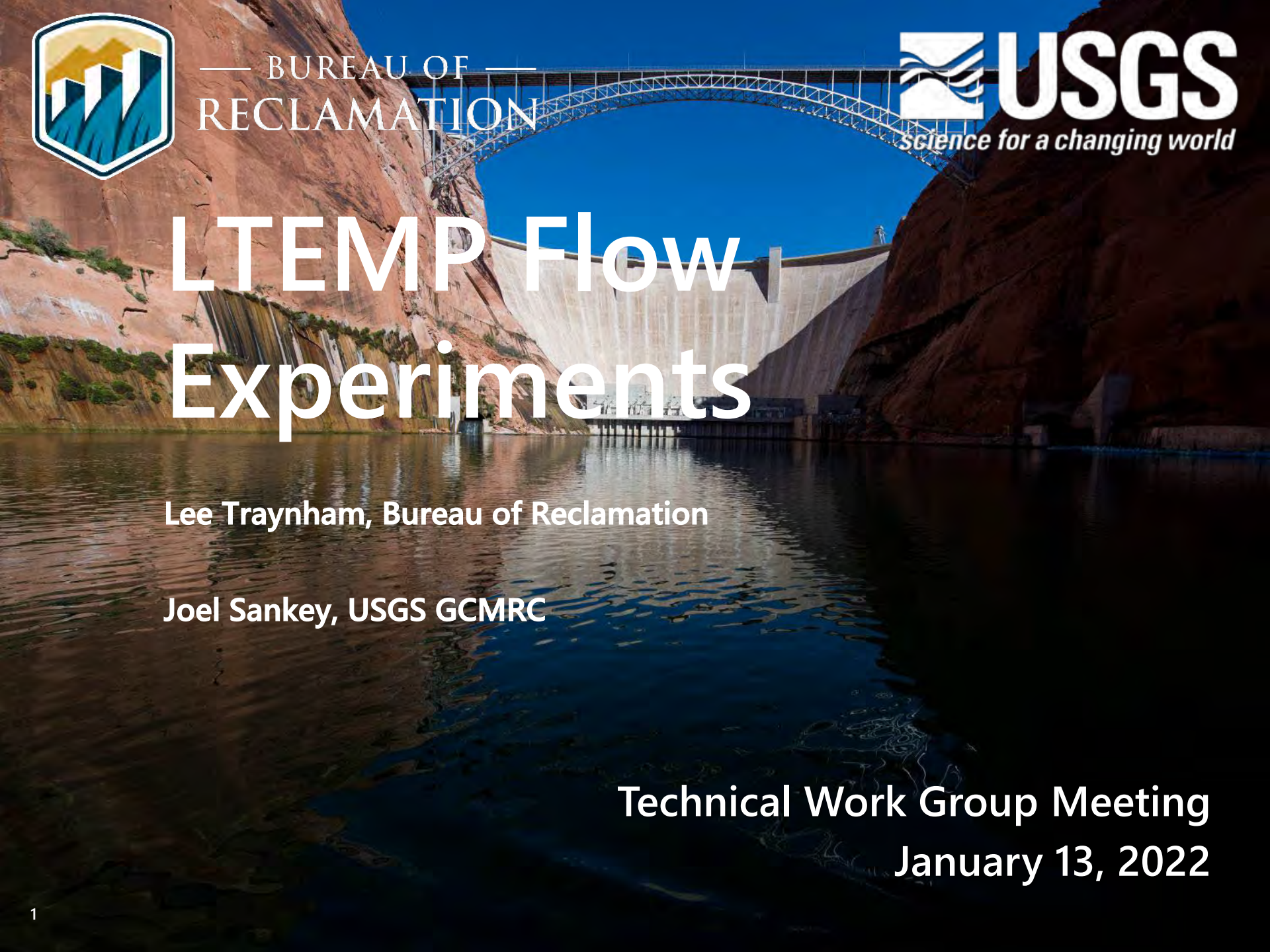


BUREAU OF RECLAMATION

USGS
science for a changing world

LTEMP Flow Experiments

Lee Traynham, Bureau of Reclamation

Joel Sankey, USGS GCMRC

Technical Work Group Meeting
January 13, 2022

LTEMP Experiments

"The overall approach attempts to strike a balance between identifying specific experiments and providing flexibility to implement those experiments when resource conditions are appropriate."

"...rather than proposing a prescriptive approach to experimentation, an adaptive management-based approach that is responsive and flexible will be used to adapt to changing environmental and resource conditions..."

--2016 LTEMP ROD, p. B-9

LTEMP Process for Experiments

- Annual Reporting and TWG meetings
- Notification and Consultation to Tribes & PA Parties
- Implementation / Planning Team Recommendation
- DOI decision

1.4 COMMUNICATION AND CONSULTATION PROCESS FOR ALTERNATIVE D

To determine whether conditions are suitable for implementing or discontinuing experimental treatments or management actions, the DOI will schedule implementation/planning meetings or calls with the DOI bureaus (USGS, NPS, FWS, BIA, and Reclamation), WAPA, AZGFD, and one liaison from each Basin State and from the UCRC, as needed or requested by the participants. The implementation/planning group will strive to develop a consensus recommendation to bring forth to the DOI regarding resource issues as detailed at the beginning of this section, as well as including WAPA's assessment of the status of the Basin Fund. The Secretary of the Interior will consider the consensus recommendations of the implementation/planning group, but retains sole discretion to decide how best to accomplish operations and experiments in any given year pursuant to the ROD and other binding obligations.

Resource Considerations

1. Water quality and water delivery
2. Humpback Chub
3. Sediment
4. Riparian Ecosystems
5. Historic properties and traditional cultural properties
6. Tribal Concerns
7. Hydropower production and WAPA's assessment of the status of the Basin Fund
8. Rainbow Trout Fishery
9. Recreation
10. Other Resources

Reference: 2016 LTEMP ROD, p. B-8,

Section 1.3 Implementation Process for Experiments Under Alternative D

Potential LTEMP Flow Experiments

GCD Experimental Flow	Duration	Implementation Window
~~Fall HFE~~	~~up to 96 hours~~	~~October - November~~
~~Extended Duration Fall HFE~~	~~97- 192* or 97-250 hours***~~	~~October - November~~
Spring HFE$^{\Delta}$	up to 96 hours	March – April
Proactive Spring HFE$^{\Delta\Diamond}$	24 hours**	April – June
Trout Management Flows	up to 3 cycles/month for 4 months	May – August
Macroinvertebrate Flows	target 2-3 replicates	May – August

* First test not to exceed 192 hours
** First test 24 hours
*** After first test, up to 250 hours

Δ no Spring HFE in same WY as extended duration Fall HFE
◊ no proactive Spring HFE in same WY as sediment-driven Spring HFE

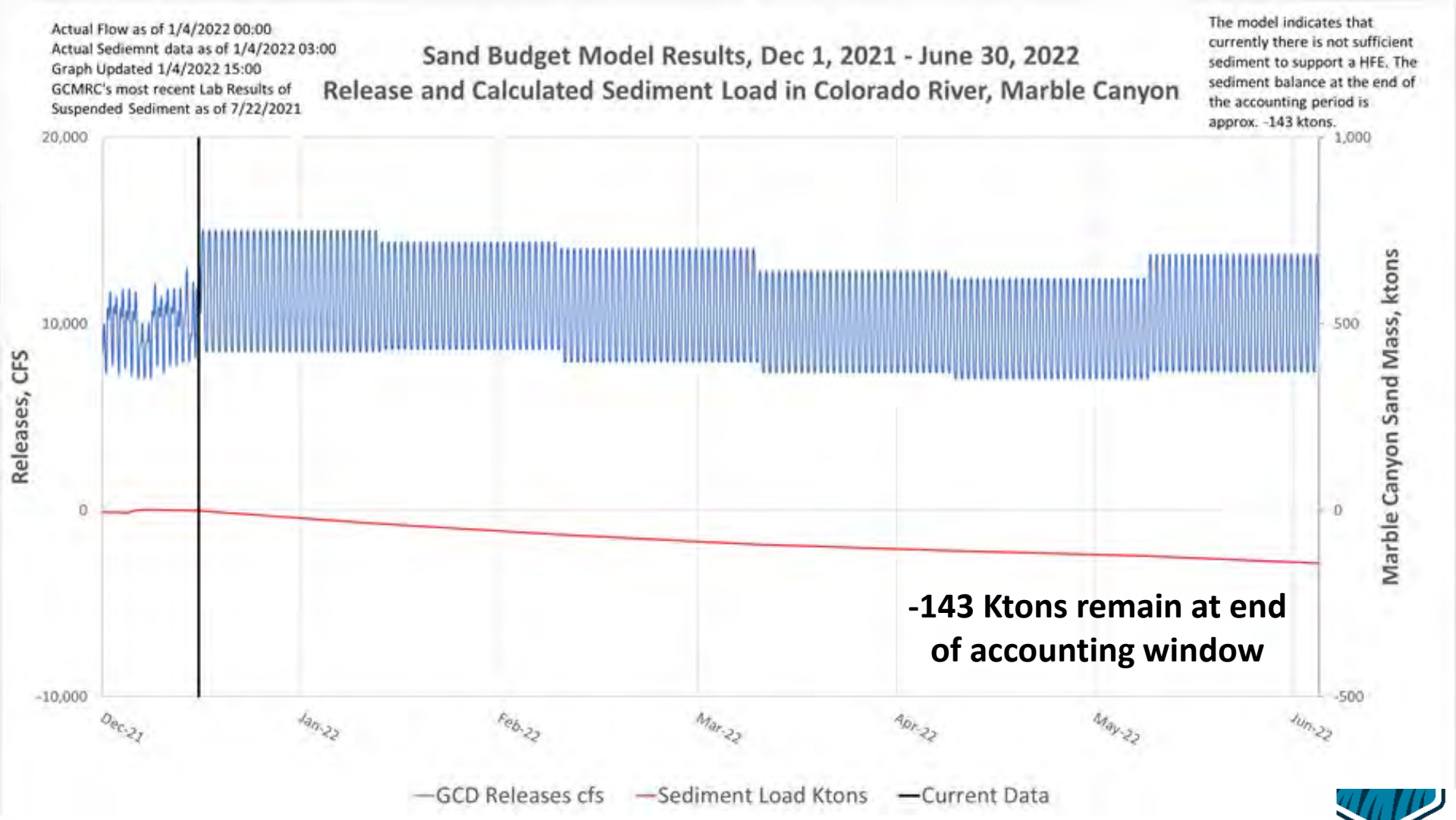
WY 2022 Related Activities:

- Drought Response Ops at GCD – Lower winter releases, reallocation
- Consultation w/ Tribes re: Trout Management Flows – Jan kickoff
- Planning/Implementation Process Review

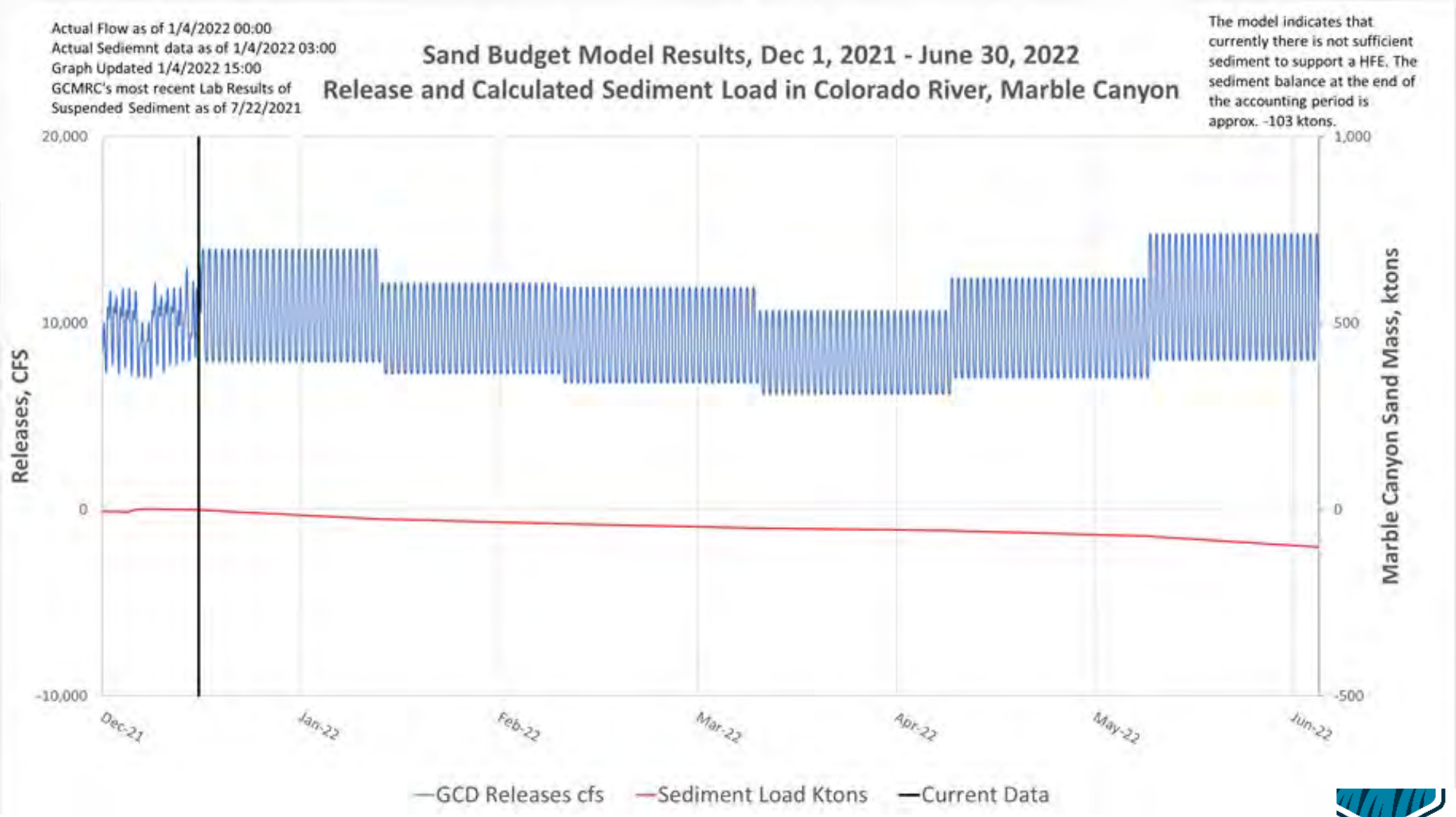
Current Activities & Next Steps

- Spring High Flow Experiment
  - Jan-Mar - Evaluating sediment inputs for trigger conditions
    Planning/Implementation Team assessment
- Bug Flows
  - ✓ Oct 2021 – GCMRC Draft Synthesis Report & WAPA assessment of purchase power costs
  - ✓ Dec 2021 – Science Advisors Review
  - Jan 2022 – ARM, TWG Review and Discussion
- Trout Management Flows
  - Jan 2022 – Consultation w/ Tribes (Jan kickoff)
  - TBD 2022 – GCMRC Literature Review (Jan TWG summary)
  - TBD 2022 – BOR White Paper
  - TBD 2022 – Potential lab-based or small-scale studies
  - TBD 2022 – Review of Upper Basin spike flow experiment
- Spring Disturbance Flow
  - ✓ Dec 2021 – GCMRC documents findings in Annual Report
  - Jan 2022 – ARM, TWG Review and Discussion
  - TBD 2022 – O.1 and O.2 continued, O.11

Sand Budget Model Results
LTEMP Monthly Release Pattern



Sand Budget Model Results
DROA Monthly Release Pattern



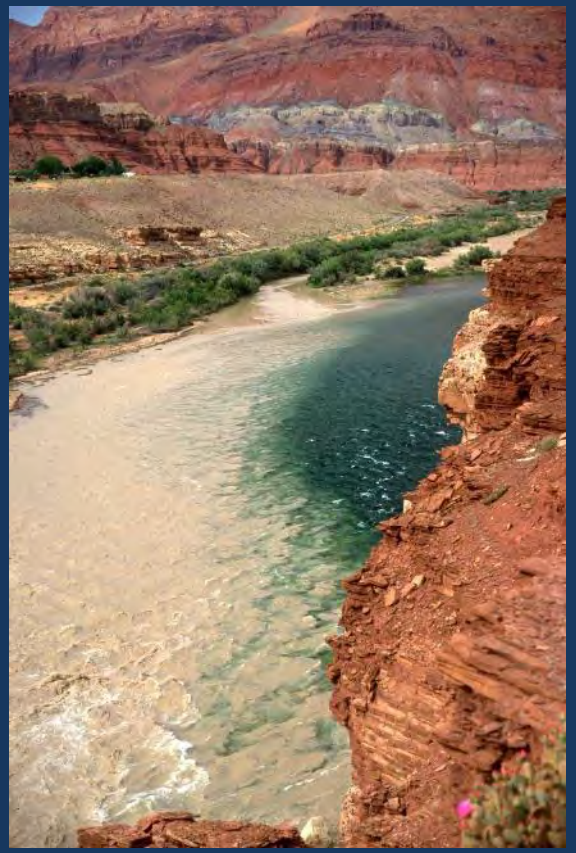
Experiments Potentially Occurring in FY22

USGS

Potential Spring HFE - FY22

- Currently within Spring accounting window (Dec. 1, 2021 – June 30, 2022)

- Sand inputs from Paria not significant to date



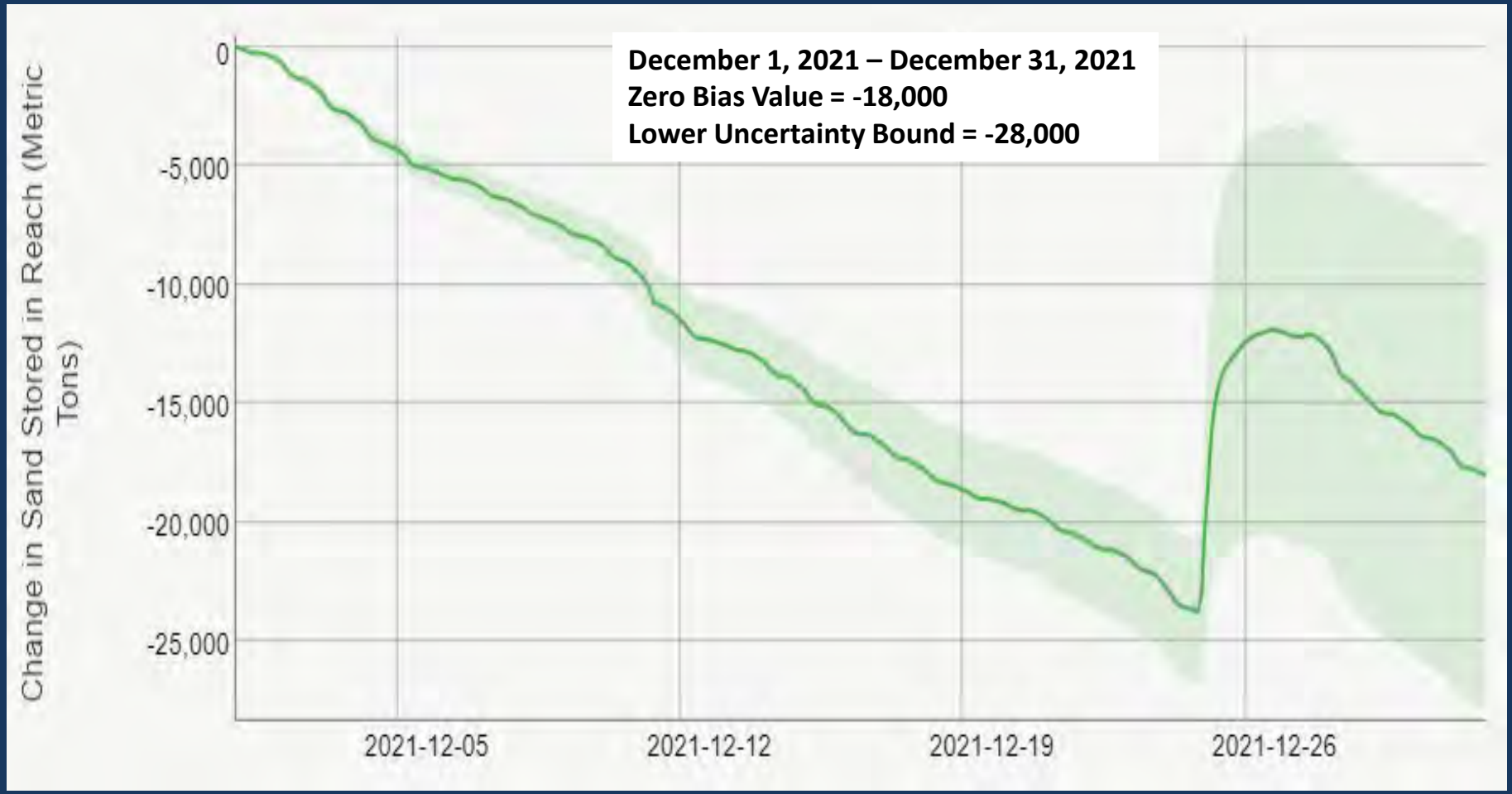
USGS

Paria River Discharge and Sand Inputs

USGS Preliminary Data, 2022. Do Not Cite.
(https://www.gcmrc.gov/discharge_qw_sediment/station/GCDAMP/09382000)

USGS

Upper Marble Canyon Sand Mass Balance



USGS Preliminary Data, 2022. Do Not Cite.
(https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09380000/09383050)

USGS

Lower Marble Canyon Sand Mass Balance

USGS Preliminary Data, 2022. Do Not Cite.
(https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09383050/09383100)

USGS

Questions?