

**MIANUS CHAPTER TROUT UNLIMITED**

**MIANUS RIVER PARK  
STAMFORD  
FAIRFIELD COUNTY, CONNECTICUT**

**MIANUS RIVER RESTORATION:  
STREAM RESTORATION DESIGN**

July 12, 2023

Prepared For:  
Mianus Chapter Trout Unlimited  
P.O. Box 475  
Wilton, Connecticut

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

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**MIANUS RIVER  
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PROJECT DESIGN**

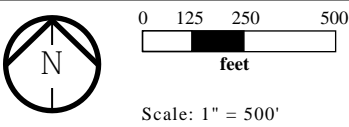
**Stamford  
Fairfield County, Connecticut**

**COVER SHEET**

**ENGINEER SEAL  
(WHEN APPLICABLE)**

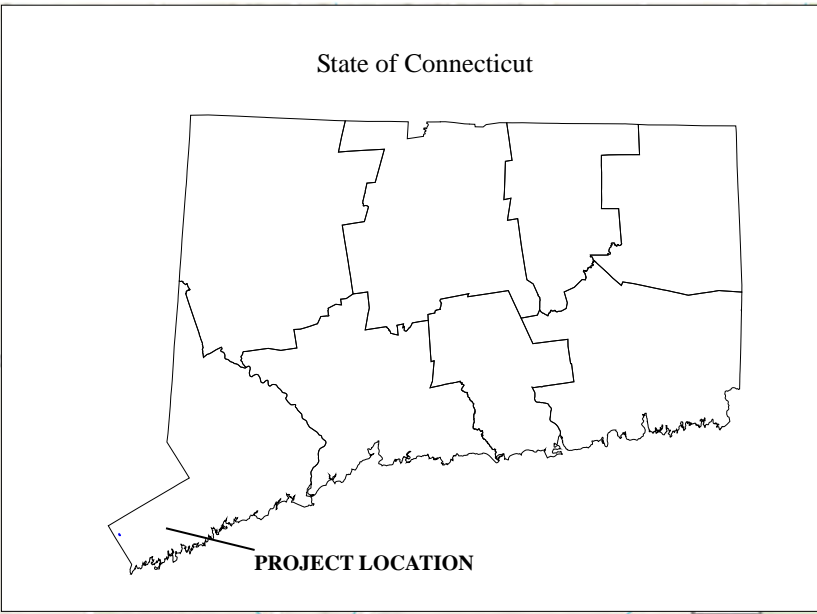
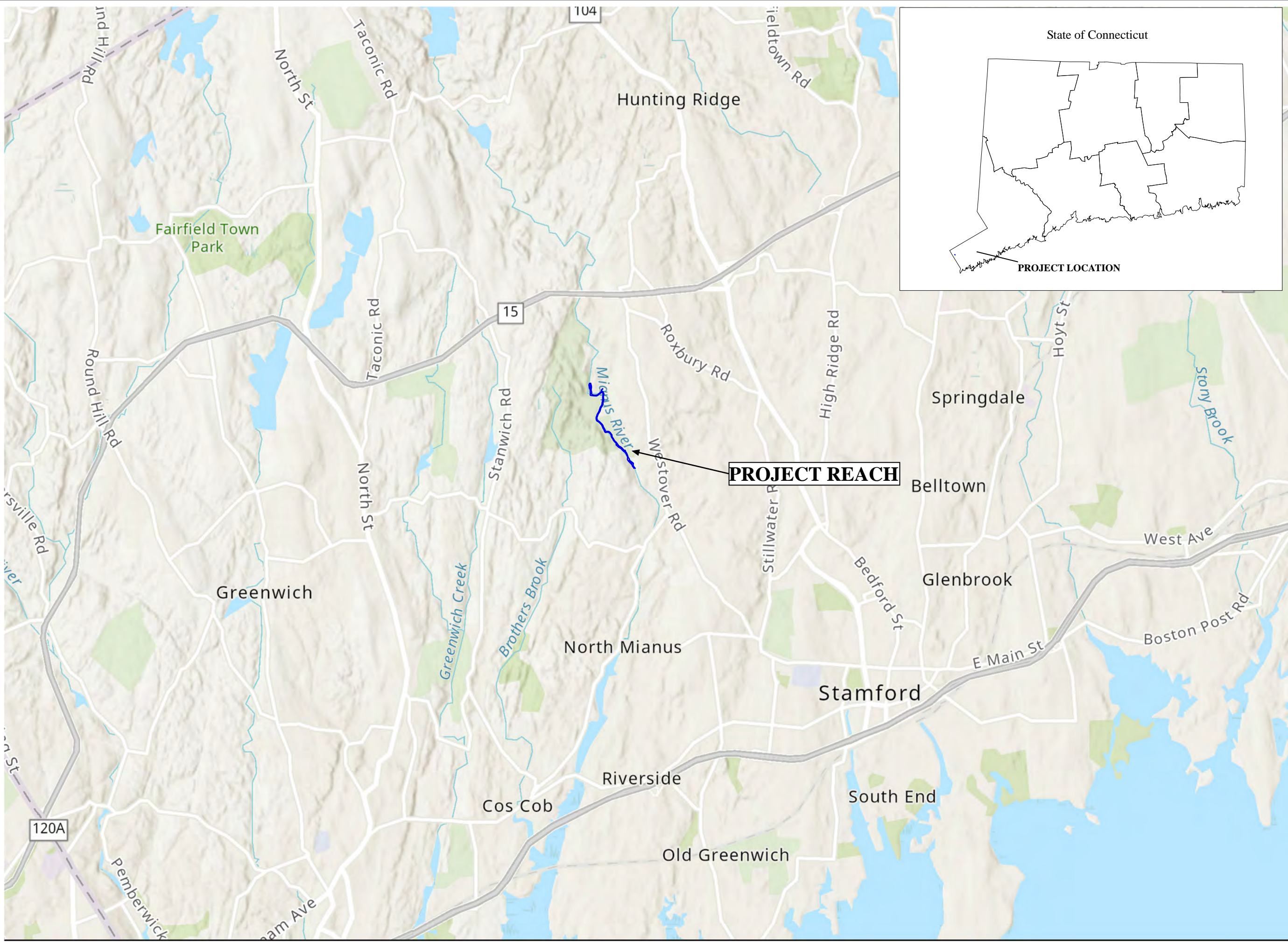
**NOTES**

1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.
2. Survey References North American Vertical Datum 1988 (NAVD88).
3. Property Boundaries Approximate, not Survey Accurate.



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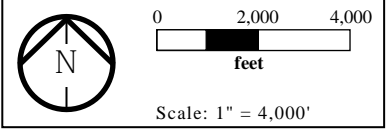
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RESTORATION  
PROJECT DESIGN**

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**LOCATION MAP**

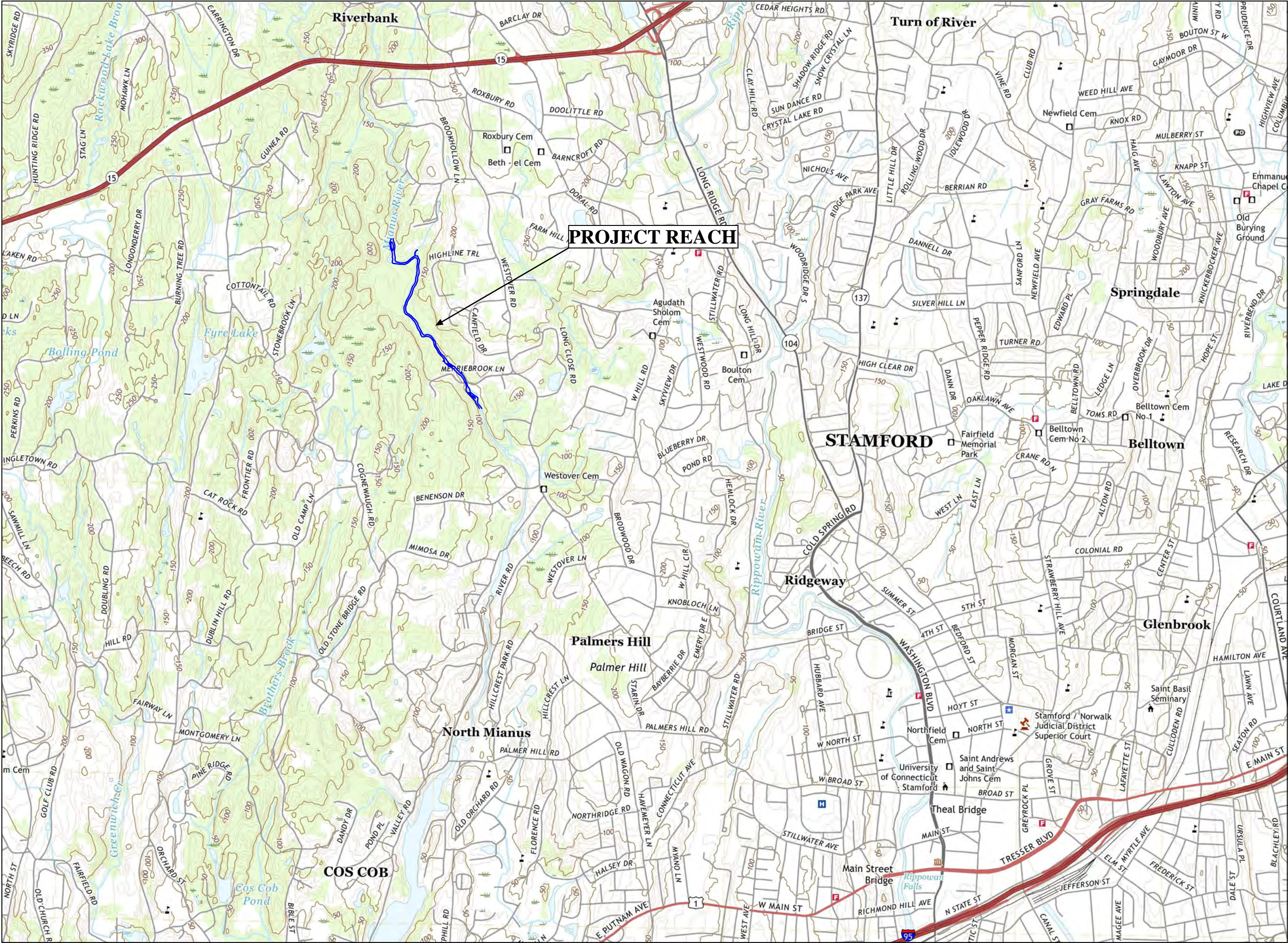
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**USGS TOPOGRAPHIC  
MAP**

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0 500 1,000 2,000  
feet  
Scale: 1" = 2,000'

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MIANUS RIVER

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MIANUS RIVER

RESTORATION SITE

PLAN INDEX

ENGINEER SEAL

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0150200400

feet

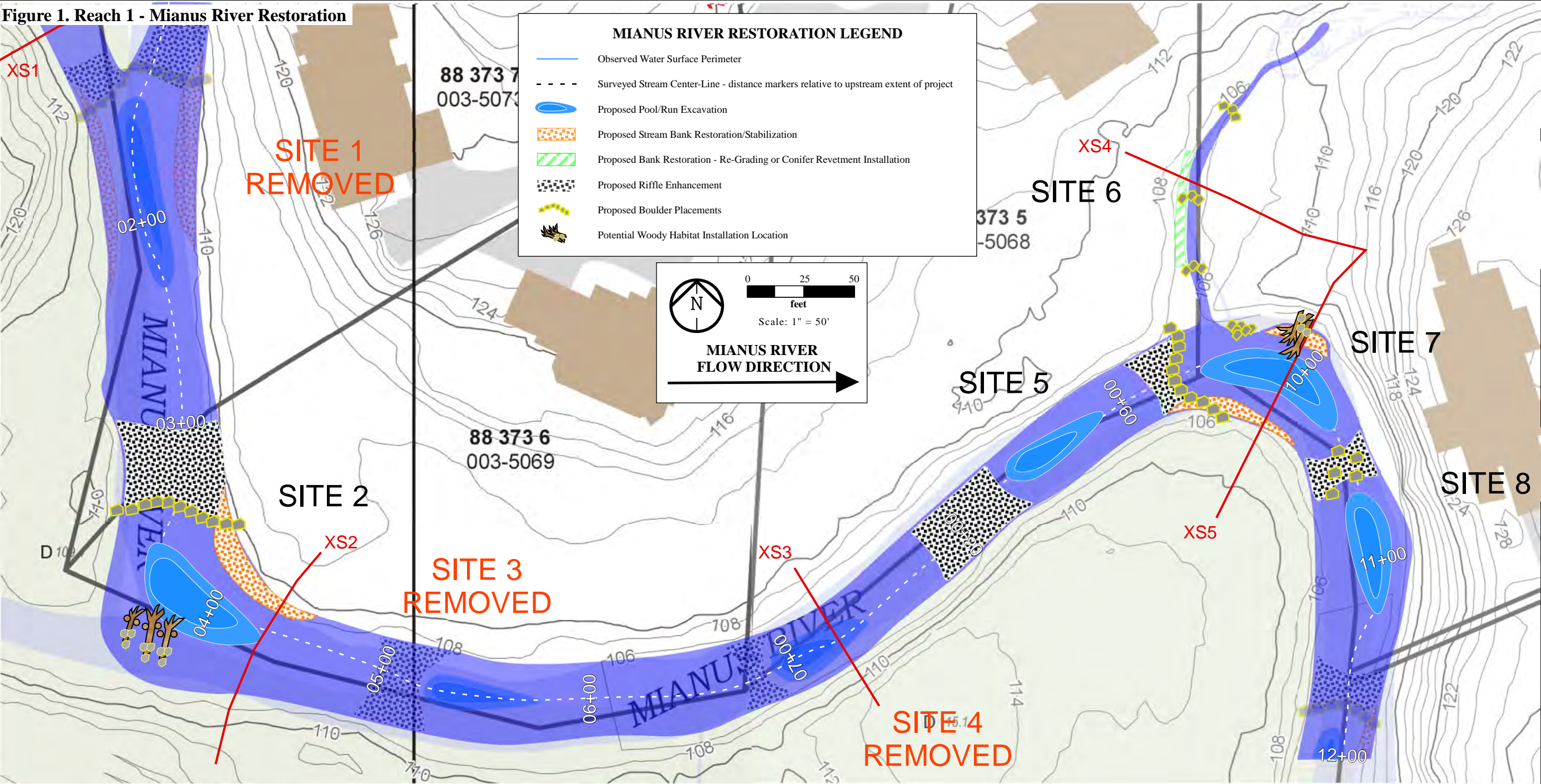
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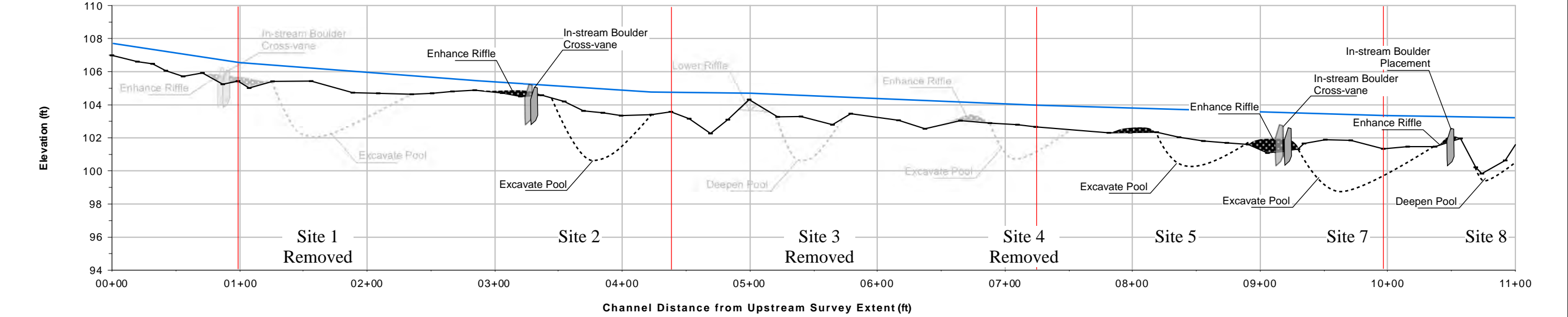
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Figure 1. Reach 1 - Mianus River Restoration



MIANUS RIVER LONGITUDINAL PROFILE (00+00 - 11+00)



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**MIANUS RIVER**  
**RESTORATION**  
**REACH 1 SITE PLAN**

**ENGINEER SEAL**  
**(WHEN APPLICABLE)**

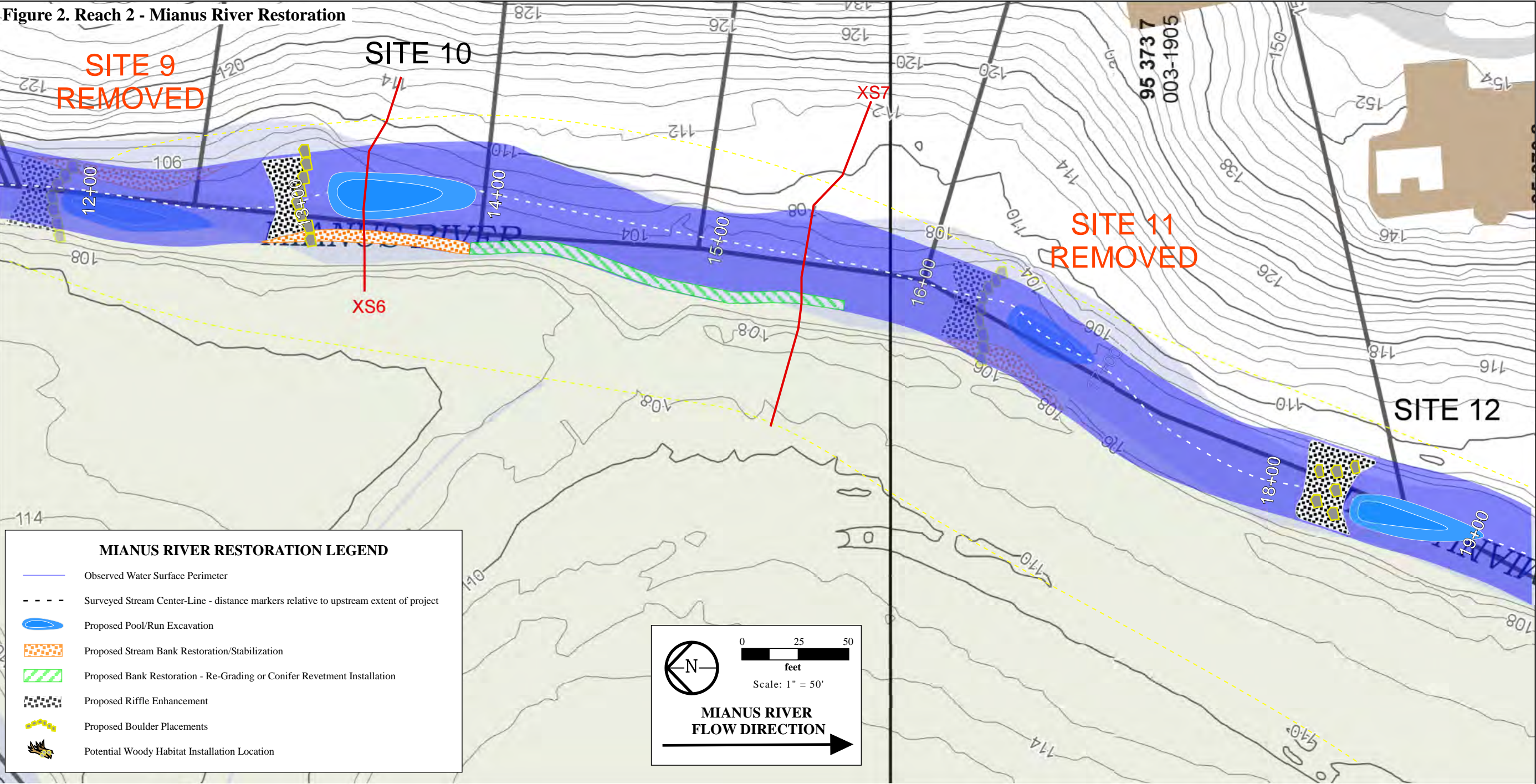
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Figure 2. Reach 2 - Mianus River Restoration



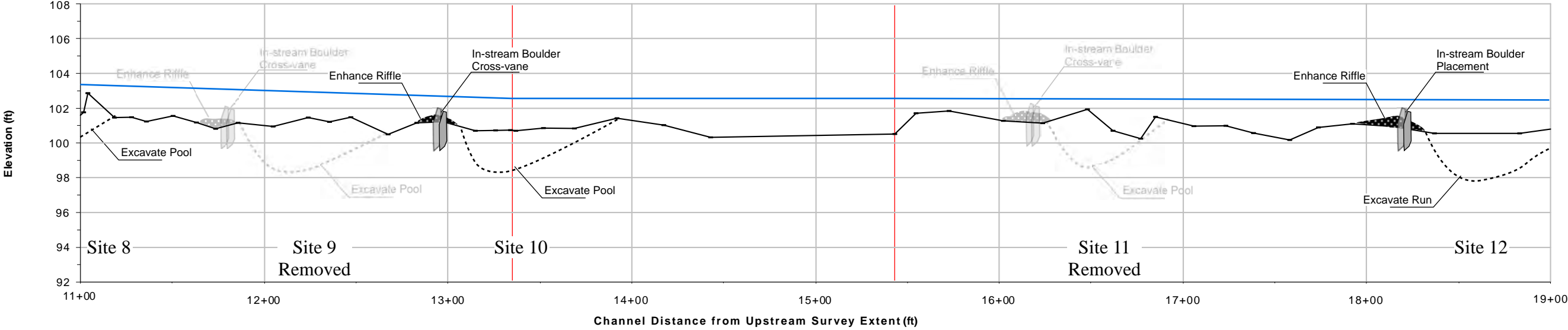
**MIANUS RIVER RESTORATION LEGEND**

- Observed Water Surface Perimeter
- Surveyed Stream Center-Line - distance markers relative to upstream extent of project
- Proposed Pool/Run Excavation
- Proposed Stream Bank Restoration/Stabilization
- Proposed Bank Restoration - Re-Grading or Conifer Revetment Installation
- Proposed Riffle Enhancement
- Proposed Boulder Placements
- Potential Woody Habitat Installation Location

0 25 50  
feet  
Scale: 1" = 50'

**MIANUS RIVER  
FLOW DIRECTION**

MIANUS RIVER LONGITUDINAL PROFILE (11+00 - 19+00)



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**MIANUS RIVER  
RESTORATION  
REACH 2 SITE PLAN**

**ENGINEER SEAL  
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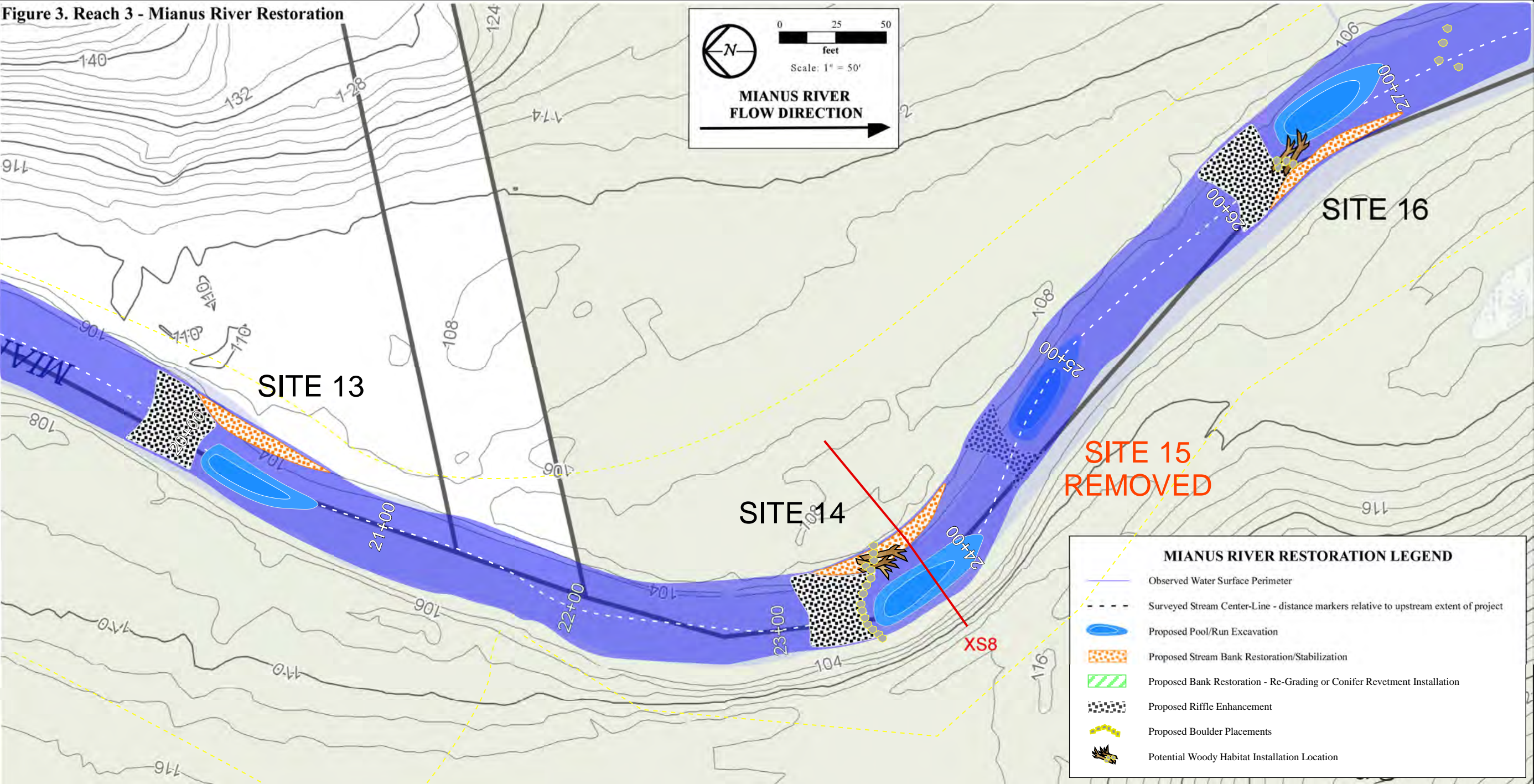
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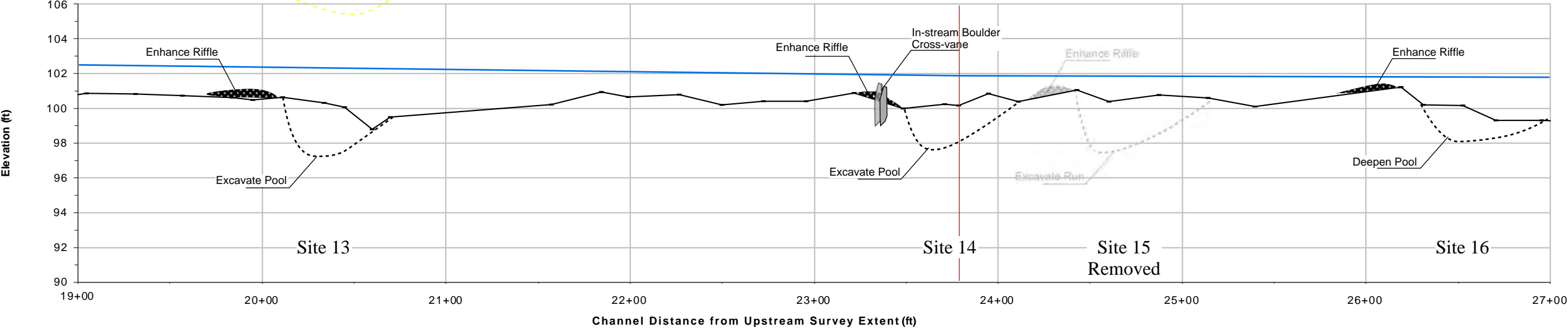
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Figure 3. Reach 3 - Mianus River Restoration



MIANUS RIVER LONGITUDINAL PROFILE (19+00 - 27+00)



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**MIANUS RIVER  
RESTORATION  
REACH 3 SITE PLAN**

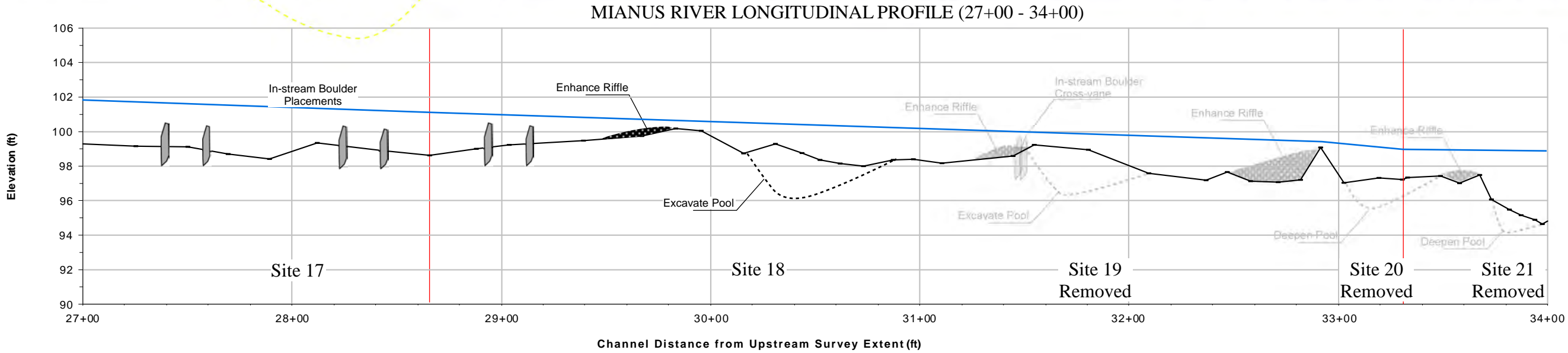
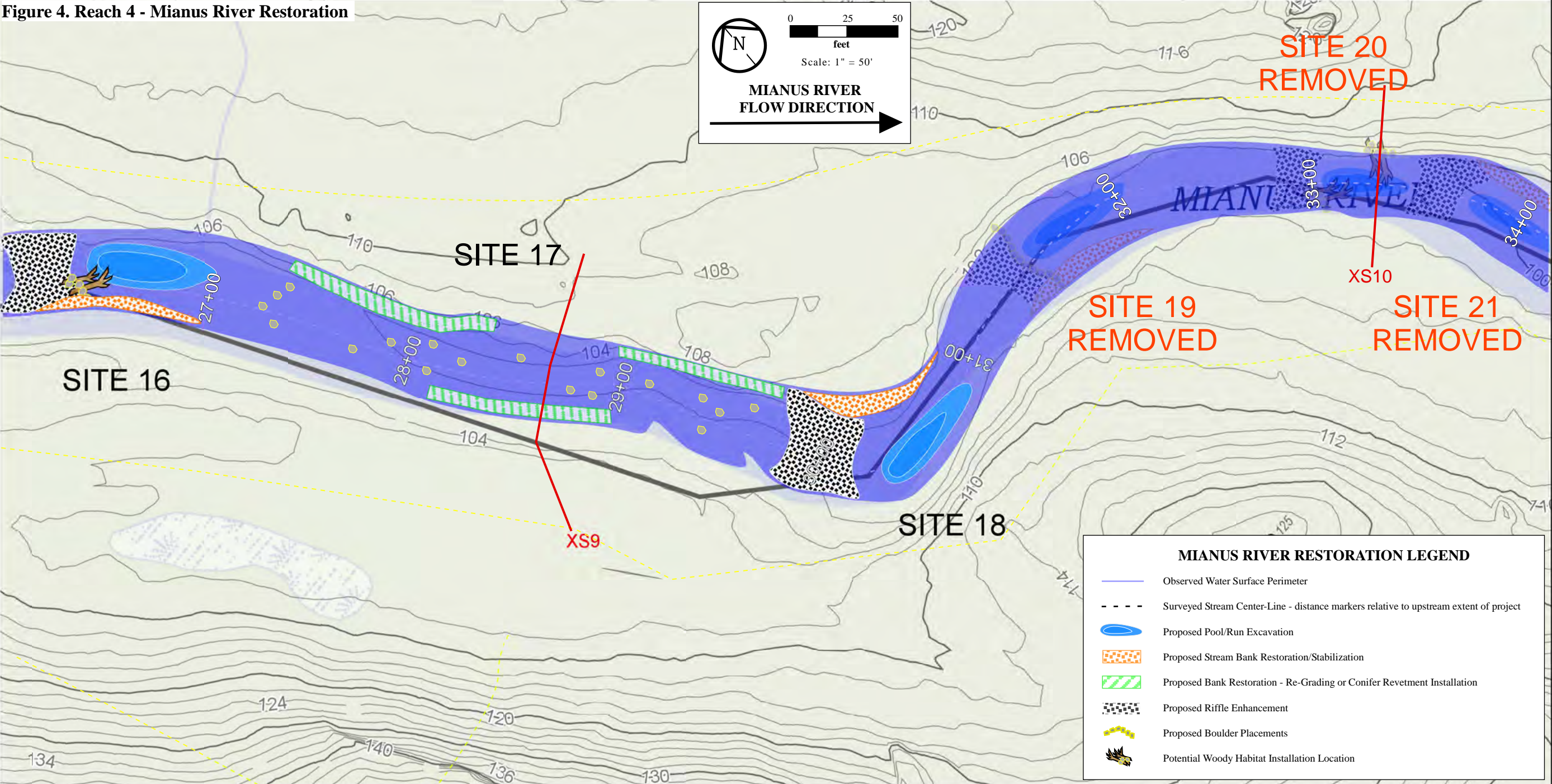
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Figure 4. Reach 4 - Mianus River Restoration



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**MIANUS RIVER  
RESTORATION  
REACH 4 SITE PLAN**

**ENGINEER SEAL  
(WHEN APPLICABLE)**

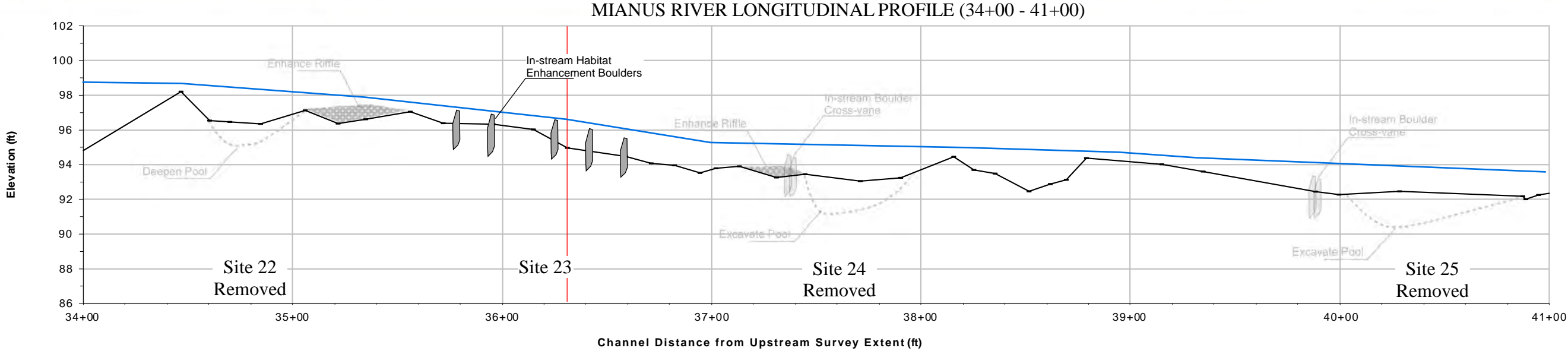
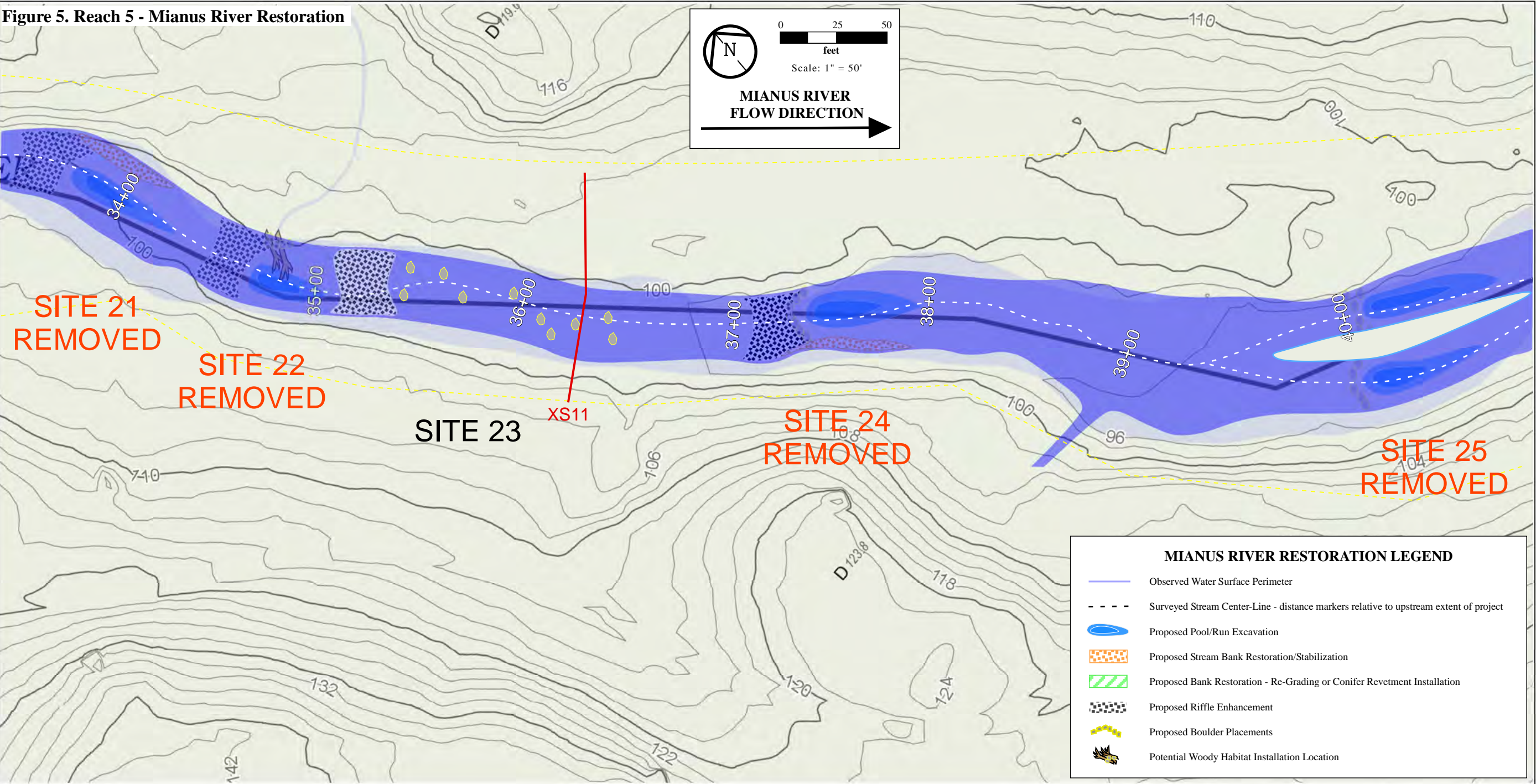
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Figure 5. Reach 5 - Mianus River Restoration



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**PROJECT DESIGN**

**Stamford**  
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**MIANUS RIVER**  
**RESTORATION**  
**REACH 5 SITE PLAN**

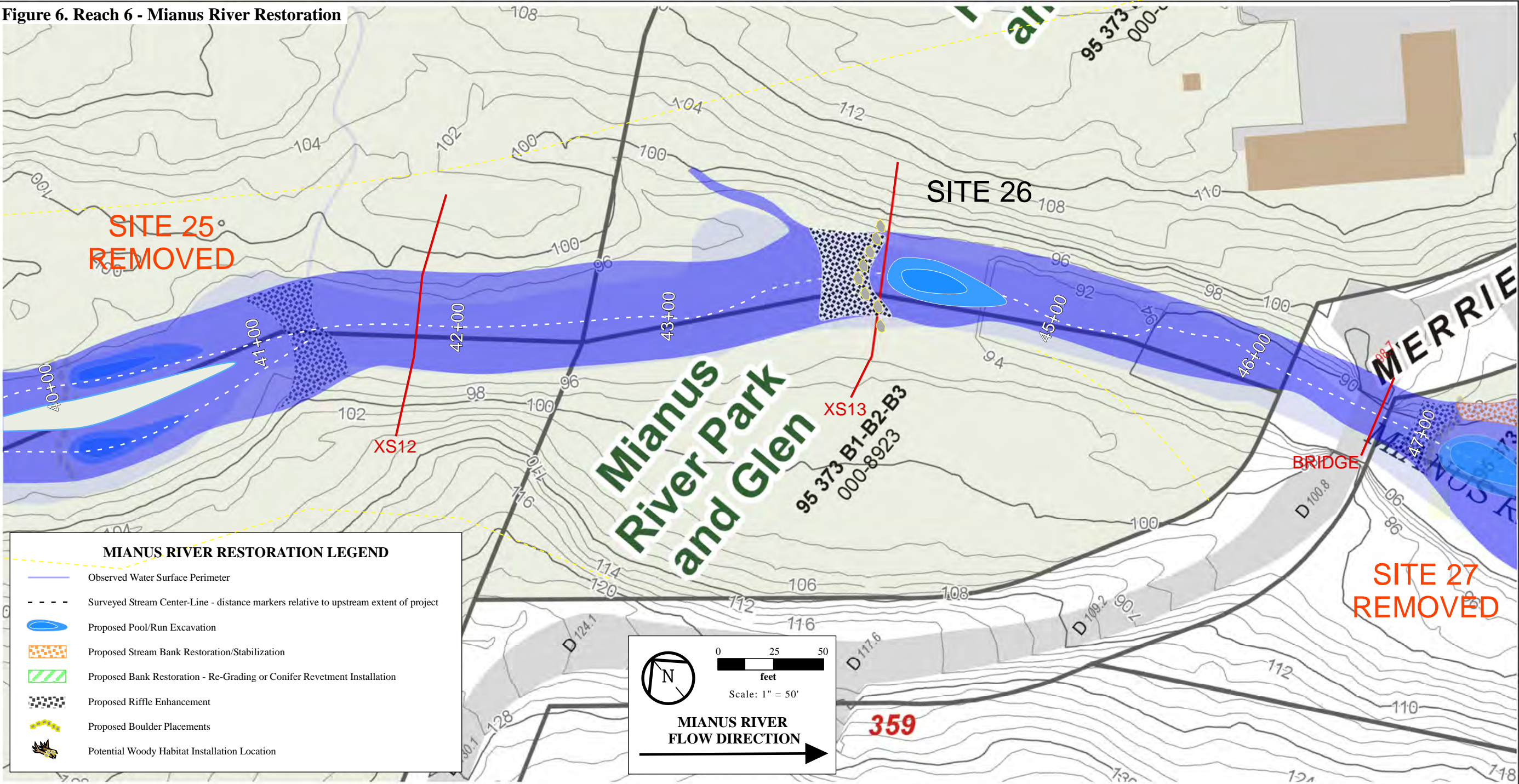
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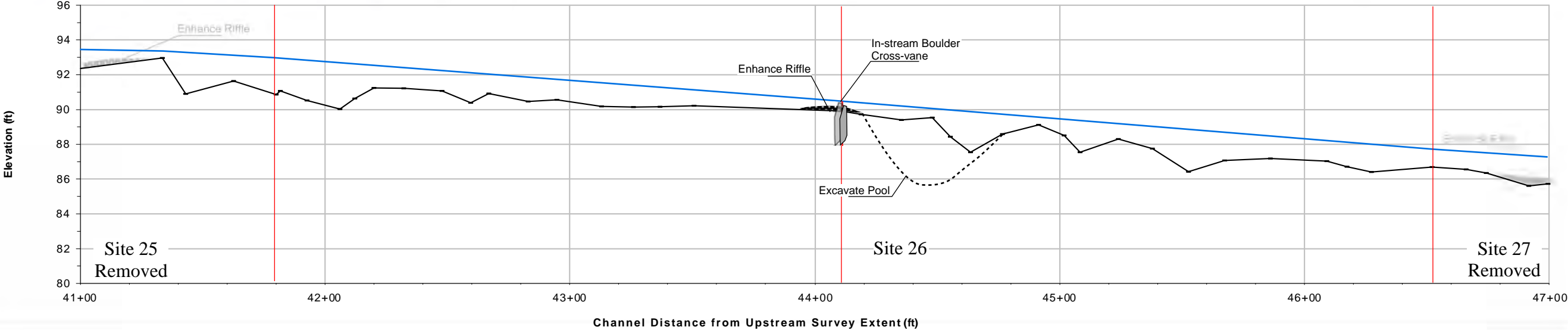
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Figure 6. Reach 6 - Mianus River Restoration



MIANUS RIVER LONGITUDINAL PROFILE (41+00 - 47+00)



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**PROJECT DESIGN**

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**MIANUS RIVER**  
**RESTORATION**  
**REACH 6 SITE PLAN**

**ENGINEER SEAL**  
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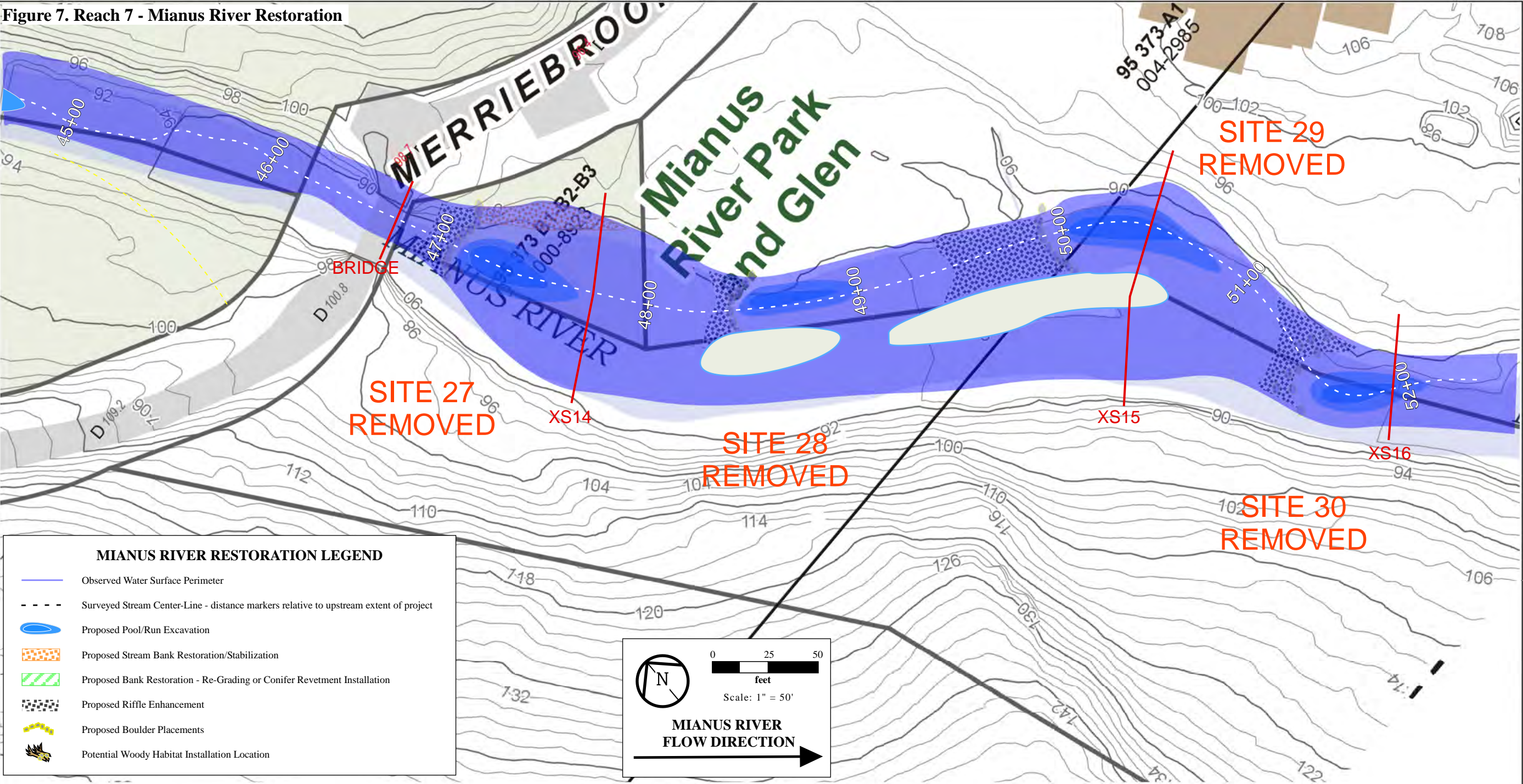
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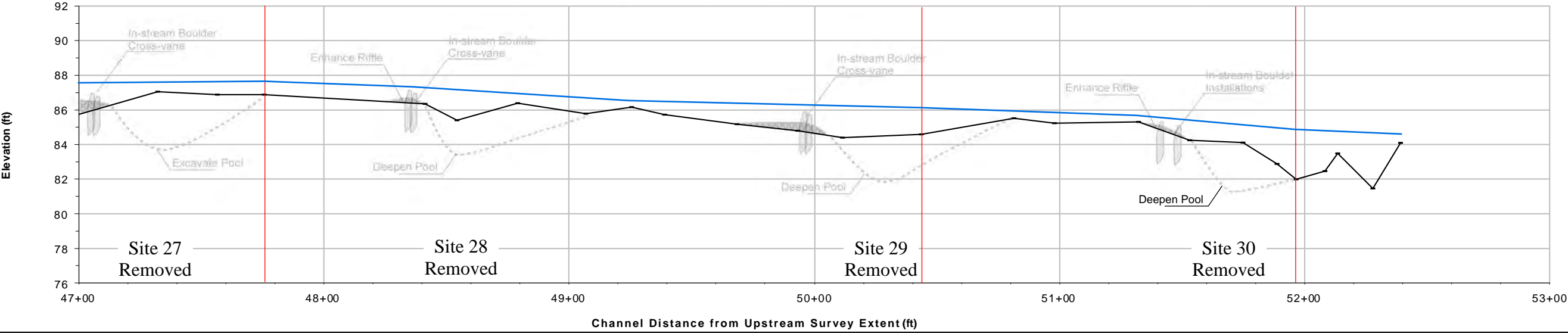
**SHEET: 10 of 28**



Figure 7. Reach 7 - Mianus River Restoration



MIANUS RIVER LONGITUDINAL PROFILE (47+00 - 53+00)



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**MIANUS RIVER  
RESTORATION  
REACH 7 SITE PLAN**

**ENGINEER SEAL  
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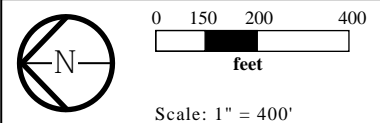
**Stamford**  
**Fairfield County, Connecticut**

## MIANUS RIVER RESTORATION CROSS-SECTION MAP

**ENGINEER SEAL  
(WHEN APPLICABLE)**

## NOTES

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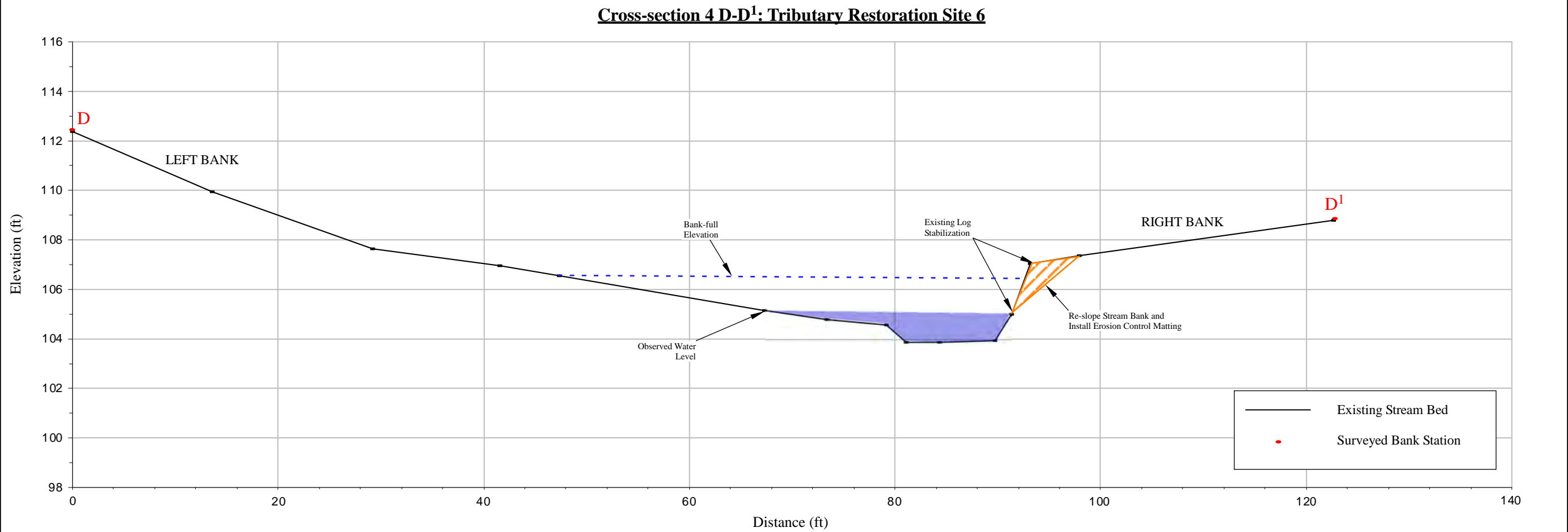
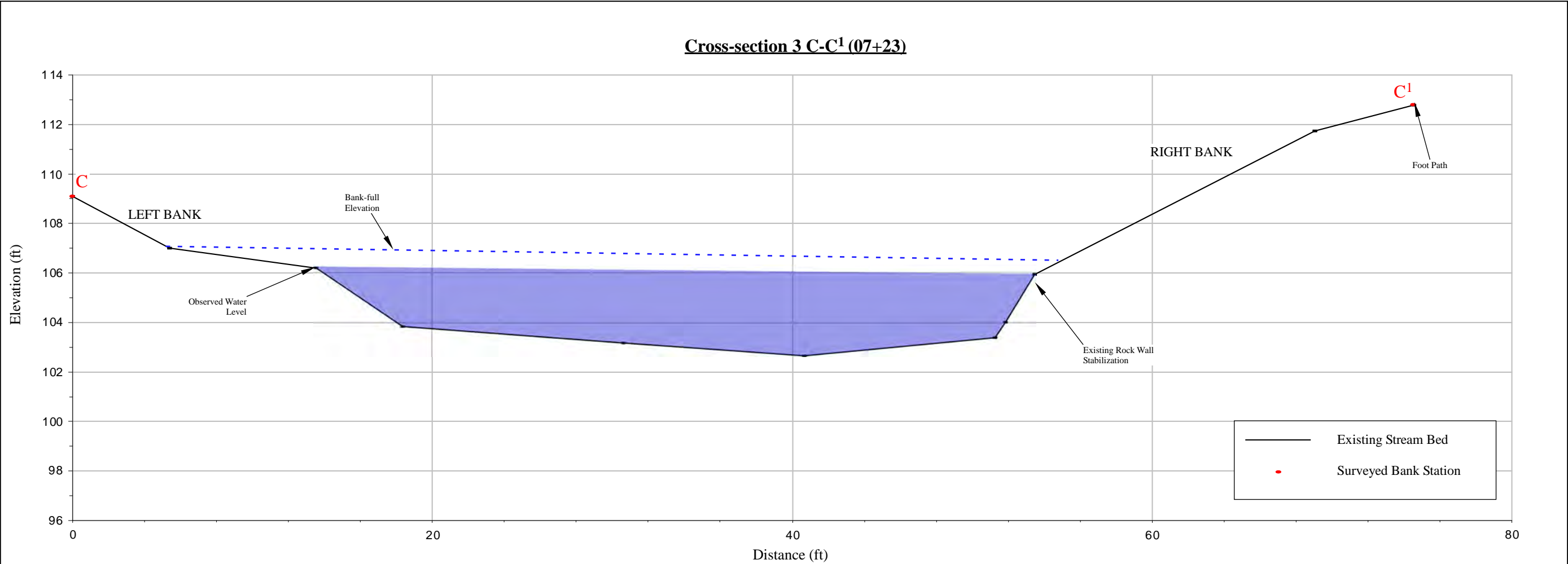
SHEET: 12 of 28











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**MIANUS RIVER  
RESTORATION  
CROSS-SECTIONS  
3 & 4**

**ENGINEER SEAL  
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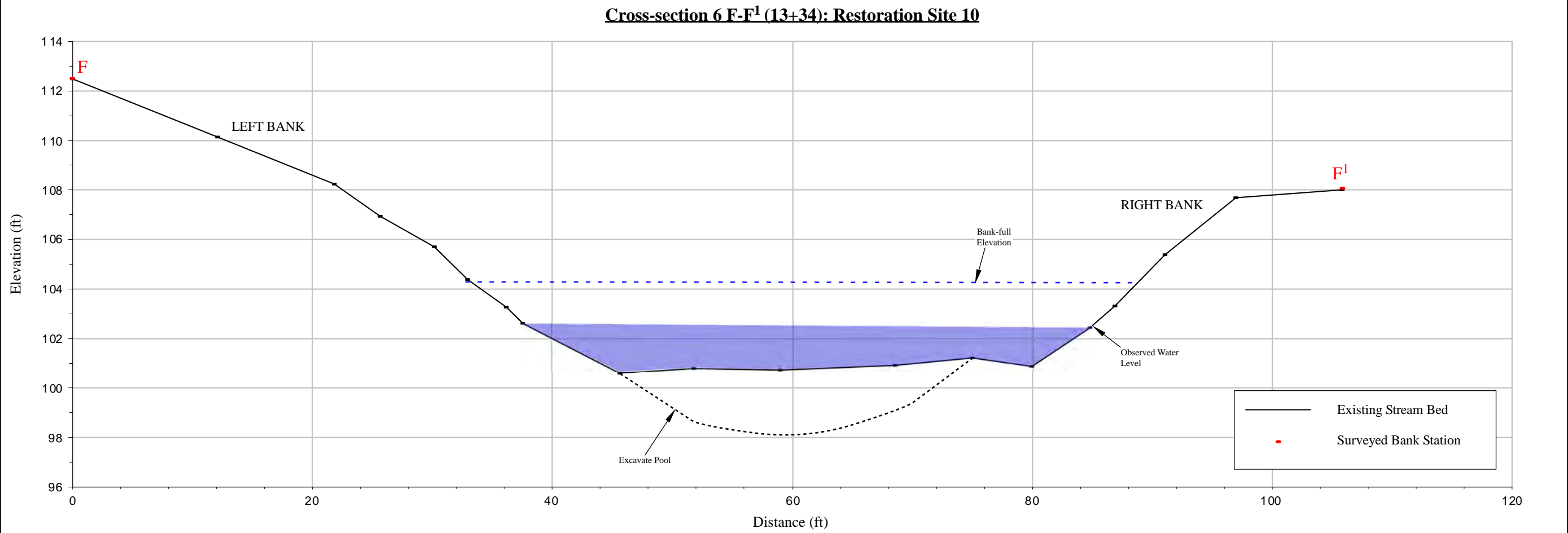
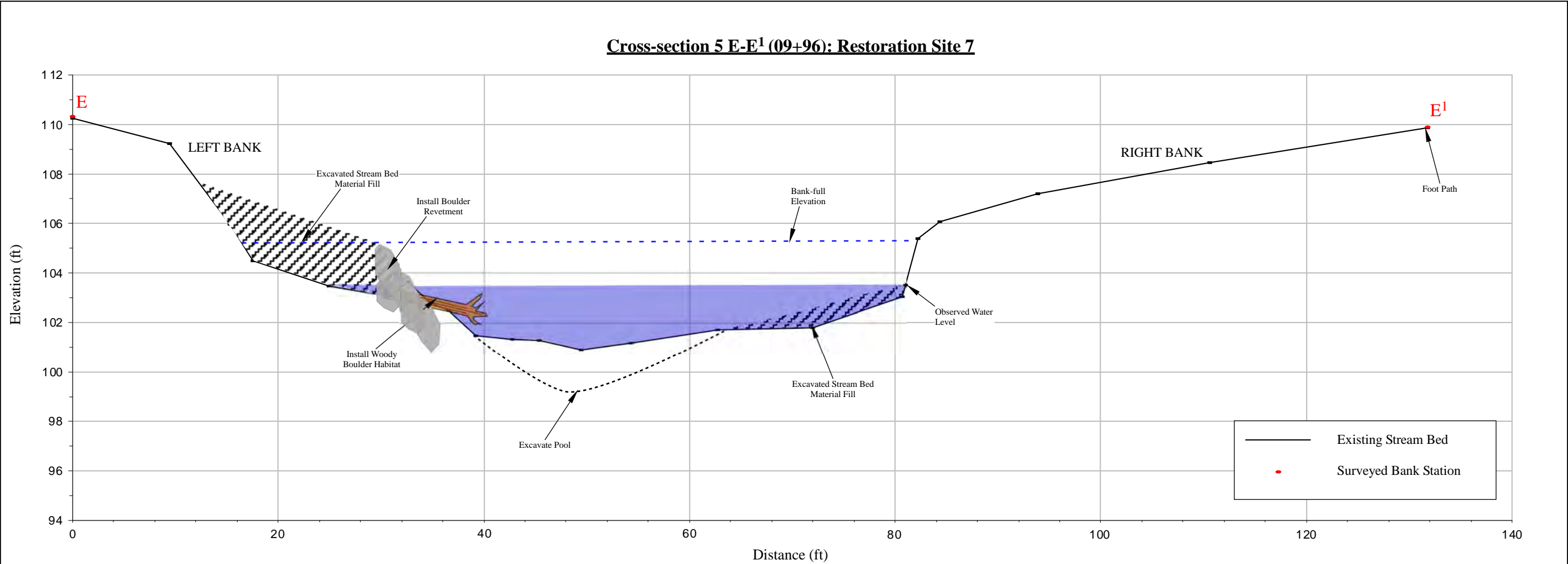
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**MIANUS RIVER  
RESTORATION  
CROSS-SECTIONS  
5 & 6**

**ENGINEER SEAL  
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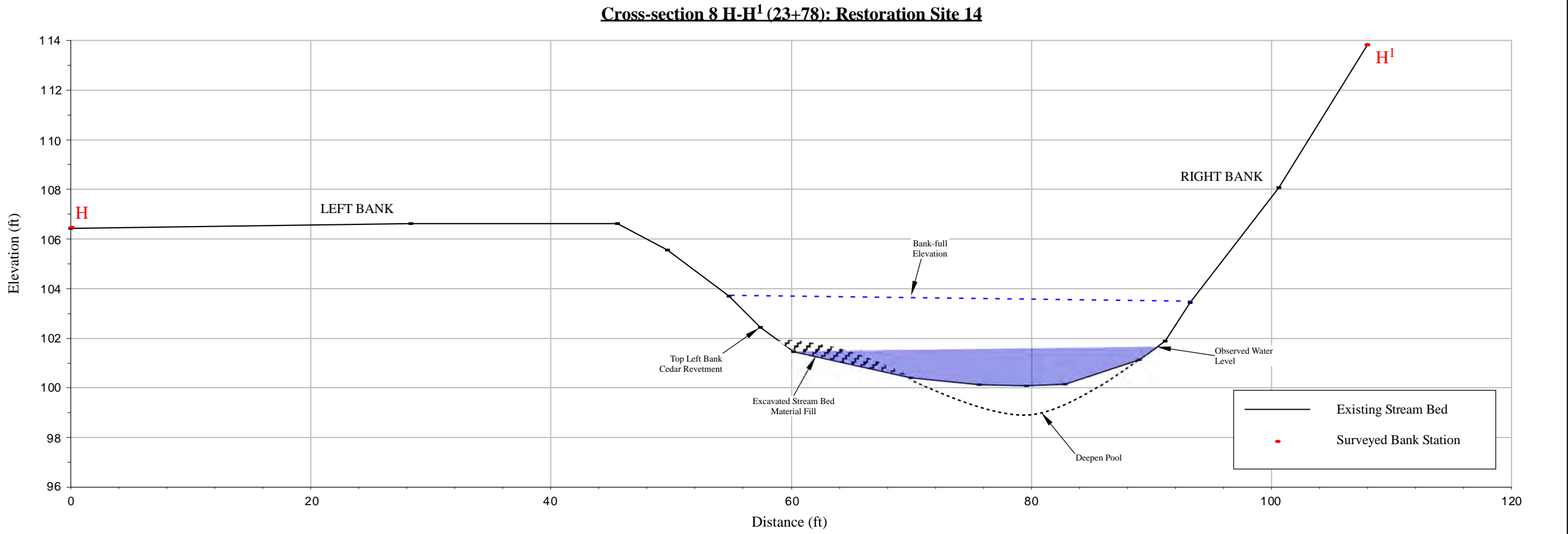
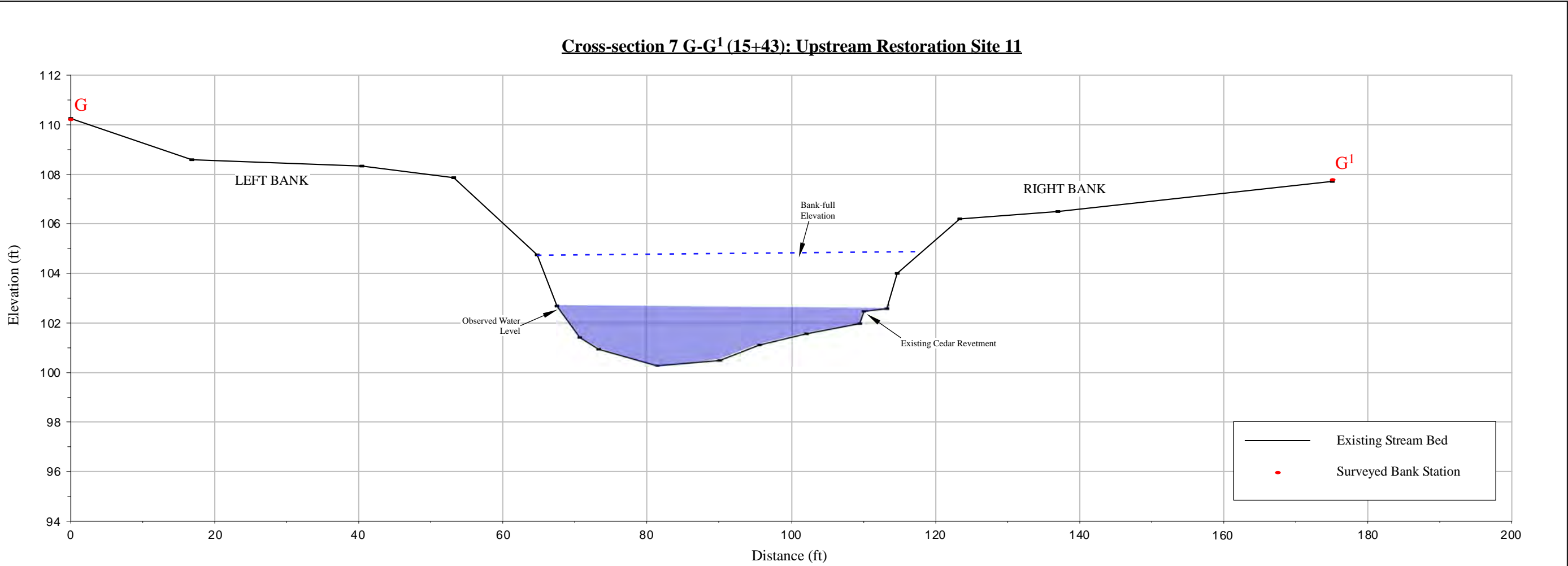
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**MIANUS RIVER  
RESTORATION  
CROSS-SECTIONS  
7 & 8**

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Stamford

Fairfield County, Connecticut

MIANUS RIVER

RESTORATION

CROSS-SECTIONS

9 & 10

ENGINEER SEAL  
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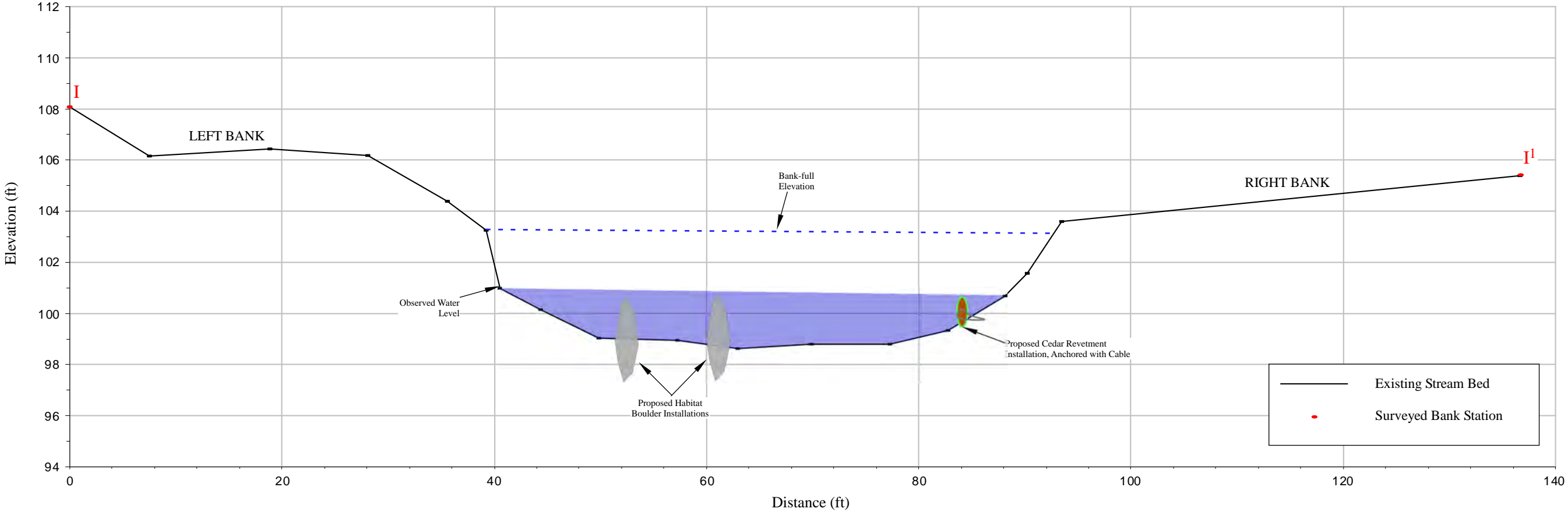
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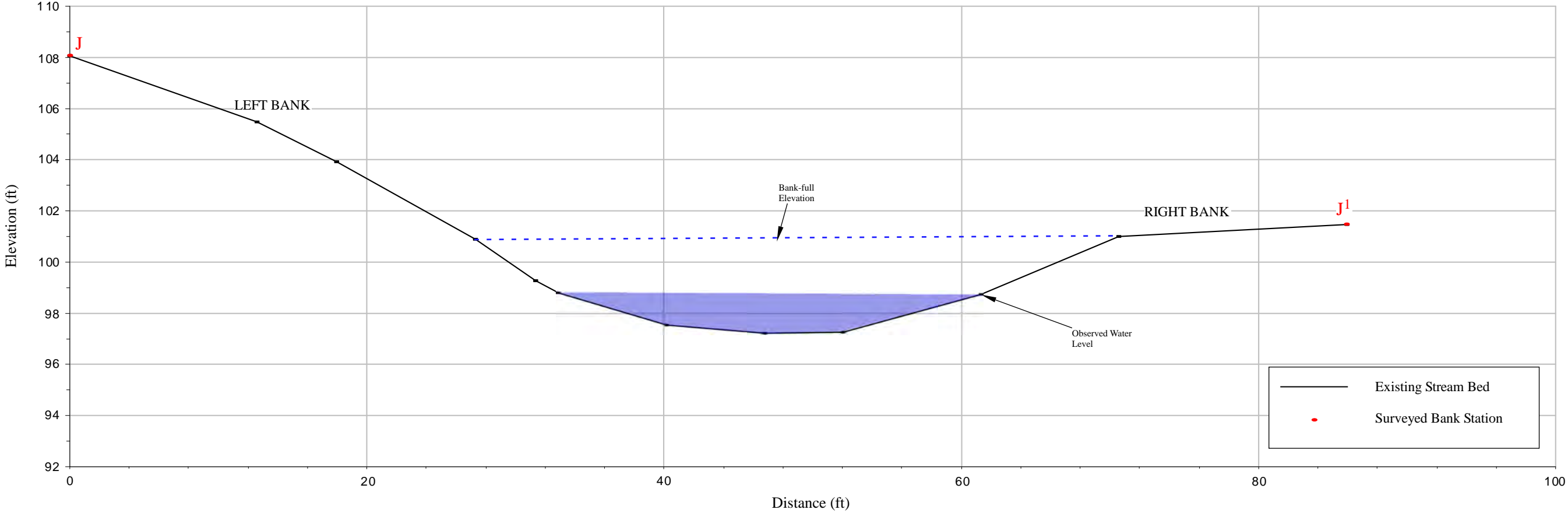
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Checked By: BC

Cross-section 9 I-I<sup>1</sup> (28+66): Restoration Site 17



Cross-section 10 J-J<sup>1</sup> (33+31)





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**MIANUS RIVER**

**RESTORATION**

**CROSS-SECTIONS**

**11 & 12**

ENGINEER SEAL

(WHEN APPLICABLE)

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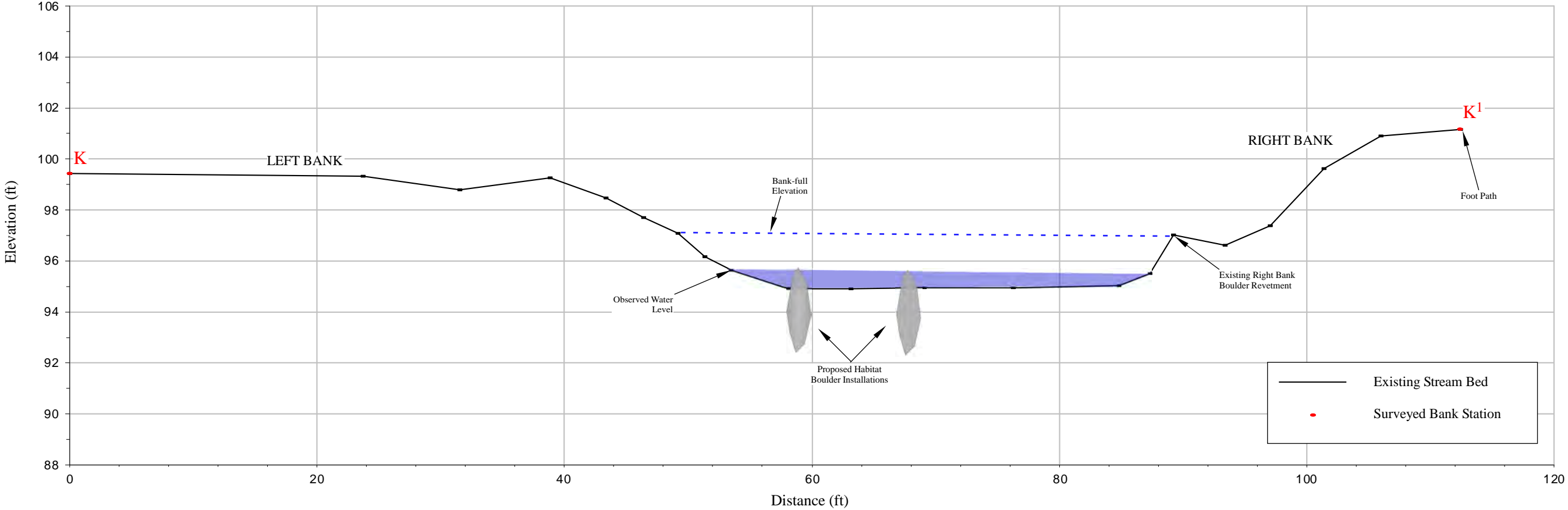
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3. Property Boundaries Approximate, not Survey Accurate.

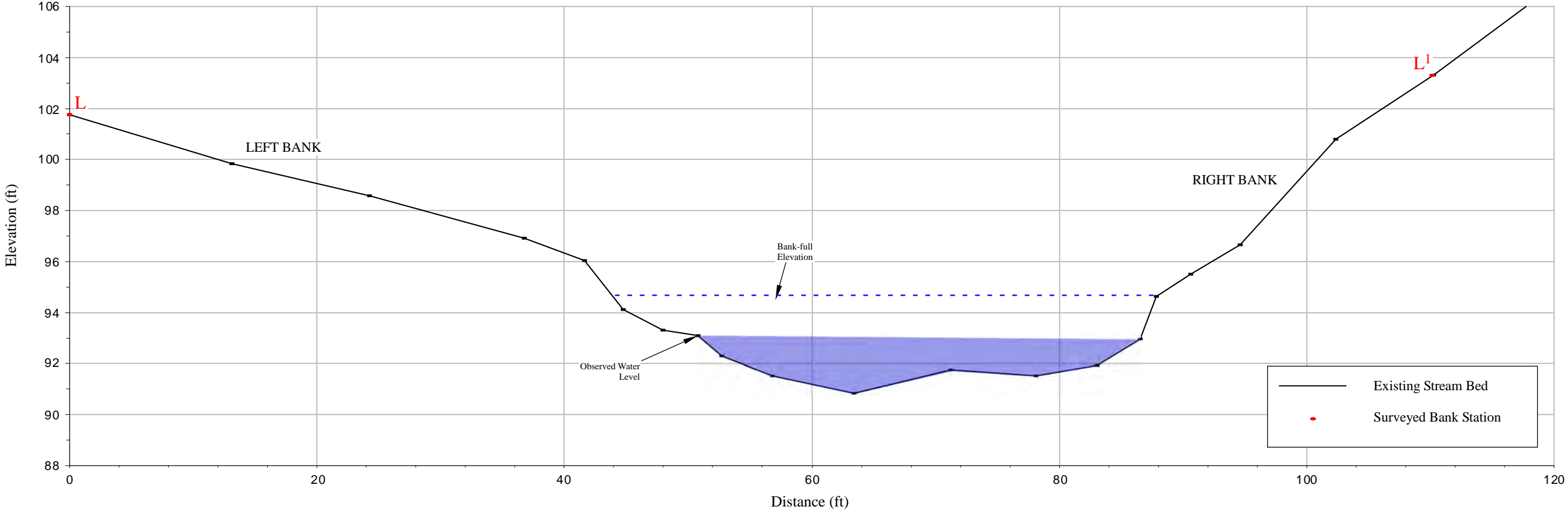
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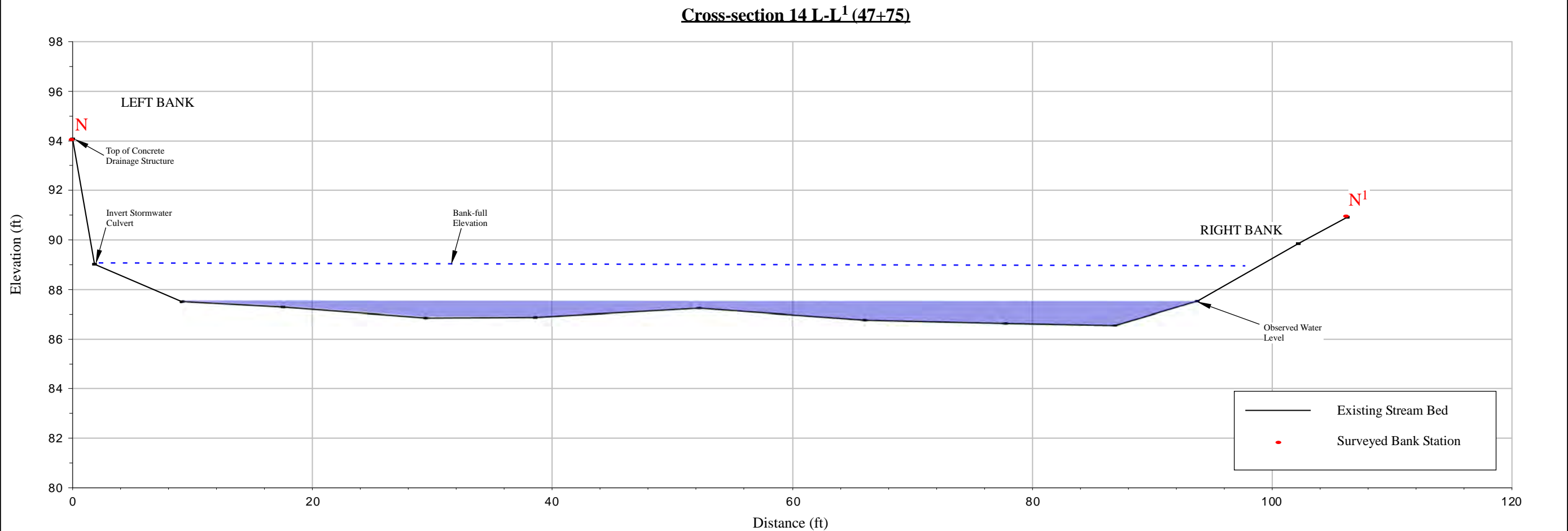
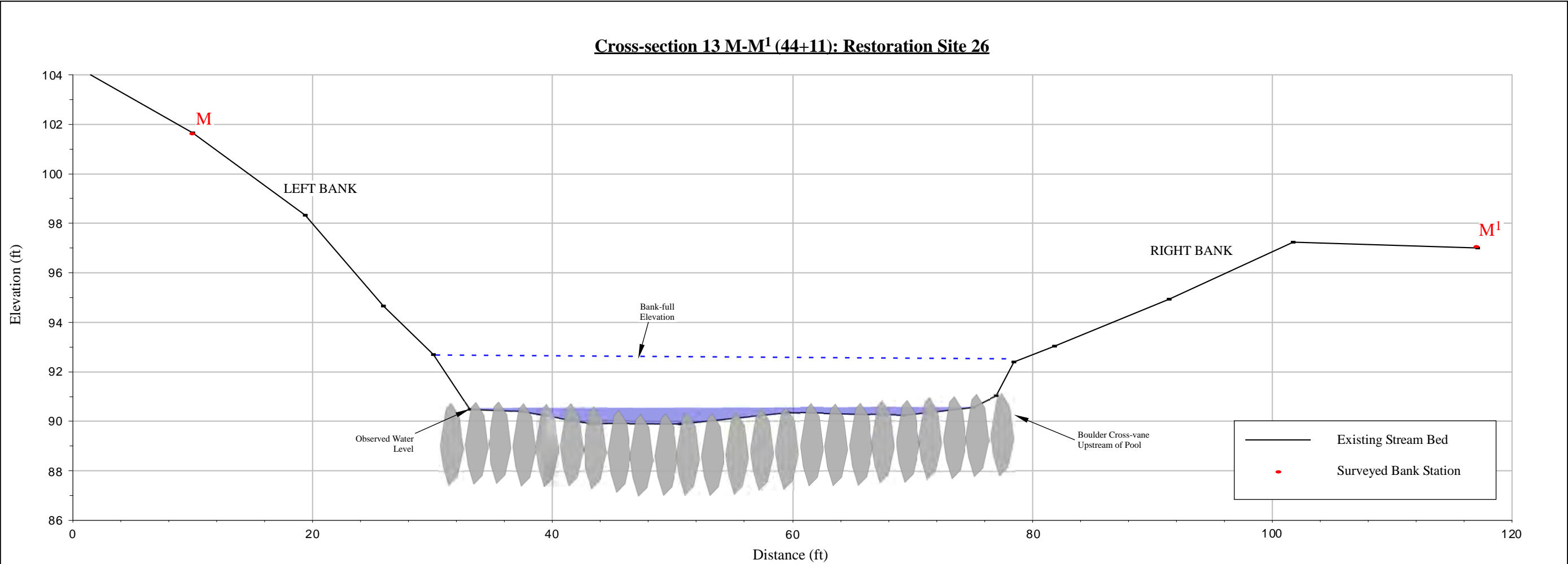
Cross-section 11 K-K<sup>1</sup> (36+61): Restoration Site 23



Cross-section 12 L-L<sup>1</sup> (41+80): Downstream Restoration Site 25







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**MIANUS CHAPTER**  
**TROUT UNLIMITED**

**MIANUS RIVER  
RESTORATION  
PROJECT DESIGN**

**Stamford  
Fairfield County, Connecticut**

**MIANUS RIVER  
RESTORATION  
CROSS-SECTIONS  
13 & 14**

**ENGINEER SEAL  
(WHEN APPLICABLE)**

**NOTES**

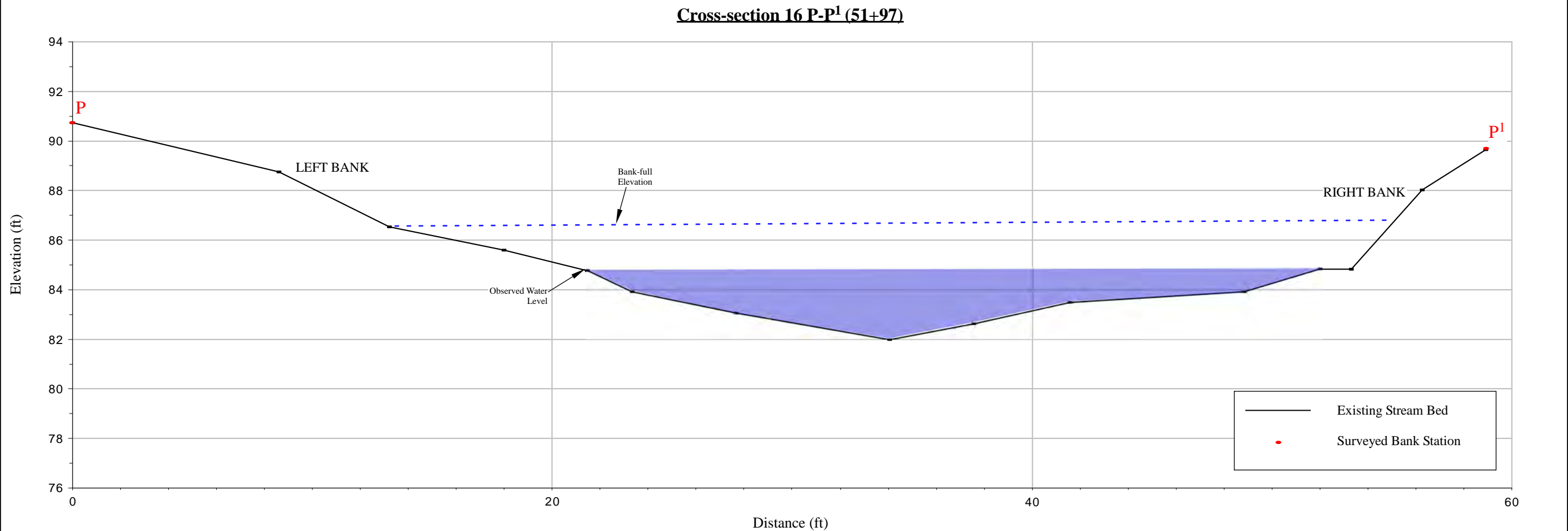
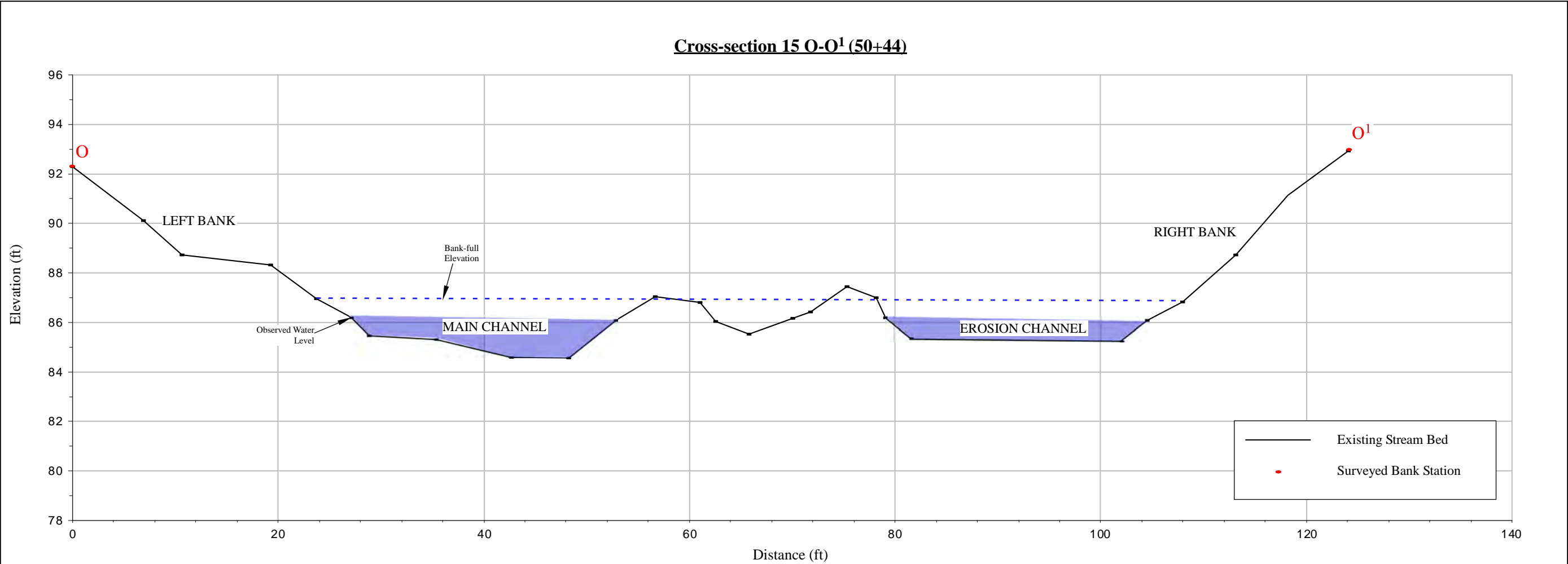
1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.

2. Survey References North American Vertical Datum 1988 (NAVD88).

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PROJECT DESIGN**

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**MIANUS RIVER  
RESTORATION  
CROSS-SECTIONS  
15 & 16**

**ENGINEER SEAL  
(WHEN APPLICABLE)**

**NOTES**

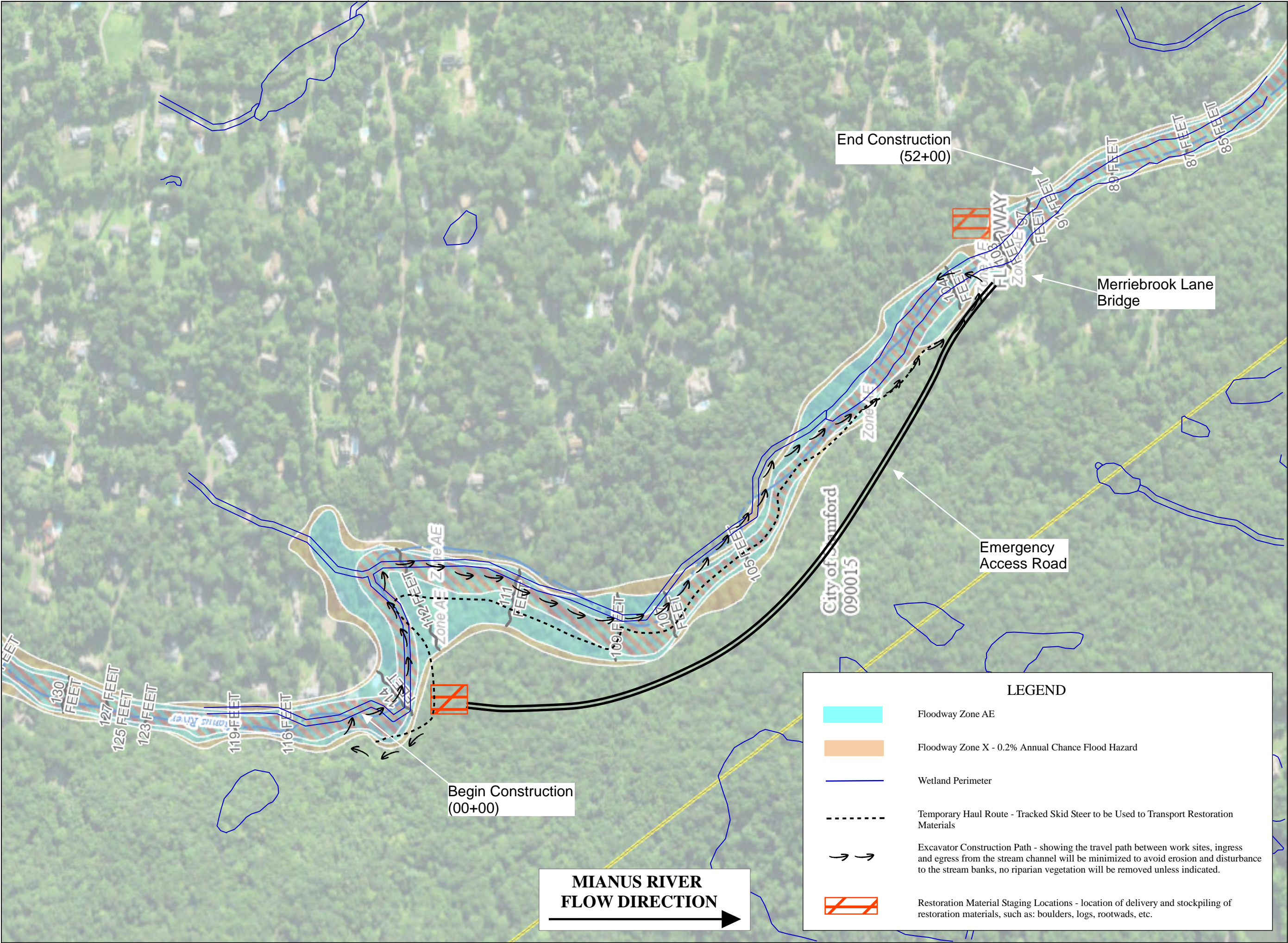
1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.

2. Survey References North American Vertical Datum 1988 (NAVD88).

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RESTORATION  
PROJECT DESIGN**

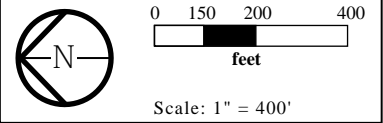
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**MIANUS RIVER  
ACCESS AND  
MATERIAL STAGING  
MAP**

ENGINEER SEAL  
(WHEN APPLICABLE)

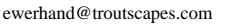
- NOTES
1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.

2. Survey References North American Vertical Datum 1988 (NAVD88).



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# MIANUS RIVER RESTORATION PROJECT DESIGN

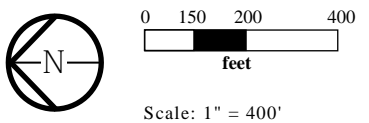
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# MIANUS RIVER EROSION & SEDIMENT CONTROL PLAN

**ENGINEER SEAL  
(WHEN APPLICABLE)**

## NOTES

1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.
2. Survey References North American Vertical Datum 1988 (NAVD88).



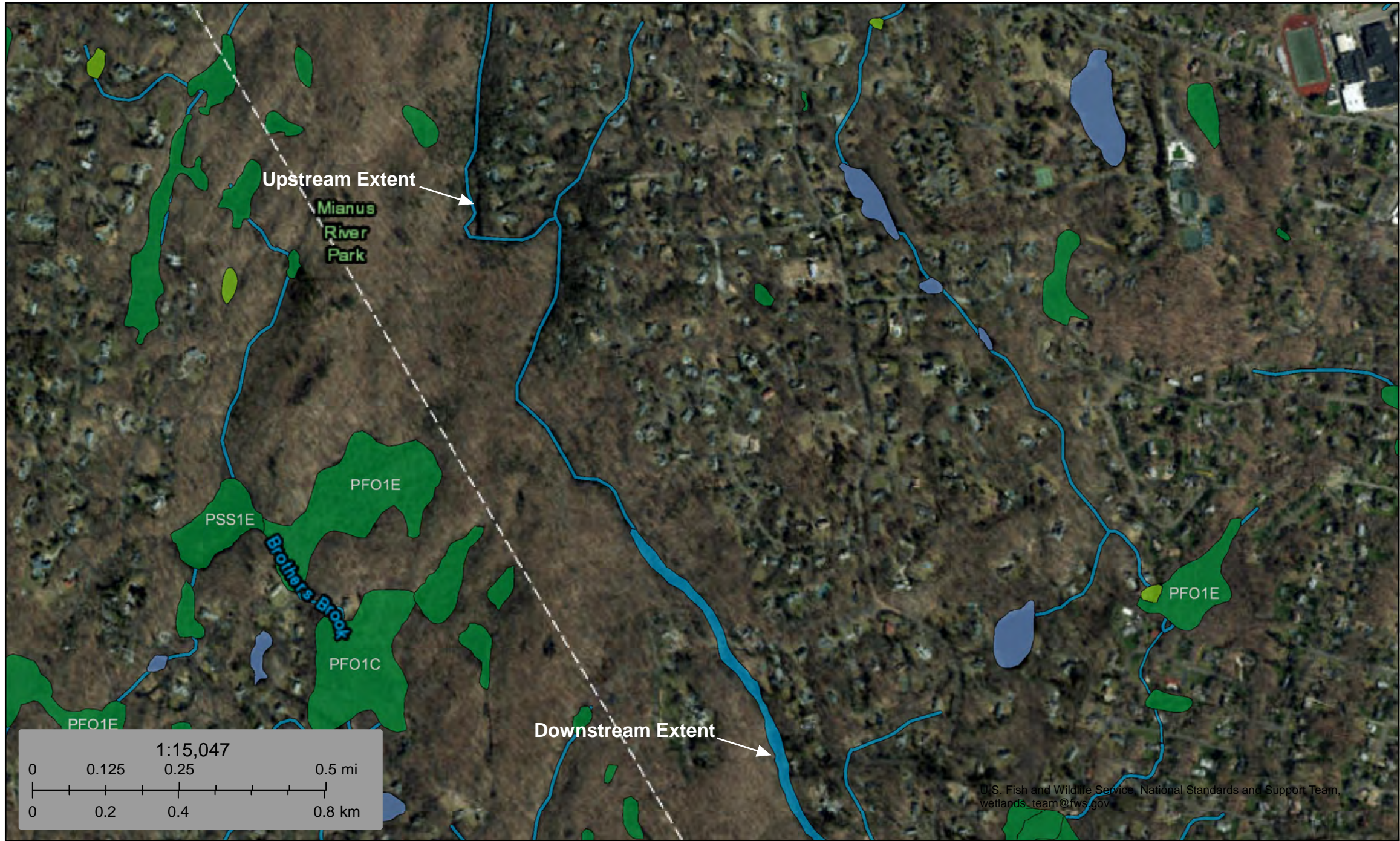
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Mianus River Park



February 3, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)  
This page was produced by the NWI mapper

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MIANUS RIVER PARK

NATIONAL

WETLANDS

INVENTORY MAP

ENGINEER SEAL

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NOTES

1. Survey Data Obtained from Topographic Survey by TSRR; June 16-18, 2022.

2. Survey References North American Vertical Datum 1988 (NAVD88).

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Figure 8. Typical Rootwad Revetment  
Plan View

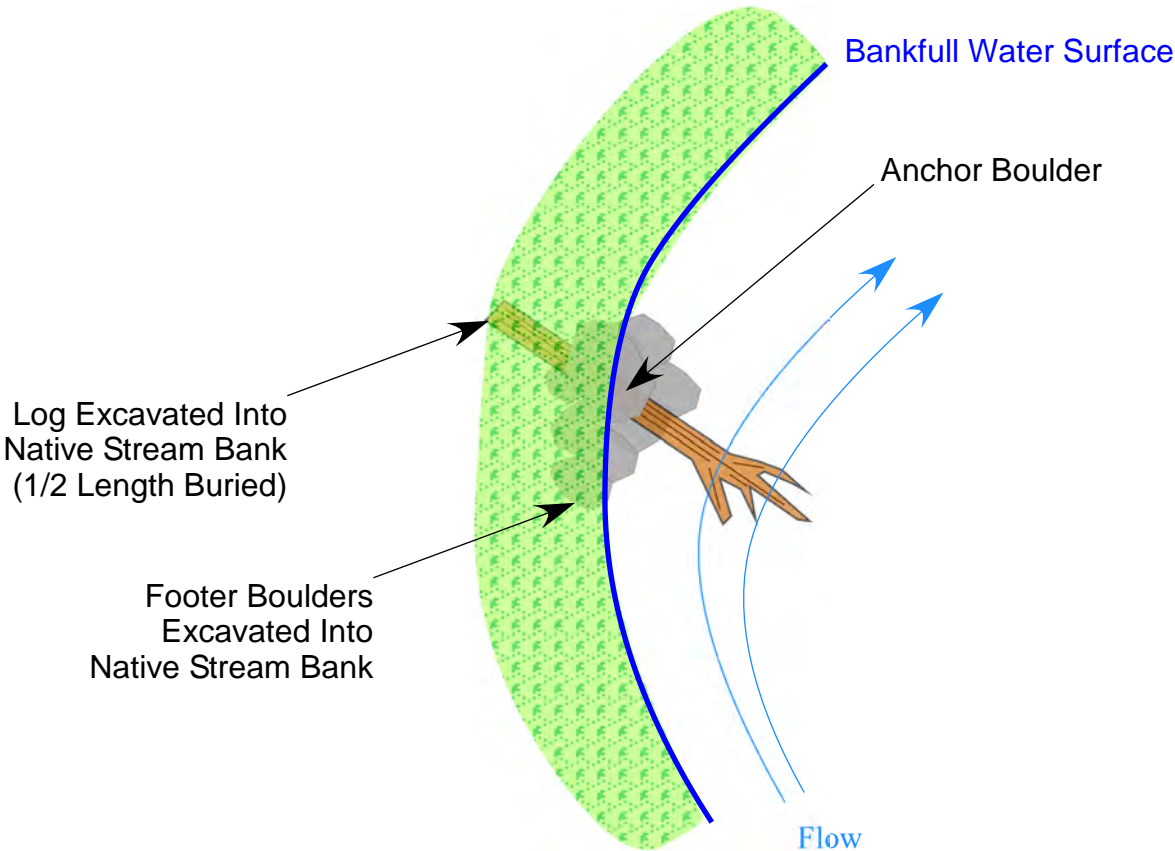
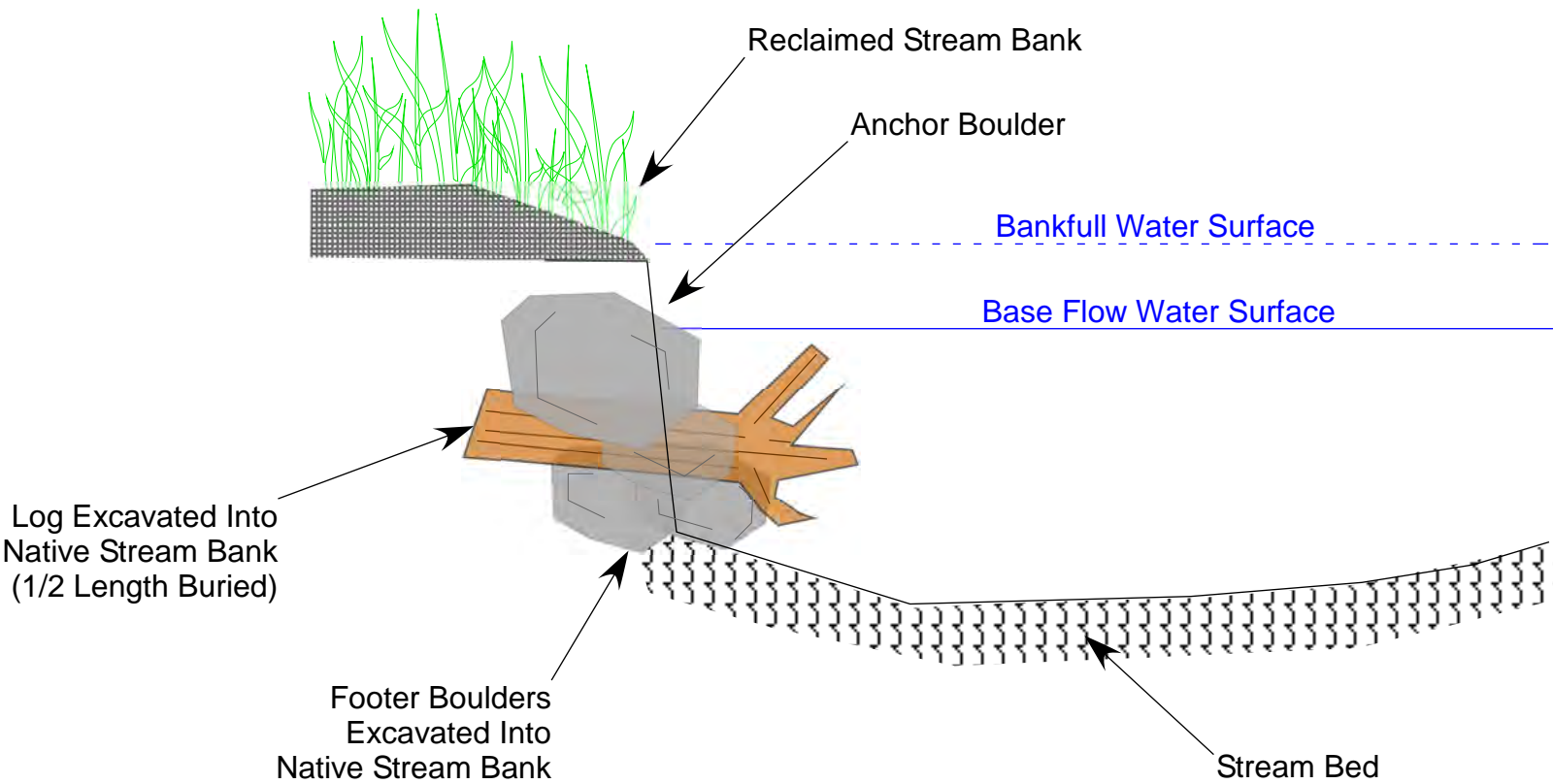


Figure 9. Typical Rootwad Revetment  
Cross-section View



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**ROOTWAD**

**REVETMENT DESIGN**

**FIGURES**

ENGINEER SEAL  
(WHEN APPLICABLE)

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Figure 10. Typical Pool Excavation  
Plan View

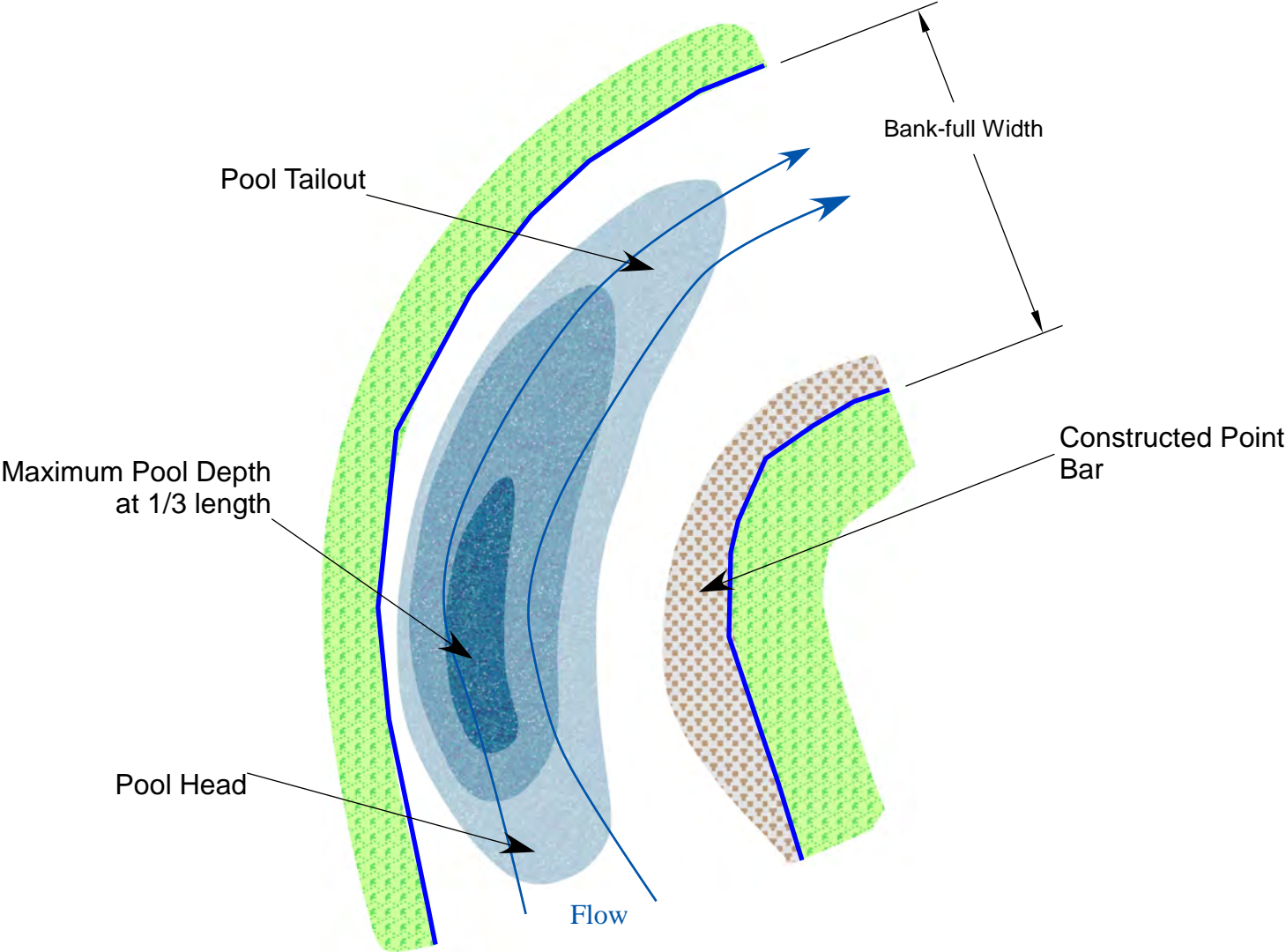
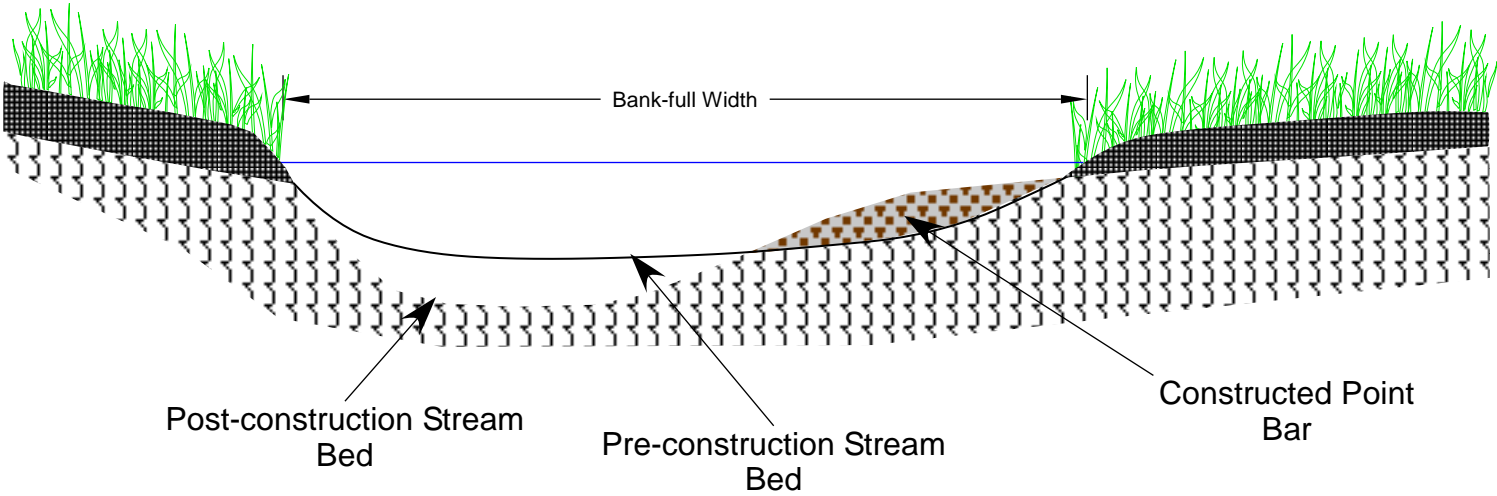


Figure 11. Typical Pool Excavation  
Cross-section View



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**POOL EXCAVATION  
DESIGN FIGURES**

ENGINEER SEAL  
(WHEN APPLICABLE)

NOTES

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Figure 12. Typical Conifer Revetment Installation  
Cross-section View

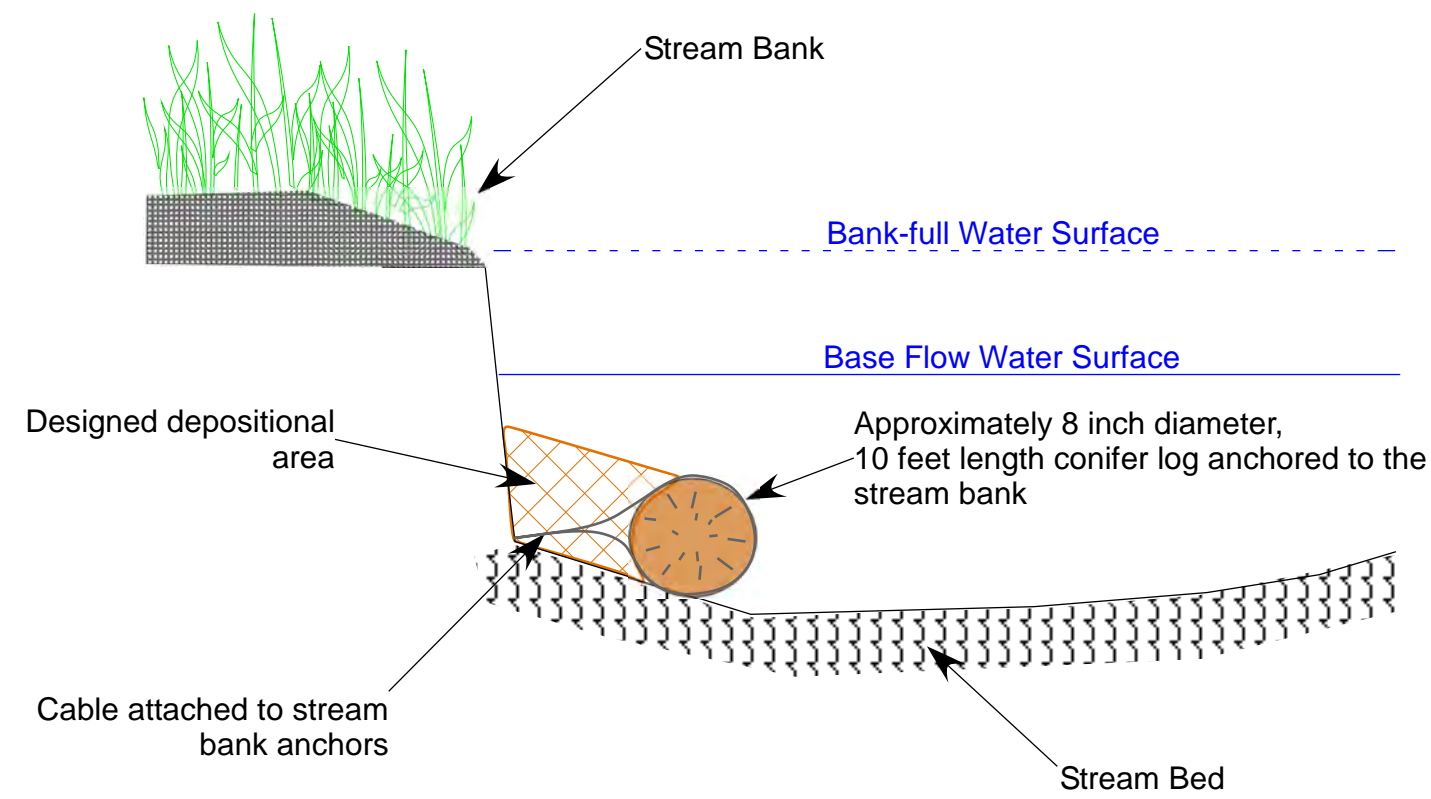
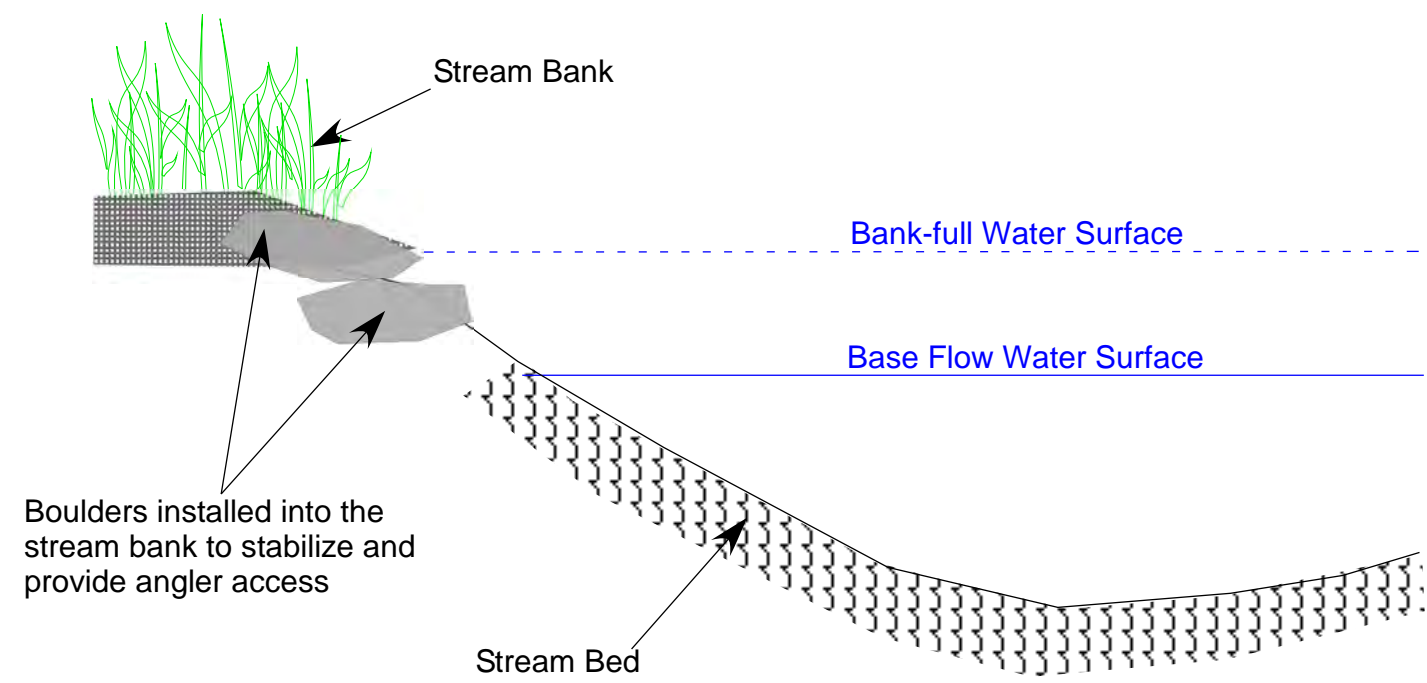


Figure 13. Typical Angler Access Boulder Placement  
Cross-section View



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**STREAM BANK  
REVETMENT  
DESIGN FIGURES**

ENGINEER SEAL  
(WHEN APPLICABLE)

NOTES

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Figure 14. Typical Cross-vane  
Plan View

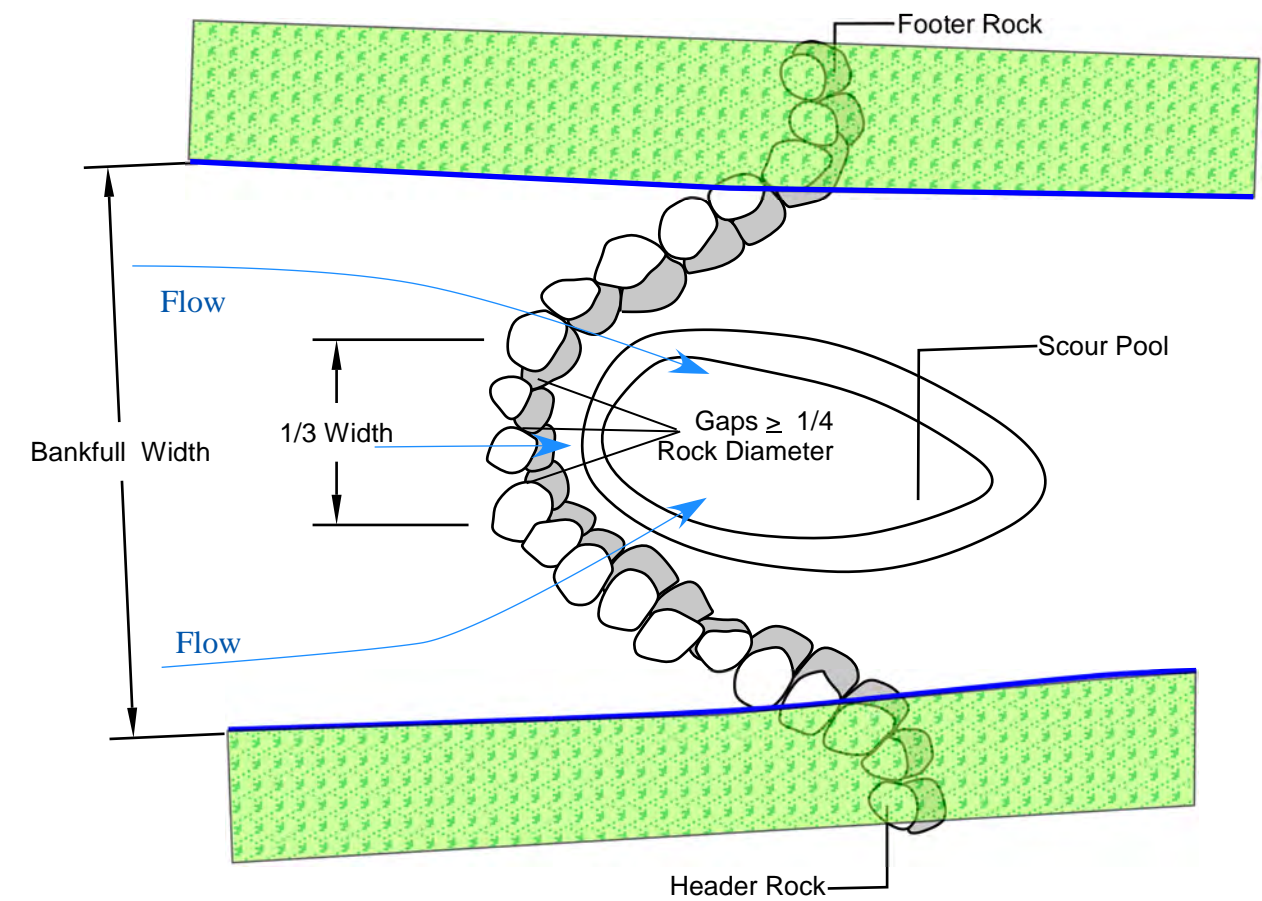
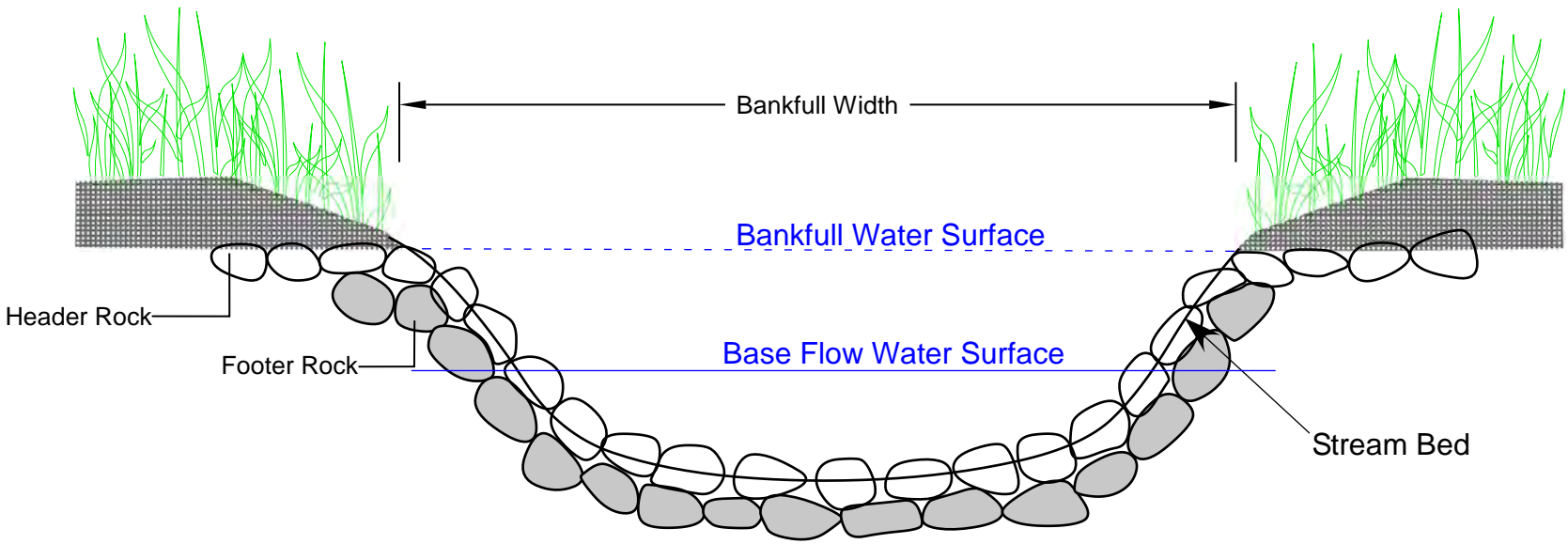


Figure 15. Typical Cross-vane  
Cross-section View



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**MIANUS CHAPTER**  
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PROJECT DESIGN**

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**BOULDER  
CROSS-VANE  
DESIGN FIGURES**

ENGINEER SEAL  
(WHEN APPLICABLE)

NOTES

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July 12, 2023 Mianus River Restoration Site Descriptions

Site 2 (fig.1, sh.5) (03+05-04+22): Install boulder cross-vane (figs.14&15, sh.27) to stabilize channel and concentrate flow through the proposed pool. Excavate pool 3 feet below current stream bed, excavated material will be relocated to construct left bank bar (fig.10&11, sh.25) and enhance upstream riffle. Install wood and boulder habitat (figs. 8&9, sh.24) into the excavated pool. Anchor logs with imported boulders and vertical logs buried into the stream bed. Imported boulders will be used to construct the cross-vane. See Table 1 for material quantities. Cross-section 2 (sh.13) transects the proposed pool’s tail-out.

Site 5 (fig.1, sh.5) (07+85-08+90): Excavate pool 2 feet below current stream bed, excavated material will be relocated to enhance the upstream riffle.

Site 6 (fig.1, sh.5) (Tributary): Install three (3) boulder cross-vanes (figs.14&15, sh.27) in the Mianus River Tributary to prevent further stream channel degradation and promote sediment transport. Re-slope and reclaim 60 linear feet of the actively eroding right bank, replacing the woody debris revetment. Disturbed stream bank will be stabilized with erosion control matting and seeded with a native seed mix. Cross-section 4 (sh.14) transects the proposed stream bank stabilization location. Imported boulders will be used to construct the cross-vanes, see Table 1 for material quantities.

Site 7 (fig.1, sh.5) (09+50-10+37): Install boulder cross-vane (figs.14&15, sh.27) to stabilize channel and concentrate flow through the proposed pool. Install boulder deflector into the left bank to further provide relief to the eroding left bank. Downstream of the deflector fill scallop with excavated stream bed material and install wood and boulder habitat (figs. 8&9, sh.24). Anchor logs with imported boulders and vertical logs buried into the stream bed. Excavate pool 3 feet below current stream bed, excavated material will be relocated to construct right bank bar (fig.10&11, sh.25), fill left bank scallop, and enhance upstream riffle. Imported boulders will be used to construct the cross-vane. See Table 1 for material quantities. Cross-section 5 (sh.13) transects the proposed pool and wood/boulder habitat location.

Site 8 (fig.1, sh.5) (10+57-10+92): Install imported boulders into upstream riffle for habitat improvements and focus flow through the pool during low flow periods. Deepen existing pool minimally, excavated material will be relocated to enhance the upstream riffle. Imported boulders will be used for riffle enhancements, see Table 1 for material quantities.

Site 10 (fig.2, sh.6) (12+98-13+92): Install boulders into the upstream riffle to stabilize channel and concentrate flow through the proposed pool. Excavate pool 3 feet below current stream bed, excavated material will be relocated to enhance upstream riffle and create right bank point bar. Imported boulders will be used to enhance the riffle, see Table 1 for material quantities. Cross-section 6 (sh.13) transects the proposed pool.

Site 12 (fig.2, sh.6) (18+37-19+04): Install imported boulders into upstream riffle for habitat improvements and focus flow through the proposed run during low flow periods. Excavate run 2 feet below current stream bed, excavated material will be relocated to enhance the upstream riffle. Imported boulders will be used for riffle enhancements, see Table 1 for material quantities.

Site 13 (fig.3, sh.7) (19+80-20+70): Excavate pool 2 feet below current stream bed, excavated material will be relocated to enhance the upstream riffle and construct left bank bar.

Site 14 (fig.3, sh.7) (22+95-24+10): Install boulder cross-vane (figs.14&15, sh.27) to stabilize channel and concentrate flow through the proposed pool. Excavate pool 2 feet below current stream bed, excavated material will be relocated to construct left bank bar (fig.10&11, sh.25) and enhance upstream riffle. Install wood and boulder habitat (figs. 8&9, sh.24) into the excavated pool. Anchor logs with imported boulders. Imported boulders will be used to construct the cross-vane. See Table 1 for material quantities. Cross-section 8 (sh.16) transects the proposed pool.

Site 16 (fig.3, sh.7) (26+19-26+95): Install boulder/ log deflector at base of riffle, into the right bank to concentrate flow through the proposed pool. Deepen pool 2 feet below current stream bed, excavated material will be relocated to construct right bank bar (fig.10&11, sh.25) and enhance upstream riffle. Install wood and boulder habitat (figs. 8&9, sh.24) into the excavated pool. Anchor logs with imported boulders, see Table 1 for material quantities.

Site 17 (fig.4, sh.8) (27+15-29+72): Install imported boulders into the stream bed to improve habitat through site. See Table 1 for material quantities. Install alternating cedar revetments (fig.12, sh.26) into the right and left banks. Cross-section 9 (sh.17) transects the proposed habitat enhancements.

Site 18 (fig.4, sh.8) (30+15-30+87): Enhance riffle to concentrate flow through the proposed pool, improving sediment transport. Excavate pool 3 feet below current stream bed, excavated material will be relocated to construct left bank bar (fig.10&11, sh.25) and enhance upstream riffle.

Site 23 (fig.5, sh.9) (35+35-36+40): Install imported boulders into the stream bed to improve habitat through site. See Table 1 for material quantities. Cross-section 11 (sh.18) transects the proposed habitat enhancements.

Site 26 (fig.6, sh.10) (43+95-44+72): Install boulder cross-vane (figs.14&15, sh.27) to stabilize channel and concentrate flow through the proposed pool. Excavate pool 3 feet below current stream bed, excavated material will be relocated to enhance upstream riffle. Imported boulders will be used for boulder cross-vane, see Table 1 for material quantities.

Table 1. Mianus River Restoration Material Quantities

SITE #	POOL EXCAVATION AREA (square feet)	EXCAVATED MATERIAL (cubic yards)	RIFFLE ENHANCEMENT AREA (square feet)	IN-CHANNEL FILL AREA (square feet)	IMPORTED BOULDER QUANTITIES (3-5' long axis, D50= 48")	WOODY HABITAT 18 inch Diameter Logs, 15 ft Long with Rootwad Attached
1						
2	1400	105	1620	520	30	3
3						
4						
5						
6	800	30	1300	0	0	0
8	0	25	0	0	20	0
7	1150	85	170	280	30	3
9	650	15	450	0	10	0
10						
10	1240	80	570	500	10	0
11						
12	850	30	800	0	10	0
13	715	30	1000	380	0	0
14	820	35	820	400	20	0
15						
16	970	60	1050	350	10	0
17	0	0	0	0	30	0
18	770	55	1300	110	0	0
19						
20						
21						
22	2	2	220	2	2	2
23	0	0	0	0	15	0
24						
25						
26	350	60	1300	0	20	0
27						
28						
29						
30						
0101S	10,625	630	11,400	6,100	265	5



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**MIANUS CHAPTER  
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**MIANUS RIVER  
RESTORATION  
PROJECT DESIGN**

**Stamford  
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MIANUS RIVER  
RESTORATION SITE  
DESCRIPTIONS AND  
MATERIAL QUANTITIES

ENGINEER SEAL  
(WHEN APPLICABLE)

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