGE: 150'
DEPTH 200'
LOT WIDTH: 135'
SETBACKS:
F – 40'
S – 35'
R – 35'
LOT COVERAGE STRUCTURES 20%
LOT COVERAGE STRUCTURES AND PAVING 25%

THE PROPERTY IS NOT LOCATED WITHIN A WATER RESOURCE DISTRICT. THE PROPERTY IS LOCATED WITHIN FLOOD ZONE A ZONE B AND ZONE X AS SHOWN ON MAPS 25021C0143F AND 25021C0306F DATED JULY 8 2025.

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

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TOWN CLERK – FRANKLIN DATE

FOR REGISTRY USE ONLY

LEGEND

- DHCB DRILL HOLE CONCRETE BOUND (TO BE SET)
- 297 EXISTING COUNTOUR
- 297 PROPOSED COUNTOUR
- 48M EXIST. TREE – DIAMETER – SPECIES
- UP4–1 UTILITY POLE
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TEST PIT DATA:

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0 – 12" A FINE SANDY LOAM ELEV. = 169.48
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MOTTLING @ 52" 7.5Y 6/4 ELEV. = 166.15
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24" – 108" C GRAVELLY SANDY LOAM ELEV. = 162.59
WATER AT 60" ELEV. = 166.59
MOTTLING @ 52" ELEV. = 167.26
PERMEABILITY RATE – 2.98 IN / HR

PT–5 ELEV. = 170.02
0 – 12" A SANDY LOAM ELEV. = 169.02
12" – 18" B SANDY LOAM ELEV. = 168.52
30" – 60" C FINE SANDY LOAM ELEV. = 165.02
PERMEABILITY RATE – 1.34 IN / HR

PT–6 ELEV. = 169.11
0 – 12" A SANDY LOAM ELEV. = 168.11
12" – 18" B SANDY LOAM ELEV. = 167.51
18" – 60" C FINE SANDY LOAM ELEV. = 164.11
PERMEABILITY RATE – 2.02 IN / HR

TP–7 ELEV. = 171.31
0 – 12" A SANDY LOAM ELEV. = 170.31
12" – 18" B SANDY LOAM ELEV. = 169.81
18" – 60" C FINE SANDY LOAM ELEV. = 166.31
NO WATER OBSERVED @ ELEV. = 166.31
MOTTLING @ 24" ELEV. = 169.31

TP–8 ELEV. = 169.23
0 – 12" A FINE SANDY LOAM ELEV. = 168.23
12" – 18" B FINE SANDY LOAM ELEV. = 167.73
18" – 60" C GRAVELLY SANDY LOAM ELEV. = 164.23
NO WATER OBSERVED @ 60" ELEV. = 164.23
MOTTLING @ 20" ELEV. = 167.56

REFERENCES:
ASSESSORS PARCELS 220–013, 220–014 AND 220–015
DEED BOOK 39210 PAGE 372
PLAN 1085 OF 1984
PLAN 1469 OF 1987
PLAN 800 OF 1987
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ANORAD RECORDED IN BOOK 42515 PAGE 133

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

DONOVAN ESTATES
EXISTING CONDITIONS PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
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FRANKLIN PLANNING BOARD

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DATE

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COMMONWEALTH OF MASSACHUSETTS
ANDREW C. MURPHY
No. 35042
PROFESSIONAL LAND SURVEYOR
1/22/26
ANDREW C. MURPHY P.L.S. #35042

DATE		INT.
2/18	FIELD BY:	BL
BK#	FIELD BOOK	PG#
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UNITED CONSULTANTS INC.
650 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508–384–6560 FAX 508–384–6566

SEPT 3, 2025
1" = 50'
UC1340
2 of 11

ZONE: RURAL RESIDENTIAL II
AREA: 30,000 SQ. FT.
FRONTAGE: 150'
DEPTH 200'
LOT WIDTH: 135'
SETBACKS:
F – 40'
S – 35'
R – 35'
LOT COVERAGE STRUCTURES 20%
LOT COVERAGE STRUCTURES AND PAVING 25%

THE PROPERTY IS NOT LOCATED WITHIN A WATER RESOURCE DISTRICT. THE PROPERTY IS LOCATED WITHIN FLOOD ZONE A ZONE B AND ZONE X AS SHOWN ON MAPS 25021C0143F AND 25021C0306F DATED JULY 8 2025.

FOR REGISTRY USE ONLY

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TOWN CLERK – FRANKLIN DATE

HARBORWOOD DRIVE
VARIABLE WIDTH

PARTRIDGE STREET

DH PUBLIC – VARIABLE WIDTH (FND)

RIDENOUR WAY
PRIVATE – 40' WIDE

PROPOSED ROAD
LENGTH = 600.00
"MINOR STREET"
WIDTH = 56'

LOT 1
42,529 SQ. FT.
BUILDING SETBACKS – TYPICAL

LOT 2
34,041 SQ. FT.

LOT 3
60,307 SQ. FT.

LOT 4
42,999 SQ. FT.

LOT 5
35,387± SQ. FT.

LOT 6
54,576± SQ. FT.

LOT 7
82,214± SQ. FT.

LOT 8
82,624± SQ. FT.

LOT P
44,578± SQ. FT.

PARCEL "D"
21,192 SQ.FT.
NOT TO BE CONSIDERED A SEPARATE BUILDING LOT

MAP 214 PARCEL 008
43 PARTRIDGE STREET
N/F WHITE

MAP 214 PARCEL 007
35 PARTRIDGE STREET
N/F SHERWOOD

MAP 220 PARCEL 012
19 PARTRIDGE STREET
N/F 19 PARTRIDGE STREET, LLC

MAP 220 PARCEL 011
PARTRIDGE STREET
N/F DONOVAN, JOHN, JR.

MAP 220 PARCEL 020
DOVER CIRCLE
N/F TOWN OF FRANKLIN

MAP 220 PARCEL 007
22 ELM STREET
N/F SYNGAY

CENTERLINE SHEPARD'S BROOK

100' RIVERFRONT

BORDERING LAND SUBJECT TO FLOODING – ELEVATION 169

EXISTING LOT LINES AS SHOWN ON PLANS OF RECORD

EXISTING SEWER EASEMENT

PROPOSED 6" x 6" 3' CONCRETE BOUND (TYP)

DRAINAGE EASEMENT

EXISTING DWELLING
DECK
SONO TUB
POOL
EXISTING GARAGE
EXIST. SHED
EXISTING WELL
HOUSE NUMBER

PLAN 1085–1984

LEGEND

- ⊡ DHCB DRILL HOLE CONCRETE BOUND (TO BE SET)
- --297-- EXISTING COUNTOUR
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ANDREW C. MURPHY P.L.S. #35042

DONOVAN ESTATES
LOT LAYOUT PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
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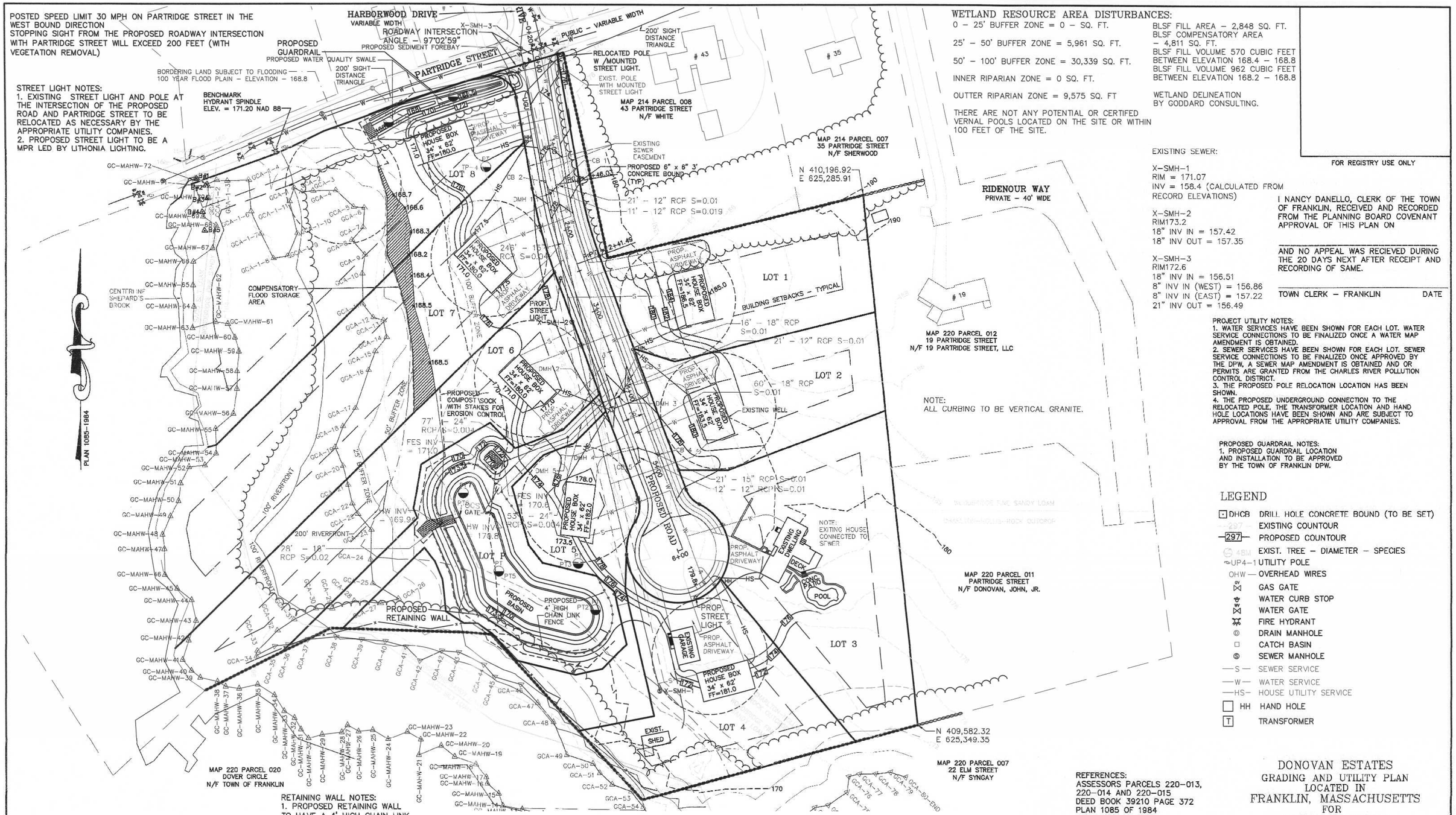
SEPT. 3, 2025
1" = 50'
UC1340

POSTED SPEED LIMIT 30 MPH ON PARTRIDGE STREET IN THE WEST BOUND DIRECTION
STOPPING SIGHT FROM THE PROPOSED ROADWAY INTERSECTION WITH PARTRIDGE STREET WILL EXCEED 200 FEET (WITH VEGETATION REMOVAL)

STREET LIGHT NOTES:
1. EXISTING STREET LIGHT AND POLE AT THE INTERSECTION OF THE PROPOSED ROAD AND PARTRIDGE STREET TO BE RELOCATED AS NECESSARY BY THE APPROPRIATE UTILITY COMPANIES.
2. PROPOSED STREET LIGHT TO BE A MPR LED BY LITHONIA LIGHTING.



RETAINING WALL NOTES:
1. PROPOSED RETAINING WALL TO HAVE A 4' HIGH CHAIN LINK FENCE LOCATED ON TOP OF THE WALL.
2. THE RETAINING WALL SHALL BE DESIGNED BY A STRUCTURAL ENGINEER.

WETLAND RESOURCE AREA DISTURBANCES:

0 – 25' BUFFER ZONE = 0 – SQ. FT.

25' – 50' BUFFER ZONE = 5,961 SQ. FT.

50' – 100' BUFFER ZONE = 30,339 SQ. FT.

INNER RIPARIAN ZONE = 0 SQ. FT.

OUTTER RIPARIAN ZONE = 9,575 SQ. FT

THERE ARE NOT ANY POTENTIAL OR CERTIFED VERNAL POOLS LOCATED ON THE SITE OR WITHIN 100 FEET OF THE SITE.

BLSF FILL AREA – 2,848 SQ. FT.
BLSF COMPENSATORY AREA – 4,811 SQ. FT.
BLSF FILL VOLUME 570 CUBIC FEET BETWEEN ELEVATION 168.4 – 168.8
BLSF FILL VOLUME 962 CUBIC FEET BETWEEN ELEVATION 168.2 – 168.8

WETLAND DELINEATION BY GODDARD CONSULTING.

EXISTING SEWER:

X–SMH–1
RIM = 171.07
INV = 158.4 (CALCULATED FROM RECORD ELEVATIONS)

X–SMH–2
RIM173.2
18" INV IN = 157.42
18" INV OUT = 157.35

X–SMH–3
RIM172.6
18" INV IN = 156.51
8" INV IN (WEST) = 156.86
8" INV IN (EAST) = 157.22
21" INV OUT = 156.49

FOR REGISTRY USE ONLY

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

_____

TOWN CLERK – FRANKLIN DATE

PROJECT UTILITY NOTES:
1. WATER SERVICES HAVE BEEN SHOWN FOR EACH LOT. WATER SERVICE CONNECTIONS TO BE FINALIZED ONCE A WATER MAP AMENDMENT IS OBTAINED.
2. SEWER SERVICES HAVE BEEN SHOWN FOR EACH LOT. SEWER SERVICE CONNECTIONS TO BE FINALIZED ONCE APPROVED BY THE DPW, A SEWER MAP AMENDMENT IS OBTAINED AND OR PERMITS ARE GRANTED FROM THE CHARLES RIVER POLLUTION CONTROL DISTRICT.
3. THE PROPOSED POLE RELOCATION LOCATION HAS BEEN SHOWN.
4. THE PROPOSED UNDERGROUND CONNECTION TO THE RELOCATED POLE, THE TRANSFORMER LOCATION AND HAND HOLE LOCATIONS HAVE BEEN SHOWN AND ARE SUBJECT TO APPROVAL FROM THE APPROPRIATE UTILITY COMPANIES.

PROPOSED GUARDRAIL NOTES:
1. PROPOSED GUARDRAIL LOCATION AND INSTALLATION TO BE APPROVED BY THE TOWN OF FRANKLIN DPW.

LEGEND

- DHCB DRILL HOLE CONCRETE BOUND (TO BE SET)
- 297 EXISTING COUNTOUR
- 297 PROPOSED COUNTOUR
- 48M EXIST. TREE – DIAMETER – SPECIES
- UP4–1 UTILITY POLE
- OHW — OVERHEAD WIRES
- GAS GAS GATE
- WATER CURB STOP
- WATER GATE
- FIRE HYDRANT
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- —S— SEWER SERVICE
- —W— WATER SERVICE
- —HS— HOUSE UTILITY SERVICE
- HH HAND HOLE
- T TRANSFORMER

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

REFERENCES:
ASSESSORS PARCELS 220–013, 220–014 AND 220–015
DEED BOOK 39210 PAGE 372
PLAN 1085 OF 1984
PLAN 1469 OF 1987
PLAN 800 OF 1987
PLAN 1557 OF 1985
PLAN 427 OF 1994
PLAN 430 OF 1995
ANORAD RECORDED IN BOOK 42515 PAGE 133

DONOVAN ESTATES
GRADING AND UTILITY PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

_____
DATE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

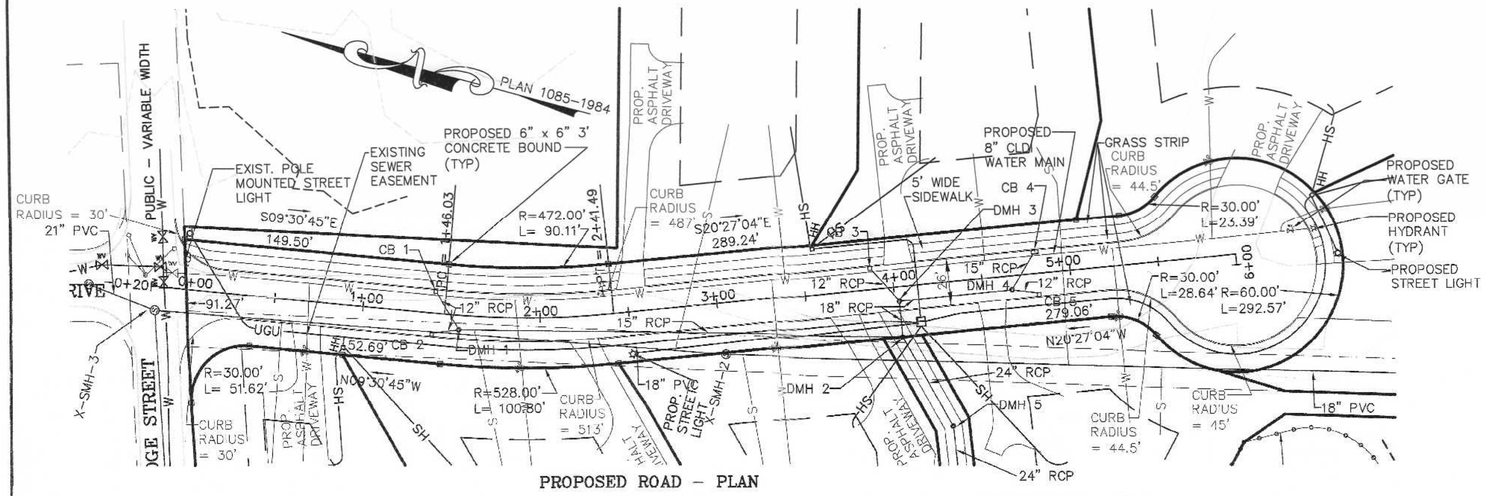
NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

CARLOS A. QUINTAL CIVIL No. 30812 REGISTERED PROFESSIONAL ENGINEER
CARLOS A. QUINTAL P.E. #30812

DATE		INT.
2/18	FIELD BY:	BL
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
9/25	DESIGNED BY:	RRG
9/25	DRAWN BY:	COMP
9/25	CHECKED BY:	CAQ

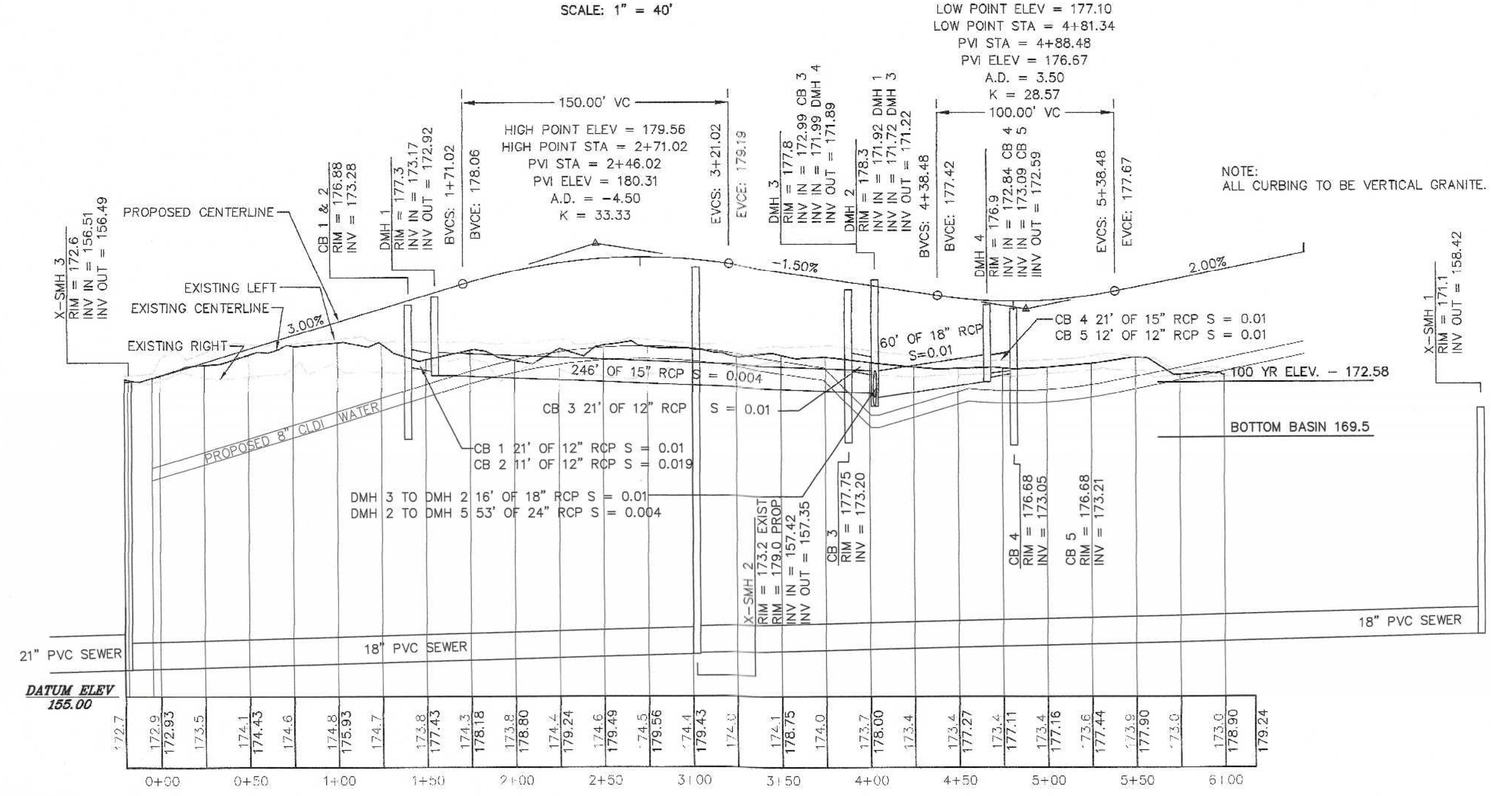
UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508–384–6660 FAX 508–384–8566

SEPT. 3, 2025
1" = 50'
UC1340
4 of 11



PROPOSED ROAD - PLAN

SCALE: 1" = 40'



PROPOSED ROAD - PROFILE

SCALE:
H - 1" = 40'
V - 1" = 4'

NOTE:
ALL CURBING TO BE VERTICAL GRANITE.

DRAINAGE STRUCTURE SCHEDULE

CB 1 & 2
RIM = 176.88
INV = 173.28

CB 3
RIM = 177.75
INV = 173.20

CB 4
RIM = 176.68
INV = 173.05

CB 5
RIM = 176.68
INV = 173.21

DMH 1
RIM = 177.3
INV IN = 173.17
INV OUT = 172.92

DMH 2
RIM = 178.3
INV IN = 171.92 DMH 1
INV IN = 171.72 DMH 3
INV OUT = 171.22

DMH 3
RIM = 177.8
INV IN = 172.99 CB 3
INV IN = 171.99 DMH 4
INV OUT = 171.89

DMH 4
RIM = 176.9
INV IN = 172.84 CB 4
INV IN = 173.09 CB 5
IINV OUT = 172.59

DMH 5
RIM = 176.5
INV IN = 171.01
IINV OUT = 170.91

FOR REGISTRY USE ONLY

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

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AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

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TOWN CLERK - FRANKLIN DATE

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- CATCH BASIN
- SEWER MANHOLE
- —S— SEWER SERVICE
- —W— WATER SERVICE
- —HS— HOUSE UTILITY SERVICE
- HH HAND HOLE
- T TRANSFORMER

SEWER NOTES:
1. SEWER INFORMATION TAKEN FROM PLANS OR RECORD AND FIELD LOCATIONS. CONTRACTOR TO VERIFY INFORMATION AND REPORT ANY DISCREPANCIES TO UNITED CONSULTANTS INC.
2. X-SMH 2 RIM ELEVATION TO BE BE RAISED WITH A RISER INSTALLED TO THE DIAMETER OF THE EXISTING MANHOLE. DEVELOPER TO OBTAIN PERMISSION FROM CHARLES RIVER POLLUTION CONTROL DISTRICT PRO TO COMMENCING WITH THE PROJECT.
3. HOUSE LOT SEWER CONNECTIONS SHALL COMPLY WITH FRANKLIN SUBDIVISION REGULATIONS SECTION 300-12.(B).(1)(a). SEWER CONNECTIONS SHALL BE INCLUDED WITH INDIVIDUAL HOUSE LOT SITE PLANS.

REFERENCES:
ASSESSORS PARCELS 220-013, 220-014 AND 220-015
DEED BOOK 39210 PAGE 372
PLAN 1085 OF 1984
PLAN 1469 OF 1987
PLAN 800 OF 1987
PLAN 1557 OF 1985
PLAN 427 OF 1994
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ANORAD RECORDED IN BOOK 42515 PAGE 133

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CARLOS A. QUINTAL P.E. #30812

DONOVAN ESTATES
ROADWAY PLAN AND PROFILE
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 40'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

DATE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

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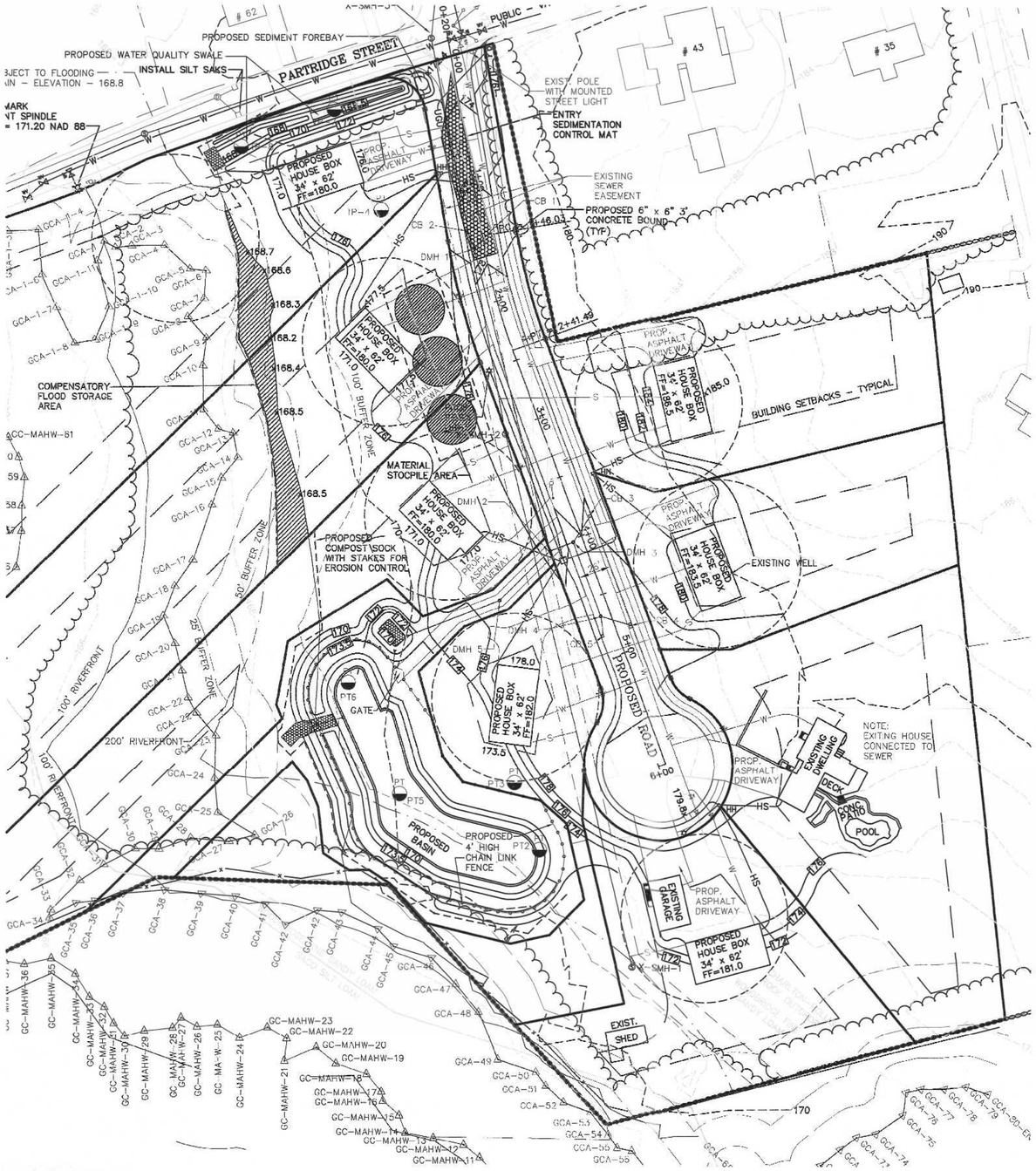

OPERATION AND MAINTENANCE PLAN

CONSTRUCTION PHASE

1. THE OWNERS REPRESENTATIVE, TO BE DETERMINED, SHALL BE THE RESPONSIBLE PARTY FOR THE STORMWATER MAINTENANCE PLAN AND THE SITES EROSION CONTROL.
2. THE SITE CONTRACTOR SHALL INSPECT ALL EROSION CONTROL MEASURES WEEKLY AND AFTER ALL RAIN EVENTS.
3. SEDIMENT SHALL BE REMOVED FROM COMPOST SOCK WHEN A MAXIMUM DEPTH OF 6" IS OBSERVED OR AS NEEDED.
4. CONSTRUCTION ENTRY MAT SHALL BE INSPECTED WEEKLY AND AFTER ALL RAIN EVENTS. SEE DETAIL FOR MAINTENANCE REQUIREMENTS.
5. DAMAGED OR DETERIORATED COMPOST SOCK SHALL BE REPLACED IMMEDIATELY.
6. EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND ALL DISTURBED AREAS ARE STABILIZED.
7. SILT SAKS SHALL BE INSTALLED AT ALL PROPOSED CATCH BASINS (CB 1 – CB 5) AND EXISTING CATCH BASINS IN PATRIDGE STREET AND SHALL BE INSPECTED WEEKLY AND AFTER ALL RAIN EVENTS.
8. CLEANING OF SILT SAKS SHALL BE COMPLETED AS NECESSARY.

INSPECTION AND MAINTENANCE SCHEDULE:

1. INSPECTIONS SHALL BE CONDUCTED BY THE APPLICANTS ENGINEER, CONTRACTOR AND / OR REPRESENTATIVES OF THE TOWN AS NECESSARY. AT A MINIMUM INSPECTIONS SHALL BE CONDUCTED ON A MONTHLY BASIS.
2. MONTHLY INSPECTIONS SHALL INCLUDE THE DRIVEWAY(S) AND ROADWAY SURFACES TO DETERMINE IF ACCUMULATED SEDIMENTS ARE TO BE REMOVED.
3. INSPECTION OF THE PROPOSED CATCH BASINS TO DETERMINE THE DEPTH OF SEDIMENT AND REQUIRED CLEANING.
4. INSPECTION OF THE INFILTRATION POND, SEDIMENT FOREBAY AND WATER QUALITY SWALES TO DETERMINE IF CLEANING IS NECESSARY.
5. THE HEADWALL OUTLET RIPRAP SHALL BE INSPECTED WEEKLY AND ANY SEDIMENT OBSERVED SHALL BE IMMEDIATELY REMOVED.

OPERATION AND MAINTENANCE SCHEDULE

CONSTRUCTION PHASE:

1. THE EROSION CONTROL BARRIERS SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER ALL STORM EVENTS.
2. THE PROPOSED PARKING AREA ONCE PAVED WILL REQUIRE DAILY INSPECTIONS TO BE CONDUCTED TO DETERMINE THE NECESSITY TO REMOVE ANY ACCUMULATED SEDIMENT. THE REMOVAL OF THE ACCUMULATED SEDIMENT SHALL BE COMPLETED ON THE DAY THE DETERMINATION IS MADE.
3. SILT SAKS SHALL BE INSTALLED AT ALL CATCH BASINS. SILT SAKS, ONCE INSTALLED SHALL BE INSPECTED ON A WEEKLY BASIS AND CLEANED AS NECESSARY.
4. THE INFILTRATION AREA SHALL BE INSPECTED AFTER EACH STORM EVENT AND CLEANED WHEN 2" OF SEDIMENT HAS ACCUMULATED AT THE INLET. ANY TRASH OR CONSTRUCTION DEBRIS SHALL BE IMMEDIATELY REMOVED.
5. ALL SLOPE AREAS TO BE SEEDED WITH NEW ENGLAND CONSERVATION AND WILDLIFE MIX SHALL BE LOAMED AND SEED WITHIN 1 WEEK OF COMPLETING OF EXCAVATION IN THE AREA. SLOPES TO BE COVERED WITH ECS-1 SINGLE NET STRAW ROLLED EROSION CONTROL BLANKET.
6. ALL OTHER AREA OF SITE GRADING SHALL BE TEMPORARILY LOAMED AND SEEDED WITH A NEW ENGLAND EROSION CONTROL / RESTORATION MIX WITHIN ONE WEEK OF AREAS BEING BROUGHT TO SUB-GRADE.
7. ALL MATERIAL STOCKPILES THAT ARE NOT BEING ACTIVELY USED FOR A PERIOD OF 2 WEEKS SHALL BE COVERED WITH A TARP(S) OR VEGETATED WITH NEW ENGLAND EROSION CONTROL / RESTORATION MIX.

ADDITIONAL EROSION CONTROLS MAY BE REQUIRED DEPENDING ON ACTUAL FIELD CONDITIONS DURING CONSTRUCTION.

LONG TERM:

1. THE ROADWAY SHALL BE SWEPT FOUR TIMES PER YEAR WITH (WITH A MECHANICAL OR VACUUM SWEEPER) ONE BEING AFTER THE LAST WINTER SANDING.
2. INSPECT AND CLEAN PRETREATMENT BMP'S EVERY SIX MONTHS AND AFTER EVERY MAJOR STORM EVENT (2 YEAR RETURN FREQUENCY). CHECK THE INLET AND OUTLET PIPES TO DETERMINE IT THEY ARE CLOGGED. REMOVE ACCUMULATED SEDIMENT, TRASH, DEBRIS, LEAVES, LAWN CLIPPINGS FROM MOWING. INSPECT THE INFILTRATION AREA AFTER THE FIRST SEVERAL RAINFALL EVENTS, AFTER ALL MAJOR STORMS, AND ON REGULARLY SCHEDULED DATES EVERY SIX MONTHS. INSPECT THE INFILTRATION AREA 24 HOURS TO SEVERAL DAYS AFTER A RAIN EVENT, TO LOOK FOR PONDED WATER AT THE SURFACE OF THE TRENCH. IF WATER IS PRESENT IT MAY BE THAT THE INFILTRATION AREA IS CLOGGED. IF SO THEN REHABILITATION OF THE BOTTOM OF THE TRENCH SHALL BE COMPLETED INCLUDING REMOVING ALL ACCUMULATED SEDIMENT, SCARIFYING AND TILLING THE BOTTOM AREA, REMOVE AND REPLACE STONE MEDIA AND FILTER FABRIC.
3. INSPECT THE LANDSCAPE AREAS FOR BARE SPOTS AND EROSION. REPAIR ERODED AREAS WITH LOAM AND SEED TO PROVIDE ADEQUATE COVERAGE. INSPECT LANDSCAPE AREAS FOR EROSION AND WEEDS. FIX EROSION AND APPLY ADDITIONAL MULCH OR LANDSCAPE STONE AS NECESSARY.

EROSION CONTROL NOTES:

1. COMPOST SOCK SHALL BE INSTALLED PRIOR TO TREE CLEARING OR SITE WORK COMMENCING.
2. COMPOST SOCK TO REMAIN IN CONTACT WITH THE EARTH. REPAIR OR RESET AS NECESSARY.
3. REFER TO CONSTRUCTION SEQUENCE FOR SLOPE GREATER THAN 3' HORIZONTAL TO 1' VERTICAL.
4. CATCH BASINS, WATER QUALITY UNITS, UNDERGROUND INFILTRATION AREA AND PARKING AREA TO BE CLEANED ONCE CONSTRUCTION IS COMPLETED.
5. ALL SEDIMENT COLLECTED DURING THE CONSTRUCTION PHASE OR POST CONSTRUCTION PHASE SHALL BE DISPOSED OF TO AN APPROVED LOCATION.
6. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED THE EROSION CONTROL MEASURES SHALL BE REMOVED.
7. DAMAGED OR DETERIORATED EROSION CONTROL MEASURES SHALL BE REPAIRED OR REPLACED IMMEDIATELY AFTER THEY HAVE BEEN IDENTIFIED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSPECTIONS.
9. DUST CONTROL WILL BE BY SPRAYING WATER AS NECESSARY. THE USE OF OILS, PETROLEUM PRODUCTS OR TOXIC LIQUIDS FOR DUST CONTROL IS PROHIBITED.

CONSTRUCTION SEQUENCE AND SCHEDULE:

1. INSTALL EROSION CONTROL AND SIGN.
2. COMPLETE THE CLEARING, STUMP REMOVAL AND REMOVE LOAM AND SUBSOIL.
3. INSTALL THE DRAINAGE SYSTEM
4. INSTALL THE WATER MAIN.
5. BRING THE ROADWAY TO SUBGRADE
6. PAVE THE ROADWAY WITH A BINDER COURSE.
7. CONSTRUCT THE HOUSES.
8. LOAM AND SEED EACH LOT UPON COMPLETION OF THE SITE WORK.
9. CONSTRUCT THE SIDEWALKS.
10. INSTALL CURBING.
10. PAVE THE ROADWAY WITH A TOP COURSE.
11. LANDSCAPING SHALL BE PLANTED AND ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED OR COVERED WITH MULCH OR STONE.
12. INSTALL SITE SIGNS.

THE GENERAL CONTRACTOR (TO BE DETERMINED) WILL BE RESPONSIBLE FOR INSPECTION AND MAINTENANCE AND SHALL KEEP A LOG OF THE INSPECTIONS AND MAINTENANCE AND THE REPORT SHALL BE SUBMITTED TO THE CONSERVATION COMMISSION OFFICE ON A WEEKLY BASIS DETAILING THE STATE OF THE EROSION CONTROL AND ANY STEPS TAKEN TO ADDRESS ANY ISSUES WITH FAILURE OF THE BARRIERS.

FOR REGISTRY USE ONLY

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

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TOWN CLERK – FRANKLIN DATE

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

DONOVAN ESTATES
EROSION CONTROL PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

_____
DATE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

CARLOS A. QUINTAL CIVIL No. 30812 REGISTERED PROFESSIONAL ENGINEER
CARLOS A. QUINTAL P.E. #30812

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BK#	FIELD BOOK	PG#
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9/25	DESIGNED BY:	RRG
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UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6560 FAX 508-384-6566

SEPT. 3, 2025
1" = 50'
UC1340

FOR REGISTRY USE ONLY

BENCHMARK
HYDRANT SPINDLE
ELEV. = 174.50 NAD 88

WOOD DRIVE

60

62

TO BE RELOCATED

DH PUBLIC – VARIABLE WIDTH

200' SIGHT DISTANCE TRIANGLE

PARTRIDGE STREET

N71°53'38"E 85.28'

N76°19'42"E 69.44'

220'

43

35

EXIST. POLE WITH MOUNTED STREET LIGHT

MAP 214 PARCEL 008
43 PARTRIDGE STREET
N/F WHITE

BORDERING LAND SUBJECT TO FLOODING – 100 YEAR FLOOD PLAIN – ELEVATION – 168.8

BENCHMARK
HYDRANT SPINDLE
ELEV. = 171.20 NAD 88

N70°36'41"E 140.59'

N64°17'55"E 86.66'

N70°14'[illegible]E 105.3'±

EXISTING SEWER EASEMENT

MAP 214 PARCEL 007
35 PARTRIDGE STREET
N/F SHERWOOD

EXISTING POLE AND OVERHEAD UTILITY LINES TO BE REMOVED

S12°20'11"E 244.10'

DH (FND)

N76°19'42"E 253.66'

DH (FND) N75°38'51"E 53.69'

RIDENOUR WAY
PRIVATE – 40' WIDE

180

190

170

19

MAP 220 PARCEL 012
19 PARTRIDGE STREET
N/F 19 PARTRIDGE STREET, LLC

S05°53'36"E 817.86'

MAP 220 PARCEL 011
PARTRIDGE STREET
N/F DONOVAN, JOHN, JR.

EXISTING DWELLING

DECK

CONC. PATIO

POOL

EXISTING GARAGE

EXISTING GARAGE TO BE REMOVED

EXISTING SHED TO BE REMOVED

EXIST. SHED

S74°49'58"W 333.50'

MAP 220 PARCEL 007
22 ELM STREET
N/F SYNGAY

GC-MAHW-72 … GC-MAHW-68 … GC-MAHW-67 … GC-MAHW-65 … GC-MAHW-63 … GC-MAHW-61 … GC-MAHW-59 … GC-MAHW-57 … GC-MAHW-55 … GC-MAHW-53 … GC-MAHW-51 … GC-MAHW-49 … GC-MAHW-47 … GC-MAHW-45 … GC-MAHW-43 … GC-MAHW-41 … GC-MAHW-39 … GC-MAHW-38 … GC-MAHW-36 … GC-MAHW-34 … GC-MAHW-32 … GC-MAHW-30 … GC-MAHW-29 … GC-MAHW-28 … GC-MAHW-26 … GC-MAHW-24 … GC-MAHW-22 … GC-MAHW-20 … GC-MAHW-19 … GC-MAHW-18 … GC-MAHW-17 … GC-MAHW-16 … GC-MAHW-15 … GC-MAHW-14

GC-MAIW-52

CENTERLINE SHEPARD'S BROOK

EXISTING FENCE

AES#48 … AES#1

GCA-1-1 … GCA-1-11 … GCA-1-10 … GCA-1-9 … GCA-1-8 … GCA-1-7 … GCA-1-6 … GCA-1-5 … GCA-1-4 … GCA-1-3 … GCA-1-2 … GCA-1-1

GCA-1 … GCA-52

AES#47 … AES#46 … AES#45 … AES#44 … AES#43 … AES#42 … AES#41 … AES#40 … AES#39 … AES#38 … AES#37 … AES#36 … AES#35 … AES#34 … AES#33 … AES#32 … AES#31 … AES#30 … AES#29 … AES#28 … AES#27 … AES#26 … AES#25 … AES#24 … AES#23 … AES#22 … AES#21 … AES#20 … AES#19 … AES#18 … AES#17 … AES#16 … AES#15 … AES#14 … AES#13 … AES#12 … AES#11 … AES#10 … AES#9 … AES#8 … AES#7 … AES#6 … AES#5 … AES#4 … AES#3 … AES#2 … AES#1

100' BUFFER ZONE

50' BUFFER ZONE

25' BUFFER ZONE

100' RIVERFRONT

200' RIVERFRONT

EXISTING LOT LINES AS SHOWN ON PLANS OF RECORD

EXISTING POLE AND OVERHEAD UTILITY LINES TO BE REMOVED

EXISTING FENCE TO BE REMOVED

EXISTING WELL TO BE ABANDONED

EXISTING DRIVEWAY TO BE REMOVED

TP-4 … TP-7 … TP-8

PT … PT6 … PT5 … PT3 … PT2

S63°40'36"E 163.79'

187.47' N88°16'07"W

N42°15'40"W 133.99'

N42°59'07"W 127.07'

DH (FND)

MAP 220 PARCEL 020
DOVER CIRCLE
N/F TOWN OF FRANKLIN

PLAN 1085–1984

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

DONOVAN ESTATES
DEMOLITION PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
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DATE

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
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COMMONWEALTH OF MASSACHUSETTS
CARLOS A. QUINTAL
CIVIL
No. 30812
REGISTERED PROFESSIONAL ENGINEER

CARLOS A. QUINTAL P.E. #30812

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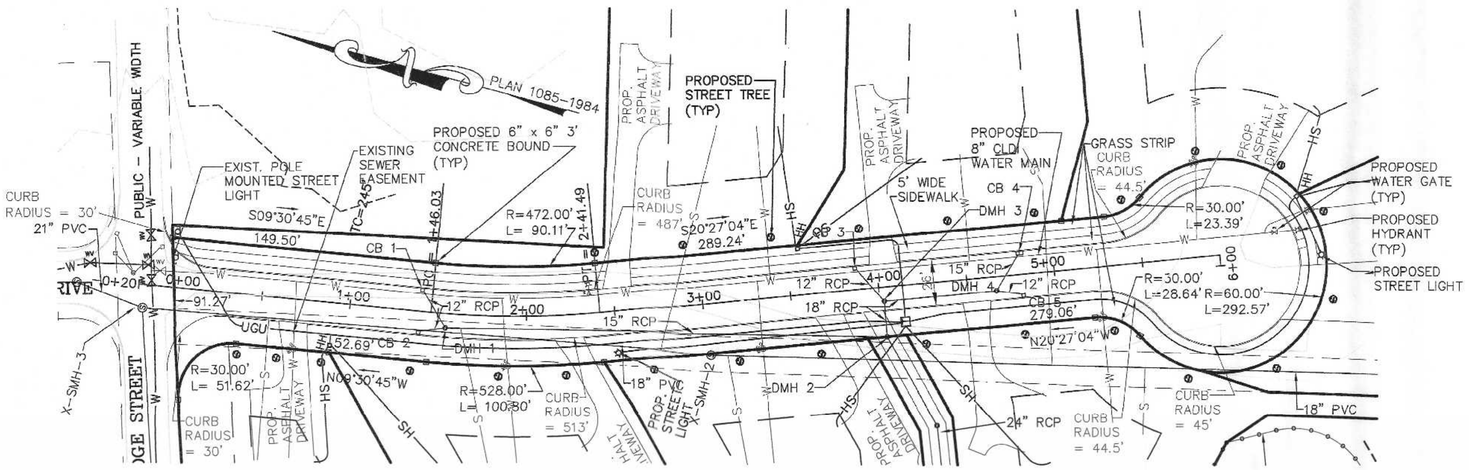
508-384-6560 FAX 508-384-6566

SEPT. 3, 2025
1" = 50'
UC1340
7 of 11

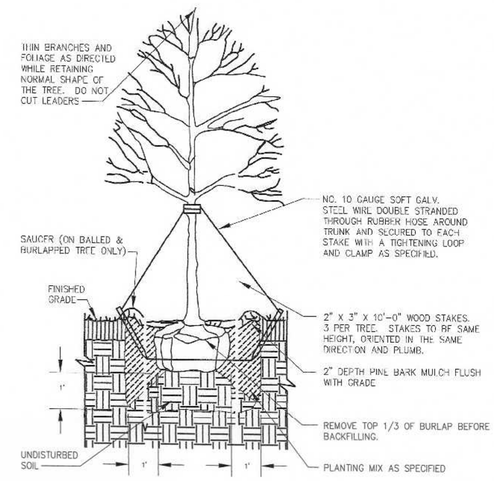
FOR REGISTRY USE ONLY

SHADE TREES TO BE PLANTED AT AN AVERAGE SPACING OF 50 FEET AND OF A HARDWOOD SPECIES APPROVED BY THE PLANNING BOARD.
THREE TREES ARE TO BE PLANTED PER LOT.
SHADE TREES TO BE 2 1/2" CALIPER AT 1' ABOVE FINISH GRADE.
SHADE TREES SHALL BE VARIED AROUND THE FOLLOWING SPECIES:
- SUGAR MAPLE (ACER SACCHARUM)
- WHITE OAK (QUERCUS ALBA)
- LITTLE LEAF LINDEN (TILIA CORDATA)

THE SUBDIVIDER SHALL BE RESPONSIBLE FOR ALL APPROVED TREES FOR A MINIMUM PERIOD OF ONE YEAR.



PROPOSED PLANTING - PLAN
SCALE: 1" = 40'



DECIDUOUS TREE PLANTING
NTS

DONOVAN ESTATES
PLANTING PLAN
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

DATE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

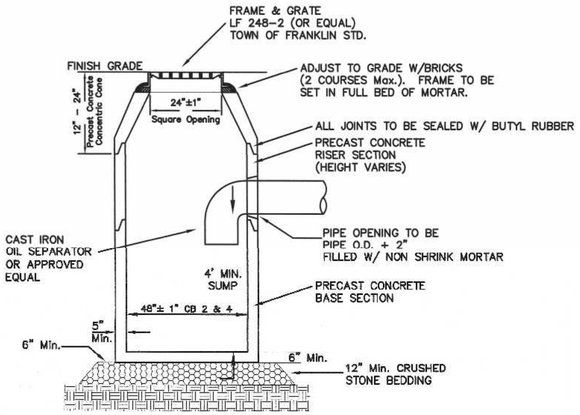
COMMONWEALTH OF MASSACHUSETTS
CARLOS A. QUINTAL
CIVIL
No. 30812
REGISTERED PROFESSIONAL ENGINEER

CARLOS A. QUINTAL P.E. #30812

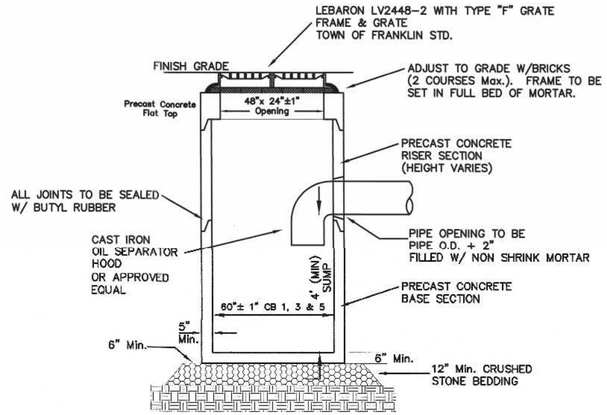
DATE		INT.
2/18	FIELD BY:	BL
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
9/25	DESIGNED BY:	RRG
9/25	DRAWN BY:	COMP
9/25	CHECKED BY:	CAQ

UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6560 FAX 508-384-6566

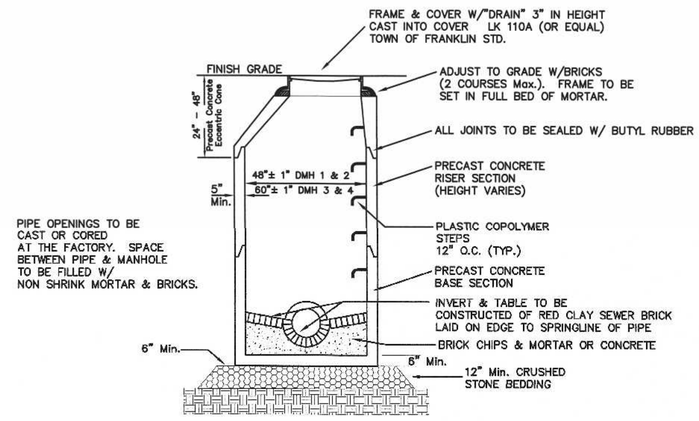
SEPT. 3, 2025	
1" = 50'	
UC1340	
8 of 11	



PRECAST CATCH BASIN
W/ DEEP SUMP



DOUBLE GRATE
PRECAST CATCH BASIN
W/ DEEP SUMP



PRECAST DRAIN MANHOLE

FOR REGISTRY USE ONLY

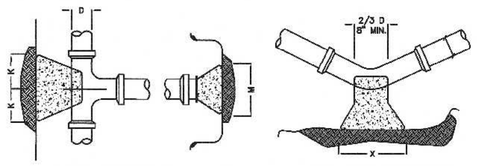
I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

_____

TOWN CLERK – FRANKLIN DATE



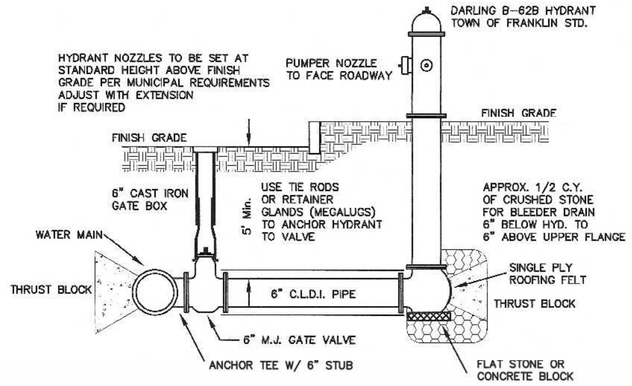
SIZE OF BRANCH	J	K	L	M	N	O
4" TO 8"	10"	10"	1'-0"	2'-0"	1'-6"	10"
10" TO 16"	1'-0"	1'-6"	1'-8"	3'-10"	2'-10"	1'-6"
24"	1'-4"	2'-0"	2'-6"	5'-0"	3'-8"	1'-8"

TEES AND PLUGS

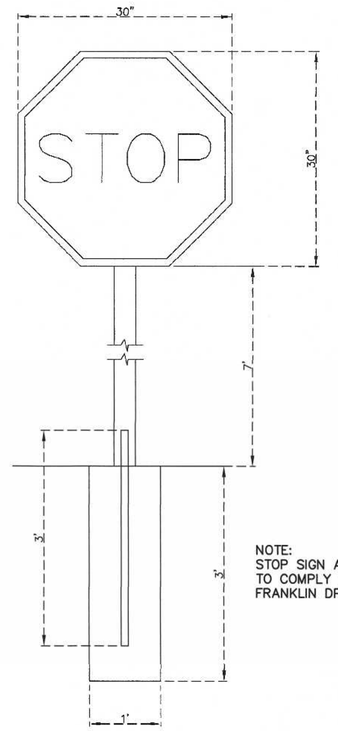
	90 & 45 BENDS			22 1/2 & 11 1/4		
D	4" TO 8"	10" TO 16"	24"	4"TO 8"	10" TO 16"	24"
X	1'-8"	3'-4"	3'-6"	1'-4"	2'-0"	3'-6"
Y	1'-2"	1'-8"	2'-4"	1'-0"	1'-2"	2'-4"

BENDS

THRUST BLOCK DETAILS

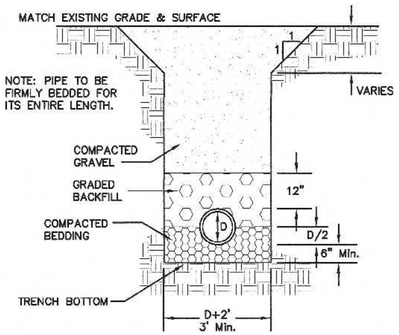


HYDRANT CONNECTION



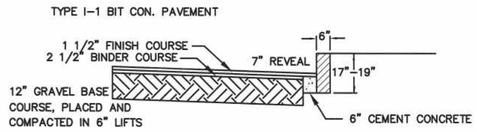
STOP SIGN DETAIL
N.T.S

NOTE:
STOP SIGN AND STREET SIGN
TO COMPLY WITH THE TOWN OF
FRANKLIN DPW STANDARDS.

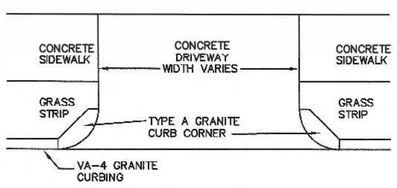


TYPE OF PIPE	RCP DRAIN	CLDI WATER	PVC SEWER
BEDDING MATERIAL	PROC. GRAVEL	SAND	3/4" STONE
BACKFILL MATERIAL	ORD. FILL	SAND	3/4" STONE

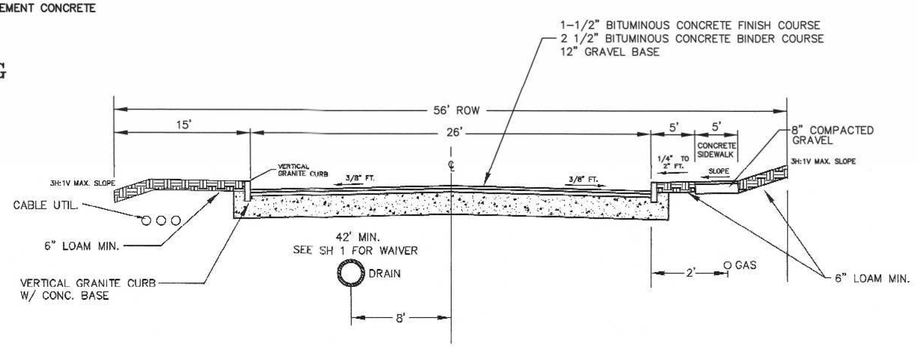
UTILITY TRENCH DETAIL



PAVEMENT AND VA-4
VERTICAL GRANITE CURBING



DRIVEWAY APRON



ROADWAY CROSS SECTION

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

DONOVAN ESTATES
CONSTRUCTION DETAILS – 1
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 40'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

_____
DATE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

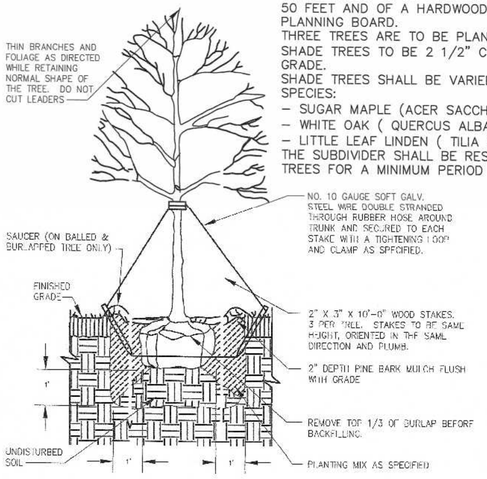
NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

CARLOS A. QUINTAL P.E. #30812

DATE		INT.
6/14	FIELD BY:	KK
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
9/25	DESIGNED BY:	RRG
9/25	DRAWN BY:	RRG
9/25	CHECKED BY:	CAQ

UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6560 FAX 508-384-6566

DATE	SEPT. 3, 2025
SCALE	1" = 40'
PROJECT	UC1340
SHEET	9 of 11

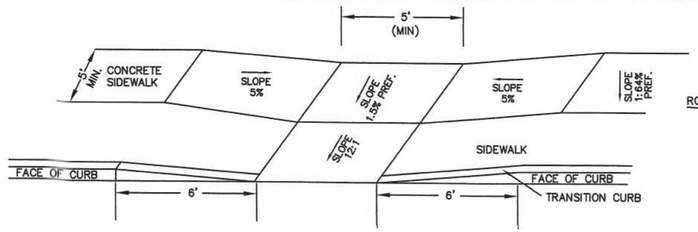


DECIDUOUS TREE PLANTING

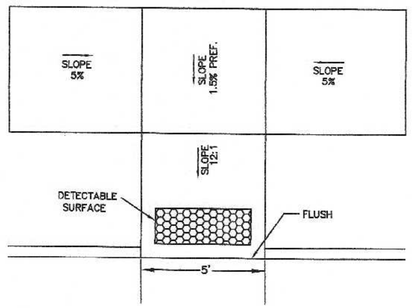
N.T.S.

SHADE TREES TO BE PLANTED AT AN AVERAGE SPACING OF 50 FEET AND OF A HARDWOOD SPECIES APPROVED BY THE PLANNING BOARD.
THREE TREES ARE TO BE PLANTED PER LOT.
SHADE TREES TO BE 2 1/2" CALIPER AT 1' ABOVE FINISH GRADE.
SHADE TREES SHALL BE VARIED AROUND THE FOLLOWING SPECIES:
- SUGAR MAPLE (ACER SACCHARUM)
- WHITE OAK (QUERCUS ALBA)
- LITTLE LEAF LINDEN (TILIA CORDATA)

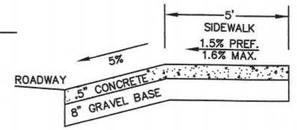
THE SUBDIVIDER SHALL BE RESPONSIBLE FOR ALL APPROVED TREES FOR A MINIMUM PERIOD OF ONE YEAR.



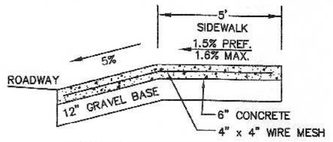
1. CROSS SLOPE ON ANY RAMP, LANDING OR ACCESSIBLE ROUTE SHALL NOT EXCEED 3/16" PER FOOT.
2. DETECTABLE SURFACES TO BE INSTALLED AT SIDEWALK RAMP ONLY.



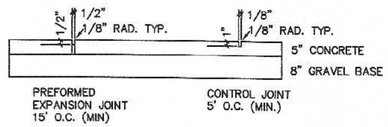
TYP. SIDEWALK RAMP



SIDEWALK RAMP SECTION



DRIVEWAY APRON SECTION



SIDEWALK JOINT DETAIL

FOR REGISTRY USE ONLY

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

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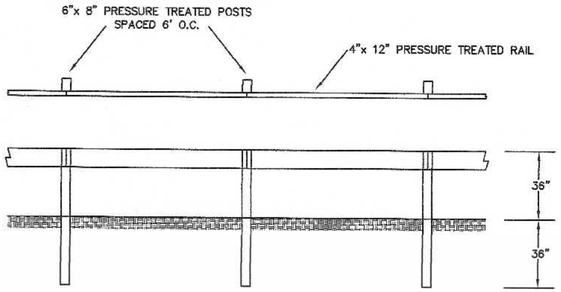
TOWN CLERK – FRANKLIN DATE

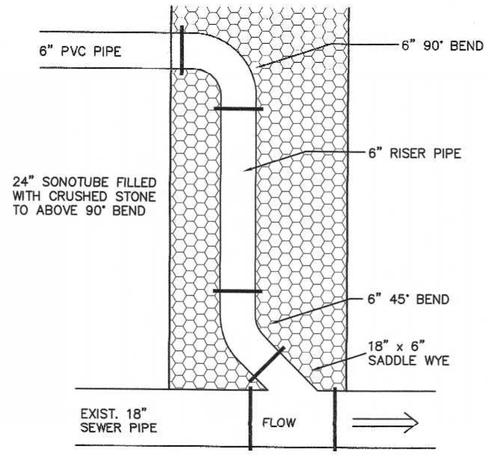


WOODEN GUARDRAIL DETAIL

N.T.S.

GENERAL NOTES:
1. IF NECESSARY, ALL BLASTING OPERATIONS SHALL BE PERFORMED IN COMPLIANCE WITH ALL TOWN, STATE AND FEDERAL REGULATIONS.
2. ALL CONSTRUCTION SHALL BE IN COMPLIANCE WITH THE TOWN OF FRANKLIN SUBDIVISION RULES AND REGULATIONS AND MASS DOT STANDARDS.
3. LOTS TO BE SERVICED BY TOWN WATER AND SEWER.
4. ALL DRAIN PIPE SHALL BE CLASS V REINFORCED CONCRETE PIPE WHERE THERE IS GREATER THAN 3.5' OF COVER. SEE PROFILES FOR PIPE CLASS.
5. MINIMUM DRAIN PIPE DIAMETER IS 12".
6. IT IS THE CONTRACTORS RESPONSIBILITY TO MAINTAIN EROSION CONTROL DEVICES DURING CONSTRUCTION.
7. EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO COMMENCING WITH CONSTRUCTION.
8. ALL PIPE GASKETS SHALL BE PRE-MOLDED NEOPRENE O-RING TYPE IN ACCORDANCE WITH SUBDIVISION REGULATION 300-11B(2)(a).

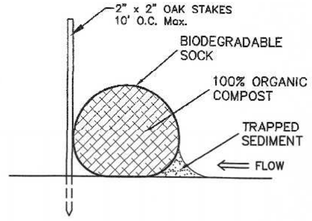
FINISH GRADE



SECTION VIEW

SEWER CHIMNEY DETAIL

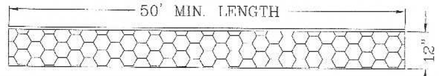
N.T.S.



COMPOST SOCK DETAIL

NOTE: COMPOST SOCK TO BE A MINIMUM OF 12" IN DIAMETER.

1. CONCRETE TO BE 4,000 PSI.
2. CONCRETE SHALL BE PLANT MIXED, PLACED, FLOATED, TROWELED AND BROOM FINISHED.
3. CURING AND SEALING COMPOUND SHALL BE APPLIED.



ENTRY SEDIMENTATION CONTROL MAT SECTION

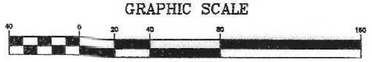
N.T.S.

NOTES:
1. PAD SHALL BE A MINIMUM OF 20 FEET IN WIDTH. EXISTING ASPHALT DRIVE TO REMAIN IN PLACE UNTIL FINAL PAVEMENT IS TO BE INSTALLED.
2. PAD SHALL CONSIST OF 4" STONE 8" MIN. DEPTH AND THEN TOP DRESSED WITH 4" OF 1" – 2" WASHED STONE.

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

_____
DATE

GRAPHIC SCALE



(IN FEET)
1 inch = 40 ft.

NO.	DATE	DESCRIPTION	BY
1	1/15/26	BETA REVIEW COMMENTS	RRG

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

CARLOS A. QUINTAL CIVIL No. 30812 REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

CARLOS A. QUINTAL P.E. #30812

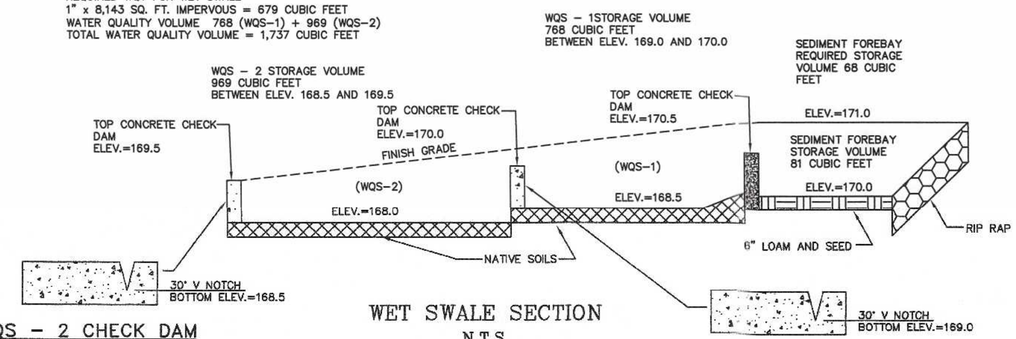
DATE		INT.
	FIELD BY:	KK
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
9/25	DESIGNED BY:	RRG
9/25	DRAWN BY:	RRG
9/25	CHECKED BY:	CAQ

UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6560 FAX 508-384-6566

DONOVAN ESTATES
CONSTRUCTION DETAILS – 2
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 40'

DATE	SEPT. 3, 2025
SCALE	1" = 40'
PROJECT	UC1340
SHEET	10 of 11

REQUIRED WQV FOR WET SWALE –
1" x 8,143 SQ. FT. IMPERVOUS = 679 CUBIC FEET
WATER QUALITY VOLUME 768 (WQS–1) + 969 (WQS–2)
TOTAL WATER QUALITY VOLUME = 1,737 CUBIC FEET



WQS – 2 CHECK DAM
NOT TO SCALE

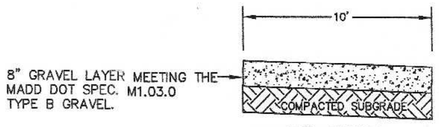
WET SWALE SECTION
N.T.S.

WQS – 1 CHECK DAM
NOT TO SCALE

CONSTRUCTION NOTES:
1. RIP RAP TO BE MAXIMUM OF 12" AVERAGE OF 18" AND MINIMUM OF 4".
2. RIP RAP TO BE PLACED OVER A FILTER FABRIC.
3. RIP RAP MINIMUM DEPTH SHALL BE 12"
4. SEDIMENT FOREBAY TO HAVE A RIP RAP INLET.
5. BOTTOM OF SEDIMENT FOREBAY SHALL HAVE 6" OF LOAM AND SHALL BE SEEDED.
6. SIDE SLOPES TO HAVE A MINIMUM OF 6" OF LOAM.
7. REFER TO ENVIRONMENTAL CONSULTANTS REPORT FOR PLANING DETAILS.

NOTE:
ONCE THE SITE IS STABILIZED, REMOVE ALL ACCUMULATED SEDIMENT FROM THE BOTTOM OF THE BASIN AS WELL AS ALL A AND B HORIZON SOILS AND AN ADDITIONAL 18" OF SOIL AND REPLACE WITH 12" OF CLEAN COARSE SAND AND GRAVEL FREE OF ORGANICS AND FINES. THEN ADD 6" OF ROOT ZONE MIX TO FINISH GRADE AND SEED WITH A WATER TOLERANT GRASS.

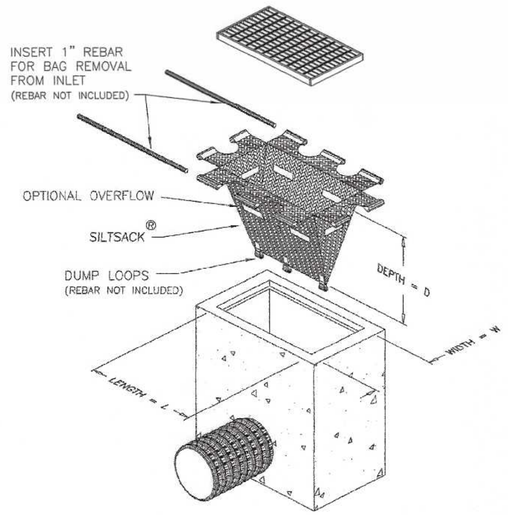
CONSTRUCTION NOTES:
1. RIP RAP TO BE MAXIMUM OF 16" AVERAGE OF 12" AND MINIMUM OF 10".
2. RIP RAP TO BE PLACED OVER A FILTER FABRIC.
3. RIP RAP MINIMUM DEPTH SHALL BE 12"
4. SEDIMENT FOREBAY TO HAVE A 10' x 10' RIP RAP INLET.
5. BOTTOM OF SEDIMENT FOREBAY AND INFILTRATION BASIN SHALL HAVE ALL A AND B HORIZON SOIL REMOVED, FILLED WITH CLEAN SAND AND GRAVEL AND SHALL THEN HAVE A 6" MINIMUM LAYER OF ROOT ZONE MIX APPLIED.
6. SIDE SLOPES TO HAVE A MINIMUM OF 6" OF LOAM.
7. SEDIMENT FOREBAY AND INFILTRATION BASIN SHALL BE SEEDED WITH WATER TOLERANT SEED MIX.
8. THE AREA UNDER EMBANKMENTS SHALL BE STRIPPED OF ALL TOPSOIL, TREES, ROOTS, VEGETATION AND DELETERIOUS MATERIALS.
9. COMPACTED LOW PERMEABILITY SOIL (SILTY GRAVELY SAND) WHICH SHALL BE FREE OF STONES GREATER THAN 6", ORGANIC MATTER, CONSTRUCTION DEBRIS, SNOW AND FROZEN SOIL.
10. EMBANKMENTS SOIL TO BE PLACED IN 8" LIFTS AND SHALL BE COMPACTED.

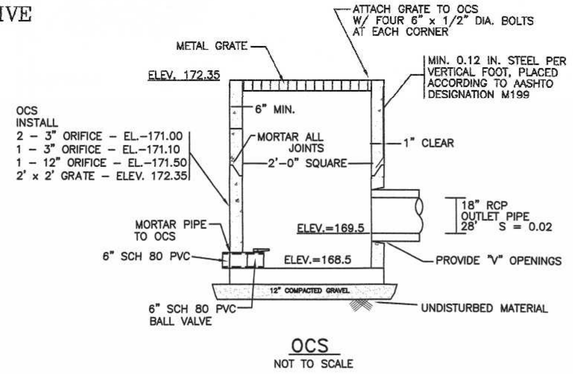


10' WIDE
GRAVEL ACCESS DRIVE

SEDIMENT FOREBAY AND INFILTRATION BASIN
SECTION
N.T.S.

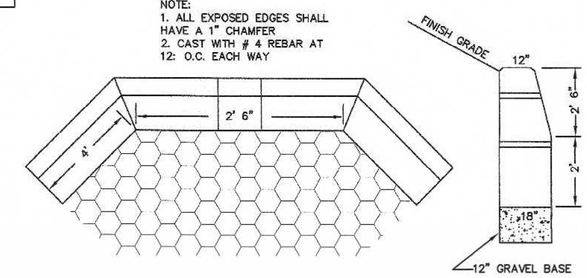
Typical Siltsack® Construction - Type B



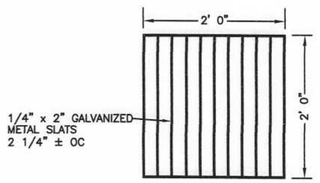


OCS
NOT TO SCALE

NOTE:
1. ALL EXPOSED EDGES SHALL HAVE A 1" CHAMFER
2. CAST WITH # 4 REBAR AT 12: O.C. EACH WAY



TYPE "B" PRECAST HEADWALL



OCS GRATE DETAIL
NOT TO SCALE

FOR REGISTRY USE ONLY

I NANCY DANELLO, CLERK OF THE TOWN OF FRANKLIN, RECEIVED AND RECORDED FROM THE PLANNING BOARD COVENANT APPROVAL OF THIS PLAN ON

_____

AND NO APPEAL WAS RECIEVED DURING THE 20 DAYS NEXT AFTER RECEIPT AND RECORDING OF SAME.

_____

TOWN CLERK – FRANKLIN DATE

I DECLARE THAT THIS PLAN HAS BEEN PREPARED IN CONFORMITY WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS

DONOVAN ESTATES
CONSTRUCTION DETAILS – 3
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 40'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

_____
DATE

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

COMMONWEALTH OF MASSACHUSETTS
CARLOS A. QUINTAL
CIVIL
No. 30812
REGISTERED PROFESSIONAL ENGINEER
CARLOS A. QUINTAL P.E. #30812

DATE		INT.
	FIELD BY:	KK
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
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UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-6560 FAX 508-384-6566

DATE	SEPT. 3, 2025
SCALE	1" = 40'
PROJECT	UC1340
SHEET	11 of 11

FOR REGISTRY USE ONLY

HARBORWOOD DRIVE
VARIABLE WIDTH

PARTRIDGE STREET

PUBLIC – VARIABLE WIDTH

BORDERING LAND SUBJECT TO FLOODING
100 YEAR FLOOD PLAIN – ELEVATION – 168.8

PROPOSED SEDIMENT FOREBAY

PROPOSED WATER QUALITY SWALE

200' SIGHT DISTANCE TRIANGLE

200' SIGHT DISTANCE TRIANGLE

EXIST. POLE W/ (2) MOUNTED STREET LIGHT

MAP 214 PARCEL 008
43 PARTRIDGE STREET
N/F WHITE

MAP 214 PARCEL 007
35 PARTRIDGE STREET
N/F SHERWOOD

EXISTING SEWER EASEMENT

PROPOSED 6" x 6" 3' CONCRETE BOUND (TYP.)

RIDENOUR WAY
PRIVATE – 40' WIDE

MAP 220 PARCEL 012
19 PARTRIDGE STREET
N/F 19 PARTRIDGE STREET, LLC

BUILDING SETBACKS – TYPICAL

PROPOSED HOUSE BOX 34' x 62' FF=180.0

PROPOSED HOUSE BOX 34' x 62' FF=185.0

PROPOSED HOUSE BOX 34' x 62' FF=183.5

PROPOSED HOUSE BOX 34' x 62' FF=182.0

PROPOSED HOUSE BOX 34' x 62' FF=180.0

PROPOSED 5' WIDE ASPHALT DRIVEWAY

PROPOSED ROAD 6.00

PROPOSED COMPOST SOCK WITH STAKES FOR EROSION CONTROL

PROPOSED BASIN

PROPOSED 4' HIGH CHAIN LINK FENCE

GATE

EXISTING WELL

EXISTING DWELLING

NOTE: EXITING HOUSE CONNECTED TO SEWER

DECK

CONC. PATIO

POOL

COMPENSATORY FLOOD STORAGE AREA

CENTERLINE SHEPARD'S BROOK

PLAN 1085–1984

100' RIVERFRONT

200' RIVERFRONT

50' BUFFER ZONE

25' BUFFER ZONE

100' BUFFER ZONE

WOODBRIDGE FINE SANDY LOAM

CHARLTON–HOLLIS–ROCK OUTCROP

MAP 220 PARCEL 011
PARTRIDGE STREET
N/F DONOVAN, JOHN, JR.

MATCH LINE

DONOVAN ESTATES
DEVELOPMENT PLAN – 1
LOCATED IN
FRANKLIN, MASSACHUSETTS
FOR
NANCY DONOVAN
47 PARTRIDGE ST.
FRANKLIN, MASSACHUSETTS
SEPTEMBER 3, 2025
SCALE: 1" = 50'

APPROVAL UNDER SUBDIVISION CONTROL LAW
REQUIRED
FRANKLIN PLANNING BOARD

DATE

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
1	1/16/26	BETA REVIEW COMMENTS	RRG

DATE		INT.
2/18	FIELD BY:	BL
BK#	FIELD BOOK	PG#
9/25	CALCS BY:	RRG
9/25	DESIGNED BY:	RRG
9/25	DRAWN BY:	COMP
9/25	CHECKED BY:	CAQ

UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
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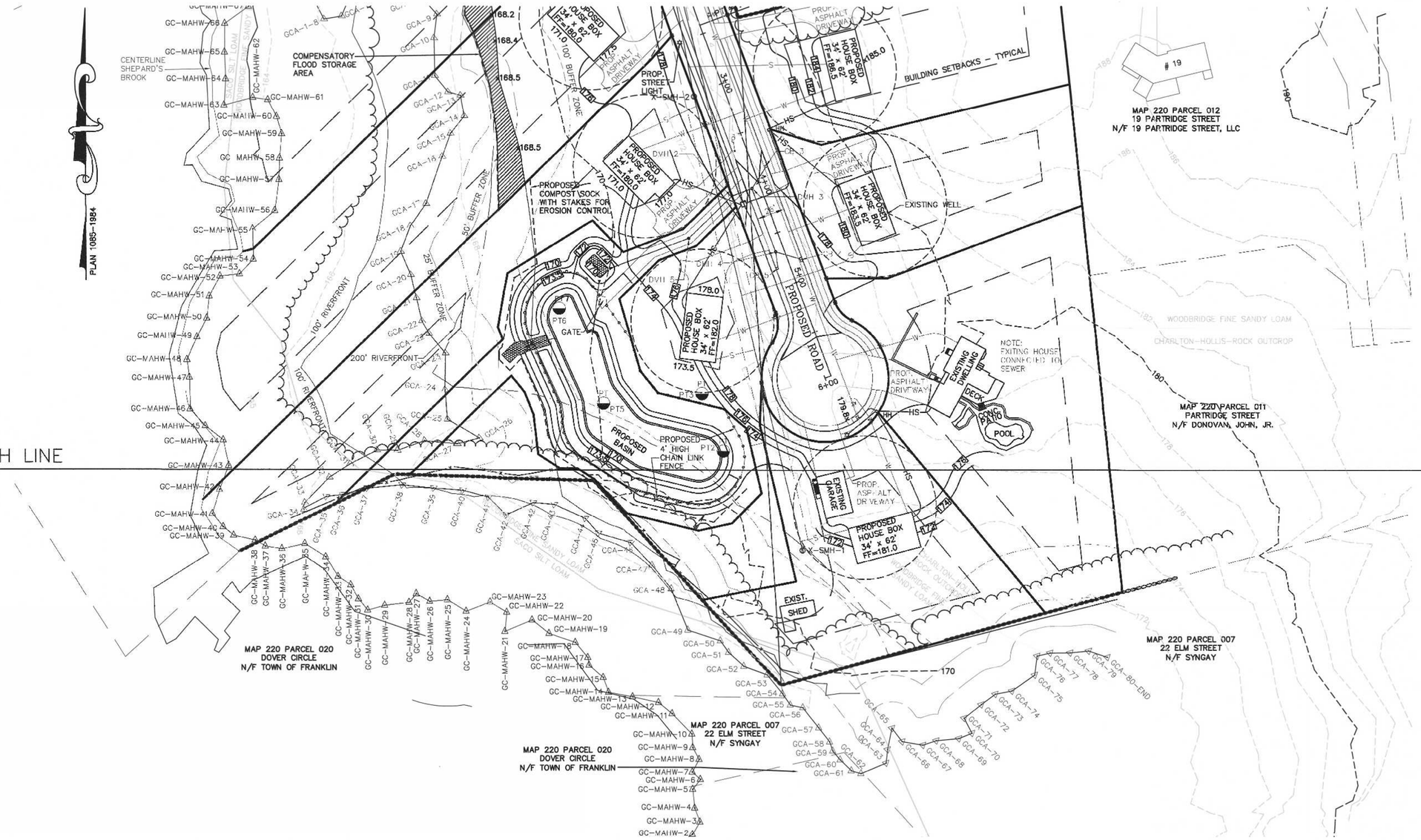
508–384–6560 FAX 508–384–6566

SEPT 3, 2025
1" = 50'
UC1340
1 of 2

FOR REGISTRY USE ONLY



DONOVAN ESTATES
DEVELOPMENT PLAN - 1
LOCATED IN
FRANKLIN, MASSACHUSETTS
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DATE

GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

NO.	DATE	DESCRIPTION	BY
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UNITED CONSULTANTS INC.
850 FRANKLIN STREET SUITE 11D
WRENTHAM, MASSACHUSETTS 02093
508-384-8560 FAX 508-384-8566

SEPT 3, 2025	
1" = 50'	
UC1340	
2 of 2	

DRAINAGE ANALYSIS

FOR
Definitive Subdivision
Donovan Estates

LOCATED IN
FRANKLIN, MASSACHUSETTS

PREPARED FOR
Donovan Family Realty Trust
47 Partridge Street
Franklin, MA 02038

PREPARED BY
UNITED CONSULTANTS, INC.
850 FRANKLIN STREET, SUITE 11D
WRENTHAM, MA. 02093

DATE: September 3, 2025
Revised: January 16, 2026

Table of Contents

APPENDIX A

I. DESCRIPTION

This report is offered in support of the stormwater management system designed for the "Definitive Subdivision – Donovan Estates" in Franklin, Massachusetts. The site currently consists of three lots with a total area of approximately 12 acres. One existing house is located on the site with out buildings and a pool. There are existing houses and vacant land abutting the site. The site has a wetland system which includes bordering vegetated wetlands, a river and a flood plain.
The project included the construction of a roadway with a water main underground utilities and a stormwater system.
The primary goals of the stormwater system are to collect and treat the stormwater runoff generated from the proposed roadway, driveways, and houses. The stormwater will be directed to an infiltration pond. Infiltration Pond 1 is open infiltration area located on Lot P.
Both the pre-development and post-development conditions flowing to the bordering vegetated wetlands are summarized in Appendix B.

II. Purpose

The purpose of this report is to examine the hydrological and hydraulic aspects of the proposed "Definitive Subdivision – Donovan Estates". This report was developed for review by the Town of Franklin Planning Board and Conservation Commission to obtain the necessary permits to allow the project to proceed.

This report considers the overall hydrological impact of proposed additional development upon the local watersheds with specific emphasis directed toward the adjacent and immediate downstream areas. The hydrology and criteria are consistent with the Town of Franklin Planning Board, Franklin Conservation Commission and Mass DEP Storm Water Management Policies.

III. Pre-Development Conditions

The site currently consists of three lots with a total area of approximately 12 acres. One existing house is located on the site with out buildings and a pool. There are existing houses and vacant land abutting the site. The site has a wetland system which includes bordering vegetated wetlands, a river and a flood plain.
The project included the construction of a roadway with a water main underground utilities and a stormwater system.
The upland soils for the site were taken from the soil survey of Norfolk and Suffolk counties. The soils are mapped as -Charlton Hollis Rock-Outcrop Complex (HSG-C) and Woodbridge Fine Sandy Loam (HSG-B) Note: Refer to the subdivision plan for the location and soil types. Soil testing was conducted on the site to determine soil types and permeability rates. See the soil logs and permeability test results located in Appendix F. Permeability test was completed on site and the results can be found in Appendix F.
Utilizing a Hydrocad computer model the pre-development and post development conditions were calculated. This included an analysis of the watershed utilizing a Hydrologic soil group B or C. A comparison of the pre-development vs. post development rate and volume of runoff can be found in Appendix B.

IV. Post Development Conditions

The project included the construction of a roadway with a water main underground utilities and a stormwater system.
The roadway stormwater runoff will be captured in deep sump hooded catch basin and then directed to a sediment forebay and then to an open infiltration pond. The proposed infiltration system will promote groundwater re-charge as required by the Town of Franklin Stormwater Regulations. Municipal utility connections are also proposed for the project. The proposal is to service the houses with town water and sewer. The project includes the construction of a proposed roadway.
TSS removal will be accomplished by a treatment train with deep sump hooded catch basin, sediment forebay and an infiltration pond. Additionally, the entrance portion of the roadway will have a sediment forebay and two water quality swales. Utilizing the same computer model as the existing conditions we have modeled the changes in surfaces and ground cover and have calculated the post development conditions.
All calculations for the above have been included in this report. Pre-development calculations are in Appendix C. Post-development calculations are located in Appendix D.

V. Conclusion

Stormwater from the proposed roadway will be captured by the catch basins type water quality units and a sediment forebay for TSS removal which will then be directed to the underground infiltration pond. Additionally, the entrance portion of the roadway will have a sediment forebay and two water quality swales.
The comparison in Appendix B summarizes the rate and volumes of runoff at the bordering vegetated wetland boundary in both the pre-development and post-development conditions.

VI. Stormwater Management Standards

Refer to Checklist for Stormwater Report in Appendix H

Town of Franklin Stormwater Management Bylaw – Chapter 153 – Bylaw Amendment 21-867

Impervious Coverage Entire Site site =

1" x 61,111 sq. ft. impervious = 5,093 cubic feet (Required)

Storage in Pond 1 below the outlet invert (171.0) = 14,338 cubic feet (Provided) See Stage-Area-Storage for Pond 1 this Appendix.

LID Measures

- Existing Vegetation Removal within the buffer zone has been reduced to the extent practicable and mitigation plantings have been proposed.

Standard 1: No New Untreated Discharges
No new untreated discharges are proposed.
A stormwater system has been provided or is proposed which will provide the required TSS removal which includes the installation of deep sump hooded catch basins, sediment forebay and an infiltration basin as well as a sediment forebay and water quality swales.

Standard 2: Peak Rate Attenuation
The drainage system has been designed to match or reduce the rate of storm-water runoff from the site when comparing the pre-development conditions to the post development conditions. See Appendix B of this report for a summary of the design storms.

Standard 3: Recharge

- Soil testing has been completed. See Appendix F of this report for permeability test results and soil testing information. Additionally, soil testing results can be found on the plan sheets.

- Drawdown within 72 hours
  Pond 1 - Storage Volume below outlet = 14,338 cubic feet
  Time = (14,338) / (0.39"/hr x 1'/12" x 8,348 sf. = 52.85 hours < 72 hours
  See Stage-Area-Storage table for Pond 1this Appendix.

Standard 4: Water Quality

- The owner will be responsible for compliance with standard four requirements.
- Refer to the Operation and Maintenance Plan and the Storm-water Facilities Plan for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.
- See Appendix E for the Manufactures TSS removal rate. The site is not located within a zone II. The Infiltration Pond has been designed with an infiltration rate of 0.39 inches per hour. This led to a Water Quality volume of 1/2" WQV.

The proposed project will include a stormwater system which includes the installation of deep sump hooded catch basins, sediment forebay and an infiltration basin as well as a sediment forebay and water quality swales.

Water Quality Volumes for Pond 1 Note: Due to Town of Franklin Stormwater Management Bylaw a WQV of 1" is being used.

Storage in Pond 1 below the outlet invert (171.0) = 14,338 cubic feet (Provided)

Standard 5: Land uses with higher potential pollutant loads
None proposed.

Standard 6: Critical Areas
N/A

Standard 7: Re-developments and Other Projects
N/A

Standard 8: Construction Period Pollution Prevention and Erosion Sedimentation Control

- Refer to Site Plans for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.
- The project will be covered by an NPDES Construction General Permit.

Standard 9: Operation and Maintenance Plan

- Refer to Site Plans for the Inspection and Maintenance Schedule and the Operation and Maintenance Schedule.

- The owner will be responsible for the storm-water management system, implementation of the operation and maintenance, the maintenance costs, and completion of the maintenance logs.

Standard 10: Prohibition of Illicit Discharges

- Owner to be responsible for compliance with avoiding illicit discharges.
- The site will be connected to the town sewer system.

Stage-Area-Storage for Pond 1P: POND 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
169.50	8,348	0	170.02	9,173	4,555
169.51	8,364	84	170.03	9,190	4,647
169.52	8,380	167	170.04	9,206	4,739
169.53	8,396	251	170.05	9,223	4,831
169.54	8,411	335	170.06	9,239	4,923
169.55	8,427	419	170.07	9,256	5,016
169.56	8,443	504	170.08	9,272	5,108
169.57	8,459	588	170.09	9,289	5,201
169.58	8,475	673	170.10	9,305	5,294
169.59	8,491	758	170.11	9,322	5,387
169.60	8,506	843	170.12	9,338	5,481
169.61	8,522	928	170.13	9,355	5,574
169.62	8,538	1,013	170.14	9,371	5,668
169.63	8,554	1,099	170.15	9,388	5,762
169.64	8,570	1,184	170.16	9,404	5,856
169.65	8,586	1,270	170.17	9,421	5,950
169.66	8,601	1,356	170.18	9,437	6,044
169.67	8,617	1,442	170.19	9,454	6,138
169.68	8,633	1,528	170.20	9,470	6,233
169.69	8,649	1,615	170.21	9,487	6,328
169.70	8,665	1,701	170.22	9,503	6,423
169.71	8,681	1,788	170.23	9,520	6,518
169.72	8,696	1,875	170.24	9,536	6,613
169.73	8,712	1,962	170.25	9,553	6,709
169.74	8,728	2,049	170.26	9,569	6,804
169.75	8,744	2,137	170.27	9,586	6,900
169.76	8,760	2,224	170.28	9,602	6,996
169.77	8,776	2,312	170.29	9,619	7,092
169.78	8,792	2,400	170.30	9,635	7,188
169.79	8,807	2,488	170.31	9,652	7,285
169.80	8,823	2,576	170.32	9,668	7,381
169.81	8,839	2,664	170.33	9,685	7,478
169.82	8,855	2,752	170.34	9,701	7,575
169.83	8,871	2,841	170.35	9,718	7,672
169.84	8,887	2,930	170.36	9,734	7,769
169.85	8,902	3,019	170.37	9,751	7,867
169.86	8,918	3,108	170.38	9,767	7,964
169.87	8,934	3,197	170.39	9,784	8,062
169.88	8,950	3,287	170.40	9,800	8,160
169.89	8,966	3,376	170.41	9,817	8,258
169.90	8,982	3,466	170.42	9,833	8,356
169.91	8,997	3,556	170.43	9,850	8,455
169.92	9,013	3,646	170.44	9,866	8,553
169.93	9,029	3,736	170.45	9,883	8,652
169.94	9,045	3,826	170.46	9,899	8,751
169.95	9,061	3,917	170.47	9,916	8,850
169.96	9,077	4,008	170.48	9,932	8,949
169.97	9,092	4,099	170.49	9,949	9,049
169.98	9,108	4,190	170.50	9,966	9,148
169.99	9,124	4,281	170.51	9,982	9,248
170.00	9,140	4,372	170.52	9,999	9,348
170.01	9,157	4,463	170.53	10,015	9,448

Stage-Area-Storage for Pond 1P: POND 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
170.54	10,032	9,548
170.55	10,048	9,649
170.56	10,065	9,749
170.57	10,081	9,850
170.58	10,098	9,951
170.59	10,114	10,052
170.60	10,131	10,153
170.61	10,147	10,255
170.62	10,164	10,356
170.63	10,180	10,458
170.64	10,197	10,560
170.65	10,213	10,662
170.66	10,230	10,764
170.67	10,246	10,866
170.68	10,263	10,969
170.69	10,279	11,072
170.70	10,296	11,174
170.71	10,312	11,278
170.72	10,329	11,381
170.73	10,345	11,484
170.74	10,362	11,588
170.75	10,378	11,691
170.76	10,395	11,795
170.77	10,411	11,899
170.78	10,428	12,003
170.79	10,444	12,108
170.80	10,461	12,212
170.81	10,477	12,317
170.82	10,494	12,422
170.83	10,510	12,527
170.84	10,527	12,632
170.85	10,543	12,737
170.86	10,560	12,843
170.87	10,576	12,949
170.88	10,593	13,054
170.89	10,609	13,160
170.90	10,626	13,267
170.91	10,642	13,373
170.92	10,659	13,480
170.93	10,675	13,586
170.94	10,692	13,693
170.95	10,708	13,800
170.96	10,725	13,907
170.97	10,741	14,015
170.98	10,758	14,122
170.99	10,774	14,230
171.00	10,791	14,338
171.01	10,808	14,445
171.02	10,824	14,554
171.03	10,841	14,662
171.04	10,857	14,770
171.05	10,874	14,879
171.06	10,890	14,988
171.07	10,907	15,097
171.08	10,923	15,206
171.09	10,940	15,315
171.10	10,956	15,425
171.11	10,973	15,534
171.12	10,989	15,644
171.13	11,006	15,754
171.14	11,022	15,864
171.15	11,039	15,975
171.16	11,055	16,085
171.17	11,072	16,196
171.18	11,088	16,307
171.19	11,105	16,418
171.20	11,121	16,529
171.21	11,138	16,640
171.22	11,154	16,751
171.23	11,171	16,863
171.24	11,187	16,975
171.25	11,204	17,087
171.26	11,220	17,199
171.27	11,237	17,311
171.28	11,253	17,424
171.29	11,270	17,536
171.30	11,286	17,649
171.31	11,303	17,762
171.32	11,319	17,875
171.33	11,336	17,988
171.34	11,352	18,102
171.35	11,369	18,215
171.36	11,385	18,329
171.37	11,402	18,443
171.38	11,418	18,557
171.39	11,435	18,672
171.40	11,451	18,786
171.41	11,468	18,901
171.42	11,484	19,015
171.43	11,501	19,130
171.44	11,517	19,245
171.45	11,534	19,361
171.46	11,550	19,476
171.47	11,567	19,592
171.48	11,583	19,707
171.49	11,600	19,823
171.50	11,617	19,939
171.51	11,633	20,056
171.52	11,650	20,172
171.53	11,666	20,289
171.54	11,683	20,405
171.55	11,699	20,522
171.56	11,716	20,639
171.57	11,732	20,757

Stage-Area-Storage for Pond 1P: POND 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
171.58	11,749	20,874
171.59	11,765	20,992
171.60	11,782	21,109
171.61	11,798	21,227
171.62	11,815	21,345
171.63	11,831	21,463
171.64	11,848	21,582
171.65	11,864	21,700
171.66	11,881	21,819
171.67	11,897	21,938
171.68	11,914	22,057
171.69	11,930	22,176
171.70	11,947	22,296
171.71	11,963	22,415
171.72	11,980	22,535
171.73	11,996	22,655
171.74	12,013	22,775
171.75	12,029	22,895
171.76	12,046	23,015
171.77	12,062	23,136
171.78	12,079	23,257
171.79	12,095	23,378
171.80	12,112	23,499
171.81	12,128	23,620
171.82	12,145	23,741
171.83	12,161	23,863
171.84	12,178	23,984
171.85	12,194	24,106
171.86	12,211	24,228
171.87	12,227	24,350
171.88	12,244	24,473
171.89	12,260	24,595
171.90	12,277	24,718
171.91	12,293	24,841
171.92	12,310	24,964
171.93	12,326	25,087
171.94	12,343	25,210
171.95	12,359	25,334
171.96	12,376	25,458
171.97	12,392	25,581
171.98	12,409	25,705
171.99	12,425	25,830
172.00	12,442	25,954
172.01	12,459	26,079
172.02	12,477	26,203
172.03	12,494	26,328
172.04	12,512	26,453
172.05	12,529	26,578
172.06	12,547	26,704
172.07	12,564	26,829
172.08	12,582	26,955
172.09	12,599	27,081
172.10	12,617	27,207
172.11	12,634	27,333
172.12	12,652	27,460
172.13	12,669	27,586
172.14	12,687	27,713
172.15	12,704	27,840
172.16	12,722	27,967
172.17	12,739	28,094
172.18	12,757	28,222
172.19	12,774	28,350
172.20	12,791	28,477
172.21	12,809	28,605
172.22	12,826	28,734
172.23	12,844	28,862
172.24	12,861	28,990
172.25	12,879	29,119
172.26	12,896	29,248
172.27	12,914	29,377
172.28	12,931	29,506
172.29	12,949	29,636
172.30	12,966	29,765
172.31	12,984	29,895
172.32	13,001	30,025
172.33	13,019	30,155
172.34	13,036	30,285
172.35	13,054	30,416
172.36	13,071	30,546
172.37	13,089	30,677
172.38	13,106	30,808
172.39	13,123	30,939
172.40	13,141	31,071
172.41	13,158	31,202
172.42	13,176	31,334
172.43	13,193	31,466
172.44	13,211	31,598
172.45	13,228	31,730
172.46	13,246	31,862
172.47	13,263	31,995
172.48	13,281	32,127
172.49	13,298	32,260
172.50	13,316	32,393
172.51	13,333	32,527
172.52	13,351	32,660
172.53	13,368	32,794
172.54	13,386	32,927
172.55	13,403	33,061
172.56	13,421	33,196
172.57	13,438	33,330
172.58	13,455	33,464
172.59	13,473	33,599
172.60	13,490	33,734
172.61	13,508	33,869

Stage-Area-Storage for Pond 1P: POND 1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
172.62	13,525	34,004
172.63	13,543	34,139
172.64	13,560	34,275
172.65	13,578	34,410
172.66	13,595	34,546
172.67	13,613	34,682
172.68	13,630	34,819
172.69	13,648	34,955
172.70	13,665	35,091
172.71	13,683	35,228
172.72	13,700	35,365
172.73	13,718	35,502
172.74	13,735	35,639
172.75	13,753	35,777
172.76	13,770	35,915
172.77	13,787	36,052
172.78	13,805	36,190
172.79	13,822	36,328
172.80	13,840	36,467
172.81	13,857	36,605
172.82	13,875	36,744
172.83	13,892	36,883
172.84	13,910	37,022
172.85	13,927	37,161
172.86	13,945	37,300
172.87	13,962	37,440
172.88	13,980	37,580
172.89	13,997	37,719
172.90	14,015	37,859
172.91	14,032	38,000
172.92	14,050	38,140
172.93	14,067	38,281
172.94	14,084	38,421
172.95	14,102	38,562
172.96	14,119	38,703
172.97	14,137	38,845
172.98	14,154	38,986
172.99	14,172	39,128
173.00	14,189	39,270
173.01	14,207	39,412
173.02	14,224	39,554
173.03	14,242	39,696
173.04	14,259	39,839
173.05	14,277	39,981
173.06	14,294	40,124
173.07	14,312	40,267
173.08	14,329	40,410
173.09	14,347	40,554
173.10	14,364	40,697
173.11	14,382	40,841
173.12	14,399	40,985
173.13	14,416	41,129
173.14	14,434	41,273
173.15	14,451	41,418
173.16	14,469	41,562
173.17	14,486	41,707
173.18	14,504	41,852
173.19	14,521	41,997
173.20	14,539	42,142
173.21	14,556	42,288
173.22	14,574	42,434
173.23	14,591	42,579
173.24	14,609	42,725
173.25	14,626	42,872
173.26	14,644	43,018
173.27	14,661	43,164
173.28	14,679	43,311
173.29	14,696	43,458
173.30	14,714	43,605
173.31	14,731	43,752
173.32	14,748	43,900
173.33	14,766	44,047
173.34	14,783	44,195
173.35	14,801	44,343
173.36	14,818	44,491
173.37	14,836	44,639
173.38	14,853	44,788
173.39	14,871	44,936
173.40	14,888	45,085
173.41	14,906	45,234
173.42	14,923	45,383
173.43	14,941	45,533
173.44	14,958	45,682
173.45	14,976	45,832
173.46	14,993	45,982
173.47	15,011	46,132
173.48	15,028	46,282
173.49	15,046	46,432
173.50	**15,063**	**46,583**

APPENDIX B

Pre-Development vs. Post Development Rate and Volume of Runoff

This analysis was prepared to show the summary of the pre-development and post development rate and volume of runoff as required by the Town of Franklin Storm-water Requirements.

The pre-development watershed area 1S has a discharge to the on-site wetland. Post-development Link 1L was provided to combine the outlet from Pond 1 and the wet swale with the undeveloped area which discharge to the on-site wetland. A comparison of the rate and volume for pre-development area 1S and post-development Link 1L (To Wetlands) is provided below:

2-year storm event (CFS)		
Pre		Post
1S	vs	1L
5.23		4.15

2 year storm event (A.F.)		
Pre		Post
1S	vs	1L
0.729		0.568

10 year storm event (CFS)		
Pre		Post
1S	vs	1L
17.14		12.98

10 year storm event (A.F.)		
Pre		Post
1S	vs	1L
1.995		1.847

100 year storm event (CFS)		
Pre		Post
1S	vs	1L
41.08		33.22

100 year storm event (A.F.)		
Pre		Post
1S	vs	1L
4.544		4.515

The rate of runoff and volume of runoff for the 2 year, 10 year and 100 year storm events have been matched or reduced.

APPENDIX C

1S

Subcat Reach Pond Link

Drainage Diagram for UC1340-PRE
Prepared by United Consultants, Inc.

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
1.766	55	Woods, Good, HSG B (1S)
8.386	61	>75% Grass cover, Good, HSG B (1S)
0.494	70	Woods, Good, HSG C (1S)
2.412	74	>75% Grass cover, Good, HSG C (1S)
0.609	98	Paved parking & roofs (1S)
13.667		

2 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 5.23 cfs @ 12.38 hrs, Volume= 0.729 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
26,517	98	Paved parking & roofs
365,308	61	>75% Grass cover, Good, HSG B
105,060	74	>75% Grass cover, Good, HSG C
76,931	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
595,345	64	Weighted Average
568,828		Pervious Area
26,517		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	42	0.0110	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.4	127	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	172	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	13	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	301	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	655	Total			

10 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 17.14 cfs @ 12.33 hrs, Volume= 1.995 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
26,517	98	Paved parking & roofs
365,308	61	>75% Grass cover, Good, HSG B
105,060	74	>75% Grass cover, Good, HSG C
76,931	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
595,345	64	Weighted Average
568,828		Pervious Area
26,517		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	42	0.0110	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.4	127	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	172	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	13	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	301	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	655	Total			

100 YR PRE-DEVELOPMENT

Subcatchment 1S: 1S

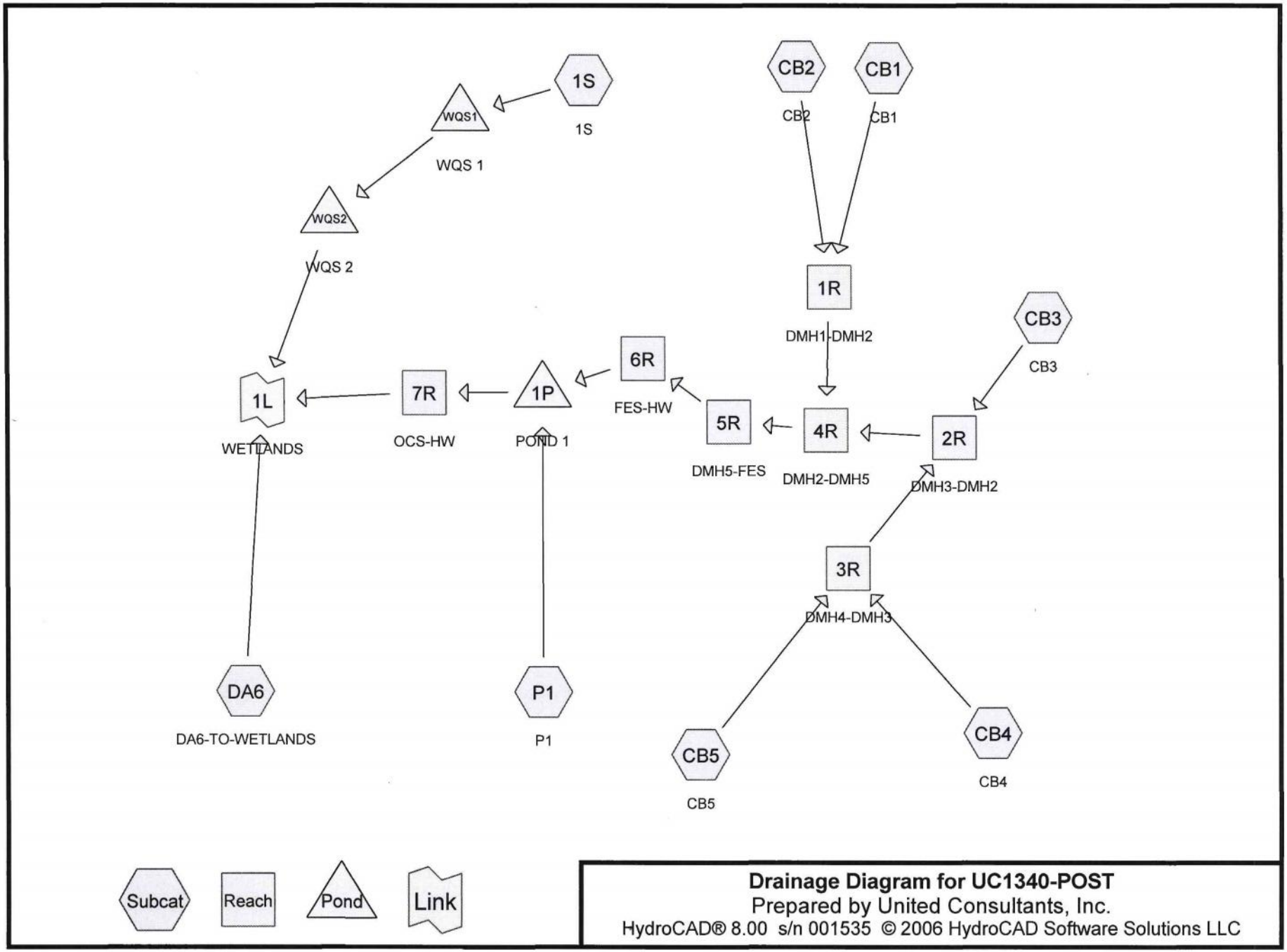
Runoff = 41.08 cfs @ 12.31 hrs, Volume= 4.544 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
26,517	98	Paved parking & roofs
365,308	61	>75% Grass cover, Good, HSG B
105,060	74	>75% Grass cover, Good, HSG C
76,931	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
595,345	64	Weighted Average
568,828		Pervious Area
26,517		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	42	0.0110	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.4	127	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.6	172	0.0650	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	13	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.8	301	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.2	655	Total			

APPENDIX D


1S
1S
WQS1
WQS 1
WQS2
WQS 2
CB2
CB2
CB1
CB1
1R
DMH1-DMH2
CB3
CB3
6R
FES-HW
1L
WETLANDS
7R
OCS-HW
1P
POND 1
5R
DMH5-FES
4R
DMH2-DMH5
2R
DMH3-DMH2
3R
DMH4-DMH3
DA6
DA6-TO-WETLANDS
P1
P1
CB5
CB5
CB4
CB4
Subcat
Reach
Pond
Link
Drainage Diagram for UC1340-POST
Prepared by United Consultants, Inc.
HydroCAD® 8.00 s/n 001535 © 2006 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcats)
1.140	55	Woods, Good, HSG B (CB1,CB3,DA6)
7.943	61	>75% Grass cover, Good, HSG B (1S,CB1,CB2,CB3,CB4,CB5,DA6,P1)
0.494	70	Woods, Good, HSG C (DA6)
2.386	74	>75% Grass cover, Good, HSG C (CB5,DA6,P1)
0.305	98	POND (P1)
1.403	98	Paved parking & roofs (1S,CB1,CB2,CB3,CB4,CB5,DA6,P1)
13.671		

2 YR POST-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.054 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
8,143	98	Paved parking & roofs
20,718	61	>75% Grass cover, Good, HSG B
28,861	71	Weighted Average
20,718		Pervious Area
8,143		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	15	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	5	0.1250	2.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	89	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	32	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	245	Total			

Subcatchment CB1: CB1

Runoff = 0.26 cfs @ 12.35 hrs, Volume= 0.037 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
4,591	98	Paved parking & roofs
7,412	61	>75% Grass cover, Good, HSG B
22,990	55	Woods, Good, HSG B
34,993	62	Weighted Average
30,402		Pervious Area
4,591		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.5	109	0.0210	0.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	160	0.0375	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	62	0.0678	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	12	0.1667	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	7	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
19.0	517	Total			

Subcatchment CB2: CB2

Runoff = 0.25 cfs @ 12.13 hrs, Volume= 0.020 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
3,240	98	Paved parking & roofs
5,920	61	>75% Grass cover, Good, HSG B
9,160	74	Weighted Average
5,920		Pervious Area
3,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.3	53	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0190	6.77	5.32	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
8.6	124	Total			

Subcatchment CB3: CB3

Runoff = 0.32 cfs @ 12.23 hrs, Volume= 0.038 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
3,207	98	Paved parking & roofs
25,212	61	>75% Grass cover, Good, HSG B
2,608	55	Woods, Good, HSG B
31,027	64	Weighted Average
27,820		Pervious Area
3,207		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.2	77	0.0227	1.05		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	66	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.1850	3.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	25	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	22	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	24	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
13.9	414	Total			

Subcatchment CB4: CB4

Runoff = 1.27 cfs @ 12.10 hrs, Volume= 0.096 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
14,187	98	Paved parking & roofs
34,440	61	>75% Grass cover, Good, HSG B
48,627	72	Weighted Average
34,440		Pervious Area
14,187		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0440	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.5	64	0.0781	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	63	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	46	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	5.70	7.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
6.0	279	Total			

Subcatchment CB5: CB5

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.054 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
8,897	98	Paved parking & roofs
6,242	61	>75% Grass cover, Good, HSG B
1,715	74	>75% Grass cover, Good, HSG C
16,854	82	Weighted Average
7,957		Pervious Area
8,897		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.1	5	0.0200	0.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.2	201	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry, MIN TC**
0.0	12	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	228	Total			

Subcatchment DA6: DA6-TO-WETLANDS

Runoff = 4.15 cfs @ 12.33 hrs, Volume= 0.525 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
13,120	98	Paved parking & roofs
215,109	61	>75% Grass cover, Good, HSG B
102,048	74	>75% Grass cover, Good, HSG C
24,053	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
375,859	66	Weighted Average
362,739		Pervious Area
13,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	13	0.0340	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
3.5	37	0.0340	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.8	101	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	61	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3	357	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	225	0.0090	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	17	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	32	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	843	Total			

Subcatchment P1: P1

Runoff = 1.58 cfs @ 12.09 hrs, Volume= 0.116 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 2YR-NOAA Rainfall=3.37"

Area (sf)	CN	Description
5,726	98	Paved parking & roofs
30,929	61	>75% Grass cover, Good, HSG B
155	74	>75% Grass cover, Good, HSG C
13,301	98	POND
50,111	75	Weighted Average
31,084		Pervious Area
19,027		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	16	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	58	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	164	Total			

Reach 1R: DMH1-DMH2

Inflow Area = 1.014 ac, Inflow Depth = 0.68" for 2YR-NOAA event
Inflow = 0.41 cfs @ 12.28 hrs, Volume= 0.057 af
Outflow = 0.40 cfs @ 12.33 hrs, Volume= 0.057 af, Atten= 0%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.25 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 3.9 min

Peak Storage= 43 cf @ 12.31 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.44 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 238.0' Slope= 0.0040 '/'
Inlet Invert= 172.93', Outlet Invert= 171.97'

Reach 2R: DMH3-DMH2

Inflow Area = 2.216 ac, Inflow Depth = 1.02" for 2YR-NOAA event
Inflow = 2.21 cfs @ 12.11 hrs, Volume= 0.188 af
Outflow = 2.21 cfs @ 12.11 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.09 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 0.1 min

Peak Storage= 7 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.73 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 16.0' Slope= 0.0106 '/'
Inlet Invert= 171.89', Outlet Invert= 171.72'

Reach 3R: DMH4-DMH3

Inflow Area = 1.503 ac, Inflow Depth = 1.20" for 2YR-NOAA event
Inflow = 2.03 cfs @ 12.09 hrs, Volume= 0.150 af
Outflow = 2.02 cfs @ 12.10 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.87 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.76 fps, Avg. Travel Time= 0.6 min

Peak Storage= 25 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.38 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 172.59', Outlet Invert= 171.99'

Reach 4R: DMH2-DMH5

Inflow Area = 3.229 ac, Inflow Depth = 0.91" for 2YR-NOAA event
Inflow = 2.42 cfs @ 12.12 hrs, Volume= 0.246 af
Outflow = 2.42 cfs @ 12.12 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.58 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.37 fps, Avg. Travel Time= 0.6 min

Peak Storage= 36 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.43 cfs

24.0" Diameter Pipe, n= 0.012
Length= 53.0' Slope= 0.0040 '/'
Inlet Invert= 171.22', Outlet Invert= 171.01'

Reach 5R: DMH5-FES

Inflow Area = 3.229 ac, Inflow Depth = 0.91" for 2YR-NOAA event
Inflow = 2.42 cfs @ 12.12 hrs, Volume= 0.246 af
Outflow = 2.42 cfs @ 12.13 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.9 min

Peak Storage= 52 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.55 cfs

24.0" Diameter Pipe, n= 0.012
Length= 77.0' Slope= 0.0040 '/'
Inlet Invert= 170.91', Outlet Invert= 170.60'

Reach 6R: FES-HW

Inflow Area = 3.229 ac, Inflow Depth = 0.91" for 2YR-NOAA event
Inflow = 2.42 cfs @ 12.13 hrs, Volume= 0.246 af
Outflow = 2.41 cfs @ 12.14 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.61 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.6 min

Peak Storage= 33 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.66 cfs

24.0" Diameter Pipe, n= 0.012
Length= 49.0' Slope= 0.0041 '/'
Inlet Invert= 171.00', Outlet Invert= 170.80'

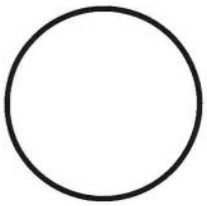
Reach 7R: OCS-HW

Inflow Area = 4.380 ac, Inflow Depth = 0.00" for 2YR-NOAA event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs, Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 28.0' Slope= 0.0200 '/'
Inlet Invert= 169.50', Outlet Invert= 168.94'



Pond 1P: POND 1

Inflow Area = 4.380 ac, Inflow Depth = 0.99" for 2YR-NOAA event
Inflow = 3.86 cfs @ 12.12 hrs, Volume= 0.362 af
Outflow = 0.09 cfs @ 22.53 hrs, Volume= 0.362 af, Atten= 98%, Lag= 624.8 min
Discarded = 0.09 cfs @ 22.53 hrs, Volume= 0.362 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 170.74' @ 22.53 hrs Surf.Area= 10,361 sf Storage= 11,583 cf

Plug-Flow detention time= 1,286.1 min calculated for 0.362 af (100% of inflow)
Center-of-Mass det. time= 1,286.3 min (2,155.2 - 869.0)

Volume	Invert	Avail.Storage	Storage Description
#1	169.50'	46,583 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.50	8,348	0	0
170.00	9,140	4,372	4,372
172.00	12,442	21,582	25,954
173.50	15,063	20,629	46,583

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.390 in/hr Exfiltration over Surface area**
#2	Primary	171.00'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	171.10'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	171.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	172.35'	**2.00' x 2.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.09 cfs @ 22.53 hrs HW=170.74' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=169.50' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
├**3=Orifice/Grate** (Controls 0.00 cfs)
├**4=Orifice/Grate** (Controls 0.00 cfs)
└**5=Orifice/Grate** (Controls 0.00 cfs)

Pond WQS1: WQS 1

Inflow Area = 0.663 ac, Inflow Depth = 0.98" for 2YR-NOAA event
Inflow = 0.70 cfs @ 12.10 hrs, Volume= 0.054 af
Outflow = 0.27 cfs @ 12.43 hrs, Volume= 0.050 af, Atten= 62%, Lag= 19.9 min
Primary = 0.27 cfs @ 12.43 hrs, Volume= 0.050 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 169.68' @ 12.43 hrs Surf.Area= 856 sf Storage= 669 cf

Plug-Flow detention time= 142.4 min calculated for 0.049 af (91% of inflow)
Center-of-Mass det. time= 99.6 min (968.3 - 868.7)

Volume	Invert	Avail.Storage	Storage Description
#1	168.50'	2,110 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.50	276	0	0
170.00	1,013	967	967
171.00	1,273	1,143	2,110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	**13.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	169.00'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=0.27 cfs @ 12.43 hrs HW=169.68' (Free Discharge)
├**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.27 cfs @ 2.15 fps)

Pond WQS2: WQS 2

Inflow Area = 0.663 ac, Inflow Depth > 0.90" for 2YR-NOAA event
Inflow = 0.27 cfs @ 12.43 hrs, Volume= 0.050 af
Outflow = 0.09 cfs @ 13.60 hrs, Volume= 0.042 af, Atten= 67%, Lag= 70.4 min
Primary = 0.09 cfs @ 13.60 hrs, Volume= 0.042 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 168.94' @ 13.60 hrs Surf.Area= 938 sf Storage= 662 cf

Plug-Flow detention time= 271.2 min calculated for 0.042 af (85% of inflow)
Center-of-Mass det. time= 174.4 min (1,142.7 - 968.3)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1,936 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.00	473	0	0
169.50	1,216	1,267	1,267
170.00	1,461	669	1,936

Device	Routing	Invert	Outlet Devices
#1	Primary	169.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	168.50'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=0.09 cfs @ 13.60 hrs HW=168.94' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.09 cfs @ 1.73 fps)

Link 1L: WETLANDS

Inflow Area = 13.671 ac, Inflow Depth = 0.50" for 2YR-NOAA event
Inflow = 4.15 cfs @ 12.33 hrs, Volume= 0.568 af
Primary = 4.15 cfs @ 12.33 hrs, Volume= 0.568 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

10 YR POST-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 1.77 cfs @ 12.09 hrs, Volume= 0.128 af, Depth= 2.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
8,143	98	Paved parking & roofs
20,718	61	>75% Grass cover, Good, HSG B
28,861	71	Weighted Average
20,718		Pervious Area
8,143		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	15	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	5	0.1250	2.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	89	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	32	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	245	Total			

Subcatchment CB1: CB1

Runoff = 0.96 cfs @ 12.29 hrs, Volume= 0.107 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
4,591	98	Paved parking & roofs
7,412	61	>75% Grass cover, Good, HSG B
22,990	55	Woods, Good, HSG B
34,993	62	Weighted Average
30,402		Pervious Area
4,591		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.5	109	0.0210	0.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	160	0.0375	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	62	0.0678	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	12	0.1667	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	7	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
19.0	517	Total			

Subcatchment CB2: CB2

Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.045 af, Depth= 2.57"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
3,240	98	Paved parking & roofs
5,920	61	>75% Grass cover, Good, HSG B
9,160	74	Weighted Average
5,920		Pervious Area
3,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.3	53	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0190	6.77	5.32	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
8.6	124	Total			

Subcatchment CB3: CB3

Runoff = 1.08 cfs @ 12.20 hrs, Volume= 0.104 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
3,207	98	Paved parking & roofs
25,212	61	>75% Grass cover, Good, HSG B
2,608	55	Woods, Good, HSG B
31,027	64	Weighted Average
27,820		Pervious Area
3,207		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.2	77	0.0227	1.05		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	66	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.1850	3.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	25	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	22	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	24	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
13.9	414	Total			

Subcatchment CB4: CB4

Runoff = 3.12 cfs @ 12.09 hrs, Volume= 0.223 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
14,187	98	Paved parking & roofs
34,440	61	>75% Grass cover, Good, HSG B
48,627	72	Weighted Average
34,440		Pervious Area
14,187		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0440	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.5	64	0.0781	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	63	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	46	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	5.70	7.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
6.0	279	Total			

Subcatchment CB5: CB5

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.107 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
8,897	98	Paved parking & roofs
6,242	61	>75% Grass cover, Good, HSG B
1,715	74	>75% Grass cover, Good, HSG C
16,854	82	Weighted Average
7,957		Pervious Area
8,897		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.1	5	0.0200	0.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.2	201	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry, MIN TC**
0.0	12	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	228	Total			

Subcatchment DA6: DA6-TO-WETLANDS

Runoff = 12.51 cfs @ 12.29 hrs, Volume= 1.371 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
13,120	98	Paved parking & roofs
215,109	61	>75% Grass cover, Good, HSG B
102,048	74	>75% Grass cover, Good, HSG C
24,053	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
375,859	66	Weighted Average
362,739		Pervious Area
13,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	13	0.0340	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
3.5	37	0.0340	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.8	101	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	61	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3	357	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	225	0.0090	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	17	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	32	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	843	Total			

Subcatchment P1: P1

Runoff = 3.59 cfs @ 12.09 hrs, Volume= 0.255 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 10YR-NOAA Rainfall=5.26"

Area (sf)	CN	Description
5,726	98	Paved parking & roofs
30,929	61	>75% Grass cover, Good, HSG B
155	74	>75% Grass cover, Good, HSG C
13,301	98	POND
50,111	75	Weighted Average
31,084		Pervious Area
19,027		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	16	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	58	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	164	Total			

Reach 1R: DMH1-DMH2

Inflow Area = 1.014 ac, Inflow Depth = 1.80" for 10YR-NOAA event
Inflow = 1.32 cfs @ 12.24 hrs, Volume= 0.152 af
Outflow = 1.32 cfs @ 12.27 hrs, Volume= 0.152 af, Atten= 0%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.16 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.26 fps, Avg. Travel Time= 3.1 min

Peak Storage= 99 cf @ 12.25 hrs, Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.44 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 238.0' Slope= 0.0040 '/'
Inlet Invert= 172.93', Outlet Invert= 171.97'

Reach 2R: DMH3-DMH2

Inflow Area = 2.216 ac, Inflow Depth = 2.35" for 10YR-NOAA event
Inflow = 5.36 cfs @ 12.10 hrs, Volume= 0.434 af
Outflow = 5.35 cfs @ 12.10 hrs, Volume= 0.434 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.49 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.1 min

Peak Storage= 13 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.73 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 16.0' Slope= 0.0106 '/'
Inlet Invert= 171.89', Outlet Invert= 171.72'

Reach 3R: DMH4-DMH3

Inflow Area = 1.503 ac, Inflow Depth = 2.63" for 10YR-NOAA event
Inflow = 4.62 cfs @ 12.09 hrs, Volume= 0.330 af
Outflow = 4.61 cfs @ 12.09 hrs, Volume= 0.330 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.10 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.5 min

Peak Storage= 45 cf @ 12.09 hrs, Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.38 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 172.59', Outlet Invert= 171.99'

Reach 4R: DMH2-DMH5

Inflow Area = 3.229 ac, Inflow Depth = 2.18" for 10YR-NOAA event
Inflow = 6.23 cfs @ 12.11 hrs, Volume= 0.586 af
Outflow = 6.23 cfs @ 12.12 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.65 fps, Avg. Travel Time= 0.5 min

Peak Storage= 71 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.43 cfs

24.0" Diameter Pipe, n= 0.012
Length= 53.0' Slope= 0.0040 '/'
Inlet Invert= 171.22', Outlet Invert= 171.01'

Reach 5R: DMH5-FES

Inflow Area = 3.229 ac, Inflow Depth = 2.18" for 10YR-NOAA event
Inflow = 6.23 cfs @ 12.12 hrs, Volume= 0.586 af
Outflow = 6.21 cfs @ 12.13 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.67 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.8 min

Peak Storage= 102 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.55 cfs

24.0" Diameter Pipe, n= 0.012
Length= 77.0' Slope= 0.0040 '/'
Inlet Invert= 170.91', Outlet Invert= 170.60'

Reach 6R: FES-HW

Inflow Area = 3.229 ac, Inflow Depth = 2.18" for 10YR-NOAA event
Inflow = 6.21 cfs @ 12.13 hrs, Volume= 0.586 af
Outflow = 6.21 cfs @ 12.13 hrs, Volume= 0.586 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.70 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.66 fps, Avg. Travel Time= 0.5 min

Peak Storage= 65 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.88'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.66 cfs

24.0" Diameter Pipe, n= 0.012
Length= 49.0' Slope= 0.0041 '/'
Inlet Invert= 171.00', Outlet Invert= 170.80'

Reach 7R: OCS-HW

Inflow Area = 4.380 ac, Inflow Depth = 0.99" for 10YR-NOAA event
Inflow = 0.55 cfs @ 14.95 hrs, Volume= 0.360 af
Outflow = 0.55 cfs @ 14.95 hrs, Volume= 0.360 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.25 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 0.1 min

Peak Storage= 4 cf @ 14.95 hrs, Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 28.0' Slope= 0.0200 '/'
Inlet Invert= 169.50', Outlet Invert= 168.94'

Pond 1P: POND 1

Inflow Area = 4.380 ac, Inflow Depth = 2.31" for 10YR-NOAA event
Inflow = 9.55 cfs @ 12.11 hrs, Volume= 0.842 af
Outflow = 0.66 cfs @ 14.95 hrs, Volume= 0.842 af, Atten= 93%, Lag= 169.9 min
Discarded = 0.11 cfs @ 14.95 hrs, Volume= 0.482 af
Primary = 0.55 cfs @ 14.95 hrs, Volume= 0.360 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 171.63' @ 14.95 hrs Surf.Area= 11,824 sf Storage= 21,413 cf

Plug-Flow detention time= 1,000.9 min calculated for 0.842 af (100% of inflow)
Center-of-Mass det. time= 1,000.9 min (1,845.5 - 844.7)

Volume	Invert	Avail.Storage	Storage Description
#1	169.50'	46,583 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.50	8,348	0	0
170.00	9,140	4,372	4,372
172.00	12,442	21,582	25,954
173.50	15,063	20,629	46,583

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.390 in/hr Exfiltration over Surface area**
#2	Primary	171.00'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	171.10'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	171.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	172.35'	**2.00' x 2.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.11 cfs @ 14.95 hrs HW=171.63' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.11 cfs)

Primary OutFlow Max=0.55 cfs @ 14.95 hrs HW=171.63' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.33 cfs @ 3.41 fps)
├**3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 3.05 fps)
├**4=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.21 fps)
└**5=Orifice/Grate** (Controls 0.00 cfs)

Pond WQS1: WQS 1

Inflow Area = 0.663 ac, Inflow Depth = 2.31" for 10YR-NOAA event
Inflow = 1.77 cfs @ 12.09 hrs, Volume= 0.128 af
Outflow = 1.63 cfs @ 12.13 hrs, Volume= 0.123 af, Atten= 8%, Lag= 2.1 min
Primary = 1.63 cfs @ 12.13 hrs, Volume= 0.123 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 170.08' @ 12.13 hrs Surf.Area= 1,033 sf Storage= 1,045 cf

Plug-Flow detention time= 74.6 min calculated for 0.123 af (96% of inflow)
Center-of-Mass det. time= 54.1 min (896.6 - 842.5)

Volume	Invert	Avail.Storage	Storage Description
#1	168.50'	2,110 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.50	276	0	0
170.00	1,013	967	967
171.00	1,273	1,143	2,110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	**13.5' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	169.00'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=1.63 cfs @ 12.13 hrs HW=170.08' (Free Discharge)
├**1=Broad-Crested Rectangular Weir** (Weir Controls 0.79 cfs @ 0.77 fps)
└**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.84 cfs @ 2.71 fps)

Pond WQS2: WQS 2

Inflow Area = 0.663 ac, Inflow Depth = 2.23" for 10YR-NOAA event
Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.123 af
Outflow = 0.62 cfs @ 12.50 hrs, Volume= 0.116 af, Atten= 62%, Lag= 22.6 min
Primary = 0.62 cfs @ 12.50 hrs, Volume= 0.116 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 169.46' @ 12.50 hrs Surf.Area= 1,194 sf Storage= 1,213 cf

Plug-Flow detention time= 123.8 min calculated for 0.116 af (94% of inflow)
Center-of-Mass det. time= 80.7 min (977.4 - 896.6)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1,936 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.00	473	0	0
169.50	1,216	1,267	1,267
170.00	1,461	669	1,936

Device	Routing	Invert	Outlet Devices
#1	Primary	169.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	168.50'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=0.62 cfs @ 12.50 hrs HW=169.46' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)
└—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.62 cfs @ 2.55 fps)

Link 1L: WETLANDS

Inflow Area = 13.671 ac, Inflow Depth = 1.62" for 10YR-NOAA event
Inflow = 12.98 cfs @ 12.29 hrs, Volume= 1.847 af
Primary = 12.98 cfs @ 12.29 hrs, Volume= 1.847 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

100 YR POST-DEVELOPMENT

Subcatchment 1S: 1S

Runoff = 3.72 cfs @ 12.09 hrs, Volume= 0.265 af, Depth= 4.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
8,143	98	Paved parking & roofs
20,718	61	>75% Grass cover, Good, HSG B
28,861	71	Weighted Average
20,718		Pervious Area
8,143		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	50	0.0280	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	15	0.0280	1.17		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	28	0.0910	1.51		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	16	0.1250	1.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	5	0.1250	2.47		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	89	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	32	0.0460	4.35		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.1	245	Total			

Subcatchment CB1: CB1

Runoff = 2.41 cfs @ 12.27 hrs, Volume= 0.252 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
4,591	98	Paved parking & roofs
7,412	61	>75% Grass cover, Good, HSG B
22,990	55	Woods, Good, HSG B
34,993	62	Weighted Average
30,402		Pervious Area
4,591		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.0	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
2.5	109	0.0210	0.72		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	160	0.0375	0.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	62	0.0678	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	12	0.1667	2.04		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	7	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	86	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
19.0	517	Total			

Subcatchment CB2: CB2

Runoff = 1.16 cfs @ 12.12 hrs, Volume= 0.090 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
3,240	98	Paved parking & roofs
5,920	61	>75% Grass cover, Good, HSG B
9,160	74	Weighted Average
5,920		Pervious Area
3,240		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	50	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.3	53	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	10	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.0	11	0.0190	6.77	5.32	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
8.6	124	Total			

Subcatchment CB3: CB3

Runoff = 2.58 cfs @ 12.19 hrs, Volume= 0.237 af, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
3,207	98	Paved parking & roofs
25,212	61	>75% Grass cover, Good, HSG B
2,608	55	Woods, Good, HSG B
31,027	64	Weighted Average
27,820		Pervious Area
3,207		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0380	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
1.2	77	0.0227	1.05		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	92	0.0435	1.46		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.1	66	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	27	0.1850	3.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	25	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	22	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0200	0.99		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	24	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
13.9	414	Total			

Subcatchment CB4: CB4

Runoff = 6.44 cfs @ 12.09 hrs, Volume= 0.458 af, Depth= 4.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
14,187	98	Paved parking & roofs
34,440	61	>75% Grass cover, Good, HSG B
48,627	72	Weighted Average
34,440		Pervious Area
14,187		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	50	0.0440	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.5	64	0.0781	1.96		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	63	0.0645	1.78		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	46	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	5	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	5	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	25	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.1	21	0.0100	5.70	7.00	**Circular Channel (pipe),** Diam= 15.0" Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
6.0	279	Total			

Subcatchment CB5: CB5

Runoff = 2.70 cfs @ 12.09 hrs, Volume= 0.197 af, Depth= 6.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
8,897	98	Paved parking & roofs
6,242	61	>75% Grass cover, Good, HSG B
1,715	74	>75% Grass cover, Good, HSG C
16,854	82	Weighted Average
7,957		Pervious Area
8,897		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.1	5	0.0200	0.78		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.37"
0.9	5	0.0200	0.10		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.2	201	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.9					**Direct Entry, MIN TC**
0.0	12	0.0100	4.91	3.86	**Circular Channel (pipe),** Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012 Concrete pipe, finished
6.0	228	Total			

Subcatchment DA6: DA6-TO-WETLANDS

Runoff = 28.72 cfs @ 12.28 hrs, Volume= 3.036 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
13,120	98	Paved parking & roofs
215,109	61	>75% Grass cover, Good, HSG B
102,048	74	>75% Grass cover, Good, HSG C
24,053	55	Woods, Good, HSG B
21,529	70	Woods, Good, HSG C
375,859	66	Weighted Average
362,739		Pervious Area
13,120		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	13	0.0340	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.37"
3.5	37	0.0340	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
1.8	101	0.0180	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.8	61	0.0330	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.3	357	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
5.6	225	0.0090	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	17	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	32	0.0400	1.00		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.0	843	Total			

Subcatchment P1: P1

Runoff = 7.08 cfs @ 12.09 hrs, Volume= 0.506 af, Depth= 5.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Type III 24-hr 100YR-NOAA Rainfall=8.26"

Area (sf)	CN	Description
5,726	98	Paved parking & roofs
30,929	61	>75% Grass cover, Good, HSG B
155	74	>75% Grass cover, Good, HSG C
13,301	98	POND
50,111	75	Weighted Average
31,084		Pervious Area
19,027		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.7	50	0.0300	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.37"
0.2	16	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	40	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	58	0.0340	1.29		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.0	164	Total			

Reach 1R: DMH1-DMH2

Inflow Area = 1.014 ac, Inflow Depth = 4.05" for 100YR-NOAA event
Inflow = 3.14 cfs @ 12.22 hrs, Volume= 0.342 af
Outflow = 3.14 cfs @ 12.25 hrs, Volume= 0.342 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 2.6 min

Peak Storage= 190 cf @ 12.24 hrs, Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.44 cfs

15.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 238.0' Slope= 0.0040 '/'
Inlet Invert= 172.93', Outlet Invert= 171.97'

Reach 2R: DMH3-DMH2

Inflow Area = 2.216 ac, Inflow Depth = 4.83" for 100YR-NOAA event
Inflow = 11.02 cfs @ 12.10 hrs, Volume= 0.892 af
Outflow = 11.01 cfs @ 12.10 hrs, Volume= 0.892 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.55 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 0.1 min

Peak Storage= 23 cf @ 12.10 hrs, Average Depth at Peak Storage= 1.15'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.73 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 16.0' Slope= 0.0106 '/'
Inlet Invert= 171.89', Outlet Invert= 171.72'

Reach 3R: DMH4-DMH3

Inflow Area = 1.503 ac, Inflow Depth = 5.23" for 100YR-NOAA event
Inflow = 9.14 cfs @ 12.09 hrs, Volume= 0.655 af
Outflow = 9.12 cfs @ 12.09 hrs, Volume= 0.655 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.16 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.43 fps, Avg. Travel Time= 0.4 min

Peak Storage= 77 cf @ 12.09 hrs, Average Depth at Peak Storage= 1.02'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 11.38 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 172.59', Outlet Invert= 171.99'

Reach 4R: DMH2-DMH5

Inflow Area = 3.229 ac, Inflow Depth = 4.58" for 100YR-NOAA event
Inflow = 13.26 cfs @ 12.11 hrs, Volume= 1.234 af
Outflow = 13.24 cfs @ 12.12 hrs, Volume= 1.234 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.52 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.5 min

Peak Storage= 127 cf @ 12.11 hrs, Average Depth at Peak Storage= 1.43'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.43 cfs

24.0" Diameter Pipe, n= 0.012
Length= 53.0' Slope= 0.0040 '/'
Inlet Invert= 171.22', Outlet Invert= 171.01'

Reach 5R: DMH5-FES

Inflow Area = 3.229 ac, Inflow Depth = 4.58" for 100YR-NOAA event
Inflow = 13.24 cfs @ 12.12 hrs, Volume= 1.234 af
Outflow = 13.23 cfs @ 12.12 hrs, Volume= 1.234 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.56 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.7 min

Peak Storage= 183 cf @ 12.12 hrs, Average Depth at Peak Storage= 1.42'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.55 cfs

24.0" Diameter Pipe, n= 0.012
Length= 77.0' Slope= 0.0040 '/'
Inlet Invert= 170.91', Outlet Invert= 170.60'

Reach 6R: FES-HW

Inflow Area = 3.229 ac, Inflow Depth = 4.58" for 100YR-NOAA event
Inflow = 13.23 cfs @ 12.12 hrs, Volume= 1.234 af
Outflow = 13.21 cfs @ 12.13 hrs, Volume= 1.234 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.59 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 0.4 min

Peak Storage= 116 cf @ 12.13 hrs, Average Depth at Peak Storage= 1.41'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 15.66 cfs

24.0" Diameter Pipe, n= 0.012
Length= 49.0' Slope= 0.0041 '/'
Inlet Invert= 171.00', Outlet Invert= 170.80'

Reach 7R: OCS-HW

Inflow Area = 4.380 ac, Inflow Depth = 3.36" for 100YR-NOAA event
Inflow = 6.52 cfs @ 12.53 hrs, Volume= 1.226 af
Outflow = 6.52 cfs @ 12.53 hrs, Volume= 1.226 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.63 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.98 fps, Avg. Travel Time= 0.1 min

Peak Storage= 21 cf @ 12.53 hrs, Average Depth at Peak Storage= 0.66'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.09 cfs

18.0" Diameter Pipe, n= 0.012 Concrete pipe, finished
Length= 28.0' Slope= 0.0200 '/'
Inlet Invert= 169.50', Outlet Invert= 168.94'

Pond 1P: POND 1

Inflow Area = 4.380 ac, Inflow Depth = 4.77" for 100YR-NOAA event
Inflow = 19.83 cfs @ 12.11 hrs, Volume= 1.740 af
Outflow = 6.64 cfs @ 12.53 hrs, Volume= 1.740 af, Atten= 66%, Lag= 25.4 min
Discarded = 0.12 cfs @ 12.53 hrs, Volume= 0.514 af
Primary = 6.52 cfs @ 12.53 hrs, Volume= 1.226 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 172.58' @ 12.53 hrs Surf.Area= 13,448 sf Storage= 33,407 cf

Plug-Flow detention time= 555.5 min calculated for 1.739 af (100% of inflow)
Center-of-Mass det. time= 555.8 min (1,380.3 - 824.6)

Volume	Invert	Avail.Storage	Storage Description
#1	169.50'	46,583 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.50	8,348	0	0
170.00	9,140	4,372	4,372
172.00	12,442	21,582	25,954
173.50	15,063	20,629	46,583

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**0.390 in/hr Exfiltration over Surface area**
#2	Primary	171.00'	**3.0" Vert. Orifice/Grate X 2.00** C= 0.600
#3	Primary	171.10'	**3.0" Vert. Orifice/Grate** C= 0.600
#4	Primary	171.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#5	Primary	172.35'	**2.00' x 2.00' Horiz. Orifice/Grate** Limited to weir flow C= 0.600

Discarded OutFlow Max=0.12 cfs @ 12.53 hrs HW=172.58' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=6.52 cfs @ 12.53 hrs HW=172.58' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.57 cfs @ 5.80 fps)
├**3=Orifice/Grate** (Orifice Controls 0.27 cfs @ 5.60 fps)
├**4=Orifice/Grate** (Orifice Controls 2.87 cfs @ 3.65 fps)
└**5=Orifice/Grate** (Weir Controls 2.80 cfs @ 1.55 fps)

Pond WQS1: WQS 1

Inflow Area = 0.663 ac, Inflow Depth = 4.81" for 100YR-NOAA event
Inflow = 3.72 cfs @ 12.09 hrs, Volume= 0.265 af
Outflow = 3.68 cfs @ 12.10 hrs, Volume= 0.261 af, Atten= 1%, Lag= 0.7 min
Primary = 3.68 cfs @ 12.10 hrs, Volume= 0.261 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 170.17' @ 12.10 hrs Surf.Area= 1,057 sf Storage= 1,142 cf

Plug-Flow detention time= 45.5 min calculated for 0.261 af (98% of inflow)
Center-of-Mass det. time= 34.9 min (856.3 - 821.4)

Volume	Invert	Avail.Storage	Storage Description
#1	168.50'	2,110 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.50	276	0	0
170.00	1,013	967	967
171.00	1,273	1,143	2,110

Device	Routing	Invert	Outlet Devices
#1	Primary	170.00'	**13.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	169.00'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=3.67 cfs @ 12.10 hrs HW=170.17' (Free Discharge)
├**1=Broad-Crested Rectangular Weir** (Weir Controls 2.64 cfs @ 1.15 fps)
└**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.03 cfs @ 2.82 fps)

Pond WQS2: WQS 2

Inflow Area = 0.663 ac, Inflow Depth = 4.72" for 100YR-NOAA event
Inflow = 3.68 cfs @ 12.10 hrs, Volume= 0.261 af
Outflow = 3.64 cfs @ 12.11 hrs, Volume= 0.253 af, Atten= 1%, Lag= 0.8 min
Primary = 3.64 cfs @ 12.11 hrs, Volume= 0.253 af

Routing by Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs
Peak Elev= 169.65' @ 12.11 hrs Surf.Area= 1,290 sf Storage= 1,456 cf

Plug-Flow detention time= 68.2 min calculated for 0.253 af (97% of inflow)
Center-of-Mass det. time= 46.3 min (902.6 - 856.3)

Volume	Invert	Avail.Storage	Storage Description
#1	168.00'	1,936 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.00	473	0	0
169.50	1,216	1,267	1,267
170.00	1,461	669	1,936

Device	Routing	Invert	Outlet Devices
#1	Primary	169.50'	**16.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#2	Primary	168.50'	**30.0 deg Sharp-Crested Vee/Trap Weir** C= 2.61

Primary OutFlow Max=3.63 cfs @ 12.11 hrs HW=169.65' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 2.63 cfs @ 1.09 fps)
└—**2=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.99 cfs @ 2.80 fps)

Link 1L: WETLANDS

Inflow Area = 13.671 ac, Inflow Depth = 3.96" for 100YR-NOAA event
Inflow = 33.22 cfs @ 12.29 hrs, Volume= 4.515 af
Primary = 33.22 cfs @ 12.29 hrs, Volume= 4.515 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.01 hrs

APPENDIX E

De Minimus Storm-water Discharge Calculation

Impervious Areas
To Deep Sump Hooded Catch Basins, Sediment Forebay and Pond 1 – 34,122 sq. ft.
To Sediment Forebay and Water Quality Swales – 8,143 sq. ft.

TSS Removal
To Ponds 1 - 85%
To Sediment Forebay and Water Quality Swales 78%

Pond 1 – 34,122 x .85 = 29,004
To Sediment Forebay and Water Quality Swales – 8,143 x .78 = 6,352

29,004 + 6,352 = 35,356

34,122 + 8,143 = 42,265

35,356
42,268 = 83.6% which is greater than 80%

Pre-treatment - To Pond 1

V

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Donovan Estates

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75
	0.00	0.75	0.00	0.75

Total TSS Removal = 25%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: UC1340
Prepared By: RRG
Date: Jan-26

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Donovan Estates

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Deep Sump and Hooded Catch Basin	**0.25**	**1.00**	**0.25**	**0.75**
Infiltration Basin	**0.80**	**0.75**	**0.60**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**
	0.00	**0.15**	**0.00**	**0.15**

Total TSS Removal = **85%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: UC1340
Prepared By: RRG
Date: Sep-25

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

INSTRUCTIONS:

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Version 1, Automated: Mar. 4, 2008

Location: Donovan Estates

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Sediment Forebay	0.25	1.00	0.25	0.75
Water Quality Swale - Wet	0.70	0.75	0.53	0.23
	0.00	0.23	0.00	0.23
	0.00	0.23	0.00	0.23
	0.00	0.23	0.00	0.23

Total TSS Removal = 78%

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: UC1340
Prepared By: RRG
Date: Sep-25

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

APPENDIX F

Guelph Permeameter Calculations

Input

Result

Support: all@soilmoisture.com

Head #1

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 5
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 0.4800

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 0.80315
$Q =$ 0.28176

$K_{fs} =$ 5.12E-04 cm/sec
3.07E-02 cm/min
5.12E-06 m/sec
1.21E-02 inch/min
2.02E-04 inch/sec

$\Phi_m =$ 4.27E-03 (cm^2/min)

Head #2

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 10
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 0.9100

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 1.28754
$Q =$ 0.53417

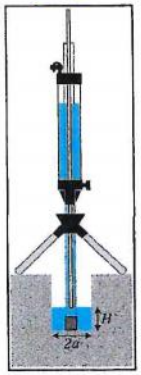
$K_{fs} =$ 5.79E-04 cm/sec
3.47E-02 cm/min
5.79E-06 m/ses
1.37E-02 inch/min
2.28E-04 inch/sec

$\Phi_m =$ 4.82E-03 (cm^2/min)

Average

$K_{fs} =$ 5.46E-04 cm/sec
3.27E-02 cm/min
5.46E-06 m/s
1.29E-02 inch/min
2.15E-04 inch/sec

$\Phi_m =$ 4.55E-03 (cm^2/min)



Two Head Method

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1

Enter the first water Head Height ("H1" in cm): 5
Enter the second water Head Height ("H2" in cm): 10

Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

$\alpha^* =$ 0.12 (cm^{-1})

Steady State Rate of Water Level Change ("R1" in cm/min): 0.4800

Steady State Rate of Water Level Change ("R2" in cm/min): 0.9100

1.95

$Q_1 =$ 0.01728

$Q_2 =$ 0.03278

$C_1 =$ 0.80315

$C_2 =$ 1.28754

$G_1 =$ 0.00496

$G_2 =$ 0.00397

$G_3 =$ 0.05569

$G_4 =$ 0.02415

$K_{fs} =$ 4.45E-05 cm/sec
2.67E-03 cm/min
4.45E-07 m/sec
1.05E-03 inch/min
1.75E-05 inch/sec

$\Phi_m =$ 1.71E-04 (cm^2/min)

PT # 2

Calculation formulas related to shape factor (C). Where H_1 is the first water head height (cm), H_2 is the second water head height (cm), a is borehole radius (cm), and α^* is macroscopic capillary length factor which is decided according to the soil texture-structure category. For one-head method, only C_1 needs to be calculated while for two-head method, C_1 and C_2 are calculated (Zang et al., 1996).

Soil Texture-Structure Category	$\alpha^*(cm^{-1})$	Shape Factor
Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01	$C_1 = \left(\frac{H_1/a}{2.102 + 0.118(H_1/a)}\right)^{0.635}$ $C_2 = \left(\frac{H_2/a}{2.102 + 0.118(H_2/a)}\right)^{0.635}$
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04	$C_1 = \left(\frac{H_1/a}{1.992 + 0.091(H_1/a)}\right)^{0.685}$ $C_2 = \left(\frac{H_2/a}{1.992 + 0.091(H_2/a)}\right)^{0.685}$
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.734}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.734}$
Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macro pores, etc.	0.36	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.734}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.734}$

Calculation formulas related to one-head and two-head methods. Where R is steady-state rate of fall of water in reservoir (cm/s), K_{fs} is Soil saturated hydraulic conductivity (cm/s), Φ_m is Soil matric flux potential (cm^2/s), α^* is Macroscopic capillary length parameter (from Table 2), a is Borehole radius (cm), H_1 is the first head of water established in borehole (cm), H_2 is the second head of water established in borehole (cm) and C_1s Shape factor (from Table 2).

One Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$	$K_{fs} = \frac{C_1 \times Q_1}{2\pi H_1^2 + \pi a^2 C_1 + 2\pi\left(\frac{H_1}{\alpha^*}\right)}$ $\Phi_m = \frac{C_1 \times Q_1}{(2\pi H_1^2 + \pi a^2 C_1)\alpha^* + 2\pi H_1}$
One Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$	
Two Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$ $Q_2 = \bar{R}_2 \times 35.22$	$G_1 = \frac{H_2 C_1}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_2 = \frac{H_1 C_2}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $K_{fs} = G_2Q_2 - G_1Q_1$ $G_3 = \frac{(2H_1^2 + a^2C_2)C_1}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$
Two Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$ $Q_2 = \bar{R}_2 \times 2.16$	$G_4 = \frac{(2H_2^2 + a^2C_1)C_2}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $\Phi_m = G_3Q_1 - G_4Q_2$

Guelph Permeameter Data Sheet

Investigator: CARLOS DIGITAL Date: 6/23/25

Location: 47 PORTRIDGE ST Test Id: PT #2

Depth of hole: 30" Radius: FRENCH 3cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ✓ Inner only: _____

Reservoir constant used: 35,22

Water level in well = 5 cm

Time *t* (min)	D*t* (min)	Water level in reservoir *h* (cm)	D*h* (cm)	Rate of change D*h*/ D*t*
0		18		
3:40	3,67	20	2	0,55
13:37	9,88	25	5	0,51
25:00	11,38	30	5	0,44
36:09	11,15	35	5	0,45
47:09	11,0	40	5	0,46
59:26	12,28	46	6	0,49
1:08:0	8,57	50	4	0,47
10:09	10,02	55	5	0,50
14:51		60	5	
29:36	14,65	65	5	0,34

Steady rate for 3 consecutive readings (R_1): 0,48

Water level in well = 10 cm

Time *t* (min)	D*t* (min)	Water level in reservoir *h* (cm)	D*h* (cm)	Rate of change D*h*/ D*t*
0		15		
9:22	9,37	20	5	0,53
15:02	5,40	25	5	0,93
20:41	5,65	30	5	0,89
26:22	5,85	35	5	0,86
32:03	5,68	40	5	0,88
37:34	5,52	45	5	0,91
42:55	5,35	50	5	0,94
48:32	5,62	55	5	0,89
53:54	5,37	60	5	0,93
59:11	5,28	65	5	0,94
1 04:40	5,48	70	5	0,91
1 12:27	7,78	75	5	0,64

Steady rate for 3 consecutive readings (R_2): 0,91

Comments:

K_{sat} = 0.0129 in/min = 0.77 in/hr

GP FIELD DATA SHEET

SECTION 1: SITE INFORMATION

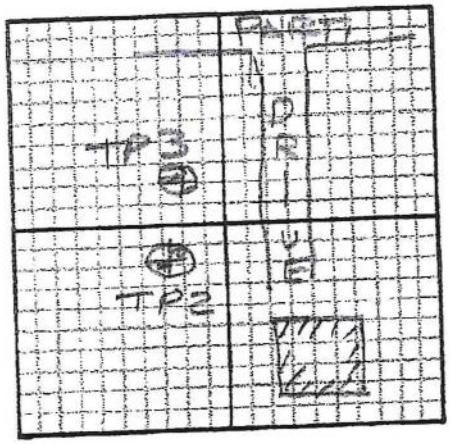
Date 6/23/25 Investigator CARLOS QUINTAL

Site Location 47 PARMBRIDGE ST, FRANKLIN

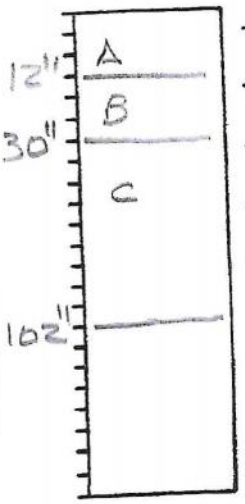
Dominant Soil Type(s) CHARLTON HOLLIS PEAR OUTCROP

Site Map:

TP#2



Soil Profile Description (horizon depth, texture, structure, color, etc.):



Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

water @ 60"

mottles @ 52" (7.5 Y 6/4)

Comments and Notes (topography, slope, vegetation, etc.):

SOILMOISTURE EQUIPMENT CORP.
P.O. Box 30025, Santa Barbara, CA 93130 USA
Phone: 805-964-3525 - Fax: (805) 683-2189 - Email: sales@soilmoisture.com
Website: http://www.soilmoisture.com

SOILMOISTURE®

Guelph Permeameter Calculations

Input

Result

Support: ai@soilmoisture.com

Head #1

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 5
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 2.1300

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 0.80315
$Q =$ 1.25031

$K_{fs} =$ 2.27E-03 cm/sec
1.36E-01 cm/min
2.27E-05 m/sec
5.37E-02 inch/min
8.95E-04 inch/sec

$\Phi_m =$ 1.90E-02 (cm^2/min)

Head #2

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 10
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 3.0300

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 1.28754
$Q =$ 1.77861

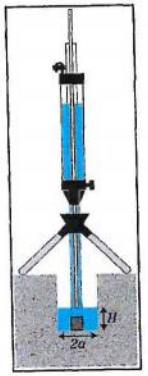
$K_{fs} =$ 1.93E-03 cm/sec
1.16E-01 cm/min
1.93E-05 m/sec
4.56E-02 inch/min
7.59E-04 inch/sec

$\Phi_m =$ 1.61E-02 (cm^2/min)

Average

$K_{fs} =$ 2.10E-03 cm/sec
1.26E-01 cm/min
2.10E-05 m/s
4.96E-02 inch/min
8.27E-04 inch/sec

$\Phi_m =$ 1.75E-02 (cm^2/min)



Two Head Method

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1

Enter the first water Head Height ("H1" in cm): 5
Enter the second water Head Height ("H2" in cm): 10

Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

$\alpha^* =$ 0.12 (cm^{-1})

Steady State Rate of Water Level Change ("R1" in cm/min): 2.1600

Steady State Rate of Water Level Change ("R2" in cm/min): 3.0300

1.95

$Q_1 =$ 0.07776

$Q_2 =$ 0.10908

$C_1 =$ 0.80315

$C_2 =$ 1.28754

$G_1 =$ 0.00496

$G_2 =$ 0.00397

$G_3 =$ 0.05569

$G_4 =$ 0.02415

$K_{fs} =$ 4.79E-05 cm/sec
2.88E-03 cm/min
4.79E-07 m/sec
1.13E-03 inch/min
1.89E-05 inch/sec

$\Phi_m =$ 1.70E-03 (cm^2/min)

PT # 3

Calculation formulas related to shape factor (C): Where H_1 is the first water head height (cm), H_2 is the second water head height (cm), a is borehole radius (cm) and α^* is macroscopic capillary length factor which is decided according to the soil texture-structure category. For one-head method, only C_1 needs to be calculated while for two-head method, C_1 and C_2 are calculated (Zeng et al., 1998).

Soil Texture-Structure Category	$\alpha^*(cm^{-1})$	Shape Factor
Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01	$C_1 = \left(\frac{H_1/a}{2.102 + 0.118(H_1/a)}\right)^{0.635}$ $C_2 = \left(\frac{H_2/a}{2.102 + 0.118(H_2/a)}\right)^{0.635}$
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.03	$C_1 = \left(\frac{H_1/a}{1.992 + 0.091(H_1/a)}\right)^{0.683}$ $C_2 = \left(\frac{H_2/a}{1.992 + 0.091(H_2/a)}\right)^{0.683}$
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.724}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.724}$
Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macro pores, etc.	0.36	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.724}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.724}$

Calculation formulas related to one-head and two-head methods. Where R is steady-state rate of fall of water in reservoir (cm/s), K_{fs} is Soil saturated hydraulic conductivity (cm/s), Φ_m is Soil matric flux potential (cm^2/s), α^* is Macroscopic capillary length parameter (from Table 2), a is Borehole radius (cm), H_1 is the first head of water established in borehole (cm), H_2 is the second head of water established in borehole (cm) and C is Shape factor (from Table 2).

One Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$	$K_{fs} = \frac{C_1 \times Q_1}{2\pi H_1^2 + \pi a^2 C_1 + 2\pi\left(\frac{H_1}{\alpha^*}\right)}$ $\Phi_m = \frac{C_1 \times Q_1}{(2\pi H_1^2 + \pi a^2 C_1)\alpha^* + 2\pi H_1}$
One Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$	
Two Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$ $Q_2 = \bar{R}_2 \times 35.22$	$G_1 = \frac{H_2 C_1}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_2 = \frac{H_1 C_2}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $K_{fs} = G_2Q_2 - G_1Q_1$ $G_3 = \frac{(2H_2^2 + a^2C_2)C_1}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$
Two Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$ $Q_2 = \bar{R}_2 \times 2.16$	$G_4 = \frac{(2H_1^2 + a^2C_1)C_2}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $\Phi_m = G_2Q_1 - G_4Q_2$

Guelph Permeameter Data Sheet

Investigator: CARLOS QUINTAL Date: 6/23/25

Location: 47 PARTRIDGE ST Test Id: PT #3

Depth of hole: 33" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ✓ Inner only: _____

Reservoir constant used: 35,22

Water level in well = 5 cm

Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		18		
1:16	1.27	20	2	1,58
3:02	1.93	25	5	2,59
5:19	2.28	30	5	2,19
7:35	2.27	35	5	2,21
9:51	2.27	40	5	2,21
12:17	2,43	45	5	2,06
12:37	2.33	50	5	2,14
14:40	2.43	55	5	2,06
4:12	2.53	60	5	1,97
6:25	2.22	65	5	2,26
8:55	2.50	70	5	2,00
11:20	2,42	75	5	2,07

Steady rate for 3 consecutive readings (R_1): 2,16

Water level in well = 10 cm

Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		18		
0:24	0.40	20	2	5,00
2:01	1.62	25	5	3,09
3:38	1.62	30	5	3,09
5:17	1.65	35	5	3,03
6:59	1.70	40	5	2,94
8:45	1.77	45	5	2,83
10:23	1.63	50	5	3,06
11:55	1.37	55	5	3,66
13:35	1.67	60	5	3,00
15:19	1.73	65	5	2,89
16:58	1.65	70	5	3,03
18:49	1.85	75	5	2,70

Steady rate for 3 consecutive readings (R_2): 3,03

Comments:

K_{SAT} = 0,0496 in/min = 2.98 in/hr

GP FIELD DATA SHEET

SECTION 1: SITE INFORMATION

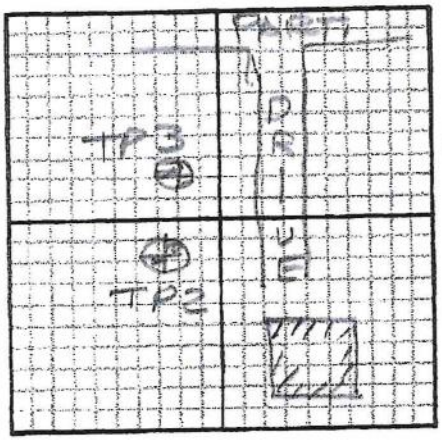
Date 6/23/25 Investigator CARLOS QUINTAL

Site Location 47 PARTRIDGE ST, FRANKLIN

Dominant Soil Type(s) CHARLTON HOLLIS ROCK OUTCROP

Site Map:

TP#3



Soil Profile Description (horizon depth, texture, structure, color, etc.):

Depth		Description
6"	A	FSL
24"	B	FSL
108"		GRAVELLY SL

Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

MOTTLES @ 52"

WATER @ 60"

Comments and Notes (topography, slope, vegetation, etc.):

SOILMOISTURE EQUIPMENT CORP.
P.O. Box 30025, Santa Barbara, CA 93130 USA
Phone: 805-964-3525 - Fax: (805) 683-2189 - Email: sales@soilmoisture.com
Website: http://www.soilmoisture.com

SOILMOISTURE

Guelph Permeameter Calculations

Input

Result

Support: ali@soilmoisture.com

Head #1

Reservoir Type(enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 5
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 1.3000

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 0.80315
$Q =$ 0.7631

$K_{fs} =$ 1.39E-03 cm/sec
8.33E-02 cm/min
1.39E-05 m/sec
3.28E-02 inch/min
5.48E-04 inch/sec

$\Phi_m =$ 1.16E-02 (cm^2/min)

Head #2

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1
Enter water Head Height ("H" in cm): 10
Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min): 2.2900

$\alpha^* =$ 0.12 (cm^{-1})

$C =$ 1.28754
$Q =$ 1.34423

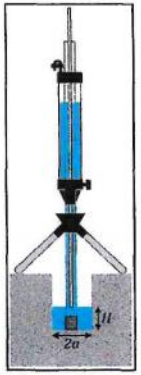
$K_{fs} =$ 1.46E-03 cm/sec
8.74E-02 cm/min
1.46E-05 m/sec
3.44E-02 inch/min
5.73E-04 inch/sec

$\Phi_m =$ 1.21E-02 (cm^2/min)

Average

$K_{fs} =$ 1.42E-03 cm/sec
8.53E-02 cm/min
1.42E-05 m/s
3.36E-02 inch/min
5.60E-04 inch/sec

$\Phi_m =$ 1.19E-02 (cm^2/min)



Two Head Method

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir): 1

Enter the first water Head Height ("H1" in cm): 5
Enter the second water Head Height ("H2" in cm): 10

Enter the Borehole Radius ("a" in cm): 3

Enter the soil texture-structure category (enter one of the below numbers): 3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

$\alpha^* =$ 0.12 (cm^{-1})

Steady State Rate of Water Level Change ("R1" in cm/min): 1.3000

Steady State Rate of Water Level Change ("R2" in cm/min): 2.2900

1.95

$Q_1 =$ 0.0468

$Q_2 =$ 0.08244

$C_1 =$ 0.80315

$C_2 =$ 1.28754

$G_1 =$ 0.00496

$G_2 =$ 0.00397

$G_3 =$ 0.05569

$G_4 =$ 0.02415

$K_{fs} =$ 9.55E-05 cm/sec
5.73E-03 cm/min
9.55E-07 m/sec
2.26E-03 inch/min
3.76E-05 inch/sec

$\Phi_m =$ 6.16E-04 (cm^2/min)

Calculation formula related to shape factor (C). Where H_1 is the first water head height (cm), H_2 is the second water head height (cm), a is borehole radius (cm) and α^* is macroscopic capillary length factor which is decided according to the soil texture-structure category. For one-head method, only C_1 needs to be calculated while for two-head method, C_1 and C_2 are calculated (Zang et al., 1998).

Soil Texture-Structure Category	$\alpha^*(cm^{-1})$	Shape Factor
Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01	$C_1 = \left(\frac{H_1/a}{2.102 + 0.118(H_1/a)}\right)^{0.632}$ $C_2 = \left(\frac{H_2/a}{2.102 + 0.118(H_2/a)}\right)^{0.632}$
Soils which are both fer textured (clayey or silty) and unstructured; may also include some fine sands.	0.04	$C_1 = \left(\frac{H_1/a}{1.992 + 0.091(H_1/a)}\right)^{0.623}$ $C_2 = \left(\frac{H_2/a}{1.992 + 0.091(H_2/a)}\right)^{0.623}$
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.754}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.754}$
Course and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macro pores, etc.	0.36	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.754}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.754}$

Calculation formulas related to one-head and two-head methods. Where R is steady-state rate of fall of water in reservoir (cm/h), K_{fs} is Soil saturated hydraulic conductivity (cm/h), Φ_m is Soil matric flux potential (cm^2/h), α^* is Macroscopic capillary length parameter (from Table 2), a is Borehole radius (cm), H_1 is the first head of water established in borehole (cm), H_2 is the second head of water established in borehole (cm) and C is Shape factor (from Table 2).

One Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$	$K_{fs} = \frac{C_1 \times Q_1}{2\pi H_1^2 + \pi a^2 C_1 + 2\pi\left(\frac{H_1}{\alpha^*}\right)}$ $\Phi_m = \frac{C_1 \times Q_1}{(2\pi H_1^2 + \pi a^2 C_1)\alpha^* + 2\pi H_1}$
One Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$	
Two Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$ $Q_2 = \bar{R}_2 \times 35.22$	$G_1 = \frac{H_2 C_2}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_2 = \frac{H_1 C_2}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $K_{fs} = G_2Q_2 - G_1Q_1$ $G_3 = \frac{(2H_1^2 + a^2C_2)C_1}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_4 = \frac{(2H_1^2 + a^2C_1)C_2}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $\Phi_m = G_3Q_1 - G_4Q_2$
Two Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$ $Q_2 = \bar{R}_2 \times 2.16$	

PT-6

Guelph Permeameter Data Sheet

Investigator: ARIES QUINTAL Date: 12/18/25

Location: 47 PARTRIDGE ST, PA Test Id: PT-6

Depth of hole: 29" Radius: 3 cm (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ✓ Inner only: _____

Reservoir constant used: 35.22

PT-6

Water level in well = 5 cm				
Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		17		
2:17	2.28	20	3	1.31
6:07	3.83	25	5	1.30
10:05	3.97	30	5	1.26
14:01	3.93	35	5	1.27
17:55	3.93	40	5	1.27
21:50	3.92	45	5	1.28
25:30	3.67	50	5	1.36
29:20	3.83	55	5	1.30
33:10	3.67	60	5	1.36

Steady rate for 3 consecutive readings (R_1): 1.30

Water level in well = 10 cm				
Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		15		
2:14	2.23	20	5	2.24
4:34	2.33	25	5	2.14
6:38	2.07	30	5	2.42
8:42	2.07	35	5	2.42
10:50	2.13	40	5	2.34
12:58	2.13	45	5	2.34
15:05	2.12	50	5	2.36
17:30	2.27	55	5	2.20
19:50	2.33	60	5	2.14

Steady rate for 3 consecutive readings (R_2): 2.29

Comments:

K_{SAT} = 0.0336 in/min = 2.02 in/hr

Guelph Permeameter Calculations

Input

Result

Support: ai@soilmoisture.com

Head #1

Reservoir Type(enter "1" for Combined and "2" for Inner reservoir):	1
Enter water Head Height ("H" in cm):	5
Enter the Borehole Radius ("a" in cm):	3
Enter the soil texture-structure category (enter one of the below numbers):	3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min):	0.8400
$\alpha^* =$	0.12 (cm^{-1})
$C =$	0.80315
$Q =$	0.49308
$K_{fs} =$	8.97E-04 cm/sec
	5.38E-02 cm/min
	8.97E-06 m/sec
	2.12E-02 inch/min
	3.53E-04 inch/sec
$\Phi_m =$	7.47E-03 (cm^2/min)

Head #2

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir):	1
Enter water Head Height ("H" in cm):	10
Enter the Borehole Radius ("a" in cm):	3
Enter the soil texture-structure category (enter one of the below numbers):	3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

Steady State Rate of Water Level Change ("R" in cm/min):	1.5700
$\alpha^* =$	0.12 (cm^{-1})
$C =$	1.28754
$Q =$	0.92159
$K_{fs} =$	9.99E-04 cm/sec
	5.99E-02 cm/min
	9.99E-06 m/ses
	2.36E-02 inch/min
	3.93E-04 inch/sec
$\Phi_m =$	8.32E-03 (cm^2/min)

Average

$K_{fs} =$	9.48E-04 cm/sec
	5.69E-02 cm/min
	9.48E-06 m/s
	2.24E-02 inch/min
	3.73E-04 inch/sec
$\Phi_m =$	7.90E-03 (cm^2/min)

Two Head Method

Reservoir Type (enter "1" for Combined and "2" for Inner reservoir):	1
Enter the first water Head Height ("H1" in cm):	5
Enter the second water Head Height ("H2" in cm):	10
Enter the Borehole Radius ("a" in cm):	3
Enter the soil texture-structure category (enter one of the below numbers):	3

1. Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.
2. Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.
3. Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.
4. Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macropors, etc

$\alpha^* =$	0.12 (cm^{-1})
Steady State Rate of Water Level Change ("R1" in cm/min):	0.8400
Steady State Rate of Water Level Change ("R2" in cm/min):	1.5700
	1.95
$Q_1 =$	0.03024
$Q_2 =$	0.05652
$C_1 =$	0.80315
$C_2 =$	1.28754
$G_1 =$	0.00498
$G_2 =$	0.00397
$G_3 =$	0.05589
$G_4 =$	0.02415
$K_{fs} =$	7.47E-05 cm/sec
	4.48E-03 cm/min
	7.47E-07 m/sec
	1.76E-03 inch/min
	2.94E-05 inch/sec
$\Phi_m =$	3.19E-04 (cm^2/min)

Calculation formula related to shape factor (C). Where H_1 is the first water head height (cm), H_2 is the second water head height (cm), a is borehole radius (cm), and α^* is microscopic capillary length factor which is decided according to the soil texture-structure category. For one-head method, only C need to be calculated while for two-head method, C_1 and C_2 are calculated (Zang et al., 1998).

Soil Texture-Structure Category	$\alpha^*(cm^{-1})$	Shape Factor
Compacted, Structure-less, clayey or silty materials such as landfill caps and liners, lacustrine or marine sediments, etc.	0.01	$C_1 = \left(\frac{H_1/a}{2.102 + 0.118(H_1/a)}\right)^{0.655}$ $C_2 = \left(\frac{H_2/a}{2.102 + 0.118(H_2/a)}\right)^{0.655}$
Soils which are both fine textured (clayey or silty) and unstructured; may also include some fine sands.	0.04	$C_1 = \left(\frac{H_1/a}{1.992 + 0.091(H_1/a)}\right)^{0.655}$ $C_2 = \left(\frac{H_2/a}{1.992 + 0.091(H_2/a)}\right)^{0.655}$
Most structured soils from clays through loams; also includes unstructured medium and fine sands. The category most frequently applicable for agricultural soils.	0.12	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.754}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.754}$
Coarse and gravely sands; may also include some highly structured soils with large and/or numerous cracks, macro pores, etc.	0.36	$C_1 = \left(\frac{H_1/a}{2.074 + 0.093(H_1/a)}\right)^{0.754}$ $C_2 = \left(\frac{H_2/a}{2.074 + 0.093(H_2/a)}\right)^{0.754}$

Calculation formulas related to one-head and two-head methods. Where R is steady-state rate of fall of water in reservoir (cm/s), K_{fs} is Soil saturated hydraulic conductivity (cm/s), Φ_m is Soil matric flux potential (cm^2/s), α^* is Macroscopic capillary length parameter (from Table 2), a is Borehole radius (cm), H_1 is the first head of water established in borehole (cm) , H_2 is the second head of water established in borehole (cm) and C is Shape factor (from Table 2).

One Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$	$K_{fs} = \frac{C_1 \times Q_1}{2\pi H_1^2 + \pi a^2 C_1 + 2\pi\left(\frac{H_1}{C_1}\right)}$
One Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$	$\Phi_m = \frac{C_1 \times Q_1}{(2\pi H_1^2 + \pi a^2 C_1)\alpha^* + 2\pi H_1}$
Two Head, Combined Reservoir	$Q_1 = \bar{R}_1 \times 35.22$ $Q_2 = \bar{R}_2 \times 35.22$	$G_1 = \frac{H_2 C_1}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_2 = \frac{H_1 C_2}{\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $K_{fs} = G_3Q_2 - G_4Q_1$ $G_3 = \frac{(2H_1^2 + a^2C_2)C_1}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $G_4 = \frac{(2H_1^2 + a^2C_1)C_2}{2\pi(2H_1H_2(H_2 - H_1) + a^2(H_1C_2 - H_2C_1))}$ $\Phi_m = G_3Q_1 - G_4Q_2$
Two Head, Inner Reservoir	$Q_1 = \bar{R}_1 \times 2.16$ $Q_2 = \bar{R}_2 \times 2.16$	

P1-5

Guelph Permeameter Data Sheet

Investigator: CARLOS QUINTAL Date: 12/18/25

Location: 47 CARTRIDGE ST FR, Test Id: PT 5

Depth of hole: 30" Radius: 3 CM (standard calcs assume 3 cm radius)

Reservoirs used during test (check one): Combined: ✓ Inner only: _____

Reservoir constant used: 35,22

PT 5

Water level in well = 5 cm				
Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		17		
3:25	3.42	20	3	0,88
9:53	6.47	25	5	0,77
16:15	6,37	30	5	0,78
22:10	5,92	35	5	0,85
28:18	6,13	40	5	0,82
34:31	6,22	45	5	0,80
40:20	5,82	50	5	0,86
46:17	5,95	55	5	0,84
51:58	5,68	60	5	0,88
58:01	6 03	65	5	0,83
Steady rate for 3 consecutive readings (R_1):				0.84

Water level in well = 10 cm				
Time t (min)	Dt (min)	Water level in reservoir h (cm)	Dh (cm)	Rate of change Dh/ Dt
0		14		
4:14	4.23	21	7	1,65
6:52	2,63	25	4	1,52
10:06	3,23	30	5	1,55
13:12	3.10	35	5	1,61
16:26	3,23	40	5	1,55
19:39	3,22	45	5	1,55
22:55	3,27	50	5	1,53
26:07	3,20	55	5	1,56
29:13	3,10	60	5	1,61
32:18	3,08	65	5	1,62
Steady rate for 3 consecutive readings (R_2):				1,57

Comments:

K_{SAT} = 0,0224 in/min = 1,34 in/Hr

GP FIELD DATA SHEET

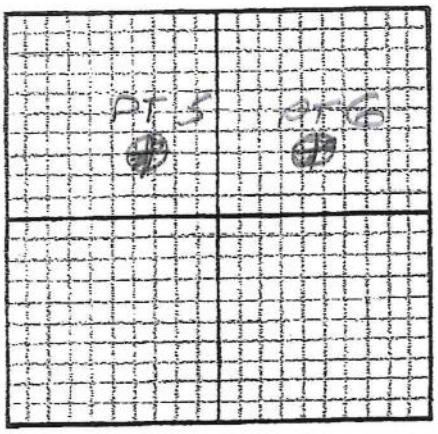
SECTION 1: SITE INFORMATION

Date 12/18/25 Investigator CARLOS A RIVERA

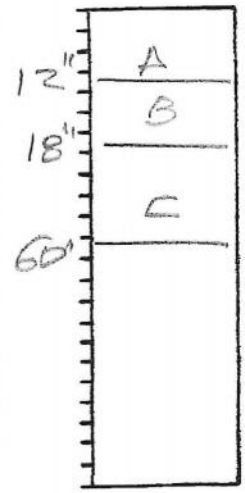
Site Location 47 PARTRIDGE ST - FRANKLIN

Dominant Soil Type(s) WOODBRIDGE FINE SANDY LOAM

Site Map:



Soil Profile Description (horizon depth, texture, structure, color, etc.):



Depth	Description
A	SL
B	SL
C	FSL

Presence of special soil conditions (mottling, water table depth, hardpan, induration, compacted layers, etc.):

Comments and Notes (topography, slope, vegetation, etc.):

SOILMOISTURE EQUIPMENT CORP.
P.O. Box 30025, Santa Barbara, CA 93130 USA
Phone: 805-964-3525 - Fax: (805) 683-2189 - Email: sales@soilmoisture.com
Website: http://www.soilmoisture.com

SOILMOISTURE

Soil Map—Norfolk and Suffolk Counties, Massachusetts
(47 Partridge Street Franklin)

Map Scale: 1:2,970 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

Soils
- Soil 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 1:25,000.

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: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 20, Aug 27, 2024

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

Date(s) aerial images were photographed: May 22, 2022—Jun 5, 2022

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
5	Saco silt loam, frequently ponded, 0 to 1 percent slopes, frequently flooded	11.1	26.8%
103C	Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes	3.9	9.4%
260B	Sudbury fine sandy loam, 2 to 8 percent slopes	2.7	6.5%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	1.3	3.1%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	19.0	45.9%
626B	Merrimac-Urban land complex, 0 to 8 percent slopes	3.4	8.3%
Totals for Area of Interest		**41.5**	**100.0%**

Norfolk and Suffolk Counties, Massachusetts

310B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2ql
Elevation: 0 to 1,470 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: All areas are prime farmland

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Ground moraines, drumlins, hills
Landform position (two-dimensional): Summit, backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Drainage class: Moderately 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 30 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 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D

Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, ground moraines, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, backslope, footslope
Landform position (three-dimensional): Base slope, head slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 20, Aug 27, 2024

Norfolk and Suffolk Counties, Massachusetts

103C—Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2wzp1
Elevation: 0 to 1,390 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

Charlton, extremely stony, and similar soils: 50 percent
Hollis, extremely stony, and similar soils: 20 percent
Rock outcrop: 10 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlton, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
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: 8 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 Hollis, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 8 to 15 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 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: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges, hills
Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 8 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

Minor Components

Woodbridge, extremely stony

Percent of map unit: 8 percent
Landform: Ground moraines, hills, drumlins
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Canton, extremely stony

Percent of map unit: 5 percent
Landform: Moraines, hills, ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Chatfield, extremely stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, side slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Ridgebury, extremely stony

Percent of map unit: 2 percent
Landform: Hills, drainageways, drumlins, depressions, ground moraines
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Head slope, base slope
Down-slope shape: Concave
Across-slope shape: Concave

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Norfolk and Suffolk Counties, Massachusetts
Survey Area Data: Version 20, Aug 27, 2024

APPENDIX G

CHECKLIST FOR DESIGNERS

GOALS and NEEDS Addressed:

1. Create a visually appealing community
2. Stabilize and increase property values
3. Encourage low impact development
4. Preserve the Town's historic and cultural heritage
5. Protect Franklin's natural environment, including habitat, water resources, and ecosystem services

FRANKLIN POLICY:
Subdivision plans and site plans for all forms of development shall adhere to the principles of environmental and aesthetic compatibility and energy-efficient design.

BEST DEVELOPMENT PRACTICES The site plan should be designed to address the following to the maximum extent practicable	Incorporated into Project?
Unique natural features have been preserved *(the development program should either avoid altering or showcase significant natural features)*	N/A
Native vegetation planted in disturbed areas as needed to enhance or restore habitat	✓
Historic and cultural resources have been preserved (*the development program should either avoid altering or showcase significant historic and cultural features)*	N/A
Clearing, grading, and building placement consider view sheds	✓
Cut and fill have been minimized	✓
Buildings blend into the natural topography	✓
Buildings are oriented to the sun and wind for maximum energy efficiency *Vegetated protection from northwest (winter) winds is provided* *Deciduous species planted or retained close to the East, South and West building edges*	✓
Conforms to §185-31 of the Town of Franklin Zoning Code and/or Chapter 300 of the Town of Franklin Subdivision Regulations	✓ with waiver requests

GOALS and NEEDS addressed:

1. Protect local and regional wetlands and water bodies;
2. Maximize groundwater recharge to retain a viable local groundwater supply; and
3. Minimize pollutants in stormwater runoff.

FRANKLIN POLICY: In addition to MassDEP's Stormwater Management Standards, all new development projects in Franklin must meet the following performance measures. All redevelopment projects shall meet the standards and if they fail to meet the standards, shall retrofit or expand existing stormwater management systems to improve existing conditions.

1. Post-development peak discharge rates and volumes from the site shall not exceed pre-development peak discharge rates and volumes from the site.
2. All drainage facilities proposed shall utilize best management practices as outlined in the Massachusetts Stormwater Management Standards.
3. All sites will have an Operation and Maintenance plan to insure future compliance.

Additionally, new development projects must:

1. Retain the volume of runoff equivalent to, or greater than, one (1.0) inch multiplied by the total post-construction impervious surface area on the site AND/OR
2. Remove 90% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site.

And redevelopment projects must:

1. Retain the volume of runoff equivalent to, or greater than, 0.80 inch multiplied by the total post-construction impervious surface area on the site AND/OR
2. Remove 80% of the average annual post-construction load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site AND 50% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site.

BEST DEVELOPMENT PRACTICES The site plan should be designed to address the following to the maximum extent practicable	Incorporated into Project?
Vegetated swales *(recommended to convey runoff from roadways & parking lots)*	✓
Vegetated filter strips *(recommended to filter and infiltrate runoff from roadways, parking lots, and driveways; use along roadsides and parking lots)*	
Constructed wetlands *(preferred method for stormwater retention & pollutant removal)*	
Bioretention cells (*rain gardens) (recommended on residential lots and parking lot islands)*	
Pervious paving surfaces *(recommended in overflow parking and low-traffic areas)*	
Sediment Forebays *(use in combination with other BDP)*	✓
Roof gardens *(encouraged on flat or gently sloped commercial and industrial rooftops)*	
Retention/Detention basins *(may be used in series with other practices to provide pre-treatment)*	✓
Recharge Systems *(suitable for all areas of development)*	✓
Drain pipe/catch basin systems *(as required to collect runoff when other systems are not practical)*	✓
If utilizing drain pipe and/or catch basin systems, have you documented that other systems are infeasible?	✓ Prel. many subdivision

Erosion & Sedimentation Control

Checklist for Designers

GOALS and NEEDS addressed:

1. Minimize clearing and regrading
2. Prevent erosion and sedimentation

FRANKLIN POLICIES:

a) Any proposed project on a previously undeveloped site shall accommodate the development program in a way that minimizes clearing and re-grading, especially in areas of steep slopes, erosion-prone soils, or sensitive vegetation. For redevelopment projects, the site plan shall concentrate development in previously-disturbed areas to the extent possible.

b) As a condition of approval, every proposed project shall submit and adhere to an erosion control plan that addresses soil stabilization, sediment retention, perimeter protection, construction scheduling, and traffic area stabilization and dust control.

c) If the proposed project is in an area under conservation jurisdiction, the project will require permitting deemed appropriate by the Conservation Commission.

BEST DEVELOPMENT PRACTICES The site plan should be designed to address the following to the maximum extent practicable.	Incorporated into Project?
Clearing and re-grading have been minimized	✓
Plan identifies sensitive areas to be protected and areas that are suitable for development	✓
Conservation Permits have been obtained *(when applicable)*	Applying For

The erosion and sedimentation control plan addresses:
• Soil stabilization
  ○ *(cover or stabilize erodible surfaces not in immediate use)*
• Sediment retention
  ○ *(runoff interceptors and sediment traps/ponds)*
• Perimeter protection
  ○ *(vegetated buffers, compost socks or straw wattles at limit of work)*
• Construction scheduling
  ○ *(minimize disturbed area at any given time)*
• Traffic area stabilization
  ○ *(crushed rock or similar at construction vehicle entrance and parking areas)*
• Dust control
  ○ *(plan for stabilizing dry, dust-prone surfaces when necessary)*
• Vegetation
  ○ *(preserve existing vegetation and/or identify areas to be revegetated including proposed planting species, quantity and planting specifications)*
	✓

GOALS and NEEDS addressed:

1. Stabilize water use at a sustainable level;
2. Create landscapes that minimize habitat destruction and maximize habitat value;
3. Encourage the development of landscapes that provide environmental quality and visual relief through the planting of native or naturalized species

FRANKLIN POLICIES:

a) Site plans and landscape plans for all proposed projects shall take appropriate steps, as outlined in the Guidebook, to minimize water use for irrigation and to allow for natural recharge of groundwater. Landscape plans shall follow the guidelines in the Guidebook for selecting species that are most appropriate to the site conditions.

b) Native and habitat-creating species shall be used in all landscape plans to the maximum extent possible while still meeting the site's landscaping needs. Invasive species may not be planted in Franklin under any condition. Refer to the Massachusetts Prohibited Plant list for more information.

c) Actively promote the Town of Franklin's Water Conservation Measures.

BEST DEVELOPMENT PRACTICES The site plan must address all of the following principles.	Incorporated into Project?
Retain and Recharge water on site *(install bio-retention cells, vegetated filter strips and minimize lawn areas where feasible)*	✓
Preserve natural vegetation to the maximum extent practicable	✓
Irrigation system is water efficient *(if an in-ground irrigation system is proposed, it is a water efficient system with timers and automatic sensors to prevent overwatering)*	
Preserve soil permeability *(minimize disturbing existing landscapes. Prepare new planting beds in accordance to the Planting Bed Guidelines on p. 13, and install 1-2" of shredded pine bark mulch on new planting areas)*	✓
Minimize the use of turf grass *(when applicable, reduce the size of the lawn area; instead, plant a bio-retention cell, use alternative, drought tolerant groundcover)*	✓
Specify variety of native and naturalized species *(species from the plant list have been incorporated into the landscape design, and no invasive species are used. Refer to the Plant Species Section and the Massachusetts Prohibited Plant List)*	✓
Species are appropriate to the soil, site, and microclimate conditions *(select appropriate species from the plant list in this guidebook)*	✓

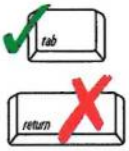
APPENDIX H

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

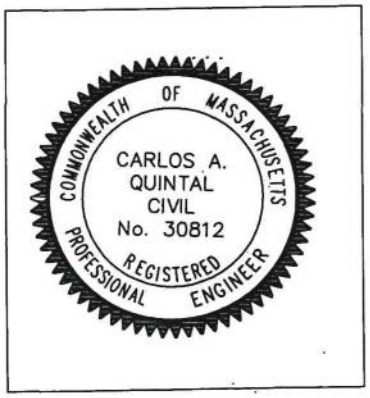
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date 1/20/26

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☐ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☒ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☒ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☒ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☐ An Illicit Discharge Compliance Statement is attached;

☒ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

APPENDIX I

Operation and Maintenance Plan

FOR
Definitive Subdivision
Donovan Estates

LOCATED IN
FRANKLIN, MASSACHUSETTS

PREPARED FOR
Donovan Family Realty Trust
47 Partridge Street
Franklin, MA 02038

PREPARED BY
UNITED CONSULTANTS, INC.
850 FRANKLIN STREET, SUITE 11D
WRENTHAM, MA. 02093

DATE: September 3, 2025
Revised: January 16, 2026

Operation and Maintenance Plan

Good House Keeping Measures

1. The roadway and driveway will receive the minimum amount of sand and salt. Snow will be stored at the roadway edges in windrows consistent with Town of Franklin Snow plowing of roadways.
2. The site landscaping will consist of turf lawn, mulch with trees, shrubs, and existing wooded areas. Minimal amounts of fertilizers, herbicides and pesticides will be applied.
3. The site will be stabilized with landscaped areas with mulch and native seed mixes. This will improve the existing site coverage.

Long Term Pollution Prevention Plan

The owner shall employ good housekeeping measures, which include removing trash and debris from the site, keeping trash in receptacles and complying with the long-term operation and maintenance plan.
The owner does not plan to store materials or waste products on the site.
The owner will have routine inspections and maintenance completed for the Storm-water BMP's. See the Operation and Maintenance Plan Stormwater Facilities Plan for details and schedule.
Typical hazardous materials for single family residences are anticipated. All hazardous materials shall be stored within the houses.
The owner's shall apply the minimum amounts of fertilizers, herbicides and pesticides.
The houses will be serviced by Town water and sewer.
Town trash receptacles are expected to provide refuse storage and will be emptied and disposed of offsite.
The owner will designate an emergency contact person prior to commencing construction.
Snow will be stored at the roadway edges in windrows consistent with Town of Franklin Snow plowing of roadways.
The owner will apply the minimum amount of sand and salt necessary. The roadway will be swept by the Town of Franklin DPW based on their street sweeping program.
Sand piles will not be stored on site.

Operation and Maintenance Plan Reference

An operation and maintenance schedule for the construction period and the post-development period has been provided on the Operation and Maintenance Plan Stormwater Facilities Plan.
Refer to the O&M plan (Sheet 5) for the location of the proposed grading and drainage easement.

During the construction period and after completion the future Owner shall be responsible for the operation and maintenance of the site and the drainage system.
Upon completion of the construction work the Town of Franklin shall be responsible for the maintenance of the drainage facilities.
The yearly estimated operation and maintenance budget is $2,500.

During Construction:

The owner will provide documentation which will be submitted to the Franklin DPW confirming when maintenance has been satisfactorily completed.

The maintenance in the maintenance agreement may be amended to achieve the purpose of the bylaws by mutual agreement of the Director of the DPW and the responsible parties.

The owner of the stormwater management system will notify the Director of changes in ownership or assignment of financial responsibility.

The owner will provide future property owners with a copy of the O&M plan and the Stormwater Facilities plan and inform them of the responsibilities of the stormwater system inspections and maintenance.

The owner shall contract with a company which provides emergency response, spill containment and remediation.
The owner will have a spill prevention kit on site for any spills containing oil or gas.
The owners shall employ a landscape professional who is qualified in fertilizer and pesticide applications.
Landscape professionals shall have spill containment for all fertilizers and pesticides.

The owner will provide documentation which will be submitted to the Franklin DPW confirming when maintenance has been satisfactorily completed.

The owner of the stormwater management system will notify the Director of changes in ownership or assignment of financial responsibility.

During Construction the Future Owner will be the party responsible.

_____

Name Title

Note: This document shall be signed and submitted with SWPPP and the Town of Franklin Stormwater Permit.

Yearly Inspection and Maintenance Log

Page 1

Lot 2 Forge Parkway
Franklin, Massachusetts

Road Sweeping and Curb Inspection – Per Town of Franklin Street Sweeping and Inspection Plan

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Roadway sweeping should be completed by a mechanical or vacuum sweeper.

Notes:

Deep Sump Hooded Catch Basins - Per Town of Franklin Catch Basin Cleaning and Inspection Plan

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Cleaning Performed

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Notes:

Sediment Forebay– Per Town of Franklin Drainage Facility Inspection Plan

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Cleaning Performed:

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Infiltration Pond – Per Town of Franklin Drainage Facility Inspection Plan

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Cleaning Performed:

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Sediment Forebay and Water Quality Swales – Per Town of Franklin Drainage Facility Inspection Plan

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Cleaning Performed:

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Notes:

Landscape Area Inspection – 4 times per year

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Work Performed Repairs completed:

Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____
Date: _____ Performed By: _____

Inspect the area with grass for bare spots and erosion. Repair eroded areas with loam and seed to provide adequate coverage. Inspect landscaped areas for erosion and weeds. Fix erosion and apply additional mulch or landscape stone as necessary.

Inspect and clean pretreatment BMP's every six months and after every major storm event (2 year return frequency). Check the inlet and outlet pipes to determine if they are clogged. Remove accumulated sediment, trash, debris, leaves, lawn clippings from mowing.

Inspect the infiltration area after the first several rainfall events, after all major storms, and on regularly scheduled dates every six months.

Inspect the infiltration area 24 hours to several days after a rain event, to look for ponded water at the surface of the trench. If water is present in may be that the infiltration area is clogged. If so then rehabilitation of the bottom of the trench shall be completed including removing all accumulated sediment, scarifying and till the bottom area, remove and replace the stone media.

APPENDIX J

In Compliance with DEP Storm-water Management Standard 10

Definitive Subdivision "**Donovan Estates**"

No Illicit discharges to the storm-water management system, including wastewater discharges and discharges of storm-water contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease are proposed and shall not be allowed.

The site map located in Appendix J shall be part of this Illicit Discharge Compliance Statement.

During Construction the future owner will be the responsible party.

_____

Name Title

Note: Once ownership of an approved Subdivisions is secured this document shall be signed and submitted with SWPPP and the Town of Franklin Stormwater Permit.

APPENDIX K

Rip Rap Sizing Calculations

Into Sediment Forebay at Wet Swale

Rip Rap Calculator

I want to find the... ...

- (●) average rock diameter (D_{50})
- ( ) rip rap volume
- ( ) both D_{50} and rip rap volume

^ Rip rap specifications

Water velocity (V) i ...

4.35 ft/s

Isbash constant (C) ...

- (●) Highly turbulent (0.86)
- ( ) Low turbulence (1.2)

Gravitational acceleration (g) ...

32.17 ft/s²

Specific gravity (S) i ...

2.75

Average rock diameter (D_{50}) ...

2.727 in

Rip Rap Sizing Calculations

Into Sediment Forebay at Pond 1

Rip Rap Calculator

I want to find the... ...

- (•) average rock diameter (D_{50})
- ( ) rip rap volume
- ( ) both D_{50} and rip rap volume

Rip rap specifications

Water velocity (V) i ...

5.56 ft/s

Isbash constant (C) ...

- (•) Highly turbulent (0.86)
- ( ) Low turbulence (1.2)

Gravitational acceleration (g) ...

32.17 ft/s²

Specific gravity (S) i ...

2.75

Average rock diameter (D_{50}) ...

4.455 in

Share result

Reload calculator

Clear all changes

Did we solve your problem today? Yes No

Rip Rap Sizing Calculations

Into Pond 1

Rip Rap Calculator

I want to find the... ...

- (●) average rock diameter (D_{50})
- ( ) rip rap volume
- ( ) both D_{50} and rip rap volume

^ Rip rap specifications

Water velocity (V) i ...

5.59 ft/s

Isbash constant (C) ...

- (●) Highly turbulent (0.86)
- ( ) Low turbulence (1.2)

Gravitational acceleration (g) ...

32.17 ft/s²

Specific gravity (S) i ...

2.75

Average rock diameter (D_{50}) ...

4.503 in

Rip Rap Sizing Calculations

Out of Pond 1

Rip Rap Calculator

I want to find the... ...

- (•) average rock diameter (D_{50})
- ( ) rip rap volume
- ( ) both D_{50} and rip rap volume

Rip rap specifications

Water velocity (V) i ...

8.63 ft/s

Isbash constant (C) ...

- (•) Highly turbulent (0.86)
- ( ) Low turbulence (1.2)

Gravitational acceleration (g) ...

32.17 ft/s²

Specific gravity (S) i ...

2.75

Average rock diameter (D_{50}) ...

10.732 in

Share result

Reload calculator

Clear all changes

Did we solve your problem today? Yes No

GODDARD CONSULTING
Strategic Ecological Consulting

February 11, 2026

Franklin Conservation Commission
335 East Central Street
Franklin, MA 02038

Re: Notice of Intent
47 Partridge Street, Franklin, MA 02038

Dear Franklin Conservation Commission,

Goddard Consulting, LLC (Goddard) is pleased to submit this Notice of Intent (NOI) on behalf of the applicant, Nancy Donovan, for the property known as 47 Partridge Street in Franklin (Parcel ID: 220/13-15). The applicant proposes the subdivision of three existing property parcels into eight lots, with the construction of seven single-family houses, within Riverfront Area, Buffer Zone to Bordering Vegetated Wetland (BVW), and Bordering Land Subject to Flooding (BLSF). The applicant seeks an Order of Conditions that would allow the work to proceed. This NOI application is a joint filing under the MA Wetlands Protection Act (WPA) and the Town of Franklin Wetland Protection Bylaw (the Bylaw). Enclosed are the supporting documentation for the project for your review and approval.

A list of enclosed documents is as follows:

- NOI Application (WPA Form 3)
- Certified Abutters List, Notification to Abutters, Affidavit of Service
- Bylaw Filing Forms
    - Resource Area Summary Impact Form
    - Property Access Signature Form
    - Applicant Process Signature Form
    - Local Filing Fee Calculation Worksheet
- Order of Resource Area Delineation, DEP File No. 159-1308, issued 6/20/2025
- Drainage Analysis for Definitive Subdivision Donovan Estates, prepared by United Consultants, Inc., dated 9/3/2025, revised 1/16/2026
- *Donovan Estates Pre- and Post-Development Watershed Plans,* prepared by United Consultants Inc., dated 9/3/2025
- *Donovan Estates Definitive Subdivision Plan of Land,* prepared by United Consultants, Inc, dated 9/3/2025

1.0 EXISTING CONDITIONS

The locus site is located south of the Franklin/Medway town line, north of the Dacey Community Field, and east of Mine Brook. The site is approximately 11.6 acres and presently consists of an existing single-family house in the southeast, with the majority of the property consisting of undeveloped, maintained meadow.

The perennial stream, known as Shepard's Brook, located along the western property boundary, casts a 200-foot Riverfront Area over a portion of the site. Additionally, a Bordering Vegetated Wetland (BVW) borders on the east of the perennial stream, casting a 100-foot Buffer Zone onto a portion of

the site. Finally, the western half of the site falls within the 100-Year FEMA Floodplain, with land upgradient from the BVW jurisdictional as Bordering Land Subject to Flooding (BLSF). These resource areas were delineated by Goddard on September 24, 2025, and subsequently confirmed with an Order of Resource Area Delineation (ORAD). See the attached ORAD (DEP File #159-1308), dated 6/20/2025, for more details.

According to the MassGIS data layers for NHESP, this site is not located within Estimated Habitat of Rare Wildlife or Priority Habitat of Rare Species. No mapped certified or potential vernal pools are located on the site or nearby. The site is not mapped within an Area of Critical Environmental Concern (ACEC) or Outstanding Resource Waters (ORW) Area. A portion of the site falls within the 100-Year FEMA Floodplain and is jurisdictional as BLSF under the Wetlands Protection Act (WPA).

Figure 1. Aerial view of the locus site. The perennial stream, BVW, and BLSF are located in the western and southwestern portions of the site. (MassGIS 2023 Aerial Imagery layer)

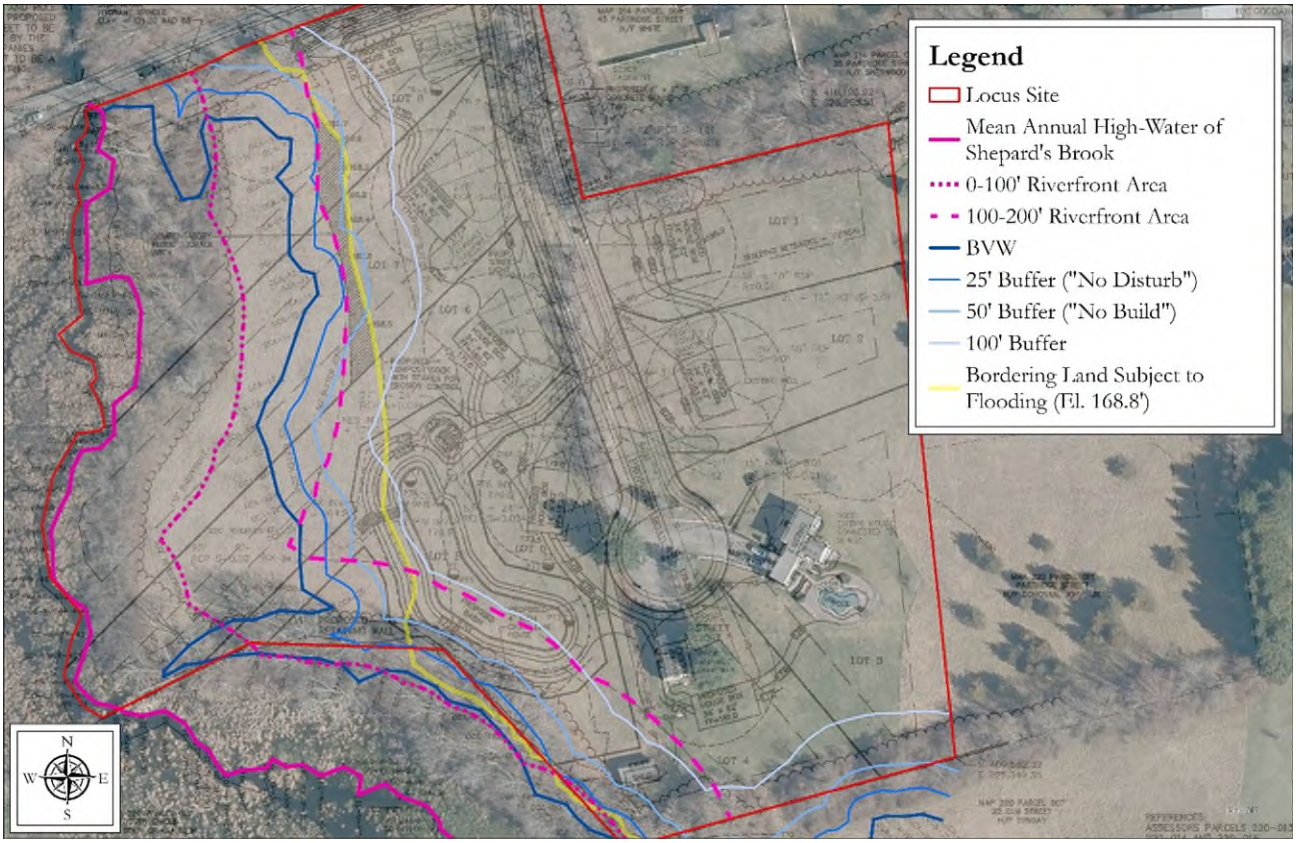


Figure 2. Graphic depicting field-delineated resource areas (as confirmed and approved by ORAD) highlighted on proposed site plan.

2.0 PROPOSED PROJECT

The applicant proposes the subdivision of the existing site into 9 total parcels, with the construction of 7 new single-family houses. To access the subdivided parcels, the applicant is proposing an access road with a cul-de-sac running down the center of the site, providing access from Partridge Street. Additionally, to ensure management of stormwater onsite, the applicant is proposing the construction of a stormwater infiltration basin in the southern portion of the site, with a water quality swale located along the edge of Patridge Street in the north of the site.

Work is proposed east of the resource areas onsite, with the majority of the proposed work outside of any areas jurisdictional under the WPA or local bylaw. Of the single-family houses proposed for construction, only the northernmost house, along Partridge Road, is partially within the 100-Foot Buffer Zone to BVW. The primary work proposed within the 100-Foot Buffer Zone, and partially within the outermost edge of the Outer Riparian Zone, is the construction of the proposed stormwater infiltration basin. The construction of the infiltration basin is situated approximately 50 feet from the BVW at its closest point, with the closest work in Riverfront Area occurring approximately 140 feet

away from the Mean Annual High-Water Line. Work is not proposed within the BVW or perennial stream.

Work is proposed within BLSF, as a portion of the proposed stormwater infiltration basin falls within this zone. However, the applicant is proposing grading to provide compensatory storage to mitigate for the loss of flood storage in the floodplain. This is proposed to be at a ratio of almost 2:1, with the loss of 570 cubic feet of flood storage replaced with 962 cubic feet of compensatory storage.

Erosion control barriers (ECB) in the form of compost socks will be installed around the limit of work prior to any earth disturbance to limit the potential for any erosion or sedimentation to leave the work area and travel offsite or towards the BVW and perennial stream. This ECB will demarcate the limit of work and will be located as shown on the attached site plans. Additionally, an entry sedimentation control mat will be installed in the entranceway to limit any erosion related to the entering or existing of the site during construction. In conjunction with the water quality swale, any sedimentation runoff will be properly captured and diverted from the resource areas. After all soil disturbance is complete, any disturbed areas will be loamed and seeded to establish permanent stability.

3.0 REGULATORY COMPLIANCE WITH WETLANDS PROTECTION ACT

3.1 BUFFER ZONE (100-FOOT)

ECB in the form of compost socks will be installed around the limit of work prior to any earth disturbance to protect downgradient resource areas. Work in the buffer zone is proposed primarily over currently managed meadow and requires minimal disturbance to any woody vegetation. The WPA Regulations do not contain performance standards for Buffer Zone alteration (310 CMR 10.02(2)(b)). All reasonable efforts to avoid, minimize and mitigate adverse impacts on the Buffer Zone have been considered. The project has been designed to limit work in the buffer zone in order to limit the potential for adverse impacts to downgradient resource areas.

3.2 BORDERING VEGETATED WETLANDS (BVW)

No work is proposed within the delineated BVW. ECB in the form of compost socks will be installed around the limit of work prior to any earth disturbance to limit the potential for any erosion or sedimentation to leave the work area and travel offsite or towards the BVW or perennial stream. Aside from +/- 257 square feet of one proposed house, all the proposed work within the buffer zone is comprised of temporary grading and will return to vegetated surfaces.

3.3 BORDERING LAND SUBJECT TO FLOODING (BLSF)

Bordering Land Subject to Flooding (BLSF) is defined under the WPA as "an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland." BLSF extends from the BVW boundary up to the elevation 168.8' contour line on the locus site. It mostly overlaps with Riverfront Area and/or buffer zones.

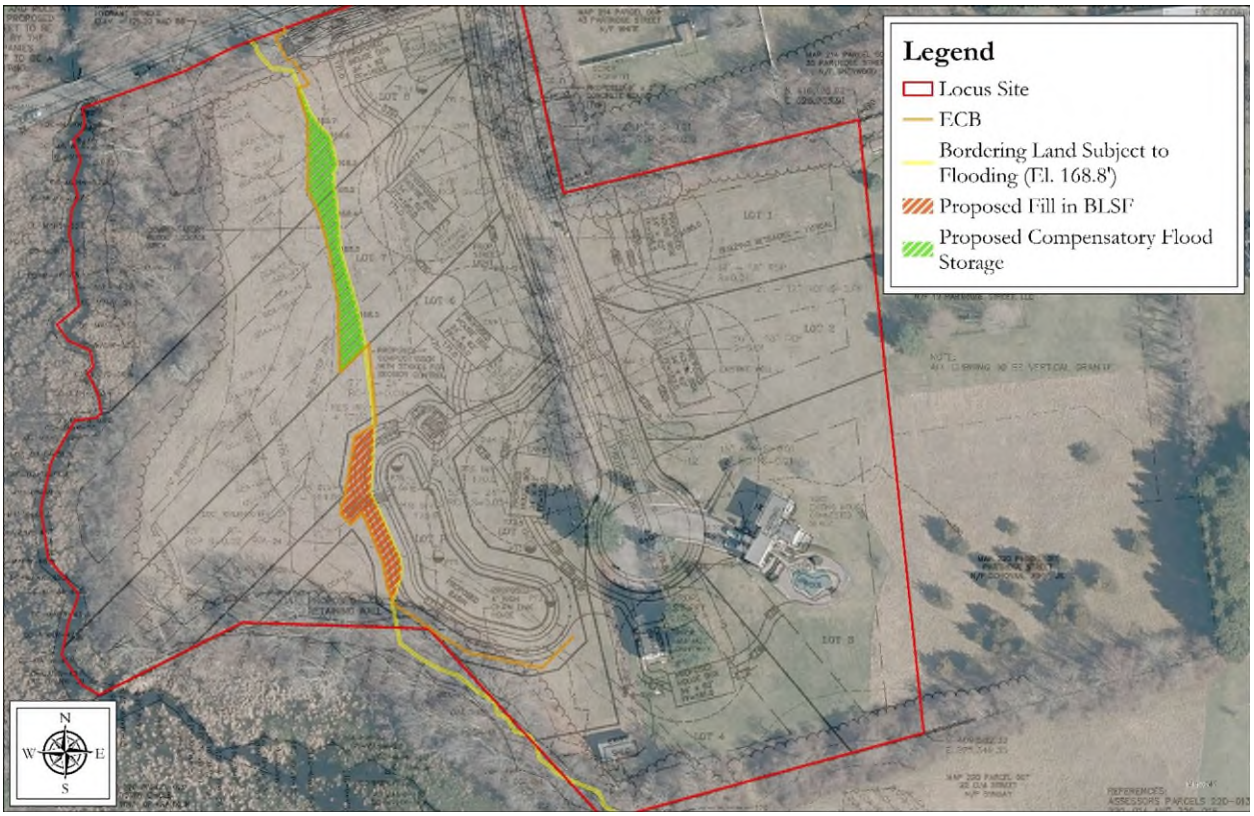


Figure 3. Graphic depicting BLSF and proposed grading therein overlaid on proposed site plan.

As a portion of the proposed work is located within BLSF, the project has been designed in such a way to meet the performance standards outlined in the WPA. See the table below for a more detailed breakdown of how the project meets the performance standards:

310 CMR 10.57: Bordering Land Subject to Flooding		
10.57 (4)(a)1.	*Compensatory storage shall be provided for all flood storage volume that will be lost as the result of a proposed project within Bordering Land Subject to Flooding, when in the judgment of the issuing authority said loss will cause an increase or will contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows. Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation, up to and including the 100-year flood elevation, which would be displaced by the proposed project. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water*	Proposed work in BLSF is comprised of grading to create the proposed stormwater basin. This work will result in a loss of 2,848 square feet (SF) of BLSF and 570 cubic feet (CF) of flood storage volume. The project proposes the creation of compensatory flood storage in the north of the site, totaling 4,811 SF and 962 CF. Fill is proposed between elevation 168'-168.8', with compensatory storage provided at the same contour interval. Additionally, the compensatory storage will have an unrestricted hydraulic connection to the perennial stream and is located within the same reach of the river.

	body. Further, with respect to waterways, such compensatory volume shall be provided within the same reach of the river, stream or creek	
10.57 (4)(a)2.	*Work within Bordering Land Subject to Flooding, including that work required to provide the above-specified compensatory storage, shall not restrict flows so as to cause an increase in flood stage or velocity.*	Work has been designed to provide additional storage of floodwaters, resulting in a reduction in flood stage and velocity. No structures are proposed within BLSF that would cause an increase in flood stage or velocity.
10.57 (4)(a)3.	*Work in those portions of bordering land subject to flooding found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions. Except for work which would adversely affect vernal pool habitat, a project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. Additional alterations beyond the above threshold, or altering vernal pool habitat, may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.*	The proposed work will alter 2,840 SF of BLSF, which is under both the 5,000 SF and 10% (+/-5,700 SF) thresholds of alteration. Thus, the proposed project is not deemed to impair the capacity of the resource area to support habitat functions and is in compliance with the performance standard.
10.57 (4)(b)	*A proposed project in Isolated Land Subject to Flooding shall not result in the following: […]*	Not applicable. Isolated Land Subject to Flooding is not present on site.
10.57 (4)(c)	*Notwithstanding the provisions of 310 CMR 10.57(4)(a) or (b), no project may be permitted which will have any adverse effect on specified wildlife habitat sites of rare vertebrate or invertebrate species, as identified by procedures established under 310 CMR 10.59*	Not applicable. No mapped Estimated Habitat of Rare Species or Priority Habitats of Rare Wildlife are present onsite.

3.4 RIVERFRONT AREA

Riverfront Area is defined by the WPA as, "A Riverfront Area is the area of land between a river's mean annual high-water line and a parallel line measured horizontally. The riverfront area may include or overlap other resource areas or their buffer zones. The riverfront area does not have a buffer zone."

Because a portion of the proposed project is located within Riverfront Area, the project has been designed in a way to limit alteration to locations within the Riverfront Area furthest from the stream

itself. See the table below for a more detailed breakdown of how the project meets the performance standards outlined in the WPA.

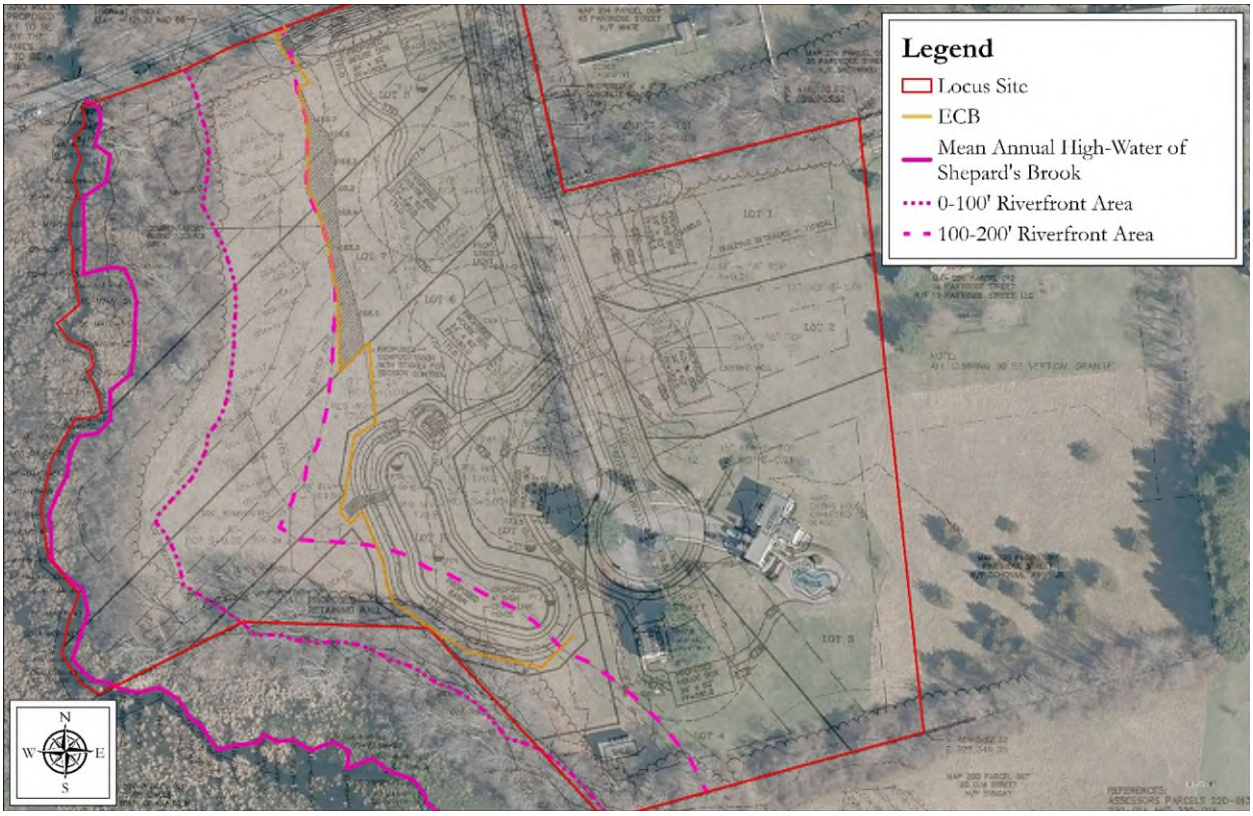


Figure 4. Graphic depicting Riverfront Area and proposed erosion control barrier overlaid on proposed site plan.

310 CMR 10.58: Riverfront Area		
10.58 (4)	*Where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40. In the event that the presumption is partially overcome, the issuing authority shall make a written determination setting forth its grounds in the Order of Conditions and the partial rebuttal shall be taken into account in the application of 310 CMR 10.58 (4)(d)1.a. and c.;*	The presumption is not overcome, thus the proposed project must comply with the following performance standards. Additionally, see Section 3.4.1 for a more detailed Alternatives Analysis.

	the issuing authority shall impose conditions in the Order that contribute to the protection of interests for which the riverfront area is significant.	
10.58 (4)(a)	*The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.30 (Coastal Bank), 10.32 (Salt Marsh), 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.*	Within the Riverfront Area, BVW and BLSF are also present. Thus, the project meets the performance standard for those resource areas, as outlined in Sections 3.2 and 3.3 above. Within the Riverfront Area, buffer zone to BVW is also present. Therefore, the Riverfront Area performance standards are presumed to adequately protect the buffer zone.
10.58 (4)(b)	*No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.*	Not applicable. No mapped Estimated Habitat of Rare Species, Priority Habitats of Rare Wildlife, certified vernal pools or potential vernal pools are present onsite.
10.58 (4)(c)	*There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.* [310 CMR 10.58(4)(c)1-3. omitted for brevity]	See Section 3.4.1 for a more detailed Alternatives Analysis compliant with 310 CMR 10.58(4)(c)1-3.
10.58 (4)(d)	*The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.*	The proposed work will have no adverse impacts to the Riverfront Area and the interests identified in the WPA. Work within the Riverfront Area is limited to grading for the creation of a stormwater basin.

10.58 (4)(d)1.	*Within 200 foot riverfront areas, the issuing authority may allow the alteration of up to 5000 square feet or 10% of the riverfront area within the lot, whichever is greater, on a lot recorded on or before October 6, 1997 or lots recorded after October 6, 1997 subject to the restrictions of 310 CMR 10.58(4)(c)2.b.vi., or up to 10% of the riverfront area within a lot recorded after October 6, 1997, provided that:*	The applicant is proposing the alteration of 9,575 SF of Riverfront Area in the Outer Riparian zone, consisting only of the creation of a structural stormwater management feature, which is less than the 10% threshold of +/-16,000 SF. Additionally, the proposed project is in compliance with the following:
10.58 (4)(d)1. a.	*At a minimum, a 100 foot wide area of undisturbed vegetation is provided. This area shall extend from mean annual high-water along the river unless another location would better protect the interests identified in M.G.L. c. 131 § 40. If there is not a 100 foot wide area of undisturbed vegetation within the riverfront area, existing vegetative cover shall be preserved or extended to the maximum extent feasible to approximate a 100 foot wide corridor of natural vegetation. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures may be allowed only when there is no practicable alternative. Temporary impacts where necessary for installation of linear site-related utilities are allowed, provided the area is restored to its natural conditions. Proposed work which does not meet the requirement of 310 CMR 10.58(4)(d)1.a. may be allowed only if an applicant demonstrates by a preponderance of evidence from a competent source that an area of undisturbed vegetation with an overall average width of 100 feet will provide equivalent protection of the riverfront area, or that a partial rebuttal of the presumptions of significance is sufficient to justify a lesser area of undisturbed vegetation;*	A vegetated strip in excess of 100 feet is present in the inner riparian zone. No alteration of the inner riparian zone is proposed as a part of this project. Alteration in the outer riparian zone is limited to a portion of the proposed stormwater infiltration basin, for which there are no practicable alternatives. Thus, the project is in compliance with this performance standard.
10.58 (4)(d)1. b.	*Stormwater is managed according to standards established by the Department in its Stormwater Policy.*	Stormwater management as a part of this project has been designed to meet the MassDEP Stormwater Standards.

10.58 (4)(d)1. c.	*Proposed work does not impair the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat identified by evidence from a competent source, but not yet certified. For work within an undeveloped riverfront area which exceeds 5,000 square feet, the issuing authority may require a wildlife habitat evaluation study under 310 CMR 10.60.*	As there are no vernal pools located on or offsite nearby, the proposed project will not impair the capacity of the Riverfront Area to provide vernal pool habitat value. No depressions that could function as vernal pool habitat are known to exist on site either.
10.58 (4)(d)1. d.	*Proposed work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution. The calculation of square footage of alteration shall exclude areas of replication or compensatory flood storage required to meet performance standards for other resource areas, or any area of restoration within the riverfront area. The calculation also shall exclude areas used for structural stormwater management measures, provided there is no practicable alternative to siting these structures within the riverfront area and provided a wildlife corridor is maintained (e.g. detention basins shall not be fenced).*	The proposed work will not impair groundwater or surface water quality, as comprehensive erosion control is proposed around the limit of work and at the site entrance/exit. Additionally, as there are no practicable alternatives to the installation of the stormwater basin in the Riverfront Area, it is excluded from calculations of alteration, effectively eliminating all alteration from the Riverfront Area.

3.4.1 ALTERNATIVES ANALYSIS

ALTERNATIVE 1: NO BUILD

In a no build scenario, the project would not be constructed in order to ensure the stormwater basin is not constructed within the Riverfront Area. This alternative is not economically equivalent, prevents the applicant from developing the land as needed, and fails to provide locally and regionally important housing inventory.

ALTERNATIVE 2: DIFFERENT LOCATION FOR STORMWATER BASIN

A second alternative could be the relocation of the stormwater basin outside of the Riverfront Area. However, the basin needs to be downgradient from the proposed single-family houses, so that it can be at the proper elevation to capture stormwater runoff by gravity. Additionally, the basin is positioned outside of the Riverfront Area to the greatest extent practicable, with only a small section inside of the Outer Riparian Zone. Thus, there is no alternative to the proposed location that results in less alteration than what is currently proposed, without extensive grading or the placement closer to the perennial stream itself.

ALTERNATIVE 3: SUBSURFACE STORMWATER MANAGEMENT

Another alternative explored was the use of a subsurface stormwater management system such as Cultec chambers. Soil testing has revealed that seasonal high groundwater is present generally within

2-4 feet of the surface, leaving insufficient space to install Cultec chambers when considering the requirement for 2 feet of separation to seasonal high groundwater. Additionally, such chambers are more expensive (in both purchase price and labor costs) and not substantially economically equivalent to the proposed design.

ALTERNATIVE 4: PROJECT AS PROPOSED

With the proposed project, the stormwater basin is located the farthest location from the resource area as practicable, without requiring extensive grading and ultimately more disturbance/potential for erosion. The proposed footprint of the detention basin is located mostly outside of the Riverfront Area, as illustrated above, and only slightly clips into this zone at the furthest edge. Additionally, per Section 10.58 (4)(d)1.d. of the WPA, the installation of structural stormwater basins within the outer extent of the Riverfront Area is exempt from alteration calculations, resulting in little to no quantifiable alteration in this zone under the Act. As such, the chosen footprint for the basin represents the least amount of alteration further from the Riverfront Area.

3.5 MASSDEP STORMWATER STANDARDS

As the project is subject to MassDEP Stormwater Standards, the project has been designed in such a way to meet said standards and capture an adequate amount of stormwater. Through the construction of both the stormwater infiltration basin and the water quality swale, the proposed project will adequately management and capture stormwater related to the increase in impervious surfaces proposed.

See the attached Drainage Analysis and Pre- and Post-Development Watershed Plans attached below for more information on Stormwater Management.

4.0 REGULATORY COMPLIANCE WITH TOWN OF FRANKLIN WETLANDS PROTECTION BYLAW

The Town of Franklin Wetland Protection Bylaw (the Bylaw) denotes the 25- and 50-foot Buffer Zones to BVW as the "No Disturb" and "No Build" Zones, respectively. As such, the project has been designed to limit alteration in these zones to the maximum extent practicable in compliance with the bylaw and its regulations.

The inner 0-25' Buffer Zone Resource Area is regulated as a "No Disturb" zone. The project proposes absolutely no work within the 0-25' Buffer Zone.

The 25-50' Buffer Zone Resource Area is regulated as a "No Build" zone, restricting the construction of "structures including but not limited to, concrete, stone, or other impervious foundations and/or slabs for construction purposes that for all intents and purposes would significantly increase runoff". Work allowed within this zone "is limited to grading, tree clearing[, s]tormwater management system components, lawns, gardens, and other low impact uses […]". Work within this zone totals 5,961 square feet. This work consists only of grading (to create compensatory flood storage volume the proposed stormwater basin), both of which will be vegetated.

Within the 50-100' Buffer Zone Resource Area, work is allowed but mitigation may be required "when the slope of the buffer zone is steeper than 10%" or "when the applicant proposes that more than 30% of the 50-100 foot buffer zone resource area is proposed to be impervious surface." Within this zone, only 257 square feet of impervious surface is proposed, totaling 0.4% of the total 50-100' Buffer Zone. An existing shed will also be removed from this zone, resulting in the reduction of approximately 50 square feet of existing impervious surface. Additionally, there is little elevation change within the buffer zone (approximately 1-2% slopes).

The Bylaw additionally requires an alternatives analysis for work within certain resource areas, including Riverfront Area. See the above in Section 3.4.1 for more information.

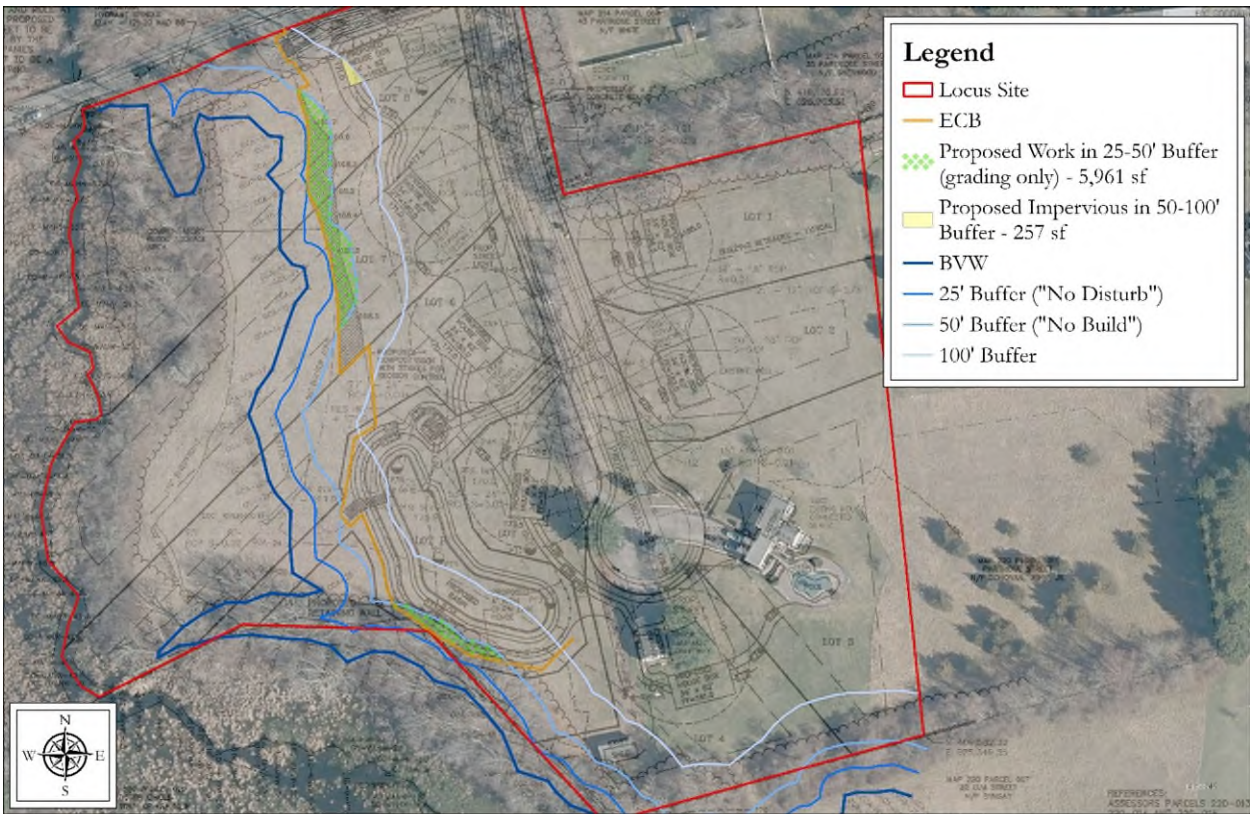


Figure 5. Graphic depicting BVW, buffer zones, and work proposed within the buffer zones overlaid on proposed site plan.

4.1 FUNCTIONS & CHARACTERISTICS STATEMENT

The Bylaw requires the detailing of how the proposed project will not "result in any significant individual or cumulative adverse effect to the functions and characteristics of resource areas…" per Section 7.10.1 of the Bylaw. See the table below for a detailed breakdown of these identified interests, and how the proposed project will not negatively impact the following.

Section 7.10.1 – Functions and Characteristics Statement

Public Water Supplies – Distance from proposed project to nearest public well.	The distance to the closest public well is approximately 1.15 miles, per Town of Franklin Water & Sewer Features map.
Private Water Supplies – Distance to nearest private wells.	The closest identifiable private well is located at 81 Partridge Street.
Groundwater – Depth to groundwater as well as impacts associated with construction (i.e. digging or blasting) and operations (water use, use of toxic or hazardous materials and stormwater management).	The depth to groundwater within the area of the infiltration basin is greater than 6 feet, with said separation allowing for adequate drainage of stormwater. Stormwater will be managed by the construction of the stormwater infiltration basin and the water quality swale, both of which will aid to adequately capture and percolate stormwater runoff prior to reaching the resource area. Stormwater will be treated by this system, resulting in no adverse impact to the groundwater.
Flood Control – Work within the 100-year flood plain must address compensatory storage	Compensatory storage will be created at an almost 2:1 ratio. More information about work in the 100-Year Floodplain is detailed above in Section 3.3.
Storm Damage Prevention – Address whether the project will have an adverse effect on the way that the wetland or flood plain will be able to minimize water and wind related impacts during large-scale storm events.	The proposed project will aid in storm damage prevention, as both the proposed stormwater management methods, as well as the creation of the compensatory storage will help to capture and store stormwater and runoff prior to reaching the resource area.
Water Quality - This item must be addressed for both the construction and post construction conditions at the property. This item will address the quality of the surface waters associated with the resource area being impacted by the project.	The surface water quality associated with the resource areas will not be impacted, due to being located far from the perennial stream itself, the preservation of the No Build and No Disturb Zones, and the creation of compensatory storage for work within BLSF. Stormwater management is provided to further protect water quality.
Water Pollution Control - This item must be addressed for both the construction and post construction conditions at the property.	Water pollution is not expected as a result of the proposed work, and runoff will be captured and adequately treated prior to infiltration or discharge.
Fisheries – Reserved for work taking place adjacent to ponds and perennial streams. The response must address both the construction and post construction conditions at the property.	The proposed project will not impact the capacity of the perennial stream to provide values to fishery habitat, as the project is located over 150 feet away from the stream itself, with work in this zone limited to the creation of the

	stormwater basin, which will aid in protecting the stream from runoff further.
Shellfish – Not Applicable in Franklin	Not applicable
Wildlife Habitat - This item must be addressed for both the construction and post construction conditions at the property.	The proposed construction will not adversely impact wildlife habitat, as the area closest to the resource areas will remain unaltered and naturally vegetated, with the primary work within jurisdictional areas consisting of grading and minor construction to install the stormwater basin and the water quality swale, both of which will serve to better protect the resource areas and associated buffer zones.
Rare Species Habitat (including rare plant species) - This item must be addressed for both the construction and post construction conditions at the property.	No potential or certified rare species are mapped for this site, and thus the project will not impact these critical habitats.
Agriculture – This item must be addressed for both the construction and post construction conditions at the property.	The proposed project is strictly for residential use, and will not impact agricultural efforts positively or negatively.
Aquaculture – To date there are no aquaculture operations in Franklin	Not applicable, as there are no aquaculture operations in Franklin.
Recreation – This item must be addressed for both the construction and post construction conditions at the property and include both passive and active recreational uses.	The proposed subdivision will be for residential use, with the resource areas offsite, and in the case of the perennial stream, not immediately accessible for recreation. Thus, the project will not impact this standard.

5.0 CONCLUSION

In summary, Goddard Consulting believes that the proposed project will not have any adverse impacts on the interests identified in the Wetlands Protection Act or the Town of Franklin Wetland Protection Bylaw. The proposed project meets all regulatory compliance standards under the Wetlands Protection Act and the Bylaw; therefore, Goddard Consulting respectfully requests that the Franklin Conservation Commission issue an Order of Conditions approving the proposed project. If you have any questions, please feel free to contact us at (508) 393-3784.

Sincerely,
Goddard Consulting, LLC

Chris Frattaroli
Lead Wetland Scientist

Jacob Crosson
Wetland Scientist

Cc:
Nancy Donovan, 47 Partridge Street, Franklin, MA 02038
Dan Lewis, DNO Realty, 135 Main Street, Medway, MA 02053
MassDEP Central Regional Office - Worcester, 8 New Bond Street, Worcester, MA 01606

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

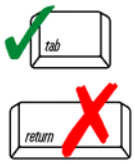
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Franklin
City/Town

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note: Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

47 Partridge Street — a. Street Address
Franklin — b. City/Town
MA — c. Zip Code

Latitude and Longitude:
42.12464 — d. Latitude
-71.40664 — e. Longitude

220 — f. Assessors Map/Plat Number
13,14,15 — g. Parcel /Lot Number

2. Applicant:

Nancy — a. First Name
Donovan — b. Last Name
Donovan Family Realty Trust — c. Organization
47 Partridge Street — d. Street Address
Franklin — e. City/Town
MA — f. State
02038 — g. Zip Code
508-520-5300 — h. Phone Number
i. Fax Number
richard@cornettalaw.com — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name
c. Organization
d. Street Address
e. City/Town
f. State
g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

Chris — a. First Name
Frattaroli — b. Last Name
Goddard Consulting LLC — c. Company
291 Main Street — d. Street Address
Northborough — e. City/Town
MA — f. State
01532 — g. Zip Code
508-393-3784 — h. Phone Number
i. Fax Number
chris@goddardconsultingllc.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$3,750 (+$21,217.50 Bylaw) — a. Total Fee Paid
$1,862.50 — b. State Fee Paid
$1,887.50 (+$21,217.50 Bylaw) — c. City/Town Fee Paid

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Franklin
City/Town

A. General Information (continued)

6. General Project Description:

Subdivision of an existing lot into 8 sepperate lots, with the construction of 7 single-family houses. A stormwater infiltration basin and water quality swales are proposed to manage stormwater. Only one proposed house is partially within jurisdiction.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☒ Residential Subdivision
3. ☐ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County	b. Certificate # (if registered land)
Norfolk	
c. Book	d. Page Number
40464	574

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☒ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☐ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Franklin
City/Town

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Bank	1. linear feet	2. linear feet
b. ☐ Bordering Vegetated Wetland	1. square feet	2. square feet
c. ☐ Land Under Waterbodies and Waterways	1. square feet 3. cubic yards dredged	2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☒ Bordering Land Subject to Flooding	2,848 1. square feet 570 3. cubic feet of flood storage lost	4,811 2. square feet 962 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	1. square feet 2. cubic feet of flood storage lost	3. cubic feet replaced
f. ☒ Riverfront Area	Shepards Brook (inland) 1. Name of Waterway (if available) - **specify coastal or inland**	

2. Width of Riverfront Area (check one):

☐ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☒ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: +/-163,337.5 square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
9,575	0	9,575

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☐ Yes ☒ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

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Provided by MassDEP:

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B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

a. number of new stream crossings

b. number of replacement stream crossings

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Provided by MassDEP:
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City/Town

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

a. ☐ Yes ☒ No

If yes, include proof of mailing or hand delivery of NOI to:

Natural Heritage and Endangered Species Program
Division of Fisheries and Wildlife
1 Rabbit Hill Road
Westborough, MA 01581

August 2021
b. Date of map

If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

c. Submit Supplemental Information for Endangered Species Review*

1. ☐ Percentage/acreage of property to be altered:

(a) within wetland Resource Area _____ percentage/acreage

(b) outside Resource Area _____ percentage/acreage

2. ☐ Assessor's Map or right-of-way plan of site

2. ☒ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

(a) ☒ Project description (including description of impacts outside of wetland resource area & buffer zone)

(b) ☒ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see https://www.mass.gov/ma-endangered-species-act-mesa-regulatory-review).
Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

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C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at https://www.mass.gov/how-to/how-to-file-for-a-mesa-project-review).
Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, https://www.mass.gov/service-details/exemptions-from-review-for-projectsactivities-in-priority-habitat; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Bourne to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
836 South Rodney French Blvd.
New Bedford, MA 02744
Email: dmf.envreview-south@mass.gov

North Shore - Plymouth to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: dmf.envreview-north@mass.gov

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

c. ☐ Is this an aquaculture project? d. ☐ Yes ☒ No

If yes, include a copy of the Division of Marine Fisheries Certification Letter (M.G.L. c. 130, § 57).

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C. Other Applicable Standards and Requirements (cont'd)

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

   a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

   b. ACEC

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

   a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

   a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

   a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

      1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

      2. ☐ A portion of the site constitutes redevelopment

      3. ☐ Proprietary BMPs are included in the Stormwater Management System.

   b. ☐ No. Check why the project is exempt:

      1. ☐ Single-family house

      2. ☐ Emergency road repair

      3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

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D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Donovan Estates Definitive Subdivision Plan of Land
a. Plan Title

United Consultants, LLC
b. Prepared By

Carlos A. Quintal
c. Signed and Stamped by

September 3, 2025
d. Final Revision Date

1":50'
e. Scale

f. Additional Plan or Document Title

g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☐ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

624, 625
2. Municipal Check Number

2/10/2026
3. Check date

623
4. State Check Number

2/10/2026
5. Check date

DNO Real Estate LLC
6. Payor name on check: First Name

7. Payor name on check: Last Name

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F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

DocuSigned by:
Richard Cornetta
2E8C927409A44C2...
1. Signature of Applicant

2/11/2026
2. Date

3. Signature of Property Owner (if different)

4. Date

Signed by:
Chris Frattaroli
42A89EE2A24D487...
5. Signature of Representative (if any)

2/10/2026
6. Date

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the “yes” box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

Massachusetts Department of Environmental Protection
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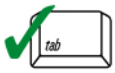
NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A. Applicant Information

1. Location of Project:

47 Partridge Street	Franklin
a. Street Address	b. City/Town
623	$1,862.50
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Nancy	Donovan	
a. First Name	b. Last Name	
Donovan Family Realty Trust		
c. Organization		
47 Partridge Street		
d. Mailing Address		
Franklin	MA	02038
e. City/Town	f. State	g. Zip Code
508-520-5300		richard@cornettalaw.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name	b. Last Name	
c. Organization		
d. Mailing Address		
e. City/Town	f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

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B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2a. Construction of each single family house	5	$500	$2500
Riverfront Area	1	x1.5	x1.5
Bylaw Filing Fee	1	$21,217.50	(+$21,217.50 Bylaw)

Step 5/Total Project Fee:

Step 6/Fee Payments:

Total Project Fee:	$3,750 (+$21,217.50 Bylaw)
State share of filing Fee:	$1,862.50 b. 1/2 Total Fee **less $**12.50
City/Town share of filling Fee:	$1,887.50 (+$21,217.50 Bylaw)

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

300 feet Abutters List Report

Franklin, MA
February 09, 2026

Subject Properties:

Parcel Number:	220-013-000	Mailing Address:	DONOVAN NANCY J TR DONOVAN FAMILY REALTY TRUST 47 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	220-013-000-000		
Property Address:	47 PARTRIDGE ST		
Parcel Number:	220-014-000	Mailing Address:	DONOVAN NANCY J DONOVAN FAMILY REALTY TRUST 47 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	220-014-000-000		
Property Address:	PARTRIDGE ST		
Parcel Number:	220-015-000	Mailing Address:	DONOVAN NANCY J TR DONOVAN FAMILY REALTY TRUST 47 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	220-015-000-000		
Property Address:	PARTRIDGE ST		

Abutters:

Parcel Number:	214-005-000	Mailing Address:	SYNGAY DONNA B 24 ELM ST FRANKLIN, MA 02038
CAMA Number:	214-005-000-000		
Property Address:	28 ELM ST		
Parcel Number:	214-006-000	Mailing Address:	JOHNSON MICHAEL F JOHNSON AMY S 15 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-006-000-000		
Property Address:	15 PARTRIDGE ST		
Parcel Number:	214-007-000	Mailing Address:	SHERWOOD JOSHUA V 35 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-007-000-000		
Property Address:	35 PARTRIDGE ST		
Parcel Number:	214-008-000	Mailing Address:	WHITE WILLIAM W WHITE ALISON S 43 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-008-000-000		
Property Address:	43 PARTRIDGE ST		
Parcel Number:	214-009-000	Mailing Address:	HENNESSEY ROBERT P 62 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-009-000-000		
Property Address:	62 PARTRIDGE ST		
Parcel Number:	214-010-000	Mailing Address:	WILLIAMS PATRICK F WILLIAMS JULIA D 60 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-010-000-000		
Property Address:	60 PARTRIDGE ST		
Parcel Number:	214-011-000	Mailing Address:	COOK JOSEPH P COOK ELAINA BS 4 HARBORWOOD DR FRANKLIN, MA 02038
CAMA Number:	214-011-000-000		
Property Address:	4 HARBORWOOD DR		

300 feet Abutters List Report

Franklin, MA
February 09, 2026

Parcel Number:	214-012-000	Mailing Address:	KENNEY JEFFREY J & NANCY A TRS KENNEY REVOCABLE TRUST 6 HARBORWOOD DR FRANKLIN, MA 02038
CAMA Number:	214-012-000-000		
Property Address:	6 HARBORWOOD DR		
Parcel Number:	214-013-000	Mailing Address:	SCARINGELLO JOSEPH G SCARINGELLO NANCY 8 HARBORWOOD DR FRANKLIN, MA 02038
CAMA Number:	214-013-000-000		
Property Address:	8 HARBORWOOD DR		
Parcel Number:	214-014-000	Mailing Address:	REARDON MARK L REARDON NOREEN P 10 HARBORWOOD DR FRANKLIN, MA 02038
CAMA Number:	214-014-000-000		
Property Address:	10 HARBORWOOD DR		
Parcel Number:	214-025-000	Mailing Address:	WINIKER HEIDI TR ROMSEY FAMILY IRREVOCABLE TR 2 CASSIDY LANE, APT 5 MEDWAY, MA 02053
CAMA Number:	214-025-000-000		
Property Address:	5 HARBORWOOD DR		
Parcel Number:	214-026-000	Mailing Address:	WARD JAMES T & SHARON J TRS HARBOR REALTY TRUST 3 HARBORWOOD DR FRANKLIN, MA 02038
CAMA Number:	214-026-000-000		
Property Address:	3 HARBORWOOD DR		
Parcel Number:	214-027-000	Mailing Address:	HESS CHAD DAVID HESS KRISTEN ELIZABETH 46 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-027-000-000		
Property Address:	46 PARTRIDGE ST		
Parcel Number:	214-028-000	Mailing Address:	SALAHUDEEN FATHIMA 42 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-028-000-000		
Property Address:	42 PARTRIDGE ST		
Parcel Number:	214-029-000	Mailing Address:	PISO CAROL-ANNE L TR CAROL-ANNE L PISO REVOC TRUST 40 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-029-000-000		
Property Address:	40 PARTRIDGE ST		
Parcel Number:	214-030-000	Mailing Address:	BARBA JENNIFER BARBA LOUIS 32 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	214-030-000-000		
Property Address:	32 PARTRIDGE ST		
Parcel Number:	220-007-000	Mailing Address:	SYNGAY EDWARD SYNGAY MARION 22 ELM ST FRANKLIN, MA 02038
CAMA Number:	220-007-000-000		
Property Address:	22 ELM ST		
Parcel Number:	220-010-000	Mailing Address:	DONOVAN JOHN E JR CLARIZIO ANTHONY F & CHERYL L 47 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	220-010-000-000		
Property Address:	RIDENOUR WAY		
Parcel Number:	220-011-000	Mailing Address:	DONOVAN JOHN E JR 47 PARTRIDGE ST FRANKLIN, MA 02038
CAMA Number:	220-011-000-000		
Property Address:	PARTRIDGE ST		

300 feet Abutters List Report

Franklin, MA
February 09, 2026

Parcel Number:	220-012-000	Mailing Address:	19 PARTRIDGE STREET LLC
CAMA Number:	220-012-000-000		19 PARTRIDGE ST
Property Address:	19 PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-013-000	Mailing Address:	DONOVAN NANCY J TR DONOVAN FAMILY REALTY TRUST
CAMA Number:	220-013-000-000		47 PARTRIDGE ST
Property Address:	47 PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-014-000	Mailing Address:	DONOVAN NANCY J DONOVAN FAMILY REALTY TRUST
CAMA Number:	220-014-000-000		47 PARTRIDGE ST
Property Address:	PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-015-000	Mailing Address:	DONOVAN NANCY J TR DONOVAN FAMILY REALTY TRUST
CAMA Number:	220-015-000-000		47 PARTRIDGE ST
Property Address:	PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-016-000	Mailing Address:	OLIVER ROBERT L JR OLIVER MARLENE S
CAMA Number:	220-016-000-000		81 PARTRIDGE ST
Property Address:	81 PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-017-000	Mailing Address:	BRATCHER IV HENRY E BRATCHER MICHELLE L
CAMA Number:	220-017-000-000		85 PARTRIDGE ST
Property Address:	85 PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-020-000	Mailing Address:	FRANKLIN TOWN OF
CAMA Number:	220-020-000-000		355 EAST CENTRAL STREET
Property Address:	DOVER CIR		FRANKLIN, MA 02038
Parcel Number:	220-054-000	Mailing Address:	MOODIE CRAIG W MOODIE ELLEN A
CAMA Number:	220-054-000-000		82 PARTRIDGE ST
Property Address:	82 PARTRIDGE ST		FRANKLIN, MA 02038
Parcel Number:	220-055-000	Mailing Address:	KLIBANOFF BENJAMIN KLIBANOFF MONA
CAMA Number:	220-055-000-000		55 BROAD ST
Property Address:	137 MASTRO DR		PAWTUCKET, RI 02860
Parcel Number:	220-056-000	Mailing Address:	FRANKLIN TOWN OF
CAMA Number:	220-056-000-000		355 EAST CENTRAL STREET
Property Address:	PARTRIDGE ST		FRANKLIN, MA 02038

Rev. 8/22/19 Notification to Abutters

Town of Franklin Conservation Commission

NOTIFICATION TO ABUTTERS

Under the Massachusetts Wetlands Protection Act

And

The Franklin Wetlands Protection Bylaw

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following proposed project:

Nancy Donovan has filed a Notice of Intent with the Franklin Conservation Commission for the 8-lot subdivision and construction of 7 single-family houses on 47 Partridge Street, on 2/11/2026, under the Wetlands Protection Act (M.G.L c.131 §40).

Copies of the Notice of Intent may be examined during regular office hours at 291 Main Street, Suite 8, Northborough, MA 01532. Monday through Friday, 8am to 4pm.

Copies may also be examined by contacting the Franklin Conservation Department located at 355 East Central Street, Franklin, MA, (508) 520-4929.

Notice of the public hearing including the date, time, and place will be published at least five (5) days in advance in the Milford Daily News.

Notice of the public hearing including the date, time, and place will be posted in the Franklin Town Hall at least forty eight (48) hours in advance of the public hearing.

The public hearing will be held on Thursday, February 26, 2026, at 7 pm at the Town Council Chambers, located on the Second Floor of the Municipal Building on 355 East Central Street. The meeting is also available via Zoom, and can be accessed through the Conservation Commission agenda for that night, which will be posted on the Town's website 48 hours prior to the meeting. Please call the Conservation Department at (508) 520-4929 if you have any questions.

You may also contact the Massachusetts Department of Environmental Protection, Central Regional Office, Worcester, MA at (508) 792-7650.

AFFIDAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act
And the Franklin Wetlands Bylaw

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission)

I, Jacob Crosson hereby certify under the pains and penalties of perjury that on 2/11/2026 I gave notification to abutters in Compliance with the second paragraph of Massachusetts General Law Chapter 131, Section 40, and the DEP Guide to Abutter Notification dating April 8, 1994 in connection with the following matter:

A Notice of Intent was filed under the Massachusetts Wetlands Protection Act by Nancy Donovan with the Franklin Conservation Commission on 2/11/2026 for property located at 47 Partridge Street, (Map 220, Parcel 13-15) in Franklin, MA for the subdivision of an existing lot and construction of single-family houses within the Buffer Zone to BVW and Riverfront Area.

The form of the notification, and the list of abutters to whom it was given, and their addresses, are attached to this Affidavit of Service.

(Name)

2/11/2026

(Date)

Town of Franklin Conservation Commission

RESOURCE AREA IMPACT SUMMARY FORM

The Franklin Wetlands Protection Bylaw
Franklin Town Code Section 181

Resource Area	Alteration Proposed	Mitigation Proposed
Bordering Vegetated Wetland (SF)	0	0
Bank (LF)	0	0
Land Under Water Bodies (SF)	0	0
Isolated Wetland (SF)	0	0
Vernal Pool (SF)	0	0
Buffer Zone (SF) - Total	36,300	0
0-25 Foot Buffer Zone (SF)	0	0
25-50 Foot Buffer Zone (SF)	5,961 (grading only)	0
50-100 Foot Buffer Zone (SF)	30,339 (257 SF of impervious)	0
Riverfront (0-200') (SF)	9,575*	0
Inner Riparian Zone (0-100') (SF)	0	0
Outer Riparian Zone (100-200') (SF)	9,575*	0
100-Year Floodplain (CF)	570	962
(SF) = Square Feet (LF) = Linear Feet (CF) = Cubic Feet Flood Storage		

*Alteration in Riverfront Area is limited to construction of Stormwater Infiltration Basin, which under 310 CMR 10.58 (4)(d)1.d. can be excluded from Riverfront Area alteration calculations. See narrative for more details.

Town of Franklin Conservation Commission

PROPERTY ACCESS SIGNATURE FORM

I hereby request that the Franklin Conservation Commission review this NOI/RDA/ANRAD application. I (we) grant authority to the Franklin Conservation Commission members and agents to go onto my (our) property solely for purposes directly related to the inspection and approval of this application and for follow-up compliance with the permit conditions.

DocuSigned by:
Richard Cornetta
2E8C927409A44C2...

Signature of Property Owner

2/11/2026

Date

Town of Franklin Conservation Commission

APPLICATION PROCESS SIGNATURE FORM

There are three different applications that can be submitted to undertake work in a jurisdictional area: a Notice of Intent (NOI), a Request for Determination (RDA) and a Minor Buffer Zone Activity (MBZA). All three applications have different criteria for submission and approval and the NOI and RDA are governed by both the state law and the local bylaw. The MBZA is issued under the local bylaw only.

When a potential applicant requests advice from the Conservation Agent on which application to file, the opinion of the Agent is based on the information given by the potential applicant and any other information available to the Agent, e.g. the town's GIS system. The Agent has no legal right to go onto private property at any time until after an application is filed or permission of the property owner is given.

It is important that all applicants understand that after an application is filed, additional information may come to light e.g. via a field inspection or a review of the application, that may impact the scope of the submitted application and the approval process. **Therefore, it is the ultimate responsibility of the applicant to decide which application to file.**

In light of the above, please sign below indicating an understanding of this policy and submit it with the application.

DocuSigned by:
Richard Cornetta
2E8C927409A44C2...

Signature of Property Owner

2/11/2026

Date

Town of Franklin Conservation Commission

LOCAL FILING FEE CALCULATION WORKSHEET

1. NOTICE OF INTENT (NOI)

1.1. New Individual Single Family Home (SFH) $200.00 $_200____
This includes all projects associated with a SFH

1.2. Work Associated with Existing Residential Property
$100.00 $_____
Above-ground pools, fences or other incidental projects involving land disturbance that are not covered by the MBZA

1.3. Control of Nuisance Vegetation $50.00 $_____
This category shall not apply to any non-natural deposition of material e.g. vegetative debris

1.4. Subdivisions
(Resource Area includes Buffer Zone)

Base Fee $600.00 $__600___
Infrastructure in Buffer Zone **or** Resource Area
Roads ___ linear feet x $2.00 = $_____
*Drainage Structures _2__ X $10.00 each = $_20____
Resource Area Disturbed _36795__square feet x $0.50= $_18,397.50__

(If single family homes are proposed as part of a subdivision application, for each house in jurisdiction, individual NOI fees will apply.)

1.5. Multifamily Dwellings, including Condominium Units:
__ MFDU x $100.00 $_____

1.6. Commercial/Industrial (Resource Area includes Buffer Zone)

Base Fee		$600.00	$_____
Infrastructure in Buffer Zone **or** Resource Area			
Roads	___ linear feet x $2.00		= $_____
*Drainage Structures	___ X $25.00 each		=$_____
Resource Area Disturbed ___ square feet x $0.50			= $_____
Buildings	___ X $125 each		= $_____
All Accessory Improvements		$100.00	= $_____

2. REQUEST FOR DETERMINATION (RDA)

Existing single family residence	$50.00	$_____
Other	$100.00	$_____

3. MINOR BUFFER ZONE ACTIVITY (MBZA)

Restoration projects	*No charge*
All other projects	$50.00= $_____

4. ABBREVIATED NOTICE OF RESOURCE AREA DETERMINATION (ANRAD)

$0.50/foot/resource area: = $_____

5. CERTIFICATES OF COMPLIANCE

Residential Certificate of Compliance Request	$50.00	$_____
Residential Certificate Re-Inspection	$50.00	$_____
Commercial Certificate of Compliance Request	$100.00	$_____
Commercial Certificate Re-Inspection	$100.00	$_____

6. OTHER PERMITS/SERVICES

Project Extension (includes Order of Conditions)	$50.00	$_____
Status Letter for Financial Institution	$100.00	$_____
Permit Amendment	$100.00	$_____

7. FILING FEE CALCULATION

Town Share of State Fees (See NOI Wetland Fee Transmittal Form) **(Check No.1)**	$ 1,887.50
Local Filing Fee Calculated Above (Check No. 2)	$21,217.50
TOTAL Due Town of Franklin	$ 23,105
State Share of Filing Fee (See NOI Wetland Fee Transmittal Form)	
TOTAL Due DEP (Check No. 3)	$ 1,862.50__

8. ADVERTISING FEE (Check No. 4) TBD

The fee will be the exact amount the newspaper charges for that specific advertisement. Once the advertisement is placed with the paper, by the Conservation Commission, the applicant will be notified of the cost and will be expected to submit a check for that exact amount, payable to the Town of Franklin, to the Conservation Department prior to the first hearing.

*Drainage structures: catch basins, manholes, leaching basins, gutter inlet or any other man-made structure (other than a pipe) for purposes of controlling drainage.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B - Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131 §40

Provided by MassDEP:
MassDEP File #:159-1308
eDEP Transaction #:1896377
City/Town:FRANKLIN

A. General Information

1. Conservation Commission FRANKLIN
2. This Issuance is for (Check one):
   a. ☑ Order of Resource Area Delineation
   b. ☐ Amended Order of Resource Area Delineation

3. Applicant Details

a. First Name	RICHARD		b. Last Name	GOODREAU	
c. Organization	UNITED CONSULTANTS, INC.				
d. Mailing Address	850 FRANKLIN STREET, SUITE 11D				
e. City/Town	WRENTHAM	f. State	MA	g. ZIP	02093

4. Property Owner (if different from applicant):

a. First Name			b. Last Name		
c. Organization	DONOVAN FAMILY REALTY TRUST				
d. Mailing Address	47 PARTRIDGE STREET				
e. City/Town	FRANKLIN	f. State	MA	g. ZIP	02038

5. Project Location

a. Street Address	47 PARTRIDGE STREET		
b. City/Town	FRANKLIN	c. Zip	02038
d. Assessors Map/Plat#	220	e. Parcel/Lot#	13, 14, AND 15
f. Latitude	42.12532N	g. Longitude	71.40751W

6. Dates

a. Date ANRAD Filed	1/9/2025	b. Date Public Hearing Closed	5/29/2025	c. Date Of Issuance	6/20/2025

7. Final Approved Plans and Other Documents

Plan Title	Plan Prepared By	Plan Signed By	Plan Final Date	Plan Scale
DONOVAN ESTATES PLAN TO ACCOMPANY AN ANORAD FILING LOCATED IN FRANKLIN, MASSACHUSETTS FOR NANCY DONOVAN	UNITED CONSULTANTS INC.	ANDREW C. MURPHY, P.L.S. 35042	May 20, 2025	1" = 50'

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable)
a. ☑ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):
   1. ☑ Bordering Vegetated Wetlands
   2. ☑ Other resource area(s), specifically
      a.BORDERING VEGETATED WETLAND (BVW)/FRESHWATER FLAG SERIES GCA1 TO GCA80; MEAN ANNUAL HIGH WATER (TO ESTABLISH RIVERFRONT AREA) FLAG SERIES GCMAHW1 TO GCMAHW72; BORDERING LAND SUBJECT TO FLOODING

Deed Ref. Book 39210, Pg. 372

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B - Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131 S40

Provided by MassDEP:
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b. ☑ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☑ Other resource area(s), specifically
   a.THIS ORAD DOES NOT APPROVE THE BOUNDARIES OF BAND OR LAND UNDER WATER (LUW) ASSOCIATED WITH SHEPARD'S BROOK; THE BOUNDARIES OF BLSF ARE APPROVED INSOFAR AS THE PUBLISHED FEMA FLOOD PROFILE REMOAINS CONSISTENT WITH WHAT IS AVAILABLE AT THE TIME OF THE ISSUANCE OF THIS ORAD. ANY LETTERS OF MAP AMENDMENTS/REVISIONS THAT ALTER THE BASE FLOOD ELEVATION AT THE SITE SHALL SUPERSEDE THE BOUNDARIES OF BLSF DEPICTED ON THE PLAN-OF-RECORD.

c. ☐ **Inaccurate::** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Recource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically
   a.
3. The boundaries were determined to be inaccurate because:

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, S 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation. This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see http://www.mass.gov/dep/about/region/findyour.htm).

D. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant. Any appellants seeking to appeal the Department?s Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination. The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, S 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

2) Mean Annual High Water (to establish Riverfront Area) flag Series GCMAHW1 through GCMAHW72
3) The boundaries of Bordering Land Subject to Flooding (Elevation 169 feet NAVD88).

Modified Delineation:

1) This ORAD does not approve the boundaries of Bank or Land Under Water (LUW) associated with Shepard's Brook.
2) The boundaries of BLSF are approved insofar as the published FEMA flood profile remains consistent with what is available at the time of the issuance of this ORAD. Any Letters of Map Amendments/Revisions that alter the base flood elevation at the Site shall supersede the boundaries of BLSF depicted on the plan-of-record.

Tel: (508) 520-4929 Fax: (508) 520 4906

Town of Franklin

NOT AN OFFICIAL COPY

Conservation Commission

47 Partridge Street, Map 220, Lots 13 / 14 / 15
Franklin, Massachusetts
Order of Resource Area Delineation
Massachusetts Wetlands Protection Act & Regulations
Town of Franklin Wetlands Protection Bylaw & Regulations
DEP File #159-1308

List of Submittals for the Record:

- Report entitled ***Abbreviated Notice of Resource Area Delineation***; prepared by United Consultants, Inc.; dated December 23, 2024. Attachment Include:
  - Cover letter;
  - WPA Form 4A
  - Filing Fees and Local Forms
  - Abutters Information
- Letter entitled ***47 Partridge Street – Abbreviated Notice of Resource Area Delineation Peer Review***; prepared by United Consultants, Inc.; dated April 9, 2025.
- Plan (1 sheet) entitled ***Donovan Estate Existing Conditions Plan***; dated December 23, 2024 and revised on May 20, 2025; prepared by United Consultants, Inc. signed and stamped by Andrew C Murphy, MA PLS No. 35042, scale: 1" = 50'.
- Letter entitled ***Permission for land Walk-Through***; prepared by Syngay Family – Edward, Marion and Robert; dated March 28, 2025.
- Registry of Deeds Documents entitled ***Town of Franklin - Resolution 08-62 Acceptance of Deed of Open Space in Franklin Chase, Residential Subdivision and Confirmatory Order of Taking***; dated November 12, 2008.
- Peer review letters from BETA Group, Inc. (89 Shrewsbury Street, Suite 300, Worcester, MA 01604) dated March 21, 2025 and April 25, 2025

Wetland Resource Areas:
Resource Areas under M.G.L. 131, S 40, 310 CMR 10.00 and covered under the Franklin Wetlands Protection Bylaw Chapter 181 and associated Regulations. **This ORAD approves the delineation of the Resource Areas series flags as drafted on the "ANRAD Plan" dated December 23, 2024, revised April 9, 2025 with a scale of 1"=50' incorporating revisions reflecting the Franklin Conservation Commission, Franklin Conservation Department, and BETA Group, Inc. review comments from review comment letters from BETA Group, Inc. dated March 21, 2025 and April 25, 2025.**

Findings:

1) Bordering Vegetated Wetland (BVW)/Freshwater Wetland flag series GCA1 through GCA80;

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B - Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131 §40

Provided by MassDEP:
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E. Signatures

1. Date of Original Order
2. No. of Signatures required 4

MICHAEL REIN

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, and the Amended Order will expire on the date of the Original Final Order unless extended in writing by the Department.

This Order is issued to the applicant and the property owner (if different) as follows:

3. ☐ By hand delivery on

a. Date _____

4. ☑ By certified mail, return receipt requested on

a. Date 6/20/2025