Potential Water Year 2021 LTEMP Experiments & Bug Flow Update

August AMWG Meeting

August 20, 2020

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.

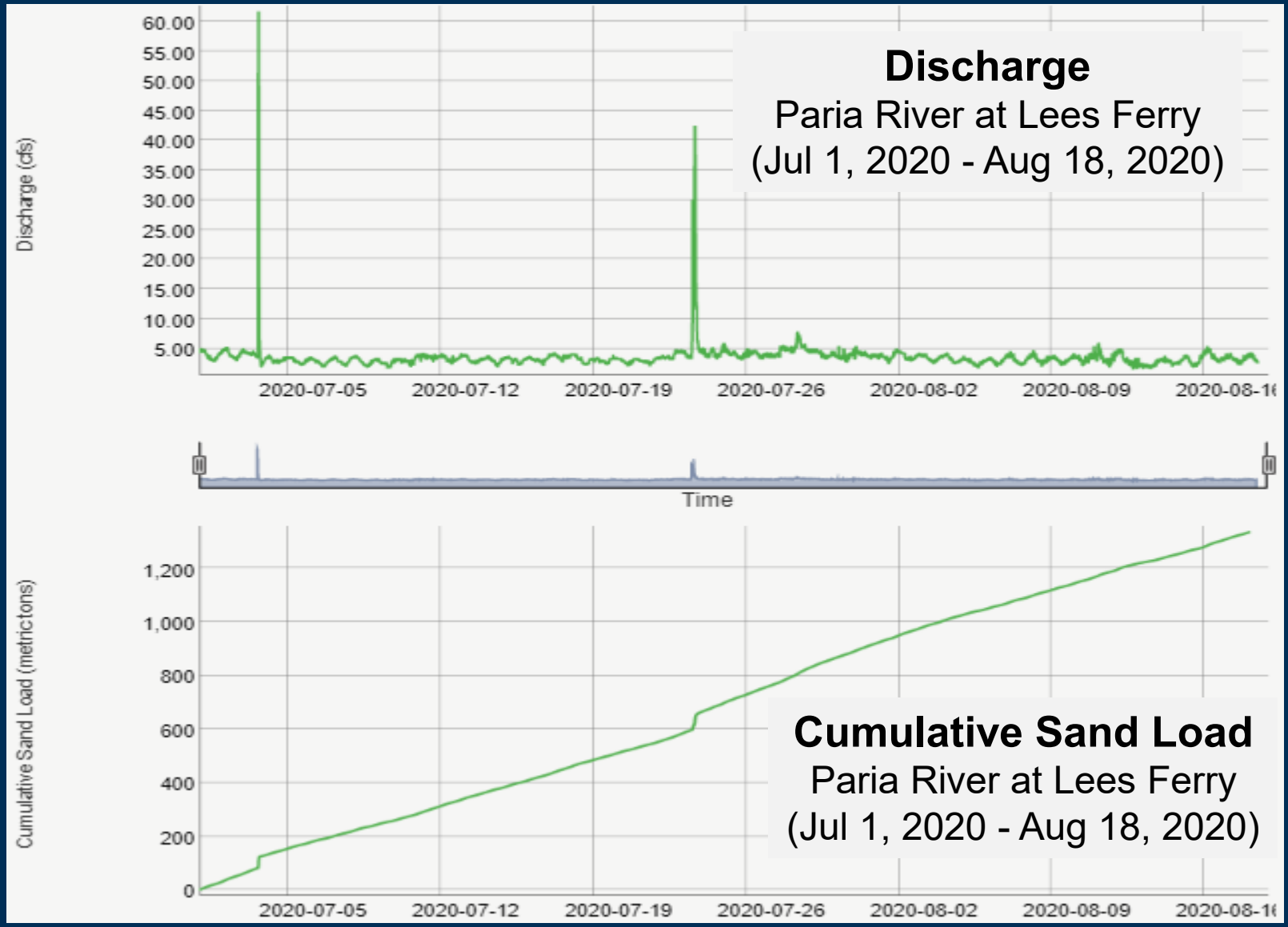
LTEMP Flow Experiments w/ 2021 Potential

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$^{\Delta\lozenge}$	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

Paria River discharge and sediment inputs



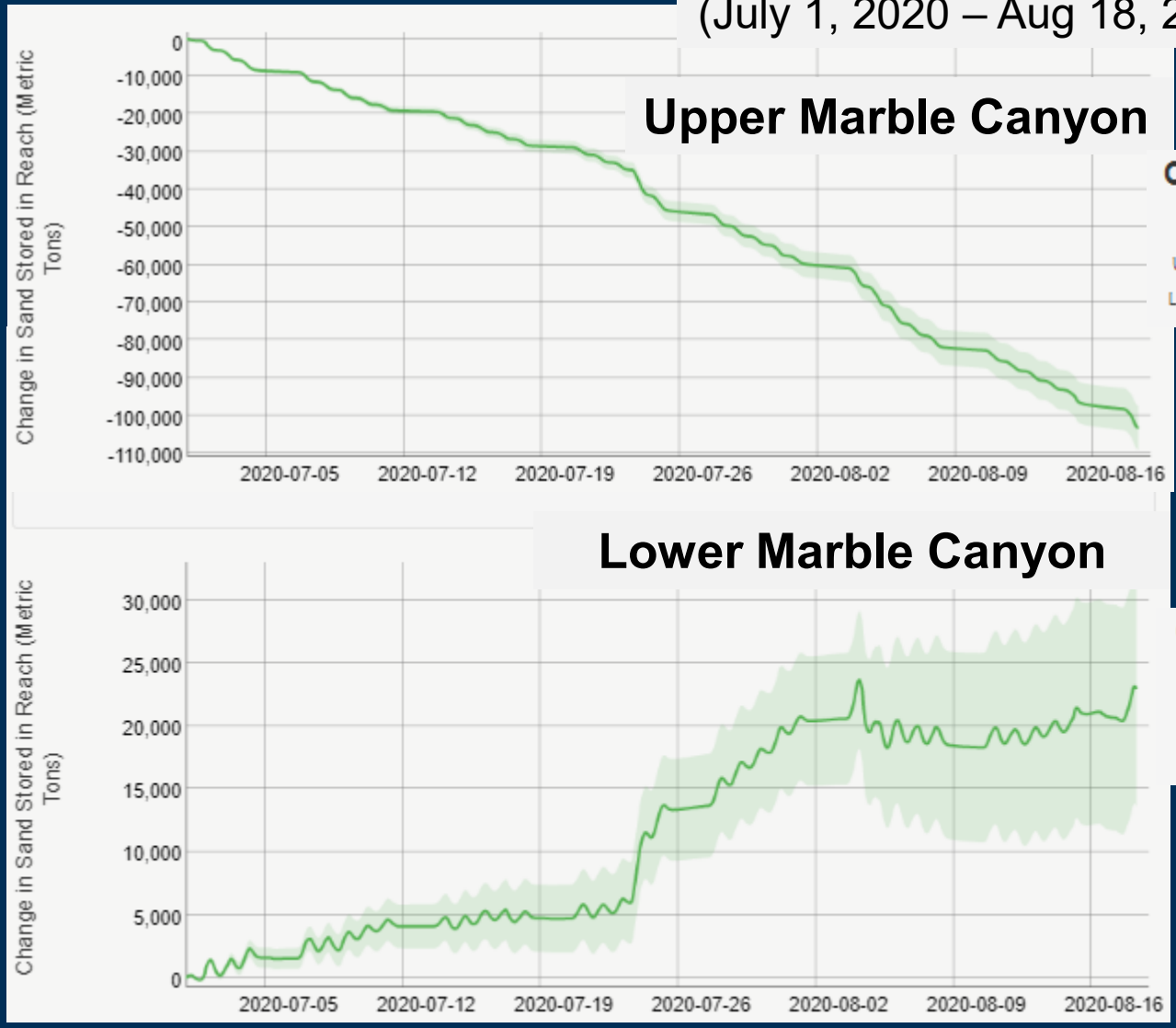
USGS Preliminary Data, 2020. Do Not Cite.
(https://www.gcmrc.gov/discharge_qw_sediment/station/GCDAMP/09382000#)

USGS

Aug. 18, 2020

Marble Canyon Sand Mass Balance

(July 1, 2020 – Aug 18, 2020)



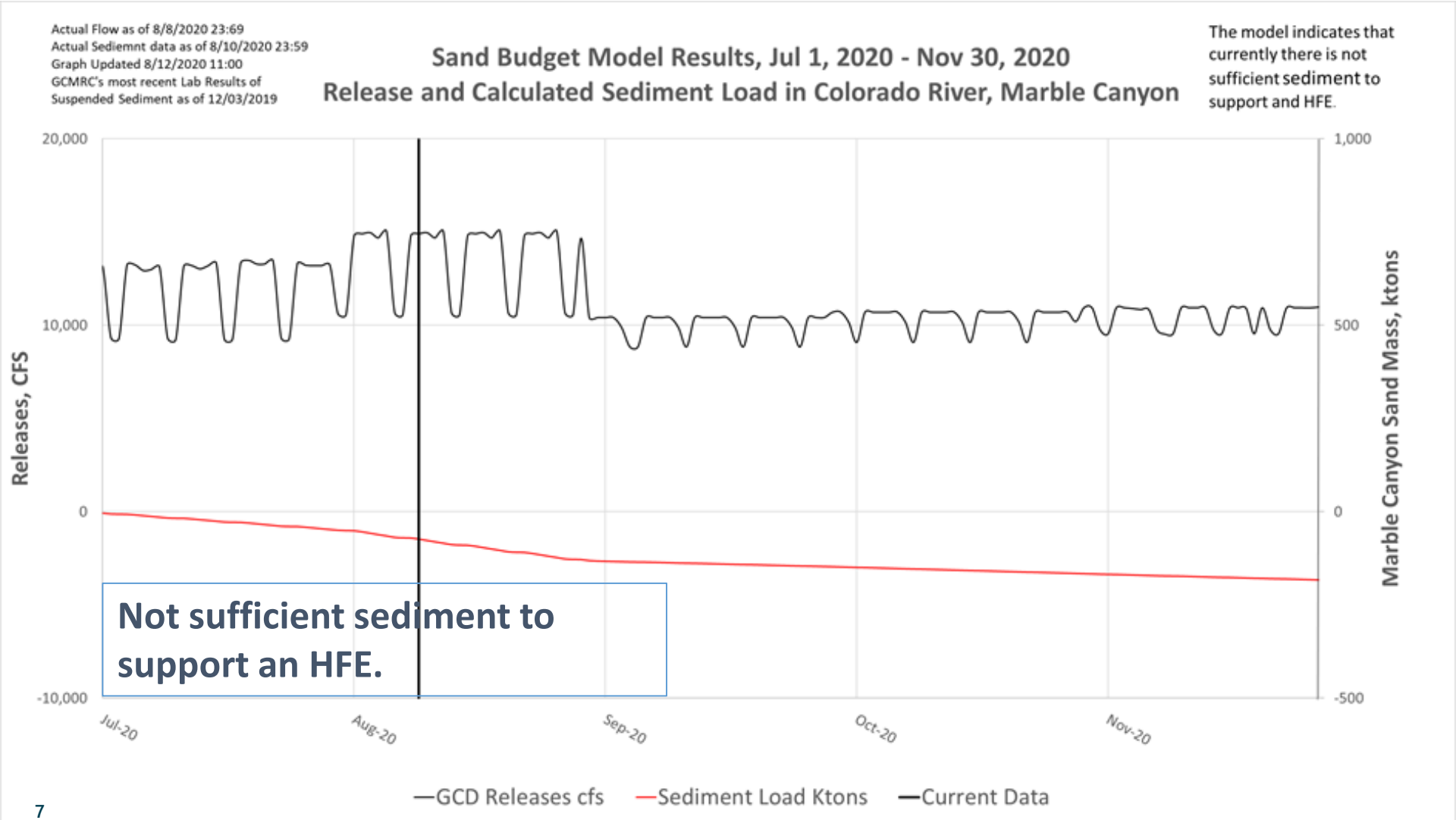
USGS Preliminary Data, 2020. Do Not Cite.

(https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09380000/09383050, https://www.gcmrc.gov/discharge_qw_sediment/reach/GCDAMP/09383050/09383100)

USGS

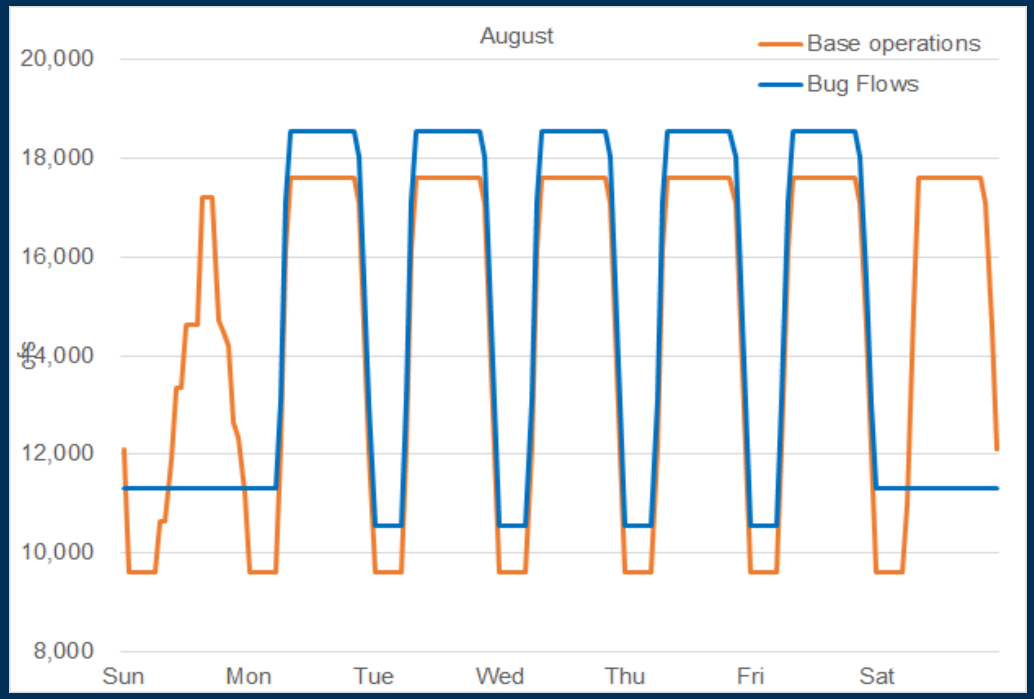
Aug. 18, 2020

Sand Budget Model Results



Macroinvertebrate Flows

"Bug Flows" Objective: Improve food base productivity and abundance or diversity of mayflies, stoneflies, and caddisflies



- **"Give bugs the weekends off"**
- **Weekend stable low flows May-August**
- **Eggs laid on weekends never dry**

USGS

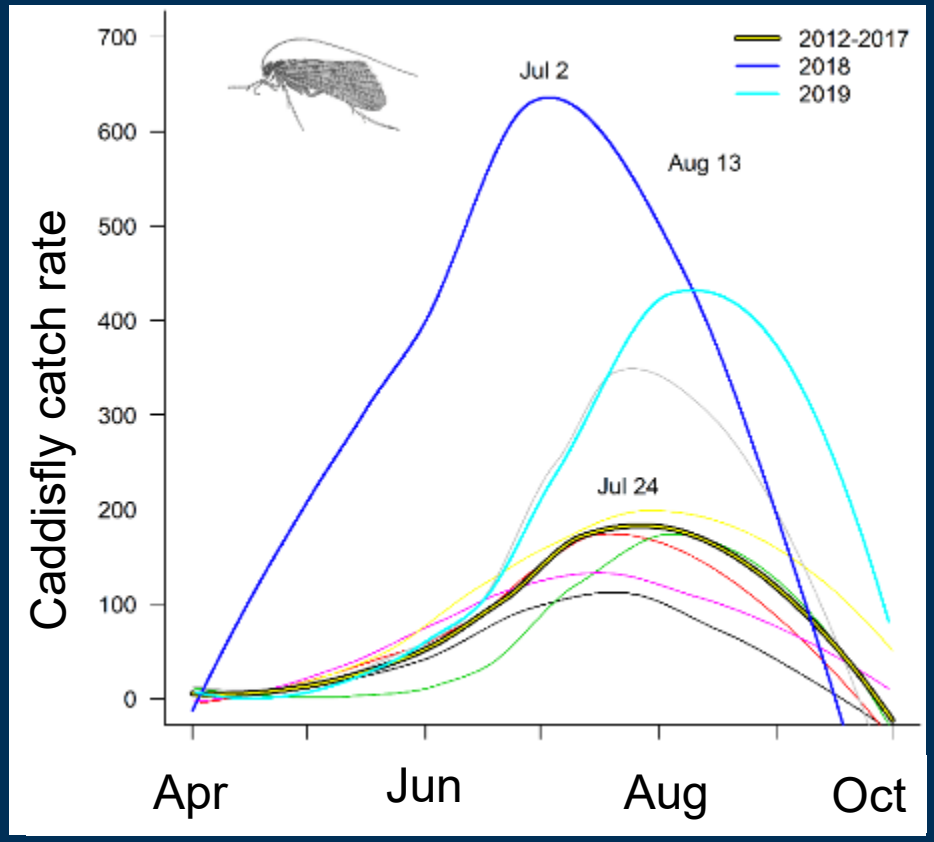
Monitoring 2020 Bug Flows

- Lees Ferry
  - Overnight, monthly samples by USGS staff
- River closed April – mid-June
  - Sampling at Phantom Ranch boat beach nightly
    - Thanks to NPS, Xanterra for assistance
- River re-opens mid-June – present
  - 5-8 samples per night from guides river-wide

Photo credit: K. Pitts

Monitoring 2020 Bug Flows, con't.

- ~500 samples anticipated
- Likely observe peak emergence
  - Midges: mid-June
  - Caddisflies: mid-July
- Robust dataset still expected!

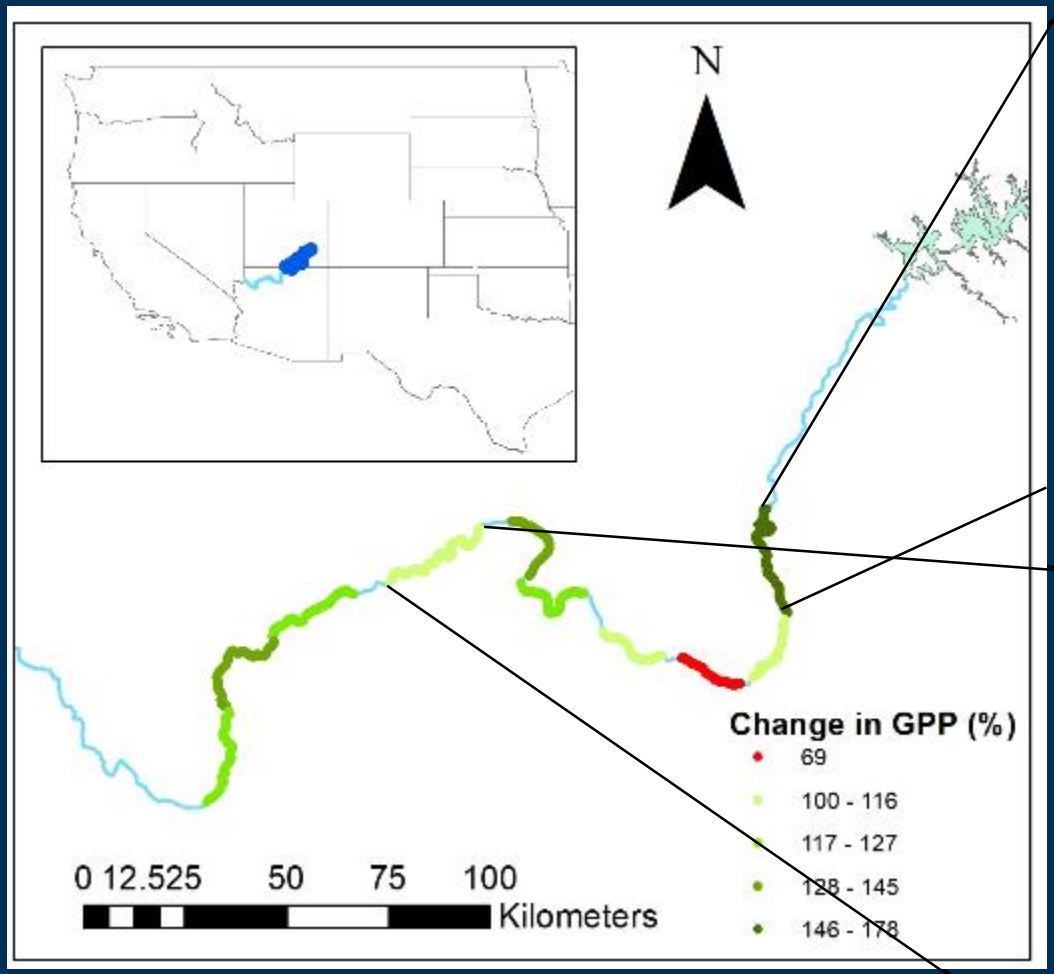


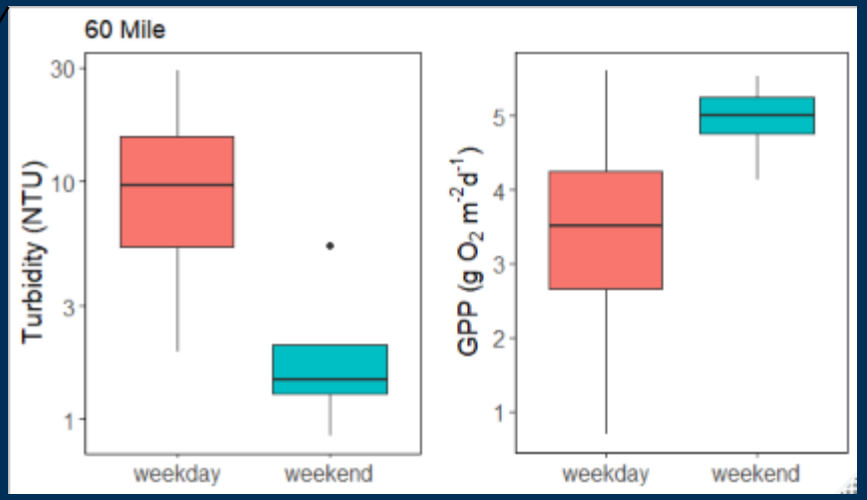
USGS

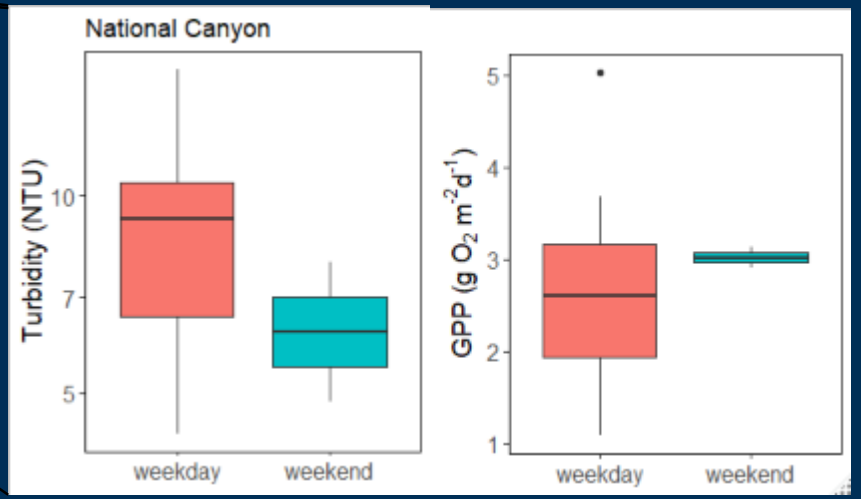
Unpublished data, subject to change, do not cite.

Results 2018 and 2019 Bug Flows

25% whole river increase in GPP on weekends







USGS

Deemer, Yackulic and others unpublished, subject to change, do not cite.


BUREAU OF
RECLAMATION
USGS