Glen Canyon Dam Adaptive Management Work Group
AMWG Meeting Agenda Item Information
August 30-31, 2005

Agenda Item
Report from the Public Outreach Ad Hoc Group

Presenters	Day and Time
Amy Heuslein, Environmental Protection Officer, Bureau of Indian Affairs Andre Potochnik, River Science Coordinator, Grand Canyon River Guides	August 30, 2:00-2:30

Previous Action Taken

√ By AMWG:

The following motions were approved at the March 2005 AMWG meeting:

Motion: AMWG approves the logo, catch phrase, outline of stationary display at Glen Canyon Dam, and the AMP website anonymously hosted by Reclamation www.gcdadaptivemanagement.gov, all as presented to AMWG.
[Note that this URL has been changed to gcdamp.gov.]

Motion: AMWG delegates to POAHG these specific authorities:
1) Posting to and updating of AMP website (AMWG retains review opportunities on new materials via email prior to posting),
2) Identify new topics for Fact Sheets and start creating them,
3) Finalize strategy for Glen Canyon Dam Display with Reclamation review and involvement,
4) Speak to media on rapid response items via Secretary's Designee and/or Interior public relations, including the five-day AMWG review for the rapid response process, and
5) Develop, finalize, and distribute guide resources.

Motion: AMWG authorizes
1) A continuing budget line item of $50,000/year with carryover from year to year, not to exceed $25,000 (for a total of $75,000),
2) POAHG to recommend service contracts to the Bureau of Reclamation to complete necessary duties and products, and
3) POAHG to report public outreach budget details annually to the TWG Budget Ad Hoc Group for review in a timely manner.

The following Action Item was noted at the March 2005 AMWG meeting: Any additional comments or suggestions on the materials distributed by the POAHG [including fact sheets] should be sent to Andre Potochnik by March 16, 2005.

Action Requested

√ Information item only; we will answer any questions.

Adopt-a-Beach: AMWG authorized the POAHG to "recommend service contracts to the Bureau of Reclamation to complete necessary duties and products." The Adopt-a-Beach proposal will be presented to the Bureau of Reclamation for contracting. The executive summary (attached, page 3) is given to the AMWG for information.

Stationary Display Outline: The POAHG was directed at the last meeting to "Finalize strategy for Glen Canyon Dam Display with Reclamation review and involvement." The latest iteration of the display is included in the packet (page 4) for AMWG's information.

√ Information, plus feedback from AMWG members.

Guide Resources Laminate Card and Information: At the last meeting, AMWG directed POAHG to "Develop, finalize, and distribute guide resources." Preliminary versions of the laminated card and information sheets, with a proposal for their completion, will be distributed at the meeting. The POAHG would appreciate feedback from AMWG members on these resources. They plan to complete them by March 1, 2006.

AMP Website Outline: At the last meeting, the AMWG approved the idea of the creation of an AMP website anonymously hosted by Reclamation, and delegated to POAHG the authority to post to and update the website. AMWG retained the opportunity to review new materials via email before posting. POAHG requests feedback on the attached outline (page 6) for the AMP website navigation. Please note that the website address has been changed to gcdamp.gov.

√ Motion requested:

AMWG approves the following five fact sheets, as attached (page 7):

- Adaptive Management Program Purpose and Goals
- Adaptive Management Program Origins
- Hydropower and the Adaptive Management Program
- Who We Are
- Whitewater Recreation

(Note that the first four fact sheets were distributed to AMWG members a month before the March 2005 AMWG meeting. These have been amended to incorporate all comments made at that meeting, and no additional comments were received after the meeting. The final versions are attached for final approval. The Whitewater Recreation fact sheet is new.)

Background Information

√ We have attached the background information to be included in the AMWG packet that is distributed 30 days before the meeting, and posted on the website. If I bring updated handouts to the meeting, I will also bring a digital file of those handouts for posting on the website.

√ We will bring additional handouts to the meeting, plus a digital file of those handouts for posting on the website.

ADOPT-A-BEACH PROGRAM:
Public Outreach through River Guides
EXECUTIVE SUMMARY

Proposal to:	The Adaptive Management Program Public Outreach Committee
Applicant:	Grand Canyon River Guides, Inc., a 501(c)(3) non-profit organization
Date:	7/21/05
Request:	$13,000 (partial funding) from the 2005 budget of the Adaptive Management Program's Public Outreach Committee

Challenge: The Adaptive Management Program of Glen Canyon Dam requires a powerful mechanism for translating the concept of dam management into terms that are both understandable and memorable to the general public while also providing relevant data to the scientific community and program stakeholders.

Solution: River guides are the key to surmounting this challenge through an innovative "citizen science" program called Adopt-a-Beach – a long-term comparative photographic program to monitor Grand Canyon camping beaches that creates a remarkable range of unique and compelling public outreach strategies, thereby supporting both Goal 9 and Goal 12 of the Adaptive Management Program Strategic Plan.

Background: Prior to the Beach Habitat Building Flow (BHBF) of 1996, Grand Canyon River Guides realized the research potential of this historic experiment and seized the opportunity to send volunteer guides down the river with cameras to objectively document a dataset of 40+ camping beaches distributed throughout five critical reaches, both pre-and post-flow. The Adopt-a-Beach program, now it its ninth year, continues to document and analyze changes in the recreational resource over time, while theorizing about potential causalities and offering a series of recommendations to strategic river managers. Since 1996, over 100 volunteers have cooperated in the program, including guides from all fifteen of the commercial river outfitters, freelance guides, private boaters, National Park Service and Arizona Game and Fish personnel, and various science trips. This collaborative, diverse base exemplifies the human spirit of the program that creates invaluable "teaching moments" for the river running public about the benefits of Glen Canyon Dam, the effects of dam flows, the importance of monitoring, and the crucial role of the Adaptive Management Program.

Deliverables: The deliverables for the program stem from the need to facilitate effective public education and build greater awareness of the challenges engendered by a dam-altered environment in Grand Canyon. This is achieved through a clear articulation of Adopt-a-Beach program results and direct public access to its extensive photographic record. Program deliverables include: public dissemination of a "state of the beaches" report for the 2005 river season (with a comparison to previous years data), an Adopt-a-Beach website and photo gallery linked to the new Adaptive Management Program public outreach website for broader accessibility, articles in the *Boatman's Quarterly Review* reaching approximately 1,900 individuals, submissions to other agency public outreach venues, an NPR interview/exposé, public presentations, photo CD's for research purposes, and a reassessment river trip that couples program oversight with interpretive learning opportunities for participants.

Glen Canyon Dam
Carl Hayden Visitor Center
Stationary Display Outline

Panel 1

Adaptive Management Program Overview

- Basic Program Description
  - Intent of program
  - Why program created
  - Adapt actions to improve environment & downstream conditions

- Program Origins
  - Description of past/historical Colorado River conditions
    - Pre-dam river conditions
    - Post-dam river conditions
    - Changing societal priorities
    - Impacts to river habitat and environment

- Factors spurring creation of program
  - Grand Canyon Protection Act (1992)
  - Need to mimic pre-dam conditions
  - Impacted fish species
  - Improve resources downstream of GCD

- Organizations Involved in Program
  - Overview of organizations involved
  - Public Involvement aspects of program
    - Coordinated actions
  - Diversity of interests/perspectives represented in program

Panels 2 & 3

Overview of Resource Issues

- Beneficial aspects of GCD operations
  - Hydrology/water operations
    - Irrigation
    - Municipal Water
    - Hydropower
    - Recreation
    - Long-term Carryover Storage
    - Flood control
- Resources/Industries Impacted by GCD Operations
  - Native fish species
  - Cultural
  - Hydropower
  - Wildlife & Habitat
  - Recreation & Fishing

- Management Actions taken to mitigate impacts
    - Dam Re-operations
    - Experimental flows
    - Fish suppression

Panel 4

Using Science to Manage River Resources in Grand Canyon

- Research/science emphasis of program
    - Long-term studies, data gathering & resource monitoring
    - Peer review process of program

- Management Options & Review of selected alternatives
    - Beach Habitat Building Flow 1996
    - High Flow Test November 2004

- Concluding Thoughts/Future Considerations
    - Current condition of resource
    - Advisory role of program
        - Government responsibilities
        - Stakeholder involvement & input
    - Decisions made based on best available science
    - New technologies and approaches under consideration
        - Temperature control device
        - Additional high or experimental flow tests
- Success stories
    - Resource decisions made based on best available science
    - Coordinated actions & approaches
    - Long-term aspects & commitment of program

Proposed Glen Canyon Dam Adaptive Management Program Outreach Web Site – ***Left Navigation***

Navigation Heading	Sub-Menu Content Links	Content
About AMP		
	Background	- Web page built from the "Amp Origins" fact sheet - Link to Law of the River Docs and Related Legislation (on BOR AMP Web site)
	What is Adaptive Mgmt	- Write up to be developed by Andre
	Purpose & Goals	- Web page built from the "AMP Purpose & Goals" fact sheet - Link to BOR AMP Web site AMWG overview page - Link to BOR AMP Web site TWG overview page - Link to GCMRC Web site
	AMWG Membership	- Web page built from the "Who We Are" fact sheet - Link to all AMWG Member organization Web sites
	Current Representatives	- Link to BOR AMP Web site AMWG Members page
	What We've Done	- Web page built from summary narrative on what the AMWG has done since 1997
	Important Documents	- Link to Law of the River Docs and Related Legislation (on BOR AMP Web site) - Link to Glen Canyon Final EIS
	Colorado River Basin Map	- Web page containing Colorado River Basin map
Key Resources		
	Water Storage & Delivery	- Web page built from to-be-written 1+ page narrative on this topic
	Endangered Species/Environmental	- Web page built from to-be-written 1+ page narrative on this topic
	Hydropower	- Web page built from to-be-written 1+ page narrative on this topic
	Cultural/Tribal	- Web page built from to-be-written 1+ page narrative on this topic
	Rafting	- Web page built from to-be-written 1+ page narrative on this topic
	Fishing	- Web page built from to-be-written 1+ page narrative on this topic
	TCD	- Web page built from to-be-written 1+ page narrative on this topic
	Study/Experiment Results	- Will link to GCMRC site when study/experiment results are posted
FAQ's	FAQ page direct link	- Can be 1 master page or split out by topic if enough topic-specific questions exist
Photo Gallery	Gallery 'topic' menu page	- "Thumbnail image" page for whichever gallery topic was selected
Contact Us	Contact Us page direct link	- Page containing primary outreach ad hoc group contacts
Links	Links page direct link	- Page containing list of associated or related agency/entity web site links (ie. GCMRC)
Current Events	Temporary or long-term link	- Could be a permanent main navigation heading if enough 'current events' content continues to exist - OR can be a temporary focus area added to main body of page

Whitewater Recreation on the Colorado River in Grand Canyon

The Colorado River continues to flow downstream of Glen Canyon Dam through magnificent desert canyons for almost 300 miles in one of the most dazzling landscapes on earth…Grand Canyon National Park. This magnificent gorge and river, first explored by John Wesley Powell in 1869, remains a widely revered and sought-after destination, a unique place with remarkable opportunities for exploring nature. The dam and its operation strongly affect this river ecosystem.

Why is river recreation included in dam management plans?

Glen Canyon Dam has profoundly impacted the downstream river ecosystem and the visitor experience of the Canyon. Upon the creation of the dam, approximately 90% of the sediment flow into the Canyon was interrupted, creating a scarcity of the sediment resources needed to maintain the beach ecosystems of the Canyon. Preservation of the remaining sediment is not only crucial to the restoration of the native habitat of the Canyon but is necessary to maintain the sandbars and beaches utilized for camping by the river running community. In order to protect the river environment and the quality of the river experience, whitewater recreational concerns are included in the management of the dam. .

- The Grand Canyon Protection Act of 1992 requires that operation of Glen Canyon Dam will, among other directives, benefit recreational use of the river below the dam.

- The Glen Canyon Dam Adaptive Management Program, initiated in 1996, incorporates goals for the needs of river recreation, including conservation of the many popular beaches throughout Grand Canyon, that are not only necessary for camping by recreational users, but are a vital part of the pre-dam ecosystem of the canyon.

What is the Adaptive Management Program concerned about?

The Glen Canyon Dam Adaptive Management Program uses the best available scientific research to understand the impacts of the dam on downstream resources and develop plans for controlled water releases that will conserve sediment eroded due to the daily fluctuations from the dam, local rainfall, human use, and reduced sediment supply. The program focuses on reducing Glen Canyon Dam's adverse impacts to the river environment while balancing the needs of the region for hydropower produced by the dam.

- Daily fluctuations due to power demand continue to erode what remains of this habitat vital not only for river visitors, but for endangered native fish and eroding archeological sites.

- Glen Canyon Dam blocks 90% of the sediment supply of the river, preventing replenishment of the many camping beaches in Grand Canyon.

- The dam stops the large annual floods, which no longer sweep the channel free of accumulating rocks to keep it safely navigable for river runners. Periodically, artificial "floods" and other flow experiments are released from the dam to mitigate environmental impacts and rebuild sand bars.

History and growth of river recreation in Grand Canyon

Following Powell's pioneering exploration, people began to run the Colorado River through Grand Canyon for adventure and enjoyment. Only a few hundred adventurers floated the river during the first half of the 20th century. In the 1950s commercially guided river trips in Grand Canyon first became available to the public.

- With completion of Glen Canyon Dam in 1963, regulation of water flows established conditions favorable for river running in Grand Canyon, which grew rapidly to become one of the most sought after outdoor recreational experiences in the United States.

- In the 1970s, surging popularity of river running caused Grand Canyon National Park to begin regulating visitor use in order to protect the river environment and the quality of the river experience. In 2004, Grand Canyon National Park initiated completion of an Environmental Impact Statement for revision of the Colorado River Management Plan.

- Explosive growth in the number of recreational river runners in Grand Canyon clearly demonstrates that there will always be more people who desire this experience than the river environment can potentially sustain:
  - 1963 (completion of Glen Canyon Dam) 1,100/year
  - 1967 (controlled water releases create predictable flows) 2,100/year
  - 1972 (commercial trips are limited to 21 river running companies) 16,500/year
  - 2004 (increasing popularity of river running) 22,460/year
  - 2006 (projected in the new Colorado River Management Plan) 26,317/year

Socioeconomic benefits of river recreation:

All told, the river running recreational economy generates over $84,000,000 annually in local and regional economies, providing jobs in river guiding and support services in communities throughout the region.

- Approximately 12% of the gross revenues earned by commercial river outfitters are returned to the Park in the form of fees needed to protect and preserve the beauty of the Canyon environment.

- Significant revenues are also generated by Hualapai River Runners, greatly assisting this Native American tribe, who own a majority of the land along the south side of the Colorado River in lower Grand Canyon.

- In addition to dollars contributed to the local economy, there is an incalculable value to millions of people worldwide, simply knowing that Grand Canyon is still there, preserved and accessible. River running on the Colorado River through Grand Canyon is one of the most deeply treasured outdoor experiences in the public mind and continues to capture our imagination, inspiring photographs, movies, books, and a continuing thirst for knowledge about the river and its ecosystem.

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Adaptive Management Program Origins

The construction and operation of Glen Canyon Dam fundamentally altered the Colorado River ecosystem. Given the importance of Colorado River water to the states and economies of the Southwest, it is not surprising that there has been and remains considerable controversy over how to share this major river. As we begin the 21st century, challenges abound over how best to manage this resource for the benefit of agricultural, municipal, industrial, tribal, environmental and recreational intersts alike.

The Grand Canyon Protection Act of 1992 directed the Secretary of the Interior to manage Glen Canyon Dam in such a way 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." The act provided direction for the Glen Canyon Dam Environmental Impact Statement, in that all dam operations would need to be analyzed with those goals in mind.

After nearly five years of study - and more than 40 different projects undertaken by more than 15 different agencies - the record of decision for the Glen Canyon Dam EIS was signed in 1996. The Decision specified operating parameters for Glen Canyon Dam and mandated that ***adaptive management*** of the resources in Grand Canyon be undertaken. The act stipulated that a close watch be maintained on the effects of Glen Canyon dam operations and ordered that future modifications of those operations and management actions be considered to protect and enhance the Colorado River ecosystems.

As part of this process, Interior Secretary Babbitt created a federal advisory committee composed of the numerous interests who share in the management of the river. These interests sit at what is called the Adaptive Management Work Group (AMWG). This group recommends dam operations and management actions to the Secretary of the Interior based on a wide variety of public and technical resources.

Law of the River

The following is a profile of some of the various federal and state laws, compacts, treaties and administrative actions that are generally referred to as the "Law of the River" and control river operations and the rights to the use of the Colorado River.

- **Colorado River Compact of 1922** - Apportions the Upper and Lower Basins with the right to develop and use 7.5 million acre-feet (maf) of river water annually. The compact reserved water for future upper basin development and allowed planning and development in the lower basin to proceed.

- **Boulder Canyon Project Act of 1928** - This act authorized the construction of Hoover Dam and other irrigation facilities in the Lower Basin. Apportioned the Lower basin's 7.5 maf among the states of Arizona (2.8 maf), California (4.4 maf) and Nevada (0.3 maf).

- **Mexican Water Treaty of 1944** - Committed 1.5 maf of the river's annual flow to Mexico.

- **Upper Colorado River Basin Compact of 1948** - Apportions the Upper Basin's 7.5 maf among Colorado (51.75 percent), New Mexico (11.25 percent), Utah (23 percent), and Wyoming (14 percent); the portion of Arizona that lies within the Upper Colorado Basin was also apportioned 50,000 acre-feet annually.

- **Colorado River Storage Project of 1956** - Provides a comprehensive Upper Basin-wide water resource development plan and authorized the construction of Glen Canyon, Flaming Gorge, Navajo and Curecanti dams for river regulation and power production and other purposes.

- **Arizona v. California 1964** - Supreme Court decree in Arizona v. California is officially handed down allotting 2.8 million acre-feet of mainstream Colorado River water to Arizona annually, clearing the way for eventual construction of the Central Arizona Project.

- **The Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs of 1970** - Provides for the coordinated operation of reservoirs in the Upper and Lower Basins and set conditions for water releases from Lake Powell and Lake Mead.

- **Grand Canyon Protection Act of 1992 -** Directs the Secretary of the Interior to manage Glen Canyon Dam in such a way 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."

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ADAPTIVE MANAGEMENT PROGRAM

Using Science to Manage River Resources in Grand Canyon

Who We Are

Representatives from the following organizations are appointed by the Secretary of the Interior for a four year term to the **Adaptive Management Work Group**, a Federal Advisory Committee, to represent diverse public interests in the operation of Glen Canyon Dam and impacts to downstream resources:

Federal and State Agencies
Arizona Game and Fish Department
Bureau of Indian Affairs
Bureau of Reclamation
National Park Service
U.S. Fish and Wildlife Service
Western Area Power Administration

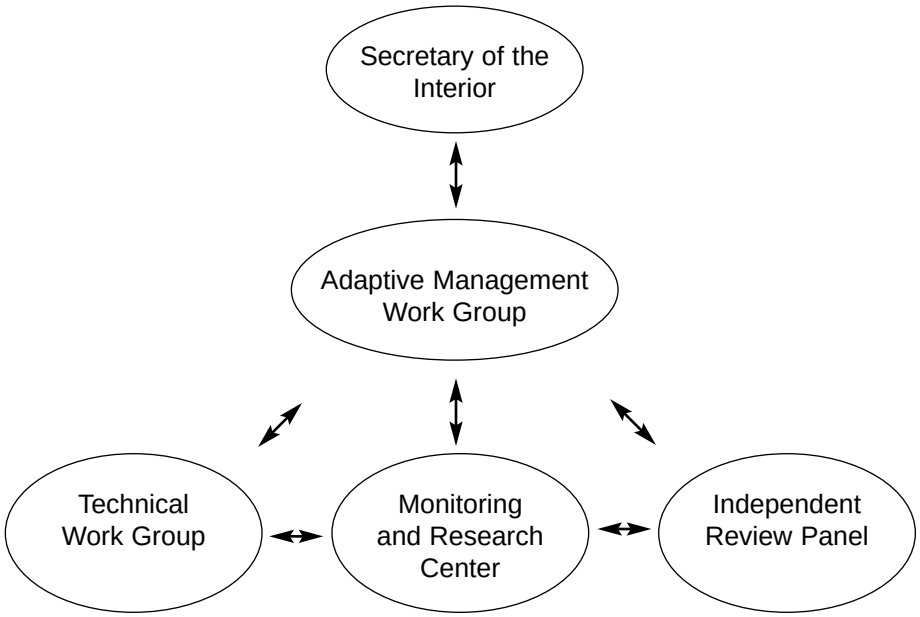
Colorado River Basin states
Arizona
California
Colorado
New Mexico
Nevada
Utah
Wyoming

Native American Tribes
Hualapai Tribe
Hopi Tribe
Navajo Nation
Southern Paiute Consortium
Pueblo of Zuni

Environmental groups
Grand Canyon Trust
Grand Canyon Wildlands Council

Recreational interests
Federation of Fly Fishers
Grand Canyon River Guides

Federal Power Purchase Contractors
Colorado River Energy Distributors Association (CREDA)
Utah Associated Municipal Power Systems (UAMPS)



Organizational structure of the Adaptive Management Program

For contact information for the individual agencies/organizations, go to: **www.gcdamp.com.**

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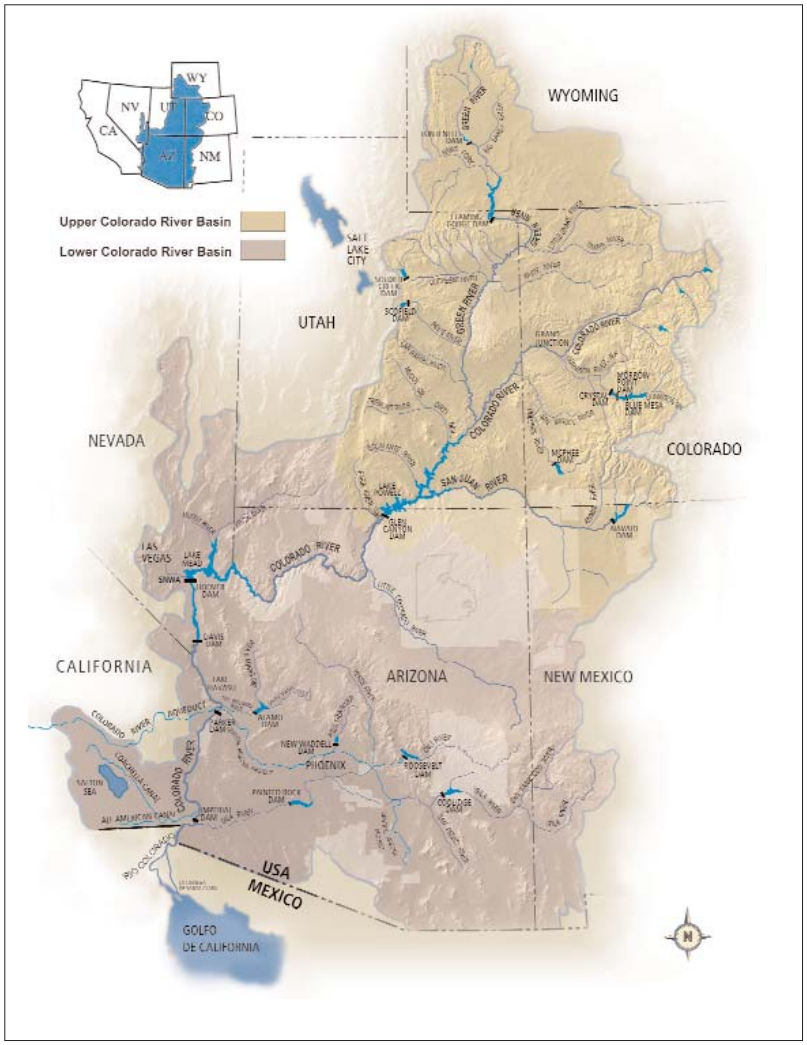
ADAPTIVE MANAGEMENT PROGRAM

Using Science to Manage River Resources in Grand Canyon

Adaptive Management Program Purpose and Goals

The Glen Canyon Dam Adaptive Management Program (AMP) was formed in 1997 to advise the Secretary of the Interior on actions to improve resources in Glen and Grand Canyons of the Colorado River in Arizona. The AMP provides a process through which the effects of dam operations on downstream resources are monitored and assessed and operational adjustments are recommended to the Secretary of the Interior based on those assessments. This approach allows for scientific experimentation that adds to the understanding of the effects of the operation of Glen Canyon Dam.

The AMP provides the latest scientific and resource information to Department of the Interior decision-makers and others concerning Glen Canyon Dam operations and protection of the affected resources consistent with existing laws including the provisions of the Law of the River, the Colorado River Storage Project Act of 1956 and the Grand Canyon Protection Act of 1992. A diverse group of stakeholders with interests in the operation of Glen Canyon Dam and impacts to downstream resources is involved in the AMP.



Colorado River Basin

The AMP focuses on the Colorado River ecosystem and uses the following adaptive management approach and process:

- Models are developed to reveal the potential effects of policies, activities, or practices that are being considered for implementation;
- Questions are formulated as testable hypotheses regarding the expected responses of the Colorado River ecosystem to dam operations and other management actions;
- Experiments are conducted to test hypotheses and answer questions;
- Management activities reveal, through monitoring and evaluation of results, the accuracy or completeness of the earlier predictions; and
- New knowledge and information produced through experimentation are incorporated into management options and recommendations to the Secretary of the Interior

Adaptive Management Work Group (AMWG)

AMWG is a Federal Advisory Committee appointed by the Secretary of the Interior with representatives

from federal agencies, states, Native American tribal governments, environmental groups, recreation interests, and contractors for federal electrical power from Glen Canyon Dam. The main responsibilities of the AMWG are to: 1) annually review long-term monitoring data to determine the status of resources and whether program goals and objectives are being met; 2) develop recommendations to the Secretary for modifying operating criteria for Glen Canyon Dam and other management actions; and, 3) facilitate input and recommendations from interested parties.

Technical Work Group (TWG)

TWG is a subcommittee of the AMWG. This group translates AMWG policy and goals into resource management objectives and establishes criteria and standards for long-term monitoring and research. Additional tasks include providing review and updates, developing resource management questions for research and monitoring, and preparing reports as requested or required by the AMWG.

Grand Canyon Monitoring and Research Center (GCMRC)

GCMRC, a division of the U.S. Geological Survey, is the science arm of the AMP. GCMRC develops and administers plans for long-term monitoring and research of the Colorado River from Glen Canyon Dam through the Grand Canyon to Lake Mead. The GCMRC oversees data collection and analysis and is guided by research needs specified by the AMWG and TWG.

Independent Scientific Review

The AMP incorporates an independent, external peer review process to maintain the highest quality scientific results for the program. The program draws from a pool of external peer reviewers that ensure the scientific integrity of research/ monitoring proposals and reports. An external, permanent board of Science Advisors periodically reviews resource specific monitoring and research programs and makes recommendations to the AMWG and GCMRC regarding monitoring, priorities, integration and management.

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Hydropower and the Adaptive Management Program

Hydropower Overview

Dams convert energy from falling water into electricity. Hydropower is a clean, renewable and reliable energy source that contributes between eight and 12 percent of United States' electrical generation and serves nearly 35 million residential customers. It is used to follow fluctuating electrical demand, or peaking power, while the larger, less-flexible coal and nuclear resources provide baseload power. Hydropower facilities are ideal for following rapid changes in electrical demand because they can be quickly adjusted to meet these changes.

Glen Canyon Dam is the largest generating facility of the federal Colorado River Storage Project (CRSP). The dam's eight generators can produce up to 1,300 megawatts, enough electricity to serve 1.3 million residential customers. The integration of hydropower and other resources provides an efficient and flexible operation of this region's electrical resources. Releases of water from Glen Canyon Dam are adjusted in part to accommodate daily and seasonal peak power demands.

CRSP Customers, Revenues and the Adaptive Management Program

- Power generated at Glen Canyon Dam is sold under 20-year contracts within the states of Arizona, Colorado, Nevada, New Mexico, Utah and Wyoming. CRSP power is sold to non-profit entities who serve over five million customers.

- Revenues from the sale of CRSP power are deposited in the U.S. Treasury and are used to fund Glen Canyon Dam's construction costs (including interest), irrigation assistance, operation and maintenance costs, salinity control, and environmental programs.

- The Glen Canyon Dam Adaptive Management Program (AMP) can affect hydropower production at Glen Canyon Dam. The intent of the AMP is to improve the resources downstream of Glen Canyon Dam, recognizing that hydropower is an integral component of the region's economy.

- Since 1991, operations have been changed at Glen Canyon Dam to address environmental concerns, reducing electricity generation by about one-third. This reduction in electricity must be purchased from other generating resources (such as coal, thermal, gas, nuclear) and paid for by CRSP customers.

- Since 1983, CRSP power revenues have funded over $225 million of costs associated with environmental programs in the Grand Canyon. Since 2000, environmental experiments at Glen Canyon Dam recommended through the AMP cost an additional $33.5 million.