



Live event will start  
in just a moment...



Washington Department of  
**FISH** and **WILDLIFE**

**Spencer Island Estuary Restoration  
Project:  
Alternatives Analysis Public  
Meeting  
August 31, 2023 | 6-7:30 pm**

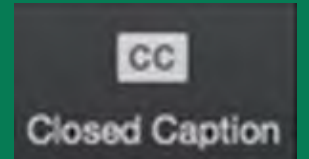


Washington Department of  
**FISH & WILDLIFE**



# ZOOM WEBINAR INSTRUCTIONS

- Audience in “listen only” mode
- Closed captioning is enabled, turn off using “CC” button
- Submit questions using “Q&A” button any time during presentation
- Questions answered at end of presentation
- During comment period, raise hand if you’d like to speak

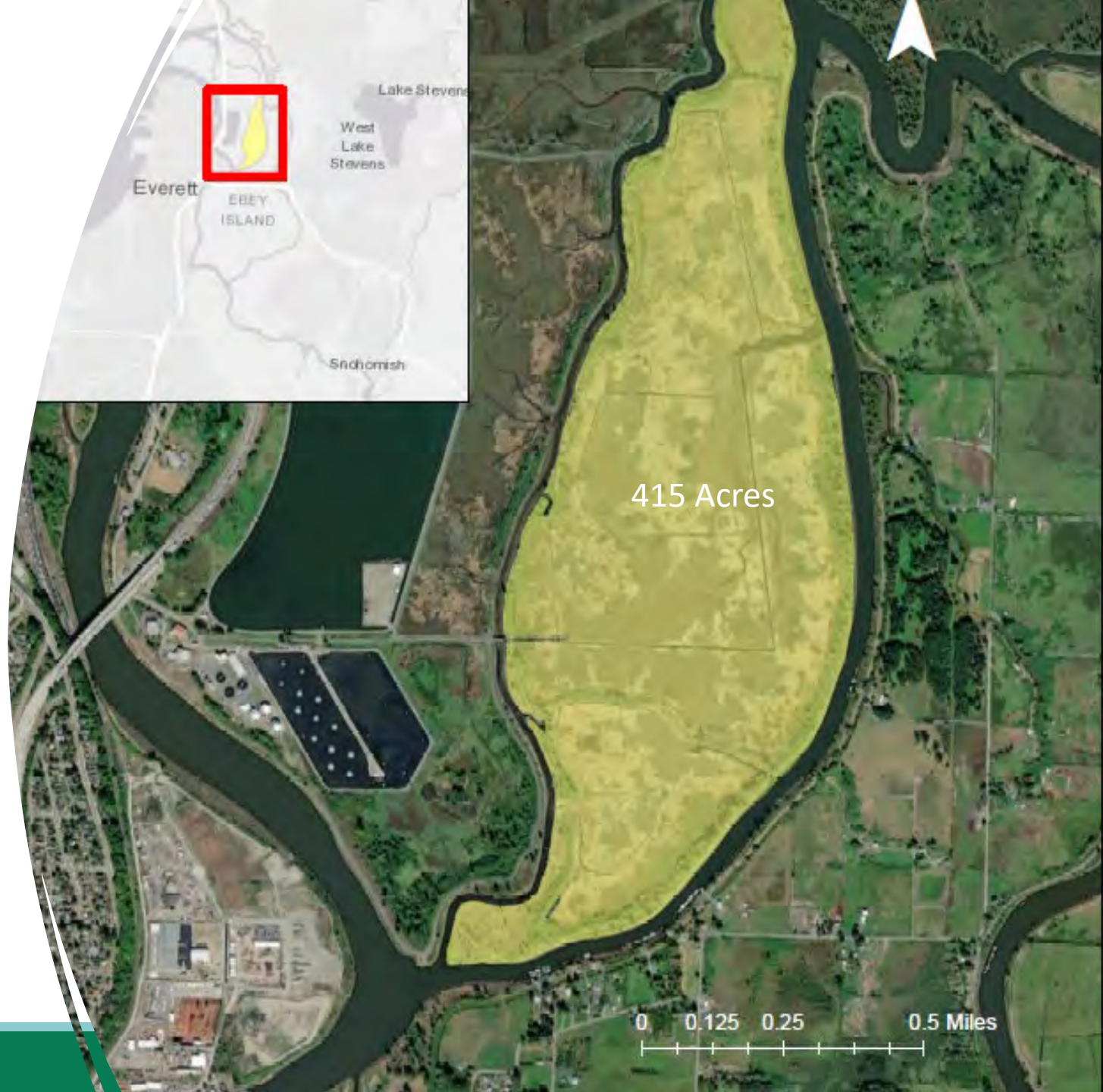




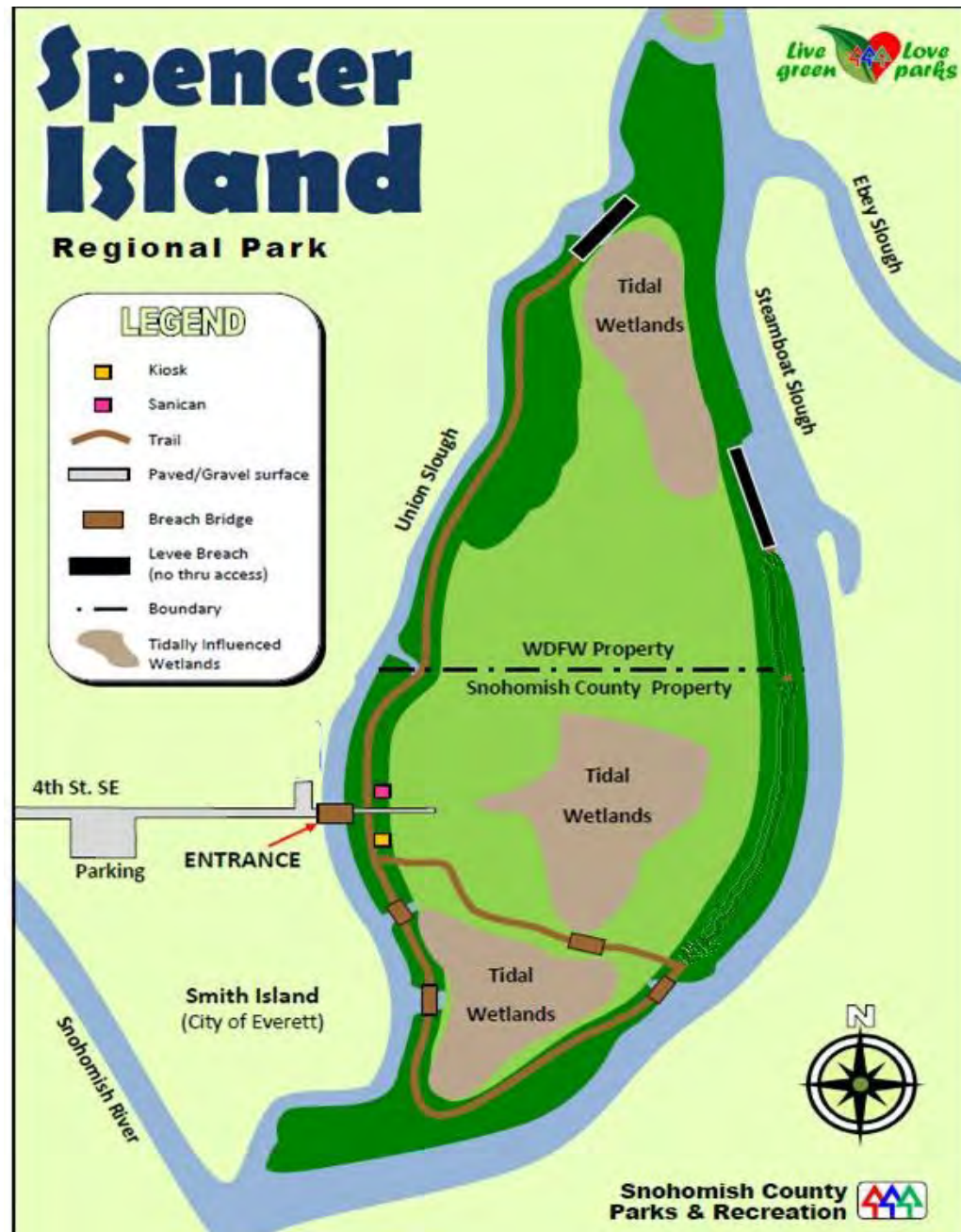
# Meeting Agenda

- Spencer Island history and background
- Spencer Island restoration project alternatives analysis
- Recreation and public access
- Q&A
- Public comment period

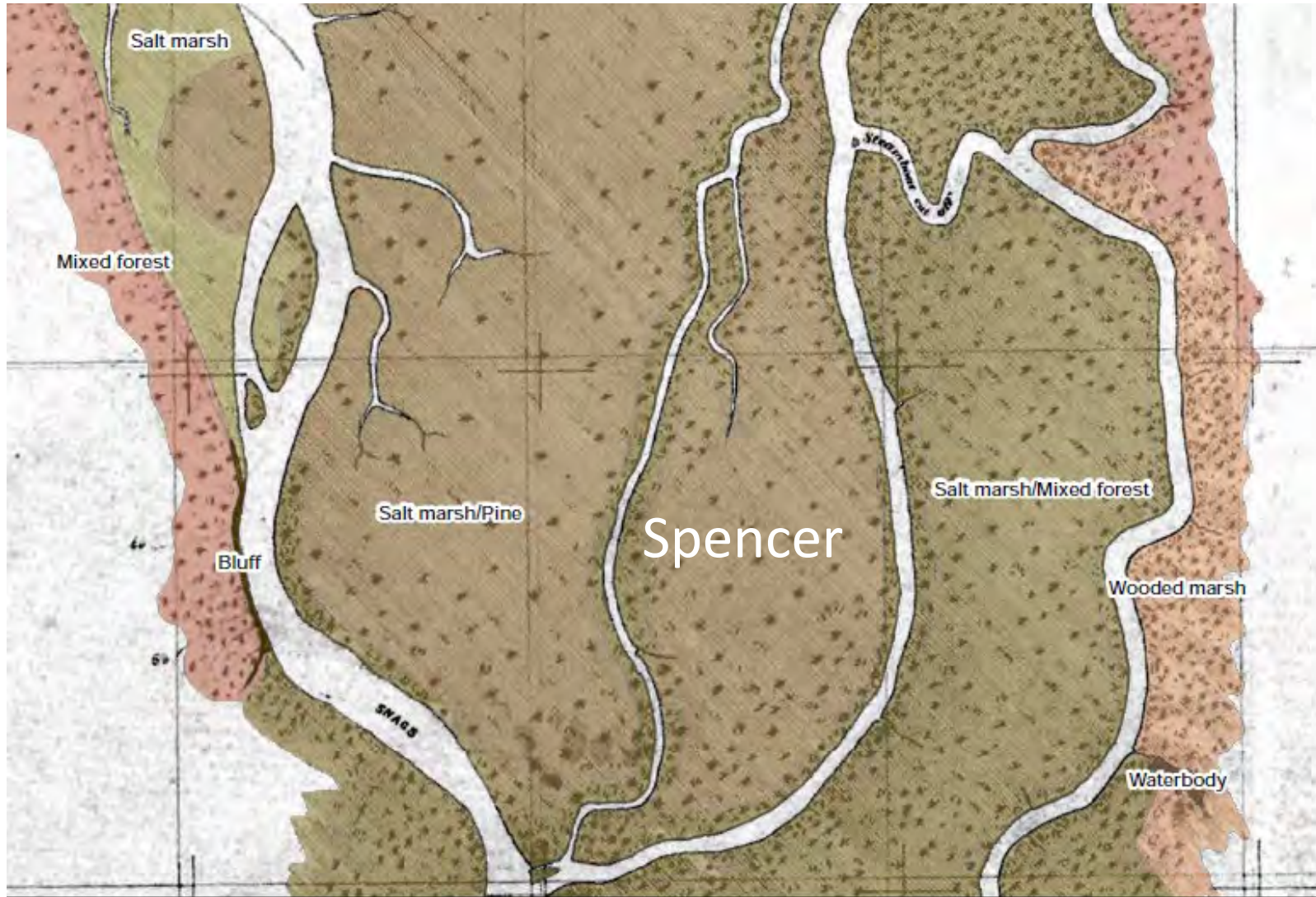
# Spencer Island Orientation



# Spencer Island ownership and management



# Historically intertidal forested wetland





# Dike and drained in the early 1900's for grazing



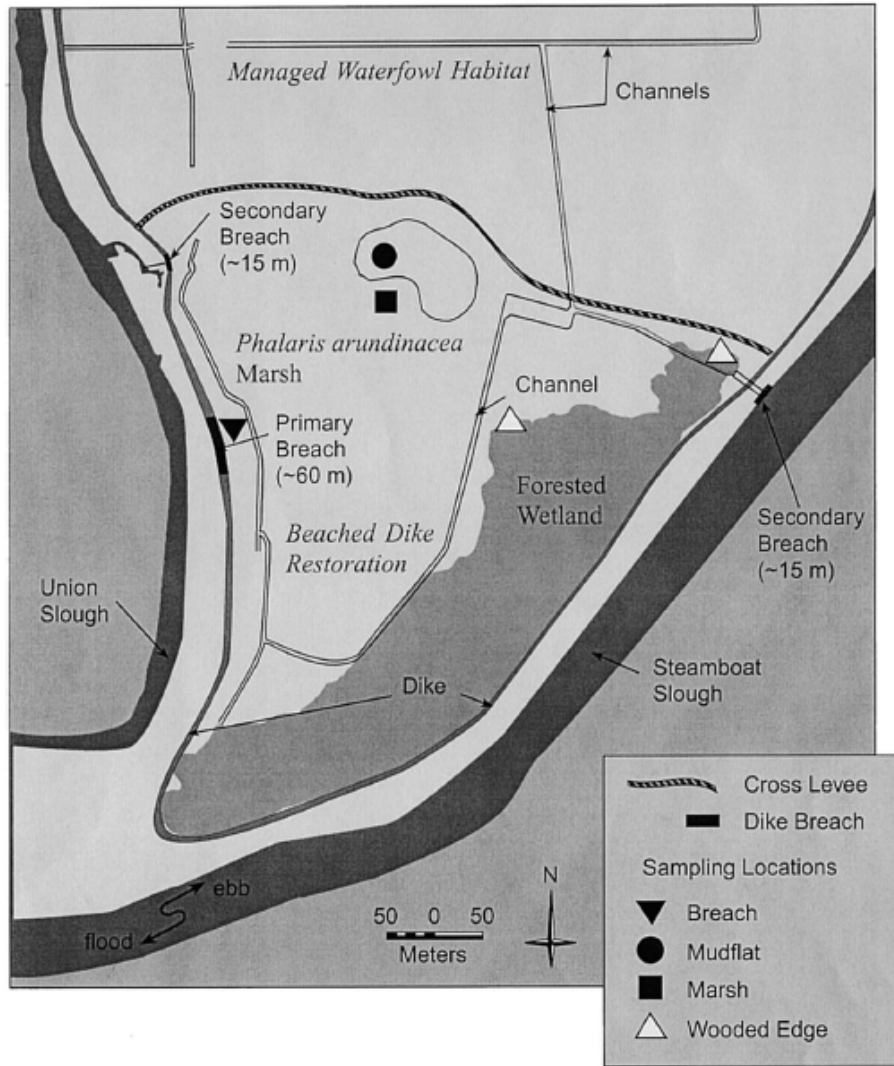
WDFW and  
Snohomish County  
purchased the site in  
1989.



1990 aerial image from  
Google earth



In 1994, Snohomish County completed estuary restoration project on southern 80 acres.



# Dike fire on north end creates breach in 2005



Cross-dike breach



Failing tidegate on Steamboat Slough



**Cross-dike and Steamboat Slough levee  
breached making the entire site muted-intertidal**



# Current conditions

- Remnant dike and undersized breaches are limiting tidal exchange and heightened velocity
- Old ditch network is capturing tidal flows, preventing tidal channels to develop at natural rate.
- Brackish marsh vegetation has colonized the site.
- Some sediment has settled out onto the site.
- Fish, including salmon, are using the site but in low numbers.



## State and Federal Partnership

- Utilizing Army Corp's Puget Sound and Adjacent Waters (PSAW) authority
- Project identified as part of Puget Sound Nearshore Ecosystem Restoration Project (PSNERP)
- Cost-share between WDFW and USACE
  - Feasibility 50/50 Cost Share
  - Design and Implementation 65 FED/35 Non-FED
- Non-FED contributions can include work-in-kind and land value

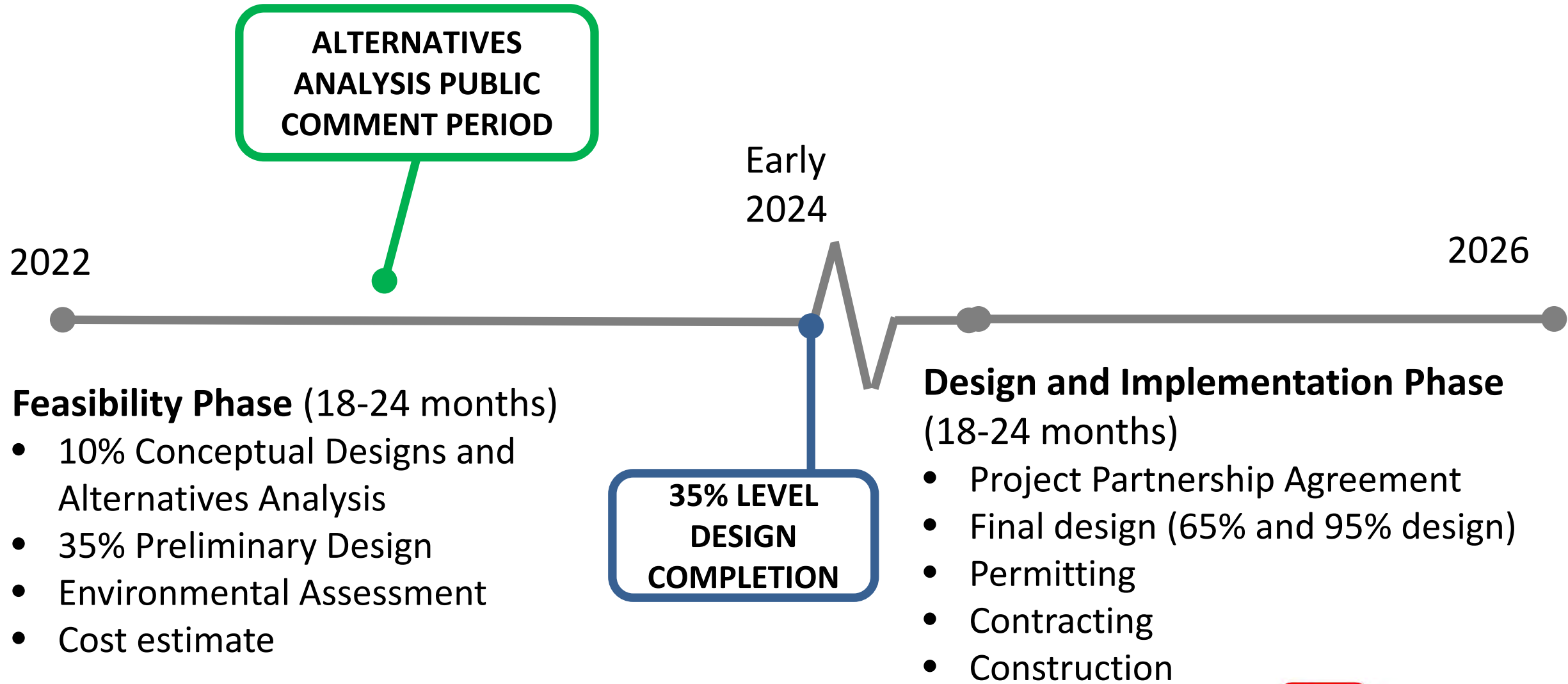
**The USACE has received \$9 Million from Congress for the FED share**



**US Army Corps  
of Engineers®**



# Spencer Island Preliminary Project Schedule and Activities







## Project Goals

- More fully restore natural processes including tidal hydrology, sedimentation, tidal channel formation, and detritus exchange.
- Improve connectivity for juvenile salmon into the site and between Steamboat and Union Sloughs.





# Wildlife Area Goals

*“The vision for the Spencer Island Unit is to provide estuary marsh habitat for fish and wildlife species while, in collaboration with partners, providing wildlife viewing and waterfowl hunting opportunities for the public.”*



# 2012 PSNERP Conceptual Design

## Key Design Elements:

- Lower existing dikes
- Dike breaches
- Tidal channel reconfiguration
- Revegetation



# Alternatives Analysis

- High-level analysis based on current data
- Multi-disciplinary staff team conducted analysis
- Stakeholder, public and Tribal input a part of decision making process
- Criteria includes ecosystem benefits, costs, access/recreation, and O&M

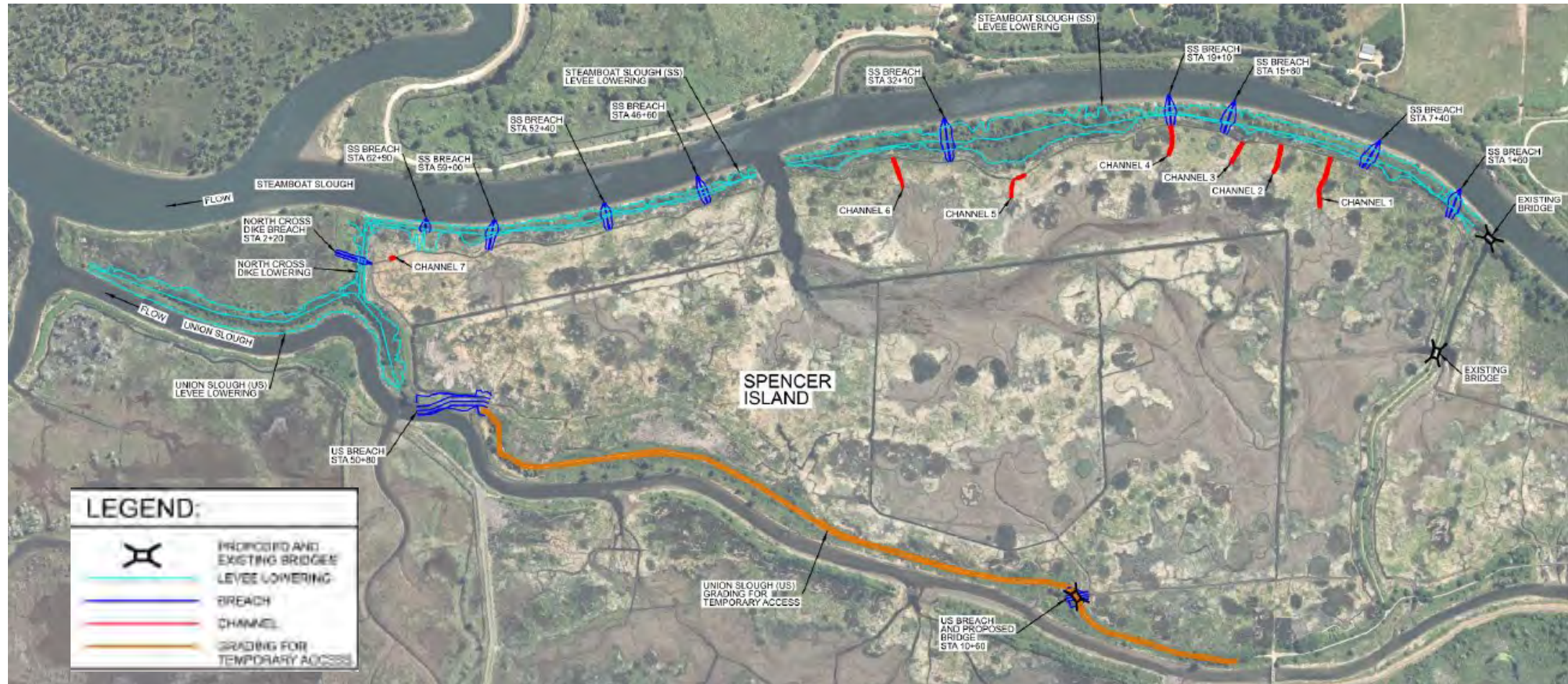


# Spencer Island 10% Conceptual Design Alternatives

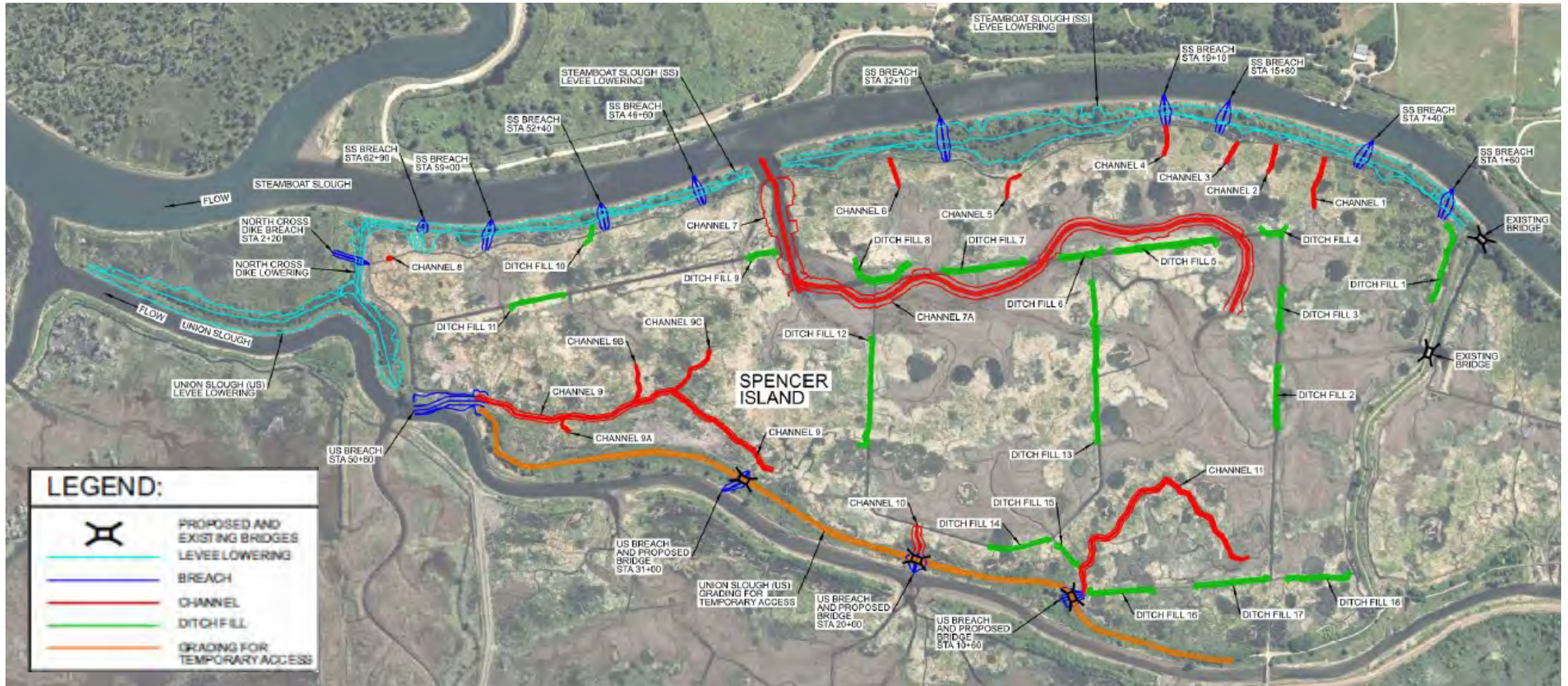
1. No Action
2. Minimum Restoration
3. Low Restoration w/ Bridge
- 4a. Moderate Restoration w/o Bridges
- 4b. Moderate Restoration w/ Bridges
- 5a. Medium Restoration w/o Bridges
- 5b. Medium Restoration w/ Bridges
- 6a. High Restoration w/o Bridges
- 6b. High Restoration w/ Bridges
7. Maximum Restoration



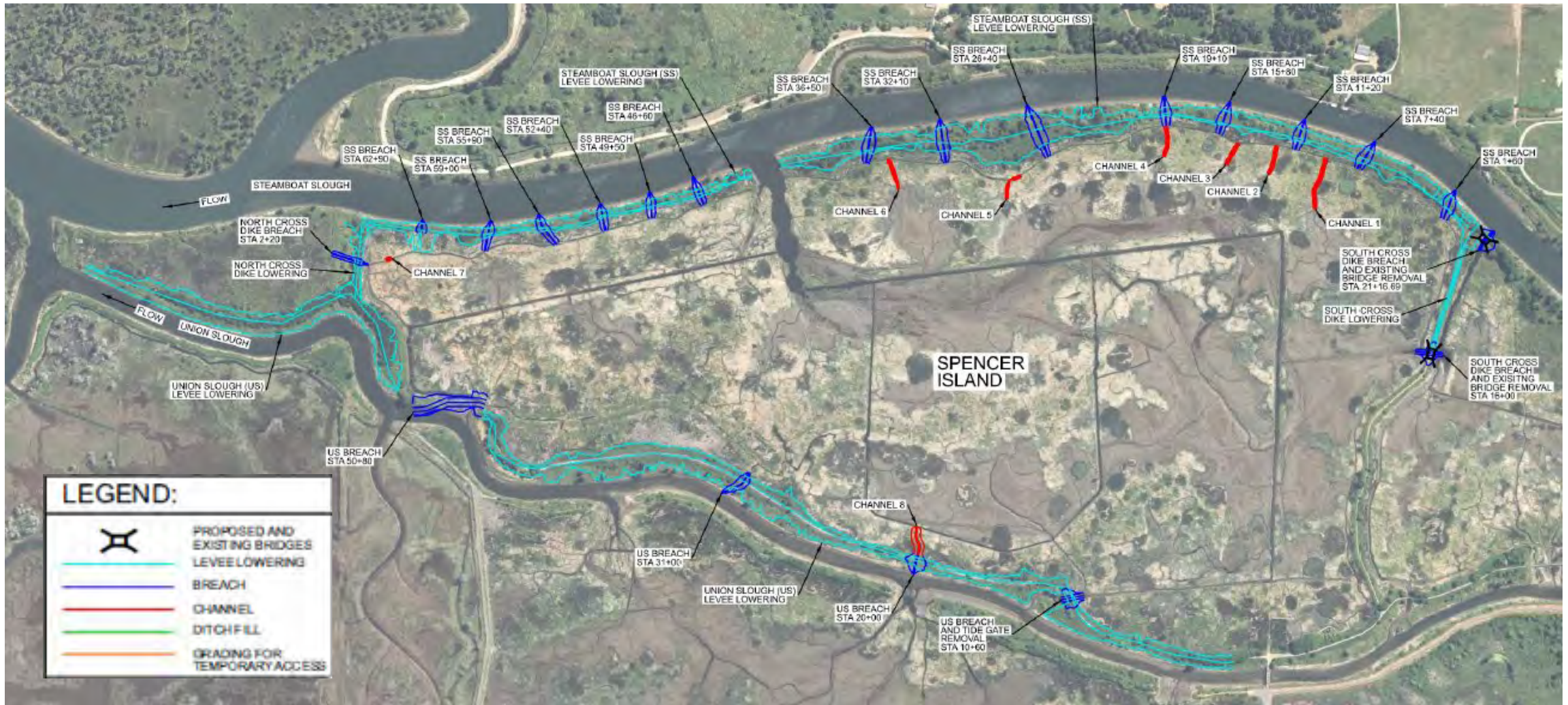
# Alternative 3: Low Restoration w/ Bridge



# Alternative 4b: Moderate Restoration w/ Bridges

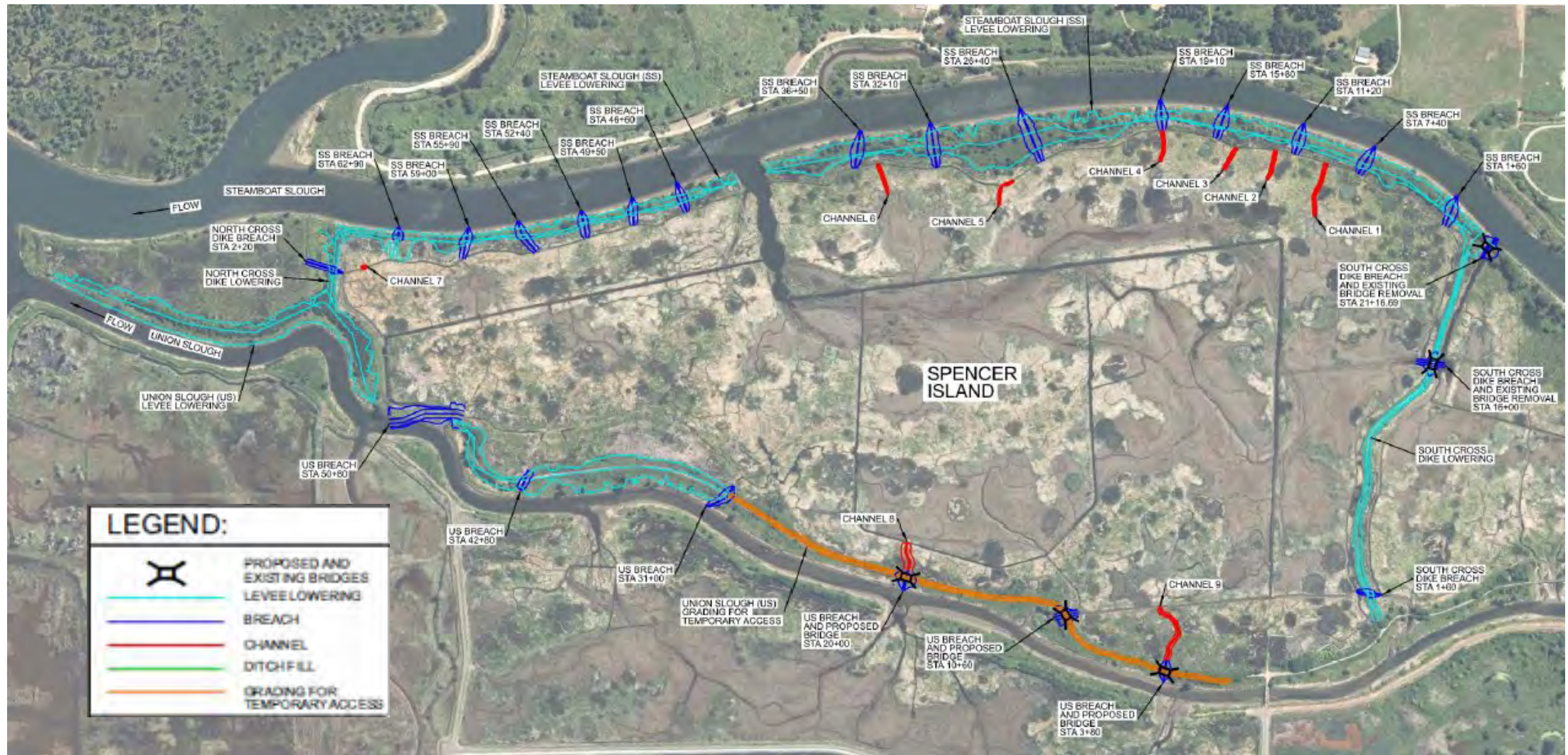


# Alternative 5a: Medium Restoration w/o Bridges

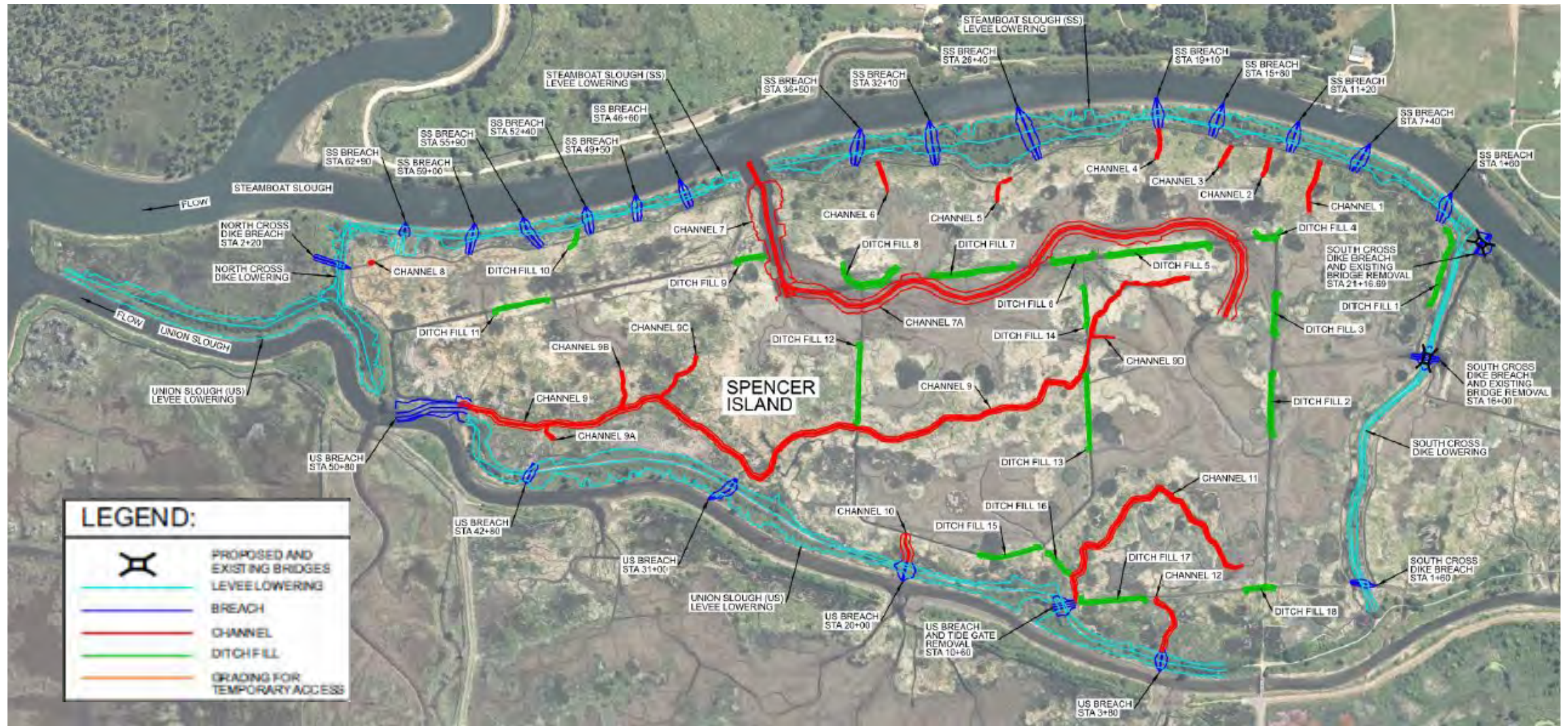




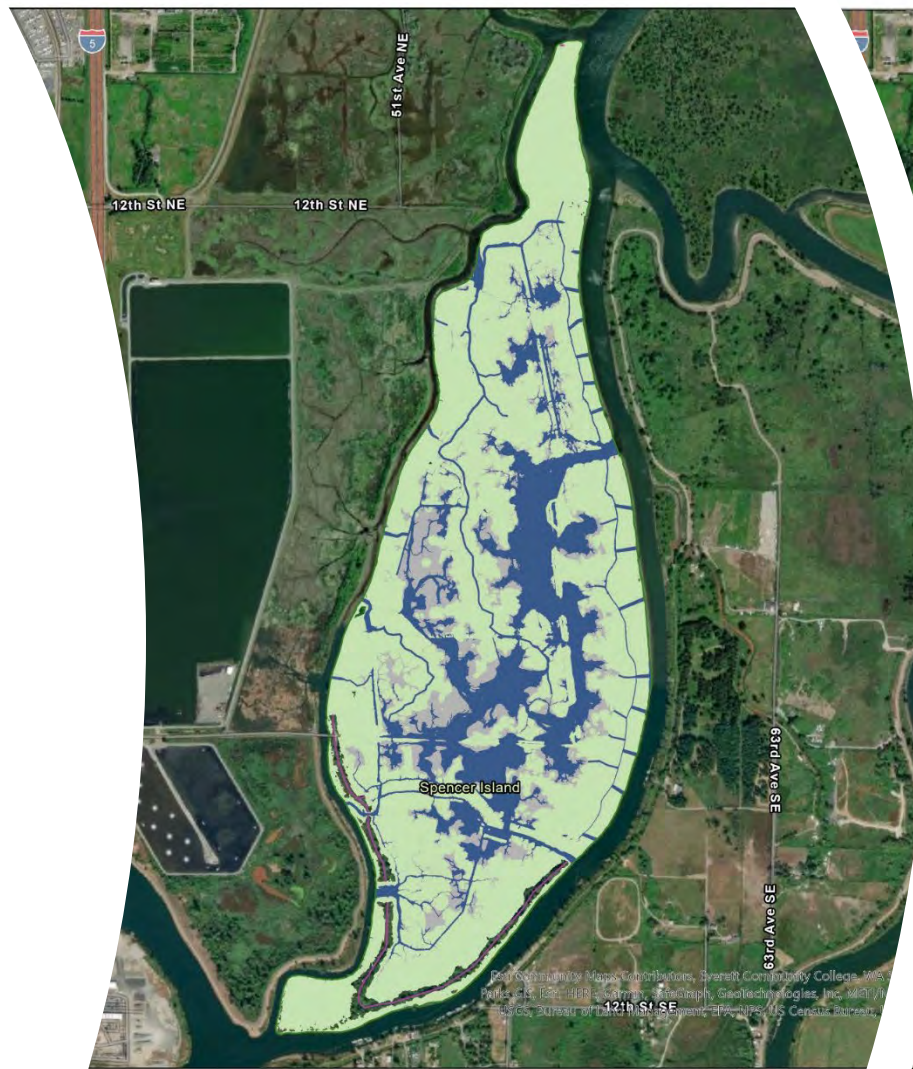
# Alternative 6b: High Restoration w/ Bridges



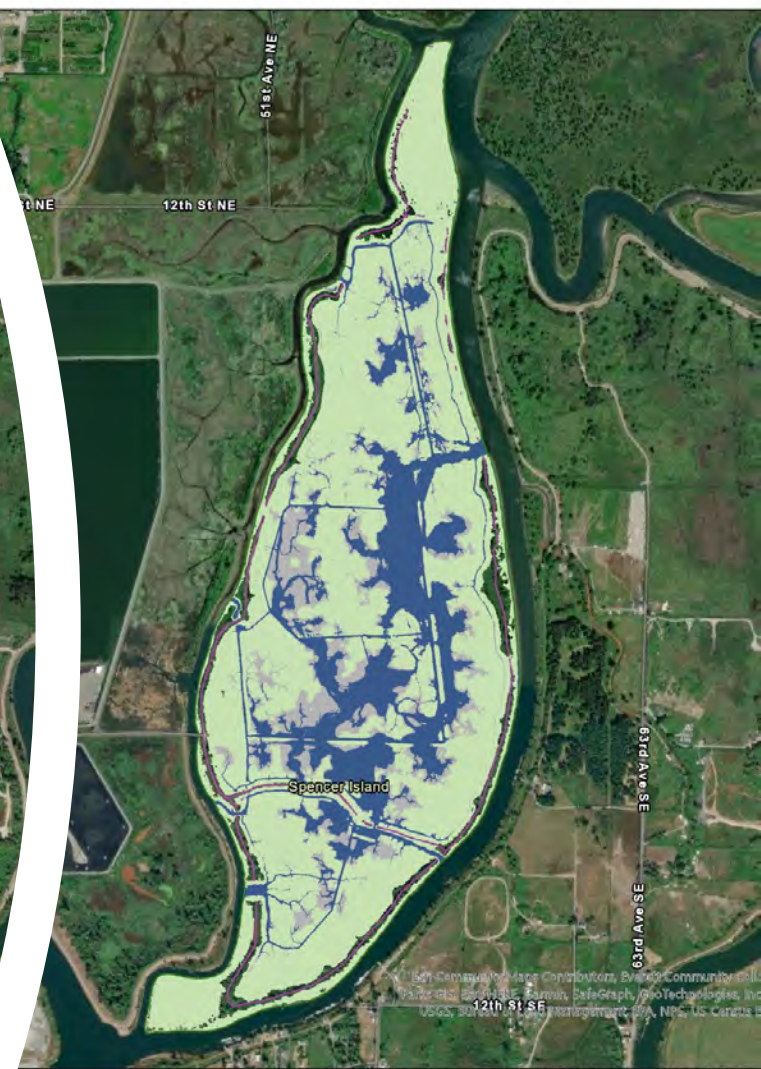
# Alternative 7: Maximum Restoration



# Spencer Island Estuary Restoration Ecosystem Benefits Analysis

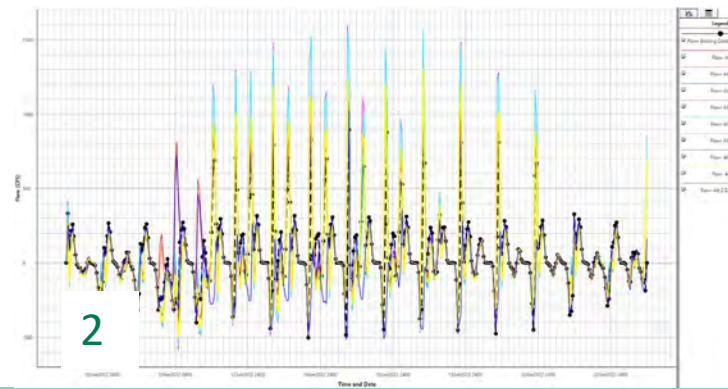
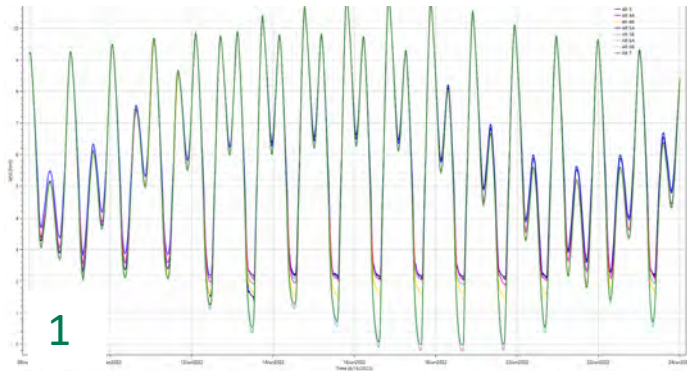
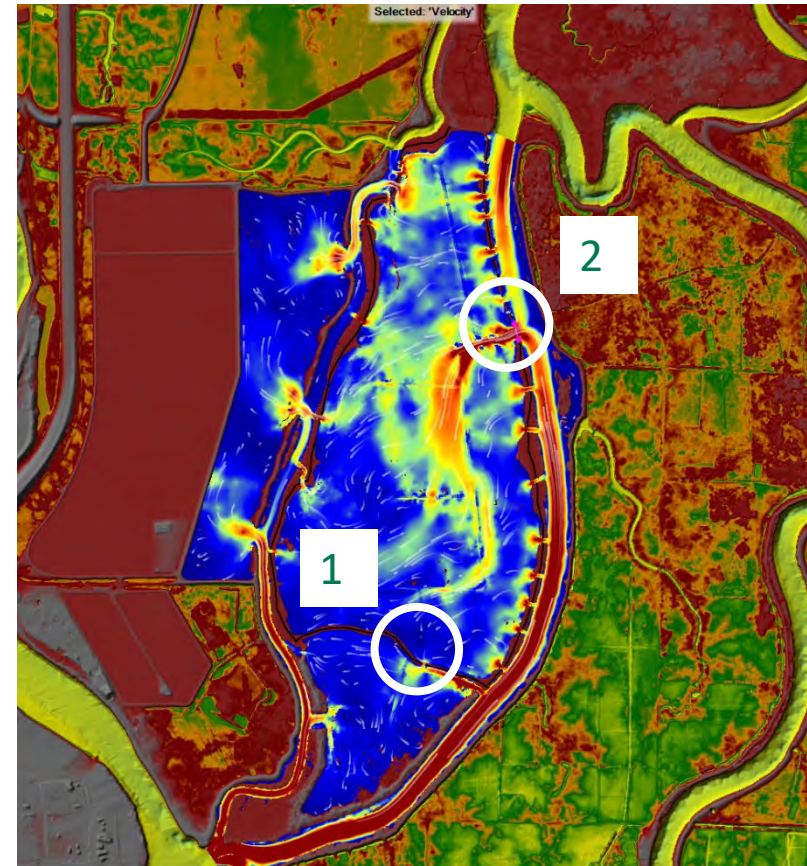
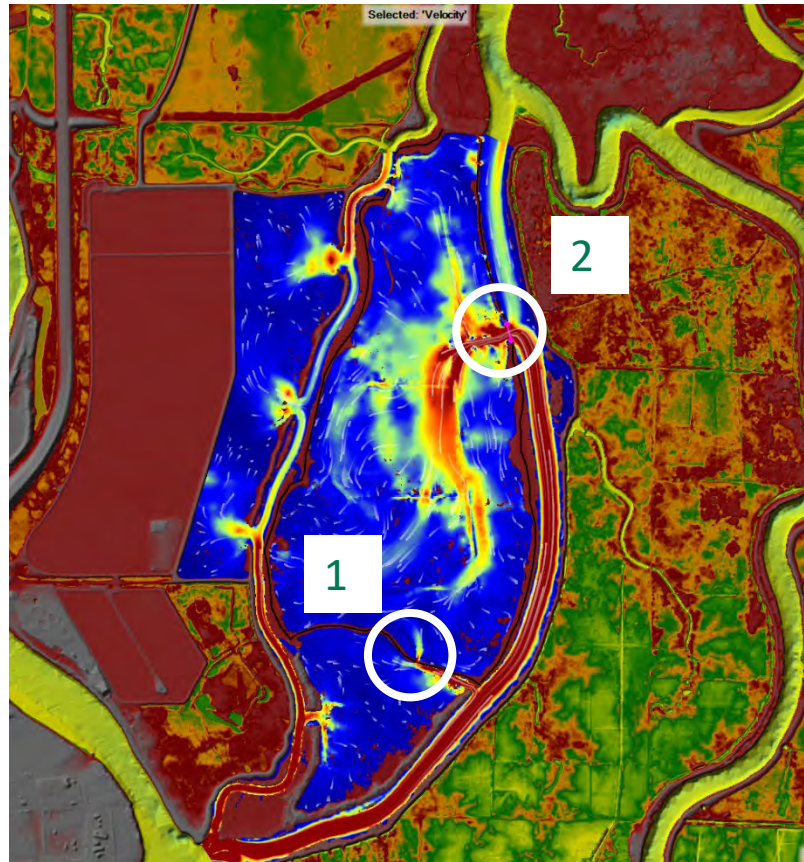
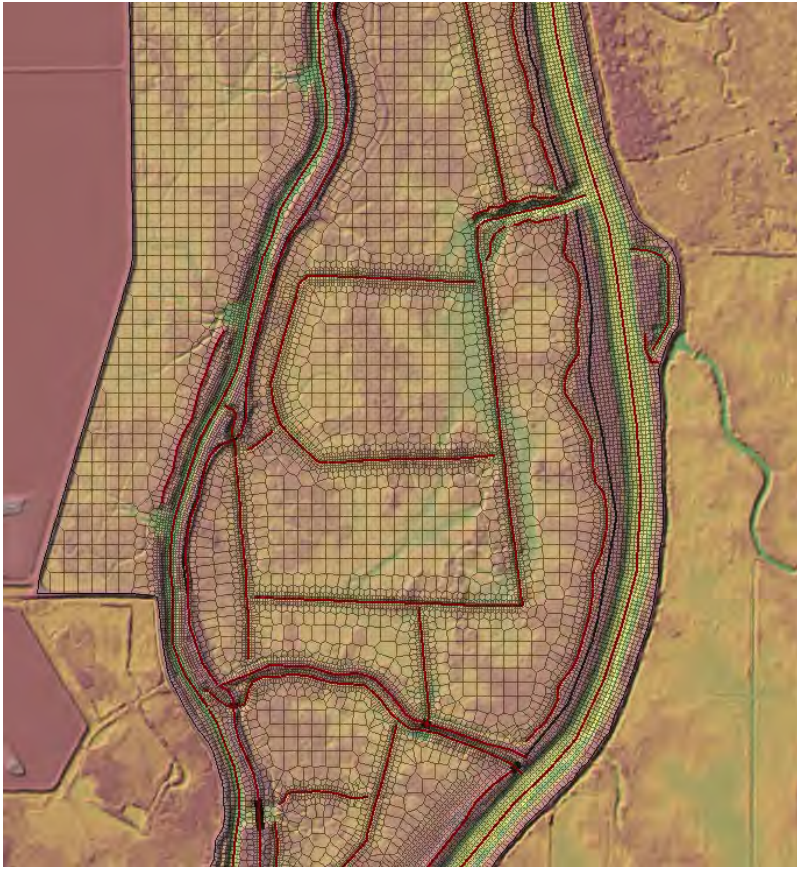


Alternative 7 Metric 1, 2, 3 Areas



Alternative 1 (NAA) Metric 1, 2, 3 Areas





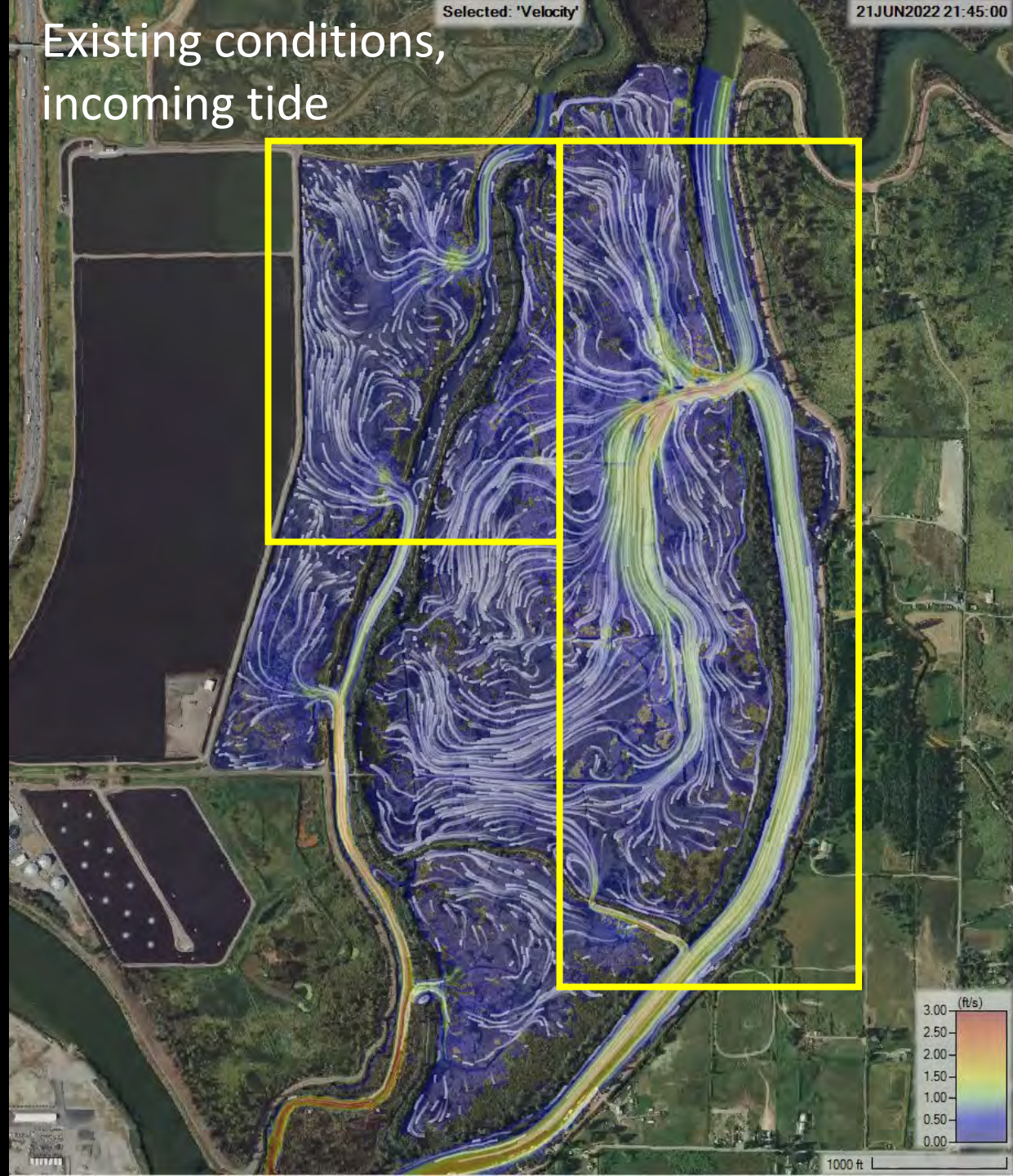
# Hydraulic Modeling



Existing conditions,  
incoming tide

Selected: 'Velocity'

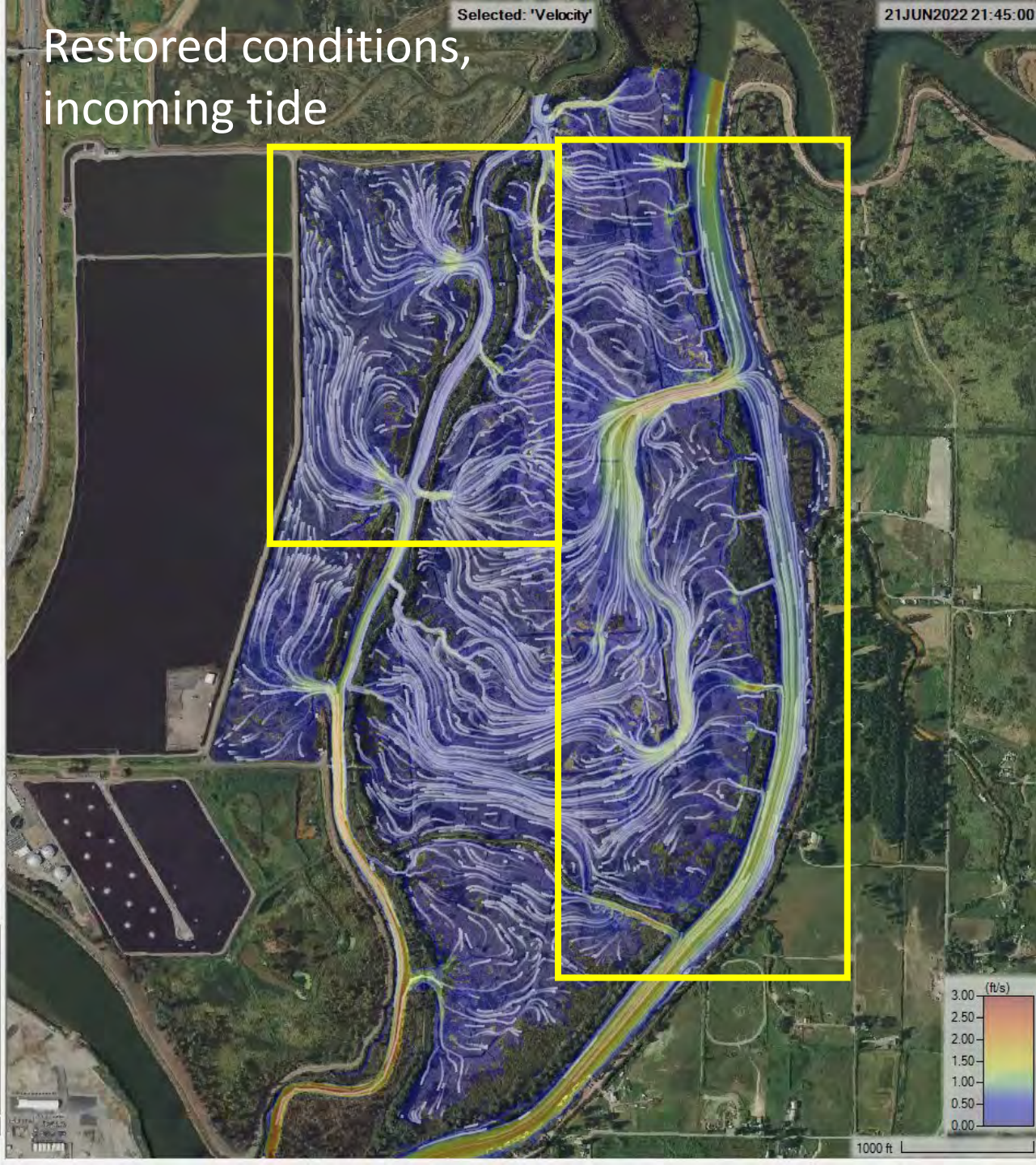
21JUN2022 21:45:00



Restored conditions,  
incoming tide

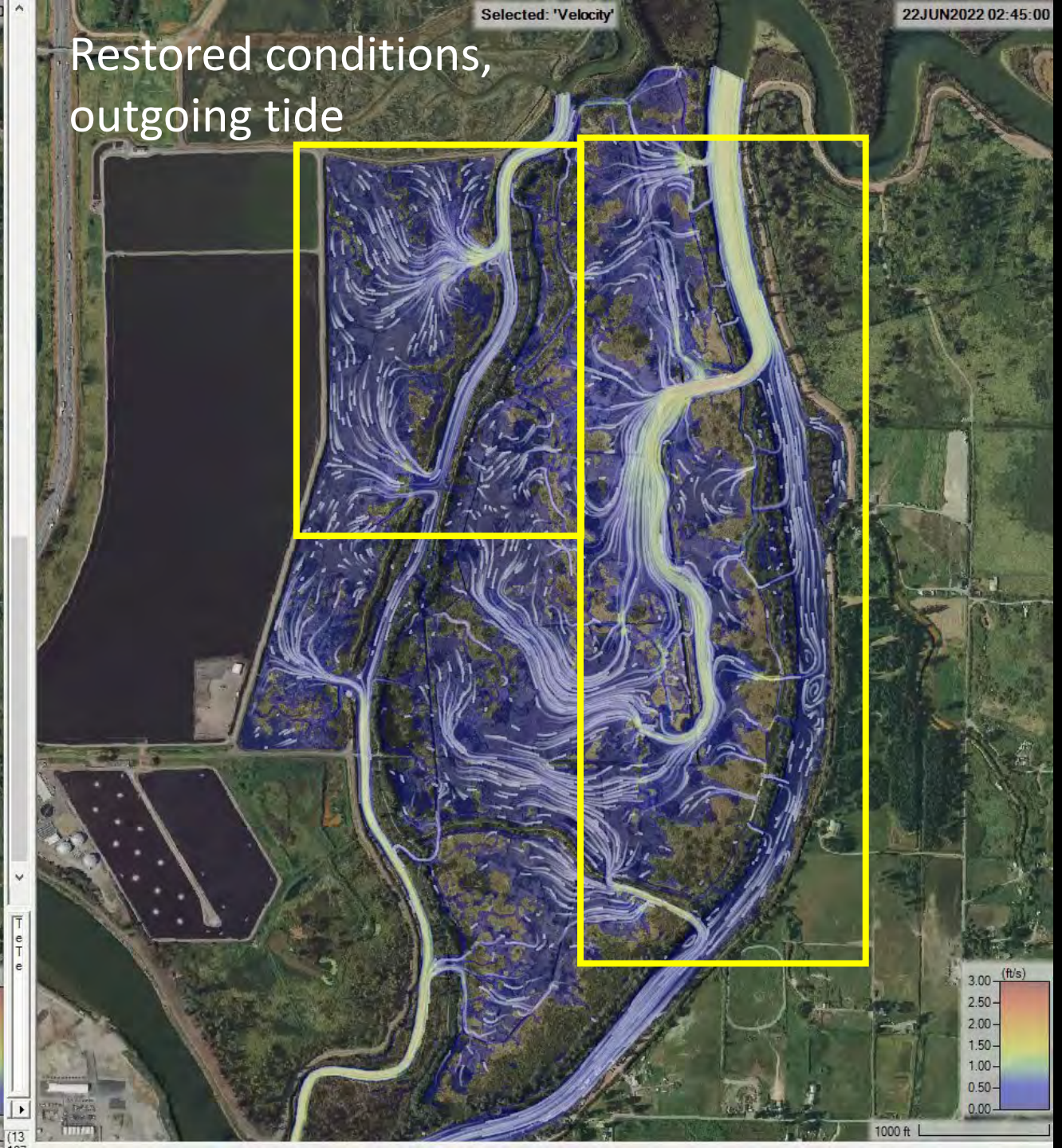
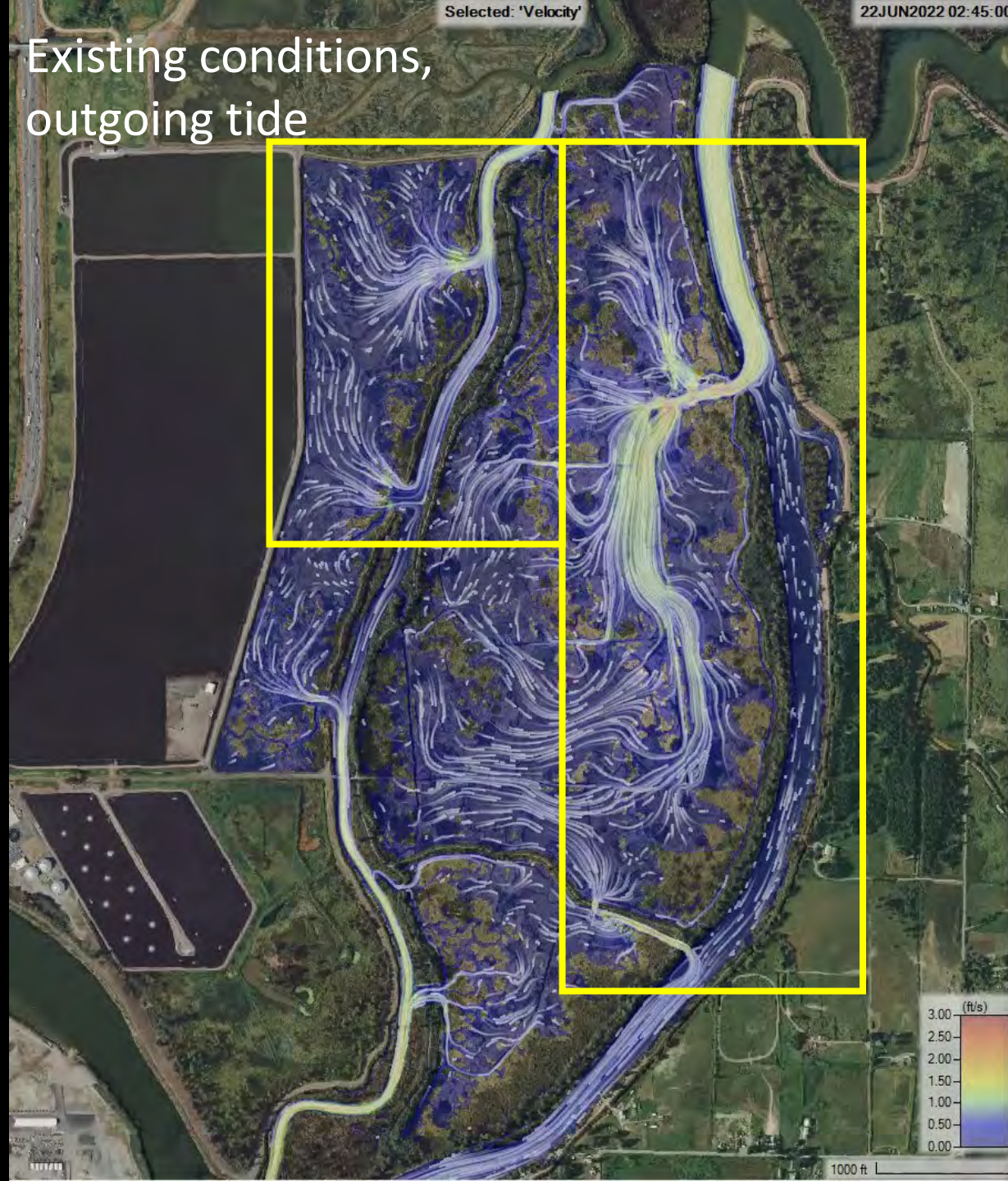
Selected: 'Velocity'

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Existing conditions,  
outgoing tide

Restored conditions,  
outgoing tide



# Effectiveness Metrics and Management Measures

Metric	Process	Threshold	Quality	Quantity
<b>Tidal channel connectivity</b>	Exchange of aquatic organisms (fish access)	Velocities at hot spots (barriers) less than swim speed for chinook smolt in June	% of time hot spots under barrier threshold	Area of inundation at MLLW (or MTL)
<b>Marsh connectivity</b>	Tidal flux to/from distributaries into/out of marsh	Number of connections relative to Hood (2015) regression prediction for Spencer Island	# breach connections / regression prediction	Area of inundation at MTL
<b>Floodplain connectivity</b>	Fluvial and tidal flooding, erosion, sedimentation, woody debris dynamics	Perimeter shoreline below ordinary fluvial high-water elevation	Length of shoreline where elev < threshold / total shoreline perimeter	Area of inundation at Q2 or MHHW + 2'

Metric	Potential Management Measures
<b>Tidal channel connectivity</b>	<ul style="list-style-type: none"> <li>• Increase number of outlets connecting marsh channels to distributaries,</li> <li>• Increase size of outlet and/or interior channels,</li> <li>• Block ditches,</li> <li>• Remove undersized hydraulic structures,</li> <li>• Increase length (sinuosity) of interior channels,</li> <li>• Flatten side slopes of interior channels,</li> <li>• Add roughness (wood) in interior channels</li> </ul>
<b>Marsh connectivity</b>	<ul style="list-style-type: none"> <li>• Add levee breaches (outlets)</li> <li>• Increase depth or width of existing outlets</li> </ul>
<b>Floodplain connectivity</b>	<ul style="list-style-type: none"> <li>• Lower levees</li> <li>• Add levee breaches</li> </ul>



# Preliminary Alternative Benefits Analysis

Alternative	Preliminary Net Benefits (Habitat Units)	% Increase Over No Action
1. No Action	0	0
2. Minimum Restoration	63	39%
3. Low Restoration w/ Bridge	91	56%
4a. Moderate Restoration w/o Bridges	147	89%
4b. Moderate Restoration w/ Bridges	101	62%
5a. Medium Restoration w/o Bridges	172	105%
5b. Medium Restoration w/ Bridges	146	89%
6a. High Restoration w/o Bridges	190	116%
6b. High Restoration w/ Bridges	164	100%
7. Maximum Restoration	219	134%





# Snoqualmie Wildlife Area

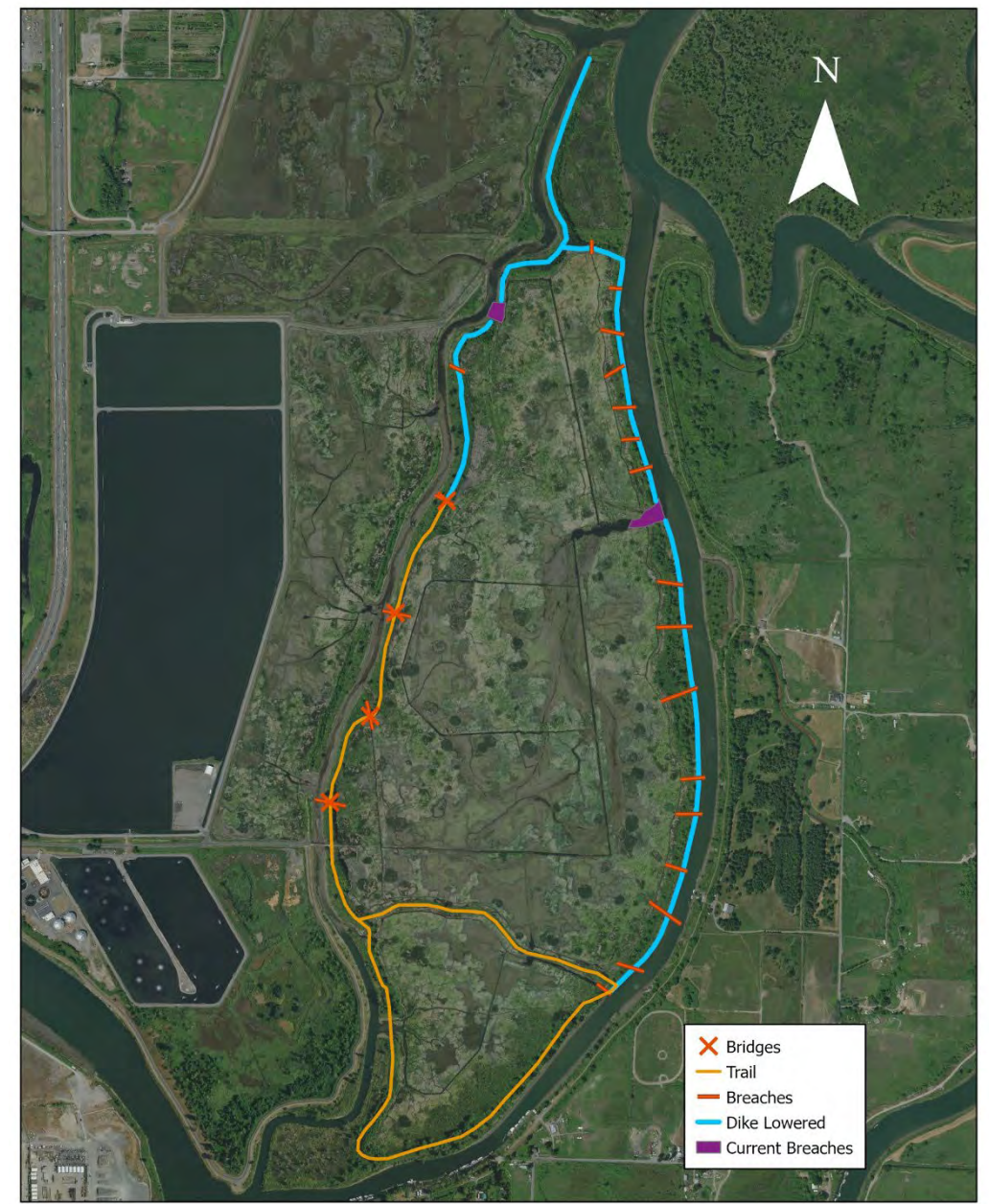
Goal 1: Restore and protect the integrity of priority ecological systems and sites

Goal 2: Sustain individual species through habitat and population management actions, where consistent with site purpose and funding

Goal 3: Provide fishing, hunting, and wildlife-related recreational opportunities where consistent with Goals 1 and 2.



# Bridges



# Bridges

Will bridges stay intact and useful in a changing system?

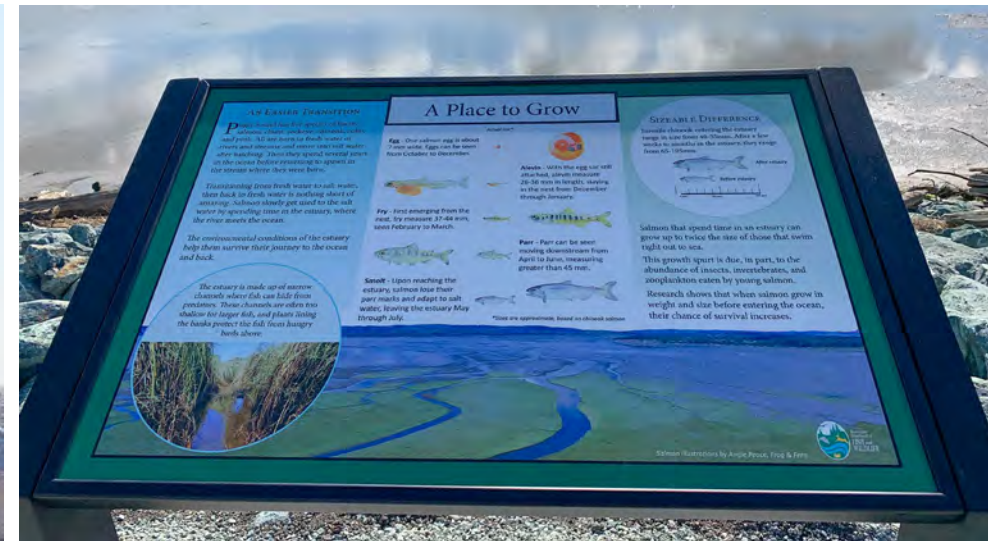


# Levee Assessment

Are the levees able to support bridges and trail?



# Creative Recreational Features



Jason Wettstein



# Creative Recreational Features



Alan Bauer



Larry Wilson



# Questions and Answers

Submit questions by typing them into Q&A box zoom function

Hold comments until comment period



# Public Comment Opportunities

- Speak at this meeting
- Online comment portal at:  
<https://wdfw.wa.gov/spencerIsland>
- By mail:  
WDFW North Puget Sound Regional Office  
Attn: Seth Ballhorn  
16018 Mill Creek Boulevard  
Mill Creek, WA 98012-1541
- Submit comments by Sept. 24<sup>th</sup>
- Army Corps will hold comment period on preliminary design Environmental Assessment



## Spencer Island Habitat Restoration Public Feedback

Translate

WDFW and Snohomish County are looking for public feedback to shape habitat restoration efforts at the Spencer Island Unit of the Snoqualmie Wildlife Area and the Spencer Island County Park. Please use the field below to share your feedback about proposed Spencer Island habitat restoration. Comments will be accepted through Sept. 24.

For more information, please reference our [recent news release](#) and [presentation](#).

Please use the field below to share your feedback about proposed Spencer Island habitat restoration.

Comment



# Public Comments

- Raise hand to if you would like to speak, moderator will unmute you
- Keep comments to 2-3 minutes, please be respectful



**For more information, contact:**

**Seth Ballhorn**

**Environmental Planner**

**[seth.ballhorn@dfw.wa.gov](mailto:seth.ballhorn@dfw.wa.gov)**

**360-791-4987**

**[wdfw.wa.gov/SpencerIsland](http://wdfw.wa.gov/SpencerIsland)**



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