LOCAL INLAND WETLAND MEETING

SLBP Proj. No. 9148-0028

Bridge No. 148-028

REHABILITATION
OF THE
SOUTH TURNPIKE BRIDGE
OVER MANSION ROAD BROOK
WALLINGFORD, CONNECTICUT

January 6, 2021

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AERIAL VIEW OF BRIDGE NO. 148-028

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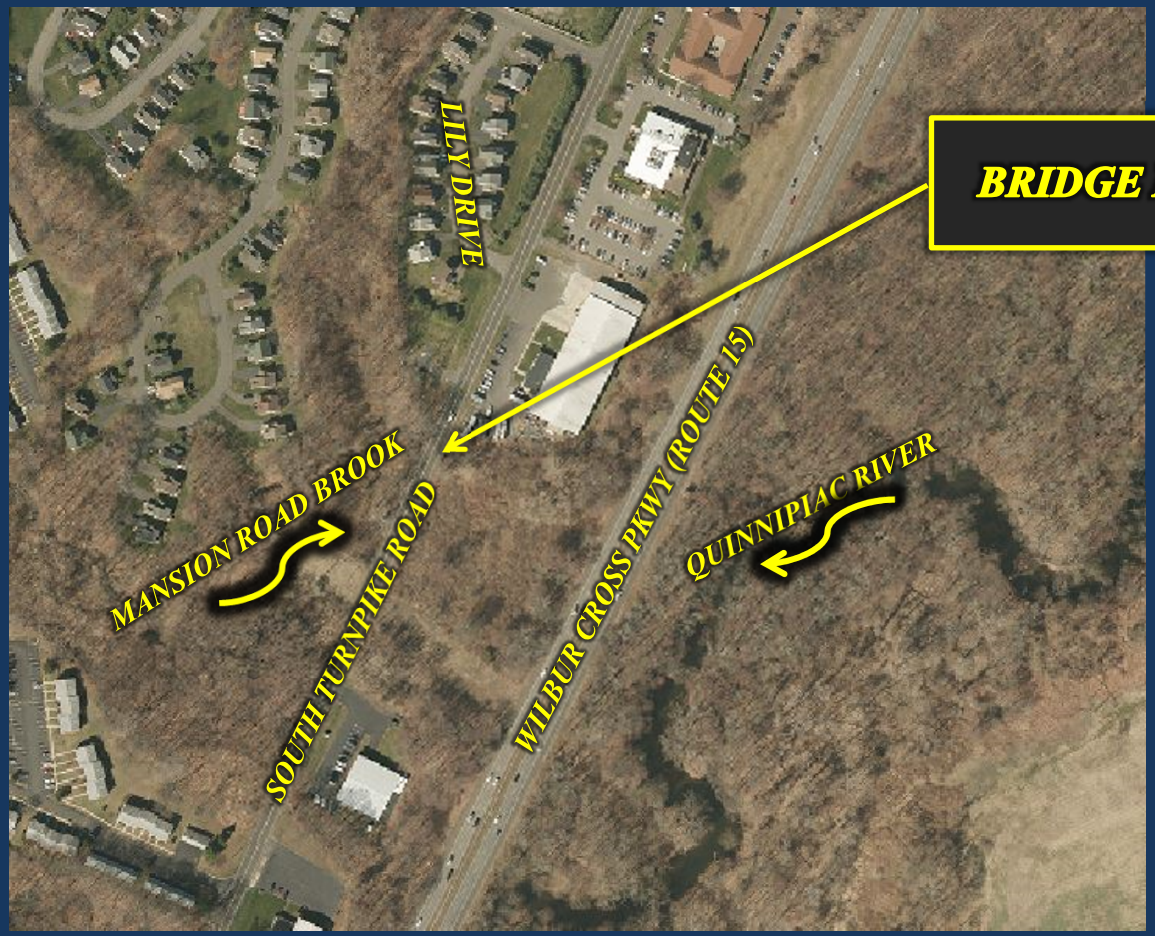

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EXISTING CULVERT OVERVIEW

- *Structure Type*
  - *Twin Concrete Box Culverts 4' X 3' (Constructed 1935)*
  - *Total width (out-to-out) of 39 feet*
  - *No Skew*
  - *Concrete endwalls*
- *Report dated January 2018*
  - *Structure Evaluation = Poor Condition*
- *Hydraulically Inadequate*
- *ADT = 7,417 (Traffic Counts 2016)*
- *Numbered FEMA Flood Zone AE*
- *Less than 1 SQ. MI. Drainage Area*

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LOOKING NORTH OVER BRIDGE

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LOOKING SOUTH OVER BRIDGE

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EXISTING BRIDGE ELEVATIONS

Upstream Face

Downstream Face

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STRUCTURAL CONDITIONS

Spalled Downstream Wingwall

Spalling Inside Box Culvert

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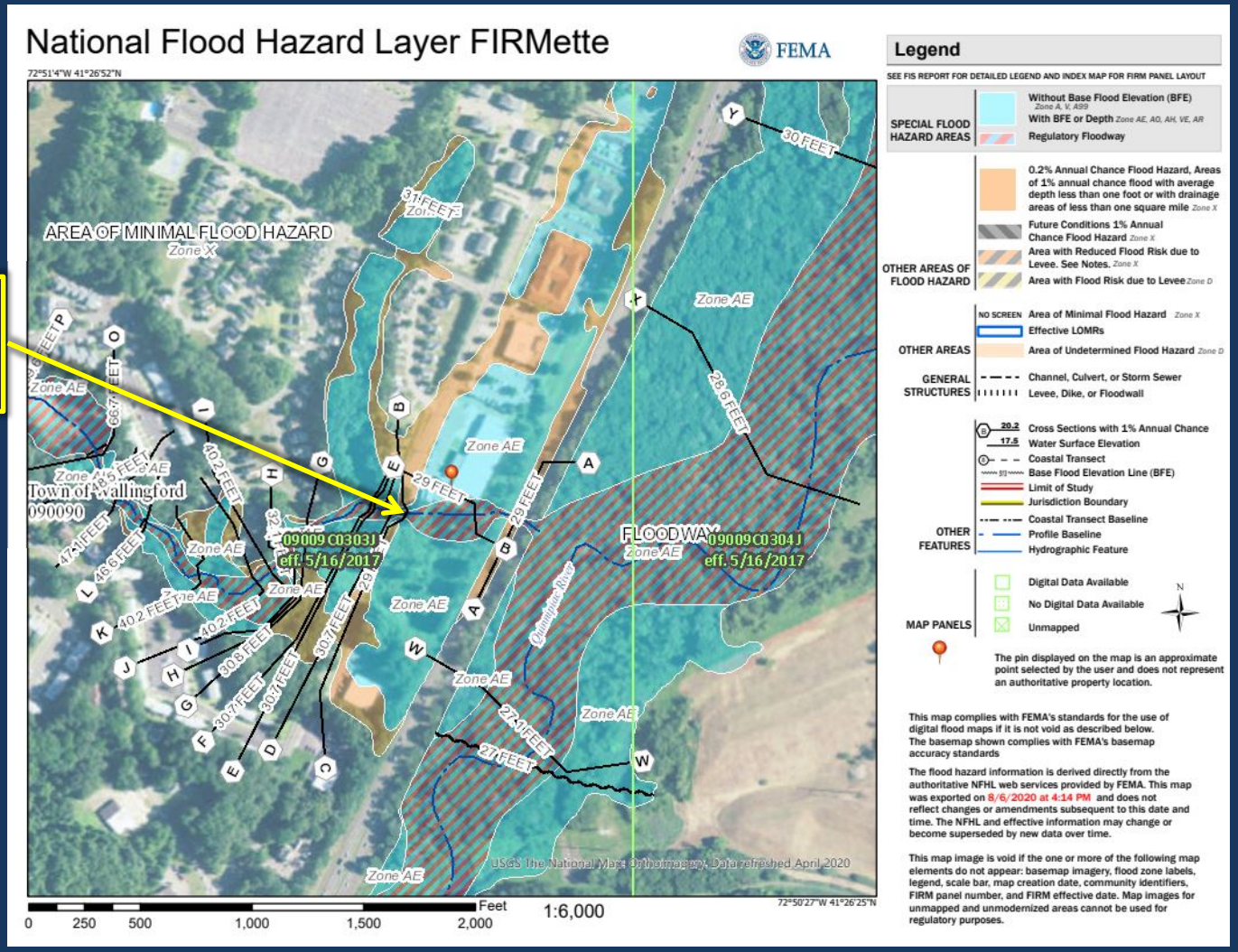
FEMA FLOOD INSURANCE RATE MAP

FEMA Elevations

- *Upstream approx. 30.7'*

BRIDGE NO. 148-028



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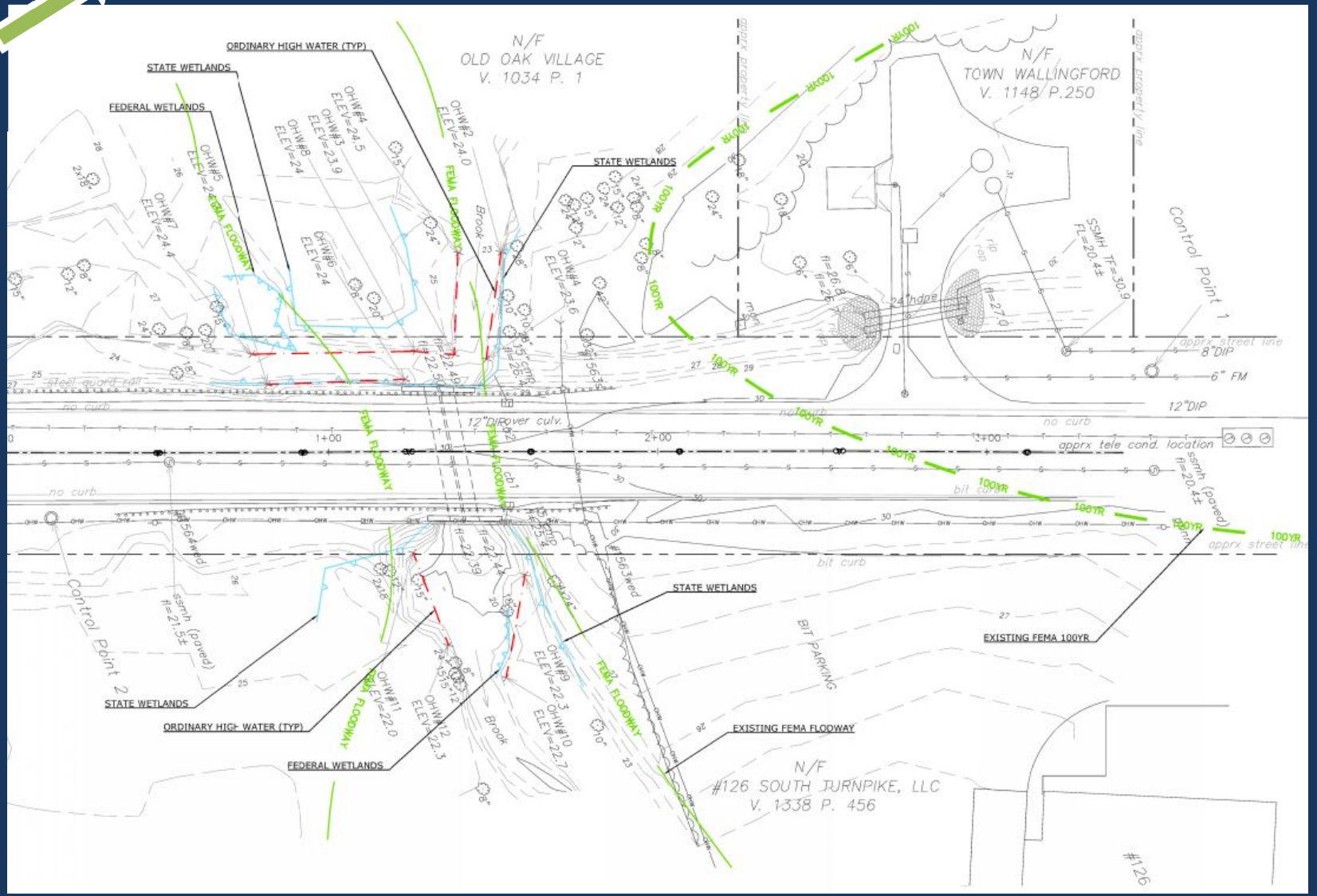
EXISTING CONDITION



PROPOSED CONSTRUCTION

- *Divert flow from one culvert to next with the use of temporary cofferdams to perform work in the dry*
- *Reconstruct and repair existing headwalls and wingwalls*
- *Clean culverts*
- *Install centrifugally cementitious lining*
- *Improve inlet with beveled edges*
- *Install large boulders top dressed with standard riprap directly adjacent to outlet*

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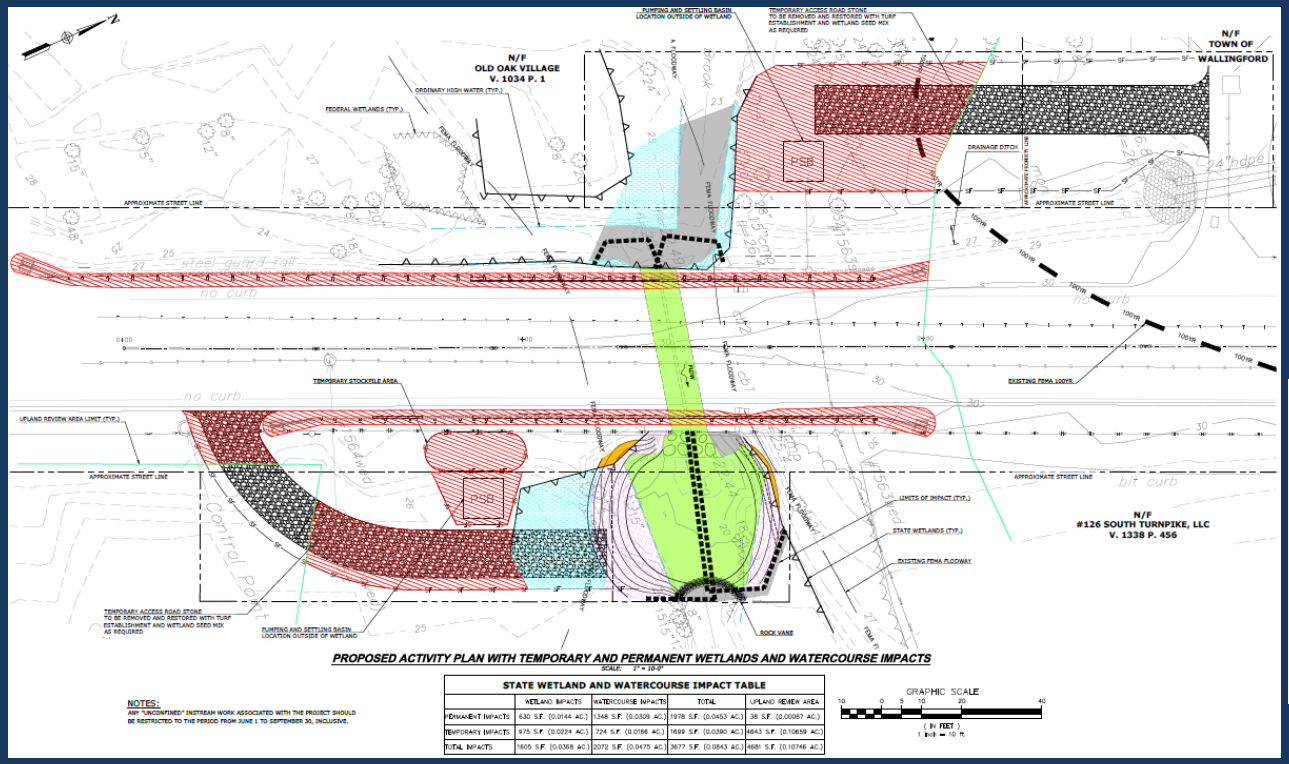
WETLAND/WATERCOURSE IMPACTS

Watercourse Impacts		Wetland Impacts	
Temporary	Permanent	Temporary	Permanent
724 S.F.	1348 S.F.	975 S.F.	630 S.F.
Total = 2,072 S.F.		Total = 1,605 S.F.	
Overall Total Impacts = 3,677 S.F.			



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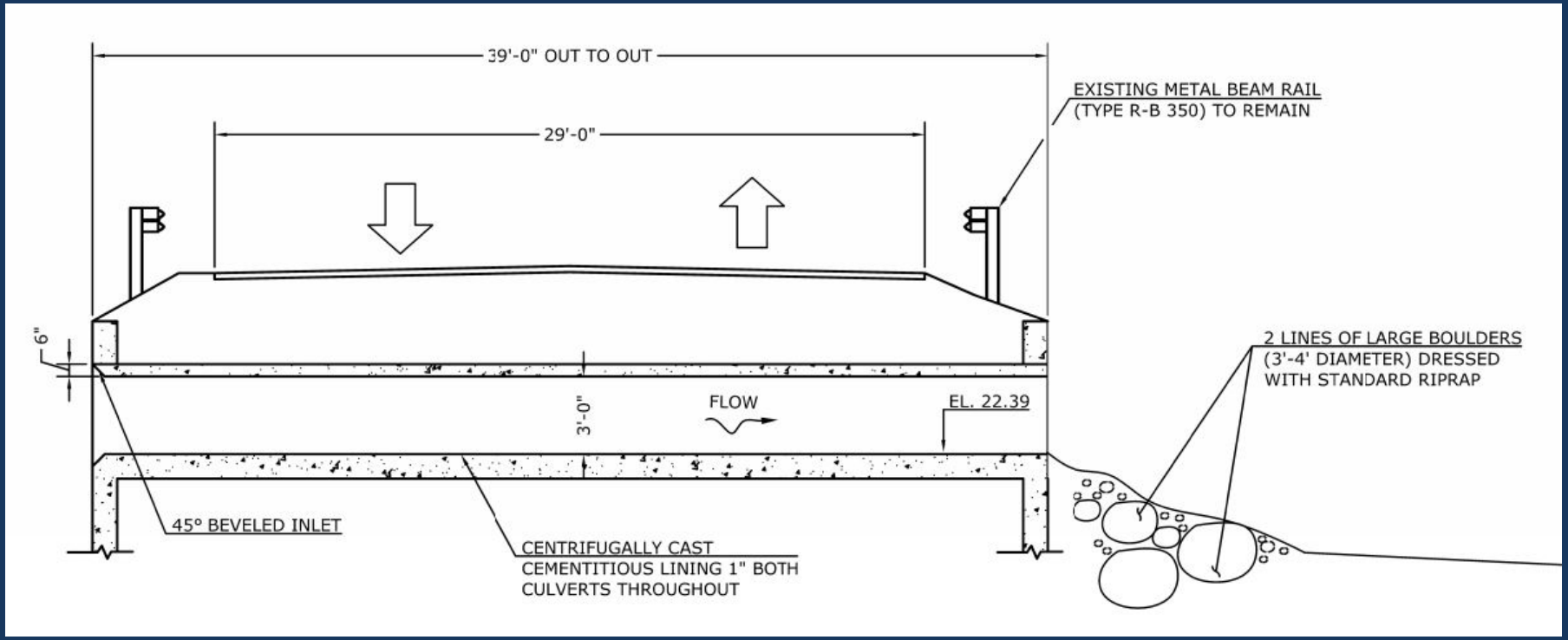
TYPICAL SECTION VIEW



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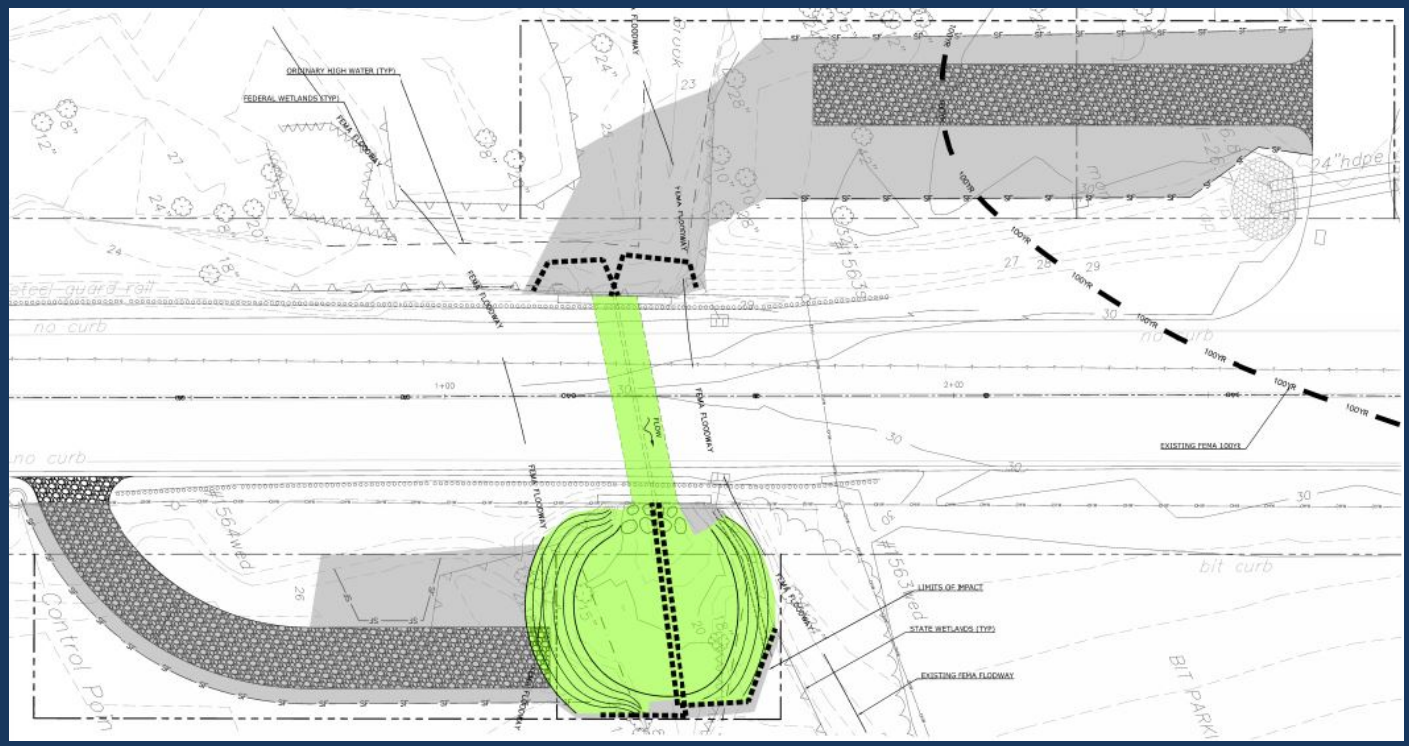
FLOODPLAIN/FLOODWAY IMPACTS

Excavation Floodplain Impacts	Fill In Floodplain Impacts
Total Impacts Total = 9 C.Y.	Total Impacts Total = 8 C.Y.
Total Impacts Total = 1 C.Y.	



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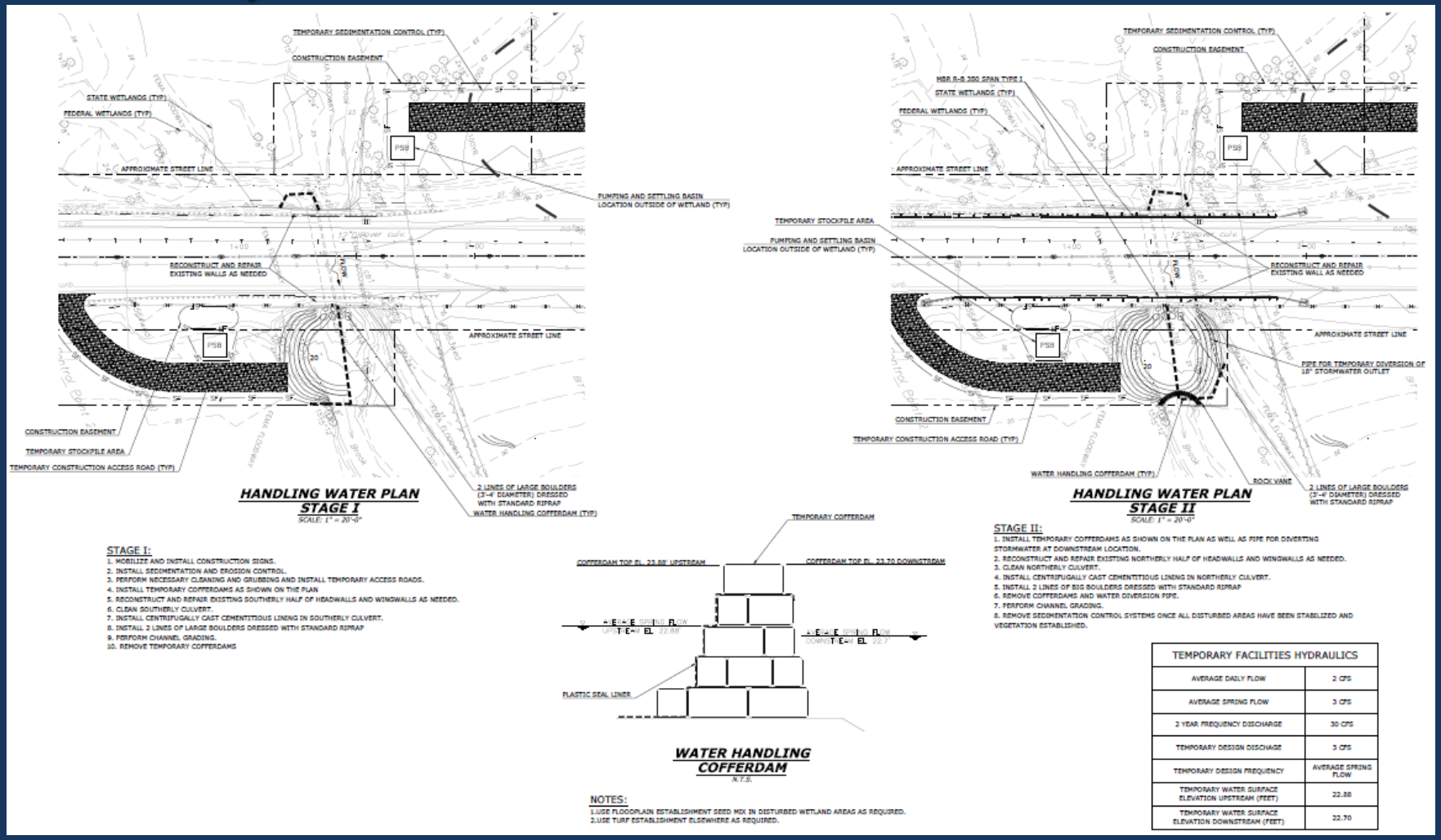
STAGING PLAN



STAGE I:

1. MOBILIZE AND INSTALL CONSTRUCTION SIGNS.
2. INSTALL SEDIMENTATION AND EROSION CONTROL.
3. PERFORM NECESSARY CLEANING AND GRUBBING AND INSTALL TEMPORARY ACCESS ROADS.
4. INSTALL TEMPORARY COFFERDAMS AS SHOWN ON THE PLAN
5. RECONSTRUCT AND REPAIR EXISTING SOUTHERLY HALF OF HEADWALLS AND WINGWALLS AS NEEDED.
6. CLEAN SOUTHERLY CULVERT.
7. INSTALL CENTRIFUGALLY CAST CEMENTITIOUS LINING IN SOUTHERLY CULVERT.
8. INSTALL 2 LINES OF LARGE BOULDERS DRESSED WITH STANDARD RIPRAP
9. PERFORM CHANNEL GRADING.
10. REMOVE TEMPORARY COFFERDAMS

STAGE II:

1. INSTALL TEMPORARY COFFERDAMS AS SHOWN ON THE PLAN AS WELL AS PIPE FOR DIVERTING STORMWATER AT DOWNSTREAM LOCATION.
2. RECONSTRUCT AND REPAIR EXISTING NORTHERLY HALF OF HEADWALLS AND WINGWALLS AS NEEDED.
3. CLEAN NORTHERLY CULVERT.
4. INSTALL CENTRIFUGALLY CAST CEMENTITIOUS LINING IN NORTHERLY CULVERT.
5. INSTALL 2 LINES OF BIG BOULDERS DRESSED WITH STANDARD RIPRAP
6. REMOVE COFFERDAMS AND WATER DIVERSION PIPE.
7. PERFORM CHANNEL GRADING.
8. REMOVE SEDIMENTATION CONTROL SYSTEMS ONCE ALL DISTURBED AREAS HAVE BEEN STABILIZED AND VEGETATION ESTABLISHED.

TEMPORARY FACILITIES HYDRAULICS	
AVERAGE DAILY FLOW	2 CFS
AVERAGE SPRING FLOW	3 CFS
2 YEAR FREQUENCY DISCHARGE	30 CFS
TEMPORARY DESIGN DISCHAGE	3 CFS
TEMPORARY DESIGN FREQUENCY	AVERAGE SPRING FLOW
TEMPORARY WATER SURFACE ELEVATION UPSTREAM (FEET)	22.80
TEMPORARY WATER SURFACE ELEVATION DOWNSTREAM (FEET)	22.70

NOTES:

1.USE FLOODPLAIN ESTABLISHMENT SEED MIX IN DISTURBED WETLAND AREAS AS REQUIRED.
2.USE TURF ESTABLISHMENT ELSEWHERE AS REQUIRED.

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HYDRAULICS AND HYDROLOGY

Table 1: FIS Flow Rates

Return Frequency (Years)	Flow Rate (CFS)
10	115
50	215
100	330
500	660

Table 5: Comparison, 100-Year Regulatory Flood Event[2], Existing versus Proposed, Encroached & Unencroached Condition Elevations

		CWSEL					
		Encroached			Unencroached		
		(1)	(2)	(2)-(1)	(3)	(4)	(4)-(3)
Section ID[1]	FIS ID	Existing	Proposed	Δ (FT)	Existing	Proposed	Δ (FT)
875	F	30.34	30.32	- 0.02	30.16	30.33	0.17
860	E	30.34	30.32	- 0.02	30.16	30.33	0.17
845[1]	---	30.32	30.30	- 0.02	30.16	30.33	0.17
666	D	30.29	30.27	- 0.02	30.12	30.30	0.18
650	South Turnpike Road Culvert						
625	C	22.89	22.89	0.00	22.90	22.90	0.00
340	B	22.08	22.08	0.00	22.07	22.07	0.00

1. Sections added for HEC-RAS – not in effective model
2. Regulatory model with alternate starting WSEL

HYDRAULIC INFORMATION

- *Drainage Area: 0.94 mi^2*
- *Design Storm Frequency: 100 year*
  - *Does not meet freeboard (1-ft)*
- *Design Discharge:*
  - *FIS Flow Rate: 330 cfs*
  - *FEMA: Flood Zone AE (Regulatory Floodway Established)*
- *Flow:*
  - *Average Daily Flow: 2 cfs*
  - *Average Spring Flow: 3 cfs*

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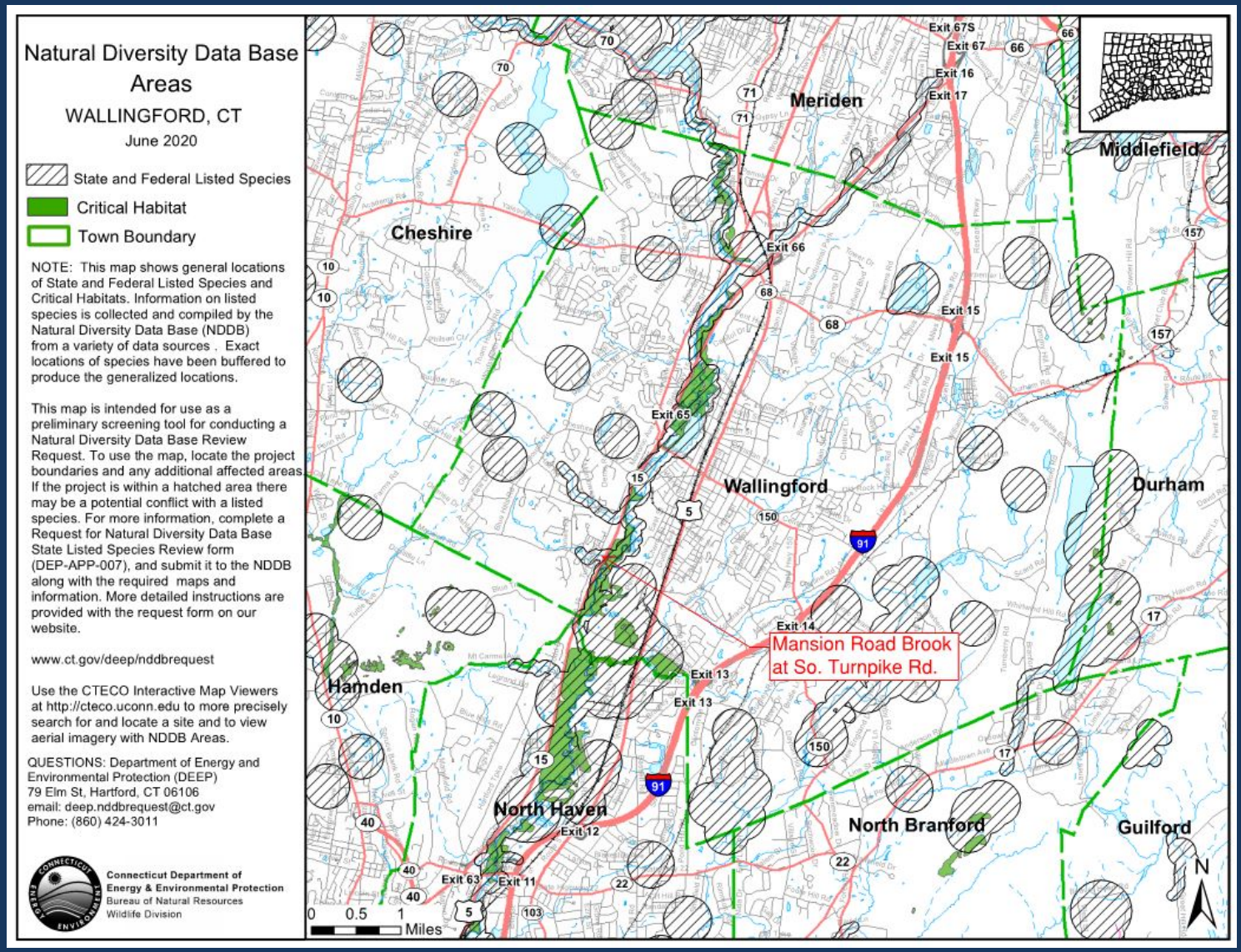
NDDB MAPPING



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ENVIRONMENTAL CONSIDERATIONS & ANTICIPATED PERMITS

- *Best management practices will be used to handle sedimentation control*
- *Inland wetlands/regulated area impacts will be kept to a minimum*
- *Any unconfined in-stream work within the Mansion Road Brook should be restricted to the period from June 1 to September 30, inclusive*
- *Disturbed areas during construction will be restored upon completion*
- *Permits required:*

  ACOE – Pre-Construction Notification (PCN)

  DEEP 401 Water Quality

  Town IWWC

  Town Flood Management Certification

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PROJECT COST

- *The cost of construction for the year 2021 is approximately $525,000*
- *Funding will be 50% State funds and 50% Town funds*
    - *State: $262,000*
    - *Town: $262,000*

PROJECT SCHEDULE

- *Start/End of construction: June 1– September 30*
- *Duration of construction: Approx. 4 months*

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