Reservoir Sediment Management Actions
Reacting to Sediment
(non sustainable actions)

USACE Risk Management Center
Lakewood, CO
August 15-17, 2017

ERDC
Engineer Research and Development Center

What do we do where there are no plans to manage sediment?

We wait until there is a quantifiable problem and then we choose the least cost solution

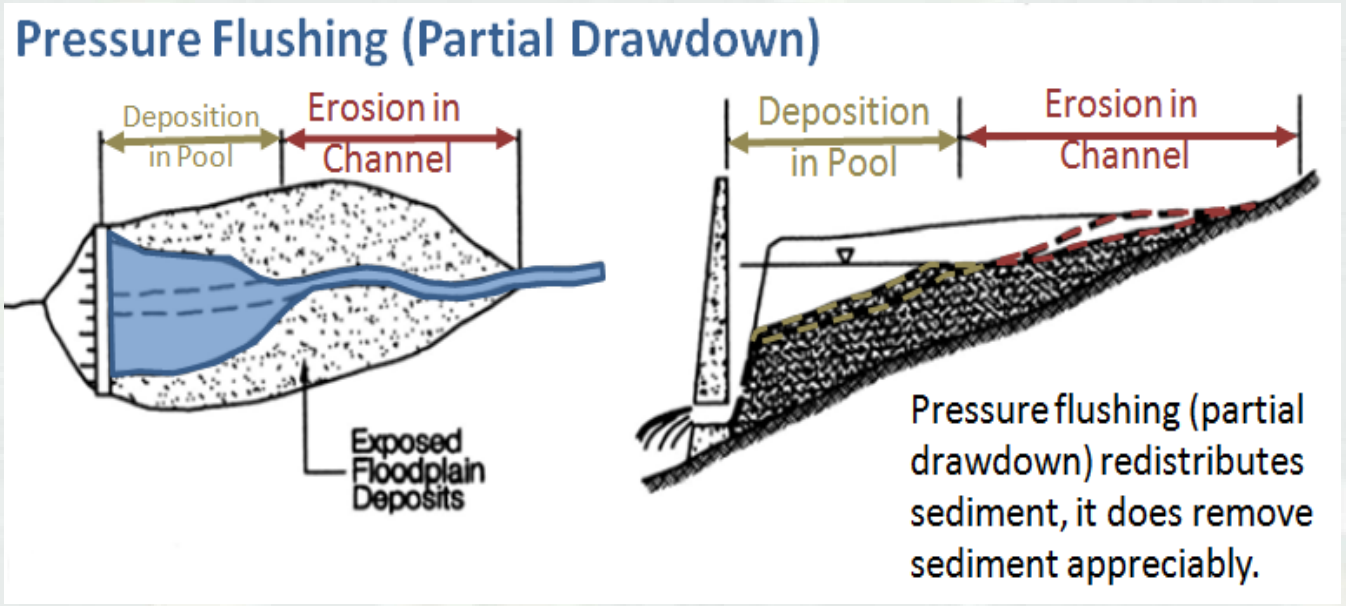
This is the traditional O&M Paradigm

Common Non-Sustainable Actions Taken to Address Sedimentation

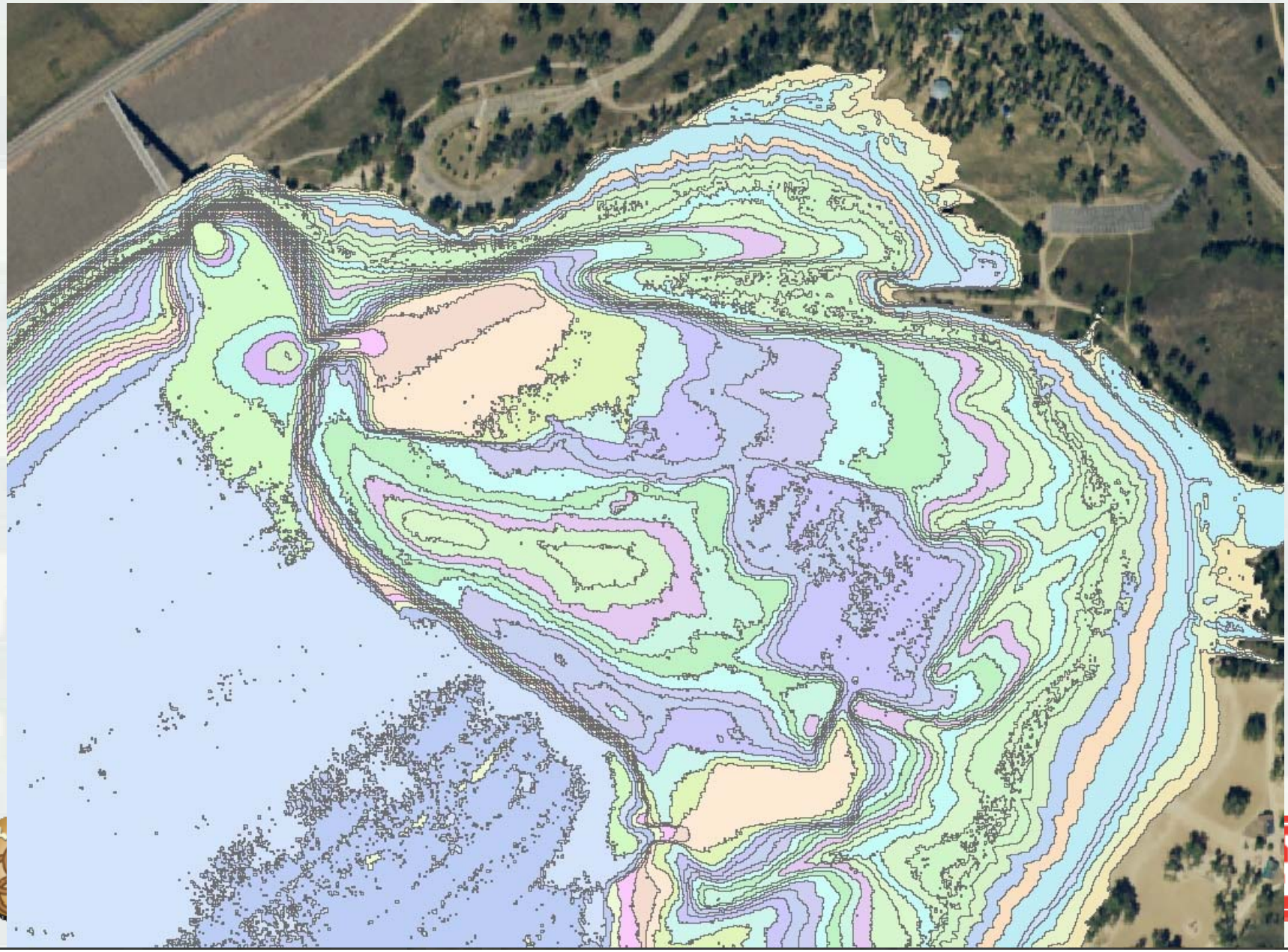
- Pressure Flushing
- Targeted Dredging
- Pool Reallocation
- Pool/Dam Raise
- New Construction
- These actions used more than all other sustainable sediment management actions
- Fall within the purview of maintenance under current water control manuals

Pressure Flushing

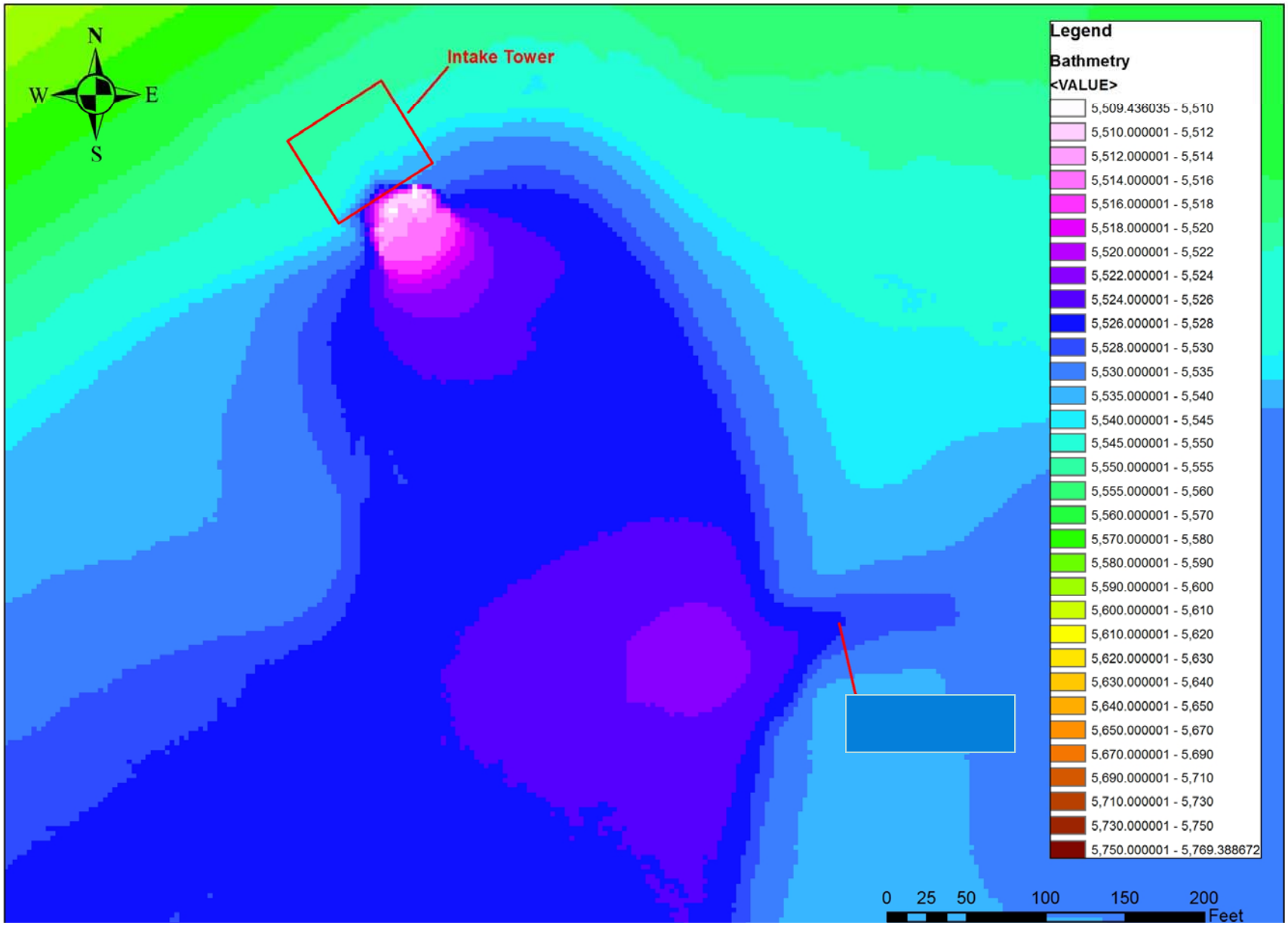
- This condition will increase water velocity through deposited sediments, redistributing sediments in the lowered pool and transporting some sediment below dam
- Essentially using the gates at a time when they are not normally needed to manage water
- Partially drawing down the reservoir may increase the area of influence for the flush



Chery Creek Dam Intake Scour

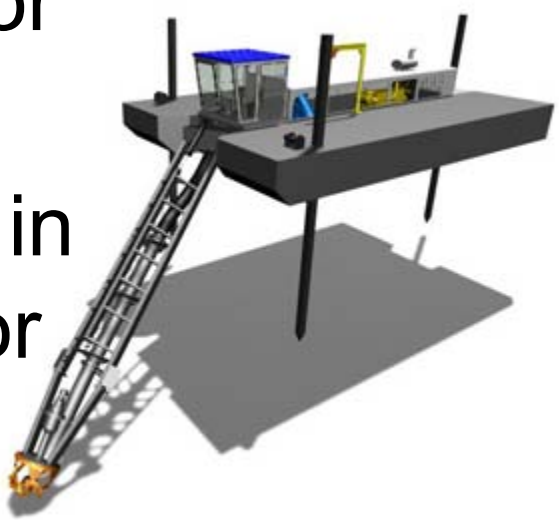


Cherry Creek Dam 2016 Multibeam Survey



Hydraulic Dredging of Reservoir Deposits

- Hydraulic dredging, usually with a cutter head dredge is used for localized sediment removal
- Often sediment is redeposited in the reservoir to reduce need for upland disposal
- Does not address the source or transport mechanisms for sediment movement



Pool Reallocation

- Reallocation studies have occurred at dozens of USACE Dam
- Revaluation of water use needs in the light of changing conditions (sedimentation, hydrology, recreation usage, etc)
- Chatfield Dam has undertaken a reallocation study.
  - ►reallocated 20K AF from flood control to joint-use flood control and water supply storage.
  - ►ROD in 2014 – in transition phase now

Reservoir Pool/Dam Raises

- If no other storage/usage solutions are available and additional storage is needed
- Requires the same level of engineering/design as new construction
- Many reservoir shorelines are developed, making this difficult
- Chatfield reallocation is essentially a pool raise as the 20k AF of additional storage for water supply can effective raise the 'normal' pool

New Construction

- ??????????????????????????????????????