



Marsh Lake Habitat Enhancement Project

Restore the aquatic and riparian ecosystems in the Marsh Lake project area on the Minnesota River in Western Minnesota.

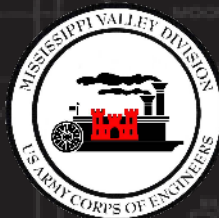
By U.S. Army Corps of Engineers and Minnesota Department of Natural Resources



U.S. ARMY



US Army Corps
of Engineers®





Marsh Lake Habitat Enhancement Project

Restore the aquatic and riparian ecosystems in the Marsh Lake project area on the Minnesota River in Western Minnesota.

By U.S. Army Corps of Engineers and Minnesota Department of Natural Resources

[About](#) [Location](#) [History](#) [Planning](#) [Objectives](#) [Project Features](#) [Compare Pre-Post](#) [Drawdowns](#) [Videos](#) [Monitoring](#) [2015-2023](#) [References](#) [Questions](#)

[Marsh Lake Habitat Enhancement Project \(arcgis.com\)](https://storymapx.arcgis.com/stories/fed86ac1de824c12afb6bbaaa4a59917)

<https://storymapx.arcgis.com/stories/fed86ac1de824c12afb6bbaaa4a59917>



CREATING RESILIENCY AT MARSH LAKE

Reverting a Shallow Freshwater Lake from a Turbid to Clear Water State

David Potter
Fishery Biologist
St. Paul District
April 18, 2024



UPPER MINNESOTA RIVER
WATERSHED DISTRICT



U.S. ARMY



US Army Corps
of Engineers®





U.S. ARMY



US Army Corps of Engineers



Ecological Resiliency - *The capacity of an ecosystem to respond to a perturbation or disturbance by resisting damage and subsequently recovering.*

-Wikipedia



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	----------	------	------------



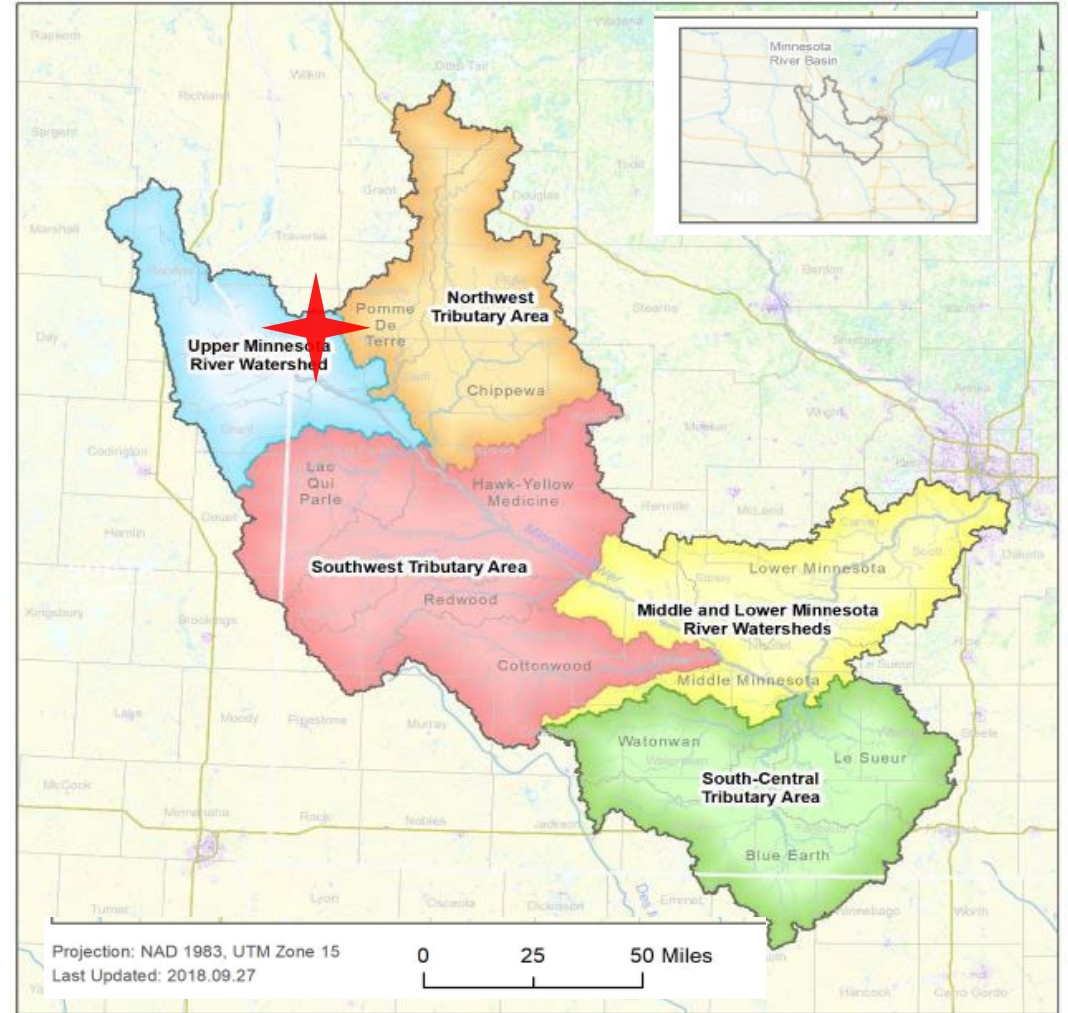
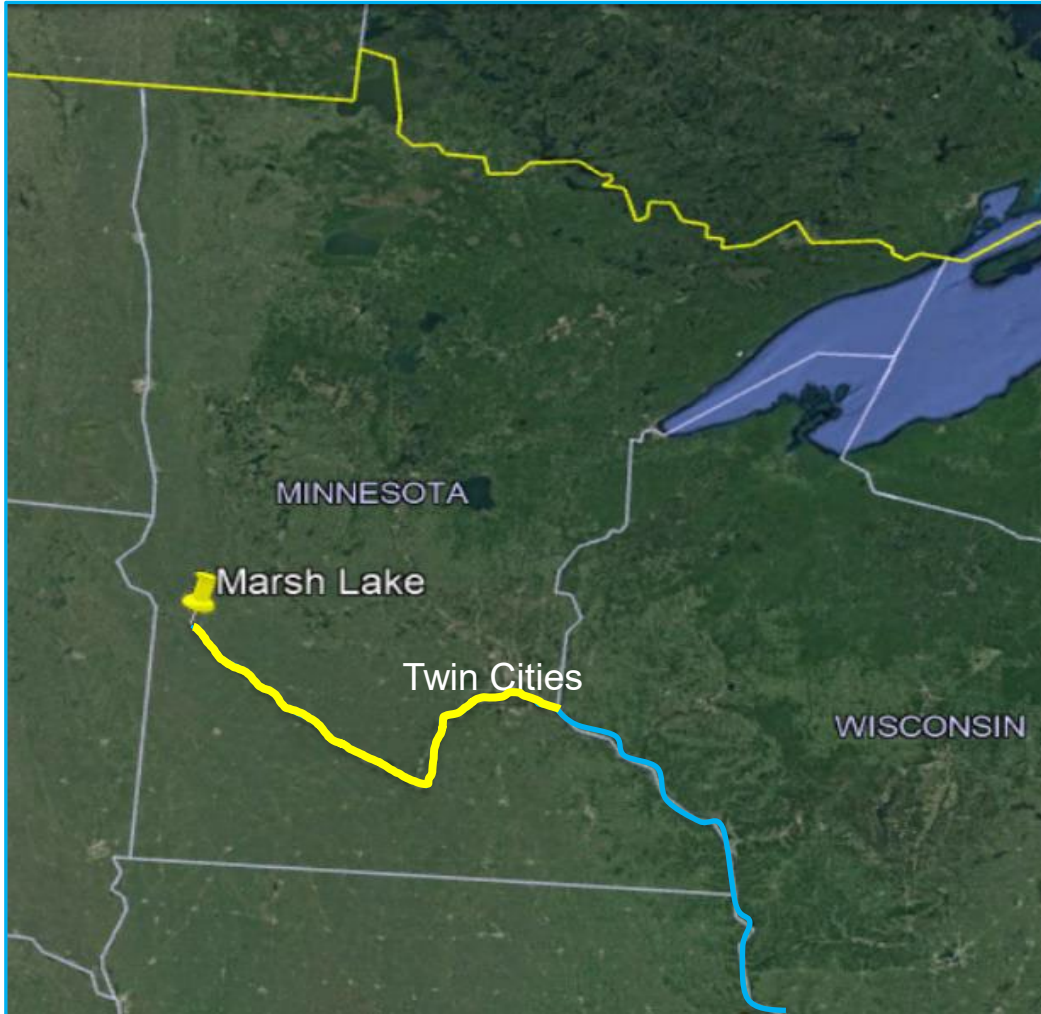
U.S. ARMY



US Army Corps of Engineers



MARSH LAKE ECOSYSTEM RESTORATION PROJECT LOCATION



Background	Project Need	Project Features	Response	MAMP	Conclusion
-------------------	--------------	------------------	----------	------	------------



U.S. ARMY



US Army Corps of Engineers®



PRAIRIE POTHOLE REGION

North American Waterfowl Management Plan



Background	Project Need	Project Features	Response	MAMP	Conclusion
-------------------	--------------	------------------	----------	------	------------



U.S. ARMY



US Army Corps of Engineers



RESOURCE SIGNIFICANCE



Background	Project Need	Project Features	Response	MAMP	Conclusion
-------------------	--------------	------------------	----------	------	------------



U.S. ARMY

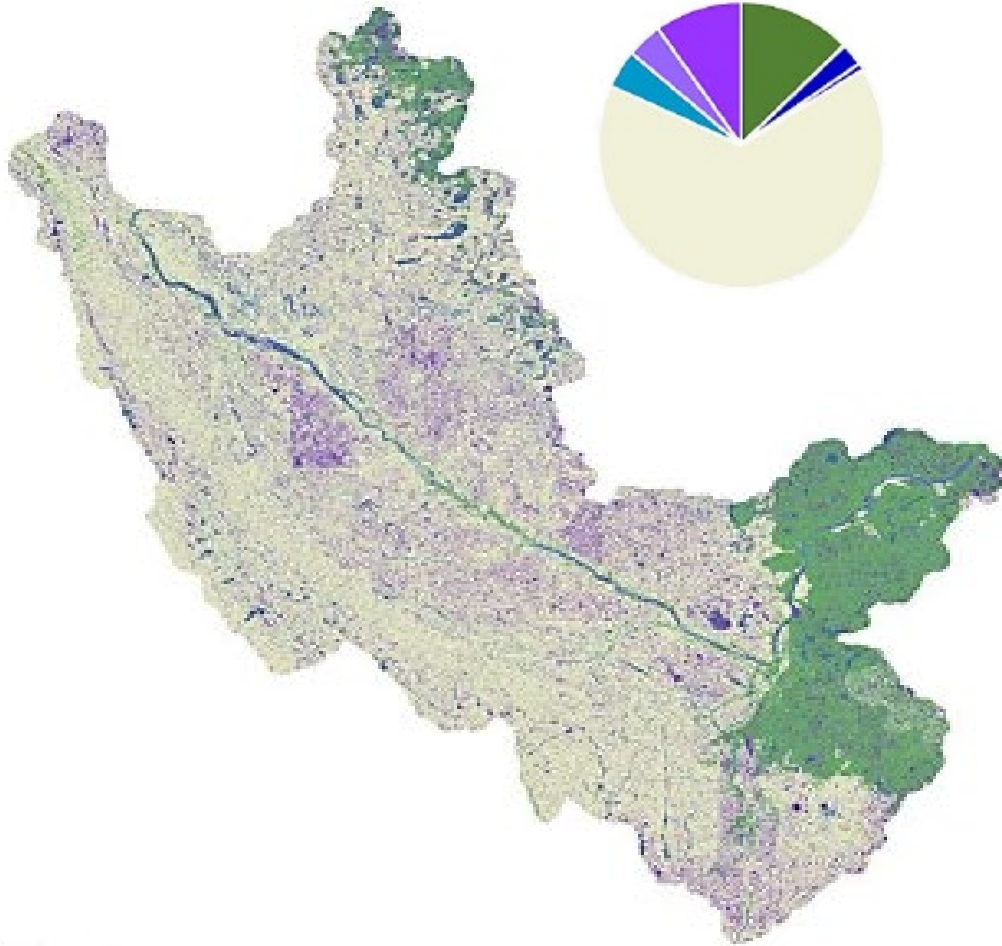


US Army Corps of Engineers

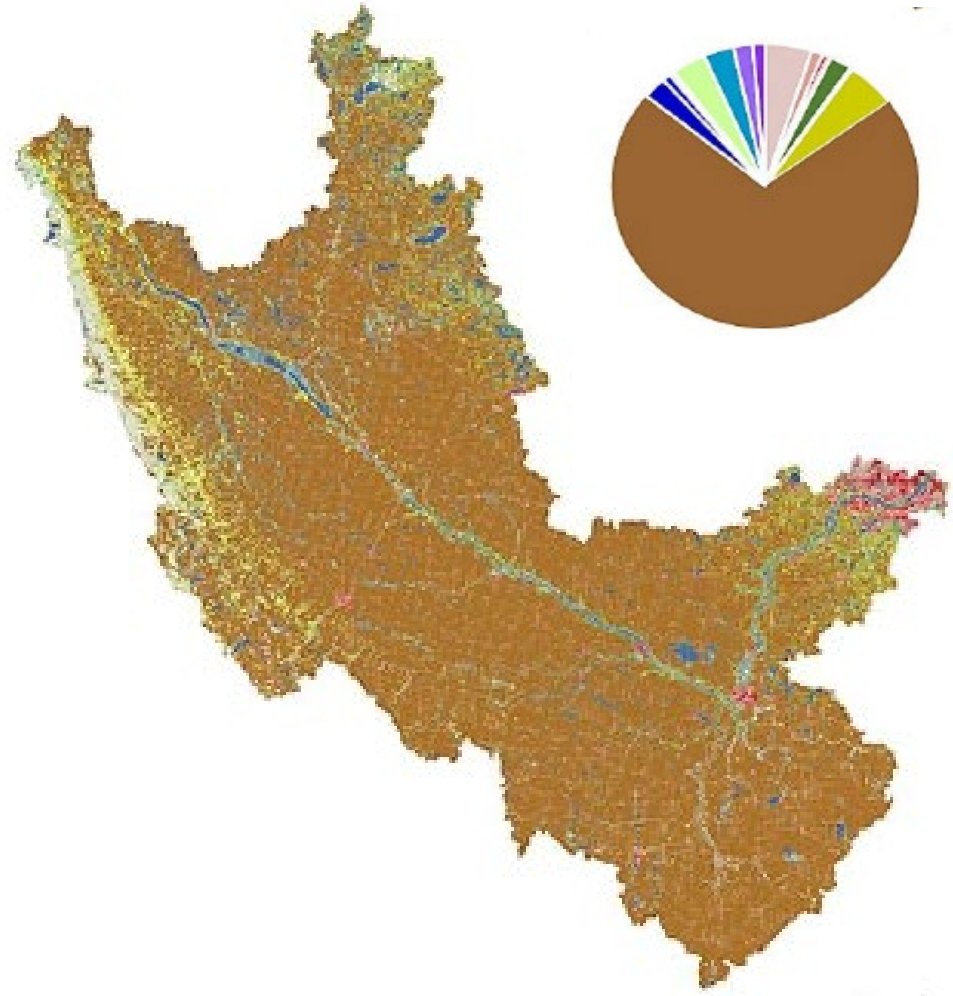


WATERSHED PROBLEMS

Presettlement Conditions



Existing Conditions



Background

Project Need

Project Features

Response

MAMP

Conclusion



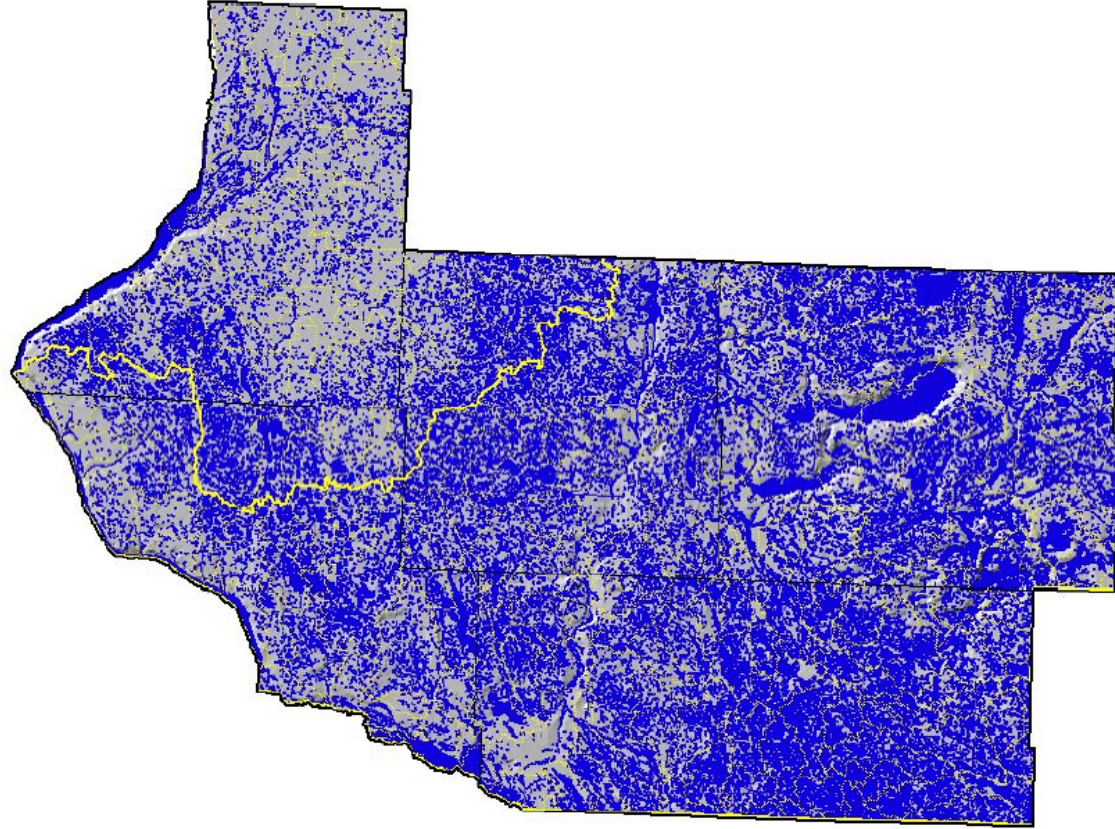
U.S. ARMY



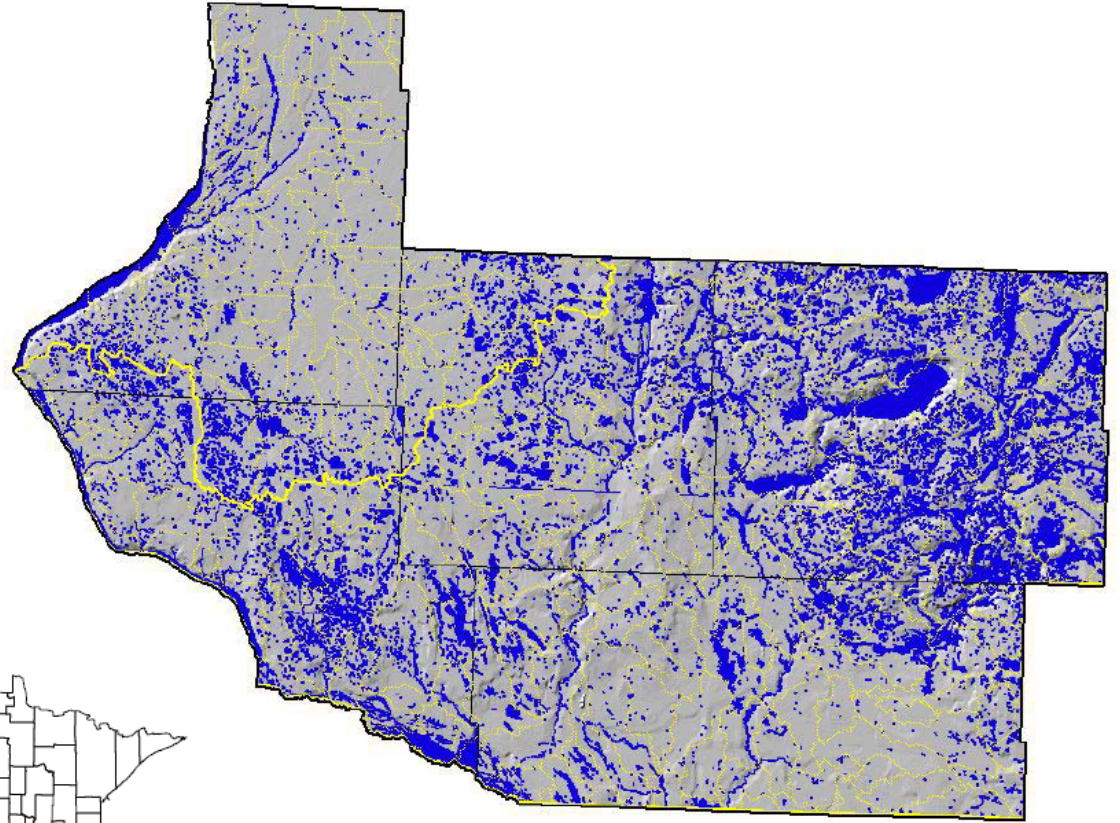
US Army Corps of Engineers®



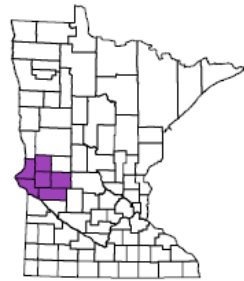
LOSS OF WETLANDS



1870s



2000s



Source: Minnesota River Basin Interagency Study. 2020.

Background	Project Need	Project Features	Response	MAMP	Conclusion
-------------------	--------------	------------------	----------	------	------------



U.S. ARMY

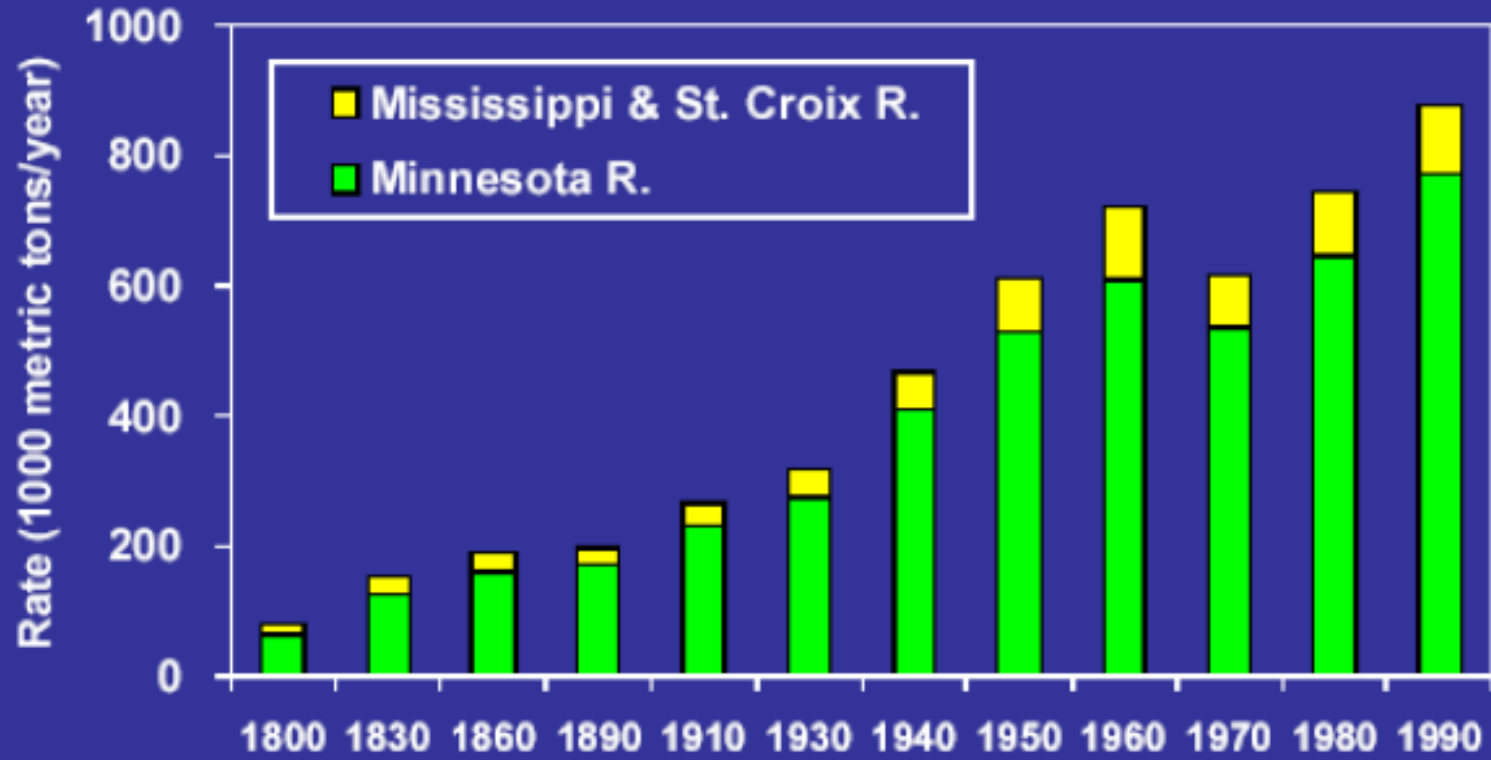
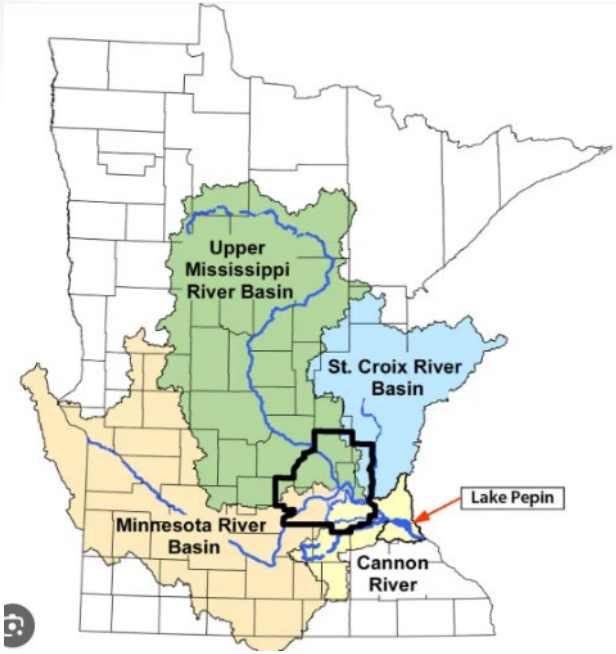


US Army Corps of Engineers



Sediment Accumulation and Sources

Lake Pepin, 1800s-1990s



Source: Minnesota River Basin Interagency Study. 2020.

Background	Project Need	Project Features	Response	MAMP	Conclusion
-------------------	--------------	------------------	----------	------	------------



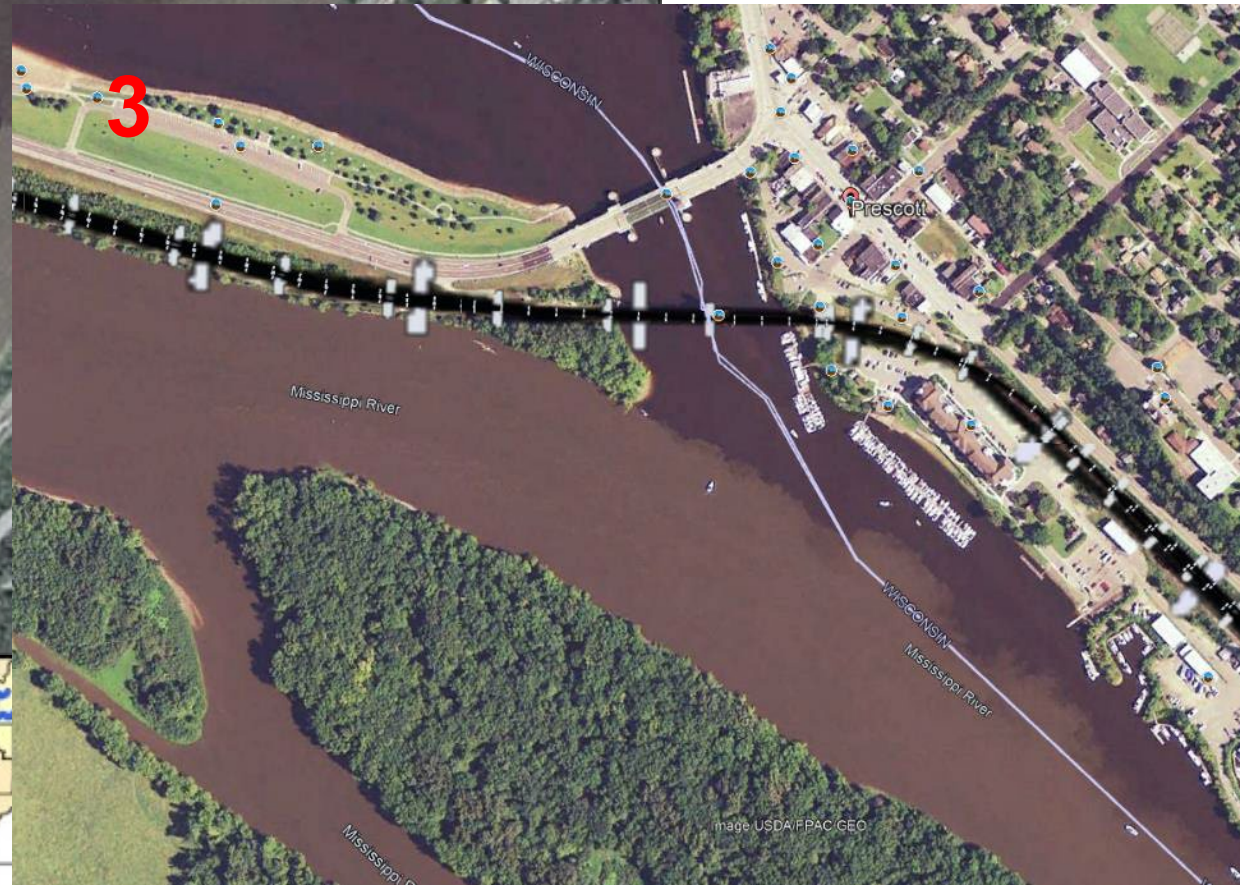
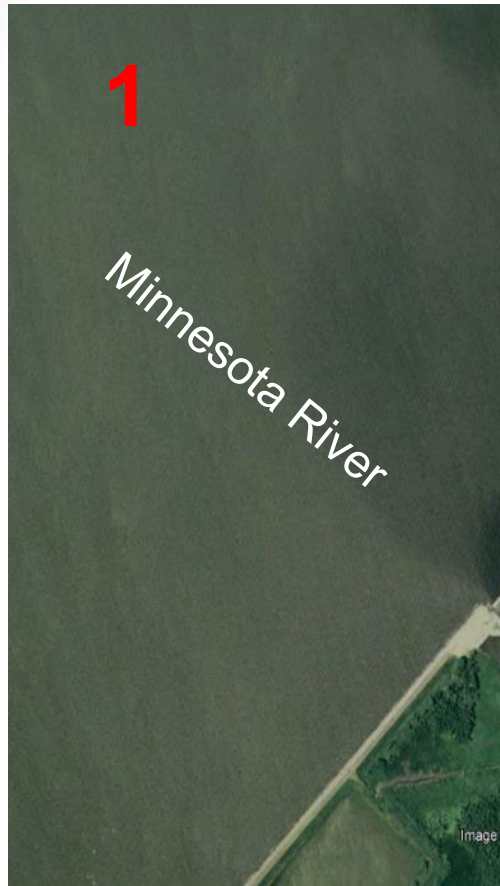
U.S. ARMY



US Army Corps of Engineers



SEDIMENTATION



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	----------	------	------------



U.S. ARMY



US Army Corps of Engineers

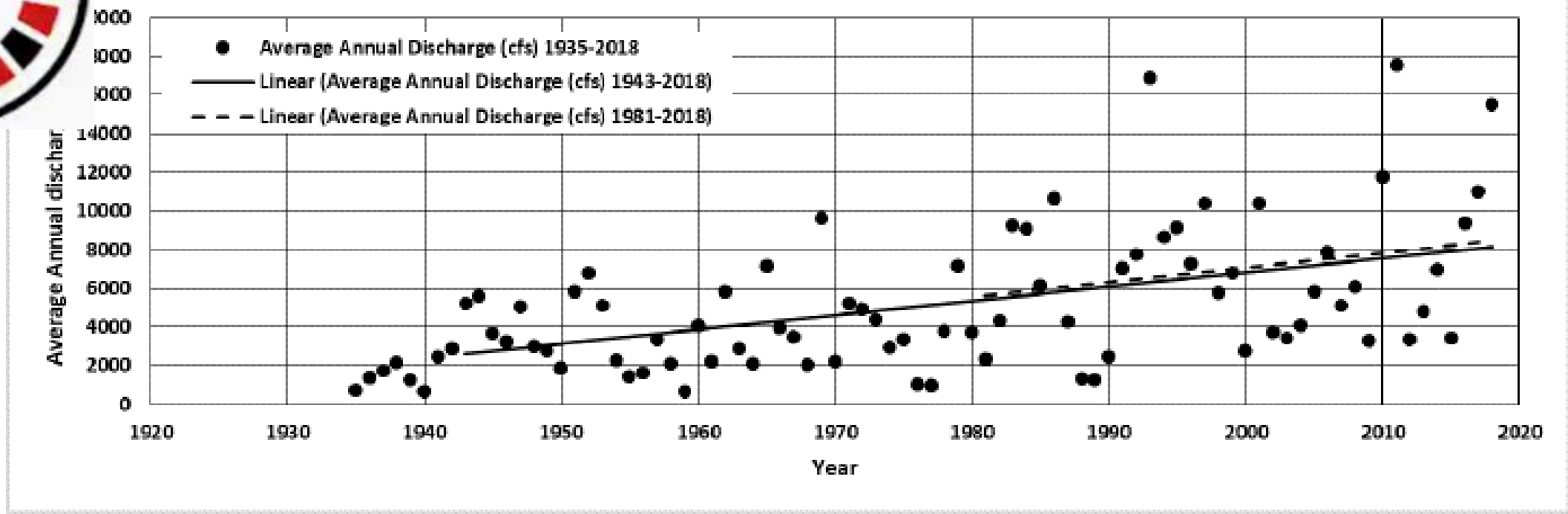


CLIMATE CHANGE

The Minnesota River drainage is getting wetter.



Minnesota River at Jordan, Minnesota (USGS Gage 05330000)





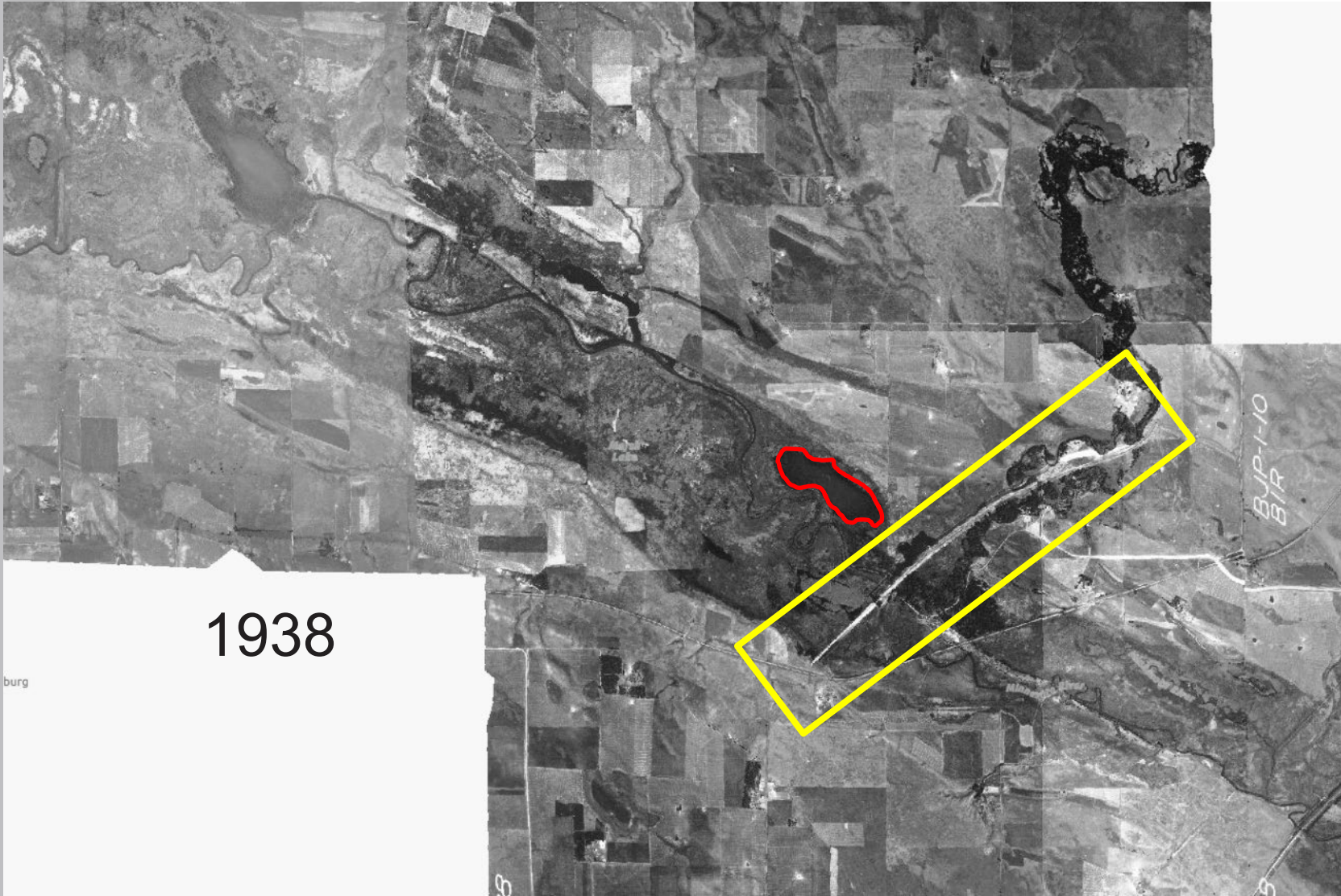
U.S. ARMY



US Army Corps of Engineers



MARSH LAKE DAM



Background

Project Need

Project Features

Response

MAMP

Conclusion



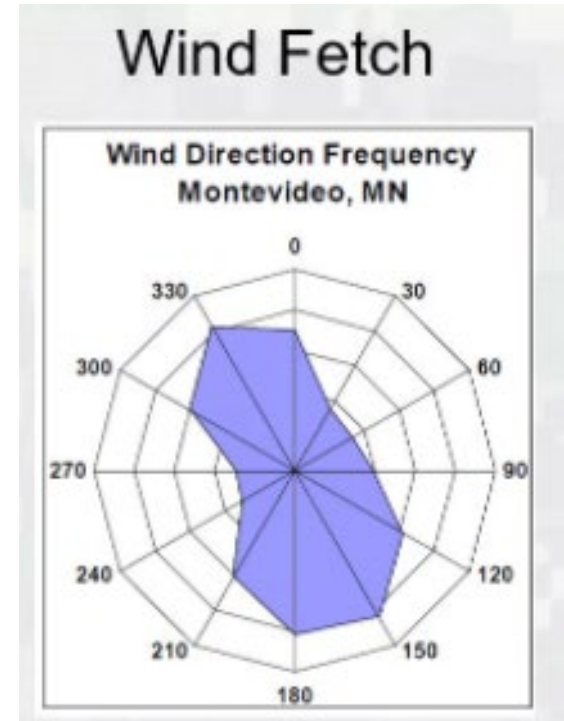
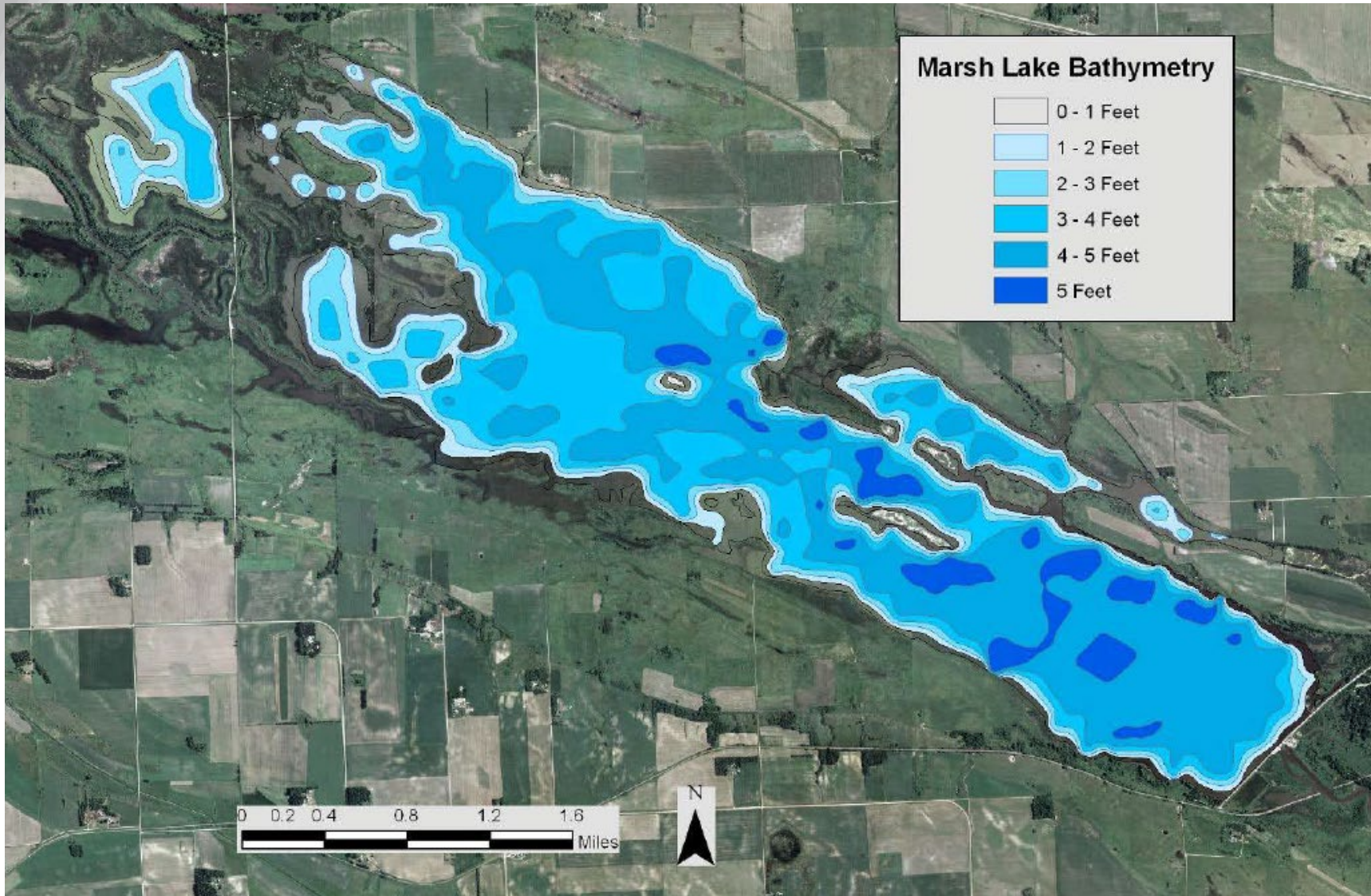
U.S. ARMY



US Army Corps of Engineers



PROJECT NEED





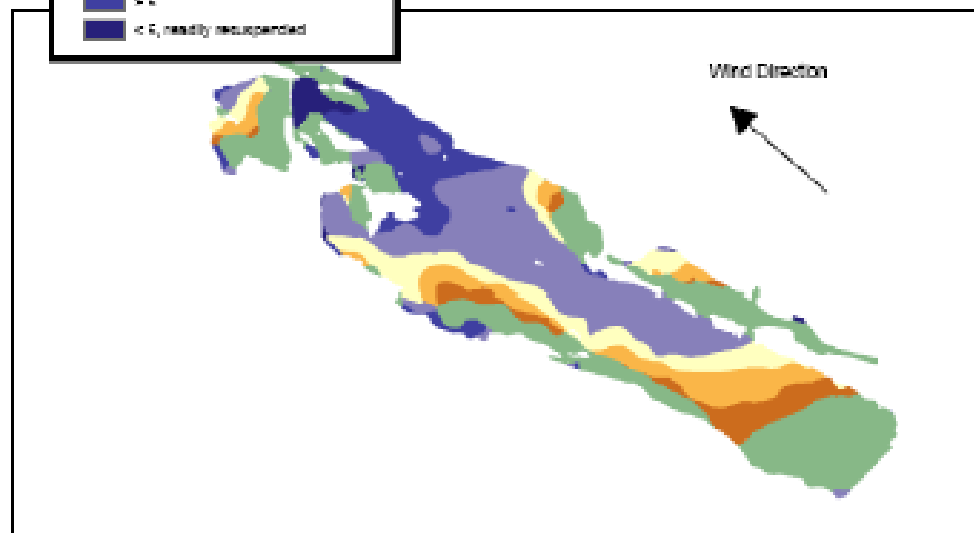
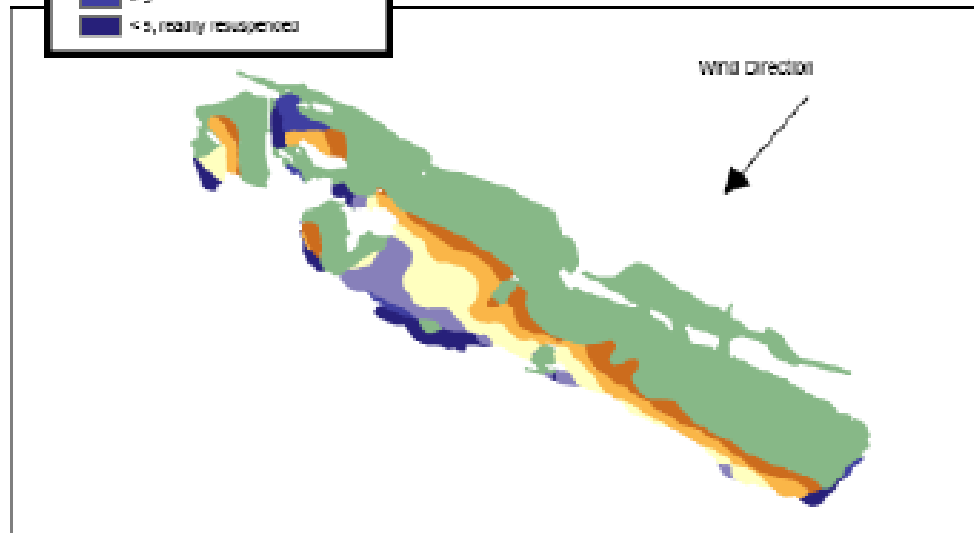
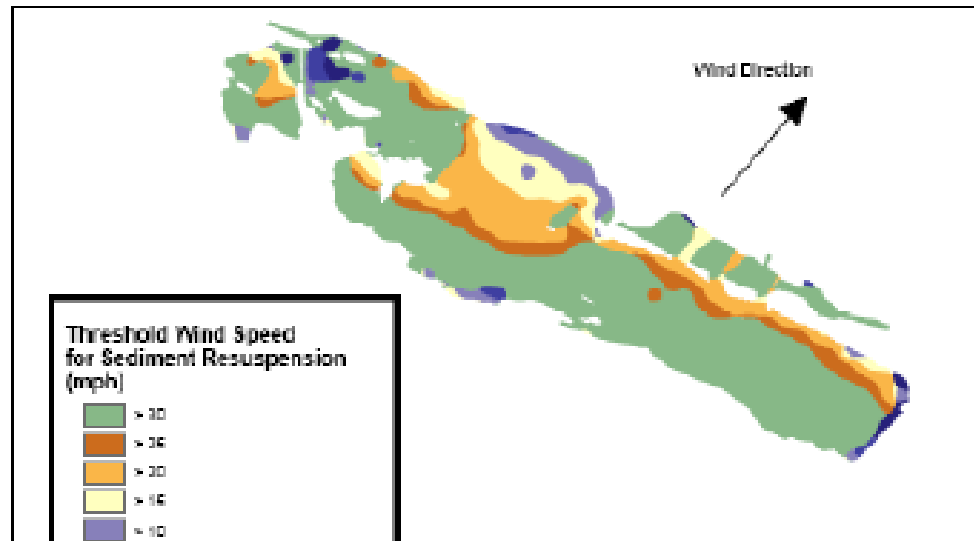
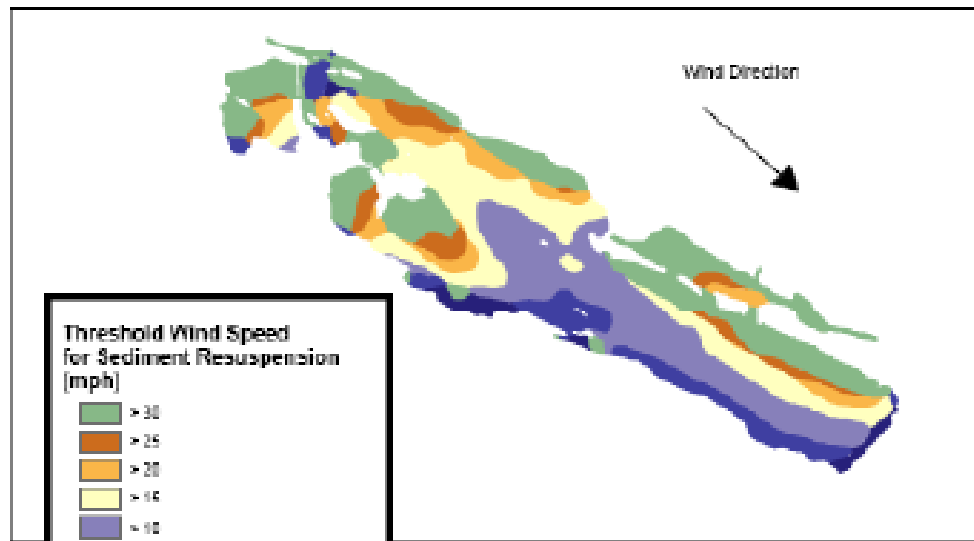
U.S. ARMY



US Army Corps of Engineers



WIND FETCH / WAVE ACTION





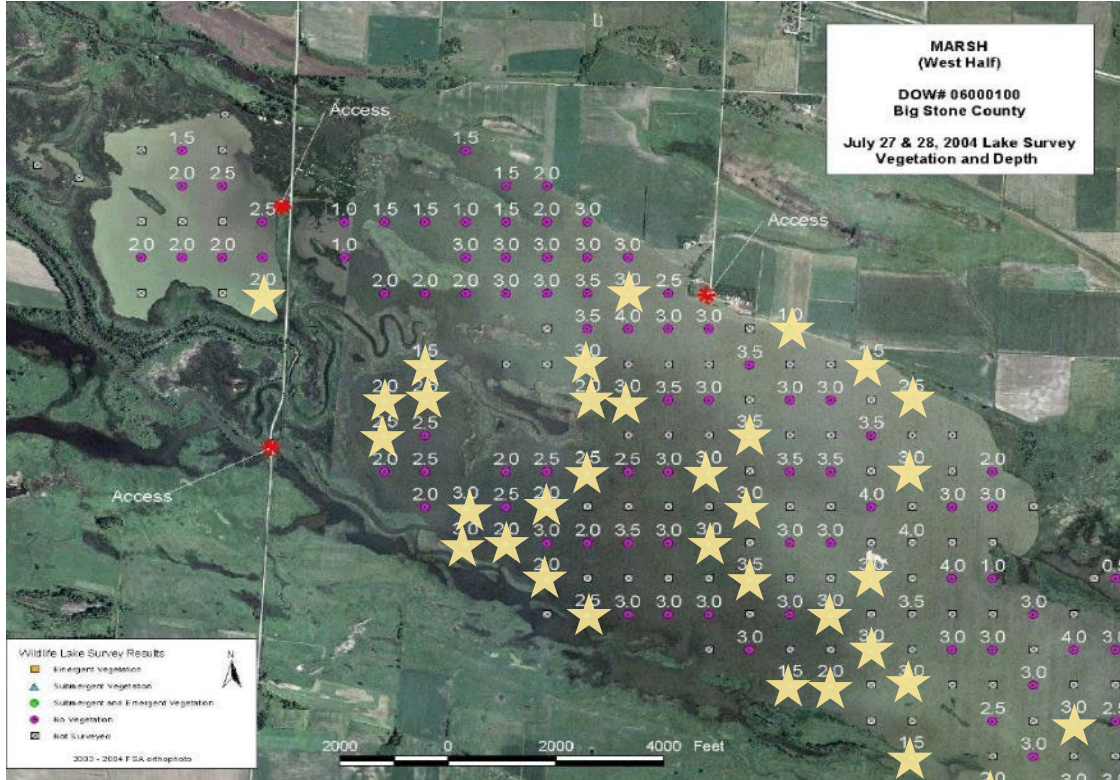
U.S. ARMY



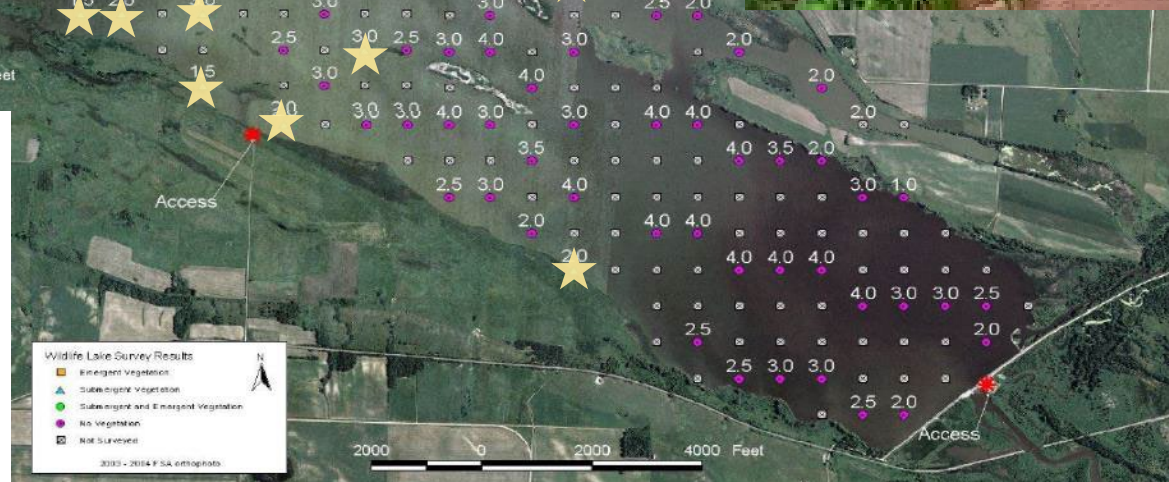
US Army Corps of Engineers



AQUATIC PLANTS



2004



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	---------------------	------------------	----------	------	------------



U.S. ARMY

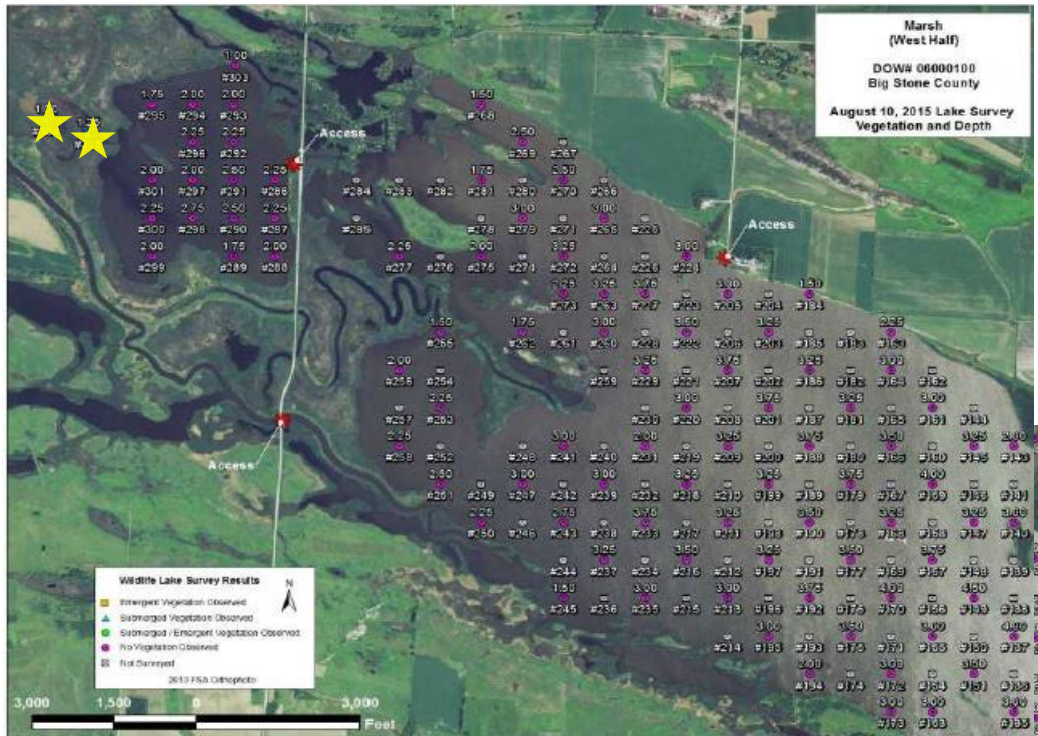


US Army Corps of Engineers

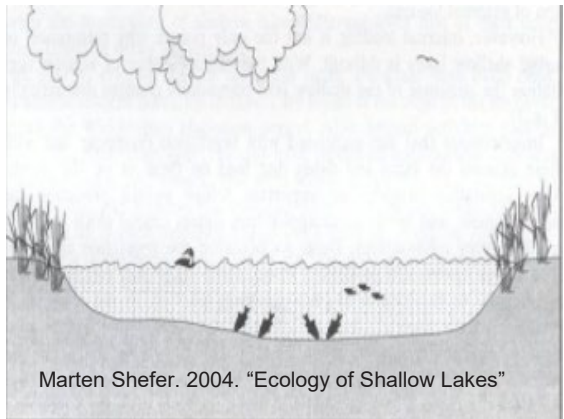
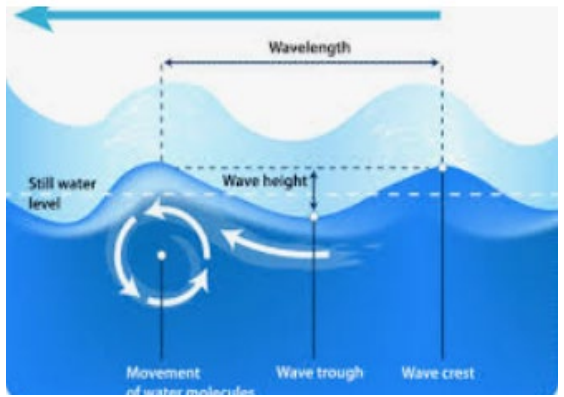
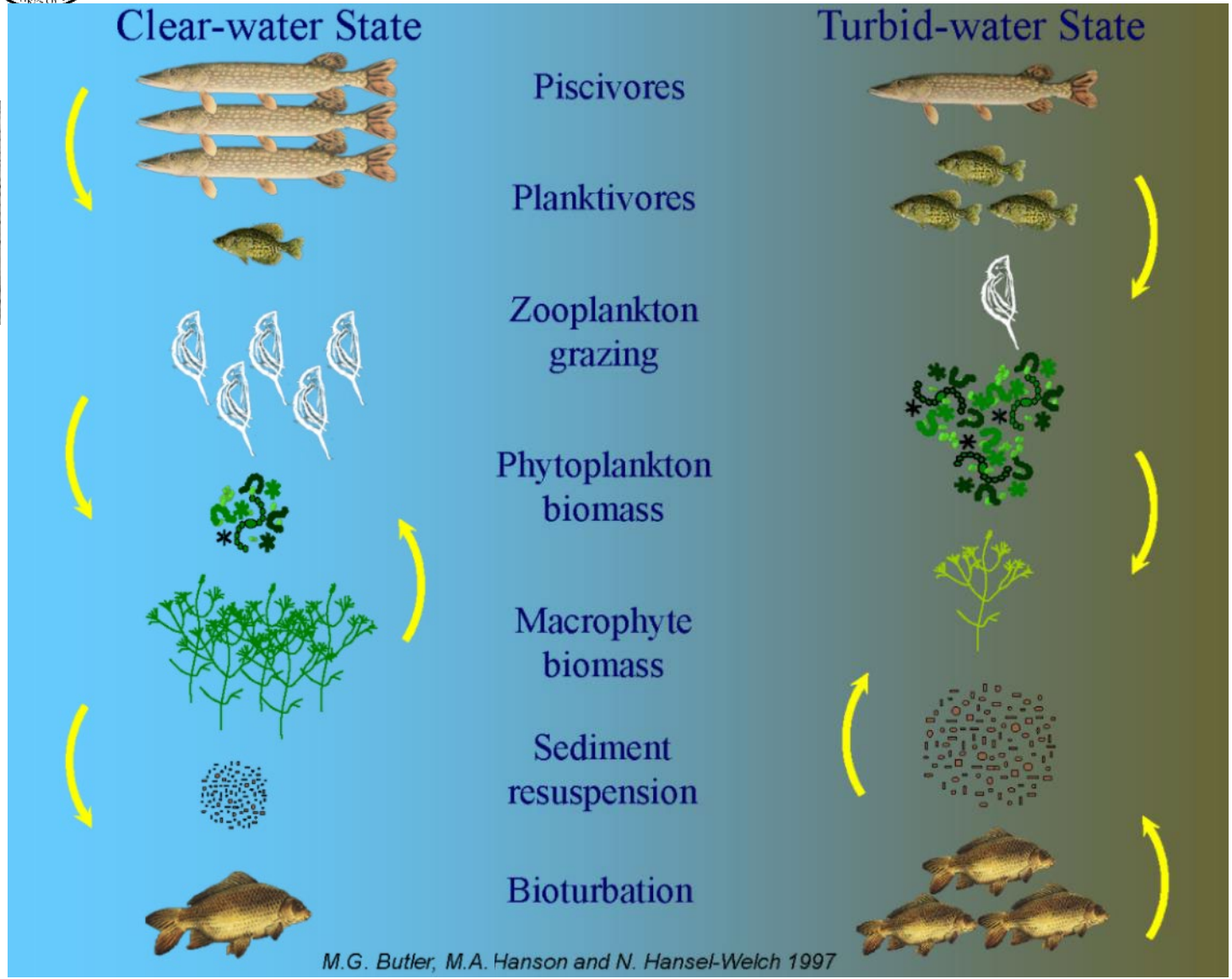


AQUATIC PLANTS

2015



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	---------------------	------------------	----------	------	------------



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	---------------------	-------------------------	----------	------	------------



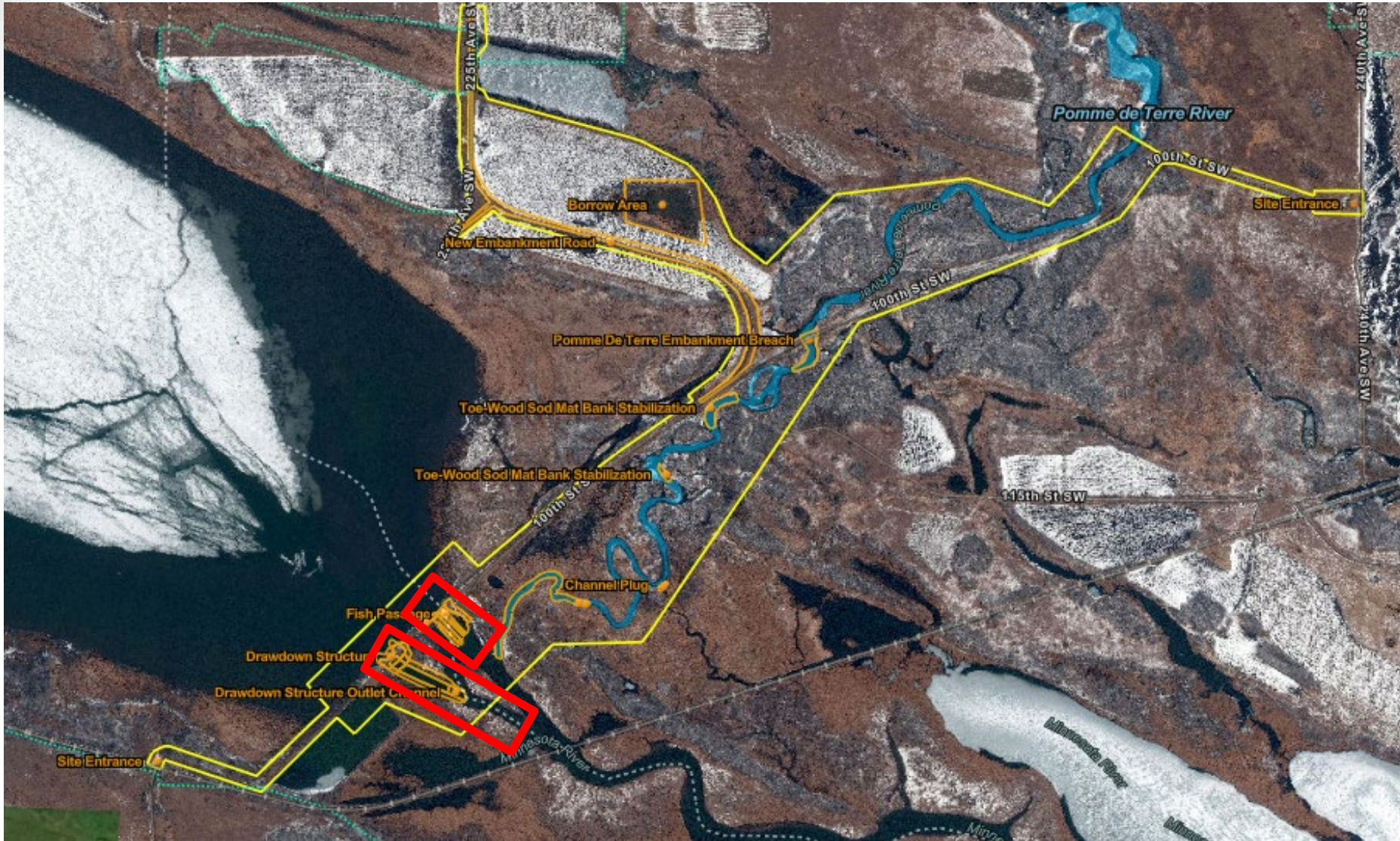
U.S. ARMY



US Army Corps of Engineers



PROJECT FEATURES



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	-------------------------	----------	------	------------



U.S. ARMY

US Army Corps
of Engineers®

PROJECT OBJECTIVES

- 1. Reduce sediment loading.**
- 2. Restore natural fluctuations to the hydrologic regime.**
3. Restore Geomorphic and Floodplain Processes to the PdT River.
- 4. Reduce Sediment Re-suspension.**
- 5. Increase Extent, Diversity & Abundance of Emergent & Submersed Aquatic Plants.**
- 6. Increase Availability of Waterfowl Habitat.**
7. Restore Aquatic Habitat Connectivity.
8. Reduce Abundance of Aquatic Invasive Fish Species in Marsh Lake.
9. Increase Diversity & Abundance of Native Fish within Marsh Lake & the PdT River.

Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	---------------------	------------------	----------	------	------------



U.S. ARMY

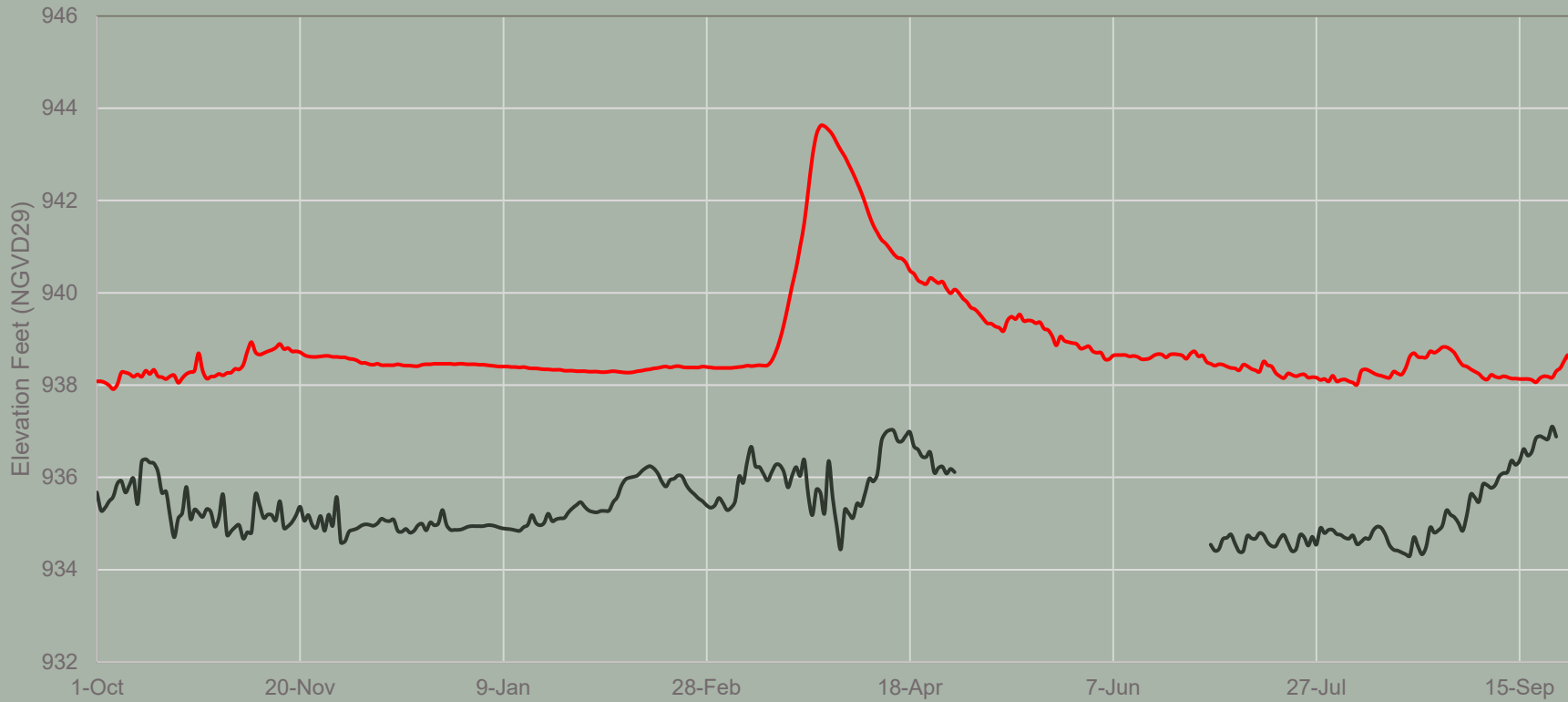


US Army Corps of Engineers



POOL WIDE DRAWDOWN

Marsh Lake Pool Elevations



— 2020 – 2021 (i.e., the drawdown)

— 2008 – 2009 (pre- restoration project features)





EMERGENT VEGETATION



BEFORE DRAWDOWN



AFTER DRAWDOWN

Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	-----------------	------	------------



U.S. ARMY



US Army Corps of Engineers®



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	-----------------	------	------------



U.S. ARMY



US Army Corps
of Engineers®



Photograph by Chris Domeier, MNDNR

Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	-----------------	------	------------



U.S. ARMY

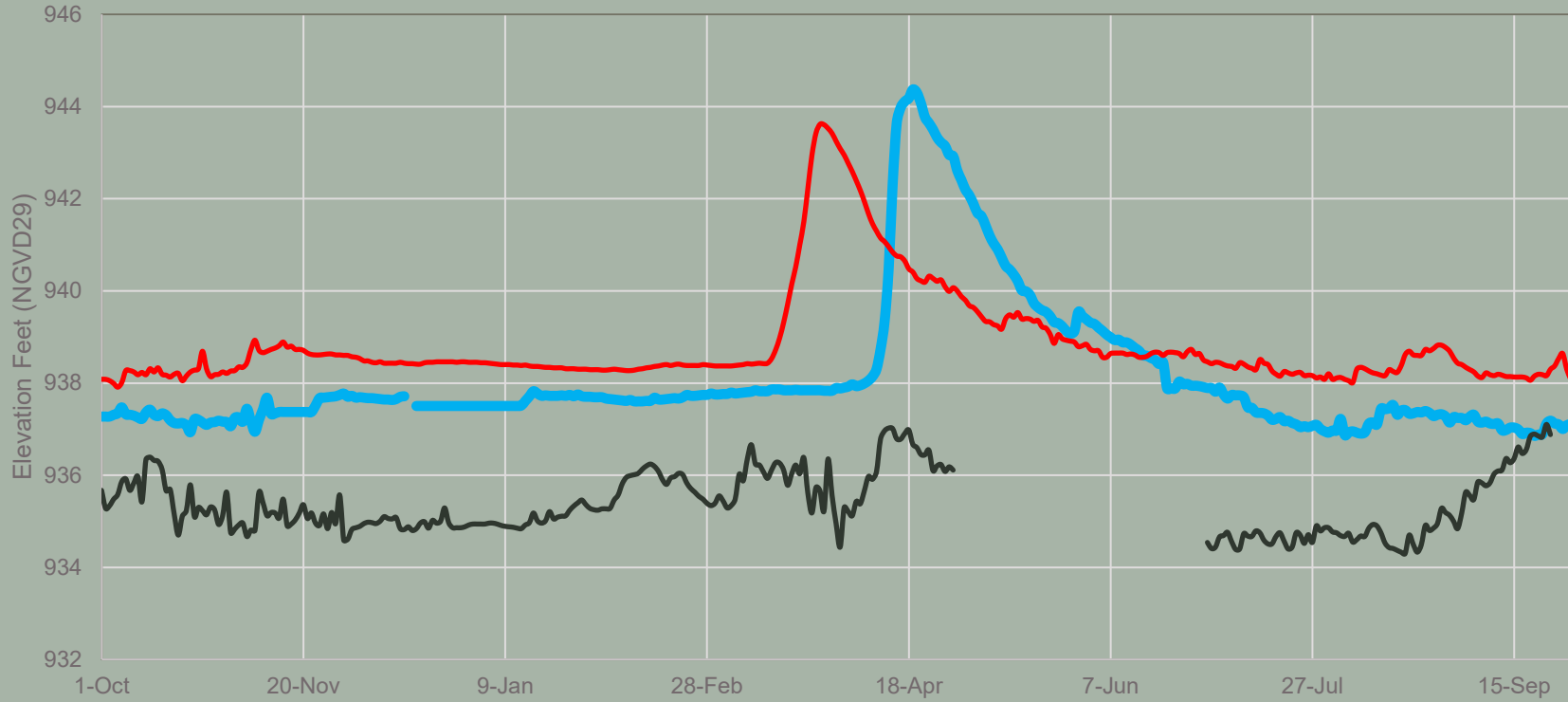


US Army Corps of Engineers



MORE NATURAL HYDROGRAPH

Marsh Lake Pool Elevations



- 2022 – 2023 (with restoration project features)
- 2020 – 2021 (i.e., the drawdown)
- 2008 – 2009 (pre-restoration project features)

Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	-----------------	------	------------



U.S. ARMY



US Army Corps
of Engineers®



2024

PERFORMANCE MONITORING AND ADAPTIVE MANAGEMENT PLAN

MARSH LAKE ECOSYSTEM RESTORATION PROJECT

Minnesota River
Big Stone, Lac qui Parle, and Swift Counties,
Minnesota

Upper Minnesota River Watershed District,
Minnesota Department of Natural Resource, and
US Army Corps of Engineer, St. Paul District



UPPER MINNESOTA RIVER
WATERSHED DISTRICT



DEPARTMENT OF
NATURAL RESOURCES

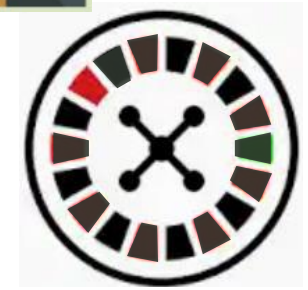
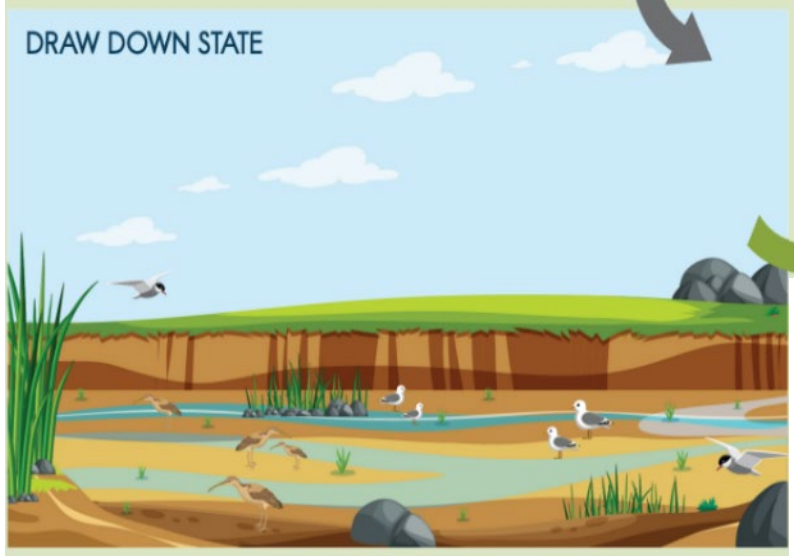




U.S. ARMY



US Army Corps of Engineers®



Background	Project Need	Project Features	Response	MAMP	Conclusion
------------	--------------	------------------	----------	-------------	------------



U.S. ARMY



US Army Corps
of Engineers®



QUESTIONS

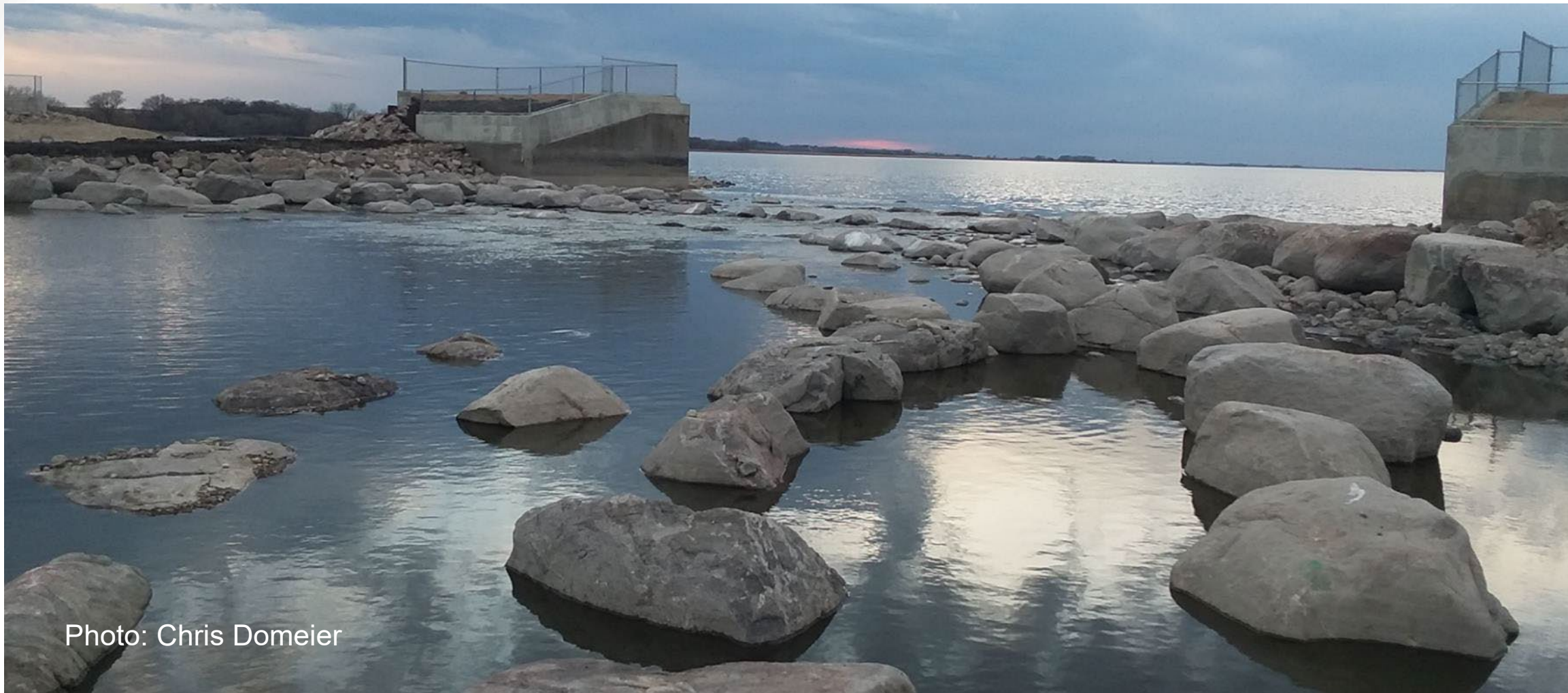


Photo: Chris Domeier