

# Technical Work Group Chair Report and Triennial Budget and Work Plan Process

Adaptive Management Work Group Meeting

March 6, 2019

Seth Shanahan

TWG Chairperson

# TWG Chair Report

# Meetings

- Past

- April 23-24, 2018
- June 25-26, 2018
- October 10, 2018 (webinar)

- Future

- March 12-14, 2019 (AR/TWG) in Phoenix, Arizona
- May 1, 2019 (webinar)
- June 11-12, 2019 in Phoenix, Arizona
- October 16, 2019 (webinar)

# Items Reported Elsewhere on AMWG Agenda

- Hydrology and operations
- Possible LTEMP experiments
- Proposed humpback chub downlisting
- Non-native aquatic species EA
- Lees Ferry rainbow trout stocking update
- Federal funding

**Glen Canyon Dam Adaptive Management Program  
Adaptive Management Work Group Meeting, March 6-7, 2019**  
Ballroom, Hilton Garden Inn, 7290 S. Price Road, Tempe, AZ 85283, 480-897-5100

**Webinar Information:** <https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e3bcd46e7c7424535ecb50b056a40ff9c>  
**Telephone:** 877-913-4721, Participant Passcode 3330168#

DRAFT AGENDA	
START TIME <sup>1</sup> (Duration)	<b>Wednesday, March 6, 2019</b> Topic and Presenter and Purpose <sup>2</sup>
9:30 (1:15)	<p><b>Welcome and Administrative:</b> Dr. Timothy R. Petty, Assistant Secretary of the Interior for Water and Science and AMWG Secretary's Designee</p> <ul style="list-style-type: none"> <li>▪ Introductions and determination of Quorum (13 members)</li> <li>▪ Approval of August 22-23, 2018 Meeting Minutes</li> <li>▪ Administration and Reclamation updates                             <ul style="list-style-type: none"> <li>○ Update on Principal Deputy Assistant Secretary for Water and Science position: Kiel Weaver</li> <li>○ FACA Review and AMWG Charter Update</li> <li>○ Drought Contingency Plan</li> <li>○ Department of the Interior Reorganization</li> <li>○ Update on the Upper Colorado Regional Director position: Brent Rhees</li> <li>○ Update on Adaptive Management Group Chief position</li> </ul> </li> <li>▪ Action Item Tracking Report (see last page of this agenda for the Action Item Tracking Report)</li> <li>▪ Progress on Nominations and Reappointments</li> </ul>
10:45 (:30)	<p><b>Basin Hydrology and Operations:</b> Heather Patno, Hydraulic Engineer, Bureau of Reclamation</p> <ul style="list-style-type: none"> <li>▪ Presentation (15 minutes)</li> <li>▪ Q&amp;A and discussion (15 minutes)</li> </ul> <p><u>Agenda item type:</u> Information item</p> <p><u>Purpose:</u> To increase understanding of water supply, forecasted hydrologic conditions, and projected reservoir conditions and operations for the current and upcoming water years.</p>
11:15 (:45)	<p><b>Upper Basin Dams: How Uncertainty in Water Volume Forecasts Correlates to Reservoir Operations:</b> Heather Patno, Hydraulic Engineer, Bureau of Reclamation</p>

# Updates Received

- Historic Preservation Plan
- Progress on water quality program science review panel recommendations
- Temperature control investigations



## Implementation of Recommendations

Some things GCMRC and BOR are starting to consider:

- Cross-check dissolved oxygen and temperature measurements made with Seabird
- pH calibration of Seabird prior to each sampling event to check for drift
- Increased vertical resolution of sampling at Wahweap
- Deployed new thermistor string
- Laboratory analyses now include Total Dissolved Phosphorus
- Freezing chlorophyll samples
- Improved data management and serving
- Purchasing benchtop pH meter for field pH measurements
- Adding phosphorus to sampling gages in tributaries

# Informative Presentations

- Riparian restoration work by the GCWC and GCNRA
- Caddisfly outbreak below Davis Dam
- Foodbase studies in Tapeats Creek and the Colorado River
- 21<sup>st</sup> century hot drought

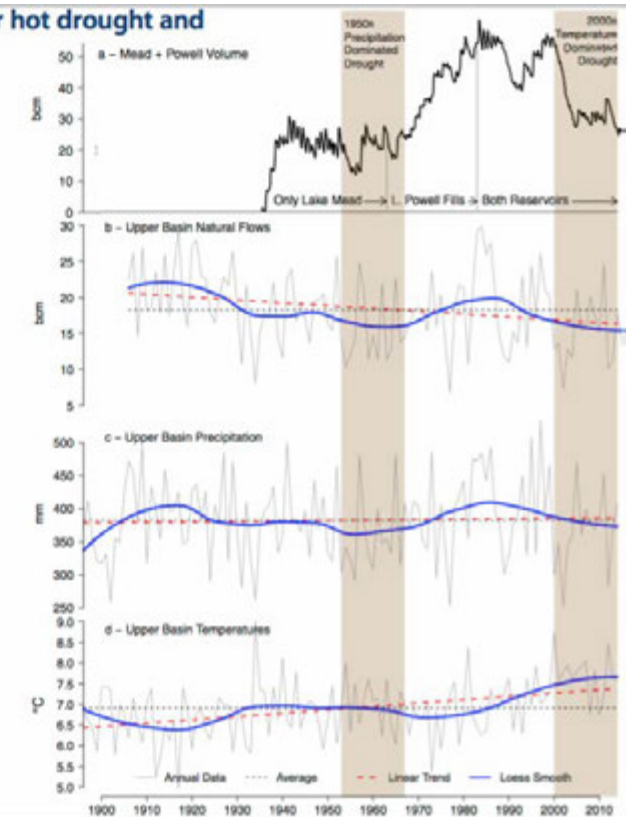
## The twenty-first century Colorado River hot drought and implications for the future

Bradley Udall<sup>1,2</sup> and Jonathan Overpeck<sup>2,3</sup>

AGU Water Resources Research

### Key Points:

- Record Colorado River flow reductions averaged 19.3% per year during 2000–2014. One-third or more of the decline was likely due to warming
- Unabated greenhouse gas emissions will lead to continued substantial warming, translating to twenty-first century flow reductions of 35% or more
- More precipitation can reduce the flow loss, but lack of increase to date and large megadrought threat, reinforce risk of large flow loss



# Experimentation

- Fall HFE decision making
- HFE experimental design discussions
- Spring HFE triggering frequency
- Bug flow preliminary results
- Aquatic foodbase research and enhancement opportunities
- LTEMP tools and methods

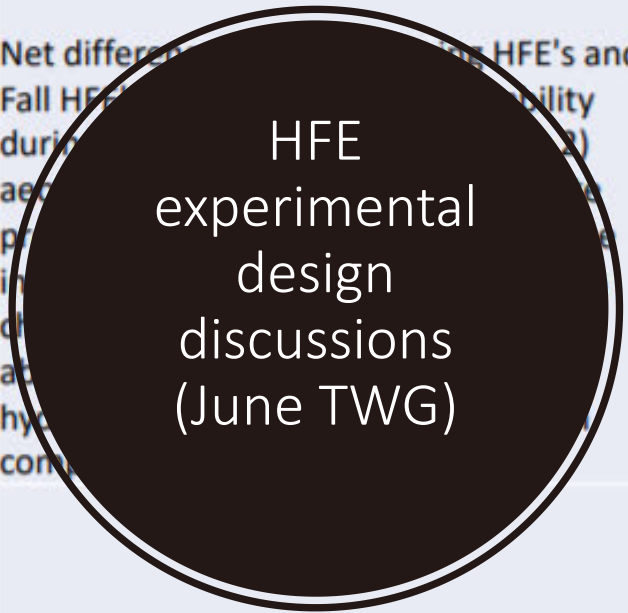
# Reminder

- TWG Standing Responsibilities
  - “to consult with GCMRC in developing criteria and standards for monitoring and research programs”
  - “develop resource management questions for the design of monitoring and research”



The purpose of this table is organize and track the Technical Work Group's input on High Flow Experiment (HFE) designs or design elements. This table is intended to be used as a discussion aide, helpful in answering an overarching research management question: How can HFE designs be optimized to achieve resource benefits?

Design or design element	Authorization Status <sup>1</sup>	Suggester(s)	Research management question(s)	Monitoring criteria and standards
Conduct sediment-triggered HFE's in June (i.e., the highest discharge month in the pre-dam record)	Proposed	Jim		
Modify the sediment accounting window (including accounting for any unused sand) to trigger more Spring HFE's in lieu of implementing Fall HFE's	Proposed	Jim/Larry/Shane/Craig/Clayton	Are there ecological and functional benefits of combining the sediment accounting periods and HFE windows to allow for Spring HFEs using fall sediment inputs?	Net difference between Spring HFE's and Fall HFE's (Sediment availability during HFE's) aer... in... di... at... hy... com...
Conduct sediment-triggered HFE's below the maximum hydropower generating capacity	Authorized	Jim		



# LTEMP Tools and Methods

Tool to Assess Problem etc.

Status and Trend Symbol Set

Resource Status	Trend in Status	Confidence in Status & Trend Assessments	Strength of Effect
	↑ Condition is Improving		High
	↔ Condition Warrants Moderate Concern		Medium
	↓ Condition is Deteriorating		Low
			Weak Effect
			Strength of Effect Unknown
			Direction of Effect Unknown

**Monitoring metrics needed**

Drivers and Constraints AND LTEMP Experimental and M-

Method for Evaluation etc.

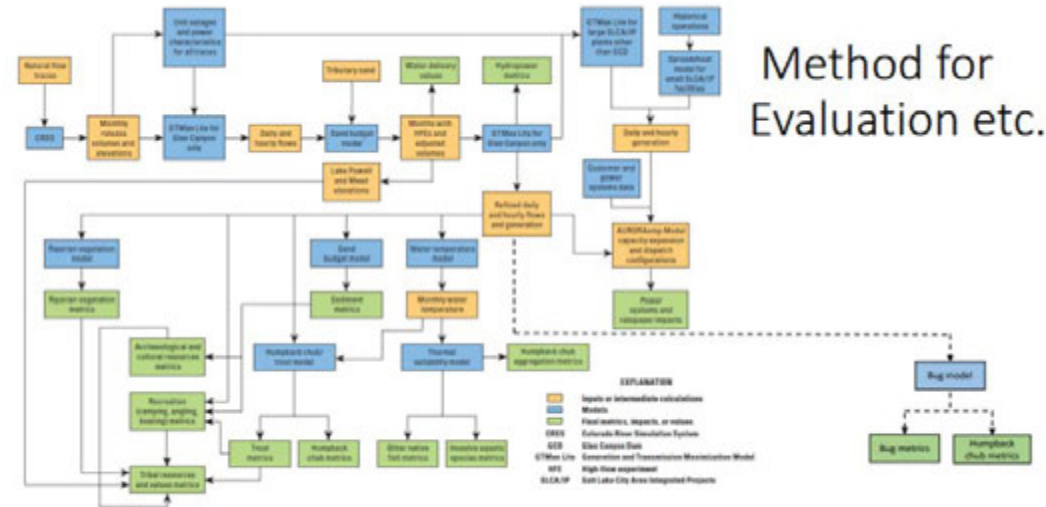
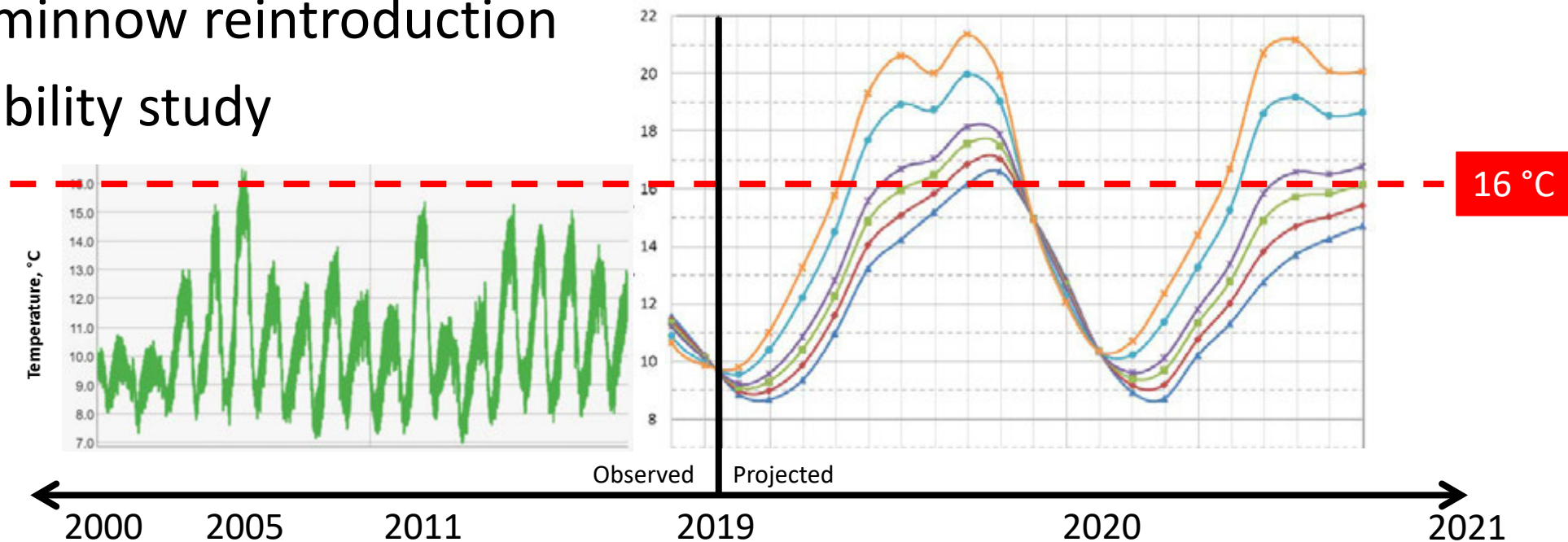


Figure 2. Model flow for the analysis of the Long-Term Experimental and Management Plan long-term strategies against the performance metrics.

# Topics for Future Meetings

- Budget expenditures report
- Consideration of potential changes to the Triennial Work Plan – Year 3
- Experimental planning and discussion for 2019 and beyond
- Pikeminnow reintroduction feasibility study

Col. Riv.  
at Lees Ferry  
(green line  
both graphs)



# Triennial Budget and Work Plan Process

# Background

- May 6, 2010 – AMWG approves biennial budget, work plan and hydrograph process (BWP) to replace annual process
- May 7, 2014 – Sec. Designee memo directs revision of BWP to TWP
- July 8, 2016 – Sec. Designee reaffirms direction to revise BWP to TWP
- October 19, 2016 – TWG approves TWP process by consensus

“The TWG has reviewed the Triennial Budget and Work Plan Process as required by the Assistant Secretary for Water and Science (May 7, 2014), and recommends that the AMWG approve the document, as revised at the October 18, 2016, TWG meeting as the GCDAMP budget guidance.”

# Primary Changes from BWP to TWP

## **Minor**

- Editorial updates
- Fine tuning process after a few budget cycles, roles etc.
- Solidified Annual Reporting Meeting as a key component
- Removed mid-year budget reporting
- Removed the hydrograph process

## **Major**

- Move to TWP from BWP
- Revised section 2.7 to include year 2 review and revisions
- Funding source identified, link projects to dam operations

# Technical Work Plan

Month	Year-1 (2017) (development of TWP)	Year-2 (2018)
December (year prior)	GCMRC and Reclamation produces annual project reports document for GCDAMP review.	
January	Annual reporting meeting and information synthesis (2 days) followed by 1-day TWG meeting to review budget and provide initial guidance to GCMRC and Reclamation. TWG reviews progress in addressing Information Needs and research accomplishments.	Annual reporting meeting (1-2 days) followed by 1-day TWG meeting with a primary emphasis on reporting results/findings/scientific advances on previous work plan.
February	GCMRC meets with tribes and DOI agencies. GCMRC follow-up with BAHG on priorities and areas of emphasis on TWP. GCMRC meets with cooperators to develop projects. AMWG meeting to discuss initial priorities. DOI and Federal family input.	
March	GCMRC and Reclamation will develop an initial TWP based on DOI priorities and input from scientists, the TWG, and DOI/DOE family. Initial TWP presented to DOI and Secretary's Designee.	
April	GCMRC meets with tribes and DOI agencies. April TWG meeting to consider draft TWP, including anticipated funding sources. Unresolved issues or conflicting priorities will be resolved by DOI in consultation with the DOI Family. GCMRC begins development of second draft TWP.	BAHG and TWG considers potential changes to the Fiscal Year 2 TWP based on criteria in section 2.7.
May	GCMRC and Reclamation provide a second draft TWP to the BAHG, Science Advisors, DOI agencies, and tribes for their review and comment. GCMRC meets with tribes, BAHG, to get input on TWP. GCMRC develops third draft of TWP.	
June	GCMRC and Reclamation finish third draft for review. TWG meets to provide input on the draft GCMRC and Reclamation TWP and provide a recommendation to the AMWG.	TWG recommends Fiscal Year 2 (2019) budget of TWP to AMWG.
July	GCMRC and Reclamation provide a final draft TWP to the AMWG for their review.	
August	AMWG meets to provide input on the GCMRC and Reclamation draft TWP and provide a recommendation to the SOI.	AMWG recommends Fiscal Year 2 (2019) budget of TWP to SOI.
September	SOI reviews the budget and work plan recommendation from AMWG.	
October 1	Fiscal Year 1 begins under the TWP guidance.	Fiscal Year 2 begins under the TWP guidance.
November 1	Consumer Price Index becomes available.	
Late November	Science and management meeting with DOI and cooperators.	Science and management meeting with DOI and cooperators.
December	Budget is finalized. USGS produces GCMRC annual project reports document for prior year work.	GCMRC produces annual project reports document.

# Technical Work Plan cont

Month	Year-3 (2019)	Year-4 (2020)
January	Annual reporting meeting and information synthesis (2 days) followed by 1-day TWG meeting to review initial results and findings of TWP. Potential TWP changes may be identified.	Process starts again under year 1.
February	BAHG/agencies/tribes meetings to consider mid-work plan adjustments to TWP, February through March.	
March		
April	Consider mid-work plan adjustments at TWG meeting. BAHG and TWG considers potential changes to the Fiscal Year 3 TWP based on criteria in section 2.7.	
May		
June	TWG considers and recommends mid-work plan adjustments to TWP and a recommendation for Fiscal Year 3 (2017) budget.	
July		
August	AMWG meets and considers mid-work plan adjustments to TWP recommended by TWG and recommends Fiscal Year 3 (2020) budget to the SOI.	
September		
October 1	Fiscal Year 3 begins under the TWP guidance.	
November 1	Consumer Price Index becomes available.	
Late November	Science and management meeting with DOI and cooperators. New TWP development meeting within DOI.	
December	USGS produces GCMRC annual project reports document for prior year work.	