



Conservation Commission AGENDA

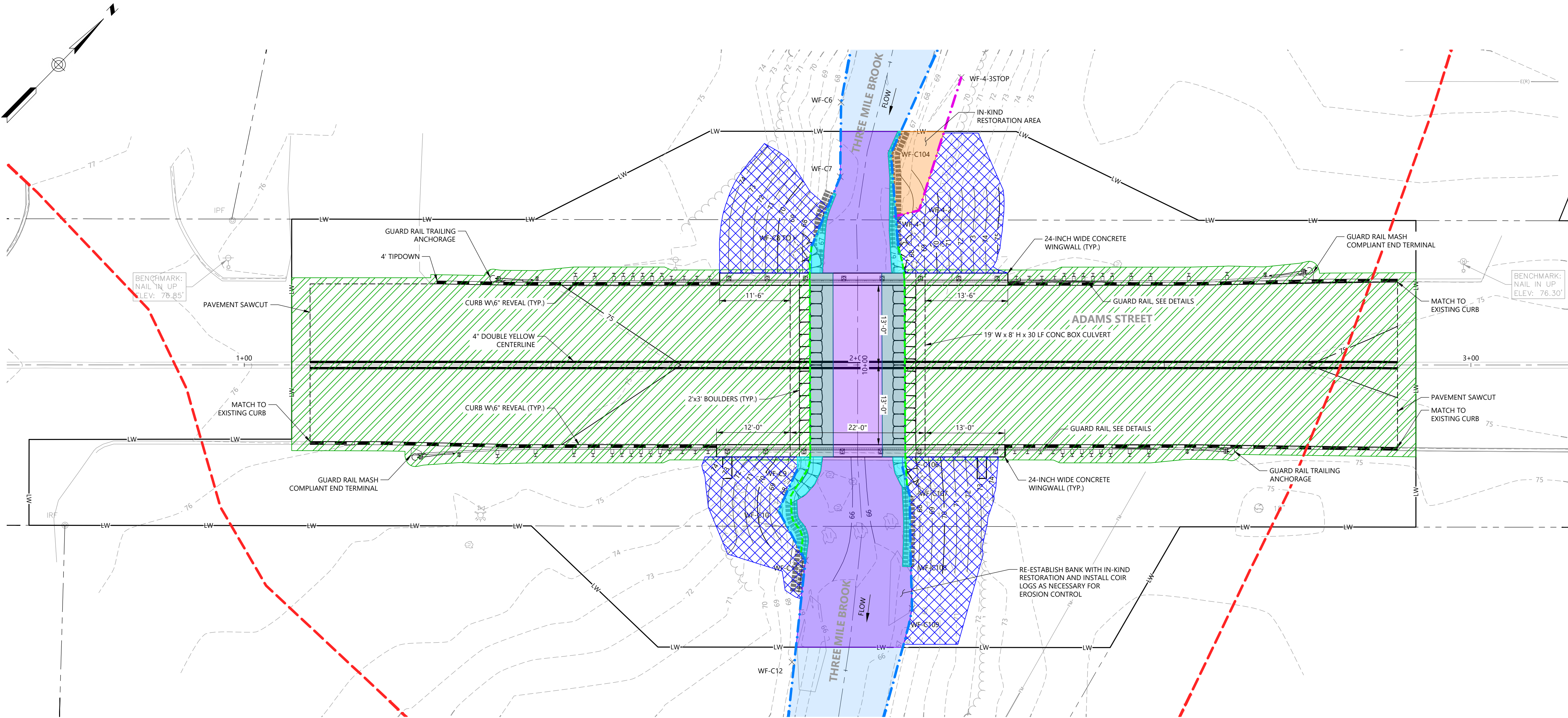
Thursday, August 13, 2026 - 6:00 PM

Regular Meeting
Agawam Senior Center
954 Main Street
Agawam, MA 01001

A. Conservation Commission

- 1) 6:00PM Public Hearing-Notice of Intent-Adams Street Culvert-Town of Agawam
- 2) Public Hearing Cont.-Notice of Intent-365 Main Street-O'Malley
- 3) Request for Certificate of Compliance-Westfield River Interceptor Sewer Relocation Project-Town of Agawam
- 4) Ratify Emergency Order-737 North Street
- 5) Ratify Emergency Order-moore & Valley Street
- 6) Approval of Minutes-July 23, 2026
- 7) Correspondence and Complaints

\\woodwardclark.com\network\shared\Projects\MA_Agawam\023447101_Agawam St Culvert Design\wp\Drawings\Civil\023447101_RESOURCE AREAS.dwg, Jul 22, 2026, 1:51pm, C:\COLUMBE



RESOURCE AREA PLAN
SCALE: 1" = 10'

TOWN OF AGAWAM
ADAMS STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	FED. AID PROJ. NO.	1	
PROJECT FILE NO.		FILE NO.	

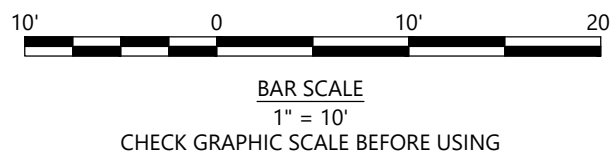
FIGURE 1 - RESOURCE AREAS

- BORDERING LAND SUBJECT TO FLOODING (100-YEAR FLOOD ZONE, DEFINED BY FEMA)
- BORDERING VEGETATED WETLAND
- BANK MEAN ANNUAL HIGH WATER LINE
- BANK/ORDINARY HIGH WATER CREATED
- LAND BELOW ORDINARY HIGH WATER/BANK
- TEMPORARY BORDERING VEGETATED WETLAND IMPACTS
- TEMPORARY LAND UNDER WATER BODIES & WATERWAYS IMPACTS
- PERMANENT LAND UNDER WATER BODIES & WATERWAYS IMPACTS
- LAND UNDER WATER BODIES & WATERWAYS CREATED
- TEMPORARY RIVERFRONT AREA IMPACTS
- PERMANENT RIVERFRONT AREA IMPACTS

RESOURCE AREA	PERMANENT	TEMPORARY
BANK (LF)	62	113
BVW (SF)	0	81
BORDERING LAND SUBJECT TO FLOODING (SF)	0	11,598
LAND UNDER WATER BODIES & WATERWAYS (SF)	108	966
RIVERFRONT AREA (SF)	1,160	5,176

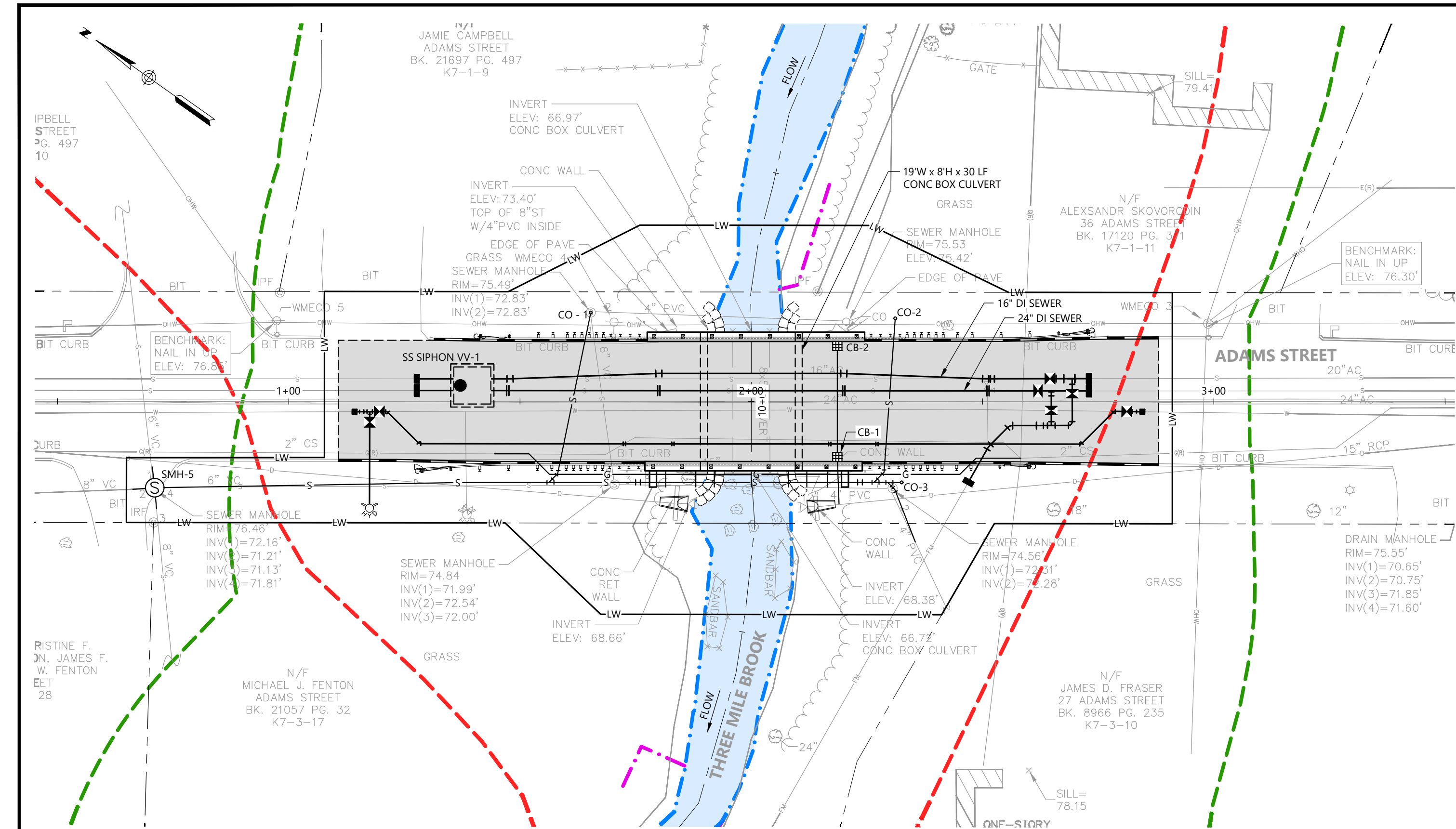
RESOURCE AREA	PERMANENT
NEW BANK CREATED WITHIN CULVERT (LF)	62
NEW LUW (WITHIN CULVERT) (SF)	464

- NOTES:
- ENTIRE PROJECT AREA LOCATED WITHIN 200' RIVERFRONT AREA.
 - EXISTING CONDITIONS ARE BASED ON A SURVEY PREPARED BY WSP USA INC., TITLED "TOPOGRAPHIC SURVEY, ADAMS STREET, AGAWAM, MASSACHUSETTS" DATED JANUARY 6, 2022. BASED ON AN ACTUAL ON THE GROUND FIELD SURVEY PERFORMED IN DECEMBER 2022.
 - WETLANDS WERE FLAGGED BY LEC ENVIRONMENTAL CONSULTANTS DURING NOVEMBER AND DECEMBER 2022, AND LOCATED BY WSP.

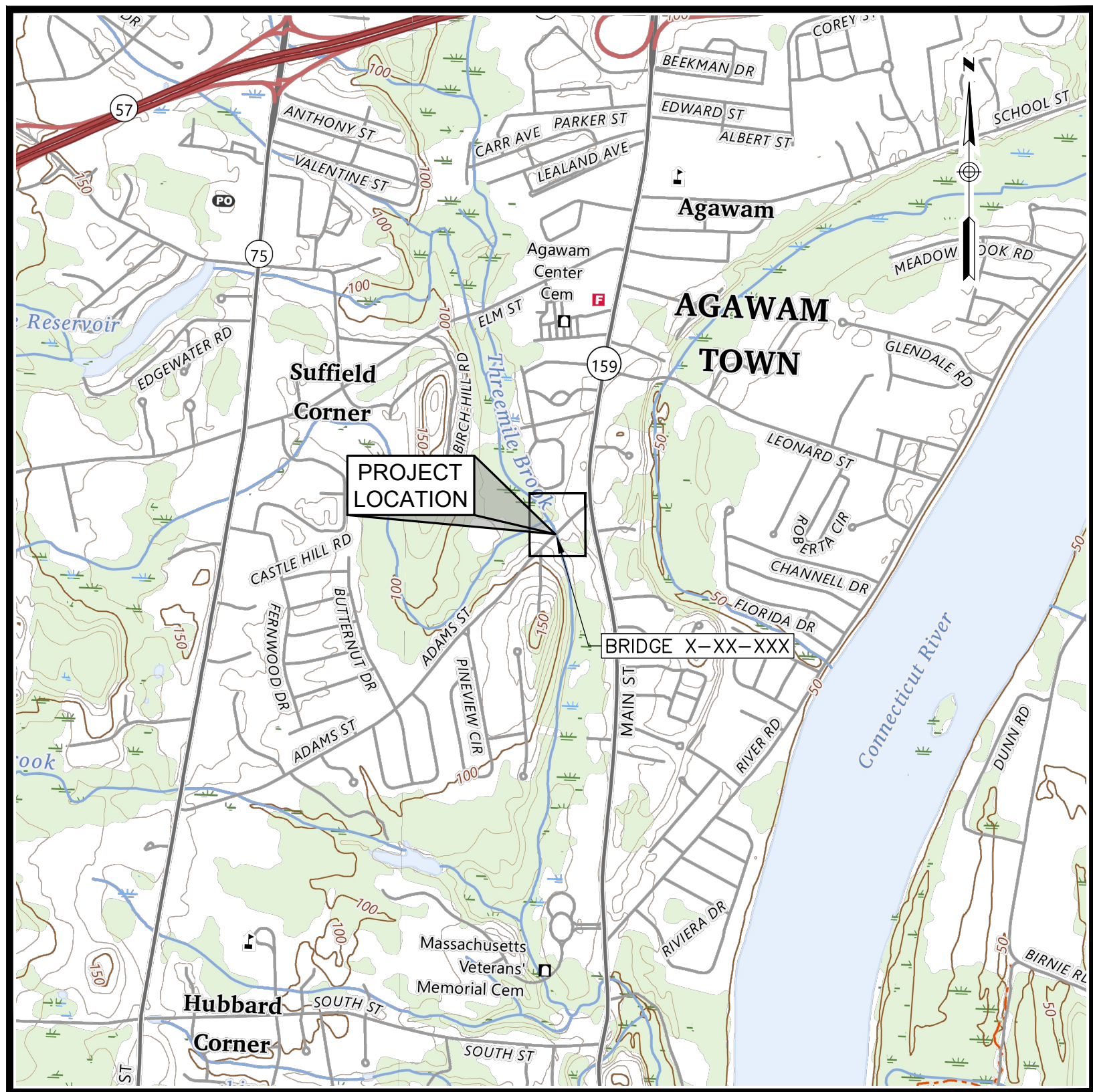


JUNE 25, 2026	ISSUED FOR PERMITTING
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

\\woodardcurran.net\shared\Projects\MA Agawam\023447101 Agawam St Culvert Design\wp\Drawings\General\023447101-G-000.dwg, Jul 30, 2026 - 7:42am, JCLOULHRE



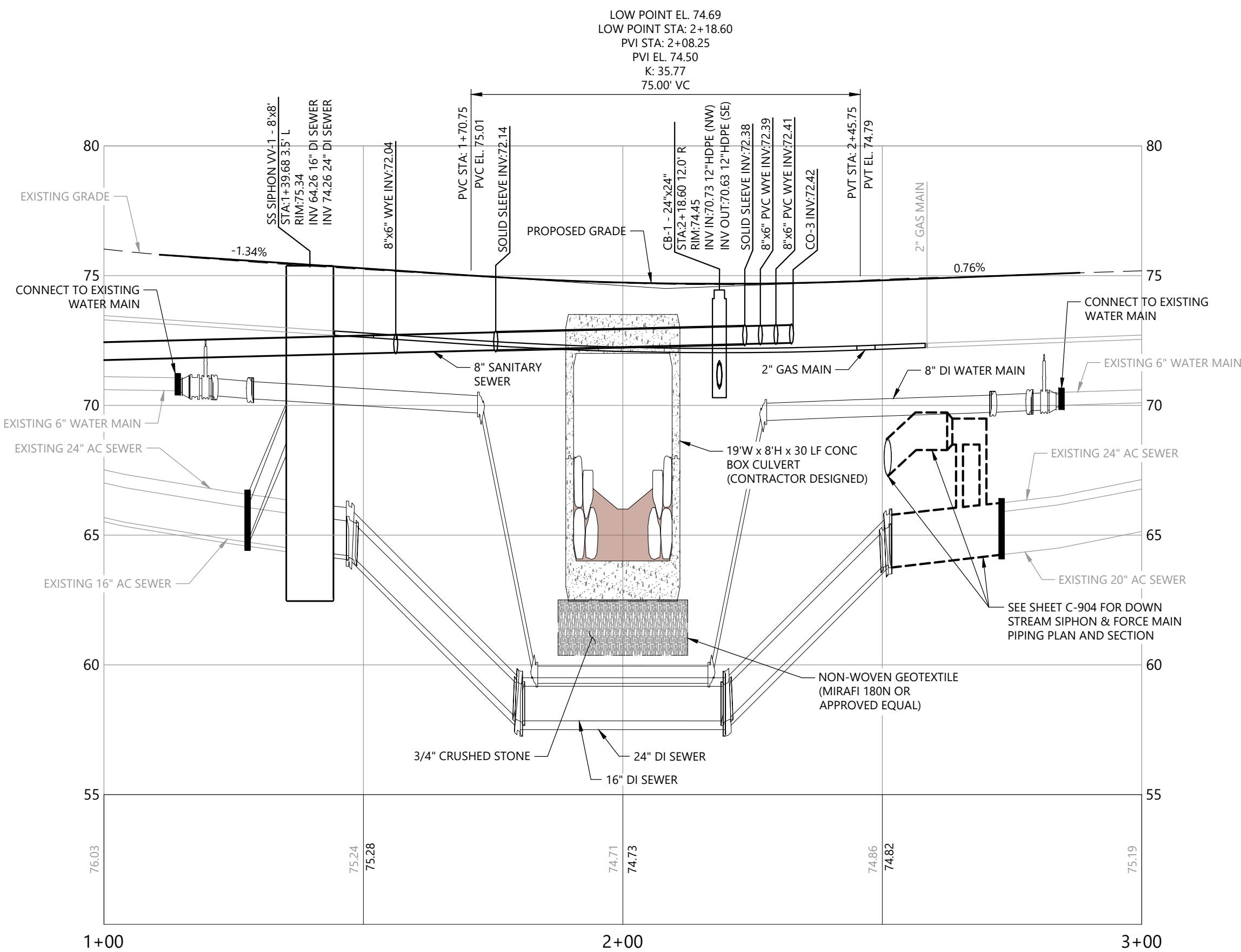
KEY PLAN
SCALE: 1" = 20'



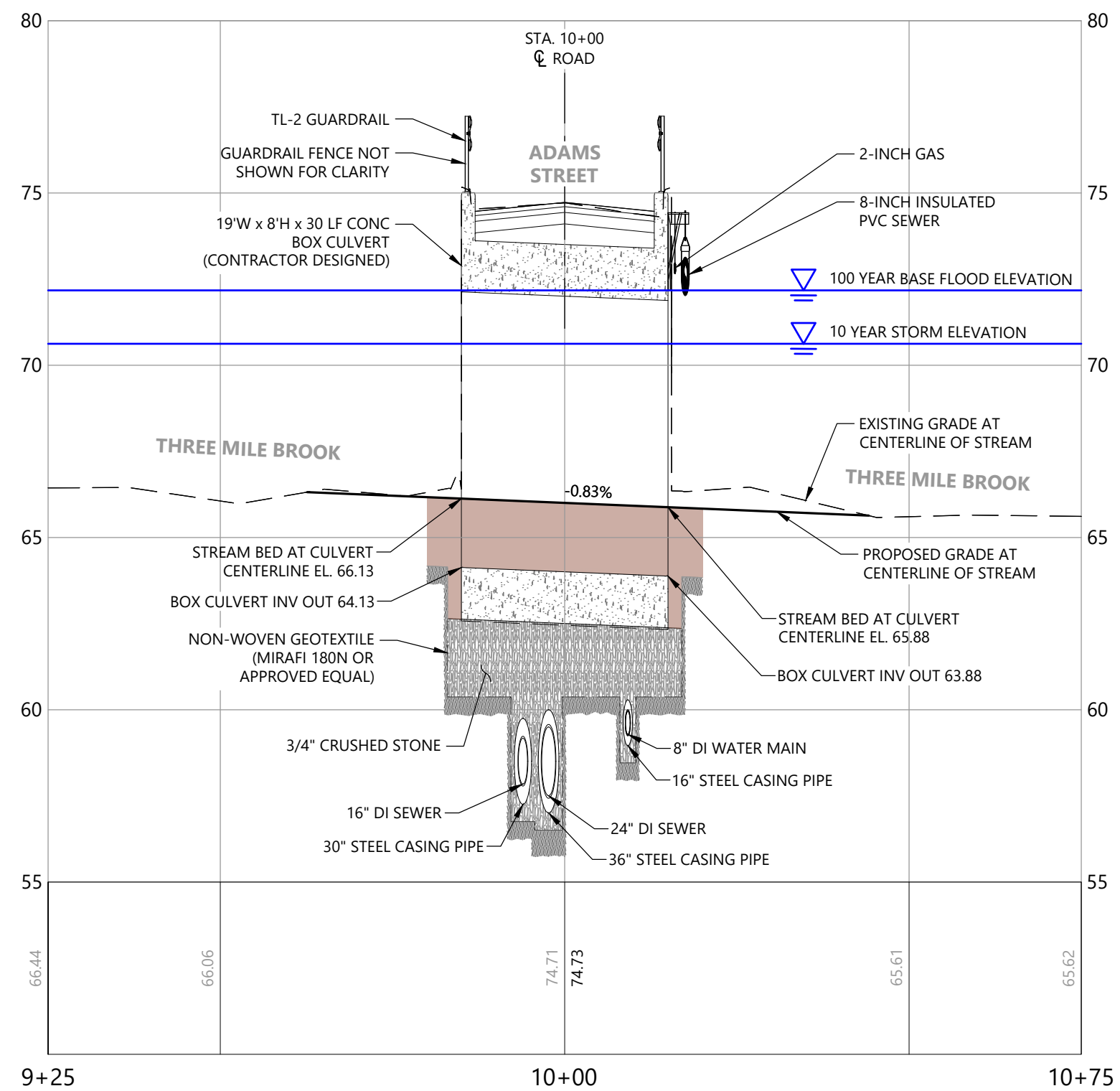
LOCUS PLAN
SCALE: 1" = 1500'

TOWN OF AGAWAM ADAMS STREET			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	1	17
PROJECT FILE NO.		0234471.01	
G-000 - TITLE SHEET			

INDEX OF SHEETS		
Sheet Number	Sheet	Sheet Description
1	G-000	TITLE SHEET
2	G-001	GENERAL NOTES & LEGEND
3	G-002	BORING LOGS
4	C-100	EXISTING CONDITIONS PLAN
5	C-101	EXISTING CULVERT SECTIONS
6	C-102	EXISTING CONDITIONS & DEMOLITION PLAN & PROFILE
7	C-103	TEMPORARY STREAM BYPASS PLAN
8	C-104	PROPOSED ROADWAY PLAN AND PROFILE
9	C-105	PROPOSED UTILITY PLAN & PROFILE
10	C-106	CULVERT SECTIONS
11	C-901	CIVIL DETAILS - 1
12	C-902	CIVIL DETAILS - 2
13	C-903	CIVIL DETAILS - 3
14	C-904	CIVIL DETAILS - 4
15	C-905	CIVIL DETAILS - 5
16	C-906	CIVIL DETAILS - 6
17	C-907	CIVIL DETAILS - 7



ADAMS STREET PROFILE STA. 1+00 TO STA. 3+00
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 4'



THREE MILE BROOK PROFILE STA. 9+25 TO STA. 10+75
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 4'



Digitally signed by David White
DN: cn=David White,
ou=WEITestUsers, ou=WCUsers,
dc=woodardcurran, dc=net
I agree to the terms defined by
the placement of my signature on this
document
Date: 2026.07.30 10:31:25 -0400

David White

PERMIT REVIEW SET - NOT FOR CONSTRUCTION

JULY 30, 2026 ISSUED FOR PERMITTING



ADAMS ST CULVERT REPLACEMENT
TOWN OF AGAWAM
ADAMS STREET
OVER THREE MILE BROOK

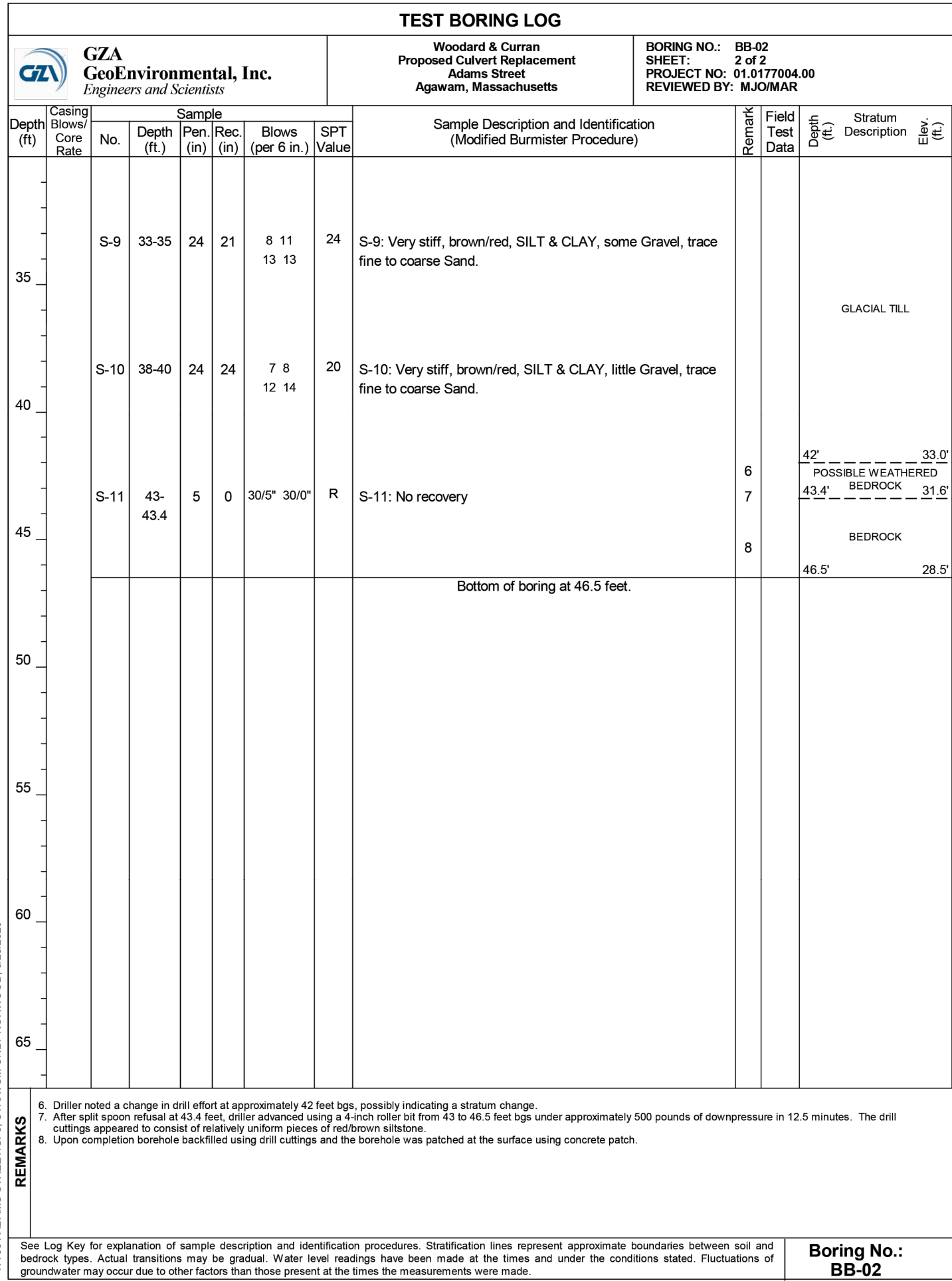
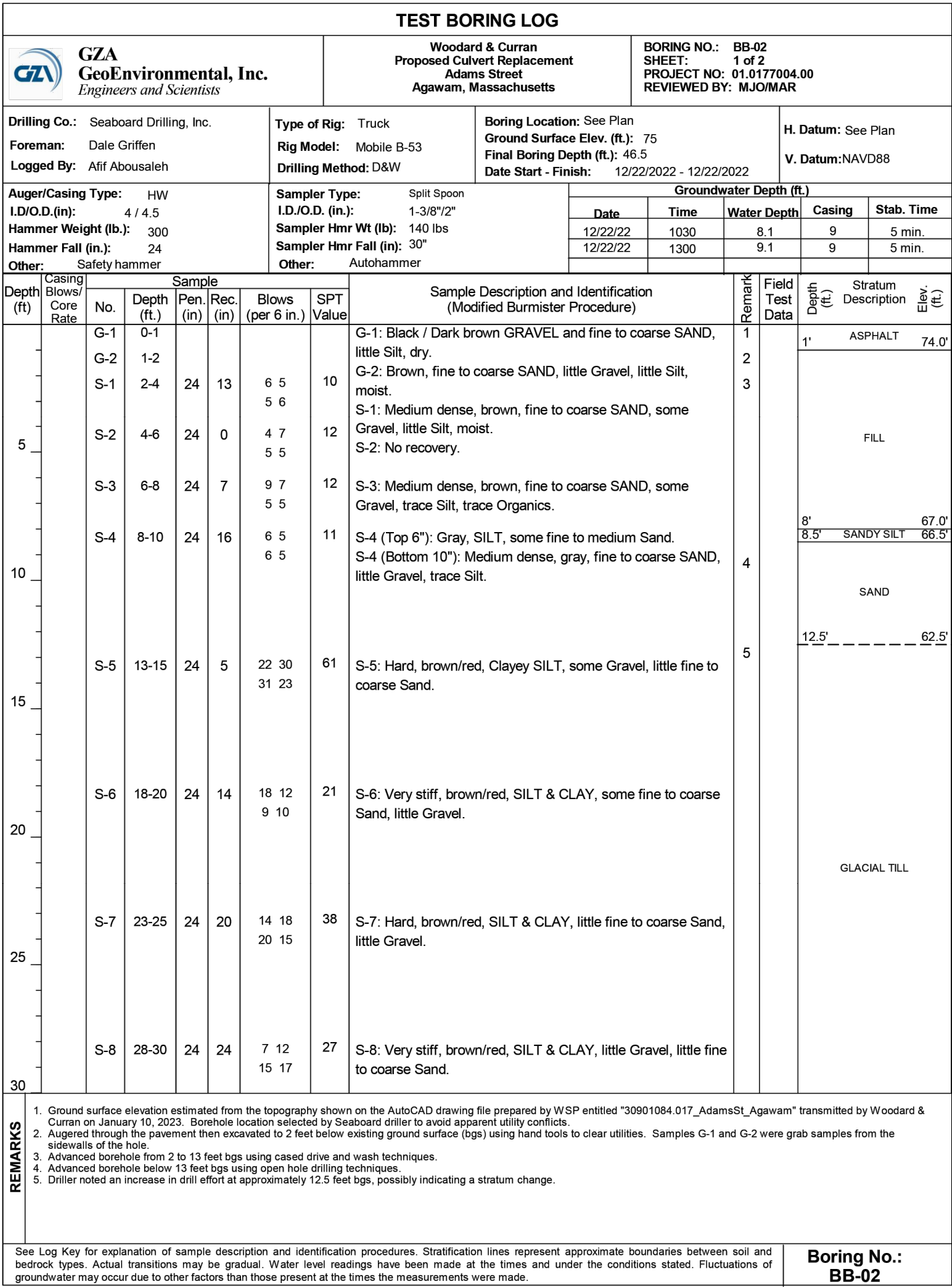
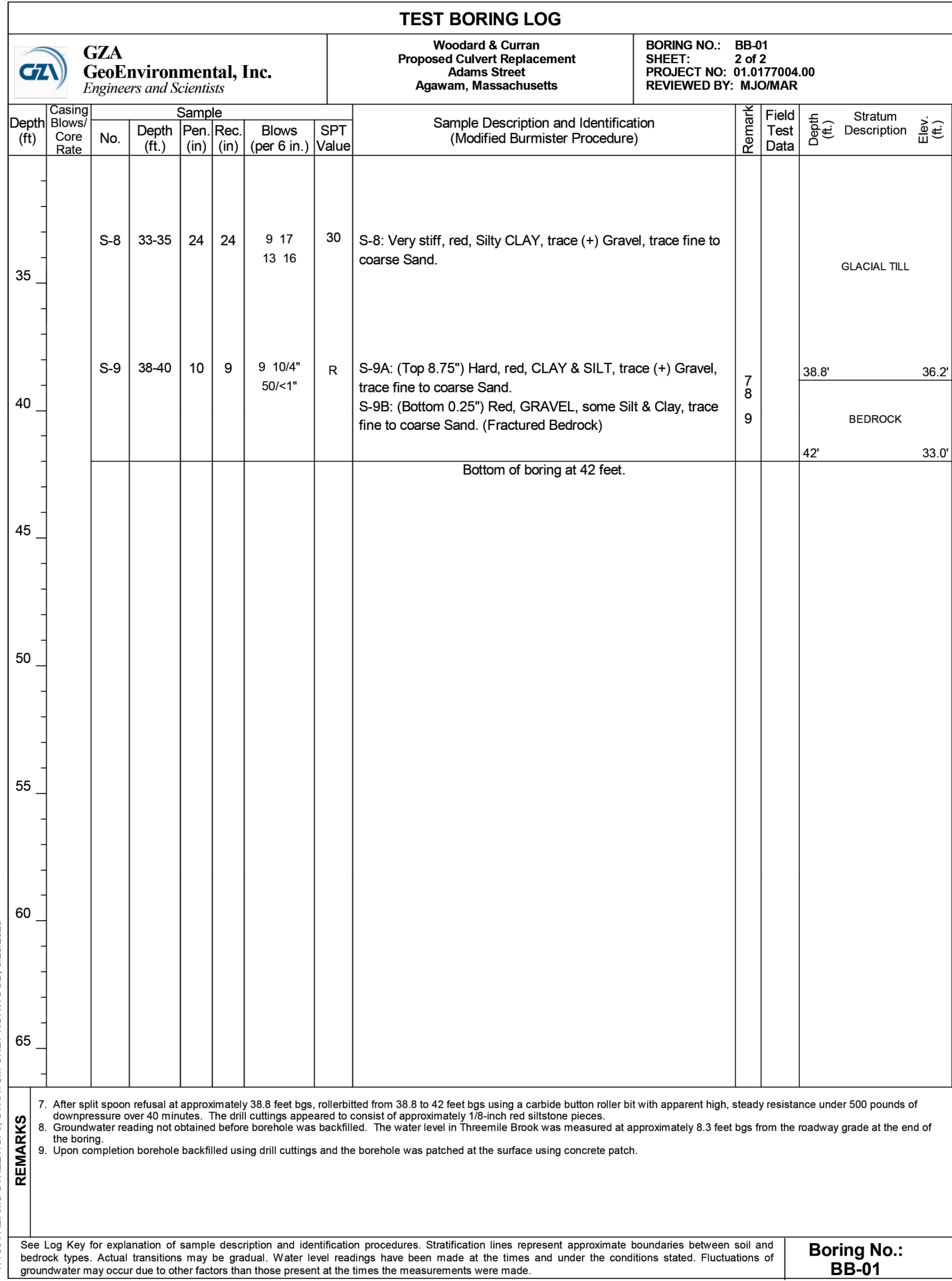
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

STATE BRIDGE ENGINEER

CHIEF ENGINEER



SHEET 1 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)



TOWN OF AGAWAM
ADAMS STREET

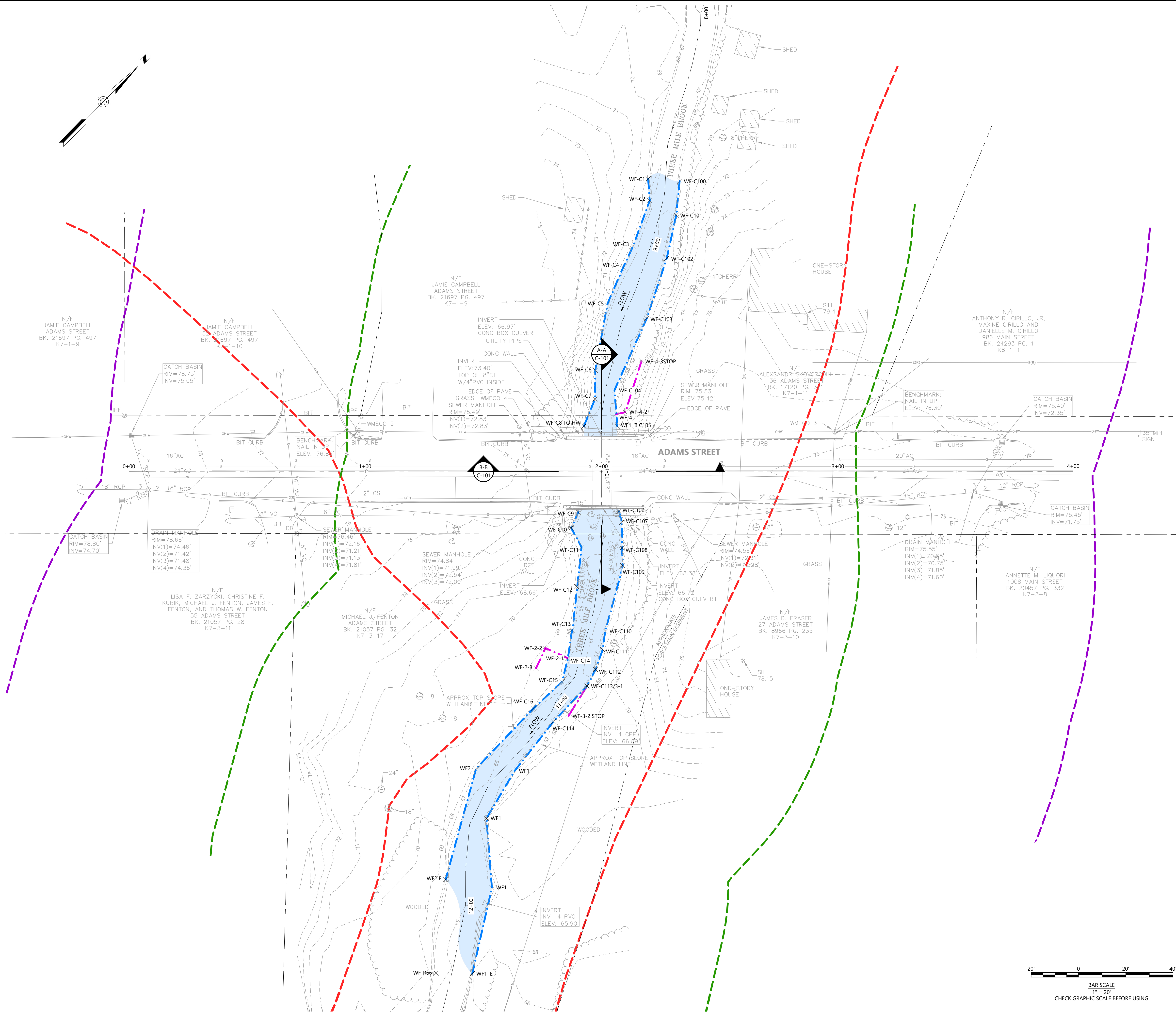
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MA	NFA	3	17

PROJECT FILE NO. 0234471.01

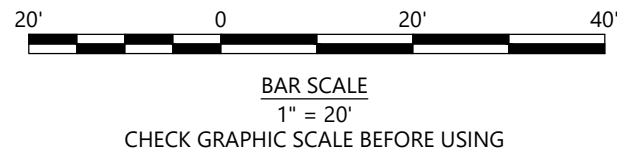
G-002 - BORING LOGS

TOWN OF AGAWAM ADAMS STREET			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	4	17
PROJECT FILE NO.		0234471.01	

C-100 - EXISTING CONDITIONS PLAN



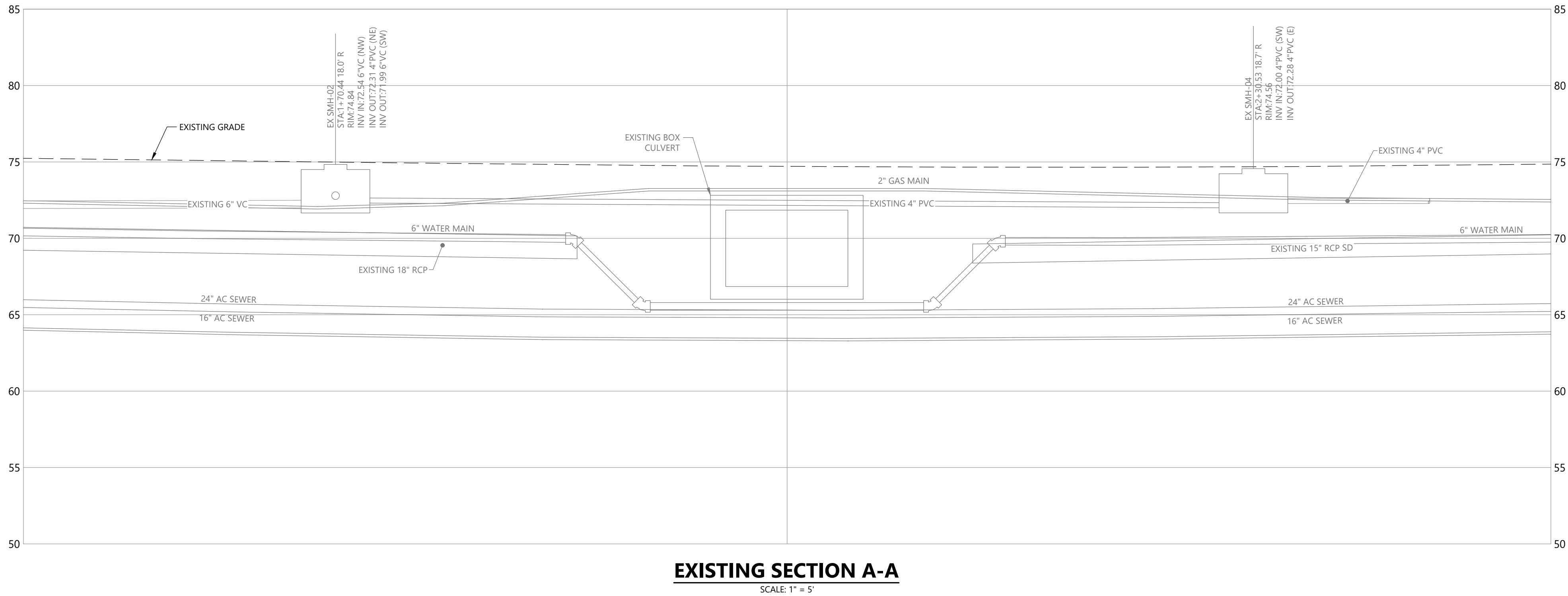
EXISTING CONDITIONS PLAN
SCALE: 1" = 20'



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JULY 30, 2026	ISSUED FOR PERMITTING
DATE	DESCRIPTION
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

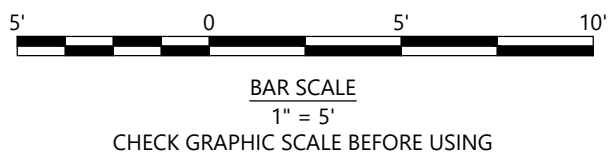
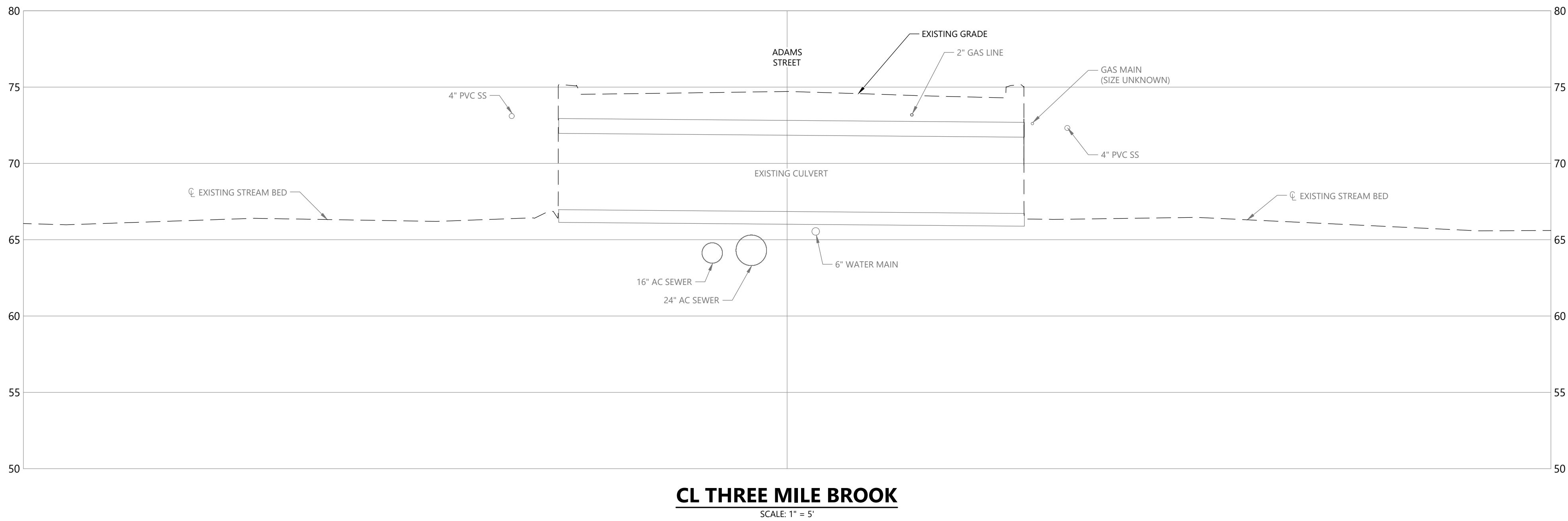
SHEET 4 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

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TOWN OF AGAWAM ADAMS STREET			
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MA	NFA	5	17
PROJECT FILE NO.		0234471.01	

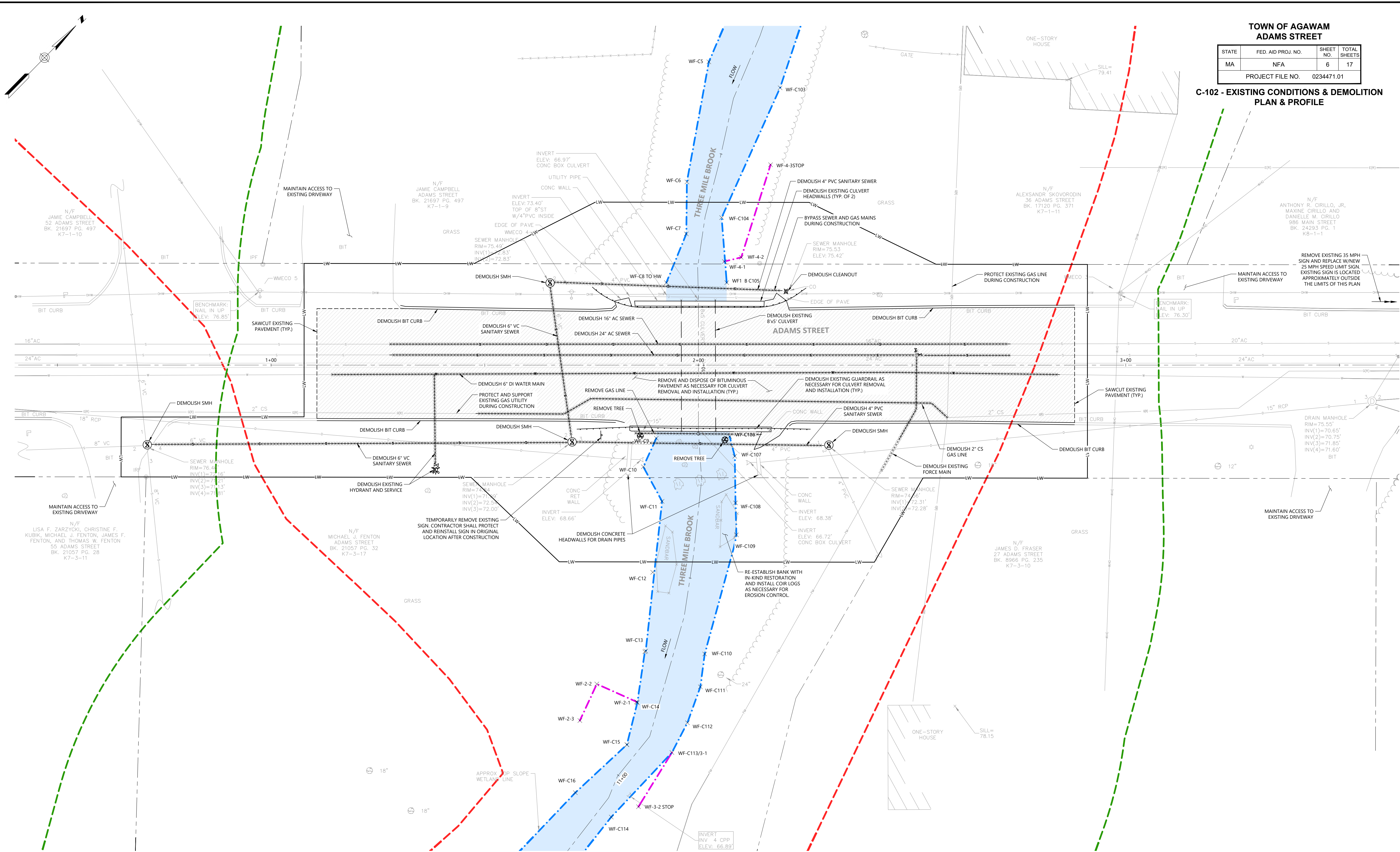
C-101 - EXISTING CULVERT SECTIONS



PERMIT REVIEW SET - NOT FOR CONSTRUCTION

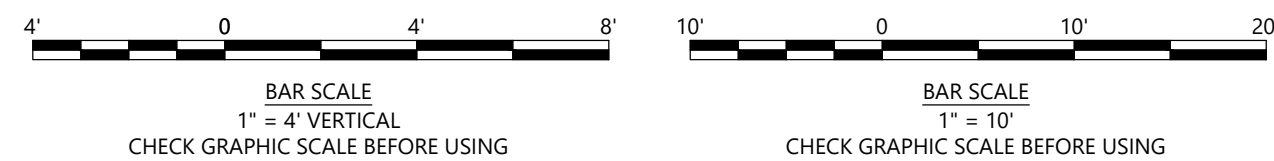
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AUTHORIZED SIGNATORY:	STATE BRIDGE ENGINEER
USE ONLY PRINTS OF LATEST DATE	

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DEMOLITION AND EROSION CONTROL PLAN

SCALE: 1" = 10'



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USE ONLY PRINTS OF LATEST DATE	

SHEET 6 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

TOWN OF AGAWAM
ADAMS STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	6	17
PROJECT FILE NO. 0234471.01			

C-102 - EXISTING CONDITIONS & DEMOLITION
PLAN & PROFILE

023447101-C-102.DWG Plotted on 30-Jul-2026 7:43 AM

DD- Month-YYYY

XXXX Structural/Arch Plans Submittal (SWSK#)

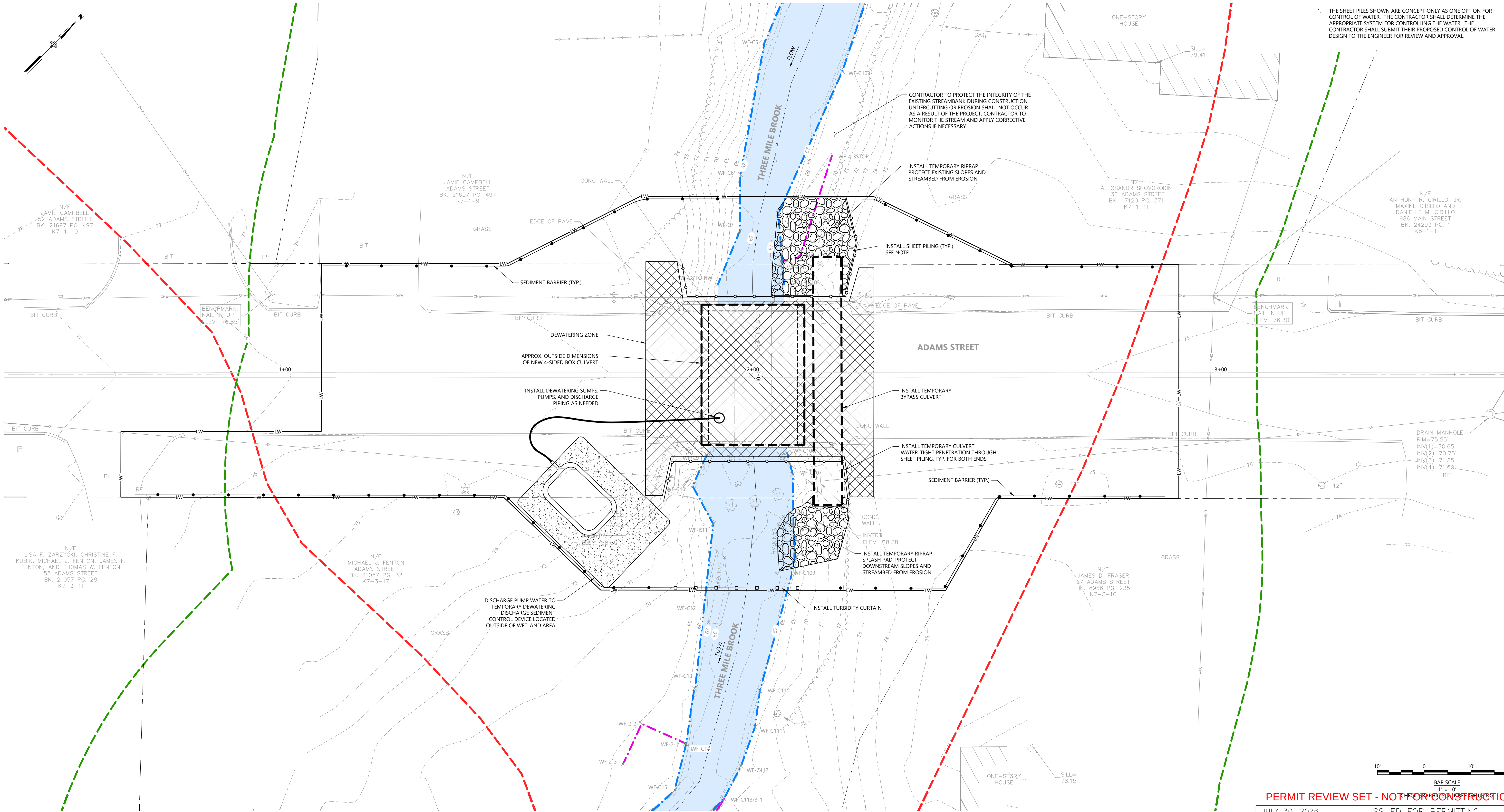
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TOWN OF AGAWAM ADAMS STREET			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	7	17
PROJECT FILE NO.		0234471.01	

C-103 - TEMPORARY STREAM
BYPASS PLAN

NOTES

1. THE SHEET PILES SHOWN ARE CONCEPT ONLY AS ONE OPTION FOR CONTROL OF WATER. THE CONTRACTOR SHALL DETERMINE THE APPROPRIATE SYSTEM FOR CONTROLLING THE WATER. THE CONTRACTOR SHALL SUBMIT THEIR PROPOSED CONTROL OF WATER DESIGN TO THE ENGINEER FOR REVIEW AND APPROVAL.



TEMPORARY STREAM BYPASS PLAN

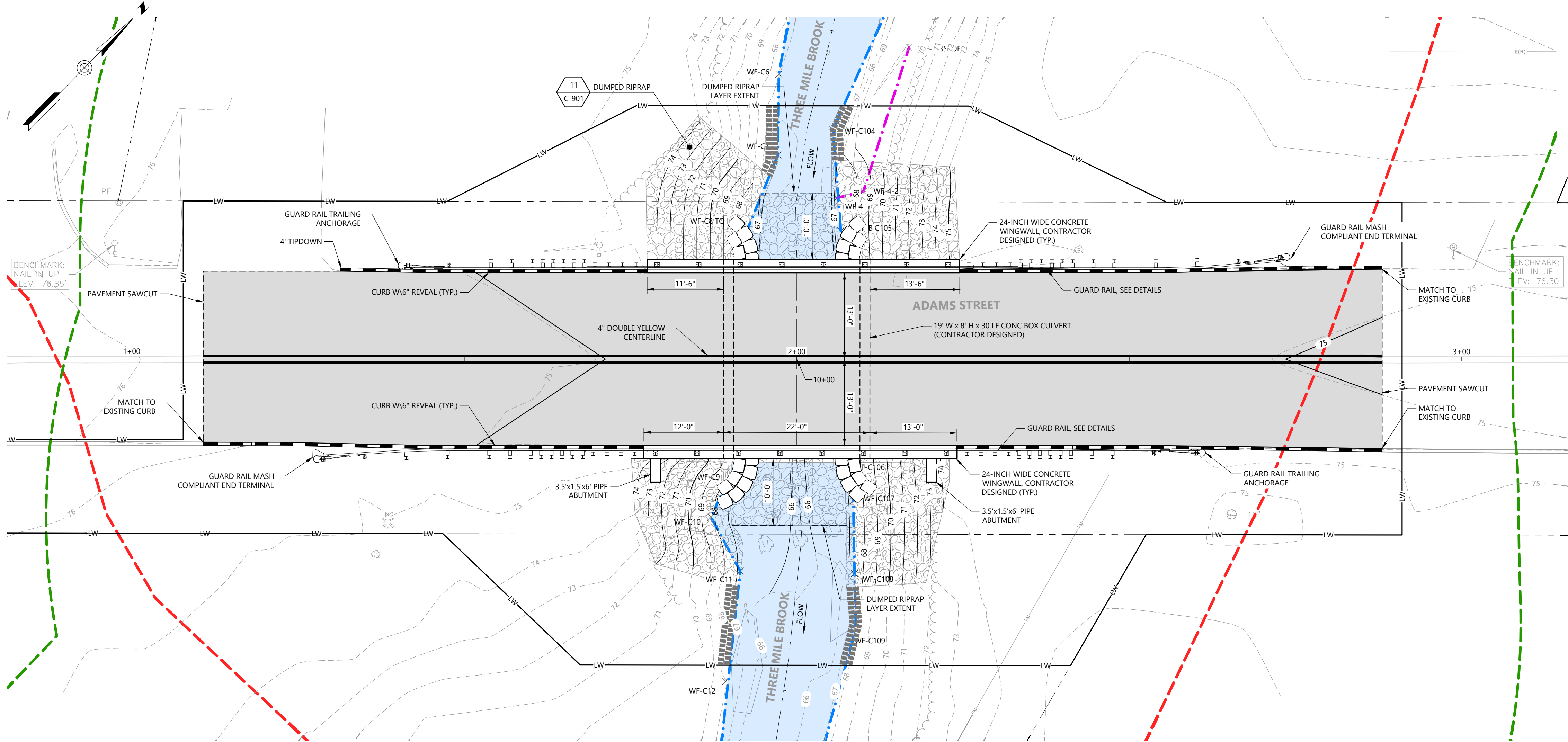
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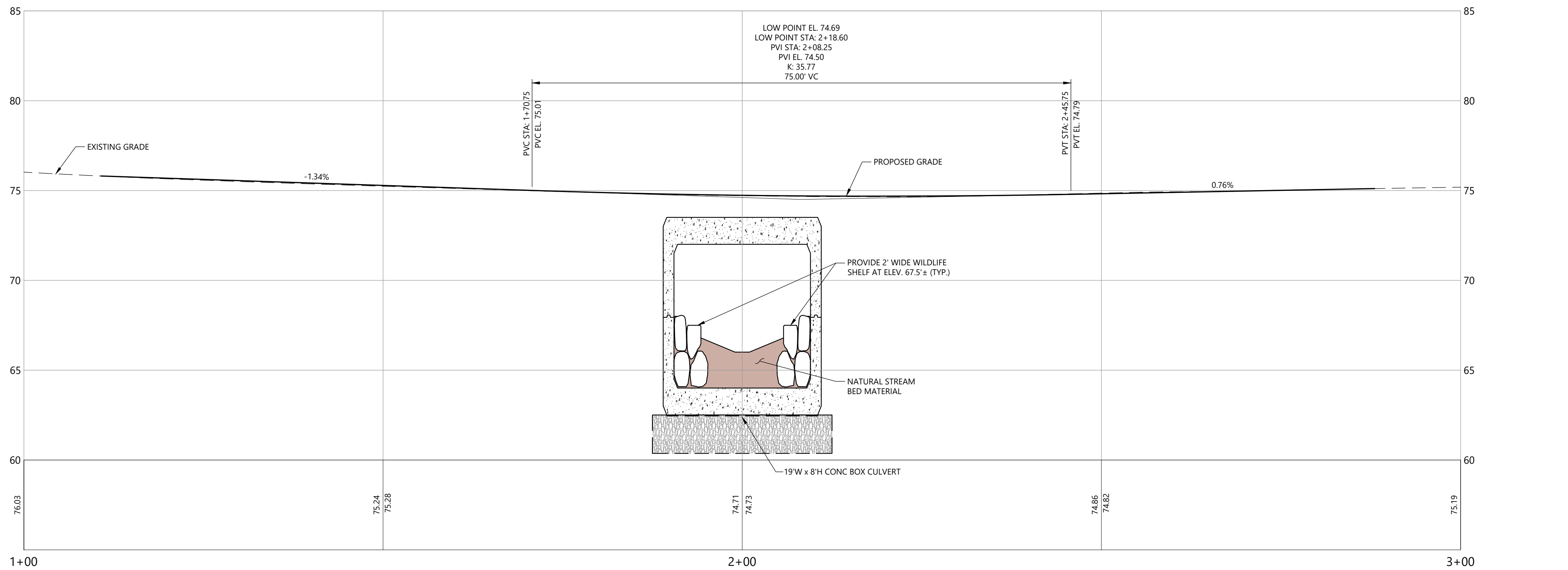
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SHEET 7 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

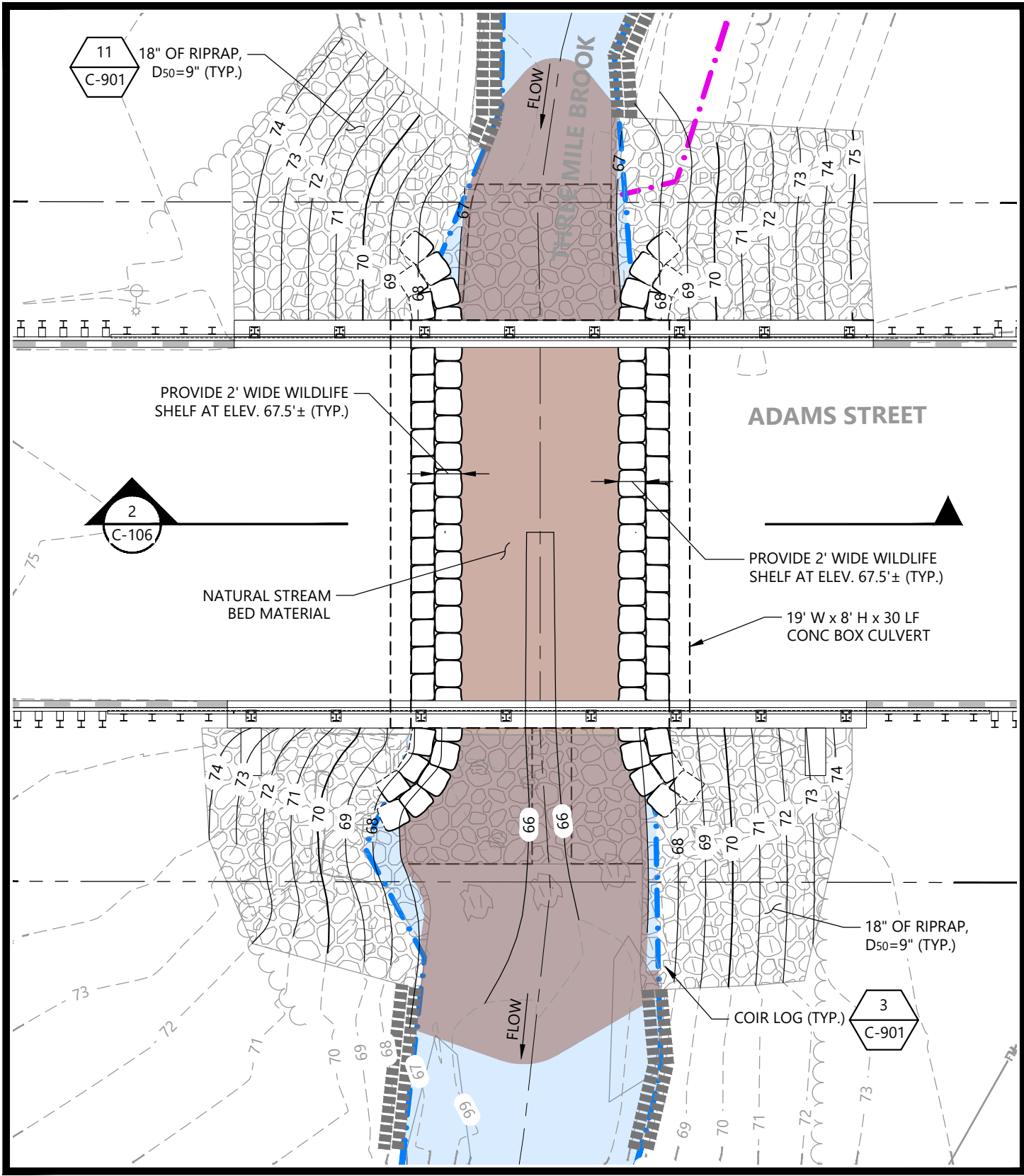
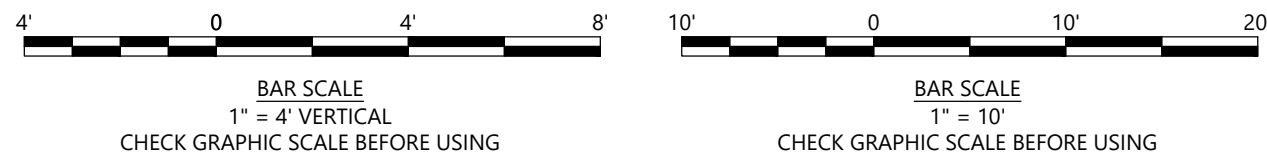
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ADAMS STREET PROPOSED ROADWAY PLAN
SCALE: 1" = 10'



ADAMS STREET PROFILE STA. 1+00 TO STA. 3+00
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 4'



THREE MILE BROOK
PROPOSED STREAM BED GRADING PLAN
SCALE: 1" = 10'

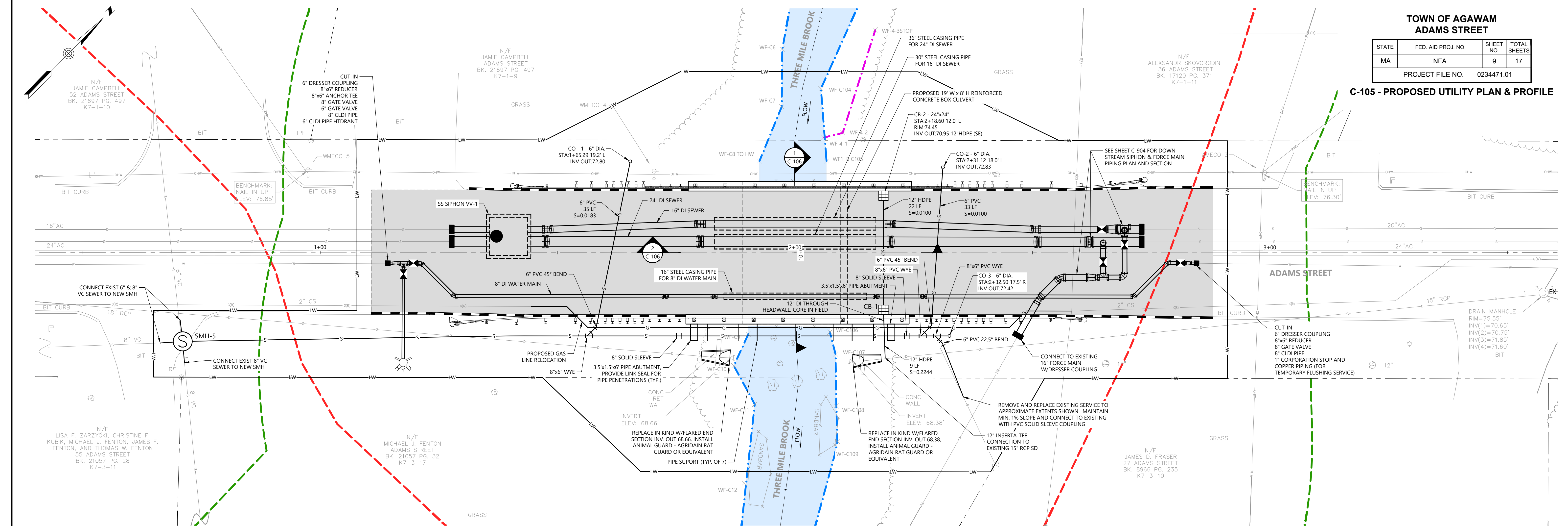
NOTES:

1. RIPRAP SHALL BE KEYED INTO ADJACENT STREAMBED MATERIAL AND NATIVE FILL PER SHEET C-901, DUMPED RIPRAP DETAIL.
2. RIPRAP SHALL BE TOED BELOW THE STREAM BOTTOM AT THE TOE OF SLOPES PER SHEET C-901, DUMPED RIPRAP DETAIL.

PERMIT REVIEW SET - NOT FOR CONSTRUCTION

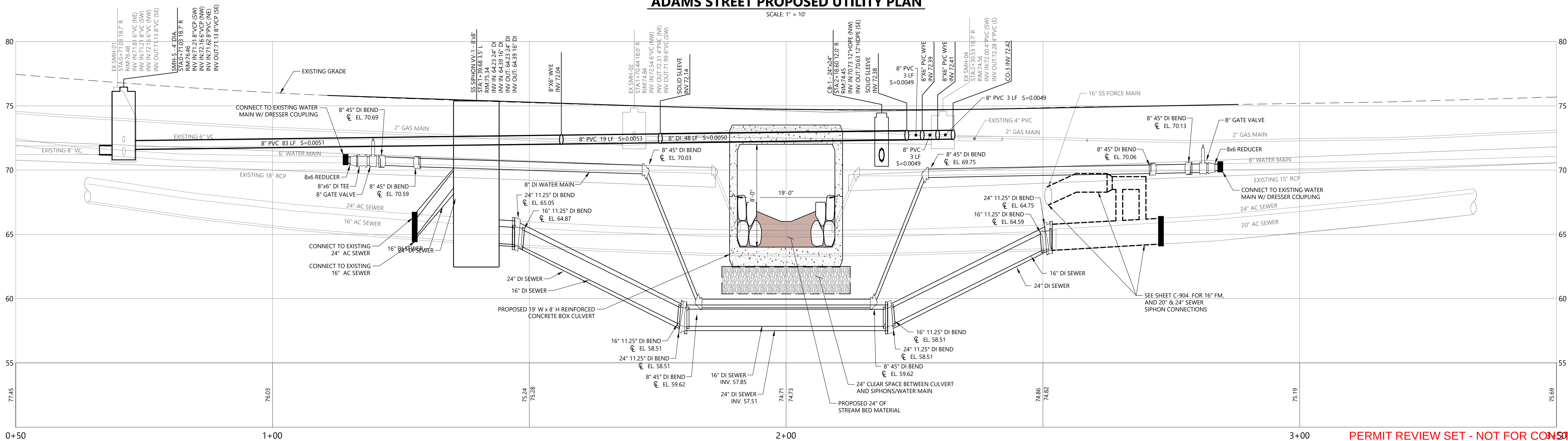
JULY 30, 2026	ISSUED FOR PERMITTING
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ADAMS STREET PROPOSED UTILITY PLAN

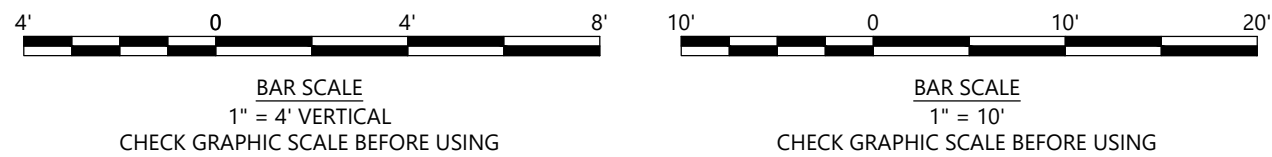
SCALE: 1" = 10'



ADAMS STREET PROFILE STA. 0+50 TO STA. 3+50

HORIZONTAL SCALE: 1" = 10'

VERTICAL SCALE: 1" = 4'



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USE ONLY PRINTS OF LATEST DATE	

SHEET 9 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

TOWN OF AGAWAM ADAMS STREET			
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	9	17
PROJECT FILE NO. 0234471.01			

C-105 - PROPOSED UTILITY PLAN & PROFILE

023447101-C-105.DWG

DD-Month-YYYY

XXXX Structural/Arch Plans Submittal (SWSK#)

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EROSION AND SEDIMENT CONTROL NOTES

TEMPORARY EROSION CONTROL

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
SEDIMENTATION BARRIER	ALL	BEFORE SOIL DISTURBANCE, INSTALL DOWNHILL OF AREAS TO BE DISTURBED AND AROUND MATERIAL STOCKPILES.
UP-SLOPE DIVERSION	ALL	BEFORE SOIL DISTURBANCE, INSTALL UPHILL OF AREAS TO BE DISTURBED AND MATERIAL STOCKPILES.
CATCH BASIN PROTECTION	ALL	BEFORE SOIL OR PAVEMENT DISTURBANCE, INSTALL ACF ENVIRONMENTAL, INC. HIGH FLOW SILTSACK, SILTSAVER INLET FILTER, OR EQUAL, INSTALLED PER MANUFACTURER'S REQUIREMENTS.
DUST CONTROL	ALL	DURING DRY WEATHER, APPLY WATER AND CALCIUM CHLORIDE TO CONTROL DUST.
TEMPORARY SEEDING	APRIL 15 TO OCT. 15	SOIL STOCKPILES THAT ARE NOT COVERED AND DISTURBED AREAS THAT WILL NOT BE DISTURBED AGAIN WITHIN 14 DAYS. IF GRASS GROWTH PROVIDES LESS THAN 95% SOIL COVERAGE BY NOV. 1, APPLY MULCH AND ANCHOR WITH EROSION CONTROL BLANKET.
MULCH	APRIL 15 TO SEPT. 15	ON ALL AREAS OF EXPOSED SOIL PRIOR TO RAIN EVENTS APPLY 100-150 LBS (2.5 BALES) PER 1,000 SQ FT. BY MECHANICAL BLOWER.
WINTER MULCH	SEPT. 16 TO OCT. 31	ON ALL AREAS OF EXPOSED SOIL PRIOR TO PRECIPITATION APPLY 150 TO 170 LBS. MULCH (4 BALES) PER 1,000 SQ. FT. BY MECHANICAL BLOWER. EROSION CONTROL BLANKET MAY BE USED AS A SUBSTITUTE FOR WINTER MULCH.
	NOV. 1 TO APRIL 14	ON ALL AREAS OF EXPOSED SOIL, APPLY 150 TO 170 LBS. MULCH (4 BALES) PER 1,000 SQ. FT. AND ANCHOR WITH NETTING AT THE END OF EACH WORKING DAY. EROSION CONTROL BLANKET MAY BE USED AS A SUBSTITUTE FOR WINTER MULCH.
INSPECTIONS	UNTIL SITE IS PERMANENTLY STABILIZED	INSPECT THE EROSION AND SEDIMENTATION CONTROL MEASURES DAILY, AND AFTER RAINFALL OF HALF INCH OR GREATER IN A 24-HOUR PERIOD, AND MAINTAIN AND REPAIR AS NECESSARY.

PERMANENT EROSION CONTROL:

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
PAVEMENT - BASE COURSE - FINAL COURSE	WHEN NO FROST IS IN GROUND	INSTALL ONLY IN AREAS SHOWN ON THE PLAN, SHORTLY AFTER PAVEMENT BASE IS BROUGHT TO FINAL GRADE. INSTALL NEAR COMPLETION OF PROJECT.
PERMANENT SEEDING	APRIL 15 TO SEPT. 15	ON FINAL GRADE AREAS, WITHIN 7 DAYS OF GRADE PREPARATION, PREPARE TOPSOIL, FOLLOWED BY SEED AND MULCH APPLICATION.
DORMANT SEEDING	SEPT. 16 TO APRIL 15	ON FINAL GRADE AREAS, WITH PREPARED TOPSOIL, APPLY SEED AT DOUBLE THE SPECIFIED RATE ON BARE SOIL, AND FOLLOW WITH AN APPLICATION OF WINTER MULCH.
GROUND COVER TREES, SHRUBS	APRIL 15 TO NOV. 1	INSTALL WITH FINAL LANDSCAPING.
PERMANENT MULCH	ALL	INSTALL WITH FINAL LANDSCAPING.

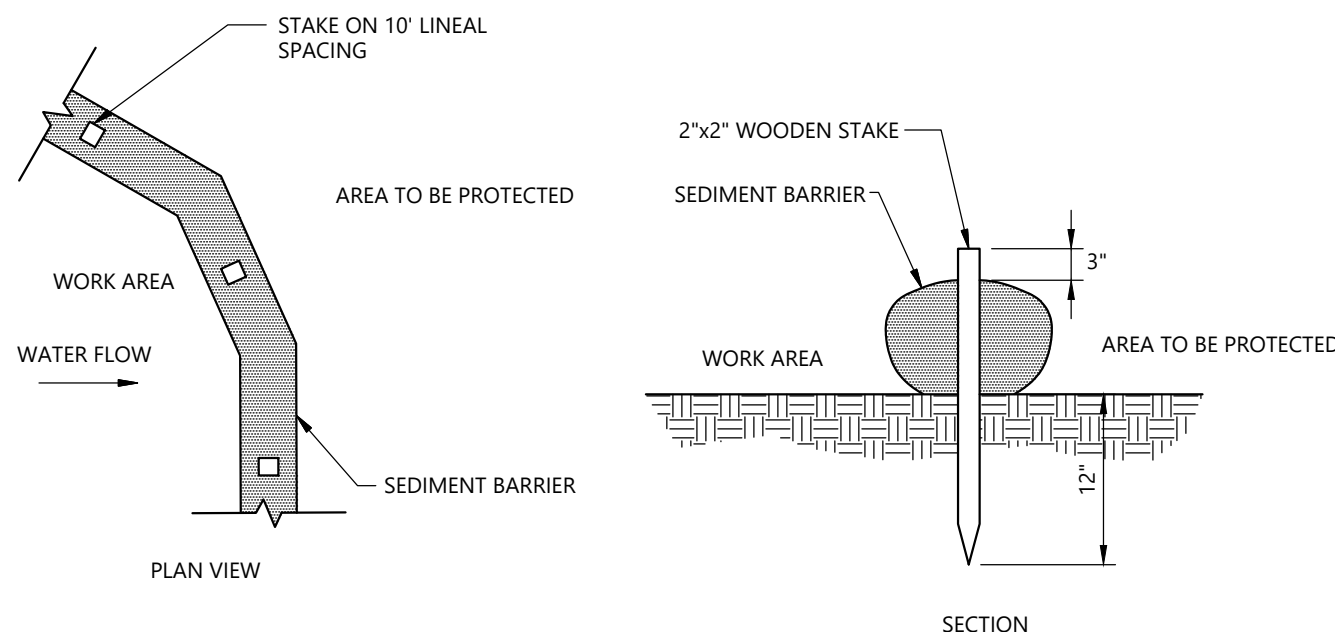
INSPECTIONS:

REGULAR INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS SHALL BE MADE AT LEAST WEEKLY AND PRIOR TO AND FOLLOWING STORM EVENTS. MINIMUM INSPECTIONS SHALL BE MADE AS LISTED IN THE TABLE BELOW.

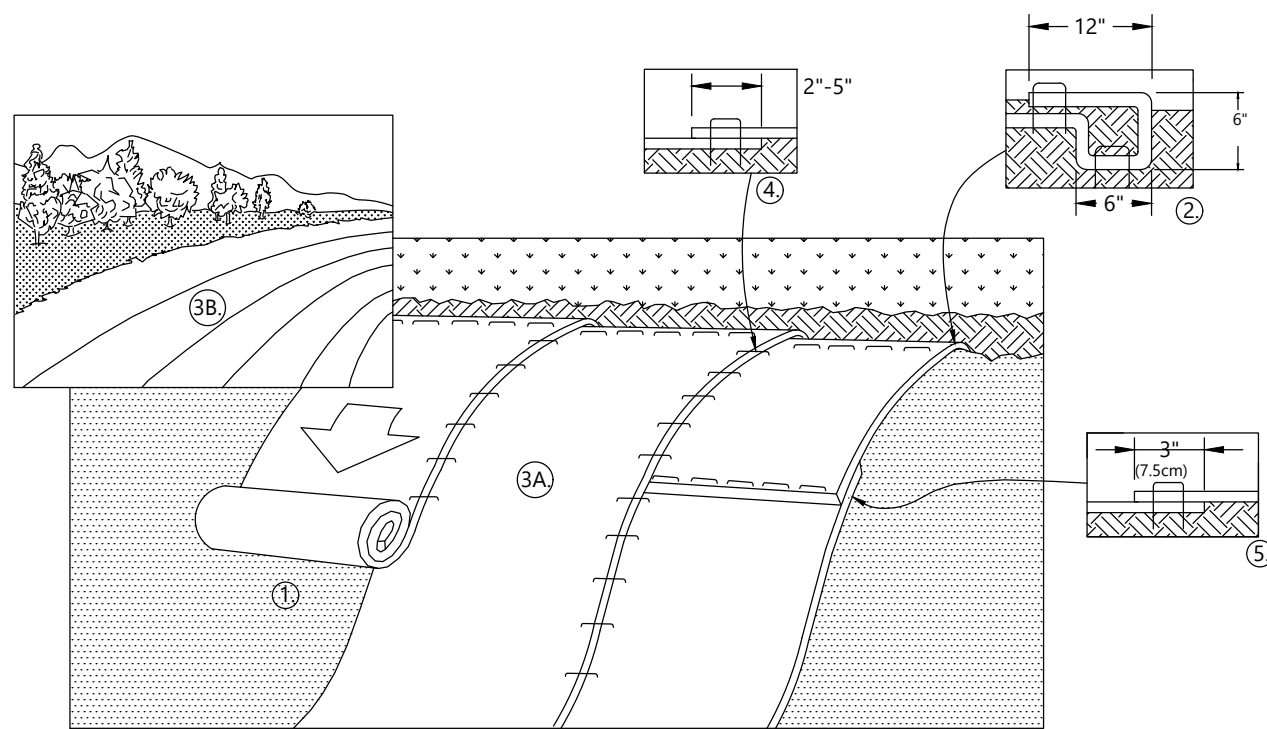
INSPECTED ITEM	LOOK FOR
MULCHED SURFACES	THIN MULCH OR INADEQUATE APPLICATION. WIND MOVEMENT.
SEEDDED SURFACES	POOR SEED GERMINATION. LOSS OF MULCH. DEVELOPMENT OF RIVULETS.
SEDIMENT BARRIER	SEDIMENT BUILD-UP TO ONE HALF THE HEIGHT OF THE BARRIER. UNDERMINING OF THE BARRIER. SUPPORTING STAKES LOOSE, TOPPLED, OR UNMARKED. BREAKS IN BARRIER.
PERIMETER DIVERSION	DISCHARGE IS TO STABILIZED AREA. EROSION OR BREAKS IN BARRIER. SUPPORTING STAKES LOOSE, TOPPLED OR UNMARKED.
CATCH BASIN PROTECTION	SEDIMENT BUILD-UP AND STRUCTURE BLOCKAGES. SLOW FLOW/PONDING WATER. BREAKS IN FABRIC OR VOIDS IN BARRIER.
DEWATERING FILTER	BREAKS IN FABRIC OR SUPPORTING STRUCTURE. SLOW FLOW, INDICATING HIGH SEDIMENT BUILD-UP.
CONSTRUCTION ENTRANCE	SEDIMENTATION OF ROADWAYS. OFF-SITE DUST COMPLAINTS.

DEWATERING NOTES

- LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
- NEVER DISCHARGE TO AREAS THAT ARE BARE OR NEWLY VEGETATED.
- DIRT BAG MATERIAL BASED ON PARTICLE SIZE IN DIRTY WATER, I.E., FOR COARSE PARTICLES A WOVEN MATERIAL; FOR SILTS/CLAYS A NON-WOVEN MATERIAL.
- DO NOT OVER PRESSURIZE DIRT BAG OR USE BEYOND CAPACITY.
- CHANNELS DUG FOR DISCHARGING WATER FROM THE EXCAVATED AREA NEED TO BE STABLE. IF FLOW VELOCITIES CAUSE EROSION WITHIN THE CHANNEL THEN A DITCH LINING SHOULD BE USED.
- BUCKETED WATER SHOULD BE DISCHARGED IN A STABLE MANNER TO THE SEDIMENT REMOVAL AREA. A SPLASH PAD OF RIPRAP UNDERLAIN WITH GEOTEXTILE MAY BE NECESSARY TO PREVENT SCOURING OF SOIL.
- DEWATERING IN PERIODS OF INTENSE, HEAVY RAIN, WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHOULD BE AVOIDED.
- INSTALL DIVERSION DITCHES OR BERMS TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATED AREA.
- DURING THE ACTIVE DEWATERING PROCESS, INSPECTION OF THE DEWATERING FACILITY SHOULD BE REVIEWED FREQUENTLY. SPECIAL ATTENTION SHOULD BE PAID TO THE BUFFER AREA FOR ANY SIGN OF EROSION AND CONCENTRATION OF FLOW THAT MAY COMPROMISE THE BUFFER AREA. OBSERVE WHERE POSSIBLE THE VISUAL QUALITY OF THE EFFLUENT AND DETERMINE IF ADDITIONAL TREATMENT CAN BE PROVIDED.
- EROSION CONTROL REQUIRED AROUND DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE.

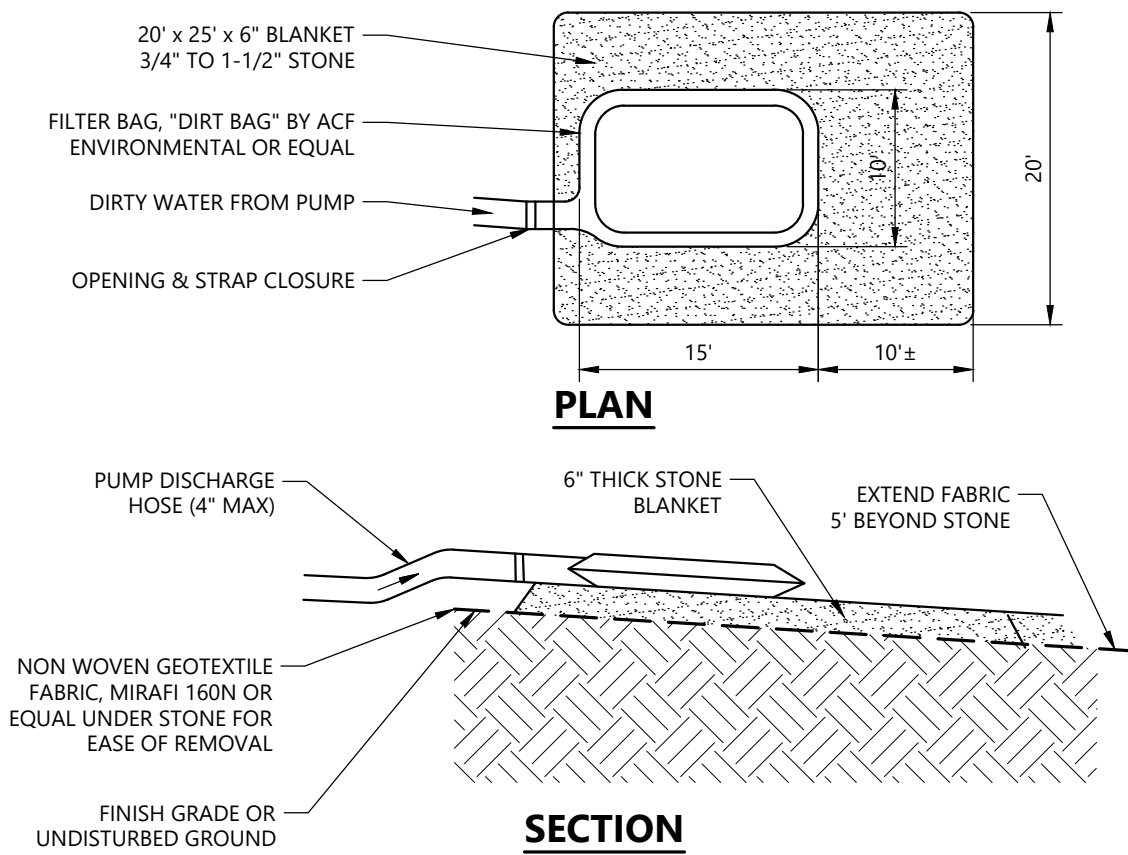


7 SEDIMENT BARRIER
NOT TO SCALE

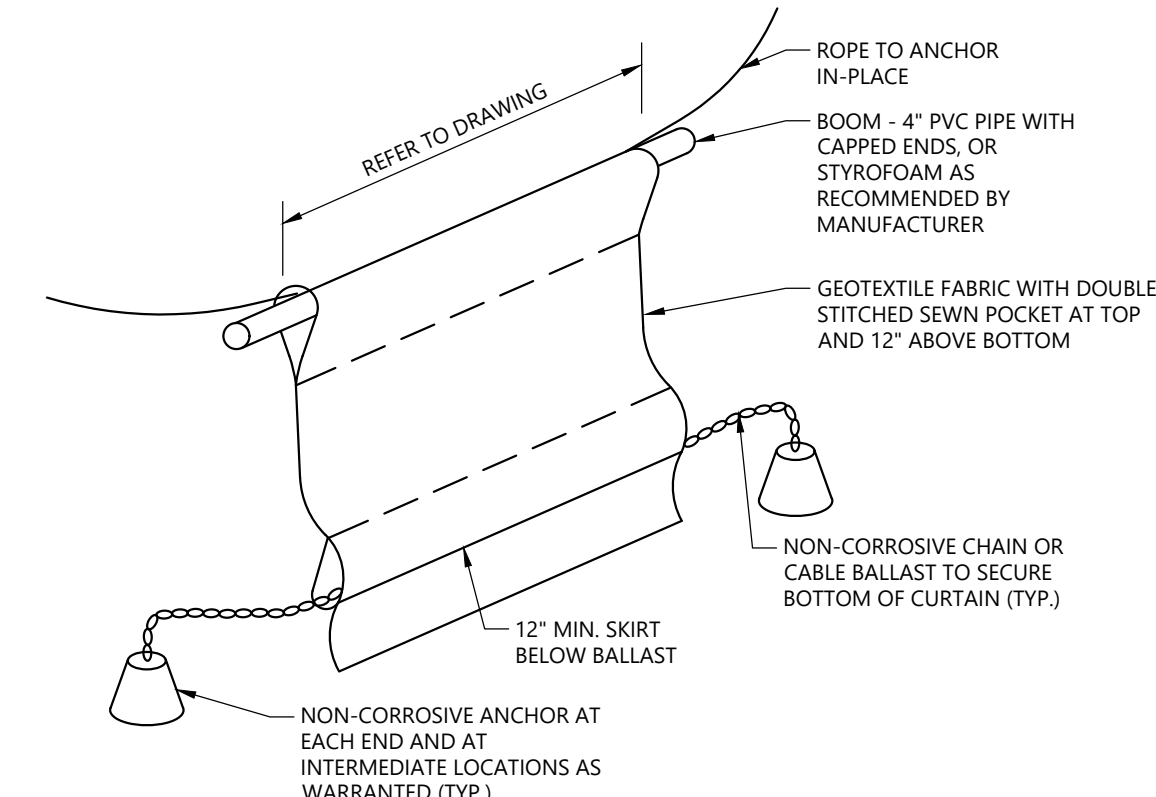


- PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED AS WELL AS REMOVING ANY PROTRUDING ROCKS, STUMPS OR ROOTS. DURING THE GROWING SEASON (APRIL 15 - SEPTEMBER 15) USE RECP'S ON SLOPES HAVING A GRADE GREATER THAN 15%, OR ANYWHERE WHERE HAY MULCH HAS PROVEN TO BE INEFFECTIVE AT CONTROLLING SHEET EROSION. RECP'S ARE A MANUFACTURED COMBINATION OF MULCH AND NETTING DESIGNED TO PREVENT EROSION AND RETAIN SOIL MOISTURE. FOR OVER WINTER PROTECTION, APPLY RECP'S ON SLOPES STEEPER THAN AN 8% GRADE.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH (USE OF METAL STAPLES IS PROHIBITED). BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
- ROLL THE RECP'S (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2' - 5" OVERLAP DEPENDING ON RECP'S TYPE.
- CONSECUTIVE RECP'S SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH. NOTE: "IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.
- UNTIL GRASS HAS GOOD COVERAGE, INSPECT PERIODICALLY AND AFTER EACH RAINSTORM TO CHECK FOR EROSION, IMMEDIATELY REPAIR AND ADD MORE MULCH UNTIL GRASSES ARE FIRMLY ESTABLISHED. DO NOT MOW THE FIRST YEAR.
- EROSION CONTROL MATTING AND GROUND FASTENERS SHALL BE 100% BIODEGRADABLE.

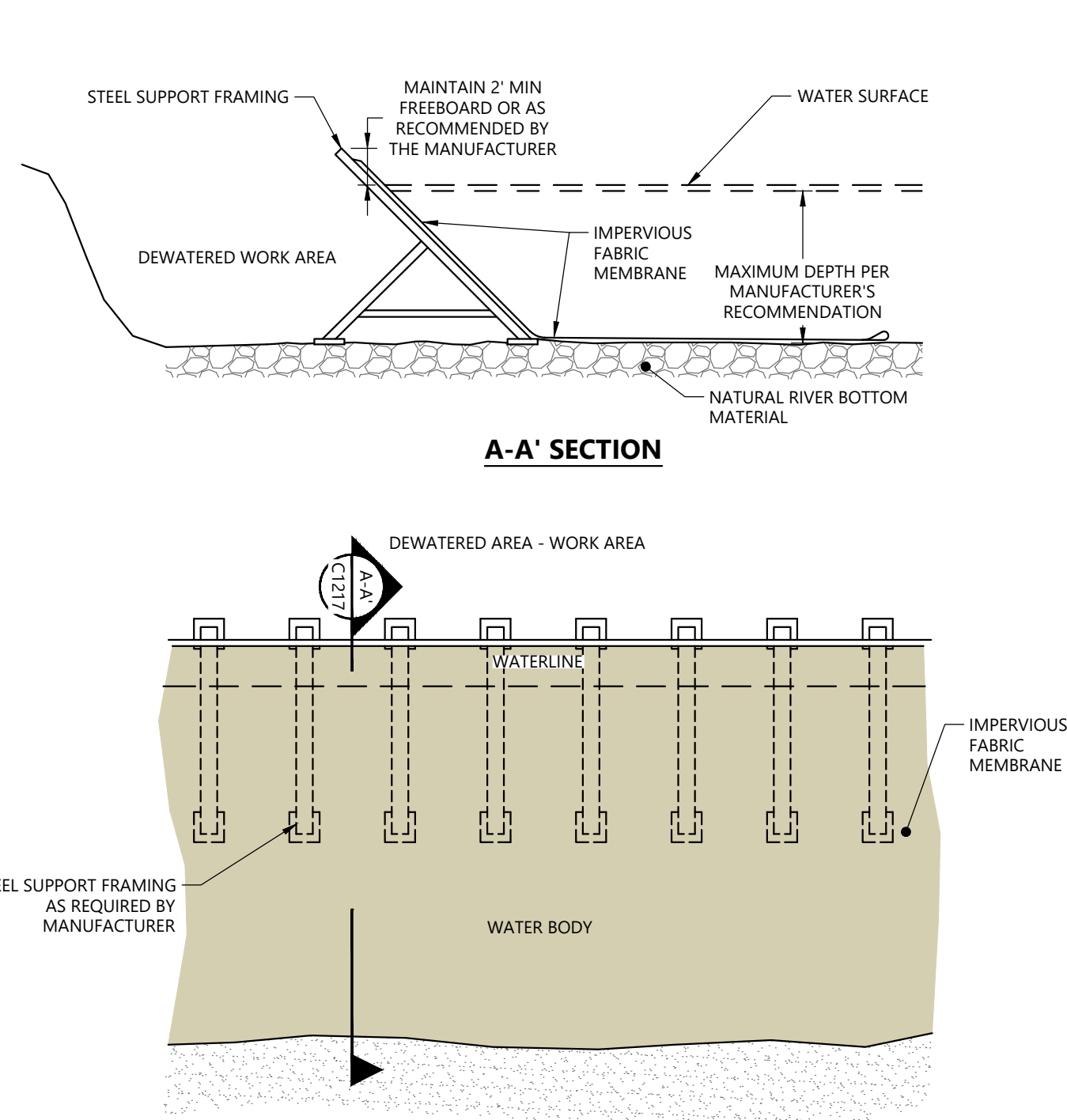
1 EROSION CONTROL MATTING
NOT TO SCALE



4 DEWATERING DISCHARGE SEDIMENT CONTROL DEVICE
NOT TO SCALE

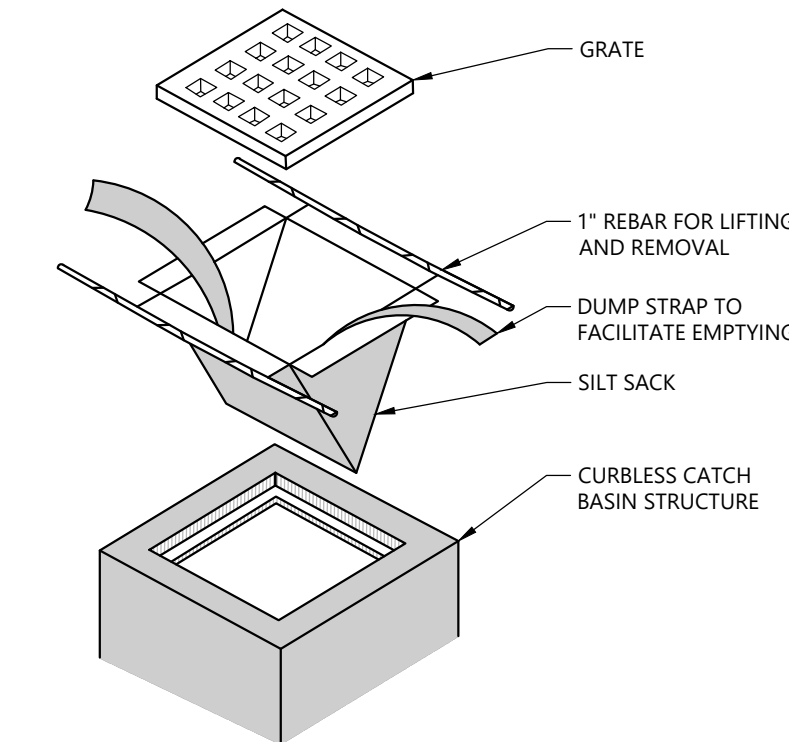


8 TURBIDITY CURTAIN
NOT TO SCALE



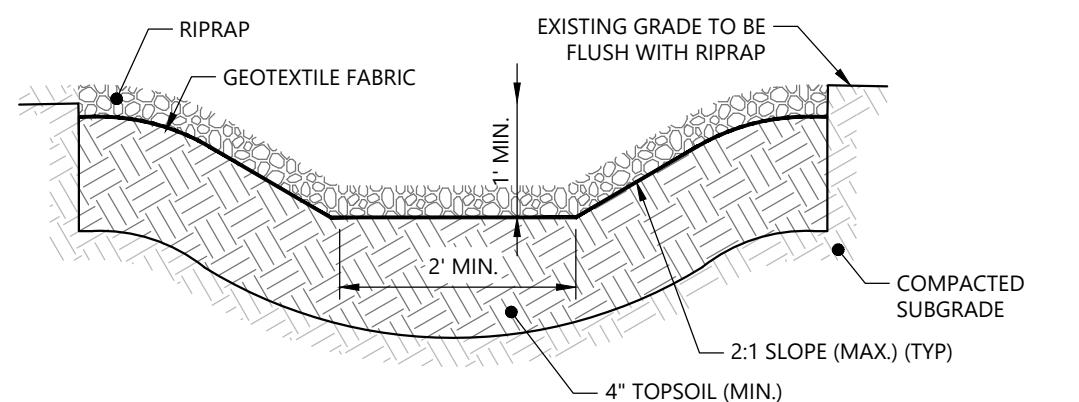
- NOTES:
- COFFERDAM DETAIL SHOWN FOR REFERENCE PURPOSES. CONTRACTOR SHALL PROVIDE DESIGN OF TEMPORARY COFFERDAMS, STAMPED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF XXXXX.
 - COFFERDAM TO BE INSTALLED AROUND WORK AREA IN ACCORDANCE WITH CONTRACTOR'S WORK PLAN.

2 COFFER DAM
NOT TO SCALE



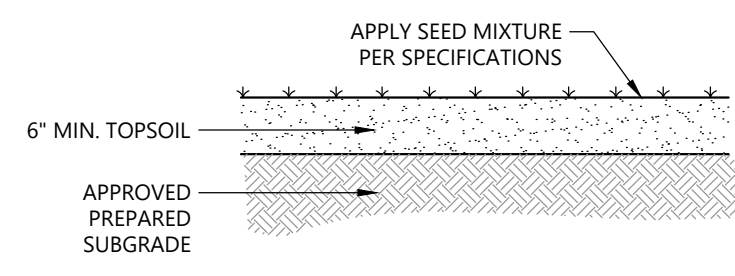
- NOTES:
- INSTALL SILTSACK PER MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
 - EMPTY OR REMOVE SEDIMENT FROM SILTSACK WHEN RESTRAINT CORD IS NO LONGER VISIBLE. CLEAN, RINSE, AND REPLACE AS NEEDED.
 - SILT SACKS TO BE INSTALLED WHEN THE POTENTIAL FOR SEDIMENT TO ENTER EXISTING & PROPOSED BASINS EXISTS.

5 SILTSACK - CURBLESS INLET
NOT TO SCALE



- NOTES:
- FOR GRASS CHANNEL SLOPES EXCEEDING 8%, JUTE MESH OR EROSION CONTROL BLANKET SHALL BE INSTALLED TO STABILIZE THE CHANNEL BASE.
 - DISTURBED AREA ADJACENT TO CHANNEL TO BE BROUGHT TO FINISHED GRADE IMMEDIATELY, TOPSOILED, SEEDDED AND MAINTAINED FOR EROSION CONTROL.

9 DRAINAGE CHANNEL
NOT TO SCALE



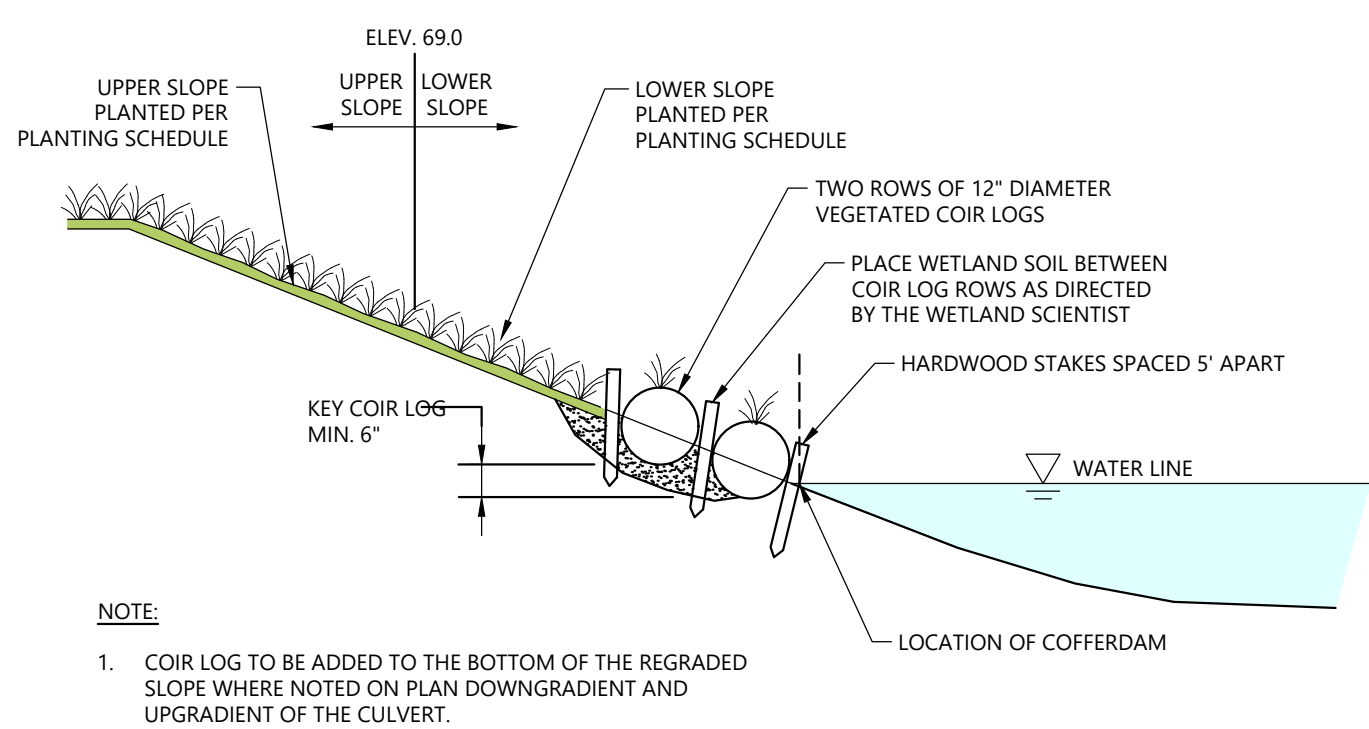
10 LOAM AND SEED
NOT TO SCALE

TOWN OF AGAWAM ADAMS STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	11	17

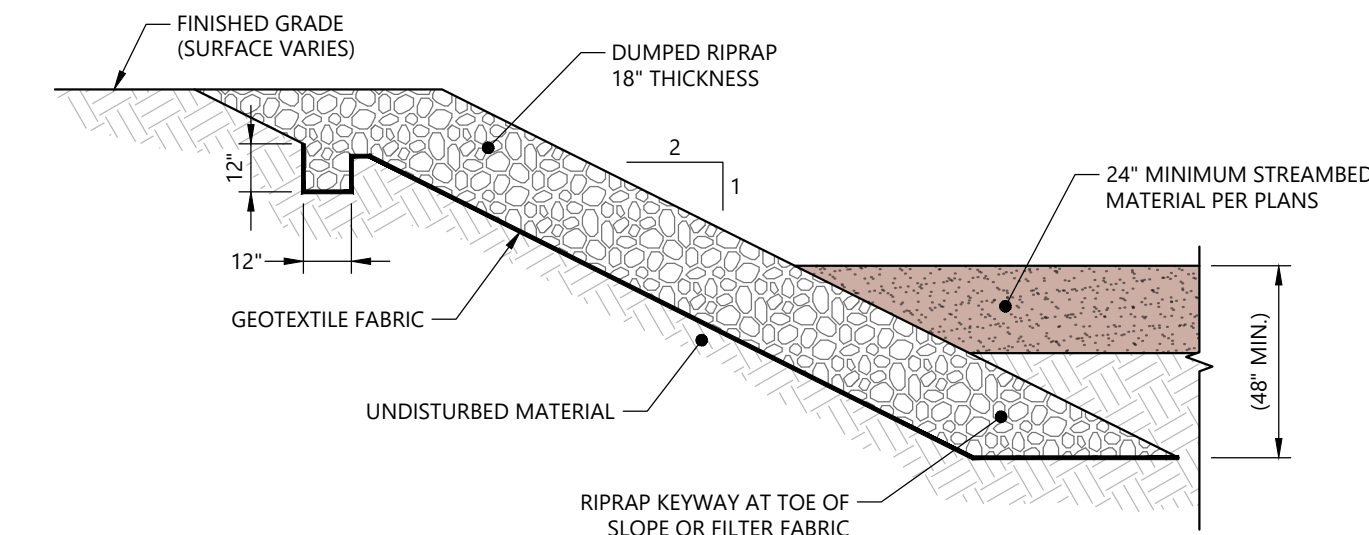
PROJECT FILE NO. 0234471.01

C-901 - CIVIL DETAILS - 1

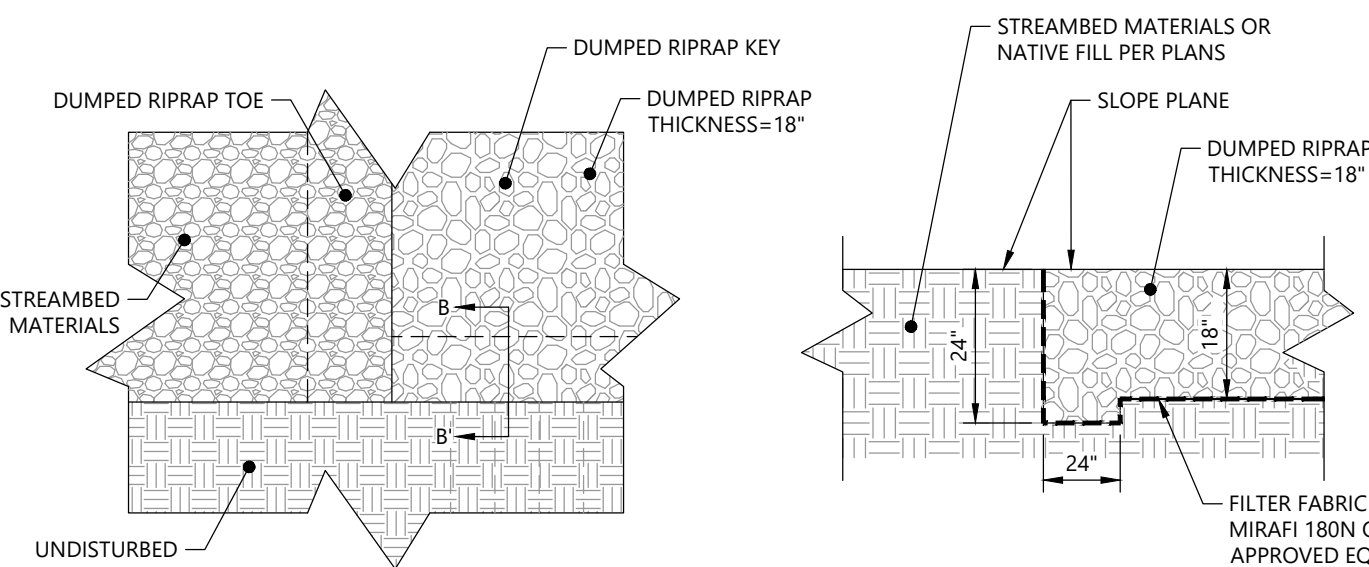


- NOTE:
- COIR LOG TO BE ADDED TO THE BOTTOM OF THE REGRADED SLOPE WHERE NOTED ON PLAN DOWNGRADIENT AND UPGRADEMENT OF THE CULVERT.

3 COIR LOG
NOT TO SCALE



6 RIPRAP SLOPE PROTECTION
NOT TO SCALE



11 DUMPED RIPRAP
NOT TO SCALE

PERMIT REVIEW SET - NOT FOR CONSTRUCTION

JULY 30, 2026	ISSUED FOR PERMITTING
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER	
USE ONLY PRINTS OF LATEST DATE	

SHEET 11 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

PLANTING SCHEDULE

BVW RESTORATION (81 SF)					
PLANT SPECIES (COMMON NAME)	PLANT SPECIES (LATIN NAME)	Spacing	Size	Quantity	Wetland Status Indicator
RED MAPLE	ACER RUBRUM	10' O.C.	4'-6"	2	FAC
COMMON SPICEBUSH	LINDERA BENZOIN	6' O.C.	3'-4"	1	FACW
HIGHBUSH BLUEBERRY	VACCINIUM CORYMBOSUM	6' O.C.	3'-4"	2	FACW
SENSITIVE FERN	ONOCLEA SENSIBILIS	3' O.C.	1 GALLON	3	FACW
CINNAMON FERN	OSMUNDA CINNAMOMEA	3' O.C.	1 GALLON	3	FACW
TOTAL				11	

SPECIALIZED WETLAND MIX FOR SHADED OBL-FACW AREAS-ERNMX-137, ERNST CONSERVATION SEEDS (WWW.ERNSTSEED.COM) OR APPROVED EQUAL, APPLIED AT A RATE OF 1LB PER 2,200 SF OR HIGHER IF APPLIED AT THE END OF THE GROWING SEASON. LIGHTLY RAKE TO INSURE SEED-SOIL CONTACT. APPLY LIGHT COATING OF STRAW AS DIRECTED BY WETLAND SCIENTIST

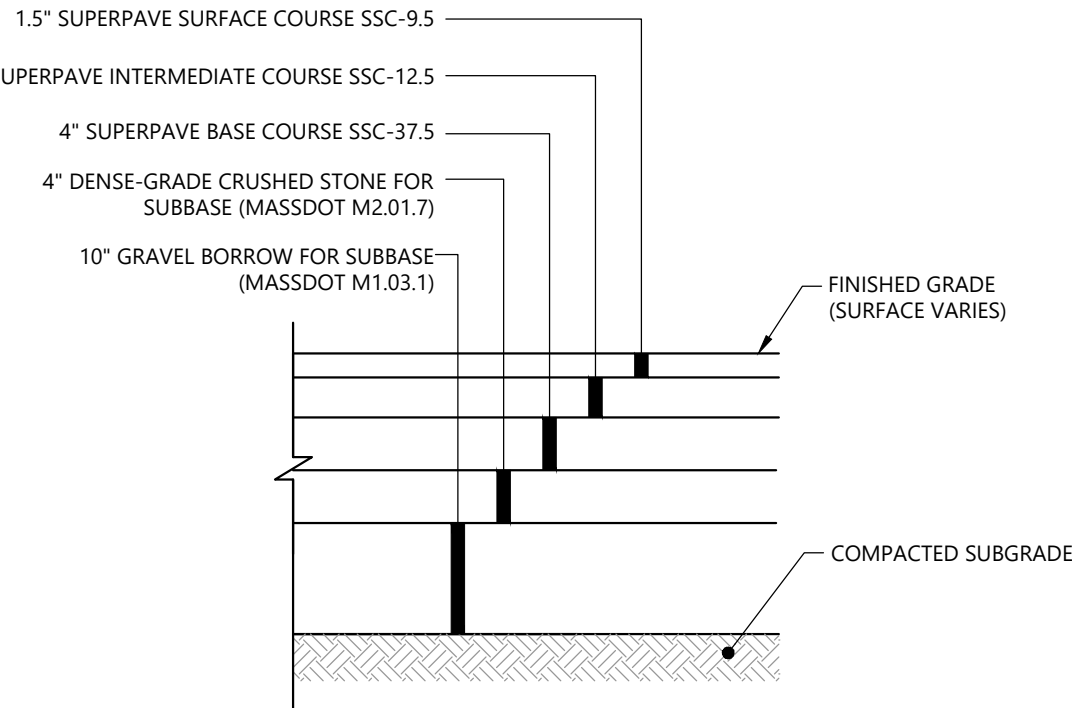
BUFFER ZONE/RIVERFRONT AREA RESTORATION (UPPER SLOPE RESTORATION=842 SF) (EL 69'+)					
PLANT SPECIES (COMMON NAME)	PLANT SPECIES (LATIN NAME)	SPACING	SIZE	QUANTITY	WETLAND STATUS INDICATOR
RED MAPLE	ACER RUBRUM	10' O.C.	4'-6"	3	FAC
AMERICAN ELM	ULMUS AMERICANA	10' O.C.	4'-6"	3	FAC
BLACK GUM	NYSSA SYLVATICA	10' O.C.	4'-6"	3	FAC
SERVICEBERRY	AMELANCHIER ARBOREA	6' O.C.	3'-4"	6	FAC
BLACK CHOKEBERRY	ARONIA MELANOCARPA	6' O.C.	3'-4"	6	FAC
GRAY DOGWOOD	CORNUS RACEMOSA	6' O.C.	3'-4"	6	FAC
TOTAL				27	

NEW ENGLAND CONSERVATION/WILDLIFE MIX, NEW ENGLAND WETLAND PLANTS (WWW.NEWP.COM), OR APPROVED EQUIVALENT, APPLIED AT A RATE OF 1,750 SF/LB, OR HIGHER IF APPLIED AT THE END OF THE GROWING SEASON. LIGHTLY RAKE TO INSURE SEED-SOIL CONTACT. MAY INCLUDE ANNUAL OR WINTER RYE DEPENDING ON TIME OF APPLICATION

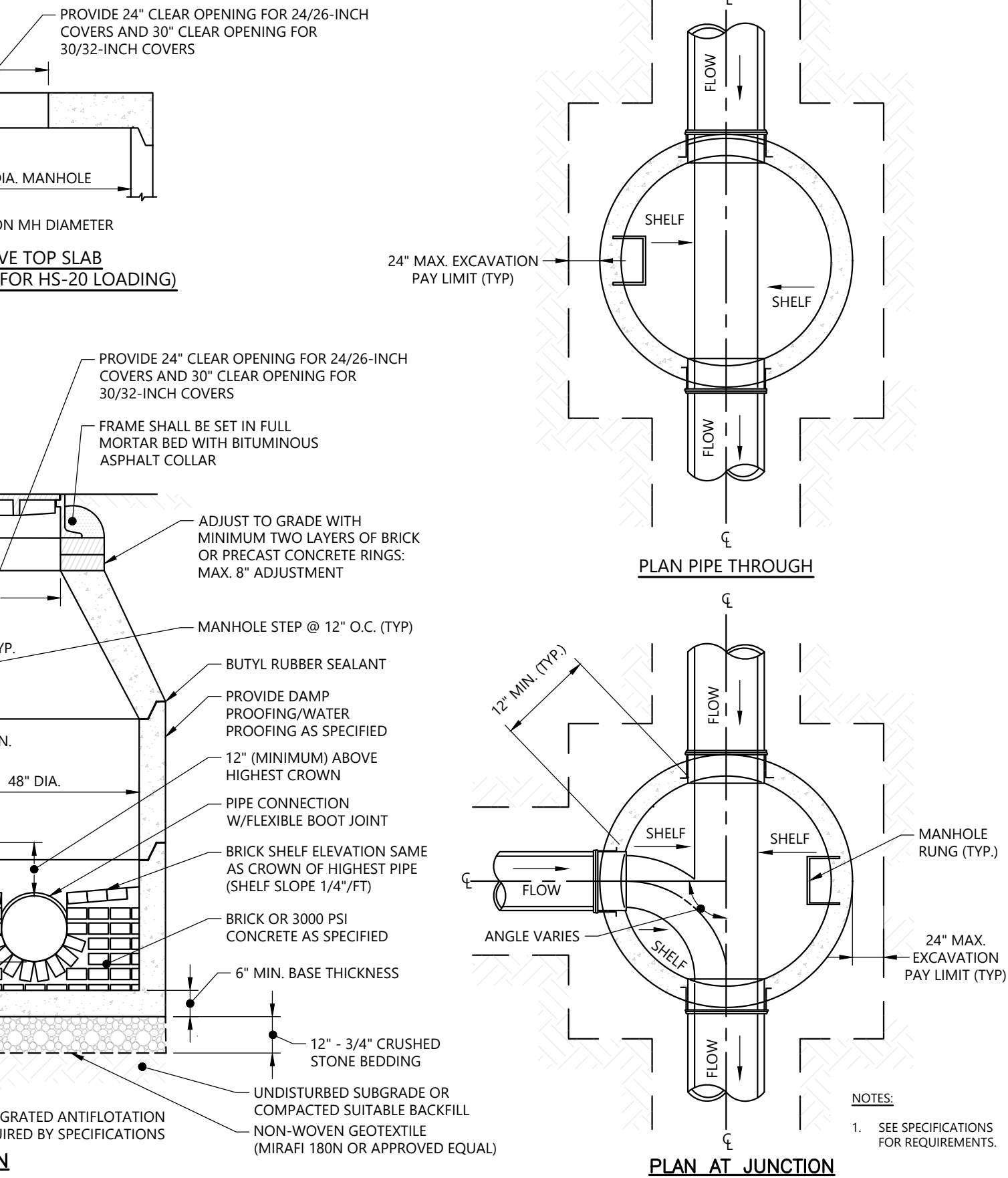
BANK RESTORATION (LOWER SLOPE RESTORATION=260 SF) (EL 67'-69')					
PLANT SPECIES (COMMON NAME)	PLANT SPECIES (LATIN NAME)	SPACING	SIZE	QUANTITY	WETLAND STATUS INDICATOR
RED MAPLE	ACER RUBRUM	10' O.C.	4'-6"	4	FAC
AMERICAN ELM	ULMUS AMERICANA	10' O.C.	4'-6"	4	FAC
SPECKLED ALDER	ALNUS INCANA (RUGOSA)	6' O.C.	3'-4"	8	FACW+
RED-OSIER DOGWOOD	CORNUS SERICEA	6' O.C.	3'-4"	4	FACW+
COMMON ELDERBERRY	SAMBUCUS CANADENSIS	6' O.C.	3'-4"	4	FACW-
SENSITIVE FERN	ONOCLEA SENSIBILIS	3' O.C.	1 GALLON	16	FACW
FRINGED SEDGE**	CAREX CRINITA	1' O.C.	2" PLUG	50	OBL
LURID SEDGE**	CAREX LURIDA	1' O.C.	2" PLUG	50	OBL
TOTAL				140	

SPECIALIZED WETLAND MIX FOR SHADED OBL-FACW AREAS-ERNMX-137, ERNST CONSERVATION SEEDS (WWW.ERNSTSEED.COM) OR APPROVED EQUAL, APPLIED AT A RATE OF 1LB PER 2,200 SF OR HIGHER IF APPLIED AT THE END OF THE GROWING SEASON. LIGHTLY RAKE TO INSURE SEED-SOIL CONTACT. APPLY LIGHT COATING OF STRAW AS DIRECTED BY WETLAND SCIENTIST

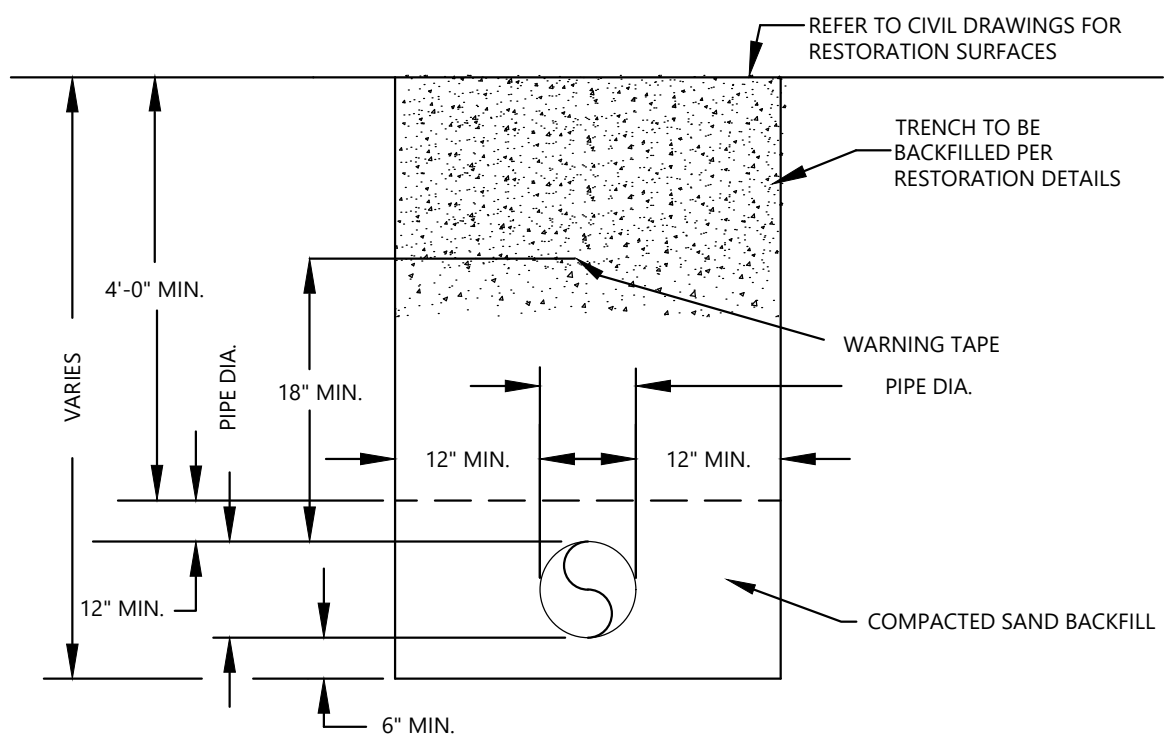
SEDGES TO BE PLANTED BETWEEN COIR LOGS AND WITHIN BVW RESTORATION AREA, AS DIRECTED BY THE WETLAND SCIENTIST



3 BITUMINOUS PAVEMENT SECTION
NOT TO SCALE



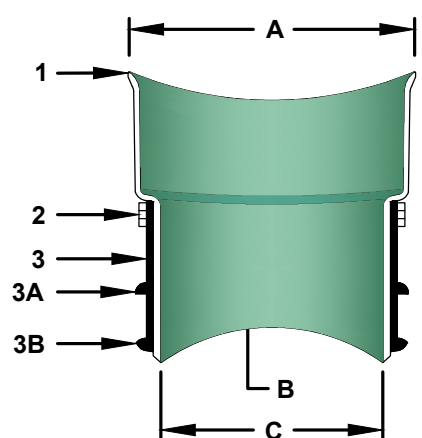
1 PRECAST CONCRETE MANHOLE
NOT TO SCALE



4 TYPICAL PIPE TRENCH
NOT TO SCALE

CORRUGATED HDPE/PP BELL GRAVITY APPLICATIONS

- A. BELL END ACCEPTS CORRUGATED HDPE/PP DUAL WALL PIPE-ADS/HANCOR INC. SPECIFICATIONS IN 4", 6", 8", 10", 12", 15", 18", 21", 24", AND 30" SIZES.
- B. CURVATURE VARIES WITH MAINLINE DIAMETERS.
- C. SPIGOT END PVC SDR 35, ASTM D3034 DIAMETERS: 4", 6", 8", 10", 12", 15", 18", 21", 24" AND 30"



MATERIALS
PVC SDR 26 ASTM D3034
BAND SS #301
SCREW SS #305
HOUSING SS #301
ASTM F477

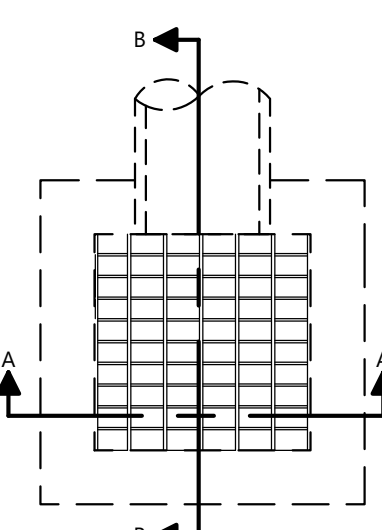
PART	PART NAME
1	HUB ADAPTOR
2	SECURING CLAMP*
3	RUBBER SLEEVE (AVAILABLE IN NITRILE AND EPDM BY SPECIAL ORDER)
3A	UPPER SEGMENT**
3B	LOWER SEGMENT***
4	(NOT SHOWN) ADS/HANCOR INC. SUPPLIES VALLEY GASKET

INSERTA TEE SIZE	HOLE DIAMETER
4" (100 mm)	4 1/2" (114 mm)
6" (150 mm)	6 1/2" (165 mm)
8" (200 mm)	8 3/4" (222 mm)
10" (250 mm)	10 7/8" (276 mm)
12" (300 mm)	12 7/8" (327 mm)
15" (375 mm)	15 1/8" (402 mm)
18" (450 mm)	19 3/4" (503 mm)
21" (525 mm)	22 3/8" (573 mm)
24" (600 mm)	25 3/8" (643 mm)
30" (750 mm)	32 1/2" (826 mm)

* OPTIONAL: #316 STAINLESS STEEL BAND, SCREW AND HOUSING
** DISTANCE BETWEEN 4A AND 4B WILL VARY BY PRODUCT TYPE
*** WILL NOT APPEAR ON RUBBER SLEEVES FOR CONCRETE OR CLAY PIPE

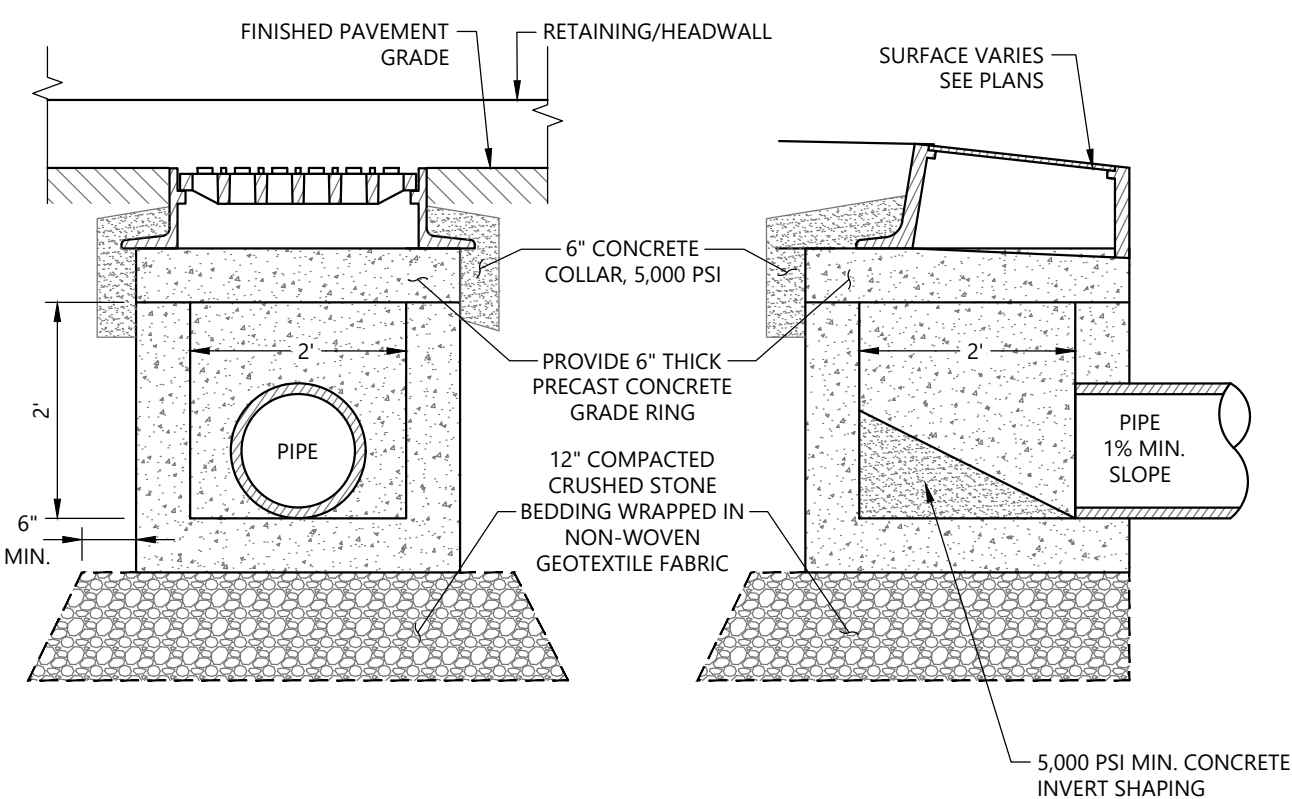
NOTE: RECOMMENDED METHOD OF CUTTING HOLE IS WITH HOLE SAW FOR PVC AND OTHER PLASTICS, AND DIAMOND BIT FOR CONCRETES, CLAY, FRP AND D.I. (SEE INSTALLATION INSTRUCTIONS. HOLE SAWS ARE AVAILABLE FOR PURCHASE OR RENT.)

2 INSERTA-TEE DETAIL
NOT TO SCALE



- NOTES**
- STRUCTURE ADJUSTMENTS OR SPECIAL STRUCTURES MAY BE REQUIRED FOR SHALLOW GUTTER INLETS. SEE PLANS FOR PROPOSED ELEVATIONS AND LOCATIONS. CONTRACTOR TO COORDINATE WITH MANUFACTURER AND ENGINEER AS NEEDED.
 - PRECAST CONCRETE STRUCTURES AND CASTINGS SHALL BE SUITABLE FOR HS-20 LOADINGS.
 - PRECAST CONCRETE STRUCTURES SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C-478.
 - REINFORCEMENT SHALL BE ASTM A-615 GRADE 60, WITH 1" MIN. CLEAR COVER.
 - WHERE CURB INLET IS NOT USED THE PROVIDE 3-SIDED FLANGE FRAME AND ALIGN BACK OF INLET FRAME WITH THE FRONT-FACE OF CURB.
 - SEE SECTION 33 49 00 FOR FRAME AND GRATE SPECIFICATIONS.
 - PROVIDE RIGID INSULATION BELOW STRUCTURE WHEN PLACED OVER SUBSURFACE UTILITIES.

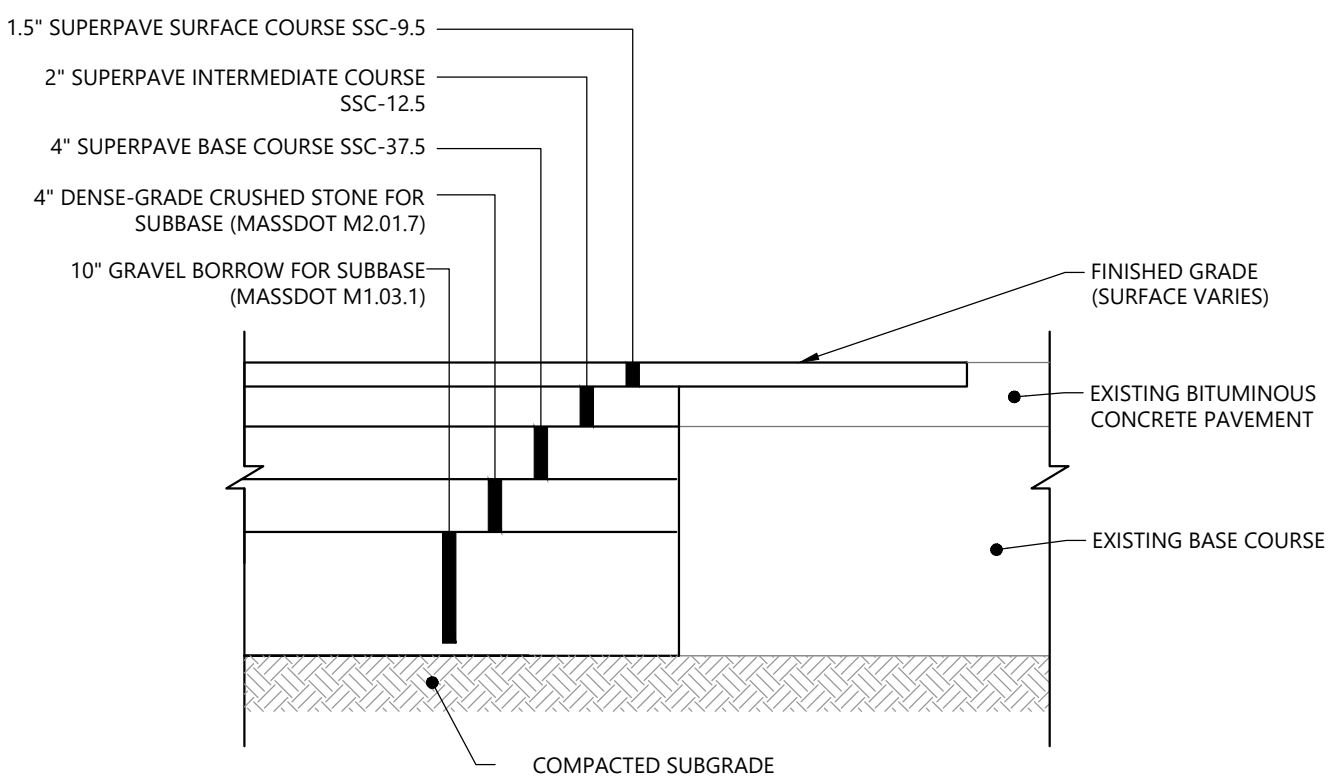
PLAN VIEW



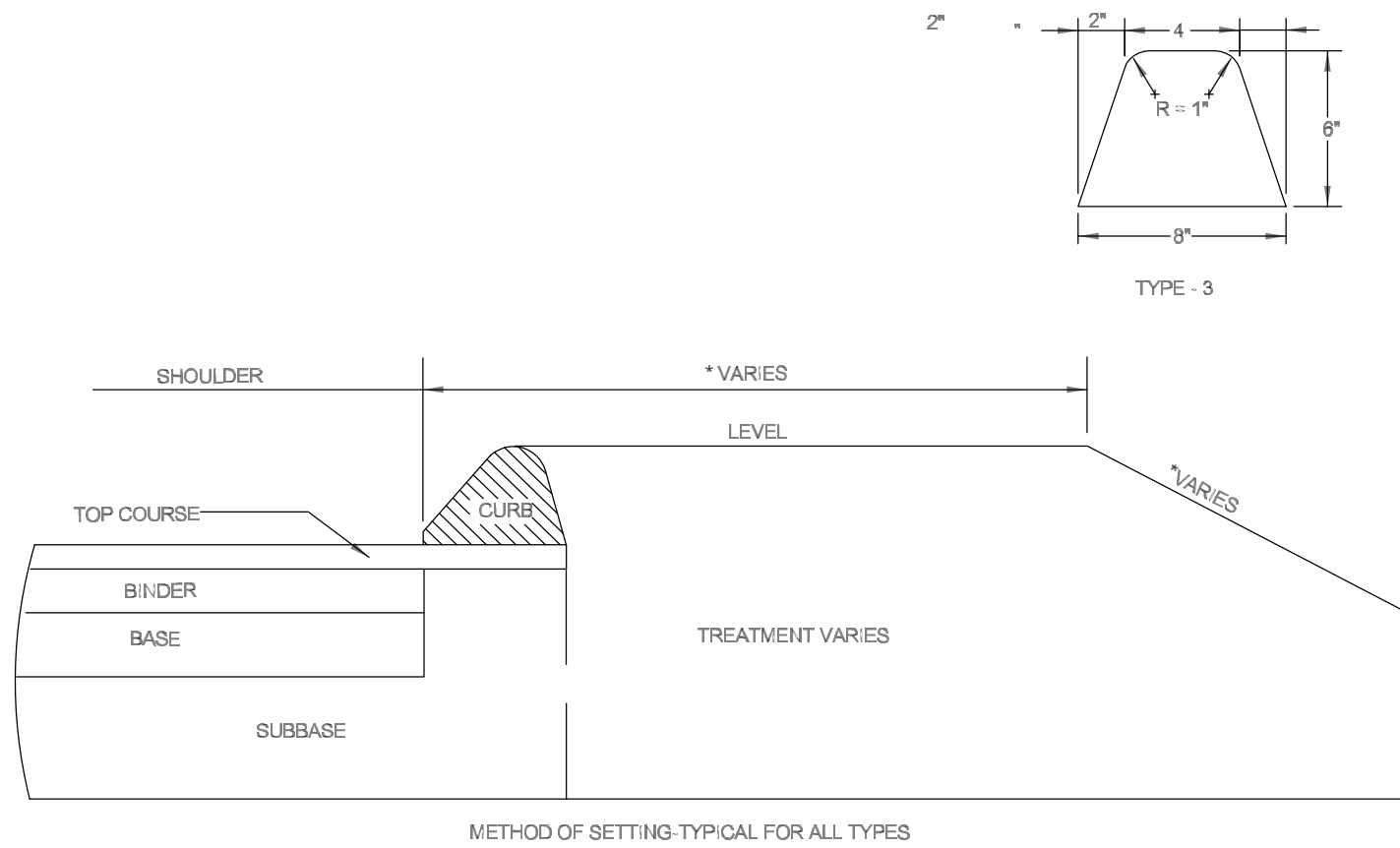
SECTION A-A

SECTION B-B

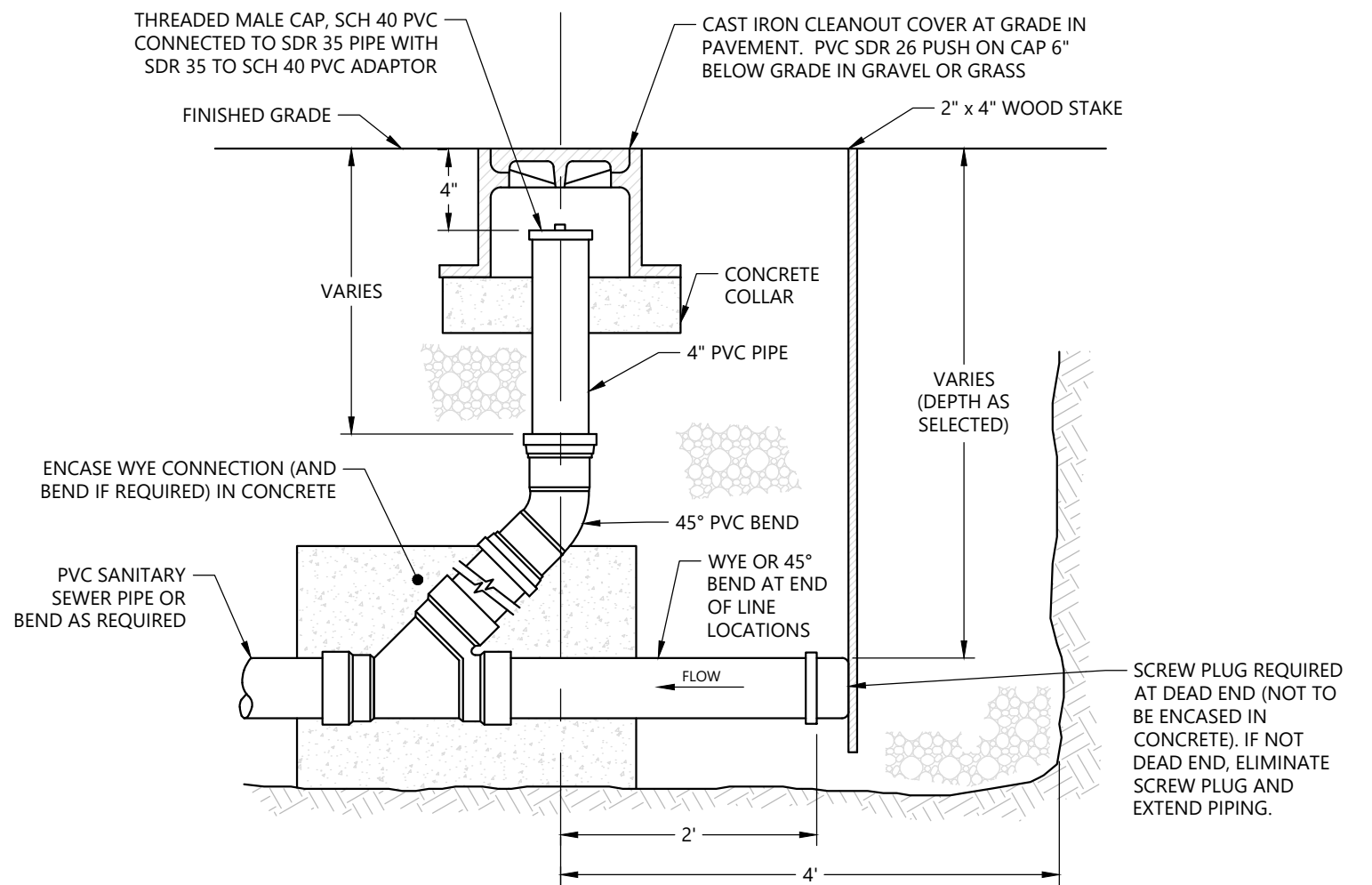
5 SHALLOW GUTTER INLET
NOT TO SCALE



6 BITUMINOUS PAVEMENT BUTT JOINT
NOT TO SCALE



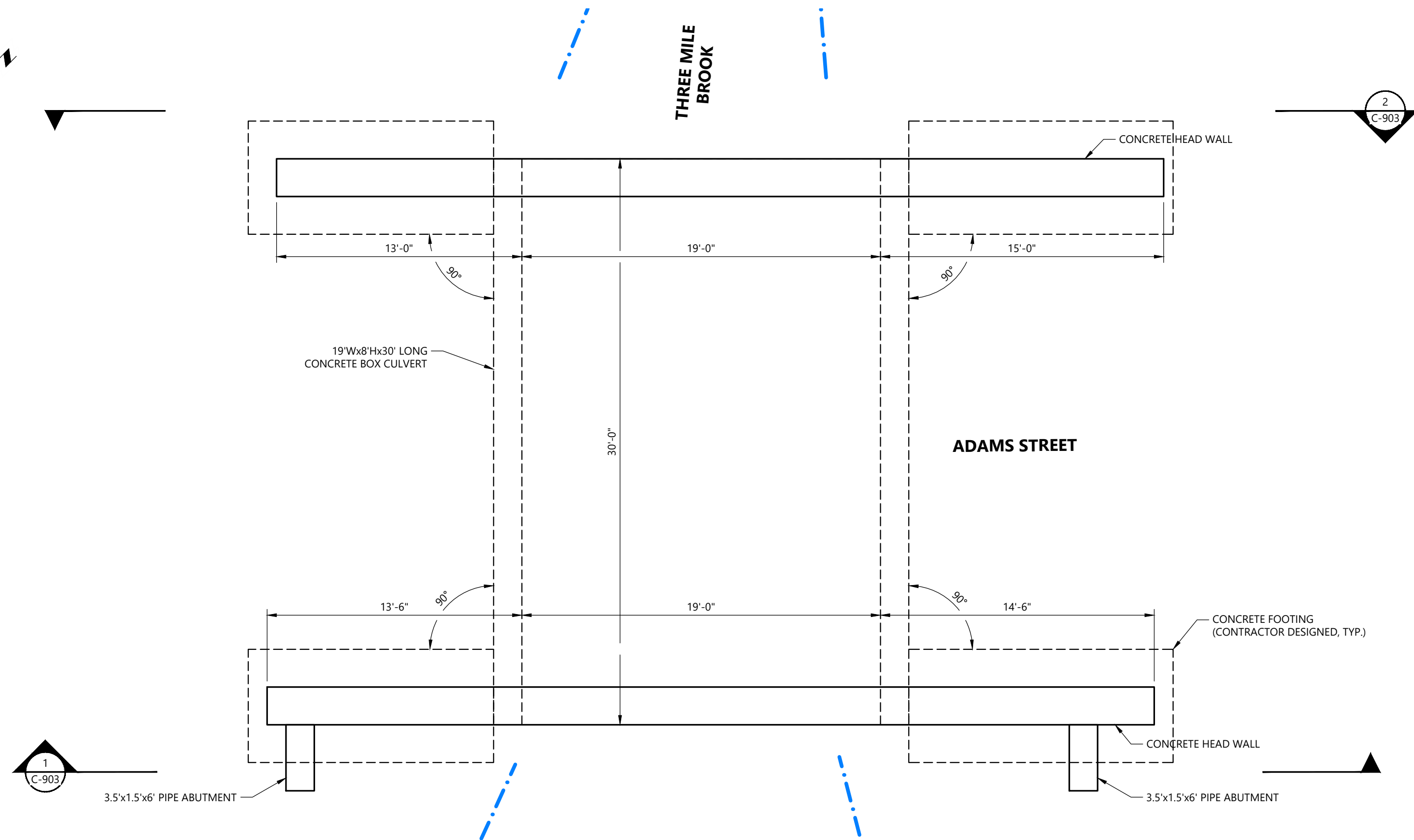
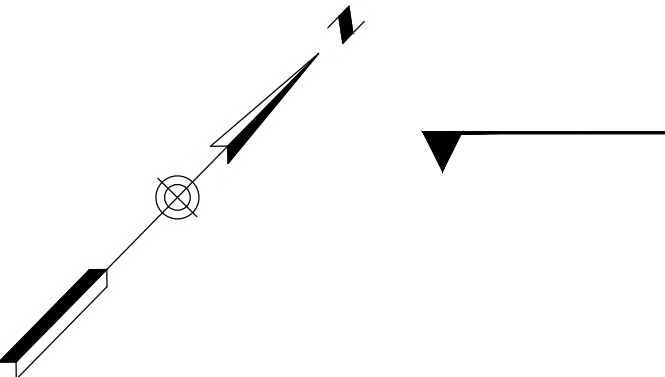
7 HOT MIX ASPHALT CURBS
NOT TO SCALE



8 SANITARY SEWER CLEANOUT
NOT TO SCALE

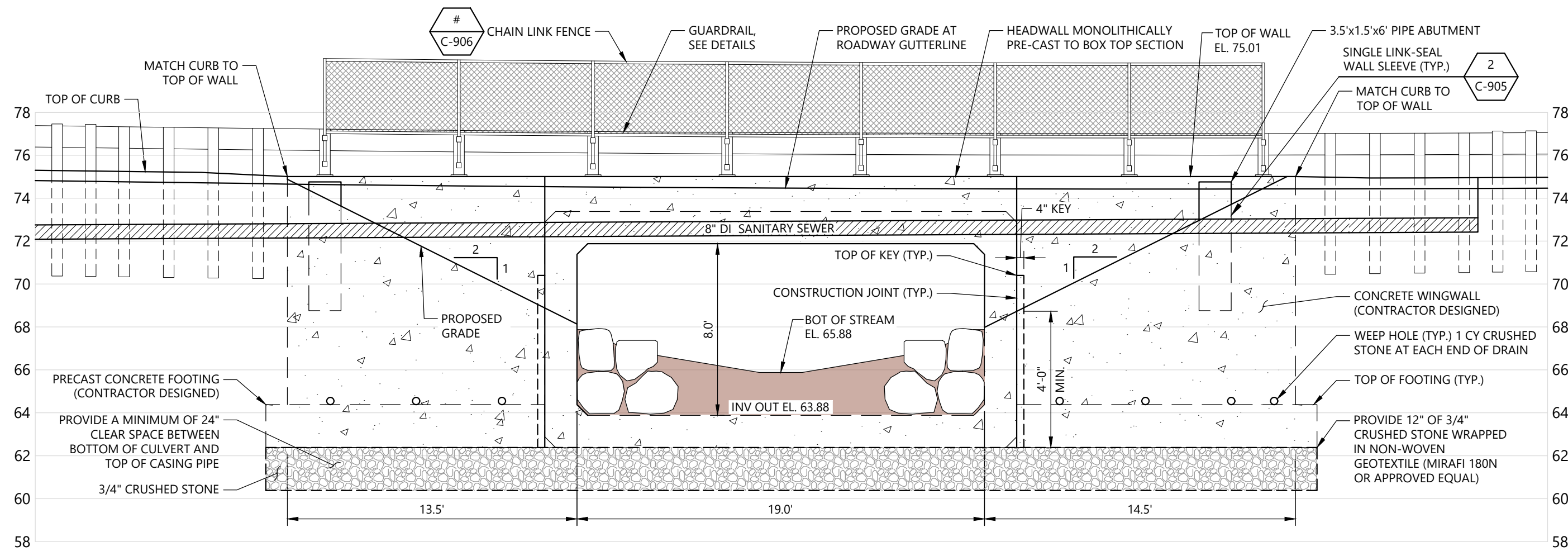
PERMIT REVIEW SET - NOT FOR CONSTRUCTION

JULY 30, 2026	ISSUED FOR PERMITTING
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER	
USE ONLY PRINTS OF LATEST DATE	



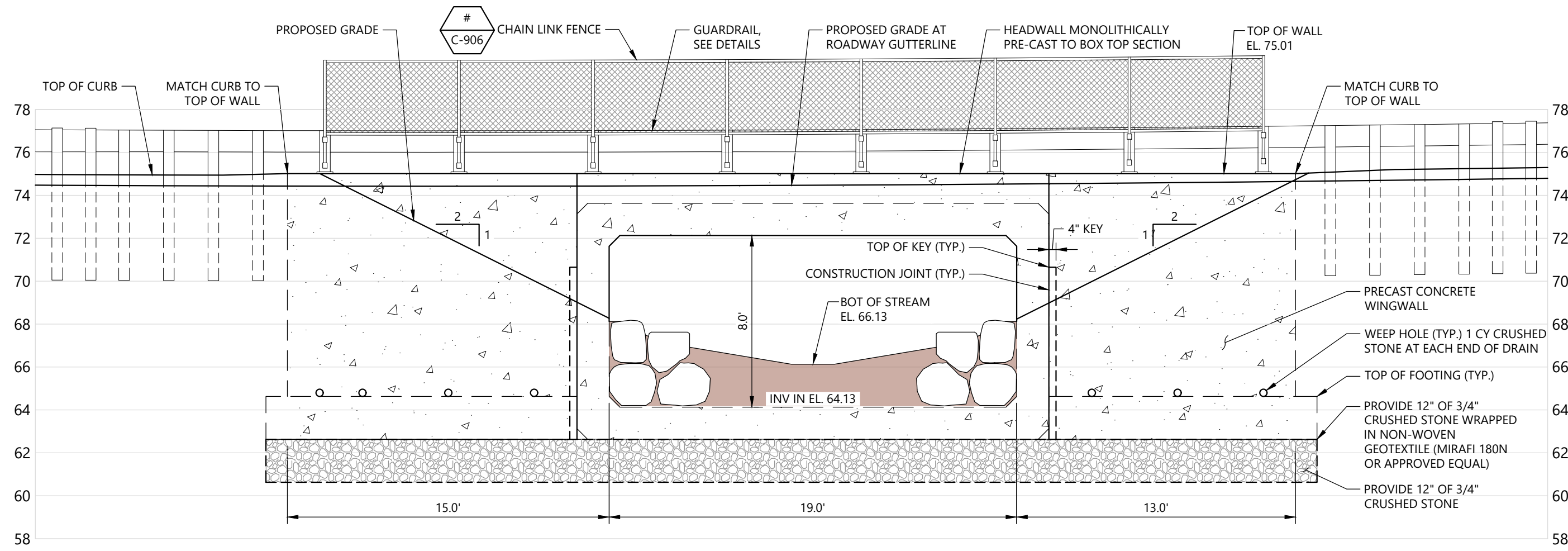
CULVERT SYSTEM PLAN VIEW

SCALE: 1" = 5'



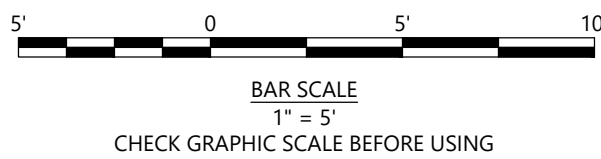
CULVERT OUTLET EXPANDED VIEW

SCALE: 1" = 5'



CULVERT INLET EXPANDED VIEW

SCALE: 1" = 5'

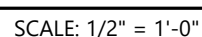
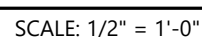
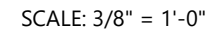
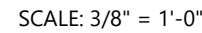
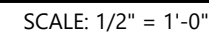


CHECK GRAPHIC SCALE BEFORE USING

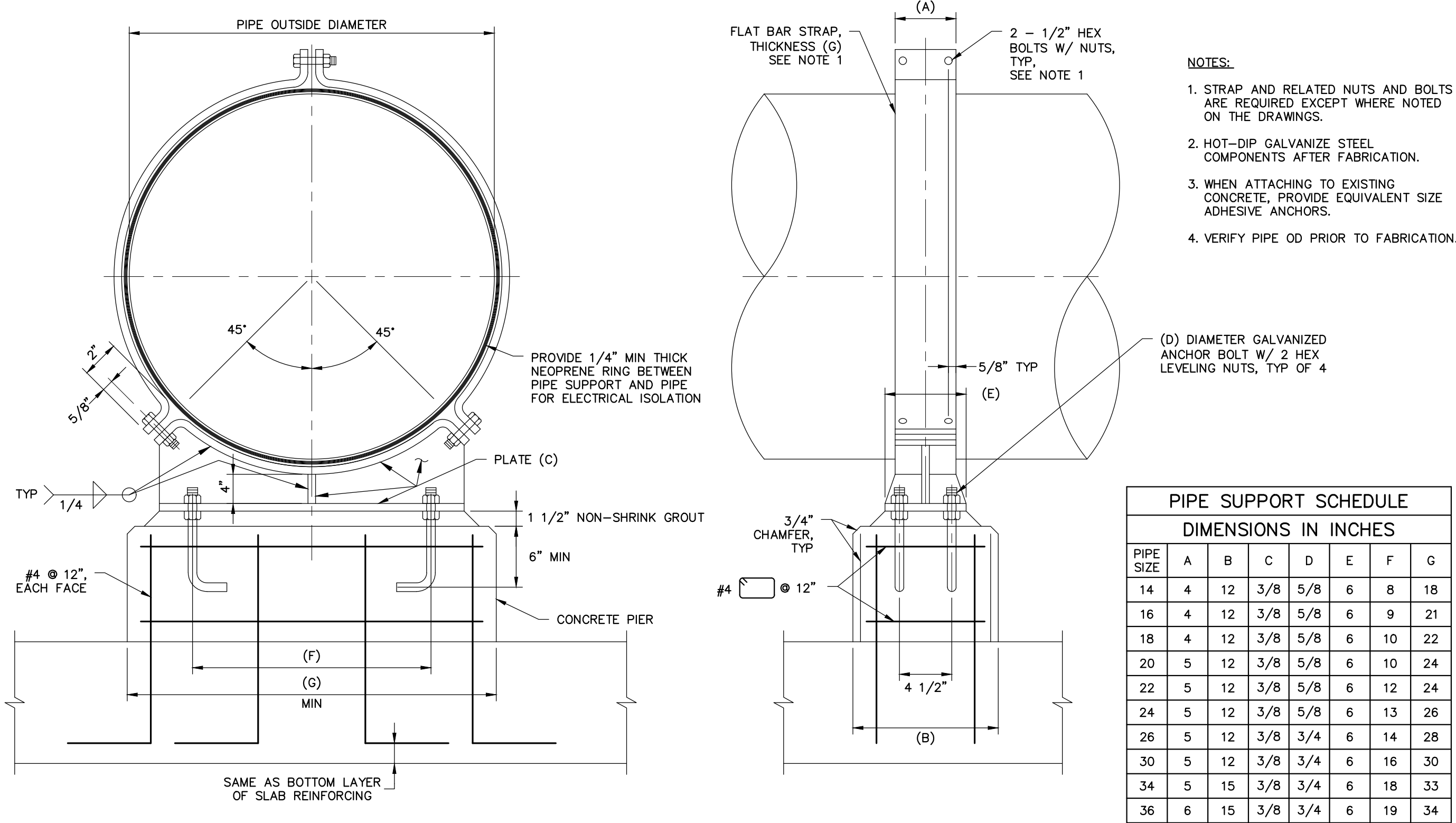
PERMIT REVIEW SET - NOT FOR CONSTRUCTION

JULY 30, 2026	ISSUED FOR PERMITTING
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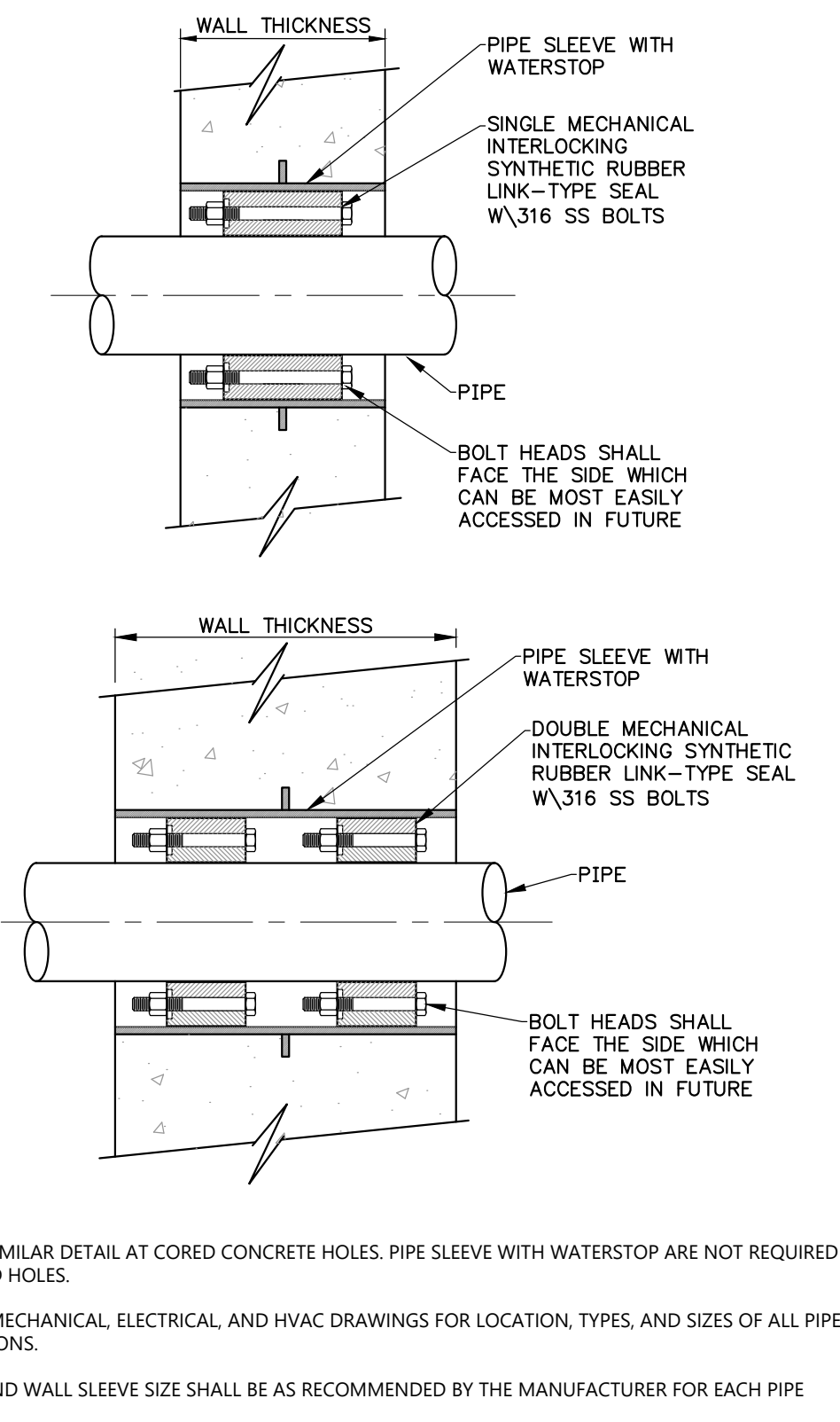
SHEET 13 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)



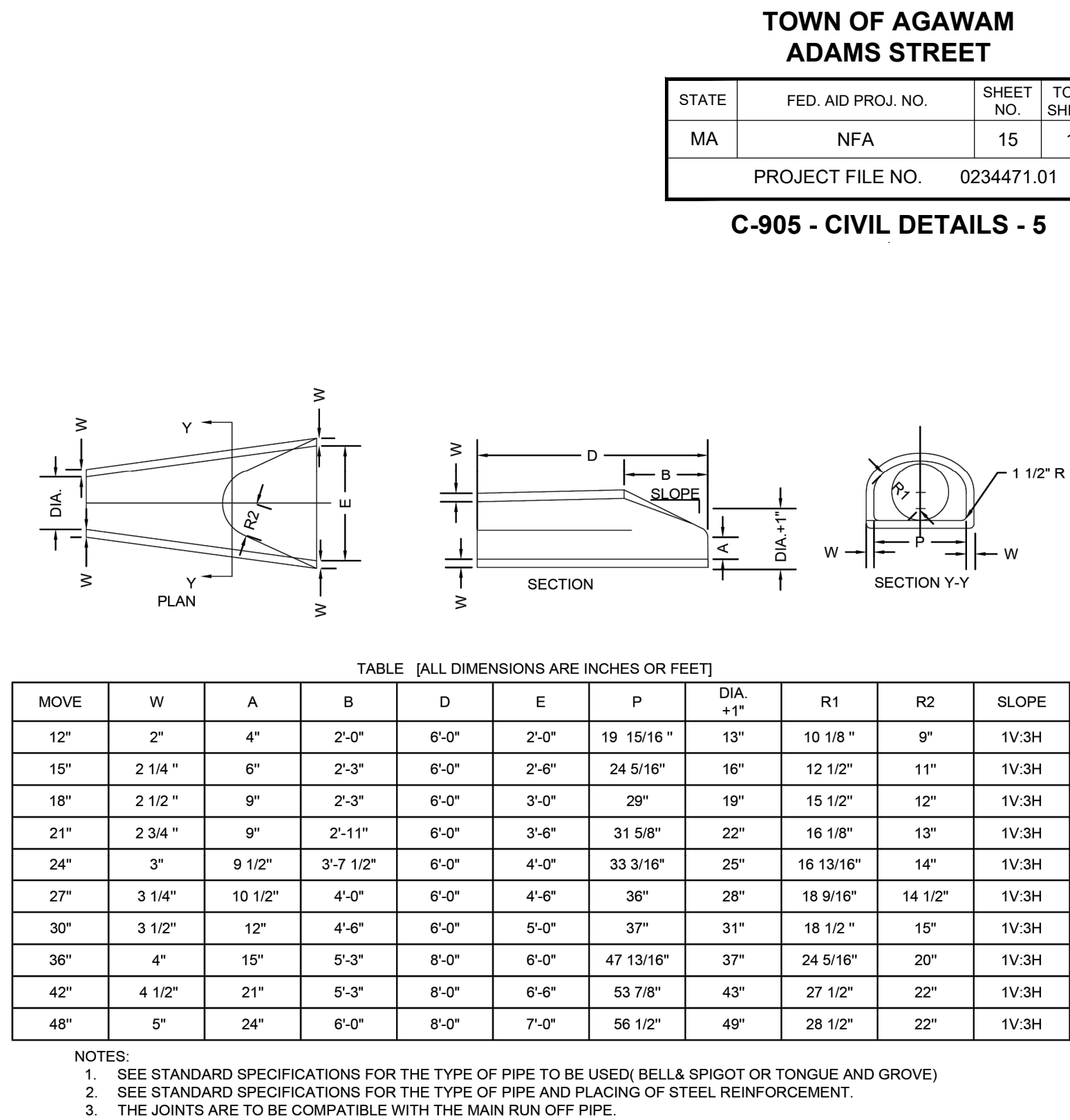
\\woodardclark\run\external\Projects\MA_Agawam\023447101_Agawam\023447101_C-99-901-902 - 905-907.dwg, Jul 30, 2026 - 7:45am, ICOLONABE



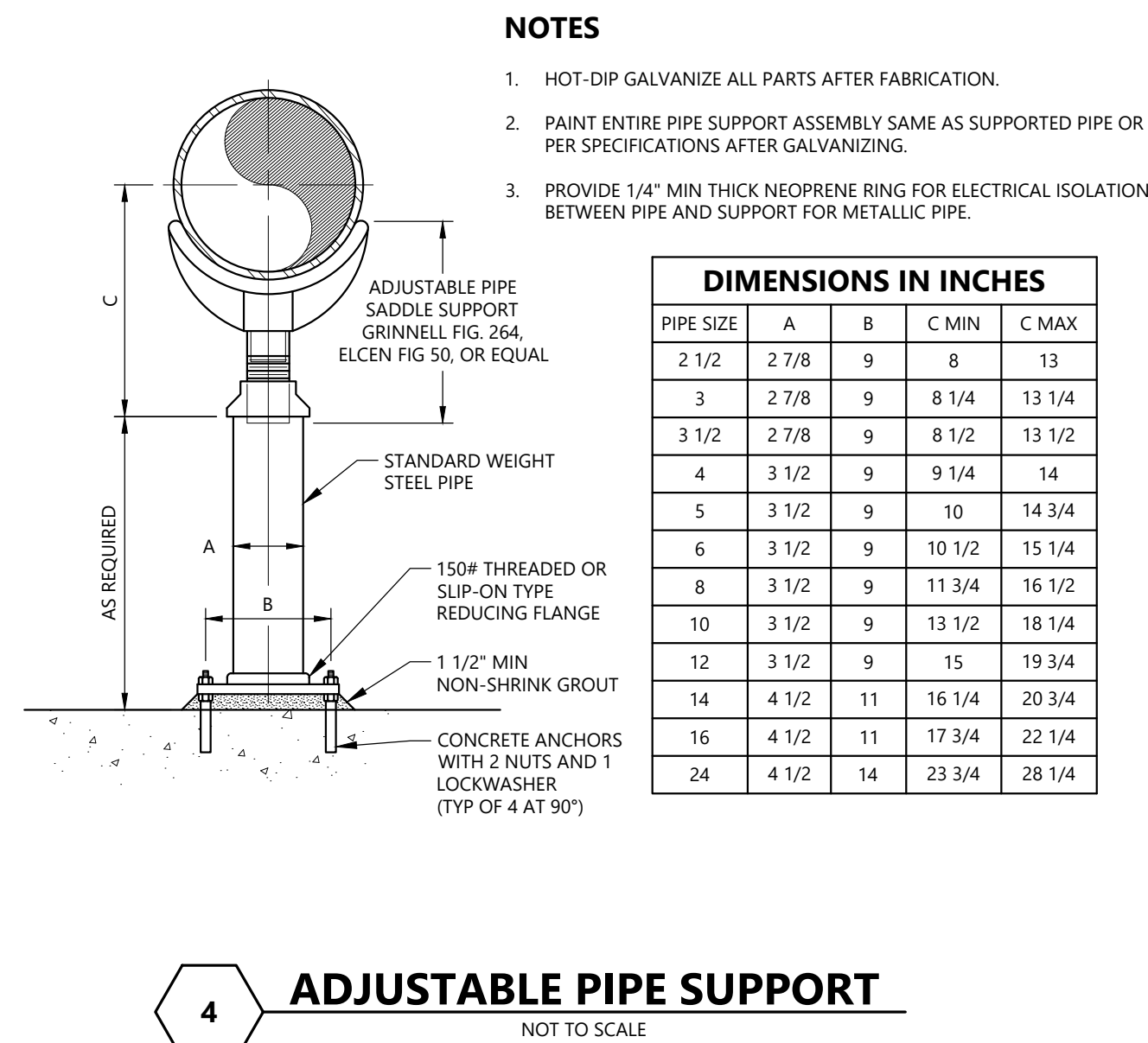
1 **CONCRETE PIER WITH FLAT BAR STRAP (VALVE VAULT)**
NOT TO SCALE



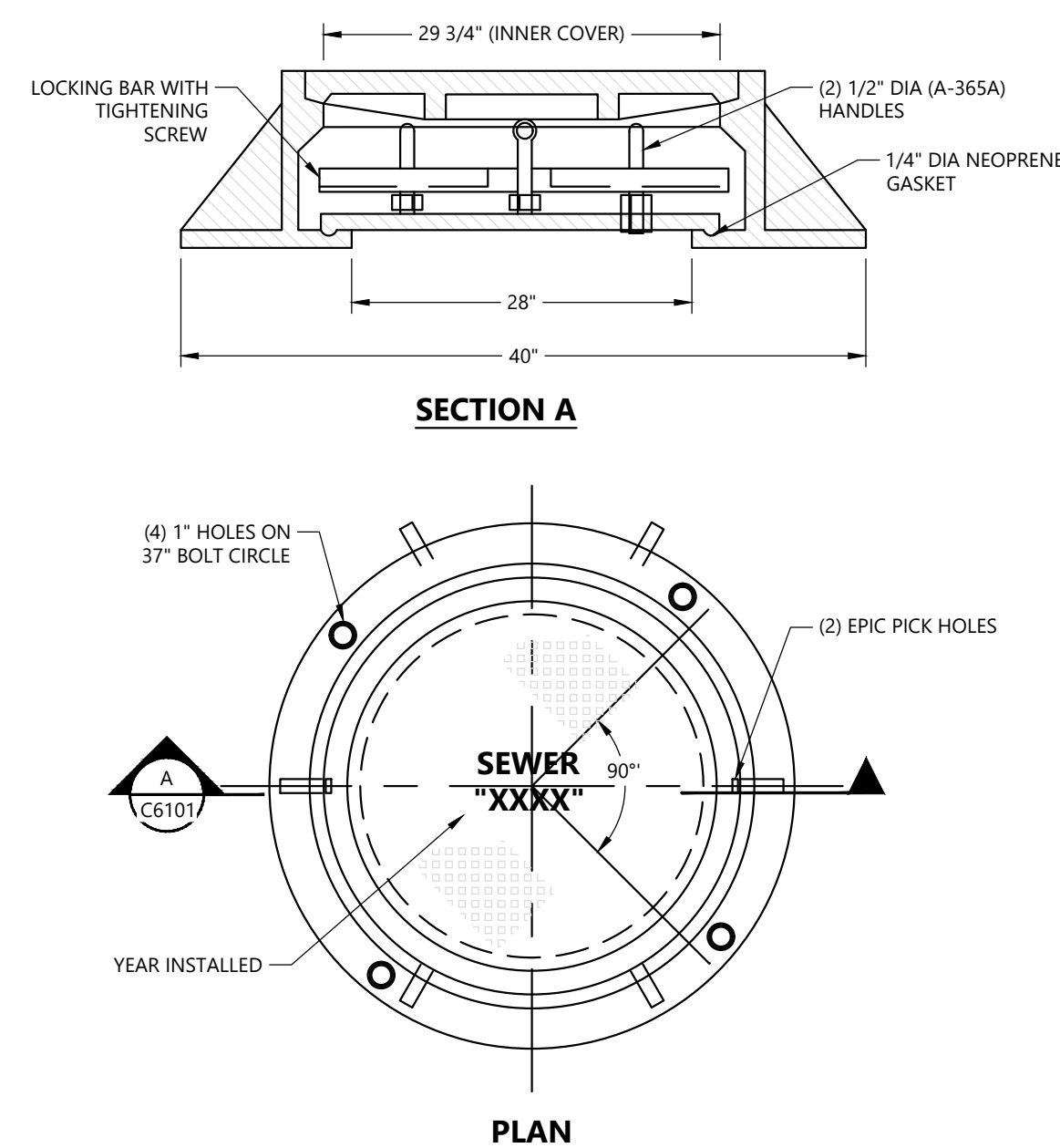
2 **SINGLE-DOUBLE LINK-SEAL WALL SLEEVE**
NOT TO SCALE



3 **REINFORCED CONCRETE PIPE FLARED ENDS**
NOT TO SCALE



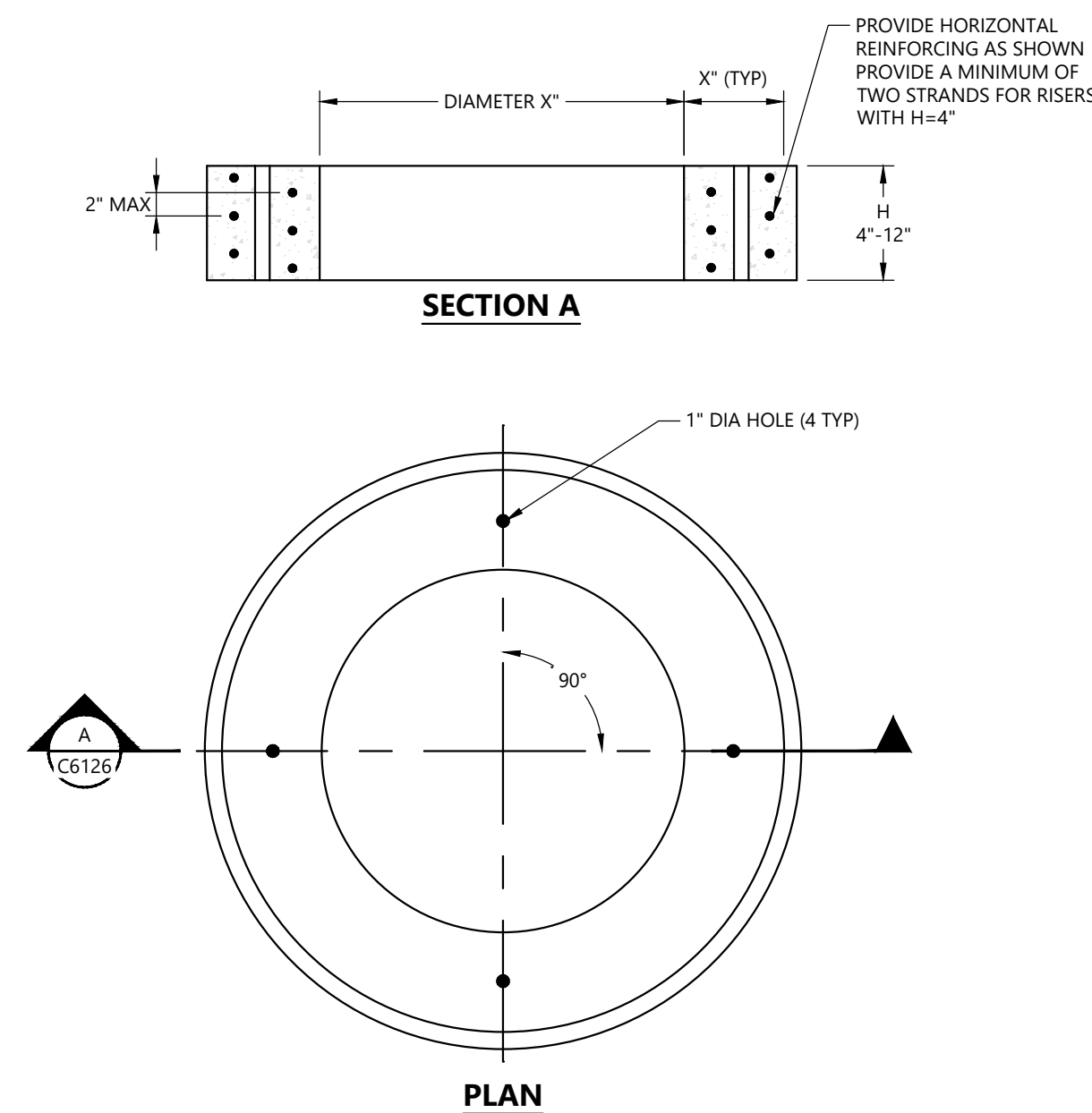
4 **ADJUSTABLE PIPE SUPPORT**
NOT TO SCALE



5 **BOLT-DOWN FRAME FASTENING**
NOT TO SCALE



6 **WATERTIGHT SEWER MANHOLE FRAME & COVER**
NOT TO SCALE



7 **PRE-CAST CONCRETE GRADE RING**
NOT TO SCALE

PERMIT REVIEW SET - NOT FOR CONSTRUCTION

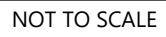
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USE ONLY PRINTS OF LATEST DATE	

SHEET 15 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)

1. THE END OF THE GUARDRAIL SHOWN IN THE PLANS CORRESPONDS WITH THE BEGINNING OF LENGTH OF NEED FOR THE END TREATMENT (SHOWN AT POST 3, BUT MAY VARY BY MANUFACTURER).
2. MAINTAIN 2'-0" (MIN) OFFSET TO FRONT SLOPE BREAK DOWNSTREAM OF MIDSPAN SPlice LOCATION AT ALL TIMES. IF, DOWNSTREAM OF THE SPlice, GRADING CONSTRAINTS INHIBIT THIS MINIMUM OFFSET THEN USE DEEP STEEL POSTS AND TRANSITION TO A SLOPE BREAK CONDITION DESIGN PER THE DETAIL IN 601.0.5 UNTIL THE 2'-0" OFFSET CAN BE MET.



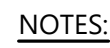
C-906 - CIVIL DETAILS - 6



ASSUMED PARAMETERS:	
LAYING CONDITION	TYPE 5
SOIL DESIGNATION	SILT 1
DEPTH COVER	5 FT
DESIGN PRESSURE	200 PSI
SAFETY FACTOR	1.5

NOTES:

1. RESTRAINED JOINTS SHALL BE MECHANICAL JOINT OR PUSH-ON RESTRAINED JOINT AS SPECIFIED IN SECTION 33 14 11.01.



1. ALL JOINTS FOR HYDRANT INSTALLATION SHALL BE APPROVED RETAINER GLANDS.
2. WHERE POSSIBLE, CONSTRUCT HYDRANT LATERAL WITH ONE CONTINUOUS PIPE LENGTH. WHERE MORE THAN 1 PIPE LENGTH IS REQUIRED, RESTRAIN ALL PIPE JOINTS WITH APPROVED RESTRAINT.
3. CONSTRUCT A HYDRANT DRAINING SUMP TO EITHER SIDE OF THE HYDRANT. THE HYDRANT DRAINING SUMP SHALL BE 4 FEET WIDE BY 3 FEET IN DEEP BY 3 FEET HIGH. THE SUMP SHALL CONSIST OF 3/4-INCH CRUSHED STONE WRAPPED IN NON-WOVEN GEOTEXTILE.

NOT TO SCALE

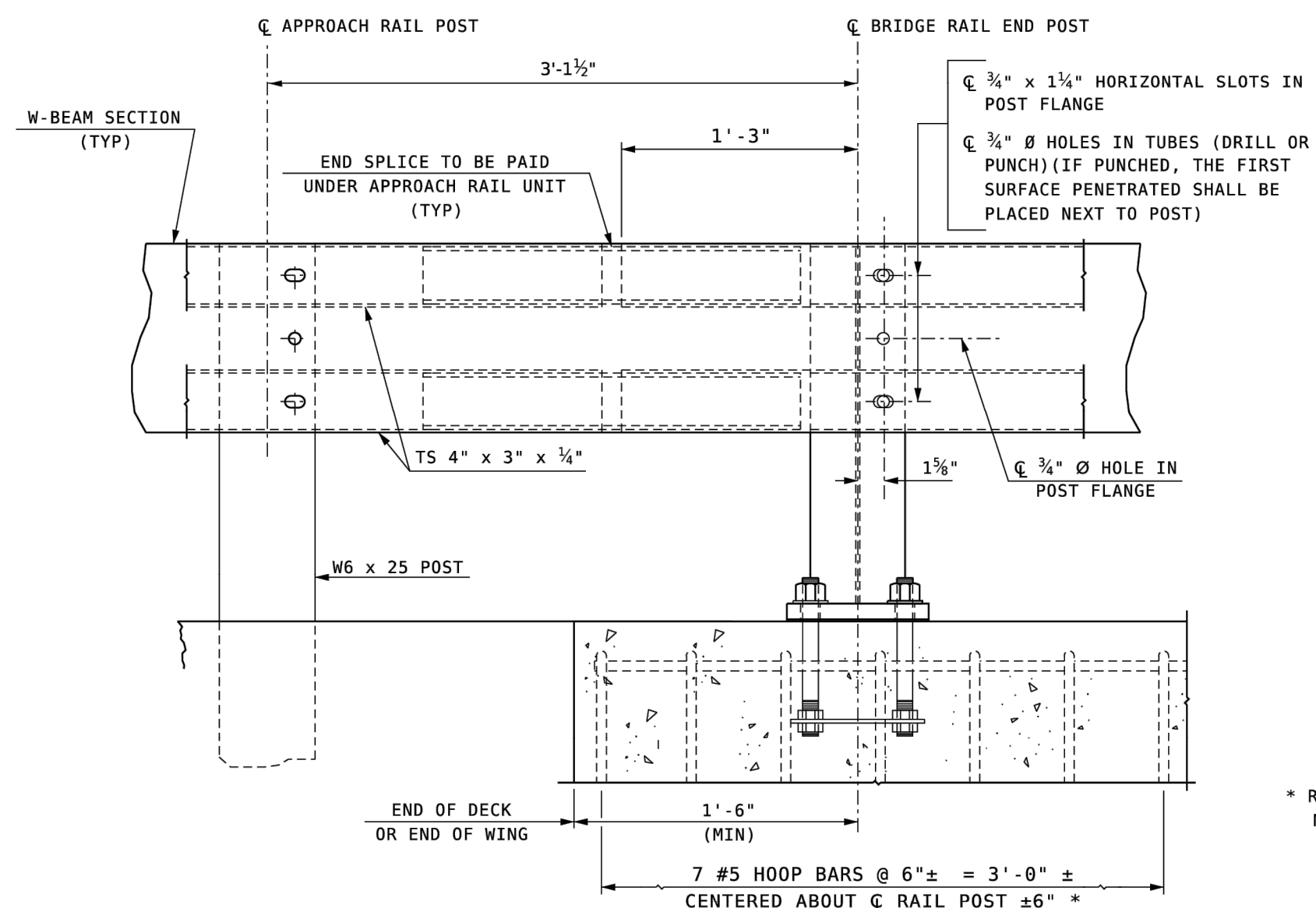
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[illegible]

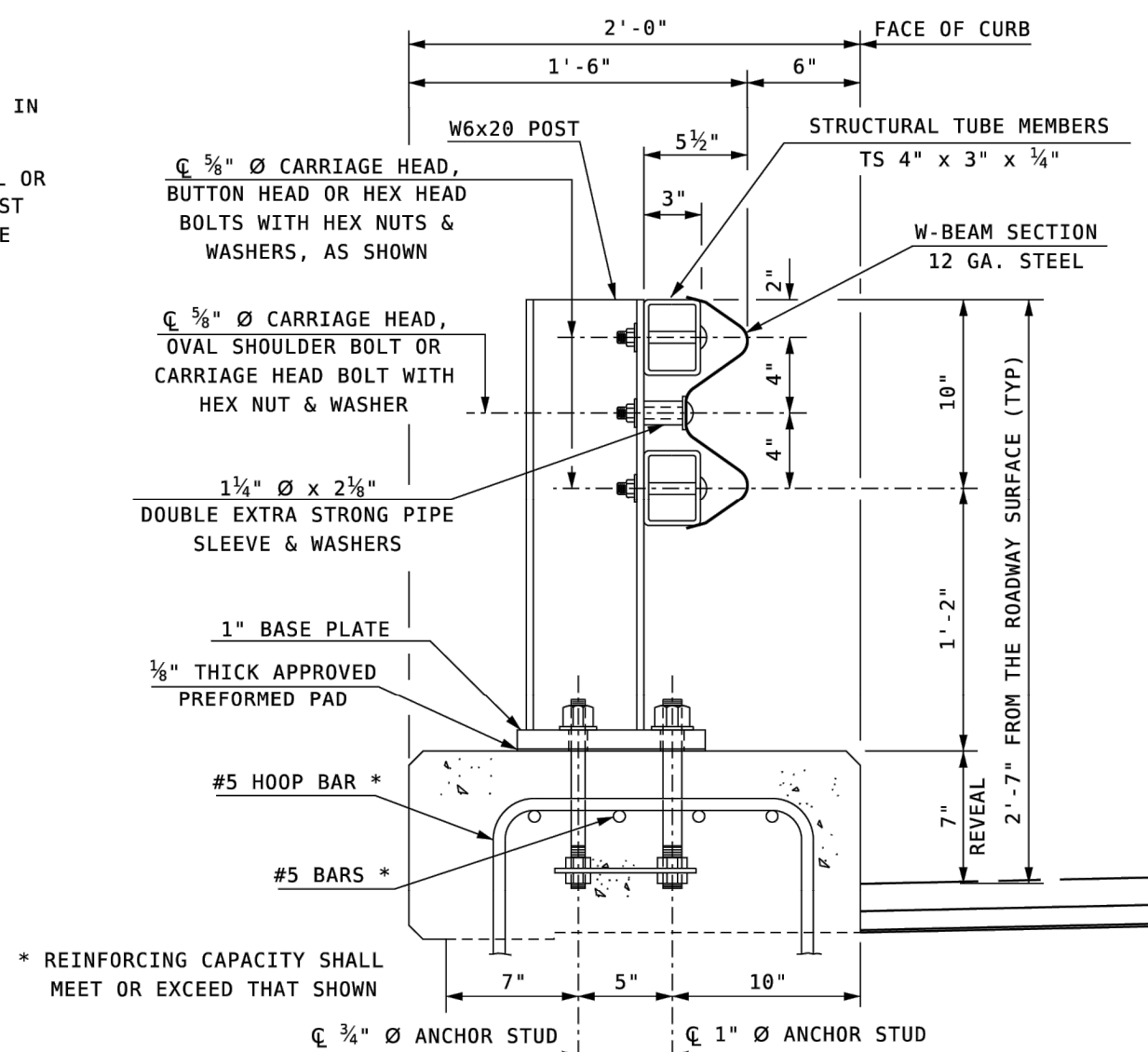
TOWN OF AGAWAM
ADAMS STREET

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NFA	17	17
PROJECT FILE NO.			0234471.01

C-907 - CIVIL DETAILS - 7

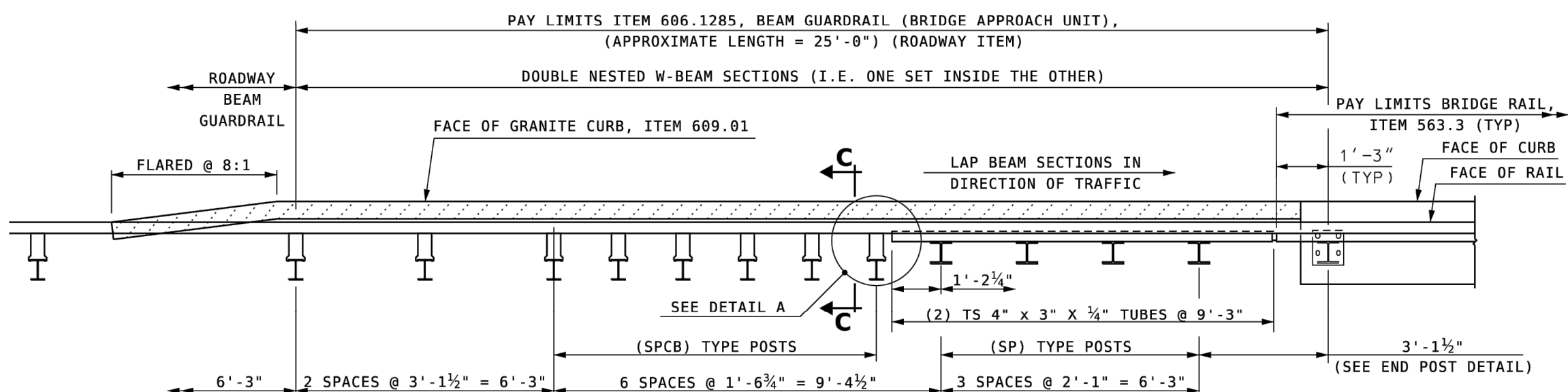


END POST DETAIL



BRIDGE RAIL DETAIL

SCALE: 1 1/2" = 1'-0"

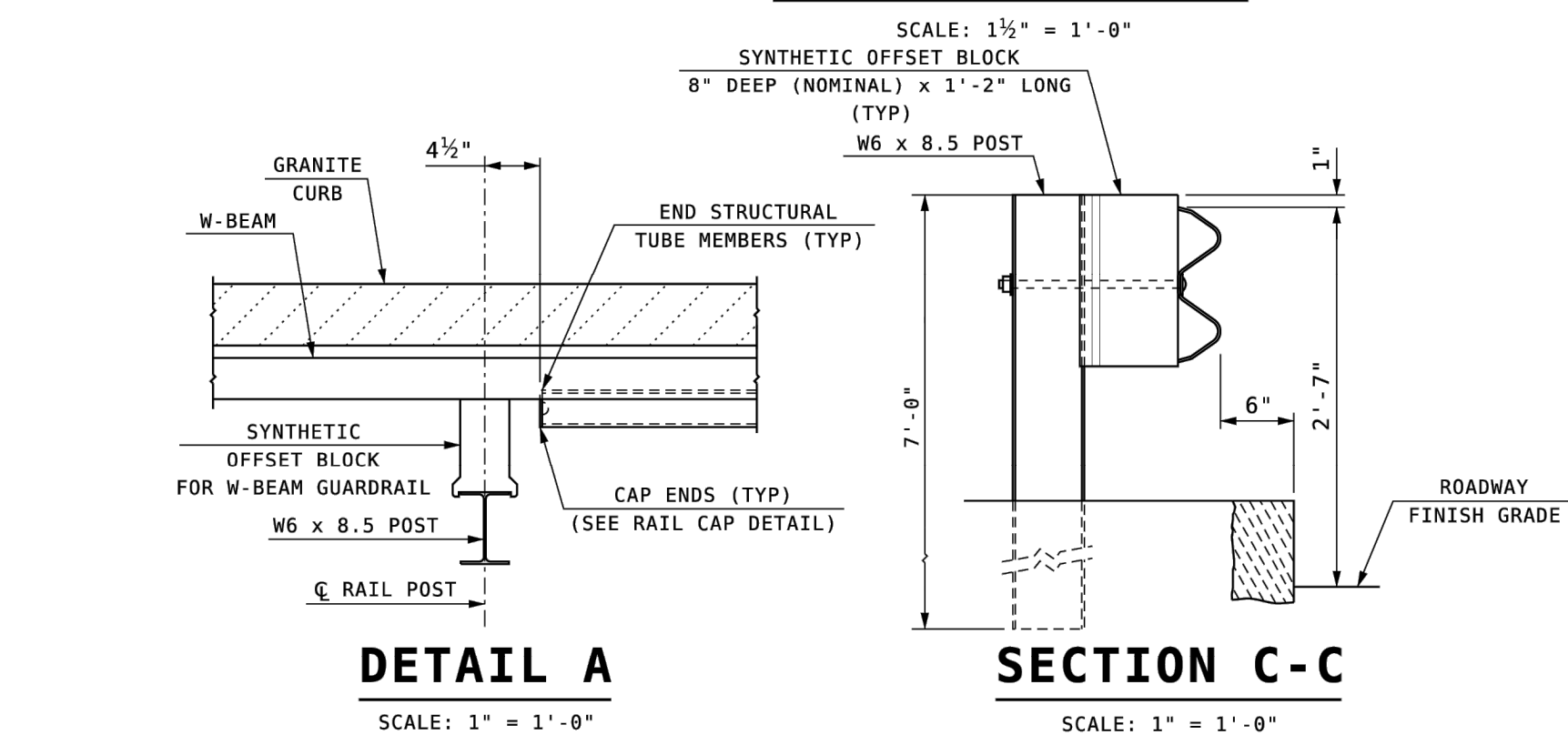


APPROACH RAIL LAYOUT

SCALE: 3/8" = 1'-0"

GENERAL NOTES

- (1) ONLY FOR USE ON LOCAL CONNECTORS AND LOCAL ROADS WITH POSTED SPEEDS < 45 MPH. DO NOT USE ON NATIONAL HIGHWAY SYSTEM (NHS).
- (2) T101 BRIDGE RAIL DID NOT PASS MASH 3-11 TESTING BUT PREVIOUSLY MET A 1984 CRASH TEST AND WAS ACCEPTED BY FHWA UNDER NCHRP 350 (TL-3). THIS SHEET CONTAINS DETAILS FROM PREVIOUS TESTING/ACCEPTANCE AND ITS SUITABILITY FOR USE IS AT THE DISCRETION OF THE ENGINEER OF RECORD.
- (3) ITEM 563.3, BRIDGE RAIL T101, SHALL INCLUDE POSTS, BASE PLATES, ANCHOR PLATES, ANCHOR STUDS, PREFORMED PADS, RAIL ASSEMBLY BOLTS, NUTS, WASHERS, STRUCTURAL TUBING, SPLICE BARS, PIPE SLEEVES AND W-BEAM SECTIONS.
(GALVANIZED)
 - ASTM A572 GRADE 50 : POSTS AND BASE PLATES
 - ASTM A500 GRADE B : STRUCTURAL TUBING
 - ASTM A36 : PIPE SLEEVES, RAIL SPLICE BARS AND ANCHOR PLATES
 - ASTM A449 : ANCHOR STUDS WITH STANDARD NUTS AND HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS
 - A307 : RAIL BOLTS, NUTS, AND WASHERS
 - AASHTO M180 TYPE II : W-BEAM SECTIONS
(BROWN)
 - ASTM A588 : POSTS AND BASE PLATES
 - ASTM A588 GRADE B (PAINTED) OR ASTM A588 (UNPAINTED) OR ASTM A847 (UNPAINTED) : STRUCTURAL TUBING
 - ASTM A36 : PIPE SLEEVES AND RAIL SPLICE BARS (PAINTED) AND ANCHOR PLATES (GALVANIZED)
 - ASTM A449 (GALV) : ANCHOR STUDS WITH STANDARD NUTS AND HARDENED STEEL COMMERCIAL TYPE A PLAIN WIDE WASHERS
 - A325 TYPE 3 : RAIL BOLTS, NUTS AND WASHERS
 - AASHTO M180 TYPE IV : W-BEAM SECTIONS
- (4) ALL STEEL COMPONENTS SHALL BE GALVANIZED AFTER FABRICATION IN CONFORMANCE WITH AASHTO M232 (ASTM A153) AND AASHTO M111 (ASTM A123). GALVANIZED SURFACES SHALL HAVE A UNIFORM APPEARANCE AND GALVANIZED MATERIAL SHALL BE PROPERLY STORED.
- (5) STRUCTURAL TUBING SHALL BE SUPPLIED AS ONE PIECE FOR BRIDGE RAIL 40 FEET OR LESS IN LENGTH. IN OTHER CASES, TUBING SHALL BE SPLICED WITH A SPLICE BAR (SEE SPLICE BAR DETAILS). NO TRANSVERSE BUTT WELDS ARE PERMITTED ON RAIL TUBING WITHIN A CONTINUOUS LENGTH.
- (6) EACH PIECE OF RAIL TUBING SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.
- (7) FOR BRIDGE RAIL POST SPACING, SEE BRIDGE RAIL LAYOUT. THE MAXIMUM BRIDGE RAIL POST SPACING SHALL BE 8'-4". POST SPACING OF 8'-4" OR 6'-3" IS RECOMMENDED WHENEVER POSSIBLE FOR USE WITH 25' SECTIONS OF STANDARD W-BEAM RAIL.
- (8) PREFORMED BEARING PADS SHALL CONFORM TO AASHTO M251.
- (9) NUTS FOR THREADED ANCHOR STUDS CONNECTING THE BASE PLATE TO THE CONCRETE SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL 1/8 TURN.
- (10) OTHER TYPES OF OFFSET BLOCKS MAY BE SUBSTITUTED FOR THOSE SHOWN. SEE NOTES IN STANDARD PLAN GR-2 (BEAM GUARDRAIL STANDARD SECTION - STEEL POSTS & HARDWARE DETAILS) OF THE HIGHWAY DESIGN STANDARD PLANS FOR ROAD CONSTRUCTION.
- (11) MEMBERS TO BE PAINTED SHALL FIRST BE GALVANIZED AFTER FABRICATION IN CONFORMANCE WITH AASHTO M111 (ASTM A123) AND THEN OUTSIDE SURFACES SHALL BE SHOP PAINTED WITH ONE COAT OF 708 NH 3.81, ALIPHATIC POLYURETHANE (1.5 TO 2.5 MILS DFT, DARK BROWN (REFER TO SPECIAL PROVISIONS FOR SECTION 550 FOR PAINT SPECIFICATIONS). EXPOSED ANCHOR BOLTS, NUTS, WASHERS & RAIL BOLTS SHALL BE PAINTED DARK BROWN IN THE FIELD WITH NH 3.81.

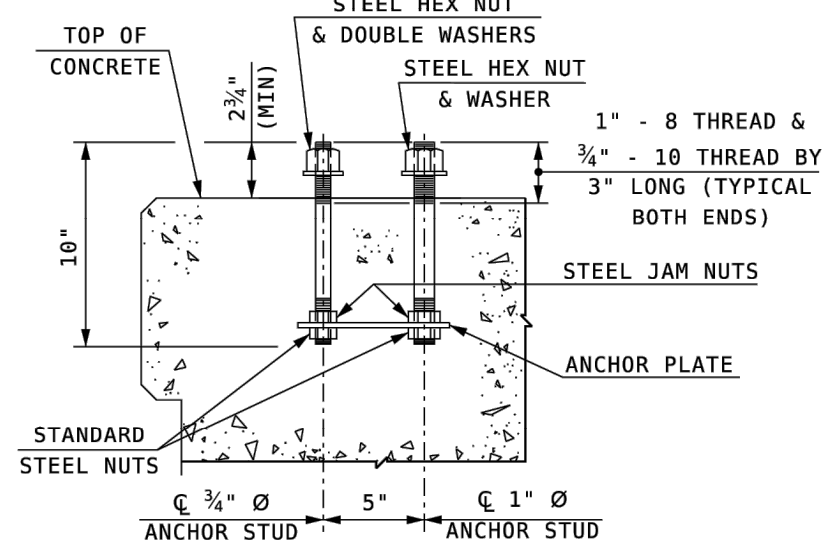


DETAIL A

SCALE: 1" = 1'-0"

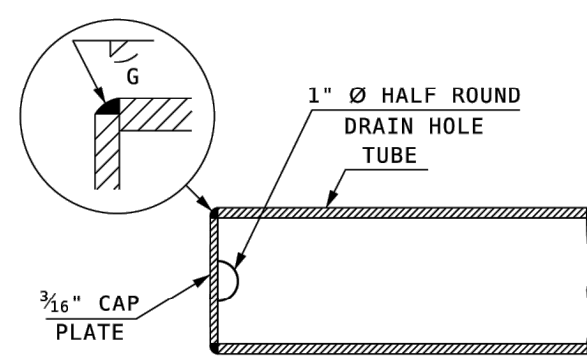
SECTION C-C

SCALE: 1" = 1'-0"



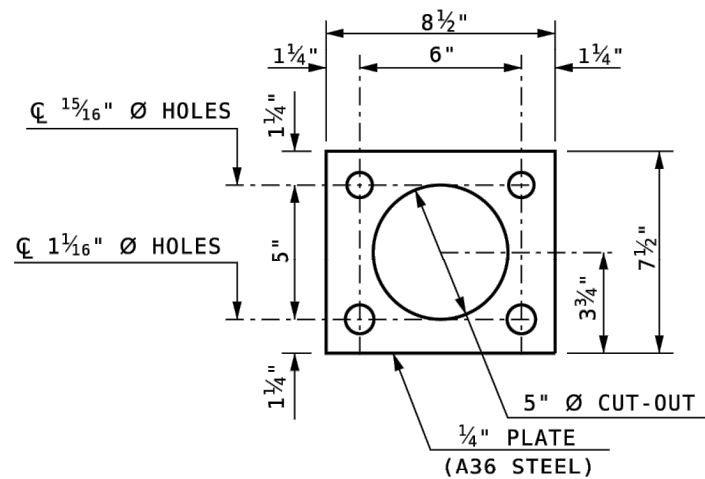
POST ANCHOR ASSEMBLY

SCALE: 1 1/2" = 1'-0"



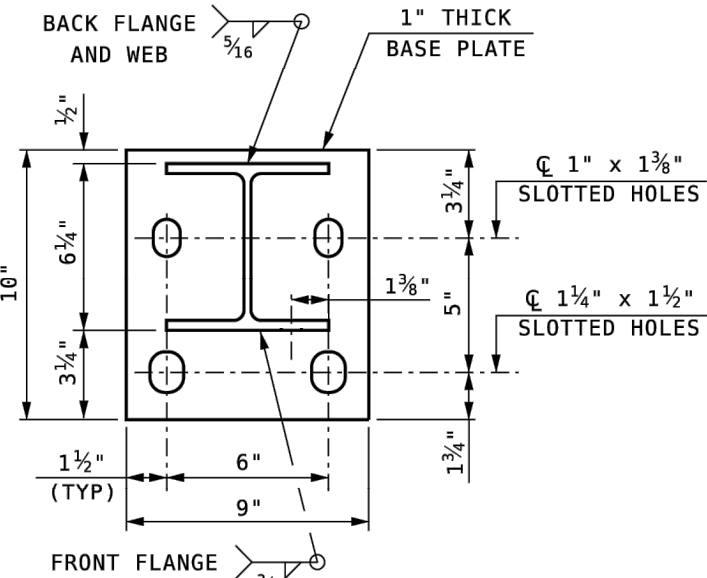
RAIL CAP DETAIL
(BOTTOM VIEW)

SCALE: 3" = 1'-0"



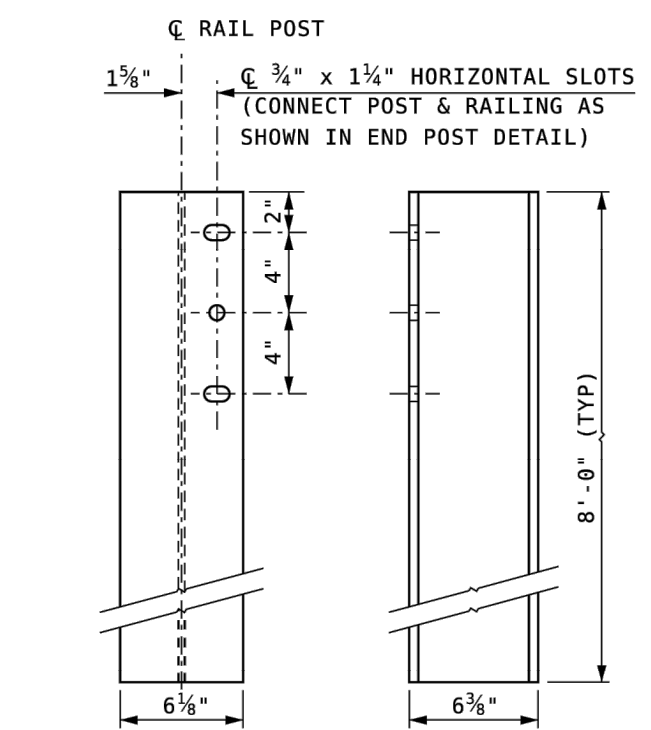
ANCHOR PLATE DETAIL

SCALE: 2" = 1'-0"



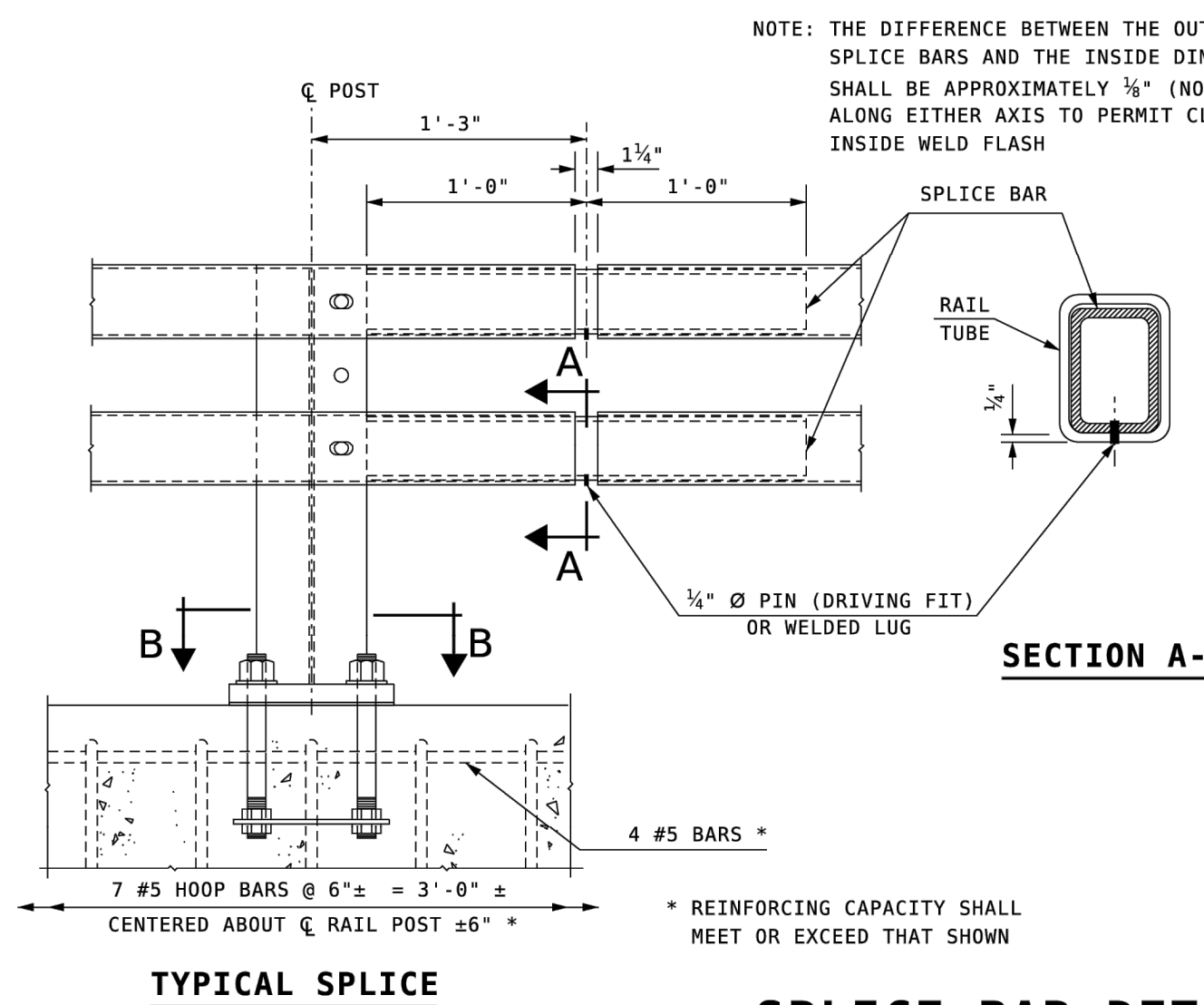
BASE PLATE DETAIL
(SECTION B-B)

SCALE: 2" = 1'-0"



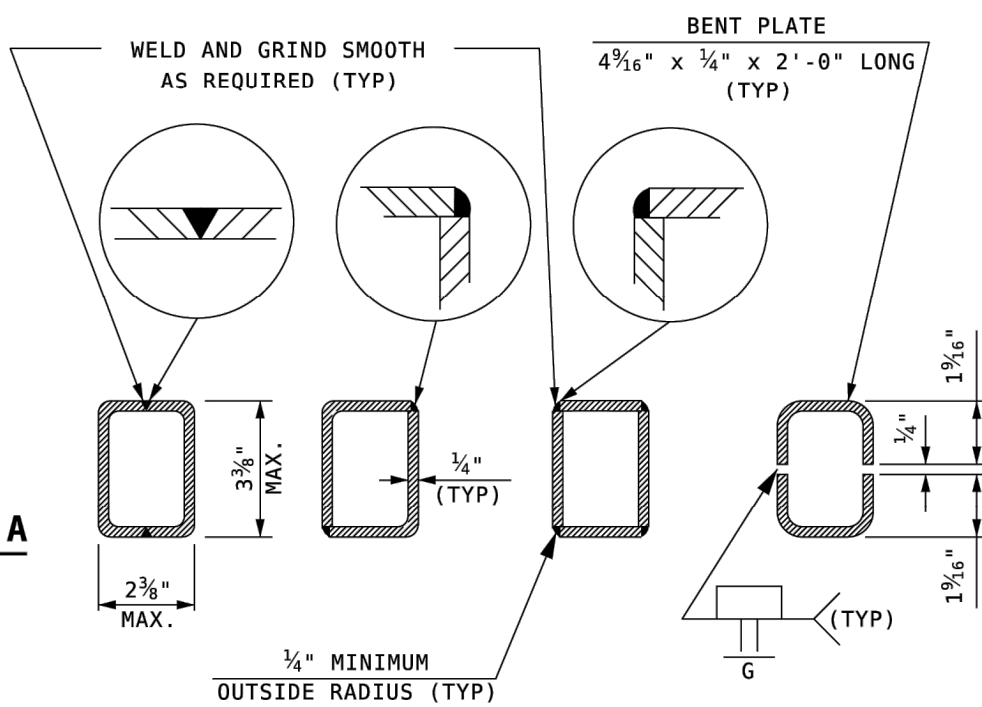
FRONT VIEW SIDE VIEW
W6 x 25 STEEL POST

(BRIDGE APPROACH RAIL)
SCALE: 1 1/2" = 1'-0"



TYPICAL SPLICE

* REINFORCING CAPACITY SHALL MEET OR EXCEED THAT SHOWN



SPLICE BAR FABRICATION OPTIONS

NOTE: OTHER SECTIONS OF EQUAL OR GREATER STRENGTH ARE ACCEPTABLE FOR SPLICE BARS

SPLICE BAR DETAILS

NOT TO SCALE

PERMIT REVIEW SET - NOT FOR CONSTRUCTION

JULY 30, 2026	ISSUED FOR PERMITTING
DATE	DESCRIPTION
THIS SHEET IS APPROVED FOR CONSTRUCTION BY MASSDOT	
AUTHORIZED SIGNATORY: STATE BRIDGE ENGINEER	
USE ONLY PRINTS OF LATEST DATE	

SHEET 17 OF 17 SHEETS BRIDGE NO. X-XX-XXX (BIN1)



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 8²
- 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.



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.

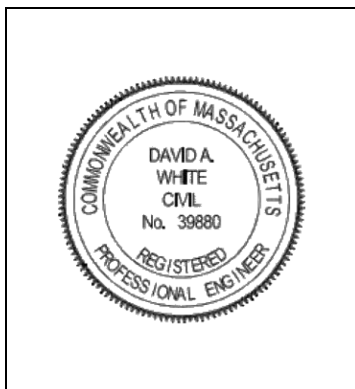
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the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



David White

Digitally signed by David White
DN: CN=David White, OU=WCTestUsers,
OU=WCUsers, DC=woodardcurran, DC=net
Reason: I agree to the terms defined by the
placement of my signature on this document
Date: 2026.07.30 10:11:45-04'00'

Signature and Date

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 **Not Applicable - no increase in impervious area proposed.**

- ☐ 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 **Not Applicable - no increase in impervious area proposed.**

- ☐ 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 Field¹
- ☐ 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 **Not Applicable - no increase in impervious area proposed.**

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) **Not Applicable - project not located within a LUHPPL.**

- ☐ 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 **Not Applicable - project not located within a critical area.**

- ☐ 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.~~ **Site Plans.**



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.

Notice of Intent Application

Adams Street over Three Mile Brook Culvert Replacement



July 30, 2026

Subject Property

Adams Street over Three Mile Brook Culvert Replacement
Agawam, Massachusetts

Applicant & Property Owner

Town of Agawam
Town Hall
36 Main Street
Agawam, MA 01001

Prepared by

LEC Environmental Consultants, Inc.

100 Grove Street, Suite 310
Worcester, MA 01605
508-753-3077

www.lecenvironmental.com

July 30, 2026

Federal Express and Email (tegerton@agawam.ma.us)

Agawam Conservation Commission
Public Works Municipal Annex
1000 Suffield Street
Agawam, MA 01001

Re: Notice of Intent Application
Adams Street Over Three Mile Brook Culvert Replacement
Agawam, Massachusetts

[LEC File #: W&C\22-400.04]

Dear Members of the Commission:

On behalf of the Applicant, the Town of Agawam (c/o Mario Mazza, Superintendent, Department of Public Works), LEC Environmental Consultants, Inc., (LEC) is submitting this Notice of Intent (NOI) Application for the proposed *Three Mile Brook Culvert Replacement* on Adams Street in Agawam, Massachusetts. The proposed public benefit and ecological restoration project involves replacement of an undersized culvert with an embedded concrete box culvert in order to restore stream continuity and improve stream habitat and storm resiliency. Utility upgrades are also proposed.

The project involves temporary and/or permanent impacts to Bordering Vegetated Wetlands, Bank, Land Under Waterbodies and Waterways, Bordering Land Subject to Flooding, 200-foot Riverfront Area associated with Three Mile Brook, and the 100-foot Buffer Zone; Wetland Resource Areas and/or jurisdictional areas protected under the *Massachusetts Wetlands Protection Act* (the *Act*, M.G.L., c. 131, s. 40) and its implementing *Regulations* (the *Act Regulations*, 310 CMR 10.00).

The proposed work activities and jurisdictional Wetland Resource Areas are depicted on the Plans, entitled *Three Mile Brook Culvert Replacement*, prepared by Woodard & Curran, dated July 29, 2026 (attached). Additionally, the *Stormwater Checklist* documenting the project's compliance with the Massachusetts Stormwater Management Standards, and the *Resource Area Impacts Figure*, all prepared by Woodard & Curran, dated July 30, 2026, and June 25, 2026, respectively, are included with this application (attached).

Since the Town of Agawam is the Applicant, under the *Act* at 310 CMR 10.03(7)(f), no filing fee is assessed for this project. It is our understanding that the Conservation Commission will post a legal advertisement of the NOI Application and required Public Hearing in the *Agawam Advertiser* for the Conservation Commission's August 13, 2026 meeting.

LEC Environmental Consultants, Inc.

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1 Richmond Square
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401.685.3109

PLYMOUTH, MA

WAKEFIELD, MA

WORCESTER, MA

RINDGE, NH

PROVIDENCE, RI



Thank you for your consideration of this NOI Application. We look forward to meeting with the Commission at the August 13, 2026 Public Hearing. Should you have any questions, please do not hesitate to contact me in our Worcester office at 508-753-3077 or at akendall@lecenvironmental.com.

Sincerely,

LEC Environmental Consultants, Inc.

A handwritten signature in black ink, reading 'Andrea Kendall', is positioned below the company name.

Andrea Kendall, PWS

Senior Environmental Scientist

cc: Mario Mazza, Superintendent, Department of Public Works, Town of Agawam
RJ Dowling, Woodard & Curran

Notice of Intent Application

- i. WPA Form 3 – Notice of Intent
- ii. WPA Appendix B – Wetland Fee Transmittal Form
- iv. Affidavit of Service
- v. Abutter Letter
- vi. Notice to Abutters
- vii. Lists of Abutters

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Appendix B

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MassDEP Western Region-Bureau of Water Resources-Wetlands Program

Minimum Information and Documentation for Dewatering Plans

Attachments

Stormwater Checklist, Plans, and Resource Area Impact Figure

Stormwater Checklist, prepared by Woodard & Curran, dated July 30, 2026

Three Mile Brook Replacement, prepared by Woodard & Curran, dated July 29, 2026

Resource Area Impact Figure, prepared by Woodard & Curran, dated June 25, 2026



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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):

Adams Street (over Three Mile River)

a. Street Address

Agawam

b. City/Town

01001

c. Zip Code

Latitude and Longitude:

42.058828

d. Latitude

-72.618454

e. Longitude

Right-of-Way; K7-1-11; K7-1-9; K7-3-10; K7-3-17

f. Assessors Map/Plat Number

g. Parcel /Lot Number

2. Applicant:

Mario

a. First Name

Mazza

b. Last Name

Town of Agawam, Department of Public Works

c. Organization

100 Suffield Street

d. Street Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

413-821-0600

h. Phone Number

N/A

i. Fax Number

mmazza@agawam.ma.us

j. Email Address

3. Property owner (required if different from applicant):

☒ Check if more than one owner

Refer to Attached List of Property Owners

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):

Andrea

a. First Name

Kendall

b. Last Name

LEC Environmental Consultants, Inc.

c. Company

100 Grove Street, Suite 310

d. Street Address

Worcester

e. City/Town

MA

f. State

01605

g. Zip Code

508-753-3077

h. Phone Number

i. Fax Number

akendall@lecenvironmental.com

j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

N/A Fee Exempt

a. Total Fee Paid

N/A Fee Exempt

b. State Fee Paid

N/A Fee Exempt

c. City/Town Fee Paid



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A. General Information (continued)

6. General Project Description:

The project includes a culvert replacement on Adams Street over Three Mile Brook in Agawam. The proposed public benefit project and ecological restoration project involves replacement of an undersized and deteriorating culver within an embedded concrete box culvert in order to restore stream continuity, improve stream habitat, and improve Agawam's preparedness for large storm events.

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)

310 CMR 10.53(3)(i) and 310 CMR 10.53(8)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(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:

Hampden

a. County

b. Certificate # (if registered land)

See attached list of property owners

c. Book

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- ☐ 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.
- ☒ 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.



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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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. ☒ Bank	175 (62 P; 113 T) 1. linear feet	175 2. linear feet
b. ☒ Bordering Vegetated Wetland	81 (T) 1. square feet	81 (restored in kind) 2. square feet
c. ☒ Land Under Waterbodies and Waterways	1,064 (108 P; 966 T) 1. square feet 68 3. cubic yards dredged	1,430 2. square feet

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
d. ☒ Bordering Land Subject to Flooding	11,598 1. square feet 0 3. cubic feet of flood storage lost	11,598 2. square feet 0 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	Three Mile 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:

6,336
square feet

4. Proposed alteration of the Riverfront Area:

6,336 (1,160 P; 5,176 T)	6,336(1,160 P;5,176 T)	0
a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.

5. Has an alternatives analysis been done and is it attached to this NOI?

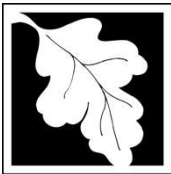
☒ Yes ☐ No

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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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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
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
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
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

0

1

a. number of new stream crossings

b. number of replacement stream crossings



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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 1, 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/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:

North Shore - Plymouth to New Hampshire border:

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

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.

Three Mile Brook Culvert Replacement

a. Plan Title

Woodard & Curran

David White, P.E.

b. Prepared By

c. Signed and Stamped by

July 29, 2025

20

d. Final Revision Date

e. Scale

Checklist for Stormwater Report, Woodard & Curran, July 30, 2026

Resource Area Impact Figure, Woodard & Currant, June 25, 2026

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:

N/A Fee Exempt

2. Municipal Check Number

3. Check date

N/A Fee Exempt

4. State Check Number

5. Check date

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.

1. Signature of Applicant Mario Mazza, Town of Agawam, Department of Public Works

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative Andrea Kendall, LEC Environmental Consultants, Inc.

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.



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

July 22, 2026

Subject: Notice of Intent Filing and Right of Entry Request – Adams Street Culvert Replacement Project

Dear Joshua Fraser,

The Town of Agawam Department of Public Works is planning to replace the existing culvert that conveys Three Mile Brook beneath Adams Street near your property at #27 Adams Street.

The existing culvert is old and undersized. The proposed replacement will increase hydraulic capacity and improve drainage during significant storm events, helping to protect the roadway and the environment.

As part of the permitting process, the Town has filed a Notice of Intent (NOI) with the Agawam Conservation Commission under the Massachusetts Wetlands Protection Act. The Conservation Commission is anticipated to review the project at a public hearing on Thursday August 13, 2026.

To facilitate construction of the project, the Town is requesting access to their existing permanent easement on a small portion of your property. Enclosed is a Right of Entry Agreement that would allow the Town's contractor to enter the corner of your property as necessary to complete the work safely and efficiently.

Please review the enclosed documents and sign the Right of Entry Agreement and return a copy to MChase@agawam.ma.us or MMazza@agawam.ma.us or deliver a copy to:

Town of Agawam Department of Public Works
1000 Suffield Street
Agawam, MA 01001
ATTN: Michelle Chase

If you have any questions regarding the project, the NOI filing, or the enclosed agreement, please contact Michelle Chase at MChase@agawam.ma.us (413-821-0625) or Mario Mazza at MMazza@agawam.ma.us (413-821-0623).

Thank you for your consideration and cooperation.
Sincerely,

Town of Agawam Department of Public Works
Engineering Division
Attachments:

1. Right of Entry Agreement
2. Adams Street Culvert Replacement Project Plan



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

Project: Adams Street Culvert Replacement
Address: #27 Adams Street
Owner: Joshua Fraser

RIGHT OF ENTRY AGREEMENT

Permission is hereby given to the Town of Agawam and its duly authorized agents to enter upon my property located at #27 Adams Street in connection with the construction of a culvert as shown on plans prepared by Woodard and Curran entitled: "Adams Street Culvert Replacement" and on file with the Agawam Engineering Department. The proposed work on my property is outlined below:

1. The Town and its contractors may temporarily enter the property for construction activities associated with the Adams Street Culvert Replacement Project as shown on the attached plan.
2. Any portions of the lawn disturbed during construction shall be loamed and seeded to the reasonable satisfaction of the owner upon completion of construction. Areas subject to the jurisdiction of the Conservation Commission shall be restored in accordance with the Notice of Intent.
3. The construction of the culvert shall not materially interfere with existing drainage patterns with respect to the owner's property.
4. The Owner shall have reasonable vehicular access to the property at all times during construction.
5. If the mailbox or any utilities servicing the Owner's property are damaged or need to be relocated to accommodate the project, the Town will repair, replace, and relocate to the Owner's reasonable satisfaction.

By signing below, I acknowledge receipt of the Notice of Intent (NOI) notification regarding the Adams Street Culvert Replacement Project and grant the Town of Agawam permission to enter my property as described in this Right of Entry Agreement.

Signature of Owner: _____

Date: _____



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

July 22, 2026

Subject: Notice of Intent Filing and Right of Entry Request – Adams Street Culvert Replacement Project

Dear Aleksandr Skovorodin,

The Town of Agawam Department of Public Works is planning to replace the existing culvert that conveys Three Mile Brook beneath Adams Street near your property at #36 Adams Street.

The existing culvert is old and undersized. The proposed replacement will increase hydraulic capacity and improve drainage during significant storm events, helping to protect the roadway and the environment.

As part of the permitting process, the Town has filed a Notice of Intent (NOI) with the Agawam Conservation Commission under the Massachusetts Wetlands Protection Act. The Conservation Commission is anticipated to review the project at a public hearing on Thursday August 13, 2026.

To facilitate construction of the project, the Town is requesting temporary access to a small portion of your property. Enclosed is a Right of Entry Agreement that would allow the Town's contractor to enter the corner of your property as necessary to complete the work safely and efficiently.

Please review the enclosed documents and sign the Right of Entry Agreement and return a copy to MChase@agawam.ma.us or MMazza@agawam.ma.us or deliver a copy to:

Town of Agawam Department of Public Works
1000 Suffield Street
Agawam, MA 01001
ATTN: Michelle Chase

If you have any questions regarding the project, the NOI filing, or the enclosed agreement, please contact Michelle Chase at MChase@agawam.ma.us (413-821-0625) or Mario Mazza at MMazza@agawam.ma.us (413-821-0623).

Thank you for your consideration and cooperation.
Sincerely,

Town of Agawam Department of Public Works
Engineering Division

Attachments:

1. Right of Entry Agreement
2. Adams Street Culvert Replacement Project Plan



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

Project: Adams Street Culvert Replacement
Address: #36 Adams Street
Owner: Aleksandr Skovorodin

RIGHT OF ENTRY AGREEMENT

Permission is hereby given to the Town of Agawam and its duly authorized agents to enter upon my property located at #36 Adams Street in connection with the construction of a culvert as shown on plans prepared by Woodard and Curran entitled: "Adams Street Culvert Replacement" and on file with the Agawam Engineering Department. The proposed work on my property is outlined below:

1. The Town and its contractors may temporarily enter the property for construction activities associated with the Adams Street Culvert Replacement Project as shown on the attached plan.
2. Any portions of the lawn disturbed during construction shall be loamed and seeded to the reasonable satisfaction of the owner upon completion of construction. Areas subject to the jurisdiction of the Conservation Commission shall be restored in accordance with the Notice of Intent.
3. The construction of the culvert shall not materially interfere with existing drainage patterns with respect to the owner's property.
4. The Owner shall have reasonable vehicular access to the property at all times during construction.
5. If the mailbox or any utilities servicing the Owner's property are damaged or need to be relocated to accommodate the project, the Town will repair, replace, and relocate to the Owner's reasonable satisfaction.

By signing below, I acknowledge receipt of the Notice of Intent (NOI) notification regarding the Adams Street Culvert Replacement Project and grant the Town of Agawam permission to enter my property as described in this Right of Entry Agreement.

Signature of Owner: Alex Sk

Date: 7.24.26



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

July 22, 2026

Subject: Notice of Intent Filing and Right of Entry Request – Adams Street Culvert Replacement Project

Dear Michael Fenton,

The Town of Agawam Department of Public Works is planning to replace the existing culvert that conveys Three Mile Brook beneath Adams Street near your property at #55 Adams Street.

The existing culvert is old and undersized. The proposed replacement will increase hydraulic capacity and improve drainage during significant storm events, helping to protect the roadway and the environment.

As part of the permitting process, the Town has filed a Notice of Intent (NOI) with the Agawam Conservation Commission under the Massachusetts Wetlands Protection Act. The Conservation Commission is anticipated to review the project at a public hearing on Thursday August 13, 2026.

To facilitate construction of the project, the Town is requesting temporary access to a small portion of your property. Enclosed is a Right of Entry Agreement that would allow the Town's contractor to enter the corner of your property as necessary to complete the work safely and efficiently.

Please review the enclosed documents and sign the Right of Entry Agreement and return a copy to MChase@agawam.ma.us or MMazza@agawam.ma.us or deliver a copy to:

Town of Agawam Department of Public Works
1000 Suffield Street
Agawam, MA 01001
ATTN: Michelle Chase

If you have any questions regarding the project, the NOI filing, or the enclosed agreement, please contact Michelle Chase at MChase@agawam.ma.us (413-821-0625) or Mario Mazza at MMazza@agawam.ma.us (413-821-0623).

Thank you for your consideration and cooperation.
Sincerely,

Town of Agawam Department of Public Works
Engineering Division

Attachments:

1. Right of Entry Agreement
2. Adams Street Culvert Replacement Project Plan



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

Project: Adams Street Culvert Replacement
Address: #55 Adams Street
Owner: Michael Fenton

RIGHT OF ENTRY AGREEMENT

Permission is hereby given to the Town of Agawam and its duly authorized agents to enter upon my property located at #55 Adams Street (Parcel K7-3-17) in connection with the construction of a culvert as shown on plans prepared by Woodard and Curran entitled: "Adams Street Culvert Replacement" and on file with the Agawam Engineering Department. The proposed work on my property is outlined below:

1. The Town and its contractors may temporarily enter the property for construction activities associated with the Adams Street Culvert Replacement Project as shown on the attached plan.
2. Any portions of the lawn disturbed during construction shall be loamed and seeded to the reasonable satisfaction of the owner upon completion of construction. Areas subject to the jurisdiction of the Conservation Commission shall be restored in accordance with the Notice of Intent.
3. The construction of the culvert shall not materially interfere with existing drainage patterns with respect to the owner's property.
4. The Owner shall have reasonable vehicular access to the property at all times during construction.
5. If the mailbox or any utilities servicing the Owner's property are damaged or need to be relocated to accommodate the project, the Town will repair, replace, and relocate to the Owner's reasonable satisfaction.

By signing below, I acknowledge receipt of the Notice of Intent (NOI) notification regarding the Adams Street Culvert Replacement Project and grant the Town of Agawam permission to enter my property as described in this Right of Entry Agreement.

Signature of Owner: Michael Fenton

Date: 8/23/2026



Town of Agawam

Department Of Public Works

DPW
1000 Suffield Street
Agawam, MA 01001
Phone: 413-821-0600
Fax: 413-821-0631

Project: Adams Street Culvert Replacement
Address: #52 Adams Street
Owner: Jamie Campbell

RIGHT OF ENTRY AGREEMENT

Permission is hereby given to the Town of Agawam and its duly authorized agents to enter upon my property located at #52 Adams Street (Parcel K7-1-9) in connection with the construction of a culvert as shown on plans prepared by Woodard and Curran entitled: "Adams Street Culvert Replacement" and on file with the Agawam Engineering Department. The proposed work on my property is outlined below:

1. The Town and its contractors may temporarily enter the property for construction activities associated with the Adams Street Culvert Replacement Project as shown on the attached plan.
2. Any portions of the lawn disturbed during construction shall be loamed and seeded to the reasonable satisfaction of the owner upon completion of construction. Areas subject to the jurisdiction of the Conservation Commission shall be restored in accordance with the Notice of Intent.
3. The construction of the culvert shall not materially interfere with existing drainage patterns with respect to the owner's property.
4. The Owner shall have reasonable vehicular access to the property at all times during construction.
5. If the mailbox or any utilities servicing the Owner's property are damaged or need to be relocated to accommodate the project, the Town will repair, replace, and relocate to the Owner's reasonable satisfaction.

By signing below, I acknowledge receipt of the Notice of Intent (NOI) notification regarding the Adams Street Culvert Replacement Project and grant the Town of Agawam permission to enter my property as described in this Right of Entry Agreement.

Signature of Owner: _____

Date: _____

7/29/26

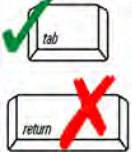
List of Property Owners
Culvert Replacement Project
Adam Street Over Three Mile Brook
Notice of Intent Application

Parcel ID	Property Owner	Street Address	Mailing Address	Registry of Deeds Information	
				County	Book/Page
N/A	Town of Agawam	Adams Street Right-of Way	36 Main Street Agawam, MA 01001-1825	Hampden	N/A
K7-1-11	Aleksandr Skovorodin	36 Adams Street	36 Adams Street Agawam, MA 01001	Hampden	17120/371
K7-1-9	Jamie Campbell	52 Adams Street	52 Adams Street Agawam, MA 01001	Hampden	21697/497
K7-3-10	Joshua Fraser, et al	27 Adams Street	27 Adams Street Agawam, MA 01001	Hampden	25398/498
K7-3-17	Michael J. Fenton	55 Adams Street	55 Adams Street Agawam, MA 01001	Hampden	21057/32



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

Adams Street (over Three Mile Brook)

a. Street Address

N/A Fee Exempt

c. Check number

Agawam

b. City/Town

N/A Fee Exempt

d. Fee amount

2. Applicant Mailing Address:

Mario

a. First Name

Mazza

b. Last Name

Town of Agawam, Department of Public Works

c. Organization

100 Suffield Street

d. Mailing Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

h. Phone Number

i. Fax Number

j. Email Address

3. Property Owner (if different):

See Attached List of Property Owners

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

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.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Cat 2(3) limited project	1.5	\$500.00	\$750.00
Step 5/Total Project Fee:			\$750.00

Step 6/Fee Payments:

Total Project Fee:	\$750.00
	a. Total Fee from Step 5
State share of filing Fee:	N/A Fee Exempt
	b. 1/2 Total Fee less \$12.50
City/Town share of filing Fee:	N/A Fee Exempt
	c. 1/2 Total Fee plus \$12.50

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.)

AFFIDAVIT OF SERVICE

Under the
Massachusetts Wetlands Protection Act (M.G.L. c. 131, s. 40),
its implementing *Regulations* (310 CMR 10.00)

I, Sharon A. Sullivan, on behalf of the Town of Agawam, hereby certify under the pains and penalties of perjury that on July 31, 2026, I gave notification to abutters in compliance with the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, s. 40) and its implementing *Regulations* (310 CMR 10.00) in connection with the following matter:

A Notice of Intent filed under the *Massachusetts Wetlands Protection Act* by LEC Environmental Consultants, Inc., on behalf of the Applicant, the Town of Agawam, with the Town of Agawam Conservation Commission on July 30, 2026 for property located at Adams Street (Assessor's Parcels: K7-1-11; K7-1-11; K7-1-9; K7-3-10; K7-3-17; and Right-of-Way) in Agawam, Massachusetts.

The form of notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

Sharon A. Sullivan

Sharon A. Sullivan
Permitting Technician

7/31/2026
Date

July 31, 2026

CERTIFIED MAIL

«Name»

«Name2»

«Address»

«City», «State» «Zip»

Re: Notice of Intent Application

[LEC File #: W&C\22-400.04]

Adams Street

**Assessor's Parcels: K7-1-11; K7-1-11; K7-1-9; K7-3-10; K7-3-17; and Right-of-Way
Agawam, Massachusetts**

Dear Abutter:

On behalf of the Applicant, the Town of Agawam, LEC Environmental Consultants, Inc., (LEC) has filed a *Notice of Intent (NOI) Application* with the Agawam Conservation Commission for replacement of an undersized culvert with an embedded concrete box culvert in order to restore stream continuity and improve stream habitat and storm resiliency. Utility upgrades are also proposed. The NOI Application is filed in accordance with the provisions of the *Massachusetts Wetlands Protection Act* (M.G.L. c. 131, s. 40) and its implementing *Regulations* (310 CMR 10.00). The project involves temporary and/or permanent impacts to Bordering Vegetated Wetlands, Bank, Land Under Waterbodies and Waterways, Bordering Land Subject to Flooding, 200-foot Riverfront Area associated with Three Mile Brook, and the 100-foot Buffer Zone.

The *NOI Application* and accompanying site plans are available for review by the public by contacting the Agawam Conservation Commission. A Public Hearing will be held on August 13, 2026 at 6:00 p.m. at the Agawam Senior Center, 954 Main Street. Notice of the Public Hearing will be posted at the Agawam Town Hall at least 48 hours in advance. Please check the Town's website and the Board/Committee's page for any updated information on the meeting.

Please do not hesitate to review the materials and/or attend the public hearing should you have questions or concerns about the proposed project.

Sincerely,

LEC Environmental Consultants, Inc.

Andrea Kendall

Senior Environmental Scientist

LEC Environmental Consultants, Inc.

www.lecenvironmental.com

12 Resnik Road
Suite 1
Plymouth, MA 02360
508.746.9491

380 Lowell Street
Suite 101
Wakefield, MA 01880
781.245.2500

100 Grove Street
Suite 310
Worcester, MA 01605
508.753.3077

P.O. Box 590
Rindge, NH 03461
603.899.6726

1 Richmond Square
219W
Providence, RI 02906
401.685.3109

PLYMOUTH, MA

WAKEFIELD, MA

WORCESTER, MA

RINDGE, NH

PROVIDENCE, RI

Notification to Abutters

By Hand Delivery, Certified Mail (return receipt requested), or Certificates of Mailing

This is a notification required by law. You are receiving this notification because you have been identified as the owner of land abutting another parcel of land for which certain activities are proposed. Those activities require a permit under the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40).

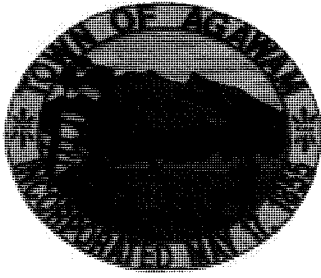
In accordance with the second paragraph of the Massachusetts Wetlands Protection Act, and 310 CMR 10.05(4)(a) of the Wetlands Regulations, you are hereby notified that:

- A. A Notice of Intent was filed with the Agawam Conservation Commission on July 30, 2026 seeking permission to remove, fill, dredge, or alter an area subject to protection under M.G.L. c. 131 §40. The following is a description of the proposed activity/activities:

Replacement of an undersized culvert with an embedded concrete box culvert in order to restore stream continuity and improve stream habitat and storm resiliency.

- B. The name of the applicant is: Town of Agawam.
- C. The address of the land where the activity is proposed is: Adams Street over Three Mile Brook (Right-of-Way) and Assessor's parcels K7-1-11, K7-1-9; K7-3-10, and K7-3-17.
- D. Copies of the Notice of Intent may be examined or obtained at the office of the Agawam Conservation Commission, located at 1000 Suffield Street. The regular business hours of the Commission are Monday through Friday, 7:30 a.m. – 3:30 p.m., and the Commission may be reached at 413-786-0400 x8245.
- E. Copies of the Notice of Intent may be obtained from the applicant's representative, LEC Environmental Consultants, Inc., by calling 781-245-2500. An administrative fee may be applied for providing copies of the NOI and plans.
- F. Information regarding the date, time, and location of the public hearing regarding the Notice of Intent may be obtained from the Agawam Conservation Commission. Notice of the public hearing will be published at least five business days in advance, in the Agawam Advertiser.

Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.



Town of Agawam Assessor's Office

**36 Main Street
Agawam, MA 01001
Ph. 413-786-0400 x 8205
Fax: 413-726-2828**

July 21, 2026

Sharon Sullivan
LEC Environmental Consultants, Inc.

Dear Ms. Sullivan:

On July 21, 2026, you requested a Certified Abutters' List on property located at Adams Street further identified as Map K07, Block 03, Lot 0017. The request was for abutters 100 feet from the subject property.

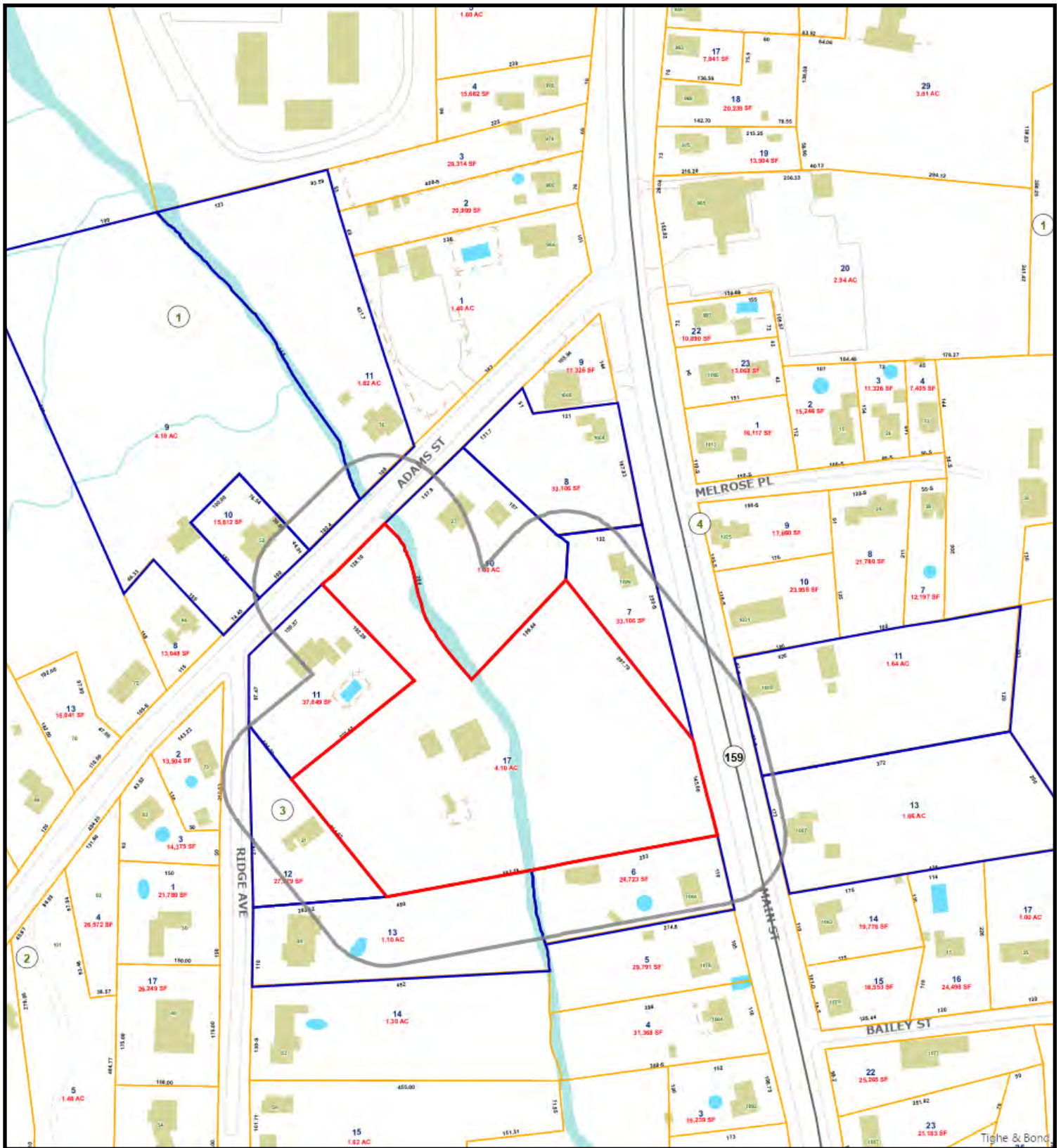
The attached list to this cover letter represents, to the best of our knowledge, the current owners of the properties that are 100 ft. from Admas St. We have also attached a map showing the subject parcel and the abutters as generated by our GIS Mapping System.

Sincerely,

Kelly Clarke,
Agawam Assessor

100'

Parcel ID	Location	Owner	Owner 2	Mailing Address	City	State	Zip
K7 3 12	21 RIDGE AV	BLANCHETTE LORI A		21 RIDGE AV	AGAWAM	MA	01001 3424
K7 3 6	1068 MAIN ST	BREAULT LUCIEN M	BREAULT PATRICIA A	1068 MAIN ST	AGAWAM	MA	01001 2582
K7 3 13	35 RIDGE AV	BREAULT MARK L	BREAULT DALE MARIE	35 RIDGE AV	AGAWAM	MA	01001 3424
K7 1 9	ADAMS ST	CAMPBELL JAMIE	CRENSON VICTORIA	52 ADAMS ST	AGAWAM	MA	01001 3402
K7 1 10	52 ADAMS ST	CAMPBELL JAMIE	CRENSON VICTORIA	52 ADAMS ST	AGAWAM	MA	01001 3402
K7 4 11	1039 MAIN ST	FEDIER JAMES		1039 MAIN ST	AGAWAM	MA	01001
K7 4 13	1057 MAIN ST	FEDIER JAMES		1039 MAIN ST	AGAWAM	MA	01001
K7 3 11	55 ADAMS ST	FENTON JAMES F JR L/E	FENTON JACQUELYN C L/E	55 ADAMS ST	AGAWAM	MA	01001 3401
K7 3 10	27 ADAMS ST	FRASER JOSHUA JAMES DENNIS		27 ADAMS ST	AGAWAM	MA	01001
K7 3 7	1026 MAIN ST	SCHROETER ROBERT J		1026 MAIN ST	AGAWAM	MA	01001 2582
K7 3 8	1008 MAIN ST	LIQUORI ANNETTE M		31 WYNNFIELD CR	SOUTHWICK	MA	01077
K7 1 11	36 ADAMS ST	SKOVORODIN ALEKSANDR	SKOVORODIN TATYANA	36 ADAMS ST	AGAWAM	MA	01001



Adams St. (K7-3-17) - 100'

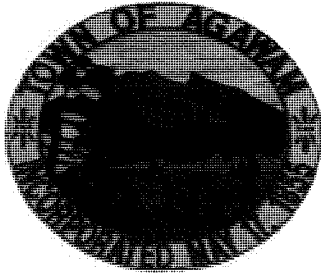
7/21/2026 11:47:57 AM

Scale: 1"=200'

Scale is approximate

The information depicted on this map is for planning purposes only.
It is not adequate for legal boundary definition, regulatory
interpretation, or parcel-level analyses.





Town of Agawam Assessor's Office

**36 Main Street
Agawam, MA 01001
Ph. 413-786-0400 x 8205
Fax: 413-726-2828**

July 21, 2026

Sharon Sullivan
LEC Environmental Consultants, Inc.

Dear Ms. Sullivan:

On July 21, 2026, you requested a Certified Abutters' List on property located at 27 Adams Street further identified as Map K07, Block 03, Lot 0010. The request was for abutters 100 feet from the subject property.

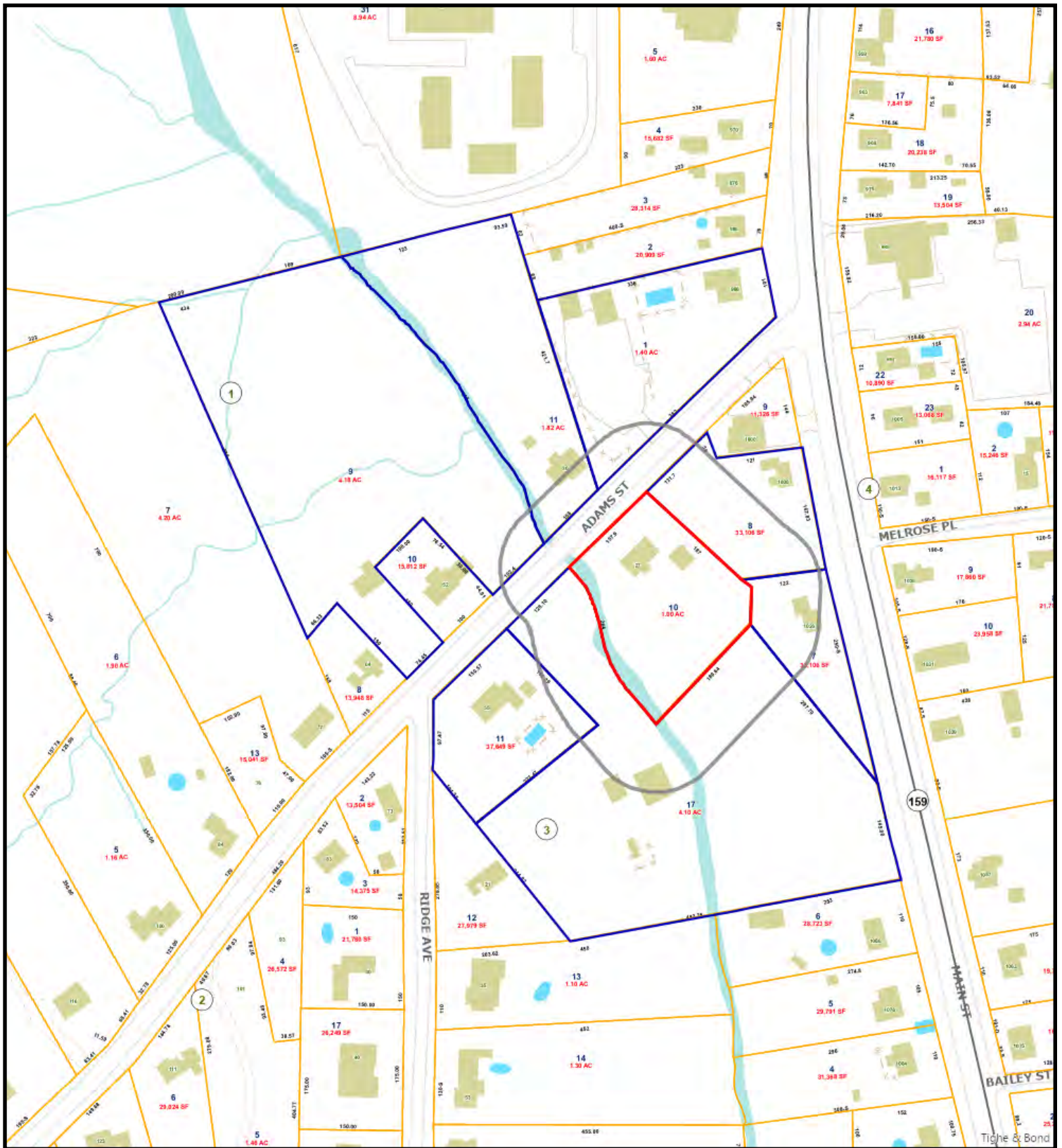
The attached list to this cover letter represents, to the best of our knowledge, the current owners of the properties that are 100 ft. from 27 Admas St. We have also attached a map showing the subject parcel and the abutters as generated by our GIS Mapping System.

Sincerely,

Kelly Clarke,
Agawam Assessor

100'

Parcel ID	Location	Owner	Owner 2	Mailing Address	City	State	Zip
K7 1 9	ADAMS ST	CAMPBELL JAMIE	CRENSON VOCTORIA	52 ADAMS ST	AGAWAM	MA	01001 3402
K8 1 1	986 MAIN ST	CIRILLO ANTHONY R JR & CIRILLO MAXINE	CIRILLO DANIELLE M	986 MAIN ST	AGAWAM	MA	01001
K7 3 11	55 ADAMS ST	FENTON JAMES F JR L/E	FENTON JACQUELYN C L/E	55 ADAMS ST	AGAWAM	MA	01001 3401
K7 3 17	ADAMS ST	FENTON MICHAEL J	FENTON JAMES F III	55 ADAMS ST	AGAWAM	MA	01001
K7 3 7	1026 MAIN ST	SCHROETER ROBERT J		1026 MAIN ST	AGAWAM	MA	01001 2582
K7 3 8	1008 MAIN ST	LIQUORI ANNETTE M		31 WYNNFIELD CR	SOUTHWICK	MA	01077
K7 1 11	36 ADAMS ST	SKOVORODIN ALEKSANDR	SKOVORODIN TATYANA	36 ADAMS ST	AGAWAM	MA	01001



27 Adams St. - 100'

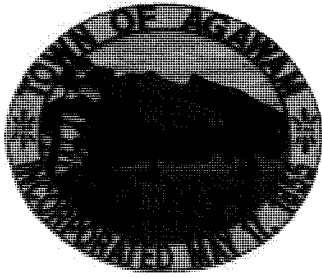
7/21/2026 11:19:23 AM

Scale: 1"=200'

Scale is approximate

The information depicted on this map is for planning purposes only.
It is not adequate for legal boundary definition, regulatory
interpretation, or parcel-level analyses.





Town of Agawam Assessor's Office

**36 Main Street
Agawam, MA 01001
Ph. 413-786-0400 x 8205
Fax: 413-726-2828**

July 21, 2026

Sharon Sullivan
LEC Environmental Consultants, Inc.

Dear Ms. Sullivan:

On July 21, 2026, you requested a Certified Abutters' List on property located at 36 Adams Street further identified as Map K07, Block 01, Lot 0011. The request was for abutters 100 feet from the subject property.

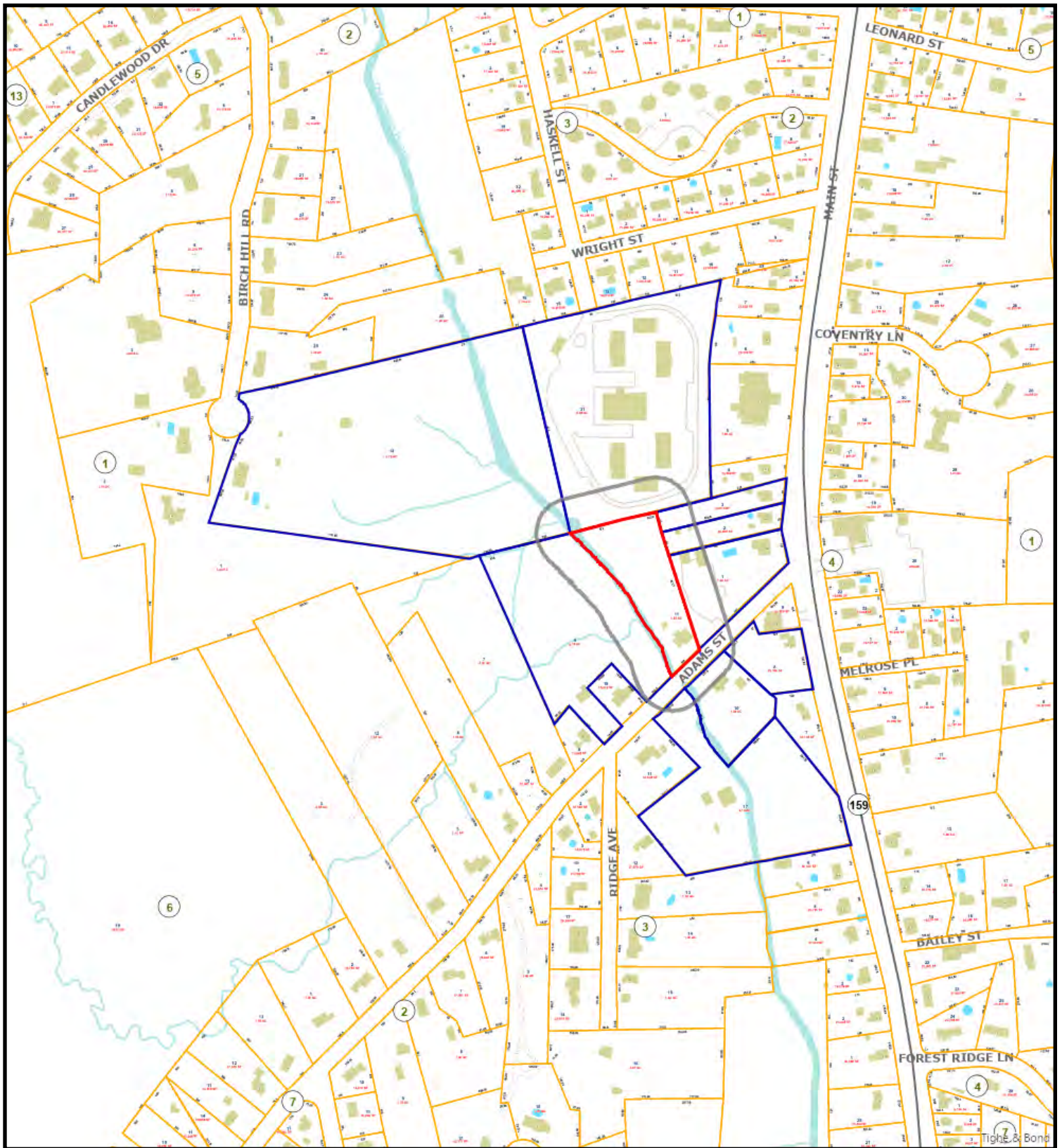
The attached list to this cover letter represents, to the best of our knowledge, the current owners of the properties that are 100 ft. from 36 Admas St. We have also attached a map showing the subject parcel and the abutters as generated by our GIS Mapping System.

Sincerely,

Kelly Clarke,
Agawam Assessor

100'

Parcel ID	Location	Owner	Owner 2	Mailing Address	City	State	Zip
K8 1 31	57 WRIGHT ST	AGAWAM HOUSING AUTHORITY		66 MEADOWBROOK MANOR	AGAWAM	MA	01001 1825
K7 1 9	ADAMS ST	CAMPBELL JAMIE	CRENSON VICTORIA	52 ADAMS ST	AGAWAM	MA	01001 3402
K8 1 1	986 MAIN ST	CIRILLO ANTHONY R JR & CIRILLO MAXINE	CIRILLO DANIELLE M	986 MAIN ST	AGAWAM	MA	01001
K7 3 17	ADAMS ST	FENTON MICHAEL J	FENTON JAMES F III	55 ADAMS ST	AGAWAM	MA	01001
K7 3 10	27 ADAMS ST	FRASER JOSHUA JAMES DENNIS		27 ADAMS ST	AGAWAM	MA	01001
K8 1 3	976 MAIN ST	JOLCY LLC		976 MAIN ST	AGAWAM	MA	01001
K7 3 8	1008 MAIN ST	LIQUORI ANNETTE M		31 WYNNFIELD CR	SOUTHWICK	MA	01077
K8 1 14	143 BIRCH HILL RD	RICCO DEBORAH L		143 BIRCH HILL RD	AGAWAM	MA	01001
K8 1 2	980 MAIN ST	SPRAGUE RUSSELL W		980 MAIN ST	AGAWAM	MA	01001 2531



36 Adams St. - 100'

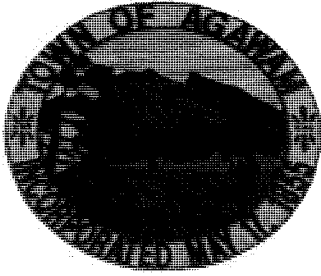
7/21/2026 11:30:35 AM

Scale: 1"=400'

Scale is approximate

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interpretation, or parcel-level analyses.





Town of Agawam Assessor's Office

**36 Main Street
Agawam, MA 01001
Ph. 413-786-0400 x 8205
Fax: 413-726-2828**

July 21, 2026

Sharon Sullivan
LEC Environmental Consultants, Inc.

Dear Ms. Sullivan:

On July 21, 2026, you requested a Certified Abutters' List on property located at Adams Street further identified as Map K07, Block 01, Lot 0009. The request was for abutters 100 feet from the subject property.

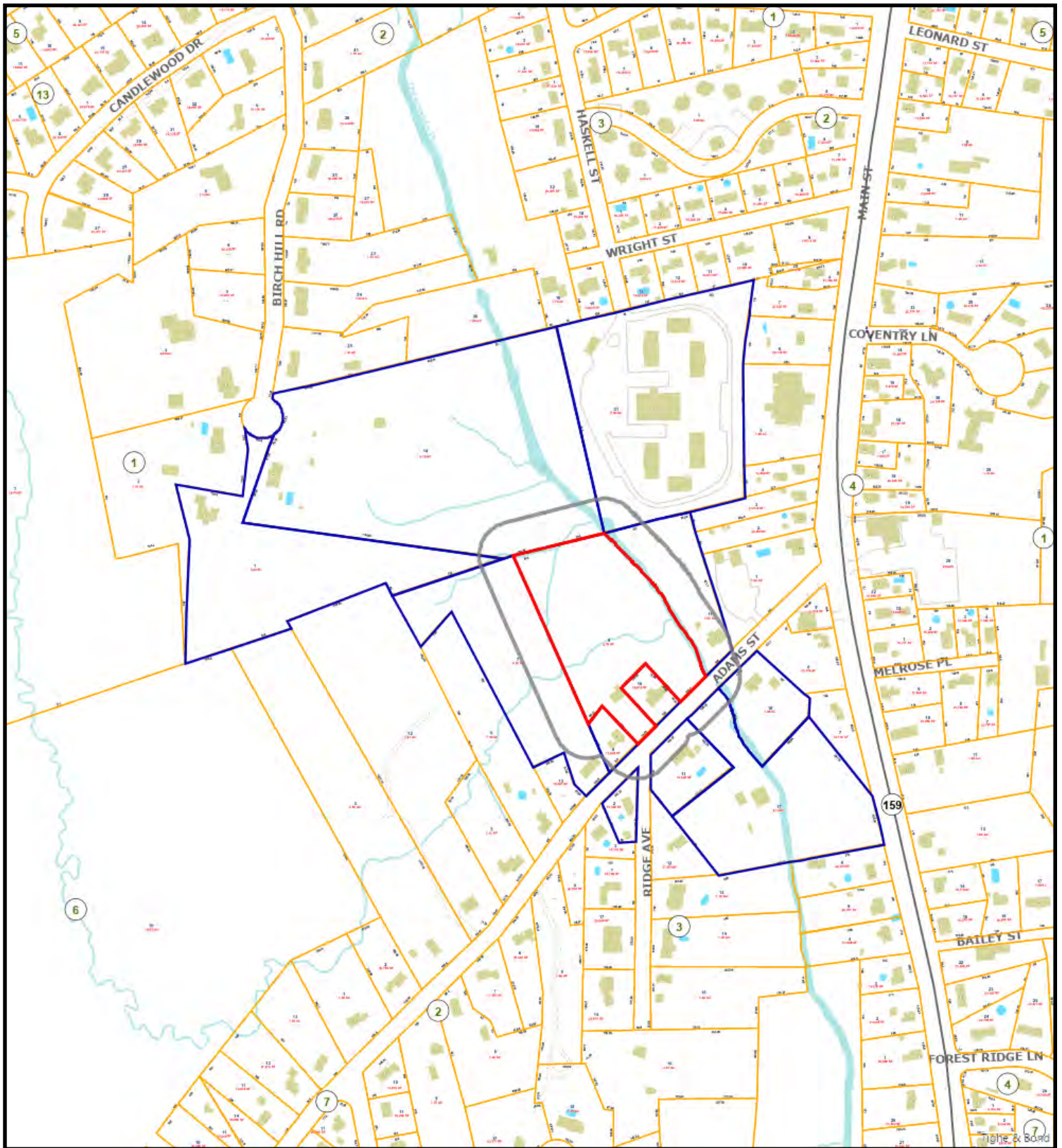
The attached list to this cover letter represents, to the best of our knowledge, the current owners of the properties that are 100 ft. from Admas St. We have also attached a map showing the subject parcel and the abutters as generated by our GIS Mapping System.

Sincerely,

Kelly Clarke,
Agawam Assessor

100'

Parcel ID	Locaion	Owner	Owner 2	Mailing Address	City	State	Zip
K8 1 31	57 WRIGHT ST	AGAWAM HOUSING AUTHORITY		66 MEADOWBROOK MANOR	AGAWAM	MA	01001 1825
K7 1 10	52 ADAMS ST	CAMPBELL JAMIE	CRENSEN VICTORIA	52 ADAMS ST	AGAWAM	MA	01001 3402
K7 3 11	55 ADAMS ST	FENTON JAMES F JR L/E	FENTON JACQUELYN C L/E	55 ADAMS ST	AGAWAM	MA	01001 3401
K7 3 17	ADAMS ST	FENTON MICHAEL J	FENTON JAMES F III	55 ADAMS ST	AGAWAM	MA	01001
K7 3 10	27 ADAMS ST	FRASER JOSHUA JAMES DENNIS		27 ADAMS ST	AGAWAM	MA	01001
K7 1 7	72 ADAMS ST	GRIMALDI LAWRENCE H TR	MOLYNEUX THERESA A TR	84 ADAMS ST	AGAWAM	MA	01001 3402
K8 1 14	143 BIRCH HILL RD	RICCO DEBORAH L		143 BIRCH HILL RD	AGAWAM	MA	01001
J8 1 1	144 BIRCH HILL RD	RICCO JAMES		144 BIRCH HILL RD	AGAWAM	MA	01001
K7 1 11	36 ADAMS ST	SKOVORODIN ALEKSANDR	SKOVORODIN TATYANA	36 ADAMS ST	AGAWAM	MA	01001
K7 2 2	73 ADAMS ST	STELLATO MARIO		73 ADAMS ST	AGAWAM	MA	01001
K7 1 8	64 ADAMS ST	VIP HOME & ASSOCIATES LLP		29 AVALON PL	FEEDING HILLS	MA	01030



Adams St. (K7-1-9) - 100'

7/21/2026 11:36:25 AM

Scale: 1"=400'

Scale is approximate

The information depicted on this map is for planning purposes only.
It is not adequate for legal boundary definition, regulatory
interpretation, or parcel-level analyses.





Notice of Intent Application

Culvert Replacement Project
Adams Street over Three Mile Brook
Agawam, Massachusetts

July 30, 2026

1. Introduction and Background

On behalf of the Applicant, the Town of Agawam (c/o Mario Mazza, Superintendent, Department of Public Works), LEC Environmental Consultants, Inc., (LEC) is filing the enclosed Notice of Intent (NOI) Application with the Agawam Conservation Commission (Commission) for the proposed *Three Mile Brook Culvert Replacement* on Adams Street in Agawam, Massachusetts. The proposed public benefit and ecological restoration project involves replacement of an undersized and deteriorating reinforced concrete box culvert (8'-0" wide by 5'-0" tall) with an embedded 19'-0" wide by 8'-0" tall concrete box culvert in order to restore stream continuity and improve stream habitat. The project will also improve Agawam's preparedness for large storm events. The project has been partially supported through a grant issued by the Department of Fish and Game's Division of Ecological Restoration (DER). The project also includes improvements to existing drainage and sewer infrastructure within the project footprint.

The project will result in temporary and/or permanent impacts to Bordering Vegetated Wetlands (BVW), Bank, Land Under Waterbodies and Waterways (LUW), Bordering Land Subject to Flooding (BLSF), the 200-foot Riverfront Area, and the 100-foot Buffer Zone; Wetland Resource Areas and/or jurisdictional areas protected under the *Massachusetts Wetlands Protection Act* (Act, M.G.L., c. 131, s. 40) and its implementing *Regulations* (Act Regulations, 310 CMR 10.00).

The work activities and jurisdictional Wetland Resource Areas are depicted on the Plans, entitled *Three Mile Brook Culvert Replacement Project*, prepared by Woodard & Curran, dated July 29, 2026 (attached). Additionally, the *Stormwater Checklist* documenting the project's compliance with the Massachusetts Stormwater Management Standards, and the *Resource Area Impacts Figure*, all prepared by Woodard & Curran, dated July 30, 2026 and June 25, 2029, respectively, are included with this application (attached).

The following NOI Application provides a description of the existing Wetland Resource Areas, proposed project, and mitigating measures proposed to protect the interests and values of the Wetland Resource Areas enumerated within the above-referenced statutes.

2. General Site Description

The site includes the Three Mile Brook culvert beneath Adams Street (Appendix A, Figures 1 and 2) situated within the east-central portion of Agawam within a residential neighborhood.

Adams Street is a 26-foot-wide paved asphalt public roadway extending in a northeast/southwest direction consisting of two travel lanes. Topography generally slopes downgradient from the paved portions of the roadways in each direction towards Three Mile Brook.

The Adams Street crossing over Three Mile Brook is comprised of a single, 30-foot-long, 8-foot-wide x 5-foot-tall concrete box culvert. The substrate within and/or immediately adjacent to the culvert crossing is comprised of sand, smaller fine to coarse gravel, cobbles, and rocks. Two drainage outfalls conveying Adams Street runoff occur immediately south (downstream) of the culvert on each slope (Appendix B, Site Photographs). In addition, stormwater runoff sheet flows from the adjacent road surface to existing vegetated shoulders and into Three Mile Brook.

Water, sewer, and gas mains occur within Adams Street. Specifically, a 24-inch and 16-inch sewer main and a 6-inch water main cross below the culvert. A 2-inch gas main extends within Adams Street and crosses above the culvert. A 4-inch PVC sanitary sewer line and an additional gas main (unknown pipe diameter) is affixed to the downstream face of the culvert and a 4-inch PVC sanitary sewer line is affixed to the upstream face of the culvert.

The main hydrologic features associated with the site include Three Mile Brook and associated Bordering Vegetated Wetland (BVW). Depicted as perennial on the most recent USGS Topographic Map (Appendix A, Figure 1), Three Mile Brook is a roughly 4-mile-long waterway that flows southerly from its headwaters proximate to Line Street through a series of culverts before discharging into the Connecticut River approximately 1,500 feet east of the Main Street (Route 159) crossing proximate to South Street. Three Mile Brook is a Third Order Stream, as it receives flow from two (2) separate Second Order tributaries and at least one (1) First Order tributary prior to its approach to Adams Street. Generally, Three Mile Brook can be characterized as a linear stream channel with gently to steeply sloping embankments and is confined within a uniform channel defined by adjacent land development and/or abrupt Bank undercuts. Proximate to the culvert, the stream channel is incised. The brook contains key features (i.e., woody debris, small boulders, sediment/leaf litter deposits), pools, riffles, point bars, runs, and low-velocity runs.

Undeveloped areas surrounding the site contain maintained lawn associated with residential dwellings, a fringing scrub/shrub-forested upland slope and wetland areas. The scrub/shrub-forested upland slope includes a canopy of Norway maple (*Acer platanoides*), black cherry (*Prunus serotina*), black birch (*Betula lenta*), cottonwood (*Populus deltoides*), gray birch (*Betula populifolia*), northern red oak (*Quercus rubra*), white oak (*Quercus alba*), and red maple (*Acer rubrum*). The understory contains witch

hazel (*Hamamelis virginiana*), hazelnut (*Corylus* sp.), tatarian honeysuckle (*Lonicera tatarica*), burning bush (*Euonymus alatus*), staghorn sumac (*Rhus typhina*), and saplings from the canopy. The groundcover contains specimens from the overstory, hay-scented fern (*Dennstaedtia punctiobula*), doll's-eyes (*Actaea pachypoda*), raspberry (*Rubus* sp.), goldenrod (*Solidago rugosa*), Christmas fern (*Polystichum acrostichoides*), and maintained lawn.

According to the Natural Resource Conservation Service (NRCS) Soil Survey (Web Soil Survey and Hampden County, Massachusetts, Version 16, September 9, 2022), Three Mile Brook and adjacent upland areas are primarily mapped as Swansea muck (0-1% slopes) and Meckesville loam (8-15% slopes). According to NRCS, the Swansea Series is described as very poorly drained organic soils formed in depressions or on flat level areas on uplands and outwash plains; and the Meckesville Series as very deep, well drained soils formed on concave side slopes of upland ridges.

LEC inspected soil conditions within the forested uplands using a hand-held, Dutch-style soil auger and generally observed a sandy loam topsoil layer (Ap-Horizon) measuring 20 inches thick with a soil matrix color of 10YR 3/1 directly beneath an inch of leaf litter. Brick fragments were noted starting at 12 inches below the surface. Redoximorphic features were not observed within the soil profile and no other indicators of hydrology were observed within the upper soil profile. As a result, the observed soil profile does not qualify as 'hydric' in accordance with the *Field Indicators Guide*.

2.1 **Natural Heritage and Endangered Species Program Designation**

According to the 15th Edition (August 1, 2021) of the Natural Heritage Endangered Species Program (NHESP) *Massachusetts Natural Heritage Atlas*, the Site is not located within *Estimated Habitat of Rare Wildlife* or *Priority Habitat of Rare Species*. In addition, there are no mapped certified or potential vernal pools on or in proximity to the Site (Appendix A, Figure 4).

2.2 **Division of Fisheries & Wildlife Coldwater Fishery Designation**

According to the Coldwater Fish Resources (CFR) Mapping program (<https://www.mass.gov/info-details/coldwater-fish-resources>), Three Mile Brook is mapped as a Coldwater Fishery within the Connecticut River Watershed (SARIS ID: 3417425; Appendix A, Figure 4). The stream is mapped through almost its entire stretch from Line Street to its confluence with the Connecticut River.

2.3 **Area of Critical Environmental Concern**

According to MassGIS MassMapper (<https://maps.massgis.digital.mass.gov/MassMapper/MassMapper>), Three Mile Brook

and surrounding areas are not mapped within an Area of Critical Environmental Concern (Appendix A, Figure 5).

2.4 **Outstanding Resource Water**

According to MassGIS MassMapper and 314 CMR 4.06, Three Mile Brook and surrounding areas are not mapped within or listed as an Outstanding Resource Water (Appendix A, Figure 5).

2.5 **Impaired Waters Designation**

According to MassGIS, MassDEP 2018 Integrated List of Waters, and the *Final Massachusetts List of Waters for the Clean Water Act 2008/2020 Reporting Cycle*, Three Mile Brook appears not to have been included in an EPA-approved water quality assessment (Appendix A, Figure 6).

3. **Wetland Boundary Determination Methodology**

LEC conducted site evaluations on November 8 and December 3, 2022 and May 18, 2026 to identify, delineate, and characterize protectable Wetland Resource Areas within 100 feet of the culvert in the survey area proximate to the Adams Street crossings over Three Mile Brook in Agawam. Based on our observations and desktop review, LEC determined that the Site contains BVW, Bank/Mean Annual High Water (MAHW)/Ordinary High Water (OHW), Land Under Water Bodies and Waterways (LUW), Bordering Land Subject to Flooding (BLSF), and Riverfront Area.

The extent of Wetland Resource Areas was determined through observations of existing plant communities, hydrologic indicators, and bankfull indicators in accordance with the *Act*, the *Act Regulations*, the *CWA*, and the *CWA Regulations*. LEC delineated the BVW boundaries with sequentially-numbered, blaze-orange surveyor's tape with the words "LEC Resource Area" printed in black. LEC flagging stations 2-1 through 2-3, 3-1 through 3-2, and 4-1 through 4-3 demarcate the BVW boundaries.

LEC delineated the Bank/MAHW/OHW boundaries with sequentially-numbered blue surveyor's tape. LEC flagging stations C1 through C16, and C100 through C114 demarcate the boundary associated with Three Mile Brook.

The 100-foot Buffer Zone extends from the outermost boundary of BVW or Bank. The Riverfront Area extends 200 feet from the boundary of Bank-MAHW line.

4. Wetland Resource Areas

Each of the aforementioned Wetland Resource Areas are described below and depicted on the Plans.

4.1 Bordering Vegetated Wetlands

BVW is defined in 310 CMR 10.55(2) as *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes. In these areas soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*

Three non-contiguous BVWs associated with Three Mile Brook occur in proximity to Adams Street. The northern BVW (wetland flags 4-1 to 4-3) is a fringing scrub-shrub wetland situated on a topographic shelf along the eastern edge of the brook. The southwestern BVW (wetland flags 2-1 to 2-3), situated within a slight topographic depression in the landscape on the west side of the brook, is generally flat throughout, and characterized as a wet meadow. The southeastern BVW (wetland flags 3-1 to 3-2) is similarly situated within a slight topographic depression on the east side of the brook and is characterized as a wet meadow.

Vegetation within the scrub-shrub BVW includes an overstory of American elm and Norway maple. The understory includes individuals of multiflora rose (*Rosa multiflora*) and Japanese barberry (*Berberis thunbergii*). The groundcover includes skunk cabbage (*Symplocarpus foetidus*), false Solomon's-seal (*Maianthemum racemosum*), jewelweed (*Impatiens capensis*), and Japanese knotweed (*Polygonum cuspidatum*). Vegetation within the wet meadow includes sensitive fern (*Onoclea sensibilis*), skunk cabbage, deer tongue (*Dichanthelium clandestinum*), mugwort (*Artemisia vulgaris*), horsetail (*Equisetum* sp.), jewelweed, soft rush (*Juncus effusus*), and boneset (*Eupatorium perfoliatum*).

LEC inspected soil conditions using a hand-held, Dutch-style soil auger within wetland areas and observed an 18-inch thick, very fine sandy loam topsoil (A-Horizon) with a soil matrix color of 10YR 3/1. Redoximorphic features were observed starting at 18 inches, with a soil matrix color of 7.5YR 4/6 (concentrations) and 2.5Y 6/4 (depletions). The soil profile is considered 'hydric' in accordance with the *Field Indicators Guide*.

4.2

Bank-Mean Annual High Water (MAHW) Line and Ordinary High Water

According to 310 CMR 10.54(2): *Bank is defined as the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland... The upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a Bank is the mean annual low flow level.*

Mean Annual High Water (MAHW) is defined at 310 CMR 10.58 (2)(a)(2) as *the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to; changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercuts.*

The term Ordinary High Water (OHW) mark is defined at 33 CFR 328.3(e) as *the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.*

The Bank along Three Mile Brook varies throughout the Site and is comprised of placed boulders, mucky/mineral substrate, and wetland vegetation. Riprap and pavement occur along the Bank in proximity to the downstream culvert. Generally, bank undercuts are common throughout the Bank and exposed roots and scouring are present, as well. The MAHW line is coincident with top of Bank, and the MAHW/Bank is generally coincident with OHW.

Bank in proximity to the culvert is situated within moderately steep and shallow embankments and is generally vegetated and well defined, ranging from 10 to 22 inches high.

4.3

Land Under Waterbodies and Waterways (LUW)

According to 310 CMR 10.56(2): *LUW is the land beneath any creek, river, stream, pond or lake. Said land may be composed of organic muck or peat, fine sediments, rocks or bedrock...The boundary of Land under Water Bodies and Waterways is the mean annual low water level.*

LUW is associated with the land area beneath Three Mile Brook. The 9-18±-foot-wide stream channel largely contains sands and gravel. Cobbles and small-medium boulders occur in select areas. A deeper pool immediately follows the outlet, likely a result of the undersized culvert creating high velocity discharges at the outlets.

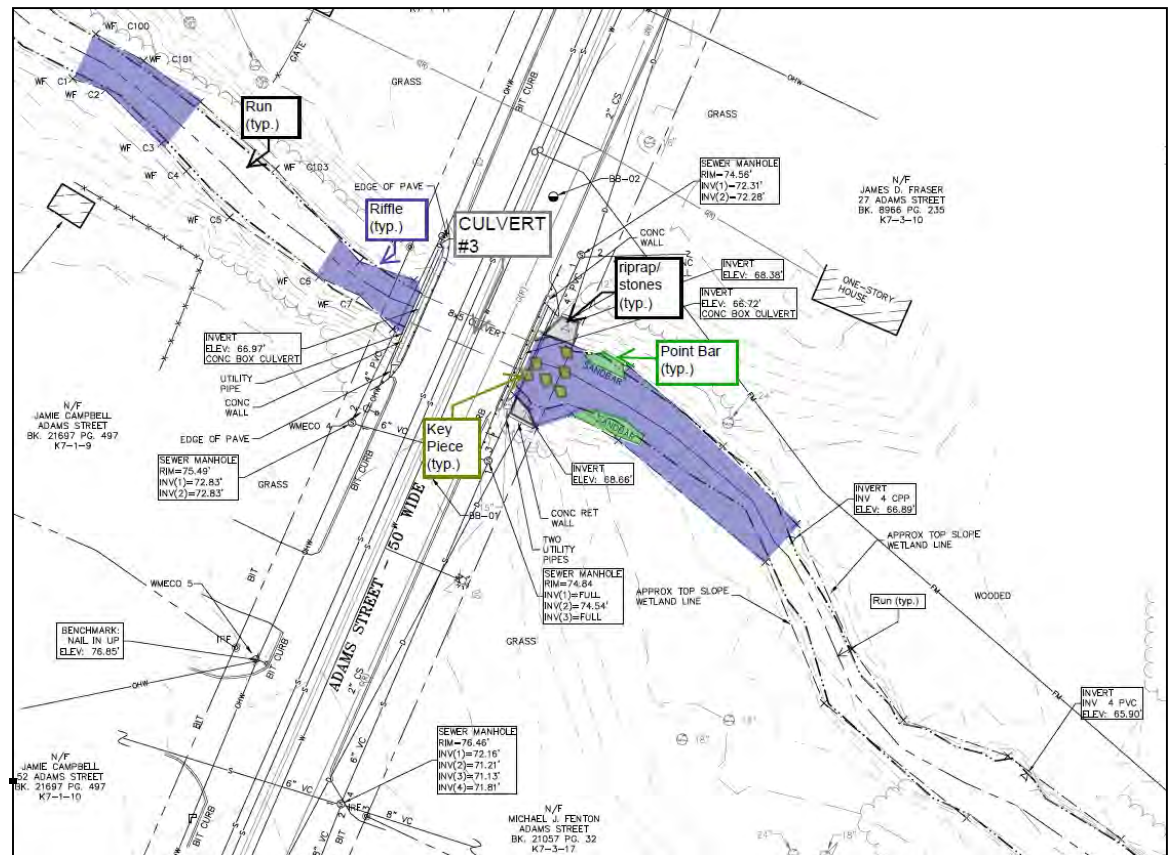
4.3.1

Stream Profile Features

As previously noted, the stream profile of Three Mile Brook contains key features (i.e., woody debris, sediment/leaf litter deposits), pools, riffles, point bars, and runs. The substrate in both stretches of the stream channel is comprised of sand and smaller fine to coarse gravel.

North (upstream) of the culvert exhibits a uniform, relatively linear channel with alternating riffles surrounding a run. The sandy to medium gravel substrate is consistent throughout, and key pieces are generally absent. South (downstream) of the culvert, the sinuous stream channel exhibits a high-velocity riffle transitioning to a run as the stream continues flowing south. Key pieces including boulders and fallen branches are common immediately downstream of the outlet, and point bars are present on both sides of the stream channel following the key pieces. Two stormwater outlets and riprap/pavement occur on both sides of the stream channel south of the culvert outlet (Figure 1).

Figure 1. Stream Profile Features.



4.4

Riverfront Area

According to 310 CMR 10.58 2(a), *Riverfront Area is defined as the area of land between a river's mean annual high water line and a parallel line measured horizontally 200 feet away.*

The 200-foot Riverfront Area associated with Three Mile Brook includes the adjacent BVWs, fringing forested uplands, lawn, and previously disturbed and developed areas associated with Adams Street, including paved travel lanes, maintained vegetated shoulders, and other site appurtenances.

4.5

Bordering Land Subject to Flooding

According to the *Act Regulations* [310 CMR 10.57 2 (a)], BLSF is defined 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.*

According to the July 16, 2013 *Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM)* for the Town of Agawam, Massachusetts (Community Panels 25013C0411E, Appendix A, Figure 4), Three Mile Brook and adjacent land proximate to Adams Street are mapped within a Zone AE (el. 57', NAVD 88) – *Special Flood Hazard Areas (Base Flood Elevation Determined)*.

As such, areas located beyond the Bank/MAHW and/or BVW boundaries are protectable as Bordering Land Subject to Flooding (BLSF).

5.

Proposed Project

5.1

Three Mile Brook Culvert Replacement and Massachusetts River & Stream Crossing Standards

The existing 8-foot-wide and 5-foot-tall culvert will be replaced by a larger concrete box culvert (aka culvert structure) and a new/widened stream channel within the culvert. The new culvert structure will have a 19-foot-wide and 8-foot-tall opening and measure 30 feet long. The culvert bottom will be embedded a minimum of 2 feet. In addition to the culvert replacement, existing utilities will be supported, relocated, and/or replaced, as noted on the Plans (Sheet 9, C-105-Proposed Utility Plan & Profile (Attachment)). The existing drainage outfall locations will be maintained, but the outfalls will be replaced with a flared end section. New guardrails will be installed along the culvert and along Adams Street on each side of the road and in each direction.

The new stream channel will be 15 feet wide with banks and a 2-foot-wide wildlife passage shelf comprised of 2-foot x 3-foot boulders intermixed with streambed materials to fill voids. The channel bottom will be comprised of substrate consistent with the gradation in the existing stream, as described above in Section 5. The new stream channel will match existing stream bottom elevations at the upstream and downstream side of the crossing (Sheet 8, C-104-Proposed Roadway Plan and Profile (Attachment)).

Regrading of the downstream channel proximate to the crossing is proposed to provide an adequate transition between the new stream channel and wing walls to the existing stream channel. Downstream of the embedded boulder Bank, two rows of stacked 12-inch diameter coir logs will be utilized to establish the new stream bank at the bottom of the graded slope. The bank and adjacent slopes will be seeded and planted with native tree, shrub, and/or fern species. Specifically, wetland plants will be installed along the stream bank, from elevation 67' up to 69'; and upland plants will be installed on the upgradient slope, as described below in Tables 1 and 2. At least 75% of the surface of any area of disturbed vegetation shall be reestablished with indigenous plant species within two growing seasons and prior to said vegetative reestablishment any exposed soil in the area of disturbed vegetation shall be temporarily stabilized to prevent erosion in accordance with standard USDA Soil Conservation Service methods.

Table 1. Bank Restoration Plantings (Lower Slope =260 sf) (el. 67'-69')

Plant Species (Common Name)	Plant Species (Latin Name)	Spacing	Size	Quantity	Wetland Status Indicator
Red maple	<i>Acer rubrum</i>	10' O.C.	4'-6'	4	Fac
American elm	<i>Ulmus americana</i>	10' O.C.	4'-6'	4	Fac
Speckled alder	<i>Alnus incana (rugosa)</i>	6' O.C.	3'-4'	8	FacW+
Red-osier dogwood	<i>Cornus sericea</i>	6' O.C.	3'-4'	4	FacW+
Common elderberry	<i>Sambucus canadensis</i>	6' O.C.	3'-4'	4	FacW-
Sensitive fern	<i>Onoclea sensibilis</i>	3' O.C.	1 gallon	16	FacW
Fringed sedge**	<i>Carex crinita</i>	1' O.C.	2" plug	50	OBL
Lurid sedge**	<i>Carex lurida</i>	1' O.C.	2" plug	50	OBL
			TOTAL	140	
Specialized Wetland Mix for Shaded OBL-FACW Areas-ERNMX-137*					

*Specialized Wetland Mix for Shaded OBL-FACW Areas-ERNMX-137, Ernst Conservation Seeds (www.ernstseed.com) or approved equal, applied at a rate of 1lb per 2,200 SF or higher if applied at the end of the growing season. Lightly rake to insure seed-soil contact. Apply light coating of straw as directed by Wetland Scientist.

** Sedges to be planted between coir logs and within BVW Restoration Area, as directed by the Wetland Scientist.

Table 2. Buffer Zone/Riverfront Area Restoration Plantings (Upper Slope =842 sf) (el 69'+)

Plant Species (Common Name)	Plant Species (Latin Name)	Spacing	Size	Quantity	Wetland Status Indicator
Red maple	<i>Acer rubrum</i>	10' O.C.	4'-6'	3	Fac
American elm	<i>Ulmus americana</i>	10' O.C.	4'-6'	3	Fac
Black gum	<i>Nyssa sylvatica</i>	10' O.C.	4'-6'	3	Fac
Serviceberry	<i>Amelanchier arborea</i>	6' O.C.	3'-4'	6	Fac
Black chokeberry	<i>Aronia melanocarpa</i>	6' O.C.	3'-4'	6	Fac
Gray dogwood	<i>Cornus racemosa</i>	6' O.C.	3'-4'	6	Fac
			TOTAL	27	
New England Conservation/Wildlife Mix***					

***New England Conservation/Wildlife Mix, New England Wetland Plants (www.newp.com), or approved equivalent, applied at a rate of 1,750 sf/lb, or higher if applied at the end of the growing season. Lightly rate to insure seed-soil contact. May include annual or winter rye depending on time of application.

The crossing has been designed to meet the General/Optimal Standards provided in the *Massachusetts River & Stream Crossing Standards (Stream Crossing Standards*; dated March 1, 2006, revised 3/1/2011, and corrected 3/8/2012), to the maximum extent practicable as described below.

5.1.1

Bankfull Width and Openness Ratio

According to the Massachusetts River & Stream Crossing Standards, dated March 1, 2006 (revised 3/1/2011 and corrected 3/8/2012), determining the average bankfull width is required for designing the replacement stream crossing. LEC focused on measuring multiple locations within the upstream and downstream portion of Three Mile Brook for bankfull width measurements. Based on these measurements, as noted below in Table 3, the average bankfull width is 13.57 feet.

Table 3. Bankfull Width Measurements

Location	Corresponding Bank or Reference Reach Flag	Bankfull Width (feet)
1	Reference Reach Flag (RR5)	14'1"
2	C1/C100	12'6" (plus 12" bank undercut)
3	C103/C5	16'7"
4	C13/C110	12'0"
5	C16/C114	9'5"
6	RR6	15'10"
	Average Bankfull Width:	13.57

LEC utilized the USGS Water Resources Web Application, StreamStats, to calculate the bankfull width of Three Mile Brook. Considering the surrounding developed conditions and undersized culverts, LEC produced two StreamStats report for a location immediately upstream of the culvert crossing and approximately 4,500 linear downstream of the culvert upstream of its confluence with Tarkill Brook. As noted in the StreamStats Reports (Appendix D), the calculated average bankfull width is 23.6 feet (upstream of the culvert) and 24.3 feet (downstream of the culvert). The StreamStats result is generally wider than existing conditions.

The proposed crossing results in an Openness Ratio of approximately 3.8 feet ((19 feet wide x 6 feet tall)/30 feet long)), which exceeds the 0.82 feet requirement. The proposed culvert has a width of 19 feet, exceeding the 1.2 bankfull width (i.e., 16.38 feet required and 19 feet provided). As required, the culvert bottom will be embedded a minimum of two feet in order to establish a stream bottom with substrate that matches the characteristic of Three Mile Brook. A thalweg has been incorporated into the stream design in order to provide a low flow channel. Details of the proposed crossing and Bankfull Width and Openness Ratio calculations are provided the Site Plans.

5.1.2

Reference Reach

The reference reach of a stream channel provides a design template of the existing stream channel to facilitate the design of the proposed new stream bed. According to Section 5.5 of the *USDA Forest Service document Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings*, dated August, 2008, “the ideal reference reach represents the physical, hydrologic, and hydraulic characteristics of the channel that would be at the culvert site if the road did not exist.”

Primarily, the stretch of Three Mile Brook within the Site is obstructed by an undersized culvert beneath the paved crossing at Adams Street, and the natural morphological development is partially limited by the close proximity to paved roadway, steep adjacent slopes, and maintained uplands. Three Mile Brook exhibits linear features up to the culvert. Downstream of the culvert, Three Mile Brook begins to exhibit sinuous features within a defined channel.

LEC collected bankfull width data at two reference reaches within Three Mile Brook approximately 200 feet upstream and approximately 215 feet downstream of the culvert. The stream bed substrate analysis provided below occurred within the reference reaches locations at the flag labeled “Reference Reach”.

5.1.3 **Stream Bed Substrate Analysis**

LEC conducted a riverbed substrate analysis (i.e., pebble count) utilizing the *Step-Toe Procedure* outlined in the *USDA Forest Service publication (GTR RM-245) Stream Channel Reference Sites: An Illustrated Guide to Field Technique*, dated April 1994, in order to facilitate the design of the proposed new stream bed at each culvert replacement. LEC conducted the pebble count at two representative upstream and downstream locations approximately 200 feet upstream and 215 feet downstream of the culvert at the reference reach locations. At the locations, the width of 100 samples were measured and the data tabulated by size class and frequency (absolute number, %, and cumulative %), as noted in Appendix D. The pebble count locations, representative of general stream bed conditions, contained a high density of sand and smaller fine to coarse gravel.

As noted above, the stream bed material will be comprised of substrate consistent with the gradation in the existing stream.

5.1.4 **Aquatic Organism Passage**

Unrestricted movement of fish and other aquatic organisms and wildlife will be provided through the new stream channel (thalweg has been designed to provide passage during low flow conditions), bank, and/or adjacent 4±-foot wide upland corridor (2± feet on each side of the stream channel) resulting in full aquatic organism passage. The wildlife passage will be set at approximately el 67.5'.

5.2 **Construction and Site Restoration**

A dewatering plan is proposed to replace the crossing 'in the dry,' by way of damming the upstream side of the stream with a coffer dam, establishing a 72-inch temporary stream bypass system, and pumping clean groundwater to a dirt bag situated within an upland area on the downstream side of the stream. A turbidity curtain will be installed within the stream downgradient of the work area. Information and details related to the sequencing of construction and dewatering shall be determined and provided by the contractor prior to construction but will be designed in accordance with MassDEP's document entitled, *Western Region-Bureau of Water Resources-Wetlands Program, Minimum Information and Documentation for Dewatering Plans* (Appendix E). In-kind replacement is proposed of all temporary alteration to BVW, Bank, LUW, and Riverfront Area as discussed further below in Section 6.3.

During construction, existing utilities, including water, sewer, gas, and overhead electric/telecommunications will be supported and/or replaced throughout the construction period.

Following installation of the stream channel and culvert, the side slopes, roadway, including guardrails and curbing, will be restored.

5.3

Wetland Resource Area Impacts

Construction access, removal of the existing culvert, installation of the new culvert structure and wing walls, regrading portions of the stream bed, and dewatering activities will result in the following temporary and permanent alterations summarized in Table 4 below and depicted on Woodard & Curran's *Resource Area Impact Figure*.

Table 4: Wetland Resource Area Alterations

Wetland Resource Area	Permanent Alteration	Temporary Alteration	Total
Bank (LF)	62	113	175
Bordering Vegetated Wetland (SF)	0	81	81
Bordering Land Subject to Flooding (SF)	0	11,598	11,598
Land Under Water (SF)	108	996	1,104
Riverfront Area (SF)	1,160 ¹	5,176 ²	6,336

1. Represents conversion of forested slope to a revegetated slope, new stormwater drainage outfall flared ends, and wingwall
2. Represents temporary impacts to roadway and shoulder

6.

Mitigation Measures

The Applicant proposes to implement a comprehensive construction-level erosion and sedimentation control plan, and provide stormwater management and wetland resource area mitigation, including restoration.

6.1

Erosion and Sedimentation Control

A comprehensive sedimentation and erosion control program will be implemented to protect the adjacent Wetland Resource Areas from sedimentation during the proposed construction activities. As shown on Sheet 7 (C-103) of the Plans (Attachment), erosion controls consisting of silt socks will be installed to demarcate the limit of work and provide assurance that construction equipment will not further intrude upon the Wetland Resource Areas and associated Buffer Zone/Riverfront Area than allowed. All barriers will remain in place and be maintained until disturbed areas are stabilized. The embankments and temporary disturbances due to construction will be seeded with native grasses and forbs that exhibit deep root growth and will augment slope stabilization.

Site construction will be conducted in phases to limit the exposure of soil and potential for erosion at any given time. Following completion of the culvert replacement activities, roadway and site construction activities will be completed and final asphalt surface and curbing established.

If required, the Contractor will file for coverage under the National Pollutant Discharge and Elimination System (NPDES) Construction General Permit (CGP). Prior to construction, the Contractor will submit a Stormwater Pollution Prevention Plan (“SWPPP”) for review and approval by the Town, identifying the BMPs that will be implemented to prevent erosion and sedimentation. The SWPPP will be updated, as necessary, during construction and maintained throughout the period of construction to comply with the CGP.

6.2 **Wetland Resource Area Restoration**

6.2.1 **Stream and BVW Restoration**

The proposed project involves culvert removal and stream restoration of Three Mile Brook. The undersized and deteriorating culvert is contributing to restricted flows within the stream channel and obstructs wildlife movement. The construction sequencing is summarized below.

The first work activity will be installing erosion controls, stream bypass, dewatering plan, and downstream turbidity curtain at the limit of work. The utility bypass and utility support systems will be implemented. The existing culvert structure and other specified items will be removed and disposed of and replaced with the new culvert, headwalls, and other specified items. The bottom of the stream channel will be reconstructed and the stream substrate will consist of a sand/gravel mix, consistent with the existing stream channel. A new stream bank will be established along each side of the stream within the culvert and upstream and downstream within the work footprint. Given limited light exposure for vegetation to grow, the bank will be comprised of small boulders.

The stream restoration effort will result in the creation of 464± sf of LUW within the new crossing and an additional 62± feet of relocated Bank within the culvert (Attachment, Resource Area Impacts).

All areas of temporary BVW, Bank, and LUW alteration will be restored in-kind following construction activities. Specifically, the BVW will be returned to existing grade (if any changes were made) and soil profiles and planted with a wetland seed mix and native trees, shrubs, and ferns as summarized below in Table 5.

Table 5. BVW Restoration Plantings (81 sf)

Plant Species (Common Name)	Plant Species (Latin Name)	Spacing	Size	Quantity	Wetland Status Indicator
Red maple	<i>Acer rubrum</i>	10' O.C.	4'-6''	2	Fac
Common spicebush	<i>Lindera benzoin</i>	6' O.C.	3'-4'	1	FacW-
Highbush blueberry	<i>Vaccinium corymbosum</i>	6' O.C.	3'-4'	2	FacW
Sensitive fern	<i>Onoclea sensibilis</i>	3' O.C. (clustered)	1 gallon	3	FacW
Cinnamon fern	<i>Osmunda cinnamomea</i>	3' O.C. (clustered)	1 gallon	3	FacW
TOTAL				11	
Specialized Wetland Mix for Shaded OBL-FACW Areas-ERNMX-137, Ernst Conservation Seeds (www.ernstseed.com) or approved equal, applied at a rate of 1lb per 2,200 SF or higher if applied at the end of the growing season. Lightly rake to insure seed-soil contact. Apply light coating of straw as directed by Wetland Scientist.					

Any temporary or minor disturbance to Bank or LUW resulting from the culvert and wingwall installation will be restored with small boulders or coir logs. Any temporary disturbance to LUW also will be restored by replacing any disturbed stream bed substrate.

7. Regulatory Compliance

The *Act Regulations* provide specific performance standards for work within the Bank, LUW, and Riverfront Area. Temporary alterations are proposed within BVW; however, the resource area will be restored to pre-existing conditions following the completion of work. Additionally, the culvert replacement project involves alterations to Bank that exceeds allowable thresholds in accordance with the performance standards. As a result, the Applicant requests the proposed project be permitted as a Limited Project under 310 CMR 10.53(3)(i) and 310 CMR 10.53(8). Pertinent citations of the regulatory performance standards and the project's compliance with said standards are provided below.

7.1 Limited Project Provisions

The proposed activities associated with the culvert replacement project will result in permanent disturbance to 62± linear feet of Bank (i.e., culvert removal, placement of fill to reestablish slope and new stream bank), temporary disturbance to 113 linear feet of Bank, permanent disturbance to 108 square feet of LUW (i.e., culvert removal and placement of fill within LUW to reestablish slope and new stream bank), temporary disturbance to 996 square feet of LUW, temporary disturbance of 11,598 square feet of BLSF, permanent disturbance to 1,160 square feet of Riverfront Area, and temporary

disturbance to 5,176 square feet of Riverfront Area. The proposed culvert replacement qualifies as a Limited Project under 310 CMR 10.53(3)(i). As described above, the project also includes the establishment of a widened stream channel within the culvert structure and a slightly modified stream channel proximate to the inlet and outlet of the culvert structure.

While permanent impacts to LUW is below the allowable 5,000 sf threshold of 310 CMR 10.55(4), permanent impacts to Bank exceed the allowable 50-foot threshold at 310 CMR 10.54 (4); however, the conversion of the existing concrete Bank to a naturalized Bank comprised of small boulders will contribute to the interests, functions, and values of the *Act*. Since the proposed project is considered a Limited Project, it is presumed that a Wildlife Habitat Evaluation is not required. Lastly, the proposed temporary disturbance to Bank, BVW, LUW, BLSF, and Riverfront will be restored to pre-construction conditions. The temporary disturbances, as well as the permanent impacts to LUW resulting from the placement of fill within Three Mile Brook are not anticipated to impair the Wetland Resource Area's functions and values as identified at 310 CMR 10.56 (4).

(3) Notwithstanding the provisions of 310 CMR 10.54 through 10.58 and 10.60, the Issuing Authority may issue an Order of Conditions and impose such conditions as will contribute to the interests identified in M.G.L. c. 131, § 40 permitting the following limited projects (although no such project may be permitted which will have any adverse effect on specified habitat sites of Rare Species, as identified by procedures established under 310 CMR 10.59). In determining whether to exercise its discretion to approve the limited projects listed in 310 CMR 10.53(3), the Issuing Authority shall consider the following factors: the magnitude of the alteration and the significance of the project site to the interests identified in M.G.L. c. 131, § 40, the availability of reasonable alternatives to the proposed activity, the extent to which adverse impacts are minimized, and the extent to which mitigation measures, including replication or restoration, are provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40 (emphasis added).

(i) The maintenance, repair and improvement (but not substantial enlargement except when necessary to meet the Massachusetts Stream Crossing Standards) of structures, including dams and reservoirs and appurtenant works to such dams and reservoirs, buildings, piers, towers, headwalls, bridges, and culverts which existed on the effective date of 310 CMR 10.51 through 10.60 (April 1, 1983).

Adams Street and the associated crossing over Three Mile Brook date back to at least 1886, the earliest USGS Topographic Map depicting the municipal roadway. In order to meet the Massachusetts Stream Crossing Standards, enlargement is required, but has been kept to the minimum footprint necessary to achieve the project goal.

Establishing a dry stream bed and the stream bypass system within the project area will result in temporary impacts to wetland resource areas but will be fully restored and water levels will return to preexisting conditions following the construction period.

According to 310 CMR 10.53(8) *Any person proposing the replacement of an existing stream crossing shall demonstrate to the Issuing Authority that the impacts of the crossing have been avoided where possible, and when not possible have been minimized and that mitigation measures have been provided to contribute to the protection of the interests identified in M.G.L. c. 131, § 40. An applicant will be presumed to have made this showing if the project is designed as follows:*

(a) If the project includes replacement of an existing non-tidal crossing, the applicant demonstrates to the satisfaction of the Issuing Authority that the crossing complies with the Massachusetts Stream Crossing Standards to the maximum extent practicable.

The proposed stream crossing is an improvement on existing conditions and has been designed to meet the Massachusetts Stream Crossing Standards to the maximum extent practicable.

(b) If the project includes replacement of an existing tidal crossing that restricts tidal flow, the applicant demonstrates to the satisfaction of the Issuing Authority that tidal restriction will be eliminated to the maximum extent practicable.

No tidal influences are present on-site.

This presumption may be rebutted by credible evidence from a competent source that the impacts of the project have not been avoided, minimized or mitigated to the maximum extent practicable. At a minimum, in evaluating the potential to comply with the standards to the maximum extent practicable the applicant shall consider site constraints in meeting the standard, undesirable effects of risk in meeting the standard and the environmental benefit of meeting the standard compared to the cost by evaluating the following:

- *The potential for downstream flooding;*
- *Upstream and downstream habitat (in-stream habitat, wetlands);*
- *Potential for erosion and head-cutting;*
- *Stream stability;*
- *Habitat fragmentation caused by the crossing;*
- *The amount of stream mileage made accessible by the improvements;*
- *Storm flow conveyance;*
- *Engineering design constraints specific to the crossing;*

- *Hydrologic constraints specific to the crossing;*
- *Impacts to wetlands that would occur by improving the crossing;*
- *Potential to affect property and infrastructure; and*
- *Cost of replacement.*

Not applicable. The replacement stream crossing complies with the Massachusetts Stream Crossing Standards.

7.2

Bank

The following analysis of the performance standards for work on Bank applies to the portions of work associated with the culvert replacement activities resulting in a cumulative 113± linear feet of temporary impacts and 62± linear feet of permanent impacts (note, new Bank will be created to accommodate the wider stream channel).

As stated at 310 CMR 10.54(4)(a), *any proposed work on a Bank shall not impair the following:*

1. *the physical stability of Bank;*

Any alteration to the physical stability of the Bank required for construction will be restored in-kind through replacement of boulders, coir logs, etc.

2. *the water carrying capacity of the existing channel within the Bank;*

No change to the water carrying capacity of the Bank is proposed.

3. *groundwater and surface water quality;*

Proper construction methodologies will be employed during construction to protect groundwater and surface water quality.

4. *the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;*

The capacity of the Bank to provide such fishery habitat will be improved given the removal of the concrete culvert, establishment of a wider stream channel with Bank comprised of small boulders.

5. *the capacity of Bank to provide important wildlife habitat functions;*

There will be an improvement given the removal of culvert and establishment of a new, wider stream channel segment.

6. *Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.54(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface*

of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirement of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures contained in 310 CMR 10.60.

The proposed embedded box culvert meets or exceeds the requirements of these stream crossing standards.

(c) no project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified under procedures established under 310 CMR 10.59.

Not applicable. The project does not occur within Priority or Estimated habitats.

7.3

Land Under Waterbodies and Waterways

The following analysis of the performance standards for work in LUW applies only to the portions of work associated with the culvert removal and stream bed creation/restoration activities, resulting in a cumulative 966± square feet of temporary impacts to LUW, 108± square feet of permanent impacts to LUW, and creation of 464± square feet of LUW (new culvert installation and net gain in expanded open stream channel).

As stated at 310 CMR 10.56(4)(a), *where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land under Water Bodies and Waterways shall not impair the following:*

1. *The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;*

While the placement of fill within Three Mile Brook is proposed to restore the eroded stream channel resulting from the undersized culvert and unmitigated drainage outfalls, the permanent loss of LUW will be offset by the removal of the culvert and establishing a new stream channel. Overall, there will be a net increase of 356± square feet of LUW, thus increasing the water carrying capacity of Three Mile Brook.

2. *Ground and surface water quality;*

Proper construction methodologies will be employed during construction to protect groundwater and surface water quality.

3. *The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and*

Habitat values will be improved as a result of the removal of the culvert and establishment of an expanded stream channel segment.

4. *The capacity of said land to provide important wildlife habitat functions.*

Wildlife habitat functions will be improved as a result of the removal of the culvert and establishment of an expanded stream channel segment with a 2-foot-wide wildlife passage shelf on each side of the brook.

5. *Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60...*

The proposed culvert meets or exceeds the requirements of these stream crossing standards.

7.4

Bordering Land Subject to Flooding

The proposed roadway grades within BLSF and slope grading will essentially match existing conditions and installation of the new culvert and establishment of the wider stream channel will maintain flood storage capacity.

The following addresses the applicable Performance Standards for BLSF under the State Regulations.

According to 310 CMR 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 body. Further, with respect to waterways,

such compensatory volume shall be provided within the same reach of the river, stream or creek.

According to Woodard and Curran's hydraulic assessment, no flood storage will be lost.

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.

The culvert replacement project will not restrict flows to cause an increase in flood stage or velocity.

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.

Not applicable. Site activities within adjacent vegetated slopes will alter less than 5,000 square feet of land within BLSF. The remaining project area is limited to the existing previously disturbed/developed right-of-way.

7.5

Riverfront Area

While unavoidable impacts to Riverfront Area are partially calculated as permanent impacts, all alterations are temporary in nature and have been kept to only that area required for construction purposes. Impacted Riverfront Area will be restored to roadway surface, vegetated slopes similar in nature to pre-existing conditions, or piped stormwater conveyance with improved outfall (flared ends). Impervious surfaces are not anticipated to increase beyond the pre-construction footprint.

8.

Summary

On behalf of the Applicant, the Town of Agawam, LEC is submitting this NOI Application for the proposed *Culvert Replacement Project* located at Adams Street over Three Mile Brook in Agawam. The proposed project involves the removal of an

undersized and deteriorating culvert and replacement with an embedded box culvert that complies with the *Massachusetts Stream Crossing Standards*. Work activities will result in temporary and/or permanent alterations to BVW, Bank, LUW, BLSF, and/or Riverfront Area.

On behalf of the Applicant, we look forward to working with the Agawam Conservation Commission and respectfully request that the Commission issue an Order of Conditions approving the project.

Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways 1995. *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act, A Handbook*. 89 pp.

Massachusetts Wetlands Protection Act (M.G.L. c. 131, s. 40),
<https://www.mass.gov/regulations/310-CMR-1000-wetlands-protection-act-regulations#current-regulations>

Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00),
<https://www.mass.gov/doc/310-cmr-1000-the-wetlands-protection-act>

National Flood Insurance Program, Federal Emergency Management Agency Flood Insurance Rate Maps for the Town of Agawam, July 16, 2013 Federal Emergency Management Agency Flood Insurance Rate Map (FEMA FIRM) for Hampden County, Massachusetts (Community Panel 25013C0381E)

New England Hydric Soils Technical Committee. 2019, 4th ed., *Field Indicators for Identifying Hydric Soils in New England*.

Massachusetts Natural Heritage Atlas, 15th Edition. Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries and Wildlife, Route 135, Westborough, MA 01581, http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

U.S. Army Corps of Engineers 2020 National Wetland Plant List, version 3.5 https://wetland-plants.usace.army.mil/nwpl_static/data/DOC/lists_2020/National/National_2020v1.pdf

Appendix A

Locus Maps

Figure 1: USGS Topographic Map

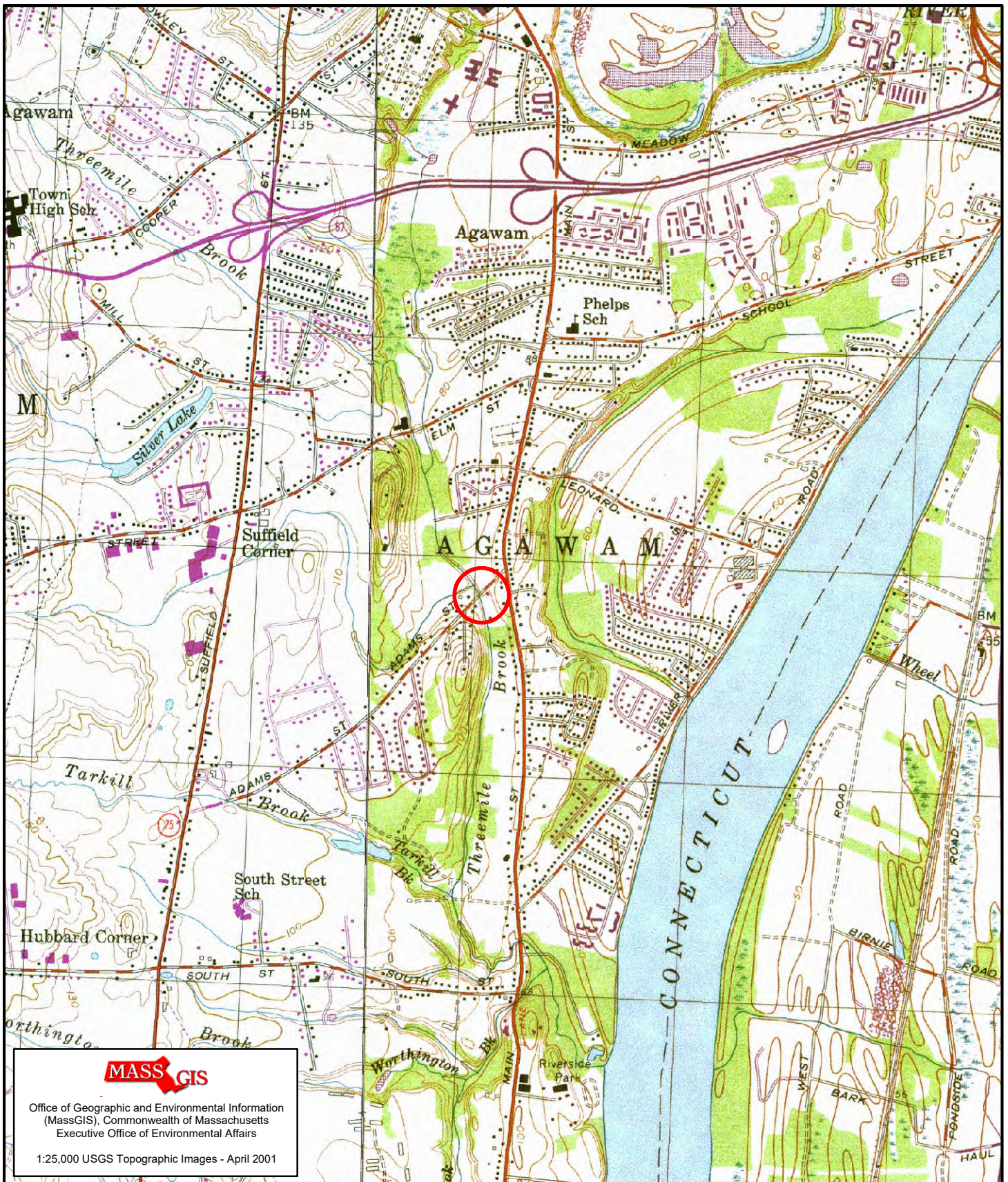
Figure 2: Aerial Orthophoto Map

Figure 3: FEMA Flood Insurance Rate Map

Figure 4: NHESP and Coldwater Fisheries Map

Figure 5: ACEC and ORW Map

Figure 6: Impaired Waters and Wellhead Protection Area Map



LEC

Environmental Consultants, Inc.

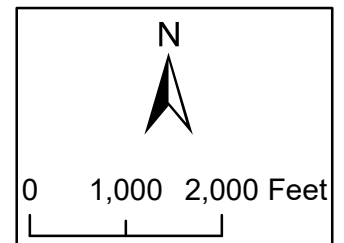
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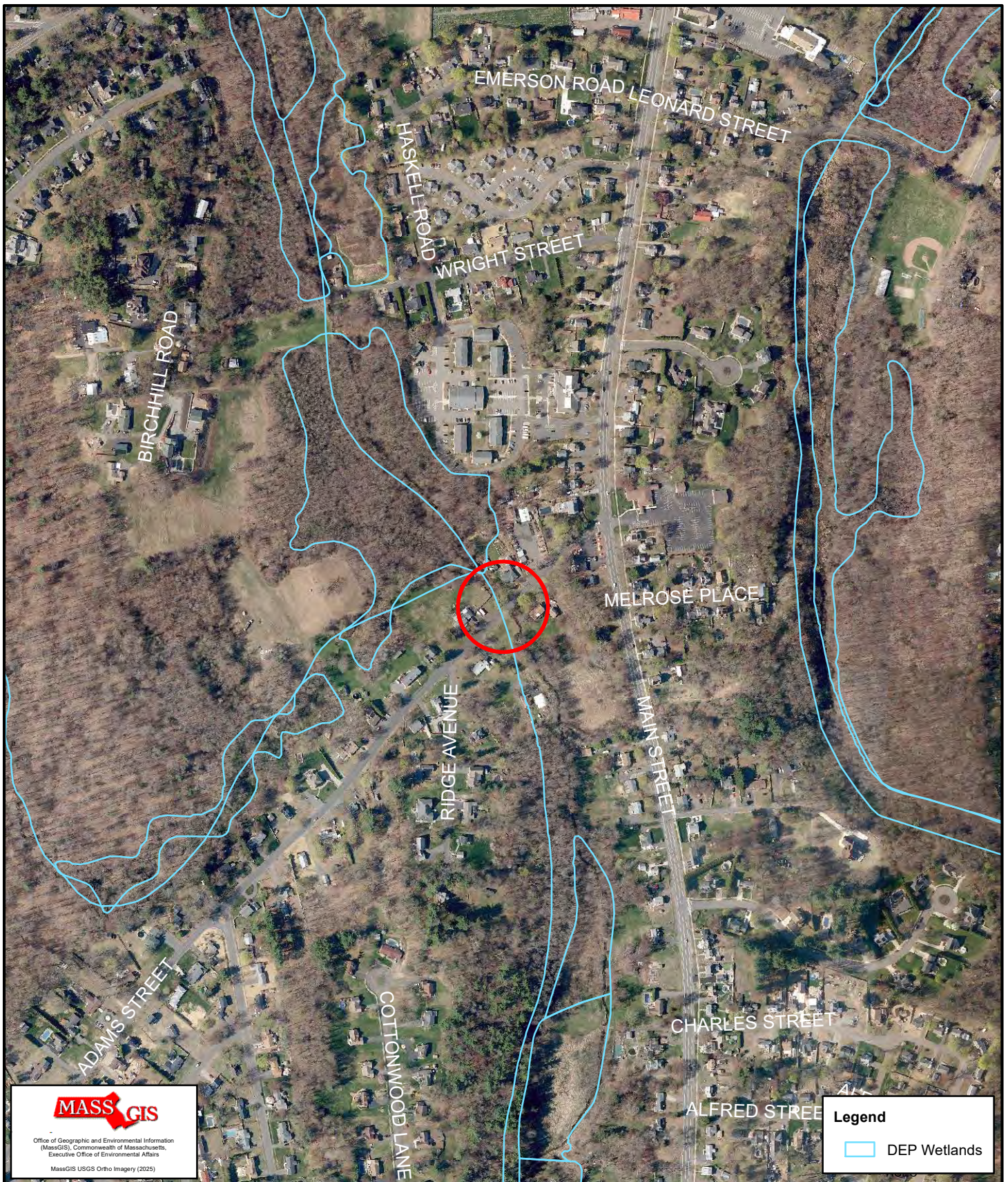
781.245.2500

www.lecenvironmental.com

Figure 1: USGS Topographic Map
Adams Street over Three Mile Brook
Agawam, MA

June 25, 2026





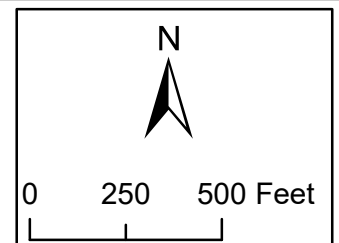
Environmental Consultants, Inc.

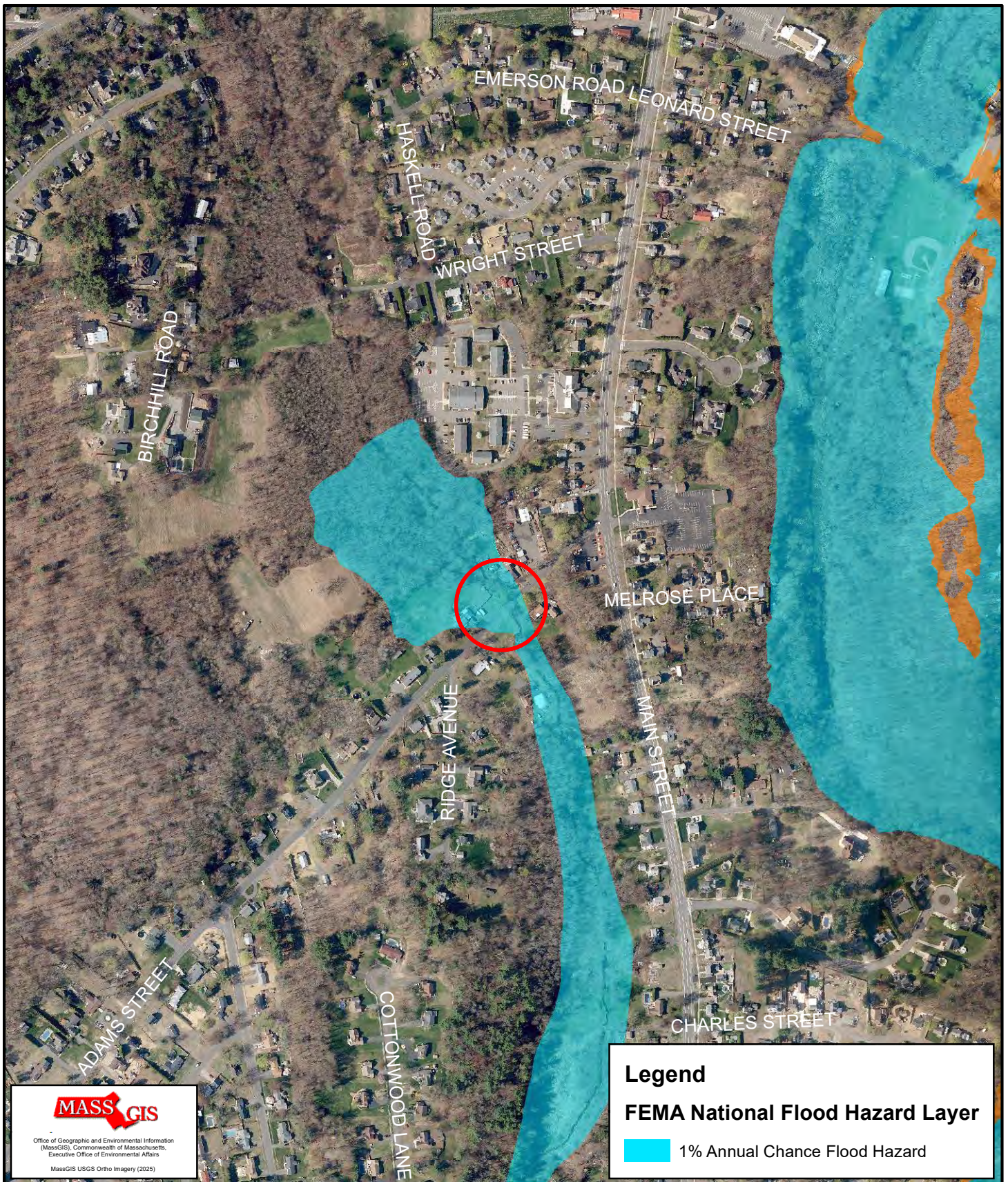
Wakefield, MA
781.245.2500

www.lecenvironmental.com

Figure 2: MassGIS Orthophoto
Adams Street over Three Mile Brook
Agawam, MA

June 25, 2026





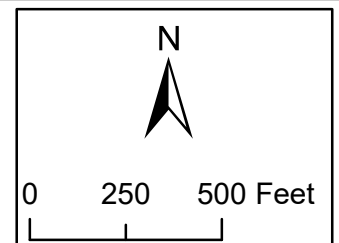
Environmental Consultants, Inc.

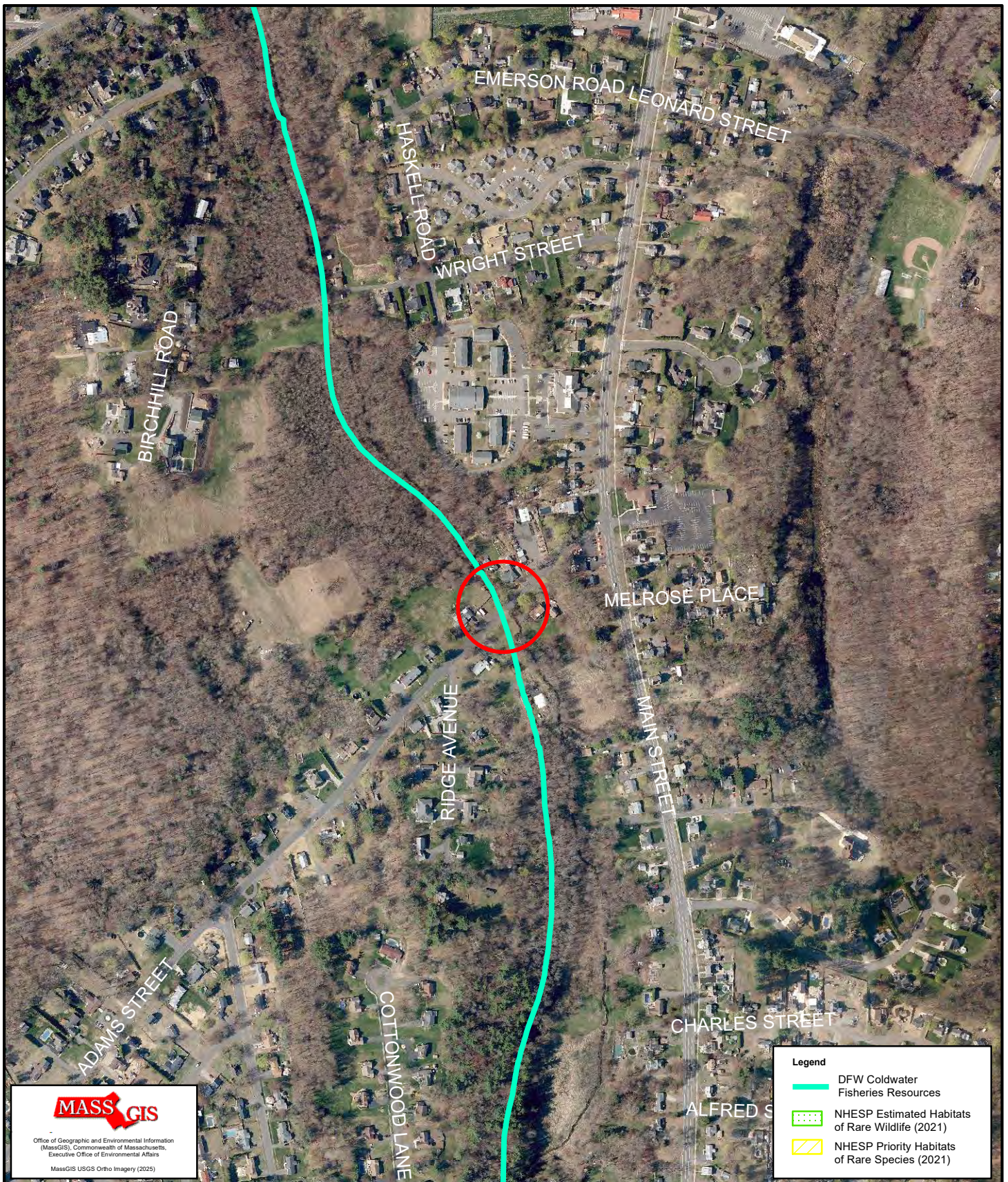
Wakefield, MA
781.245.2500

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Figure 3: FEMA Flood Insurance Rate Map
Adams Street over Three Mile Brook
Agawam, MA

June 25, 2026





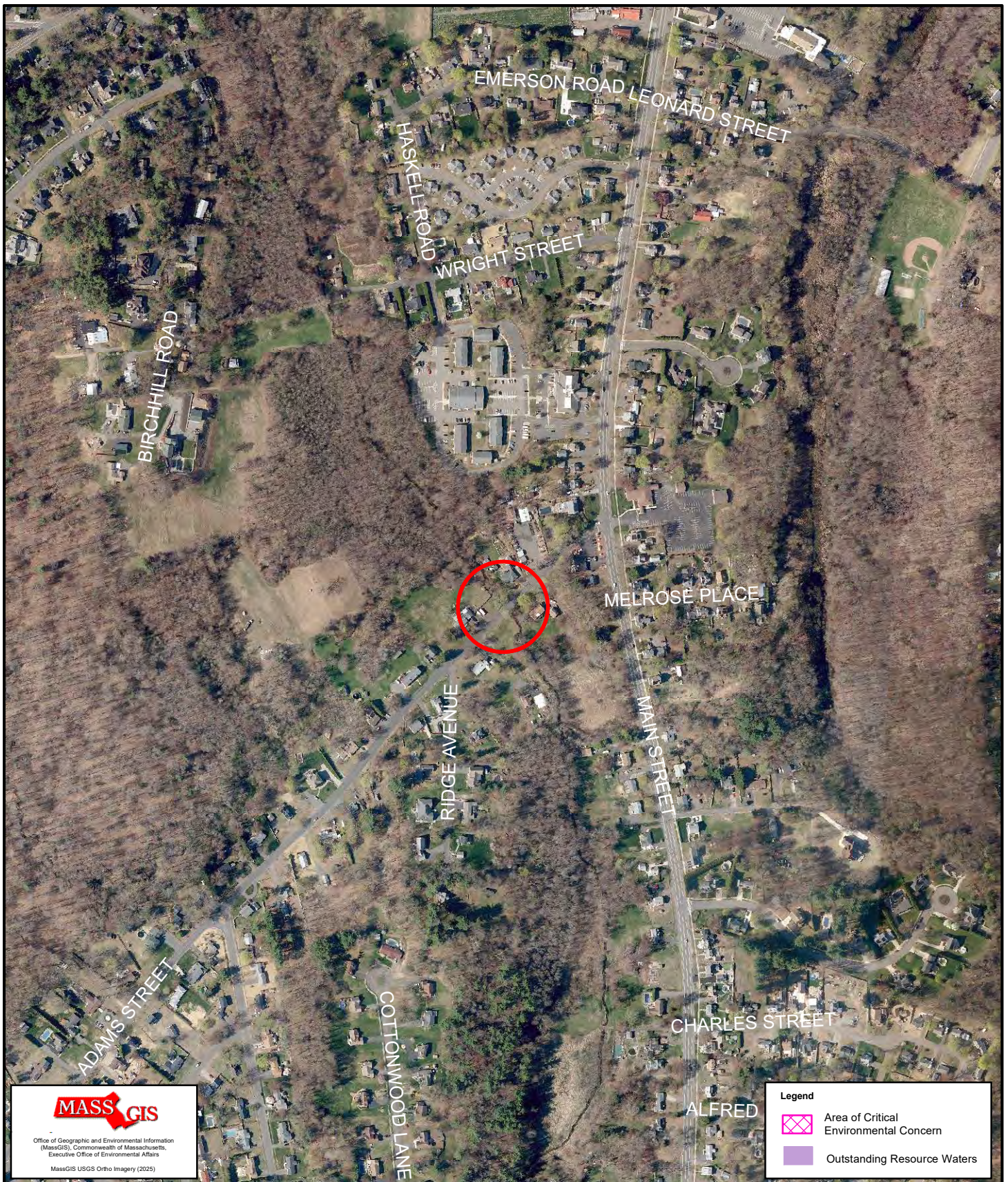
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Figure 4: NHESP and Coldwater Fisheries Map
Adams Street over Three Mile Brook
Agawam, MA

June 25, 2026



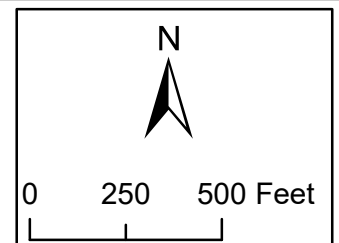
Environmental Consultants, Inc.

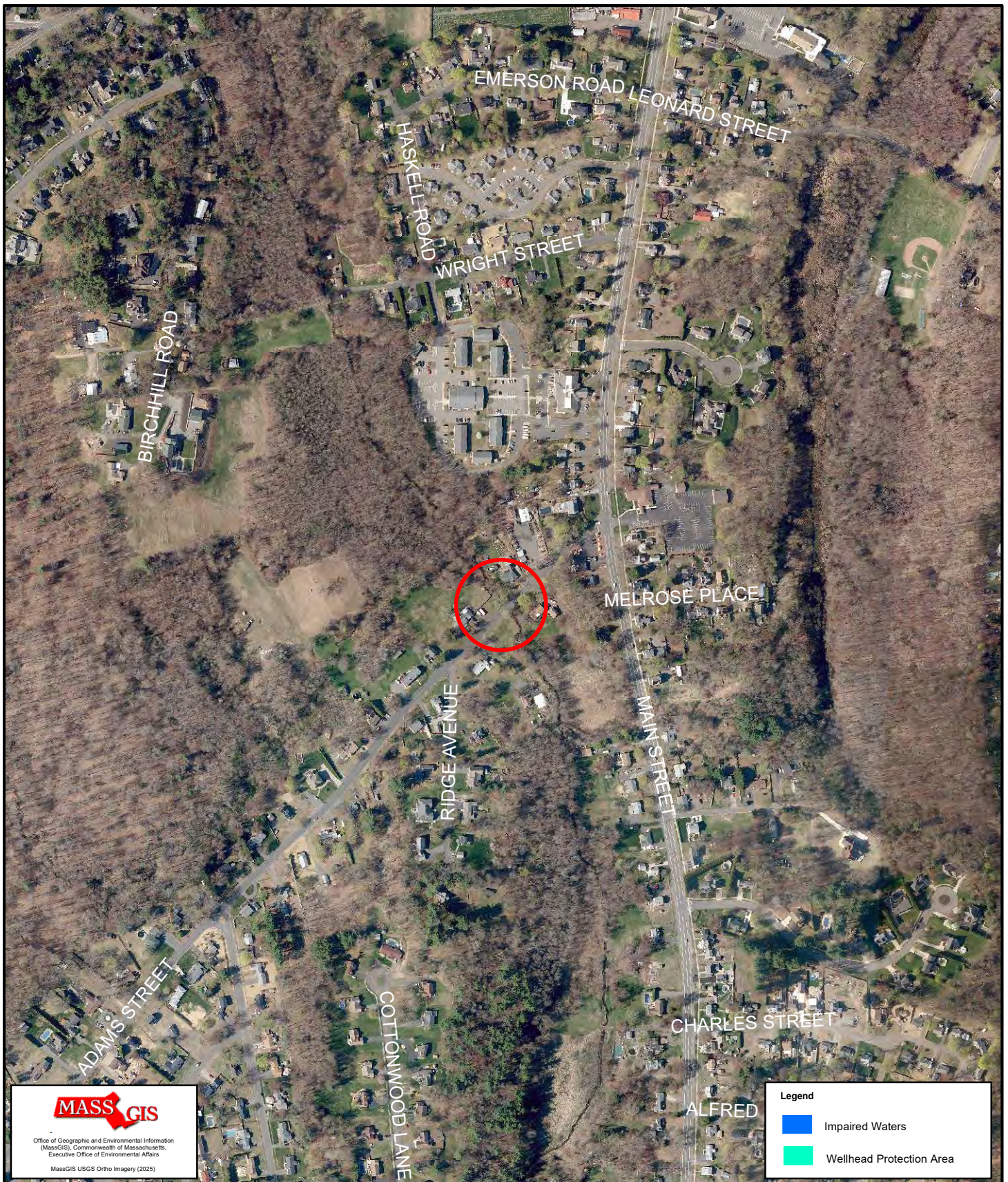
Wakefield, MA
 781.245.2500

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Figure 5: ACEC and ORW Map
 Adams Street over Three Mile Brook
 Agawam, MA

June 25, 2026





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Figure 6: Impaired Waters
and Wellhead Protection Area Map
Adams Street over Three Mile Brook
Agawam, MA

June 25, 2026

Appendix B

Site Photographs

Downstream of Adams Street



Photo 1. Southerly (downstream) view of Three Mile Brook from Adams Street



Photo 2. Northerly view of Three Mile Brook and culvert on south side of Adams Street.



Photo 3. Westerly view of existing drainage outfall with placed rip-rap and paved stormwater conveyance on slope abutting culvert headwall.



Photo 4. Easterly view of existing drainage outfall and paved stormwater conveyance on slope abutting culvert headwall. View of existing utilities crossing the culvert.



Photo 5. Southerly view of Three Mile Brook immediately downstream of culvert. Placed rip rap on lower east Bank (left).



Photo 6. View of eastern Bank with placed rip rap on lower slope.



Photo 7. View of cobble, rocks, and small boulders at outfall of culvert. Streambed transitions to sand and fine to coarse gravel.

Upstream of Adams Street



Photo 8. Southerly view of culvert on north side of Adams Street.



Photo 9. Southerly view of steep western slope on north side of Adams Street.



Photo 10. Northerly view of steep western slope on north side of Adams Street.



Photo 11. Northerly (upstream) view of Three Mile Brook on north side of Adams Street.

Reference Reach #5



Photo 12. View Reference Reach #5. Confluence within unnamed perennial tributary occurs immediately upstream of reference reach.



Photo 13. Downstream view from Reference Reach #5.

Reference Reach #6



Photo 14. Downstream (southerly) view from Reference Reach #6.



Photo 15. Upstream (northerly) view of Three Mile Brook approximately 40 feet upstream from Reference Reach #6.



Photo 16. View of Bank at Reference Reach #6.



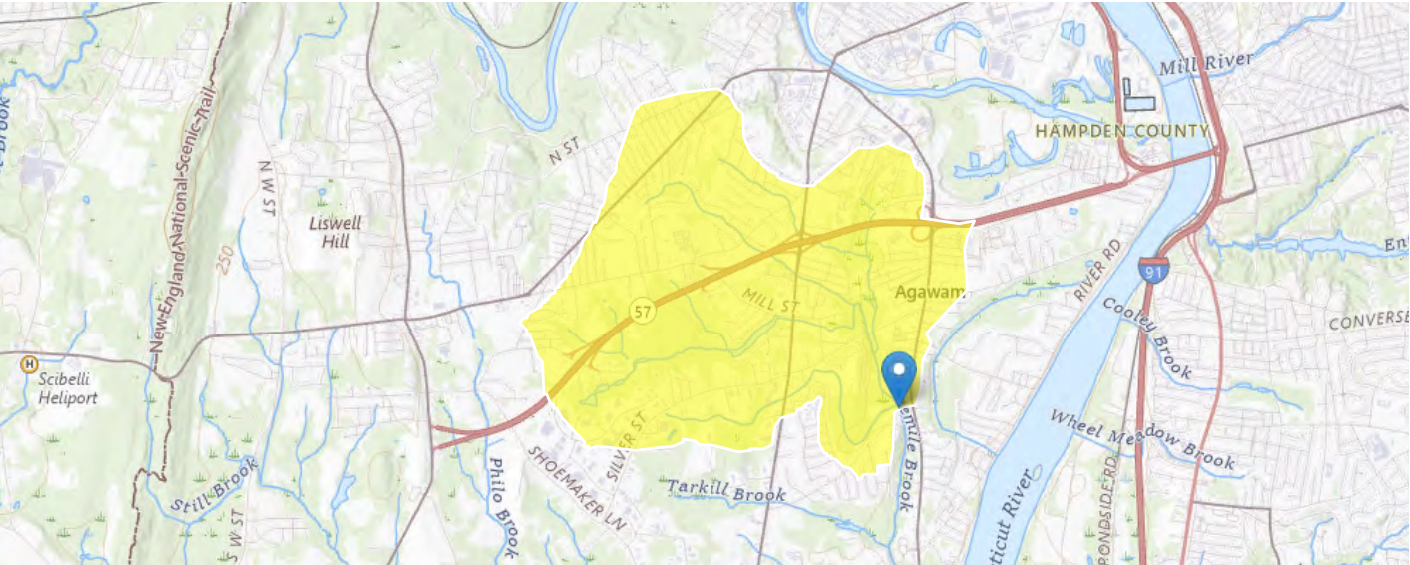
Photo 17. View of Bank at Reference Reach #6.

Appendix C

USGS StreamStats Reports

StreamStats Report-Three Mlle Brook upgradient of Adams Street

Region ID: MA
Clicked Point (Latitude, Longitude): 42.05901, -72.61864
Time: 2026-06-26 08:51:08 -0400



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at <https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release> (<https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release>).

+ Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	3.3638	percent
DRNAREA	Area that drains to a point on a stream	4.38	square miles
ELEV	Mean Basin Elevation	-999	feet
FOREST	Percentage of area covered by forest	12.545	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	3.64	percent
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	97.45	percent
SOILAorB	Percentage of area of Hydrologic Soil Type A or B from SSURGO	75.3	percent
TEMP	Mean Annual Temperature	50.1	degrees F

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.16	512
ELEV	Mean Basin Elevation	-999	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	3.64	percent	0	32.3

Peak-Flow Statistics Disclaimers [Peak Statewide 2016 5156]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors. Equation PK50AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK20AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK10AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK4AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK2AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK1AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK0_5AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK0_2AEP in GC1741 could not be calculated due to undefined basin characteristic.

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

Statistic	Value	Unit
50-percent AEP flood	undefined	ft^3/s
20-percent AEP flood	undefined	ft^3/s
10-percent AEP flood	undefined	ft^3/s
4-percent AEP flood	undefined	ft^3/s
2-percent AEP flood	undefined	ft^3/s
1-percent AEP flood	undefined	ft^3/s
0.5-percent AEP flood	undefined	ft^3/s
0.2-percent AEP flood	undefined	ft^3/s

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (<https://dx.doi.org/10.3133/sir20165156>)

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [MA Mainland Low Flows CLS SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Low-Flow Statistics Parameters [MA Mainland Low Flows GLS SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Low-Flow Statistics Disclaimers [MA Mainland Low Flows CLS SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [MA Mainland Low Flows CLS SIR 2025 5082]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.64	ft^3/s
7 Day 10 Year Low Flow	0.288	ft^3/s

Low-Flow Statistics Disclaimers [MA Mainland Low Flows GLS SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [MA Mainland Low Flows GLS SIR 2025 5082]

Statistic	Value	Unit
30 Day 2 Year Low Flow	0.898	ft^3/s
30 Day 10 Year Low Flow	0.377	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.64	ft^3/s
7 Day 10 Year Low Flow	0.288	ft^3/s
30 Day 2 Year Low Flow	0.898	ft^3/s
30 Day 10 Year Low Flow	0.377	ft^3/s

Low-Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Flow-Duration Statistics

Flow-Duration Statistics Parameters [MA Mainland Annual Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61
SOILAorB	Percent SSURGO Soil Type A or B	75.3	percent	3.5	85.17

Flow-Duration Statistics Disclaimers [MA Mainland Annual Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [MA Mainland Annual Durations SIR 2025 5082]

Statistic	Value	Unit
50 Percent Duration	5.29	ft^3/s
60 Percent Duration	3.76	ft^3/s

Statistic	Value	Unit
70 Percent Duration	2.38	ft^3/s
75 Percent Duration	2.3	ft^3/s
80 Percent Duration	1.84	ft^3/s
85 Percent Duration	1.41	ft^3/s
90 Percent Duration	1.06	ft^3/s
95 Percent Duration	0.717	ft^3/s
98 Percent Duration	0.48	ft^3/s
99 Percent Duration	0.375	ft^3/s

Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Annual Flow Statistics

Annual Flow Statistics Parameters [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Annual Flow Statistics Disclaimers [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Annual Flow Statistics Flow Report [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

Statistic	Value	Unit
Median of annual 7-day low flow	0.662	ft^3/s

Annual Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Seasonal Flow Statistics

Seasonal Flow Statistics Parameters [MA Mainland Monthly Medians SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61
SOILAorB	Percent SSURGO Soil Type A or B	75.3	percent	3.5	85.17
TEMP	Mean Annual Temperature	50.1	degrees F	41.7	51.24

Seasonal Flow Statistics Disclaimers [MA Mainland Monthly Medians SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Seasonal Flow Statistics Flow Report [MA Mainland Monthly Medians SIR 2025 5082]

Statistic	Value	Unit
Med Feb Monthly Mean Flow	11.3	ft^3/s
Med Jun Monthly Mean Flow	4.66	ft^3/s
Med Aug Monthly Mean Flow	1.91	ft^3/s

Seasonal Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ June Flow-Duration Statistics

June Flow-Duration Statistics Parameters [MA Mainland June Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
SOILAorB	Percent SSURGO Soil Type A or B	75.3	percent	3.5	85.17

June Flow-Duration Statistics Flow Report [MA Mainland June Durations SIR 2025 5082]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU
June 50 Percent Duration	3.83	ft^3/s	2.52	5.82
June 90 Percent Duration	1.26	ft^3/s	0.61	2.6

June Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ July Flow-Duration Statistics

July Flow-Duration Statistics Parameters [MA Mainland July Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

July Flow-Duration Statistics Disclaimers [MA Mainland July Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

July Flow-Duration Statistics Flow Report [MA Mainland July Durations SIR 2025 5082]

Statistic	Value	Unit
July 50 Percent Duration	2.11	ft^3/s
July 90 Percent Duration	0.717	ft^3/s

July Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ August Flow-Duration Statistics

August Flow-Duration Statistics Parameters [MA Mainland August Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

August Flow-Duration Statistics Disclaimers [MA Mainland August Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

August Flow-Duration Statistics Flow Report [MA Mainland August Durations SIR 2025 5082]

Statistic	Value	Unit
August 50 Percent Duration	1.46	ft^3/s
August 90 Percent Duration	0.501	ft^3/s

August Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ September Flow-Duration Statistics

September Flow-Duration Statistics Parameters [MA Mainland September Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

September Flow-Duration Statistics Disclaimers [MA Mainland September Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

September Flow-Duration Statistics Flow Report [MA Mainland September Durations SIR 2025 5082]

Statistic	Value	Unit
September 50 Percent Duration	1.54	ft^3/s

Statistic	Value	Unit
September 90 Percent Duration	0.512	ft^3/s

September Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ General Flow Statistics

General Flow Statistics Parameters [MA Mainland Harmonic Mean SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

General Flow Statistics Disclaimers [MA Mainland Harmonic Mean SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

General Flow Statistics Flow Report [MA Mainland Harmonic Mean SIR 2025 5082]

Statistic	Value	Unit
Harmonic Mean Streamflow adjusted for proportion of zero flow days	2.59	ft^3/s

General Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLDEM10M	Mean Basin Slope from 10m DEM	3.3638	percent	2.2	23.9
DRNAREA	Drainage Area	4.38	square miles	0.6	329

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	23.6	ft	21.3
Bankfull Depth	1.31	ft	19.8
Bankfull Area	30.7	ft ²	29
Bankfull Streamflow	63.7	ft ³ /s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	28	ft
Bieger_D_channel_depth	1.71	ft
Bieger_D_channel_cross_sectional_area	48.8	ft ²

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	38.2	ft
Bieger_P_channel_depth	1.9	ft
Bieger_P_channel_cross_sectional_area	73.5	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	20.8	ft
Bieger_USA_channel_depth	1.65	ft
Bieger_USA_channel_cross_sectional_area	37.9	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	23.6	ft	21.3
Bankfull Depth	1.31	ft	19.8
Bankfull Area	30.7	ft ²	29
Bankfull Streamflow	63.7	ft ³ /s	55
Bieger_D_channel_width	28	ft	
Bieger_D_channel_depth	1.71	ft	
Bieger_D_channel_cross_sectional_area	48.8	ft ²	
Bieger_P_channel_width	38.2	ft	
Bieger_P_channel_depth	1.9	ft	
Bieger_P_channel_cross_sectional_area	73.5	ft ²	
Bieger_USA_channel_width	20.8	ft	
Bieger_USA_channel_depth	1.65	ft	
Bieger_USA_channel_cross_sectional_area	37.9	ft ²	

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M., 2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (<http://pubs.usgs.gov/sir/2013/5155/>)
 Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G., 2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

➤ Probability Statistics

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.01	1.99
FOREST	Percent Forest	12.545	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1
PCTSNDGRV	Percent Underlain By Sand And Gravel	97.45	percent	0	100

Probability Statistics Disclaimers [Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Probability Statistics Flow Report [Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.997	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A., 2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.38	square miles	0.1	10000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 1]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	10400	ft ³ /s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D. 1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)

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Application Version: 4.34.0

SSHydro Services Version: 1.3.0

SSDelineate Services Version: 1.2.0

NSS Services Version: 2.2.1

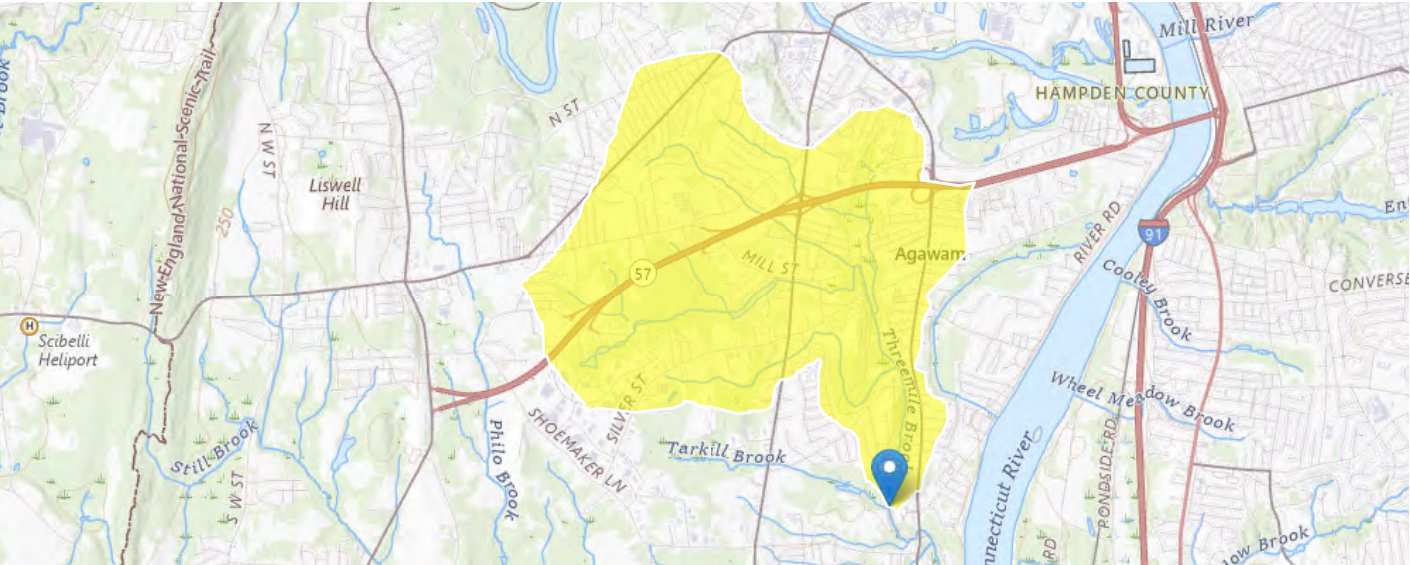
GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1

StreamStats Report-Three Mile Brook-Before Confluence with Tarkill Brook

Region ID: MA
Clicked Point (Latitude, Longitude): 42.04662, -72.61980
Time: 2026-06-26 09:33:14 -0400



StreamStats Update

Starting with version 4.30.0, the StreamStats application uses services that were redeveloped with open-source software components. Users may observe minor variations in computed results when compared to those from previous versions. These differences are expected and do not reflect errors in the underlying data or analytical methods. Users are advised to consider these potential variations when interpreting or comparing results generated across different versions of StreamStats. Please email streamstats@usgs.gov with any questions or concerns. A full list of changes can be found at <https://www.usgs.gov/streamstats/news/streamstats-data-updates-open-source-code-release> .

+ Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BSLDEM10M	Mean basin slope computed from 10 m DEM	3.4424	percent
DRNAREA	Area that drains to a point on a stream	4.66	square miles
ELEV	Mean Basin Elevation	-999	feet
FOREST	Percentage of area covered by forest	13.009	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	4.16	percent
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	97	percent
SOILAorB	Percentage of area of Hydrologic Soil Type A or B from SSURGO	72.5	percent
TEMP	Mean Annual Temperature	50.1	degrees F

➤ Peak-Flow Statistics

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.16	512
ELEV	Mean Basin Elevation	-999	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	4.16	percent	0	32.3

Peak-Flow Statistics Disclaimers [Peak Statewide 2016 5156]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors. Equation PK50AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK20AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK10AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK4AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK2AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK1AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK0_5AEP in GC1741 could not be calculated due to undefined basin characteristic. Equation PK0_2AEP in GC1741 could not be calculated due to undefined basin characteristic.

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

Statistic	Value	Unit
50-percent AEP flood	undefined	ft^3/s
20-percent AEP flood	undefined	ft^3/s
10-percent AEP flood	undefined	ft^3/s
4-percent AEP flood	undefined	ft^3/s
2-percent AEP flood	undefined	ft^3/s
1-percent AEP flood	undefined	ft^3/s
0.5-percent AEP flood	undefined	ft^3/s
0.2-percent AEP flood	undefined	ft^3/s

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p. (<https://dx.doi.org/10.3133/sir20165156>)

➤ Low-Flow Statistics

Low-Flow Statistics Parameters [MA Mainland Low Flows CLS SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Low-Flow Statistics Parameters [MA Mainland Low Flows GLS SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Low-Flow Statistics Disclaimers [MA Mainland Low Flows CLS SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [MA Mainland Low Flows CLS SIR 2025 5082]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.692	ft^3/s
7 Day 10 Year Low Flow	0.314	ft^3/s

Low-Flow Statistics Disclaimers [MA Mainland Low Flows GLS SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Low-Flow Statistics Flow Report [MA Mainland Low Flows GLS SIR 2025 5082]

Statistic	Value	Unit
30 Day 2 Year Low Flow	0.965	ft^3/s
30 Day 10 Year Low Flow	0.409	ft^3/s

Low-Flow Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
7 Day 2 Year Low Flow	0.692	ft^3/s
7 Day 10 Year Low Flow	0.314	ft^3/s
30 Day 2 Year Low Flow	0.965	ft^3/s
30 Day 10 Year Low Flow	0.409	ft^3/s

Low-Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Flow-Duration Statistics

Flow-Duration Statistics Parameters [MA Mainland Annual Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61
SOILAorB	Percent SSURGO Soil Type A or B	72.5	percent	3.5	85.17

Flow-Duration Statistics Disclaimers [MA Mainland Annual Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Flow-Duration Statistics Flow Report [MA Mainland Annual Durations SIR 2025 5082]

Statistic	Value	Unit
50 Percent Duration	5.61	ft^3/s
60 Percent Duration	3.98	ft^3/s

Statistic	Value	Unit
70 Percent Duration	2.53	ft^3/s
75 Percent Duration	2.46	ft^3/s
80 Percent Duration	1.97	ft^3/s
85 Percent Duration	1.52	ft^3/s
90 Percent Duration	1.14	ft^3/s
95 Percent Duration	0.773	ft^3/s
98 Percent Duration	0.52	ft^3/s
99 Percent Duration	0.407	ft^3/s

Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Annual Flow Statistics

Annual Flow Statistics Parameters [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

Annual Flow Statistics Disclaimers [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Annual Flow Statistics Flow Report [MA Mainland Annual 7Day Low Flow SIR 2025 5082]

Statistic	Value	Unit
Median of annual 7-day low flow	0.717	ft^3/s

Annual Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Seasonal Flow Statistics

Seasonal Flow Statistics Parameters [MA Mainland Monthly Medians SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61
SOILAorB	Percent SSURGO Soil Type A or B	72.5	percent	3.5	85.17
TEMP	Mean Annual Temperature	50.1	degrees F	41.7	51.24

Seasonal Flow Statistics Disclaimers [MA Mainland Monthly Medians SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Seasonal Flow Statistics Flow Report [MA Mainland Monthly Medians SIR 2025 5082]

Statistic	Value	Unit
Med Feb Monthly Mean Flow	12	ft^3/s
Med Jun Monthly Mean Flow	4.95	ft^3/s
Med Aug Monthly Mean Flow	2.05	ft^3/s

Seasonal Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ June Flow-Duration Statistics

June Flow-Duration Statistics Parameters [MA Mainland June Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
SOILAorB	Percent SSURGO Soil Type A or B	72.5	percent	3.5	85.17

June Flow-Duration Statistics Flow Report [MA Mainland June Durations SIR 2025 5082]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR^2: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	PIL	PIU
June 50 Percent Duration	4.06	ft^3/s	2.68	6.16
June 90 Percent Duration	1.34	ft^3/s	0.649	2.77

June Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ July Flow-Duration Statistics

July Flow-Duration Statistics Parameters [MA Mainland July Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

July Flow-Duration Statistics Disclaimers [MA Mainland July Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

July Flow-Duration Statistics Flow Report [MA Mainland July Durations SIR 2025 5082]

Statistic	Value	Unit
July 50 Percent Duration	2.26	ft^3/s
July 90 Percent Duration	0.773	ft^3/s

July Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ August Flow-Duration Statistics

August Flow-Duration Statistics Parameters [MA Mainland August Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

August Flow-Duration Statistics Disclaimers [MA Mainland August Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

August Flow-Duration Statistics Flow Report [MA Mainland August Durations SIR 2025 5082]

Statistic	Value	Unit
August 50 Percent Duration	1.57	ft^3/s
August 90 Percent Duration	0.543	ft^3/s

August Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ September Flow-Duration Statistics

September Flow-Duration Statistics Parameters [MA Mainland September Durations SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

September Flow-Duration Statistics Disclaimers [MA Mainland September Durations SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

September Flow-Duration Statistics Flow Report [MA Mainland September Durations SIR 2025 5082]

Statistic	Value	Unit
September 50 Percent Duration	1.65	ft^3/s

Statistic	Value	Unit
September 90 Percent Duration	0.554	ft^3/s

September Flow-Duration Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ General Flow Statistics

General Flow Statistics Parameters [MA Mainland Harmonic Mean SIR 2025 5082]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.49	466.19
MA_SVI2025	Streamflow Variability Index for Massachusetts, as described in SIR 2025-5058	0.37	dimensionless	0.38	0.61

General Flow Statistics Disclaimers [MA Mainland Harmonic Mean SIR 2025 5082]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

General Flow Statistics Flow Report [MA Mainland Harmonic Mean SIR 2025 5082]

Statistic	Value	Unit
Harmonic Mean Streamflow adjusted for proportion of zero flow days	2.78	ft^3/s

General Flow Statistics Citations

Gardner C. Bent, Elizabeth A. Ahearn, and Jenn H. Fair2025, Equations for Estimating Low-Flow Statistics in Massachusetts, U.S. Geological Survey Scientific Investigations Report 2025-5082 (<https://doi.org/10.3133/sir20255082>)

➤ Bankfull Statistics

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
BSLDEM10M	Mean Basin Slope from 10m DEM	3.4424	percent	2.2	23.9
DRNAREA	Drainage Area	4.66	square miles	0.6	329

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	24.3	ft	21.3
Bankfull Depth	1.34	ft	19.8
Bankfull Area	32.3	ft ²	29
Bankfull Streamflow	67.9	ft ³ /s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	28.8	ft
Bieger_D_channel_depth	1.74	ft
Bieger_D_channel_cross_sectional_area	50.9	ft ²

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	38.9	ft
Bieger_P_channel_depth	1.93	ft
Bieger_P_channel_cross_sectional_area	75.9	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	21.3	ft
Bieger_USA_channel_depth	1.67	ft
Bieger_USA_channel_cross_sectional_area	39.2	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct, RMSE: Root Mean Squared Error, PseudoR²: Pseudo R Squared (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	24.3	ft	21.3
Bankfull Depth	1.34	ft	19.8
Bankfull Area	32.3	ft ²	29
Bankfull Streamflow	67.9	ft ³ /s	55
Bieger_D_channel_width	28.8	ft	
Bieger_D_channel_depth	1.74	ft	
Bieger_D_channel_cross_sectional_area	50.9	ft ²	
Bieger_P_channel_width	38.9	ft	
Bieger_P_channel_depth	1.93	ft	
Bieger_P_channel_cross_sectional_area	75.9	ft ²	
Bieger_USA_channel_width	21.3	ft	
Bieger_USA_channel_depth	1.67	ft	
Bieger_USA_channel_cross_sectional_area	39.2	ft ²	

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013–5155, 62 p., (<http://pubs.usgs.gov/sir/2013/5155/>)
 Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

➤ Probability Statistics

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.01	1.99
FOREST	Percent Forest	13.009	percent	0	100
MAREGION	Massachusetts Region	1	dimensionless	0	1
PCTSNDGRV	Percent Underlain By Sand And Gravel	97	percent	0	100

Probability Statistics Disclaimers [Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors.

Probability Statistics Flow Report [Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.997	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

➤ Maximum Probable Flood Statistics

Maximum Probable Flood Statistics Parameters [Crippen Bue Region 1]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.66	square miles	0.1	10000

Maximum Probable Flood Statistics Flow Report [Crippen Bue Region 1]

Statistic	Value	Unit
Maximum Flood Crippen Bue Regional	10900	ft ³ /s

Maximum Probable Flood Statistics Citations

Crippen, J.R. and Bue, Conrad D.1977, Maximum Floodflows in the Conterminous United States, Geological Survey Water-Supply Paper 1887, 52p. (<https://pubs.usgs.gov/wsp/1887/report.pdf>)

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USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.34.0

SSHydro Services Version: 1.3.0

SSDelineate Services Version: 1.2.0

NSS Services Version: 2.2.1

GageStats Services Version: 1.2.1

Pourpoint Services Version: 1.2.0

Batch Processor Version: 1.6.1

Appendix D

Riverbed Substrate Analysis

**Pebble Count at Reference Reach 5 (RR5)
Three Mile Brook Upstream from Adams Street**

Class	Particle Size (mm)	Frequency	Percent	Cumulative Percent
Sand	<2	87	87%	87%
Very Fine Gravel	2-4	9	9%	96%
Fine Gravel	4-6	0	0%	96%
Fine Gravel	6-8	3	3%	99%
Medium Gravel	8-11	1	1%	100%
Medium Gravel	11-16	0	0%	100%
Coarse Gravel	16-22	0	0%	100%
Coarse Gravel	22-32	0	0%	100%
Very Coarse Gravel	32-45	0	0%	100%
Very Coarse Gravel	45-64	0	0%	100%
Small Cobble	64-90	0	0%	100%
Medium Cobble	90-128	0	0%	100%
Large Cobble	128-180	0	0%	100%
Very Large Cobble	180-256	0	0%	100%
Small Boulder	256-512	0	0%	100%
Medium Boulder	512-1024	0	0%	100%
Large Boulder	1024-2048	0	0%	100%
Very Large Boulder	2048-4096	0	0%	100%
	Total	100	100%	100%

**Pebble Count at Reference Reach 6 (RR6)
Three Mile Brook Downstream from Adams Street**

Class	Particle Size (mm)	Frequency	Percent	Cumulative Percent
Sand	<2	82	87%	87%
Very Fine Gravel	2-4	12	9%	96%
Fine Gravel	4-6	0	0%	96%
Fine Gravel	6-8	6	3%	99%
Medium Gravel	8-11	0	1%	100%
Medium Gravel	11-16	0	0%	100%
Coarse Gravel	16-22	0	0%	100%
Coarse Gravel	22-32	0	0%	100%
Very Coarse Gravel	32-45	0	0%	100%
Very Coarse Gravel	45-64	0	0%	100%
Small Cobble	64-90	0	0%	100%
Medium Cobble	90-128	0	0%	100%
Large Cobble	128-180	0	0%	100%
Very Large Cobble	180-256	0	0%	100%
Small Boulder	256-512	0	0%	100%
Medium Boulder	512-1024	0	0%	100%
Large Boulder	1024-2048	0	0%	100%
Very Large Boulder	2048-4096	0	0%	100%
	Total	100	100%	100%



Photo 1 Representative View of Stream Bed Substrate at RR6.

Appendix E

MassDEP Western Region-Bureau of Water Resources-Wetlands Program Minimum Information and Documentation for Dewatering Plans



Department of Environmental Protection

Western Regional Office • 436 Dwight Street, Springfield MA 01103 • 413-784-1100

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

Western Region-Bureau of Water Resources-Wetlands Program **Minimum Information and Documentation for Dewatering Plans**

The Massachusetts Department of Environmental Protection's (hereinafter "the Department") Western Region Wetlands Program has determined that a set of site plans and attached information submitted for its review does not clearly demonstrate that proposed activities "will contribute to the protection of the interests identified" in the Massachusetts Wetlands Protection Act, MGL Chapter 131, Section 40 (and similarly that such plans do not clearly demonstrate that the project will prevent "adverse impacts" to the "Aquatic Ecosystem" associated with "Waters of the United States within the Commonwealth", each as defined at 314 CMR 9.02).

Therefore, please review the below criteria and either modify such plans accordingly where pertinent, or contact the Environmental Analyst assigned to your project to further discuss possible changes. Any request to modify any of the below minimum requirements should be submitted to the Department in writing, and should include justifications. Approval to modify will be provided by the Department in writing, and solely at its discretion.

1. Prepare or modify a dewatering plan, which shall minimally include identification of techniques for bypass of water around the area of alteration; and separately, identification of techniques for treatment of residual water ("seepage water") within the area of alteration. All such plans shall completely segregate bypass water from residual water. This dewatering plan shall include:
 - Identification of any regulatory "time-of-year" ("TOY") restrictions governing the proposed work [from the US Army Corps of Engineers "General Permit-Commonwealth of Massachusetts" ("MGP"); any Massachusetts Natural Heritage and Endangered Species Program directive; and any presumptive directions offered by the Massachusetts Division of Fisheries and Wildlife]. The Department will require adherence to TOY restrictions unless the applicant demonstrates that compliance with them is not practicable;
 - Identification of any "Cold-water Fishery" (as defined at 310 CMR 10.04 and 314 CMR 9.02) within the subject reach where work is proposed, by reference to the Massachusetts Division of Fisheries and Wildlife "Coldwater Fishery Resources Index" (See http://www.mass.gov/dfwele/dfw/fisheries/conservation/cfr/watershed_index.htm);

- Use of temporary flume pipes to bypass flowing water in small rivers and intermittent streams, when flowing, and upstream and downstream temporary dams to isolate the work area and protect it from backwatering. Flume pipes shall be equipped with anti-seep collars where they pass through temporary dams, and fish screens on their upstream inverts. Flume pipes shall be sized to adequately handle at least a two-year storm event;
- Use of cofferdams to isolate the area of alteration from flowing water in larger rivers, and in reservoirs, lakes, and ponds;
- Use of pumps and hose lines to dewater standing water held behind cofferdams, and to dewater residual water and leaked water in isolated work areas. The rating, type, and location of all pumps and the intake and discharge positions of all hoses shall be identified and located on the site plans;
- Use of appropriate energy dissipaters and erosion and sedimentation control best management practices at the discharge orifices of all bypass flume pipes and pump hoses;
- Treatment of pumped residual water prior to discharge back to resource areas. Techniques such as filter bags, frac tanks, and stilling basins shall be analyzed and specifically proposed;
- Salvage of sessile aquatic organisms (vertebrates, crayfish, freshwater mussels, etc.) stranded during dewatering;
- Structural and nonstructural best management practices to separate stormwater from the area of alteration during work and while the site is unstable;
- Assurance that the substrate of the area of alteration is stable prior to the reestablishment of flow within it.

The Department advises that dewatering plans be designed according to *Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms at Road Crossings* (USDA Forest Service-National Technology and development Program 0877 1801-SDTDC, May 2008) (available at http://www.nae.usace.army.mil/reg/Stream/USFS_StreamSimulationManual.pdf). This document is very useful, even for projects not located in flowing streams.

Invasive Plant Species Map Site off of 365 Main St. Agawam, MA

Area of Sparse and Sporadic Invasive Plants
Area of Significant Invasive Plants

Potential Vernal Pools

Certified Vernal Pools

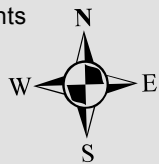
Estimated Site Area

MassDEP Wetlands

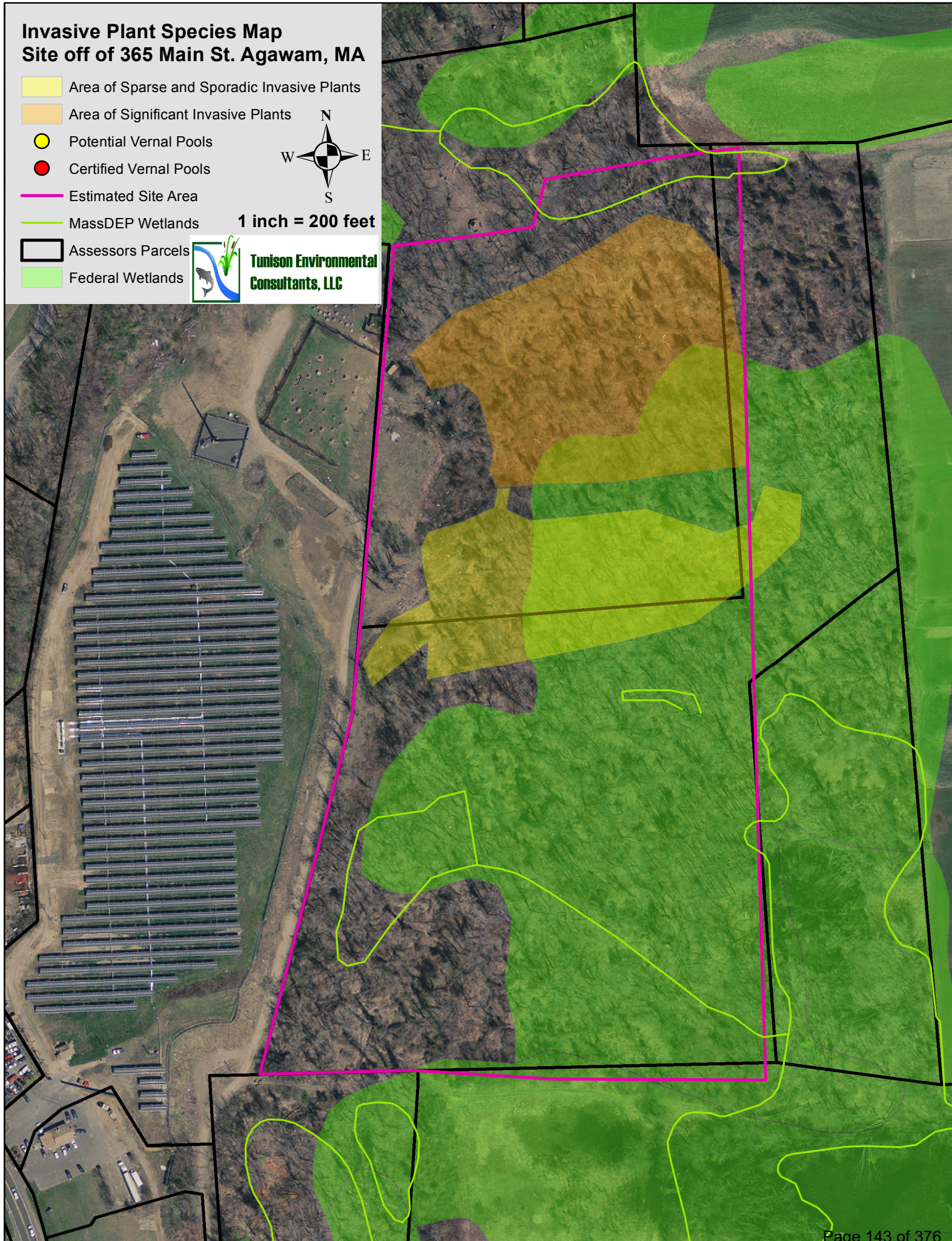
1 inch = 200 feet

Assessors Parcels

Federal Wetlands



**Tunison Environmental
Consultants, LLC**





Tunison Environmental Consultants, LLC

June 5, 2026

Attn: Mark Stinson
MassDEP
Western Regional Office
Town Hall
436 Dwight Street
Springfield, Massachusetts 01103

**RE: Response to MassDEP Comments (MassDEP File #: WE 087-0714) for
Wetland and Ecological Restorations at a site off of Main Street (Assessor's
ID: L14 1 3) in Agawam, Massachusetts**

Dear Agent Stinson:

Below are our responses to the nine comments listed on the June 1, 2026,
Notification of Wetland Protection Act File Number. The comments are listed below in
parenthesis and italics followed by the response.

1. *"Section 1 of the NOI, Street Address, does not appear to be correct. Form 3
may need to be corrected. Also, the map/parcel ID information needs to be
verified. Name of property owner may be different."*

Both parcels were included on the site plan from the engineers and was also
presented to the U.S. Army Corps of Engineers (USACE) when requesting a
determination for filing the project as a "General Permit" and not an "Individual
Permit" as to the area where some brush was cut. The response from the
USACE was that they would not take jurisdiction over this site so no USACE
Permit was required. We kept the information the same when filing the Notice of
Intent (NOI). We have since removed the 365 Main Street address even though
it is shown on the plans as the applicant doesn't own this parcel but leases it.
The alteration to the vegetation in the Bordering Vegetated Wetland (BVW) and
Bordering Land Subject to Flooding only occurs on the parcel owned by the
applicant so the other parcel (Parcel ID: L14 1 3) was removed from the
application on the attached updated NOI Form 3 (Attachment 1, Updated NOI
Form 3).

2. *"The restoration work is not apparently a limited project and only the generic citation of 310 CMR 10.53 is even noted. Only the invasive species removal could be considered an Ecological Restoration Limited Project. However, since the NOI submitted does not include an Appendix A, nor was notice apparently placed in the Environmental Monitor, then it can't be reviewed that way. The applicant needs to comply with the requirements of 310 CMR 10.11, 310 CMR 10.12 and 310 CMR 10.53(4)(e)5."*

The checkbox was accidentally checked when the Form 3 was filled out back in November of 2023 just prior to providing the project information to the USACE. This checkbox has been unchecked on the updated Form 3. The Appendix A is attached (refer to Attachment 2, Appendix A) which was prepared back in 2023 but updated on June 4, 2026. Please note, even though the shrub and some tree cutting occurred in an area greater than 5,000 sq. ft. of wetland, the USACE has decided the project will not be under USACE jurisdiction.

3. *"The Commission needs to understand the definition of BLSF and how BVW boundaries are reviewed. Per the regulations in the definition of BLSF, it states it (BLSF) extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland. One can't have BVW and BLSF in the same footprint. The specific footprint is either one or the other resource area, it can't be both."*

No comment.

4. *"Any use of herbicides in BVW likely requires a WM04 Permit from MassDEP."*

This is understood and typically required under a Special Condition within the Order of Conditions (OOC). The majority of the herbicide applicators that we use have both aquatic applications and right-of-way applications. It states that an herbicide applicator's license is required in five locations within the Ecological Restoration Plan which is generic as our reports are often used for rights-of-way and/or aquatic applications. This is always a request for the municipality or if a state agency is contracting the herbicide applicator to provide a copy of this license prior to the commencement of work.

5. *"Multiple locations in the NOI mention work occurring in the year 2024. Elsewhere it notes work to occur in the year 2025. All dates need to be checked."*

Yes, the report references 2025 as it has been updated multiple times since 2023. Prior to mentioning the year listed in the report it states in several areas

that, "This will **LIKELY** occur in...." This is done since most ecological restorations take several years to complete and the years for certain actions are unknown. Invasive plants typically aren't under control in one to two years as some of the plant basis (roots) will survive and the existing seed bank will sprout new plants once the ones targeted are eradicated. In addition, the lack of native plants if not ordered a year in advance will often extend the timeline of an ecological restoration. These delays make the actual year irrelevant but we include an estimated year for permitting purposes. The report has been updated (refer to Attachment 3, Ecological Restoration Plan Updated Narrative).

6. "The restoration plants list needs to note the plants wetland indicator status."

Table 1 from our report has been included with the wetland indicator status shown below.

Table 1 Wetland Restoration Areas Planting Table					
Plant Species	# of Plants	Plant On Center	Plant Height	Size	Wetland Indicator Status*
New England Wetmix Seed Mix application rates to bare wetland restoration areas: 1 lb./1,200 sq. ft.					
Northern Spicebush (<i>Lindera benzoin</i>)	22	8 – 10 ft.	18 - 24 in.	2 - 4 gal. container	FACW
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	17	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container	FACW
Southern Arrowwood (<i>Viburnum dentatum</i>)	15	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container	FAC
Silky Dogwood (<i>Cornus amomum</i>)	13	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container	FACW
Common Winterberry (<i>Ilex verticillata</i>)	7	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container	FACW
Pin Oaks (<i>Quercus palustris</i>)	2	10 – 15 ft.	24-30 in.	2 - 4 gal. container	FACW
Red Maple (<i>Acer rubrum</i>)	8	10 – 15 ft.	24-30 in.	2 - 4 gal. container	FAC
The altered area of Wetlands A and B will include planting of 10 trees and 74 shrubs.					
Status based on USACE National Plant List: Northcentral and Northeast Region, 2022					

7. "Page 26 of 27 mentions Riverfront restoration, yet there is no Riverfront on the mentioned parcels."

This was a typo that existed from our report template as it should have been "BLSF" or "restoration area". It has been removed from the updated report that is attached.

8. *"The submitted plans do not appear to show what vertical elevation datum is being used. Since the flood plain elevation is based upon NAVD88, the plans need to show that."*

The client is not proposing to file a Letter of Map Amendment (LOMA) with the Federal Emergency Management Agency (FEMA) for the floodplain. No filling, earthwork or location of any structures or materials are proposed within the Bordering Land Subject to Flooding so we don't see the need for a vertical elevation datum for planting of small shrubs and trees that existed before they were cut. Any soil removed for a plant's root ball will be placed on a section of tarp or in a 5-gallon bucket to avoid any piles of soil and permanent damage to surrounding vegetation. The soil will be disposed of offsite.

Please call (508) 737-7104 or email me at garretttunison@tunison.com if you have any questions or concerns.

Sincerely,



Garrett M. Tunison, PWS, Principal
Tunison Environmental Consultants, LLC

CC: Agawam Conservation Commission
Mr. Joseph O'Malley
TEC File #: 2308-001

Attachment 1

Updated NOI Form 3



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

Agawam

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):

Off of 365 Main Street

a. Street Address

Agawam

b. City/Town

01001

c. Zip Code

Latitude and Longitude:

42.083 N

d. Latitude

-72.612 W

e. Longitude

L14

f. Assessors Map/Plat Number

1/3

g. Parcel /Lot Number

2. Applicant:

Joseph

a. First Name

O'Malley

b. Last Name

Property owner

c. Organization

351 Main Street

d. Street Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

(413) 626-8212

h. Phone Number

N/A

i. Fax Number

xtremepbma@yahoo.com

j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

Same as above

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):

Garrett

a. First Name

Tunison

b. Last Name

Tunison Environmental Consultants, LLC

c. Company

P.O. Box 992

d. Street Address

Plymouth

e. City/Town

MA

f. State

02362

g. Zip Code

(508) 737-7104

h. Phone Number

N/A

i. Fax Number

garretttunison@gmail.com

j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

\$2,500.00

a. Total Fee Paid

\$1,237.50

b. State Fee Paid

\$1,262.50

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:

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A. General Information (continued)

6. General Project Description:

The applicant was clearing land removed 8 to 10 trees and cut the shrub layer) for a tree farm that turned out to be Bordering Land Subject to Flooding and Bordering Vegetated Wetland. He received a WPA-9 Form and stopped cutting. A wetland restoration has been proposed and is included in the attached Wetland Restoration Plan and additional details are provided in the attached narrative.

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 CMR 10.24(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:

Hampden

a. County

24430 & 25309

c. Book

N/A

b. Certificate # (if registered land)

259 & 166

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- ☐ 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.
- ☒ 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.



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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	N/A 1. linear feet	N/A 2. linear feet
b. ☒ Bordering Vegetated Wetland	80,031 +/- (cut shrubs & trees) 1. square feet	80,031 +/- restoration 2. square feet
c. ☐ Land Under Waterbodies and Waterways	N/A 1. square feet N/A 3. cubic yards dredged	N/A 2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☒ Bordering Land Subject to Flooding	1. square feet N/A 3. cubic feet of flood storage lost	2. square feet N/A 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	N/A 1. square feet N/A 2. cubic feet of flood storage lost	N/A 3. cubic feet replaced
f. ☐ Riverfront Area	N/A 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: N/A
square feet

4. Proposed alteration of the Riverfront Area:

<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.

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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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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	N/A 1. square feet N/A 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	N/A 1. square feet	N/A 2. cubic yards beach nourishment
e. ☐ Coastal Dunes	N/A 1. square feet	N/A 2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. ☐ Coastal Banks	N/A 1. linear feet	
g. ☐ Rocky Intertidal Shores	N/A 1. square feet	
h. ☐ Salt Marshes	N/A 1. square feet	N/A 2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	N/A 1. square feet N/A 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	N/A 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 N/A 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	N/A 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.

N/A

a. square feet of BVW

N/A

b. square feet of Salt Marsh

5. ☐ Project Involves Stream Crossings

N/A

a. number of new stream crossings

N/A

b. number of replacement stream crossings



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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 N/A
percentage/acreage

(b) outside Resource Area N/A
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/mas-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. N/A N/A
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:

North Shore - Plymouth to New Hampshire border:

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

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.
N/A
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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Provided by MassDEP:

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City/Town

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.

Wetland Filing Plan

a. Plan Title

R Levesque Associates, Inc.

b. Prepared By

2/20/24

d. Final Revision Date

c. Signed and Stamped by

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:

2. Municipal Check Number

3. Check date

4. State Check Number

5. Check date

6. Payor name on check: First Name

7. Payor name on check: Last Name



Massachusetts Department of Environmental Protection
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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.

Wetland Filing Plan

a. Plan Title

R Levesque Associates, Inc.

b. Prepared By

2/20/24

d. Final Revision Date

c. Signed and Stamped by

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:

1092

2. Municipal Check Number

1091

4. State Check Number

Joseph

6. Payor name on check: First Name

05/04/26

3. Check date

05/04/26

5. Check date

O'Malley

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.

1. Signature of Applicant

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

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.



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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:

365 Main Street

a. Street Address

1091

c. Check number

Agawam

b. City/Town

\$1,237.50

d. Fee amount

2. Applicant Mailing Address:

Joseph

a. First Name

O'Malley

b. Last Name

Property owner

c. Organization

351 Main Street

d. Mailing Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

(413) 626-8212

h. Phone Number

N/A

i. Fax Number

xtremepbma@yahoo.com

j. Email Address

3. Property Owner (if different):

Same as above

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

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.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Attachment 2

Appendix A



Wildlife Habitat Protection Guidance

Appendix A: Simplified Wildlife Habitat Evaluation

Project Information

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



Off of Main Street (Parcel ID: L14 1 3)

Project Location (from NOI)

Garrett M. Tunison

Name of Person Completing Form

6/4/26

Date

Important Habitat Features

Direct alterations to the following important habitat features in resource areas may be permitted only if they will have no adverse effect (refer to Section V).

- ☐ Habitat for state-listed animal species (receipt of a positive opinion or permit from MNHESP shall be presumed to be correct. Do not refer to Section V).
- ☐ Sphagnum hummocks and pools suitable to serve as nesting habitat for four-toed salamanders
- ☐ Trees with large cavities (≥ 18 " tree diameter at cavity entrance)
- ☐ Existing beaver, mink or otter dens
- ☐ Areas within 100 feet of existing beaver, mink or otter dens (if significant disturbance)
- ☐ Existing nest trees for birds that traditionally reuse nests (bald eagle, osprey, great blue heron)
- ☐ Land containing freshwater mussel beds
- ☐ Wetlands and waterbodies known to contain open water in winter with the capacity to serve as waterfowl winter habitat
- ☐ Turtle nesting areas
- ☐ Vertical sandy banks (bank swallows, rough-winged swallows or kingfishers)

The following habitat characteristics when not commonly encountered in the surrounding area:

- ☐ Stream bed riffle zones (e.g. in eastern MA)
- ☐ Springs
- ☐ Gravel stream bottoms (trout and salmon nesting substrate)
- ☐ Plunge pools (deep holes) in rivers or streams
- ☐ Medium to large, flat rock substrates in streams



Wildlife Habitat Protection Guidance

Appendix A: Simplified Wildlife Habitat Evaluation

Activities

When any one of the following activities is proposed within resource areas, applicants should complete a Detailed Wildlife Habitat Evaluation (refer to Appendix B).

- ☐ Activities located in mapped “Habitat of Potential Regional or Statewide Importance”
- ☐ Activities affecting certified or documented vernal pool habitat, including habitat within 100’ of a certified or documented vernal pool when within a resource area
- ☐ Activities in bank, land under water, bordering land subject to flooding (presumed significant) where alterations are more than twice the size of thresholds
- ☒ Activities affecting vegetated wetlands >5000 sq. ft. occurring in resource areas other than Bordering Vegetated Wetland
- ☐ Activities affecting the sole connector between habitats >50 acres in size
- ☐ Installation of structures that prevent animal movement
- ☐ Activities for the purpose of bank stabilization using hard structure solutions that significantly affect ability of stream channel to shift and meander, or disrupt continuity in cover that would inhibit animal passage
- ☐ Dredging (greater than 5,000 sf)

Attachment 3
Ecological Restoration Plan
Updated Narrative

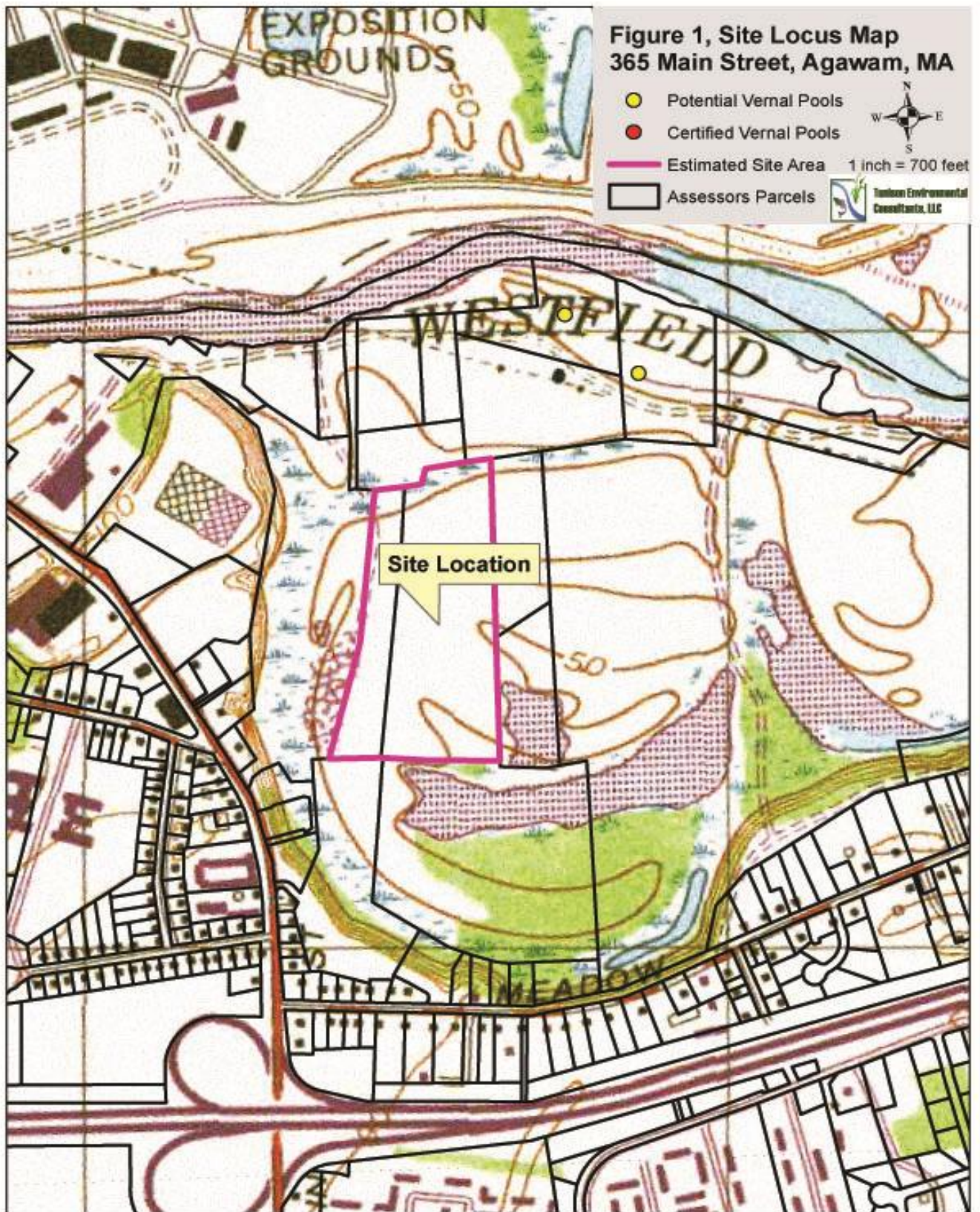


Tunison Environmental Consultants, LLC

1.0 Introduction

On August 23, 2023, Garrett M. Tunison, PWS of Tunison Environmental Consultants, LLC, visited the property at 365 Main Street (Assessor's Parcel ID Numbers: L 131/ 1/ 5 & L13/ 1/ 3), Agawam, Massachusetts (refer to Figure 1, Site Locus Map) to inspect the wetland alterations under a current Agawam Conservation Commission Wetlands Violation (refer to Attachment 1, Agawam Conservation Commission Violation Letter). The soils and ground cover within the area where the vegetation was cut appeared to be intact except for a few tire marks in the wetland (refer to Attachment 2, Site Photographs, Photos 1 through 4). The wetland alterations consisted of cutting vegetation including many herbs, shrubs and some trees. TEC identified the cutting of 17 trees including 2 Red Maple (*Acer rubrum*), 1 Eastern White Pine (*Pinus strobus*), 2 Quaking Aspens (*Populus tremuloides*), 2 Pin Oaks (*Quercus palustris*), 3 Tree of Heaven (*Ailanthus altissima*) and 7 Black Locust (*Robinia pseudoacacia*). The cutting occurred in the southern half of the site with the 16 cut trees that were mostly visible but there could be 1 or 2 additional trees in the pile of removed trees that weren't visible. Most of the trees were from the 100 yr. floodplain and not the delineated vegetated wetlands. Almost all of the vines cut on the site were invasive Oriental Bittersweet. The shrubs were mostly Blackberries, Black Raspberry, Multiflora Rose, Glossy Buckthorn and Common Buckthorn with a few of the native shrubs mentioned above with some sporadic Common Witch Hazels (*Hamamelis virginiana*) and Smooth Sumacs (*Rhus glabra*). At the time of the wetland delineation, many of the cut stalks were beginning to regrow, including most of the cut tree stumps. Hundreds of invasive plant stalks were observed at the site and in the attached photographs that were cut. These invasive plant stalks were mostly Oriental Bittersweet (*Celastrus orbiculata*) and Common Mugwort (*Artemisia vulgaris*). These species have begun to regrow on the site and are dominating the western portion of the cut area between the access drive, Wetland C and along the western edge of Wetland A. The area where shrubs had been cut along with the 17 trees occurred is approximately 1.8 ac. of Wetland A and the adjacent floodplain to the east. Many of these areas have sprouted new herbs, shrubs and trees along with new sprouts on the basal areas of the cut shrubs and trees. This is the same for the 100-yr. floodplain. Native wetland vegetation is thriving within the cut areas of Wetland A and B.

The site is approximately 25.3 acres and appears to be relatively flat with only a slight slope from north to south and east to west. All areas of the site are highly disturbed and appeared to have been cleared in the past. Most areas of the site lack an "O" and "A" Horizon soils and there is a lot of trash and debris on the site that likely came from the old landfill and previous paintball playing fields (Attachment 2, Site Photographs, Photos 5 through 12). There are many invasive plants including Garlic Mustard (*Alliaria petiolata*), Common Mugwort and Oriental Bittersweet in the herbaceous layer; Glossy Buckthorn (*Frangula alnus*), Multiflora Rose (*Rosa multiflora*), Tartarian Honeysuckle and an occasional Autumn Olive (*Elaeagnus umbellata*) in the shrub layer and Tree-of-



Heaven and Black Locust in the tree layer (refer to the attached Site Plant List within Attachment 3, Wetland Resource Areas Delineation Report). The site is highly disturbed including garbage, yard debris, and fill materials (asphalt, brick and concrete chunks) scattered throughout the western portion of the site (refer to Attachment 2, Photos 5 through 12). Please note, these areas of trash and debris precede the current ownership of property and the wetland violation. The northern portions of the site consist of an existing paintball and air-soft facility that also precede the current owner.

2.0 Wetland Resource Areas

Three wetland resource areas were delineated on the site as Wetlands A, B and C. A Wetland Resource Area Report has been prepared and is included as an attachment to this Wetland Restoration Plan (Attachment 3). Wetlands A and B likely connect east of the site along the drainage wetlands to the adjacent farm fields. Wetland C is an isolated wetland that appears to have been dug and is a drainage ditch that connects to a larger stormwater basin. The entire site is within the 100 yr. floodplain or Bordering Land Subject to Flooding to the Westfield River. Wetlands A and B are gently sloping where water appears to occur within 12 in. of the soil surface during periods of substantial precipitation. The area of the wetlands has likely occurred in recent years as soil matrix colors mostly ranged from 10YR 6/1 to 10YR 6/4 in the "B" Horizon with depletions that were approximately 10YR 6/1 or 10YR 6/2 in color. There were many upland plants (UPL) or facultative upland (FACU) occurring in the delineated wetlands and most wetland plants were facultative (FAC). There were a few pockets of mostly dominant facultative wetland (FACW) plants such as Sensitive Fern (*Onoclea sensibilis*) in the herbaceous layer and Silky Dogwood (*Cornus amomum*) in the shrub layer. Sensitive Fern appeared to be popping up throughout Wetland A after the tree and shrub layers had been cut along with a few patches of Oriental Bittersweet.

3.0 Cutting of Vegetation

Invasive plant species exist along the eastern and northeastern edge of Wetland A and the 100 yr. floodplain. Most of these invasive plants in the wetland included Oriental Bittersweet in the vine layer; Common Buckthorn, Glossy Buckthorn and Multiflora Rose in the shrub layer and Black Locust and Tree-of-Heaven in the tree layer. The majority or approximately 60% to 70% of the vegetation cut was invasive plants and only the remaining vegetation consisting of native herbs, shrubs and trees (refer to Attachment 2, Site Photographs, Photos 13 through 17). The native plant species that occurred within the wetland area and surrounding 100 yr. floodplain included Wild or False Lily-of-the-Valley (*Maianthemum canadense*), Thin-leaved Sunflower (*Helianthus divaricalus*), Purple or Red Clover (*Trifolium pratense*), White Heath Aster (*Symphyotrichum ericoides*), several species of goldenrods (*Solidago spp.*), Sensitive Fern, Cinnamon Fern (*Osmundastrum cinnamomeum*), a few Royal Fern (*Osmunda spectabilis*), Hay-scented Fern (*Dennstaedtia punctilobula*) and upland and wetland

grasses (*Gramineae spp.*) in the herbaceous layer; Poison Ivy (*Toxicodendron radicans*), Virginia Creeper (*Parthenocissus quinquefolia*) in the vine layer; Silky Dogwood, Blackberries (*Rubus spp.*), Black Raspberry (*Rubus occidentalis*), Highbush Blueberry (*Vaccinium corymbosum*), Southern Arrowwood (*Viburnum dentatum*) and some Common Winterberry (*Ilex verticillata*) and Northern Spicebush (*Lindera benzoin*).

4.0 Wetland Restoration

Restoration of the tree and shrub layers is proposed within the cut area along with seeding of the herbaceous layer with native wetland vegetation found within Wetland A in areas of bare soils or where the majority of the herbaceous layer was removed since it was mostly invasive plants. Wetland C has not been cut or disturbed but contain some invasive plants and Wetland B has only been partially cut within the northern 2/3's of the delineated area. Wetland B only contains a few invasive plants that will be weeded first. Prior to the restoration, the invasive plant species will be removed as part of an Invasive Plant Species Eradication or Management Plan.

4.1 Goals of the Wetland Restoration

Our goals resulting from the invasive plant species eradication plan and the wetlands and restoration of the naturally forested 100-yr. floodplain area are to: 1) removal and eradicate any invasive plant species from identified within or adjacent to the disturbed areas; 2) restore the areas of cut wetland vegetation with native vegetation; and 3) ensure the wetland restoration area flourishes with native vegetation. This wetland restoration area should contain native vegetation observed on the site that provides significant wildlife habitat. It is anticipated the wetland restoration area and remaining ecological restoration area (including impacted 100-yr. floodplain area) will contain at least 75% native vegetation from planting and seeding after two growing seasons if this plan is followed.

4.2 Invasive Plant Species Eradication or Management Plan

Invasive plant species eradication is discussed below that has been prepared from our site visits. This document has been developed to ensure success of the eradication or management of invasive plant species and wetland restoration to occur within the areas that have been recently disturbed by cutting and removing vegetation (mostly invasive plant species) without a permit. A few additional areas of invasive plants have been identified along the western and northern portions of the site that will need to be addressed under this plan (refer to Attachment 2, Photographs, Photos 13 through 15). This document will provide a guide for the landscaper or contractor to complete the invasive plant species eradication and wetland restoration properly and successfully.

It is the experience of TEC to prioritize the removal all of the invasive plants during the first year of the wetland restoration. There has been extensive invasive plant growth in the disturbed portions of the wetlands and 100-yr. floodplain areas for many years. We recommend removing the remaining invasive plant species from the wetland and natural 100-yr. floodplain areas on the site. This will benefit the restoration efforts and the property owner as the eradication or management of these species will be complete or manageable once the below restoration plan is followed which will result in minimal costs and a successful wetland and floodplain area restoration. Without removing the remaining invasive plants, weeding and cut-and-treating the remaining large invasive plants; the invasive plants will remain and dominate the site as they have for years.

4.3 Invasive Plant Species Eradication

This Restoration Plan has been designed to first remove the majority of the remaining plants through weeding and using the "cut-and-treat" method of invasive plant eradication for large shrubs and trees. This plan is designed for complete eradication of the invasive plant species over numerous growing seasons with the bulk of this work occurring during the first one to three growing seasons with only light maintenance thereafter. There are invasive plants located on the properties to the north and west of the subject property so it is uncertain if we can fully eradicate the invasive plants on the site or almost eliminate them with light annual maintenance after the first three years. Regardless if eradication or light maintenance is needed, the removal of the invasive plants will benefit both the wetlands and the site as the invasive plants will need to be addressed from both a conservation and land management perspectives. This work should be done regardless of the wetland resource area protection.

This eradication program is structured to begin in the summer (late August to September) and/or fall of 2024 (September and/or October) and continue through at least the 2027 growing season. Upon completion of the initial eradication of invasive plant species removal and treatment, the restoration area will be evaluated in the following spring to determine if a significant amount of the invasive plants (80% to 85% reduction or greater) have been removed. The invasive plant species eradication plan will continue throughout the planting and monitoring of the wetlands and floodplain restoration. These areas will be weeded in the summer for any seedlings and will be weeded and if they have root systems that are difficult to remove such as large woody shrubs and vines, they will also be cut and treated or pulled and the remaining roots will be treated. Invasive plant species make up approximately 30% to 95+% coverage within the wetland (eastern portion of Wetland A) and floodplain restoration areas. Areas of invasive plants within the current tree line contain less invasive plants (approximately 10% to 40% invasive plants) than areas such as the

northern and eastern portions of Wetland A (approximately 95+% invasive plants).

4.4 Invasive Plants

Ten invasive plant species were observed on the site (refer to Attachment 2, Photographs, Photos 13 through 17). Most were woody shrubs or vines. Nine of these species will be targeted which include Garlic Mustard, Common Mugwort, Oriental Bittersweet, Glossy Buckthorn, Multiflora Rose, Tartarian Honeysuckle, Autumn Olive, Tree-of-Heaven and Black Locust. Three other invasive plant species observed on the site and within the wetlands and floodplain which included Curly Dock, Common Mugwort and Climbing Nightshade will not be further discussed as they will be weeded from the site. These three invasive plant species will not be discussed further in this document as they will be weeded and discarded into plastic contractor's bags as they are encountered in the wetlands and floodplain area. All invasive plants that are weeded and cut will be placed on large tarps and cut up and put into large contractor's black bags for solarization.

There are a few large Oriental Bittersweets, Glossy Buckthorns, Multiflora Roses, Autumn Olives, Tree-of-Heavens and Black Locust that will need to be cut down and their stumps/stalks treated. There are only patches of Garlic Mustard that can easily be weeded and there is a lot of Common Mugwort in large patches or areas but it can also be easily weeded. All weeded plants will immediately be placed in 5 gal. buckets, contractor's bags or on tarps to be placed into black contractor's bags to be removed from the forested area of the site and placed in an open area for solarization.

The seven of the ten invasive plants listed above are described below in detail in Sections 4.3.1 through 4.3.7. Information provided below for each plant species was acquired from publications (such as factsheets, invasive plant books or booklets) and websites from the Plant Conservation Alliance's Alien Plant Working Group, Penn State University, University of Connecticut, National Park Service, The Nature Conservancy, the NRCS, U.S. Fish and Wildlife Plant Data Base (online) and the Massachusetts Natural Heritage Program.

Invasive plants become established and can often dominate landscapes causing over \$120 billion dollars in damages in the U.S. alone each year. The plants typically have very few native or natural enemies and as a result often thrive in our local environments. They are spread by: 1) animals through their waste, on their skin, fur or feathers; 2) by treads on shoes, tires, tracked vehicles, or other machinery; 3) being transported down streams, other waterways, water bodies, or coastal waters; 4) airborne seeds; 5) people's clothes; 6) yard or construction debris; 7) soils containing seed banks; or even by 8) landscapers or being supplied by plant nurseries. Invasive plants alter natural habitats often reducing

the numbers and diversities of native plants and animals. This can be detrimental to our natural environment and significantly alter ecosystems.

4.4.1 Oriental Bittersweet

Oriental Bittersweet (refer to Attachment 2, Photographs, Photo 25) is a deciduous woody vine that was introduced to the United States in the mid-1800's and has spread throughout much of the Country. This species grows around the trunks, stems and stalks of surrounding vegetation and chokes them out. They can change the natural nutrient cycling systems that take place in our natural environments. These plants can be found along roadsides, trails, fields, wastelands, landscaped areas, sand dunes, and forest interiors.

Oriental Bittersweet looks similar to native American Bittersweet (*Celastrus scandens*) but it can be distinguished by their leaves and fruit. Oriental Bittersweet has fruit and flowers located within the leaf axils along the length of the stem. Their fruit ripen in the fall and have yellow capsules. American Bittersweet only has fruit and flowers in terminal clusters. Their fruit also ripen in the fall as do Oriental Bittersweet but their capsules are orange. Leaves are used as the most distinguishable feature to tell the difference between Oriental Bittersweet and American Bittersweet throughout their life cycle (seedling to maturity). The best time and way to identify the difference between these two species is to observe them at leaf out when two sides of the leaf of the Oriental Bittersweet are folded against each other (conduplicate) and tightly packed in the bud when they emerge in the spring. The leaves of the American Bittersweet have leaf margins rolled in like a scroll (involute) and are not as tightly packed in the bud. An additional method to distinguish the leaves, although not as reliable, is to use the ratio of length-to-width of the leaves which is often greatest for American Bittersweet (90% chance) when it is equal to or greater than 2. If the ratio is less than or equal to 1.4, it is likely (90% chance) Oriental Bittersweet.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. When hand weeding, make sure to get all of the roots to avoid re-growth. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Cutting should include cutting the vine near its base (within 2 inches of the ground) and removing the vine from surrounding vegetation, followed by treating the basal area of the vine with herbicide containing 25% glyphosate (such as Accord or Roundup Pro) works best. Remove all cut vines including any berries observed to reduce local seeding by placing them in containers or large plastic bags from where

they were cut. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This woody vine occurs throughout the wetland and restoration area restoration and makes up approximately 70% to 80% of the invasive plant species at the site. The largest densities of this vine occur in the southeastern portion of the site in and around Wetland C.

Tartarian Honeysuckle (refer to Attachment 2, Invasive Plant Photographs, Photo 21) is a tall rounded or upright oval deciduous shrub that can reach heights of 7 to 12 feet. This plant often is one of the first shrubs to leaf out in the spring and one of the last to lose its leaves in the fall holding an advantage over other native shrubs. It often grows with a few to several stems occurring from the base that are spreading. It has a shallow woody root system that prefers mesic loamy soils but often grows in sandy loam to sandy soils. Leaves are rounded to slightly ovulate in shape and smooth along their margins. The base of each leaf is rounded to slightly cordate but the tip tapers to a blunt point. The upper leaf surface is a medium green color while the lower surface is light green. Leaves grow in opposite pairs along their shoots and range from 1-½ in. to 2 in. long and ¾ to 1-½ in. wide. Their bark is gray to brown with narrow ridges that develop vertically shredded strips of bark as they age. Young shoots appear light green to reddish brown that are predominantly smooth. Its branches are quite fragile as they are hollow. These branches appear glabrous with a brownish to grey color in winter and a yellow to tannish color during spring and summer. The fruit is small in size (average 0.25 in. or 0.6 cm. in diameter) and range in color from orange to red that may persist throughout the winter. Each berry contains several small seeds. Its flowers appear in mid-spring (May through June) that form in pairs in the axils of the leaves. The flowers are tubular and pink to red and white in color and bloom for approximately three weeks. These flowers have a sweet fragrance common to other honeysuckles and are approximately ¾ in. long and across. The flowers consist of a corolla with five long and narrow petals containing five stamens of white filaments and yellow anthers with a pistil carrying a single style.

This plant was introduced to the United States in 1752 as an ornamental plant from central China. It is native to Siberia and other parts of eastern Asia. It grows in uplands along roadsides and trails, in old fields, thickets, fencerows, woodland edges, woodlands, and disturbed areas. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are moderately difficult to remove once in large numbers due to their seed base.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its

roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This vine occurs along the western and northern portions of the site and makes up approximately 8% to 10% of the invasive plants in the areas identified to contain invasive plant species. The property owner was trying to remove these vines when they were stopped under the violation.

4.4.2 Glossy Buckthorn

Glossy Buckthorn is a tall deciduous shrub or small tree that can reach heights of 20 to 25 feet and have a trunk up to 10 inches in diameter. It often grows with a few to several stems occurring from the base that are spreading with loosely branched crowns. Leaves are thin and glossy with an oval or elliptical shape (not toothed). The upper leaf surface is shiny while the lower leaf surface can be hairy or smooth. Their bark is gray to brown with prominent elongated and light-colored lenticels. The fruit is small in size and range in color from green to red to blackish.

This plant was introduced in Wisconsin in 1849 as an ornamental plant to be used in a hedgerow where it spread across Canada and the northern United States. It grows in wetlands and uplands, along roadsides and trails, in old fields, and in woodlands. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are difficult to remove once in large numbers.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this

project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

Glossy Buckthorn was observed scattered throughout the wetland areas making up approximately 5% to 7% of the invasive plant species.

4.4.3 Multiflora Rose

Multiflora Rose is a large deciduous, woody shrub that was introduced in 1866 from rootstock sent from Japan for ornamental roses. Its use was promoted in the 1930's for use in erosion control and "live fences" for livestock. It occurs along roadsides, paths, in disturbed lands or wastelands, adjacent to and within fields, forest edges and light gaps in forest areas. Most of these plants develop from seeds in the soil and are often spread by wildlife that feed on the rose fruits which are called, "hips". They can also form new plants when long branches touch the ground and get covered with dirt which start to grow roots. They can be dispersed over long distances and seeds can remain viable for up to 10 to 20 years in the soil.

These rose bushes are thorny with arching brown (mature stems) to greenish and/or reddish stems. The leaves are divided into five to eleven sharply toothed leaflets with a pair of fringed bracts at the base of each leaf stalk. Beginning in May or June this rose has abundant small (about an inch across) white to pinkish showy flowers. Small rose hips develop in summer, become leathery in the fall, and remain on the plant through winter. These roses can grow up to 10 feet high and 10 feet wide. The closest relatives to this rose are the Scott Rose (*Rosa spinosissima*) and the Memorial Rose (*Rosa wichuraiana*) which are not present on the site.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older established plant or its roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing works well were applicable but often requires 6 to 8 times a year over 4 to 6 years to achieve complete removal but this method will not be used in this eradication plan as there will not be any mowing in the buffer zone area. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This shrub makes up approximately 2% to 3% of the invasive plant species at the site and was observed along the western portion of the site.

4.4.4 Tartarian Honeysuckle

Tartarian Honeysuckle is a tall rounded or upright oval deciduous shrub that can reach heights of 7 to 12 feet (refer to Attachment 2, Site Photographs, Photo 16). This plant often is one of the first shrubs to leaf out in the spring and one of the last to lose its leaves in the fall holding an advantage over other native shrubs. It often grows with a few to several stems occurring from the base that are spreading. It has a shallow woody root system that prefers mesic loamy soils but often grows in sandy loam to sandy soils. Leaves are rounded to slightly ovulate in shape and smooth along their margins. The base of each leaf is rounded to slightly cordate but the tip tapers to a blunt point. The upper leaf surface is a medium green color while the lower surface is light green. Leaves grow in opposite pairs along their shoots and range from 1-½ in. to 2 in. long and ¾ to 1-½ in. wide. Their bark is gray to brown with narrow ridges that develop vertically shredded strips of bark as they age. Young shoots appear light green to reddish brown that are predominantly smooth. Its branches are quite fragile as they are hollow. These branches appear glabrous with a brownish to grey color in winter and a yellow to tannish color during spring and summer. The fruit is small in size (average 0.25 in. or 0.6 cm. in diameter) and range in color from orange to red that may persist throughout the winter. Each berry contains several small seeds. Its flowers appear in mid-spring (May through June) that form in pairs in the axils of the leaves. The flowers are tubular and pink to red and white in color and bloom for approximately three weeks. These flowers have a sweet fragrance common to other honeysuckles and are approximately ¾ in. long and across. The flowers consist of a corolla with five long and narrow petals containing five stamens of white filaments and yellow anthers with a pistil carrying a single style.

This plant was introduced to the United States in 1752 as an ornamental plant from central China. It is native to Siberia and other parts of eastern Asia. It grows in uplands along roadsides and trails, in old fields, thickets, fencerows, woodland edges, woodlands, and disturbed areas. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are moderately difficult to remove once in large numbers due to their seed base.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its

roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This shrub occurs along the western edge and within Wetland A and is only about 1% to 2% of the invasive plants on the site. Several of these shrubs were cut down during the violation by the property owner.

4.4.5 Autumn Olive

Autumn Olive is a deciduous shrub that can grow to 20 feet in height. Leaves are alternate and egg or lance-shaped and smooth margined. The leaves are dull green on the upper surface and often silvery with brownish scales on the underside. The stems and buds are often silvery to rusty colored with scales. Autumn Olive have dense clusters of pale-yellow flowers that occur in June and July. Small reddish brown to pink fruit dotted with brown or silvery scales are produced in August through October. This plant was introduced to the United States in 1830 and was widely planted as an ornamental and in clusters as a windbreak.

Hand pulling (weeding), cutting, and the use of herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its roots. It is best to pull these seedlings after recent rains when the soil is loose. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

Autumn Olive was observed scattered in the western portion of the site and consists of approximately 1% to 2% percent of the invasive plant species. Most of these shrubs were cut down by the property owner during the violation.

4.4.6 Tree of Heaven

Tree of Heaven is a fast growing deciduous tree that can reach heights of 80 to 100 ft. with a diameter of 3 to 6 ft. It was introduced to the United States in the Philadelphia, PA area in 1784 and was later introduced to the West Coast in the 1850's by immigrants. It was initially used as an urban street tree and has been well documented to have been used along the streets in Baltimore and Washington D.C. This tree is native to northeast and central China and Taiwan. A single female tree can produce up to 300,000 seeds which are often wind spread and they can produce seeds once a sapling becomes two years old. These trees are not only prolific but have allelopathic chemicals in their roots, leaves, and bark that can limit or prevent other native plants from becoming established. If the roots, leaves, twigs, bark or any other portion of this tree are crushed or damaged, they will give off a strong odor. This tree's sap can affect human health resulting in skin irritation, dermatitis, and may even lead to myocarditis (inflammation of the heart muscle) in rare occasions if any portions of the plant puncture skin. It is recommended that gloves and protective clothing be worn when removing this tree. Tree of Heaven can be found along roadsides, parking lots, railways, trails, fencerows, woodland edges, wastelands, fields, logging sites, mining sites, and forest openings.

Tree of Heaven looks similar to Black Walnut (*Juglans nigra*) and Sumacs (*Rhus spp.*) but it can be distinguished by their leaves, fruit, and bark. Their leaves are pinnately compound having a central stem with leaflets that are attached on each side. A leaf can range from approximately 1 to 4 ft. in length with 10 to 40 leaflets. These leaflets are lance shaped with smooth margins and one or two protruding bumps known as glandular teeth. The bark of this tree is smooth and green when it is young turning light brown to grey resembling the skin of a cantaloupe as it ages. Their twigs are brittle and alternate on the tree with a greenish to brown color. They lack a terminal bud but have large "v" or heart shaped leaf scars. Once their twigs are broken, a large spongy brown center or pith is exposed. The Tree of Heaven has small yellowish-green flowers that occur in June. Seeds appear during summer as 1 to 2 in. long twisted samara or wings with one seed per samara. Samaras occur in clusters which can be produced in the hundreds of thousands on a single tree and persist through winter.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. When hand weeding, make sure to get all of the roots to avoid re-growth. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Cutting should include cutting the vine near its base (within 2 inches of the ground) and removing the vine from surrounding

vegetation, followed by treating the basal area of the vine with herbicide containing 25% glyphosate (such as Accord or Roundup Pro) works best. Remove all cut vines including any berries observed to reduce local seeding by placing them in containers or large plastic bags from where they were cut. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This tree species occurred in the tree and sapling layers but only makes up approximately 2% to 3% of the restoration area. Several of these trees were cut down by the property owner during the violation.

4.4.7 Black Locust

Black Locust is a medium sized deciduous tree that is originally from the southeastern (southern Appalachia) and central (Ozarks) United States and some areas of Europe (refer to Attachment 2, Site Photographs, Photo 17). It has spread north throughout the northeastern and northern central United States. Black Locust was used in construction projects since their root systems are great for stabilizing soils. Seedlings and sprouts of this tree can grow rapidly and can be identified by their long paired thorns. They can rapidly overtake an area creating a dense tree layer that crowds or shades out native plants by blocking sun light and depleting soil moisture. This tree produces many seeds that seldom germinate but they spread from root suckering. Their nitrogen-fixing root nodules allow these plants to grow just about anywhere, even areas with little nutrients. They grow best in well drained soils with full sunlight. These trees are most often found along woodland edges, in abandoned fields, pastures, wastelands, and along roadsides.

The Black Locust typically grows between 40 to 50 feet tall but can grow from 70 to 100 feet in height. This tree grows relatively upright with a somewhat narrow crown that is widest at the top. Its bark can be a dark greyish brown to a greenish brown to a yellowish brown with distinctive thick rope-like ridges with furrows interlaced. The trunk is long and straight and its branches are often upright to irregular. Leaves are alternate along the stem with smaller oval or elliptical leaflets. Leaves are 6 to 14 inches long and include 7 to 19 leaflets. The leaflets are dark dull green to bluish green above and yellow below. This tree produces clusters of pea-like flowers that are creamy white in color with a yellow patch on the uppermost petal and are very fragrant. Its flower clusters are 4 to 8 inches long that occur in late May through early June for approximately one week. This tree's fruit consists of flat long smooth pods that is approximately 2 to 4 inches in length which mature in October and persist as a dried brown fruit. Each pod contains 4 to 8 seeds.

This species was observed scattered along the western and northern areas of the site in the floodplain and in Wetland A. This tree is approximately 8% to 10% of the invasive plant species on the site. Several of these trees were cut down by the property owner during the violation.

4.5 Invasive Plant Species Removal

The invasive plant species removal or eradication will be considered to be the first part of the Wetland Restoration Plan.

Removal of the invasive plants will begin along the northeastern portion of the site and continue south and then west to the driveway until all invasive plants have been weeded and/or cut-and-treated. The ecologist or wetland scientist will identify the invasive plants and show the landscapers how to identify each species seen. They will also show the landscapers how to cut, tell them which plants to weed or pull, and how to bag the plant waste to avoid seed dispersion. The plants will be weeded, cut, plant waste removed, and the basal area of large shrubs, saplings and trees will be treated with herbicide as the team moves along the site from east to west. The majority of the invasive plants that are immature or easy to extricate from the soil will be weeded/hand pulling such as young Glossy Buckthorn, Japanese Honeysuckle, Tartarian Honeysuckle, Eastern Burning Bush, Multiflora Rose, Japanese Barberry, Oriental Bittersweet, and Autumn Olive. Seedling Japanese Knotweed will also be weeded.

Common Mugwort, Curly Dock, Garlic Mustard and Climbing Nightshade plants identified that will only be weeded and not cut-and-treated. Plants with a stem or stalk that is greater than ½ in. diameter may be cut and treated with herbicide but weeding them from the site will also be attempted prior or in place of the cut-and-treat method. Any plant with a stem or trunk greater than 1-½ in. will be cut and treated with herbicide dabbed on its cut stem or trunk (with a dabbing brush or dapping wand) by an herbicide applicator with a MA Herbicide Applicator's License under the direct supervision of a wetland scientist or ecologist. The wetland and floodplain area to be restored may be divided into transects to aid with coverage of the area and to avoid additional movement within the restoration area that could damage native vegetation. The team will consist of at least three individuals. These individuals include: 1) the ecologist; 2) a landscaper who is cutting/weeding and possibly bagging; 3) a landscaper (who has an MA Herbicide Applicator's License) that is treating the cut basal area of large shrubs under the guidance of the ecologist; and 4) possibly an additional landscaper that is cutting/weeding and bagging the plant waste. Once a contractor's bag is full of plant waste, it will be tied closed and placed on the lawn edge by the driveway to be picked up by the landscapers once a transect is completed and placed in a truck bed. Mowing of invasive shrubs and herbs will not occur on this site as all work is within wetland resource areas. After a section or transect of the restoration is completed, the site ecologist or wetland

scientist will inspect each section or transect to ensure that all invasive plants have been removed.

All invasive plant species above will be weeded except for large Oriental Bittersweet, Glossy Buckthorn, Multiflora Roses, Tartarian Honeysuckle, Autumn Olive and Black Locust as stated above. The small to medium sized invasive plant species will be weeded and discarded in black contractor's bags for offsite removal or in an open area outside of the forested area of the site for solarization.

4.6 Herbicide Use

Herbicide use has been designed into this plan with the intention of using it as infrequently or as sparingly as possible. It is the opinion of this office as a result of several recently published studies that large-scale use of herbicides, including those with glyphosate, negatively impact the environment. Glyphosate that enters surface waters has been linked to DNA damage in fish and other species. Glyphosate is a heavy salt that does breakdown organically into natural elements over time. No spraying release of this herbicide over large areas will occur under this plan. Two brands of glyphosate based herbicides may be used one is Accord XRT II for any aquatic invasive plant stalks or roots and the other will be either RoundUp Pro or Roundup Custom. This herbicide will be applied directly and sparingly to cut basal areas or visible roots only when physical removal of the plant is not possible or is more damaging to surrounding natural vegetation. Herbicide application will occur through the use of cotton swabs, paintbrushes and/or dabbing wands. Dabbing wands are typically sheaths of material that are secured to the sprayer tip and metal shaft of the sprayer to become soaked with herbicide that can be gently placed on the cut basal area of the plant where it will accumulate on the cut area.

Three brands of herbicide have been mentioned within this plan. All three brands contain the active ingredient glyphosate. Accord XRT II is a brand/product that is typically used in aquatic settings to control emergent vegetation. Roundup Pro or Roundup Custom and Accord XRT II contain surfactants which help the herbicide stick to the plant surface where it is applied. This helps it penetrate into the plants tissue, especially when it is a hard woody surface and may be exposed to rain within 3 to 6 days of application. Without the surfactants, the life of the herbicide is greatly reduced and may not be effective. This is especially true when dealing with areas where rainfall may occur within 3 to 6 days after the application of the herbicide.

The application method chosen in this plan (direct basal area application) was determined based on experience and research to provide the most effective manner of application with the highest level of protection for the environment. The time of application has been based upon the end of the growing season so that the plant will absorb the herbicide and store the herbicide in its root system

with its sugars to draw from when it needs energy to grow in the spring. This provides a high rate of efficiency for eliminating invasive plant species within 2 to 3 years if proper weeding programs are in place and areas surrounding the Restoration Area are also free of invasive. Targeting the basal and exposed root areas of shrubs and trees minimizes the herbicide application so that it is almost completely absorbed by the plant unlike foliar spraying. Our Company's experience and research of herbicides that contain glyphosate are that it is harmful to fish and other aquatic organisms if it enters a waterway, waterbody, or coastal waters. It can act as a bio-inhibitor impacting fish reproduction. This is why we have the herbicide applied to the basal area of invasive plants and not sprayed. It is likely that RoundUp Pro or Roundup Custom will be the herbicide chosen to be applied on the cut basal areas of the invasive plant species. The majority of the proposed cut-and-treat method will occur west or north of the wetlands with a few potential spots in the wetlands. Please note, these wetlands rarely contain water but contain high groundwater that reaches the upper 12 in. of the soil.

4.7 Solarization and Disposal

Once the invasive plants are placed in large black contractor's bags, they will be removed from the forested area of the site at the end of each work day and placed along the parking lot of the site. The bags of invasive plant material will either be removed from the site for offsite solarization or kept in an open area of the site for solarization. Solarization will occur over 6 months to ensure the plant material (roots, small branches that could contain seeds, fruits and seeds) will be dead and rotting to ensure no invasive plants can't spread. The best method of disposal is to bring them to a transfer station or place them in a dumpster that is picked up by a contracted waste disposal company that takes its waste to a facility with an incinerator but this process has become unfeasible as costs have risen sharply (\$4,000+ per roll-off dumpster). Burying the plant waste deep such as in a landfill or other location is also a potential solution is the next best option following solarization but taking them anywhere where they can be used for mulch, compost or future top soil should be prohibited. This method of disposal will ensure that no invasive plants will be allowed to spread or resurface in the surrounding environment. It is recommended that a contractor who performs the invasive plant species eradication or is a disposal company that either transfers the plant waste and any refuse from the site follows the decontamination processes discussed below in Section 4.7 Decontamination Plan to a private or public incinerator.

4.8 Decontamination Plan

The spread of invasive plants can occur as a result of the distribution of seeds, roots, and even stem fragments from invasive plant species and can occur on many different sources such as personnel clothing, vehicles and/or machinery.

Any of these sources, such as clothing, tools, or vehicles, need to be inspected and likely cleaned daily prior to leaving the site and at the end of the project or any time before or after leaving the site. Vehicles and mechanical equipment shouldn't be an issue at this site so they will not be part of the decontamination. The decontamination protocols will only apply to workers clothing, footwear and mechanical cutting or treatment equipment.

Inspections should be carried out on a staging area dedicated to cleaning personnel, equipment, and vehicles (on the driveway). Effective inspections require good lighting conditions, personnel trained to look for problem areas that are not apparent upon casual observation, and development of protocols and lists of priority invasive species. Effective inspections also require persons who have the task of inspecting vehicles, equipment, and personnel to be dedicated and accountable for their actions. Inspections should include personnel, vehicles, and equipment that are used in locations known to be infested with invasive species. The equipment should undergo a pre-inspection, followed by thorough cleaning and a post-inspection before being allowed to leave the site.

Decontamination of any and all: 1) clothes; 2) shoes, boots, and any other footwear worn on the site; 3) vehicles; 4) trailers; 5) mowing equipment, 6) any earth-moving equipment; and 7) any other machinery or object brought onto the site that may make contact with the ground or site vegetation during the proposed ecological restoration. Decontamination will occur when anything leaves the site at the end of the work day or when work is completed and will include the removal of seeds, fruits, soils, mud, and plant cuttings/fragments from any of the seven itemized categories listed above. Numerous cleaning methods are available to decontaminate workers and equipment of invasive species. A lint roller and whisk broom or small broom works best with a dust pan. Materials removed from each site worker should be swept up or off personnel, boots, and equipment and placed in one of the black contractor's bags containing the plant waste. The use of mowing and construction equipment is unlikely to occur during the times the invasive plant species eradication program will be executed at the site.

5.0 Wetland Restoration Plan

The success of the ecological restoration can only be accomplished with a well-developed and thoroughly followed restoration plan. Portions of the ecological restoration plan described below has been developed from the Massachusetts Department of Environmental Protection, Massachusetts Inland Wetland Replacement Guidelines, September 2022 such as planting densities and percent coverage of restored plants for qualification of the restoration area after two years of monitoring. All activities identified within the ecological restoration area will be supervised by a qualified wetland scientist. Restoration of Wetland A and B and the floodplain area will not occur until approximately 80% to 85% reduction in invasive plant species occurs within the

restoration area. Once the majority of the invasive plants have been removed from the restoration area, the restoration plantings will commence. This will likely occur in the summer (weeding only) or fall of 2026 when the regrowth or sprouting of invasive plants can be evaluated prior to planting.

5.1 Existing Conditions and Functions

The site consists of an area that was recently disturbed from the removal of invasive plants and some native vegetation that was cut in the process within the eastern portion of the site. The remaining portions of the site consist of forested wetland and mixed forested upland that occur within the 100-yr. floodplain to the Westfield River. The areas of the wetland and floodplain restoration include areas of invasive plant species.

5.2 Vegetation

All vegetation chosen to be planted in the ecological restoration areas was observed on or adjacent to the site. Other dominant native vegetation that contains high wildlife habitat value throughout the forested areas of the site will be used for the ecological restoration as described below. The purpose of revegetating the areas where the invasive plant species are being eradicated is to avoid these areas from becoming re-infested with invasive plant species. Re-vegetating areas once occupied by invasive plant species has shown these areas can be ecologically restored and will become re-established with native plants instead of invasive species (invasive plant species numbers typically dwindle to near zero in a few growing seasons). This results in effective restorations that cost less and are successful which occurs in a much shorter period of time, typically within one to two growing seasons for dominant native plants when compared to just treating the invasive plant species.

The planting sequence will include planting the trees first at approximately 10 to 15 ft. on-center, then shrubs will be planted approximately 8 to 12 ft. on-center, followed by seeding. The spacing for most of the wetland restoration area and many portions of the floodplain will be at these planting densities but will not reflect this due to the existing shrubs and trees that have regrown or sprouted on their stumps. The proposed Planting Plan (refer to Attachment 4, Restoration Planting Plan) reflects the general locations of the new or regrowth of native shrubs and trees at the site. Once the plant stock is delivered to the site, the plants will be evaluated to ensure they are the proposed plants, they are delivered with the requested quantities of each plant species, and that they are healthy. The plants will be laid out within the ecological restoration area prior to planting. When all nursery stock is planted, the New England Wetmix will be applied to Wetland A in the areas where the invasive herbs have been removed and any other areas where the herbaceous layer has been damaged from the invasive plant species eradication. New England Conservation/Wildlife Seed Mix

will be applied to 100-yr. floodplain within the restoration area. The same native plant species that are located within the existing buffer zone with high wildlife habitat value will be planted in the restoration area.

There are numerous native trees, shrubs, and many herbs in the restoration area that have been estimated in our planting plan (refer to Attachment 4, Restoration Planting Plan). The densities of native plants have been estimated conservatively as any significant open areas in the vegetative cover following the two years of invasive plant species eradication plan will allow the invasive plants to repopulate and dominate these open patches. This would create additional time, costs, and effort to eradicate the invasive plant species from the restoration area.

The wetland restoration area will be seeded with New England Wetmix in the herbaceous layer within the boundaries of Wetland A and B where the herbaceous layer has been weeded or damaged from the invasive plant species eradication and with New England Conservation/Wildlife Seed Mix in the herbaceous layer in the remaining 100-yr. floodplain of the ecological restoration area where the invasive plant species have been removed. Planting of shrubs and trees will not be distinguished from wetland and 100-yr. floodplain as relatively the same in both areas. 15 Silky Dogwoods, 32 Highbush Blueberries, 22 Northern Spicebushes, 53 Southern Arrowwoods, 37 Common Witch Hazels, and 7 Common Winterberry in the shrub layer; and 27 Red Maples and 21 Pin Oaks trees for the tree layer (Refer to Table 1 below).

Table 1 Wetland Restoration Areas Planting Table				
Plant Species	# of Plants	Plant On Center	Plant Height	Size
New England Wetmix Seed Mix application rates to bare wetland restoration areas: 1 lb./1,200 sq. ft.				
Northern Spicebush (<i>Lindera benzoin</i>)	22	8 – 10 ft.	18 - 24 in.	2 - 4 gal. container
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	17	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Southern Arrowwood (<i>Viburnum dentatum</i>)	15	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Silky Dogwood (<i>Cornus amomum</i>)	13	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Common Winterberry (<i>Ilex verticillata</i>)	7	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Pin Oaks (<i>Quercus palustris</i>)	2	10 – 15 ft.	24-30 in.	2 - 4 gal. container
Red Maple (<i>Acer rubrum</i>)	8	10 – 15 ft.	24-30 in.	2 - 4 gal. container
The altered area of Wetlands A and B will include planting of 10 trees and 74 shrubs.				

Table 2 Floodplain Restoration Area Planting Table				
Plant Species	# of Plants	Plant On Center	Plant Height	Size
New England Conservation/Wildlife Seed Mix application rates to bare 100-yr. Floodplain areas: 1 lb./1,200 sq. ft.				
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	15	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Common Witch Hazel (<i>Hamamelis virginiana</i>)	37	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Southern Arrowwood (<i>Viburnum dentatum</i>)	38	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Pin Oaks (<i>Quercus palustris</i>)	19	10 – 15 ft.	24 – 30 in.	2 - 4 gal. container
Red Maple (<i>Acer rubrum</i>)	19	10 – 15 ft.	24 – 30 in.	2 - 4 gal. container
The altered floodplain restoration area will include planting of 38 trees and 90 shrubs.				

New England Wetmix seed mix will be used for the native herbaceous layer within Wetland A and B where invasive plants have been removed. This seed mix contains Fox Sedge (*Carex vulpinoidea*), Hop Sedge (*Carex lupulina*), Bearded Sedge (*Carex comosa*), Lurid Sedge (*Carex lurida*), Nodding Bur Marigold (*Bidens cernua*), Soft Rush (*Juncus effusus*), Grass-leaved Goldenrod (*Solidago graminifolia*), Blue Vervain (*Verbena hastata*), Boneset (*Eupatorium perfoliatum*), Flat-top Aster (*Aster umbellatus*), Hard-stem Bulrush (*Scirpus acutus*), Green Bulrush (*Scirpus atrovirens*), Woolgrass (*Scirpus cyperinus*), Sensitive Fern (*Onoclea sensibilis*), Spotted Joe-Pye Weed (*Eupatorium maculatum*), Water Plantain (*Alisma plantago-aquatica*), Soft-Stem Bulrush (*Scirpus validus*), and Ditch Stonecrop (*Penthorum sedoides*). The New England Wetmix will be applied at a rate of 800 sq. ft./lb. to Wetlands A and C.

New England Conservation/Wildlife Seed Mix will be used in the 100-yr. floodplain where invasive plants have been removed which includes: Virginia Wild Rye (*Elymus virginicus*), Little Bluestem (*Schizachyrium scoparium*), Big Bluestem (*Andropogon gerardii*), Red Fescue (*Festuca rubra*), Switch Grass (*Panicum virgatum*), Partridge Pea (*Chamaecrista fasciculata*), Panicleleaf Tick Trefoil (*Desmodium paniculatum*), Indian Grass (*Sorghastrum nutans*), Blue Vervain (*Verbena hastata*), Butterfly Milkweed (*Asclepias tuberosa*), Black Eyed Susan (*Rudbeckia hirta*), Common Sneezeweed (*Helenium autumnale*), Heath Aster (*Aster pilosus/Symphotrichum pilosum*), Early Goldenrod (*Solidago juncea*), and Upland Bentgrass (*Agrostis perennans*). The New England Erosion Control/Restoration Mix for Dry Sites includes: Red Fescue (*Festuca rubra*), Canada Wild Rye (*Elymus canadensis*), Annual Ryegrass (*Lolium multiflorum*), Perennial Ryegrass (*Lolium perenne*), Little Bluestem (*Schizachyrium scoparium*), Indian Grass (*Sorghastrum nutans*), Switch Grass (*Panicum virgatum*), Upland Bentgrass (*Agrostis perennans*). The Conservation Mix will be applied at a rate of 800 sq. ft./lb. to the restoration area.

Planting of the restoration area will follow the invasive plant species eradication plan and will likely occur in spring or fall 2027 or 2028 following the reduction in invasive plant species by at least 80% to 85%. The seeding for the ecological restoration area will only be spread in the spring as the seed mix contains plant seeds that are food sources for native animals and will often be eaten before they can germinate. The ecological restoration area will be planted with shrubs will be planted 8 to 12 ft. on center and trees will be planted 10 to 15 ft. on center. It is anticipated that the vegetation within the ecological restoration area will thrive (establishment of 75% or greater of the native plant species planted in the ecological restoration area) after two consecutive growing seasons. The success of the ecological restoration area will depend upon whether or not predicted conditions, such as normal or average seasonal weather, occur and are met within the ecological restoration area, and that the planting plan is closely followed.

An invasive plant species prevention plan is proposed to continue after the restoration plantings to ensure that the vegetation within the restoration area takes hold and is not dominated by invasive or opportunistic vegetation, a weeding program will be incorporated into this planting plan for all new seedlings. Potential sources of new infestations of invasive vegetation are onsite construction/maintenance equipment, local wildlife populations, or airborne seeds. Invasive plant species have been identified not only on the site in the existing buffer zone but also on the surrounding properties.

Watering of the vegetation is a concern for the success of the ecological restoration. Watering will likely need to occur if planting occurs in the fall or in the spring if we have a dry spring and/or summer.

5.3 Wildlife Habitat

All of the eight native plant species that are to be used in the ecological restoration area are native to the area and site and contain significant wildlife habitat value. According to Readington 1994 and DeGraaf 2002, small mammals, birds, reptiles, amphibians, and insects use these native plant species for feeding, breeding, and shelter.

5.4 Plan

A planting plan has been included as Attachment 7, Restoration Planting Plan that shows the location of the ecological restoration area plantings.

5.5 Stormwater Management

The ecological restoration areas will not receive storm water discharge from the proposed stormwater management system.

5.6 Erosion Control Plan

No sediment or erosion controls are currently proposed as the site is completely vegetated. Areas where invasive plants will be removed will be planted with shrubs and trees and seeded with herbaceous seed mixes.

5.7 Considerations During Construction

Proper scheduling and sequencing of events to prepare and complete work associated with the restoration area will be necessary for the wetland and floodplain restorations to be successful. This includes the eradication plan and planting within the restoration area as described below. The invasive plant species eradication plan will be conducted for the first one to two years to ensure that when the proposed restoration plants are planted, they aren't overtaken by invasive plant species. Prior to planting, the restorations areas will be inspected to ensure that most of the invasive plants have been eradicated. If 80% to 85% or greater removal of the invasive plant species has occurred, the planting of the ecological restoration area will commence. Proposed planting orders will be submitted to the restoration plant suppliers once it is determined that enough of the invasive plants have been eradicated in late summer and/or early fall of 2027. The proposed ecological restoration plantings will be ordered in late winter/early spring 2027 to ensure the availability of the plant stock for the restoration area.

5.8 Schedule & Sequencing

The restoration area must be constructed in a sequenced plan to ensure its success. The construction sequencing for the restoration area is listed below.

5.8.1 Invasive Plant Eradication

Weeding of the invasive plants will commence at the end of summer or early fall of 2024. The way in which the ecological restoration plan will be executed is described below in Section 5.8.1.1 Construction Sequencing.

5.8.1.1 Construction Sequencing

This section will be followed closely by the site's wetland scientist and the landscaping crew to ensure each task is completed in proper sequence and thoroughly to avoid additional contamination on and off the site of invasive plant species. If each step of the construction sequencing is performed fully and accurately, the ecological restoration should be successful.

1. In late summer and/or early fall of 2024, the wetland scientist will instruct the landscaping crew on how to identifying each invasive plant species at the seedling, juvenile and adult plant stages at the site. Each person's task(s) will be conveyed so that everyone will know who is weeding, cutting and removing the slash or plant matter and placing it in black contractor's bags. The location for the placement of full bags is along on the edge of the access drive where they will be picked up and either placed in an open area along the existing parking lot or move to another offsite location for solarization.
2. Once the instruction is completed, the eradication of invasive plant species will begin with weeding and cut-and-treat of larger woody plants along the northern and eastern extent of the site moving (moving south to west) around and in Wetland A and removal of the few invasive plants from the cut area of Wetland B.
3. A transect that is approximately 20 ft. wide will be established to keep trampling of the native vegetation to a minimum and to focus on the invasive plants in the transect so none are missed.
4. The herbicide applicator with the MA Herbicide Applicator's License will dab the cut stalk or stump of the invasive plants along the path of the transect as needed.
5. Upon completion of the invasive plant species removal and treatment, all slash or plant waste (except for the trunks and large branches from the trees and shrubs that don't contain any seeds or fruits) will be collected and put into black contractor's bags. All personnel that have been in the field will have to be inspected for any plant materials, especially seeds, berries, and roots. Once all personnel have been inspected and cleaned off with a lint roller and nylon brush. Any dirt from boots, lint rollers, and brushes and dust pans will be discarded into the remaining plant materials bag.

6. In spring 2027, the area will be inspected in late April or early May to determine the extent of regrowth or new invasive plant species. If less than 20% are present, planting could begin.
7. If a fall 2027 planting is proposed, the areas of invasive plants will be inspected at the end of August to determine if another treatment is necessary prior to planting and what level of weeding, cutting and treatment is needed to eradicate new and plants with regrowth.
8. Planting will include coordinating the plant stock ordering, establishing a staging area, evaluating plant stock once it arrives on the site.
9. Prior to planting, the shrubs and trees will be laid out in the locations by the site's wetland scientist and proper planting procedures will be discussed and monitoring of planting will occur by the wetland scientist to ensure the plants are planted properly according to the Restoration Planting Plan.
10. Shrubs will be planted 8 to 12 ft. apart and trees will be planted 10 to 15 ft. apart.
11. The seed mixes for the herbaceous area will be cast across the bare areas of the ecological restoration areas at a rate of 1 lb./1,200 sq. ft.
12. All plants will be watered immediately following planting.
13. The restored ecological restoration areas will be inspected by the wetland scientist following planting.
14. **All activities described in #1 through #12 will be supervised and authorized by the wetland scientist until completed and approved.**
15. **Activities listed above are subject to change due to site conditions, weather, failure of equipment or other unforeseen issues that may arise and will be addressed by the supervising wetland scientist.** If any changes do occur, they will be documented and discussed in full detail in the first report to the Conservation Commission, MassDEP and the U.S. Army Corps of Engineers following completion of the restoration area.

5.9 Ecological Restoration Monitoring

Monitoring of the restoration area will occur twice (during spring and fall) following planting to observe the health of the plantings and to determine when watering is necessary during the first growing season and if there are any issues with the plants. A quick monitoring will be performed twice in the first one to two weeks following the planting to ensure the plants aren't in shock (are healthy) and there isn't any evidence of animals eating the plants. Monitoring at the end of the growing seasons for both years will include observing the health of the plantings and to evaluate any replaced plantings. This monitoring will include evaluating the location of each shrub and tree planted, health of the vegetation, the overall success of the wetland restoration and BLSF restoration area, and to set two sample plot monitoring locations to evaluate the wetland restoration area based on percent coverage of wetland vegetation and to sample soils in the center of each sample plot. One sample plot location will be established within the BLSF area restoration. The plots will be marked in the field with flagging tape and marked "TEC Sample Plot 1", "TEC Sample Plot 2" and "TEC Sample Plot 3". Any dead or significantly stressed vegetation will be marked with flagging tape and will be photographed and discussed in the monitoring report. The area of the wetland restoration will be documented for hydrology, wetland vegetated coverage, soils, potential for erosion, colonizing wetland plant species, any evidence of invasive plants, signs or observation of wildlife utilization, and the ability of the wetland restoration to blend into or become part of the adjacent existing wetland system. The 100-yr. floodplain will be monitored for all parameters of the wetland restoration area minus the hydrology. If any plantings are dead, they will be marked with flagging tape, their location within the restoration area will be marked on a plan and the plant species will be documented both in field notes and in the monitoring report.

Access to the restoration area will be limited to prevent damage to the vegetation and disturbance of the soils. Water will be obtained onsite and vegetation will be watered by hose or by buckets during the first month after planting if necessary. If a drought or extreme wet weather occurs, monitoring will be increased and necessary action taken to prevent damage or stress to the plantings. The restoration area will also be monitored to ensure invasive or unwanted plant species from becoming established during the two site visits. If invasive or unwanted species are found in the restoration area, a weeding program will be implemented to remove these species.

The first year of monitoring will include two site visits during the first full growing season, in early summer and late September. Each site visit will involve inspecting and documenting any changes in the health and growth of the planted vegetation. Photographs of the restoration area will be taken to show how the vegetation throughout these areas has fared. The locations of where the photos were taken will be marked for subsequent site visits. Photos of planted vegetation and volunteer species will be taken and included in the monitoring reports. A qualified wetland scientist will conduct all inspections of the

restoration area for plant vitality, vegetational coverage, and any potential erosion or sedimentation in the restoration area. A report regarding the inspection will be completed and submitted to the Agawam Conservation Commission, MassDEP and the Army Corps of Engineers after every inspection. A yearly monitoring report will be prepared after each growing season to document the yearly success.



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
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MAURA T. HEALEY
Governor

KIMBERLEY DRISCOLL
Lieutenant Governor

REBECCA L. TEPPER
Secretary

BONNIE HEIPLE
Commissioner

DATE: June 1, 2026

Municipality AGAWAM
(city/town)

RE: NOTIFICATION OF WETLANDS PROTECTION ACT FILE NUMBER

The Department of Environmental Protection has received a Notice of Intent filed in accordance with the Wetlands Protection Act (M.G.L. c. 131, §40):

Applicant: JOSEPH O'MALLEY
Address: 351 MAIN STREET
AGAWAM, MA

Owner:
Address:

LOCUS: 365 MAIN STREET

This project has been assigned the following file # : WE 087-0714

A FILE NUMBER ONLY INDICATES THAT THE APPLICATION CONTAINS THE MINIMAL SUBMITTAL REQUIREMENTS AND IS ADMINISTRATIVELY COMPLETE - NOT THAT THE INFORMATION IN THE APPLICATION IS ADEQUATE FOR ISSUANCE OF AN ORDER OF CONDITIONS.

Although a file # is being issued, please note the following:

[1] Section 1 of the NOI, Street Address, does not appear to be correct. Form 3 may need to be corrected. Also, the map/parcel ID information needs to be verified. Name of property owner may also be different.

[2] The restoration work is not apparently a limited project and only the generic citation of 310 CMR 10.53 is even noted. Only the invasive species removal could be considered an Ecological Restoration Limited Project. However, since the NOI submittal does not include an Appendix A, nor was notice apparently placed in the Environmental Monitor, then it cannot be reviewed that way. The applicant needs to comply with the requirements of 310 CMR 10.11, 310 CMR 10.12 and 310 CMR 10.53(4)(e)5.

[3] The commission needs to understand the definition of BLSF and how BVW boundaries are reviewed. Per the regulations in the definition of BLSF, it states It (BLSF) extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland. One cannot have BVW and BLSF in the same footprint. The specific footprint is either one or the other resource area, it cannot be both.

[4] Any use of herbicides in BVW likely requires a WM04 permit from MassDEP. <https://www.mass.gov/how-to/wm-04-herbicide-application>

This information is available in alternate format. Call Donald M. Gomes, ADA Coordinator at 617-556-1057. TDD# 1-866-539-7622 or 1-617-574-6868.



Printed on Recycled Paper

JOSEPH O'MALLEY
351 MAIN STREET
AGAWAM, MA

[5] Multiple locations in the NOI mention work occurring in the year 2024. Elsewhere it notes work to occur in the year 2025. All dates need to be checked.

[6] The restoration plants list needs to note the plants wetland indicator status.

[7] Page 26 of 27 mentions Riverfront restoration, yet there is no Riverfront on the mentioned parcels.

[8] The submitted plans do not appear to show what vertical elevation datum is being used. Since the flood plain elevation is based upon NAVD88, the plans need to show that.

[9] To help ensure that conservation commissions have sufficient expertise available to address specific issues regarding an applicant's filing, M.G.L. c. 44, section 53g gives Commissions authority to charge a fee for the employment of outside consultants that allow for the use of the fee to ensure that they have the necessary information for them to make a decision pursuant to the Wetlands Protection Act, M.G.L. c. 131, sec. 40 and 310 CMR 10.00.

If you have any questions regarding this letter, please contact: MARK STINSON @ (413)-961-9583

Cc: Agawam Conservation Commission, DPW Inspection Services 1000 Suffield Street, Agawam, MA, 01001
Representative: Tunison Env. Consultants, LLC, PO Box 992, PLYMOUTH, MA, 02362



Tunison Environmental Consultants, LLC

May 6, 2026

Agawam Conservation Commission
1000 Suffield Street
Agawam, Massachusetts 01001

**RE: Notice of Intent for Wetland Resource Area Restoration at 365 Main in
Agawam, Massachusetts**

Dear Agent and Members of the Commission:

On behalf of Mr. Joseph O'Malley, Tunison Environmental Consultants, LLC is pleased to submit two copies of this Notice of Intent (NOI), including project plans at the above referenced site for the ecological restoration of a Bordering Vegetated Wetland and Bordering Land Subject to Flood. Some trees and shrubs were cut from an approximately 2.5-acre area that consists of wetland and floodplain. Most of the vegetation has begun to grow back in this area. The proposed restoration will consist of planting approximately 136 shrubs and 48 trees. The abutter's mailings have been prepared and will be immediately sent out upon receiving the information for the proposed Agawam Conservation Commission hearing.

As requested in WPA Form 3-Notice of Intent, Section D, Additional Information, all additional information is included in the narrative or attachments (see Table of Contents) to the enclosed NOI. The attached plan set has not been revised.

Please call me (508) 737-7104 or email me garretttunison@gmail.com if you have any questions or concerns.

Sincerely,

Garrett M. Tunison, PWS
Principal
Tunison Environmental Consultants, LLC

Cc: Mr. Joseph O'Malley
TEC File #: 2308-001



Tunison Environmental Consultants, LLC

Notice of Intent for Wetland Resource Area Restoration at 365 Main Street in Agawam, Massachusetts

Prepared for:

Mr. Joseph O'Malley
361 Main Street
Agawam, MA 01001

Prepared by:

Tunison Environmental Consultants, LLC
P.O. Box 992
Plymouth, Massachusetts 02362

May 6, 2026

TEC #: 2308-001

Tunison Environmental Consultants, LLC

P.O. Box 992
Plymouth, Massachusetts 02362
Phone: (508) 737-7104



Table of Contents

WPA Form 3- Notice of Intent Form

Attachments

Appendix A	Invasive Plant Species Eradication and Wetland Restoration Plan
Appendix B	Abutters' Notification
Appendix C	Affidavit of Service

**Commonwealth of Massachusetts
Department of Environmental Protection
Notice of Intent Form (WPA Form 3)**



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

Agawam

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):

365 Main Street

a. Street Address

Agawam

b. City/Town

01001

c. Zip Code

Latitude and Longitude:

42.083 N

d. Latitude

-72.612 W

e. Longitude

L131 & L13

f. Assessors Map/Plat Number

1/5 & 1/3

g. Parcel /Lot Number

2. Applicant:

Joseph

a. First Name

O'Malley

b. Last Name

Property owner

c. Organization

351 Main Street

d. Street Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

(413) 626-8212

h. Phone Number

N/A

i. Fax Number

xtremepbma@yahoo.com

j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

Same as above

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):

Garrett

a. First Name

Tunison

b. Last Name

Tunison Environmental Consultants, LLC

c. Company

P.O. Box 992

d. Street Address

Plymouth

e. City/Town

MA

f. State

02362

g. Zip Code

(508) 737-7104

h. Phone Number

N/A

i. Fax Number

garretttunison@gmail.com

j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

\$2,500.00

a. Total Fee Paid

\$1,237.50

b. State Fee Paid

\$1,262.50

c. City/Town Fee Paid



Massachusetts Department of Environmental Protection
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A. General Information (continued)

6. General Project Description:

The applicant was clearing land removed 8 to 10 trees and cut the shrub layer) for a tree farm that turned out to be Bordering Land Subject to Flooding and Bordering Vegetated Wetland. He received a WPA-9 Form and stopped cutting. A wetland restoration has been proposed and is included in the attached Wetland Restoration Plan and additional details are provided in the attached narrative.

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)

310 CMR 10.53

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR 10.24(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:

Hampden

a. County

24430 & 25309

c. Book

N/A

b. Certificate # (if registered land)

259 & 166

d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

- ☐ 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.
- ☒ 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
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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	N/A 1. linear feet	N/A 2. linear feet
b. ☒ Bordering Vegetated Wetland	80,031 +/- (cut shrubs & trees) 1. square feet	80,031 +/- restoration 2. square feet
c. ☐ Land Under Waterbodies and Waterways	N/A 1. square feet N/A 3. cubic yards dredged	N/A 2. square feet

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☒ Bordering Land Subject to Flooding	1. square feet N/A 3. cubic feet of flood storage lost	2. square feet N/A 4. cubic feet replaced
e. ☐ Isolated Land Subject to Flooding	N/A 1. square feet N/A 2. cubic feet of flood storage lost	N/A 3. cubic feet replaced
f. ☐ Riverfront Area	N/A 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: N/A
square feet

4. Proposed alteration of the Riverfront Area:

<u>N/A</u> a. total square feet	<u>N/A</u> b. square feet within 100 ft.	<u>N/A</u> c. square feet between 100 ft. and 200 ft.
------------------------------------	---	--

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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City/Town

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.

<u>Resource Area</u>	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	N/A 1. square feet N/A 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	N/A 1. square feet	N/A 2. cubic yards beach nourishment
e. ☐ Coastal Dunes	N/A 1. square feet	N/A 2. cubic yards dune nourishment
	<u>Size of Proposed Alteration</u>	<u>Proposed Replacement (if any)</u>
f. ☐ Coastal Banks	N/A 1. linear feet	
g. ☐ Rocky Intertidal Shores	N/A 1. square feet	
h. ☐ Salt Marshes	N/A 1. square feet	N/A 2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	N/A 1. square feet N/A 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	N/A 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 N/A 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	N/A 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.	
	N/A a. square feet of BVW	N/A b. square feet of Salt Marsh
5. ☐ Project Involves Stream Crossings	N/A a. number of new stream crossings	N/A b. number of replacement stream crossings



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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 N/A
percentage/acreage

(b) outside Resource Area N/A
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/mas-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.



Massachusetts Department of Environmental Protection
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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. | <u>N/A</u> | <u>N/A</u> |
| | 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:

North Shore - Plymouth to New Hampshire border:

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

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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Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

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City/Town

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.
N/A
 - 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.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

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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.

Wetland Filing Plan

a. Plan Title

R Levesque Associates, Inc.

b. Prepared By

2/20/24

d. Final Revision Date

c. Signed and Stamped by

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:

1092

2. Municipal Check Number

1091

4. State Check Number

Joseph

6. Payor name on check: First Name

05/04/26

3. Check date

05/04/26

5. Check date

O'Malley

7. Payor name on check: Last Name



Massachusetts Department of Environmental Protection
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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.

1. Signature of Applicant

2. Date

3. Signature of Property Owner (if different)

4. Date

5. Signature of Representative (if any)

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
Bureau of Resource Protection - Wetlands
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:

365 Main Street

a. Street Address

1091

c. Check number

Agawam

b. City/Town

\$1,237.50

d. Fee amount

2. Applicant Mailing Address:

Joseph

a. First Name

O'Malley

b. Last Name

Property owner

c. Organization

351 Main Street

d. Mailing Address

Agawam

e. City/Town

MA

f. State

01001

g. Zip Code

(413) 626-8212

h. Phone Number

N/A

i. Fax Number

xtremepbma@yahoo.com

j. Email Address

3. Property Owner (if different):

Same as above

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

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.

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).



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Bureau of Resource Protection - Wetlands
NOI Wetland Fee Transmittal Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Cat. 2, j. Cutting vegetation	1	\$500	\$500
Cat. 6 Wetland Delineation	1 @ \$2/ln. ft.		\$2,000

Step 5/Total Project Fee: _____

Step 6/Fee Payments:

Total Project Fee:	\$2,500.00
	a. Total Fee from Step 5
State share of filing Fee:	\$1,237.50
	b. 1/2 Total Fee less \$12.50
City/Town share of filing Fee:	\$1,262.50
	c. 1/2 Total Fee plus \$12.50

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.)

Appendix A

Invasive Plant Species Eradication and Wetland Restoration Plan



Tunison Environmental Consultants, LLC

Invasive Plant Species Eradication and Wetland Restoration Plan for 365 Main Street in Agawam, Massachusetts

Prepared for:

Mr. Joseph O'Malley
361 Main Street
Agawam, MA 01001

Prepared by:

Tunison Environmental Consultants, LLC
P.O. Box 992
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February 26, 2026

TEC #: 2308-001

Tunison Environmental Consultants, LLC

P.O. Box 992
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Attachment 2	Site Photographs
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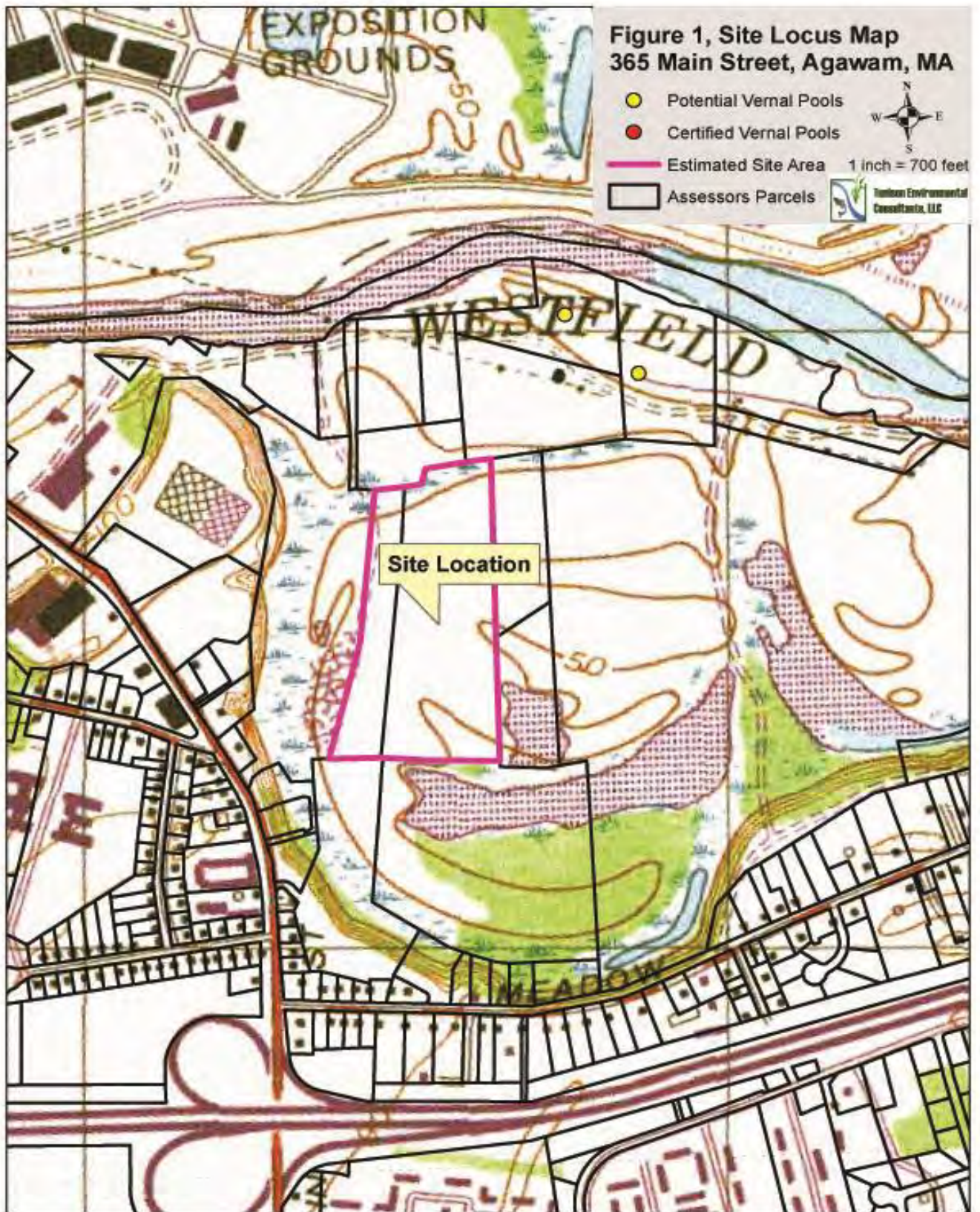


Tunison Environmental Consultants, LLC

1.0 Introduction

On August 23, 2023, Garrett M. Tunison, PWS of Tunison Environmental Consultants, LLC, visited the property at 365 Main Street (Assessor's Parcel ID Numbers: L 131/ 1/ 5 & L13/ 1/ 3), Agawam, Massachusetts (refer to Figure 1, Site Locus Map) to inspect the wetland alterations under a current Agawam Conservation Commission Wetlands Violation (refer to Attachment 1, Agawam Conservation Commission Violation Letter). The soils and ground cover within the area where the vegetation was cut appeared to be intact except for a few tire marks in the wetland (refer to Attachment 2, Site Photographs, Photos 1 through 4). The wetland alterations consisted of cutting vegetation including many herbs, shrubs and some trees. TEC identified the cutting of 17 trees including 2 Red Maple (*Acer rubrum*), 1 Eastern White Pine (*Pinus strobus*), 2 Quaking Aspens (*Populus tremuloides*), 2 Pin Oaks (*Quercus palustris*), 3 Tree of Heaven (*Ailanthus altissima*) and 7 Black Locust (*Robinia pseudoacacia*). The cutting occurred in the southern half of the site with the 16 cut trees that were mostly visible but there could be 1 or 2 additional trees in the pile of removed trees that weren't visible. Most of the trees were from the 100 yr. floodplain and not the delineated vegetated wetlands. Almost all of the vines cut on the site were invasive Oriental Bittersweet. The shrubs were mostly Blackberries, Black Raspberry, Multiflora Rose, Glossy Buckthorn and Common Buckthorn with a few of the native shrubs mentioned above with some sporadic Common Witch Hazels (*Hamamelis virginiana*) and Smooth Sumacs (*Rhus glabra*). At the time of the wetland delineation, many of the cut stalks were beginning to regrow, including most of the cut tree stumps. Hundreds of invasive plant stalks were observed at the site and in the attached photographs that were cut. These invasive plant stalks were mostly Oriental Bittersweet (*Celastrus orbiculata*) and Common Mugwort (*Artemisia vulgaris*). These species have begun to regrow on the site and are dominating the western portion of the cut area between the access drive, Wetland C and along the western edge of Wetland A. The area where shrubs had been cut along with the 17 trees occurred is approximately 1.8 ac. of Wetland A and the adjacent floodplain to the east. Many of these areas have sprouted new herbs, shrubs and trees along with new sprouts on the basal areas of the cut shrubs and trees. This is the same for the 100-yr. floodplain. Native wetland vegetation is thriving within the cut areas of Wetland A and B.

The site is approximately 25.3 acres and appears to be relatively flat with only a slight slope from north to south and east to west. All areas of the site are highly disturbed and appeared to have been cleared in the past. Most areas of the site lack an "O" and "A" Horizon soils and there is a lot of trash and debris on the site that likely came from the old landfill and previous paintball playing fields (Attachment 2, Site Photographs, Photos 5 through 12). There are many invasive plants including Garlic Mustard (*Alliaria petiolata*), Common Mugwort and Oriental Bittersweet in the herbaceous layer; Glossy Buckthorn (*Frangula alnus*), Multiflora Rose (*Rosa multiflora*), Tartarian Honeysuckle and an occasional Autumn Olive (*Elaeagnus umbellata*) in the shrub layer and Tree-of-



Heaven and Black Locust in the tree layer (refer to the attached Site Plant List within Attachment 3, Wetland Resource Areas Delineation Report). The site is highly disturbed including garbage, yard debris, and fill materials (asphalt, brick and concrete chunks) scattered throughout the western portion of the site (refer to Attachment 2, Photos 5 through 12). Please note, these areas of trash and debris precede the current ownership of property and the wetland violation. The northern portions of the site consist of an existing paintball and air-soft facility that also precede the current owner.

2.0 Wetland Resource Areas

Three wetland resource areas were delineated on the site as Wetlands A, B and C. A Wetland Resource Area Report has been prepared and is included as an attachment to this Wetland Restoration Plan (Attachment 3). Wetlands A and B likely connect east of the site along the drainage wetlands to the adjacent farm fields. Wetland C is an isolated wetland that appears to have been dug and is a drainage ditch that connects to a larger stormwater basin. The entire site is within the 100 yr. floodplain or Bordering Land Subject to Flooding to the Westfield River. Wetlands A and B are gently sloping where water appears to occur within 12 in. of the soil surface during periods of substantial precipitation. The area of the wetlands has likely occurred in recent years as soil matrix colors mostly ranged from 10YR 6/1 to 10YR 6/4 in the "B" Horizon with depletions that were approximately 10YR 6/1 or 10YR 6/2 in color. There were many upland plants (UPL) or facultative upland (FACU) occurring in the delineated wetlands and most wetland plants were facultative (FAC). There were a few pockets of mostly dominant facultative wetland (FACW) plants such as Sensitive Fern (*Onoclea sensibilis*) in the herbaceous layer and Silky Dogwood (*Cornus amomum*) in the shrub layer. Sensitive Fern appeared to be popping up throughout Wetland A after the tree and shrub layers had been cut along with a few patches of Oriental Bittersweet.

3.0 Cutting of Vegetation

Invasive plant species exist along the eastern and northeastern edge of Wetland A and the 100 yr. floodplain. Most of these invasive plants in the wetland included Oriental Bittersweet in the vine layer; Common Buckthorn, Glossy Buckthorn and Multiflora Rose in the shrub layer and Black Locust and Tree-of-Heaven in the tree layer. The majority or approximately 60% to 70% of the vegetation cut was invasive plants and only the remaining vegetation consisting of native herbs, shrubs and trees (refer to Attachment 2, Site Photographs, Photos 13 through 17). The native plant species that occurred within the wetland area and surrounding 100 yr. floodplain included Wild or False Lily-of-the-Valley (*Maianthemum canadense*), Thin-leaved Sunflower (*Helianthus divaricalus*), Purple or Red Clover (*Trifolium pratense*), White Heath Aster (*Symphyotrichum ericoides*), several species of goldenrods (*Solidago spp.*), Sensitive Fern, Cinnamon Fern (*Osmundastrum cinnamomeum*), a few Royal Fern (*Osmunda spectabilis*), Hay-scented Fern (*Dennstaedtia punctilobula*) and upland and wetland

grasses (*Gramineae spp.*) in the herbaceous layer; Poison Ivy (*Toxicodendron radicans*), Virginia Creeper (*Parthenocissus quinquefolia*) in the vine layer; Silky Dogwood, Blackberries (*Rubus spp.*), Black Raspberry (*Rubus occidentalis*), Highbush Blueberry (*Vaccinium corymbosum*), Southern Arrowwood (*Viburnum dentatum*) and some Common Winterberry (*Ilex verticillata*) and Northern Spicebush (*Lindera benzoin*).

4.0 Wetland Restoration

Restoration of the tree and shrub layers is proposed within the cut area along with seeding of the herbaceous layer with native wetland vegetation found within Wetland A in areas of bare soils or where the majority of the herbaceous layer was removed since it was mostly invasive plants. Wetland C has not been cut or disturbed but contain some invasive plants and Wetland B has only been partially cut within the northern 2/3's of the delineated area. Wetland B only contains a few invasive plants that will be weeded first. Prior to the restoration, the invasive plant species will be removed as part of an Invasive Plant Species Eradication or Management Plan.

4.1 Goals of the Wetland Restoration

Our goals resulting from the invasive plant species eradication plan and the wetlands and restoration of the naturally forested 100-yr. floodplain area are to: 1) removal and eradicate any invasive plant species from identified within or adjacent to the disturbed areas; 2) restore the areas of cut wetland vegetation with native vegetation; and 3) ensure the wetland restoration area flourishes with native vegetation. This wetland restoration area should contain native vegetation observed on the site that provides significant wildlife habitat. It is anticipated the wetland restoration area and remaining ecological restoration area (including impacted 100-yr. floodplain area) will contain at least 75% native vegetation from planting and seeding after two growing seasons if this plan is followed.

4.2 Invasive Plant Species Eradication or Management Plan

Invasive plant species eradication is discussed below that has been prepared from our site visits. This document has been developed to ensure success of the eradication or management of invasive plant species and wetland restoration to occur within the areas that have been recently disturbed by cutting and removing vegetation (mostly invasive plant species) without a permit. A few additional areas of invasive plants have been identified along the western and northern portions of the site that will need to be addressed under this plan (refer to Attachment 2, Photographs, Photos 13 through 15). This document will provide a guide for the landscaper or contractor to complete the invasive plant species eradication and wetland restoration properly and successfully.

It is the experience of TEC to prioritize the removal all of the invasive plants during the first year of the wetland restoration. There has been extensive invasive plant growth in the disturbed portions of the wetlands and 100-yr. floodplain areas for many years. We recommend removing the remaining invasive plant species from the wetland and natural 100-yr. floodplain areas on the site. This will benefit the restoration efforts and the property owner as the eradication or management of these species will be complete or manageable once the below restoration plan is followed which will result in minimal costs and a successful wetland and floodplain area restoration. Without removing the remaining invasive plants, weeding and cut-and-treating the remaining large invasive plants; the invasive plants will remain and dominate the site as they have for years.

4.3 Invasive Plant Species Eradication

This Restoration Plan has been designed to first remove the majority of the remaining plants through weeding and using the "cut-and-treat" method of invasive plant eradication for large shrubs and trees. This plan is designed for complete eradication of the invasive plant species over numerous growing seasons with the bulk of this work occurring during the first one to three growing seasons with only light maintenance thereafter. There are invasive plants located on the properties to the north and west of the subject property so it is uncertain if we can fully eradicate the invasive plants on the site or almost eliminate them with light annual maintenance after the first three years. Regardless if eradication or light maintenance is needed, the removal of the invasive plants will benefit both the wetlands and the site as the invasive plants will need to be addressed from both a conservation and land management perspectives. This work should be done regardless of the wetland resource area protection.

This eradication program is structured to begin in the summer (late August to September) and/or fall of 2024 (September and/or October) and continue through at least the 2027 growing season. Upon completion of the initial eradication of invasive plant species removal and treatment, the restoration area will be evaluated in the following spring to determine if a significant amount of the invasive plants (80% to 85% reduction or greater) have been removed. The invasive plant species eradication plan will continue throughout the planting and monitoring of the wetlands and floodplain restoration. These areas will be weeded in the summer for any seedlings and will be weeded and if they have root systems that are difficult to remove such as large woody shrubs and vines, they will also be cut and treated or pulled and the remaining roots will be treated. Invasive plant species make up approximately 30% to 95+% coverage within the wetland (eastern portion of Wetland A) and floodplain restoration areas. Areas of invasive plants within the current tree line contain fewer invasive plants (approximately 10% to 40% invasive plants) than areas such as the

northern and eastern portions of Wetland A (approximately 95+% invasive plants).

4.4 Invasive Plants

Ten invasive plant species were observed on the site (refer to Attachment 2, Photographs, Photos 13 through 17). Most were woody shrubs or vines. Nine of these species will be targeted which include Garlic Mustard, Common Mugwort, Oriental Bittersweet, Glossy Buckthorn, Multiflora Rose, Tartarian Honeysuckle, Autumn Olive, Tree-of-Heaven and Black Locust. Three other invasive plant species observed on the site and within the wetlands and floodplain which included Curly Dock, Common Mugwort and Climbing Nightshade will not be further discussed as they will be weeded from the site. These three invasive plant species will not be discussed further in this document as they will be weeded and discarded into plastic contractor's bags as they are encountered in the wetlands and floodplain area. All invasive plants that are weeded and cut will be placed on large tarps and cut up and put into large contractor's black bags for solarization.

There are a few large Oriental Bittersweets, Glossy Buckthorns, Multiflora Roses, Autumn Olives, Tree-of-Heavens and Black Locust that will need to be cut down and their stumps/stalks treated. There are only patches of Garlic Mustard that can easily be weeded and there is a lot of Common Mugwort in large patches or areas but it can also be easily weeded. All weeded plants will immediately be placed in 5 gal. buckets, contractor's bags or on tarps to be placed into black contractor's bags to be removed from the forested area of the site and placed in an open area for solarization.

The seven of the ten invasive plants listed above are described below in detail in Sections 4.3.1 through 4.3.7. Information provided below for each plant species was acquired from publications (such as factsheets, invasive plant books or booklets) and websites from the Plant Conservation Alliance's Alien Plant Working Group, Penn State University, University of Connecticut, National Park Service, The Nature Conservancy, the NRCS, U.S. Fish and Wildlife Plant Data Base (online) and the Massachusetts Natural Heritage Program.

Invasive plants become established and can often dominate landscapes causing over \$120 billion dollars in damages in the U.S. alone each year. The plants typically have very few native or natural enemies and as a result often thrive in our local environments. They are spread by: 1) animals through their waste, on their skin, fur or feathers; 2) by treads on shoes, tires, tracked vehicles, or other machinery; 3) being transported down streams, other waterways, water bodies, or coastal waters; 4) airborne seeds; 5) people's clothes; 6) yard or construction debris; 7) soils containing seed banks; or even by 8) landscapers or being supplied by plant nurseries. Invasive plants alter natural habitats often reducing

the numbers and diversities of native plants and animals. This can be detrimental to our natural environment and significantly alter ecosystems.

4.4.1 Oriental Bittersweet

Oriental Bittersweet (refer to Attachment 2, Photographs, Photo 25) is a deciduous woody vine that was introduced to the United States in the mid-1800's and has spread throughout much of the Country. This species grows around the trunks, stems and stalks of surrounding vegetation and chokes them out. They can change the natural nutrient cycling systems that take place in our natural environments. These plants can be found along roadsides, trails, fields, wastelands, landscaped areas, sand dunes, and forest interiors.

Oriental Bittersweet looks similar to native American Bittersweet (*Celastrus scandens*) but it can be distinguished by their leaves and fruit. Oriental Bittersweet has fruit and flowers located within the leaf axils along the length of the stem. Their fruit ripen in the fall and have yellow capsules. American Bittersweet only has fruit and flowers in terminal clusters. Their fruit also ripen in the fall as do Oriental Bittersweet but their capsules are orange. Leaves are used as the most distinguishable feature to tell the difference between Oriental Bittersweet and American Bittersweet throughout their life cycle (seedling to maturity). The best time and way to identify the difference between these two species is to observe them at leaf out when two sides of the leaf of the Oriental Bittersweet are folded against each other (conduplicate) and tightly packed in the bud when they emerge in the spring. The leaves of the American Bittersweet have leaf margins rolled in like a scroll (involute) and are not as tightly packed in the bud. An additional method to distinguish the leaves, although not as reliable, is to use the ratio of length-to-width of the leaves which is often greatest for American Bittersweet (90% chance) when it is equal to or greater than 2. If the ratio is less than or equal to 1.4, it is likely (90% chance) Oriental Bittersweet.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. When hand weeding, make sure to get all of the roots to avoid re-growth. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Cutting should include cutting the vine near its base (within 2 inches of the ground) and removing the vine from surrounding vegetation, followed by treating the basal area of the vine with herbicide containing 25% glyphosate (such as Accord or Roundup Pro) works best. Remove all cut vines including any berries observed to reduce local seeding by placing them in containers or large plastic bags from where

they were cut. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This woody vine occurs throughout the wetland and riverfront area restoration and makes up approximately 70% to 80% of the invasive plant species at the site. The largest densities of this vine occur in the southeastern portion of the site in and around Wetland C.

Tartarian Honeysuckle (refer to Attachment 2, Invasive Plant Photographs, Photo 21) is a tall rounded or upright oval deciduous shrub that can reach heights of 7 to 12 feet. This plant often is one of the first shrubs to leaf out in the spring and one of the last to lose its leaves in the fall holding an advantage over other native shrubs. It often grows with a few to several stems occurring from the base that are spreading. It has a shallow woody root system that prefers mesic loamy soils but often grows in sandy loam to sandy soils. Leaves are rounded to slightly ovulate in shape and smooth along their margins. The base of each leaf is rounded to slightly cordate but the tip tapers to a blunt point. The upper leaf surface is a medium green color while the lower surface is light green. Leaves grow in opposite pairs along their shoots and range from 1-½ in. to 2 in. long and ¾ to 1-½ in. wide. Their bark is gray to brown with narrow ridges that develop vertically shredded strips of bark as they age. Young shoots appear light green to reddish brown that are predominantly smooth. Its branches are quite fragile as they are hollow. These branches appear glabrous with a brownish to grey color in winter and a yellow to tannish color during spring and summer. The fruit is small in size (average 0.25 in. or 0.6 cm. in diameter) and range in color from orange to red that may persist throughout the winter. Each berry contains several small seeds. Its flowers appear in mid-spring (May through June) that form in pairs in the axils of the leaves. The flowers are tubular and pink to red and white in color and bloom for approximately three weeks. These flowers have a sweet fragrance common to other honeysuckles and are approximately ¾ in. long and across. The flowers consist of a corolla with five long and narrow petals containing five stamens of white filaments and yellow anthers with a pistil carrying a single style.

This plant was introduced to the United States in 1752 as an ornamental plant from central China. It is native to Siberia and other parts of eastern Asia. It grows in uplands along roadsides and trails, in old fields, thickets, fencerows, woodland edges, woodlands, and disturbed areas. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are moderately difficult to remove once in large numbers due to their seed base.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its

roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This vine occurs along the western and northern portions of the site and makes up approximately 8% to 10% of the invasive plants in the areas identified to contain invasive plant species. The property owner was trying to remove these vines when they were stopped under the violation.

4.4.2 Glossy Buckthorn

Glossy Buckthorn is a tall deciduous shrub or small tree that can reach heights of 20 to 25 feet and have a trunk up to 10 inches in diameter. It often grows with a few to several stems occurring from the base that are spreading with loosely branched crowns. Leaves are thin and glossy with an oval or elliptical shape (not toothed). The upper leaf surface is shiny while the lower leaf surface can be hairy or smooth. Their bark is gray to brown with prominent elongated and light-colored lenticels. The fruit is small in size and range in color from green to red to blackish.

This plant was introduced in Wisconsin in 1849 as an ornamental plant to be used in a hedgerow where it spread across Canada and the northern United States. It grows in wetlands and uplands, along roadsides and trails, in old fields, and in woodlands. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are difficult to remove once in large numbers.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this

project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

Glossy Buckthorn was observed scattered throughout the wetland areas making up approximately 5% to 7% of the invasive plant species.

4.4.3 Multiflora Rose

Multiflora Rose is a large deciduous, woody shrub that was introduced in 1866 from rootstock sent from Japan for ornamental roses. Its use was promoted in the 1930's for use in erosion control and "live fences" for livestock. It occurs along roadsides, paths, in disturbed lands or wastelands, adjacent to and within fields, forest edges and light gaps in forest areas. Most of these plants develop from seeds in the soil and are often spread by wildlife that feed on the rose fruits which are called, "hips". They can also form new plants when long branches touch the ground and get covered with dirt which start to grow roots. They can be dispersed over long distances and seeds can remain viable for up to 10 to 20 years in the soil.

These rose bushes are thorny with arching brown (mature stems) to greenish and/or reddish stems. The leaves are divided into five to eleven sharply toothed leaflets with a pair of fringed bracts at the base of each leaf stalk. Beginning in May or June this rose has abundant small (about an inch across) white to pinkish showy flowers. Small rose hips develop in summer, become leathery in the fall, and remain on the plant through winter. These roses can grow up to 10 feet high and 10 feet wide. The closest relatives to this rose are the Scott Rose (*Rosa spinosissima*) and the Memorial Rose (*Rosa wichuraiana*) which are not present on the site.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older established plant or its roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing works well were applicable but often requires 6 to 8 times a year over 4 to 6 years to achieve complete removal but this method will not be used in this eradication plan as there will not be any mowing in the buffer zone area. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This shrub makes up approximately 2% to 3% of the invasive plant species at the site and was observed along the western portion of the site.

4.4.4 Tartarian Honeysuckle

Tartarian Honeysuckle is a tall rounded or upright oval deciduous shrub that can reach heights of 7 to 12 feet (refer to Attachment 2, Site Photographs, Photo 16). This plant often is one of the first shrubs to leaf out in the spring and one of the last to lose its leaves in the fall holding an advantage over other native shrubs. It often grows with a few to several stems occurring from the base that are spreading. It has a shallow woody root system that prefers mesic loamy soils but often grows in sandy loam to sandy soils. Leaves are rounded to slightly ovulate in shape and smooth along their margins. The base of each leaf is rounded to slightly cordate but the tip tapers to a blunt point. The upper leaf surface is a medium green color while the lower surface is light green. Leaves grow in opposite pairs along their shoots and range from 1-½ in. to 2 in. long and ¾ to 1-½ in. wide. Their bark is gray to brown with narrow ridges that develop vertically shredded strips of bark as they age. Young shoots appear light green to reddish brown that are predominantly smooth. Its branches are quite fragile as they are hollow. These branches appear glabrous with a brownish to grey color in winter and a yellow to tannish color during spring and summer. The fruit is small in size (average 0.25 in. or 0.6 cm. in diameter) and range in color from orange to red that may persist throughout the winter. Each berry contains several small seeds. Its flowers appear in mid-spring (May through June) that form in pairs in the axils of the leaves. The flowers are tubular and pink to red and white in color and bloom for approximately three weeks. These flowers have a sweet fragrance common to other honeysuckles and are approximately ¾ in. long and across. The flowers consist of a corolla with five long and narrow petals containing five stamens of white filaments and yellow anthers with a pistil carrying a single style.

This plant was introduced to the United States in 1752 as an ornamental plant from central China. It is native to Siberia and other parts of eastern Asia. It grows in uplands along roadsides and trails, in old fields, thickets, fencerows, woodland edges, woodlands, and disturbed areas. Once these plants become established and produce fruit, they infiltrate into the naturally vegetated areas very quickly and are moderately difficult to remove once in large numbers due to their seed base.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its

roots. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. Mowing will not occur on this project. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This shrub occurs along the western edge and within Wetland A and is only about 1% to 2% of the invasive plants on the site. Several of these shrubs were cut down during the violation by the property owner.

4.4.5 Autumn Olive

Autumn Olive is a deciduous shrub that can grow to 20 feet in height. Leaves are alternate and egg or lance-shaped and smooth margined. The leaves are dull green on the upper surface and often silvery with brownish scales on the underside. The stems and buds are often silvery to rusty colored with scales. Autumn Olive have dense clusters of pale-yellow flowers that occur in June and July. Small reddish brown to pink fruit dotted with brown or silvery scales are produced in August through October. This plant was introduced to the United States in 1830 and was widely planted as an ornamental and in clusters as a windbreak.

Hand pulling (weeding), cutting, and the use of herbicides work best, especially in conjunction with each other. Hand weeding only works with newly established seedlings that are not part of an older, established plant or its roots. It is best to pull these seedlings after recent rains when the soil is loose. Make sure to get all of the roots to avoid re-growth when weeding any seedlings. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab) application of herbicide. Mowing or cutting the stalks or stems near its base (within 2 inches of the ground), removing the plant in large contractor's bags followed by treating the remaining basal area of the plant with herbicide containing glyphosate (such as Roundup Pro) seem to work best. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

Autumn Olive was observed scattered in the western portion of the site and consists of approximately 1% to 2% percent of the invasive plant species. Most of these shrubs were cut down by the property owner during the violation.

4.4.6 Tree of Heaven

Tree of Heaven is a fast growing deciduous tree that can reach heights of 80 to 100 ft. with a diameter of 3 to 6 ft. It was introduced to the United States in the Philadelphia, PA area in 1784 and was later introduced to the West Coast in the 1850's by immigrants. It was initially used as an urban street tree and has been well documented to have been used along the streets in Baltimore and Washington D.C. This tree is native to northeast and central China and Taiwan. A single female tree can produce up to 300,000 seeds which are often wind spread and they can produce seeds once a sapling becomes two years old. These trees are not only prolific but have allelopathic chemicals in their roots, leaves, and bark that can limit or prevent other native plants from becoming established. If the roots, leaves, twigs, bark or any other portion of this tree are crushed or damaged, they will give off a strong odor. This tree's sap can affect human health resulting in skin irritation, dermatitis, and may even lead to myocarditis (inflammation of the heart muscle) in rare occasions if any portions of the plant puncture skin. It is recommended that gloves and protective clothing be worn when removing this tree. Tree of Heaven can be found along roadsides, parking lots, railways, trails, fencerows, woodland edges, wastelands, fields, logging sites, mining sites, and forest openings.

Tree of Heaven looks similar to Black Walnut (*Juglans nigra*) and Sumacs (*Rhus spp.*) but it can be distinguished by their leaves, fruit, and bark. Their leaves are pinnately compound having a central stem with leaflets that are attached on each side. A leaf can range from approximately 1 to 4 ft. in length with 10 to 40 leaflets. These leaflets are lance shaped with smooth margins and one or two protruding bumps known as glandular teeth. The bark of this tree is smooth and green when it is young turning light brown to grey resembling the skin of a cantaloupe as it ages. Their twigs are brittle and alternate on the tree with a greenish to brown color. They lack a terminal bud but have large "v" or heart shaped leaf scars. Once their twigs are broken, a large spongy brown center or pith is exposed. The Tree of Heaven has small yellowish-green flowers that occur in June. Seeds appear during summer as 1 to 2 in. long twisted samara or wings with one seed per samara. Samaras occur in clusters which can be produced in the hundreds of thousands on a single tree and persist through winter.

Hand pulling (weeding), cutting, and herbicides work best, especially in conjunction with each other. When hand weeding, make sure to get all of the roots to avoid re-growth. Any remaining roots that can't be removed should be treated with a direct (apply directly with a cotton swab, small paint brush or dabbing wand applicator) application of herbicide. Cutting should include cutting the vine near its base (within 2 inches of the ground) and removing the vine from surrounding

vegetation, followed by treating the basal area of the vine with herbicide containing 25% glyphosate (such as Accord or Roundup Pro) works best. Remove all cut vines including any berries observed to reduce local seeding by placing them in containers or large plastic bags from where they were cut. These methods will likely require 2 to 3 years of repeat efforts to ensure full removal of these plants.

This tree species occurred in the tree and sapling layers but only makes up approximately 2% to 3% of the restoration area. Several of these trees were cut down by the property owner during the violation.

4.4.7 Black Locust

Black Locust is a medium sized deciduous tree that is originally from the southeastern (southern Appalachia) and central (Ozarks) United States and some areas of Europe (refer to Attachment 2, Site Photographs, Photo 17). It has spread north throughout the northeastern and northern central United States. Black Locust was used in construction projects since their root systems are great for stabilizing soils. Seedlings and sprouts of this tree can grow rapidly and can be identified by their long paired thorns. They can rapidly overtake an area creating a dense tree layer that crowds or shades out native plants by blocking sun light and depleting soil moisture. This tree produces many seeds that seldom germinate but they spread from root suckering. Their nitrogen-fixing root nodules allow these plants to grow just about anywhere, even areas with little nutrients. They grow best in well drained soils with full sunlight. These trees are most often found along woodland edges, in abandoned fields, pastures, wastelands, and along roadsides.

The Black Locust typically grows between 40 to 50 feet tall but can grow from 70 to 100 feet in height. This tree grows relatively upright with a somewhat narrow crown that is widest at the top. Its bark can be a dark greyish brown to a greenish brown to a yellowish brown with distinctive thick rope-like ridges with furrows interlaced. The trunk is long and straight and its branches are often upright to irregular. Leaves are alternate along the stem with smaller oval or elliptical leaflets. Leaves are 6 to 14 inches long and include 7 to 19 leaflets. The leaflets are dark dull green to bluish green above and yellow below. This tree produces clusters of pea-like flowers that are creamy white in color with a yellow patch on the uppermost petal and are very fragrant. Its flower clusters are 4 to 8 inches long that occur in late May through early June for approximately one week. This tree's fruit consists of flat long smooth pods that is approximately 2 to 4 inches in length which mature in October and persist as a dried brown fruit. Each pod contains 4 to 8 seeds.

This species was observed scattered along the western and northern areas of the site in the floodplain and in Wetland A. This tree is approximately 8% to 10% of the invasive plant species on the site. Several of these trees were cut down by the property owner during the violation.

4.5 Invasive Plant Species Removal

The invasive plant species removal or eradication will be considered to be the first part of the Wetland Restoration Plan.

Removal of the invasive plants will begin along the northeastern portion of the site and continue south and then west to the driveway until all invasive plants have been weeded and/or cut-and-treated. The ecologist or wetland scientist will identify the invasive plants and show the landscapers how to identify each species seen. They will also show the landscapers how to cut, tell them which plants to weed or pull, and how to bag the plant waste to avoid seed dispersion. The plants will be weeded, cut, plant waste removed, and the basal area of large shrubs, saplings and trees will be treated with herbicide as the team moves along the site from east to west. The majority of the invasive plants that are immature or easy to extricate from the soil will be weeded/hand pulling such as young Glossy Buckthorn, Japanese Honeysuckle, Tartarian Honeysuckle, Eastern Burning Bush, Multiflora Rose, Japanese Barberry, Oriental Bittersweet, and Autumn Olive. Seedling Japanese Knotweed will also be weeded.

Common Mugwort, Curly Dock, Garlic Mustard and Climbing Nightshade plants identified that will only be weeded and not cut-and-treated. Plants with a stem or stalk that is greater than ½ in. diameter may be cut and treated with herbicide but weeding them from the site will also be attempted prior or in place of the cut-and-treat method. Any plant with a stem or trunk greater than 1-½ in. will be cut and treated with herbicide dabbed on its cut stem or trunk (with a dabbing brush or dapping wand) by an herbicide applicator with a MA Herbicide Applicator's License under the direct supervision of a wetland scientist or ecologist. The wetland and floodplain area to be restored may be divided into transects to aid with coverage of the area and to avoid additional movement within the restoration area that could damage native vegetation. The team will consist of at least three individuals. These individuals include: 1) the ecologist; 2) a landscaper who is cutting/weeding and possibly bagging; 3) a landscaper (who has an MA Herbicide Applicator's License) that is treating the cut basal area of large shrubs under the guidance of the ecologist; and 4) possibly an additional landscaper that is cutting/weeding and bagging the plant waste. Once a contractor's bag is full of plant waste, it will be tied closed and placed on the lawn edge by the driveway to be picked up by the landscapers once a transect is completed and placed in a truck bed. Mowing of invasive shrubs and herbs will not occur on this site as all work is within wetland resource areas. After a section or transect of the restoration is completed, the site ecologist or wetland

scientist will inspect each section or transect to ensure that all invasive plants have been removed.

All invasive plant species above will be weeded except for large Oriental Bittersweet, Glossy Buckthorn, Multiflora Roses, Tartarian Honeysuckle, Autumn Olive and Black Locust as stated above. The small to medium sized invasive plant species will be weeded and discarded in black contractor's bags for offsite removal or in an open area outside of the forested area of the site for solarization.

4.6 Herbicide Use

Herbicide use has been designed into this plan with the intention of using it as infrequently or as sparingly as possible. It is the opinion of this office as a result of several recently published studies that large-scale use of herbicides, including those with glyphosate, negatively impact the environment. Glyphosate that enters surface waters has been linked to DNA damage in fish and other species. Glyphosate is a heavy salt that does breakdown organically into natural elements over time. No spraying release of this herbicide over large areas will occur under this plan. Two brands of glyphosate based herbicides may be used one is Accord XRT II for any aquatic invasive plant stalks or roots and the other will be either RoundUp Pro or Roundup Custom. This herbicide will be applied directly and sparingly to cut basal areas or visible roots only when physical removal of the plant is not possible or is more damaging to surrounding natural vegetation. Herbicide application will occur through the use of cotton swabs, paintbrushes and/or dabbing wands. Dabbing wands are typically sheaths of material that are secured to the sprayer tip and metal shaft of the sprayer to become soaked with herbicide that can be gently placed on the cut basal area of the plant where it will accumulate on the cut area.

Three brands of herbicide have been mentioned within this plan. All three brands contain the active ingredient glyphosate. Accord XRT II is a brand/product that is typically used in aquatic settings to control emergent vegetation. Roundup Pro or Roundup Custom and Accord XRT II contain surfactants which help the herbicide stick to the plant surface where it is applied. This helps it penetrate into the plants tissue, especially when it is a hard woody surface and may be exposed to rain within 3 to 6 days of application. Without the surfactants, the life of the herbicide is greatly reduced and may not be effective. This is especially true when dealing with areas where rainfall may occur within 3 to 6 days after the application of the herbicide.

The application method chosen in this plan (direct basal area application) was determined based on experience and research to provide the most effective manner of application with the highest level of protection for the environment. The time of application has been based upon the end of the growing season so that the plant will absorb the herbicide and store the herbicide in its root system

with its sugars to draw from when it needs energy to grow in the spring. This provides a high rate of efficiency for eliminating invasive plant species within 2 to 3 years if proper weeding programs are in place and areas surrounding the Restoration Area are also free of invasive. Targeting the basal and exposed root areas of shrubs and trees minimizes the herbicide application so that it is almost completely absorbed by the plant unlike foliar spraying. Our Company's experience and research of herbicides that contain glyphosate are that it is harmful to fish and other aquatic organisms if it enters a waterway, waterbody, or coastal waters. It can act as a bio-inhibitor impacting fish reproduction. This is why we have the herbicide applied to the basal area of invasive plants and not sprayed. It is likely that RoundUp Pro or Roundup Custom will be the herbicide chosen to be applied on the cut basal areas of the invasive plant species. The majority of the proposed cut-and-treat method will occur west or north of the wetlands with a few potential spots in the wetlands. Please note, these wetlands rarely contain water but contain high groundwater that reaches the upper 12 in. of the soil.

4.7 Solarization and Disposal

Once the invasive plants are placed in large black contractor's bags, they will be removed from the forested area of the site at the end of each work day and placed along the parking lot of the site. The bags of invasive plant material will either be removed from the site for offsite solarization or kept in an open area of the site for solarization. Solarization will occur over 6 months to ensure the plant material (roots, small branches that could contain seeds, fruits and seeds) will be dead and rotting to ensure no invasive plants can't spread. The best method of disposal is to bring them to a transfer station or place them in a dumpster that is picked up by a contracted waste disposal company that takes its waste to a facility with an incinerator but this process has become unfeasible as costs have risen sharply (\$4,000+ per roll-off dumpster). Burying the plant waste deep such as in a landfill or other location is also a potential solution is the next best option following solarization but taking them anywhere where they can be used for mulch, compost or future top soil should be prohibited. This method of disposal will ensure that no invasive plants will be allowed to spread or resurface in the surrounding environment. It is recommended that a contractor who performs the invasive plant species eradication or is a disposal company that either transfers the plant waste and any refuse from the site follows the decontamination processes discussed below in Section 4.7 Decontamination Plan to a private or public incinerator.

4.8 Decontamination Plan

The spread of invasive plants can occur as a result of the distribution of seeds, roots, and even stem fragments from invasive plant species and can occur on many different sources such as personnel clothing, vehicles and/or machinery.

Any of these sources, such as clothing, tools, or vehicles, need to be inspected and likely cleaned daily prior to leaving the site and at the end of the project or any time before or after leaving the site. Vehicles and mechanical equipment shouldn't be an issue at this site so they will not be part of the decontamination. The decontamination protocols will only apply to workers clothing, footwear and mechanical cutting or treatment equipment.

Inspections should be carried out on a staging area dedicated to cleaning personnel, equipment, and vehicles (on the driveway). Effective inspections require good lighting conditions, personnel trained to look for problem areas that are not apparent upon casual observation, and development of protocols and lists of priority invasive species. Effective inspections also require persons who have the task of inspecting vehicles, equipment, and personnel to be dedicated and accountable for their actions. Inspections should include personnel, vehicles, and equipment that are used in locations known to be infested with invasive species. The equipment should undergo a pre-inspection, followed by thorough cleaning and a post-inspection before being allowed to leave the site.

Decontamination of any and all: 1) clothes; 2) shoes, boots, and any other footwear worn on the site; 3) vehicles; 4) trailers; 5) mowing equipment, 6) any earth-moving equipment; and 7) any other machinery or object brought onto the site that may make contact with the ground or site vegetation during the proposed ecological restoration. Decontamination will occur when anything leaves the site at the end of the work day or when work is completed and will include the removal of seeds, fruits, soils, mud, and plant cuttings/fragments from any of the seven itemized categories listed above. Numerous cleaning methods are available to decontaminate workers and equipment of invasive species. A lint roller and whisk broom or small broom works best with a dust pan. Materials removed from each site worker should be swept up or off personnel, boots, and equipment and placed in one of the black contractor's bags containing the plant waste. The use of mowing and construction equipment is unlikely to occur during the times the invasive plant species eradication program will be executed at the site.

5.0 Wetland Restoration Plan

The success of the ecological restoration can only be accomplished with a well-developed and thoroughly followed restoration plan. Portions of the ecological restoration plan described below has been developed from the Massachusetts Department of Environmental Protection, Massachusetts Inland Wetland Replacement Guidelines, September 2022 such as planting densities and percent coverage of restored plants for qualification of the restoration area after two years of monitoring. All activities identified within the ecological restoration area will be supervised by a qualified wetland scientist. Restoration of Wetland A and B and the floodplain area will not occur until approximately 80% to 85% reduction in invasive plant species occurs within the

restoration area. Once the majority of the invasive plants have been removed from the restoration area, the restoration plantings will commence. This will likely occur in the spring (April to early May) or fall of 2025 when the regrowth or sprouting of invasive plants can be evaluated prior to planting.

5.1 Existing Conditions and Functions

The site consists of an area that was recently disturbed from the removal of invasive plants and some native vegetation that was cut in the process within the eastern portion of the site. The remaining portions of the site consist of forested wetland and mixed forested upland that occur within the 100-yr. floodplain to the Westfield River. The areas of the wetland and floodplain restoration include areas of invasive plant species.

5.2 Vegetation

All vegetation chosen to be planted in the ecological restoration areas was observed on or adjacent to the site. Other dominant native vegetation that contains high wildlife habitat value throughout the forested areas of the site will be used for the ecological restoration as described below. The purpose of revegetating the areas where the invasive plant species are being eradicated is to avoid these areas from becoming re-infested with invasive plant species. Revegetating areas once occupied by invasive plant species has shown these areas can be ecologically restored and will become re-established with native plants instead of invasive species (invasive plant species numbers typically dwindle to near zero in a few growing seasons). This results in effective restorations that cost less and are successful which occurs in a much shorter period of time, typically within one to two growing seasons for dominant native plants when compared to just treating the invasive plant species.

The planting sequence will include planting the trees first at approximately 10 to 15 ft. on-center, then shrubs will be planted approximately 8 to 12 ft. on-center, followed by seeding. The spacing for most of the wetland restoration area and many portions of the floodplain will be at these planting densities but will not reflect this due to the existing shrubs and trees that have regrown or sprouted on their stumps. The proposed Planting Plan (refer to Attachment 4, Restoration Planting Plan) reflects the general locations of the new or regrowth of native shrubs and trees at the site. Once the plant stock is delivered to the site, the plants will be evaluated to ensure they are the proposed plants, they are delivered with the requested quantities of each plant species, and that they are healthy. The plants will be laid out within the ecological restoration area prior to planting. When all nursery stock is planted, the New England Wetmix will be applied to Wetland A in the areas where the invasive herbs have been removed and any other areas where the herbaceous layer has been damaged from the invasive plant species eradication. New England Conservation/Wildlife Seed Mix

will be applied to 100-yr. floodplain within the restoration area. The same native plant species that are located within the existing buffer zone with high wildlife habitat value will be planted in the restoration area.

There are numerous native trees, shrubs, and many herbs in the restoration area that have been estimated in our planting plan (refer to Attachment 4, Restoration Planting Plan). The densities of native plants have been estimated conservatively as any significant open areas in the vegetative cover following the two years of invasive plant species eradication plan will allow the invasive plants to repopulate and dominate these open patches. This would create additional time, costs, and effort to eradicate the invasive plant species from the restoration area.

The wetland restoration area will be seeded with New England Wetmix in the herbaceous layer within the boundaries of Wetland A and B where the herbaceous layer has been weeded or damaged from the invasive plant species eradication and with New England Conservation/Wildlife Seed Mix in the herbaceous layer in the remaining 100-yr. floodplain of the ecological restoration area where the invasive plant species have been removed. The proposed wetland restoration area will include 13 Silky Dogwoods, 12 Highbush Blueberries, 18 Northern Spicebushes, 13 Southern Arrowwoods, 7 Common Witch Hazels, and 7 Common Winterberry in the shrub layer; and 8 Red Maples and 2 Pin Oaks trees for the tree layer (Refer to Table 1 below).

Table 1 Wetland Restoration Areas Planting Table				
Plant Species	# of Plants	Plant On Center	Plant Height	Size
New England Wetmix Seed Mix application rates to bare wetland restoration areas: 1 lb./1,200 sq. ft.				
Northern Spicebush (<i>Lindera benzoin</i>)	18	8 – 10 ft.	18 - 24 in.	2 - 4 gal. container
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	12	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Southern Arrowwood (<i>Viburnum dentatum</i>)	15	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Silky Dogwood (<i>Cornus amomum</i>)	13	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Common Winterberry (<i>Ilex verticillata</i>)	7	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Pin Oaks (<i>Quercus palustris</i>)	2	10 – 15 ft.	24-30 in.	2 - 4 gal. container
Red Maple (<i>Acer rubrum</i>)	8	10 – 15 ft.	24-30 in.	2 - 4 gal. container
The altered area of Wetlands A and B will include planting of 10 trees and 65 shrubs.				

Table 2 Floodplain Restoration Area Planting Table				
Plant Species	# of Plants	Plant On Center	Plant Height	Size
New England Conservation/Wildlife Seed Mix application rates to bare 100-yr. Floodplain areas: 1 lb./1,200 sq. ft.				
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	7	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Common Witch Hazel (<i>Hamamelis virginiana</i>)	32	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Southern Arrowwood (<i>Viburnum dentatum</i>)	32	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
Pin Oaks (<i>Quercus palustris</i>)	19	10 – 15 ft.	24 – 30 in.	2 - 4 gal. container
Red Maple (<i>Acer rubrum</i>)	19	10 – 15 ft.	24 – 30 in.	2 - 4 gal. container
The altered floodplain restoration area will include planting of 38 trees and 71 shrubs.				

The proposed floodplain restoration area will include 7 Highbush Blueberries, 32 Southern Arrowwoods, and 32 Common Witch Hazels in the shrub layer; and 19 Red Maples and 19 Pin Oaks trees for the tree layer (Refer to Table 1 below).

New England Wetmix seed mix will be used for the native herbaceous layer within Wetland A and B where invasive plants have been removed. This seed mix contains Fox Sedge (*Carex vulpinoidea*), Hop Sedge (*Carex lupulina*), Bearded Sedge (*Carex comosa*), Lurid Sedge (*Carex lurida*), Nodding Bur Marigold (*Bidens cernua*), Soft Rush (*Juncus effusus*), Grass-leaved Goldenrod (*Solidago graminifolia*), Blue Vervain (*Verbena hastata*), Boneset (*Eupatorium perfoliatum*), Flat-top Aster (*Aster umbellatus*), Hard-stem Bulrush (*Scirpus acutus*), Green Bulrush (*Scirpus atrovirens*), Woolgrass (*Scirpus cyperinus*), Sensitive Fern (*Onoclea sensibilis*), Spotted Joe-Pye Weed (*Eupatorium maculatum*), Water Plantain (*Alisma plantago-aquatica*), Soft-Stem Bulrush (*Scirpus validus*), and Ditch Stonecrop (*Penthorum sedoides*). The New England Wetmix will be applied at a rate of 800 sq. ft./lb. to Wetlands A and C.

New England Conservation/Wildlife Seed Mix will be used in the 100-yr. floodplain where invasive plants have been removed which includes: Virginia Wild Rye (*Elymus virginicus*), Little Bluestem (*Schizachyrium scoparium*), Big Bluestem (*Andropogon gerardii*), Red Fescue (*Festuca rubra*), Switch Grass (*Panicum virgatum*), Partridge Pea (*Chamaecrista fasciculata*), Panicleleaf Tick Trefoil (*Desmodium paniculatum*), Indian Grass (*Sorghastrum nutans*), Blue Vervain (*Verbena hastata*), Butterfly Milkweed (*Asclepias tuberosa*), Black Eyed Susan (*Rudbeckia hirta*), Common Sneezeweed (*Helenium autumnale*), Heath Aster (*Aster pilosus/Symphotrichum pilosum*), Early Goldenrod (*Solidago juncea*), and Upland Bentgrass (*Agrostis perennans*). The New England Erosion Control/Restoration Mix for Dry Sites includes: Red Fescue (*Festuca rubra*), Canada Wild Rye (*Elymus canadensis*), Annual Ryegrass (*Lolium multiflorum*), Perennial Ryegrass (*Lolium perenne*), Little Bluestem (*Schizachyrium scoparium*), Indian Grass (*Sorghastrum nutans*), Switch Grass (*Panicum virgatum*), Upland

Bentgrass (*Agrostis perennans*). The Conservation Mix will be applied at a rate of 800 sq. ft./lb. to the riverfront area restoration.

Planting of the restoration area will follow the invasive plant species eradication plan and will likely occur in spring or fall 2025 following the reduction in invasive plant species by at least 80% to 85%. The seeding for the ecological restoration area will only be spread in the spring as the seed mix contains plant seeds that are food sources for native animals and will often be eaten before they can germinate. The ecological restoration area will be planted with shrubs will be planted 8 to 12 ft. on center and trees will be planted 10 to 15 ft. on center. It is anticipated that the vegetation within the ecological restoration area will thrive (establishment of 75% or greater of the native plant species planted in the ecological restoration area) after two consecutive growing seasons. The success of the ecological restoration area will depend upon whether or not predicted conditions, such as normal or average seasonal weather, occur and are met within the ecological restoration area, and that the planting plan is closely followed.

An invasive plant species prevention plan is proposed to continue after the restoration plantings to ensure that the vegetation within the restoration area takes hold and is not dominated by invasive or opportunistic vegetation, a weeding program will be incorporated into this planting plan for all new seedlings. Potential sources of new infestations of invasive vegetation are onsite construction/maintenance equipment, local wildlife populations, or airborne seeds. Invasive plant species have been identified not only on the site in the existing buffer zone but also on the surrounding properties.

Watering of the vegetation is a concern for the success of the ecological restoration. Watering will likely need to occur if planting occurs in the fall or in the spring if we have a dry spring and/or summer.

5.3 Wildlife Habitat

All of the eight native plant species that are to be used in the ecological restoration area are native to the area and site and contain significant wildlife habitat value. According to Readington 1994 and DeGraaf 2002, small mammals, birds, reptiles, amphibians, and insects use these native plant species for feeding, breeding, and shelter.

5.4 Plan

A planting plan has been included as Attachment 7, Restoration Planting Plan that shows the location of the ecological restoration area plantings.

5.5 Stormwater Management

The ecological restoration areas will not receive storm water discharge from the proposed stormwater management system.

5.6 Erosion Control Plan

No sediment or erosion controls are currently proposed as the site is completely vegetated. Areas where invasive plants will be removed will be planted with shrubs and trees and seeded with herbaceous seed mixes.

5.7 Considerations During Construction

Proper scheduling and sequencing of events to prepare and complete work associated with the restoration area will be necessary for the wetland and floodplain restorations to be successful. This includes the eradication plan and planting within the restoration area as described below. The invasive plant species eradication plan will be conducted for the first one to two years to ensure that when the proposed restoration plants are planted, they aren't overtaken by invasive plant species. Prior to planting, the restorations areas will be inspected to ensure that most of the invasive plants have been eradicated. If 80% to 85% or greater removal of the invasive plant species has occurred, the planting of the ecological restoration area will commence. Proposed planting orders will be submitted to the restoration plant suppliers once it is determined that enough of the invasive plants have been eradicated in late summer and/or early fall of 2024. The proposed ecological restoration plantings will be ordered in late winter/early spring 2025 to ensure the availability of the plant stock for the restoration area.

5.8 Schedule & Sequencing

The restoration area must be constructed in a sequenced plan to ensure its success. The construction sequencing for the restoration area is listed below.

5.8.1 Invasive Plant Eradication

Weeding of the invasive plants will commence at the end of summer or early fall of 2024. The way in which the ecological restoration plan will be executed is described below in Section 5.8.1.1 Construction Sequencing.

5.8.1.1 Construction Sequencing

This section will be followed closely by the site's wetland scientist and the landscaping crew to ensure each task is completed in proper sequence and thoroughly to avoid additional contamination on and off the site of invasive plant species. If each step of the construction sequencing is performed fully and accurately, the ecological restoration should be successful.

1. In late summer and/or early fall of 2024, the wetland scientist will instruct the landscaping crew on how to identifying each invasive plant species at the seedling, juvenile and adult plant stages at the site. Each person's task(s) will be conveyed so that everyone will know who is weeding, cutting and removing the slash or plant matter and placing it in black contractor's bags. The location for the placement of full bags is along on the edge of the access drive where they will be picked up and either placed in an open area along the existing parking lot or move to another offsite location for solarization.
2. Once the instruction is completed, the eradication of invasive plant species will begin with weeding and cut-and-treat of larger woody plants along the northern and eastern extent of the site moving (moving south to west) around and in Wetland A and removal of the few invasive plants from the cut area of Wetland B.
3. A transect that is approximately 20 ft. wide will be established to keep trampling of the native vegetation to a minimum and to focus on the invasive plants in the transect so none are missed.
4. The herbicide applicator with the MA Herbicide Applicator's License will dab the cut stalk or stump of the invasive plants along the path of the transect as needed.
5. Upon completion of the invasive plant species removal and treatment, all slash or plant waste (except for the trunks and large branches from the trees and shrubs that don't contain any seeds or fruits) will be collected and put into black contractor's bags. All personnel that have been in the field will have to be inspected for any plant materials, especially seeds, berries, and roots. Once all personnel have been inspected and cleaned off with a lint roller and nylon brush. Any dirt from

- boots, lint rollers, and brushes and dust pans will be discarded into the remaining plant materials bag.
6. In spring 2025, the area will be inspected in late April or early May to determine the extent of regrowth or new invasive plant species. If less than 20% are present, planting could begin.
 7. If a fall 2025 planting is proposed, the areas of invasive plants will be inspected at the end of August to determine if another treatment is necessary prior to planting and what level of weeding, cutting and treatment is needed to eradicate new and plants with regrowth.
 8. Planting will include coordinating the plant stock ordering, establishing a staging area, evaluating plant stock once it arrives on the site.
 9. Prior to planting, the shrubs and trees will be laid out in the locations by the site's wetland scientist and proper planting procedures will be discussed and monitoring of planting will occur by the wetland scientist to ensure the plants are planted properly according to the Restoration Planting Plan.
 10. Shrubs will be planted 8 to 12 ft. apart and trees will be planted 10 to 15 ft. apart.
 11. The seed mixes for the herbaceous area will be cast across the bare areas of the ecological restoration areas at a rate of 1 lb./1,200 sq. ft.
 12. All plants will be watered immediately following planting.
 13. The restored ecological restoration areas will be inspected by the wetland scientist following planting.
 14. All activities described in #1 through #12 will be supervised and authorized by the wetland scientist until completed and approved.
 15. Activities listed above are subject to change due to site conditions, weather, failure of equipment or other unforeseen issues that may arise and will be addressed by the supervising wetland scientist. If any changes do occur, they will be documented and discussed in full detail in the first report to the Conservation Commission, MassDEP and the U.S. Army Corps of Engineers following completion of the restoration area.

5.9 Ecological Restoration Monitoring

Monitoring of the restoration area will occur twice (during spring and fall) following planting to observe the health of the plantings and to determine when watering is necessary during the first growing season and if there are any issues with the plants. A quick monitoring will be performed twice in the first one to two weeks following the planting to ensure the plants aren't in shock (are healthy) and there isn't any evidence of animals eating the plants. Monitoring at the end of the growing seasons for both years will include observing the health of the plantings and to evaluate any replaced plantings. This monitoring will include evaluating the location of each shrub and tree planted, health of the vegetation, the overall success of the wetland restoration and riverfront area, and to set two sample plot monitoring locations to evaluate the wetland restoration area based on percent coverage of wetland vegetation and to sample soils in the center of each sample plot. One sample plot location will be established within the riverfront area restoration. The plots will be marked in the field with flagging tape and marked "TEC Sample Plot 1", "TEC Sample Plot 2" and "TEC Sample Plot 3". Any dead or significantly stressed vegetation will be marked with flagging tape and will be photographed and discussed in the monitoring report. The area of the wetland restoration will be documented for hydrology, wetland vegetated coverage, soils, potential for erosion, colonizing wetland plant species, any evidence of invasive plants, signs or observation of wildlife utilization, and the ability of the wetland restoration to blend into or become part of the adjacent existing wetland system. The 100-yr. floodplain will be monitored for all parameters of the wetland restoration area minus the hydrology. If any plantings are dead, they will be marked with flagging tape, their location within the restoration area will be marked on a plan and the plant species will be documented both in field notes and in the monitoring report.

Access to the restoration area will be limited to prevent damage to the vegetation and disturbance of the soils. Water will be obtained onsite and vegetation will be watered by hose or by buckets during the first month after planting if necessary. If a drought or extreme wet weather occurs, monitoring will be increased and necessary action taken to prevent damage or stress to the plantings. The restoration area will also be monitored to ensure invasive or unwanted plant species from becoming established during the two site visits. If invasive or unwanted species are found in the restoration area, a weeding program will be implemented to remove these species.

The first year of monitoring will include two site visits during the first full growing season, in early summer and late September. Each site visit will involve inspecting and documenting any changes in the health and growth of the planted vegetation. Photographs of the restoration area will be taken to show how the vegetation throughout these areas has fared. The locations of where the photos were taken will be marked for subsequent site visits. Photos of planted vegetation and volunteer species will be taken and included in the monitoring reports. A qualified wetland scientist will conduct all inspections of the

restoration area for plant vitality, vegetational coverage, and any potential erosion or sedimentation in the restoration area. A report regarding the inspection will be completed and submitted to the Agawam Conservation Commission, MassDEP and the Army Corps of Engineers after every inspection. A yearly monitoring report will be prepared after each growing season to document the yearly success.

Attachment 1

Agawam Conservation Commission
Violation Letter



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

DEP File Number: _____

WPA Form 9 – Enforcement Order

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. Violation Information

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

This Enforcement Order is issued by:

Agawam

Conservation Commission (Issuing Authority)

8/11/2023

Date

To:

Joseph O'Malley

Name of Violator

351 Main Street, Agawam, MA 01001

Address

1. Location of Violation:

Tree House S LLC

Property Owner (if different)

"Meadow Lot & Kirkland," "Meadow Lot," "Rear Meadow Lot"

Street Address

Agawam

City/Town

L13

Assessors Map/Plat Number

01001

Zip Code

1/3, 1/4, 1/5

Parcel/Lot Number

2. Extent and Type of Activity (if more space is required, please attach a separate sheet):

The Agawam Conservation Commission received an anonymous complaint of clear cutting on Saturday, August 5, 2023 and a second complaint on Monday, August 6, 2023 stating acres of the wooded area have been cut down. The Conservation Commission went onsite and verified the tree cutting. See attached pictures. They were told that the area would be replanted with tomatoes and that they would be starting a Christmas tree farm. This area is in Bordering Land Subject to Flooding.

B. Findings

The Issuing Authority has determined that the activity described above is in a resource area and/or buffer zone and is in violation of the Wetlands Protection Act (M.G.L. c. 131, § 40) and its Regulations (310 CMR 10.00), because:

- ☒ the activity has been/is being conducted in an area subject to protection under c. 131, § 40 or the buffer zone without approval from the issuing authority (i.e., a valid Order of Conditions or Negative Determination).

Attachment 2

Site Photographs



Photo 1. Area that was clearcut with trees cut down east and north of Wetland A.



Photo 2. Cut area east of Wetland A, note ground cover is intact and Oriental Bittersweet vines on tree.



Photo 3. Cut stumps of Pin Oak and Tree of Heaven east of Wetland A.



Photo 4. Cleared area of Wetland A and floodplain to the upper left of photograph.



Photo 5. A few of the many tires observed on the site within the cut or cleared area.



Photo 6. Tire and metal cylinder between Wetland A and Wetland C.



Photo 7. Tires and vehicle parts just southwest of Wetlands A and C.



Photo 8. Piles of trash and debris west of Wetland C and north of Wetland A.



Photo 9. Plastic debris, tires, plastic drums, etc. west of Wetland C and north of Wetland A.



Photo 10. Tires, trash and other debris just west of Wetland C and the eastern most portion of Wetland A.



Photo 11. Trash and debris strewn across the western edge of the site.



Photo 12. Another image of the trash and debris along the western edge of the site.



Photo 13. Area along the southwestern edge of the site, note the Common Mugwort.



Photo 14. Area just west of Wetland A and C along the western edge of the site, note C. Mugwort.



Photo 15. Area on the edge of Wetland A, note Black Locust and Quaking Aspen saplings re-growth.



Photo 16. Tartarian Honeysuckle along the eastern edge of Wetland A.



Photo 17. Black Locust with Fox Grape and goldenrods east of Wetland A.



Photo 18. Native grasses, goldenrods and Eastern Poison Ivy just east of Wetland A.



Photo 19. White Heath Aster, goldenrods and Purple Clover southeast of Wetland A.



Photo 20. White Heath Asters east of Wetland A.



Photo 21. Cut area of Wetland A, note Sensitive Fern and goldenrods in the cut area.



Photo 22. Area southeast of Wetland A, note White Heath Asters and goldenrods.



Photo 23. Area to the east of Wetland A in the southern most portion of the cut area of floodplain.



Photo 24. Raspberry bush near the edge of Wetland A.



Photo 25. Quaking Aspen, Virginia Creeper, goldenrod, Purple Clover, blackberries, Poison Ivy and a couple of Oriental Bittersweets in the 100-yr. floodplain.

Attachment 3

Wetland Resource Areas

Delineation Report



Tunison Environmental Consultants, LLC

Wetland Resource Area Delineation Report for 365 Main Street in Agawam, Massachusetts

Prepared for:

Mr. Joseph O'Malley
351 Main Street
Agawam, MA 01001

Prepared by:

Tunison Environmental Consultants, LLC
P.O. Box 992, 11 South Park Avenue
Plymouth, Massachusetts 02362

July 12, 2024

TEC #: 2308-001

Tunison Environmental Consultants, LLC

P.O. Box 992
Plymouth, Massachusetts 02362
Phone: (508) 737-7104



Tunison Environmental Consultants, LLC

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Figures

Figure 1 Site Locus

Attachments

- Attachment 1 Site Plant List
- Attachment 2 DEP Bordering Vegetated Wetland Delineation Field Data Forms
- Attachment 3 Natural Heritage and Endangered Species Program Estimated Habitat of Rare Wildlife and Certified Vernal Pools, Springfield South Quadrangle Map
- Attachment 4 ACOE Wetland Determination Data Forms – Northcentral and Northeast Region
- Attachment 5 NRCS Soil Report
- Attachment 6 Wetland Plan



Tunison Environmental Consultants, LLC

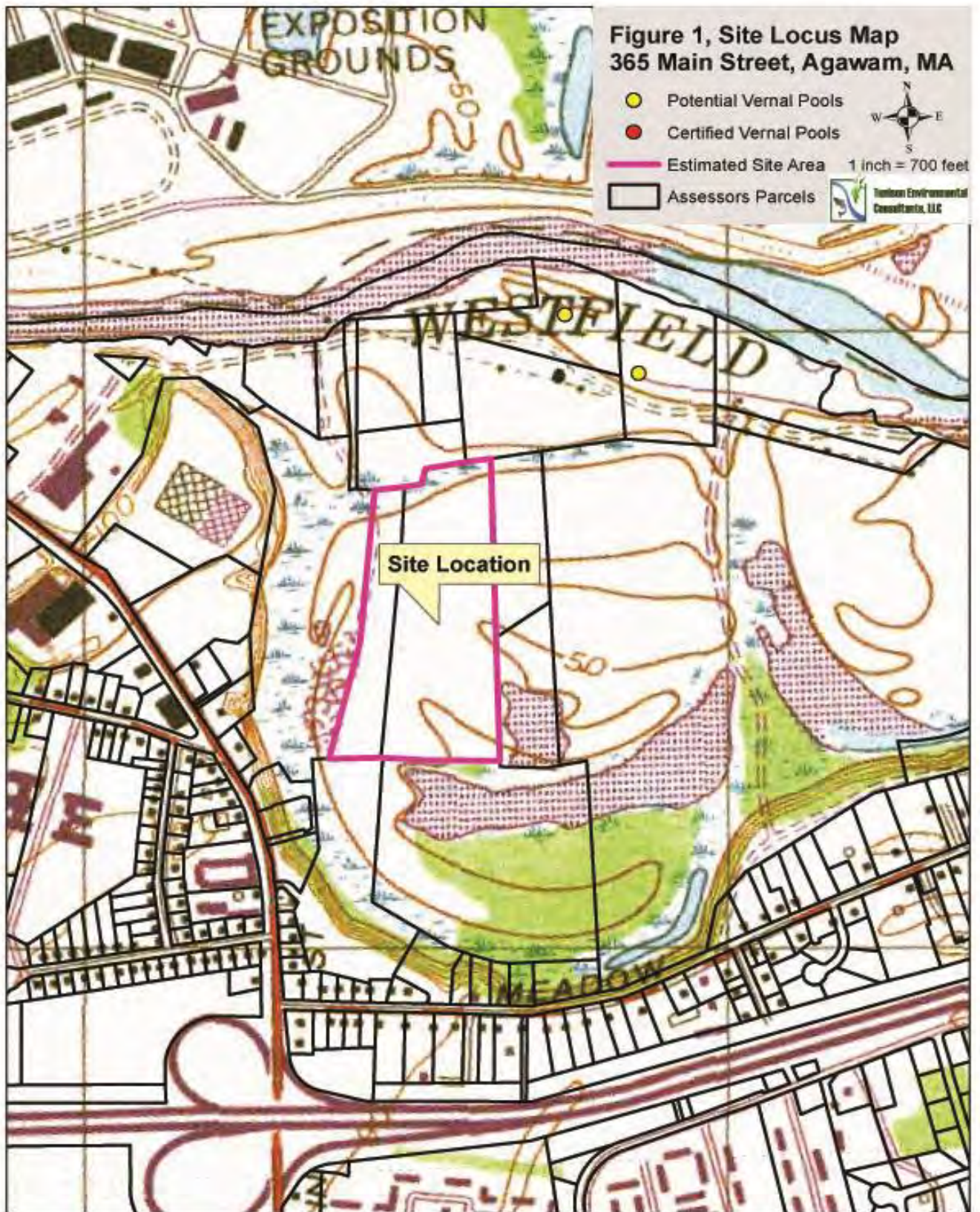
1.0 Introduction

This document presents the methodologies that were used to delineate and identify wetland resources at the property at 365 Main Street (Assessor's Parcel ID Numbers: L 131/ 1/ 5 & L13/ 1/ 3) in Agawam, Massachusetts (refer to Figure 1, Site Locus). The wetlands at this site were delineated on August 23, 2023 by Garrett M. Tunison, of Tunison Environmental Consultants, LLC who applied the methodologies described below.

2.0 Wetland Resource Areas

Under the Massachusetts Wetlands Protection Act (MWPA) (M.G.L. Ch. 131, S.40) and its implementing regulations (310 CMR 10.00), five freshwater resource area categories are defined. These categories are: (1) Bank, (2) Bordering Vegetated Wetlands (BVW), (3) Land Under Water Bodies and Waterways, (4) Land Subject to Flooding (Bordering and Isolated), and (5) Riverfront Area.

Bank, BVW, and Riverfront Area can be delineated in the field. The boundaries of Land Under Water Bodies and Waterways and Land Subject to Flooding are typically not physically delineated on a site for the following reasons. 310 CMR 10.56(2)(c) states: "The boundary of Land Under Water Bodies and Waterways is the mean annual low water level." As a result, this resource is not present within intermittent streams and is below bank resources in perennial streams. 310 CMR 10.57(2)(a)3 states: "The boundary of Bordering Land Subject to Flooding is the



estimated maximum lateral extent of flood water which will theoretically result from statistical 100-year frequency storm.” As such, this boundary is normally obtained from NFIP Profile data or by calculation and is represented on a site plan based upon elevation. The boundary of Isolated Land Subject to Flooding is based upon the “Perimeter of the largest observed or recorded volume of water confined in said area.” (310 CMR 10.57(2)(b)). Often historical data is lacking and the boundary is determined by calculation using the extent of flood water which will result from the statistical 100-year frequency storm.

3.0 Definitions of Wetland Resource Areas Normally Delineated in the Field

BVW is defined 310 CMR 10.55(2) as:

“...freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants...” The boundary of BVW is defined in 310 CMR 10.55(2)(c) as “...the line within which 50% or more of the vegetated community consists of wetland indicator plants and saturated or inundated conditions exist.”

Bank is defined in 310 CMR 10.54(2)(a) as:

“...the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland.” The boundary of the Bank is defined in 310 CMR 10.54(2)(c) as “the upper boundary of the Bank is the first observable break in slope or the mean annual flood level, whichever

is lower. The lower boundary of a Bank is the mean annual low flow level.”

River is defined in 310.CMR 10.58(2)(a) as:

“...any natural flowing body of water that empties to any ocean, lake, pond or other river and which flows throughout the year.”

Riverfront is defined in 310 CMR 10.58(2)(a)3 as:

“...the area between a river’s mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet¹ away...” 310 CMR 10.58(2)(a)2 states: “Mean Annual High-Water Line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominately terrestrial land.”

4.0 Methodologies for Delineation of BVW

Bordering Vegetated Wetlands were delineated in accordance with the methodology set forth in the document entitled “Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: A Handbook,” dated March 1995, produced by the Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways. Vegetated wetlands are defined by the presence of 50% or more of wetland indicator plants and saturated or inundated conditions.

¹In some instances, the riverfront area may extend outward less than 200 feet.

4.1 Description of Criteria

4.1.1 Wetland Indicator Plants

Wetland indicator plants are defined in the MWPA regulations as any of the following:

1. Plant species listed in the Wetlands Protection Act
2. Plants listed in the National List of Plant Species That Occur in Wetlands, published by the U.S. Army Corps of Engineers, 2012, with an indicator category of: OBL, FACW, and FAC.
3. Individual plants that exhibit morphological or physiological adaptations of life in saturated or inundated conditions.

Wetland indicator species categories are defined as:

OBL: Obligate Wetland. Occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW: Facultative Wetland. Usually occur in wetlands (estimated probability 67%-99%) but occasionally found in non-wetlands.

FAC: Facultative. Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

Morphological adaptations are evident in the form or shape of a plant. Two examples of a morphological adaptation are a shallow root system and a flared or buttress tree trunk.

4.1.2 Indicators of Hydrology

While wetlands must have saturated or inundated conditions, these conditions do not have to be present throughout the year. Saturation or inundation can be as short as two weeks if it occurs in the right type of soil during the growing season. As a result, indicators of hydrology can be used to satisfy the hydrology criterion when no flooding or saturation is observed.

The presence of hydric soil is an indicator of hydrology. Hydric soil is defined in Appendix D of "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act: A Handbook," as "...a soil that is saturated, ponded, or flooded long enough during the growing season to cause anaerobic conditions at or near the surface." Soils with at least 8 inches of organic material measured from the ground surface are hydric soils. Anaerobic conditions create physical and chemical changes in hydric mineral soils that are observable primarily by color mottling.

Other evidence of hydrology includes "groundwater, including the capillary fringe, within a major portion of the root zone;" and "observation of prolonged or frequent flowing or standing surface water" (310 CMR 10.55(2)(c)2). Examples of evidence for surface water are watermarks on trees and rocks, water-stained leaves, or drainage patterns. Examples of soil saturation include free water in the test hole and saturated soil within 12 inches of the ground surface.

4.2 Field Methodology

When conducting delineations, it is important to know if the wetland is isolated or borders on a creek, river, stream, pond or lake. This information is used to classify the resource area as either an Isolated Wetland or Bordering Vegetated Wetland. 310 CMR 10.04 states: "Bordering means touching. An area listed in 310 CMR 10.02(1)(a) is bordering on a water body listed in 310 CMR 10.02(1)(a) if some portion of the area is touching the water body or if some portion of the area is touching another area listed in 310 CMR 10.02(1)(a) some portion of which is in turn touching the water body." In practice, the "bordering" test is passed if the wetland somehow extends without a break to the bank of a creek, river, stream, pond or lake.

4.2.1 Boundary Flagging

A search for wetlands is made on a site by walking throughout the site with special attention paid to low lying areas and areas along streams, ponds and lakes. Visual inspection of vegetation allows for a preliminary determination as to the presence of a wetland². Once an area is suspected of being a wetland, detailed observations of vegetation and hydrology indicators are made to confirm that the area qualifies as a vegetated wetland. Once confirmed, observations are made along a transect that extends into adjacent uplands. When the composition of the vegetation changes such that less than 50% of the vegetation is composed of wetland indicator plants, or when indicators of wetland hydrology are lost, the wetland boundary is marked (usually with numbered flagging). This procedure is repeated along the wetland boundary frequently enough so that, when the flag locations are mapped, the resulting line accurately reflects the wetland boundary.

4.2.2 Boundary Documentation

At representative boundary locations data is collected sufficient to complete Department of Environmental Protection Agency (DEP) delineation field data forms. These data support the accurate placement of boundary flags. At a representative boundary location data are collected concerning vegetation, soils and other hydrology indicators from each of two sets of plots. One plot set is located just down gradient of the boundary while the second plot set is located just up gradient of the boundary.

²Disturbed situations require special procedures that are not discussed in this document.

4.2.2.1 Vegetation

Vegetation is evaluated on a layer by layer basis. Vegetation layers consist of ground cover (non-woody vegetation and all woody vegetation less than three feet in height), shrubs (woody vegetation greater than or equal to 3 feet, but less than 20 feet in height), saplings (woody vegetation over 20 feet in height with a diameter at breast height (dbh) greater than or equal to 0.4 inches to less than 5 inches), climbing woody vines, and trees (woody plants with a dbh of 5 inches or greater and a height of 20 feet or more). To be included in the analysis, a layer must contain at least 5 percent plant coverage.

The abundance of each species in a layer is evaluated by estimating percent coverage over a standard plot size. To be included in this analysis, a species must provide over 2 percent coverage within a plot. Generally, circular plots are established for each layer. Ground cover is evaluated using a 5' radius plot. Shrubs and saplings are evaluated using a 15' radius plot. Climbing woody vines and trees are evaluated utilizing a 30' radius plot. The size and shape of the plots may vary based on field conditions.

The dominance of each plant species within each layer is then calculated. This calculation is made by dividing the abundance of a species within a layer by the total plant abundance within that layer and multiplying by 100 to obtain a percent dominance. Those species that individually provide at least 20 percent dominance to the layer are always designated as "dominated species". The species within a layer are arranged by percent dominance in descending order. Those species that cumulatively provide 50% of the percent dominance for the layer, regardless as to whether or not they provide a minimum of 20 percent are designated "dominant species". This is often referred to as the "20/50" rule. Once the dominant species within each layer are determined, the number of dominant wetland indicator species are compared with the number of dominant

non-wetland indicator species. The vegetative criterion is met if at least half of the dominant species are wetland indicator species.

4.2.2.2 Hydrology

The presence of hydric soil is commonly used to indicate the presence of wetland hydrology. To identify whether hydric soils are present, the soil horizons within a test pit are evaluated. Hydric soil indicators as identified in "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act: A Handbook," include:

- Histosols (organic soils). Histosols are soils with at least 16 inches of organic material measured from the soil surface.
- Histic epipedons. These are soils with 8 to 16 inches of organic material measured from the soil surface.
- Sulfidic material. A strong 'rotten egg' smell generally is noticed immediately after the soil test hold is a dug.
- Gleyed soils. Soils that are predominately neutral gray, or occasionally greenish or bluish gray in color within 12 inches from the bottom O-horizon. (The Munsell Soil color charts have special pages for gleyed soils.)
- Soils with a matrix chroma of 0 or 1 and values of 4 or higher within 12 inches from the bottom of O-horizon.
- Within 12 inches from the bottom of the O-horizon, soils with a chroma of 2 or less and values of 4 or higher in the matrix, and mottles with a chroma of 3 or higher.
- Within 12 inches from the bottom of the O-horizon, soils with a matrix chroma of 3 and values of 4 or higher, with 10 percent or more low-chroma mottles, as well as indicators of saturation (i.e. mottles, oxidized rhizospheres, concretions, nodules) within 6 inches of the soil surface."

Other indicators of wetland hydrology include the presence of surface water flooding, groundwater (including the capillary fringe) within a major portion of the root zone in the test pit, water marks on trees, water-stained leaves, sediment deposits, drift lines, scoured areas, and/or drainage patterns.

5.0 Site Description and Wetland Delineation

The site is approximately 25.3 acres in size and is located at 365 Main Street (Assessor's Parcel ID Numbers: L 131/ 1/ 5 & L13/ 1/ 3) in Agawam, Massachusetts (refer to Figure 1, Site Locus). The property is bound by forested upland and a paintball playing field to the north; forested upland, forested wetland and farm fields to the east; forested upland and farm fields to the South; and a dirt access road and a capped landfill with a solar array on top of it to the west. A cell tower is also located just west of the site or south of the paintball fields parking area.

The site appears to be relatively flat with only a slight slope from north to south and east to west. All areas of the site are highly disturbed and appeared to have been cleared in the past. Most areas of the site lack an "O" and "A" Horizon soils and there is a lot of trash and debris on the site that likely came from the old landfill and previous paintball playing fields. There are many invasive plants including Garlic Mustard (*Alliaria petiolata*), Common Mugwort (*Artemisia vulgaris*) and Oriental Bittersweet (*Celastrus orbiculata*) in the herbaceous layer; Glossy Buckthorn (*Frangula alnus*), Multiflora Rose (*Rosa multiflora*) and an occasional Autumn Olive (*Elaeagnus umbellata*) in the shrub layer and Tree-of-Heaven (*Ailanthus altissima*) and Black Locust (*Robinia pseudoacacia*) in the tree layer (refer to Attachment 1, Plant List). The site is highly disturbed including garbage, yard debris, and fill materials (asphalt, brick and concrete chunks) scattered throughout the western portion of the site.

5.1 Wetland Resources Delineated on the Site

Three wetland resource areas have been delineated on the site which consists of two areas of BVW to bank of an intermittent stream and an isolated wetland.

Wetlands A and B likely join together offsite as one wetland just east of the site property.

5.1.1 Wetland A

Flagging series A-1 through A-9, A-11 through A-28, A-50 through A-78 and A-82 through A-101 delineates a BVW. Flags A-9 through A-11 and A-78 through A-82 delineate bank to an intermittent stream. This intermittent stream appears to have been dug a long time ago and was likely constructed or expanded for farm drainage. Dominant wetland vegetation includes Sensitive Fern (*Solidago gigantea*) in the herbaceous layer and Red Maple (*Acer rubrum*) in the tree layer. The herbaceous and shrub layers in many areas were thin or missing in areas where cutting has occurred. Dominant vegetation in areas outside of our sample plots in addition to the dominant species within our sample plots consisted of sedges (*Carex spp.*), Cinnamon Fern (*Osmundastrum cinnamomeum*), and some Royal Fern (*Osmunda spectabilis*) in the herbaceous layer; Northern Spicebush (*Lindera benzoin*), Glossy Buckthorn (*Frangula alnus*), Silky Dogwood (*Cornus amomum*) and some Highbush Blueberry (*Vaccinium corymbosum*) in the shrub layer; Poison Ivy (*Toxicodendron radicans*) in the vine layer and Box Elder (*Acer negundo*), American Elm (*Ulmus americana*), Pin Oak (*Quercus palustris*) in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.2 Wetland B

Flagging series B-1 through B-10 delineates a BVW just south of Wetland A to bank of an intermittent stream. Dominant wetland vegetation includes Sensitive Fern in the herbaceous layer and American Elm (*Ulmus*

americana) and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.3 Wetland C

Flagging series C-1 through C-13 and C-50 through C-54 delineates an isolated wetland west of Wetland A, east of the dirt road and paintball playing field. Dominant wetland vegetation includes Sensitive Fern in the herbaceous layer; Grey Willow (*Salix bebbiana*) and Silky Dogwood (*Cornus amomum*) in the shrub layer and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.2 Regulations that Apply to Delineated Resources Areas

The interests and functions of wetland resources areas are protected as defined by federal, state, and local regulations. Depending upon the type of wetland present, federal, state and local regulations may all apply to the wetland resources delineated and described above in this report, or only local and/or federal regulations may apply to wetland resources such as small isolated wetlands. The wetland resources delineated on the attached plans and described above in this report are discussed below as they relate to state, federal and local regulations.

5.2.1 Massachusetts Wetlands Protection Act (310 CMR 10.00)

Under the Massachusetts Wetlands Protection Act, 310 CMR 10.55, flag series Flags A-9 through A-11 and A-78 through A-82 delineates bank to

an intermittent stream. Flags A-1 through A-9, A-11 through A-28, A-50 through A-78, A-82 through A-101 and B-1 through B-10 delineate BVW. Both bank (310 CMR 10.54) and BVW (310 CMR 10.55) have a 100 ft. buffer zone extending horizontally outward from the BVW line (refer to Attachment 5, Wetland Plan).

Massachusetts Department of Environmental Protection (DEP) Bordering Vegetated Wetland Delineation Field Data Forms were completed for observation plots located in the wetlands and uplands along each wetland transect discussed above and are presented as Attachment 2.

5.2.2 Federal Clean Water Act

Wetlands A and B drain to intermittent streams east and south of the site that discharge into the Westfield River that drains to the Connecticut River which is a tributary that flows into Long Island Sound. Since the wetland listed above (Wetland E) discharge into coastal waters, it is considered as contiguous to a tributary to "waters of the U.S.", and regulated by the U.S. Army Corps of Engineers under the Clean Water Act.

5.2.3 Local Regulations and Bylaws

The Town of Agawam, MA, doesn't have any wetlands bylaw, regulations or policies.

6.0 Rare Species and Other Environmental Resources

This evaluation also included a review of the MA Natural Heritage Atlas, 2021, 15th edition, published by MA Natural Heritage and Endangered Species Program, Division of Fisheries and Wildlife, Westborough, MA. Based on review of the Springfield South Quadrangle, the site property is **not** within Priority or Estimated Habitats of Rare Species (refer to Attachment 3, Environmental Resources Map) Based on review of the Weymouth Quadrangle, the site is **not** within an area designated as Priority/Estimated Habitat of Rare Wildlife or within any Certified Vernal Pools. Mass/GIS data layers, including Priority/Estimated Habitat of rare species (updated August, 2021), certified vernal pools (updated continually), and potential vernal pools (July 2013) have been layered on an ortho-photo of the site that has been included as Attachment 3.

Attachment 1

Site Plant List

Attachment 1

List of Plants Observed in Field

The following species were observed growing on site. They are listed classified relative to their affinity for wetland habitats. Classifications are based upon the U.S. Army Corps of Engineers, NWPL-National Wetland Plant List, Northcentral and Northeast 2020 Regional Wetland Plant List. This publication does not list all plants that grow in New England. "NL" which represents "not listed" or listed as "NA" which indicates "no agreement" indicates species not listed in the publication. Plant species listed as "NL" or "NA" below should be considered upland (UPL) plants since they are not included in the 2020 National Wetland Plant List for the Northcentral and Northeast Region.

In certain cases, plants may have been identified only on the family or genus level. In these cases, the indicator status, SESW (wetland) or SESU (upland), is listed by the most typical status of the genus or based upon characteristics of the plant as observed in the field.

Notwithstanding classifications, it must be emphasized that individual plants of almost any species may be found in almost any habitat. It is not uncommon to find individual plants of OBL species growing in uplands or individual plants of UPL species growing in wetlands. For this reason, the total vegetation best serves as an indicator of wetlands rather than any individual species.

INDICATOR CATEGORIES AS DEFINED BY THE U.S. Army Corps of Engineers:

OBL: Obligate Wetland (OBL). Occur almost always (estimated probability > 99%) under natural conditions in wetlands.

FACW: Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%) but occasionally found in non-wetlands.

FAC: Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU: Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

UPL: Obligate Upland (UPL). Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

HABIT: The plant characteristics and life forms assigned to each species.

A: Annual
B: Biennial
C: Clubmoss
E: Emergent
@: Epiphytic
F: Forb
/: Floating
F3: Fern
G: Grass

GL: Grasslike
H: Partly woody
HS: Half shrub
H2: Horsetail
I: Introduced
N: Native
P: Perennial
+: Parasitic
P3: Pepperwort

Q: Quillwort
S: Shrub
- : Saprophytic
Z: Submerged
\$: Succulent
T: Tree
V: Herbaceous Vine
W: Waterfern
WV: Woody Vine

Plant List for 365 Main Street in Agawam, MA

Scientific Name	Common Name	MA Ind	Habit
<i>Acer negundo</i>	BOX-ELDER OR ASH-LEAF MAPLE	FAC	NT
<i>Acer platanoides</i>	MAPLE, NORWAY	UPL	IT
<i>Acer rubrum</i>	MAPLE, RED	FAC	NT
<i>Achillea millefolium</i>	YARROW, COMMON	FACU	PNF
<i>Agrostis penennans</i>	UPLAND BENT GRASS	FACU	PIG
<i>Ailanthus altissima</i>	TREE-OF-HEAVEN	UPL	IT
<i>Alliaria petiolata</i>	MUSTARD, GARLIC	FACU	BIF
<i>Allium canadense</i>	ONION, MEADOW GARLIC OR	FACU	PNF
<i>Alnus incana</i>	ALDER, SPECKLED	FACW	NS
<i>Ambrosia artemisiifolia</i>	RAGWEED, ANNUAL	FACU	ANF
<i>Artemisia vulgaris</i>	MUGWORT, COMMON	FACU	ANF
<i>Betula alleghaniensis</i>	BIRCH, YELLOW	FAC	NT
<i>Betula papyrifera</i>	BIRCH, PAPER	FAC	NTS
<i>Betula populifolia</i>	BIRCH, GRAY	FAC	NT
<i>Bidens frondosa</i>	BEGGAR-TICK, DEVIL'S	FACW	ANF
<i>Brassica rapa</i>	MUSTARD, FIELD OR RAPE	UPL	ANF
<i>Carex flava</i>	SEDGE, YELLOW-GREEN	OBL	PNGL
<i>Carex blanda</i>	SEDGE, EASTERN WOODLAND	FAC	PNGL
<i>Carex crinita</i>	SEDGE, FRINGED	OBL	PNEGL
<i>Carex digitalis</i>	SEDGE, SLENDER WOOD	UPL	PNGL
<i>Carex flava</i>	SEDGE, YELLOW-GREEN	OBL	PNGL
<i>Carex leptoneura</i>	SEDGE, NERVELESS WOOD	FAC	PNGL
<i>Carex lupulina</i>	SEDGE, HOP	OBL	PNEGL
<i>Carex lurida</i>	SEDGE, SHALLOW	OBL	PNEGL
<i>Carex novae-angliae</i>	SEDGE, NEW ENGLAND	FACU	PNGL
<i>Carex scoparia</i>	SEDGE, POINTED BROOM	FACW	PNGL
<i>Carex stricta</i>	SEDGE, UPTIGHT OR TUSsock	OBL	PNEGL
<i>Carex sylvatica</i>	SEDGE, EUROPEAN WOODLAND	FACU	PNEGL
<i>Carex vulpinoidea</i>	SEDGE, COMMON FOX	OBL	PNEGL
<i>Catalpa speciosa</i>	CATALPA, NORTHERN	FACU	NT
<i>Celastrus orbiculata</i>	BITTER-SWEET ORIENTAL OR ASIAN	UPL*	IWV
<i>Comptonia peregrina</i>	FERN, SWEET	NL	NS
<i>Cornus amomum</i>	DOGWOOD, SILKY	FACW	NS
<i>Daucus carota</i>	QUEEN ANNE'S LACE	UPL	F
<i>Dennstaedtia punctilobula</i>	FERN, HAYSCENTED	UPL	F3

Scientific Name	Common Name	MA Ind	Habit
Dichanthelium clandestinum	GRASS, DEER-TONGUE ROSETTE	FACW	PNG
Dryopteris carthusiana	FERN, SPINULOSE WOOD	FACW	F3
Echinochloa crusgalli	GRASS, BARNYARD, LARGE	FAC	AIG
Elaeagnus umbellata	AUTUMN OLIVE	NL	
Eurybia divaricata	ASTER, WHITE WOOD	NL	PNF
Frangula alnus	BUCKTHORN, FALSE GLOSSY	FAC	IS
Gramineae (Hydrophilic)	GRASSES, HYDROPHILIC	SESW	G
Gramineae (Upland)	GRASSES, UPLAND	SESU	G
Hamamelis virginiana	WITCH-HAZEL, COMMON OR AMERICAN	FACU	NST
Hypericum perforatum	ST. JOHN'S-WORT, COMMON	UPL	PNF
Ilex verticillata	WINTERBERRY, COMMON	FACW	NST
Impatiens capensis	TOUCH-ME-KNOT, SPOTTED	FACW	ANF
Lepidium virginicum	PEPPER-WORT, POORMAN'S	FACU	ABNF
Lespedeza capitata	BUSH-CLOVER, ROUND-HEAD	FACU	PNF
Ligustrum sinense	PRIVET, CHINESE	FACU	NS
Linaria vulgaris	BUTTER & EGGS	NL	IP
Lindera benzoin	SPICEBUSH, NORTHERN	FACW	NST
Lonicera tatarica	HONEYSUCKLE, TWINSISTERS OR TARTARIAN	FACU*	IS
Lythrum salicaria	LOOSESTRIFE, PURPLE	OBL	PIF
Maianthemum canadense	LILY-OF-THE-VALLEY, WILD-OR FALSE	FACU	PNF
Melilotus alba	SWEETCLOVER, WHITE	FACU	ABIF
Medicago lupulina	MEDIC, BLACK	FACU	AIF
Musci	MOSSES	NL	
Nyssa sylvatica	TUPELO, BLACK	FAC	NT
Oenothera parviflora	EVENING-PRIMROSE, NORTHERN	FACU	BIF
Onoclea sensibilis	FERN, SENSITIVE	FACW	PNEF3
Osmundastrum cinnamomeum	FERN, CINNAMON	FACW	PNEF3
Osmunda claytoniana	FERN, INTERRUPTED	FAC	PNEF3
Osmunda spectabilis	FERN, ROYAL	OBL	PNF3
Oxalis stricta	WOODSORREL, UPRIGHT YELLOW	FACU	PIF
Parthenocissus quinquefolia	CREEPER, VIRGINIA	FACU	NWV
Plantago lanceolata	PLANTAIN, ENGLISH	FACU	ABPIF
Plantago major	PLANTAIN, COMMON OR GREAT	FACU	PIF
Pinus strobus	PINE, EASTERN WHITE	FACU	NT
Polygonum pensylvanicum	SMARTWEED, PENNSYLVANIA	FACW	ANEF
Populus grandidentata	ASPEN, BIG-TOOTH	FACU	NT
Populus tremula	ASPEN, QUAKING	FACU	IT
Potentilla simplex	CINQUEFOIL, OLD FIELD	FACU	PNF

Scientific Name	Common Name	MA Ind	Habit
<i>Prunus serotina</i>	CHERRY, BLACK	FACU	NT
<i>Pteridium aquilinum</i>	FERN, BRACKEN	FACU	PNF3
<i>Pyrus malus</i>	APPLE	NL	IT
<i>Quercus alba</i>	OAK, NORTHERN WHITE	FACU-	NT
<i>Quercus palustris</i>	OAK, PIN	FACW	NT
<i>Quercus rubra</i>	OAK, NORTHERN RED	FACU	NT
<i>Rhamnus cathartica</i>	BUCKTHORN, COMMON OR ALDERLEAF	UPL	IT
<i>Rhexia virginica</i>	MEADOW-BEAUTY OR HANSOME-HARRY	OBL	PNF
<i>Robinia pseudoacacia</i>	LOCUST, BLACK	FACU	NT
<i>Rosa multiflora</i>	ROSE, MULTIFLORA OR RAMBLER	FACU	IS
<i>Rudbeckia hirta</i>	SUSAN, BLACK-EYED	FACU	BPNF
<i>Rubus allegheniensis</i>	BLACKBERRY, ALLEGHENY	FACU	NS
<i>Rubus alumnus</i>	BLACKBERRY, OLD FEILD	FACU	NS
<i>Rubus flagellaris</i>	DEWBERRY, WHIPLASH	FACU	NS
<i>Rubus hispidus</i>	DEWBERRY, BRISTLY	FACW	NS
<i>Rubus semisetosus</i>	BLACKBERRY, NEW ENGLAND	FAC	NS
<i>Rumex crispus</i>	DOCK, CURLY	FAC	PIF
<i>Salix bebbiana</i>	WILLOW, BEBB OR GREY	FACW	NS
<i>Salix daphnoides</i>	WILLOW, VIOLET	FAC	IT
<i>Salix discolor</i>	WILLOW, PUSSY	FACW	NS
<i>Salix nigra</i>	WILLOW, BLACK	OBL	NT
<i>Sambucus nigra</i>	ELDER, BLACK	FACW	NS
<i>Saxifraga virginiana</i>	SAXIFRAGE, VIRGINIA	FAC	PNF
<i>Smilax rotundifolia</i>	GREENBRIER, COMMON OR HORSE	FAC	NWV
<i>Solanum dulcamara</i>	NIGHTSHADE, CLIMBING	FAC	PIF
<i>Solidago altissima</i>	GOLDENROD, TALL	FACU	PNF
<i>Solidago canadensis</i>	GOLDEN-ROD, CANADIAN	FACU	PNF
<i>Solidago gigantea</i>	GOLDEN-ROD, GIANT OR LATE	FACW	PNF
<i>Solidago rugosa</i>	GOLDEN-ROD, WRINKLED-LEAF	FAC	PNF
<i>Sparganium americanum</i>	BURREED, AMERICAN	OBL	PNEF
<i>Spiraea alba</i>	MEADOW-SWEET, WHITE	FACW	NS
<i>Symphyotrichum ericoides</i>	ASTER, WHITE HEATH AMERICAN	FACU	PNF
<i>Symphyotrichum laevis</i>	ASTER, SMOOTH BLUE	NL	PNF
<i>Taraxacum officinale</i>	DANDELION, COMMON	FACU	PIF
<i>Toxicodendron radicans</i>	IVY, EASTERN POISON	FAC	NWVS
<i>Trientalis borealis</i>	STARFLOWER, MAYSTAR OR AMERICAN	FAC	PNF
<i>Trifolium pratense</i>	CLOVER, RED	FACU	BPIF
<i>Trifolium repens</i>	CLOVER, WHITE	FACU	PIF

Scientific Name	Common Name	MA Ind	Habit
<i>Ulmus americana</i>	ELM, AMERICAN	FACW	NT
<i>Ulmus rubra</i>	ELM, SLIPPERY	FAC	NT
<i>Urtica dioica</i>	NETTLE, STINGING	FAC	PIF
<i>Vaccinium corymbosum</i>	BLUEBERRY, HIGHBUSH	FACW	NS
<i>Verbascum thapsus</i>	MULLEIN, COMMON OR GREAT	UPL	F
<i>Viburnum dentatum</i>	ARROW-WOOD, SOUTHERN	FAC	NTS
<i>Viburnum lentago</i>	NANNY-BERRY OR WILD RASIN	FAC	NTS
<i>Viola septentrionalis</i>	VIOLET, NORTHERN WOODLAND	FACU	PNF
<i>Viola papilionacea</i>	VIOLET, COMMON	FAC	PNF
<i>Vitis labrusca</i>	GRAPE, FOX	FACU	NWV
<i>Vitis riparia</i>	GRAPE, RIVER-BANK	FAC	NWV

Attachment 2

DEP Bordering Vegetated Wetland Delineation Field Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-4, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____ If yes, optional Wetland Site ID: <u>Wetland A (northeastern lobe)</u>
Hydric Soil Present?	Yes ☒ No _____	
Wetland Hydrology Present?	Yes ☒ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

* A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☒ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes ☒ No _____
Water Table Present?	Yes _____ No ☒	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No ☒	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precepitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.

VEGETATION – Use scientific names of plants.

Sampling Point: A-4, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Red Maple (Acer rubrum)</u>	<u>63</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>63%</u> = Total Cover																				
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																				
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>63</u></td> <td>x 2 = <u>126.00</u></td> </tr> <tr> <td>FAC species <u>63</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>38</u></td> <td>x 4 = <u>152.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>164</u> (A)</td> <td><u>467</u> (B)</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = <u>2.85</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>63</u>	x 2 = <u>126.00</u>	FAC species <u>63</u>	x 3 = <u>189.00</u>	FACU species <u>38</u>	x 4 = <u>152.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>164</u> (A)	<u>467</u> (B)	Prevalence Index = B/A = <u>2.85</u>	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species <u>63</u>	x 2 = <u>126.00</u>																			
FAC species <u>63</u>	x 3 = <u>189.00</u>																			
FACU species <u>38</u>	x 4 = <u>152.00</u>																			
UPL species _____	x 5 = _____																			
Column Totals: <u>164</u> (A)	<u>467</u> (B)																			
Prevalence Index = B/A = <u>2.85</u>																				
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
<u>0.0%</u> = Total Cover																				
Herb Stratum (Plot size: <u>5 ft. radius</u>)																				
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>63</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>63%</u> = Total Cover																				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																				
1. <u>Eastern Poison Ivy (Toxicodendron radicans)</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.																
2. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>38</u>	<u>Yes</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
<u>41%</u> = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.) The northwestern portion of Wetland A is mostly a mix of FACW, FAC, FACU and UPL plant species.				Hydrophytic Vegetation Present? Yes ☒ No _____																

Sampling Point: A-4, Wet

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) | ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) | ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) | ☐ Dark Surface (S7) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☒ Depleted Matrix (F3) | ☐ Polyvalue Below Surface (S8) (LRR K, L) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) | ☐ Thin Dark Surface (S9) (LRR K, L) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) | ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) | ☐ Piedmont Floodplain Soils (F19) (MLRA 149B) |
| ☐ Sandy Gleyed Matrix (S4) | | ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| ☐ Sandy Redox (S5) | | ☐ Red Parent Material (F21) |
| ☐ Stripped Matrix (S6) | | ☐ Very Shallow Dark Surface (TF12) |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | | ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: Spodosol

Depth (inches): 4.5

Hydric Soil Present? Yes X No

Remarks: * FSL stands for Fine Sandy Loam soils. ** The "B2" Horizon was 10YR 6/2 with 10YR 6/8 mottles (35+/-%) and 10YR 5/1 (10 +/-%) depletions. The soils are highly disturbed and missing "O" and "A" Horizons are missing in most areas. There are some areas of a 10YR 2/2 FSL "A" Horizon. The other closest surface soils to an "A" or "O" layer are a mineral soil of 10YR 4/1 FSL with an approximately 30% silt content. The delineated wetlands contained a spodosol that occurred approximately 3 to 4 in. below the soil surface and was approximately 2.5 to 4.5 in. thick. The soil below the hydric layer was typically a "B" Horizon of 10YR 6/6 to 10YR 6/8. The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-4, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>X</u> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: A-4, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Quaking Aspen (Populus tremula)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>63%</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Multiflora Rose (Rosa rugosa)</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = <u>126.00</u> FAC species _____ x 3 = <u>189.00</u> FACU species <u>129</u> x 4 = <u>152.00</u> UPL species _____ x 5 = _____ Column Totals: <u>129</u> (A) <u>516</u> (B) Prevalence Index = B/A = <u>4.00</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>3%</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>0%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Eastern Poison Ivy (Toxicodendron radicans)</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>66%</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) The northwestern portion of Wetland A is mostly a mix of FACW, FAC, FACU and UPL plant species.				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>

SOIL

Sampling Point: A-4, Up

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-62, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland?	Yes ☒ No _____
Hydric Soil Present?	Yes ☒ No _____	If yes, optional Wetland Site ID: <u>Wetland A</u>	
Wetland Hydrology Present?	Yes ☒ No _____		

Remarks: (Explain alternative procedures here or in a separate report.)
 * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes ☒ No _____
Surface Water Present? Yes _____ No ☒	Depth (inches): _____	
Water Table Present? Yes _____ No ☒	Depth (inches): _____	
Saturation Present? Yes _____ No ☒ (includes capillary fringe)	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precipitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.

VEGETATION – Use scientific names of plants.

 Sampling Point: A-62, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Big-Tooth Aspen (Populus grandidentata)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>121.5</u> (A/B)														
2. <u>Red Maple (Acer rubrum)</u>	<u>63</u>	<u>Yes</u>	<u>FAC</u>															
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>38</u></td> <td>x 2 = <u>76.00</u></td> </tr> <tr> <td>FAC species <u>63</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>20.5</u></td> <td>x 4 = <u>82.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>121.5</u> (A)</td> <td><u>347</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.86</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>38</u>	x 2 = <u>76.00</u>	FAC species <u>63</u>	x 3 = <u>189.00</u>	FACU species <u>20.5</u>	x 4 = <u>82.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>121.5</u> (A)	<u>347</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>38</u>	x 2 = <u>76.00</u>																	
FAC species <u>63</u>	x 3 = <u>189.00</u>																	
FACU species <u>20.5</u>	x 4 = <u>82.00</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>121.5</u> (A)	<u>347</u> (B)																	
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>38</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>38%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. _____				Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____																		
3. _____																		
4. _____																		
5. _____																		
6. _____																		
7. _____																		
<u>0.0%</u> = Total Cover																		
Hydrophytic Vegetation Present?				Yes ☒ No ☐														

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: A-62, Wet

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes ☒ No ☐

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-62, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.998 N Long: -72 36.636 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>X</u>	Depth (inches): _____	
(includes capillary fringe)		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

Sampling Point: A-62, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Red Maple (Acer rubrum)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)														
2. <u>Quaking Aspen (Populus tremula)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>126.00</u></td> </tr> <tr> <td>FAC species <u>31</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>74</u></td> <td>x 4 = <u>152.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>387</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.70</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = <u>126.00</u>	FAC species <u>31</u>	x 3 = <u>189.00</u>	FACU species <u>74</u>	x 4 = <u>152.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>105</u> (A)	<u>387</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = <u>126.00</u>																	
FAC species <u>31</u>	x 3 = <u>189.00</u>																	
FACU species <u>74</u>	x 4 = <u>152.00</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>105</u> (A)	<u>387</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea ordiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>21%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACU</u>	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

Sampling Point: A-62, Up

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) | ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) | ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) | ☐ Dark Surface (S7) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) | ☐ Polyvalue Below Surface (S8) (LRR K, L) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) | ☐ Thin Dark Surface (S9) (LRR K, L) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) | ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) | ☐ Piedmont Floodplain Soils (F19) (MLRA 149B) |
| ☐ Sandy Gleyed Matrix (S4) | | ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| ☐ Sandy Redox (S5) | | ☐ Red Parent Material (F21) |
| ☐ Stripped Matrix (S6) | | ☐ Very Shallow Dark Surface (TF12) |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | | ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: None

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: * FSL stands for Fine Sandy Loam soils. ** The "B" Horizon soils were mostly 10YR 6/6 to 10YR 6/8. The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: B-4, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.981 N Long: -72 36.651 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____ If yes, optional Wetland Site ID: <u>Wetland B</u>
Hydric Soil Present?	Yes ☒ No _____	
Wetland Hydrology Present?	Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * The area is listed as a NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes ☒ No _____
Water Table Present? Yes _____ No ☒	Depth (inches): _____	
Saturation Present? Yes _____ No ☒	Depth (inches): _____ (includes capillary fringe)	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks: The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precipitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.		

VEGETATION – Use scientific names of plants.

 Sampling Point: B-4, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Apple (Pyrus malus)</u>	<u>3.0</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)
2. <u>American Elm (Ulmus americana)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	
3. <u>Red Maple (Acer rubrum)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>79%</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>63</u> x 2 = <u>126</u> FAC species <u>76</u> x 3 = <u>228</u> FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: <u>139</u> (A) <u>354</u> (B) Prevalence Index = B/A = <u>2.55</u>
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
<u>0.0%</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. radius</u>)				Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
1. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>3</u>	<u>Yes</u>	<u>UPL</u>	
2. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>63</u>	<u>Yes</u>	<u>FACW</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>66%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				Hydrophytic Vegetation Present? Yes ☒ No _____
1. <u>Eastern Poison Ivy (Toxicodendron radicans)</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	
2. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>38</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>41%</u> = Total Cover				
Remarks: (Include photo numbers here or on a separate sheet.) 				

SOIL

Sampling Point: B-4, Wet

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: B-4, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.981 N Long: -72 36.651 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes _____ No <u>X</u> Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Water Table Present?	Yes _____ No <u>X</u> Depth (inches): _____		
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u> Depth (inches): _____		
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

 Sampling Point: B-4, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. Pin Oak (<i>Quercus palustris</i>)	3	No	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)
2. Red Maple (<i>Acer rubrum</i>)	38	Yes	FAC	
3. Quaking Aspen (<i>Populus tremula</i>)	38	Yes	FACU	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = <u>126.00</u> FAC species <u>31</u> x 3 = <u>189.00</u> FACU species <u>74</u> x 4 = <u>152.00</u> UPL species _____ x 5 = _____ Column Totals: <u>105</u> (A) <u>387</u> (B) Prevalence Index = B/A = <u>3.70</u>
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>83.5%</u>	= Total Cover		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>0.0%</u>	= Total Cover		
Herb Stratum (Plot size: <u>5 ft. radius</u>)				
1. Oriental Bittersweet (<i>Celastrus orbiculata</i>)	63	Yes	UPL	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
	<u>63%</u>	= Total Cover		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				
1. Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	10.5	Yes	FACU	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
	<u>10.5%</u>	= Total Cover		
Remarks: (Include photo numbers here or on a separate sheet.) Please note, Oriental Bittersweet was included as an herb and not a woody vine as all plants were seedlings and not growing as a vine during our evaluation. We have listed this plant in the herbaceous layer on other data forms as it was also growing as an herb and not vine like during its early stages of life.				

Sampling Point: A-62, Up

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes _____ No X

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: C-2, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.016 N Long: -72 36.727 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____ If yes, optional Wetland Site ID: <u>Wetland C</u>
Hydric Soil Present?	Yes ☒ No _____	
Wetland Hydrology Present?	Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☒ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present?	Yes _____ No ☒ Depth (inches): _____	Wetland Hydrology Present? Yes ☒ No _____
Water Table Present?	Yes _____ No ☒ Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No ☒ Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: C-2, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Red Maple (Acer rubrum)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>38%</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>104</u></td> <td>x 2 = <u>208.00</u></td> </tr> <tr> <td>FAC species <u>38</u></td> <td>x 3 = <u>114.00</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>00.00</u></td> </tr> <tr> <td>UPL species <u>11</u></td> <td>x 5 = <u>52.50</u></td> </tr> <tr> <td>Column Totals: <u>152.5</u></td> <td>(A) <u>347.5</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.46</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>104</u>	x 2 = <u>208.00</u>	FAC species <u>38</u>	x 3 = <u>114.00</u>	FACU species _____	x 4 = <u>00.00</u>	UPL species <u>11</u>	x 5 = <u>52.50</u>	Column Totals: <u>152.5</u>	(A) <u>347.5</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>104</u>	x 2 = <u>208.00</u>																	
FAC species <u>38</u>	x 3 = <u>114.00</u>																	
FACU species _____	x 4 = <u>00.00</u>																	
UPL species <u>11</u>	x 5 = <u>52.50</u>																	
Column Totals: <u>152.5</u>	(A) <u>347.5</u> (B)																	
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. <u>Grey Willow (Salix bebbiana)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Silky Dogwood (Cornus amomum)</u>	<u>63</u>	<u>Yes</u>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>38%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>	Hydrophytic Vegetation Present? Yes ☒ No _____														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: C-2, Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, |
| ☐ Histic Epipedon (A2) | MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Depleted Below Dark Surface (A11) | ☒ Depleted Matrix (F3) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Dark Surface (F6) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Redox Depressions (F8) |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No

Remarks: * FSL stands for Fine Sandy Loam soils. The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: C-2, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.016 N Long: -72 36.727 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>	
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____		
Saturation Present? Yes _____ No <u>X</u>	Depth (inches): _____		
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION – Use scientific names of plants.

Sampling Point: C-2, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Red Maple (Acer rubrum)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)														
2. <u>Tree-of-Heaven (Ailanthus altissima)</u>	<u>38</u>	<u>Yes</u>	<u>UPL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>11</u></td> <td>x 2 = <u>21.00</u></td> </tr> <tr> <td>FAC species <u>38</u></td> <td>x 3 = <u>114.00</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>00.00</u></td> </tr> <tr> <td>UPL species <u>69</u></td> <td>x 5 = <u>345.00</u></td> </tr> <tr> <td>Column Totals: <u>117.5</u> (A)</td> <td><u>480</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>4.09</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>11</u>	x 2 = <u>21.00</u>	FAC species <u>38</u>	x 3 = <u>114.00</u>	FACU species _____	x 4 = <u>00.00</u>	UPL species <u>69</u>	x 5 = <u>345.00</u>	Column Totals: <u>117.5</u> (A)	<u>480</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>11</u>	x 2 = <u>21.00</u>																	
FAC species <u>38</u>	x 3 = <u>114.00</u>																	
FACU species _____	x 4 = <u>00.00</u>																	
UPL species <u>69</u>	x 5 = <u>345.00</u>																	
Column Totals: <u>117.5</u> (A)	<u>480</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea ordiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>20.5</u>	<u>Yes</u>	<u>UPL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>31%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																		
Remarks: (Include photo numbers here or on a separate sheet.) 																		

Sampling Point: A-62, Up

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|---|--|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) | ☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) | ☐ Coast Prairie Redox (A16) (LRR K, L, R) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) | ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) | ☐ Dark Surface (S7) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Depleted Matrix (F3) | ☐ Polyvalue Below Surface (S8) (LRR K, L) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) | ☐ Thin Dark Surface (S9) (LRR K, L) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) | ☐ Iron-Manganese Masses (F12) (LRR K, L, R) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) | ☐ Piedmont Floodplain Soils (F19) (MLRA 149B) |
| ☐ Sandy Gleyed Matrix (S4) | | ☐ Mesic Spodic (TA6) (MLRA 144A, 145, 149B) |
| ☐ Sandy Redox (S5) | | ☐ Red Parent Material (F21) |
| ☐ Stripped Matrix (S6) | | ☐ Very Shallow Dark Surface (TF12) |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | | ☐ Other (Explain in Remarks) |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes ☐ No ☒

Depth (inches): _____

Remarks: * FSL stands for Fine Sandy Loam soils. ** The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

Attachment 3

Natural Heritage and Endangered Species Program Estimated Habitat of Rare Wildlife and Certified Vernal Pools, Springfield South Quadrangle Map

365 Main Street, Agawam, MA

Area of Critical Environmental Concern

Estimated Habitats of Rare Species

Priority Habitats of Rare Species

Outstanding Resource Waters

Potential Vernal Pools

Certified Vernal Pools

Estimated Site Area

100 yr. Floodplain

Assessors Parcels

N

W

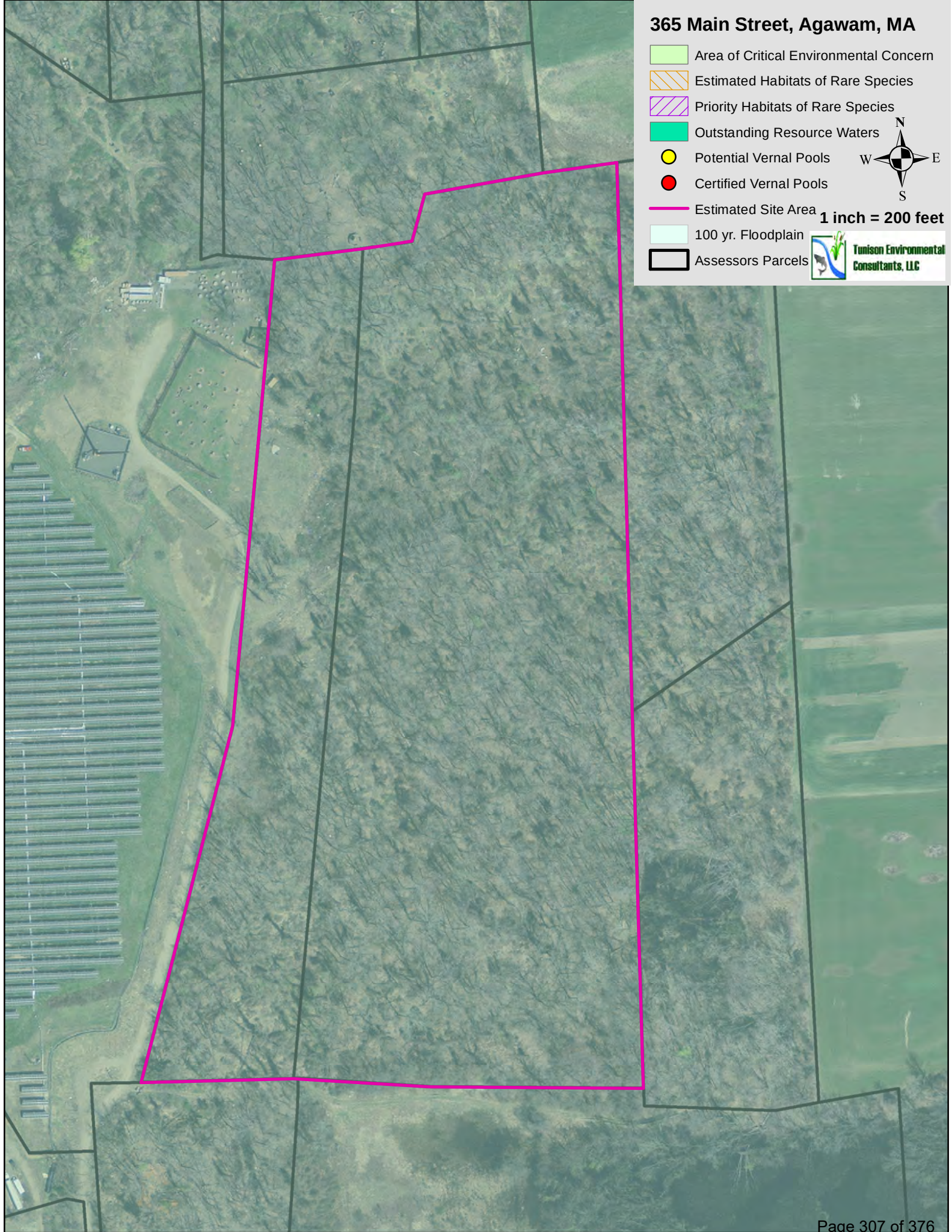
E

S

1 inch = 200 feet



**Tunison Environmental
Consultants, LLC**



Attachment 4

ACOE Wetland Determination Data Form – Northcentral and Northeast Region

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-4, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A (northeastern lobe)</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

* A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)
☐ Saturation (A3)	☐ Marl Deposits (B15)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)
☐ Sparsely Vegetated Concave Surface (B8)	

Secondary Indicators (minimum of two required)

☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Moss Trim Lines (B16)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☐ Shallow Aquitard (D3)
☒ Microtopographic Relief (D4)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): _____
Saturation Present?	Yes _____ No <u>X</u>	Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precepitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.

VEGETATION – Use scientific names of plants.

Sampling Point: A-4, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Red Maple (Acer rubrum)</u>	<u>63</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>63%</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>63</u> x 2 = <u>126.00</u> FAC species <u>63</u> x 3 = <u>189.00</u> FACU species <u>38</u> x 4 = <u>152.00</u> UPL species _____ x 5 = _____ Column Totals: <u>164</u> (A) <u>467</u> (B) Prevalence Index = B/A = <u>2.85</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0.0%</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. radius</u>)				
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>63</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>63%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				
1. <u>Eastern Poison Ivy (Toxicodendron radicans)</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>38</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>41%</u> = Total Cover				
Hydrophytic Vegetation Present? Yes ☒ No ☐				
Remarks: (Include photo numbers here or on a separate sheet.) The northwestern portion of Wetland A is mostly a mix of FACW, FAC, FACU and UPL plant species.				

SOIL

Sampling Point: A-4, Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☒ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ Sandy Gleyed Matrix (S4) | |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Spodosol

Depth (inches): 4.5

Hydric Soil Present? Yes X No

Remarks: * FSL stands for Fine Sandy Loam soils. ** The "B2" Horizon was 10YR 6/2 with 10YR 6/8 mottles (35+/-%) and 10YR 5/1 (10 +/-%) depletions. The soils are highly disturbed and missing "O" and "A" Horizons are missing in most areas. There are some areas of a 10YR 2/2 FSL "A" Horizon. The other closest surface soils to an "A" or "O" layer are a mineral soil of 10YR 4/1 FSL with an approximately 30% silt content. The delineated wetlands contained a spodosol that occurred approximately 3 to 4 in. below the soil surface and was approximately 2.5 to 4.5 in. thick. The soil below the hydric layer was typically a "B" Horizon of 10YR 6/6 to 10YR 6/8. The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-4, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

* A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>	
☐ Surface Water (A1)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)	☐ Microtopographic Relief (D4)
☐ Water-Stained Leaves (B9)	☐ FAC-Neutral Test (D5)
☐ Aquatic Fauna (B13)	
☐ Marl Deposits (B15)	
☐ Hydrogen Sulfide Odor (C1)	
☐ Oxidized Rhizospheres on Living Roots (C3)	
☐ Presence of Reduced Iron (C4)	
☐ Recent Iron Reduction in Tilled Soils (C6)	
☐ Thin Muck Surface (C7)	
☐ Other (Explain in Remarks)	

Field Observations:

Surface Water Present?	Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present?	Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No <u>X</u>	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: A-4, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Quaking Aspen (Populus tremula)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>63%</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)				
1. <u>Multiflora Rose (Rosa rugosa)</u>	<u>3</u>	<u>Yes</u>	<u>FACU</u>	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = <u>126.00</u> FAC species _____ x 3 = <u>189.00</u> FACU species <u>129</u> x 4 = <u>152.00</u> UPL species _____ x 5 = _____ Column Totals: <u>129</u> (A) <u>516</u> (B) Prevalence Index = B/A = <u>4.00</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>3%</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. radius</u>)				
1. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>0%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				
1. <u>Eastern Poison Ivy (Toxicodendron radicans)</u>	<u>3</u>	<u>No</u>	<u>FAC</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>66%</u> = Total Cover				
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>				
Remarks: (Include photo numbers here or on a separate sheet.) The northwestern portion of Wetland A is mostly a mix of FACW, FAC, FACU and UPL plant species.				

Sampling Point: A-4, Up

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes _____ No X

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-62, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.006 N Long: -72 36.704 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: <u>Wetland A</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

* A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
<u>Primary Indicators</u> (minimum of one is required; check all that apply)	
☐ Surface Water (A1)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)	☒ Microtopographic Relief (D4)
☐ Water-Stained Leaves (B9)	☐ FAC-Neutral Test (D5)
☐ Aquatic Fauna (B13)	
☐ Marl Deposits (B15)	
☐ Hydrogen Sulfide Odor (C1)	
☒ Oxidized Rhizospheres on Living Roots (C3)	
☒ Presence of Reduced Iron (C4)	
☐ Recent Iron Reduction in Tilled Soils (C6)	
☐ Thin Muck Surface (C7)	
☐ Other (Explain in Remarks)	

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <u>X</u> No _____
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precipitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.

VEGETATION – Use scientific names of plants.

Sampling Point: A-62, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Big-Tooth Aspen (Populus grandidentata)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>121.5</u> (A/B)														
2. <u>Red Maple (Acer rubrum)</u>	<u>63</u>	<u>Yes</u>	<u>FAC</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>38</u></td> <td>x 2 = <u>76.00</u></td> </tr> <tr> <td>FAC species <u>63</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>20.5</u></td> <td>x 4 = <u>82.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>121.5</u> (A)</td> <td><u>347</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.86</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>38</u>	x 2 = <u>76.00</u>	FAC species <u>63</u>	x 3 = <u>189.00</u>	FACU species <u>20.5</u>	x 4 = <u>82.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>121.5</u> (A)	<u>347</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>38</u>	x 2 = <u>76.00</u>																	
FAC species <u>63</u>	x 3 = <u>189.00</u>																	
FACU species <u>20.5</u>	x 4 = <u>82.00</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>121.5</u> (A)	<u>347</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>38</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>38%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes ☒ No _____														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>0.0%</u> = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: A-62, Wet

[illegible]

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: A-62, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.998 N Long: -72 36.636 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes <u>X</u> No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <u>X</u>
Water Table Present? Yes _____ No <u>X</u>	Depth (inches): _____	
Saturation Present? Yes _____ No <u>X</u> (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: A-62, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Red Maple (Acer rubrum)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACU</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)														
2. <u>Quaking Aspen (Populus tremula)</u>	<u>63</u>	<u>Yes</u>	<u>FACU</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____	_____	_____	_____	Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>126.00</u></td> </tr> <tr> <td>FAC species <u>31</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>74</u></td> <td>x 4 = <u>152.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>387</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.70</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = <u>126.00</u>	FAC species <u>31</u>	x 3 = <u>189.00</u>	FACU species <u>74</u>	x 4 = <u>152.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>105</u> (A)	<u>387</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = <u>126.00</u>																	
FAC species <u>31</u>	x 3 = <u>189.00</u>																	
FACU species <u>74</u>	x 4 = <u>152.00</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>105</u> (A)	<u>387</u> (B)																	
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea ordiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>21%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. <u>Virginia Creeper (Parthenocissus quinquefolia)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACU</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		
Hydrophytic Vegetation Present?				Yes _____ No ☒														

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: A-62, Up

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: B-4, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.981 N Long: -72 36.651 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes ☒ No _____
Hydric Soil Present? Yes ☒ No _____	If yes, optional Wetland Site ID: <u>Wetland B</u>
Wetland Hydrology Present? Yes ☒ No _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 * The area is listed as a NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes ☒ No _____
Surface Water Present? Yes _____ No ☒	Depth (inches): _____	
Water Table Present? Yes _____ No ☒	Depth (inches): _____	
Saturation Present? Yes _____ No ☒ (includes capillary fringe)	Depth (inches): _____	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 The majority of the soils in Wetland A are spodosols with a 2.5 to 4.5 inch ("B2" Horizon) that is 10YR 6/2 to 10YR 6/3 with mottles and depletions as indicated in the "Soil" section below. Hydrophyllic vegetation was observed to be dominant within Wetland A and hydric soils were present. It is likely that this wetland has a relatively short hydroperiod after large precipitation events as the spodosol horizon slowly infiltrates water. The soils in the wetland and surrounding floodplain were similar minus the spodosol horizon in the wetland.

Sampling Point: B-4, Wet

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SOIL

Sampling Point: B-4, Wet

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|---|--|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) |
| ☐ Histic Epipedon (A2) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Stratified Layers (A5) | ☒ Depleted Matrix (F3) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Redox Dark Surface (F6) |
| ☐ Thick Dark Surface (A12) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Redox Depressions (F8) |
| ☐ Sandy Gleyed Matrix (S4) | |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Spodosol

Depth (inches): 4

Hydric Soil Present? Yes X No

Remarks: * FSL stands for Fine Sandy Loam soils. ** The "B2" Horizon was 10YR 6/2 with 10YR 6/8 mottles (35+/-%) and 10YR 5/1 (10 +/-%) depletions. The soils are highly disturbed and missing "O" and "A" Horizons are missing in most areas. There are some areas of a 10YR 2/2 FSL "A" Horizon. The other closest surface soils to an "A" or "O" layer are a mineral soil of 10YR 4/1 FSL with an approximately 30% silt content. The delineated wetlands contained a spodosol that occurred approximately 3 to 4 in. below the soil surface and was approximately 2.5 to 4.5 in. thick. The soil below the hydric layer was typically a "B" Horizon of 10YR 6/6 to 10YR 6/8. The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: B-4, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 4.981 N Long: -72 36.651 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes _____ No ☒ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes ☒ No _____	
Wetland Hydrology Present?	Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
<u>Primary Indicators (minimum of one is required; check all that apply)</u>		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No ☒
Water Table Present? Yes _____ No ☒	Depth (inches): _____	
Saturation Present? Yes _____ No ☒ (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: B-4, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. Pin Oak (<i>Quercus palustris</i>)	3	No	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>126</u> (A/B)														
2. Red Maple (<i>Acer rubrum</i>)	38	Yes	FAC															
3. Quaking Aspen (<i>Populus tremula</i>)	38	Yes	FACU															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <th style="width: 50%;">Total % Cover of:</th> <th style="width: 50%;">Multiply by:</th> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = <u>126.00</u></td> </tr> <tr> <td>FAC species <u>31</u></td> <td>x 3 = <u>189.00</u></td> </tr> <tr> <td>FACU species <u>74</u></td> <td>x 4 = <u>152.00</u></td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>387</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>3.70</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = <u>126.00</u>	FAC species <u>31</u>	x 3 = <u>189.00</u>	FACU species <u>74</u>	x 4 = <u>152.00</u>	UPL species _____	x 5 = _____	Column Totals: <u>105</u> (A)	<u>387</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species _____	x 2 = <u>126.00</u>																	
FAC species <u>31</u>	x 3 = <u>189.00</u>																	
FACU species <u>74</u>	x 4 = <u>152.00</u>																	
UPL species _____	x 5 = _____																	
Column Totals: <u>105</u> (A)	<u>387</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)														
<u>0.0%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. Oriental Bittersweet (<i>Celastrus orbiculata</i>)	63	Yes	UPL															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>63%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				Hydrophytic Vegetation Present? Yes _____ No ☒														
1. Virginia Creeper (<i>Parthenocissus quinquefolia</i>)	10.5	Yes	FACU															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)

Please note, Oriental Bittersweet was included as an herb and not a woody vine as all plants were seedlings and not growing as a vine during our evaluation. We have listed this plant in the herbaceous layer on other data forms as it was also growing as an herb and not vine like during its early stages of life.

Sampling Point: A-62, Up

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: None

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: C-2, Wet
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.016 N Long: -72 36.727 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Partial FEW*

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	If yes, optional Wetland Site ID: <u>Wetland C</u>
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

* A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The northwestern corner of this wetland appears to be in the edge of the cut area where some shrubs and herbs were cut. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☒ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☒ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☒ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☒ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☒ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☒ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)

Field Observations:		Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____		
Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____		
Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: C-2, Wet

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status															
1. <u>Red Maple (Acer rubrum)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>38%</u> = Total Cover				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species <u>104</u></td> <td>x 2 = <u>208.00</u></td> </tr> <tr> <td>FAC species <u>38</u></td> <td>x 3 = <u>114.00</u></td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = <u>00.00</u></td> </tr> <tr> <td>UPL species <u>11</u></td> <td>x 5 = <u>52.50</u></td> </tr> <tr> <td>Column Totals: <u>152.5</u> (A)</td> <td><u>347.5</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.46</u>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species <u>104</u>	x 2 = <u>208.00</u>	FAC species <u>38</u>	x 3 = <u>114.00</u>	FACU species _____	x 4 = <u>00.00</u>	UPL species <u>11</u>	x 5 = <u>52.50</u>	Column Totals: <u>152.5</u> (A)	<u>347.5</u> (B)
Total % Cover of:	Multiply by:																	
OBL species _____	x 1 = _____																	
FACW species <u>104</u>	x 2 = <u>208.00</u>																	
FAC species <u>38</u>	x 3 = <u>114.00</u>																	
FACU species _____	x 4 = <u>00.00</u>																	
UPL species <u>11</u>	x 5 = <u>52.50</u>																	
Column Totals: <u>152.5</u> (A)	<u>347.5</u> (B)																	
<u>83.5%</u> = Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)																		
1. <u>Grey Willow (Salix bebbiana)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACW</u>															
2. <u>Silky Dogwood (Cornus amomum)</u>	<u>63</u>	<u>Yes</u>	<u>FACW</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
<u>83.5%</u> = Total Cover																		
Herb Stratum (Plot size: <u>5 ft. radius</u>)																		
1. <u>Sensitive Fern (Onoclea sensibilis)</u>	<u>20.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
11. _____	_____	_____	_____															
12. _____	_____	_____	_____															
<u>38%</u> = Total Cover																		
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)																		
1. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.														
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
<u>10.5%</u> = Total Cover																		
Hydrophytic Vegetation Present? Yes ☒ No _____																		

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: C-2, Wet

[illegible]²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- ³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Hydric Soil Present? Yes X No

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WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 365 Main Street City/County: Agawam Sampling Date: 8/23/23
 Applicant/Owner: Joseph O'Malley State: MA Sampling Point: C-2, Up
 Investigator(s): Garrett M. Tunison Section, Township, Range: Agawam
 Landform (hillslope, terrace, etc.): Gental slope 0-3% Local relief (concave, convex, none): concaved Slope (%): 0-3%
 Subregion (LRR or MLRA): _____ Lat: 42 5.016 N Long: -72 36.727 W Datum: NAD83
 Soil Map Unit Name: Hadley fine sandy loam, 0 to 3 percent slopes NWI classification: Not applicable

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No _____ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No _____	Is the Sampled Area within a Wetland? Yes _____ No ☒ If yes, optional Wetland Site ID: _____
Hydric Soil Present?	Yes ☒ No _____	
Wetland Hydrology Present?	Yes ☒ No _____	
Remarks: (Explain alternative procedures here or in a separate report.) * A portion of the site contains an NWI wetland identified as a Freshwater Emergent Wetland. The site has previously been disturbed for agriculture and the western and northern portions of the site have been used as a dump and a paintball and airsoft playing field.		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water-Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial Imagery (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes _____ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No ☒
Water Table Present? Yes _____ No ☒	Depth (inches): _____	
Saturation Present? Yes _____ No ☒ (includes capillary fringe)	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION – Use scientific names of plants.

 Sampling Point: C-2, Up

Tree Stratum (Plot size: <u>30 ft. radius</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Red Maple (Acer rubrum)</u>	<u>38</u>	<u>Yes</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40</u> (A/B)
2. <u>Tree-of-Heaven (Ailanthus altissima)</u>	<u>38</u>	<u>Yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>83.5%</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft. radius</u>)				
1. _____	_____	_____	_____	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species <u>11</u> x 2 = <u>21.00</u> FAC species <u>38</u> x 3 = <u>114.00</u> FACU species _____ x 4 = <u>00.00</u> UPL species <u>69</u> x 5 = <u>345.00</u> Column Totals: <u>117.5</u> (A) <u>480</u> (B) Prevalence Index = B/A = <u>4.09</u>
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
<u>0.0%</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft. radius</u>)				
1. <u>Sensitive Fern (Onoclea ordiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☒ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☒ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>20.5</u>	<u>Yes</u>	<u>UPL</u>	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
12. _____	_____	_____	_____	
<u>31%</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft. radius</u>)				
1. <u>Oriental Bittersweet (Celastrus orbiculata)</u>	<u>10.5</u>	<u>Yes</u>	<u>UPL</u>	Definitions of Vegetation Strata: Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall. Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody vines – All woody vines greater than 3.28 ft in height.
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
<u>10.5%</u> = Total Cover				
Hydrophytic Vegetation Present?				Yes _____ No <u>X</u>
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: A-62, Up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- | | |
|--|---|
| ☐ Histosol (A1) | ☐ Polyvalue Below Surface (S8) (LRR R, |
| ☐ Histic Epipedon (A2) | ☐ MLRA 149B) |
| ☐ Black Histic (A3) | ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) |
| ☐ Hydrogen Sulfide (A4) | ☐ Loamy Mucky Mineral (F1) (LRR K, L) |
| ☐ Stratified Layers (A5) | ☐ Loamy Gleyed Matrix (F2) |
| ☐ Depleted Below Dark Surface (A11) | ☐ Depleted Matrix (F3) |
| ☐ Thick Dark Surface (A12) | ☐ Redox Dark Surface (F6) |
| ☐ Sandy Mucky Mineral (S1) | ☐ Depleted Dark Surface (F7) |
| ☐ Sandy Gleyed Matrix (S4) | ☐ Redox Depressions (F8) |
| ☐ Sandy Redox (S5) | |
| ☐ Stripped Matrix (S6) | |
| ☐ Dark Surface (S7) (LRR R, MLRA 149B) | |

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
☐ Coast Prairie Redox (A16) (**LRR K, L, R**)
☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
☐ Dark Surface (S7) (**LRR K, L**)
☐ Polyvalue Below Surface (S8) (**LRR K, L**)
☐ Thin Dark Surface (S9) (**LRR K, L**)
☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
☐ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
☐ Red Parent Material (F21)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: None

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: * FSL stands for Fine Sandy Loam soils. ** The soils were classified as "fine sandy loam" but contained approximately 30% to 35% silt.

Attachment 5

NRCS Soil Report



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Hampden County, Massachusetts, Central Part**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



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 1:15,800.

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: Hampden County, Massachusetts, Central Part
Survey Area Data: Version 17, Sep 10, 2023

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

Date(s) aerial images were photographed: Oct 15, 2020—Oct 31, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

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
8A	Limerick silt loam, 0 to 3 percent slopes, frequently flooded	2.2	4.3%
95A	Podunk fine sandy loam, 0 to 3 percent slopes, occasionally flooded	0.3	0.6%
96A	Hadley very fine sandy loam, 0 to 3 percent slopes	23.3	46.4%
98A	Winooski silt loam, 0 to 3 percent slopes, occasionally flooded	12.0	23.9%
602	Urban land	8.8	17.5%
718A	Saco Variant silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded	3.7	7.3%
Totals for Area of Interest		50.1	100.0%

Map Unit Descriptions

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a

given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

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

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

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

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

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

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

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

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

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

Hampden County, Massachusetts, Central Part

8A—Limerick silt loam, 0 to 3 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2zvdd
Elevation: 50 to 500 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Limerick

Setting

Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty alluvium

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 24 inches: silt loam
H3 - 24 to 60 inches: stratified very fine sand to very fine sandy loam to silt

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 2.00 in/hr)
Depth to water table: About 6 to 10 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 13.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F144AY015NY - Wet Silty Low Floodplain
Hydric soil rating: Yes

Minor Components

Winooski

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Saco variant

Percent of map unit: 5 percent

Landform: Alluvial flats

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

95A—Podunk fine sandy loam, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2zvdf

Elevation: 10 to 2,000 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 140 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Podunk and similar soils: 85 percent

Minor components: 15 percent

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

Description of Podunk

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium

Typical profile

H1 - 0 to 9 inches: fine sandy loam

H2 - 9 to 24 inches: fine sandy loam

H3 - 24 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)

Depth to water table: About 18 to 36 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F144BY110ME - Broad Floodplain Riparian Complex
Hydric soil rating: No

Minor Components

Rumney

Percent of map unit: 10 percent
Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Saco variant

Percent of map unit: 5 percent
Landform: Alluvial flats
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

96A—Hadley very fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 99p7
Elevation: 50 to 100 feet
Mean annual precipitation: 32 to 50 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Hadley

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Friable coarse-silty alluvium

Typical profile

H1 - 0 to 12 inches: very fine sandy loam
H2 - 12 to 26 inches: very fine sandy loam

H3 - 26 to 66 inches: very fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

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

Depth to water table: About 39 to 67 inches

Frequency of flooding: Common

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Ecological site: F145XY001MA - Silty High Floodplain

Hydric soil rating: No

Minor Components

Winooski

Percent of map unit: 10 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

Suncook

Percent of map unit: 5 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

98A—Winooski silt loam, 0 to 3 percent slopes, occasionally flooded

Map Unit Setting

National map unit symbol: 2zvdk

Elevation: 50 to 500 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 140 to 240 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Winooski and similar soils: 80 percent

Custom Soil Resource Report

Minor components: 20 percent

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

Description of Winooski

Setting

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-silty alluvium

Typical profile

H1 - 0 to 12 inches: silt loam

H2 - 12 to 21 inches: silt loam

H3 - 21 to 60 inches: stratified very fine sand to silt

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Very low

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.60 to 6.00 in/hr)*

Depth to water table: About 22 to 24 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Available water supply, 0 to 60 inches: High (about 10.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: B

Ecological site: F145XY002MA - Silty Low Floodplain

Hydric soil rating: No

Minor Components

Limerick

Percent of map unit: 10 percent

Landform: Alluvial flats

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

Hadley

Percent of map unit: 10 percent

Landform: Flood plains

Landform position (two-dimensional): Toeslope

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

602—Urban land

Map Unit Setting

National map unit symbol: 99rq

Frost-free period: 150 to 195 days

Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 100 percent

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

Description of Urban Land

Setting

Landform position (two-dimensional): Toeslope

718A—Saco Variant silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2zvdh

Elevation: 0 to 3,280 feet

Mean annual precipitation: 32 to 50 inches

Mean annual air temperature: 45 to 52 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Saco variant and similar soils: 85 percent

Minor components: 15 percent

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

Description of Saco Variant

Setting

Landform: Alluvial flats

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Coarse-silty alluvium

Typical profile

H1 - 0 to 10 inches: silt loam

H2 - 10 to 22 inches: silt loam

H3 - 22 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Very poorly drained

Runoff class: Very high

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

Depth to water table: About 0 to 2 inches

Frequency of flooding: Frequent

Frequency of ponding: Frequent

Available water supply, 0 to 60 inches: Very high (about 13.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w

Hydrologic Soil Group: B/D

Ecological site: F144AY016MA - Very Wet Low Floodplain

Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent

Landform: Bogs

Down-slope shape: Linear

Across-slope shape: Concave

Hydric soil rating: Yes

Limerick

Percent of map unit: 5 percent

Landform: Alluvial flats

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: Yes

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment 6

Wetland Plan

Titled: Wetland Filing Plan

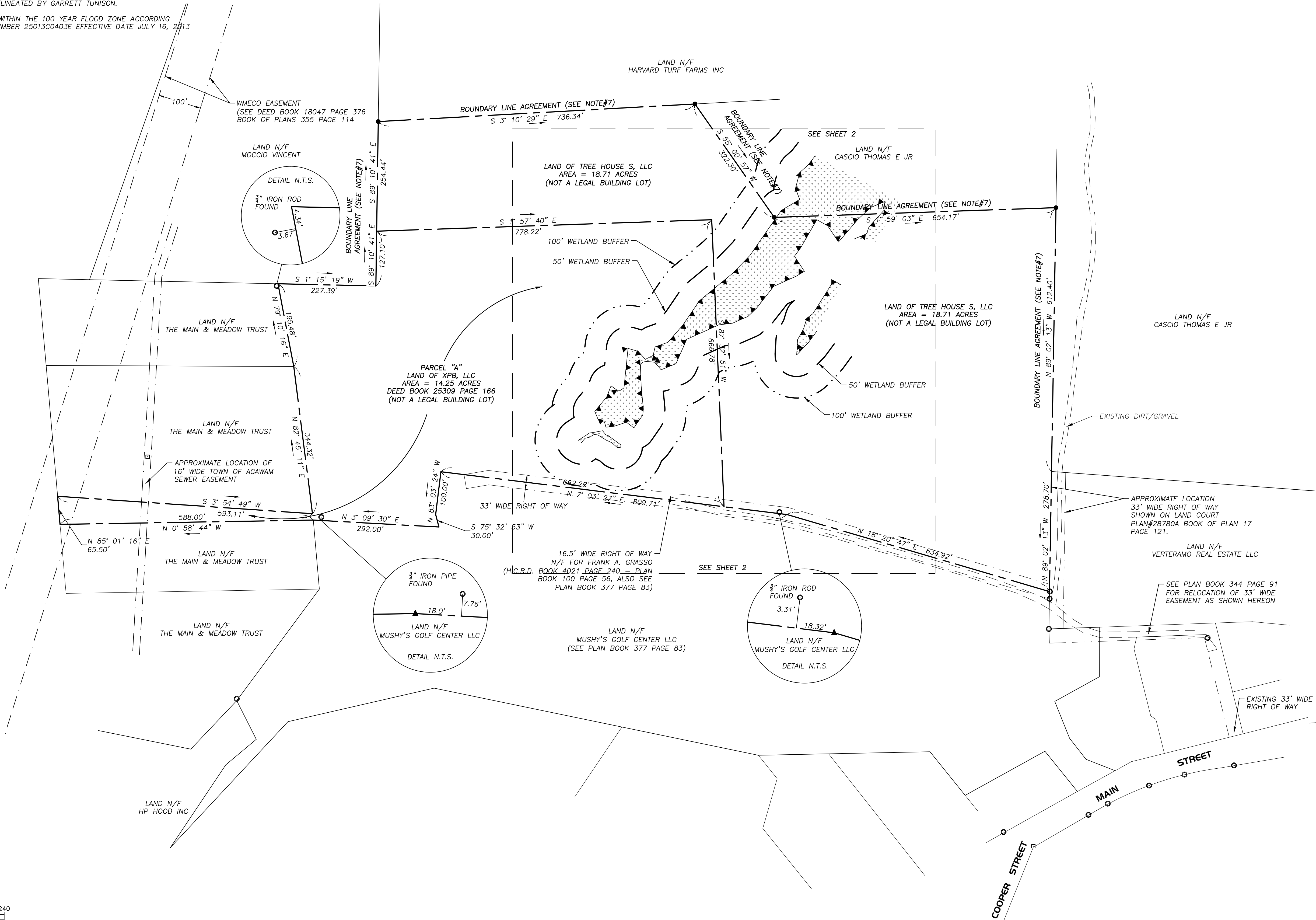
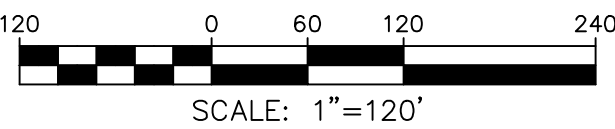
Prepared by: R Levesque Associates Inc.

Dated: February 20, 2024

S:\Projects\2023\230818 - O'Malley - Northerly of Main Street - Agawam\05 Civil 3D\230818 - Wetland Filing Plan plan.dwg

NOTES

1. THE RECORD OWNERS OF THE SUBJECT PARCEL ARE TREE HOUSE S, LLC. AND XPB, LLC SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 24430 PAGE 259 ALSO BOOK 25309 PAGE 166.
2. BOUNDARY SURVEY PREPARED BY THIS OFFICE AND RECORDED IN PLAN BOOK 399 PAGE 102.
3. THE SUBJECT PROPERTIES SHOWN HEREON MAY BE SUBJECT TO RIGHTS AND EASEMENTS AS CONTAINED IN THE VARIOUS DEEDS OF RECORD DESCRIBING SAID PROPERTIES. THE LOCATION AND EXTENT OF ANY SUCH RIGHTS AND EASEMENTS IS NOT THE SUBJECT OF THIS PLAN.
4. ADJACENT PROPERTY LINES AND ABUTTERS SHOWN HEREON ARE REFERENCED FROM THE TOWN OF AGAWAM GIS MAPPING.
7. BOUNDARY LINE AGREEMENT IS RECOMMENDED ALONG THESE LINE DUE TO LACK OF PHYSICAL EVIDENCE
8. THIS PLAN IS PREPARED FOR CONSERVATION FILING ONLY SHALL NOT BE USED FOR CONVEYANCE.
9. WETLAND RESOURCE AREAS WERE DELINEATED BY GARRETT TUNISON.
9. THE SUBJECT PARCEL IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 25013C0403E EFFECTIVE DATE JULY 16, 2013 100 YEAR FLOOD ELEVATION 60.0.



DRAFT

SHEET 1 OF 2

WETLAND FILING PLAN

Northerly of Main Street
Agawam, MA

PREPARED FOR:

Mr. Joseph O'Malley

Xtreme Paintball
351 Main Street
Agawam, MA 01001

ISSUANCE DATE: 02-20-2024

REVISIONS:	DATE:

DRAFTED BY: t.o.

UNAUTHORIZED ALTERATION OF
THIS DOCUMENT IS A VIOLATION
OF MASSACHUSETTS STATE LAW

SCALE: As Noted

RLA PROJ. NUMBER: 230818

DRAWING#	REV.
W-1	-



RLA

R LEVESQUE ASSOCIATES INC.

Landscape Architects
Civil Engineers - Land Surveyors
Environmental Consultants

ph: 413.568.0985 fax: 413.568.0986

40 School Street
Westfield, MA 01085
rlaland.com

NOTES

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LAND OF TREE HOUSE S, LLC
AREA = 18.71 ACRES
(NOT A LEGAL BUILDING LOT)

PARCEL "A"
LAND OF XPB, LLC
AREA = 14.25 ACRES
DEED BOOK 25309 PAGE 166
(NOT A LEGAL BUILDING LOT)

LAND OF TREE HOUSE S, LLC
AREA = 18.71 ACRES
(NOT A LEGAL BUILDING LOT)

100' WETLAND BUFFER

50' WETLAND BUFFER

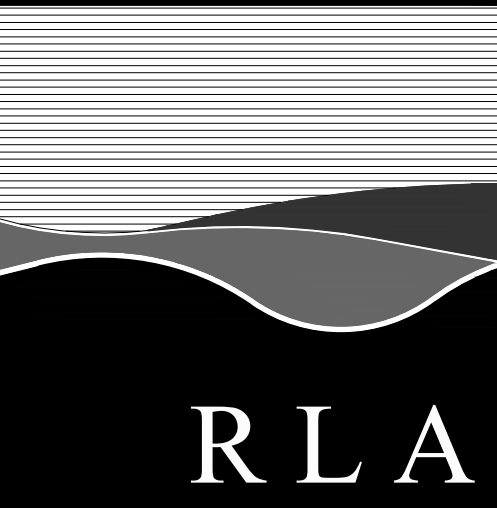
50' WETLAND BUFFER

100' WETLAND BUFFER



DRAFT

SHEET 2 OF 2



R LEVESQUE
ASSOCIATES LLC

Landscape Architects
Civil Engineers - Land Surveyors
Environmental Consultants

ph: 413.568.0985 fax: 413.568.0986

40 School Street
Westfield, MA 01085
rlaland.com

WETLAND FILING PLAN

Northerly of Main Street
Agawam, MA

PREPARED FOR:

Mr. Joseph O'Malley

Xtreme Paintball
351 Main Street
Agawam, MA 01001

ISSUANCE DATE: 02-20-2024

REVISIONS:	DATE:

DRAFTED BY: t.o.

UNAUTHORIZED ALTERATION OF
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SCALE: As Noted

RLA PROJ. NUMBER: 230818

DRAWING#	REV.
W-2	-

Attachment 4

Restoration Planting Plan

Base Plan Titled:
Wetland Filing Plan – Draft (Sheet 2 of 2)

Base Plan Prepared by:
R Levesque Associates Inc.

NOTES

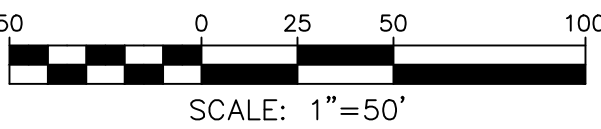
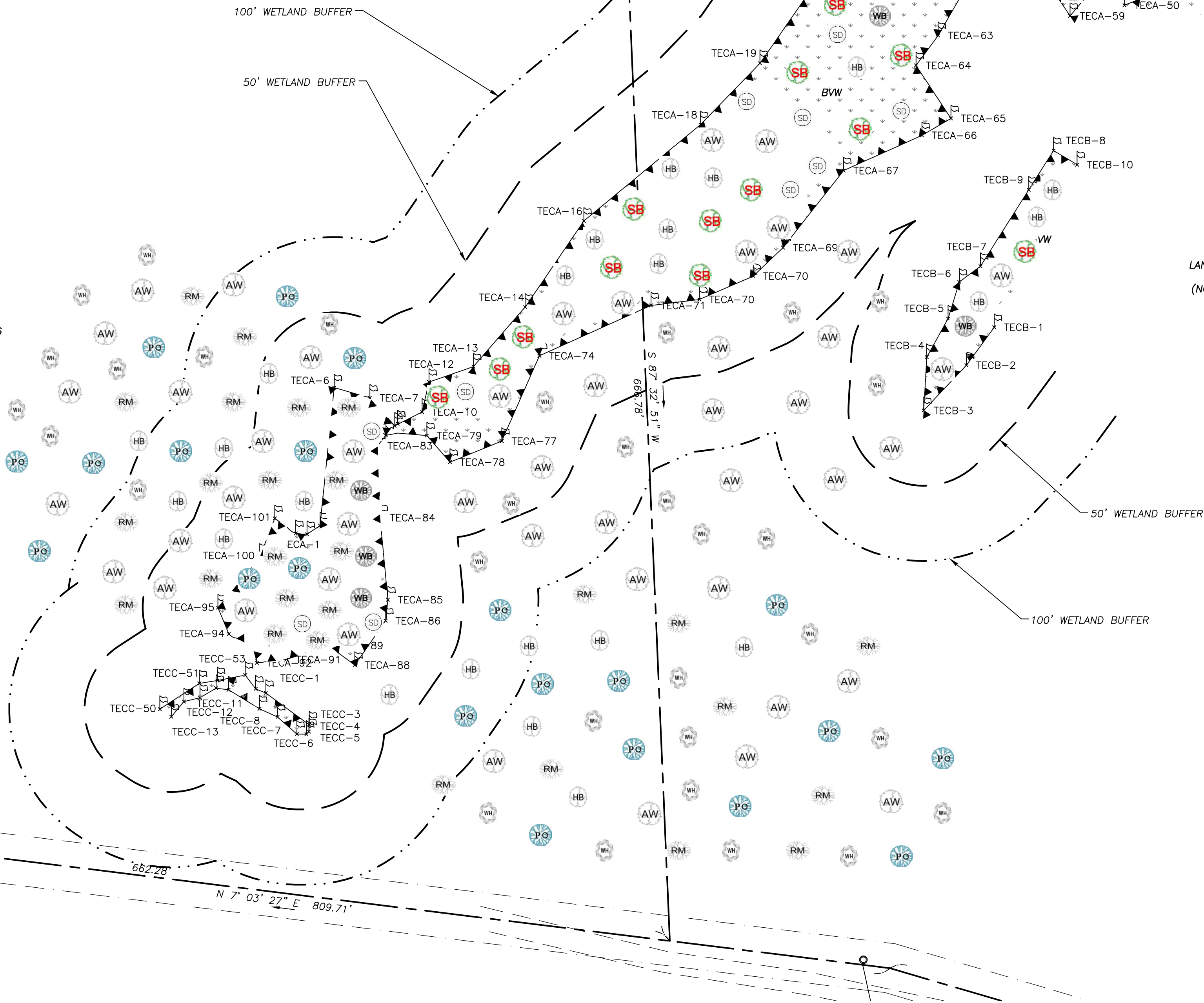
1. THE RECORD OWNERS OF THE SUBJECT PARCEL ARE TREE HOUSE S, LLC. AND XPB, LLC SEE HAMPDEN COUNTY REGISTRY OF DEEDS BOOK 24430 PAGE 259 ALSO BOOK 25309 PAGE 166.
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9. THE SUBJECT PARCEL IS LOCATED WITHIN THE 100 YEAR FLOOD ZONE ACCORDING TO FLOOD INSURANCE RATE MAP NUMBER 25013C0403E EFFECTIVE DATE JULY 16, 2013 100 YEAR FLOOD ELEVATION 60.0.

LAND OF TREE HOUSE S, LLC
AREA = 18.71 ACRES
(NOT A LEGAL BUILDING LOT)

Wetland Restoration Area and Floodplain Planting Schedule					
Plant Symbol	Plant Species	# of Plants	Plant on Center	Plant Height	Size/Container
New England Wetmix Seed Mix application rates to bare areas of Wetland A: 1 lb./1,200 sq. ft.					
New England Conservation/Wildlife Seed Mix application rates to bare 100-yr. Floodplain areas: 1 lb./1,200 sq. ft.					
SB	Northern Spicebush (<i>Lindera benzoin</i>)	18	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
HB	Highbush Blueberry (<i>Vaccinium corybosum</i>)	19	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
WH	Common Witch Hazel (<i>Hamamelis virginiana</i>)	37	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
AW	Southern Arrowwood (<i>Viburnum dentatum</i>)	46	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
SD	Silky Dogwood (<i>Cornus amomum</i>)	13	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
WB	Common Winterberry (<i>Ilex verticillata</i>)	7	8 – 10 ft.	18 – 24 in.	2 - 4 gal. container
PG	Pin Oaks (<i>Quercus palustris</i>)	21	10 - 15 ft.	24 -30 in.	2 - 4 gal. container
RM	Red Maple (<i>Acer rubrum</i>)	27	10 – 12 ft.	24 – 30 in.	2 - 4 gal. container

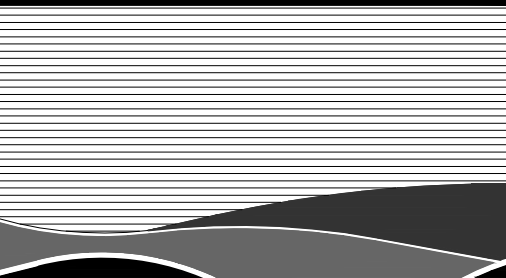
There are a total of 140 shrubs and 48 trees proposed to be planted in the restoration areas.

PARCEL "A"
LAND OF XPB, LLC
AREA = 14.25 ACRES
DEED BOOK 25309 PAGE 166
(NOT A LEGAL BUILDING LOT)



Restoration Planting Plan

DRAFT
SHEET 2 OF 2



RLA
R LEVESQUE ASSOCIATES INC.
Landscape Architects
Civil Engineers - Land Surveyors
Environmental Consultants
ph: 413.568.0985 fax: 413.568.0986

40 School Street
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rlaland.com

WETLAND FILING PLAN

Northerly of Main Street
Agawam, MA

PREPARED FOR:

Mr. Joseph O'Malley
Xtreme Paintball
351 Main Street
Agawam, MA 01001

ISSUANCE DATE: 02-20-2024

REVISIONS:	DATE:

DRAFTED BY: t.a.

UNAUTHORIZED ALTERATION OF THIS DOCUMENT IS A VIOLATION OF MASSACHUSETTS STATE LAW

SCALE: As Noted

RLA PROJ. NUMBER: 230818

DRAWING#	REV.
W-2	-

Appendix B

Abutters' Notification

Notification to Abutters

By Hand Delivery, Certified Mail (return receipt requested), or Certificates of Mailing

This is a notification required by law. You are receiving this notification because you have been identified as the owner of land abutting another parcel of land for which certain activities are proposed. Those activities require a permit under the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40).

In accordance with the second paragraph of the Massachusetts Wetlands Protection Act, and 310 CMR 10.05(4)(a) of the Wetlands Regulations, you are hereby notified that:

- A. A Notice of Intent was filed with the Milton Conservation Commission on May 6, 2026 seeking permission to remove, fill, dredge, or alter an area subject to protection under M.G.L. c. 131 §40. The following is a description of the proposed activity/activities:

An ecological restoration within a portion of Bordering Vegetated Wetland (BVW) under 310 CMR 10.55 to bank (310 CMR 10.54) of an intermittent stream and within the 100-year floodplain also known as Bordering Land Subject to Flooding (BLSF) under 310 CMR 10.57.

- B. The name of the applicant is: Joseph O'Malley.
- C. The address of the land where the activity is proposed is: 365 Main Street, Agawam, MA.
- D. Copies of the Notice of Intent may be examined or obtained at the office of the Agawam Conservation Commission, located at the Public Works and Municipal Annex, 1000 Suffield Street, Agawam, MA 01001. The regular business hours of the Commission are Monday through Friday, 7:30 a.m. to 4 p.m., and the Commission may be reached at (413) 726-9737.
- E. Copies of the Notice of Intent may be obtained from the applicant or their representative by calling Tunison Environmental Consultants, LLC at (508) 737-7104. An administrative fee may be applied for providing copies of the NOI and plans.
- F. Information regarding the date, time, and location of the public hearing regarding the Notice of Intent may be obtained from the Agawam Conservation Commission. Notice of the public hearing will be published at least five business days in advance, in the Agawam Advisor.

Notification provided pursuant to the above requirement does not automatically confer standing to the recipient to request Departmental Action for the underlying matter. See 310 CMR 10.05(7)(a)4.

Appendix C

Affidavit of Service

Affidavit of Service

Under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of
Environmental Protection and the Conservation Commission
when filing a Notice of Intent (NOI))

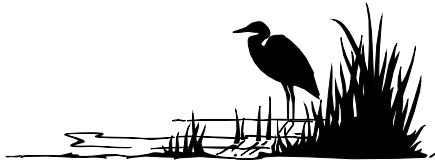
I, **Garrett M. Tunison** hereby certify under the pains and penalties of perjury that on
May 67 2026 I gave notification to abutters in compliance with the second
paragraph of Massachusetts General Laws Chapter 131, Section 40, and the **DEP Guide to
Abutter Notification** dated April 8, 1994, in connection with the following matter:
**Notice of Intent (NOI) for invasive plant species eradication and wetland restoration at 365
Main Street in Agawam, Massachusetts.**

A Notice of Intent (NOI) filed under the Massachusetts Wetlands Protection Act by
Joseph O'Malley with the **Agawam** Conservation Commission on **May 7, 2025** for the
property at 365 Main Street in Agawam, Massachusetts.

The form of the notification, and a list of the abutters to whom it was given and their addresses,
are attached to this Affidavit of Service.


Name

05/07/26
Date



TOWN OF AGAWAM, MASSACHUSETTS
CONSERVATION COMMISSION
ORDER OF CONDITIONS

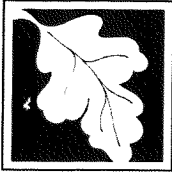
DEP File #087-0697 – Main Street (Westfield River Interceptor Sewer Relocation Project) – Agawam Department of Public Works

1. This Order supersedes all previous Orders of Conditions issued for this work.
2. The Order of Conditions applies only to the work permitted by this Order. Any other work to be done within the area of statutory interests of Wetlands Protection shall require the filing of a new Notice of Intent or Request for Determination.
3. During the construction phase, the applicant shall be responsible for maintaining a copy of these Orders at the site. The applicant shall be responsible for compliance with the conditions of these Orders.
4. Prior to the start of construction, adequate erosion and sedimentation control measures shall be implemented, and shall be maintained throughout the entire construction phase and until the site has become stabilized with permanent vegetative cover.
5. The Commission shall be notified at least seventy-two hours prior to the start of site work (including tree cutting or clearing).
6. The Commission shall be notified when the erosion control measures are in place to enable the Commission to ensure compliance with these Orders.
7. The erosion and sedimentation barrier shall serve as the alteration limit line. Said barrier shall fully protect the adjacent wetland/resource area, and no work shall be permitted beyond this limit line. No machinery shall be operated beyond this limit line.
8. There shall be no discharge or spillage of oil, fuel, any petroleum product or any other pollutant into any area of statutory interest.
9. At no time shall any construction materials, soils, fills, sediments, dredging or any other substances be stockpiled or stored in any area of statutory interest.
10. All work within the area of statutory interest shall be performed so as to create minimum disturbance to the existing vegetative cover and contours.
11. The construction site shall be left in a stable condition at the close of each day. Erosion and sedimentation controls shall be continuously monitored to ensure proper operation.

12. Whether from on-site or off-site, any fill used in connection with this project shall be clean fill as described here:

The fill material shall be clean coarse washed sand or other clean granular material essentially free of clay, fines, dust, organic matter, large stones, masonry, stumps, frozen clumps of earth, wood tree branches and waste material. Before the fill is put in place, all trees, brush and stumps shall be removed from the area to be filled. Topsoil, peat and other impervious materials shall be removed from all areas to be filled prior to the placement of the fill material.

13. The Commission reserves the right to impose additional conditions on any or all portions of this work to minimize the impact of potential site erosion or noticeable degradation of water quality discharging from the site at any time.
14. Commencing with the issuance of these Orders and continuing through the end of the construction phase of this project, the applicant or his successors and assigns shall submit to the Commission a written monthly progress report detailing the work that has been done of statutory interest.
15. This order shall apply to all successor or assignee in interest or control of the subject property. Any conveyance of interest or control in the subject property shall make reference to this order by stating that the conveyance is subject to the provisions of an Order of Conditions under the Wetlands Protection Act, M.G.L. Chapter 131, Section 40, and by giving the book and page reference in the Hampden County Registry of Deeds where this order is recorded.
16. The petitioner shall have recorded in the Hampden County Registry of Deeds an "Order of Conditions Form" provided by this Commission. The Commission will not allow work to begin until proof of recording is provided the Conservation Commission.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Emergency Certification Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

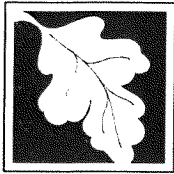
A. Emergency Information

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



- Issuance From: Agawam
Issuing Authority
1. Site Location: 737 North Street
2. Reason for Emergency:
Dying tree near house in danger of falling
3. Applicant to perform work: Northern Tree
4. Public agency to perform work or public agency ordering the work to be performed:
Agawam Tree Warden
5. Date of Site Visit: 7/28/2026 Start Date: 8/9/26 End Date*: 9/8/26
* no later than 30 days from start date or 60 days in the case of an Immediate Response Action approved by DEP to address an oil/hazardous material release.
6. Work to be allowed*:
Removal of one tree in danger of falling

* May not include work beyond that necessary to abate the emergency.



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Emergency Certification Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Signatures

Certified to be an Emergency by this Issuing Authority.

Agawam

Signatures:

Signature Henry A. Kozloski

Printed Name Henry Kozloski

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

A copy of this form must be provided to the appropriate DEP Regional Office.

C. General Conditions

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Emergency Certification or subject to enforcement action.
2. This Emergency Certification does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of property rights.
3. This Emergency Certification does not relieve the applicant or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. Any work conducted beyond that described above, and any work conducted beyond that necessary to abate the emergency, shall require the filing of a Notice of Intent.
5. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Emergency Certification at reasonable hours to evaluate compliance with this Certification, and may require the submittal of any data deemed necessary by the Conservation Commission or the Department for that evaluation.
6. This Emergency Certification shall apply to any contractor or any other person performing work authorized under this Certification.
7. No work may be authorized beyond 30 days from the date of this certification without written approval of the Department.



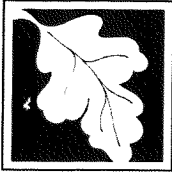
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Emergency Certification Form
Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

D. Special Conditions

Notify the Commission when work is completed

E. Appeals

The Department may, on its own motion or at the request of any person, review: an emergency certification issued by a conservation commission and any work permitted thereunder; a denial by a conservation commission of a request for emergency certification; or the failure by a conservation commission to act within 24 hours of a request for emergency certification. Such review shall not operate to stay the work permitted by the emergency certification unless the Department specifically so orders. The Department's review shall be conducted within seven days of: issuance by a conservation commission of the emergency certification; denial by a conservation commission of the emergency certification; or failure by a conservation commission to act within 24 hours of a request for emergency certification. If certification was improperly granted, or the work allowed thereunder is excessive or not required to protect the health and safety of citizens of the Commonwealth, the Department may revoke the emergency certification, condition the work permitted thereunder, or take such other action as it deems appropriate.



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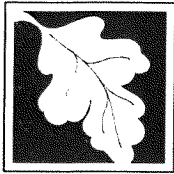
A. Emergency Information

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



- Issuance From: Agawam
Issuing Authority
1. Site Location: 737 North Street
2. Reason for Emergency:
Dying tree near house in danger of falling
3. Applicant to perform work: Northern Tree
4. Public agency to perform work or public agency ordering the work to be performed:
Agawam Tree Warden
5. Date of Site Visit: 7/28/2026 Start Date: 8/9/26 End Date*: 9/8/26
* no later than 30 days from start date or 60 days in the
case of an Immediate Response Action approved by
DEP to address an oil/hazardous material release.
6. Work to be allowed*:
Removal of one tree in danger of falling

* May not include work beyond that necessary to abate the emergency.



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B. Signatures

Certified to be an Emergency by this Issuing Authority.

Agawam

Signatures:

Signature *Henry A. Kozloski*

Printed Name Henry Kozloski

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

Signature

Printed Name

A copy of this form must be provided to the appropriate DEP Regional Office.

C. General Conditions

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Emergency Certification or subject to enforcement action.
2. This Emergency Certification does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of property rights.
3. This Emergency Certification does not relieve the applicant or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. Any work conducted beyond that described above, and any work conducted beyond that necessary to abate the emergency, shall require the filing of a Notice of Intent.
5. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Emergency Certification at reasonable hours to evaluate compliance with this Certification, and may require the submittal of any data deemed necessary by the Conservation Commission or the Department for that evaluation.
6. This Emergency Certification shall apply to any contractor or any other person performing work authorized under this Certification.
7. No work may be authorized beyond 30 days from the date of this certification without written approval of the Department.



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AGAWAM CONSERVATION COMMISSION
July 23, 2026

MEMBERS PRESENT:

Henry Kozloski, Chair
Magda Galiatsos
Laura Fallon
Sheryl Becker (6:03pm)
Frank Meagher
Jill Ward

MEMBERS ABSENT:

Keven Brown

ALSO PRESENT:

Stefanie Kesecker

Mr. Kozloski called the meeting to order at 6:00pm.

1. Request for Determination Cont.-130 South Westfield Street-Tirone

Petitioner Giuseppe Tirone, Jeff Smith with Salvini Associates, and Emily Stockman were present for this agenda item. Mr. Smith stated that since the last meeting they have responded to peer review comments and performed an onsite with Ms. Stockman, peer reviewer on July 2, 2026. He stated there were a few small changes: a drain added to the north end wetland A-B, wetland C on the southerly side of the property had no changes, and wetland D in the middle of property 3 flags were added, 15, 16, & 17 at the north end that is isolated. He stated the report and RDA was updated to reflect the changes. The updated plan includes Mr. Tirone's legal first and last name.

Ms. Stockman stated that Mr. Smith's summary encapsulated everything from the July 2, 2026 site visit. She stated she provided written comments to the Commission on July 17, 2026 with some suggested findings, as well as recommended determinations. The Commission received the final plan dated July 20, 2026. She stated Ms. Egerton had prepared a draft of the findings, and she had went over these as well. She went on to say the RDA asked two questions. She stated in relation to the accuracy boundary she recommends the Commission issue a Positive 2A determination for the approved site flags. The second question had to do with a local bylaw, which the Commission does not have and recommends a Negative 6 to indicate this. In terms of findings she recommends the Commission acknowledge that wetland A-B is associated with a jurisdictional intermittent stream the boundaries of which have not been delineated, reviewed, or approved. She stated when doing the site visit she noticed to the northwest off of the property some hydrophilic vegetation and there is a possible buffer zone that projects so she recommends the Commission indicate there may be an additional buffer zone on the property.

Mr. Kozloski went over the findings:

1. The Agawam Conservation Commission finds that Wetland AB is a Bordering Vegetated Wetland
2. The Agawam Conservation Commission finds that Wetland D is an Isolated Vegetated Wetland
3. The Agawam Conservation Commission approves the boundary of the Bordering Vegetated Wetlands boundary demarcated by flags A1-A16 (joins B8) and B1-B8 (joins A6)
4. The Agawam Conservation Commission approves the boundary of Bordering Vegetated Wetlands boundary demarcated by flags C1a-C1-C15
5. The Agawam Conservation Commission approves the boundary of the Isolated Vegetated Wetlands boundary demarcated by flags D1 to D17 (joins D1)
6. The Agawam Conservation Commission finds that the subject property contains jurisdictional bank associated with an intermittent stream, the boundaries of which have not been delineated, reviewed, or approved under the Determination of Applicability.
7. The Agawam Conservation Commission finds that additional 100-FT associated with off property resource area may exist within the site, the boundaries of which have not been submitted, reviewed, or approved under this Determination of Applicability.

Ms. Fallon asked if the intermittent stream comes out on Hamilton Circle and appears to be carved. Ms. Stockman stated it definitely has some anthropogenic features that suggest manipulation.

Motion was made by Mr. Meagher and seconded by Ms. Becker to close the RDA for 130 South Westfield Street for Tirone.

VOTE 6-0-0

Motion was made by Mr. Meagher and seconded by Ms. Galiatsos to accept findings 1-7 for 130 South Westfield Street for Tirone.

VOTE 6-0-0

Motion was made by Mr. Meagher and seconded by Ms. Galiatsos to issue a Positive 2 A Determination indicating the specific flags being approved and citing attached findings 1-7.

VOTE 6-0-0

Motion was made by Mr. Meagher and seconded by Ms. Galiatsos to issue a Negative 6 Determination indicating that Agawam Conservation Commission does not have a local wetland bylaw or ordinance.

VOTE 6-0-0

2. Public Hearing Cont.-Notice of Intent-365 Main Street-O'Malley

The Commission received a request to continue this agenda item to the August 13, 2026 meeting.

Motion was made by Ms. Ward and seconded by Mr. Meagher to continue the Public Hearing for the Notice of Intent for 365 Main Street for O'Malley to the August 13, 2026 meeting as requested.

VOTE 6-0-0

3. Approval of Minutes-July 9, 2026

Motion was made by Ms. Ward and seconded by Ms. Becker to approve the July 9, 2026 minutes as written.

VOTE 5-0-1(Meagher)

4. Correspondence and Complaints

136 Parker Street-The Commission sent notification and an Enforcement Order to the owner requesting an appearance at tonight's meeting, but no one was present to discuss the violation. The owner is required to submit a restoration plan on or before August 13, 2026, to be reviewed and approved by the Conservation Commission in regards to restoration in the Riverfront Area and buffer zone to the BVW. The owner was also required on or before September 30, 2026 to ensure all the restoration plantings have been planted and stabilized per the approved plan, unless documented unforeseen circumstances ensue, by which any event is no later than the last day of November 2026. The restoration plantings shall be monitored for two consecutive growing seasons beginning on the first full growing season after planting. The Commission will send this to the Town Solicitor.

35 Winthrop Street-The Commission send a letter to the Law Department as the owner was not cooperative with the Commission, in regards to digging and trenching that occurred in a jurisdictional area. To date the Commission has not heard back from the Town Solicitor.

184 River Road-An Order of Conditions exists for this location and the owner notified the Commission on Tuesday, July 21, 2026 that he was starting the work.

22 Kathy Terrace-The Commission received a complaint of trees being taken down at this location. Ms. Fallon performed a site visit on Wednesday, July 22, 2026. She took pictures from the street, but did not actively witness any trees being felled, but there is large machinery at the back of the property. The Commission will send a letter to the owner of the property.

Mr. Kozloski presented the members with the 310CMR section 10.06 in regards to Emergency Orders. Mr. Kozloski stated the request for an Emergency Order must demonstrate it is "necessary for the protection of the health and safety" per the Wetlands Protection Act. He stated he and Ms. Egerton will sit down and draft a form that petitioners seeking Emergency

Orders can fill out, which would require a plan in writing, or a diagram, as well as erosion controls. He stated the draft form will be reviewed by the Commission for input and suggestions.

Motion was made by Ms. Ward and seconded by Ms. Becker to adjourn the meeting.

VOTE 6-0-0

Meeting adjourned at 6:35pm.

DRAFT