

# Charleston Tradeport Hydrologic Analysis

January 20, 2021





## **Scope of Work:**

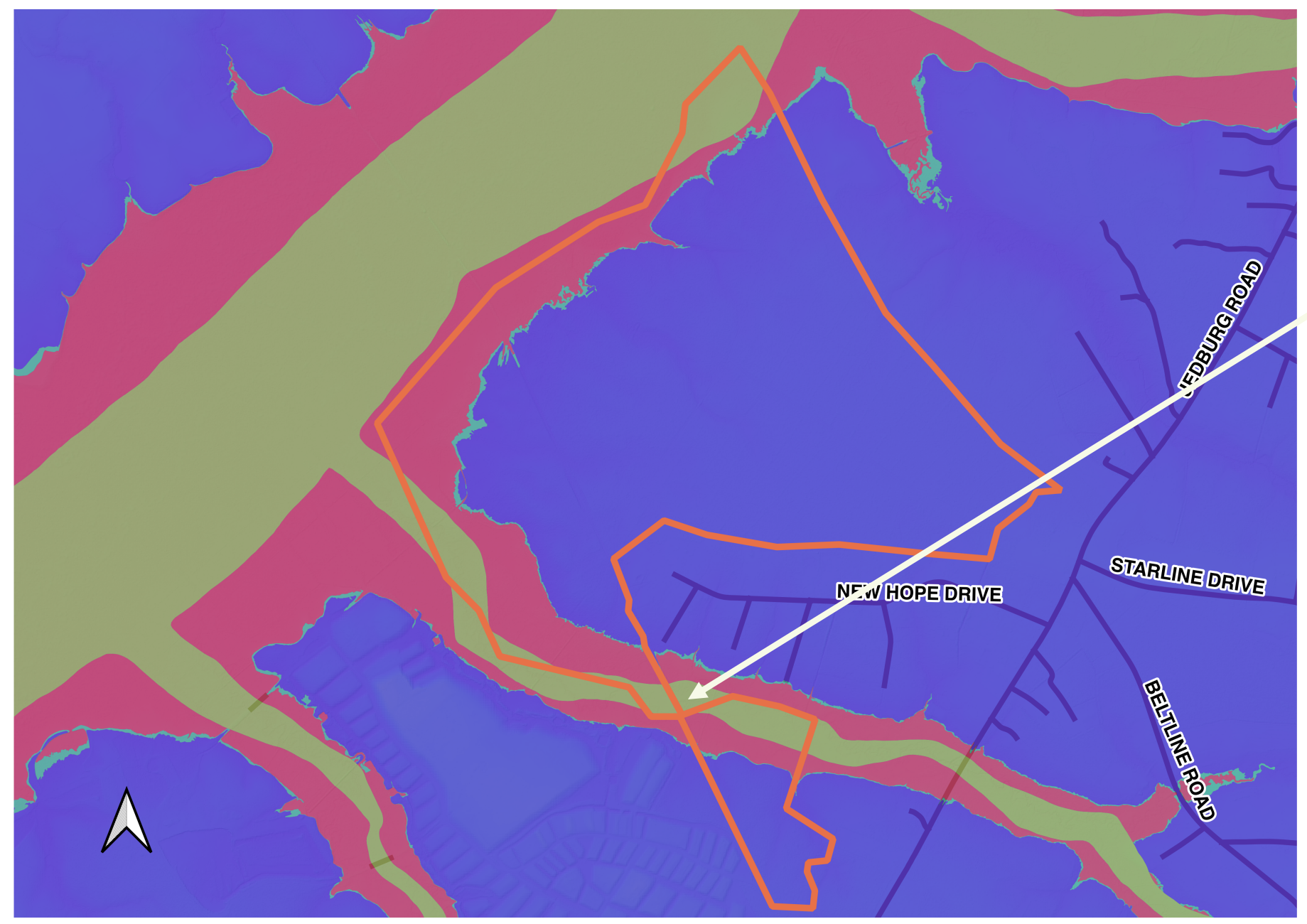
**Hydrologic analyses of project site and Miller Dam Branch watershed to inform public hearing talking points**



# Highlights:

- 1. Proposed site plan will increase annual runoff volume by 60%.**
- 2. Proposed culvert in Miller Dam Branch is in a FEMA floodway.**
- 3. Project site is downstream of a 5.37 sq mi watershed.**
- 4. Future urbanization of the watershed will increase peak discharge of 2-year storm by 56%.**

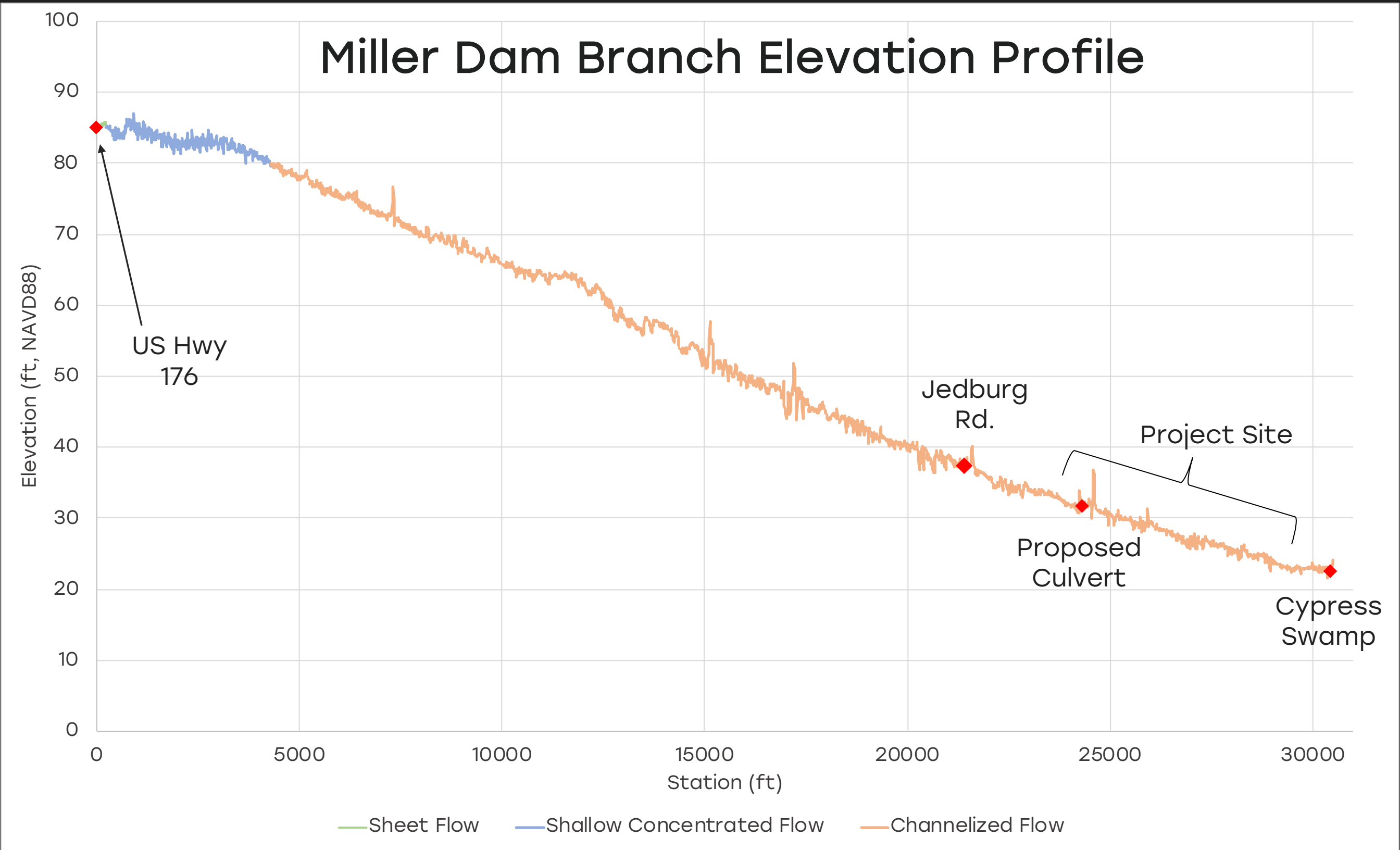
# FEMA Flood Map:



Proposed  
Culvert in  
Floodway



# Miller Dam Branch Elevation Profile





# Watershed Analysis:

	Existing Conditions	Urbanized Condition	Change
2 Year Peak Flow (cfs)	254	397	+ 56%
10 Year Peak Flow (cfs)	731	951	+ 30%
25 Year Peak Flow (cfs)	1070	1397	+ 31%
100 Year Peak Flow (cfs)	1757	2208	+ 26%



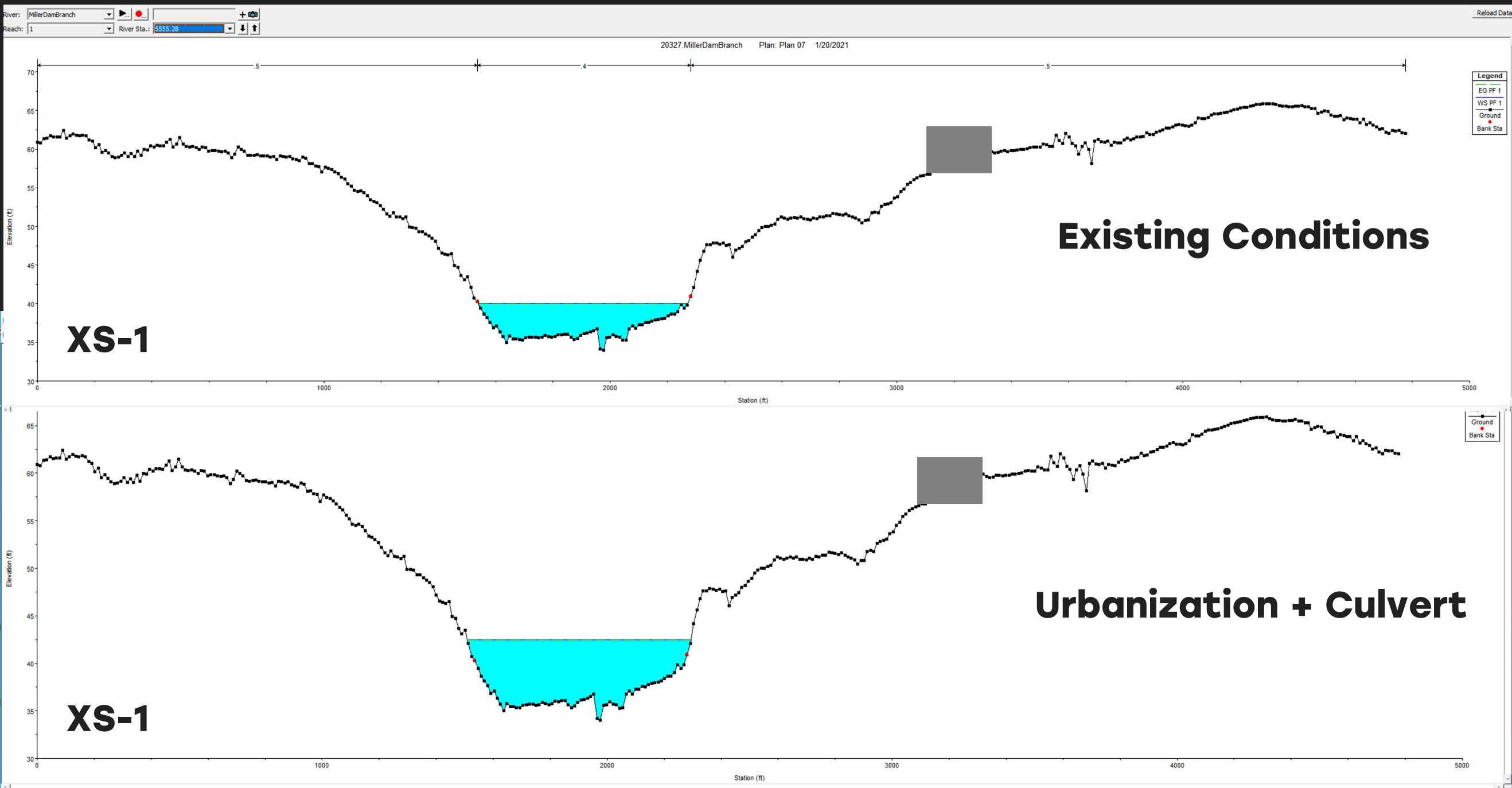
# Hydraulic Modeling:

XS	FEMA BFE (ft)	BFE with Culvert	BFE with Culvert & Urbanization	Max change in BFE (ft)
1	40.5	40.5	42.5	2.0
2	38.3	39.6	41.1	2.8
3	36.3	39.3	40.5	4.2
4*	35.8	35.8	35.8	n/a

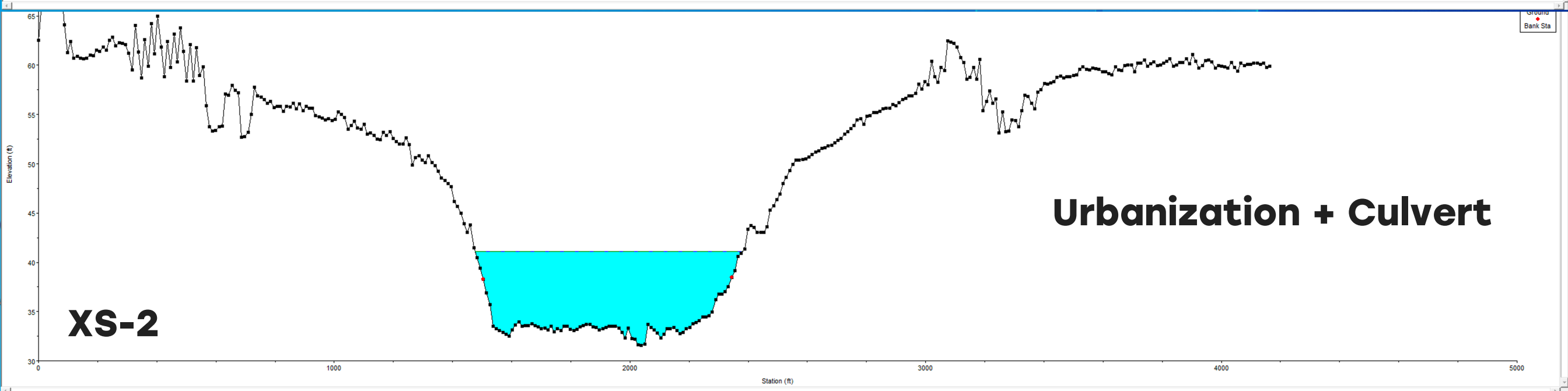
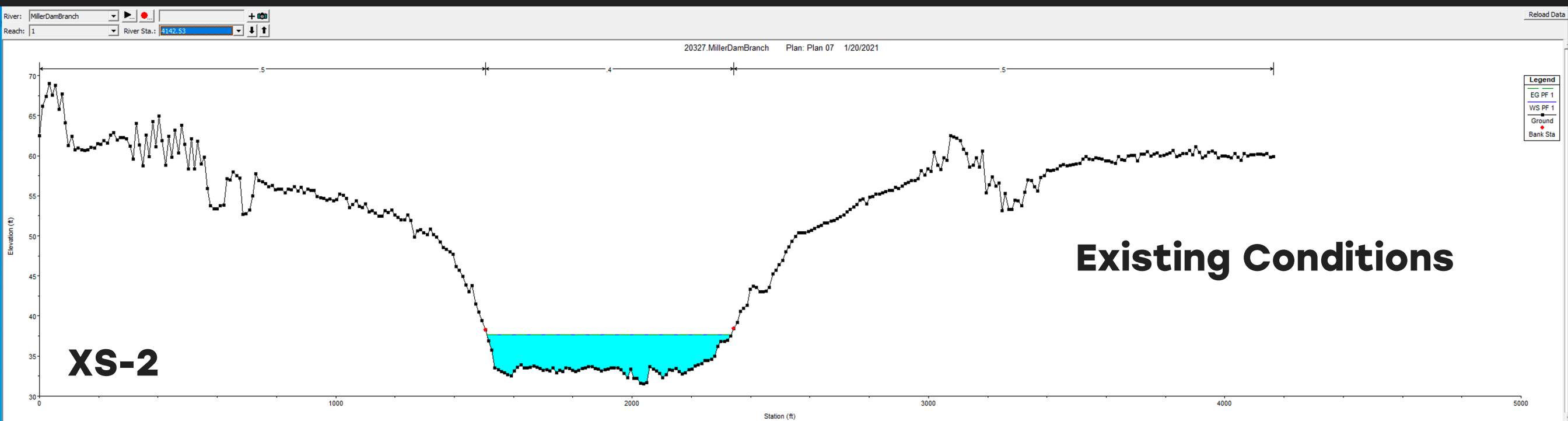
**\*Cross Section #4 forced to 35.8 ft as boundary condition.**



# Hydraulic Modeling:

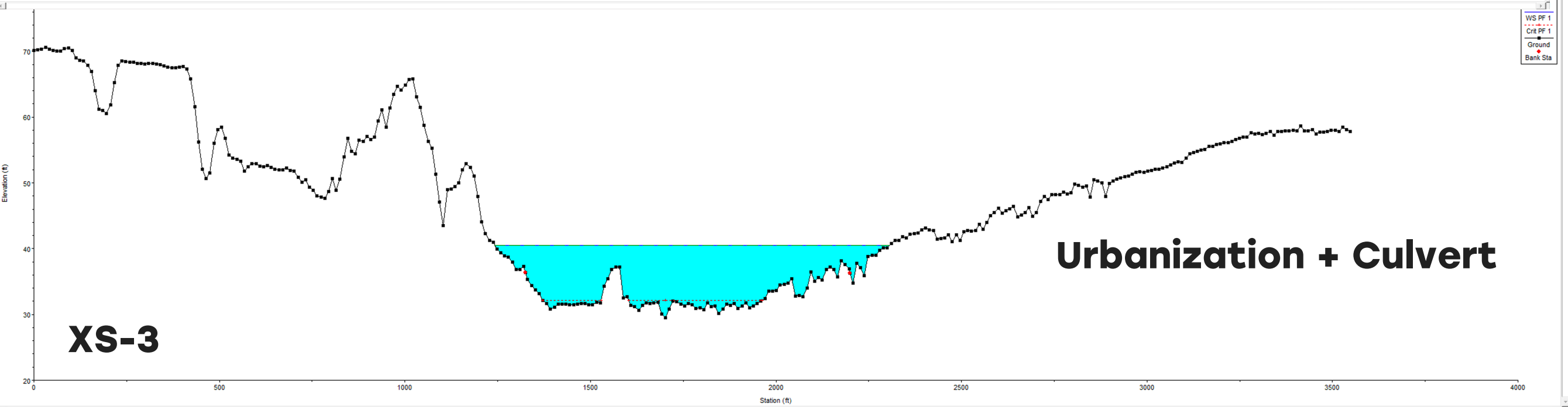
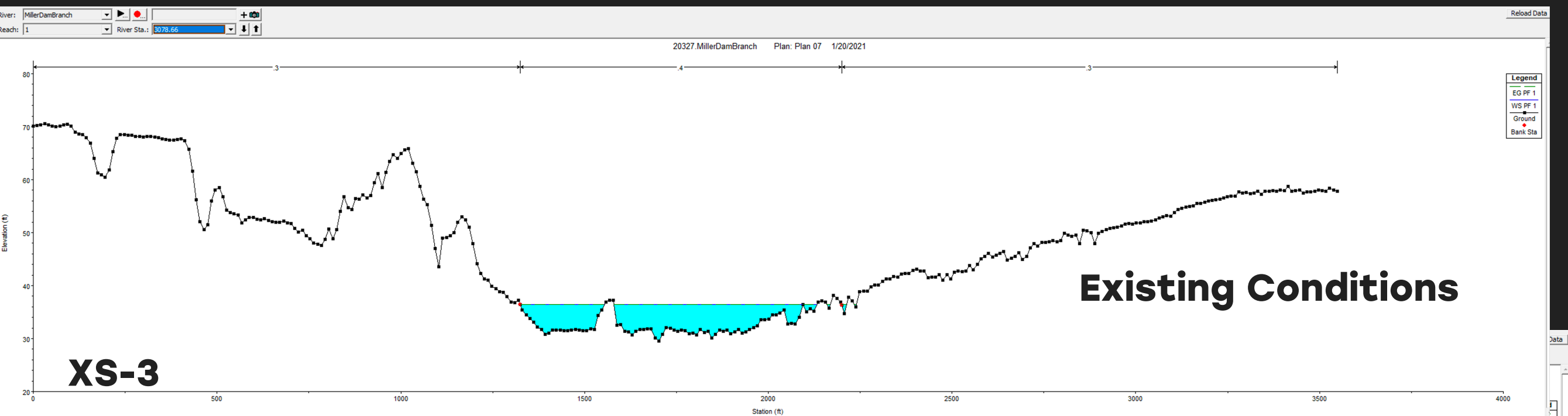


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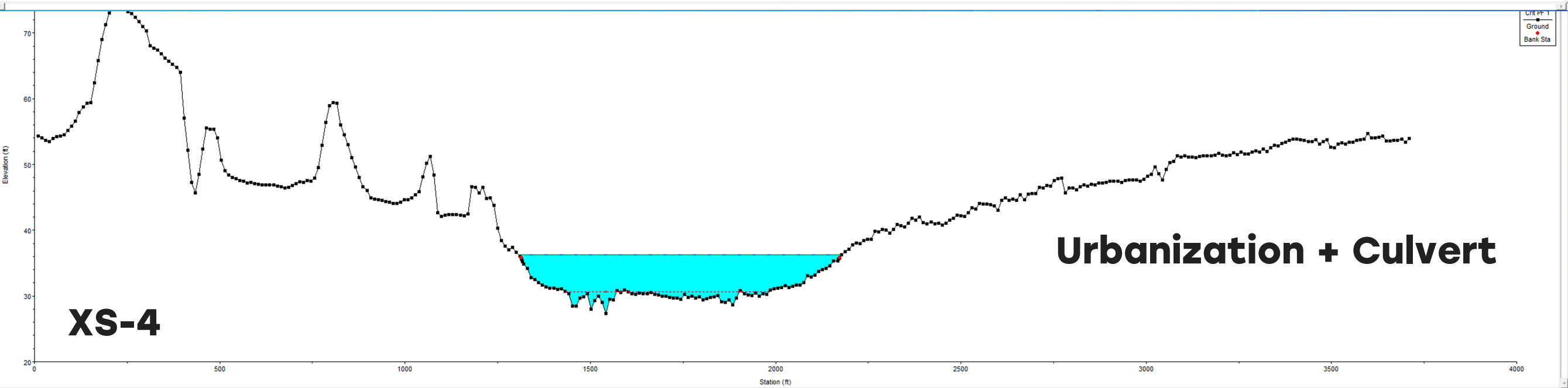
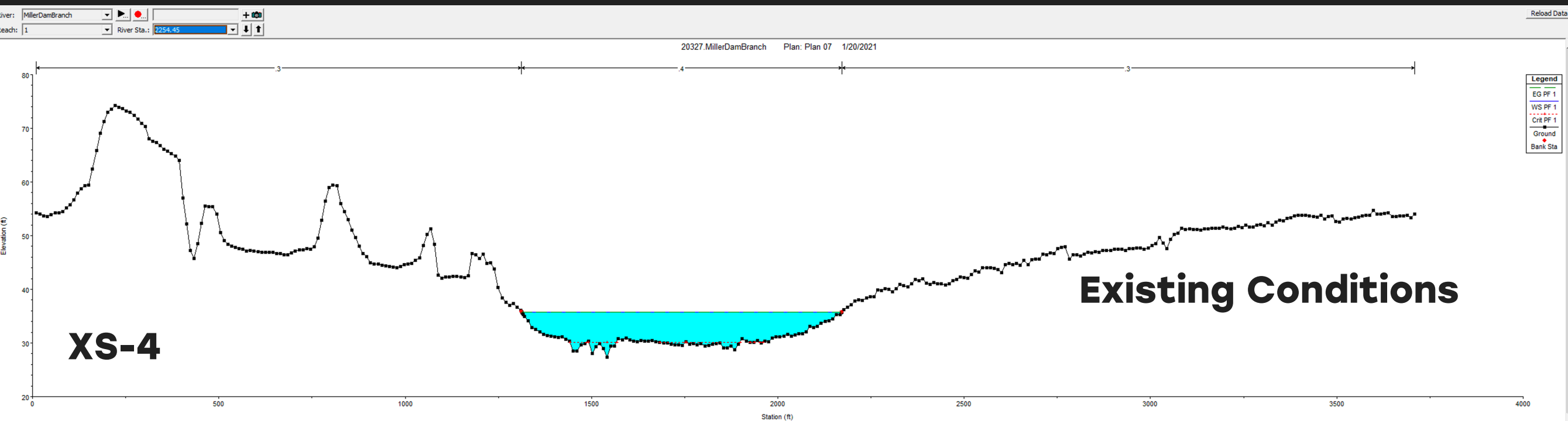




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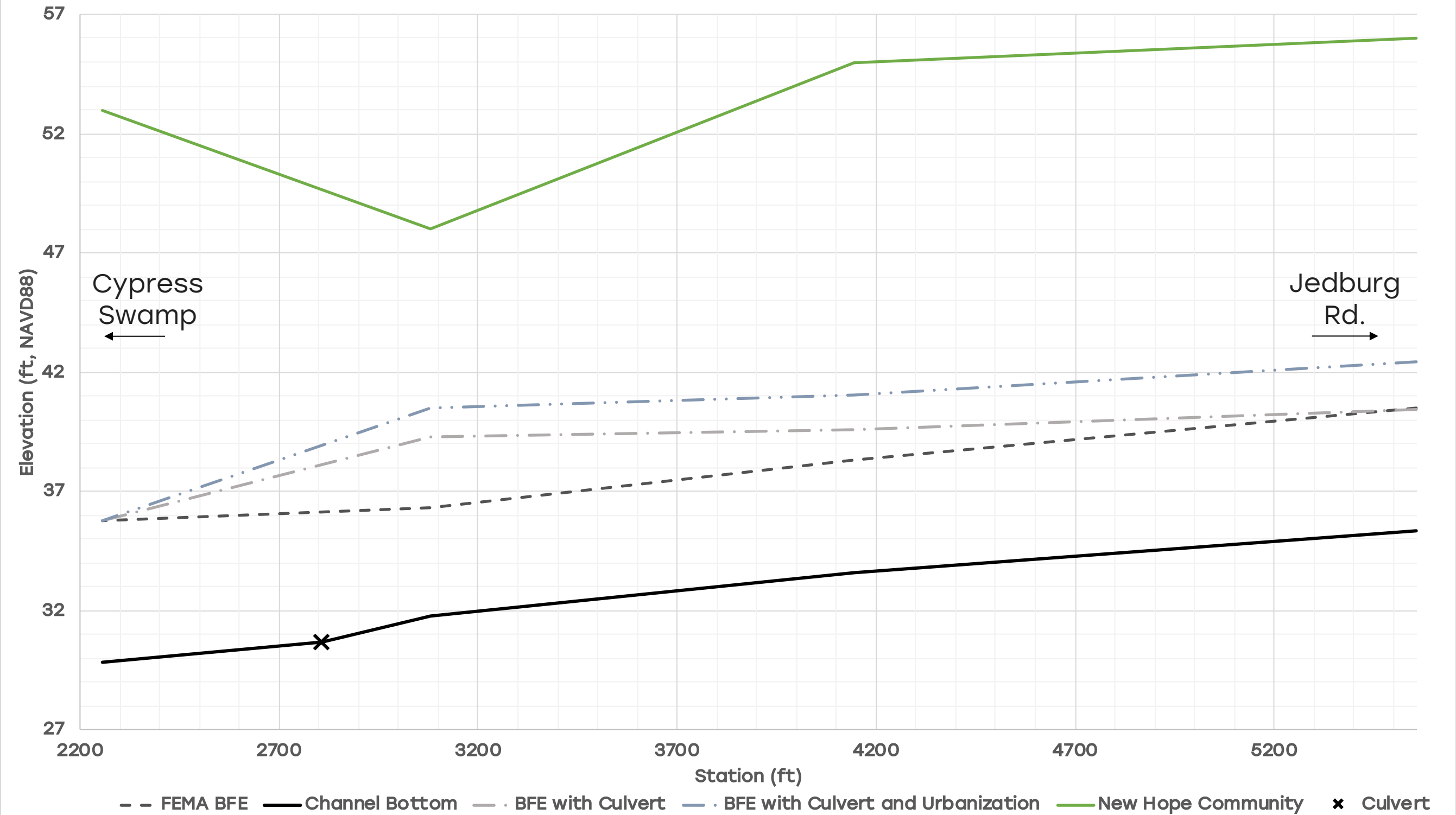


# Hydraulic Modeling:





# Hydraulic Modeling Results



# Site Analysis:

	Existing Conditions	Post Construction	Change
2 Year Runoff (in)	1.49	2.09	+ 40%
10 Year Runoff (in)	3.15	3.98	+ 26%
25 Year Runoff (in)	4.31	5.24	+ 22%
100 Year Runoff (in)	6.36	7.41	+ 17%



# Site Annual Water Balance:

	Existing Conditions	Post Construction	Change
Precipitation (in)	59	59	--
Evapotranspiration (in)	38.7	26.5	--
Annual Runoff (in)	20.2	32.4	+ 60%
Annual Runoff Volume (acre-ft)	789	1264	
Annual Runoff As # of Olympic-Sized Swimming Pools	389	624	+ 235



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