

LOCK & DAM 7 OUTDRAFT STUDY UPDATE

Mississippi Manager's Meeting
February 2023



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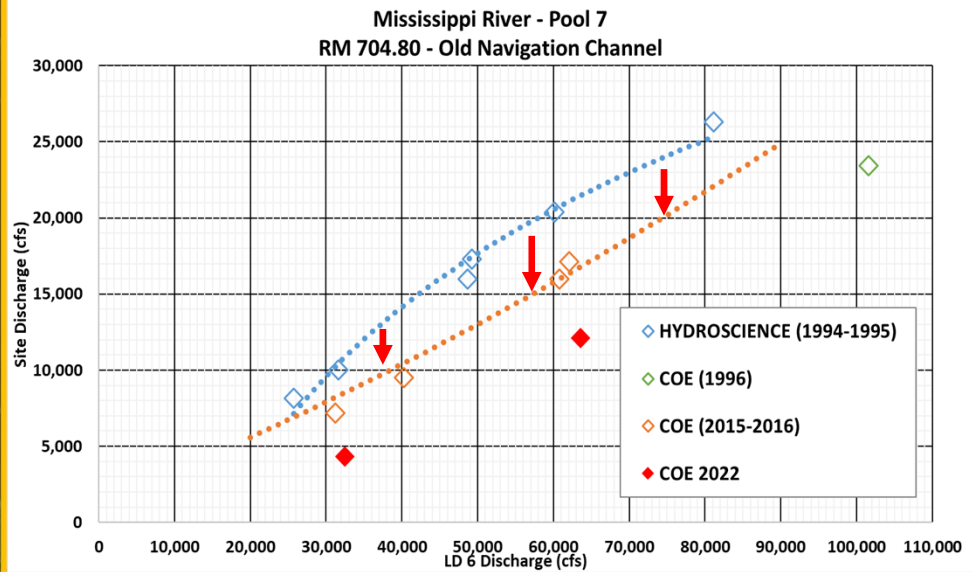
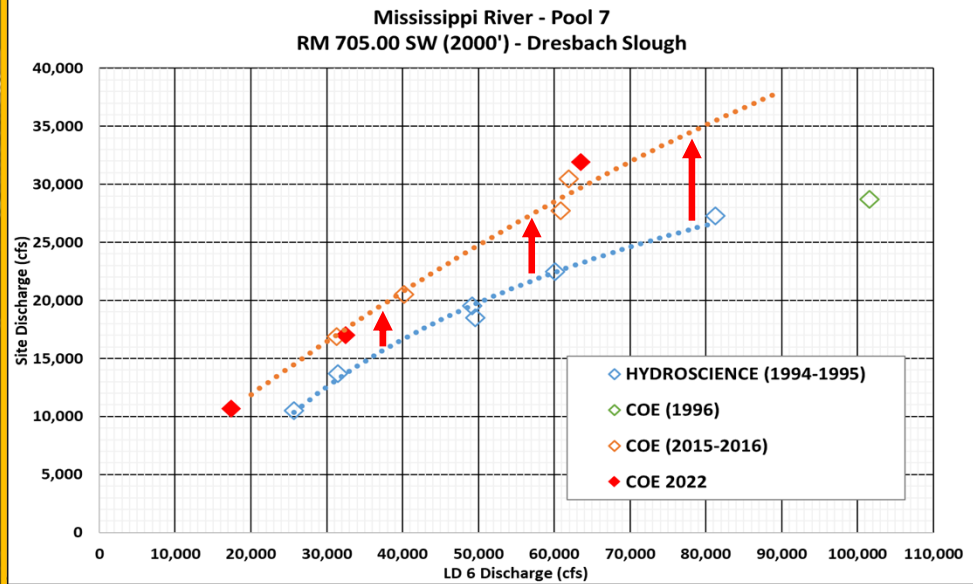
OVERVIEW

- Project History
 - Dynamic Conditions
 - Study Recap (to-date)
- Path Forward
 - Data Collection
 - Future Modeling
- Feedback





Significant Flow Changes





HYDRAULIC MODELING



- 2D Model Developed (2017)
 - 4 River Miles
 - Validate & Assess Existing Conditions
 - Test Alternatives
- *Goal: Reduce Velocities around Upper Approach*



HYDRAULIC MODELING



- **Objective:** Identify potential “simple” solutions to reduce outdraft.
 - “Simple” = quick-to-deploy, non-structural/concrete
- Several options considered—
 - Weirs, chevrons, significant dredging, etc.
- Upper Approach is shallow & narrow—
 - Limits options (no chevrons, dikes, submerged weirs, etc.)
- Only one alternative demonstrated potential...

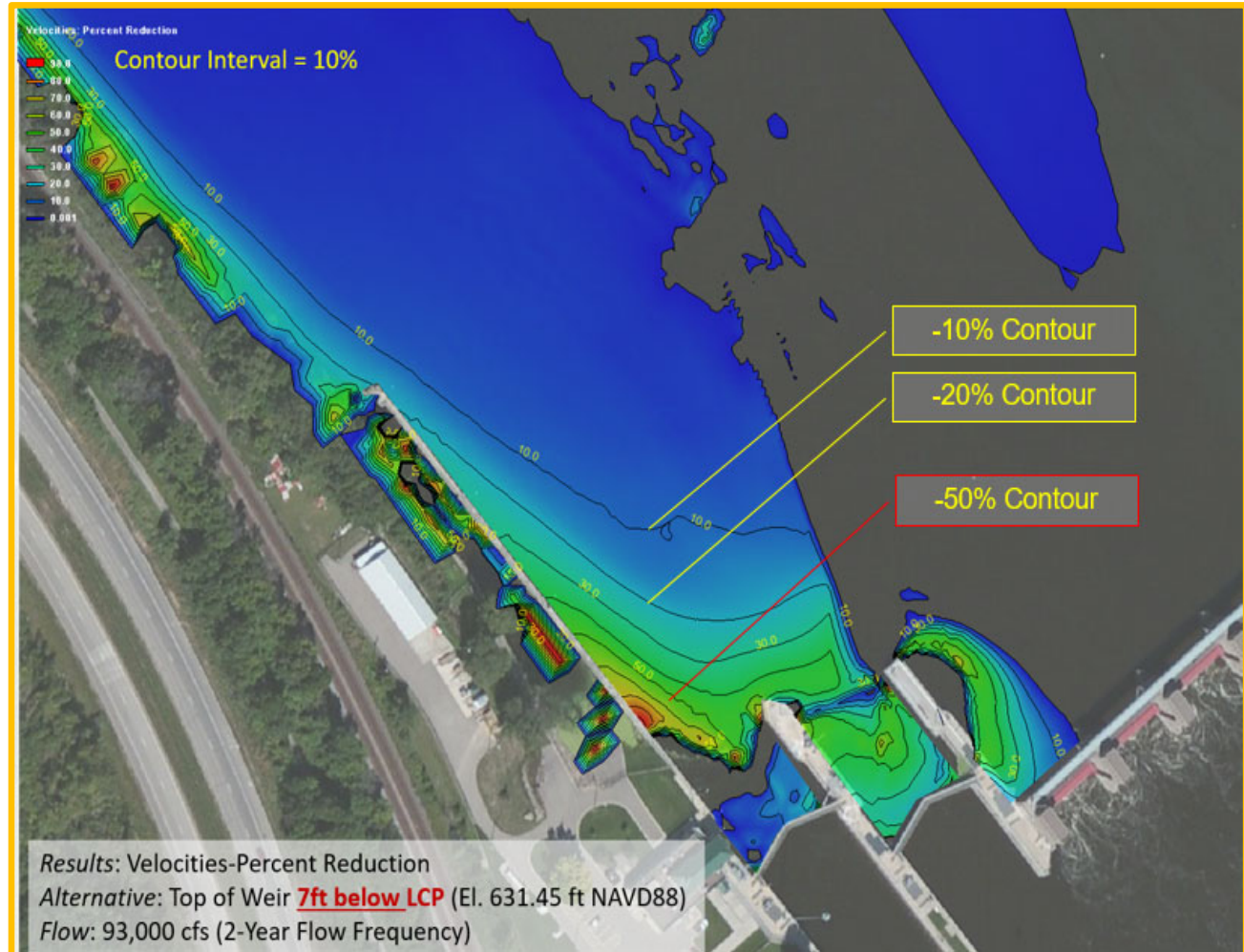




CONSTRUCTED ALTERNATIVE



- Rock Weir at **7ft below LCP** (El. 631.45 ft NAVD88)
 - Lowered velocities by 20-50% (near Upper Approach)
 - “Nudge” in the right direction
 - Constructed late 2018, extended in 2020
 - Reduced velocities, ***but not enough...***





PATH FORWARD SUMMARY



Continue Data Collection

- Data Collection
 - Timeline: 2023 Nav. Season
- Sediment Transport Modeling
 - Timeline: 4-6 months
- Ship Simulation
 - Timeline:
 - Prep Work: 4-6 months
 - Simulation: 2 weeks





PATH FORWARD



Continue Data Collection

- Updated surveys
- Flow measurements
- **Objective:** continue tracking bathymetric & flow shifts in lower Pool 7



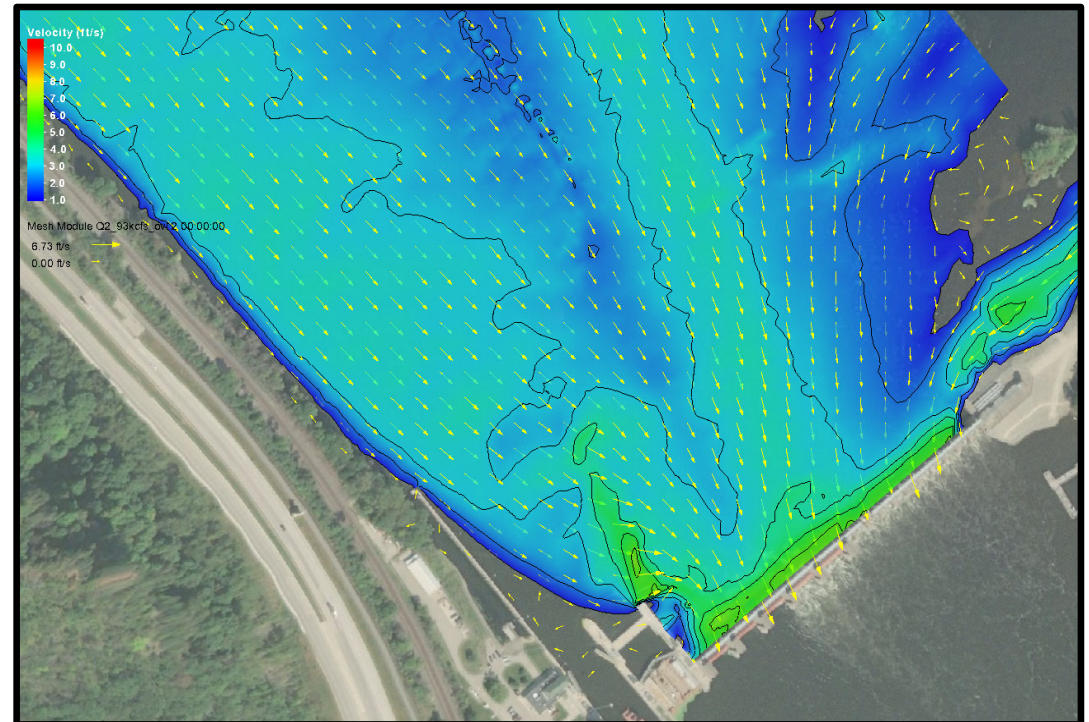


PATH FORWARD



Sediment Transport Modeling

- **Objective:** Validate existing sedimentation patterns & verify potential alternatives won't worsen conditions (*outdraft & sedimentation*).
- **Timeline:** 4-6 months





PATH FORWARD



Ship Simulation

- **Objective:** Validate existing conditions & assess alternatives with local pilots.
- **Components-**
 - Site Visit
 - Hydraulic Modeling
 - Vessel Configurations
 - Ship Simulation (w local pilots)
- **Timeline-**
 - 4-6 months prep work
 - Simulation = 2 weeks





FEEDBACK

- River Conditions
 - when is outdraft present? at its worst?
- Alternatives
 - ideas for improvements
- Ship Simulation Vessel Configuration(s)
 - for example, LD25 simulation used:

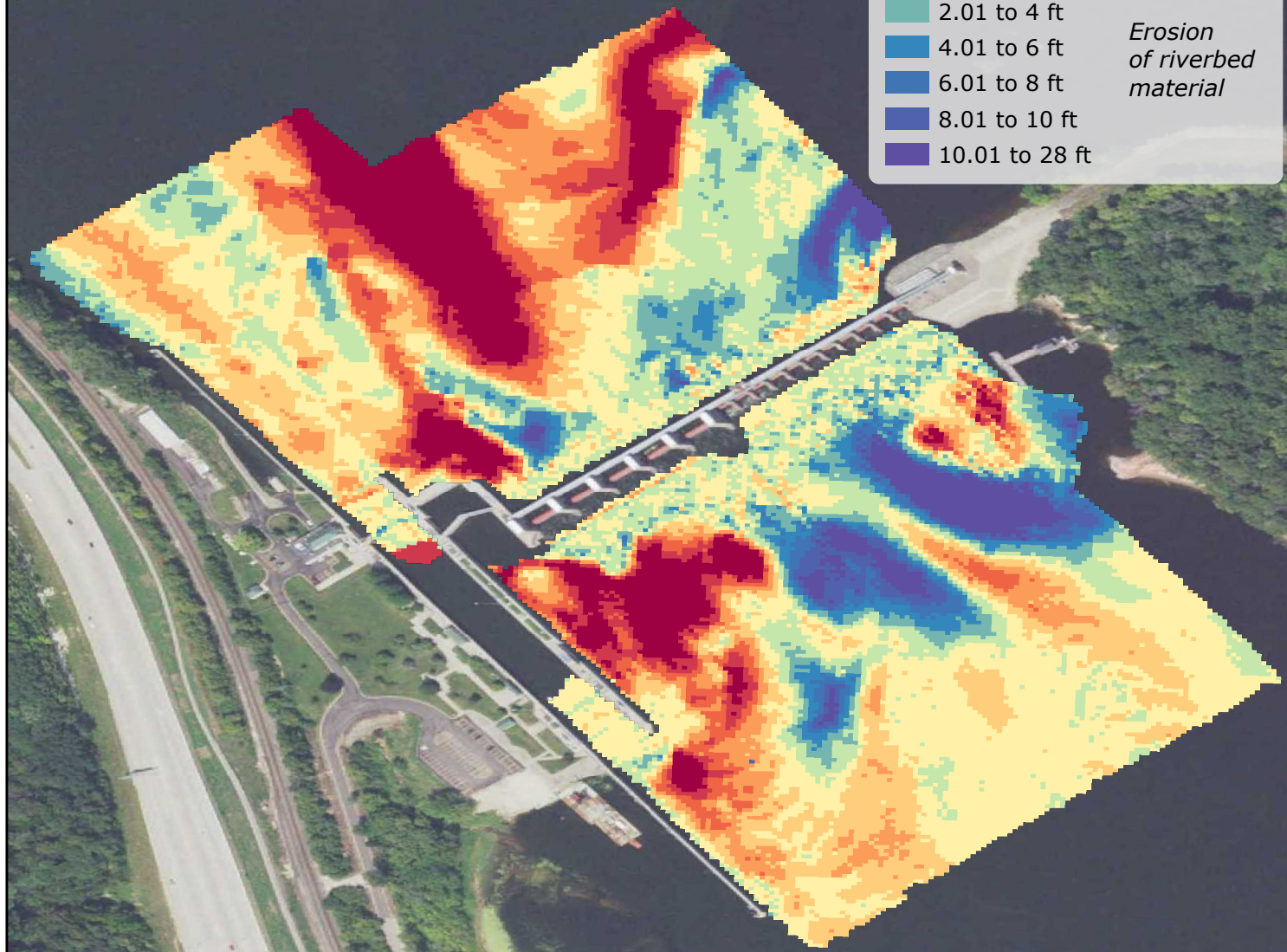
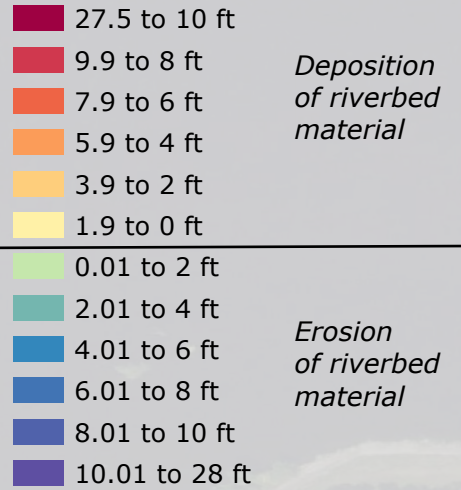


Vessel	Length Overall (LOA)	Total Barge Length	Width	Load
TUGBA70	1085'	972'	105'	Loaded

Draft	Barge configuration	Horsepower (HP)	Front Rake Pos	Back Rake Pos
9'	3x5	5475	FWD	FWD

Pool 7

Change in Depth 2008-2022



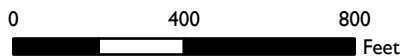
Pool 8



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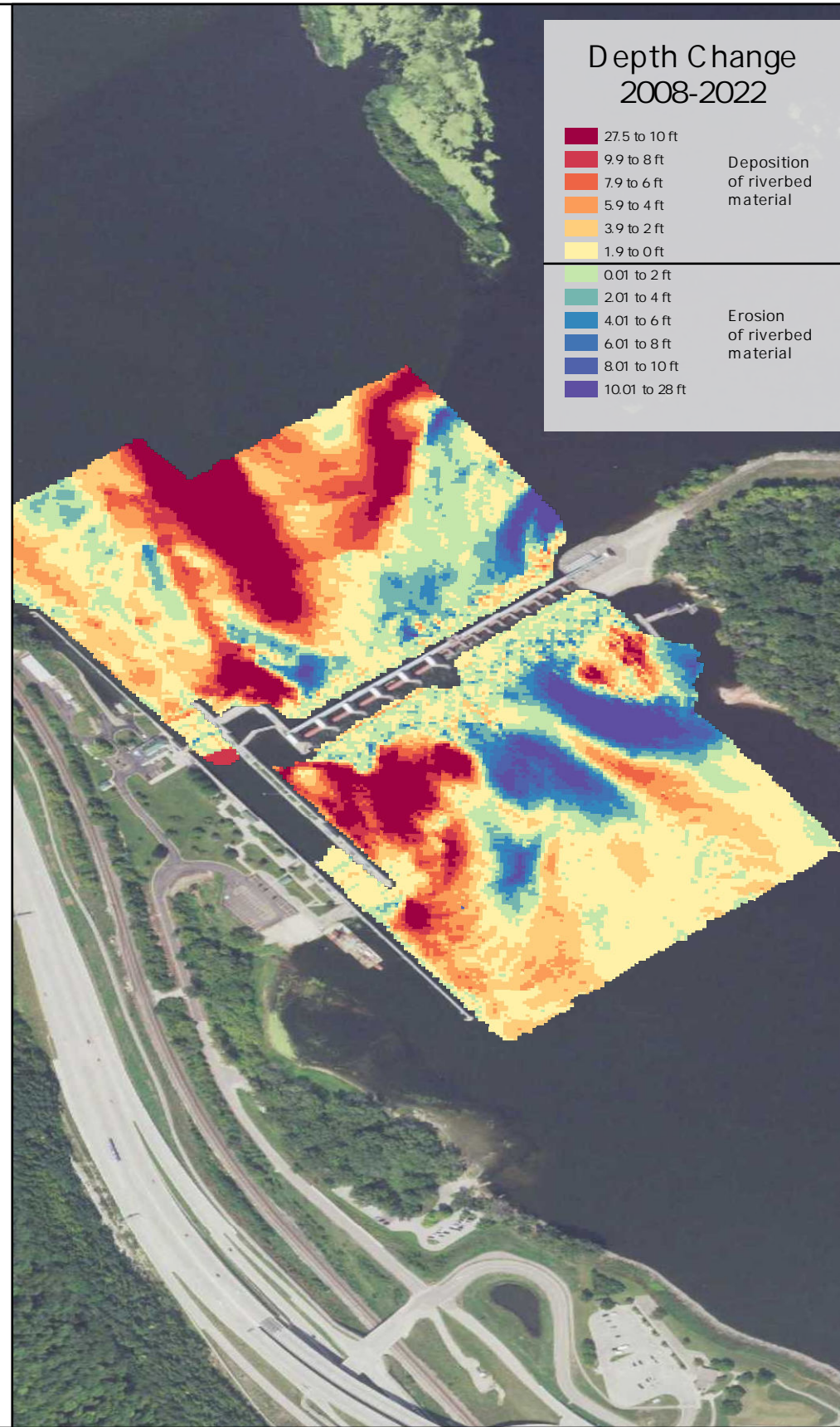
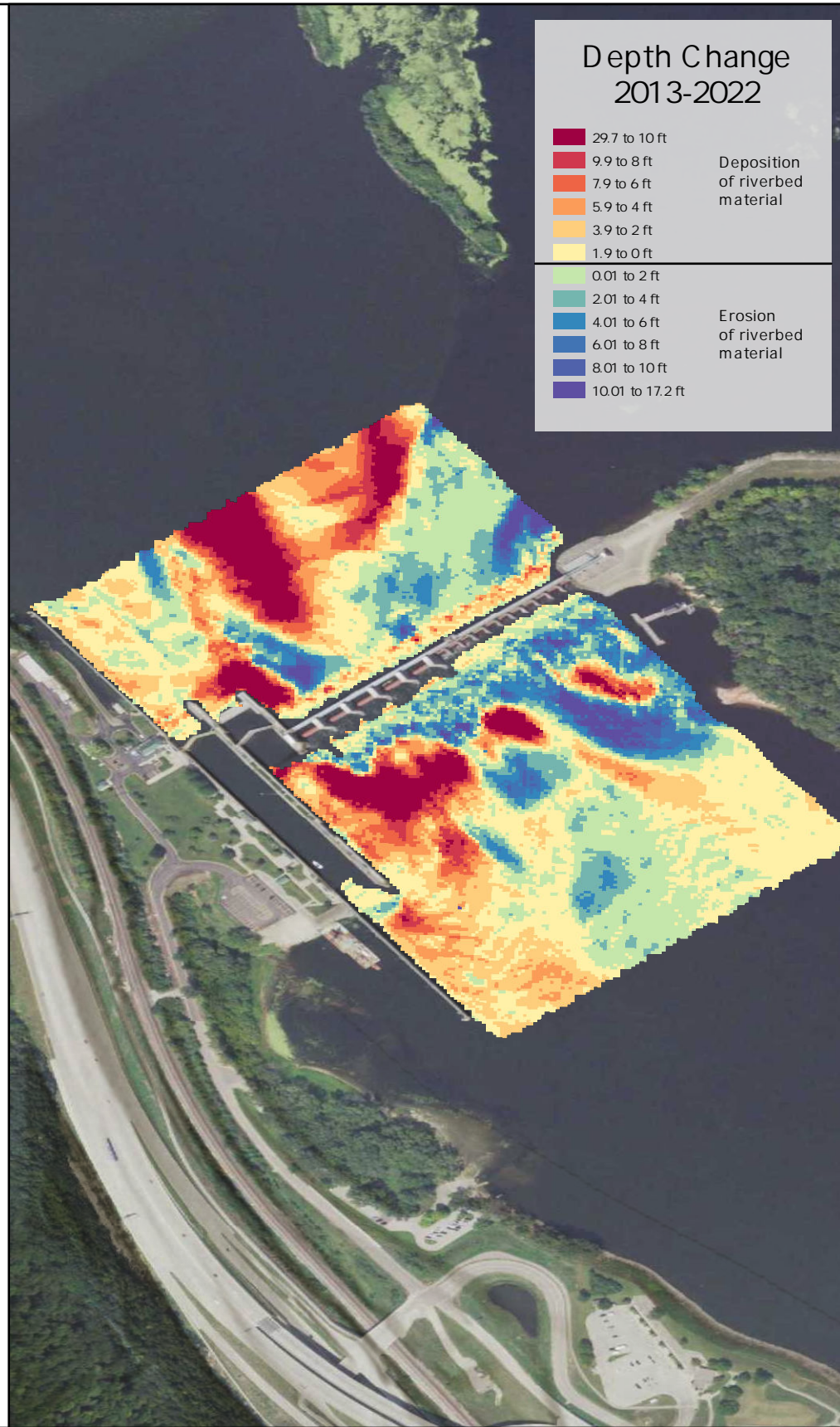
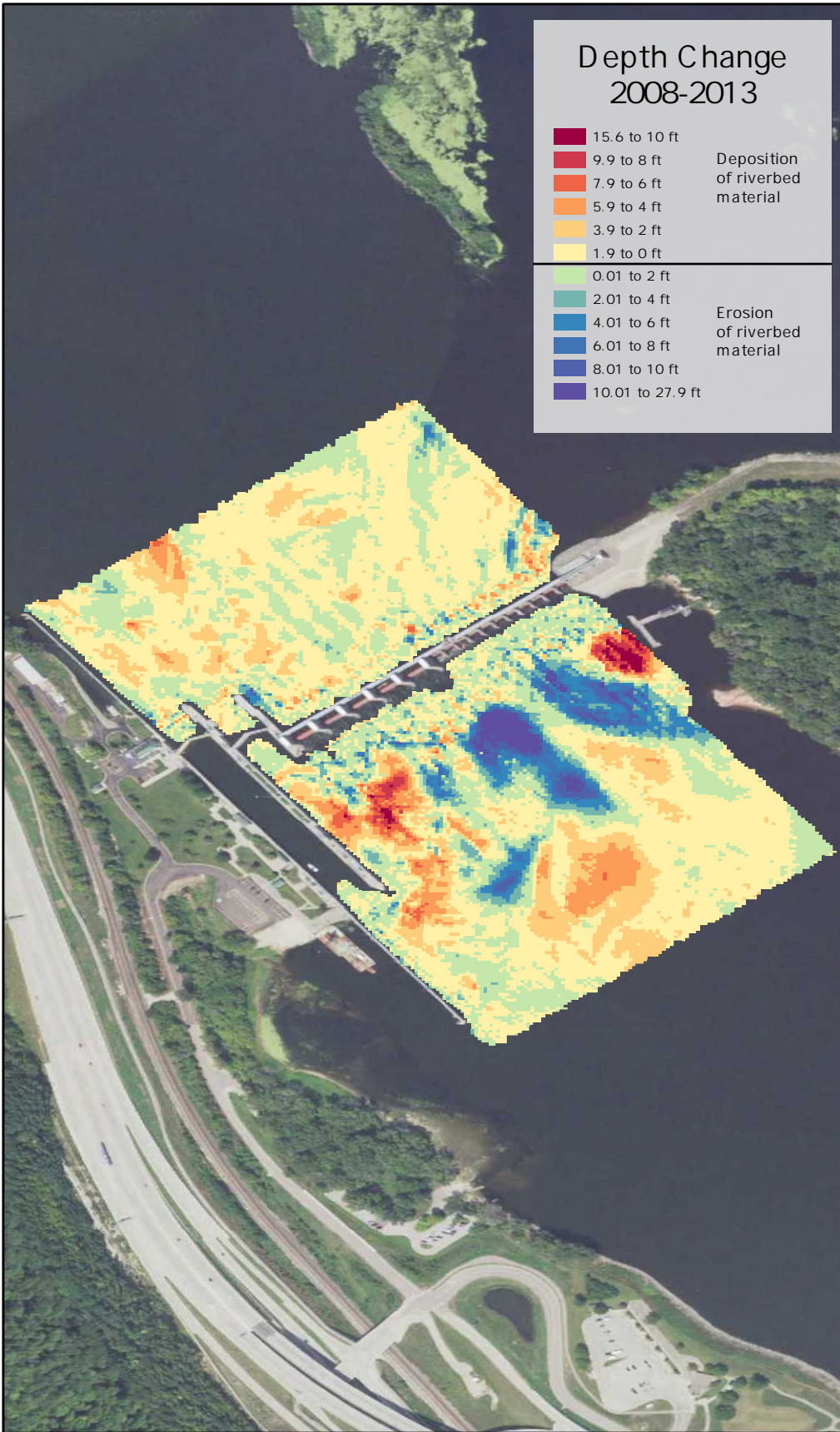
LD7 Scour Analysis - Change in Depth 2008-2022

Base image: MN 2021 NAIP True Color



Created by: b6pdjp22 2/3/2023 12:54 PM

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LD 7 Scour Change Analysis

Base Image: MN 2021 NAIP True Color

