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Potential LTEMP Experiments WY 2023

TWG

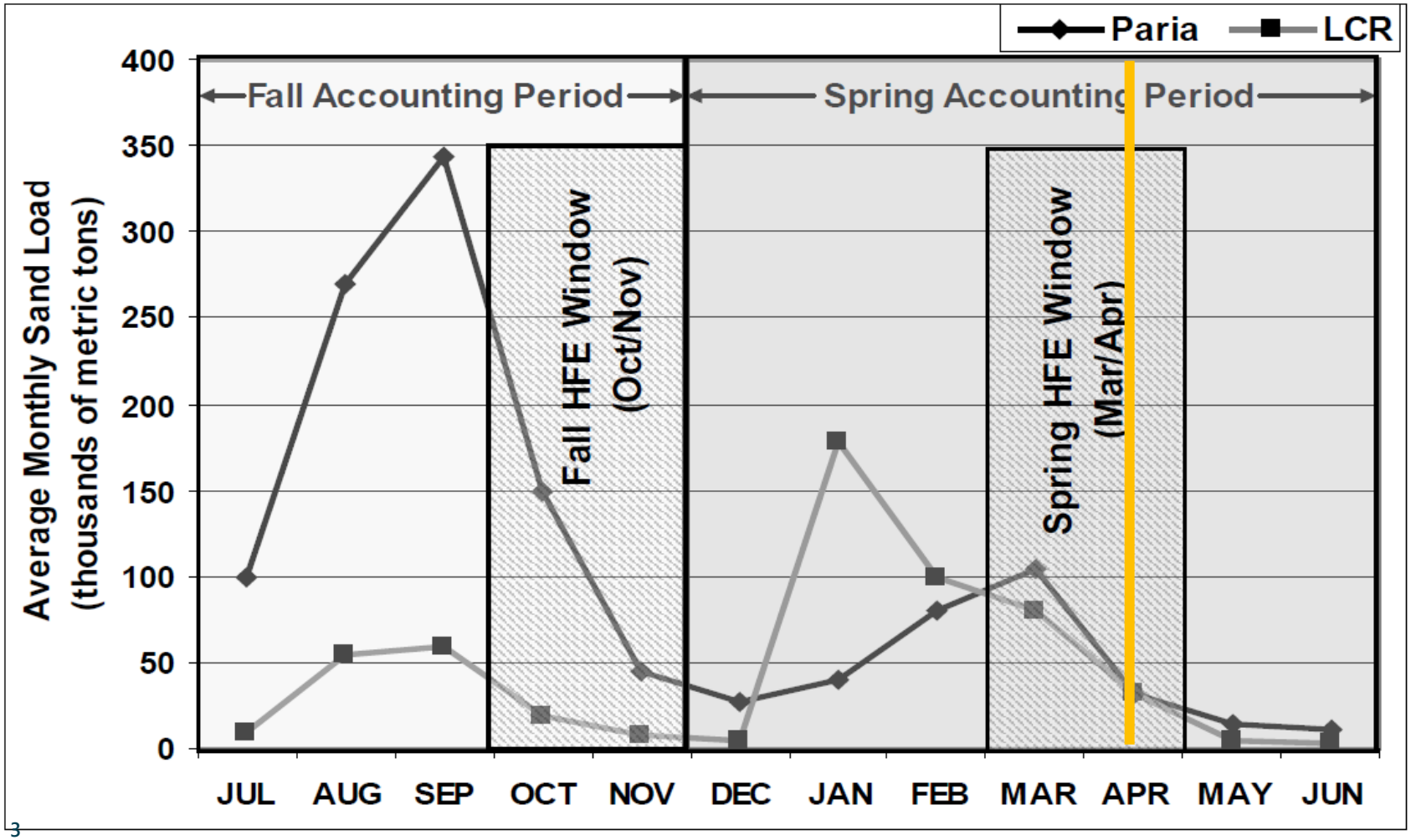
April 11, 2023

LTEMP ROD – Spring HFE Criteria

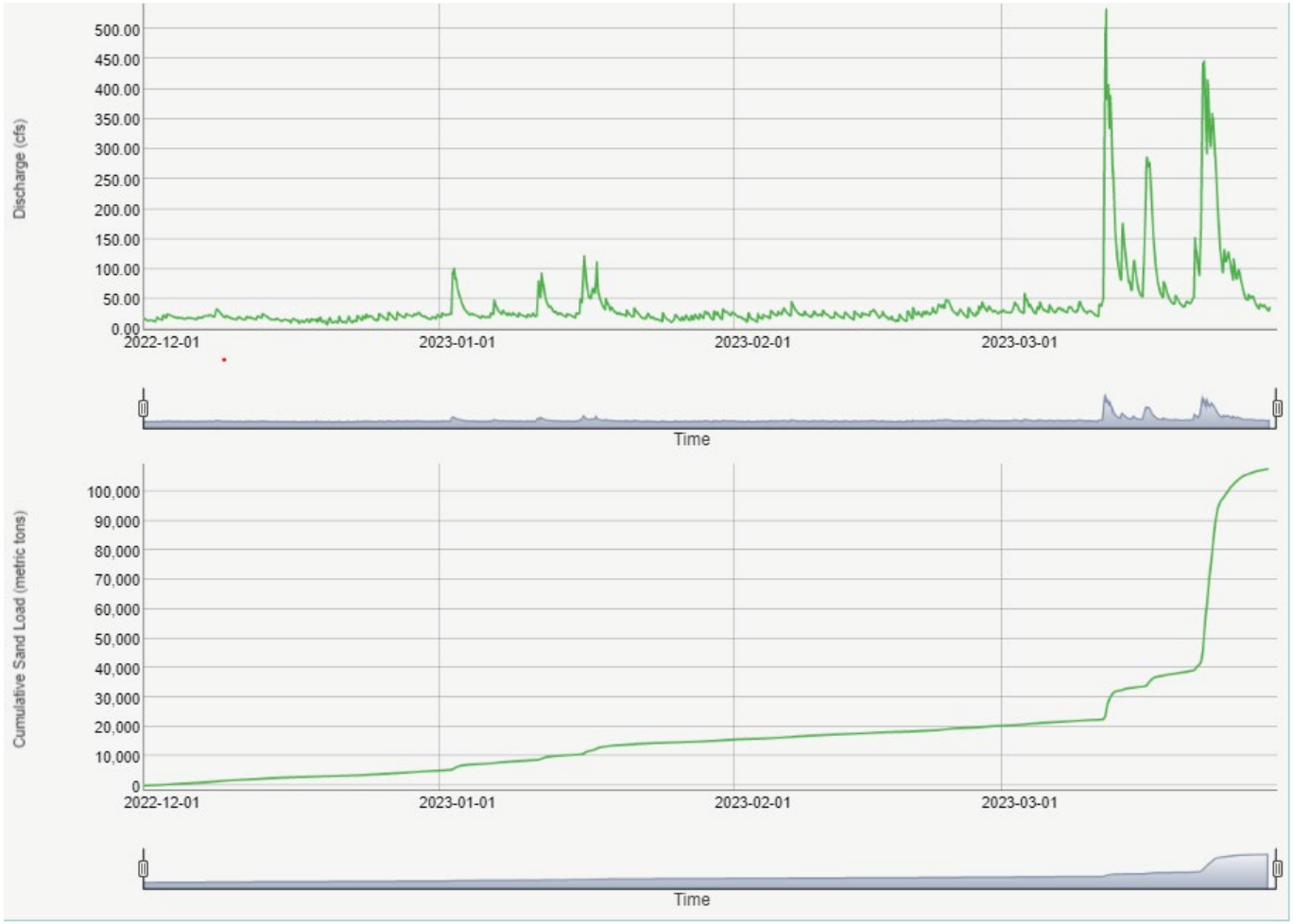
TABLE 4 Implementation Criteria for Experimental Treatments of Alternative D

Experimental Treatment	Trigger[a] and Primary Objective	Replicates	Duration	Annual Implementation Considerations[b]	Long-Term Off-Ramp Conditions[c]	Action if Successful
Sediment-Related Experiments[d]						
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

HFE Accounting & Implementation Windows



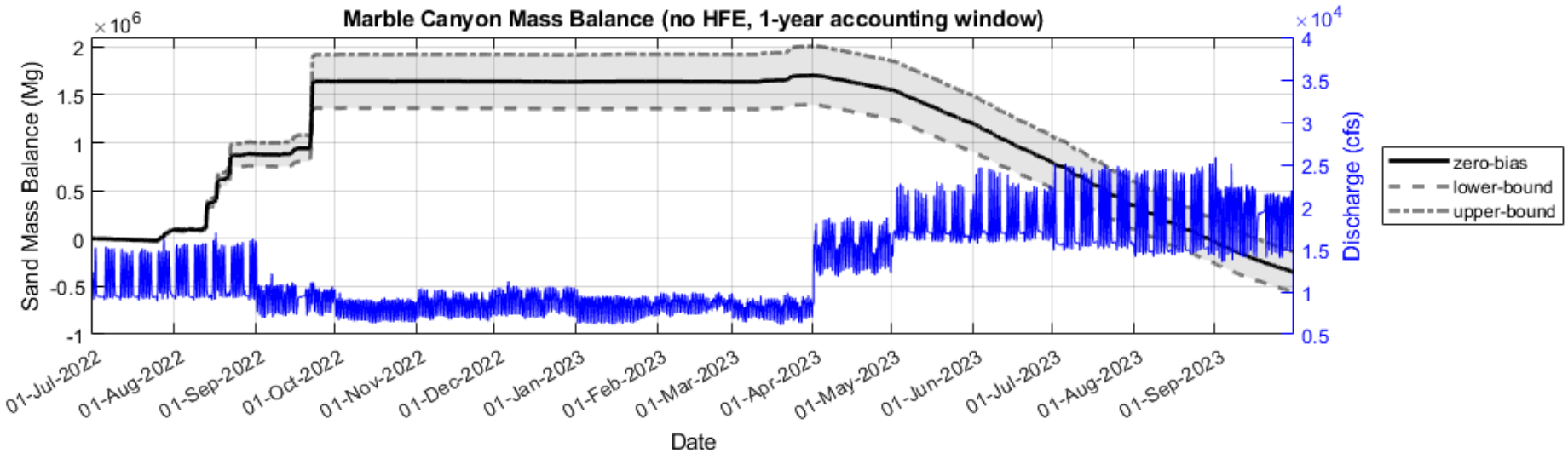
Paria River Discharge & Sand Inputs



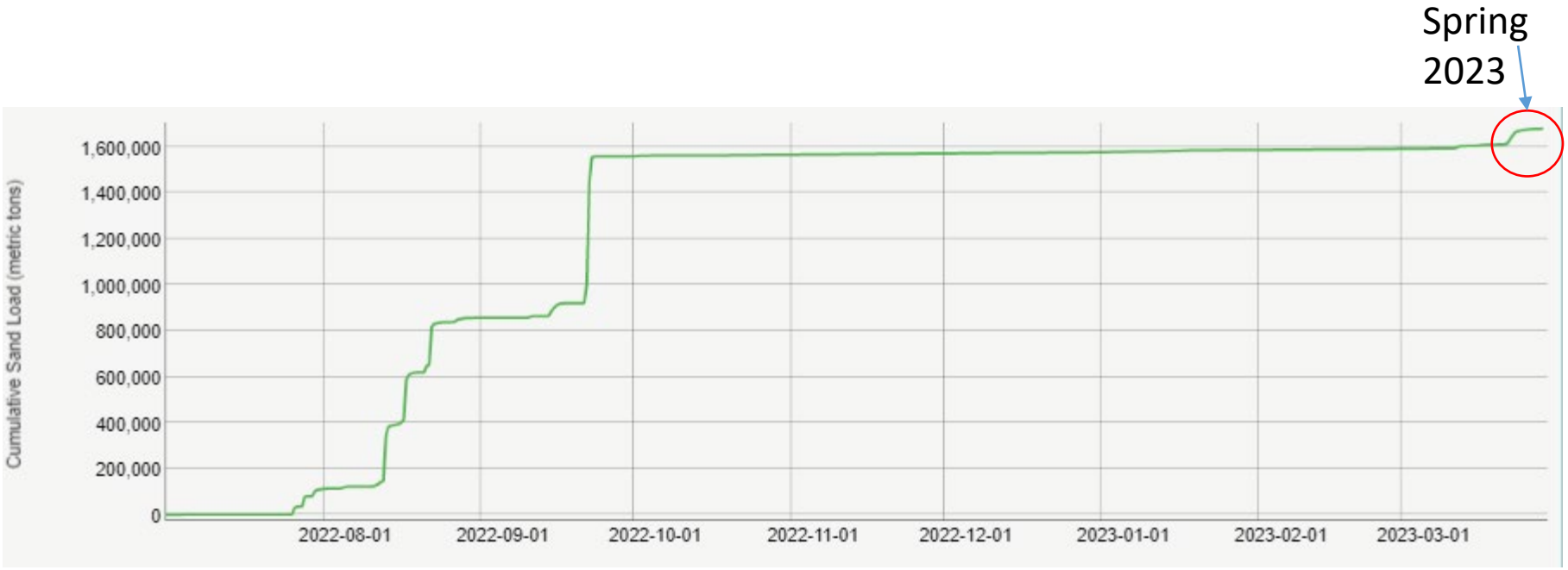
200,000 -500,000 more metric tons of sediment anticipated with Paria runoff.

No HFE triggered

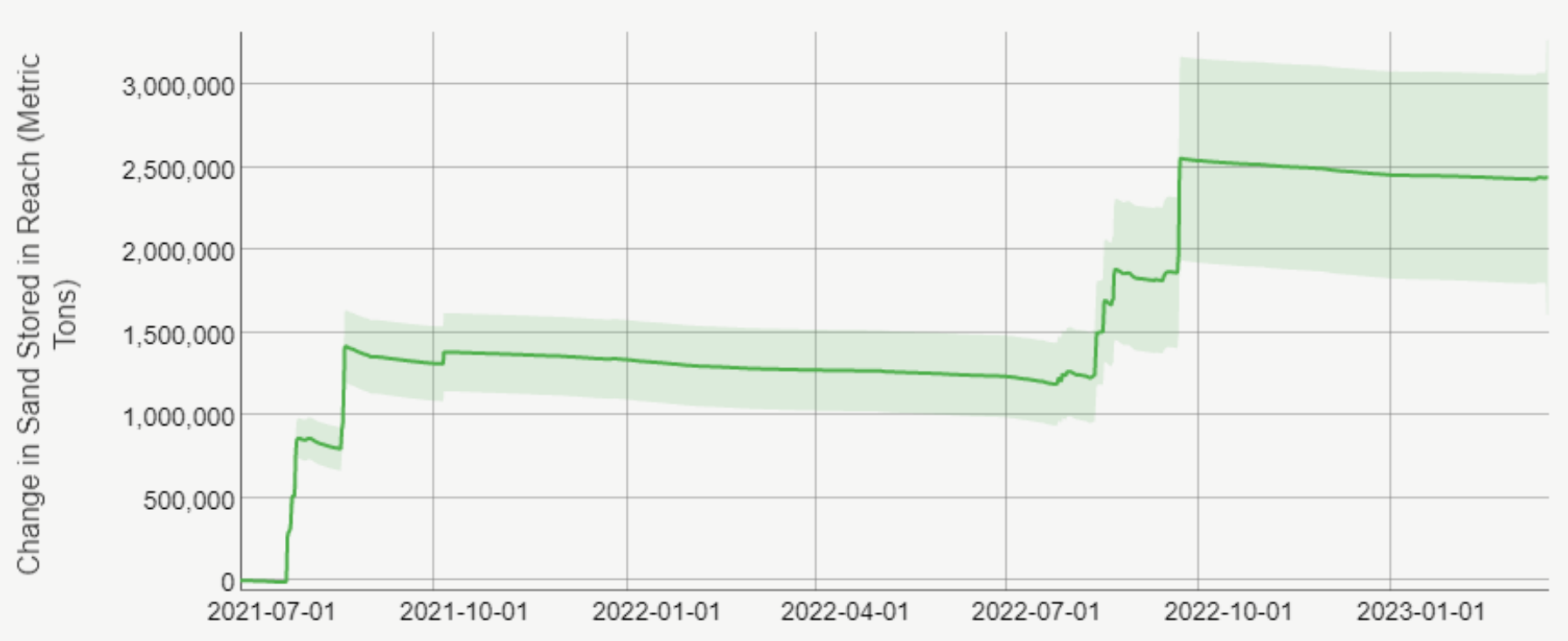
- **Owing to high April-June volumes, which must be accounted for in the sand budget model.**
- **Likely would have triggered a spring HFE with a 7.0 maf year.**



Sand Load since 7/1/2022

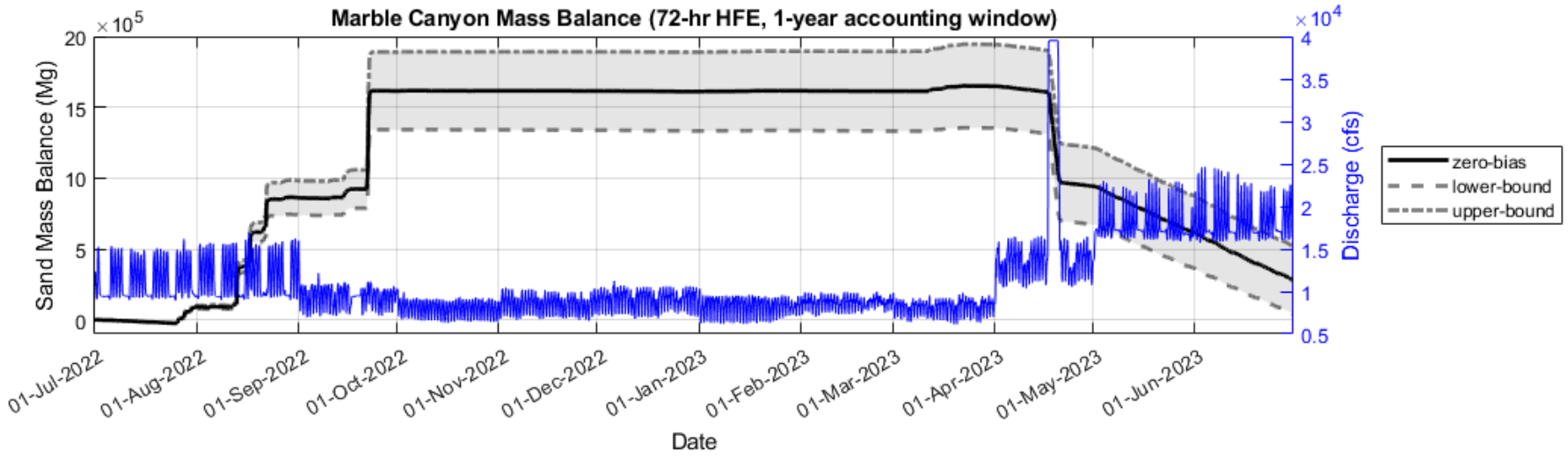


Upper Marble Mass Balance Since 2021



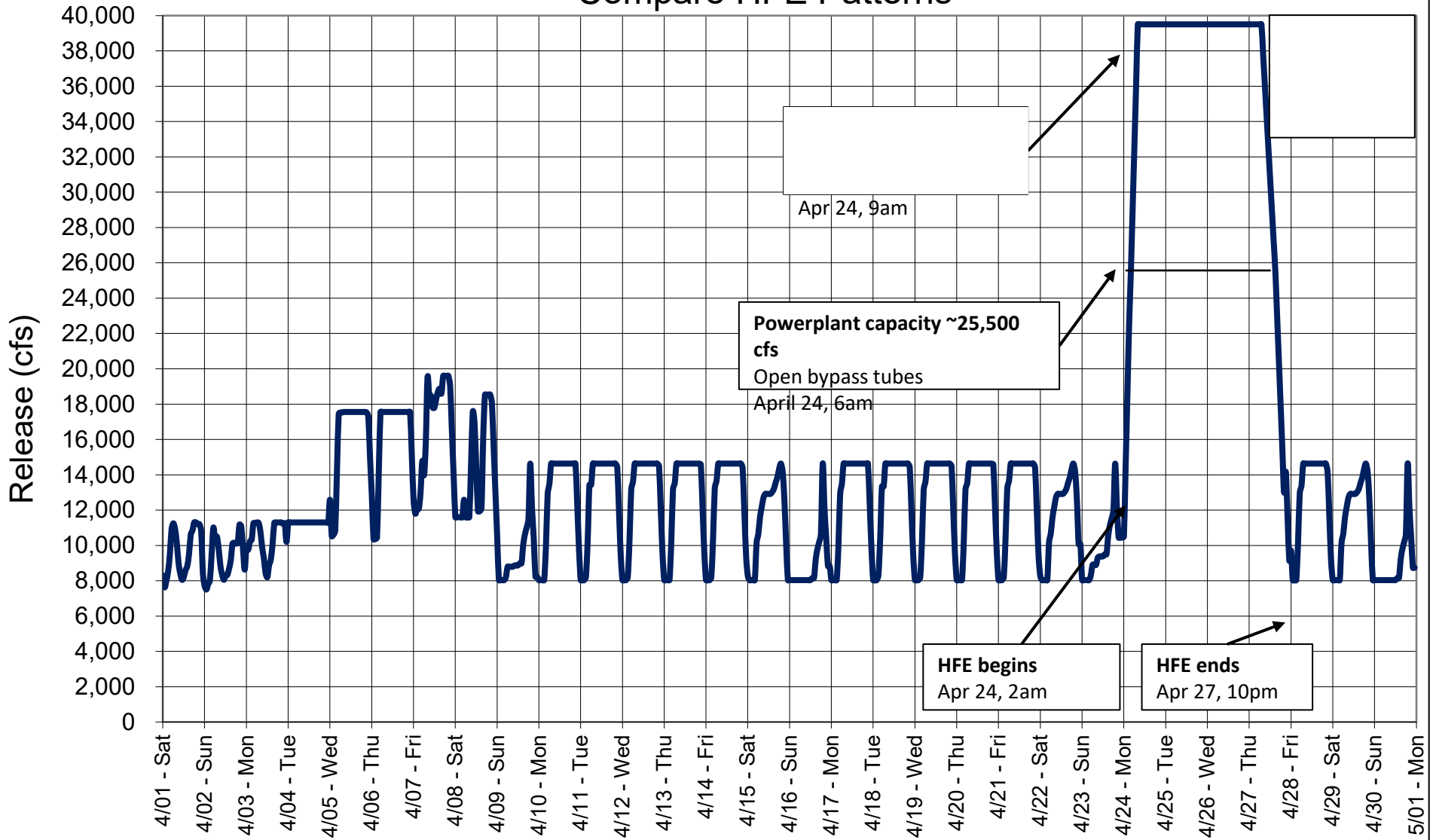
Large sand inputs to Upper Marble Canyon occurred in Fall 2021 and Fall 2022, followed by little export (most of the sand is still in Upper Marble Canyon).

72-hr w/ 1 year Accounting Window



Glen Canyon Dam Hourly Release Pattern April 2023

Compare HFE Patterns



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72-Hour HFE | Actual Hourly Releases | Lees Ferry Flow

Proposed Spring Experiment

- 8 unit + full bypass available
- 72 hr duration
  - Very close to an LTEMP trigger
  - Based on a 1-yr accounting window since most sediment is still in Marble Canyon from 2022.
  - Used a Supplemental Information Report for this Experiment because of exceptional conditions that exist.
- 39,500 cfs magnitude
- 270 kaf moved
- April 24-27, 2023
- Within-month experiment

Resources

- Smallmouth bass & other non-native fishes
  - 1) Entrainment
  - 2) Warmer summer releases
  - 3) Pushing fish downstream
- Hydropower - $1.4M
- Hydrology
- Water quality

Rest of WY23

- LTEMP menu also includes for consideration:
  - Bug Flows
  - TMFs
- Fall accounting window starts July 1, 2023.
  - High flows through remainder of WY 2023.


Send comments/feedback to:
Clarence Fullard
cfullard@usbr.gov
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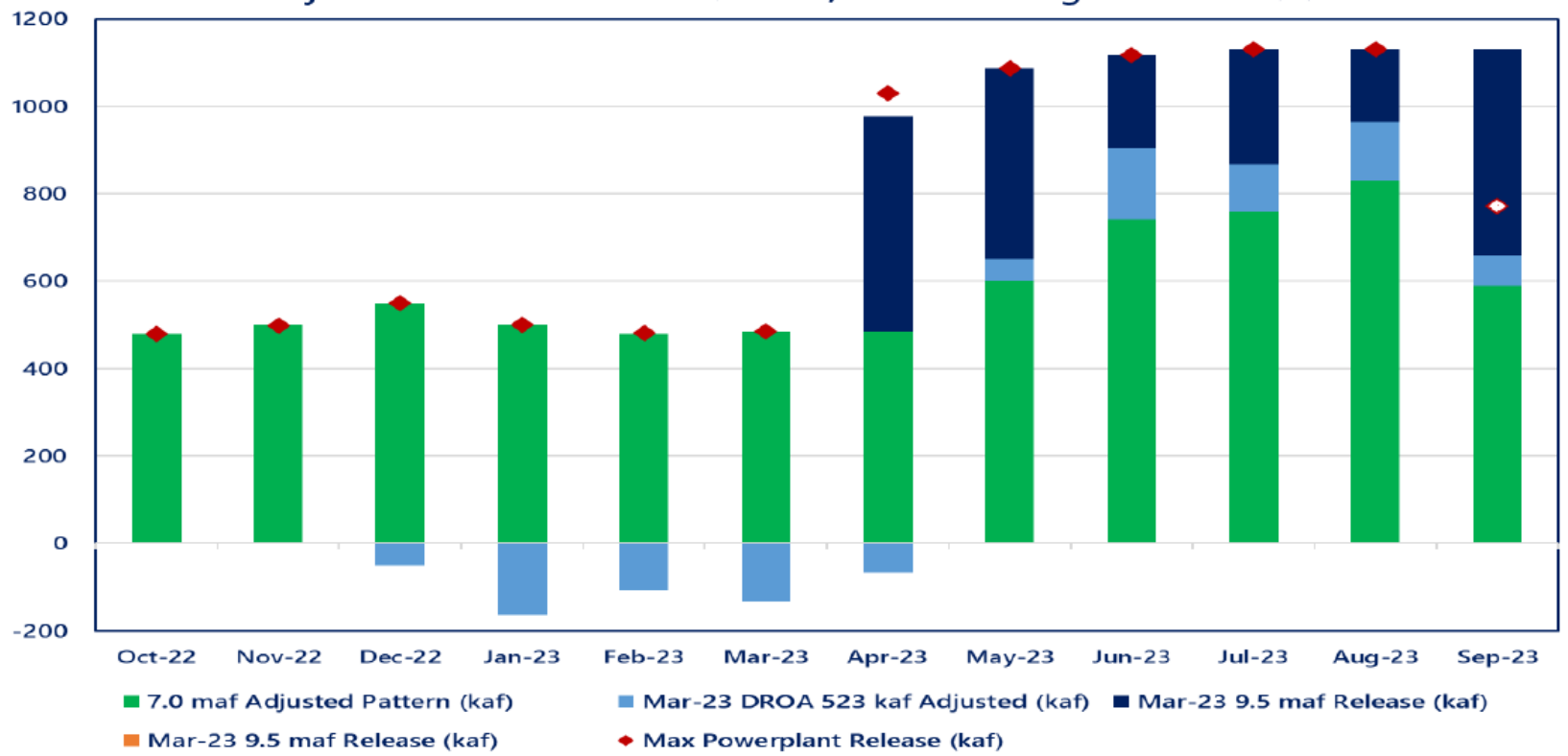
WY2023 Potential GCD Release of 9.5 maf

All scenarios are for discussion purposes to assist Reclamation in the GCD decision-making process.



WY2023	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Max Powerplant Release (kaf)	480	498	550	501	480	485	1,030	1,100	1,090	1,140	1,130	770	
7.0 maf LTEMP Pattern (kaf)	480	500	600	664	587	620	552	550	577	652	696		00
Mar23 24MS Official 7.83 maf Pattern (kaf)	480	498	550	501	480	485	552	770	905	925	966		5
Mar-23 9.0 maf Release (kaf)	480	498	550	501	480	485	850	1,036	1,090	1,130	1,130		0
Mar-23 9.5 maf Release (kaf)	480	498	550	501	480	485	910	1,088	1,118	1,130	1,130		0

= HFE

WY2023 Potential GCD Release of 9.5 maf

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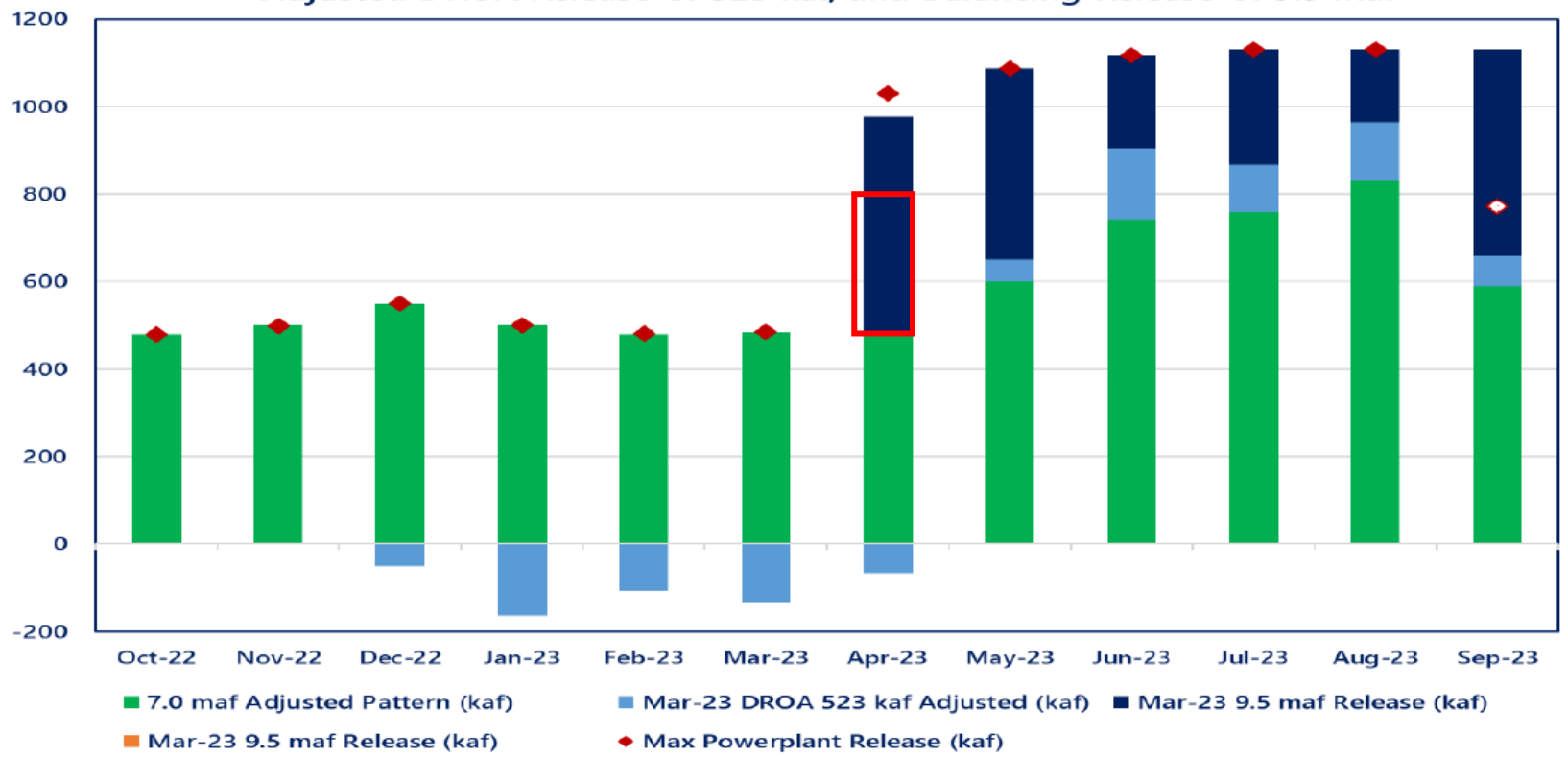

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