



BOARD BRIEFING - MARCH 20, 2018

On December 27th, Lake Cypress Springs experienced a historic flooding event which resulted in record lake levels and significant damage to waterfront property.

Although the Emergency Spillway did not engage, anecdotal evidence suggested the Emergency Spillway was higher in elevation than it's intended design.

FCWD hired Carollo Engineers, Inc. to prepare and submit a Preliminary Engineering Report (PER) to determine if the current condition of the Emergency Spillway was contributing to the risk to public assets on Lake Cypress Springs.

The PER was completed and presented to the Board on February 20, 2018.

The PER studied the hydraulic capacity of the existing spillway, modeled three (3) alternatives, determined the impact of each alternative, and outlined the costs.

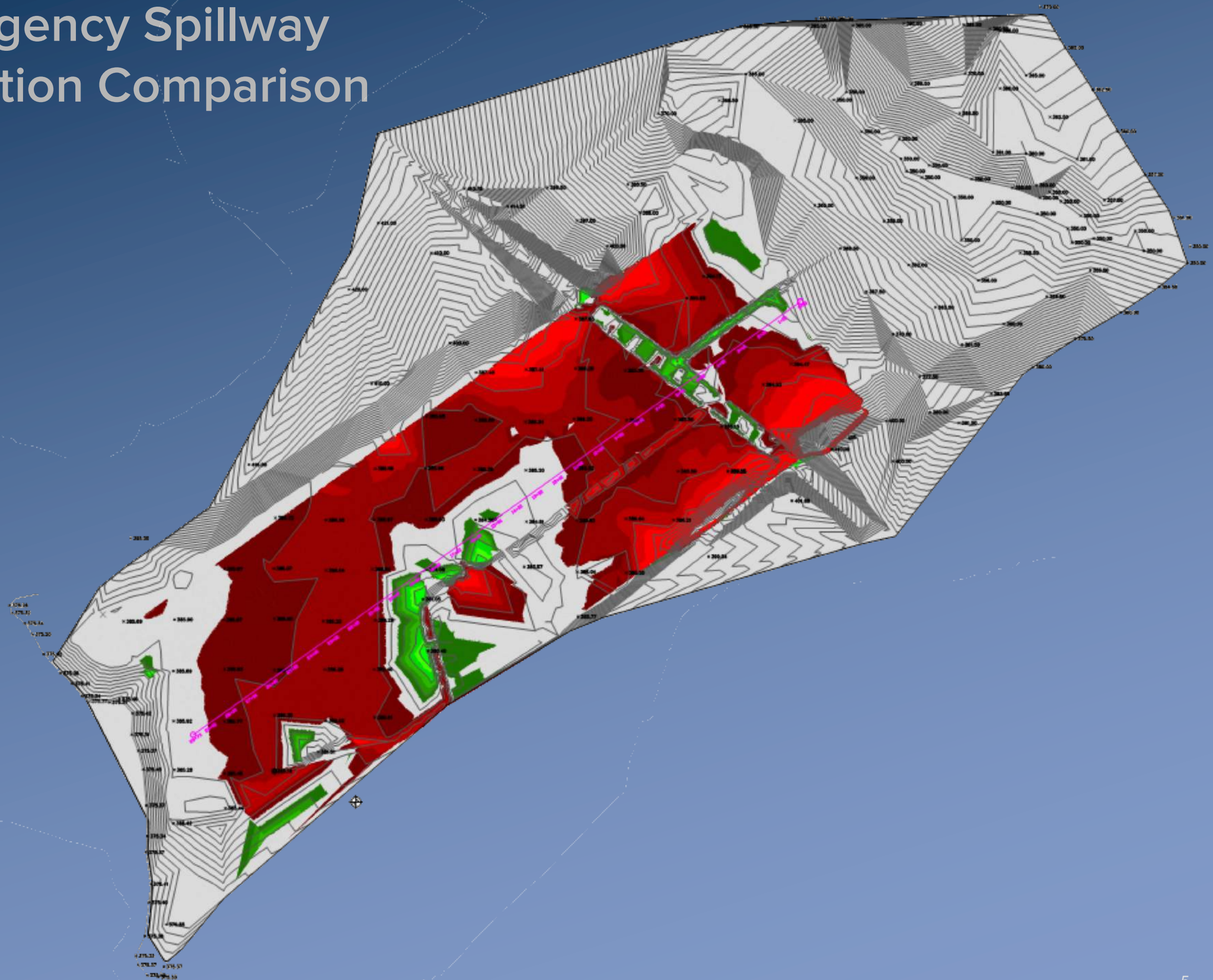
An aerial photograph of a landscape featuring a large reservoir in the center. The reservoir is surrounded by a mix of forested areas and agricultural fields. A road or path runs along the right side of the reservoir. The entire image is covered with a semi-transparent blue overlay. The text 'Emergency Spillway' is written in white, serif font, positioned in the lower right quadrant of the image.

Emergency Spillway

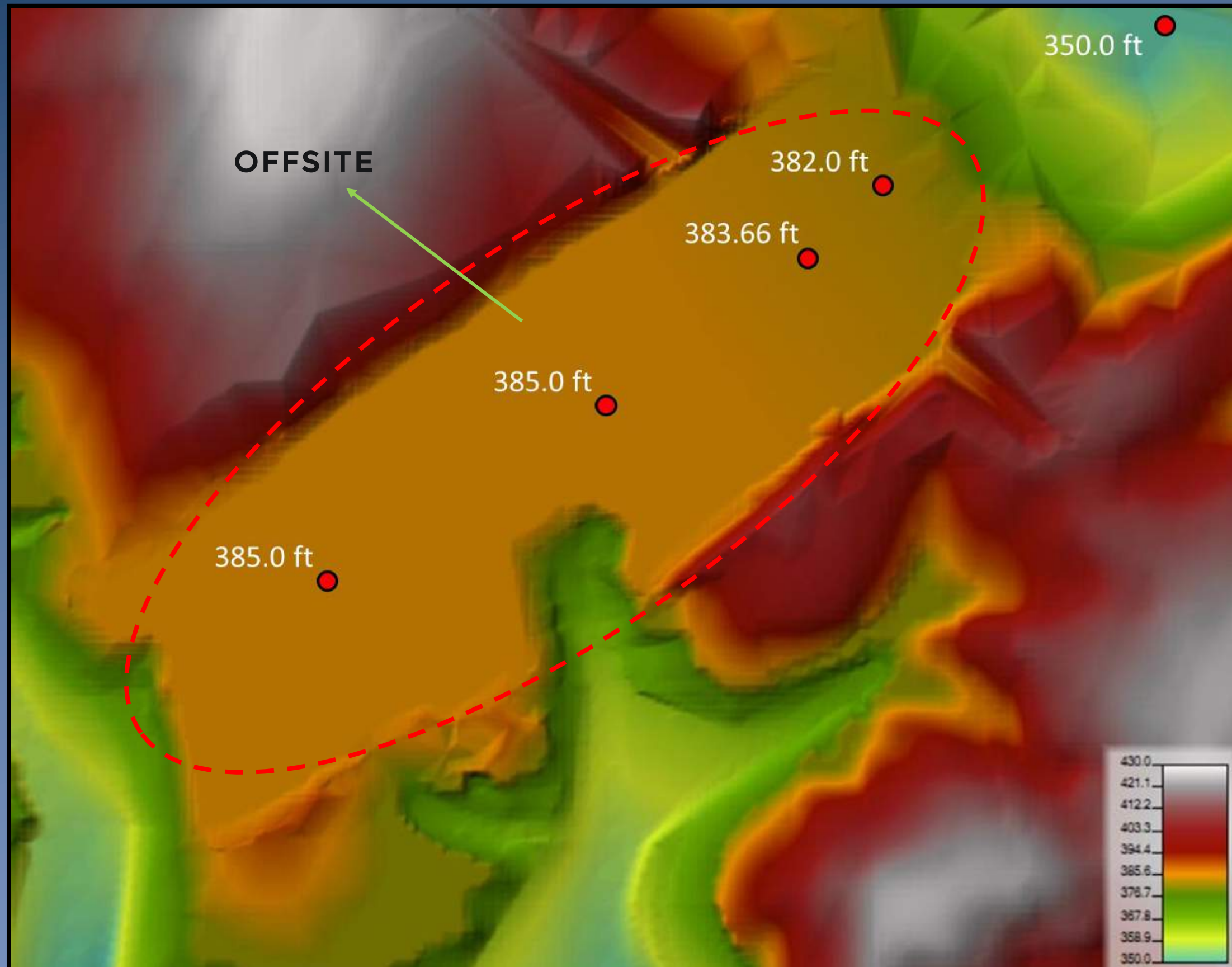
The Emergency Spillway is fixed at 385 feet MSL and is designed to relieve pressure on the Franklin County Dam only to prevent a catastrophic failure.

Water will start to flow out the Emergency Spillway if the lake level reaches that 385 feet MSL elevation.

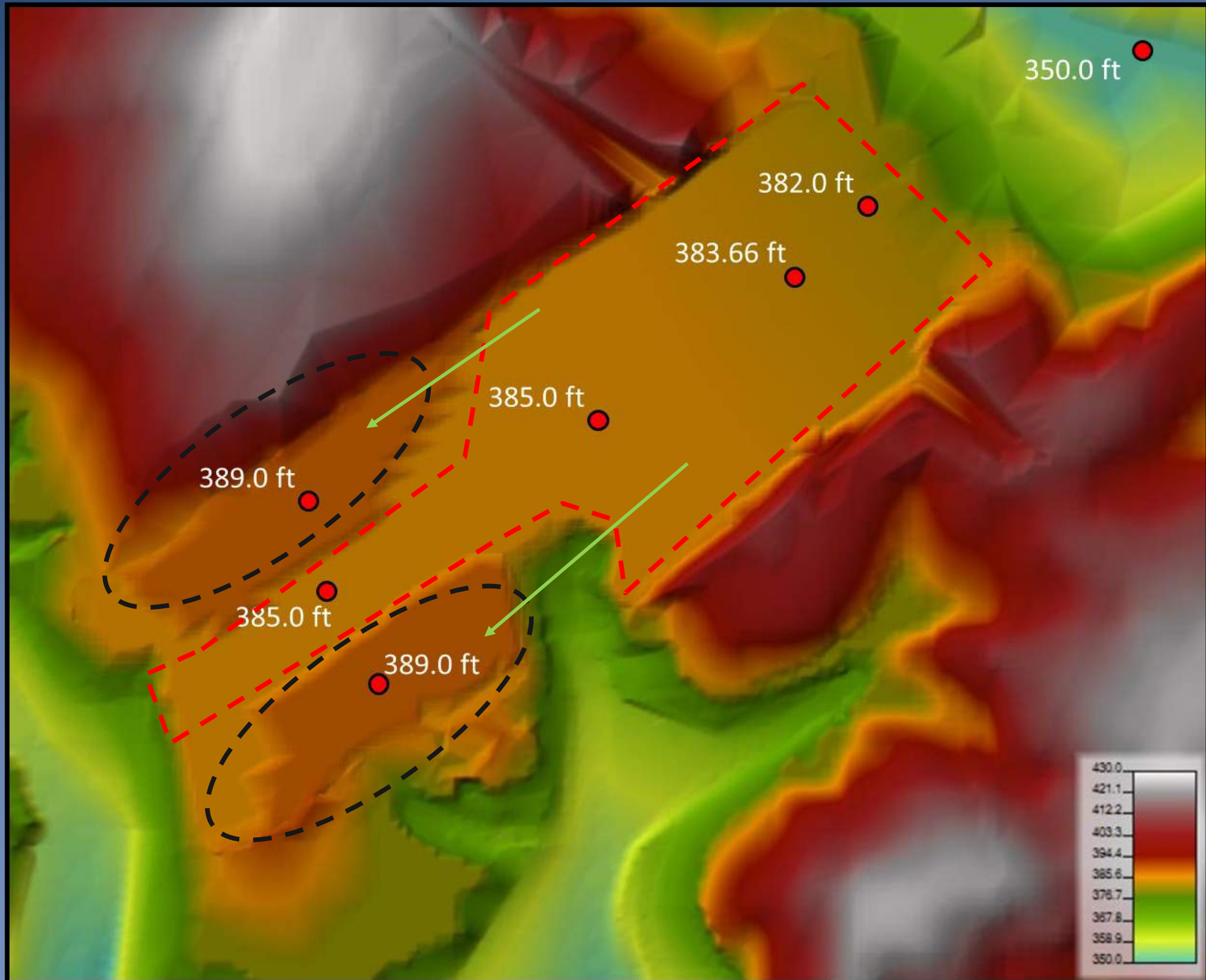
Emergency Spillway Elevation Comparison



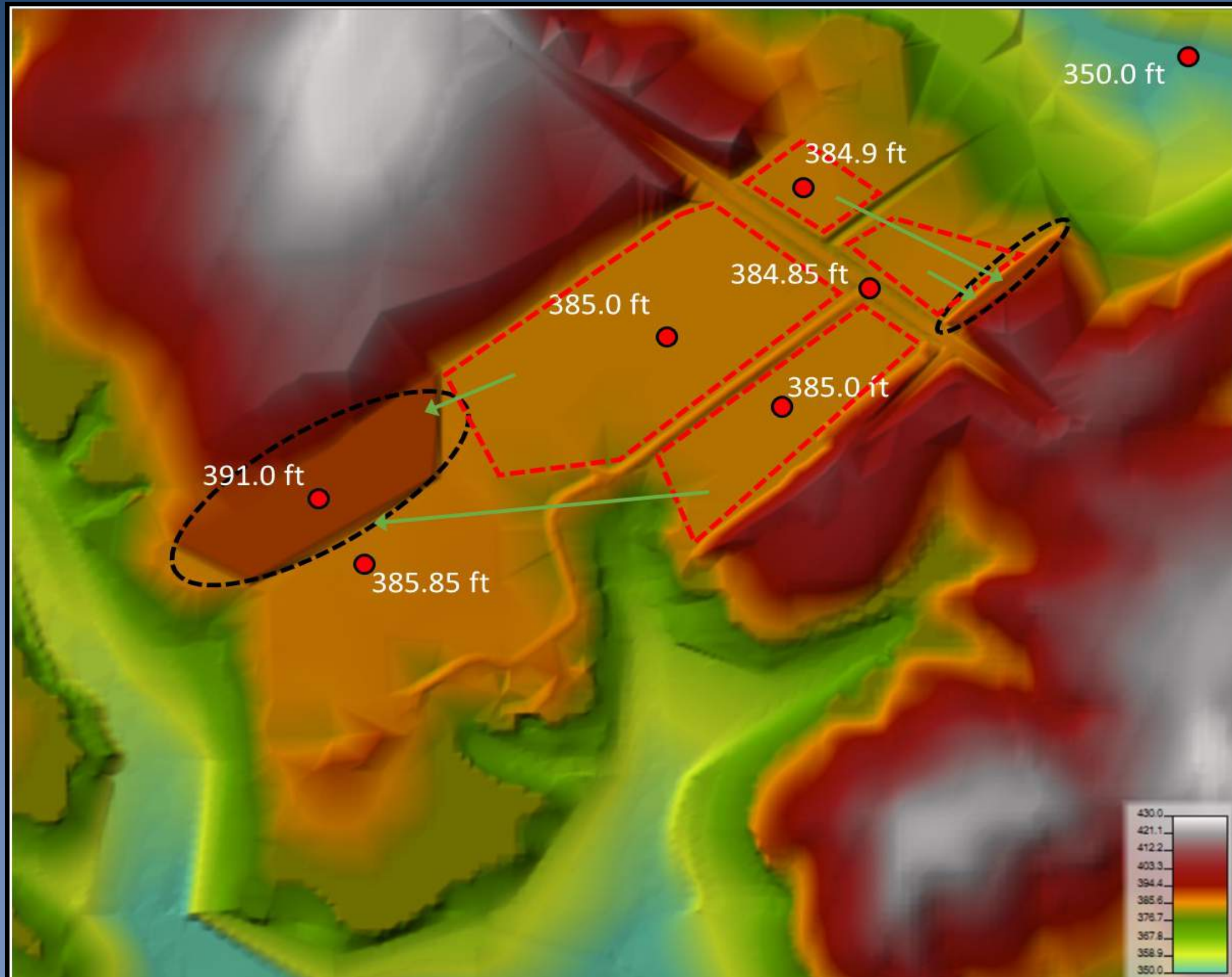
Alternative 2



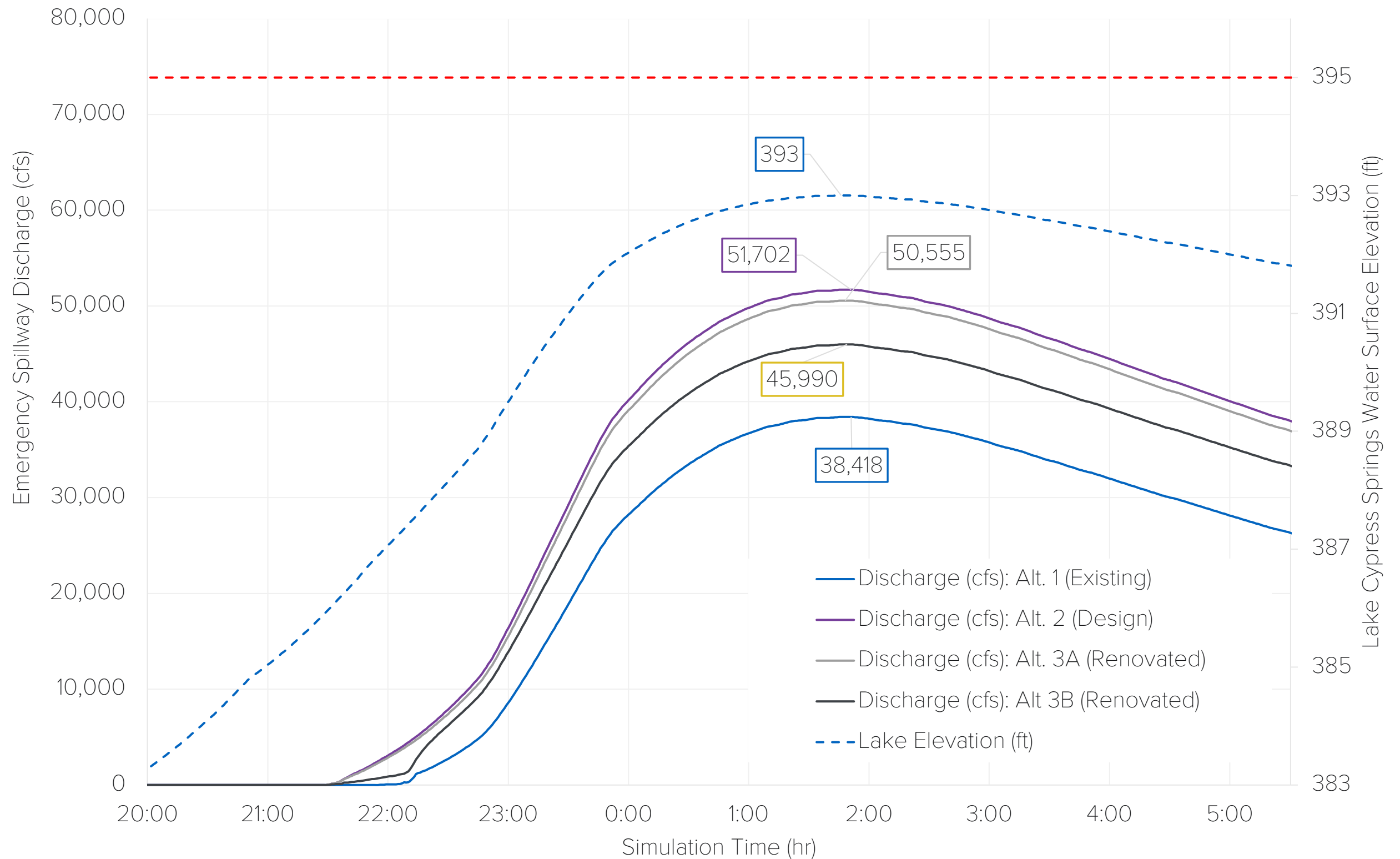
Alternative 3A



Alternative 3B



DISCHARGE VS. MODEL TIME



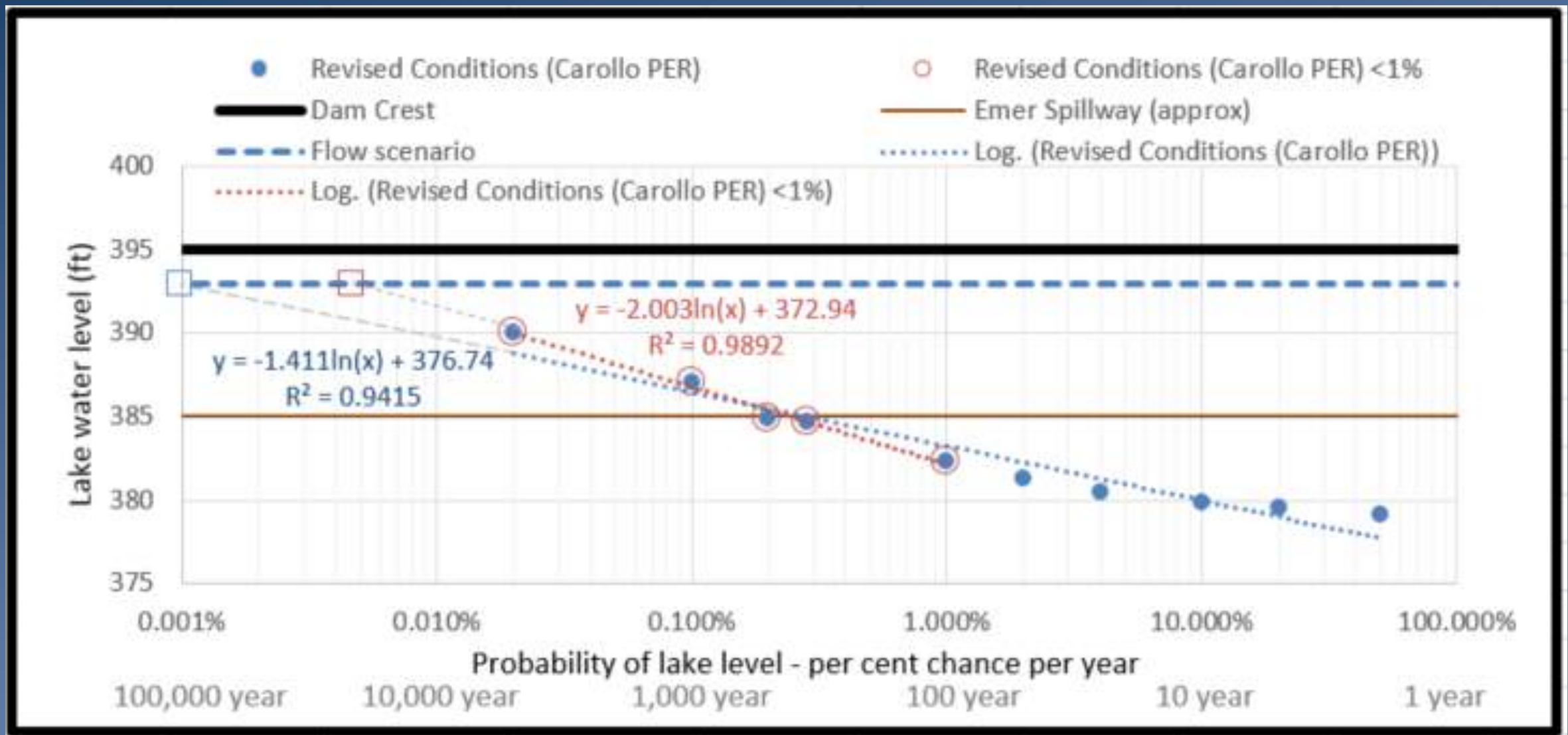
Timestep (hrs)	Water Surface Elevation (ft)						Notes
	Alternative No. 1 (Existing)	Alternative No. 2 (Design)	Alternative No. 3A (Renovated)	Alternative No. 3B (Renovated)	Alternative No. 3B (Renovated)	Alternative No. 3B (Renovated)	
0.00	382.83	382.83 0.00	382.83 0.00	382.83 0.00	382.83 0.00	382.83 0.00	No Engagement of Emergency Spillway
1.00	384.39	384.39 0.00	384.39 0.00	384.39 0.00	384.39 0.00	384.39 0.00	
2.00	386.29	386.29 0.00	386.29 0.00	386.29 0.00	386.29 0.01	386.29 0.01	Water Rising
3.00	388.48	388.44 0.48	388.46 0.24	388.43 0.60	388.43 0.60	388.43 0.60	
4.00	391.39	391.27 1.44	391.31 0.96	391.25 1.68	391.25 1.68	391.25 1.68	
5.00	392.66	392.29 4.44	392.42 2.88	392.26 4.80	392.26 4.80	392.26 4.80	Peak Timestep
6.00	392.99	392.43 6.72	392.62 4.44	392.37 7.44	392.37 7.44	392.37 7.44	
7.00	392.86	392.10 9.12	392.37 5.88	392.02 10.08	392.02 10.08	392.02 10.08	Water Falling
8.00	392.52	391.71 9.72	391.94 6.96	391.65 10.44	391.65 10.44	391.65 10.44	
9.00	392.14	391.33 9.72	391.60 6.48	391.26 10.56	391.26 10.56	391.26 10.56	

INCHES OF DIFFERENCE

ALTERNATIVE 2 PROPOSED COSTS		
START-UP, MOBILIZATION, SECURITY, & SW3P ITEMS	\$85,050	
EMERGENCY SPILLWAY DIRT WORK ITEMS	\$870,000	
FM 3122 ROAD RENOVATION ITEMS	\$162,500	
DESIGN FEES (SURVEY, GEOTECH, ENGINEERING, ETC.)	\$187,633	
CONTINGENCY	20%	\$261,037
TOTAL:		\$1,566,000

ALTERNATIVE 3A PROPOSED COSTS		
START-UP, MOBILIZATION, SECURITY, & SW3P ITEMS	\$74,288	
EMERGENCY SPILLWAY DIRT WORK ITEMS	\$511,250	
FM 3122 ROAD RENOVATION ITEMS	\$162,500	
DESIGN FEES (SURVEY, GEOTECH, ENGINEERING, ETC.)	\$132,206	
CONTINGENCY	20%	\$176,049
		\$1,056,000

ALTERNATIVE 3B PROPOSED COSTS		
START-UP, MOBILIZATION, SECURITY, & SW3P ITEMS	\$69,150	
EMERGENCY SPILLWAY DIRT WORK ITEMS	\$502,500	
FM 3122 ROAD RENOVATION ITEMS	\$0	
DESIGN FEES (SURVEY, GEOTECH, ENGINEERING, ETC.)	\$105,748	
CONTINGENCY	20%	\$135,480
		\$813,000



The calculated probability of reaching 393' is between 0.005% annual chance (20,000-year) and 0.001% annual chance (100,000-year).

Alternatives	OPCC Cost	Damage Difference at Peak <small>Timestep = 10.77 hr.</small>	BC-Ratio
Alternative 1 (Existing)	\$0	N/A	N/A
Alternative 2 (Design)	\$1,566,000	\$1,104,445	0.71
Alternative 3A (Renovated)	\$1,056,000	\$741,397	0.70
Alternative 3B (Renovated)	\$813,000	\$1,203,963	1.48

*** It takes between a 20,000-year and 100,000-year storm event to break even on the capital investment of the emergency spillway project**

Key Board-Decision Elements

A

B

C

**Project
Cost**

**Storm
Frequency (Risk)**

**Property
Damages**

Manager's Opinion

In my opinion, the capital costs required to implement an alternative (\$0.7M - \$1.5M) coupled with a low risk of consequence and low BC-Ratio warrants NO-ACTION from the District.

Additionally, based on Carollo's recommendation, agricultural practices (primarily the growing of hay) on the Emergency Spillway should be discontinued.

Manager's Opinion

We have received public input requesting a delay of this decision until after the litigation is finalized.

My recommendation to take NO-ACTION is based on the information provided by Carollo in the PER. The conclusions are not associated with the litigation resolution and would not change regardless of the litigation timeframe. I believe no delay in considering this recommendation is warranted.