



— BUREAU OF —
RECLAMATION

Potential LTEMP Experiments Water Year 2020

Planning / Implementation Team Call #1

March 6, 2020

Agenda

1. Welcome and Introduction
2. LTEMP Process for Experiments
3. Possible Spring/Summer Experiments
4. HFE Protocol Process
5. Current Sediment modeling results
6. Timeline and actions/tasks
7. Resource Condition Updates
8. Summary and Next steps
9. Other?



Communication and Consultation

Annual Reporting meeting

- Present learning from previous experiments
- Provide best available scientific information

Technical Work Group meeting

- Meet to discuss potential experimental actions for the year

1.4 COMMUNICATION AND CONSULTATION PROCESS FOR ALTERNATIVE D

In implementing the processes described in Section 1.3 and the associated decision process shown in Figures 4 and 5, the DOI will exercise a formal process of stakeholder engagement to ensure decisions are made with sufficient information regarding the condition and potential effects on important resources. As an initial platform to discuss potential future experimental actions, the DOI will hold GCDAMP annual reporting meetings for all interested stakeholders; these meetings will present the best available scientific information and learning from previously implemented experiments and ongoing monitoring of resources. As a follow-up to this process, the DOI will meet with the TWG to discuss the experimental actions being contemplated for the year.



Consultation

With Tribes, AZGFD, States, and UCRC as requested

1.4 COMMUNICATION AND CONSULTATION PROCESS FOR ALTERNATIVE D

DOI will also continue separate consultation meetings with the Tribes, AZGFD, the Basin States, and UCRC upon request, or as required under existing RODs.

6.5 Commitments to Tribes

- Traditionally Associated Tribes³ shall be notified at least 30 days in advance of planned experimental flows (including HFEs, TMFs, MPFs, and LSFs).
- The DOI is committed to finding beneficial uses with Traditionally Associated Tribes for nonnative fish that are mechanically removed as part of the LTEMP actions to the extent practicable.
- The DOI recognizes the opportunities for cooperative and collaborative partnerships with tribes in the management of Federal lands and resources related to the LTEMP as stated in Secretarial Order No. 3342.



Planning and Implementation Team

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.



Planning and Implementation

- Planning / Implementation team coordination
- Strives for consensus recommendation to DOI
- Secretary of the Interior makes 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/ 2020 Potential

GCD Experimental Flow	Duration	Implementation Window
Spring HFE ^Δ	up to 96 hours	March – April
Proactive Spring HFE ^{Δ◇}	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
Fall HFE	up to 96 hours	October - November
Extended Duration Fall HFE	97- 192* or 97-250 hours ^{***}	October - November

* 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



High Flow Experiments

Spring HFE, sediment triggered

- Objective: Rebuild sandbars

Spring HFE, proactive

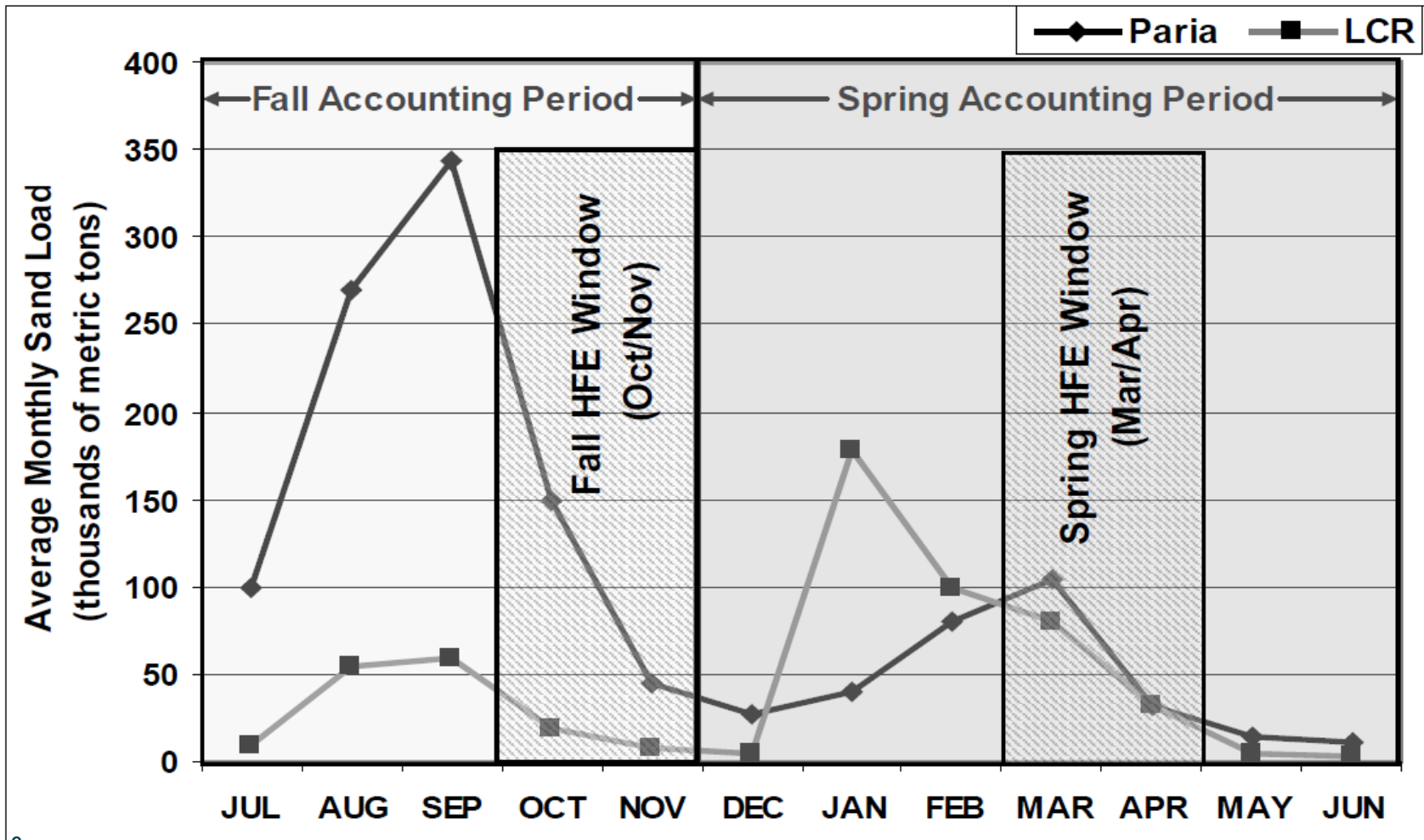
- Objective: Protect sand supply from equalization releases

Fall HFE, sediment triggered

- Objective: Rebuild sandbars



HFE Accounting & Implementation Windows



HFE Protocol

1. Planning and Budgeting

- Annual resource status assessment
- Annual Agency Reporting
- GCDAMP Budget and Work Plan Process

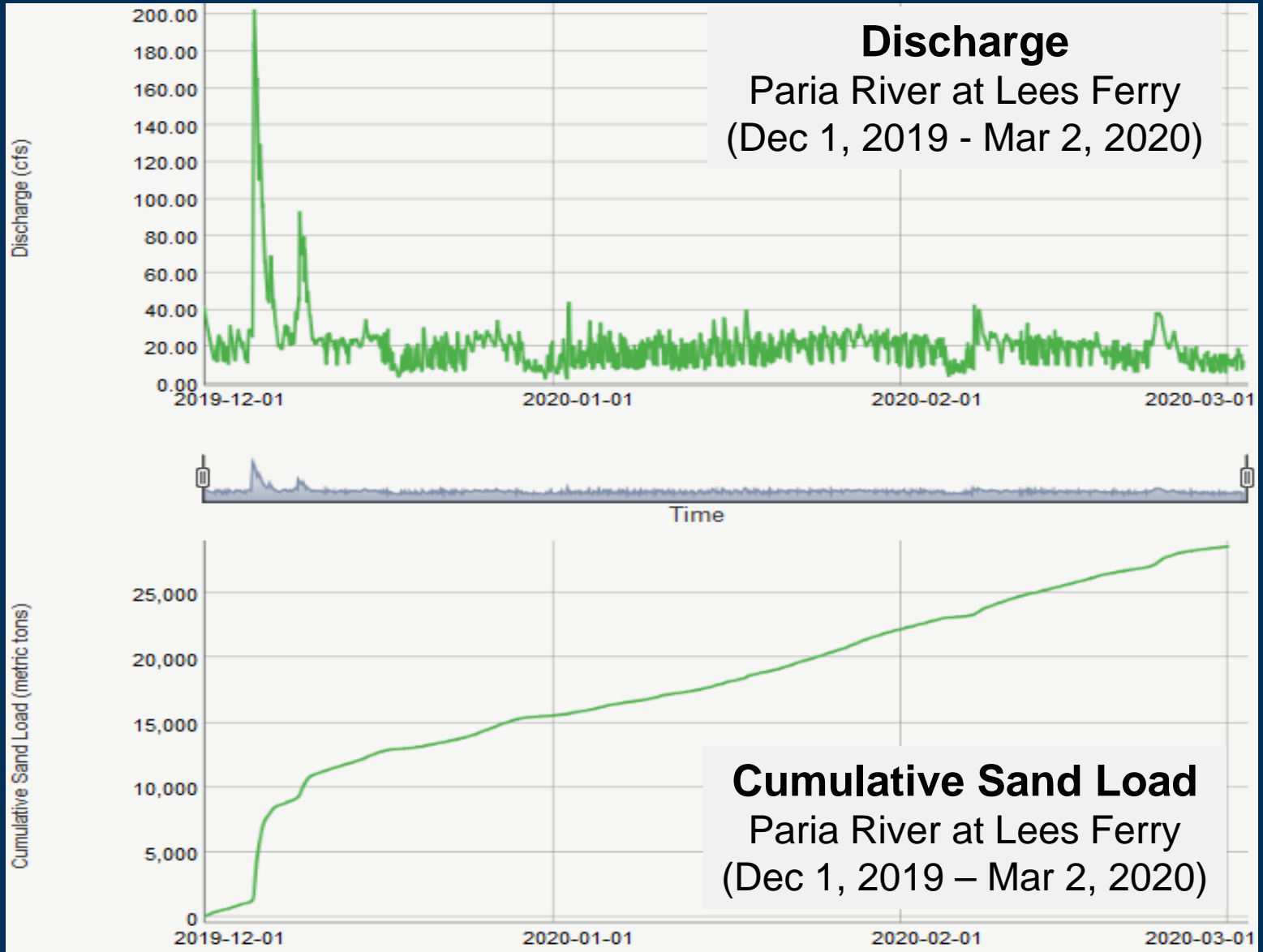
2. Modeling

3. Decision and Implementation Component

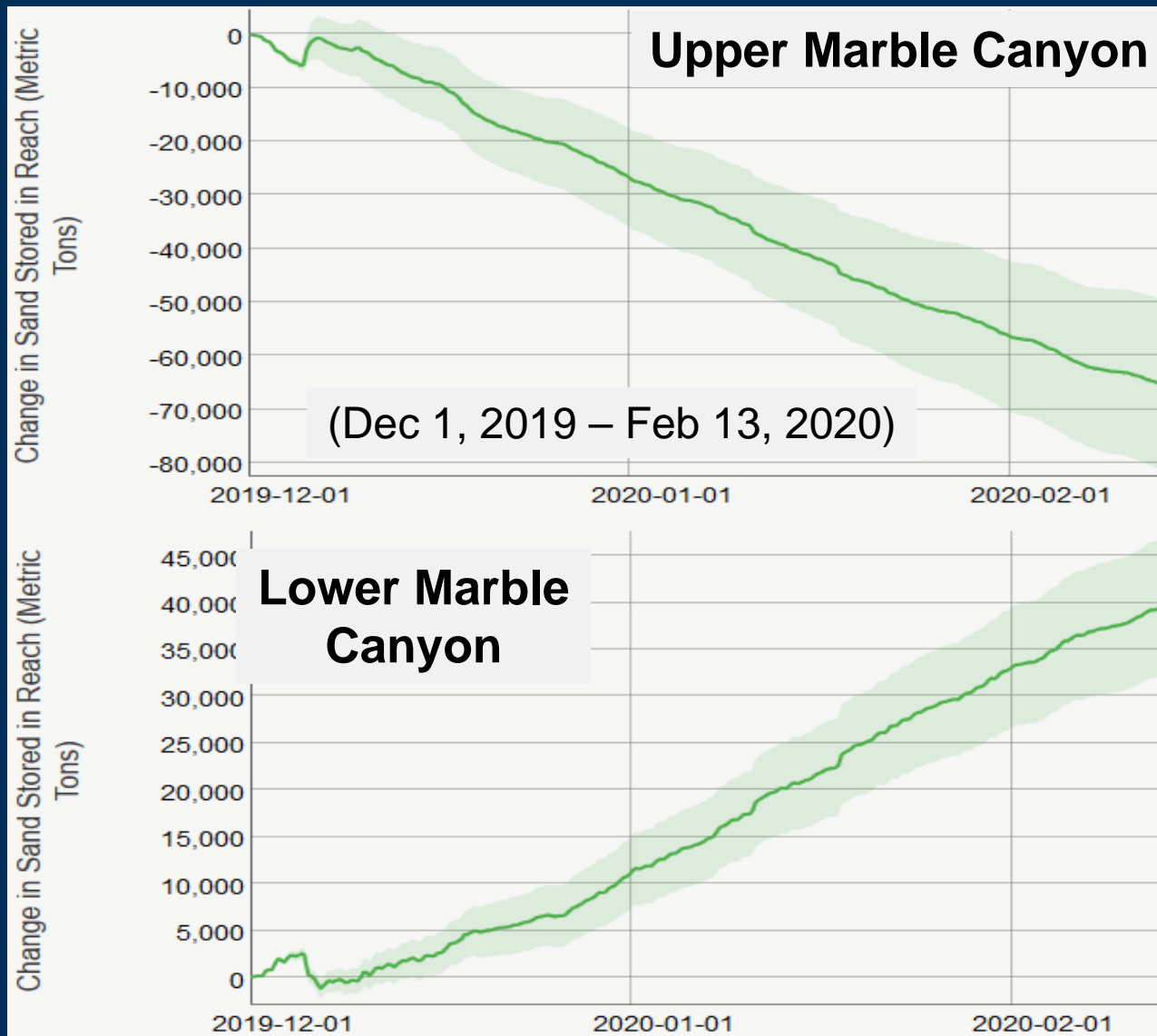
- Review Modeling
- Review Status of Resources
- Consultation with agencies and tribes, TWG / AMWG input
- Staff Recommendation / GCD Leadership Team Recommendation
- DOI Decision



Paria River Discharge & Sediment Inputs



Marble Canyon Sand Mass Balance



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)

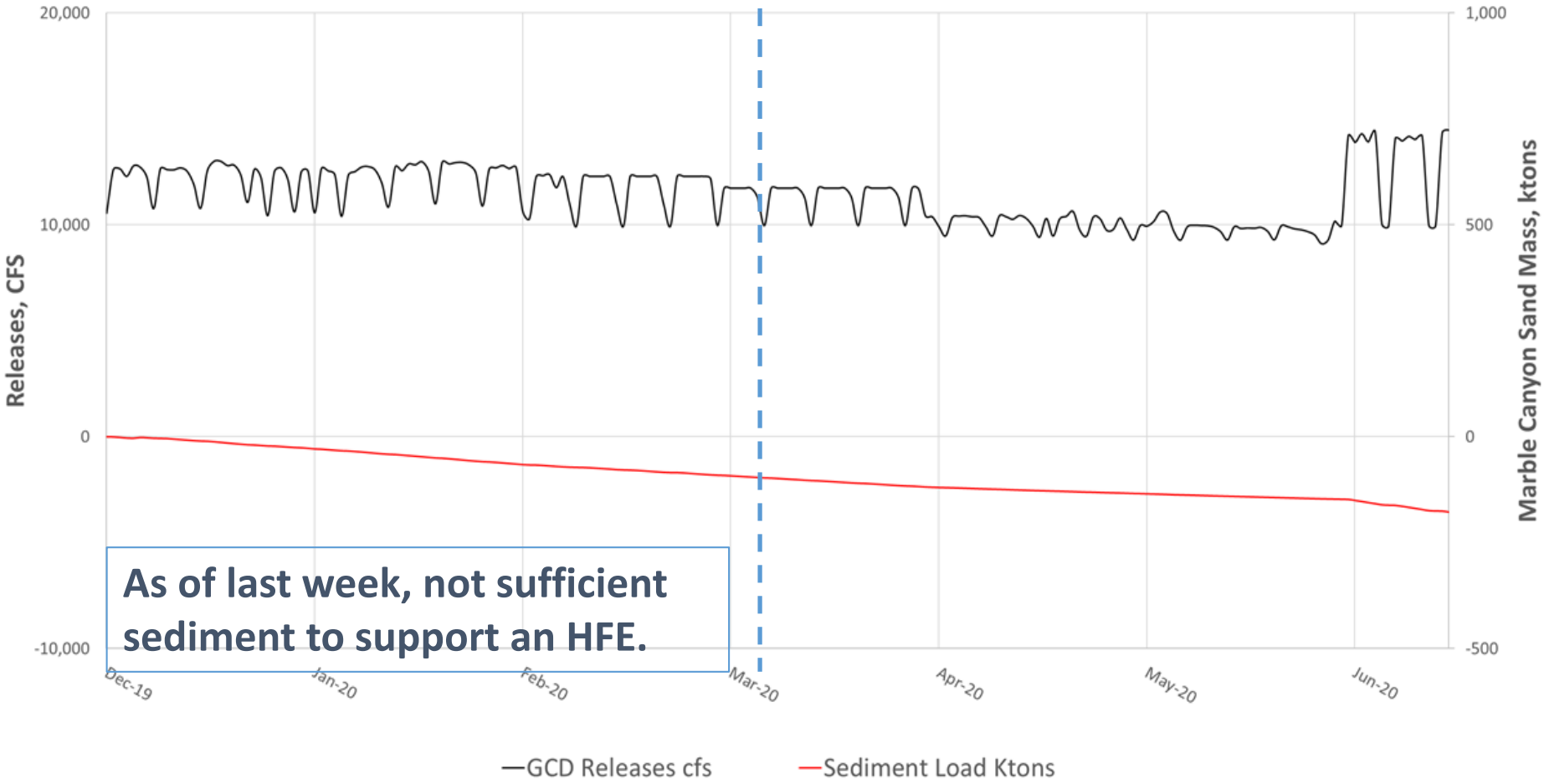
Mar. 6, 2020

Sand Budget Model Results

Actual Flow as of 3/2/2020 06:00
 Actual Sediment data as of 3/1/2020 0:00
 Graph Updated 3/4/2020 12:00
 GCMRC's most recent Lab Results of
 Suspended Sediment as of 9/4/2019

Sand Budget Model Results, Dec 2019-June 30, 2020
Release and Calculated Sediment Load in Colorado River, Marble Canyon

The model indicates that currently there is not sufficient sediment to support and HFE.



Spring 2020 HFE Timeline

- Annual Reporting & TWG Meetings – 1/14-16
- Notification to Tribes and Parties – 2/4
- AMWG Meeting – 2/12-13
- IF sediment trigger is met:
 - Notify stakeholders and public EARLY
 - Assessment of Resources, Monitoring Plan, Comms Plan:
→ draft Tech Team report: **3/20**
 - AMWG/TWG webinar: **3/25**
 - Final HFE Tech Team report / recommendation: **3/27**
 - Example: [2018 Fall HFE Report](#)
 - Leadership team recommendation: **3/30-31**
 - DOI decision: **4/1**
 - Notify people: **~4/2-3**
 - Potential Implementation: **4/20**



MARCH 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6 Tech Team Call #1	7
8	9	10	11	12	13	14
15	16	17 Tech Team Call #2	18	19	20 Tech Team Draft Report	21
22	23	24	25 AMWG/TWG Webinar	26	27 Tech Team Recommendation	28
29	30 HFE Leadership Team mtg, DOI decision	31	1	2	3	4 Notify GCDAMP stakeholders, public



APRIL 2020

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
29	30 HFE Leadership Team mtg, DOI decision	31	1	2 Notify GCDAMP stakeholders, public	3	4
5	6	7	8	9	10	11
12 Easter Sunday	13	14	15	16	17	18
19	20 Possible HFE Start	21	22	23	24	25
26	27	28	29	30	1	2



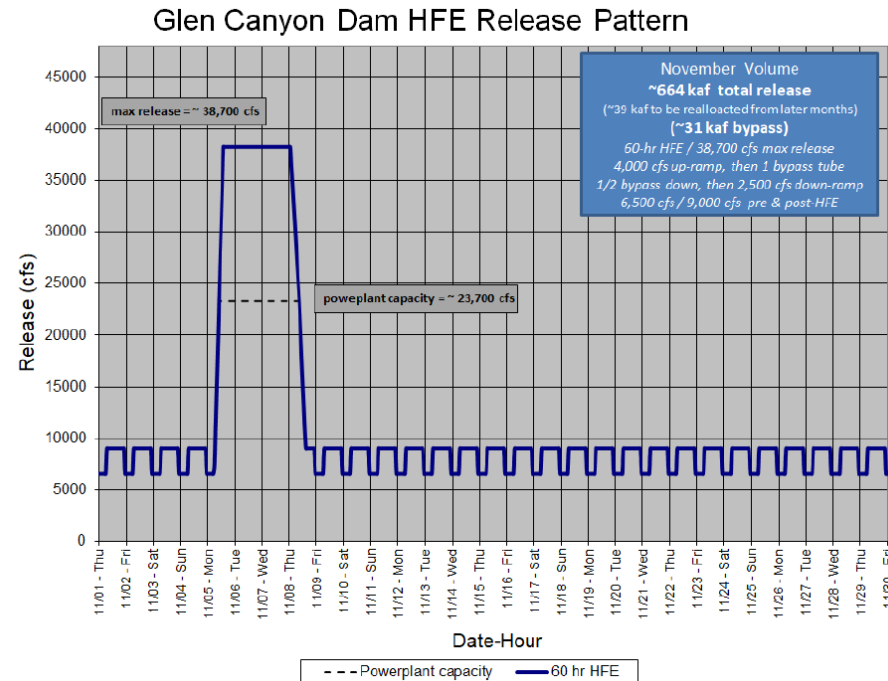
Spring 2020 HFE Considerations

- Hydrograph characteristics:

- Implement in late April (4/20 or 4/27)
- Peak release capacity: ~35,000 cfs (6 hydro units, 4 bypass tubes)
- Peak release duration: from 1 hr up to 96 hrs (4 days)
- Ramp rates: 4,000 cfs/hr up; 2,500 cfs/hr down
- Pre- and post-HFE base flows?

- Resource Considerations

- Basin Fund Status
- Recreational Safety
- Non-native Fish
 - Green Sunfish at RM12
 - Brown Trout at Lees Ferry



Glen Canyon Power Plant Planned Unit Outage Schedule for Water Year 2020

Unit Number	Oct 2019	Nov 2019	Dec 2019	Jan 2020	Feb 2020	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	
1	[Outage]												
2	[Outage]												
3					[Outage]						[Outage]		
4					[Outage]						[Outage]		
5													
6													
7							[Outage]						
8							[Outage]						
Units Available	5	6	6	6	6	5	8/6	6	6	6	6	6	
Capacity (cfs)	16,800	20,500	20,400	20,400	20,300	16,600	29,650*/20,300	20,500	20,700	20,750	20,700	20,700	JAN MOST
Capacity (kaf/month)	1,060	1,160	1,420	1,250	1,180	1,100	1,290	1,280	1,270	1,310	1,340	1,270	JAN MAX
Max (kaf) ¹	625	625	750	760	675	700	630	630	650	750	835	599	8.23
Most (kaf) ²	625	625	750	760	675	700	630	630	650	750	835	599	8.23
Min (kaf) ¹	625	625	750	760	675	700	630	630	650	750	835	599	8.23
											(updated 01-29-2020)		

- 1 Projected release, based on January 2020 MOST Probable Inflow Projections and 24-Month Study model runs
- 2 Projected release, based on January 2020 Min and Max Probable Inflow Projections and 24-Month Study model runs
- 3 *Dependent upon availability to shift regulation and reserves



Resource Considerations

1. Archaeological and Cultural Resources
2. Natural Processes
3. Humpback Chub
4. Hydropower and Energy
5. Other Native Fish
6. Recreational Experience
7. Sediment
8. Tribal Resources
9. Rainbow Trout Fishery
10. Nonnative Invasive Species
11. Riparian Vegetation



Summary and Next Steps

- **Neither sediment nor hydrologic conditions currently support a 2020 Spring HFE**
- **Next HFE Technical Team Call: Tuesday, March 17 (?)**
 - Review past HFE Tech Team Report
 - Verbal report out on resource status
 - Sediment, Basin Fund, Green Sunfish, Brown Trout, Other
 - Public Affairs update re: notification strategy
- **Consultation meetings as needed (Basin States, Tribes)**
- **Additional steps if we move forward with an HFE**
- **Otherwise...**
 - 3/23 – Transition Tech Team discussion to Bug Flows / TMFs
 - ~ 4/1 – Email AMWG/TWG w/ notification
 - 6/30 – Sediment modeling through accumulation period



Additional Discussion

- Questions
- Comments



Lee Traynham

801-524-3752

ltraynham@usbr.gov



— BUREAU OF —
RECLAMATION

Two Types of Spring HFEs

TABLE 4 Implementation Criteria for Experimental Treatments of Alternative D

Experimental Treatment	Trigger ^a and Primary Objective	Replicates	Duration	Annual Implementation Considerations ^b	Long-Term Off-Ramp Conditions ^c	Action if Successful
<i>Sediment-Related Experiments^d</i>						
Spring HFE up to 45,000 cfs in Mar. or Apr.	Trigger: Sufficient Paria River sediment input in spring accounting period (Dec.–Jun.) to achieve a positive sand mass balance in Marble Canyon with implementation of an HFE Objective: Rebuild sandbars	Not conducted during first 2 years of LTEMP, otherwise implement in each year triggered, dependent on resource condition and response	≤96 hr	Potential short-term unacceptable impacts on resources listed in Section 1.3; unacceptable cumulative effects of sequential HFEs; sediment-triggered spring HFEs will not occur in the same water year as an extended-duration (>96 hr) fall HFE	Sediment-triggered spring HFEs are not effective in building sandbars; or long-term unacceptable adverse impacts on the resources listed in Section 1.3 are observed	Implement as adaptive treatment when triggered and existing resource conditions allow
Proactive spring HFE up to 45,000 cfs (Apr., May, or Jun.)	Trigger: High-volume year with planned equalization releases (≥10 maf) Objective: Protect sand supply from equalization releases	Not conducted during first 2 years of LTEMP, otherwise implement in each year triggered, dependent on resource condition and response	First test 24 hr; subsequent tests could be shorter, but not longer, depending on results of first tests	Potential short-term unacceptable impacts on resources listed in Section 1.3; unacceptable cumulative effects of sequential HFEs; will not be implemented in the same water year as a sediment-triggered spring HFE or extended-duration fall HFE	Proactive spring HFEs are not effective in building sandbars; or long-term unacceptable adverse impacts on the resources listed in Section 1.3 are observed	Implement as adaptive treatment when triggered and existing resource conditions allow



Other potential actions

Spring Power Plant Capacity Flows

TABLE 1 Operational Characteristics of Alternative D

Elements of Base Operations ^a	Values under Preferred Alternative
Monthly pattern in release volume	Monthly volumes are described in Tables 2 and Table 3; volume released in Oct.–Dec. = 2.0 maf in ≥ 8.23 -maf years and 1.5 maf in years ≤ 7.48 maf
Minimum flows	8,000 cfs between 7 a.m. and 7 p.m. 5,000 cfs between 7 p.m. and 7 a.m.
Maximum non-experimental flows ^b	25,000 cfs
Daily range ^c	Equal to $10 \times$ monthly volume (in kaf) in Jun.–Aug., and $9 \times$ monthly volume (in kaf) in other months; daily range not to exceed 8,000 cfs
Ramp rates	4,000 cfs/hr up 2,500 cfs/hr down

^a Base operations are defined as operations in those years when no condition-dependent or experimental actions are triggered. Examples of experimental actions include HFES, LSF, and TMFs (see Table 2).

^b Maximum flows presented are for normal operations and may be exceeded as necessary for HFES, emergency operations, and equalization purposes.

^c Values presented are the normal daily range in mean hourly flow. Some variation in instantaneous flows within hours is allowed to accommodate emergency conditions, regulation requirements, and reserve requirements.

