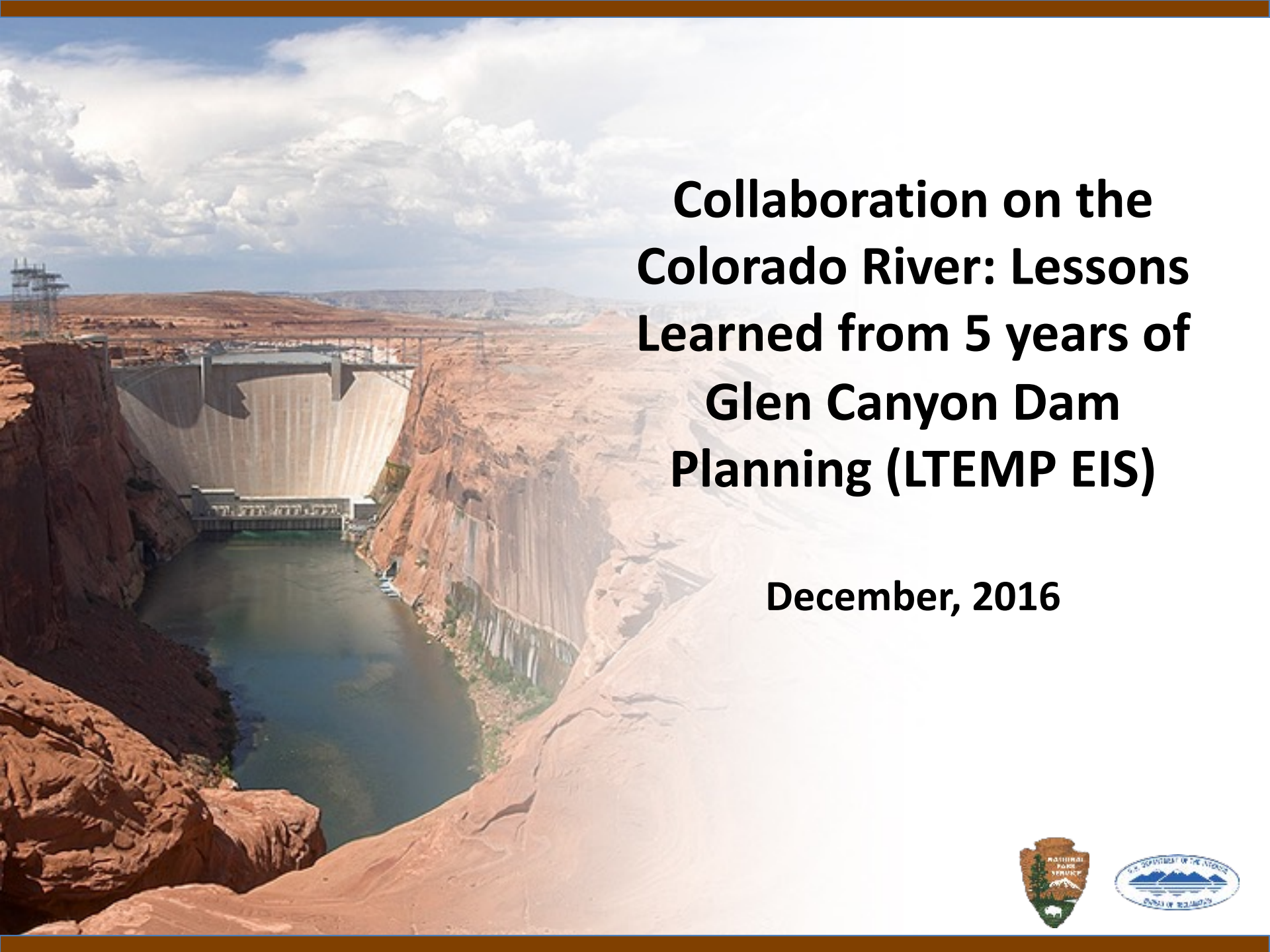


Collaboration on the Colorado River: Lessons Learned from 5 years of Glen Canyon Dam Planning (LTEMP EIS)

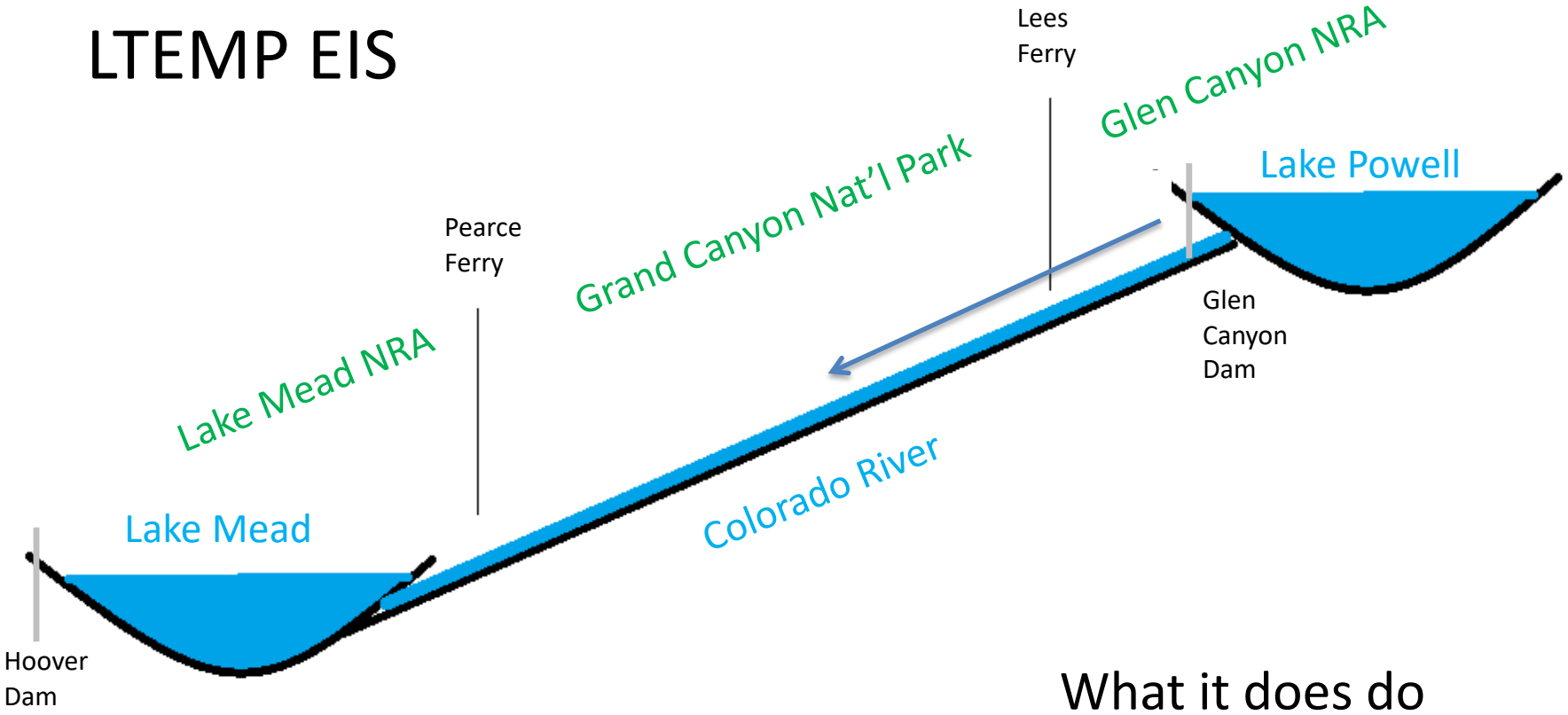
December, 2016

Glen Canyon Dam
Long-Term Experimental and Management Plan (LTEMP) Environmental Impact Statement (EIS)

- **Proposed action:** Develop and implement a structured, long-term experimental and management plan for operations of Glen Canyon Dam

- **Purpose of the proposed action:** Provide a framework for adaptively managing Glen Canyon Dam operations and other management and experimental actions over the next 20 years consistent with the Grand Canyon Protection Act and other provisions of applicable federal law

LTEMP EIS



What it does do

- Considers Re-operating the dam
- Monthly, daily, hourly releases

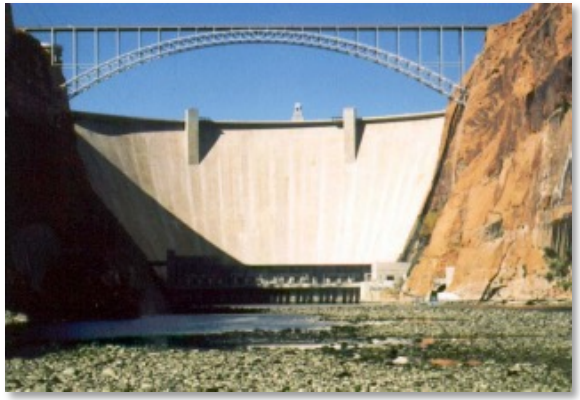
What it doesn't do

- Does not change annual water volume that moves between Lake Powell and Lake Mead

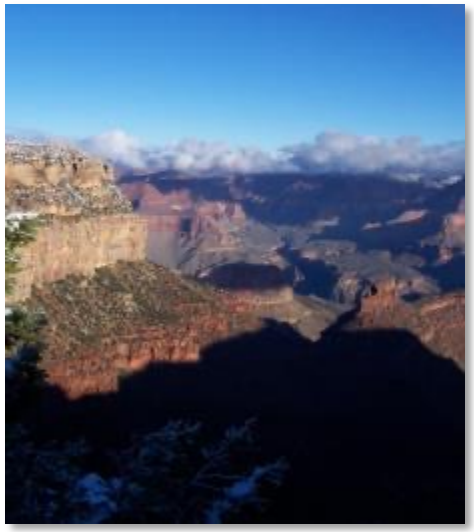
Grand Canyon Protection Act (1992)

- Requires the operation of Glen Canyon Dam in a manner to:
  - Protect, mitigate adverse impacts to, and improve the values for which the Grand Canyon National Park and Glen Canyon National Recreation Area were established including natural and cultural resources and visitor use
  - Comply with water delivery laws and requirements
- Requires long-term scientific monitoring and research

LTEMP has been a Joint Lead Process



- Bureau of Reclamation operates Glen Canyon Dam
- National Park Service manages Grand Canyon National Park and Glen Canyon and Lake Mead National Recreation Areas



- Wasn't always easy
- We discovered each others' strengths and differences
- The relationship evolved and strengthened
- Advantage to having different perspectives "inside the tent"

Federal Agencies Involved

- **Bureau of Reclamation** – operates Glen Canyon Dam – co lead on LTEMP EIS, lead on ESA consultation and cultural/106 consultation
- **National Park Service** – manages Grand Canyon National Park and Glen Canyon and Lake Mead National Recreation Areas – co lead on LTEMP
- **Argonne National Laboratory** – team that wrote the LTEMP EIS analysis in coordination with DOI staff
- **US Fish and Wildlife Service** – Endangered Species – determines the final conservation measures in a biological opinion (BO)
- **USGS – Grand Canyon Research and Monitoring Center** (GCMRC) – team of scientists studying sediment, fish and other resource issues below the dam

Cooperating Agencies

- Arizona Game and Fish Department
- Bureau of Indian Affairs
- Colorado River Commission of Nevada
- Colorado River Board of California
- The Hopi Tribe
- The Hualapai Tribe
- The Havasupai Tribe
- Kaibab Band of Paiute Indians
- The Navajo Nation
- The Pueblo of Zuni
- Salt River Project
- U.S. Fish and Wildlife Service
- Upper Colorado River Commission
- Utah Associated Municipal Power Systems
- Western Area Power Administration

GCD Adaptive Management Workgroup

- **DOI – Secretary's Designee**
- **Federal Agencies**
  - Bureau of Reclamation
  - Bureau of Indian Affairs
  - National Park Service
  - U.S. Fish and Wildlife Service
- **Indian Tribes**
  - Hopi Tribe
  - Hualapai Tribe
  - Havasupai Tribe
  - Navajo Nation
  - Pueblo of Zuni
  - San Juan Paiute Tribe
  - Southern Paiute Consortium
- **Seven Basin States**
  - Arizona
  - California
  - Colorado
  - Nevada
  - New Mexico
  - Wyoming
  - Utah
- **Federal Power Purchase Contractors**
  - Colorado River Energy Distributors Association
  - Utah Associated Municipal Power Systems

- **Environmental Groups**
  - National Parks Conservation Association
  - Grand Canyon Wildlands Council
- **Recreation Interests**
  - Federation of Fly Fishers/Trout Unlimited
  - Grand Canyon River Guides
- **Federal Power Purchase Contractors**
  - Colorado River Energy Distributors Association
  - Utah Associated Municipal Power Systems

How to approach coordination and collaboration?

- Levels of engagement with public, stakeholders, cooperators, tribes and government agencies
- Open and Transparent – lot of engagement
- Involvement of solicitors
- USFWS
- Tribes
- Water and Power
- AMWG FACA
- Scientists

The Role of Modeling

- Abundance of science in this system
  - GCMRC
- Quantitative vs. Qualitative
  - Hydrology
  - Humpback Chub/Rainbow Trout
  - Hydropower
  - Tribal Values
  - Cultural Resources
  - Sediment
  - Vegetation
  - Recreation
- Explicit Treatment of Unknowns
  - Dr. Mike Runge

	known	unknown
known	known knowns	known unknowns
unknown	unknown knowns	unknown unknowns

Glen Canyon Dam

Long-Term Experimental and Management Plan EIS

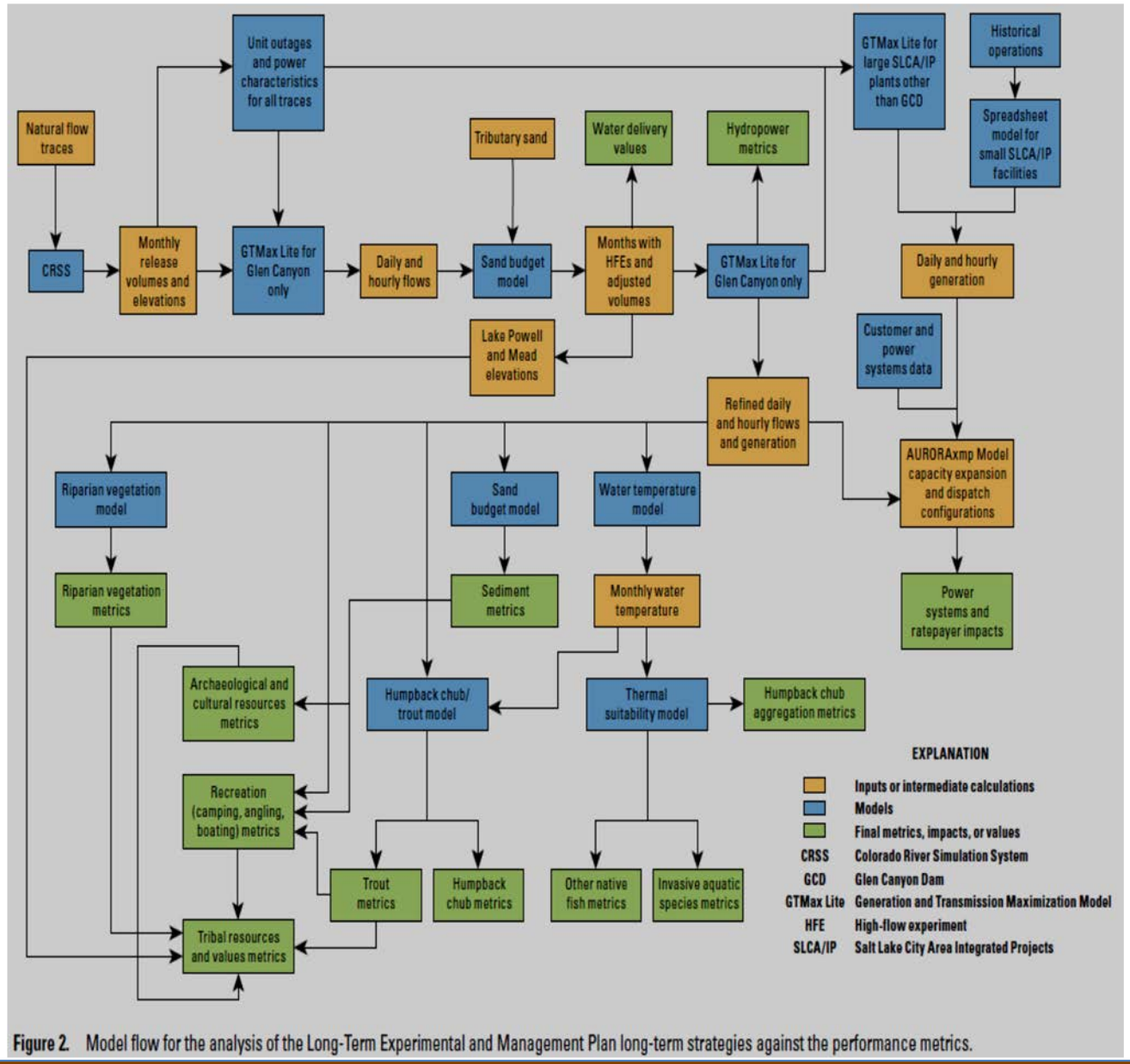
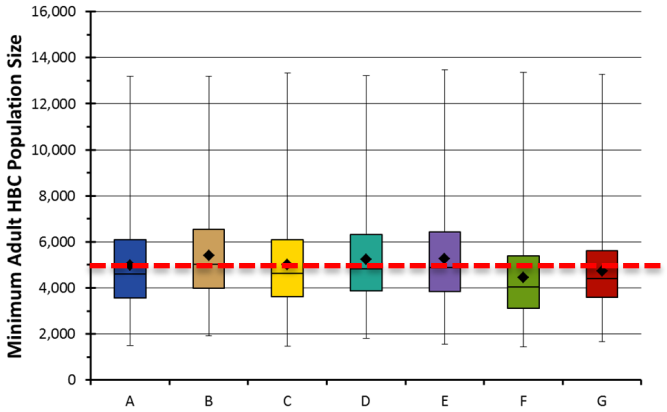
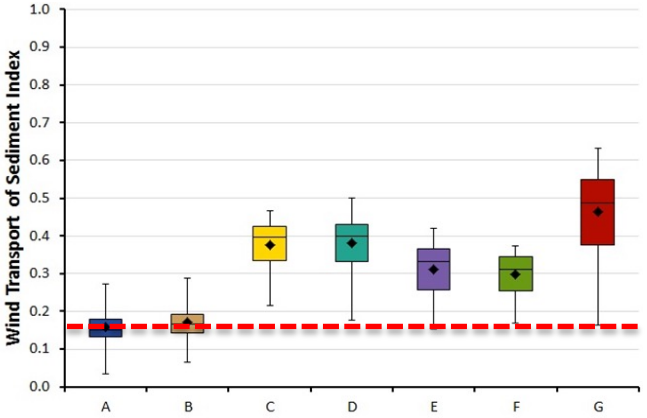


Figure 2. Model flow for the analysis of the Long-Term Experimental and Management Plan long-term strategies against the performance metrics.

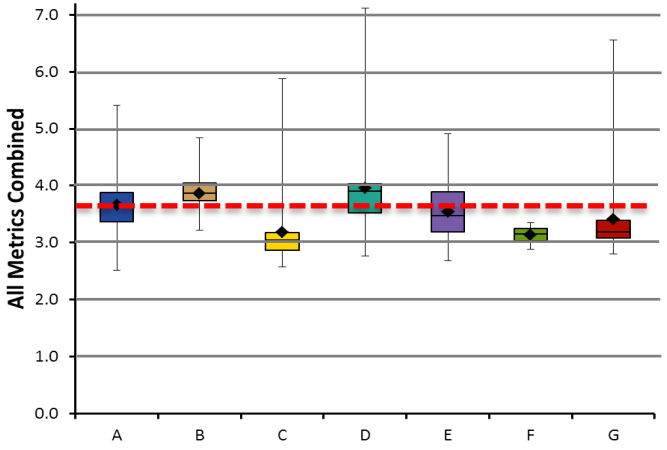
Minimum Adult Humpback Chub Population Size



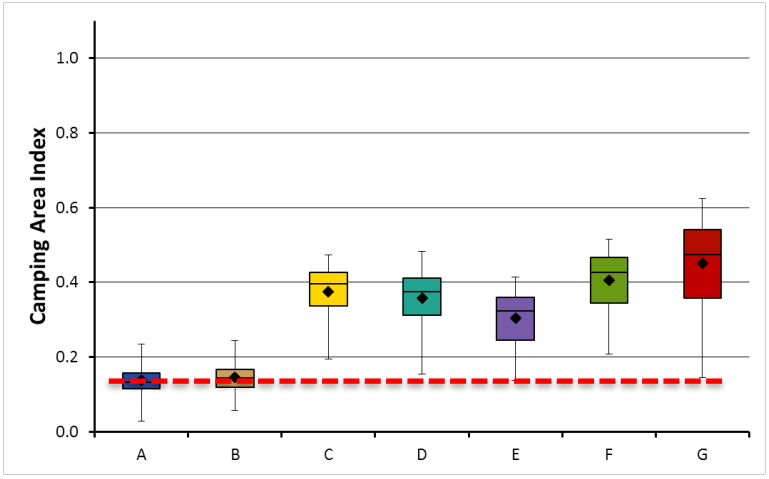
Cultural Resources—Wind Transport of Sand



Vegetation—Native Plants and Diversity



Recreation—Camping Area Index



The Role of Modeling

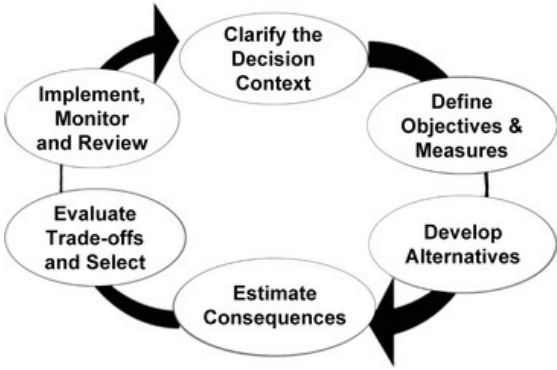
- The Wisdom of Larry Walkoviak
  - "All models are wrong and some are useful"

- How modeling helped with Collaboration and Agreement
  - Instead of black and white positions
  - Evaluations of the degrees of grey
  - Define boundaries

- Creation of a "Hybrid" Alternative
  - Built after the first round of modeling – took the best aspects of other alternatives created by DOI, Basin States and WAPA

Structured Decision Analysis

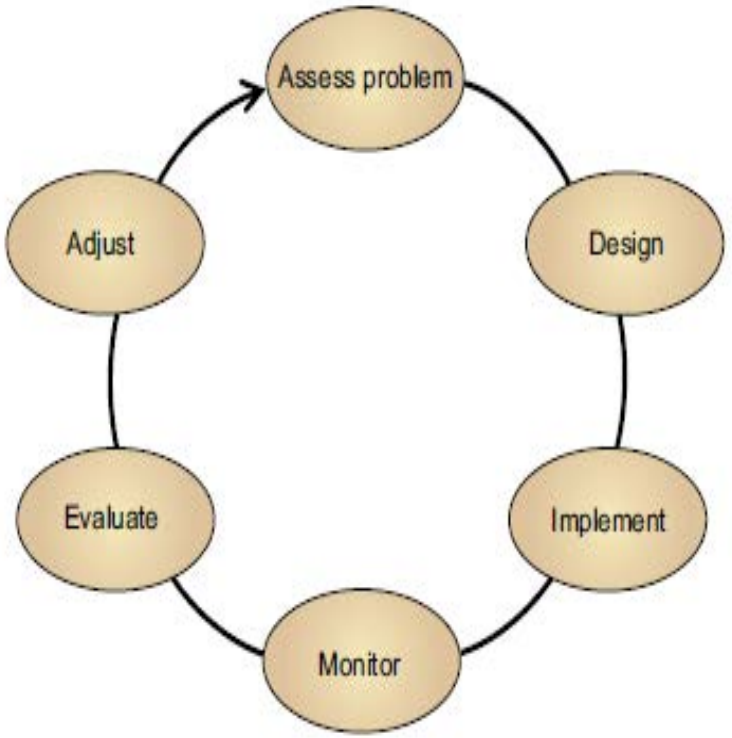
- Structured decision analysis is "*a general term for carefully organized analysis of problems in order to reach decisions that are focused clearly on achieving fundamental objectives*".
- Useful for focus on modeling and quantitative approaches
- Discussion and explicit treatment of unknowns
- Appropriate metrics and units
- How did SDA relate to collaboration?
- Concerns about how it would be used up front
- Was useful to find areas of potential agreement
- Ultimately it played a role, but not a decision "equation"
  - part of the considerations of:
  - public input, cooperator input, analysis and modeling



The "Magic" of Collaboration

- Small groups
- Frank conversations face-to-face
  - "It's the way we get things done on the Colorado River"
- Right timing and sequence of meetings
- Real attempts to understand the concerns of other stakeholders
- Respect of each stakeholder as a person – relationships
- Downside:
  - NOT FAST to be inclusive
  - But its worth it

Adaptive Management



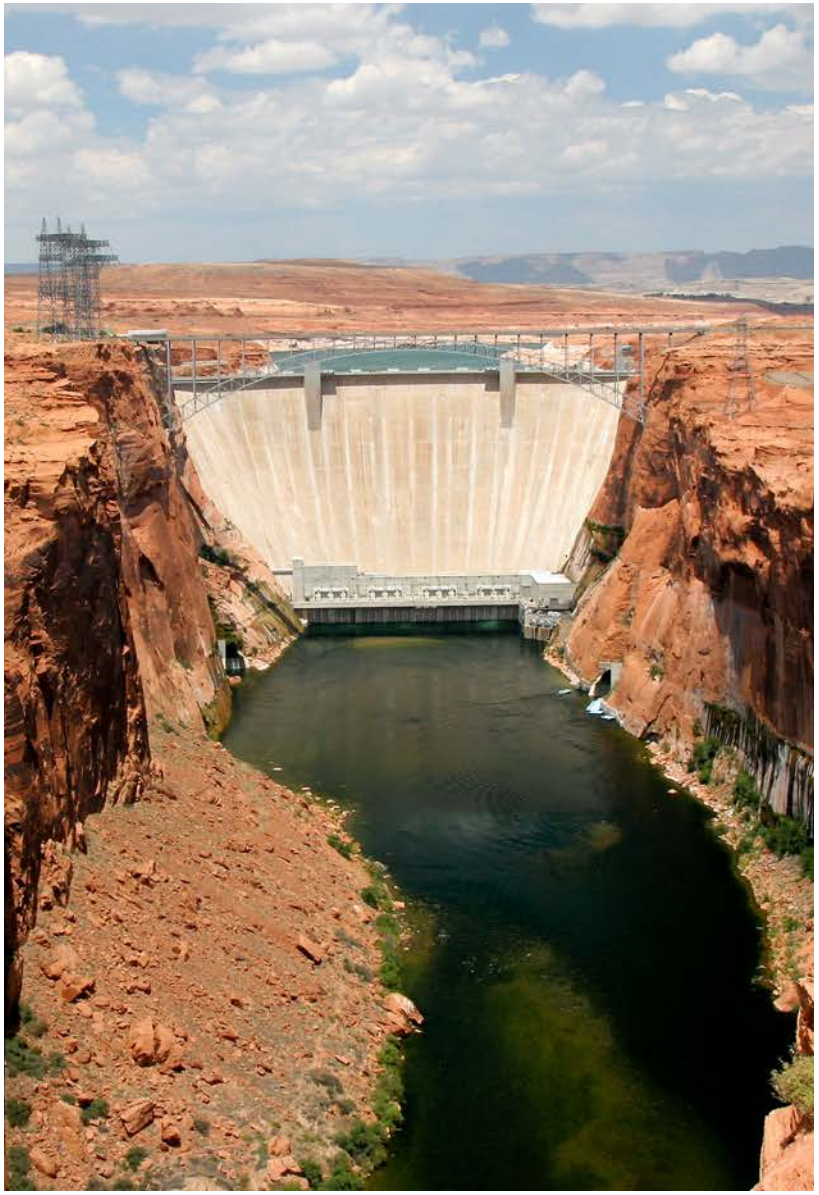
- Annual Experimental Recommendations
- Status of Resources Reporting
- Communication and Consultation
- Comprehensive Review after 10 years

Outcomes of the Collaboration on the LTEMP

- We addressed many issues throughout the process rather than waiting until the DEIS stage
- Outcomes were grounded in the science and based on multiple stakeholder perspectives
- We ended up with an FEIS with a thoroughly vetted and science-based alternative
- Support for selected alternative from a diverse group and got close to consensus
- Built in on-going collaboration and involvement in the adaptive management
- Time will tell…

Takeaways

- Involve solicitors early and often
- Involve diverse stakeholders early
- Different perspectives “inside the tent” to address concerns up front
- Develop relationships and understand stakeholder perspectives
- Allow frequent opportunities for stakeholder input
- Consider careful use of Structured Decision Analysis



Takeaways

- Model more – quantitative approaches create opportunities for consensus
- Define and explicitly model unknowns
- Adaptive management and communication process
- Small groups in between big groups to work through difficult issues
- Be open to new and innovative approaches
- Be prepared to take a long time