

Sand Dam Modification- Pre-feasibility Analysis

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& Ed Weschler



Review Updates Since January Meeting



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graph TD; A[Review Updates Since January Meeting] --> B[Sand Dam Mod A]; B --> C[Sand Dam Mod B (New)]; C --> D[Other Options and Discussion of RFP Scope];
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Sand Dam Mod A

Sand Dam Mod B (New)

**Other Options and Discussion of RFP
Scope**

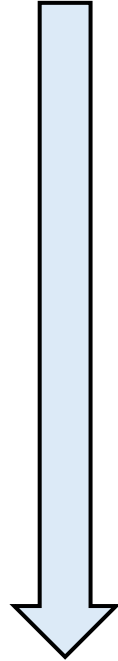
Attachment B: Possible Actions for post-2024 Augmentation

No outside tech
support recommendedOutside tech support
recommended

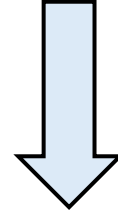
#	Action	Analysis needed	Continue or Drop? Continue how?
1	Continue mechanical augmentation	Continued monitoring.	
2	Use lateral erosion volumes to predict the J2 channel sediment deficit on a yearly basis	Continued monitoring.	Continuing investigation
3	Encourage lateral erosion via vegetation management, disking, etc. on north and south channels	Create a work plan or experimental setup. Conduct and monitor.	Continuing investigation
4	Reconnect the north channel to its upstream sediment supply. (Diversion modification at Dawson Cozad, or others, transport of dredge material with EA water)	Pre-feasibility analysis Review of current structures and operating practices, data collection and possible sediment modeling. RFP if feasible	Drop
5	Recruit sediment and flow from the north channel to the J2 channel via the sand dam or breakthrough channel	Pre-feasibility analysis 2 or 3D sediment model. Structural analysis. RFP if feasible	Pre-feasibility Analysis Potential RFP
6	Reconnect side channels in the J2 reach	Further analysis/ design Incorporate into future sediment augmentation designs and monitor.	Continuing investigation

TAC Discuss Pre-feasibility Results and Draft RFP

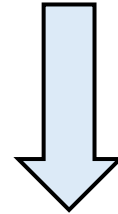
Recommend/ Not
Recommend RFP to
GC



Propose RFP Edits



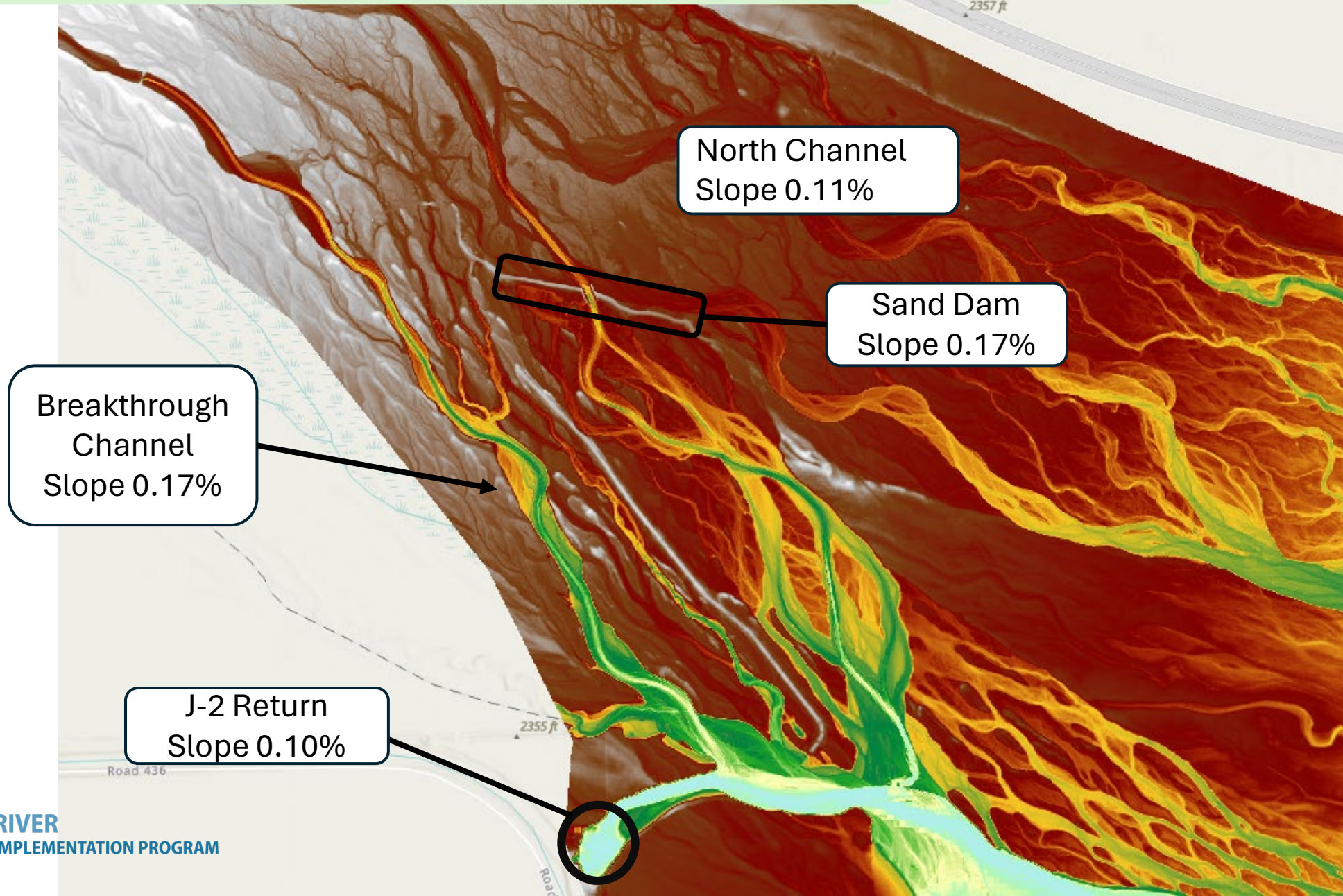
Virtual Meeting to
Recommend/ Not
Recommend RFP to GC



June GC Meeting



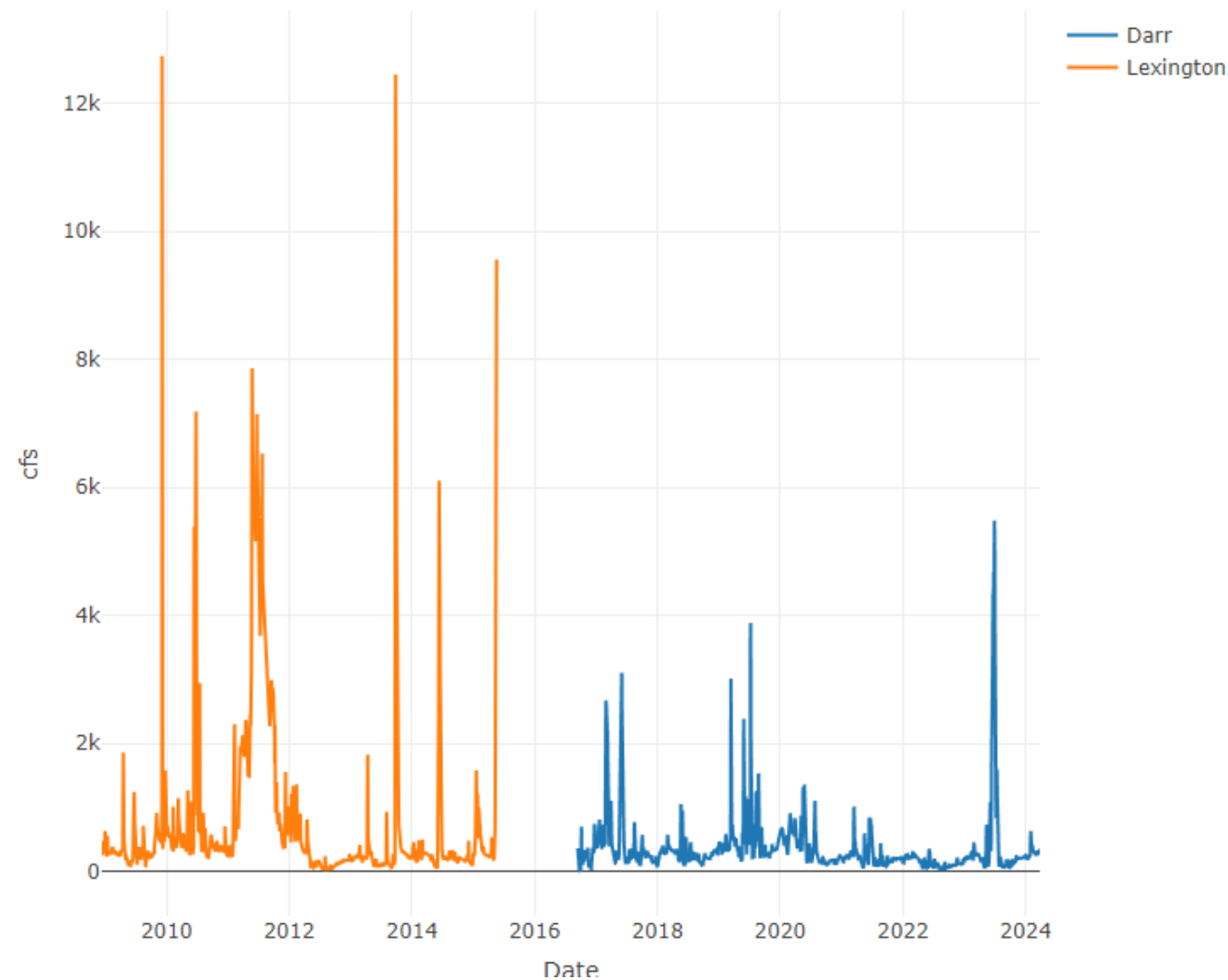
Sand Dam Pre-feasibility Analysis



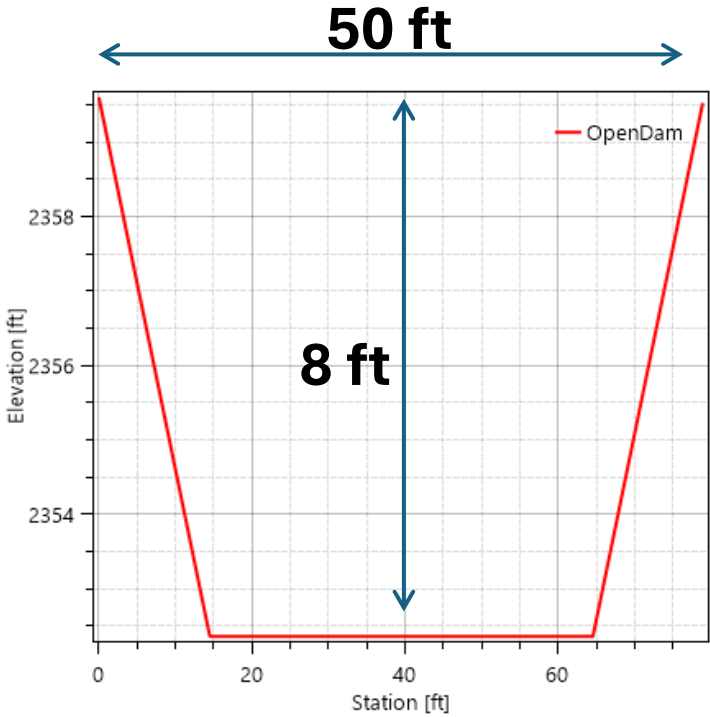
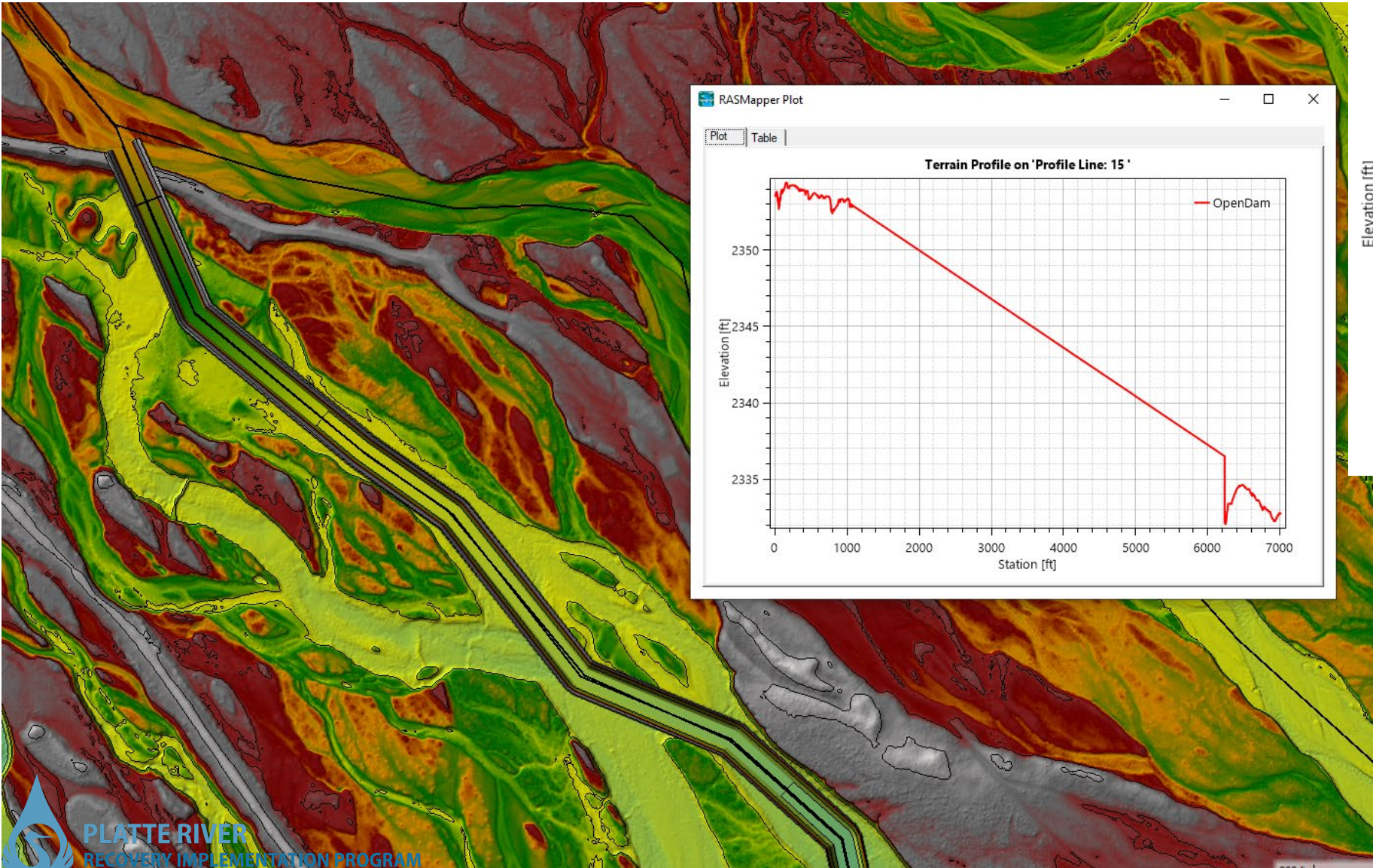
Hydrology and High Flows in the North Channel

North Channel (partial) Gage Record

Darr Flood Stages:	
Action:	5,650
Minor:	8,250
Moderate:	12,000
Major:	14,100

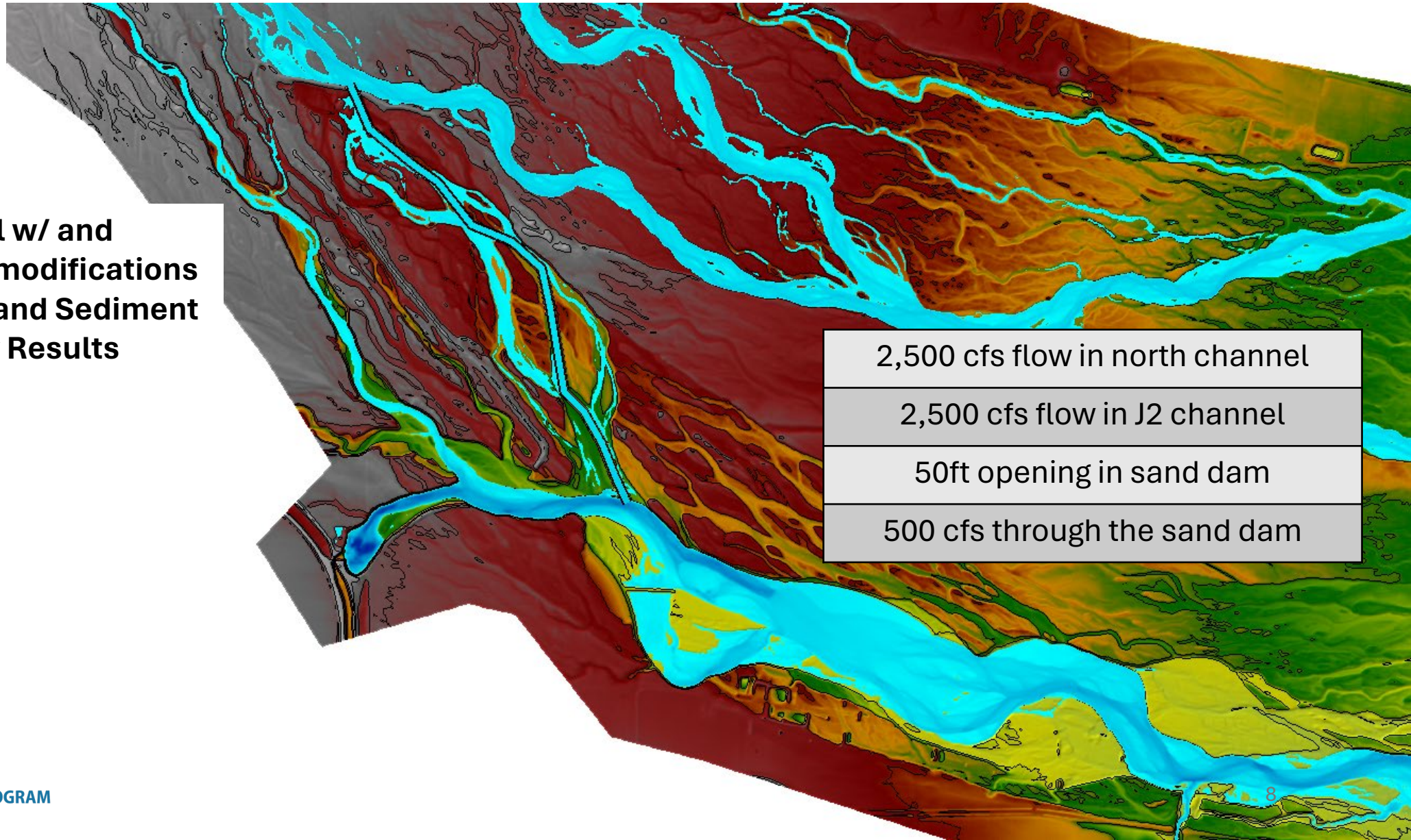


Mod A: North Channel Sediment

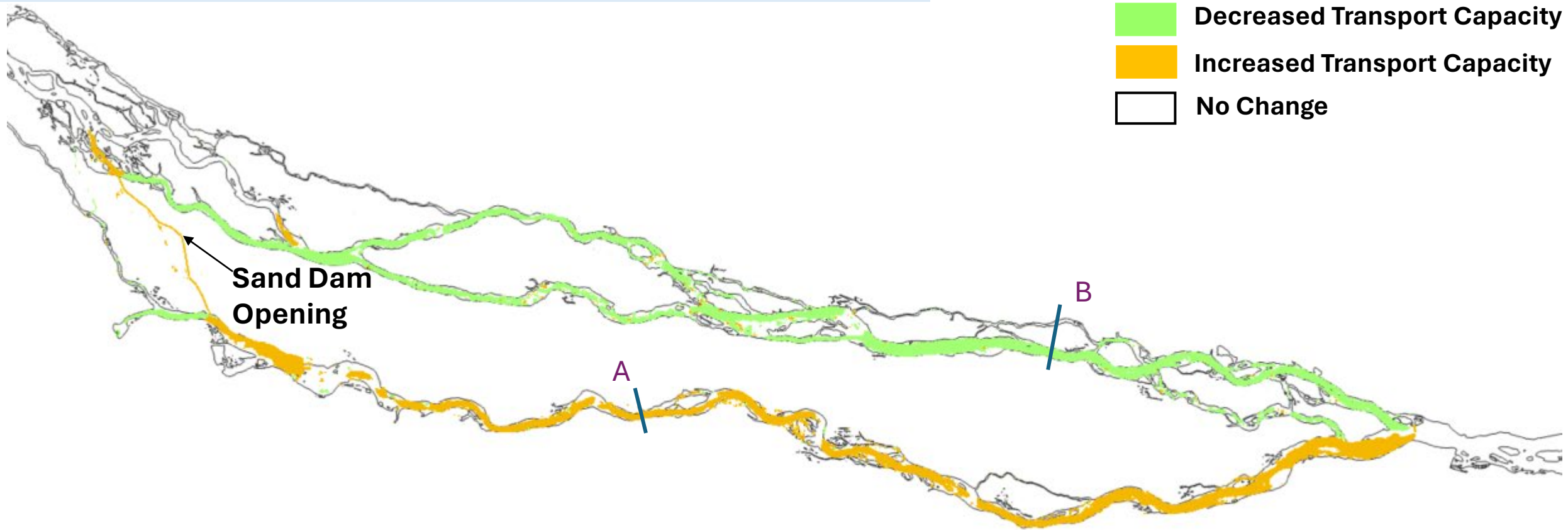


Mod A: North Channel Sediment

1. HEC-RAS 2D model w/ and without sand dam modifications
2. Analyze Hydraulic and Sediment Transport Capacity Results

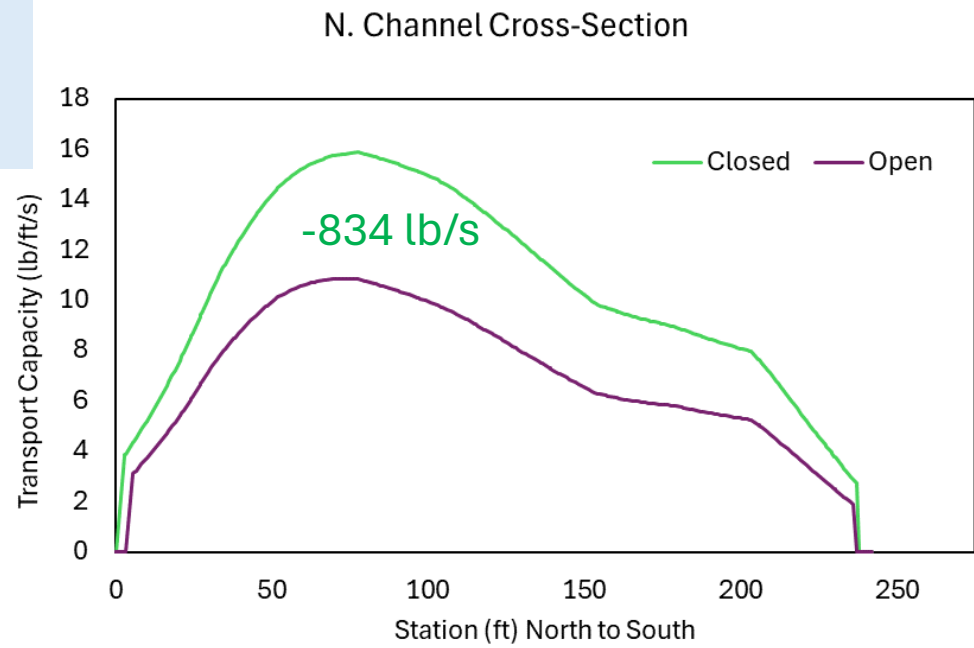
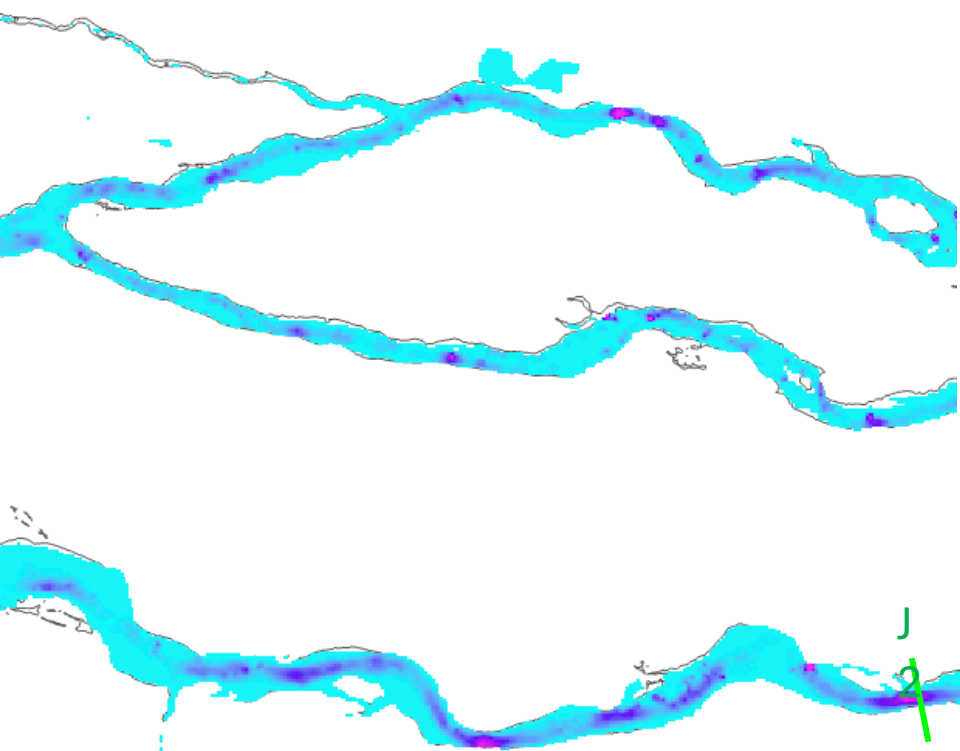


Mod A: North Channel Sediment

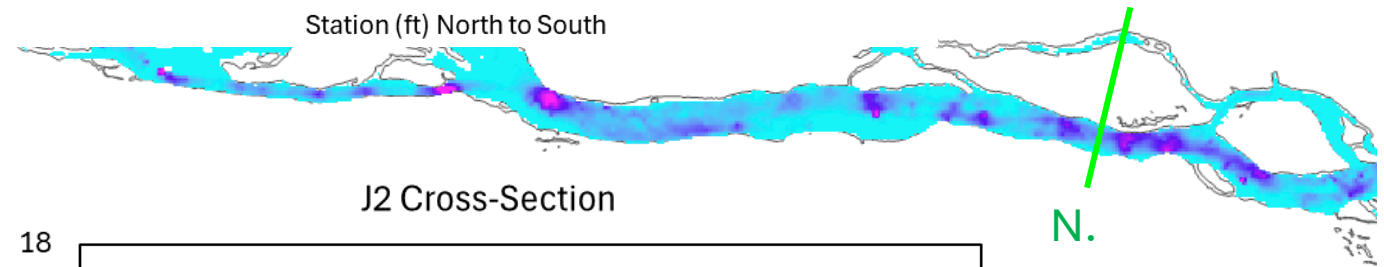
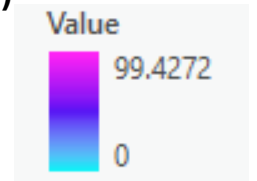


If we sum the areas of decrease and areas of increase, we find a **net decrease in sediment transport capacity**.

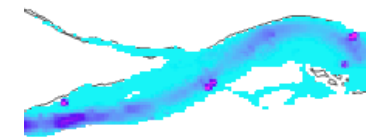
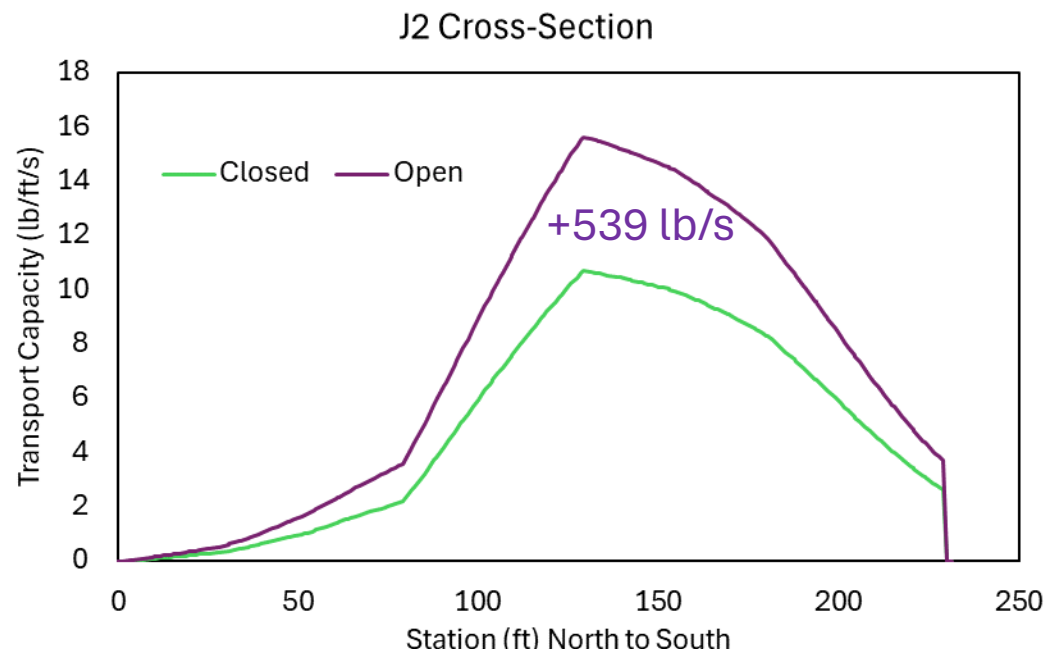
Mod A: North Channel Sediment



Cell-Face Total Sediment Transport Load Capacity (lb/ft/s)



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Mod B: Sand Dam Channel Sediment

Sand Dam
Opening

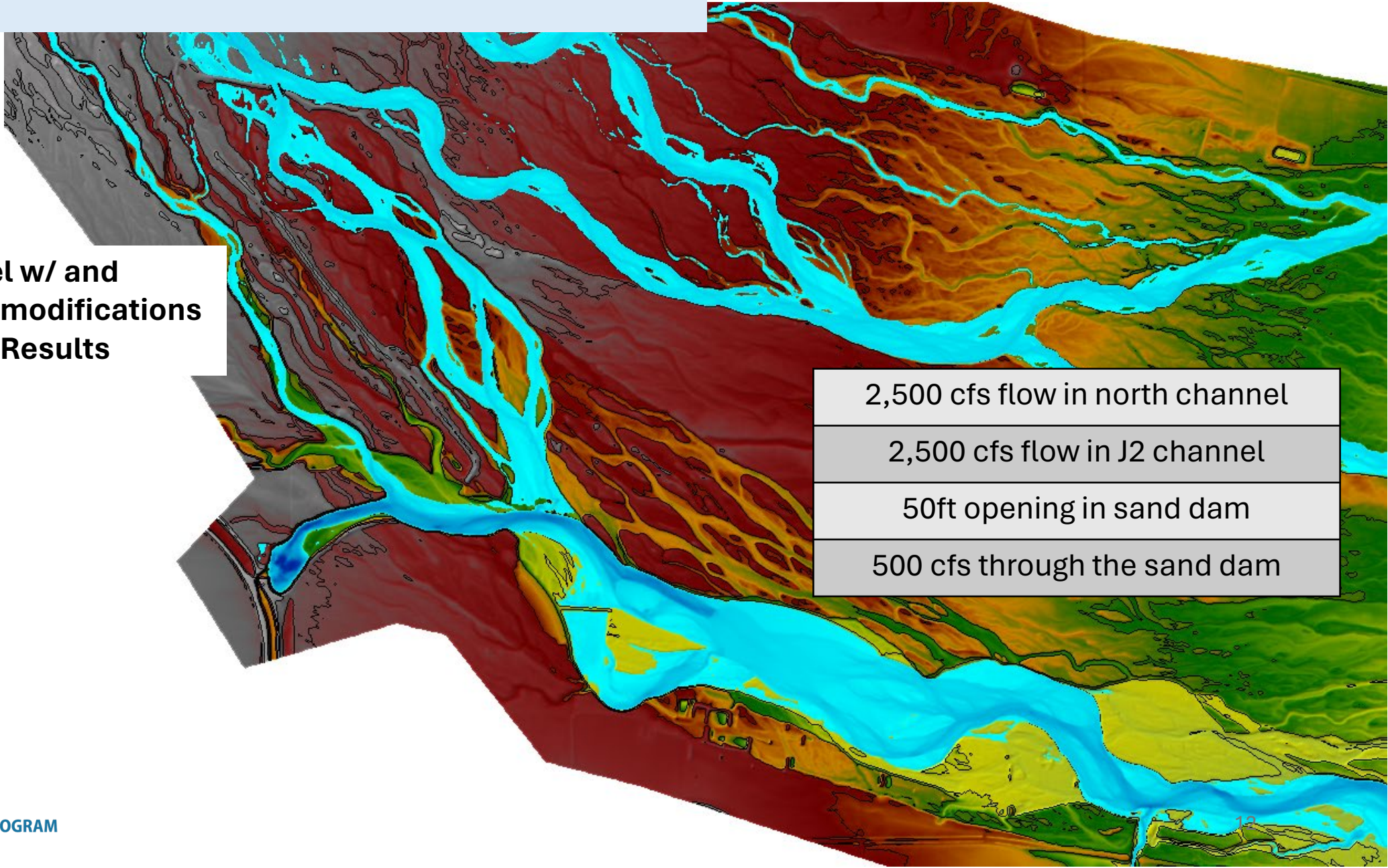


HEC-RAS Model
Velocities

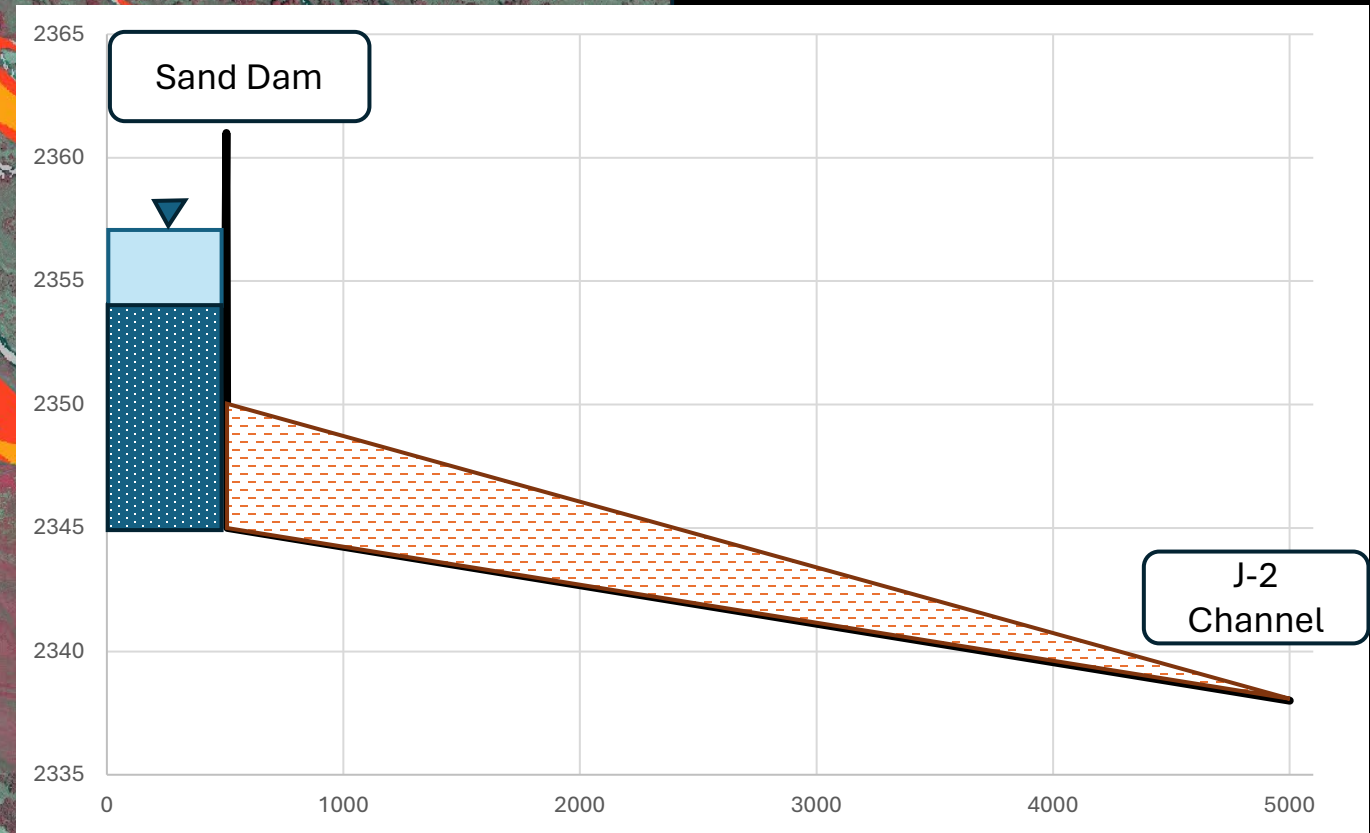
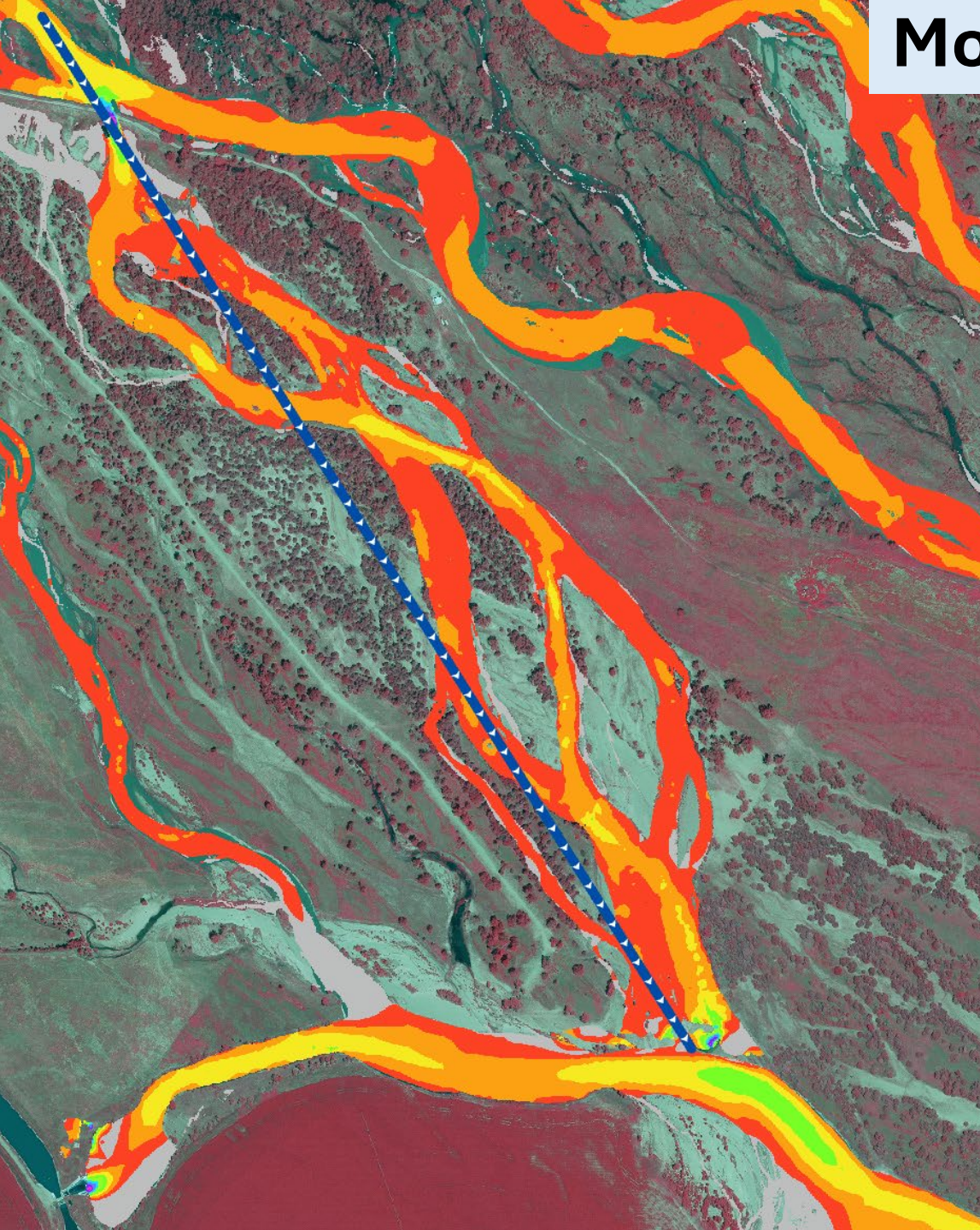
J-2 Return

Mod B: Sand Dam Channel Sediment


1. HEC-RAS 2D model w/ and without sand dam modifications
2. Analyze Hydraulic Results



Mod B: Sand Dam Channel Sediment

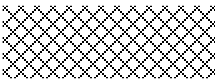



Mod B: Sand Dam Channel Sediment

Legend	Scenario	Available Sediment
	Incision Channel	138,000 CY

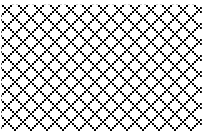

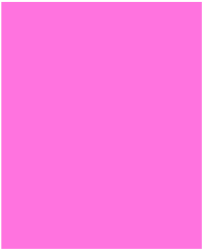


Mod B: Sand Dam Channel Sediment

Legend	Scenario	Available Sediment
	Incision Channel	138,000 CY
	Natural Flow Limits	334,000 CY



Mod B: Sand Dam Channel Sediment

Legend	Scenario	Sediment Yield	Years (50,000 CY rate)
	Incision Channel	138,000 CY	2.8
	Natural Flow Limits	334,000 CY	6.7
	Natural Flow Limits + Mechanical Augmentation	645,000 CY	13.1



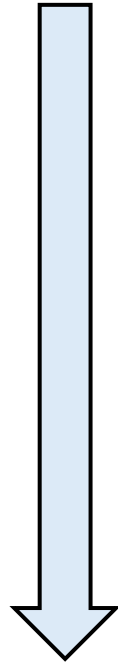


The image is a topographic map of a river valley. The river is shown in blue, winding through the landscape. The surrounding land is colored in shades of red, orange, and green, indicating different elevations or land use. A blue rectangular box is overlaid on the map, containing the text 'RFP Scope'. A white arrow points from the bottom right corner of this box to a specific location on the river, likely indicating the area of focus for the Recovery Implementation Program.

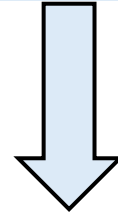
RFP Scope

TAC Discuss Pre-feasibility Results and Draft RFP

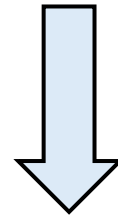
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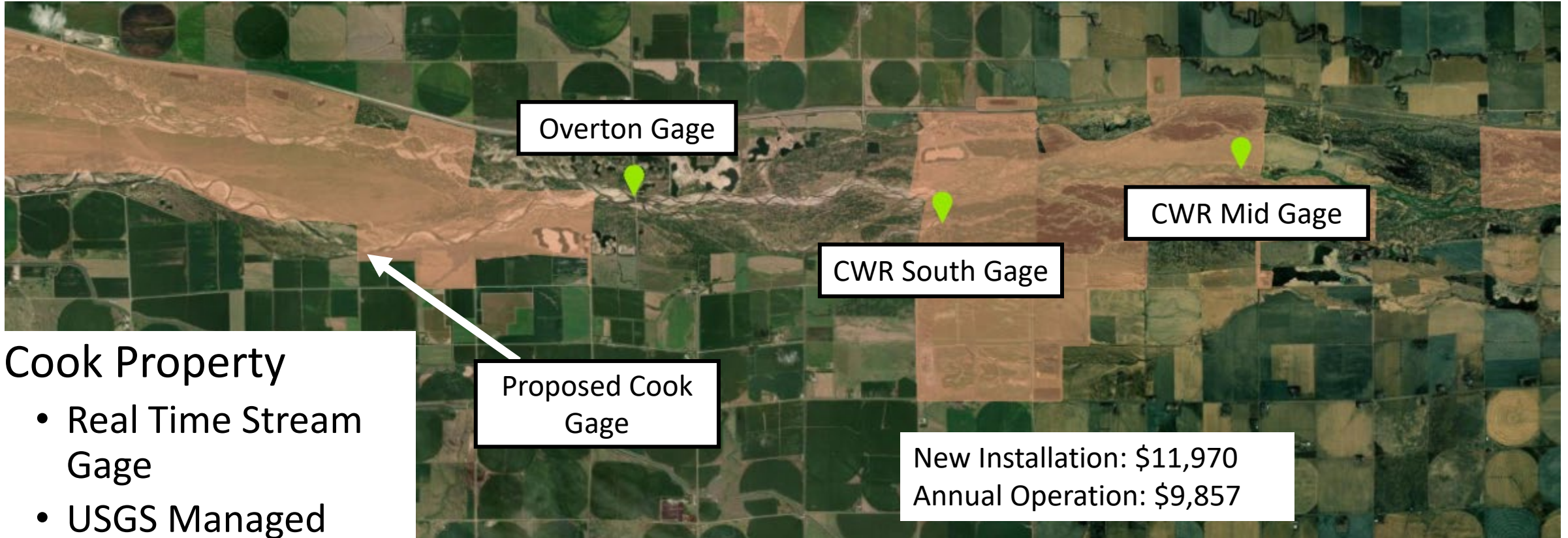
June GC Meeting



Current Scope- \$250,000

1. Collect necessary data/background information
2. Create and calibrate a 2D Mobile Bed Hydrodynamic Model
3. Model Mod A and B under a range of conditions and operation rules
4. Potential to develop and model other passive augmentation alternatives
5. Construction and feasibility evaluation/ Cost estimate

J2 Channel USGS Stage Gage Installation



- Cook Property
 - Real Time Stream Gage
 - USGS Managed