
To:	Ryan Coyne, P.E. City Engineer City of Rye	From:	Antonio Di Camillo, P.E. 55 Church Street New Haven, CT 06510
File:	192311076	Date:	February 24, 2020

**Reference: Hydraulic Analysis Memorandum
Nursery Field
Rye, NY**

Introduction:

The City of Rye proposes to build a new soccer field at approximately the current location of Nursery Field in Rye, NY. The existing natural turf field is in poor condition and experiences extended periods of time after storm events when it does not adequately drain and is unplayable. The proposed field will be raised a maximum of approximately 4 feet at the western end, elevating it to the FEMA 100-year flood plain elevation depicted on the FEMA map (elevation 13.0 NGVD 88, see attached map) in order to protect it from future flooding damage.

The field is in a FEMA 100-Year floodplain for the Blind Brook. According to FEMA, the project area is tidally influenced and up to Boston Post Road (approximately 3,000 feet upstream of the upper study limit). The Blind Brook through the area is a winding, relatively flat brook with a sandy/silty channel bottom. Wide floodplain areas can be found at both sides of the channel mostly comprised of phragmites adjacent to the channel. The floodplain is generally wide in the project area and extends into surrounding residential areas and park land. The field is located in a low area between two areas of higher elevation. To the north is Playland Parkway and to the south is a residential area.

Stantec has been retained by the City of Rye to design the field and to conduct a hydraulic analysis of the area to evaluate the impacts the project would have on the FEMA floodplain.

Hydraulic Analysis:

A hydraulic analysis using the program HEC-RAS (river analysis software) has been conducted through the area to evaluate if the proposed field construction will impact water surface elevations.

FEMA flows were utilized for the analysis taken from the FIS Table for the Blind Brook at the confluence of the brook and the Long Island Sound (see Table 1). The downstream limit of the study is FEMA Section C (upstream face of the Oakland Beach Avenue Bridge) while the upstream limit is FEMA Section D (downstream face of Playland Parkway Bridge). Ten hydraulic sections are included in the model with three sections through the field. The total length of the study reach is approximately 3,700 feet. A pedestrian bridge was included in the model located approximately midway through the study reach. The section elevations at the channel were compiled from field survey shots taken by Martin Surveying Associates on November 22nd, 2019 and supplemented

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Nursery Field
Rye, NY

with GIS data at the floodplain areas. The elevations at Nursery Field were also field surveyed. Starting water surface elevations were taken from the FEMA FIS Table and the FEMA Profile. Manning's values utilized in the model range from 0.05 (woods) to 0.013 (pavement) with a value of 0.03 assigned to the channel.

An existing conditions model was compiled using the above noted information. This model was then amended at the location of the field to reflect the proposed condition. An additional pre-existing condition model was created using 2001 contours provided by the City of Rye. The 2001 contours were through the proposed field location.

Table 1: FEMA Flows

Storm Event	Discharge (cfs)	Starting W.S.E. (ft.)
10-year	1,660	8.7
50-year	2,731	11.8
100-year	3,265	12.5
500-year	4,426	16.9

Conclusion:

The model shows that the construction of the field will have no impact on the 100-year flood elevations in the area. One of the reasons for this is that the area where the field is located is considered to be an ineffective flow area. Given that there are high areas to the upstream and downstream sides of the field, this area will likely pond and will not actively convey flow. The field is also located at the outermost limit of the floodplain which has less of an impact than if it was located adjacent to the channel. The total flood storage for the 100-year floodplain within the study reach is approximately 600,000 cubic yards. The fill associated with the proposed field is approximately 2,600 cubic yards. This fill represents 0.4% of the total flood storage of the study reach. The field will also be constructed above the 10-year flood elevation and therefore no impact is anticipated to storms events with a 10-year or more frequency (i.e. 5-year and 1-year).

The field is also located in a tidally influenced area and therefore has a lesser impact to the floodplain than if it was in a non-tidal area. The flood elevations in this area are influenced more by the tides from the Long Island Sound than from upstream peak flows. This can be seen from the fact that the water surface elevation through the entire reach is relatively flat and not significantly affected by the ground elevations/features.

The analysis shows that the proposed and existing water surface elevations for the 100-year flood are not affected by the proposed field construction (see Table 2) and that compensatory flood storage measures are not necessary.

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 Nursery Field
 Rye, NY

Table 2: Existing and Proposed Water Surface Elevations (WSE) – 100-Year Storm

Section ID	2001 WSE Pre-Existing (ft.)	WSE Existing (ft.)	WSE Proposed (ft.)	Difference (ft) (proposed – existing)
FEMA D (5470)	12.63	12.63	12.63	0.00
4760	12.64	12.64	12.64	0.00
4065	12.64	12.64	12.64	0.00
3719	12.63	12.63	12.63	0.00
3123	12.62	12.62	12.62	0.00
2967	12.61	12.61	12.61	0.00
2747	12.58	12.58	12.58	0.00
2354	12.57	12.57	12.57	0.00
FEMA C (1742)	12.50	12.50	12.50	0.00

It should be noted that there are preliminary FEMA Maps that have not been formally adopted that show the 100-year elevation to be 12.0 in this area. Using this as the basis for the analysis would further lessen any concerns about impacts from the proposed project.

Summary tables, water surface profiles and HEC-Ras Data can be found following this memorandum.

Stantec Consulting Services, Inc.

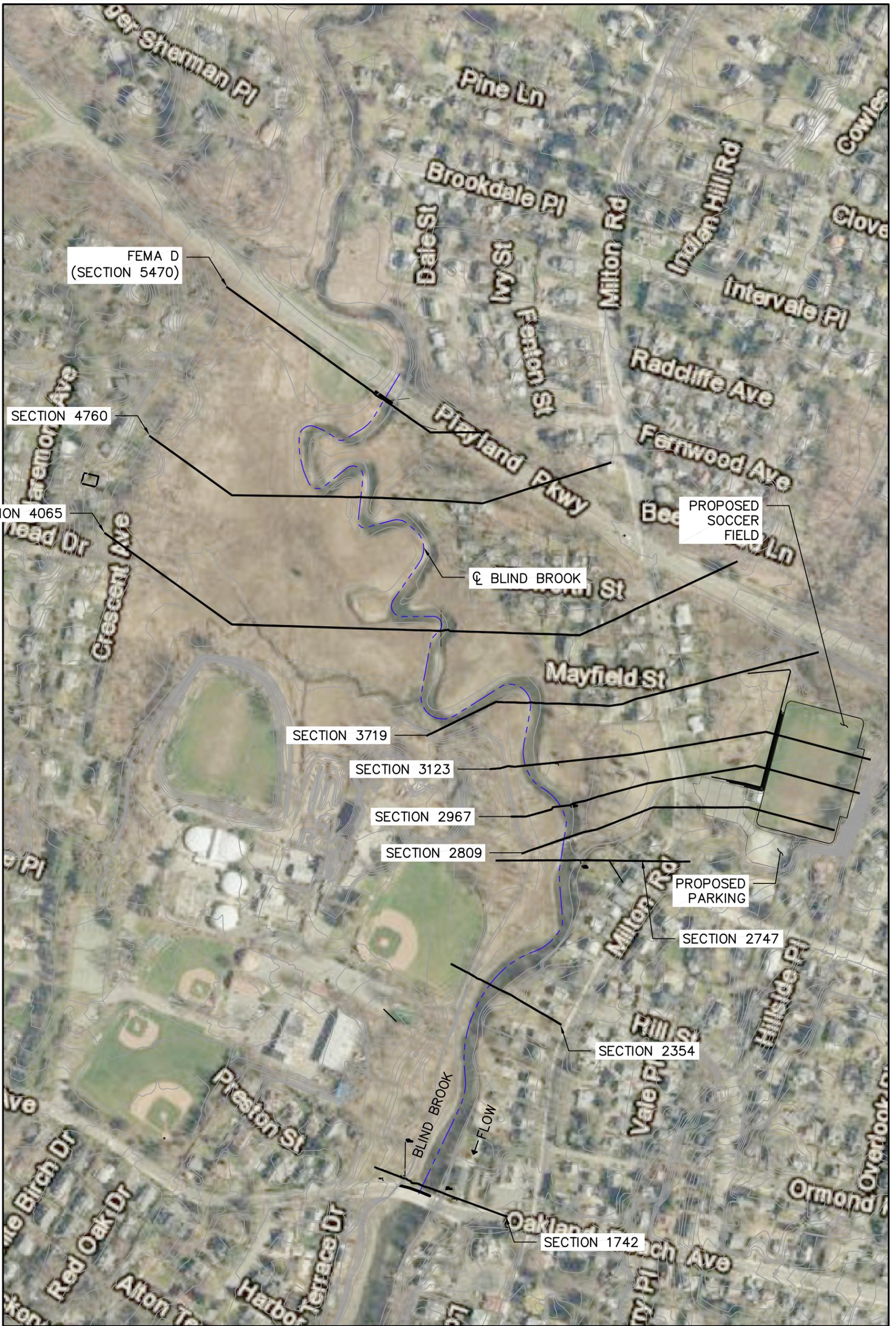


Antonio DiCamillo PE
 Associate

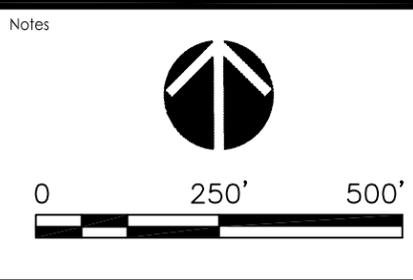
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 Antonio.DiCamillo@stantec.com

Attachment: Cross-section Map, HEC-Ras Data, FEMA Information

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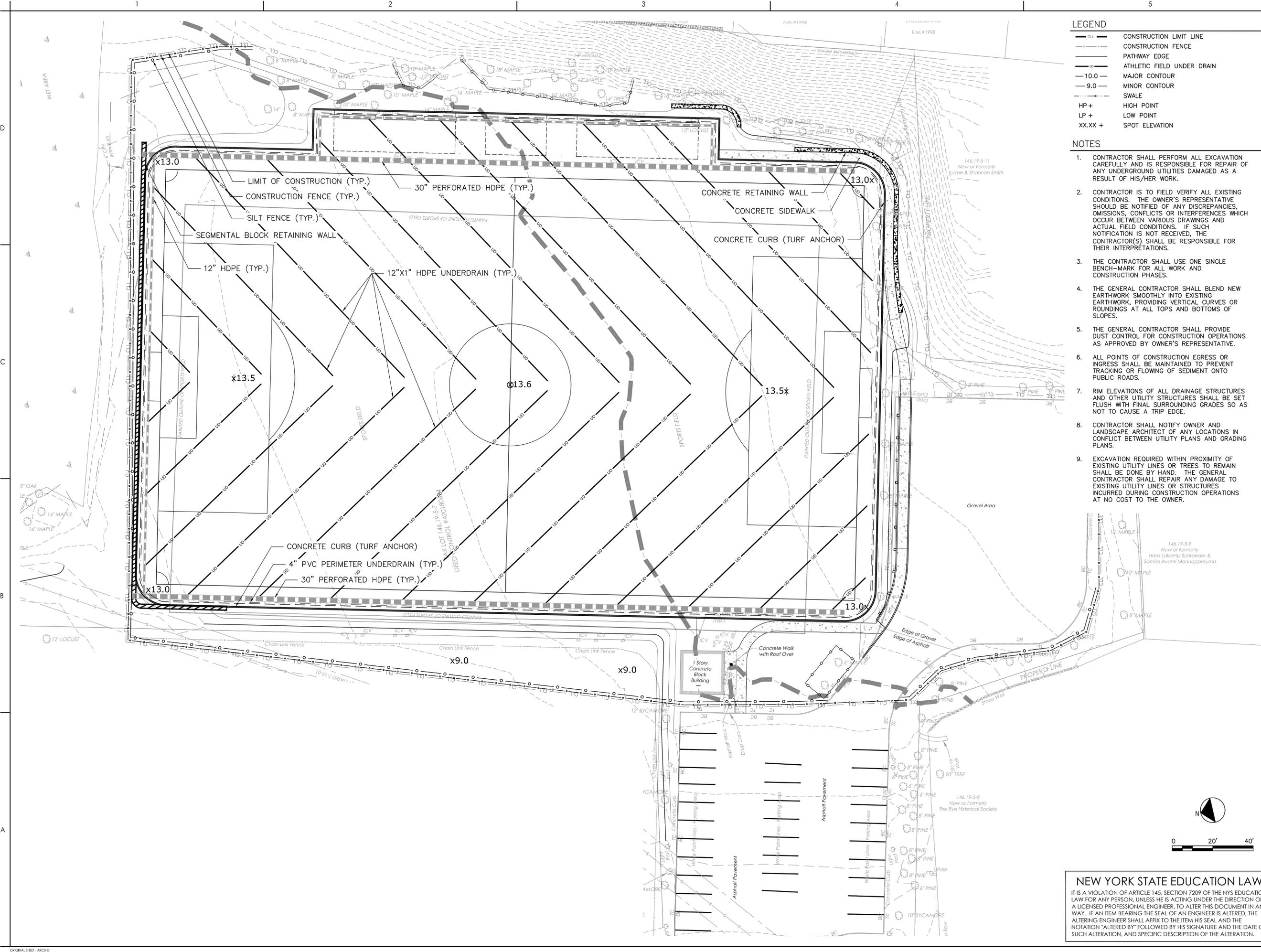


Client/Project
CITY OF RYE
 NURSERY FIELD -
 SOCCER FIELD DESIGN

Project No.
 192311076

Title CROSS SECTION MAP	
Revision #	Date 2019.12.31
Reference Sheet	Figure No. 1

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LEGEND

— CL —	CONSTRUCTION LIMIT LINE
— CF —	CONSTRUCTION FENCE
— PE —	PATHWAY EDGE
— UD —	ATHLETIC FIELD UNDER DRAIN
— 10.0 —	MAJOR CONTOUR
— 9.0 —	MINOR CONTOUR
— SW —	SWALE
HP +	HIGH POINT
LP +	LOW POINT
XX.XX +	SPOT ELEVATION

- NOTES**
- CONTRACTOR SHALL PERFORM ALL EXCAVATION CAREFULLY AND IS RESPONSIBLE FOR REPAIR OF ANY UNDERGROUND UTILITIES DAMAGED AS A RESULT OF HIS/HER WORK.
 - CONTRACTOR IS TO FIELD VERIFY ALL EXISTING CONDITIONS. THE OWNER'S REPRESENTATIVE SHOULD BE NOTIFIED OF ANY DISCREPANCIES, OMISSIONS, CONFLICTS OR INTERFERENCES WHICH OCCUR BETWEEN VARIOUS DRAWINGS AND ACTUAL FIELD CONDITIONS. IF SUCH NOTIFICATION IS NOT RECEIVED, THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR THEIR INTERPRETATIONS.
 - THE CONTRACTOR SHALL USE ONE SINGLE BENCH-MARK FOR ALL WORK AND CONSTRUCTION PHASES.
 - THE GENERAL CONTRACTOR SHALL BLEND NEW EARTHWORK SMOOTHLY INTO EXISTING EARTHWORK, PROVIDING VERTICAL CURVES OR ROUNDINGS AT ALL TOPS AND BOTTOMS OF SLOPES.
 - THE GENERAL CONTRACTOR SHALL PROVIDE DUST CONTROL FOR CONSTRUCTION OPERATIONS AS APPROVED BY OWNER'S REPRESENTATIVE.
 - ALL POINTS OF CONSTRUCTION EGRESS OR INGRESS SHALL BE MAINTAINED TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADS.
 - RIM ELEVATIONS OF ALL DRAINAGE STRUCTURES AND OTHER UTILITY STRUCTURES SHALL BE SET FLUSH WITH FINAL SURROUNDING GRADES SO AS NOT TO CAUSE A TRIP EDGE.
 - CONTRACTOR SHALL NOTIFY OWNER AND LANDSCAPE ARCHITECT OF ANY LOCATIONS IN CONFLICT BETWEEN UTILITY PLANS AND GRADING PLANS.
 - EXCAVATION REQUIRED WITHIN PROXIMITY OF EXISTING UTILITY LINES OR TREES TO REMAIN SHALL BE DONE BY HAND. THE GENERAL CONTRACTOR SHALL REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER.

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Consultant

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Permit/Seal

**PRELIMINARY
NOT FOR
CONSTRUCTION**

Not for permits, pricing or other official purposes. This document has not been completed or checked and is for general information or comment only.

Client/Project
CITY OF RYE

NURSERY FIELD - TURF FIELD DESIGN

RYE, NEW YORK

Project No.: 192311076

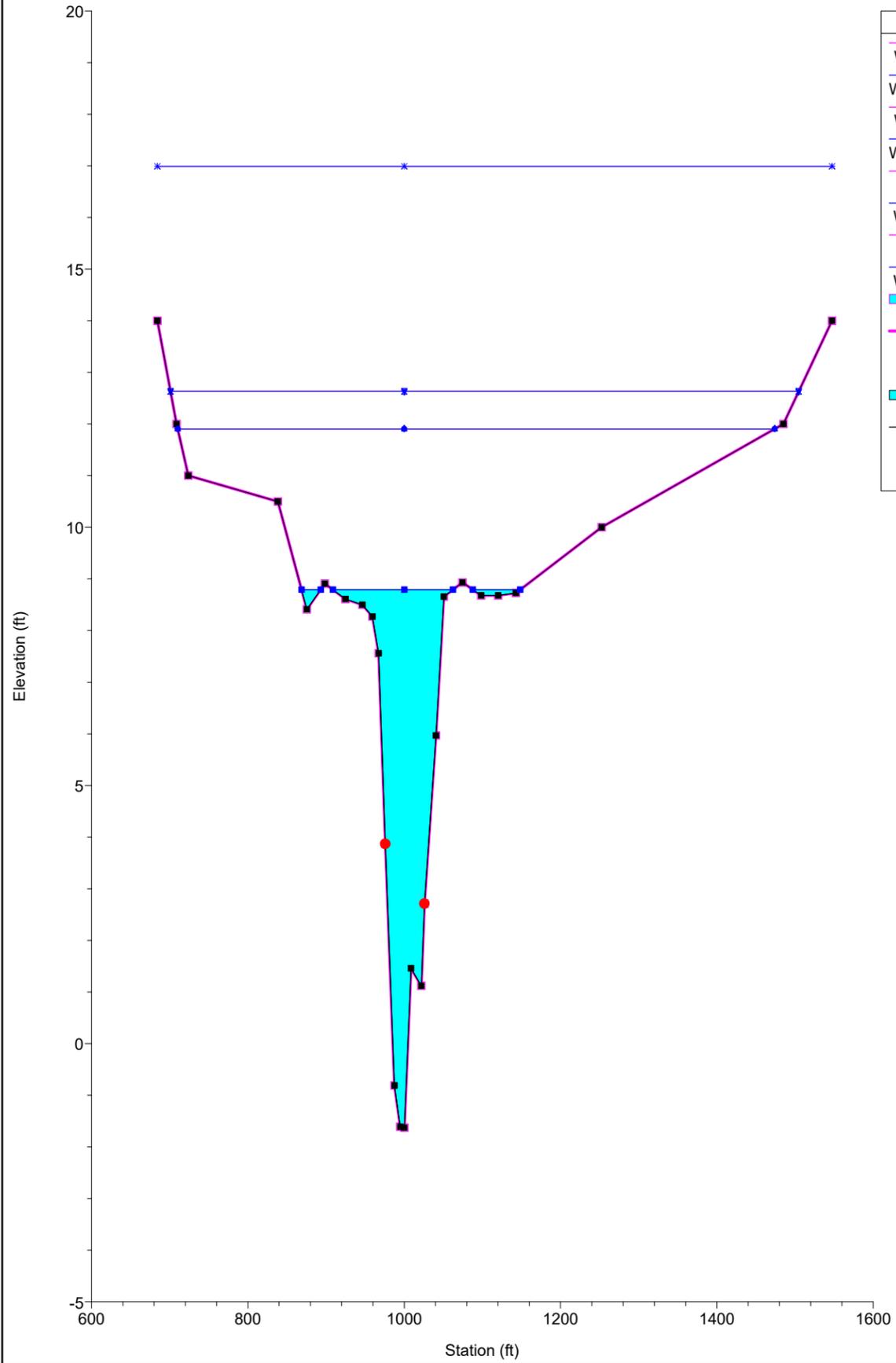
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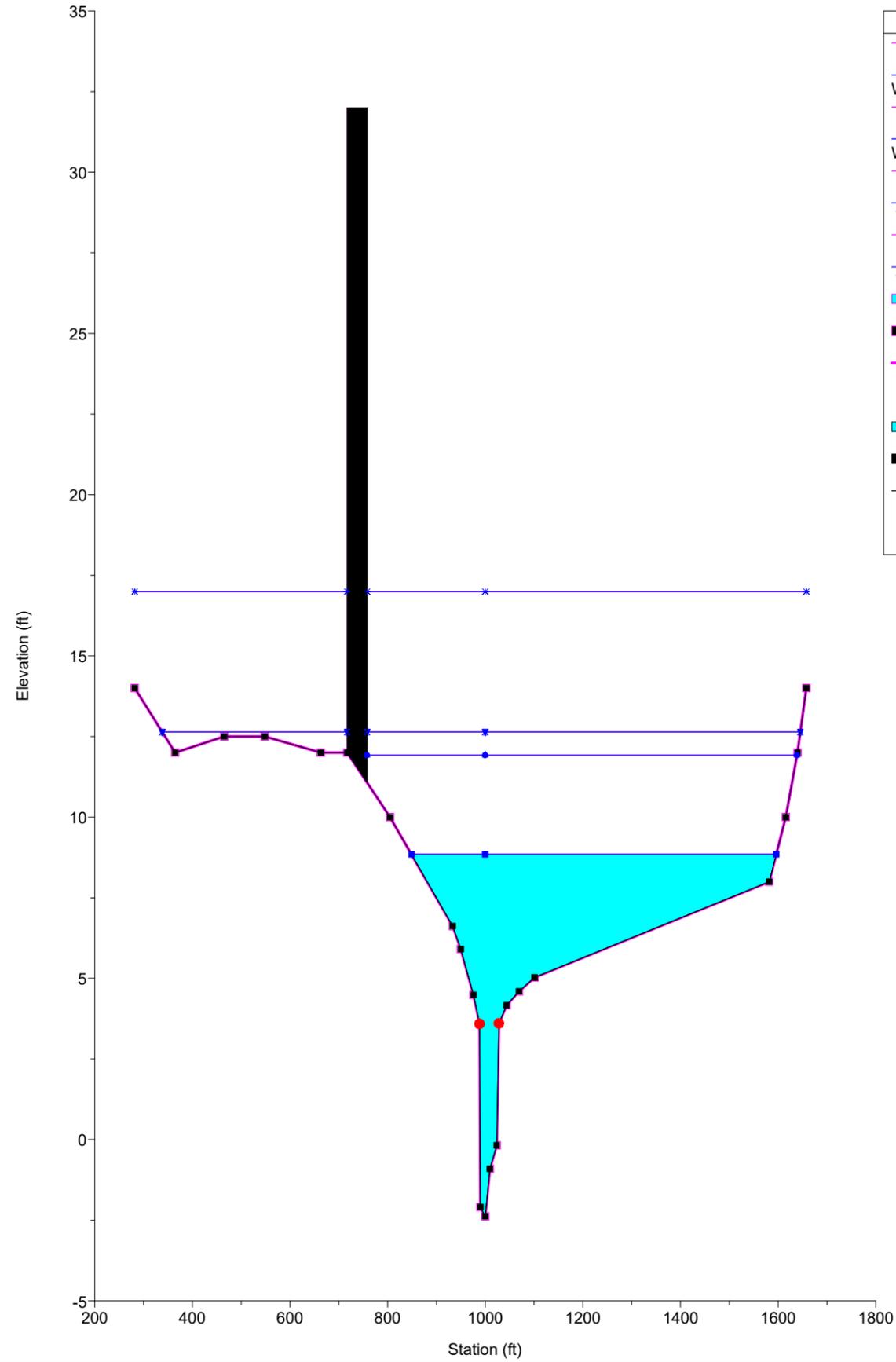
NEW YORK STATE EDUCATION LAW

IT IS A VIOLATION OF ARTICLE 145, SECTION 7209 OF THE NYS EDUCATION LAW FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

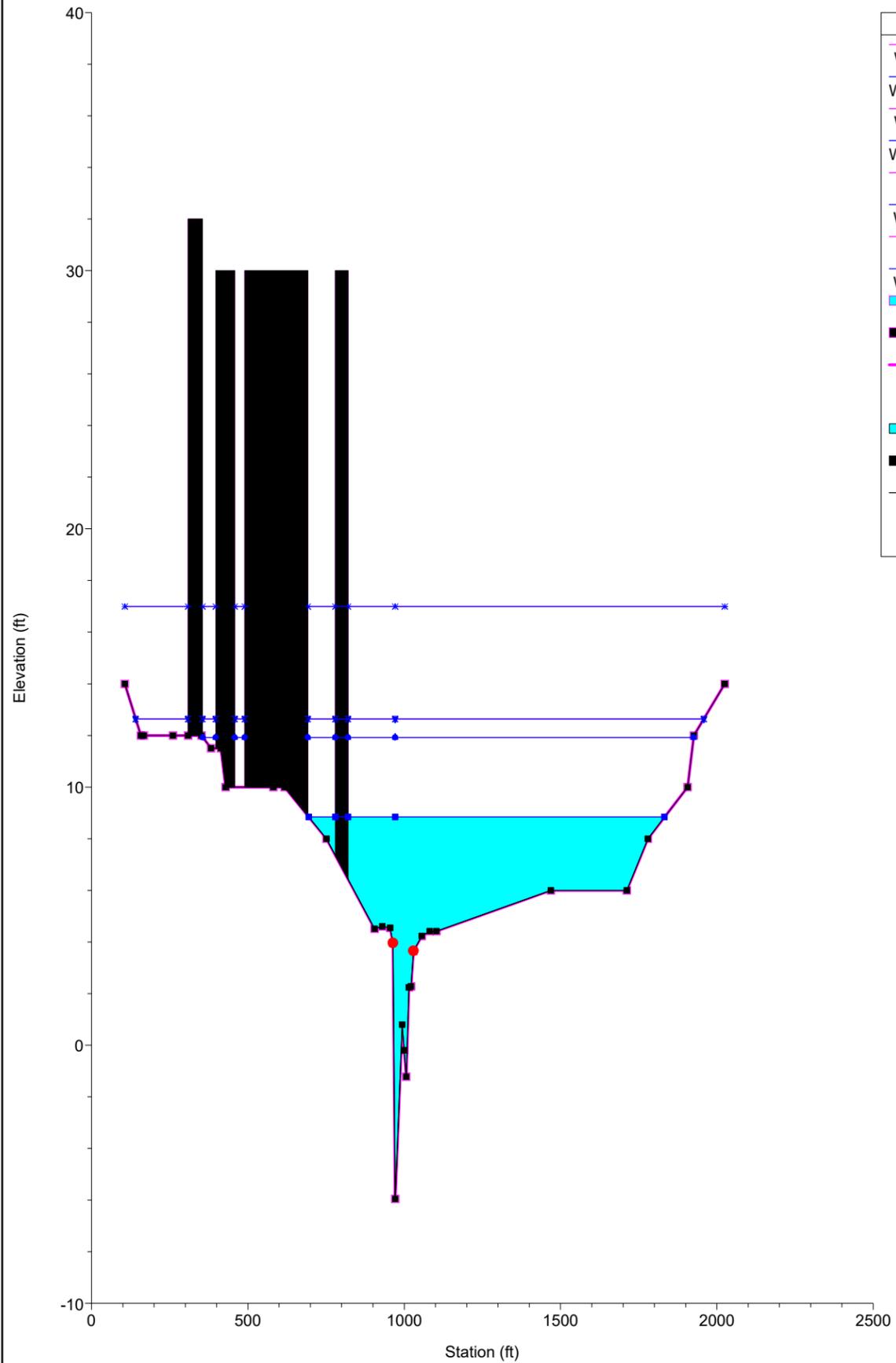
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FEMA D



nursery_field Plan: 1) proposed 2) Existing
Section 4760

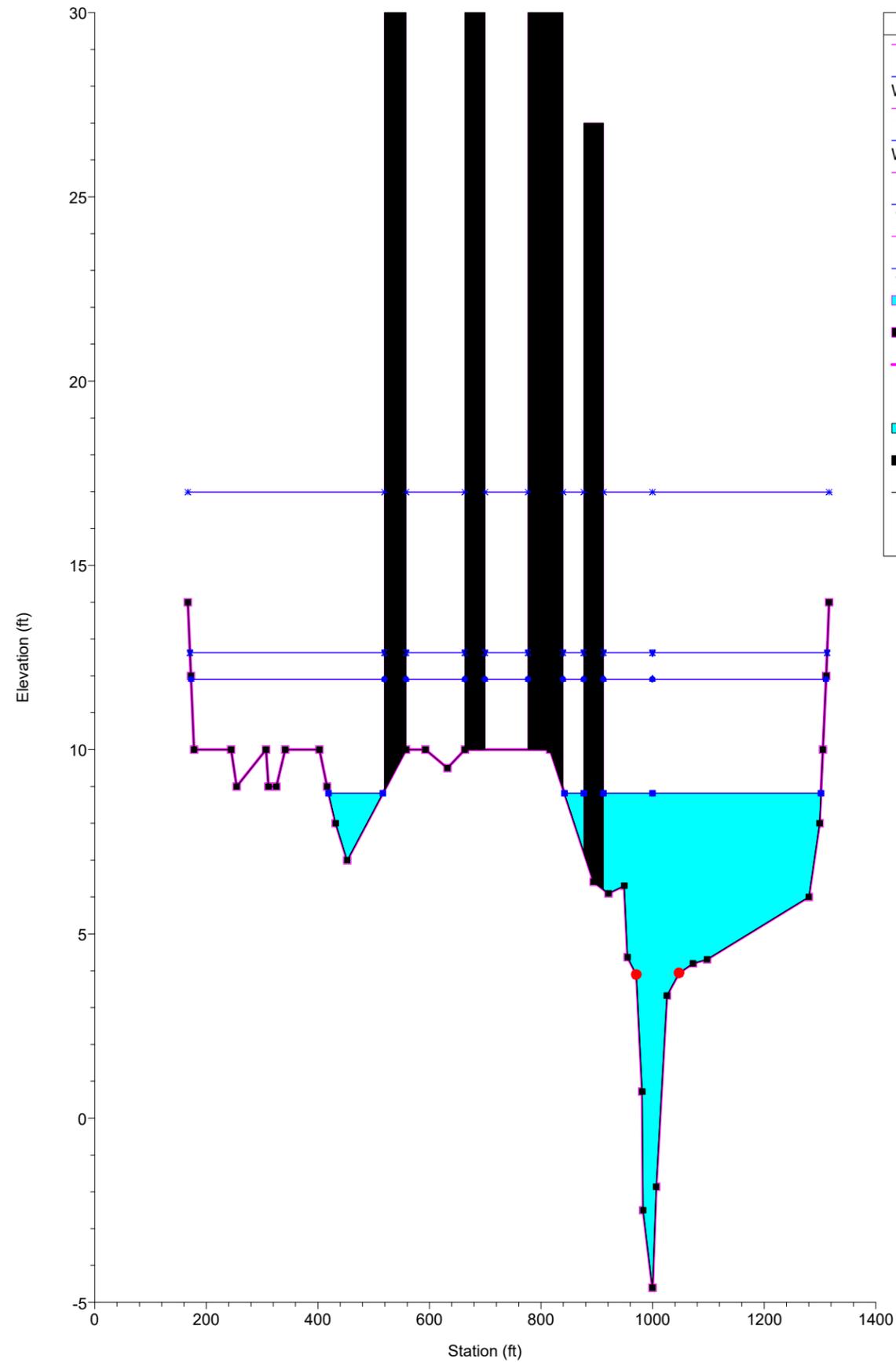


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Section 4065



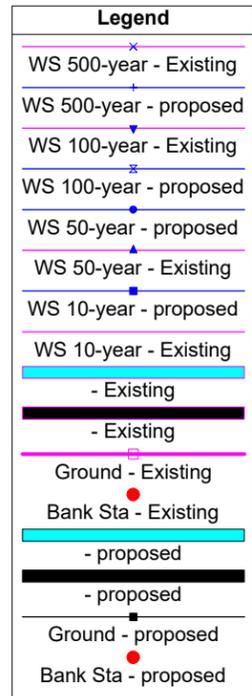
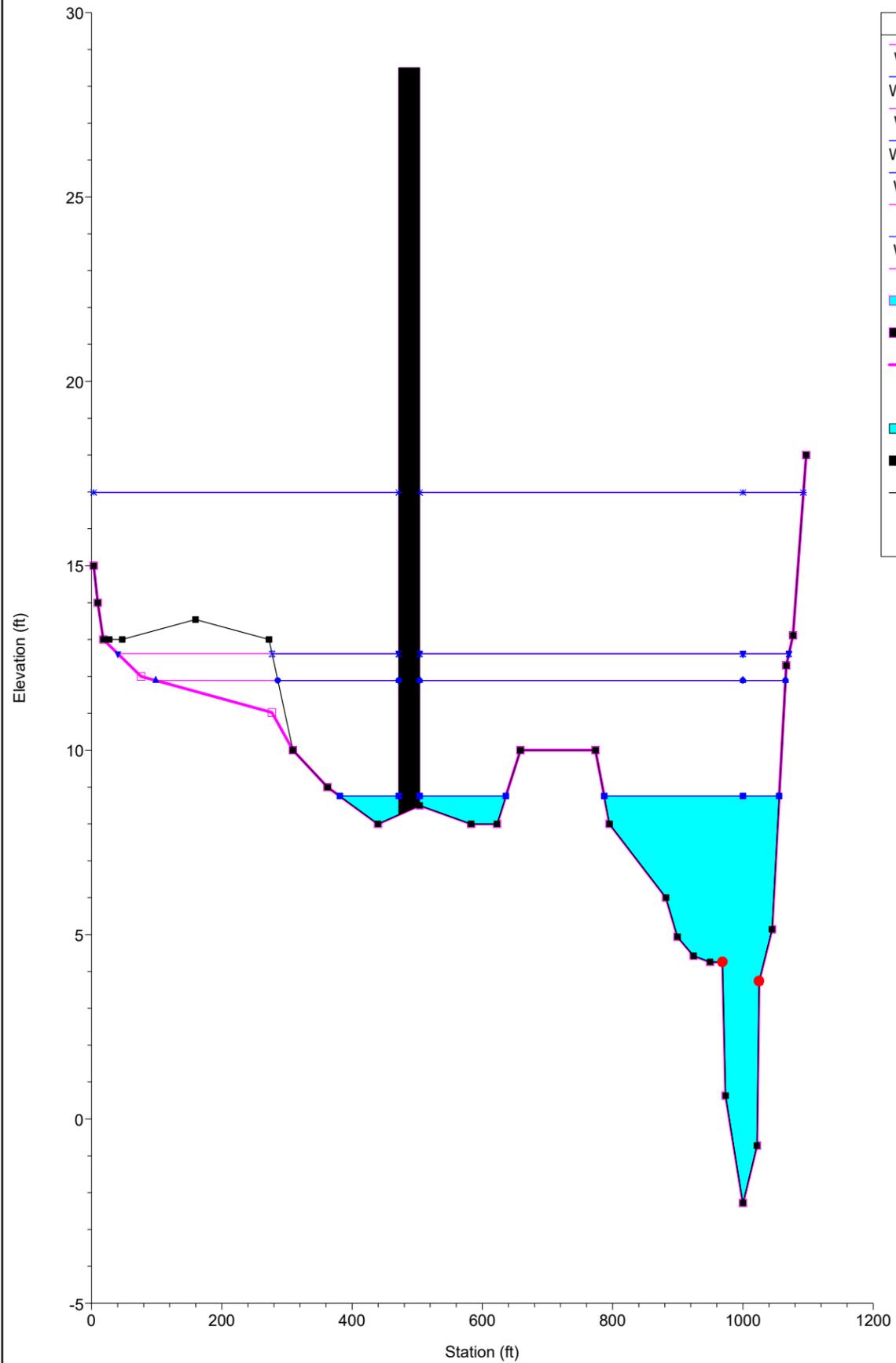
Legend	
WS 500-year - Existing	Blue line with 'x' markers
WS 500-year - proposed	Purple line with 'x' markers
WS 100-year - Existing	Blue line with 'v' markers
WS 100-year - proposed	Purple line with 'v' markers
WS 50-year - Existing	Blue line with '▲' markers
WS 50-year - proposed	Purple line with '▲' markers
WS 10-year - Existing	Blue line with '■' markers
WS 10-year - proposed	Purple line with '■' markers
- Existing	Cyan shaded area
- Existing	Black vertical bar
Ground - Existing	Magenta line with square markers
Bank Sta - Existing	Red dot
- proposed	Cyan shaded area
- proposed	Black vertical bar
Ground - proposed	Black line with square markers
Bank Sta - proposed	Red dot

nursery_field Plan: 1) proposed 2) Existing
Section 3719

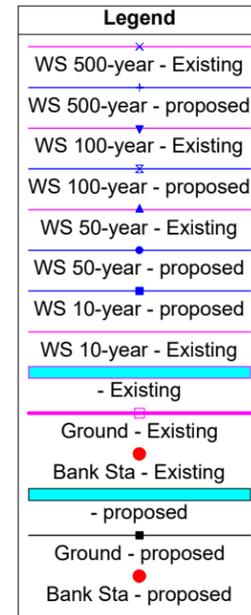
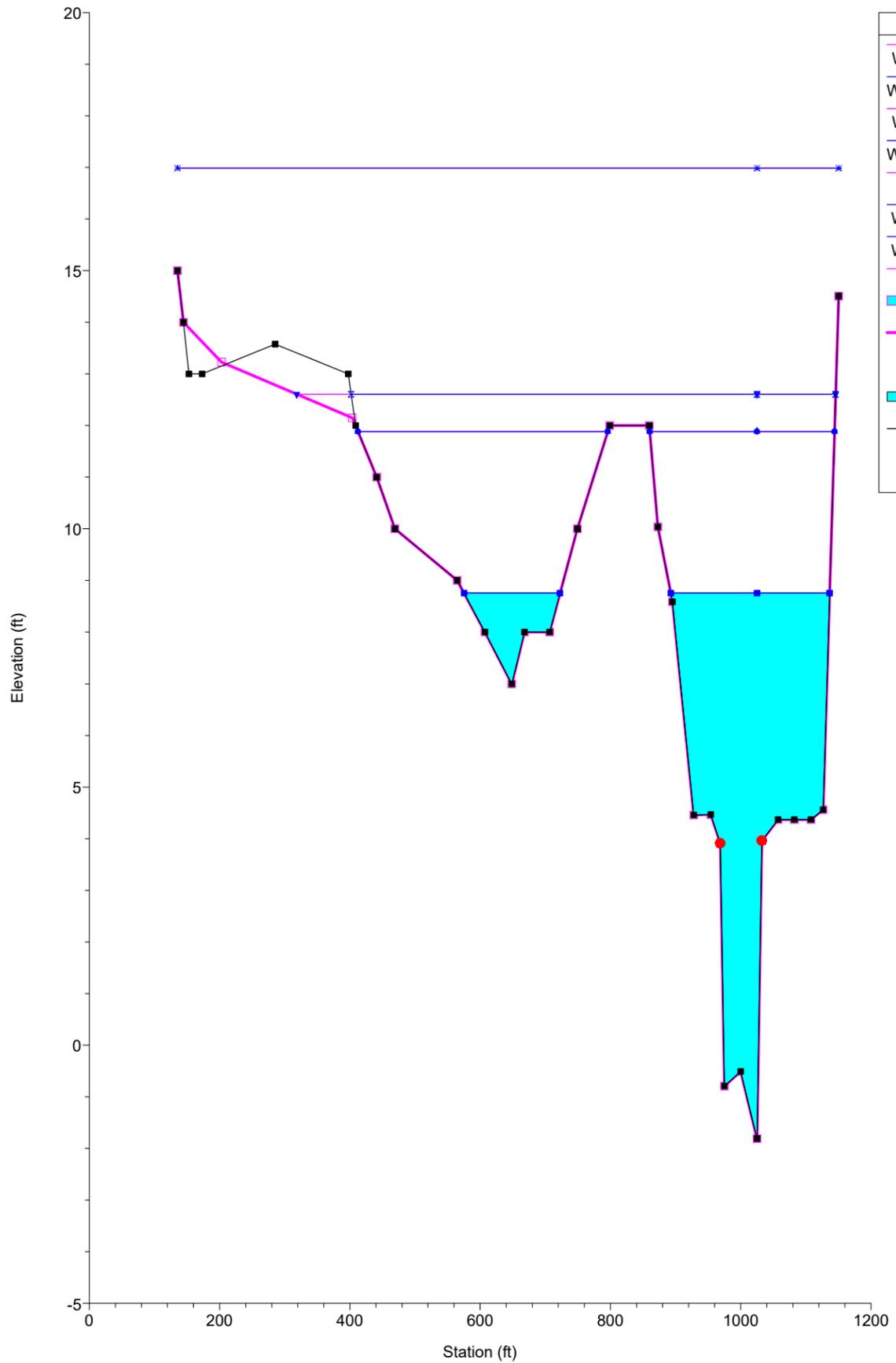


Legend	
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WS 500-year - proposed	Purple line with 'x' markers
WS 100-year - Existing	Blue line with 'v' markers
WS 100-year - proposed	Purple line with 'v' markers
WS 50-year - Existing	Blue line with '▲' markers
WS 50-year - proposed	Purple line with '▲' markers
WS 10-year - Existing	Blue line with '■' markers
WS 10-year - proposed	Purple line with '■' markers
- Existing	Cyan shaded area
- Existing	Black vertical bar
Ground - Existing	Magenta line with square markers
Bank Sta - Existing	Red dot
- proposed	Cyan shaded area
- proposed	Black vertical bar
Ground - proposed	Black line with square markers
Bank Sta - proposed	Red dot

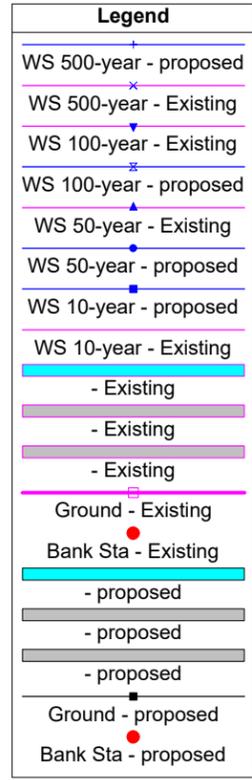
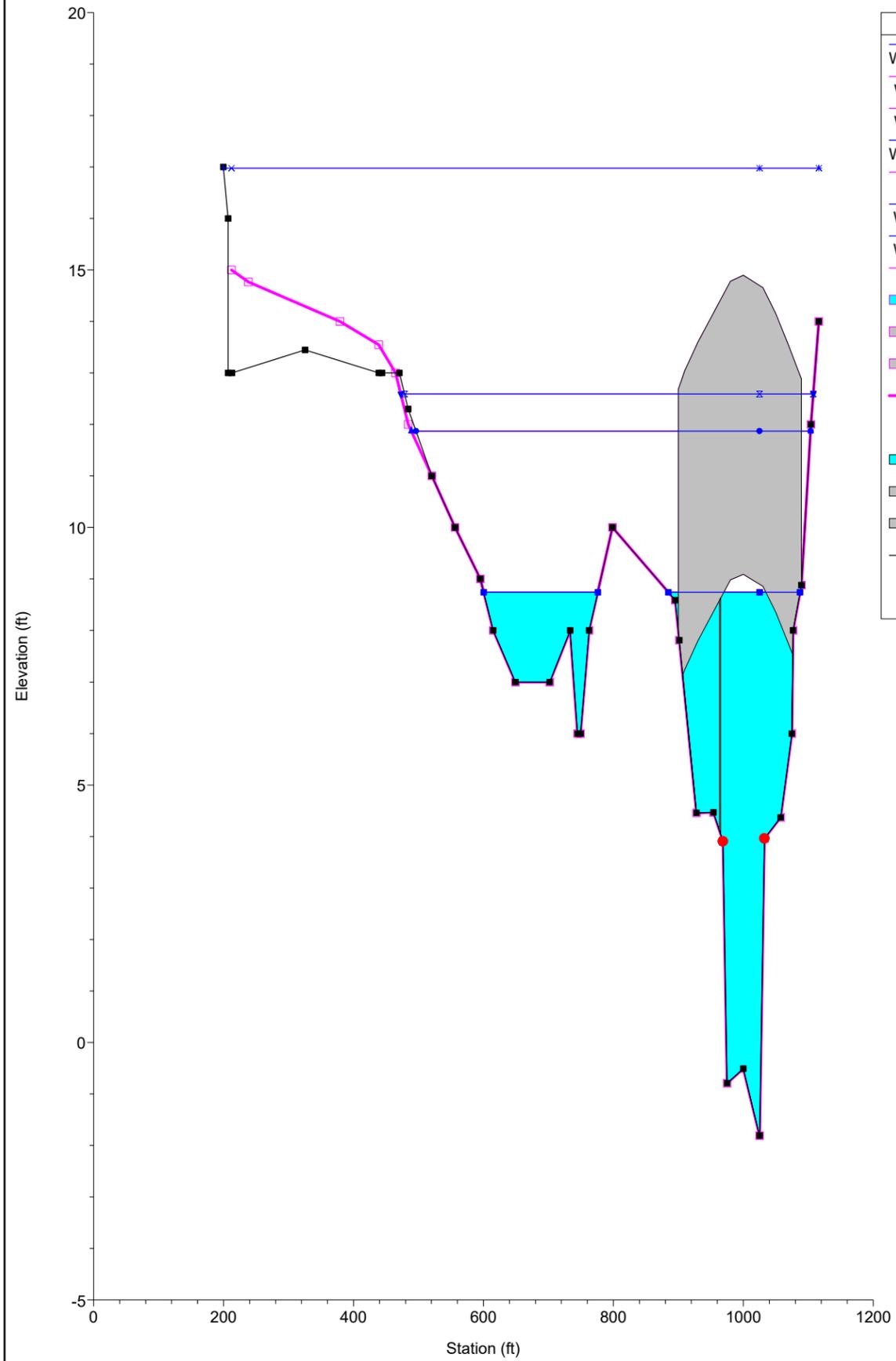
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Section 3123



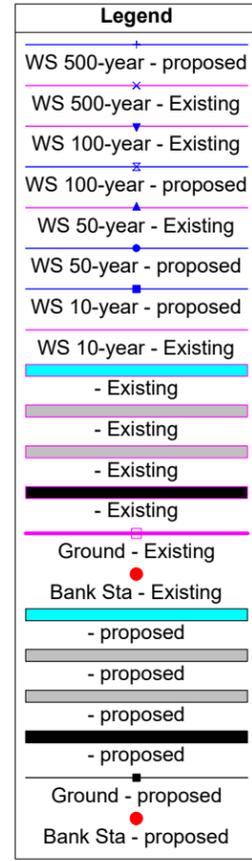
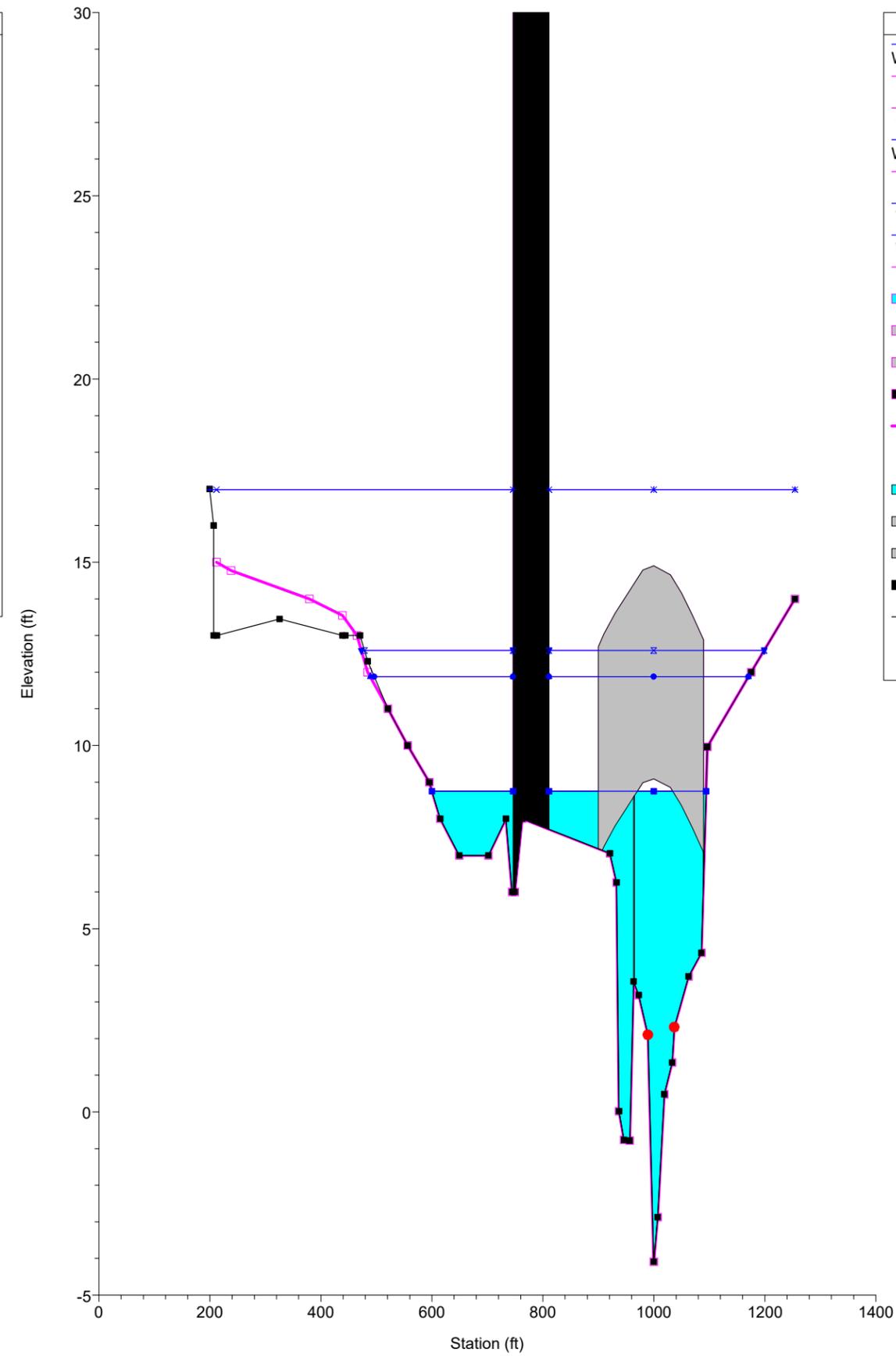
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Section 2967



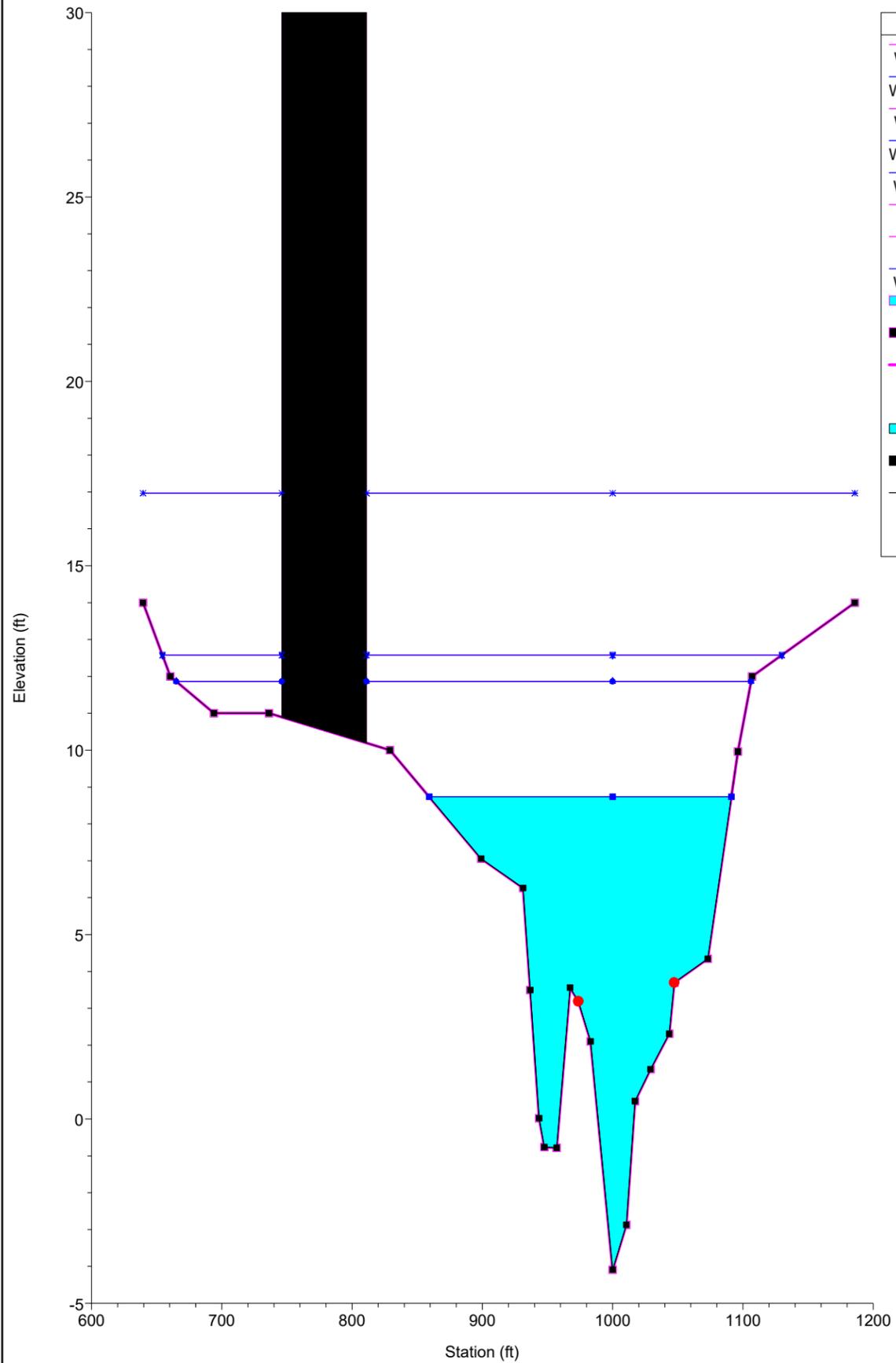
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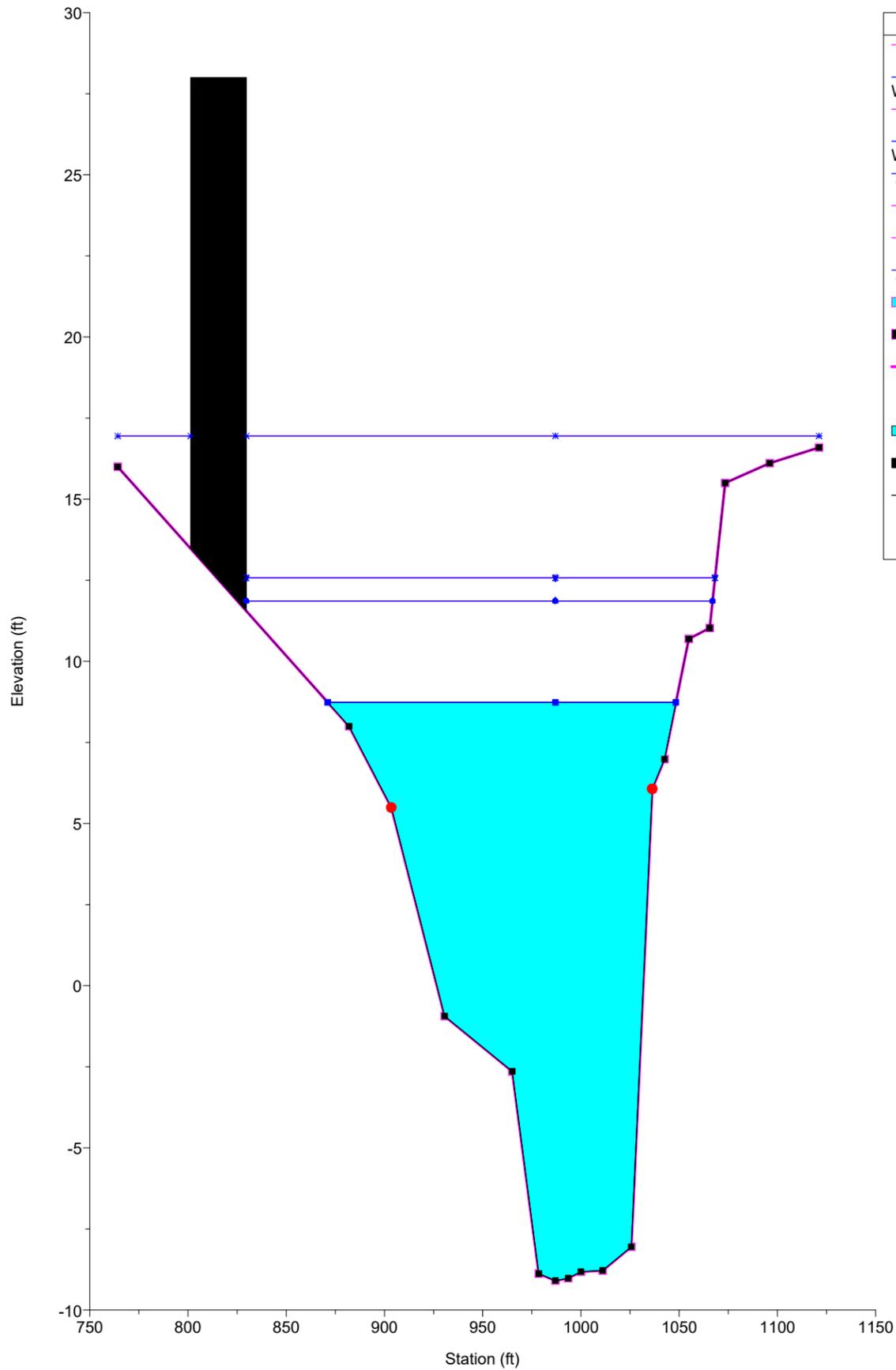
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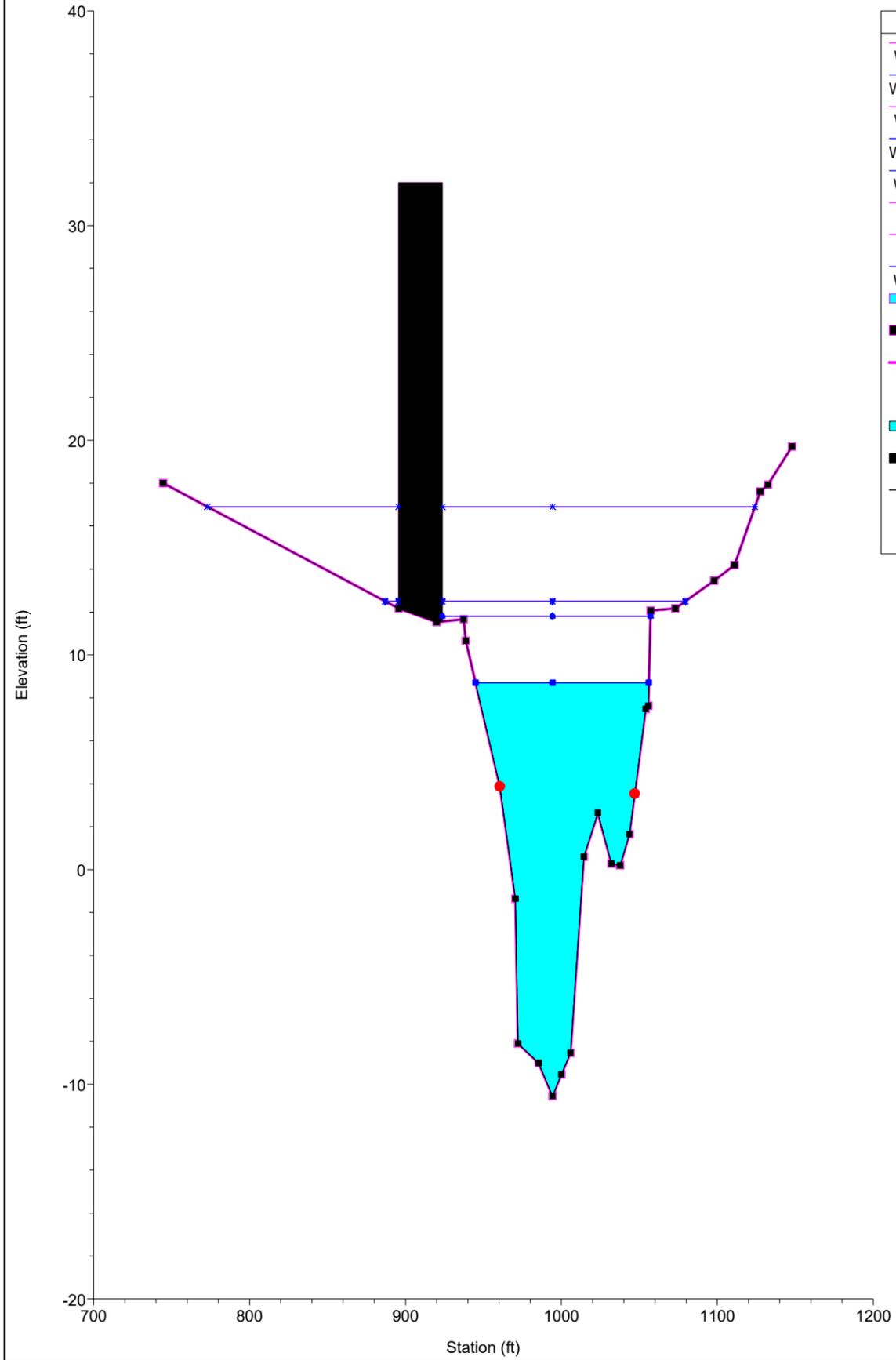
nursery_field Plan: 1) proposed 2) Existing
Section 2747



nursery_field Plan: 1) proposed 2) Existing
Section 2354



nursery_field Plan: 1) proposed 2) Existing
FEMA C



Legend	
WS 500-year - Existing	✕
WS 500-year - proposed	+
WS 100-year - Existing	▼
WS 100-year - proposed	⊠
WS 50-year - proposed	●
WS 50-year - Existing	▲
WS 10-year - Existing	■
WS 10-year - proposed	■
- Existing	█
- Existing	█
Ground - Existing	□
Bank Sta - Existing	●
- proposed	█
- proposed	█
Ground - proposed	■
Bank Sta - proposed	●

Reach	River Sta	Profile	Plan	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
01	5470	10-year	proposed	1660.00	-1.63	8.79		8.99	0.000344	3.68	550.59	238.94	0.23
01	5470	10-year	Existing	1660.00	-1.63	8.79		8.99	0.000344	3.68	550.63	239.01	0.23
01	5470	50-year	proposed	2731.00	-1.63	11.91		11.96	0.000094	2.38	2097.64	763.81	0.12
01	5470	50-year	Existing	2731.00	-1.63	11.91		11.96	0.000094	2.38	2097.87	763.84	0.12
01	5470	100-year	proposed	3265.00	-1.63	12.63		12.67	0.000075	2.21	2669.21	803.59	0.11
01	5470	100-year	Existing	3265.00	-1.63	12.63		12.67	0.000075	2.21	2669.23	803.59	0.11
01	5470	500-year	proposed	4426.00	-1.63	16.99		17.00	0.000011	1.06	6390.03	862.94	0.05
01	5470	500-year	Existing	4426.00	-1.63	16.99		17.00	0.000011	1.06	6390.07	862.94	0.05
01	4760	10-year	proposed	1660.00	-2.38	8.84		8.86	0.000060	1.60	2120.94	747.28	0.09
01	4760	10-year	Existing	1660.00	-2.38	8.84		8.86	0.000060	1.60	2121.07	747.29	0.09
01	4760	50-year	proposed	2731.00	-2.38	11.92		11.93	0.000018	1.05	4664.52	880.83	0.05
01	4760	50-year	Existing	2731.00	-2.38	11.92		11.93	0.000018	1.05	4664.78	880.83	0.05
01	4760	100-year	proposed	3265.00	-2.38	12.64		12.65	0.000017	1.06	5441.36	1266.92	0.05
01	4760	100-year	Existing	3265.00	-2.38	12.64		12.65	0.000017	1.06	5441.38	1266.92	0.05
01	4760	500-year	proposed	4426.00	-2.38	16.99		17.00	0.000004	0.63	11209.47	1335.70	0.03
01	4760	500-year	Existing	4426.00	-2.38	16.99		17.00	0.000004	0.63	11209.53	1335.70	0.03
01	4065	10-year	proposed	1660.00	-5.95	8.84		8.84	0.000017	0.83	3779.84	1137.36	0.05
01	4065	10-year	Existing	1660.00	-5.95	8.84		8.84	0.000017	0.83	3780.04	1137.38	0.05
01	4065	50-year	proposed	2731.00	-5.95	11.92		11.92	0.000006	0.60	7566.82	1307.04	0.03
01	4065	50-year	Existing	2731.00	-5.95	11.92		11.92	0.000006	0.60	7567.20	1307.06	0.03
01	4065	100-year	proposed	3265.00	-5.95	12.64		12.64	0.000006	0.62	8623.50	1508.54	0.03
01	4065	100-year	Existing	3265.00	-5.95	12.64		12.64	0.000006	0.62	8623.53	1508.54	0.03
01	4065	500-year	proposed	4426.00	-5.95	16.99		16.99	0.000002	0.42	15566.28	1610.35	0.02
01	4065	500-year	Existing	4426.00	-5.95	16.99		16.99	0.000002	0.42	15566.36	1610.35	0.02
01	3719	10-year	proposed	1660.00	-4.60	8.81		8.83	0.000047	1.36	1884.37	521.82	0.08
01	3719	10-year	Existing	1660.00	-4.60	8.81		8.83	0.000047	1.36	1884.46	521.83	0.08
01	3719	50-year	proposed	2731.00	-4.60	11.91		11.92	0.000020	1.07	4424.00	965.36	0.06
01	3719	50-year	Existing	2731.00	-4.60	11.91		11.92	0.000020	1.07	4424.28	965.36	0.06
01	3719	100-year	proposed	3265.00	-4.60	12.63		12.64	0.000019	1.10	5121.94	969.32	0.06
01	3719	100-year	Existing	3265.00	-4.60	12.63		12.64	0.000019	1.10	5121.96	969.32	0.06
01	3719	500-year	proposed	4426.00	-4.60	16.99		16.99	0.000006	0.77	9376.74	976.82	0.03
01	3719	500-year	Existing	4426.00	-4.60	16.99		16.99	0.000006	0.77	9376.79	976.82	0.03
01	3123	10-year	proposed	1660.00	-2.28	8.75		8.80	0.000095	2.07	1261.94	491.58	0.12
01	3123	10-year	Existing	1660.00	-2.28	8.75		8.80	0.000096	2.07	1261.88	491.57	0.12
01	3123	50-year	proposed	2731.00	-2.28	11.89		11.91	0.000032	1.45	3332.39	747.46	0.07
01	3123	50-year	Existing	2731.00	-2.28	11.89		11.91	0.000033	1.48	3432.38	934.68	0.07
01	3123	100-year	proposed	3265.00	-2.28	12.61		12.63	0.000030	1.45	3877.24	761.60	0.07
01	3123	100-year	Existing	3265.00	-2.28	12.61		12.63	0.000030	1.46	4136.22	998.12	0.07
01	3123	500-year	proposed	4426.00	-2.28	16.99		16.99	0.000007	0.84	8281.91	1057.47	0.04
01	3123	500-year	Existing	4426.00	-2.28	16.99		16.99	0.000007	0.83	8696.42	1057.47	0.03
01	2967	10-year	proposed	1660.00	-1.81	8.76	2.20	8.79	0.000068	1.73	1398.30	391.34	0.10
01	2967	10-year	Existing	1660.00	-1.81	8.76	2.20	8.79	0.000068	1.73	1398.29	391.34	0.10
01	2967	50-year	proposed	2731.00	-1.81	11.89	3.36	11.90	0.000030	1.40	3118.01	666.97	0.07
01	2967	50-year	Existing	2731.00	-1.81	11.89	3.36	11.90	0.000030	1.40	3118.20	667.38	0.07
01	2967	100-year	proposed	3265.00	-1.81	12.61	3.86	12.63	0.000031	1.48	3643.60	743.72	0.07
01	2967	100-year	Existing	3265.00	-1.81	12.61	3.86	12.63	0.000031	1.48	3664.15	827.19	0.07
01	2967	500-year	proposed	4426.00	-1.81	16.98	5.57	16.99	0.000007	0.87	7895.50	1015.05	0.04
01	2967	500-year	Existing	4426.00	-1.81	16.99	5.57	16.99	0.000007	0.86	7990.81	1015.05	0.04
01	2809			Bridge									
01	2747	10-year	proposed	1660.00	-4.09	8.74		8.77	0.000066	1.66	1196.19	231.94	0.10
01	2747	10-year	Existing	1660.00	-4.09	8.74		8.77	0.000066	1.66	1196.19	231.94	0.10
01	2747	50-year	proposed	2731.00	-4.09	11.86		11.90	0.000046	1.70	2108.48	376.22	0.09
01	2747	50-year	Existing	2731.00	-4.09	11.86		11.90	0.000046	1.70	2108.48	376.22	0.09
01	2747	100-year	proposed	3265.00	-4.09	12.58		12.62	0.000051	1.85	2390.26	410.55	0.09
01	2747	100-year	Existing	3265.00	-4.09	12.58		12.62	0.000051	1.85	2390.26	410.55	0.09
01	2747	500-year	proposed	4426.00	-4.09	16.97		16.99	0.000018	1.36	4452.65	481.46	0.06
01	2747	500-year	Existing	4426.00	-4.09	16.97		16.99	0.000018	1.36	4452.65	481.46	0.06
01	2354	10-year	proposed	1660.00	-9.09	8.74		8.75	0.000015	0.99	1726.55	177.24	0.05
01	2354	10-year	Existing	1660.00	-9.09	8.74		8.75	0.000015	0.99	1726.55	177.24	0.05
01	2354	50-year	proposed	2731.00	-9.09	11.86		11.88	0.000018	1.26	2375.36	237.33	0.06
01	2354	50-year	Existing	2731.00	-9.09	11.86		11.88	0.000018	1.26	2375.36	237.33	0.06
01	2354	100-year	proposed	3265.00	-9.09	12.57		12.60	0.000022	1.42	2545.39	238.57	0.06
01	2354	100-year	Existing	3265.00	-9.09	12.57		12.60	0.000022	1.42	2545.39	238.57	0.06
01	2354	500-year	proposed	4426.00	-9.09	16.95		16.98	0.000015	1.40	3728.44	328.53	0.05
01	2354	500-year	Existing	4426.00	-9.09	16.95		16.98	0.000015	1.40	3728.44	328.53	0.05
01	1742	10-year	proposed	1660.00	-10.55	8.70	-5.03	8.74	0.000042	1.55	1109.57	111.03	0.08
01	1742	10-year	Existing	1660.00	-10.55	8.70	-5.03	8.74	0.000042	1.55	1109.57	111.03	0.08
01	1742	50-year	proposed	2731.00	-10.55	11.80	-3.43	11.86	0.000051	1.99	1472.40	133.53	0.09
01	1742	50-year	Existing	2731.00	-10.55	11.80	-3.43	11.86	0.000051	1.99	1472.40	133.53	0.09
01	1742	100-year	proposed	3265.00	-10.55	12.50	-2.72	12.58	0.000062	2.26	1574.61	164.74	0.10
01	1742	100-year	Existing	3265.00	-10.55	12.50	-2.72	12.58	0.000062	2.26	1574.61	164.74	0.10
01	1742	500-year	proposed	4426.00	-10.55	16.90	-1.33	16.96	0.000040	2.14	2679.89	323.10	0.08
01	1742	500-year	Existing	4426.00	-10.55	16.90	-1.33	16.96	0.000040	2.14	2679.89	323.10	0.08

National Flood Hazard Layer FIRMette



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, A99
		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
		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		17.5 Coastal Transect Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

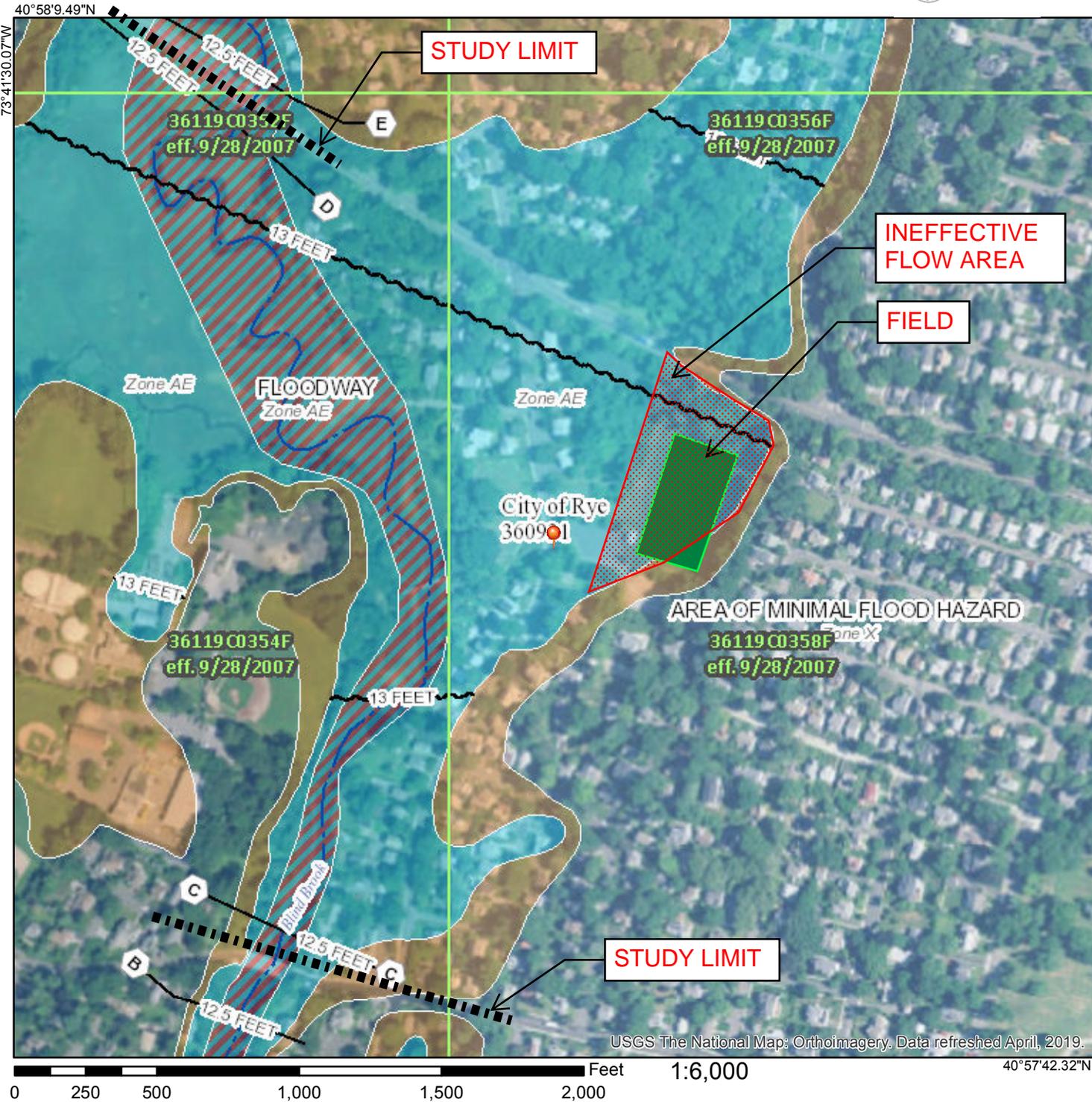


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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 10/10/2019 at 2:56:44 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.



40°58'9.49"N
73°41'30.07"W

0 250 500 1,000 1,500 2,000 Feet 1:6,000 40°57'42.32"N

73°40'52.62"W

USGS The National Map: Orthoimagery. Data refreshed April, 2019.

TABLE 4 - SUMMARY OF DISCHARGES - continued

<u>FLOODING SOURCE AND LOCATION</u>	<u>DRAINAGE AREA (sq. miles)</u>	<u>PEAK DISCHARGES (cfs)</u>			
		<u>10-PERCENT</u>	<u>2-PERCENT</u>	<u>1-PERCENT</u>	<u>0.2-PERCENT</u>
BEAVER SWAMP BROOK (continued)					
Upstream Metro North Railroad	2.34	454	816	968	1400
Upstream of Locust Avenue	1.6	414	751	892	1300
Upstream of Park Drive	0.9	344	631	752	1145
BLIND BROOK					
At mouth	10.9	1,660	2,731	3,265	4,426
At USGS Gage	9.6	1,521	2,497	2,984	4,042
At Purchase Street	8.80	1,434	2,353	2,812	3,807
At upstream corporate limit	8.32	1,374	2,255	2,694	3,645
Upstream of confluence with East Branch Blind Brook	7.80	1,317	2,160	2,580	3,490
At Bowman Avenue	6.90	1,211	1,986	2,372	3,206
At Cross Section O	6.00	1,100	1,803	2,153	2,907
At a point approximately 400 feet upstream of Brookside Avenue	3.0	780	1,220	1,535	2,375
Upstream of New Blind Brook Country Club Dam	2.4	575	930	1,135	1,765
At cross section AM (upstream of Anderson Hill Road)	1.80	425	695	850	1,330
BRANCH BROOK					
Confluence with Kisco River	2.83	255	422	494	713
Upstream of East Main Street	2.20	252	363	422	548
Upstream of Tributary approximately 1,100 feet upstream of Preston Way	1.10	183	302	369	524
Upstream of Green Lane	0.40	98	168	209	321
BRANCH 1 HUTCHINSON RIVER					
Highbrook Avenue	0.25	172	219	239	291
BRANCH 2 KISCO RIVER					
At downstream Town of New Castle corporate Limits	0.18	147	195	214	259

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE ¹	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Blind Brook								
A	1,088	111	558	5.9	12.5	4.1 ²	4.1	0.0
B	1,756	113	954	3.4	12.5	5.2 ²	5.3	0.1
C	2,026	112	898	3.6	12.5	8.5 ²	8.6	0.1
D	5,473	431	2,318	1.4	12.5	9.8 ²	10.1	0.3
E	5,620	425	2,569	1.3	12.5	10.8 ²	11.1	0.3
F	8,617	376	1,854	1.8	12.5	11.7 ²	12.3	0.6
G	8,791	376	1,635	2.0	13.0	13.0	13.3	0.3
H	9,945	178	790	4.1	14.0	14.0	14.5	0.5
I	10,132	115	737	4.4	16.7	16.7	17.0	0.3
J	11,475	91	525	6.2	18.5	18.5	19.4	0.9
K	11,556	191	960	3.4	21.1	21.1	21.3	0.2
L	12,248	223	1,051	2.8	22.5	22.5	23.3	0.8
M	12,977	90	1,265	2.4	30.3	30.3	30.3	0.0
N	18,371	120	770	3.5	32.1	32.1	32.9	0.8
O	20,679	46	218	11.8	35.0	35.0	35.7	0.7
P	22,113	50	546	4.7	58.7	58.7	58.9	0.2
Q	23,398	127	484	4.9	63.4	63.4	63.7	0.3
R	24,205	59	339	7.0	69.4	69.4	70.4	1.0
S	25,074	37	238	10.0	74.3	74.3	75.2	0.9
T	27,024	89	378	5.7	88.8	88.8	88.8	0.0
U	27,556	117	554	3.9	94.5	94.5	94.9	0.4
V	27,943	123	297	7.3	99.1	99.1	99.1	0.0
W	28,525	53	247	8.7	104.4	104.4	105.2	0.8
X	31,426	54	169	9.1	126.8	126.8	126.8	0.0
Y	31,959	47	155	9.9	133.2	133.2	133.2	0.0
Z	32,143	70	461	3.3	139.0	139.0	139.0	0.0

¹Feet above confluence with Long Island Sound

²Elevation computed without consideration of backwater effects from Long Island Sound

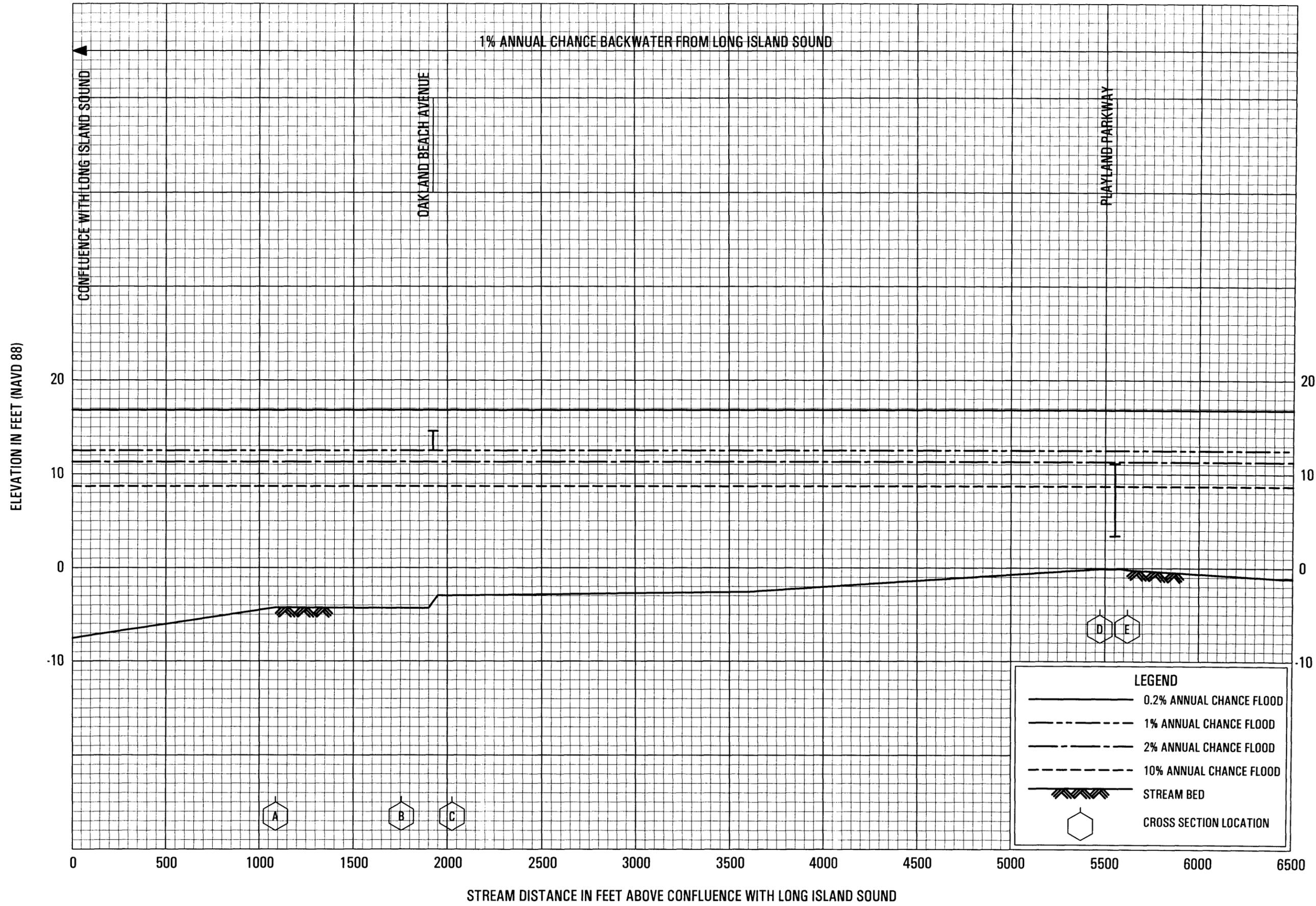
TABLE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)

FLOODWAY DATA

BLIND BROOK



FLOOD PROFILES

BLIND BROOK

FEDERAL EMERGENCY MANAGEMENT AGENCY
WESTCHESTER COUNTY, NY
(ALL JURISDICTIONS)