McCloud Reservoir Modeling

Prepared for The Nature Conservancy

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Objective and Setting

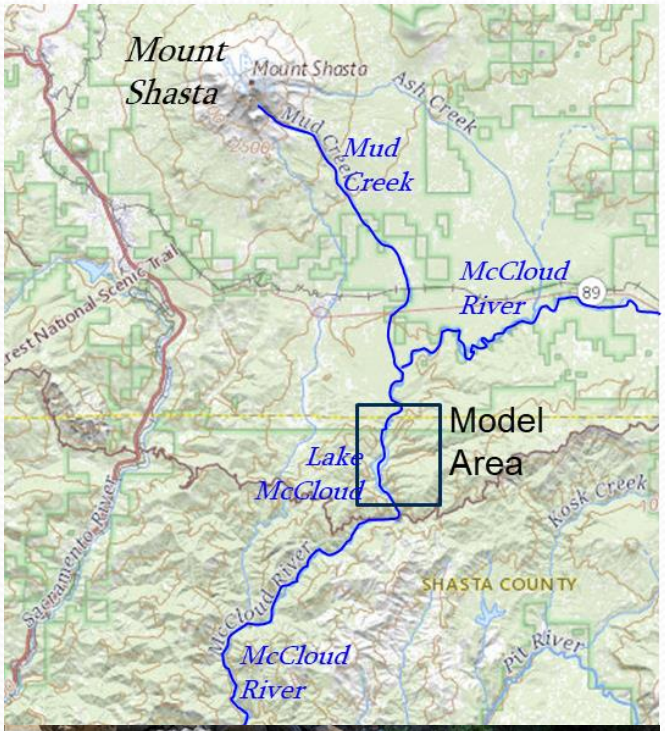
Objective

Characterize fate and transport of suspended sediment within McCloud Reservoir

Setting

- Mud Creek is a natural source of turbidity events (snow melt, thunderstorms)
- Reservoir impacts magnitude and duration of turbidity events
- Environmental impact of extended turbidity events

Preliminary Results




Mud Creek

Approach

Model: CE-QUAL-W2

- Two-Dimensional (x-z)

Constituents

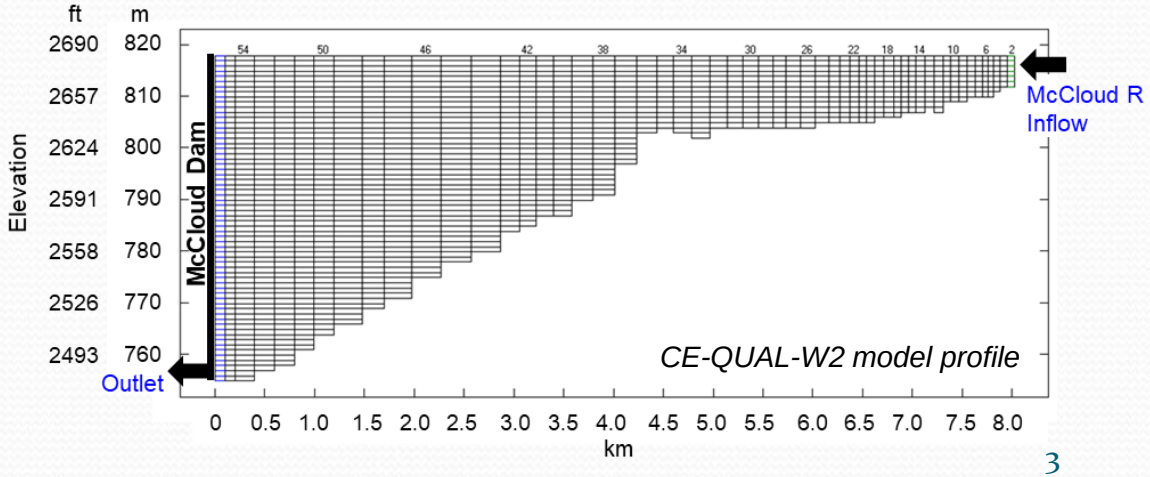
- Flow
- Temperature
- Turbidity (ISS)

Simulation Period

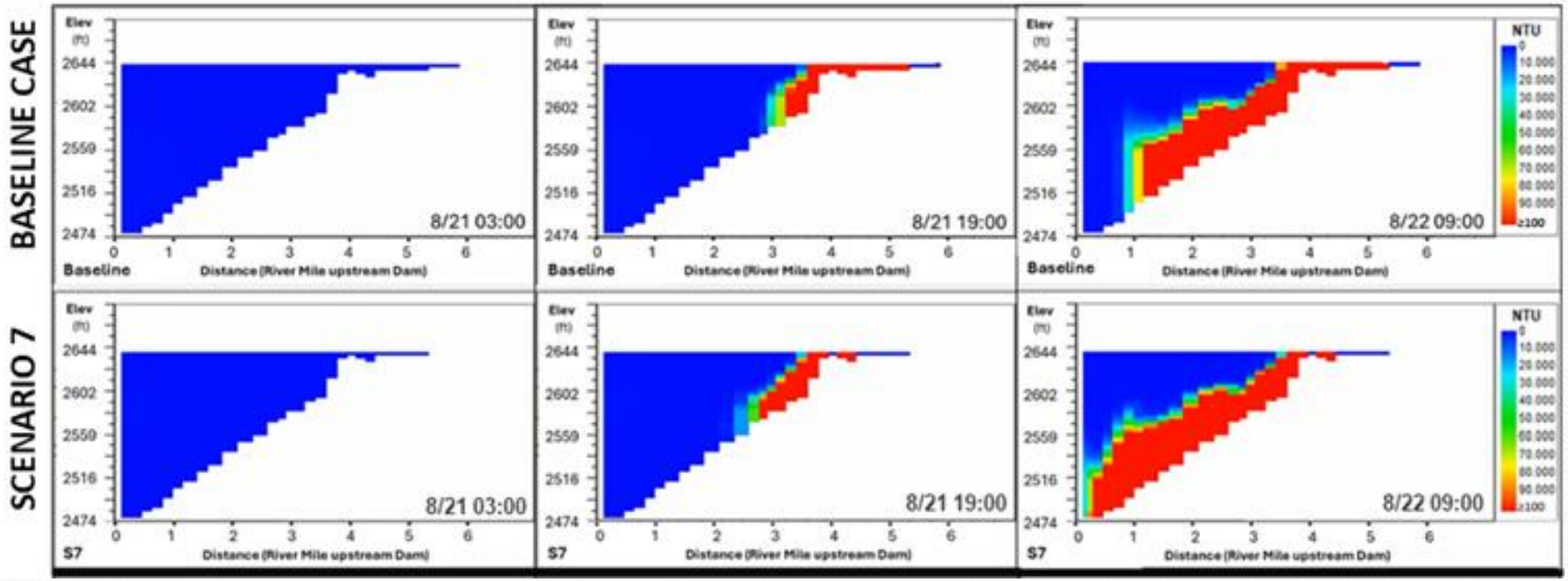
- Summer 2023

Scenarios

- Baseline: 200 cfs outlet
- Scenario: 800 cfs outlet

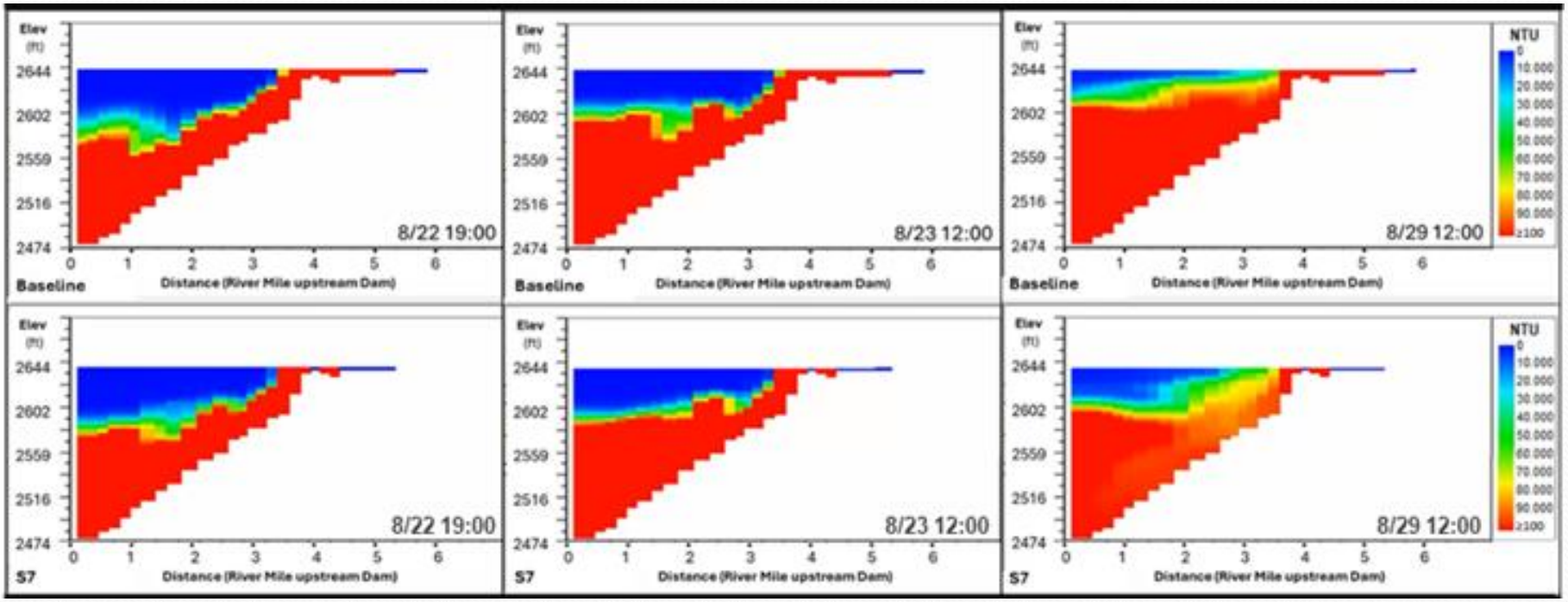


8/21 to 8/22



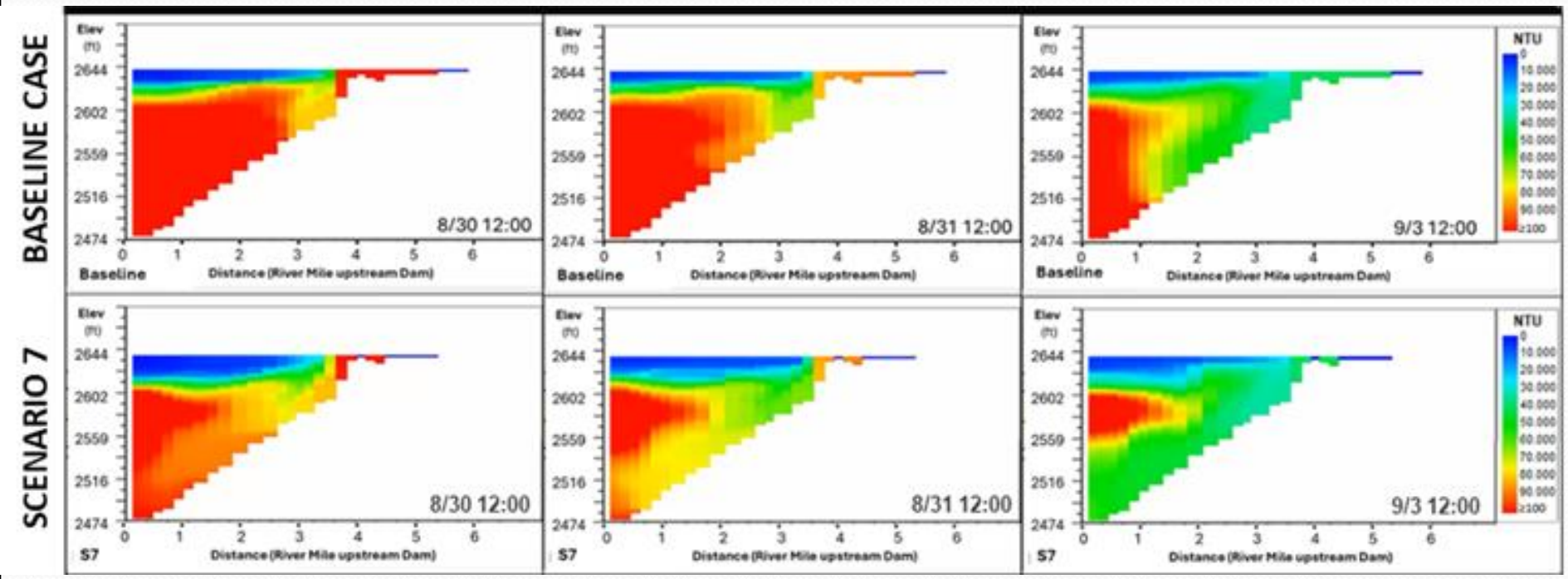
- 8/22 (day 1): Scenario 7 higher outflow rate results in turbidity plume reaching dam quicker
- Vertical extent of plume at dam ≈40 ft

8/22 to 8/29



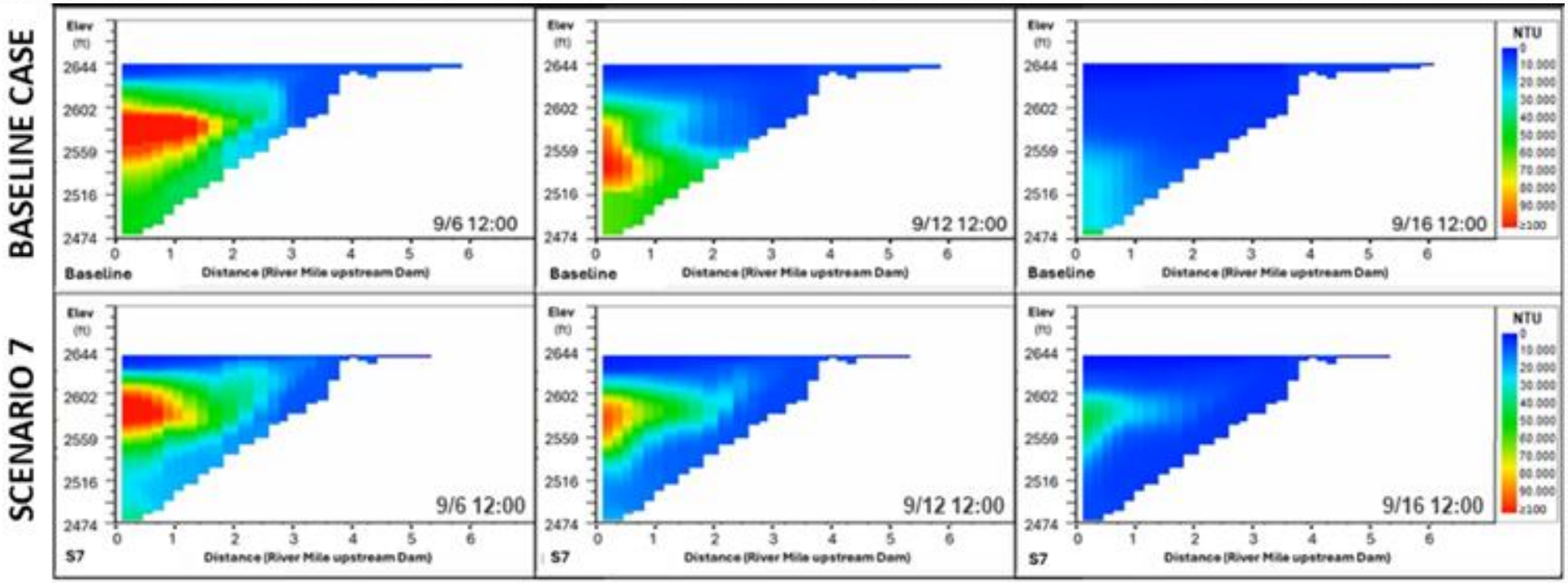
- Similar volume where turbidity exceeds 100 NTU due to vertical extent of sediment plume at dam

8/30 to 9/3



- 8/30 (day 8): deeper waters indicate reduced turbidity, and by 9/3 (day 12) notable differences
- 8/31 (day 9): turbidity event abates

9/6 to 9/16



- 9/6 (day 15): deeper waters indicate reduced turbidity and by 9/3 notable differences at
- Reservoir outflow “clears” ≈10 days earlier for scenario

Thank you