

GCDAMP Administrative History Project

Year Two Performance Report

Bureau of Reclamation CESU Cooperative Agreement

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Arizona State University

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Principle Investigator: Dr. Paul Hirt, ASU

Co-Investigators: Dr. Joshua MacFadyen, ASU

Dr. Mark Tebeau, ASU

Staff: Kristine Navarro-McElhaney (ASU Oral History Lab)

Research Assistant: Jennifer Sweeney

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## Scope of Work and Summary of Accomplishments in Year 2

(1 Oct 2017 – 30 Sept 2018)

**The Scope of Work** (SOW) in the Bureau of Reclamation contract for the second year of this GCDAMP administrative history project (pp. 6-7) stipulates that the ASU team would accomplish the following:

- Conduct and process ten oral history interviews, and prepare a list of additional interview subjects for years 3-4;
- Prepare an annotated bibliography of key literature related to the administrative history of the Adaptive Management Program;
- Prepare a chronological program summary;
- Begin uploading documents and files to the web archive and develop the user interface for the administrative history website;
- Design and compile materials for an orientation packet for new members of the GCDAMP.

### Accomplishments

We made excellent progress on the oral history interviews in year 2, completing eleven interviews, including every person on our priority list from the end of year 1: Bruce Babbitt, Anne Castle, Kerry Christensen, Kurt Dongoske, Dave Garrett, Leigh Kuwanwisiwma, Andre Potochnik, Jack Schmidt, Carl Walters, and Mike Yeatts. We also interviewed Jan Balsom, bringing the total for years 1 & 2 to fifteen interviews. All are founders or long-time participants in the adaptive management program and the GCMRC. They include policy makers and administrators, scientists from various disciplines, stakeholder representatives, federal and tribal agency representatives, and facilitators. All the interviews are available in the shared Dropbox folder. The Orton, Castle, and Babbitt interviews were videotaped at the ASU recording studio. All the rest were audio recorded in the field.

Annotations and transcripts: The most time-consuming tasks in preparing these oral history interviews for public access and research are (1) creating the “annotations” (a time-stamped, minute-by-minute subject index to facilitate topic searches on the audio or video file) for each interview, and (2) creating a verbatim time-stamped transcript for access to the interview as a PDF and for key word searches. Ten of the fifteen interviews were fully annotated by November 2018. The remaining five will be complete by the end of 2018. Both the interviews and the annotations are available on Dropbox. Year 2 interviewees that still need annotations include: Bruce Babbitt (61 min), Kurt

Dongoske (99 min), Leigh Kuwanwisiwima (99 min), Michael Yeatts (125 min), and Jan Balsom (134 min).

Verbatim transcripts are completed in several stages separately from the annotations. First, a rough transcript processed by digital voice recognition software is produced, then human editors make two consecutive passes through the interview comparing the audio with the transcript to make corrections. Finally, project director Hirt makes a final fact check. By November 2018 all interviews except the Babbitt interview had initial digital transcriptions completed. Only three interviews (Stevens, Orton, Barrett) had double-verified, corrected transcripts completed, so my team is working to accelerate completion of the remaining twelve transcripts by spring 2019.

Here is a link to a Dropbox folder where we store the oral history interviews and related documents including the recruitment script, interview questions, consent forms, etc.:  
[https://www.dropbox.com/sh/o1luou2q20bkwz3/AAD\\_ugRuHF7BtpOdZtkLTpjXa?dl=0](https://www.dropbox.com/sh/o1luou2q20bkwz3/AAD_ugRuHF7BtpOdZtkLTpjXa?dl=0)

Annotated bibliography: My team maintains and continuously updates a “key documents” bibliography central to the GCDAMP administrative history. The bibliography and the documents themselves are available in Dropbox and will eventually be uploaded to the project website. We ask each oral history interviewee to identify what they consider to be key events and key reports/documents in the program’s evolution. Suggestions from these interviews are then added to our key documents bibliography. This expanding list of publications, reports, legislation, and memos are not yet “annotated,” so this task is only half completed at the end of year two. The unannotated bibliography is attached to this report.

Chronological summary: With input from a variety of sources (Wiki timeline, previously prepared program summaries, and oral history interviews) my team has prepared an evolving chronological summary of the program’s history that will serve as the foundation for the administrative history narrative being prepared in year 3. The chronological summary is in Dropbox and attached to this report.

Orientation packet: During year 2 my team prepared a list of material contents that we believe should be included in an orientation packet for new members of the GCDAMP. The packet has not been formally assembled and prepared for distribution but it could be if requested. Unless requested otherwise, I plan to assemble the orientation packet once the administrative history narrative has been drafted and the website is further developed—by the end of year 3. The proposed list of contents for the orientation packet is attached to this report.

Website and archive: We made only modest progress on the website and archive. My two faculty colleagues responsible for that aspect of the project engaged Discovery Garden as the web hosting service, set up the architecture of the site, and trained a student worker to tag and upload archival content. Unfortunately, the student worker failed to fulfill his duties over the summer when most of the content was supposed to be uploaded. Plus, the primary faculty director of the website component, Dr. Joshua MacFadyen, left ASU in May to accept a Canada Research Chair position at the University of Prince Edward Island. My other website advisor, Dr. Mark Tebeau, does not have the available time to replace Dr. MacFadyen. The website wireframe is in place and some documents and text have been uploaded, but I need to recruit and hire new staff to further advance the website and archive.

Moreover, for financial and logistical reasons I have decided to end our web hosting service contract with Discovery Garden. Dr. MacFadyen was the lead in selecting this vendor and most familiar with its Islandora-based archival features, and we no longer have his expertise available to us for building the archive. While extremely robust, Discovery Garden's open source content management system is also complicated, difficult to master for nontechnical specialists, and unduly expensive to maintain at \$3,000 per year. Mark Tebeau and I are consulting with Clint Stone, webmaster at BoR in Salt Lake City, to identify a less expensive server host (possibly the ASU Library), and an alternative platform that will be simpler to build and easier to transfer to BoR for maintenance in the future if desired. I will need extra time in year 3 to make these adjustments and hire a new web developer, so I do not anticipate advancing this component of the project at the originally anticipated pace. Consequently, I request a change in scope of work and priorities for year 3 (see below).

### Requested Change in Scope of Work and Priorities for Year 3

The months of uncertainty regarding future funding of Colorado River Basin and GCDAMP programs during the summer of 2018 caused me to think strategically about what should be my priority in the coming year. Considering the importance of the oral history interviews, which are unique to this project, and the importance of completing a narrative of the program's history and accomplishments, I wish to prioritize those two aspects of the project in year 3 so that if funding is no longer available after next summer, I will at least be able to deliver all the promised oral histories and the administrative history narrative. If BoR approves this request, I would postpone the main development of the web archive to year 4 and focus year 3 activities instead on completing the remaining oral histories (15 more this year so that there are 30 total by Sept 2019), completing all the annotations and transcripts, writing the administrative history narrative (which was originally projected for year 4), and preparing the orientation packet. I do intend to resolve the current platform and server uncertainties of the website and archive during year 3 and get more content uploaded, but it will be a

lower priority than the oral histories and administrative history narrative. Since I am on sabbatical this year, I have the time to accelerate the collection of oral histories and the writing of the administrative history, plus I have the staff support for that (Jen Sweeney and Kristine Navarro). Please let me know if you support this request.

## Budget/Expenditures Summary for Year 2

Reclamation allocated \$50,000 for project expenses in year 2. In addition, there was a surplus of \$17,247 that rolled over from year 1. So, available project funds in year 2 totaled \$67,247. Total expenses in year 2 came to \$52,498. The remaining surplus of \$14,749 will roll over to year 3.

Attached to this report is a budget/expenditures spreadsheet prepared by my academic unit comparing the combined years 1 & 2 budgets to the combined years 1 & 2 expenses. Total salary, wage, fringe benefit, and web contract/consultant expenses came within 10% more or less of budgeted amounts. Travel expenses, at only 28% of budget, were the most at variance from projected costs and explain nearly all the budget surplus remaining at year end.

## Strategic Plan and Budget Projections for Year 3

### Oral History Interviews

As stated above, I would like to accelerate oral history collection in order to complete all 15 remaining oral history interviews in year 3. This will require spending more money than anticipated in salary for staff (Kristine Navarro) and wages for research assistants (Jen Sweeney, etc.), and possibly for travel. However, we have significant surpluses in travel and student wages left over from years 1 & 2, so the extra costs in year 3 should bring us more nearly in line with budgeted amounts. Any additional salary needed for faculty and staff to complete the 15 oral histories can be covered by the savings realized by the departure of Dr. MacFadyen from the project.

### Prospective Oral History Interview Subjects for Year 3

Based on feedback from the AMWG ad hoc administrative history committee, we have prepared the following list of 15 top priority interview subjects:

**Randy Peterson**

*Was the AMWG Program Manager for BoR in SLC. Retired.*

**Richard Begay**

*Navajo Nation member*

**Angelita Bullets** (suggested by Richard Begay)

*USFS; Kaibab Paiute Tribe member*

**Loretta Jackson** (suggested by Kerry Christensen)

*Hualapai Tribe*

**Lori Caramanian** (suggested by Mary Orton)

*Former Deputy Assistant Secretary for Water and Science at U.S. Department of the Interior.*

**Steve Carothers** (suggested by Andre Potochnik and others)

*SWCA, aquatic and terrestrial biologist. Had lots of research contracts with GCDAMP over the years.*

**William E. Davis** (suggested by Larry Stevens)

*Active in the transition period between GCES and LTEMP (GCDAMP?).*

**Randy Seaholm**

*Colorado Rep to AMWG/TWG for many years (associated with Colorado Water Conservation Board, Division of Natural Resources?)*

**Amy Heuselin**

*Founding member GCDAMP; BIA connection; advocated for tribes prior to their inclusion as AMWG stakeholders*

**Leslie James**

*Power contractor (CREDA) representative*

**Dennis Kubly**

*GCDAMP Program Manager*

**Ted Melis**

*GCMRC*

**Ed Norton**

*Grand Canyon Trust; essential to passage of GCPA*

**Don Ostler**

*Upper Basin States Representative*

**Rich Valdez** (Utah State University)

*Fisheries scientist.*

### Administrative History Narrative

The SOW indicates that we will complete a 20,000 word narrative history of the GCDAMP by the end of year 4 (Sept 2020). As I mentioned above and in my Year 1 Performance Report, I would instead like to write the administrative history during year 3 (this year) while I am on sabbatical. I will be the principle author with research and writing assistance from Jen Sweeney. To accomplish this while also accelerating the oral history component of the project that I manage, I will increase my amount of compensation from the budget during my sabbatical. The extra salary costs will be covered in part from the previous year's budget surplus and in part from the reduced expenses for the website/archive component of the project in year 3.

### Website and Archive

As explained above, my team and I plan to temporarily reduce our efforts on building the website and archive during year 3 in order to resolve issues related to the web hosting service, the choice of content management system, compatibility with BoR servers and security policies, and to hire and train a new web developer to replace the oversight and implementation functions that Joshua MacFadyen would have provided had he remained at ASU. We will prioritize oral history collection and the administrative history narrative in year 3 and return to a more focused effort on the website in year 4.



## KEY DOCUMENTS FOR GCDAMP ADMINISTRATIVE HISTORY

Updated 12/02/2018

**The following documents are located in the “Key Readings” folder in the GCDAMP Dropbox:**

### **Operations and Policy**

**1988** US DOI, Glen Canyon Environmental Studies: Executive Review Committee Final Report

**1990** Wegner, “A Brief History of the Glen Canyon Environmental Studies.” Electronic access at <https://www.nap.edu/read/1832/chapter/12>.

**1995** EIS on Glen Canyon Dam Operations (in a folder—this is a long, multi-file document)

**1996** ROD on Glen Canyon Dam Operations (PDF in sub-folder titled “Key Readings”)

**1997** AMWG Charter Original (PDF in sub-folder titled “Key Readings”)

**2001** GCDAMP Strategic Plan Final Draft

**2007** ROD Colorado River Interim Guidelines for Lower Basin Shortages

**2015** AMWG Charter Renewal (PDF in sub-folder titled “Key Readings”)

### **Adaptive Management**

**1986** Walters, Carl J. *Adaptive Management of Renewable Resources*. Not available electronically; for the IIASA overview report on this book with a foreword by C.S. Holling, see <http://pure.iiasa.ac.at/id/eprint/2775/1/ER-86-012.pdf>

**2005** Gloss, Lovich and Melis, “The State of the Colorado River Ecosystem in Grand Canyon.”

**2007** Lovich and Melis, “The State of the Colorado River Ecosystem in Grand Canyon: Lessons from 10 Years of Adaptive Ecosystems Management.”

**2010** Susskind, Camacho and Schenk, “Collaborative Planning and Adaptive Management in Glen Canyon: A Cautionary Tale.”

**2015** Melis, Walters and Korman, “Surprise and Opportunity for Learning in Grand Canyon: The Glen Canyon Dam Adaptive Management Program.”

## Science

**1974** Dolan, Howard and Gallenson, “Man’s Impact on the Colorado River in the Grand Canyon.”

**1976** Carothers and Aitchison, “An Ecological Survey of the Riparian Zone of the Colorado River Between Lees Ferry and Grand Wash Cliffs.”

**1980** Turner and Karpiscak, “Recent Vegetation Changes Along the Colorado River Between Glen Canyon Dam and Lake Mead, Arizona.”

**1981** Howard and Dolan, “Geomorphology of the Colorado River in the Grand Canyon.”

**1987** National Research Council, *River and Dam Management: A Review of the Bureau of Reclamation’s Glen Canyon Environmental Studies*.

**1998** Schmidt, Webb, Valdez, Marzolf and Stevens, “Science and Values in River Restoration in the Grand Canyon.”

**2000** Thompson and Potochnik, “Development of a Geomorphic Model to Predict Erosion of Pre-Dam Colorado River Terraces Containing Archaeological Resources.”

**2008** Pratson et al., “Timing and Patterns of Basin Infilling as Documented in Lake Powell During a Drought.”

### **The following large documents / books are not in Dropbox, but are available for download or viewing at the locations specified:**

Holling, C.S., ed. *Adaptive Environmental Assessment and Management*. International Series on Applied Systems Analysis. New York: John Wiley & Sons, 1978. Available for download at <http://pure.iiasa.ac.at/id/eprint/823/>.

National Research Council, *River and Dam Management: A Review of the Bureau of Reclamation’s Glen Canyon Environmental Studies* (Washington, DC: The National Academies Press, 1987). Download: <https://www.nap.edu/download/18926>.

National Research Council, *Colorado River Ecology and Dam Management: Proceedings of a Symposium May 24-25, 1990 Santa Fe, New Mexico* (Washington, DC: The National Academies Press, 1991). Download: <https://www.nap.edu/download/1832>.

National Research Council, *River Resource Management in the Grand Canyon*, Washington, DC: The National Academies Press, 1996). Download: <https://www.nap.edu/download/5148>.

Trinkle Jones, Anne, *A Cross Section of Grand Canyon Archeology : Excavations at Five Sites along the Colorado River*, Publications in Anthropology (Western

Archeological and Conservation Center (U.S.)) No. 28 (Tucson, Arizona: Western Archeological and Conservation Center, National Park Service, U.S. Dept. of the Interior, 1986). Download (authorization required for access):

<https://core.tdar.org/document/3956/a-cross-section-of-grand-canyon-archeology-excavations-at-five-sites-along-the-colorado-river>.

Webb, Robert H., John C. Schmidt, G. Richard Marzolf, Richard A. Valdez, eds. *The Controlled Flood in Grand Canyon*. Geophysical Monograph Series Vol. 110.

Washington, D.C.: American Geophysical Union, 1999. Electronic access at

<https://agupubs.onlinelibrary.wiley.com/doi/book/10.1029/GM110>.

Woodbury, Angus et al., "Ecological Studies of the Flora and Fauna in Glen Canyon," University of Utah Anthropological Papers 40, (1959): 1-229. Download (authorization required for access): <https://core.tdar.org/document/92630/ecological-studies-of-the-flora-and-fauna-in-glen-canyon>.

## CHRONOLOGICAL SUMMARY OF GCDAMP

1963	Glen Canyon Dam completed	
1973	Endangered Species Act passed	
1974	First lawsuit by river runners	First Lawsuit filed over Glen Canyon Dam operations by commercial raft operators contending that the disruption of normal flows was interfering with their ability to conduct river trips.
1975	Grand Canyon National Park Enlargement Act passed	
1978	U.S. Fish and Wildlife Service files jeopardy opinion on the effects of Glen Canyon Dam on endangered fish species	
1979	USBR proposes to upgrade Glen Canyon Dam's generators	Proposal to upgrade existing generators and add two new generators leads to push by environmental interests to require an environmental impact statement, which eventually led to the Glen Canyon Environmental Studies in 1982, followed by the EIS in 1995.
1982-1996	Glen Canyon Environmental Studies (GCES) initiated	GCES was initiated with a memo dated 6 December 1982 from Reclamation Commissioner Broadbent to the Regional Director. The stated purpose was to: "...see how the present flow patterns impact upon the total riverine environment in the Grand Canyon and how various low-flow periods affect rafting and the fisheries resources in the river." In addition, the memo calls for "[e]nvironmental studies of the effects of the present and historic operation of Glen Canyon Dam on the vegetation, wildlife, fishery, recreation, and other environmental resources of the Grand Canyon" (Broadbent, 1982). The Glen Canyon Environmental Studies program of the Bureau of Reclamation "was the first systematic effort to investigate the effects of dam operations on downstream resources" (2001 GCDAMP Strategic Plan).
1983	Historic floods in Colorado River Basin	In an epic El Niño year, Lake Powell is filled to overflowing and the USBR releases more than 92,000 cfs from Glen Canyon Dam to stop Lake Powell from overtopping and destroying the Dam.
1987	NRC review of GCES published	National Research Council completes review of GCES, publishing <i>River and Dam Management: A Review of the Bureau of Reclamation's Glen Canyon Environmental Studies</i> <a href="https://archive.org/details/riverdammanageme00unse">https://archive.org/details/riverdammanageme00unse</a>

1988	GCES Phase 1 Final Report	Glen Canyon Environmental Studies issues its <i>Glen Canyon Environmental Studies Final Report</i> , completing Phase I of GCES. Immediately afterward, Phase II begins, which is accelerated the next year to support development of the environmental impact statement mandated in 1989 (see below).
1989	Sect of Interior announces an Environmental Impact Statement will be developed for Glen Canyon Dam	in 1989 Secretary of the Interior Manual Lujan announced that an environmental impact statement would be completed to evaluate the environmental impacts of the operation of Glen Canyon Dam. An EIS was proposed earlier during the Reagan Admin but resisted until the Bush administration. The decision was controversial. First time there would be a "retroactive" EIS done for a federal dam already in existence.
1989	NRC workshop on Colorado River	National Research Council sponsors symposium that reviews existing knowledge on Colorado River ecosystems
1990-1991	Studies of dam discharge patterns and river flows initiated	
1991	Interim operating criteria for Glen Canyon Dam implemented.	
1991	Glen Canyon National Recreation Area Proposed General Management Plan	The General Management Plan was designed to meet the goals of the act establishing the national recreation area "...to provide for public outdoor recreation use and enjoyment...and to preserve scenic, scientific, and historic features contributing to public enjoyment of the area." (NPS, 1979).
1992	Grand Canyon Protection Act (GCPA)	The GCPA was enacted on 30 October 1992. It states that the "...Secretary shall operate Glen Canyon Dam ... and exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to, natural and cultural resources and visitor use." The act, however, also states that: "The Secretary shall implement this section in a manner fully consistent with and subject to the Colorado River Compact, the Upper Colorado River Basin Compact, the Water Treaty of 1944 with Mexico, the decree of the Supreme Court in <i>Arizona v. California</i> , and the provisions of the Colorado River Storage Project Act of 1956 and the Colorado River Basin Project Act of 1968 that govern ... the waters of the Colorado River Basin" (Grand Canyon Protection Act of 1992). Finally, the act required consultation among federal agencies, the Governors of the Basin States, Indian Tribes, and the general public, including representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of federal power produced at Glen Canyon Dam. (GCDAMP Strategic Plan of 2001)

1994	Cultural resources agreement with six tribes	Programmatic Agreement on Cultural Resources signed between the State of Arizona, Department of the Interior agencies, and six tribes over protection of cultural resources in the river corridor below Glen Canyon Dam.
1994	Biological Opinion and Critical Habitat designation for 4 fish species	U.S. Fish and Wildlife Service designates critical habitat for four species of endangered Colorado River fish and completes Biological Opinion outlining reasonable and prudent alternatives that must be evaluated for dam operation.
1994	Lower Colorado River Multi-Species Conservation Plan launched	Memorandum of Agreement signed for development of a Lower Colorado River Multi-Species Conservation Plan between state agencies in Nevada, California, and Arizona and federal agencies, including the Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, and the National Park Service: <a href="http://www.sci.sdsu.edu/salton/LowerColoradoRiverMSCP.html">http://www.sci.sdsu.edu/salton/LowerColoradoRiverMSCP.html</a>
1994	Biological Opinion on Operation of Glen Canyon Dam	The Biological Opinion (BO) dated 21 December 1994 was in response to USBR's request for section 7 consultation under the Endangered Species Act "on the proposed action to operate Glen Canyon Dam according to ... the Modified Low Fluctuating Flow Alternative (MLFF)" (USFWS, 1994). The modified-low-fluctuating-flow strategy allowed dam operators to continue diurnal fluctuations of water flow through the dam's turbines to meet power demand, but restricted the up-ramp and down-ramp rates of water discharge to reduce the rapidity of river flow changes and the total daily range of fluctuations in river flow. The BO determined that a MLFF would not result in jeopardy to endangered species.
1995	Glen Canyon Dam Environmental Impact Statement (GCDEIS)	The EIS dated March 1995 analyzed nine alternatives to implement the goals of the Grand Canyon Protection Act and balance the interests of hydropower generation with the protection of environmental and cultural resources. As stated in the EIS, its purpose was to: "determine specific options that could be implemented to minimize—consistent with law—adverse impacts on the downstream environmental and cultural resources and Native American interests in Glen and Grand Canyons" (USBR, 1995). (See also 1996 Record of Decision below.)
1995	Grand Canyon National Park General Management Plan	Dated August 1995, the General Management Plan was designed to "provide a foundation from which to protect park resources while providing for meaningful visitor experiences" (NPS, 1995). The plan built upon several earlier park plans including the 1988 Backcountry Management Plan, 1989 Colorado River Management Plan, and 1994 Resource Management Plan. (Subsequent NPS planning documents relevant to the AMP include the 1997 Resource Management Plan and the 1998 Draft Wildemess Management Plan.)

1995	Establishment of the Grand Canyon Monitoring and Research Center (GCMRC) under USBR	The GCMRC was created by the Secretary of the Interior and placed under the USBR following completion of the Glen Canyon Dam EIS to fulfill the directive in the Grand Canyon Protection Act for the "Establishment and implementation of a long-term monitoring and research program to ensure that Glen Canyon Dam is operated in a manner that protects the values for which the Grand Canyon National Park and the Glen Canyon National Recreation Area were created." (Deputy Assistant Secretary for Water and Power, 1995). Glen Canyon Environmental Studies program merged into GCMRC.
1996	Experimental controlled flood of 45,000 cfs conducted at Glen Canyon Dam.	
1996	Glen Canyon Dam Environmental Impact Statement Record of Decision (ROD)	The ROD selected the "preferred alternative" from among the options presented in the Glen Canyon Dam EIS of 1995. The preferred alternative was the Modified Low Fluctuating Flow Alternative (see 1994 Biological Opinion above). The rationale for choosing that alternative was "The goal of selecting a preferred alternative was not to maximize benefits for the most resources, but rather to find an alternative dam operating plan that would permit recovery and long-term sustainability of downstream resources while limiting hydropower capability and flexibility only to the extent necessary to achieve recovery and long-term sustainability" (USDI 1996: 10). The ROD also mandated the establishment of an Adaptive Management Program and the funding of scientific research to inform the Secretary of Interior regarding how dam operations might be modified to meet the statutory requirements of the Grand Canyon Protection Act (USDI, 1996). Several specific environmental research and monitoring commitments were specified in the ROD, including cultural resources, flood frequency, sediment/beaches, and endangered humpback chub populations.
1997	Glen Canyon Dam Adaptive Management Work Group (AMWG) and Technical Work Group (TWG) fully established	In 1997 Secretary of Interior Bruce Babbitt established the Glen Canyon Dam Adaptive Management Work Group (AMWG) as a formal Federal Advisory Committee, under the authority and guidelines of the Federal Advisory Committee Act of 1972. The purpose of AMWG was to monitor implementation of the ROD, provide recommendations to the Secretary regarding its effectiveness, and recommend science-based adjustments to the operation of Glen Canyon Dam to better achieve restoration and maintenance of downstream resources. AMWG held its first meeting on September 10-11, 1997, and officially formed the Glen Canyon Technical Work Group (TWG) as a subgroup to work on tasks charged to them by the AMWG.

1997	First test of Habitat Maintenance flows conducted in November.	
1998	GCMRC moved from USBR to Asst Sect of Department of Interior	Oral history interviewees stated that there was a perception that the USBR had a vested interest in hydropower and was not sufficiently "independent" so the GCMRC was placed directly under the authority of the Asst Secretary of Interior (for Water and Science?)
2000	Further tests of Habitat Maintenance Flows and low summer steady flows	First test of low summer steady flows to benefit endangered fish species. Second and third tests of habitat maintenance flows conducted in spring and summer.
2001	GCMRC moved from Asst Sect of Interior to US Geological Survey	
2001	Publication of first GCDAMP Strategic Plan	"This strategic plan is a guidance document for the Glen Canyon Dam Adaptive Management Program and was developed by program members. Elements of this plan include the Glen Canyon Dam Adaptive Management Work Group's vision and mission statements, as well as principles, goals, and management objectives." (From the Foreword to the Strategic Plan)
2002	Recovery goals for endangered fish	U.S. Fish and Wildlife Service announces recovery goals for endangered fishes of the Colorado River Basin.
2002	Experimental design initiated	Adaptive Management Work Group recommends implementation of the first 2 years of an experimental design proposed by the GCMRC.
2003	Experimental fish programs launched	Experiment begun to remove nonnative fish from the Colorado River in Grand Canyon. Fluctuating nonnative fish suppression releases from January through March implemented and continued through 2005.
2004	High Flow Experimental release of water initiated on Sunday, Nov. 21.	
2005		
2006		
2007		
2008	Grand Canyon Trust files suit against USBR, USFWS, and other entities	Grand Canyon Trust contended that federal agencies responsible for Glen Canyon Dam operations had authorized dam operations that ran counter to their obligation to comply with the Endangered Species Act, National Environmental Policy Act, and Administrative Policy Act. After a series of decisions and appeals, the suit was decided in favor of the operating agencies in 2012.



2009		
2010		
2011		
2012	High-Flow Experimental release of water from Glen Canyon Dam in Nov	"Secretary of the Interior Ken Salazar triggered the first release under the experimental long-term protocol in November 2012. The protocol calls for conducting more frequent high-flow experimental releases and timing them to occur following sediment inputs to the Colorado River downstream from Glen Canyon Dam." (USDI Press Release 11/07/2016: <a href="https://www.doi.gov/pressreleases/high-flow-experiment-underway-glen-canyon-dam-simulates-natural-flooding-through-grand">https://www.doi.gov/pressreleases/high-flow-experiment-underway-glen-canyon-dam-simulates-natural-flooding-through-grand</a> )
2016	LTEMP Draft and Final EIS issued	Draft EIS for Long-Term Experimental and Management Plan (LTEMP) released to public in January 2016. Public comment accepted through May 9. Final EIS published in October. Record of Decision signed in December. LTEMP prepared by Department of Interior (USBR and NPS), evaluating the effects of dam operations on resources in Glen Canyon, Grand Canyon, and Lake Mead NRA. LTEMP "provides the basis for decisions that identify management actions and experimental options that will provide a framework for adaptively managing Glen Canyon Dam operations over the next 20 years." <a href="http://ltempeis.anl.gov/">http://ltempeis.anl.gov/</a>

## ORIENTATION PACKET CONTENTS (DRAFT)

Why AMWG exists

Laws that affect the program

The history of the GCPA (Grand Canyon Protection Act)

The 1996 Glen Canyon Dam EIS (Environmental Impact Statement) ROD (Record of Decision)

1997 original charter and 2015 renewal of charter

The role of the Secretary of the Interior and the Secretary's Designee

How AMWG and TWG function

Substantive issues and process issues, areas of concern

Primary areas of research and adaptive management actions

The history and different interests of stakeholders

### Other subjects of interest to stakeholders

AMWG goals/objectives (see 2001 Strategic Plan for excellent content on this).

Meeting purpose, structure and schedule

What GCMRC does and how that has evolved since 1997, how it functions, why it is needed, relationship to AMWG, TWG

AMWG shift from having stakeholders vote on issues to requiring that they work toward consensus on issues. Reason for that change.

### Possible learning tools

Chronological summary of GCDAMP

List of guiding documents for AMWG/TWG, with links

Glossary or list of terms (How much knowledge should orientees be assumed to have?)

Contact information for key administrators

BUDGET/EXPENDITURES FOR YEARS 1-2

	<b>Total Budget</b>	<b>Two Year Budget</b>	<b>9/16-9/18 Actuals</b>
<b>Salaries and Wages</b>			
Project Investigator	50,000	20,000	25,001
Sr. Researcher	10,150	4,060	4,060
Researcher	14,000	5,600	5,680
Research Technician	17,226	6,890	8,012
Graduate Student	28,000	11,200	7,680
<b>Total Salaries and Wages</b>	<b>119,376</b>	<b>47,750</b>	<b>50,432</b>
<b>Fringe Benefits ERE</b>			
Project Investigator	15,344	6,138	6,825
Sr. Researcher	3,115	1,246	1,108
Researcher	4,296	1,719	1,551
Research Technician	6,841	2,736	2,892
Graduate Student	179	72	174
<b>Total Fringe Benefits</b>	<b>29,775</b>	<b>11,910</b>	<b>12,550</b>
<b>Travel</b>			
	53,485	21,394	5,998
<b>Total Travel</b>	<b>53,485</b>	<b>21,394</b>	<b>5,998</b>
<b>Supplies/materials</b>			
Portable Recorder	500	200	
<b>Total Supplies</b>	<b>500</b>	<b>200</b>	<b>-</b>

<b>Contractual/Consultant</b>			
Web Consultant	8,000	3,200	3,384
<b>Total Contractual/Consultant</b>	<b>8,000</b>	<b>3,200</b>	<b>3,384</b>
<b>Total Direct Costs</b>	<b>211,136</b>	<b>84,454</b>	<b>72,364</b>
<b>Indirect Costs</b>			
Colorado Plateau Cooperative Ecosystem Studies Unit	36,948.82	14,780	12,663.63
<b>Total Indirect Costs</b>	<b>36,949</b>	<b>14,780</b>	<b>12,664</b>
<b>Total Estimated Project Cost</b>	<b>248,085</b>	<b>99,234</b>	<b>85,027</b>