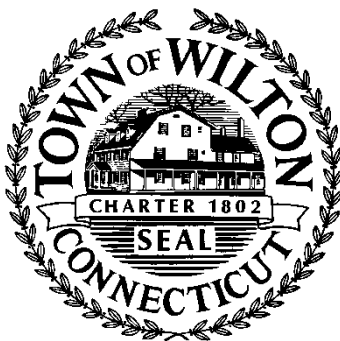


INLAND WETLANDS
COMMISSION
Telephone (203) 563-0180
Fax (203) 563-0284



TOWN HALL
238 Danbury Road
Wilton, Connecticut 06897

APPLICATION FOR AN INTERMEDIATE REGULATED ACTIVITY

For Office Use Only:

WET# _____	
Filing Fee \$ _____	Wilton Land Record Map# _____
Date of Submission _____	Volume # _____ Page # _____
Date of Acceptance _____	Assessor's Map # _____ Lot# _____

APPLICANT INFORMATION:

Applicant _____	Agent (if applicable) _____
Address _____ _____	Address _____ _____
Telephone _____	Telephone _____
Email _____	Email _____

PROJECT INFORMATION:

Property Address _____	Site Acreage _____
Acres of altered Wetlands On-Site _____	Cu. Yds. of Material Excavated _____
Linear Feet of Watercourse _____	Cu. Yds. of Material to be Deposited _____
Linear Feet of Open Water _____	Acres of altered upland buffer _____
Sq. Ft. of proposed and/or altered impervious coverage _____	Sq. Ft. of disturbed land in regulated area _____

APPLICATION REQUIREMENTS:

Is The Site Within a Public Water Supply
Watershed Boundary? NO _____ YES* _____

Is The Site Within 500 Feet of a Town Boundary?
NO _____ YES* _____

* If the answer is yes, then the applicant is responsible for notifying the appropriate water authority and/or adjoining community's Wetlands Department. Instructions for notification are available at the office of the commission.

Project Description and Purpose: _____

In addition, the applicant shall provide nine (9) collated copies of the following information as well as an electronic submission via email to mike.conklin@wiltonct.org & elizabeth.larkin@wiltonct.org **

- () A. Written consent from the owner authorizing the agent to act on his/her behalf
- () B. A Location Map at a scale of 1" = 800'
- () C. ***A Site Plan showing existing and proposed features at a scale not to exceed 1" = 40'***
 - D. Sketch Plans depicting the alternatives considered
 - E. Names and addresses of adjoining property owners
 - F. A narrative describing, in detail
 - a. the proposed activity
 - b. the alternatives considered
 - c. impacts
 - d. proposed mitigation measures
 - G. Soils Report prepared by a Certified Soil Scientist and Wetlands Map prepared by a Registered Land Surveyor
- () H. Description of the chemical and physical characteristics of fill material to be used in the Regulated Area
- () I. Description and maps detailing the watershed of the Regulated Area
- () J. One original application and eight (8) copies

****Application materials shall be collated and copies of documents more than two pages in length shall be double sided.**

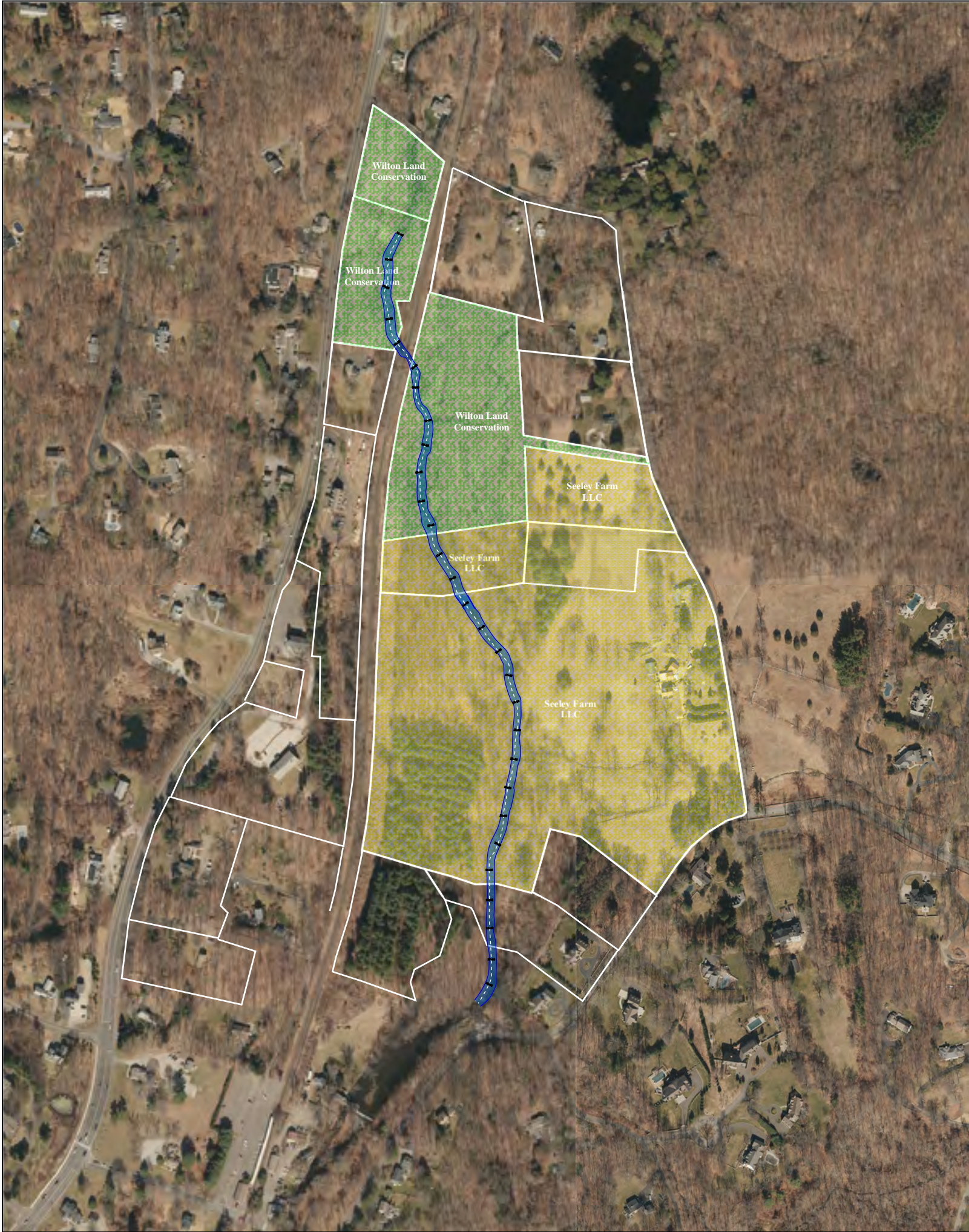
See Section 7 of the Wetlands and Watercourses Regulations of the Town of Wilton for a more detailed description of applications requirements.

The Applicant or his/her agent certifies that he is familiar with the information provided in this application and is aware of the penalties for obtaining a permit through deception, inaccurate or misleading information.

By signing this application, permission is hereby given to necessary and proper inspections of the subject property by the Commissioners and designated agents of the Commission or consultants to the Commission, at reasonable times, both before and after a final decision has been rendered.

Applicant's Signature: _____ Date: _____

Agent's Signature (if applicable): _____ Date: _____



MIANUS CHAPTER TROUT UNLIMITED

**NORWALK RIVER RESTORATION
SEELEY ROAD REACH
WILTON
FAIRFIELD COUNTY, CONNECTICUT**

**NORWALK RIVER RESTORATION:
SEELEY ROAD REACH PROPOSED DESIGN**

March 10, 2023

Prepared For:
Mianus Chapter Trout Unlimited
PO Box 475
Wilton, Connecticut 06897

Prepared By:
Trout Scapes River Restoration LLC
280 W. Kagy Boulevard, Suite D #310
Bozeman, MT 59715

SHEET 1 of 22	COVER SHEET
SHEET 2 of 22	LOCATION MAP
SHEET 3 of 22	USGS TOPOGRAPHIC MAP
SHEET 4 of 22	SITE PLAN INDEX
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SHEET 6 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 1 SITE PLAN
SHEET 7 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 2 SITE PLAN
SHEET 8 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 3 SITE PLAN
SHEET 9 of 22	NORWALK RIVER CROSS-SECTION MAP
SHEET 10 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS A & B
SHEET 11 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS C & D
SHEET 12 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS E & F
SHEET 13 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS G & H
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SHEET 15 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS K & L
SHEET 16 of 22	NORWALK RIVER RESTORATION CROSS-SECTION M
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SHEET 18 of 22	NORWALK RIVER FEMA FLOODPLAIN MAP
SHEET 19 of 22	CROSS-VANE DESIGN FIGURES
SHEET 20 of 22	ROOTWAD REVETMENT DESIGN FIGURES
SHEET 21 of 22	POOL EXCAVATION DESIGN FIGURES
SHEET 22 of 22	NORWALK RIVER RESTORATION PROJECT SPECIFICATIONS

TROUT SCALES

RIVER RESTORATION LLC

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(406) 580-9482

ewerhand@troutscapes.com

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**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

COVER SHEET

ENGINEER SEAL
(WHEN APPLICABLE)

NOTES

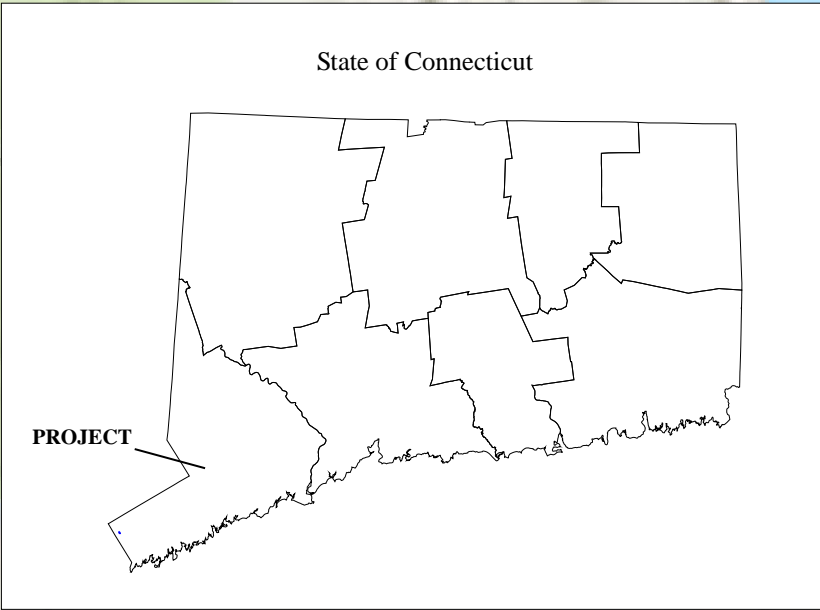
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3. Property Boundaries Approximate, not Survey Accurate.

0100200400

feet

Scale: 1" = 400'

Drawn By: EW Checked By: BC



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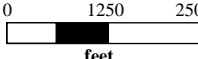

**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

Wilton
Fairfield County, Connecticut

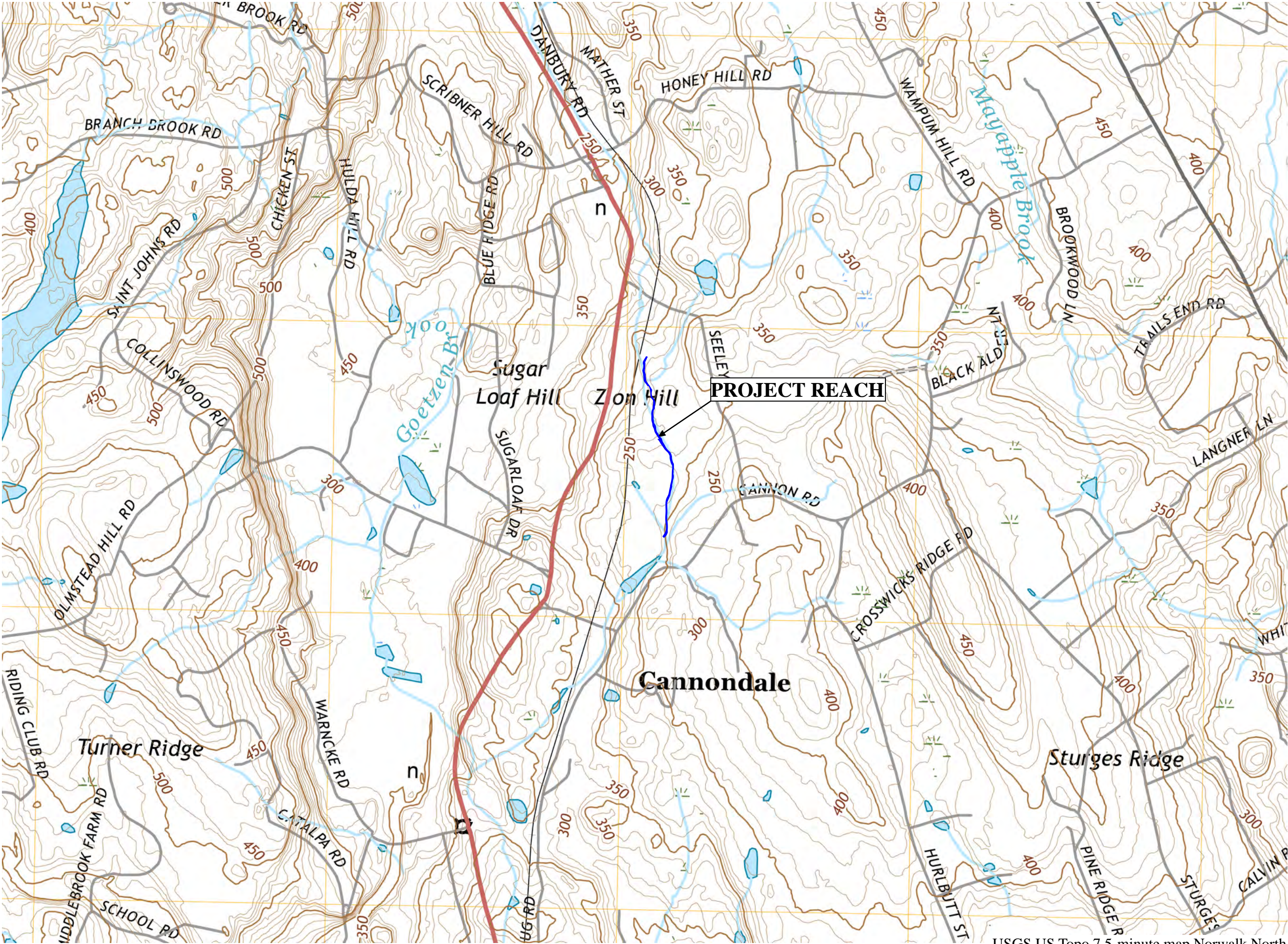
LOCATION MAP

**ENGINEER SEAL
(WHEN APPLICABLE)**

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Scale: 1" = 2,500'

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USGS US Topo 7.5-minute map Norwalk North



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Wilton
Fairfield County, Connecticut

USGS TOPOGRAPHIC
MAP

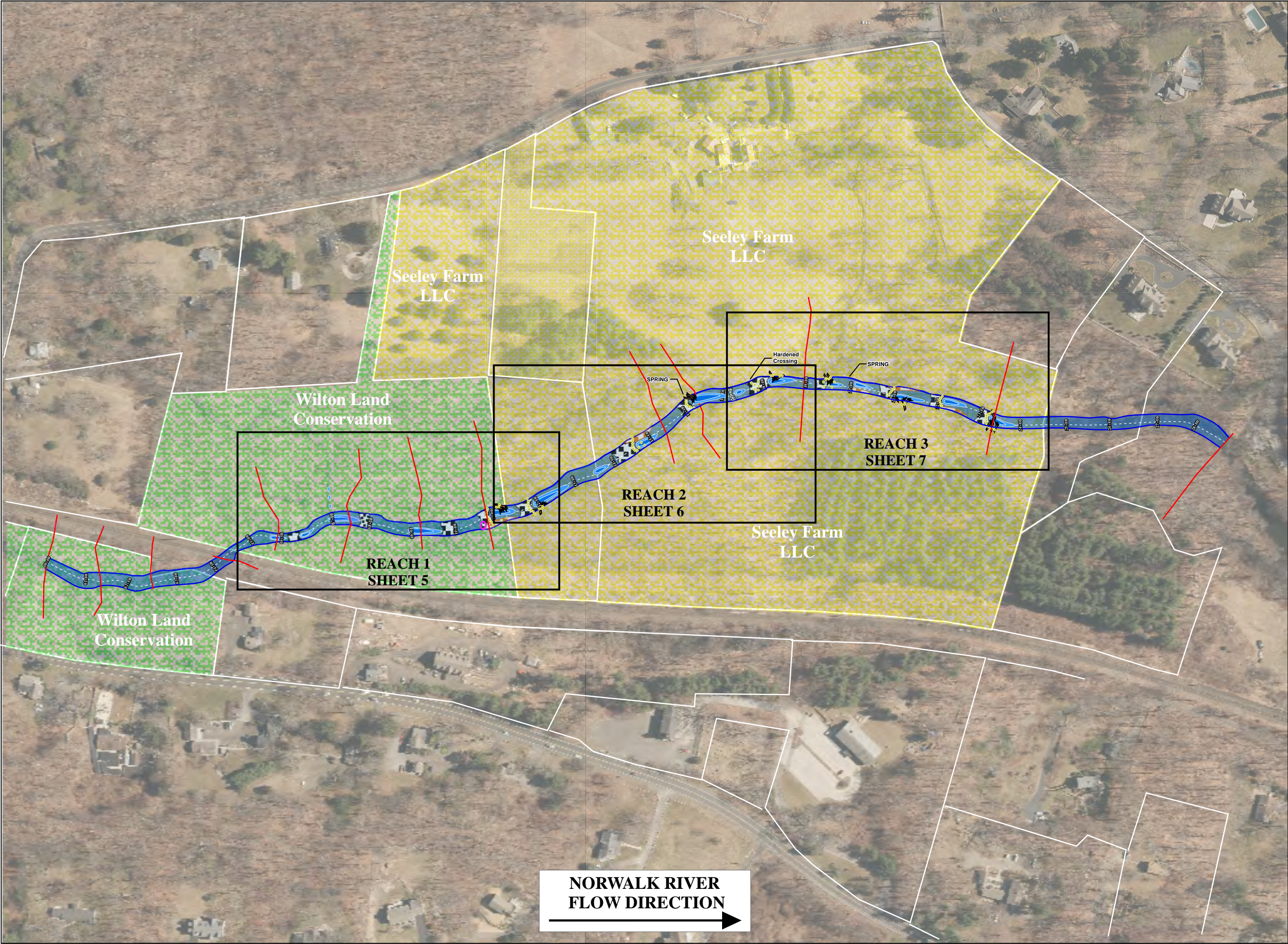
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0 250 500 1000
feet
Scale: 1" = 1,000'

Drawn By: EW Checked By: BC





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RESTORATION
SEELEY ROAD REACH**

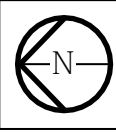
**Wilton
Fairfield County, Connecticut**

**SITE PLAN
INDEX**

ENGINEER SEAL
(WHEN APPLICABLE)

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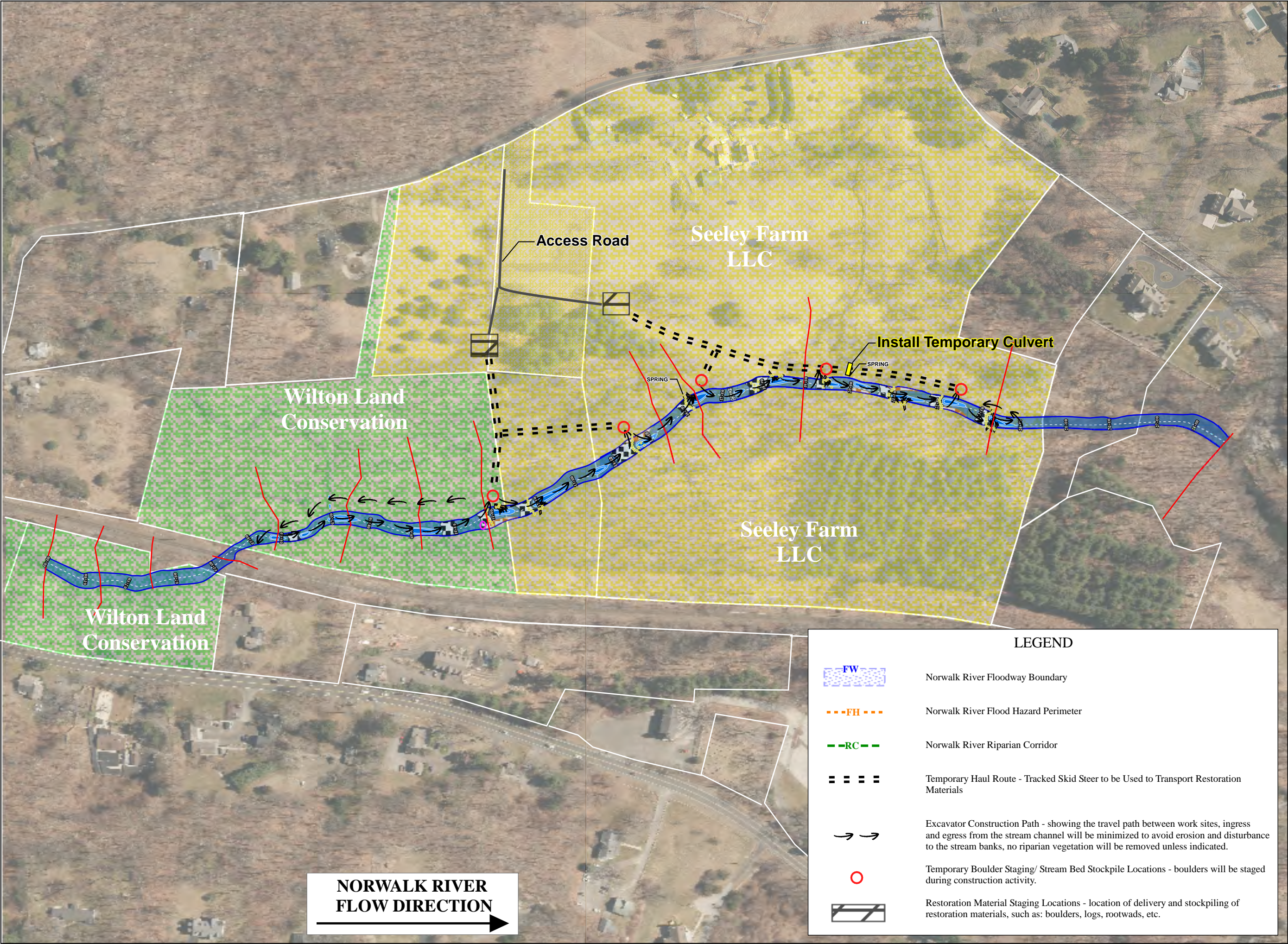
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feet

Scale: 1" = 200'

Drawn By: EW

Checked By: BC





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**MIANUS CHAPTER
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**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

ACCESS & MATERIAL
STAGING MAP

ENGINEER SEAL
(WHEN APPLICABLE)

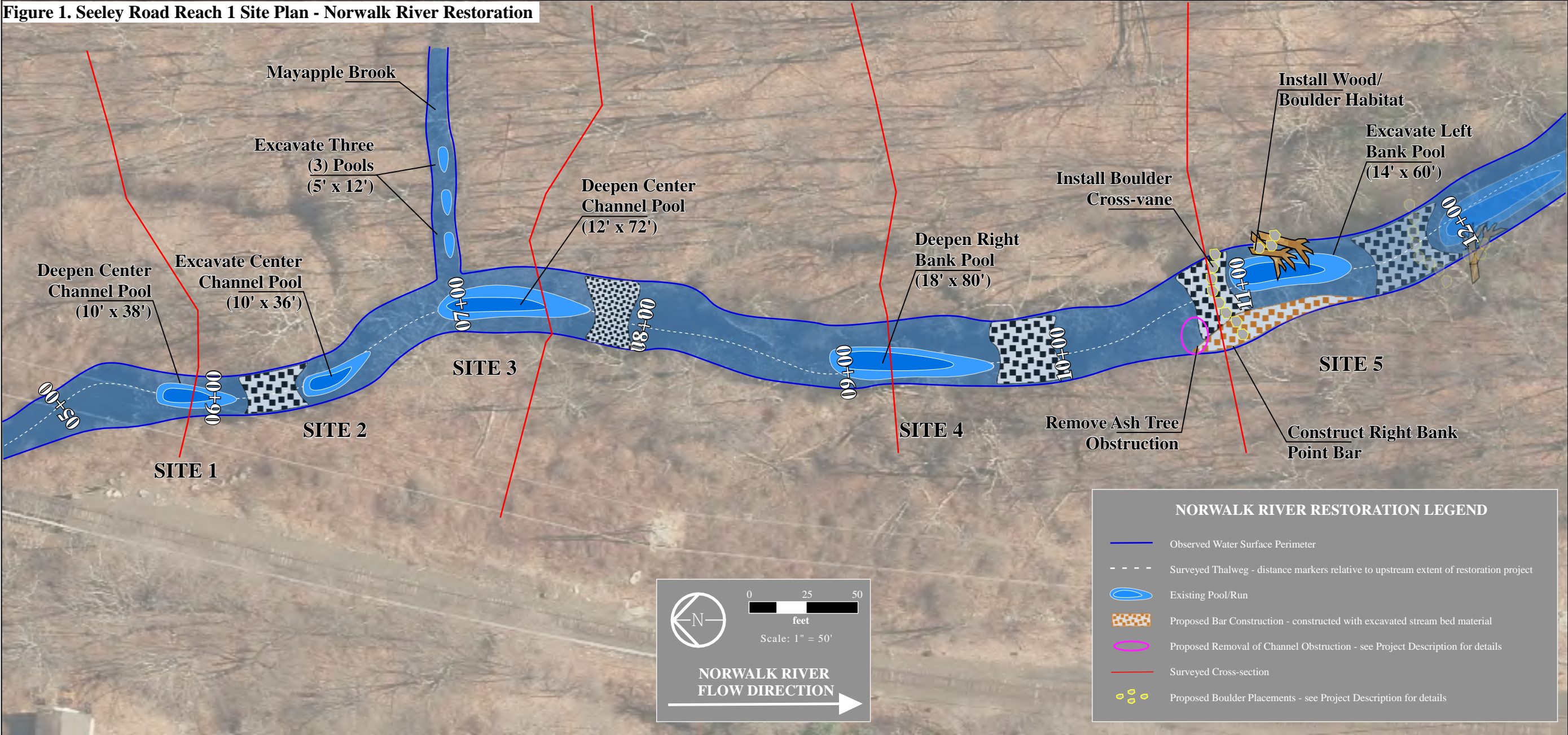
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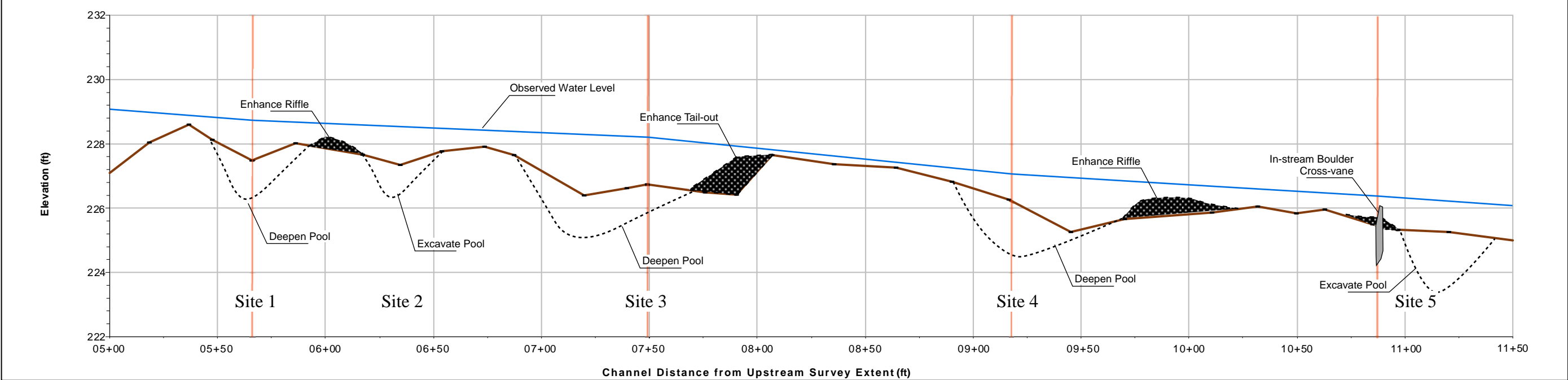
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Scale: 1" = 200'

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Figure 1. Seeley Road Reach 1 Site Plan - Norwalk River Restoration



LONGITUDINAL STREAM BED PROFILE (06+00 - 11+50)



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NORWALK RIVER
RESTORATION
SEELEY ROAD REACH

Wilton
Fairfield County, Connecticut

NORWALK RIVER
RESTORATION
SEELEY ROAD REACH
1 SITE PLAN

ENGINEER SEAL
(WHEN APPLICABLE)

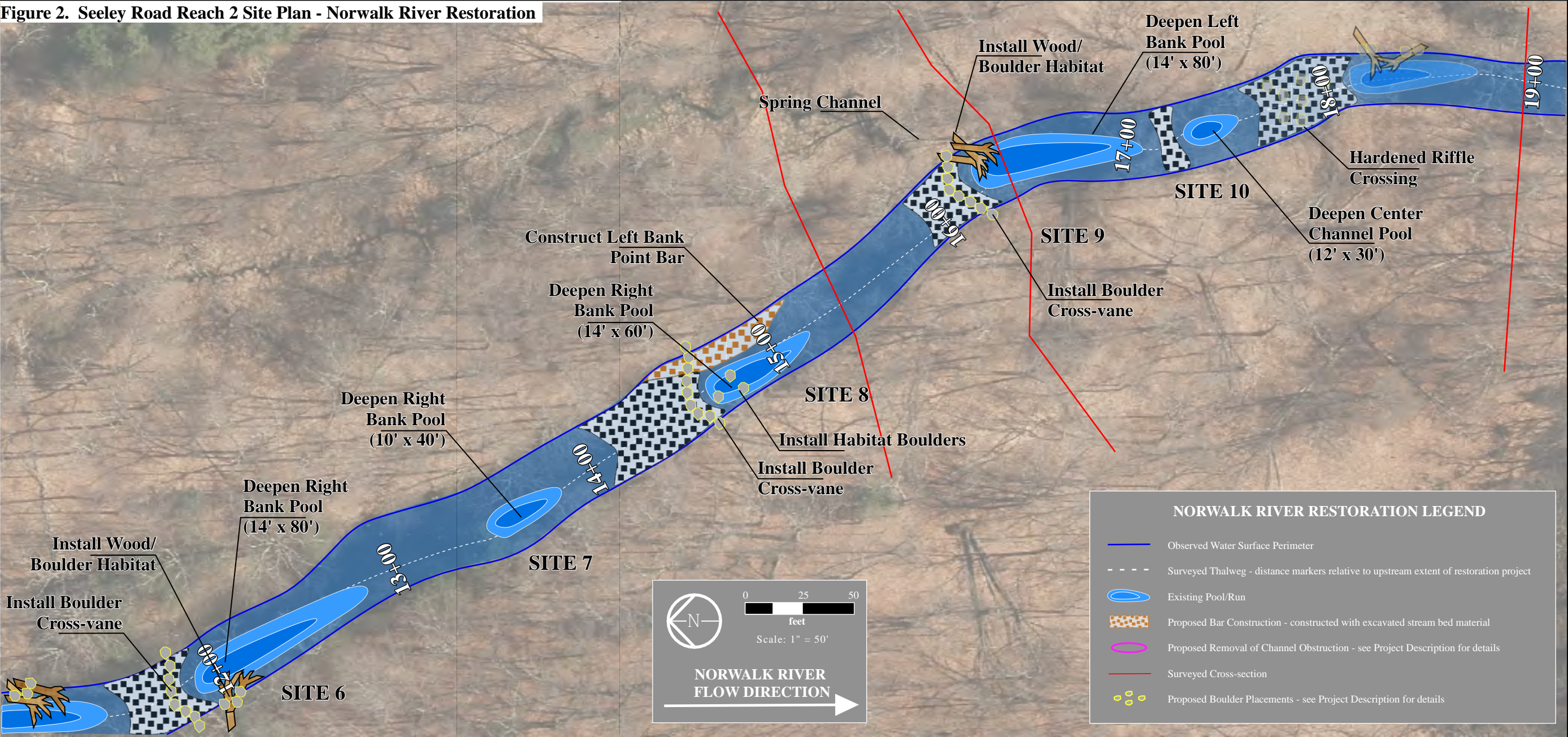
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Figure 2. Seeley Road Reach 2 Site Plan - Norwalk River Restoration



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NORWALK RIVER
RESTORATION
SEELEY ROAD REACH

Wilton
Fairfield County, Connecticut

NORWALK RIVER
RESTORATION
SEELEY ROAD REACH
2 SITE PLAN

ENGINEER SEAL
(WHEN APPLICABLE)

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SHEET: 7 of 22

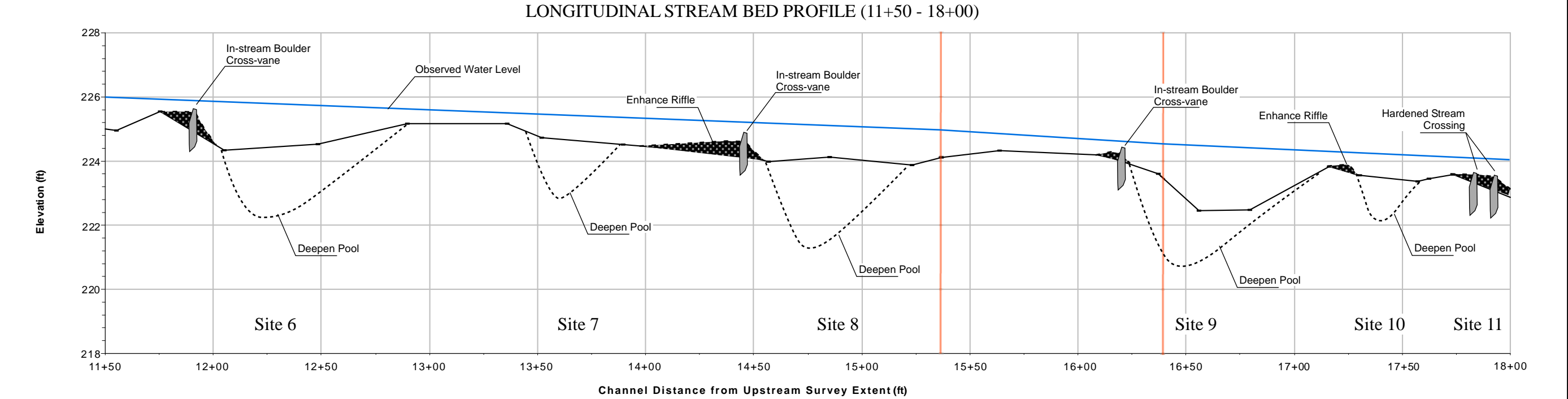
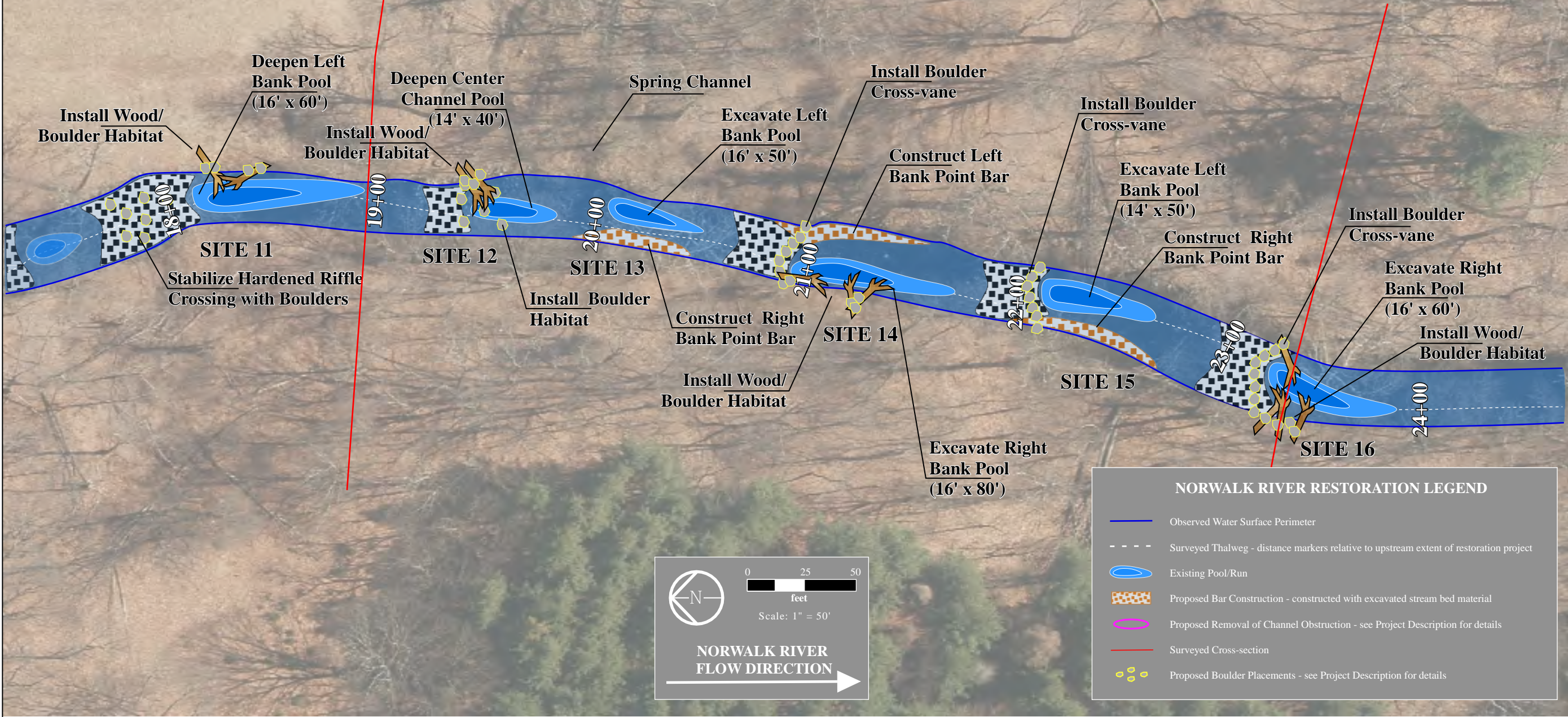


Figure 3. Seeley Road Reach 3 Site Plan - Norwalk River Restoration



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RESTORATION
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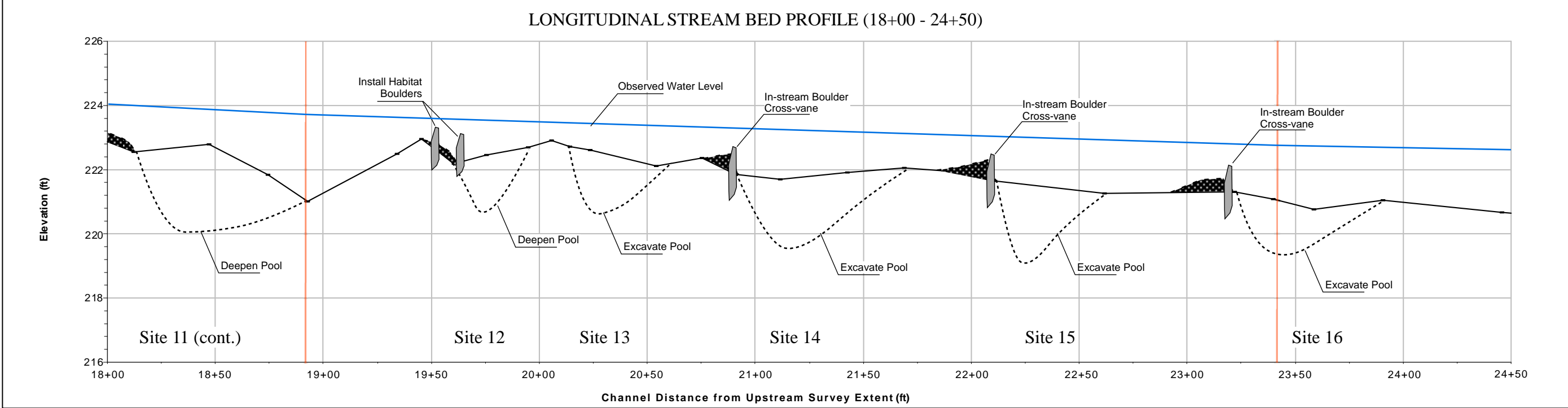
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NORWALK RIVER
RESTORATION
SEELEY ROAD REACH
3 SITE PLAN

ENGINEER SEAL
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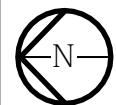
**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

**NORWALK RIVER
CROSS-SECTION MAP**

ENGINEER SEAL
(WHEN APPLICABLE)

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0 50 100 200
feet
Scale: 1" = 200'

Drawn By: EW Checked By: BC



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**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

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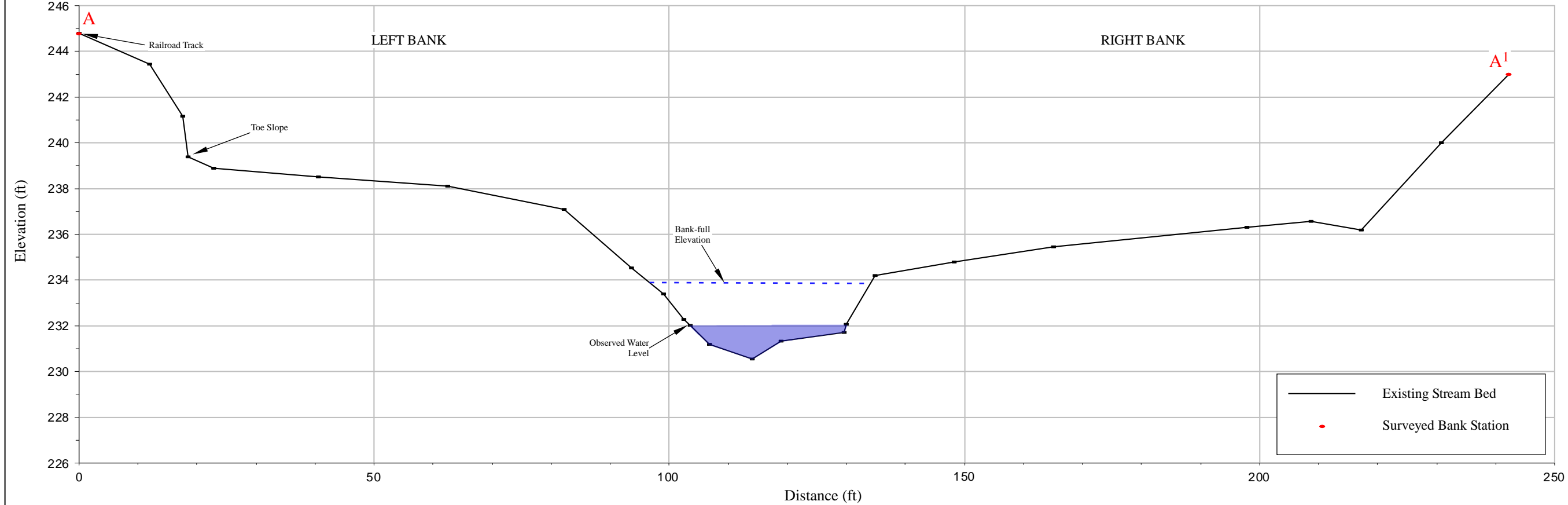
**NORWALK RIVER
RESTORATION
CROSS-SECTIONS
A & B**

ENGINEER SEAL
(WHEN APPLICABLE)

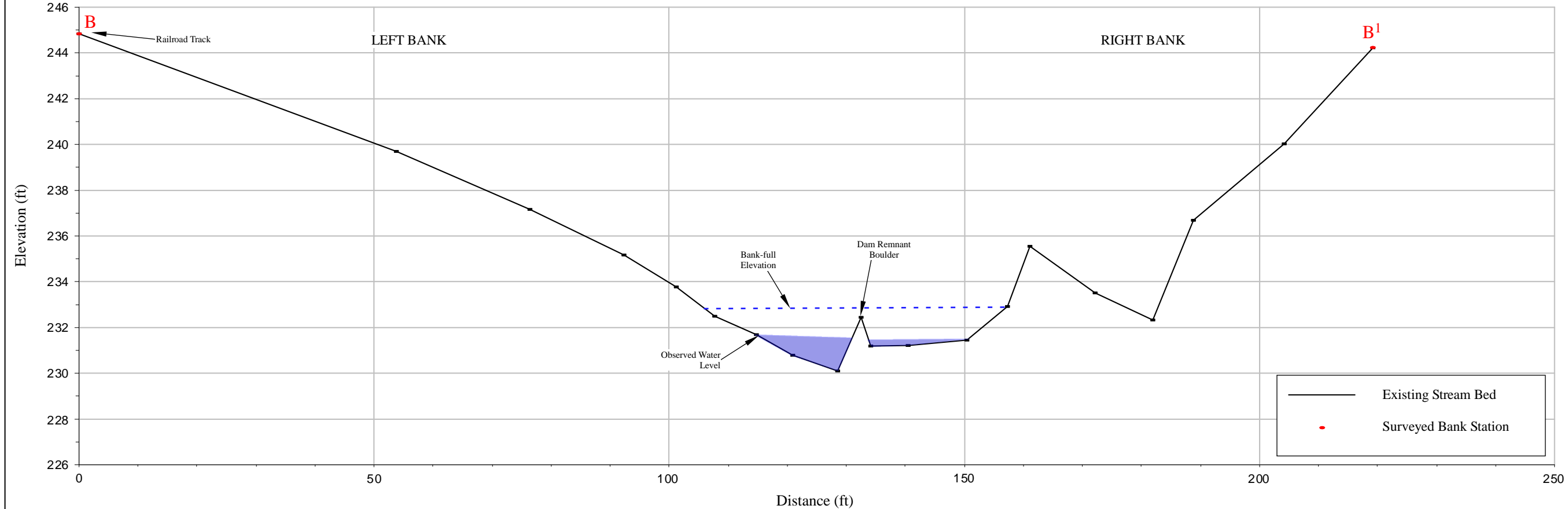
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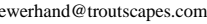
Drawn By: EW Checked By: BC

Cross-section A-A¹ (00+00): Upstream of Restoration Reach



Cross-section B-B¹ (01+32): Upstream of Restoration Reach





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NORWALK RIVER RESTORATION SEELEY ROAD REACH

Wilton
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NORWALK RIVER RESTORATION CROSS-SECTIONS C & D

**ENGINEER SEAL
(WHEN APPLICABLE)**

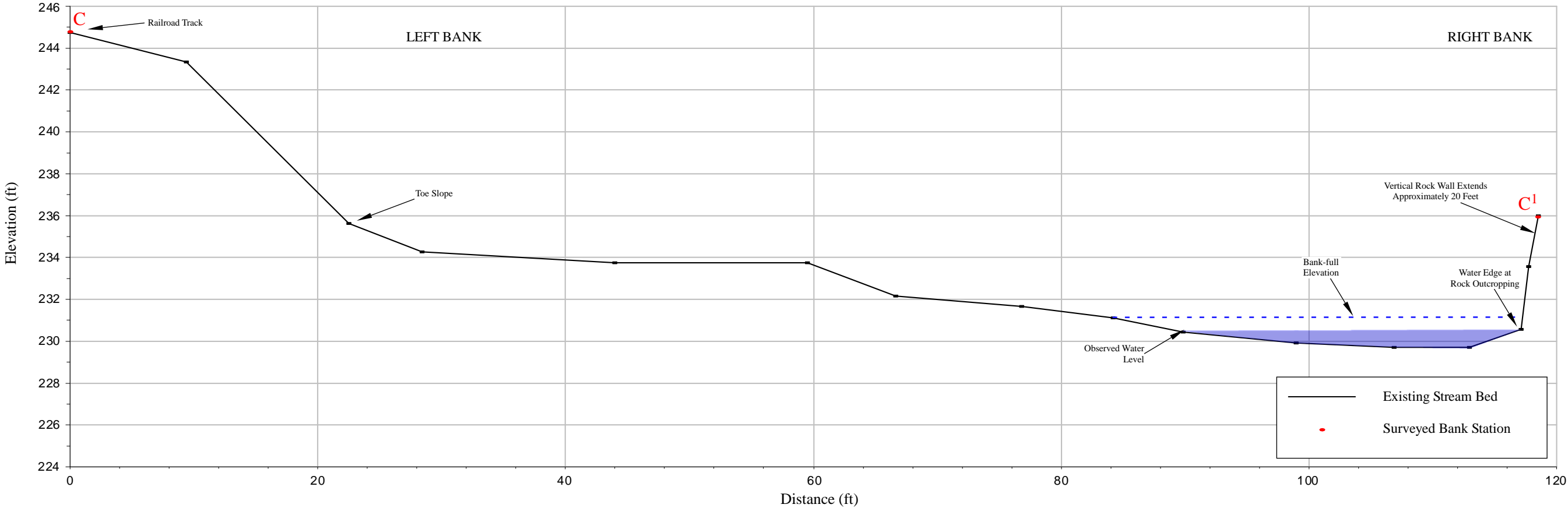
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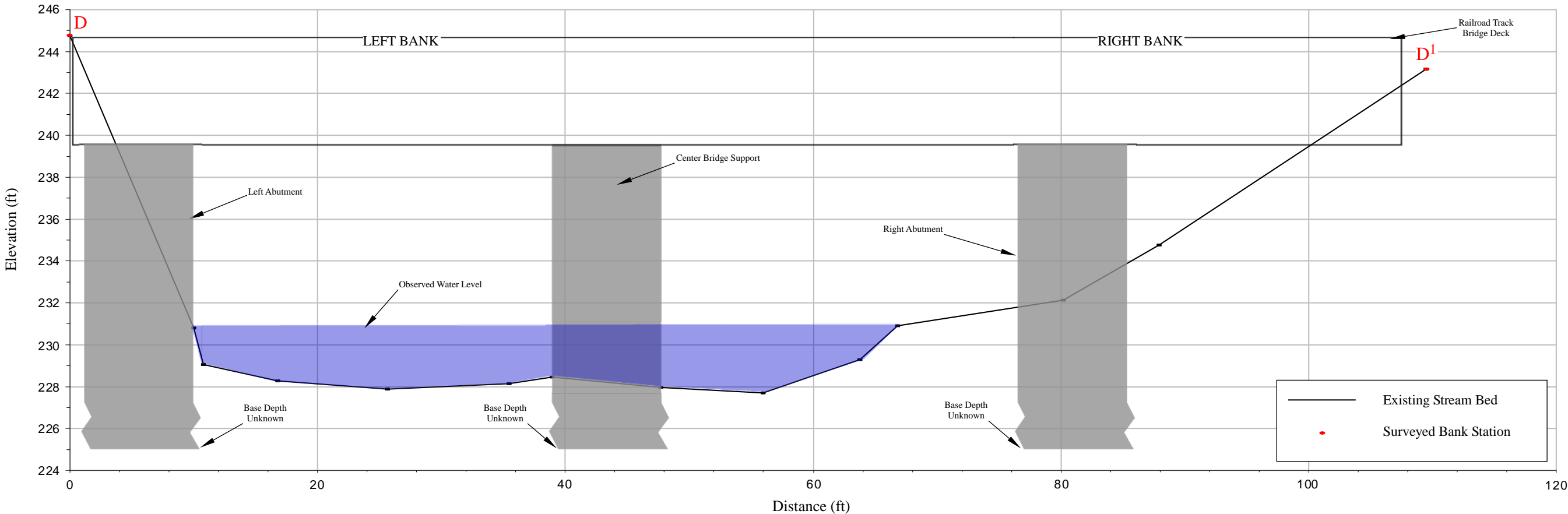
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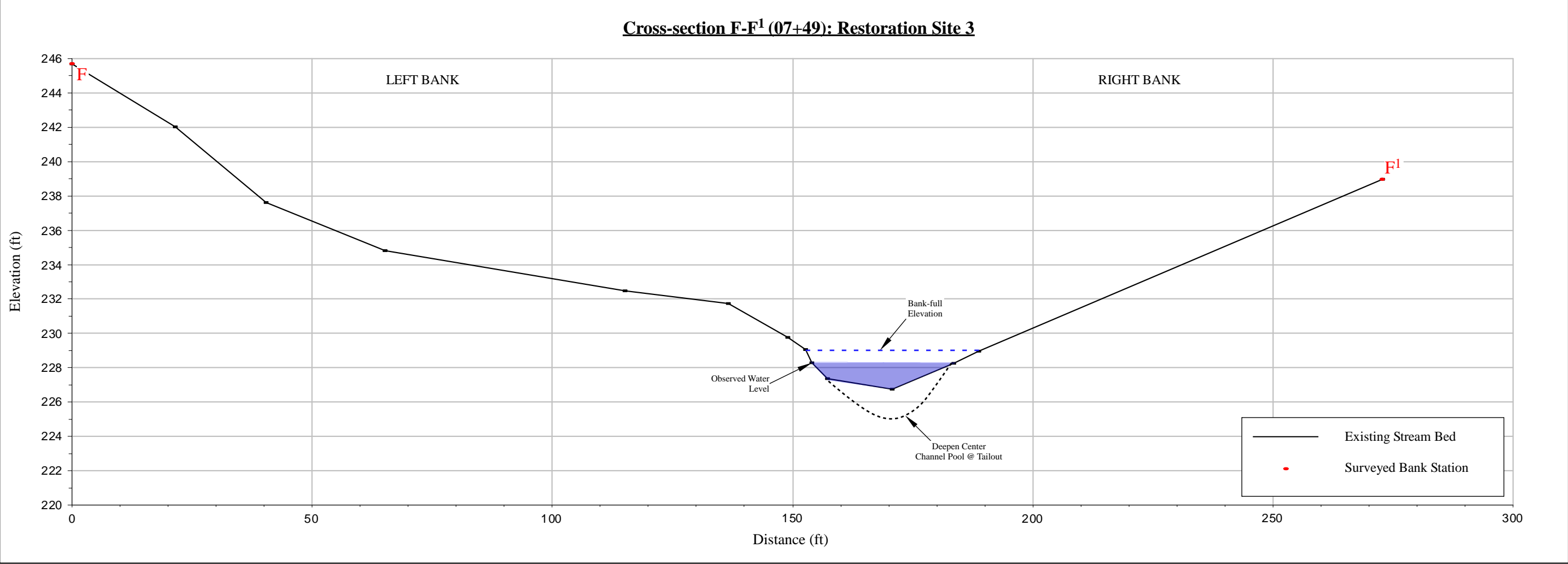
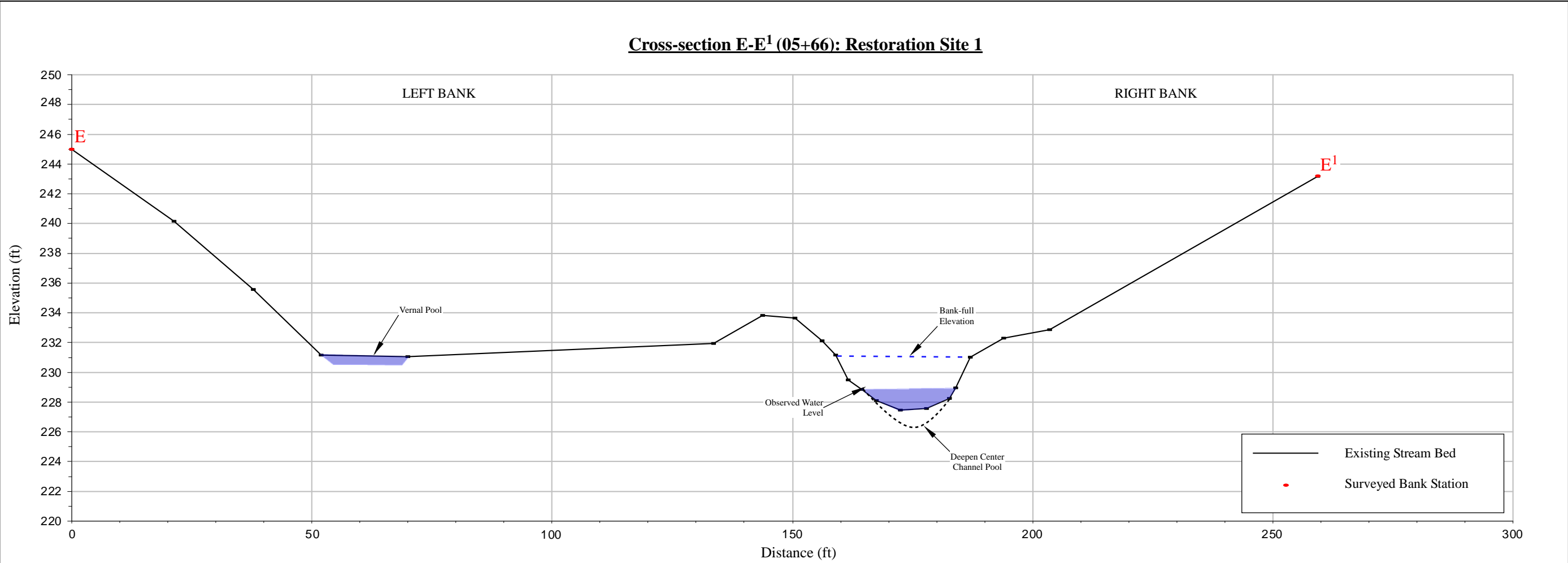
Checked By: BC

Cross-section C-C¹ (02+54): Upstream of Restoration Reach



Cross-section D-D¹ (04+26): Upstream Bridge Opening





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Wilton
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**NORWALK RIVER
RESTORATION
CROSS-SECTIONS
E & F**

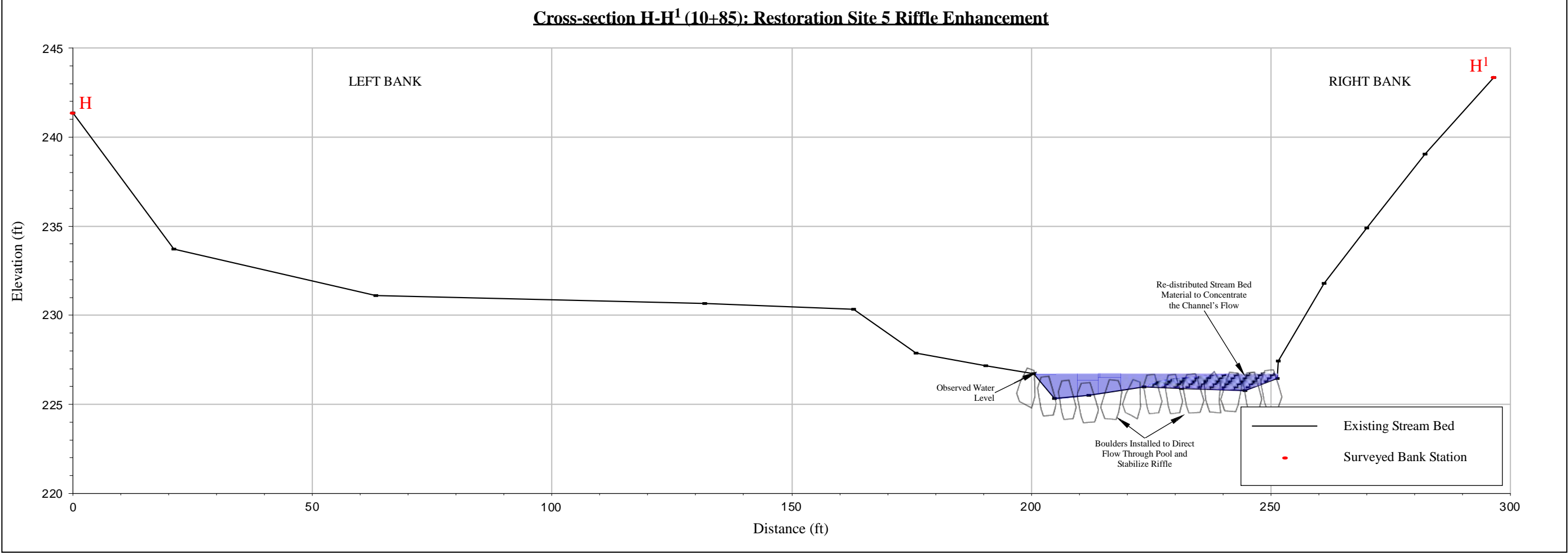
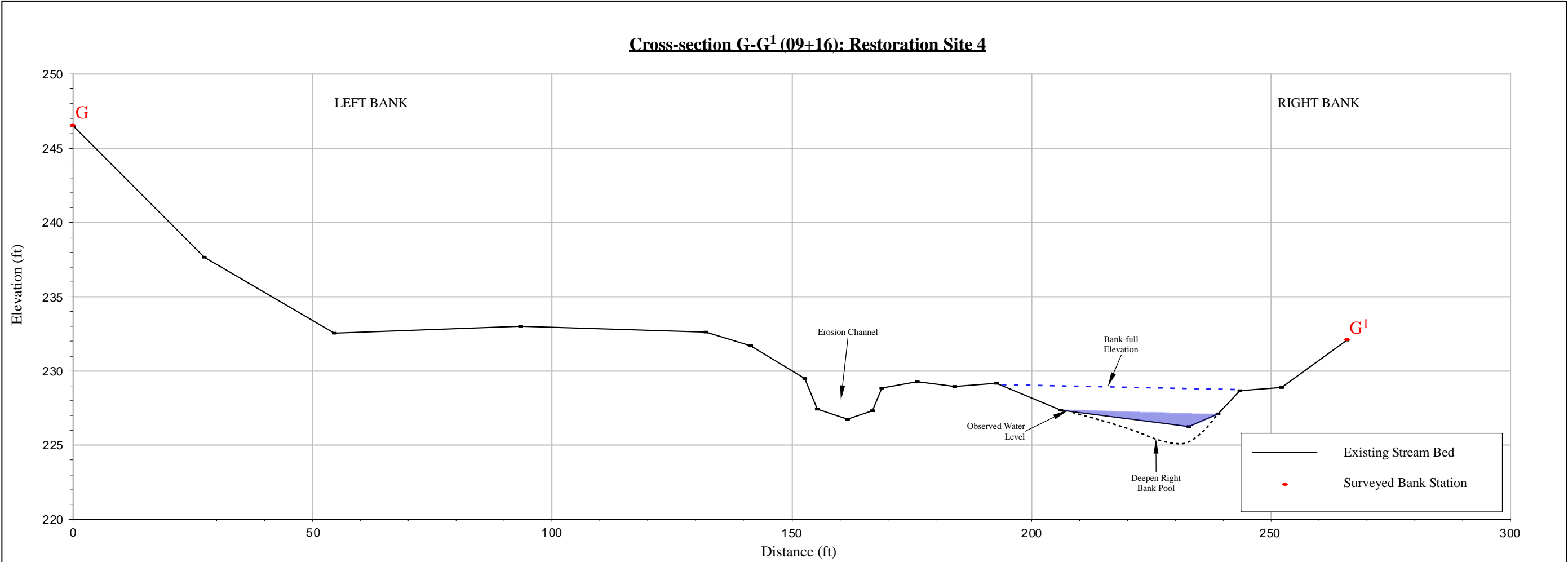
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SHEET: **12 of 22**



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SEELEY ROAD REACH**

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Fairfield County, Connecticut**

**NORWALK RIVER
RESTORATION
CROSS-SECTIONS
G & H**

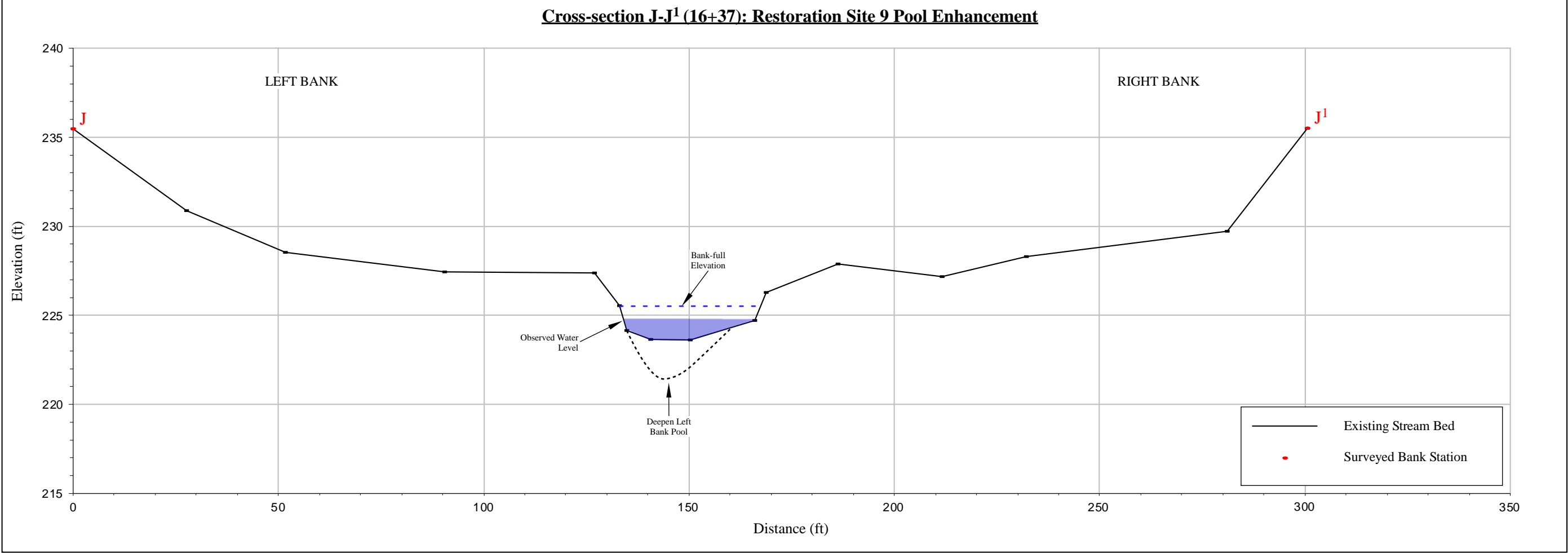
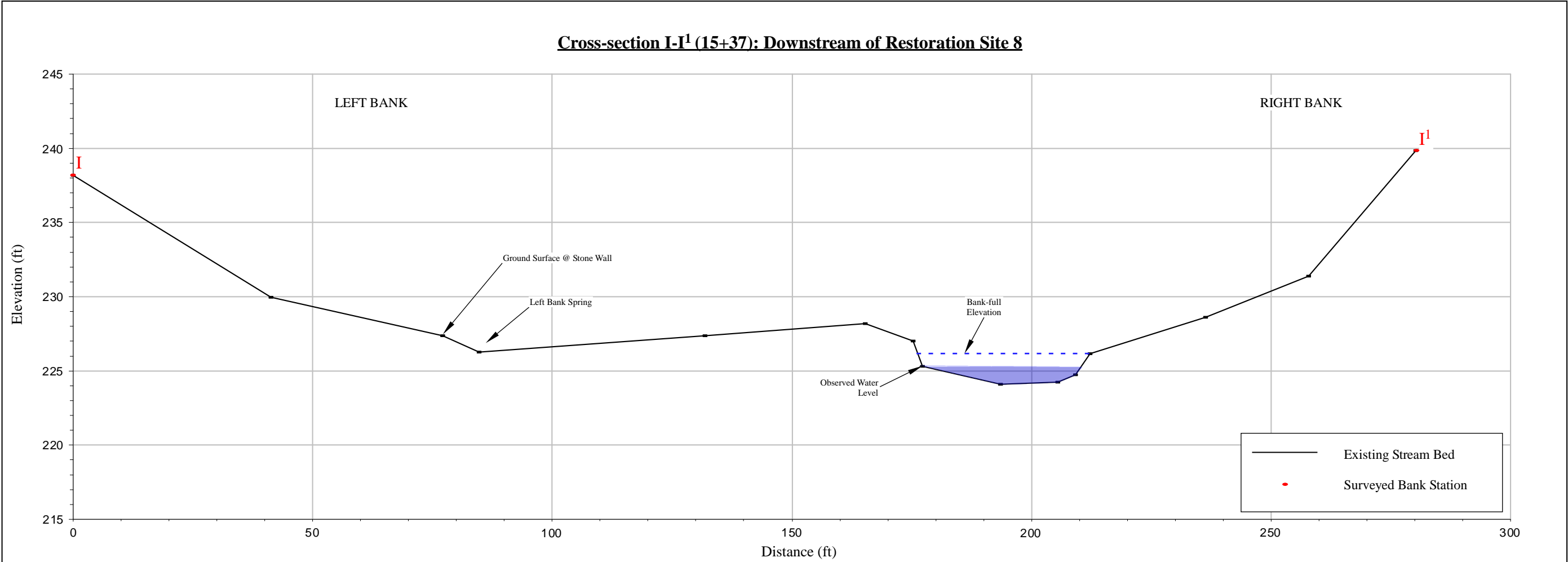
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**NORWALK RIVER
RESTORATION
CROSS-SECTIONS
I & J**

ENGINEER SEAL
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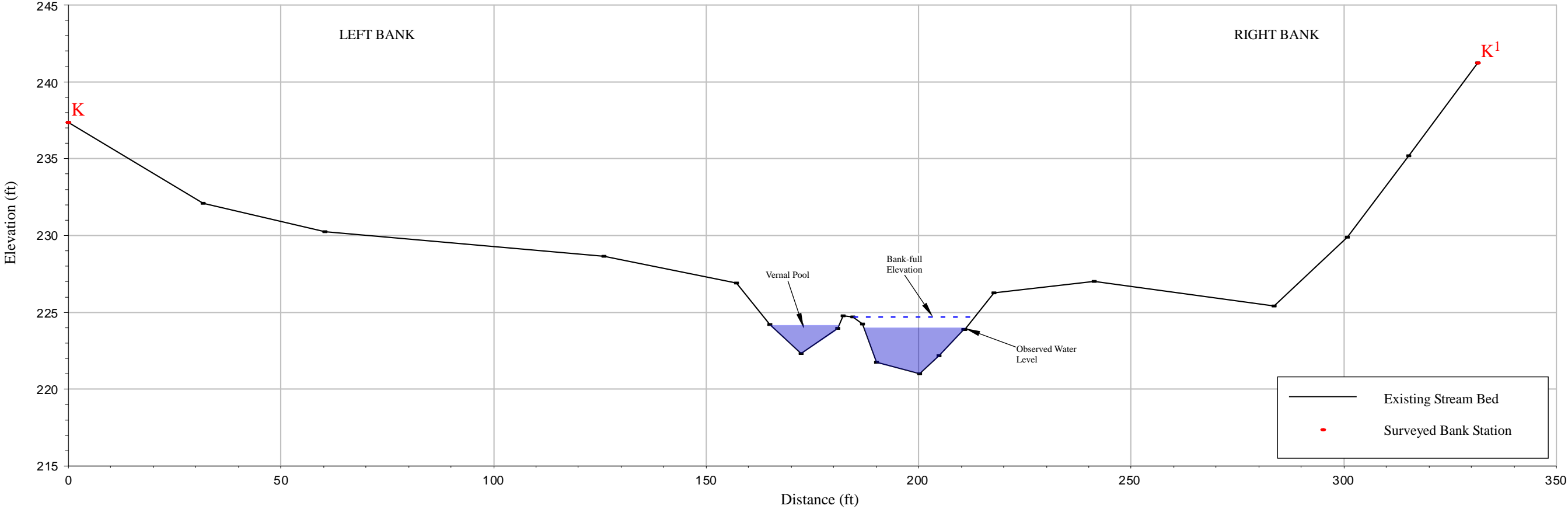
**NORWALK RIVER
RESTORATION
CROSS-SECTIONS
K & L**

ENGINEER SEAL
(WHEN APPLICABLE)

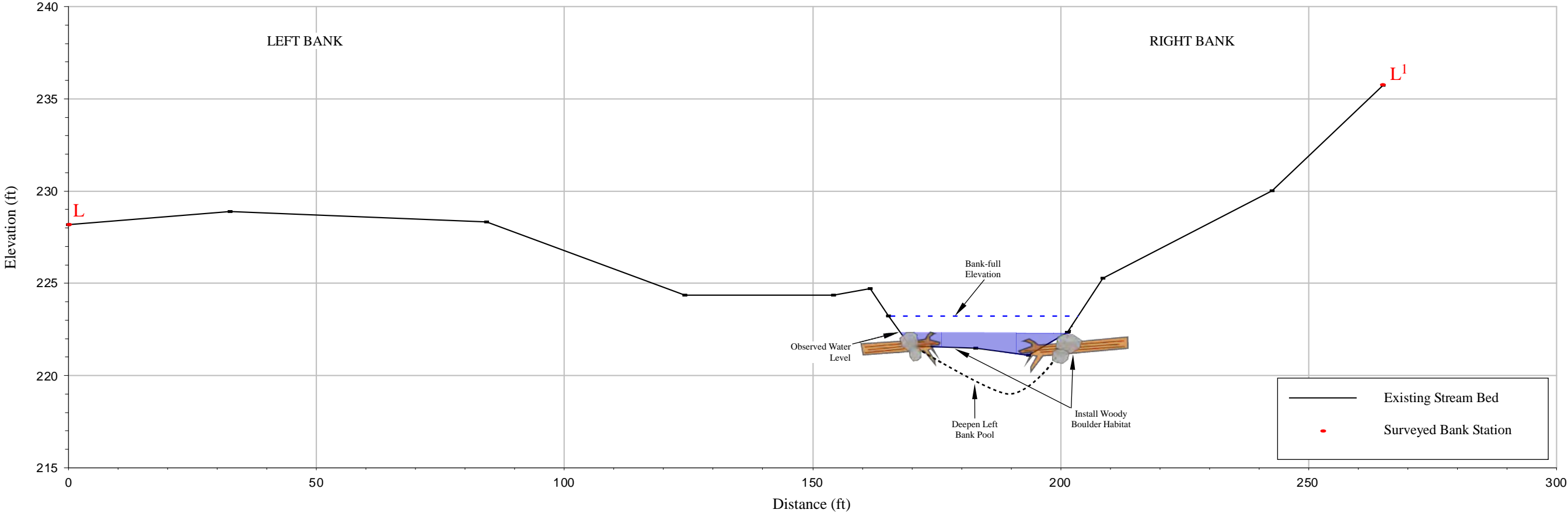
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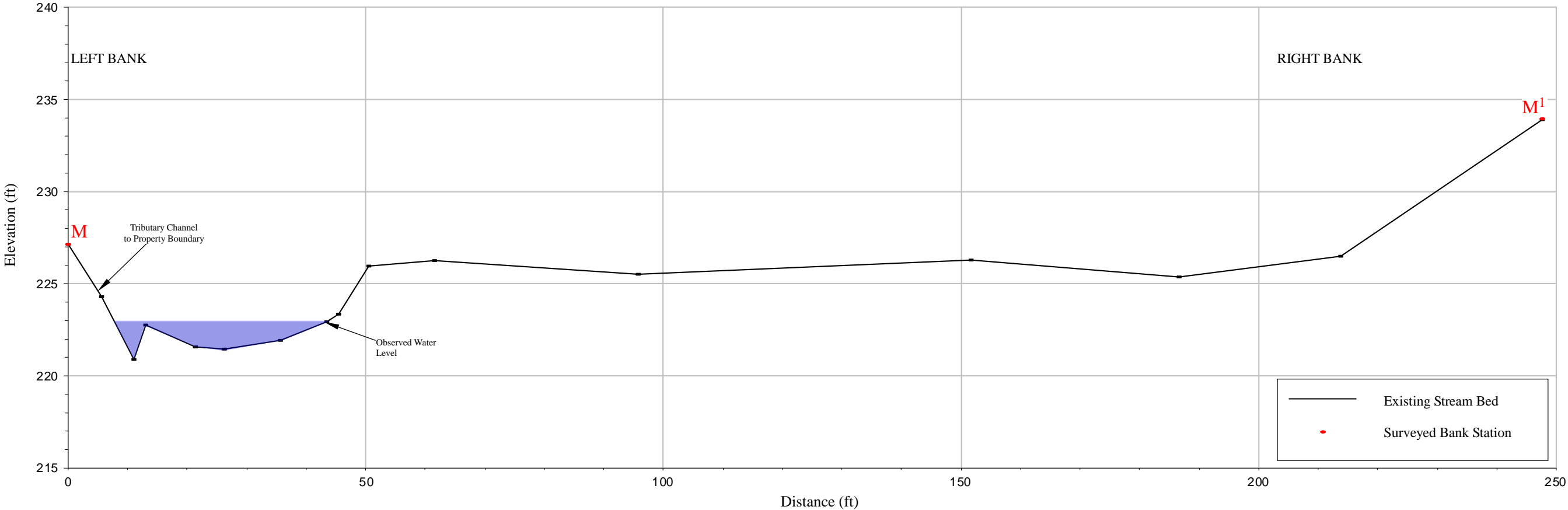
Cross-section K-K¹ (18+93): Left Bank Vernal Pool, Downstream of Restoration Site 11



Cross-section L-L¹ (23+40): Restoration Site 16



Cross-section M-M¹ (28+73): Downstream Restoration Reach





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RESTORATION
SEELEY ROAD REACH

Wilton
Fairfield County, Connecticut

NORWALK RIVER
RESTORATION
CROSS-SECTION M

ENGINEER SEAL
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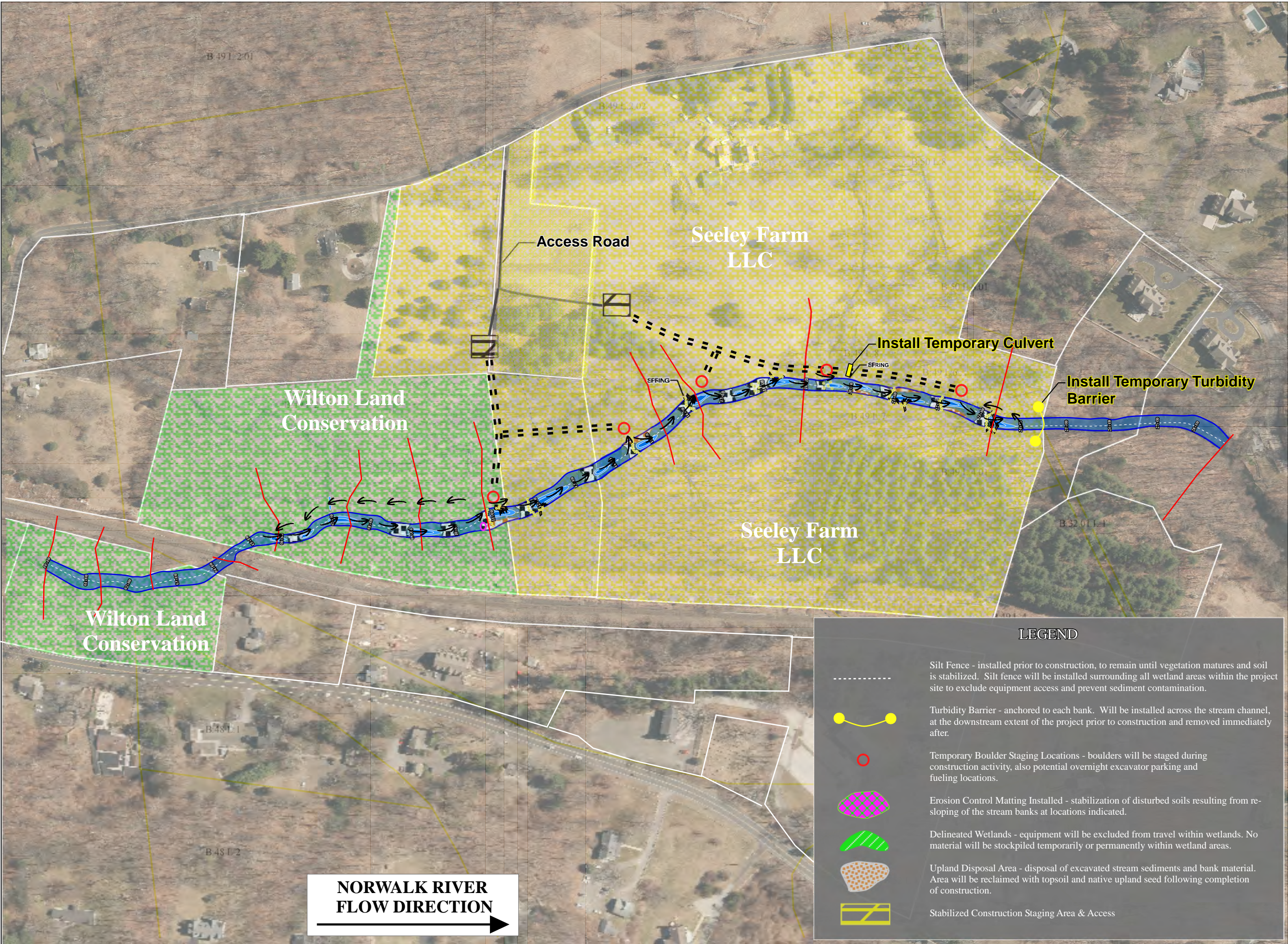
3. Property Boundaries Approximate, not Survey Accurate.

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16 of 22



**NORWALK RIVER
FLOW DIRECTION**





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**MIANUS CHAPTER
TROUT UNLIMITED**

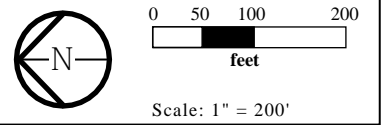
**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

**NORWALK RIVER
EROSION &
SEDIMENT
CONTROL PLAN**

ENGINEER SEAL
(WHEN APPLICABLE)

- NOTES**
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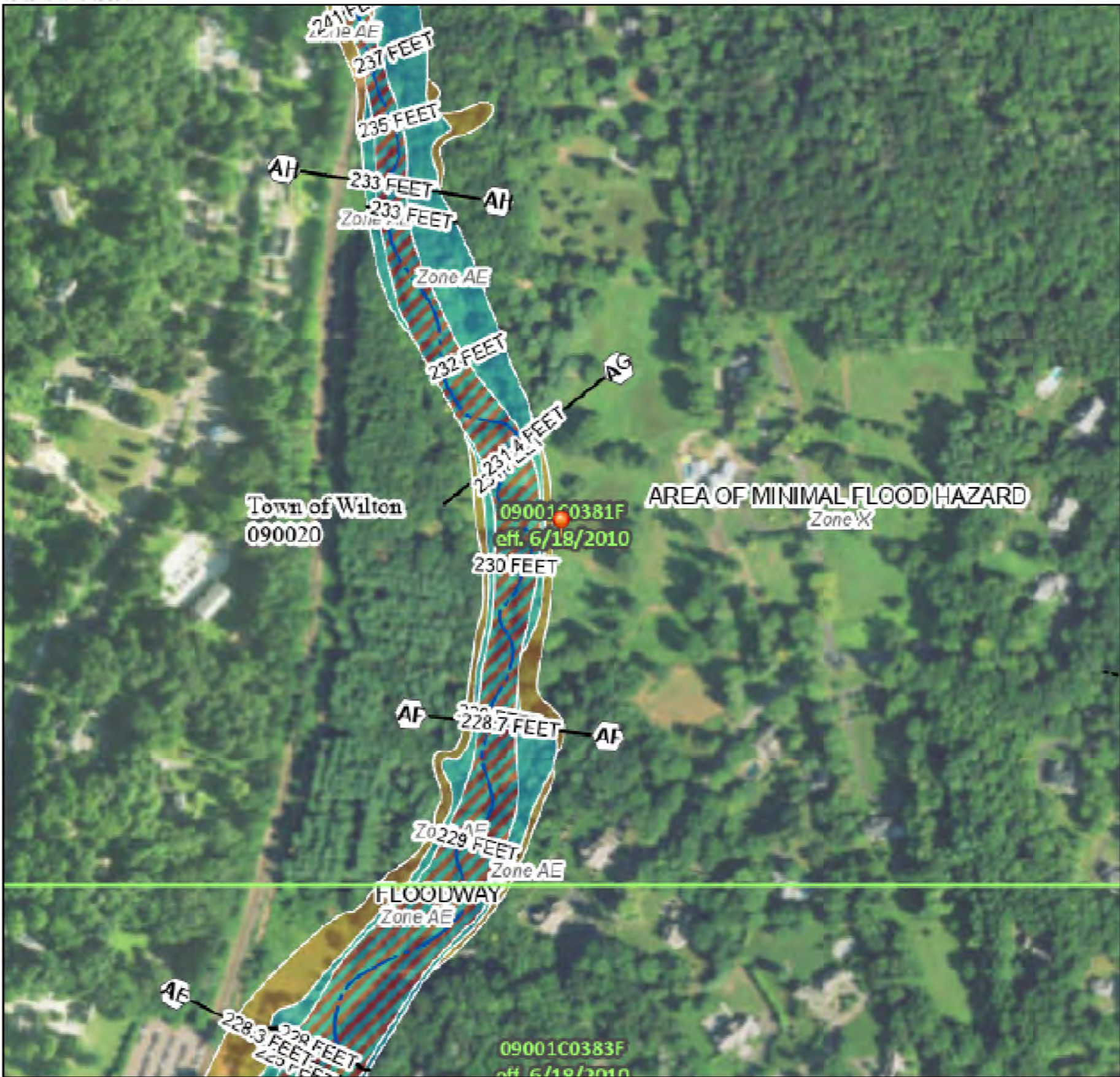


Drawn By: EW Checked By: BC

National Flood Hazard Layer FIRMette



73°25'41"W 41°13'30"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000
Basemap: USGS National Map; Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A33
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
OTHER FEATURES		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/17/2022 at 1:03 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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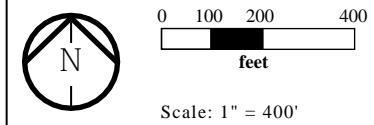
**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

**NORWALK RIVER
FEMA FLOODPLAIN
MAP**

ENGINEER SEAL
(WHEN APPLICABLE)

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Figure 4. Typical Cross-vane
Plan View

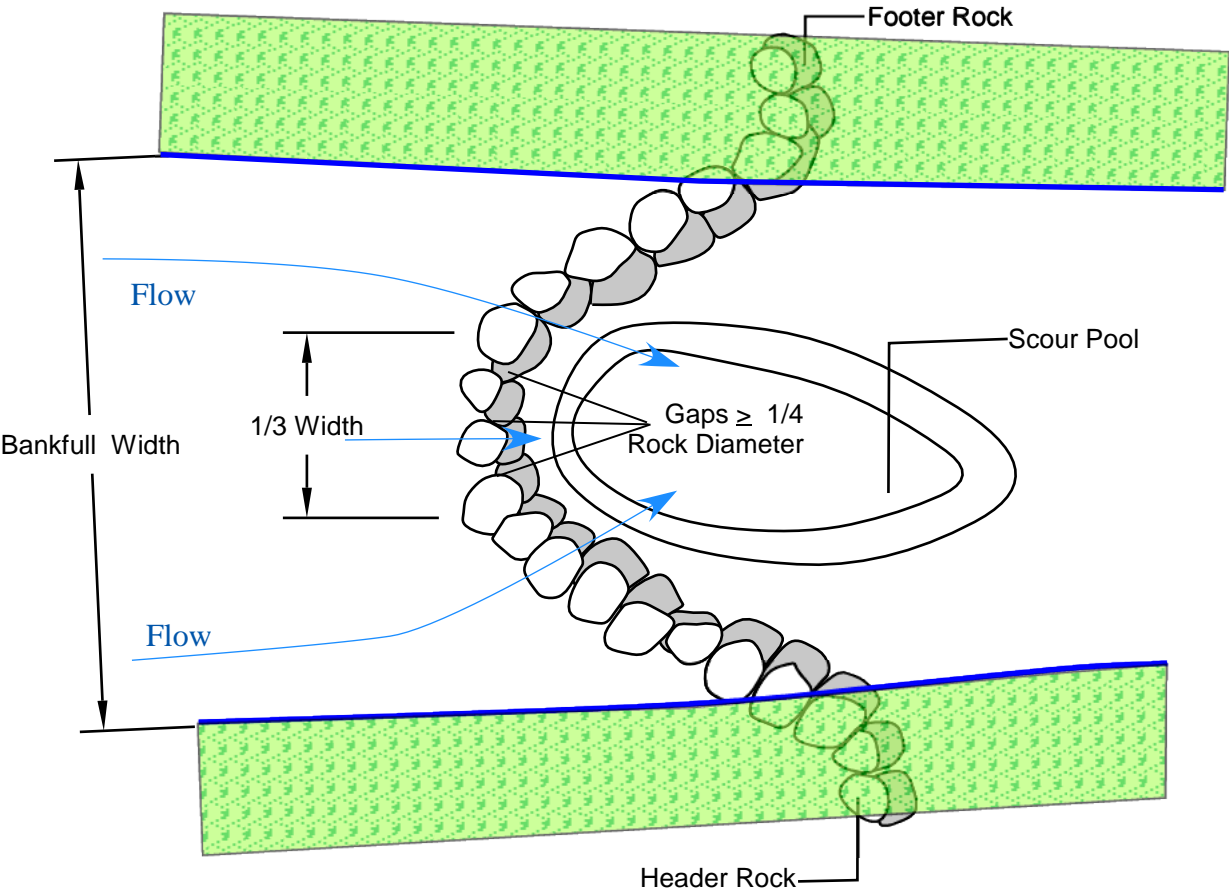
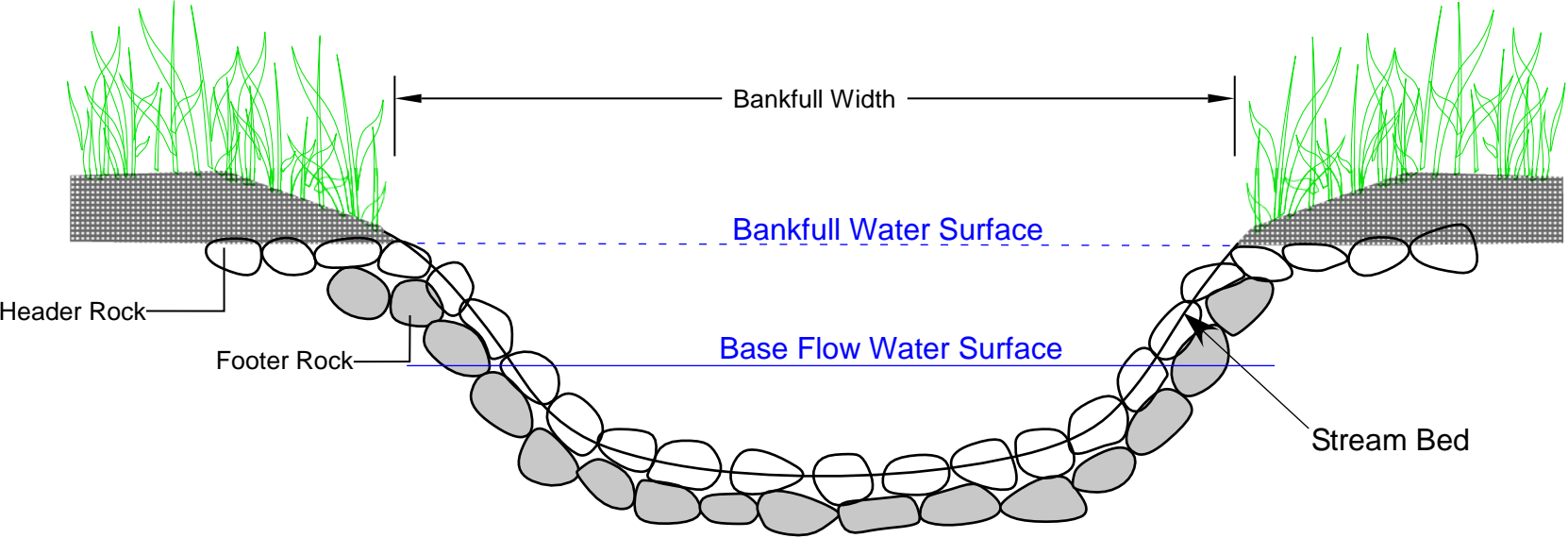


Figure 5. Typical Cross-vane
Cross-section View





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MIANUS CHAPTER
TROUT UNLIMITED

**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

Wilton
Fairfield County, Connecticut

**CROSS-VANE
DESIGN FIGURES**

ENGINEER SEAL
(WHEN APPLICABLE)

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Figure 6. Typical Rootwad Revetment
Plan View

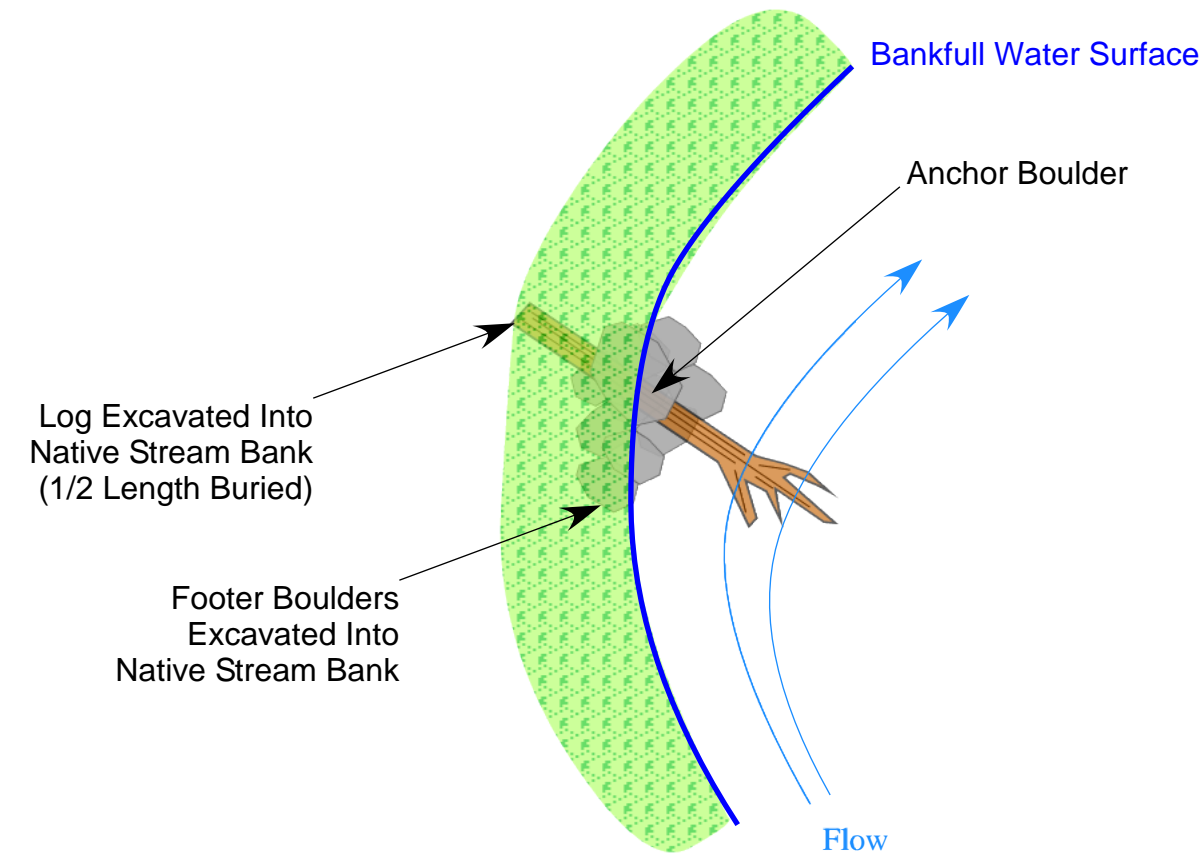
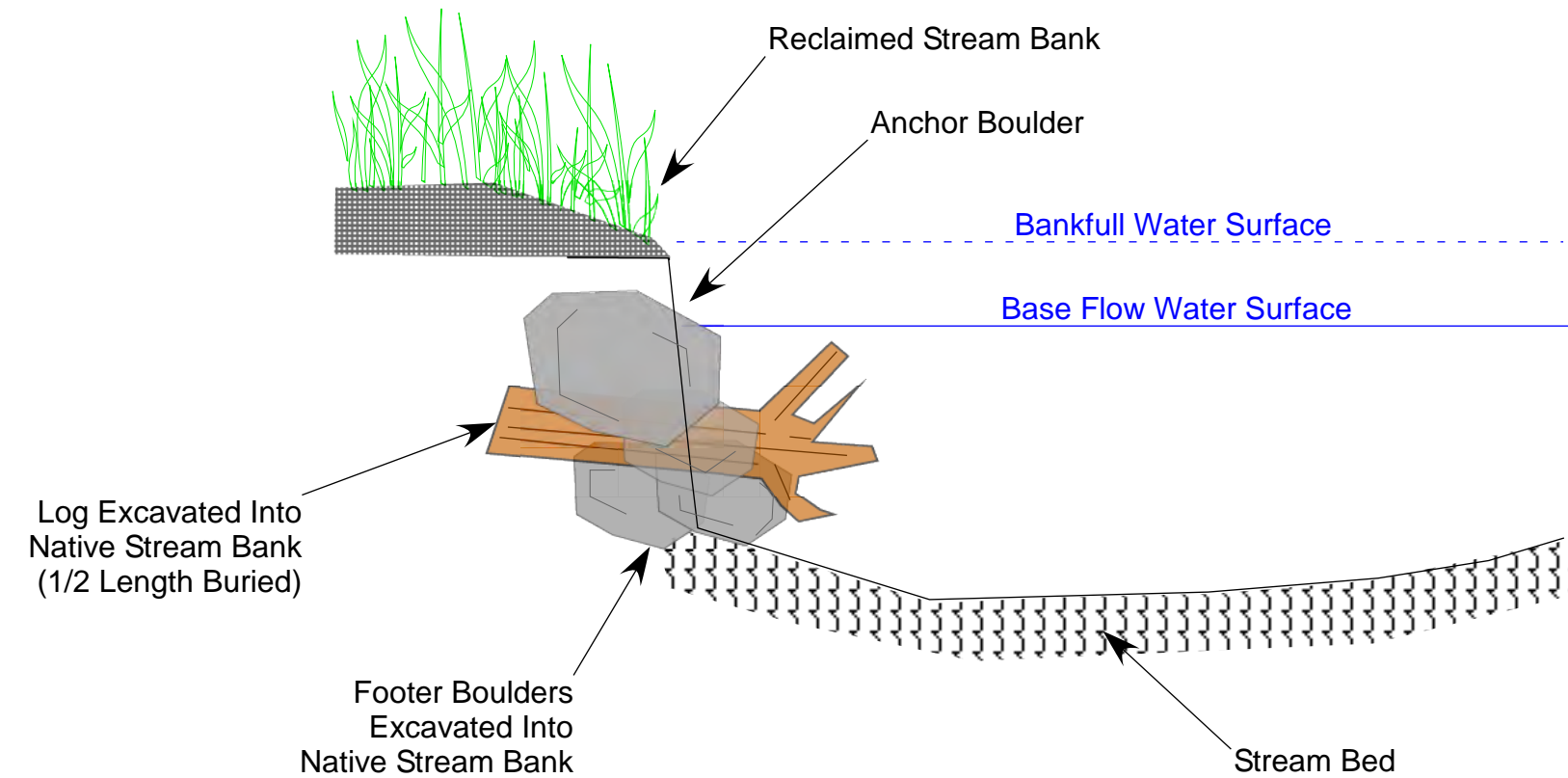


Figure 7. Typical Rootwad Revetment
Cross-section View



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MIANUS CHAPTER

TROUT UNLIMITED

NORWALK RIVER

RESTORATION

SEELEY ROAD REACH

Wilton

Fairfield County, Connecticut

ROOTWAD

REVETMENT DESIGN

FIGURES

ENGINEER SEAL
(WHEN APPLICABLE)

NOTES

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Drawn By: EW

Checked By: BC

SHEET:

20 of 22

Figure 8. Typical Pool Excavation
Plan View

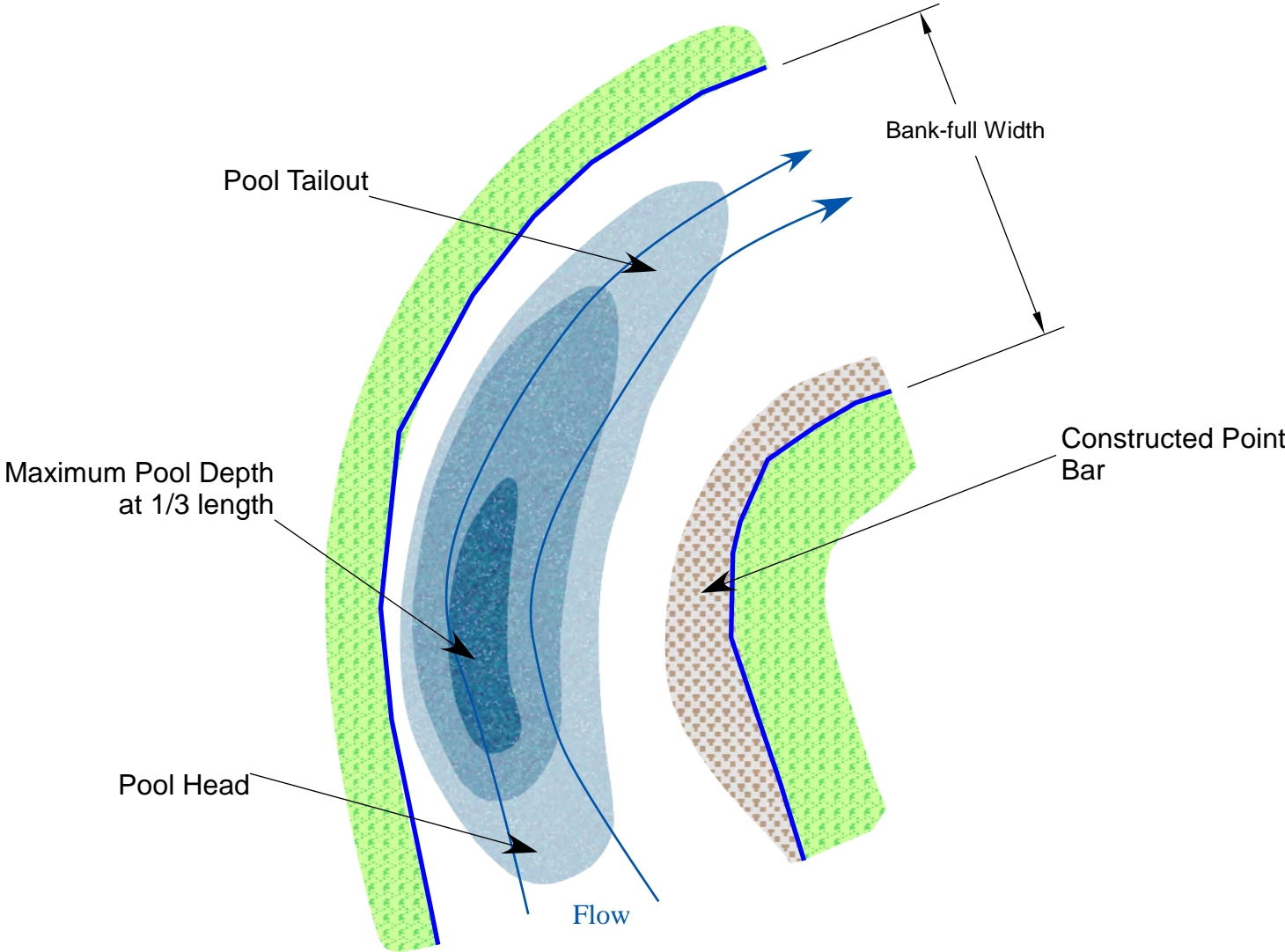
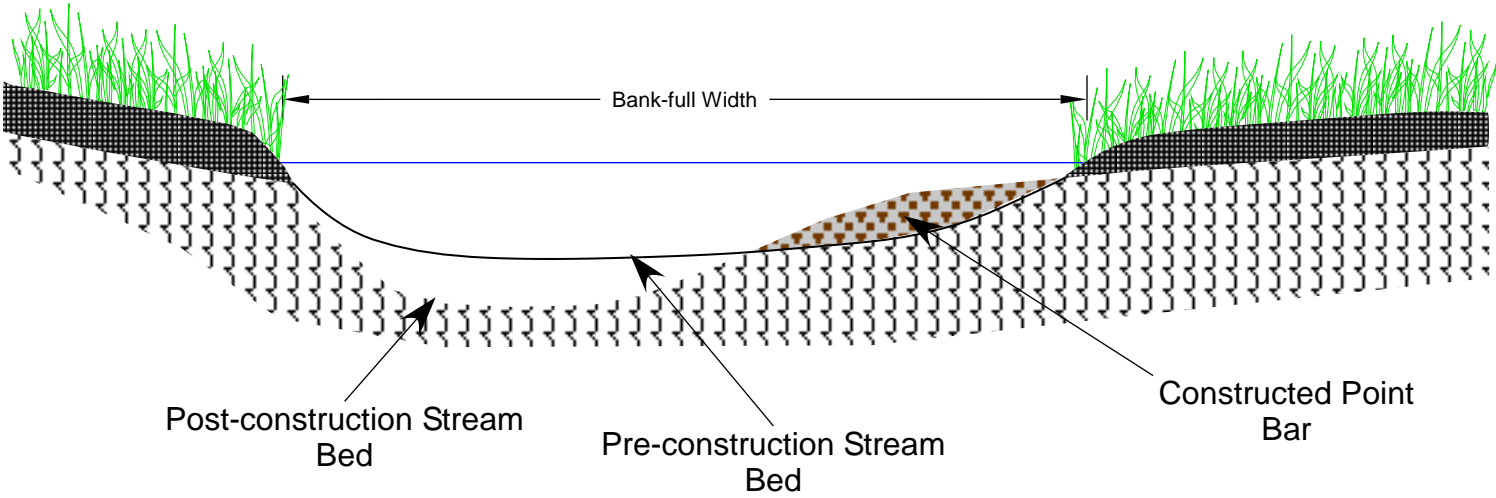


Figure 9. Typical Pool Excavation
Cross-section View





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MIANUS CHAPTER
TROUT UNLIMITED

**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

**Wilton
Fairfield County, Connecticut**

**POOL EXCAVATION
DESIGN FIGURES**

ENGINEER SEAL
(WHEN APPLICABLE)

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Norwalk River Restoration Enhancement Site Descriptions

Sixteen (16) restoration sites have been identified to improve stream channel habitat for trout and macroinvertebrates. Within the 1,850 linear foot Seeley Road reach of the Norwalk River sixteen potential pool sites have been chosen for proposed excavation or deepening. Site depending, the pools may be associated with the construction of point bars to narrow the channel’s profile; construction of boulder cross-vanes to aid in sediment transport and improve channel stability; as well as boulder and log habitat. All pool depths are relative to their respective elevations at the stream’s base flow.

REACH 1 (Fig. 1, Sheet 5):

Site 1 (05+48 – 06+01): Deepen center channel pool to maximum depth of 3 feet. Use excavated material to enhance pool’s tail-out/ downstream riffle.

- a) Designed Pool Dimensions: 10’ W X 38’ L
- b) Designed Riffle Enhancement: 230 sq ft

Site 2 (06+02 – 06+54): Excavate center channel pool to a maximum depth of 2 feet. Excavated material will be used to enhance upstream riffle, concentrating flow through excavated pool.

- a) Designed Pool Dimensions: 10’ W X 36’ L
- b) Designed Riffle Enhancement: 230 sq ft

Site 3 (06+87 – 07+93): Deepen left bank pool to a maximum depth of 3 feet. Excavated material will be installed in the tail-out to improve sediment transport through the site. Three (3) pools will be dug in the adjacent tributary, Mayapple Brook to provide seasonal trout habitat. The tributary pools will be excavated to a depth of 1-1.5 feet.

- a) Designed Pool Dimensions: 12’ W X 72’ L
- b) Designed Riffle Enhancement: 600 sq ft
- c) Mayapple Brook Pools (3) Dimensions: 5’ W X 12’ L

Site 4 (8+90 – 09+94): Deepen left bank pool to a maximum depth of 3 feet. Excavated material will be used to enhance pool’s tail-out/ downstream riffle

- a) Designed Pool Dimensions: 18’ W X 80’ L
- b) Designed Riffle Enhancement: 850 sq ft

Site 5 (10+86 – 11+55): Excavate left bank pool to a maximum depth of 3 feet. Remove ash tree obstruction (right bank) at the head of the site. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14’ W X 60’ L
- b) Designed Riffle Enhancement: 650 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 16 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 15 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 3 Logs and Attached Rootwads

REACH 2 (Fig. 2, Sheet 6):

Site 6 (11+59– 12+90): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into right bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14’ W X 80’ L
- b) Designed Riffle Enhancement: 980 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 16 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 10 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 2 Logs and Attached Rootwads

Site 7 (13+52 – 14+40): Deepen center channel pool to maximum depth of 3 feet. Use excavated material to enhance pool’s tail-out/ downstream riffle.

- a) Designed Pool Dimensions: 10’ W X 40’ L
- b) Designed Riffle Enhancement: 500 sq ft

Site 8 (14+41 – 15+23): Deepen right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a left bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14’ W X 60’ L
- b) Designed Point Bar Dimensions: 10’ W X 55’ L
- c) Designed Riffle Enhancement: 1,160 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- e) Quantity of 4-5 feet diameter Boulders for In-channel Habitat = 5 Boulders

Site 9 (15+81 – 16+80): Deepen left bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14’ W X 80’ L
- b) Designed Riffle Enhancement: 780 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 15 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 3 Logs and Attached Rootwads

Site 10 (17+21 – 17+57): Excavate center channel pool to a maximum depth of 3 feet. Excavated material will be used to enhance upstream riffle, concentrating flow through excavated pool.

- a) Designed Pool Dimensions: 12’ W X 30’ L
- b) Designed Riffle Enhancement: 280 sq ft

REACH 3 (Fig. 3, Sheet 7):

Site 11 (17+59 – 18+54): Deepen left bank pool to a maximum depth of 4 feet. Stabilize hardened crossing upstream of pool with imported boulders. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to stabilize upstream riffle.

- a) Designed Pool Dimensions: 16’ W X 60’ L
- b) Designed Riffle Enhancement: 1,310 sq ft
- c) Quantity of 3 feet diameter Boulders for Hardened Crossing = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 10 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 2 Logs and Attached Rootwads

Site 12 (19+31 – 19+95): Deepen center channel pool to a maximum depth of 3 feet. Install habitat boulders within the pool. Additionally, wood/boulder habitat will be installed into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and stabilize wood/boulder habitat.

- a) Designed Pool Dimensions: 14’ W X 40’ L
- b) Designed Riffle Enhancement: 370 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 0 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 20 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 2 Logs and Attached Rootwads

Site 13 (20+05 – 20+54): Excavate left bank pool to a maximum depth of 3 feet. Excavated material will be used to construct a right bank point bar to narrow channel profile, improving sediment transport.

- a) Designed Pool Dimensions: 16’ W X 50’ L
- b) Designed Point Bar Dimensions: 8’ W X 50’ L

Site 14 (20+67 – 21+69): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a left bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders. Install wood/boulder habitat into left bank, adjacent to pool.

- a) Designed Pool Dimensions: 16’ W X 80’ L
- b) Designed Point Bar Dimensions: 10’ W X 82’ L
- c) Designed Riffle Enhancement: 670 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- e) Quantity of 4-5 feet diameter Boulders for In-channel Habitat = 15 Boulders
- f) Quantity of 10-12 foot Logs with 24” Root Wad = 3 Logs and Attached Rootwads

Site 15 (21+86 – 22+62): Excavate left bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a right bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14’ W X 50’ L
- b) Designed Point Bar Dimensions: 10’ W X 62’ L
- c) Designed Riffle Enhancement: 660 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders

Site 16 (22+96– 23+90): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into right bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 16’ W X 60’ L
- b) Designed Riffle Enhancement: 970 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 20 Boulders
- e) Quantity of 10-12 foot Logs with 24” Root Wad = 4 Logs and Attached Rootwads

Table 1. Material Quantities							
Site #	Excavated Stream Bed Material (cubic yards)	Riffle Enhancement (square feet)	In-Channel Bar Construction (square feet)	Bank Length of Rootwad Revetement (linear feet)	Imported, Native Cross-Vane Boulders (3 feet diameter)	Imported, Native Habitat Boulders (4-5 feet diameter)	24" Rootwads w/ 10-12ft Trunk
Site 1	7	230	-	-	-	-	-
Site 2	5	230	-	-	-	-	-
Site 3	25	600	-	-	-	-	-
Site 4	28	850	-	-	-	-	-
Site 5	40	650	-	12	16	15	3
Site 6	50	980	-	10	16	10	2
Site 7	23	500	-	-	-	-	-
Site 8	38	1,160	580	-	20	5	-
Site 9	52	780	-	12	20	15	3
Site 10	15	280	-	-	-	-	-
Site 11	42	890	-	10	20*	10	2
Site 12	10	370	-	10	-	20	2
Site 13	18	-	400	-	-	-	-
Site 14	35	670	330	14	20	15	3
Site 15	30	660	350	-	20	-	-
Site 16	30	970	-	18	20	20	4
Totals	448	9820	1660	86	132	110	19
*Boulders to be used for hardened riffle							



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MIANUS CHAPTER
TROUT UNLIMITED

**NORWALK RIVER
RESTORATION
SEELEY ROAD REACH**

Wilton
Fairfield County, Connecticut

NORWALK RIVER
SITE DESCRIPTIONS
AND MATERIAL
QUANTITIES

ENGINEER SEAL
(WHEN APPLICABLE)

NOTES

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Drawn By: EW

Checked By: BC

Trout Scapes River Restoration LLC

We Dig Fish Habitat



April 26, 2023

**TROUT UNLIMITED
NORWALK RIVER RESTORATION
SEELEY ROAD REACH
Wilton
Fairfield County, CT**

Location

Start of Reach Lat/Long: 41°13'28.56"N, 73°25'28.54"W

Introduction

The Mianus Chapter of Trout Unlimited is proposing to enhance the trout and macroinvertebrate habitat within 1,850 linear feet of the Norwalk River stream channel. Located downstream of the Seeley Road bridge, the ownership of the proposed project reach is split between Wilton Land Conservation Trust and Seeley Farm. The reach is accessible to the public and contains very little low flow habitat, making it an impactful restoration project.



Picture 1. Railroad Bridge Upstream Project Reach; Nov 9, 2020

This reach of the Norwalk has substantial cold water input from its tributary Mayapple Brook on the WLCT property and two springs on the Seeley Farm property. There are few pools within this reach which would provide trout with cold water refuge during the low summer flows often experienced on the Norwalk River.

Objective

Contracted by Trout Unlimited, Trout Scapes River Restoration has identified sixteen (16) restoration sites for improvement which will improve the available habitat and stream bed stability within this reach of the Norwalk River. To increase the available habitat, sites indicated for pool excavation will be deepened and in most cases an imported boulder cross-vane will be installed at the head of the pools. The cross-vanes will function to stabilize the stream channel bed and direct flow through the pool to promote sediment transport through the project reach.

Trout Scapes River Restoration LLC

We Dig Fish Habitat



At sites with adequate bank stability and channel width, additional habitat may be installed to provide cover protection for resident trout. Underwater habitat will consist of log(s) with attached rootwads buried into the streambank. Imported native boulders will be used to anchor the log structures beneath base flow water surface.

Commented [BC1]: Imported native boulders

Disturbance to wetland areas adjacent to the project reach will be limited to temporary ground disturbance at the ingress and egresses of equipment relative to the stream channel.

Construction Sequence

1. Boulders and logs will be delivered to designated locations prior to equipment mobilization.
2. An across channel turbidity barrier will be installed prior to construction.
3. Working downstream, a wide tracked excavator will be used to install boulder cross-vane, excavate pools, construct bars and habitat structure. Where possible, construction will occur within the channel to minimize damage to stream bank and adjacent wetlands.
4. A rubber tracked skid steer will be used to transport boulders and logs from the staging locations to the work sites.
5. All disturbances will be reclaimed and reseeded with a native herbaceous seed mix as work sites are completed.
6. To access the downstream 500 linear feet of the project a temporary culvert or log crossing may need to be installed to protect the banks of the active tributary/stormwater drainage channel and banks.

Commented [BC2]: To

Commented [BC3]: With native herbaceous seed mix

Alternatives Considered

No Action – The unmodified channel will remain overly wide and shallow with few riffles and pools within the reach. Minimal habitat will exist for refuge and feeding.

Impacts

No wetlands will be impacted by the construction. All work is to be performed between the tops of the right and left banks. The proposed construction project will positively impact the quality and amount of habitat for trout and macroinvertebrates. The stream channel modifications will promote increased sediment transport through the reach and reduce bacteria through the increased oxygenation from the addition of riffle area. The excavation of pools adds holding water for fish and may result in additional input of groundwater, potentially mitigating high water temperatures through the summer.

Mitigation Measures

1. Work will be performed at low flow to reduce turbidity impacts downstream.
2. A turbidity barrier will be installed downstream (perpendicular to the flow) of the work area and removed following completion of the construction activities.

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Trout Scapes River Restoration LLC

We Dig Fish Habitat



3. All wetlands identified on the property will be flagged and avoided by vehicles and heavy equipment.
4. A temporary culvert or log crossing will be installed over tributary/stormwater drainage channel adjacent to 19+90, crossing will be removed and reclaimed immediately following completion of the project.
5. At locations disturbing the bank such as “keying” in boulders, sod will be saved to reclaim bank, securing all loose soils below the top of bank.
6. Boulder staging locations are located in the upland pasture, all onsite hauling will be done using a tracked skid steer.
7. Excavate ingress and egress of the stream channel will be minimized and limited to stable, low bank height locations. Any damage will be repaired to pre-construction condition immediately.

Plan Set

SHEET 1 of 22	COVER SHEET
SHEET 2 of 22	LOCATION MAP
SHEET 3 of 22	USGS TOPOGRAPHIC MAP
SHEET 4 of 22	SITE PLAN INDEX
SHEET 5 of 22	ACCESS & MATERIAL STAGING MAP
SHEET 6 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 1 SITE PLAN
SHEET 7 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 2 SITE PLAN
SHEET 8 of 22	NORWALK RIVER RESTORATION SEELEY ROAD REACH 3 SITE PLAN
SHEET 9 of 22	NORWALK RIVER CROSS-SECTION MAP
SHEET 10 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS A & B
SHEET 11 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS C & D
SHEET 12 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS E & F
SHEET 13 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS G & H
SHEET 14 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS I & J
SHEET 15 of 22	NORWALK RIVER RESTORATION CROSS-SECTIONS K & L
SHEET 16 of 22	NORWALK RIVER RESTORATION CROSS-SECTION M
SHEET 17 of 22	NORWALK RIVER EROSION & SEDIMENT CONTROL PLAN
SHEET 18 of 22	NORWALK RIVER FEMA FLOODPLAIN MAP
SHEET 19 of 22	CROSS-VANE DESIGN FIGURES
SHEET 20 of 22	ROOTWAD REVETMENT DESIGN FIGURES
SHEET 21 of 22	POOL EXCAVATION DESIGN FIGURES
SHEET 22 of 22	NORWALK RIVER RESTORATION PROJECT SPECIFICATIONS

Norwalk River Restoration Enhancement Site Descriptions

Sixteen (16) restoration sites have been identified to improve stream channel habitat for trout and macroinvertebrates. Within the 1,850 linear foot Seeley Road reach of the Norwalk River sixteen potential pool sites have been chosen for proposed excavation or deepening. Site depending, the pools may be associated with the construction of point bars to narrow the channel’s profile; construction of boulder cross-vanes to aid in sediment transport and improve channel stability; as well as boulder and log habitat. All pool depths are relative to their respective elevations at the stream’s base flow.



REACH 1 (Fig. 1, Sheet 5):

Site 1 (05+48 – 06+01): Deepen center channel pool to maximum depth of 3 feet. Use excavated material to enhance pool's tail-out/downstream riffle.

- a) Designed Pool Dimensions: 10' W X 38' L
- b) Designed Riffle Enhancement: 230 sq ft

Site 2 (06+02 – 06+54): Excavate center channel pool to a maximum depth of 2 feet. Excavated material will be used to enhance upstream riffle, concentrating flow through excavated pool.

- a) Designed Pool Dimensions: 10' W X 36' L
- b) Designed Riffle Enhancement: 230 sq ft

Site 3 (06+87 – 07+93): Deepen left bank pool to a maximum depth of 3 feet. Excavated material will be installed in the tail-out to improve sediment transport through the site. Three (3) pools will be dug in the adjacent tributary, Mayapple Brook to provide seasonal trout habitat. The tributary pools will be excavated to a depth of 1-1.5 feet.

- a) Designed Pool Dimensions: 12' W X 72' L
- b) Designed Riffle Enhancement: 600 sq ft
- c) Mayapple Brook Pools (3) Dimensions: 5' W X 12' L

Site 4 (8+90 – 09+94): Deepen left bank pool to a maximum depth of 3 feet. Excavated material will be used to enhance pool's tail-out/downstream riffle

- a) Designed Pool Dimensions: 18' W X 80' L
- b) Designed Riffle Enhancement: 850 sq ft

Site 5 (10+86 – 11+55): Excavate left bank pool to a maximum depth of 3 feet. Remove ash tree obstruction (right bank) at the head of the site. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14' W X 60' L
- b) Designed Riffle Enhancement: 650 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 16 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 15 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 3 Logs and Attached Rootwads

REACH 2 (Fig. 2, Sheet 6):

Site 6 (11+59– 12+90): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into right bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14' W X 80' L
- b) Designed Riffle Enhancement: 980 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 16 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 10 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 2 Logs and Attached Rootwads

Site 7 (13+52 – 14+40): Deepen center channel pool to maximum depth of 3 feet. Use excavated material to enhance pool's tail-out/downstream riffle.



- a) Designed Pool Dimensions: 10' W X 40' L
- b) Designed Riffle Enhancement: 500 sq ft

Site 8 (14+41 – 15+23): Deepen right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a left bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14' W X 60' L
- b) Designed Point Bar Dimensions: 10' W X 55' L
- c) Designed Riffle Enhancement: 1,160 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- e) Quantity of 4-5 feet diameter Boulders for In-channel Habitat = 5 Boulders

Site 9 (15+81 – 16+80): Deepen left bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14' W X 80' L
- b) Designed Riffle Enhancement: 780 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 15 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 3 Logs and Attached Rootwads

Site 10 (17+21 – 17+57): Excavate center channel pool to a maximum depth of 3 feet. Excavated material will be used to enhance upstream riffle, concentrating flow through excavated pool.

- a) Designed Pool Dimensions: 12' W X 30' L
- b) Designed Riffle Enhancement: 280 sq ft

REACH 3 (Fig. 3, Sheet 7):

Site 11 (17+59 – 18+54): Deepen left bank pool to a maximum depth of 4 feet. Stabilize hardened crossing upstream of pool with imported boulders. Install wood/boulder habitat into left bank, adjacent to pool. Excavated material will be used to stabilize upstream riffle.

- a) Designed Pool Dimensions: 16' W X 60' L
- b) Designed Riffle Enhancement: 1,310 sq ft
- c) Quantity of 3 feet diameter Boulders for Hardened Crossing = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 10 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 2 Logs and Attached Rootwads

Site 12 (19+31 – 19+95): Deepen center channel pool to a maximum depth of 3 feet. Install habitat boulders within the pool. Additionally, wood/boulder habitat will be installed into left bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and stabilize wood/boulder habitat.

- a) Designed Pool Dimensions: 14' W X 40' L
- b) Designed Riffle Enhancement: 370 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 0 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 20 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 2 Logs and Attached Rootwads

Site 13 (20+05 – 20+54): Excavate left bank pool to a maximum depth of 3 feet. Excavated material will be used to construct a right bank point bar to narrow channel profile, improving sediment transport.

- a) Designed Pool Dimensions: 16' W X 50' L

Trout Scapes River Restoration LLC

We Dig Fish Habitat



- b) Designed Point Bar Dimensions: 8' W X 50' L

Site 14 (20+67 – 21+69): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a left bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders. Install wood/boulder habitat into left bank, adjacent to pool.

- a) Designed Pool Dimensions: 16' W X 80' L
- b) Designed Point Bar Dimensions: 10' W X 82' L
- c) Designed Riffle Enhancement: 670 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- e) Quantity of 4-5 feet diameter Boulders for In-channel Habitat = 15 Boulders
- f) Quantity of 10-12 foot Logs with 24" Root Wad = 3 Logs and Attached Rootwads

Site 15 (21+86 – 22+62): Excavate left bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Excavated material will be used to construct a right bank point bar as well as enhance the upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 14' W X 50' L
- b) Designed Point Bar Dimensions: 10' W X 62' L
- c) Designed Riffle Enhancement: 660 sq ft
- d) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders

Site 16 (22+96– 23+90): Excavate right bank pool to a maximum depth of 4 feet. Install boulder cross-vane to stabilize the channel and direct flow through proposed pool. Install wood/boulder habitat into right bank, adjacent to pool. Excavated material will be used to enhance upstream riffle and fill interstitial spaces between cross-vane boulders.

- a) Designed Pool Dimensions: 16' W X 60' L
- b) Designed Riffle Enhancement: 970 sq ft
- c) Quantity of 3 feet diameter Boulders for Cross-vane = 20 Boulders
- d) Quantity of 4-5 feet diameter Boulders for Left Bank Wood/Boulder Habitat = 20 Boulders
- e) Quantity of 10-12 foot Logs with 24" Root Wad = 4 Logs and Attached Rootwads



Material Quantities

Table 1. Material Quantities

Site #	Excavated Stream Bed Material (cubic yards)	Riffle Enhancement (square feet)	In-Channel Bar Construction (square feet)	Bank Length of Rootwad Revetement (linear feet)	Imported, Native Cross-Vane Boulders (3 feet diameter)	Imported, Native Habitat Boulders (4-5 feet diameter)	24" Rootwads w/ 10-12ft Trunk
Site 1	7	230	-	-	-	-	-
Site 2	5	230	-	-	-	-	-
Site 3	25	600	-	-	-	-	-
Site 4	28	850	-	-	-	-	-
Site 5	40	650	-	12	16	15	3
Site 6	50	980	-	10	16	10	2
Site 7	23	500	-	-	-	-	-
Site 8	38	1,160	580	-	20	5	-
Site 9	52	780	-	12	20	15	3
Site 10	15	280	-	-	-	-	-
Site 11	42	890	-	10	20*	10	2
Site 12	10	370	-	10	-	20	2
Site 13	18	-	400	-	-	-	-
Site 14	35	670	330	14	20	15	3
Site 15	30	660	350	-	20	-	-
Site 16	30	970	-	18	20	20	4
Totals	448	9820	1660	86	132	110	19

Commented [BC4]: 24 inches?

*Boulders to be used for hardened riffle



Design Photographs



Picture 2. Site 1 Facing Downstream, Nov 10, 2020



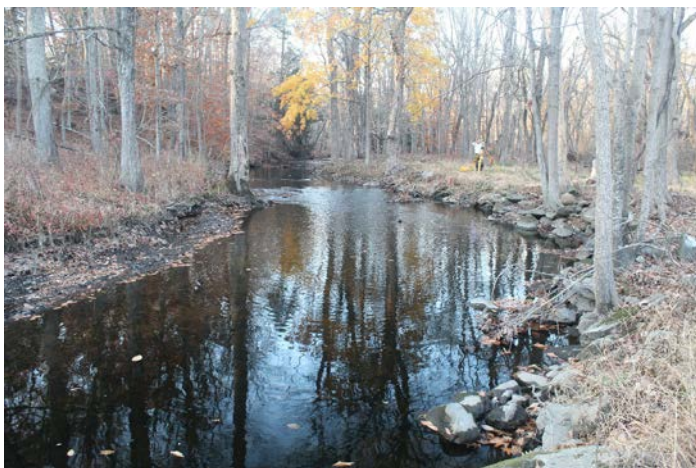
Picture 3. Site 3 Facing Upstream, Nov 10, 2020



Picture 4. Site 5 Facing Upstream; Nov 10, 2020



Picture 5. Site 8 Facing Upstream; Nov 10, 2020



Picture 6. Site 9 Facing Upstream, Nov 10, 2020



Picture 7. Site 11 Facing Upstream, Nov 10, 2020



November 25, 2022

Ref: 43144.00

Jeffrey Yates
Trout Unlimited Mianus Chapter
P.O. Box 475
Wilton, Connecticut 06897

Re: Wetland & Watercourse Delineation Report
Seely Road Reach of the Norwalk River
Seely Road, Wilton, Connecticut 06897

Dear Mr. Yates,

Vanasse Hangen Brustlin, Inc. (VHB) completed an on-site investigation to determine the presence or absence of wetlands and/or watercourses along ± 0.4 linear miles of the Seely Road Reach of the Norwalk River (Herein referred to as the Project site) in Wilton, Connecticut (Figure 1), as requested and authorized. This investigation involved a wetland resource delineation that was completed by a qualified soil scientist and conducted in accordance with the principles and practices noted in the United States Department of Agriculture (USDA) Soil Survey Manual (1993). The soil classification system of the National Cooperative Soil Survey was used in this investigation to identify the soil map units present in the Study Area. This report includes descriptions of site conditions, photographic documentation (Appendix A), and a Delineated Wetland and Watercourse Sketch (Figure 2) confirming the absence of resources within the Project Area.

INVESTIGATION

The Project site was investigated on Friday, October 28, 2022. The weather during the time of delineation was sunny, with a temperature of 59°F. Minimal rainfall occurred on October 25, 2022, but no additional rain events occurred within three business days of the delineation effort. VHB's delineation was completed in accordance with State of Connecticut Inland Wetlands and Watercourse regulations and the Corps of Engineers Wetlands Delineation Manual (January 1987) in conjunction with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) (Environmental Laboratory U.S. Army Corps of Engineers, January 2012). The Ordinary High Water Line (OHW Line) of perennial streams, if present, is delineated in accordance with the Connecticut Department of Transportation's Standard Operating Procedure (SOP) for Determining Ordinary High Water.



Soil types are identified by observing soil morphology (soil texture, color, structure, etc.). Soil morphology is evaluated through numerous test pits and/or hand borings (generally to a depth of at least two feet). If a wetland and/or watercourse were determined to be present, their boundaries are identified with flags and hung from vegetation or small wire stakes if in fields or grass communities. For wetlands, these flags are labeled “Wetland Delineation” and generally spaced a maximum of approximately 50 feet apart. For watercourses, these flags are blue and generally spaced a maximum of 50 feet apart. If the boundary between a wetland and a watercourse were found to be within 10 feet of each other, a single line is delineated. It is important to note that flagged wetland and watercourse boundaries are subject to change until verified by local, state, or federal regulatory agencies.

REGULATORY INFORMATION

Wetlands and watercourses are regulated by both state and federal law each with different definitions and regulatory requirements. Accordingly, the State may regulate waters that fall outside of federal jurisdiction; however, where federal jurisdiction exists concurrent State jurisdiction is almost always present.

State Regulation

Wetland determinations are based on the presence of poorly drained, very poorly drained, alluvial, or floodplain soils and submerged land. *Watercourses* are defined as “rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border upon the state or any portion thereof.” *Intermittent watercourse* determinations are made based on the presence of a defined permanent channel and bank, and two of the following characteristics: (1) evidence of scouring or deposits of recent alluvium or detritus, (2) the presence of standing or flowing water for a duration longer than a particular storm incident, and (3) the presence of hydrophytic vegetation. (See Inland Wetlands and Watercourses Act §22a-38 CGS.)

WETLAND AND WATERCOURSE SITE DESCRIPTION

As shown in Figure 2, the Project site is undeveloped and bisected by the Norwalk River which flows north to south. Primarily forested, an open field is present in the eastern portion of the site. No buildings are present onsite, but a minor footbridge spanning the Norwalk River is present in the southern portion of the site. The surrounding area consists of residential properties, continued forested areas, and a railroad right-of-way to the west. Topography onsite varies, with two steep slopes leading down to the Norwalk



River channel in the north, and a relatively flat grade in the southern portion of the site. Please refer to Appendix A for photographs of current conditions onsite.

Wetland classifications used to identify the type of wetland(s) identified within the Project site are based on guidance from the U.S. Fish and Wildlife Service (USFWS) (Cowardin et.al. 1979). These are further qualified with the Hydrogeomorphic Method of wetland classification (Brinson, 1993).

Wetland/Watercourse Description

Six depressional wetland areas were identified onsite during the October 2022 delineation effort. Four were palustrine, deciduous wetlands (USFWS: PFO6), and two were palustrine scrub-shrub deciduous wetlands. The Ordinary High Water Line of the portions of the Norwalk River and the Mayapple Brook present onsite were also delineated.

Wetland Nos. 1, 2, 3 and 5

These four wetlands are located within forested portions of the Project site, dominated by canopy trees and saplings, with minimal shrubs present on the forest floor. Wetland 1 is located at the toe of the slope in the center of the site, to the east of the Norwalk River. Wetland 2 is a depressional wetland located adjacent to both the main channel of the Norwalk River, an intermittent stream, and the main channel of the Mayapple Brook, in the northern portion of the site. Wetlands 3 and 5 are depressional wetlands located to the east of the Norwalk River, with small upland humucs separating the wetland from the main stream channels.

Standing water and heavily saturated and poorly drained soils are present in each of the wetlands, with soils displaying redoximorphic conditions starting between ± 6 -11 inches below the ground surface. An intermittent stream connects Wetland 1 to the main channel of the Norwalk River, and Wetland 2 is situated between three stream channels, the Norwalk River, an intermittent stream, and the main Mayapple Brook channel. All three wetlands are surrounded by forested uplands dominated by mature canopy trees and saplings. Shrubs are present, but herbaceous cover and vines are largely absent, except for common grasses, common rush (*Juncus effusus*), and tussock sedge (*Carex stricta*).

Wetland Nos. 4 and 6

Wetland 4 is an onsite pond located adjacent to the Norwalk River. No connecting culvert pipe was observed, and there was no flow pattern present within the ± 8 -12-inch-deep pond waters. No emergent or aquatic vegetation was observed during the October 2022 delineation effort, and surrounding vegetation was limited to upland grasses and minor saplings including an ironwood (*Ostrya virginiana*) sapling.

Wetland 6 is located in an open field, adjacent to an intermittent stream that flows into the Norwalk River. This wetland is dominated by herbaceous vegetation present within ± 2 -4 inches of standing water throughout the wetland. Soils within Wetland 1 are heavily saturated, with redoximorphic characteristics observed starting at ± 6 inches below the ground surface.



Ordinary High Water Line of the Norwalk River and Mayapple Brook

The Norwalk River is a perennial river located in southwestern Connecticut that drains into the Long Island Sound, and ultimately the Atlantic Ocean. Within the Project site, the river flows from north to south and is ± 20 -40 feet wide. To the west of Wetland 1, the river channel flows through a small valley that is bound by two steep slopes in the northern portion of the site, and a steep slope to the west and an open field to the east in the southern portion of the site. In the north and south, the river is heavily forested on both banks, with deciduous mature canopy trees and dense shrubs covering the top of bank below. In the central portion of the site a small wood footbridge spans the channel, and vegetation is dominated by maintained grasses.

Mayapple Brook is also a perennial stream that converges with the Norwalk River in the northern portion of the site. The brook begins $\pm 4,500$ feet to the northeast of the Project site, and ranges from ± 4 -10 feet wide. An intermittent tributary of the Mayapple Brook is also located onsite, to the north of the main channel and Wetland 2. Both channels are located within forested portions of the site and supported minimal water flow during the time of the October 2022 delineation effort.

Physical indicators present that were used to determine and delineate the location of the OHW Line of the Norwalk River and Mayapple Brook include:

- Natural line impressed on the bank
- Shelving
- Destruction of terrestrial vegetation
- Presence of litter and debris
- Presence of a wrack line
- Vegetation matted down, bent, or absent
- Leaf litter disturbed or washed away
- Exposed root systems

Dominant Vegetation

Dominant observed vegetation species present throughout the Project site include red maple (*Acer rubrum*), (*Berberis thunbergia*), swamp white oak (*Quercus bicolor*), lowbush blueberry (*Vaccinium angustifolium*), Sweet Birch (*Betula lenta*) and lowbush blueberry (*Vaccinium corymbosum*). Additional vegetation located within uplands and wetlands identified within the Project site is presented in Table 1 below.

TABLE 1: Dominant Vegetation Within the Project site

TREES & SAPLINGS				
Scientific	Common	Indicator	Upland	Wetland
<i>Acer rubrum</i>	Red maple	FAC	X	X



<i>Betula nigra</i>	River birch	FACW	-	X
<i>Fagus grandifolia</i>	American beech	FACU	X	-
<i>Ostrya virginiana</i>	Ironwood	FACU	X	-
<i>Prunus virginiana</i>	Common chokeberry	FACU	X	-
<i>Quercus bicolor</i>	Swamp white oak	FACW	-	X
SHRUBS				
Scientific	Common	Indicator	Upland	Wetland
<i>Berberis thunbergia</i>	Japanese barberry	FACU	X	-
<i>Clethra alnifolia</i>	Sweet pepperbush	FAC	X	X
<i>Vaccinium angustifolium</i>	Lowbush blueberry	FACU	X	-
HERBS & VINES				
Scientific	Common	Indicator	Upland	Wetland
<i>Asclepias syriaca</i>	Common milkweed	UPL	X	-
<i>Carex lupuliformis</i>	Hop sedge	OBL	-	X
<i>Carex stricta</i>	Tussock sedge	OBL	-	X
<i>Glyceria striata</i>	Fowl Mannagrass	OBL	-	X
<i>Juncus effusus</i>	Common rush	OBL	-	X

*Denotes State non-native invasive species

OBL-Obligate wetland species (99% or more occurring in wetlands)

FACW-Facultative wetland species (67%-99% occurring in wetlands)

FAC- Facultative species (34% -66% occurring in both wetlands and uplands)

FACU-Facultative upland plants (1%-33% occurring in wetlands)

UPL- Obligate Upland species (<1% occurring in wetlands)

NI- No Indicator

SOIL MAP TYPES

A brief description of each soil unit mapped and/or identified in the Study Area is presented below including information from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil descriptions. For further information on these and other soils, please refer to the internet site at <http://soils.usda.gov/technical/classification/osd/index.html>.

Wetland Soils

(103) Rippowam Soils

The Rippowam series consists of very deep, poorly drained loamy soils formed in alluvial sediments. They are nearly level soils on flood plains subject to frequent flooding. Saturated hydraulic conductivity ranges from moderately high or high in the loamy upper part and high or very high in the underlying sandy materials. Rippowam soils are nearly level soils on flood plains along rivers and streams. They are in low areas. Slope ranges from 0 to 3 percent. The soils formed in recent alluvium are derived mostly from granite, gneiss, and schist.



Upland Soils

(38C) Hinkley loamy sands

The Hinkley series consists of very deep, excessively drained soils formed in glaciofluvial materials. They are nearly level through very steep soils on outwash terraces, outwash plains, outwash deltas, kames, kame terraces, and eskers. Saturated hydraulic conductivity is high or very high. Hinkley soils are nearly level through very steep soils on outwash terraces, outwash plains, outwash deltas, kames, kame terraces, and eskers. Slope is generally 0 through 8 percent on tops of the terraces, outwash plains and deltas. Slope of 8 through 60 percent or more are on the kames, eskers and margins of the outwash plains, deltas, and terraces. The soils formed in glaciofluvial sand and gravel derived principally from granite, gneiss, and schist.

REFERENCES

1. Brinson, M.M. 1993. *A Hydrogeomorphic Classification for Wetlands*. Tech. Rpt.WRP-DE-4, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
2. Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe, 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Fish and Wildlife Service. Washington, D.C. FWS/OBS-79/31.
3. United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil descriptions. Internet site:
<http://soils.usda.gov/technical/classification/osd/index.html>.

CLOSING

Thank you for the opportunity to work with you on this Project. Please contact Jeffrey Shamas at 860-807-4388 if you have any questions or require additional assistance.

Sincerely,
Vanasse Hangen Brustlin, Inc.

A handwritten signature in blue ink, appearing to read "A. Loss".

Anna R. Loss
Environmental Scientist
ALoss@vhb.com

A handwritten signature in black ink, appearing to read "J. Shamas".

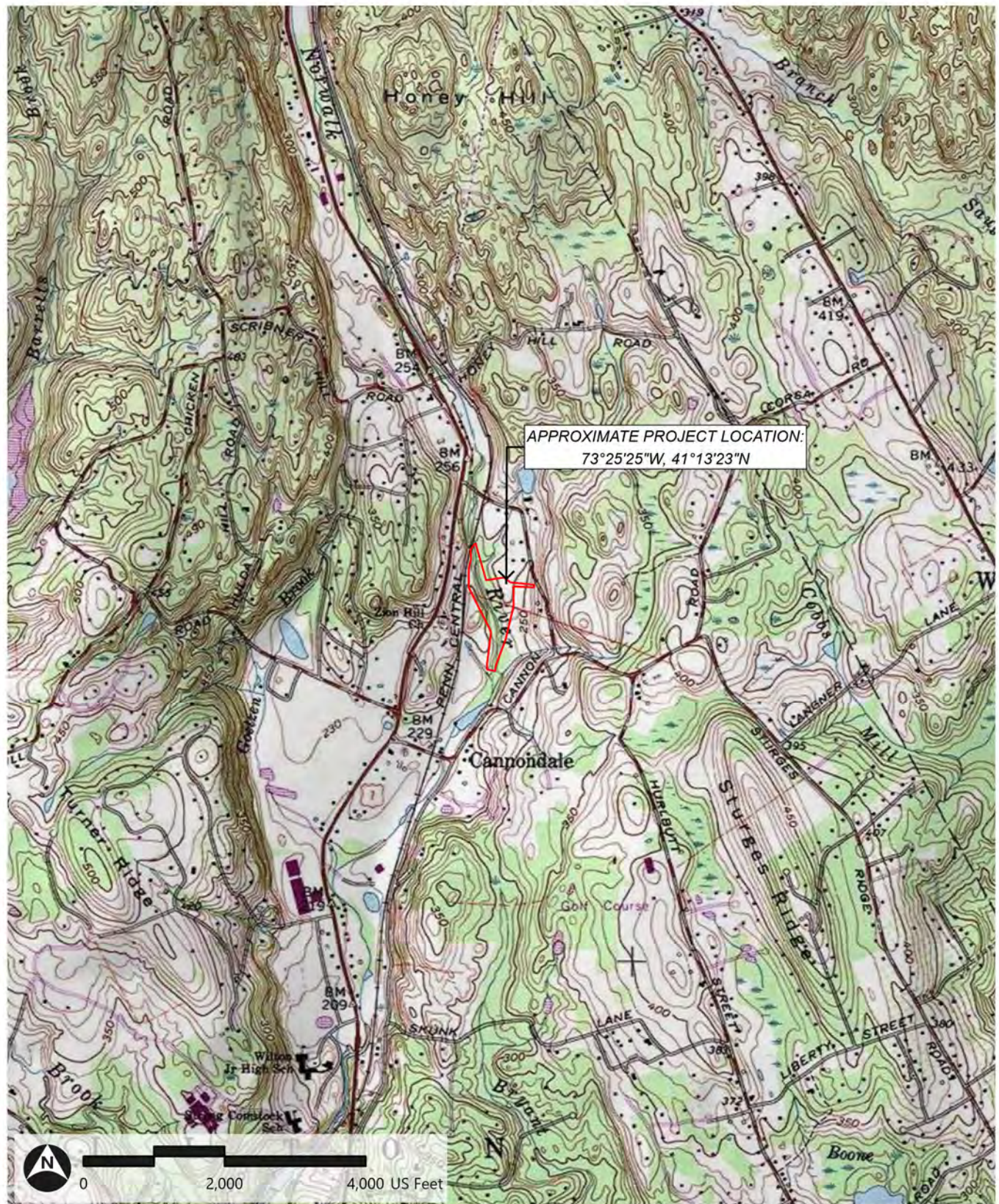
Jeffrey R. Shamas, CE, CSS, ENV SP, SPWS
Director, Energy & Natural Sciences
Jshamas@vhb.com

Attachments:

- Figure 1 – USGS Site Location Map
- Figure 2 – Wetland and Watercourse Delineation Map
- Appendix A – Site Photograph Log

Figure 1: USGS Site Location Map

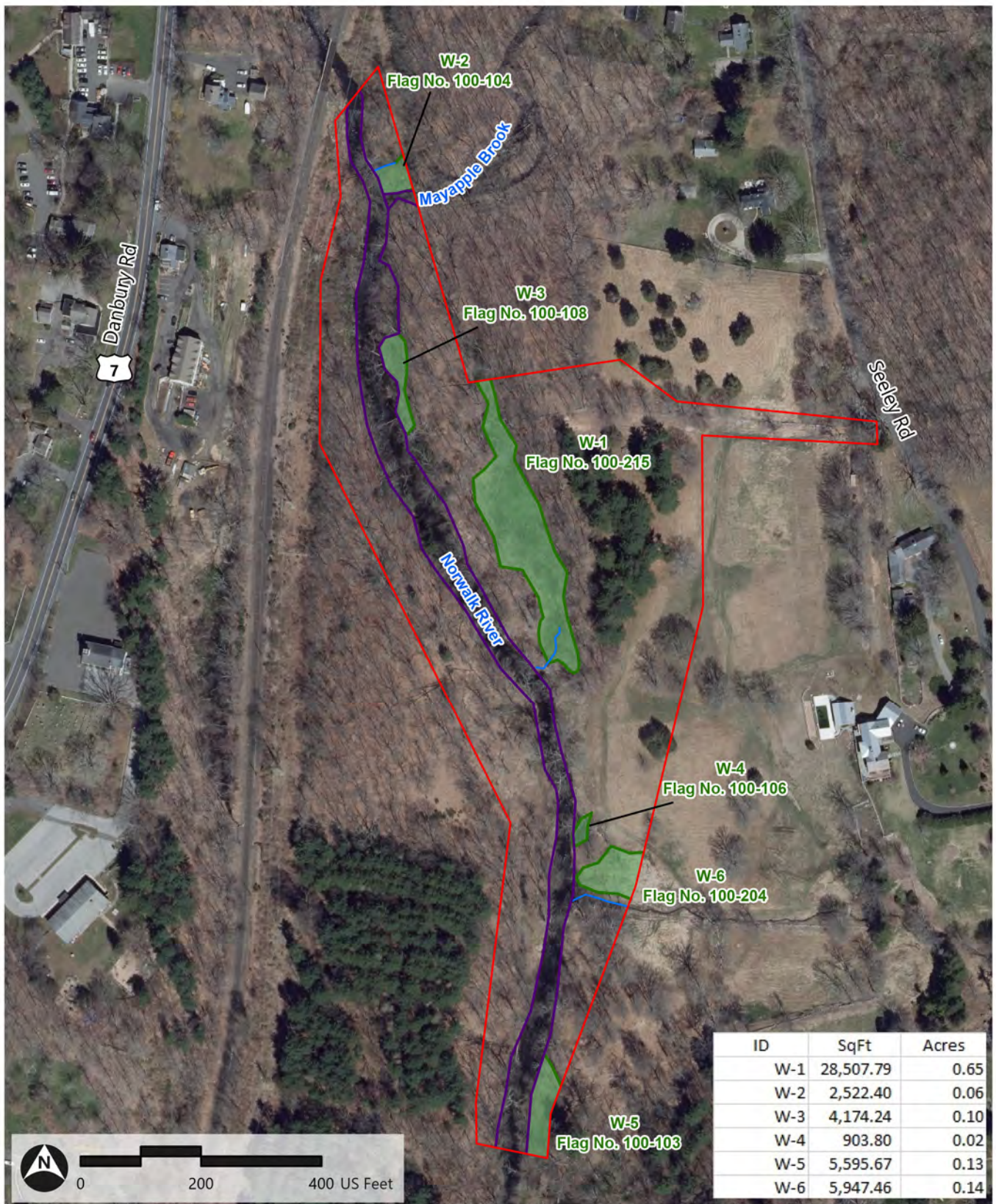
Trout Unlimited Project | Seeley Rd, Wilton CT



 Project Study Area

Figure 2: Wetland and Watercourse Delineation Sketch

Trout Unlimited Project | Seeley Rd, Wilton CT



Project Study Area

Delineated Stream Centerline

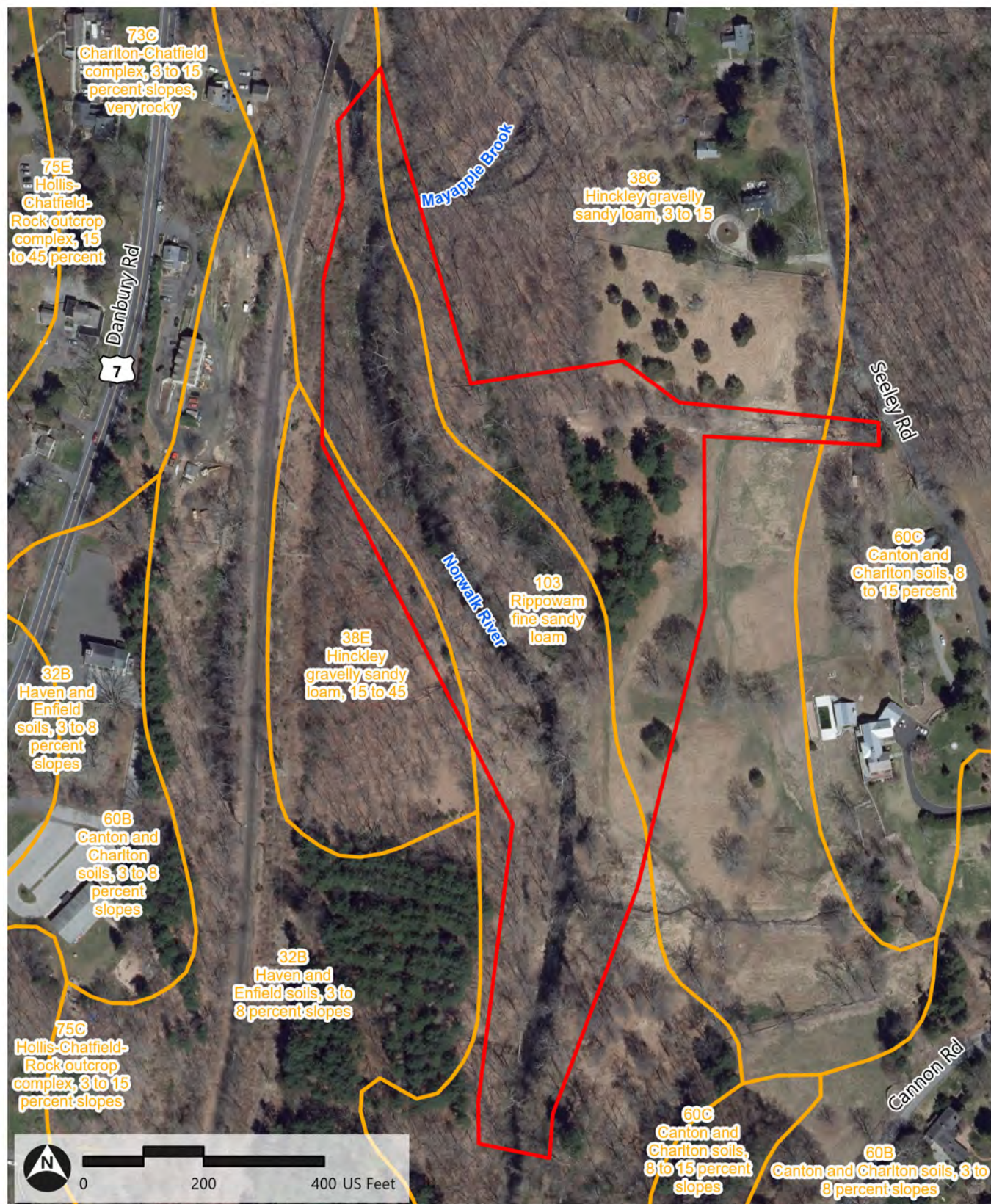
Delineated Ordinary High Water

Delineated Wetland Edge

Delineated Wetland Area

Figure 3: NRCS Soils Map

Trout Unlimited Project | Seeley Rd, Wilton CT

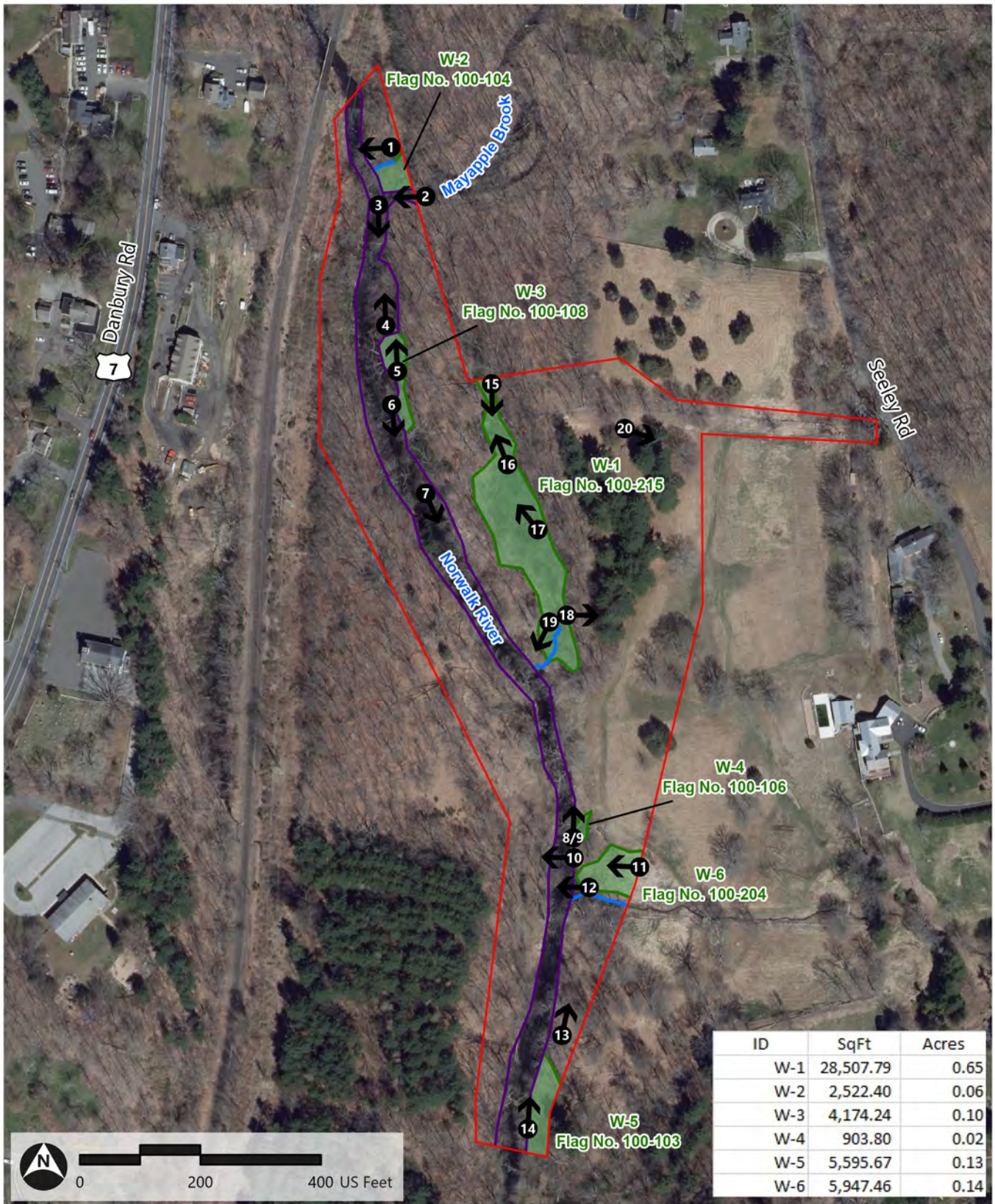


Project Study Area NRCS Soils Boundary

Path: \\vhb.com\gis\proj\Wethersfield\43144.00\Project\Trout Seeley Rd Delineation.aprx (srao, 11/16/2022)

Figure 1: Photograph Log Map

Trout Unlimited Project | Seeley Rd, Wilton CT



Project Study Area


Photo Points



Delineated Wetland Edge



Delineated Wetland Area



Delineated Stream Centerline

Delineated Ordinary High Water



 vhb Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 1	Date: 10/28/2022		
Description: Facing west, a view of Wetland 2 along the Norwalk River and Mayapple Brook channels. Ponding water is present.			



 vhb Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 2	Date: 10/28/2022		
Description: Facing west, a view of a Mayapple Brook intermittent tributary channel. Heavy leaf cover is present, but water and a well-defined channel are visible.			


 vhb Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 3	Date: 10/28/2022		
Description: Facing south, a view of the Norwalk River channel. A well-defined channel is present, with shelving present on the opposite side of the river.			



 vhb Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 4	Date: 10/28/2022		
Description: Facing north, a view of the Norwalk River's ordinary high water line.			


 Engineers Scientists Planners Designers		<h2 style="text-align: center;">PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 5	Date: 10/28/2022		
Description: Facing north, a view of Wetland 3. These fringe wetlands are within a topographic depression adjacent to the main river channel.			



 Engineers Scientists Planners Designers		<h2 style="text-align: center;">PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 7	Date: 10/28/2022		
Description: Facing south, a view of the Norwalk River channel and banks. A steep slope is present at this location.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 8	Date: 10/28/2022		
Description: Facing north, a view of the depressional Wetland 4.			


 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 9	Date: 10/28/2022		
Description: Facing north, a view of Wetland 4 on the right, and the main channel of the Norwalk River on the left.			



 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 10	Date: 10/28/2022		
Description: Facing west, a view of the onsite footbridge that crosses the Norwalk River.			



 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 11	Date: 10/28/2022		
Description: Facing west, a view of the open field Wetland 6. Poorly drained soils were heavily saturated and hydrophytic herbaceous vegetation was present. The footbridge can be seen in the background of the picture.			

 Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	Project No: 43144.00
Photo No.: 12	Date: 10/28/2022		
Description: Facing west, a view of an intermittent stream's confluence with the Norwalk River channel. Water, hydrophytic vegetation and well-defined banks are present.			

 Engineers Scientists Planners Designers		PHOTOGRAPHIC LOG	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	Project No: 43144.00
Photo No.: 13	Date: 10/28/2022		
Description: Facing north, a view of uplands adjacent to the Norwalk River.			



 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 14	Date: 10/28/2022		
Description: Facing north, a view of the ordinary high water line. This portion of the channel was rocky in comparison to the remainder of the channel.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 15	Date: 10/28/2022		
Description: Facing south, a view of the depressional Wetland 1. A steep slope is present to the left of the wetland.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 16	Date: 10/28/2022		
Description: Facing north, a view of Wetland 1. Standing water is present, ranging from 1-4 inches deep.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 18	Date: 10/28/2022		
Description: Facing east, a view of a stone wall and uplands adjacent to Wetland 1.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 19	Date: 10/28/2022		
Description: Facing east, a view of an intermittent tributary that merges with Wetland 1.			

 Engineers Scientists Planners Designers		<h2>PHOTOGRAPHIC LOG</h2>	
Client Name: Trout Unlimited Mianus Chapter		Site Location: Wilton, CT	
Project No: 43144.00			
Photo No.: 20	Date: 10/28/2022		
Description: Facing east, a view of uplands that continue outside the Study Area.			

Seeley Farm, LLC

105 Seeley Road

Wilton, CT 06897

RE: Stream Restoration, Norwalk River, 105 Seeley Road Wilton, Connecticut

Dear Sir/Madam,

I hereby authorize the Mianus Chapter of Trout Unlimited to act as the applicant for the stream restoration project on my property.

Sincerely,

Seeley Farm, LLC

A handwritten signature in blue ink, appearing to read 'Peter W. Gaboriault', with a long, sweeping horizontal stroke extending to the right.

Peter W. Gaboriault



Wilton Land Conservation Trust

Dedicated to Preserving Wilton's Open Spaces

EXECUTIVE DIRECTOR

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Anthony P. Grassi

Robert H. Russell, Jr.

Thomas M. Sinchak

David McCarthy

Executive Director

Wilton Land Conservation Trust

PO Box 77

Wilton, CT 06897

August 30, 2021

Dear Audubon and Army Corps,

On behalf of the Wilton Land Conservation Trust (WLCT), I write to voice our wholehearted support of Trout Unlimited's project to restore sections of the Norwalk River on WLCT's Seeley Farm Preserve. The WLCT grants permission for Trout Unlimited to conduct the Norwalk River Habitat Restoration Project. We are excited and eager to do our part!

We care deeply about rivers and wetland habitats and are eager to work with TU to improve stream channel habitat for trout and macroinvertebrates on the Norwalk River. Development and runoff have compromised sections of the river, and we are eager to work with TU to improve it. As you've been made aware in the project proposal, areas of the river have become shallow due to sedimentation. We need to deepen them, add boulder cross-vanes to aid sediment transport, and improve the channel's stability to restore habitat.

The WLCT has worked with Jeff Yates and Trout Unlimited (TU) on a section of the Norwalk River owned by the Trust running through Schenck's Island in Wilton Center. Their project to restore sections of the river was done professionally and successfully.

The Wilton Land Conservation Trust strongly endorses Trout Unlimited's project to restore trout and macroinvertebrate habitat on WLCT's Seeley Farm Preserve. We encourage the Audubon and Army Corps to give TU's proposal to preserve and protect this precious shared natural resource due consideration.

Sincerely,

David McCarthy

Executive Director

Wilton Land Conservation Trust

Mianus Chapter of Trout Unlimited

Seeley Road Restoration Project

Adjoining Property Owners

GUERON NAVA
2450 NE 196TH ST
MIAMI FL 33180

JOHNSON RYAN &
GOLDMAN JESSICA
90 CANNON RD
WILTON CT 06897

ROMANOV FLORENCE K ETAL
C/O THERESA A DOUGLAS
1633 ROUTE 74 WEST
SHOREHAM VT 05770

MACGREGOR MURDOCK MALCOLM III
67 SEELEY RD
WILTON CT 06897

ANASTASIA OWEN
45 SEELEY RD
WILTON CT 06897

25 SEELEY ROAD LLC
27 SEELEY RD
WILTON CT 06897

----- Forwarded message -----

From: **Beland, Bianca** <Bianca.Beland@ct.gov>

Date: Tue, May 23, 2023 at 8:28 AM

Subject: RE: Norwalk River/Seeley Road Reach GP 10 Certification

To: Eric Werhand <ewerhand@troutscapes.com>

Cc: Missell, Danielle <Danielle.Missell@ct.gov>, Jacobson, Susan <Susan.Jacobson@ct.gov>

Good Morning Eric,

Thank you for forwarding these to us. As USACE has processed this project under GP10, there is nothing more DEEP needs to process. *DEEP waived Water Quality Certification for GPs 10-15.* As such, I will be administratively closing the WQC and PCN applications.

Please feel free to forward us before and after photos! Even though DEEP does not need to permit the activity, we appreciate the opportunity to see the results of these projects especially to learn how we can improve mitigation projects that involve similar wetland and watercourse habitat improvement.

Kind regards,

Bianca Beland

Environmental Analyst II

Regulatory – East Region

Land and Water Resources Division

Bureau of Water Protection and Land Reuse

Connecticut Department of Energy and Environmental Protection

79 Elm Street, Hartford, CT 06106-5127

P: 860.418.5951 | E: bianca.beland@ct.gov



Connecticut
Department of Energy &
Environmental Protection

*Conserving, improving, and protecting our natural resources and environment;
Ensuring a clean, affordable, reliable, and sustainable energy supply.*

     | portal.ct.gov/DEEP



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

May 19, 2023

Regulatory Division
File Number: NAE-2023-00531
CT DEEP File Number:

Gerald Berrafati
Mianus Chapter Trout Unlimited
105 Seeley Rd
Wilton, CT 06897

Dear Mr. Berrafati:

We have reviewed your application to the CT Dept. of Energy & Environmental Protection, Land and Water Resources Division for the dredging and redistribution of approximately 448 cy of gravel and cobble below the OHWM to enhance riffles upstream of the proposed cross vanes, and the discharge of 80 cy of boulders and logs to construct cross vanes for the purpose of improving aquatic habitat for fish. This project is located in the Norwalk River in the vicinity of 105 Seeley Road, Wilton, Connecticut. The work is shown on the enclosed plans titled "Norwalk River Restoration Seeley Road Reach", on eight sheets, and dated August 19, 2021.

Based on the information you have provided, we verify that the activity is authorized under General Permit # 10 of the enclosed December 15, 2021 Federal permit known as the Connecticut General Permits (GPs).

Please review the enclosed GPs and general conditions carefully to be sure that you and whoever does the work understand its requirements. A copy of the GPs and this verification letter shall be available at the project site throughout the time the work is underway. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with any special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization expires on December 15, 2026, unless the GPs are modified, suspended, or revoked before then. You must commence or have under contract to commence the work authorized herein by December 15, 2026 and complete the work by December 15, 2027. If not, you must contact this office to determine the need for further authorization before beginning or continuing the activity. We recommend that you contact us *before* this permit expires to discuss a permit reissuance. If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law.

This determination becomes valid only after the Connecticut Department of Energy & Environmental Protection (DEEP) issues or waives the following applicable State permits: Certificate of Permission (COP); General Permit (LIS-GP); Tidal Wetlands Permit; Structures and Dredging and Filling Permit; Water Quality Certification (WQC) as required under Section 401 of the Clean Water Act; and/or a Section 307 Coastal Zone Management Act consistency determination. In the event the DEEP denies any of these permits, this determination becomes null and void. The address of the DEEP office for your area is provided in the enclosed GP.

We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey/>

Please contact Michael Maaninen, of my staff, at (808) 835-4307 if you have any questions.

Sincerely,

Kevin R Kotelly

Kevin R. Kotelly, P.E.
Chief, Permits & Enforcement Branch
Regulatory Division

Enclosures

cc:

CT DEEP, Chief, Land & Water Resources Division (via email)
Eric Werhand, Troutscapes