

Technical Work Group Chair Report

Adaptive Management Work Group Meeting

August 17, 2023

Seth Shanahan

TWG Chairperson

Meetings

- Past
 - June 14-15, 2023 (June 16 tour)
 - August 9, 2023 (special meeting)
- Future
 - October 11-12, 2023 (in person)

Items Reported Elsewhere on AMWG Agenda

Updated: August 1, 2023
DRAFT

**Glen Canyon Dam Adaptive Management Program
 Adaptive Management Work Group Meeting, August 16-17, 2023**

Little America, 2515 East Butler Ave
 Flagstaff, AZ 86004

Wednesday, August 16, 2023

Day 1 Webinar Information:

<https://rec.webex.com/rec/j.php?MTID=m67fef4d2de6569962b5cf3f6100b20ca>

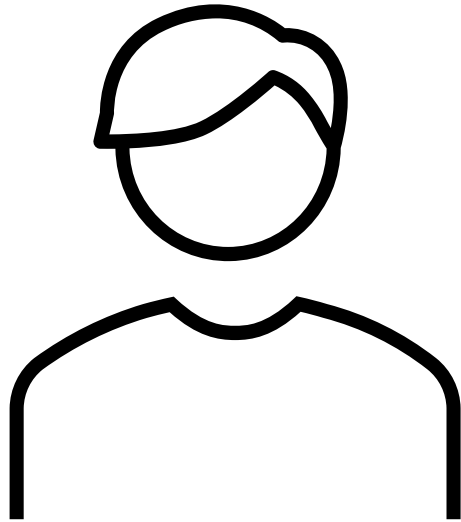
Telephone: 415-527-5035 Passcode: 2762 308 0111

- Basin hydrology, operations, and water quality
- Basin Fund and hydropower customer impacts
- HFE Protocol
- Trout fishery impacts
- April 2023 HFE
- Budget and work plan
- SMB and other invasive fish planning
- SMB EIS and 07G SEIS

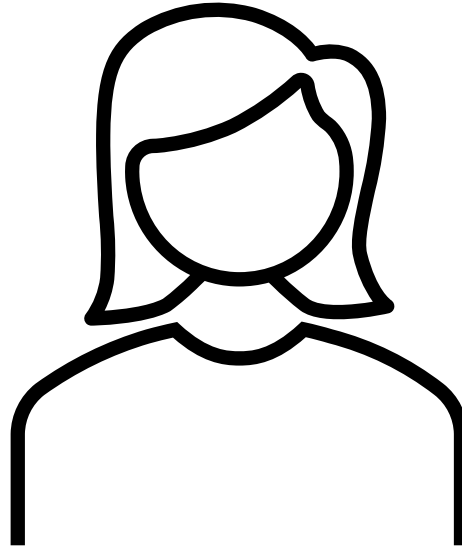
Draft Agenda

START TIME ¹ (Duration)	Wednesday, August 16, 2023 Topic, Presenter, and Purpose ²
9:30 PDT/MST 10:30 MDT (:45)	Welcome and Administrative: Wayne Pullan, Acting Secretary's Designee to the Adaptive Management Work Group <ul style="list-style-type: none"> ▪ Introductions and Determination of Quorum (13 members) <ul style="list-style-type: none"> ○ Facilitator: Terra Alpaugh, Kearns & West ▪ Approval of May meeting minutes ▪ Review May meeting evaluation ▪ Administrative Updates

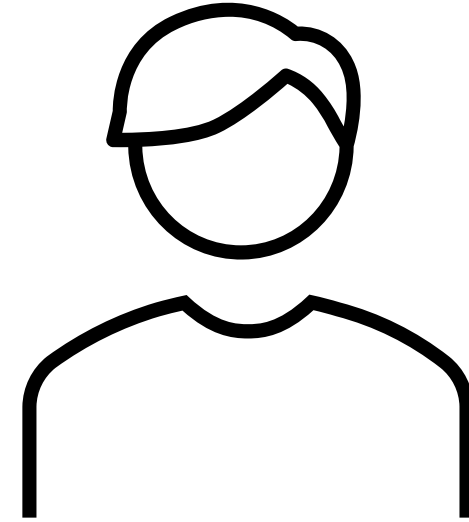
Elections/Appointments



Seth Shanahan,
TWG Chairperson



Michelle Garrison,
TWG Vice-
Chairperson



Jeremy Hammen,
Reclamation
Vice-Chairperson

What was the purpose of the Bug Flows Experiment?




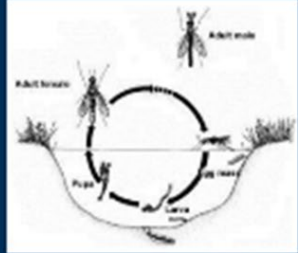
To see if a modified release pattern would:

- Increase midge abundance
- Increase EPT abundance/diversity

Mechanism: improved egg-laying conditions

Purpose of Bug Flows Experiment

- Improve egg-laying conditions for insects!
- Therefore:
 - Increase midge abundance
 - Increase sensitive EPT abundance/diversity (longer term?)
- Ultimately:
 - Improve fish food base



USGS

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Outline

- Background
- Lees Ferry fishery
- Grand Canyon

My talk will also cover



“Enhances natural processes” by reducing flow fluctuations?

But does the data indicate a statistically significant increase in:

- Midge abundance, or
- EPT abundance/diversity

Did we see:

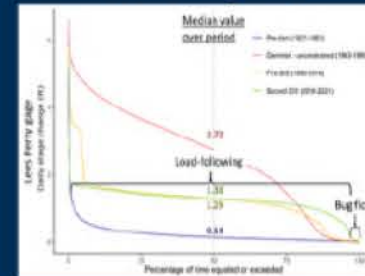
- Smoothing in midge distribution?
- Caddis distribute away from tributaries?

From Ellsworth 2023, 3 minutes ago...

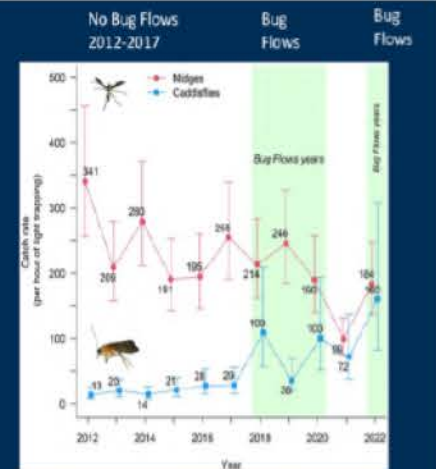
Conclusions

Conclusions

- Bug Flows appears to be a useful tool for enhancing natural processes that sustain aquatic insect populations and the Colorado River ecosystem



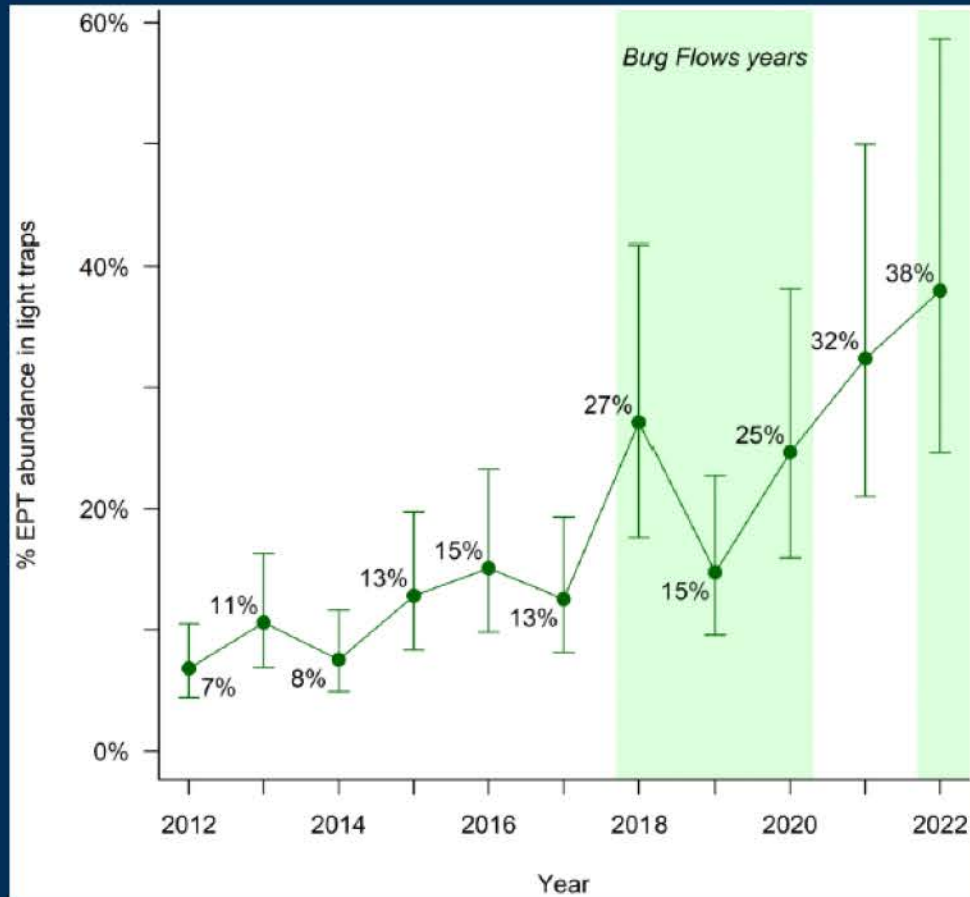
USGS
Unpublished data, subject to change, do not cite.



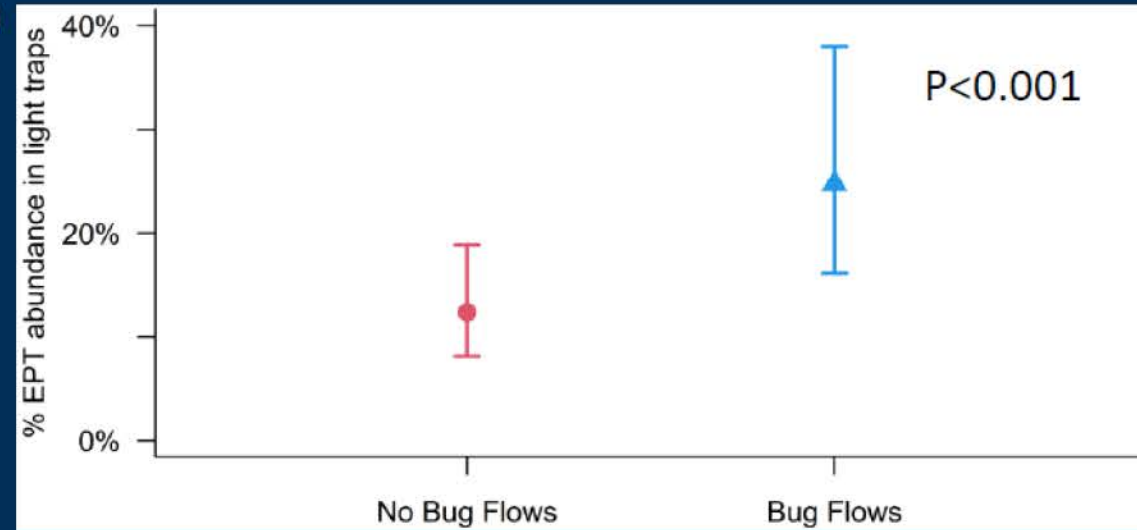
Kennedy's professional opinion: SMB represent far greater threat to native fish conservation than low diversity/production of prey base. SMB Flows take precedence over Bug Flows.

<https://www.usbr.gov/uc/progact/amp/twg/2023-01-26-twg-meeting/20230126-AnnualReportingMeeting-BugFlowsFoodBaseUpdate-508-UCRO.pdf>

Bug Flows Increase EPT%



EPT% = EPT in sample/Total aquatic insects in sample



Significantly higher EPT% in Bug Flow years

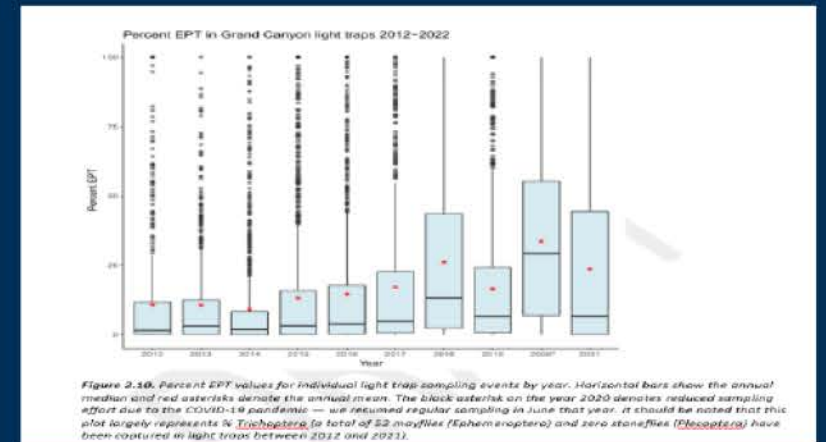


Figure 2-50. Percent EPT values for individual light trap sampling events by year. Horizontal bars show the annual median and red asterisks denote the annual mean. The black asterisk on the year 2020 denotes reduced sampling effort due to the COVID-19 pandemic — we resumed regular sampling in June that year. It should be noted that this plot largely represents % *Trichoptera* (a total of 52 mayflies (Ephemeroptera) and zero stoneflies (Diptera) have been captured in light traps between 2012 and 2022).

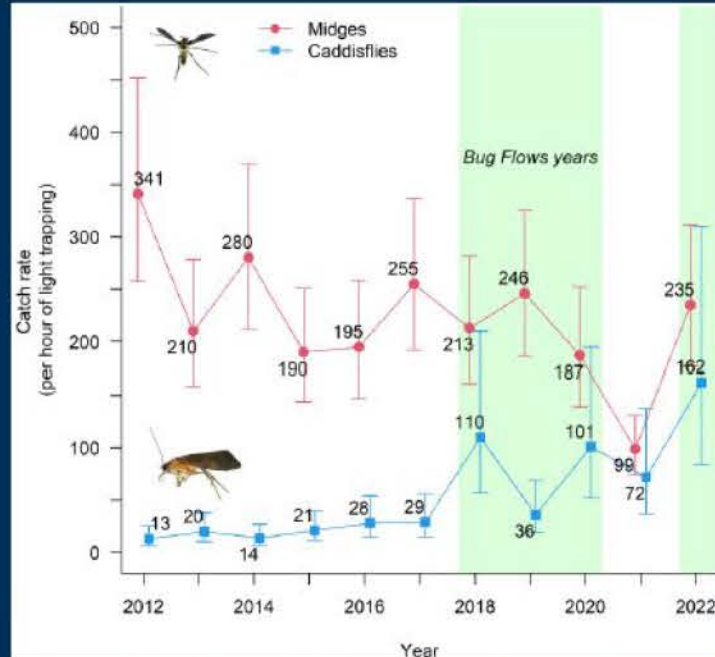
EPT% graph shown in June 2022 & March 2023 Metrics report



Unpublished data, subject to change,
do not cite.

Conclusions

- Bug Flows temporarily restores discharge to natural range of variability (no tides) thereby enhancing natural processes that sustain aquatic insect populations and the Colorado River ecosystem



USGS
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Conceptual model of select Natural Processes
at the Little Colorado River confluence
Figure courtesy of Diana Valentine



U.S. Department of the Interior
U.S. Geological Survey

Risk to campers on tributary debris fans of the Colorado River in Grand Canyon, AZ from known debris flow hazards

Risk Community of Practice
Monthly Meeting
June 15, 2023

Paul Grams

Erica Byerley, Tom Gushue, Joe Thomas, and Jason Kean

U.S. Geological Survey

Southwest Biological Science Center

Grand Canyon Monitoring and Research Center


Risk Project – Motivation and Goals

- Despite general awareness of the hazard, there is no formal warning system (remote location) or program to communicate the risk to visitors to Grand Canyon
- Purpose of this project:
 - Elevate the understanding of debris flow and flash flood risk to visitors to the river corridor in Grand Canyon
 - Create a risk assessment using existing data
 - Engage with stakeholders to describe the risk assessment and develop a plan for communicating the risk to the public



U.S. Department of the Interior
U.S. Geological Survey

Waterfalls in Reservoirs: Tracking the Development of Nickpoints in the Sediments of Declining Reservoirs

A wide-angle photograph of a desert landscape with a river. In the foreground, two surveying tripods are set up on a sandy bank. One is yellow and black, the other is red and black. A yellow storage bin sits between them. In the background, a river flows through a canyon with layered rock formations. Several vehicles and people are visible along the riverbank, suggesting a field research site.

Paul Grams, Robert Tusso, and Matt Kaplinski
U.S. Geological Survey, Grand Canyon Monitoring and Research Center
Chris Wilkowske and Scott Hynek
U.S. Geological Survey, Utah Water Science Center
Jamie Macy
U.S. Geological Survey, Arizona Water Science Center
Mike DeHoff and Peter Lefebvre
Returning Rapids Project

Perched river channels and rapids/waterfalls on the San Juan arm of Lake Powell and the Colorado River at Lake Mead



Waterfall formation at a desert river-reservoir delta isolates endangered fishes

Charles N. Cathcart¹ | Casey A. Penrock¹ | Christopher A. Cheek² | Mark C. McKinstry² | Peter D. MacKinnon² | Mary M. Conner² | Keith B. Gido¹

[As Lake Powell shrinks, the Colorado River is coming back to life – | The Salt Lake Tribune \(sltrib.com\)](#)



Willow flycatcher and clapper rail surveys



Burnt Springs (260 mile)



Tour of Glen Canyon Dam and -12 Mile Slough



- June 16
- Optional
- First come, first serve (20 max)
- Thanks to:
 - National Park Service
 - Bureau of Reclamation
 - Glen Canyon Conservancy
 - Grand Canyon Monitoring and Research Center









**THANK YOU FOR
VISITING
GLEN CANYON DAM**

*Bureau of Reclamation
Employees*

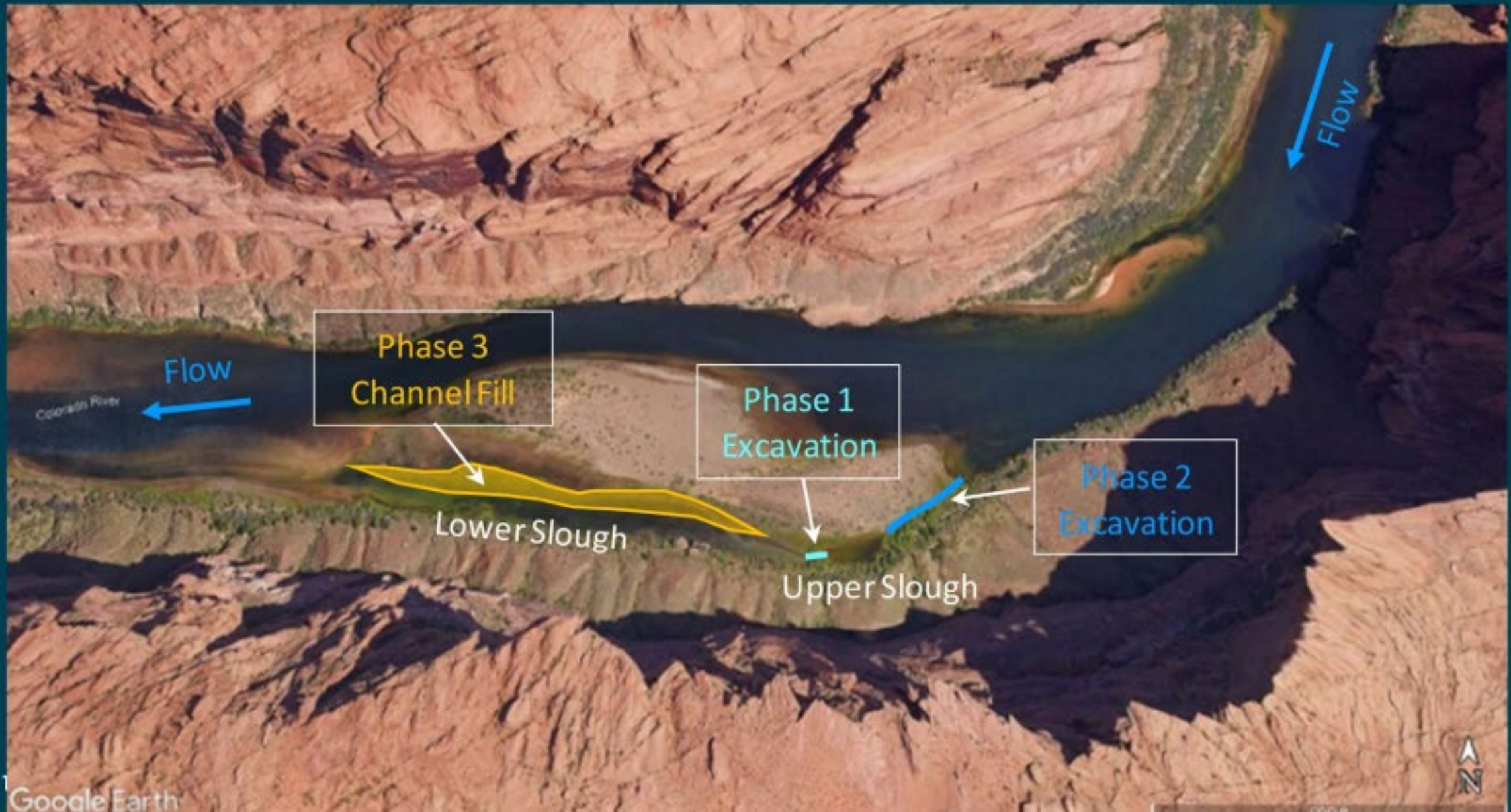








New Slough Alternative [2023]













Signage on the wooden structure includes:

- A top sign with the heading "Don't Drink, Dugout, or Use Water From Bitter Lake" and illustrations of a rainbow trout and a cutthroat trout.
- A middle sign with text: "Bitter Lake is a coldwater trout stream. It is home to several species of trout including rainbow trout, cutthroat trout, and brook trout. The water in this stream is not safe to drink. Do not drink water from this stream. Do not use water from this stream for irrigation or other purposes." Below the text are logos for FSU and other organizations.





GLEN CANYON CONSERVANCY

2023
AZ0622HM

Future TWG Agenda Items

- Monitoring metrics
- Lake Powell hydroacoustics and fish survey update
- Fish exclusion update
- Pre-dam invertebrate assemblages
- Natal origins of brown trout in Grand Canyon
- Fall HFE webinar
- Budget priorities
- Smallmouth bass response
- Incentivized harvest program