

Adaptive Management Program Strategic Plan

This strategic plan guides the Glen Canyon Dam Adaptive Management Program (AMP) through a series of goals and management objectives. Accomplished together, they meet the intent of the Grand Canyon Protection Act of 1992 (GCPA) and the Record of Decision on the Operation of Glen Canyon Dam Final Environmental Impact Statement (ROD).

The plan is grounded in statute and uses the concept of adaptive management to meet its purpose, to evaluate the effectiveness of actions taken to protect downstream resources. The nature of the AMP is to monitor the effects of the ROD and experiment to verify that these changes are indeed producing the expected benefits and are meeting the intent of the GCPA, and to advise the Secretary of the Interior (Secretary) of the findings. This plan describes the history of the program, the use of adaptive management in this context, the statutory framework, and specific objectives and actions to meet our goals.

BACKGROUND

Where the Institutional Authority Derives

The genesis of the AMP comes from Section 1804(c) of the GCPA, which requires the Secretary to complete a final Glen Canyon Dam Environmental Impact Statement (EIS) in accordance with the National Environmental Policy Act (NEPA) of 1969. The final EIS was published in March of 1995 and finalized by a ROD that was signed on October 9, 1996.

Sections 1804 and 1805 of the GCPA require the Secretary to:

(1) Adopt criteria and operating plans separate from and in addition to those specified in section 602(b) of the Colorado River Basin Act of 1968 and exercise other authorities under existing laws, so as to ensure that Glen Canyon Dam is operated in a manner consistent with section 1802 and to fulfill consultation requirements of section 1804(c) of the GCPA.

(2) Establish and implement long-term monitoring and research programs and activities that will ensure that Glen Canyon Dam is operated in a manner consistent with that of section 1802 and the consultation requirements of section 1805(c).

When the Bureau of Reclamation (Reclamation) began the task of developing an EIS on the operations of Glen Canyon Dam, research on the effects of dam operations had already been underway for nearly a decade under the auspices of the Glen Canyon Environmental Studies (GCES). GCES Phase I had come to the conclusion that dam

1 operations did indeed affect the resources of the Grand Canyon, but in answering the
2 fundamental question had managed to raise a myriad of new questions regarding these
3 impacts. GCES Phase II was in the process of trying to answer that new set of questions
4 when the EIS process began.

5
6 Because of the significant level of uncertainty surrounding the resources of the Grand
7 Canyon and the effect of dam operations on those resources, the EIS included as an
8 element common to all alternatives an adaptive management approach. This approach
9 would allow for scientific experimentation that would add to the knowledge base of the
10 effects of the operation of Glen Canyon Dam, and which could result in the development
11 of recommendations to the Secretary regarding additional operational changes.

12
13 The AMP is not intended to satisfy all of the mandates in the GCPA. Likewise, the
14 program is not intended to derogate any agency's statutory responsibilities for managing
15 certain resources. The AMP was developed and designed to provide an organization and
16 process for cooperative integration of dam operations, resource protection and
17 management, and monitoring and research information. The program would meet the
18 purpose and strengthen the intent for which this EIS was prepared and ensure that the
19 mandates of the GCPA of 1992 are met through future advances in information and
20 resource management.

21 22 **History of Compliance With Federal Laws**

23
24 Numerous statutes and compacts govern the operation of the Colorado River and thus,
25 affect the AMP. These are summarized in the Background section of the Guidance
26 Document (see Appendix XX) furnished to the Adaptive Management Work Group
27 (AMWG) by its chairman on January 19, 2000. The Colorado River Compact of 1922,
28 the 1944 Treaty with Mexico, the Upper Colorado River Basin Compact of 1948, the
29 Colorado River Storage Project (CRSP) Act of 1956, the Colorado River Basin Project
30 Act of 1968, along with various other compacts, court decrees, and other documents are
31 commonly and collectively known as the "Law of the River." These are all controlling to
32 the AMP. Additional laws that control the AMP include the legislation authorizing
33 Grand Canyon National Park and the Glen Canyon National Recreation Area, and the
34 GCPA of 1992.

35
36 The Guidance Document also refers to the Secretary's role as trustee for Native
37 American trust resources, the National Historic Preservation Act (NHPA), NEPA, and the
38 Endangered Species Act (ESA) as other laws and obligations which affect the AMP. In
39 addition, Section 204 of Title II of P.L. 106-377 controls the level of funding of AMP
40 activities from CRSP power revenues. Operation of the AMWG is controlled by the
41 Federal Advisory Committee Act (FACA).

42
43 One of the objectives of this strategic plan is to assure that all AMP activities are in
44 compliance with the full body of law which affects this program. To help understand the
45 history and background of the AMP, the following institutions and documents are
46 described:

1
2 Glen Canyon Environmental Studies

3
4 The GCES were initiated with a memorandum dated December 6, 1982, from
5 Reclamation Commissioner Broadbent to the Regional Director of the Upper Colorado
6 Region. The stated purpose was to “. . . see how the present flow patterns impact the
7 total riverine environment in the Grand Canyon and how various low-flow periods affect
8 rafting and the fishery resources in the river.” In addition, the memorandum calls for
9 “[e]nvironmental studies of the effects of the present and historic operation of Glen
10 Canyon Dam on the vegetation, wildlife, fishery, recreation, and other environmental
11 resources of the Grand Canyon.” (Broadbent, 1982)

12
13 Glen Canyon National Recreation Area Proposed General Management Plan (GMP)

14
15 The purpose of the plan comes from the enabling legislation. The plan states that the
16 Glen Canyon National Recreation Area is “. . . to provide for public outdoor recreation
17 use and enjoyment . . . and to preserve scenic, scientific, and historic features
18 contributing to public enjoyment of the area.” (National Park Service, 1979)

19
20 Grand Canyon Protection Act

21
22 The GCPA was enacted on October 30, 1992. It states that “The Secretary shall operate
23 Glen Canyon Dam in accordance with the additional criteria and operating plans
24 specified in Section 1804 and exercise other authorities under existing law in such a
25 manner as to protect, mitigate adverse impacts to, and improve the values for which
26 Grand Canyon National Park and Glen Canyon National Recreation Area were
27 established, including, but not limited to natural and cultural resources and visitor use.
28 The Secretary shall implement this section in a manner fully consistent with and subject
29 to the Colorado River Compact, the Upper Colorado River Basin Compact, the Water
30 Treaty of 1944 with Mexico, the decree of the Supreme Court in Arizona vs. California,
31 and the provisions of the Colorado River Storage Project Act of 1956 and the Colorado
32 River Basin Project Act of 1968 that govern allocation, appropriation, development, and
33 exportation of the waters of the Colorado River Basin.” (GCPA of 1992)

34
35 Biological Opinion (BO) on the Operation of Glen Canyon Dam

36
37 The BO is dated December 21, 1994. It states that the “biological opinion is in response
38 to . . . Reclamation’s . . . request . . . for formal Section 7 consultation, under the
39 Endangered Species Act . . . , on the proposed action to operate Glen Canyon Dam
40 according to operating and other criteria of the Modified Low Fluctuating Flow
41 Alternative . . . modified by a memorandum dated June 17, 1994. . . .” (United States
42 Fish and Wildlife Service (FWS), 1994)

43
44 Operation of Glen Canyon Dam Final Environmental Impact Statement

45

1 The Glen Canyon Dam Final EIS is dated March 1995. The purpose of the EIS was to
2 “determine specific options that could be implemented to minimize—consistent with
3 law—adverse impacts on the downstream environmental and cultural resources and
4 Native American interests in Glen and Grand Canyons.” The ROD elaborated by stating
5 that an “[A]nalysis of an array of reasonable alternatives was needed to allow the
6 Secretary to balance competing interests and to meet statutory responsibilities for
7 protecting downstream resources and producing hydropower, and to protect affected
8 Native American interests.” (United States Department of the Interior, 1996)

9 10 Grand Canyon National Park General Management Plan

11
12 The GMP is dated August 1995. The primary purpose of the plan is to provide a
13 foundation from which to protect park resources while providing for meaningful visitor
14 experiences. The GMP identifies the “values for which Grand Canyon National Park was
15 established.” The GMP was developed from several other park plans of relevance to the
16 AMP including the 1988 Backcountry Management Plan, 1989 Colorado River
17 Management Plan, and 1994 Resource Management Plan. Other plans subsequent to the
18 GMP include the 1997 Resource Management Plan and the 1998 Draft Wilderness
19 Management Plan.

20 21 Grand Canyon Monitoring and Research Center (GCMRC)

22
23 The purpose of the GCMRC is to fulfill the directive in the GCPA for the “establishment
24 and implementation of a long-term monitoring and research program to ensure that Glen
25 Canyon Dam is operated in a manner that protects the values for which the Grand
26 Canyon National Park and the Glen Canyon National Recreation Area were created.”
27 (Deputy Assistant Secretary for Water and Power, 1995)

28 29 Record of Decision on the Operation of Glen Canyon Dam

30
31 The ROD acknowledged that the Secretary must operate Glen Canyon Dam in
32 compliance with the GCPA. “This Record of Decision . . . documents the selection of
33 operating criteria . . . as analyzed in the final Environmental Impact Statement.”
34 “Analysis of an array of reasonable alternatives was needed to allow the Secretary to
35 balance competing interests and to meet the statutory responsibilities for protecting
36 downstream resources and producing hydropower, and to protect affected Native
37 American interests.” “The goal of selecting a preferred alternative was not to maximize
38 benefits for the most resources but rather to find an alternative dam operating plan that
39 would permit recovery and long-term sustainability of downstream resources while
40 limiting hydropower capability and flexibility only to the extent necessary to achieve
41 recovery and long-term sustainability.” (United States Department of the Interior, 1996)

42 43 National Park Service (NPS) 2001 Management Policies

44
45 The 2001 Management Policies is the “basic Service-wide policy document of the
46 National Park Service.” These policies define how “the National Park Service will meet

1 its park management responsibilities under the 1916 National Park Service Organic Act
2 “to conserve the scenery and the natural and historic objects and the wildlife therein and
3 to provide for the enjoyment of the same in such manner and by such means as will leave
4 them unimpaired for the enjoyment of future generations.” (NPS, 2001)

7 **ADAPTIVE MANAGEMENT PHILOSOPHY UNDERPINNING THE AMP**

9 **Introduction**

10
11 Adaptive management is a collaborative, science-based approach to resource
12 management. “Adaptive management applies the concept of experimentation to the
13 design and implementation of natural-resource and environmental policies. An adaptive
14 policy is one that is designed from the outset to test clearly formulated hypotheses about
15 the behavior of an ecosystem being changed by human use.”¹

16
17 Traditional adaptive management includes three basic characteristics:

18
19 “As a decision-making perspective, adaptive management is ecosystemic rather
20 than jurisdictional. The adaptive approach crosses boundaries and links functions
21 such as fisheries and land management.

22
23 What is being managed is a population or ecosystem, not individual organisms or
24 projects. Failures at the individual level need to be tolerated because risk-taking
25 is needed if hypotheses are to be advanced and tested.

26
27 The time scale of adaptive management is the biological generation rather than
28 the business cycle, the electoral term of office, or the budget process.”²

29
30 It was felt that this approach would provide the flexibility that was needed to meet the
31 intent of the GCPA in the face of the uncertainty that this complex system continued to
32 pose. In developing management policies, questions would arise regarding the expected
33 response of the Colorado River ecosystem to dam operations and other management
34 actions. Those questions would be formulated as hypotheses that would be tested
35 through experimentation. The information gained from those experiments would be
36 incorporated into recommendations to the Secretary regarding future management of the
37 dam and downstream resources.

38
39 Although the Glen Canyon Dam AMP has some sideboards and limitations that separate
40 it from a traditional adaptive management approach, the general principles still apply.
41 The goal of this program is an ecosystem management approach, with attention paid to

¹ Kai N. Lee, Compass and Gyroscope: Integrating Science and Politics for the Environment, Washington, DC: Island Press, 1993, p. 53.

² *Id.*, pp. 62-3.

1 mandates to address sensitive resources. The keys to using this kind of an adaptive
2 management philosophy as a base for a program like the Glen Canyon Dam AMP are to
3 (1) develop a clear and robust program of experimentation designed to answer questions
4 about ecosystem linkages and causal relationships between human actions and ecosystem
5 responses, (2) establish an effective process for incorporating new knowledge and
6 information produced by experimentation into management decisions, (3) keep resource
7 analysis and decision making ultimately focused on the ecosystem level, and (4) maintain
8 an open and flexible attitude toward defining the pathway to meeting the goals of the
9 program, so that the program can remain truly “adaptive.”

10 11 **Science in Adaptive Management**

12
13 Scientific activities in the Grand Canyon actually started millennia ago as Native
14 Americans lived in and migrated through this area of the North American continent.
15 Through generations of experience, they utilized the natural resources of the canyon to
16 sustain life, while maintaining profound respect for the canyon’s spiritual and cultural
17 significance.

18
19 Early pioneers and explorers such as John Wesley Powell opened the canyon to modern
20 scientific discovery, and expeditions of geologists, anthropologists, and artists fanned the
21 flames of public interest. Through the 19th and 20th centuries, significant scientific
22 understanding was established.

23
24 An organized effort of scientific study in the Grand Canyon arose out of activities
25 surrounding proposals to install additional generators on the bypass tubes, and to rewind
26 and uprate the existing generators at Glen Canyon Dam, resulting in the establishment of
27 the GCES in 1982. The intent of the studies was to determine the effects of dam
28 operations on downstream resources. The studies were conducted by Reclamation and
29 began the integrated monitoring of the Grand Canyon ecosystem. While the studies were
30 limited by unanticipated events such as floods in 1983 through 1986, they did identify
31 significant negative effects of dam operations on the downstream environment, which
32 ultimately led to both the preparation of an EIS and the passage of the GCPA.

33
34 Issuance of the ROD in 1996 established the AMP and the GCMRC, insuring that
35 scientific ecosystem inquiry would continue in compliance with the GCPA. Within this
36 administrative framework, science plays a major role in adaptive management. It is the
37 role of GCMRC to manage this scientific data collection. It serves as an independent
38 science organization of the AMP under the United States Geological Survey (USGS),
39 serving with the Technical Work Group (TWG) as an interface between the scientists and
40 the AMWG.

41
42 The goal of this scientific inquiry is to discover facts about the ecosystem downstream of
43 Glen Canyon Dam, using a rigorous monitoring and research program. While significant
44 progress has been made in the past 20 years of intensive study, the ecosystem is
45 extraordinarily complex, and much is still unknown. Hypotheses are framed from these
46 unanswered questions.

1
2 Long-term monitoring is critical to understanding the status and trends of important
3 resources. A stable monitoring program allows repetitive measurements on a consistent
4 time scale, which allows short- and long-term comparison with previous measurements.
5 Methods range from traditional sampling techniques to multispectral remote sensing, all
6 in an effort to answer the basic questions, “are the resources being protected and
7 preserved?” and “are conditions improving, stable, or degrading?”
8

9 In contrast, research activities are hypothesis driven. They attempt to enlarge
10 understanding of critical ecosystem processes. They employ a fine focus on specific
11 aspects of the ecosystem. Most often, they require experimental comparison of an
12 alternative treatment against a control or baseline environment. However, because there
13 are many other compounding factors beside dam operations, the experiments must
14 attempt to segregate these effects through careful controls.
15

16 Understanding of ecological processes has changed substantially as the result of these
17 monitoring and research activities. The resulting answers to questions and hypotheses
18 thus add to the knowledge base available to the AMWG as they make recommendations
19 to the Secretary.
20

21 **Management within the Glen Canyon Dam AMP**

22

23 Federal and state management agencies have delegated responsibilities for many of the
24 resources downstream of Glen Canyon Dam. Authorities for these agencies are typically
25 contained in statute, from which agencies develop policies. Government agencies rely on
26 these statutes and policies as they make management decisions. As noted in the EIS,
27 “...the AMP is not intended to derogate any agency’s statutory responsibilities for
28 managing certain resources.”
29

30 In the Glen Canyon Dam AMP, formal recommendations are made from the AMWG to
31 the Secretary regarding dam operations and other management actions needed to comply
32 with the GCPA. The AMWG is composed of members familiar with policy and
33 management decision making. The AMWG attempts to operate through consensus, but
34 voting occurs on formal recommendations. These recommendations are transmitted to
35 the Secretary through the Secretary’s designee.
36

37 The Secretary then responds to these recommendations as the final decision maker, either
38 directly or through actions of the agencies under delegated authority. In the latter case,
39 implementation of these recommendations by a federal agency often depends on internal
40 discussions between the management agency and the Secretary. The Guidance
41 Document contains additional thoughts on this interaction between management agencies
42 and the AMP.
43

44 **How Science and Management Are Integrated**

45

1 The entities primarily responsible for integration of science and management in the Glen
2 Canyon Dam AMP are the GCMRC and the TWG. As identified in the final EIS, the
3 GCMRC is responsible for developing the annual monitoring and research plan,
4 managing and coordinating all monitoring and research programs, and managing all data
5 collected as part of those programs. Thus, the GCMRC oversees contracts with
6 scientists, who monitor the resources, and integrates the scientific information for
7 communication to the TWG. To assure that its protocols are appropriate and sufficient
8 for assessing status and trends, the GCMRC periodically convenes Protocol Evaluation
9 Panels (PEP) comprised of external peer reviewers. Reports of PEP findings are
10 provided to both the GCMRC and TWG for their evaluation. If the recommendations are
11 agreed upon, changes in research and monitoring protocols are made. A Scientific
12 Advisory Board, comprised of eminent scientists from outside the AMP, provides advice
13 to all levels of the AMP and serves as an independent review body whose responsibility
14 is to assess the quality of science and the integration of that science into management
15 recommendations through the adaptive management process.

16
17 The TWG, which is comprised of technical representatives of all the entities comprising
18 the AMP, communicates information from scientists and the GCMRC to members of the
19 AMWG. It is their primary role to develop monitoring and research criteria and resource
20 questions for investigation by GCMRC. They must understand the policy implications of
21 advances in scientific understanding and the resource consequences of current and
22 proposed decision making. The successful integration of science and management
23 depends largely on this ability of scientists and decision makers to communicate
24 effectively.

25 26 **How Management of One Resource Affects Other Resources**

27
28 The individual-resource management approach that is prevalent in resource management
29 today cannot be applied to the Colorado River ecosystem in Grand Canyon. The complex
30 interdependence of resources that together comprise the ecosystem becomes manifest
31 when management of one resource (natural, cultural, recreational, economic) produces
32 unexpected effects on another resource. Benefits and impacts to all resources must be
33 considered and managed in order to produce a desirable and sustainable result.

34
35 The Colorado River ecosystem is full of examples of resource interdependence. Perhaps
36 the most illustrative example comes from the planning of the experimental
37 Beach/Habitat-Building Flow in 1996. This experimental flow was designed to test the
38 hypothesis that flows greater than powerplant capacity (which is approximately 31,000
39 cubic feet per second [cfs]) would mobilize sediment stored in the river channel and
40 deposit it on the river banks at a stage that would not be vulnerable to erosion by river
41 flows at normal operating levels. However, in designing and scheduling the experimental
42 flow, the effects of the higher flow on a whole suite of biological factors, from aquatic
43 food base to endangered Kanab ambersnail to food source and nesting habitat for
44 endangered Southwestern willow flycatcher to the timing of seed release and potential
45 spread of the nonnative tamarisk trees had to be considered. Similarly, the effects of
46 higher flows on the stability of cultural sites had to be assessed. Both recreational

1 boating and trout fishing in the 15 miles below Glen Canyon Dam would potentially be
2 impacted, and the timing and the magnitude of the flows would influence the expected
3 level of impact. There would also be significant impacts to power generation. Some of
4 the effects of the experimental flow would be positive and some would be negative. The
5 challenge to the resource managers and decision makers was to maximize the positive
6 impacts while minimizing the negative ones.

7
8 Future management decisions must always understand the interdependence of resources,
9 and seek to not only understand the potential effects on non-targeted resources when
10 designing and implementing management actions on targeted resources, but also to
11 approach management actions from an ecosystem perspective.

12 13 14 **GEOGRAPHIC AND PROGRAMMATIC SCOPE**

15
16 A discussion of scope of the AMP is set forth in a letter dated February 19, 2000, from
17 Steve Magnussen wherein he cites a January 11, 2000, Guidance Document (*Glen
18 Canyon Dam Adaptive Management Program AMWG FACA Committee Guidance*)
19 prepared by Interior Solicitor Scott Loveless. As stated in the Guidance Document, “The
20 key to the scope of AMWG’s responsibilities is whether a specific desired resource effect
21 downstream of the dam can be achieved through some manipulation of dam operations.
22 Under the ROD, the upper limit of planned release level is 45,000 cfs. Long-term
23 monitoring and research, including test flows within the current range of authorized
24 operations, are intended to enable finer and finer tuning of operations over time, as
25 additional knowledge and experience are gained, to better achieve the target mix of
26 resource benefits, as outlined in the EIS, pages 54-65.” In addition, the GCPA also
27 authorizes other management actions to accomplish its purposes. Examples of other
28 actions include water temperature control, stabilization of cultural sites, non-native fish
29 control, and removal of non-native vegetation.

30
31 The scope of the AMP is limited by the range of dam operations and other management
32 actions available to achieve a specific desired resource effect downstream. This is
33 complicated by the fact the dam and immediate downstream areas occur on the Colorado
34 River at approximately the mid-point between the river’s origin in the Rocky Mountains
35 and its terminus in the Gulf of California. Many activities, facilities and conditions on
36 the river occur both upstream and downstream of the planning area that significantly
37 influence attainment of AMP goals but over which the AMP has little or no control.
38 Despite these limits, the AMP provides information necessary to determine efficacy of
39 the ROD to meet its intended purpose under the GCPA, as well as recommendations on
40 dam operations and other management actions to the Secretary.

41
42 In addition, the AMWG may coordinate with other organizations and programs and offer
43 recommendations to the Secretary regarding actions that may be undertaken by other
44 agencies. Activities outside the scope of the AMP “will be funded separately, and do not
45 deter from the focus of the Act” (*AMWG Charter*).

1 The geographic scope of the AMP is defined in a longitudinal sense from the forebay of
2 Glen Canyon Dam downstream to the western boundary of Grand Canyon National Park at
3 Grand Wash Cliffs on Lake Mead.

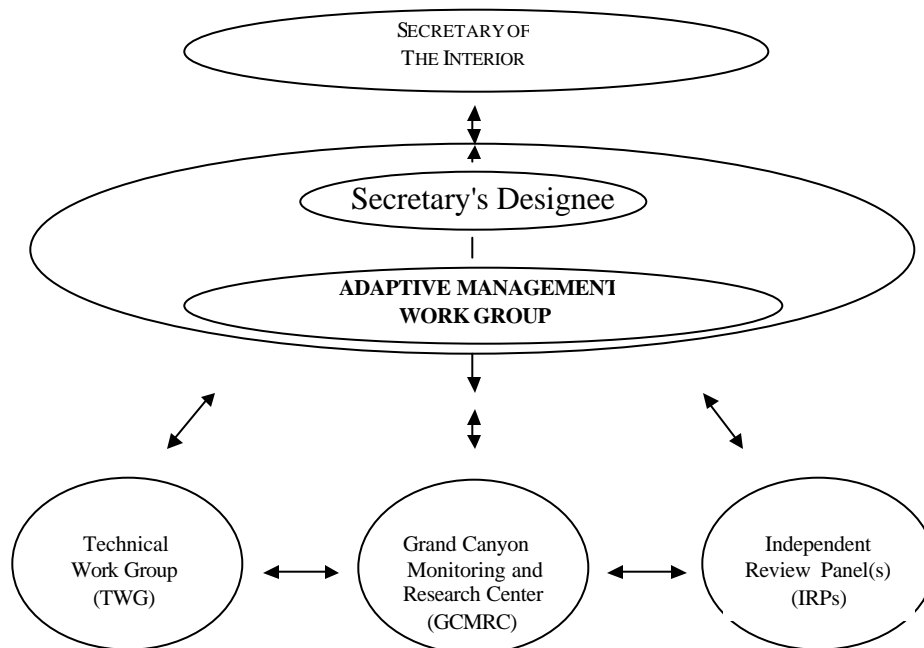
4
5 The lateral scope is an issue of ongoing discussion involving the effects of dam
6 operations on the area of potential effects as it relates to compliance with Section 106 of
7 the NHPA, the effect of tributaries on the mainstream Colorado River, and the potential
8 effects of the operation of the powerplant, bypass tubes, and spillways of Glen Canyon
9 Dam. It includes the downstream inundation level to which dam operations impact
10 physical, biological, recreational, cultural, and other resources.

11
12 The AMP may do research outside the geographic scope defined above to obtain needed
13 information. Such linkages with other areas “should be made on a case-by-case basis,
14 considering ecosystem processes, management alternatives, funding sources, and
15 stakeholder interests” (*Downstream: Adaptive Management of Glen Canyon Dam and the
16 Colorado River Ecosystem, National Research Council 1999*).

19 ROLES AND RESPONSIBILITIES

21 Organizational Components of the AMP

22 The Glen Canyon Dam Final EIS calls for the establishment of the AMP to assess
23 the effects of the Secretary’s actions on downstream resources. The critical entities in the
24 AMP include: the Secretary and his/her designee, AMWG, TWG, GCMRC, and
25 Independent Review Panels. These are shown in Figure 1 from the Glen Canyon Dam
26 Final EIS.



1
2 Figure 1. Organizational components of the Glen Canyon Dam Adaptive Management Program.
3

4 The AMWG and TWG include representatives from federal and state resource
5 management agencies, Native American tribes, and a diverse set of other private and
6 public stakeholders. The Secretary under the FACA appoints AMWG members. The
7 roles for the specified entities in the AMP were originally defined in the Glen Canyon
8 Dam Final EIS (pages 34-38) and are currently as follows:
9

10 **Secretary’s Designee**

- 11
- 12 • Serves as the Secretary’s principal contact for the AMP and as the focal point for
- 13 issues and decisions associated with the program.
- 14 • Chairs the AMWG.
- 15 • Responsibilities include ensuring that the Department of the Interior complies with its
- 16 obligations under the GCPA and ROD for the Glen Canyon Dam EIS.
- 17 • The designee reviews, modifies, accepts or remands the recommendations from the
- 18 AMWG in making decisions about any changes in dam operation and other
- 19 management actions.
- 20

21 **Adaptive Management Work Group**

- 22
- 23 • Provides the framework for AMP policy, goals, direction and priorities.
- 24 • Develops recommendations for modifying operating criteria and other resource
- 25 management actions.
- 26 • Facilitates coordination and input from interested parties.
- 27 • Reviews and forwards the annual report to the Secretary and his/her designee on
- 28 current and projected year operations.
- 29 • Reviews and forwards annual budget proposals.
- 30 • Ensures coordination of operating criteria changes in the Annual Operating Plan
- 31 (AOP) for Colorado River Reservoirs and other ongoing activities.
- 32

33 **Technical Work Group**

- 34
- 35 • Develops with GCMRC criteria and standards for monitoring and research programs
- 36 and provides periodic reviews and updates of these.
- 37 • Develops resource management questions (i.e., information needs in response to the
- 38 AMWG management objectives) for the design of monitoring and research programs
- 39 by GCMRC.
- 40 • Provides information as necessary for preparing annual resource reports and other
- 41 reports as required by the AMWG.
- 42 • Reviews strategic plans, annual work plans, long-term and annual budgets, and other
- 43 assignments from the AMWG.
- 44

45 **Grand Canyon Monitoring and Research Center**

- 1
- 2 • Responsible for developing and managing the annual monitoring and research
- 3 programs, and managing all data contracted to be delivered to GCMRC as part of
- 4 those programs.
- 5 • Ensures development of research research designs and proposals for implementing
- 6 monitoring and research identified by the AMWG.
- 7 • Manages monitoring and research on resources affected by dam operations and other
- 8 management actions.
- 9 • Administers research proposals through a competitive contract process, as
- 10 appropriate.
- 11 • Coordinates, prepares, and distributes technical reports and documentation for review
- 12 and as final products.
- 13 • Facilitates interaction between scientists and TWG and AMWG.
- 14 • Coordinates review of the monitoring and research program with independent review
- 15 panel(s).
- 16 • Prepares and forwards technical management recommendations and annual reports, as
- 17 specified in section 1804 of the GCPA to the AMWG and the TWG.
- 18 • Coordinates research and monitoring activities with NPS and tribes.

19

20 **Independent Review Panel(s)**

- 21
- 22 • Responsible for periodically reviewing resource specific monitoring and research
- 23 programs and for making recommendations to the AMWG and GCMRC regarding
- 24 monitoring, priorities, integration, and management.
- 25 • Provides reviews of the AMP monitoring and research programs, including the
- 26 GCMRC and Programmatic Agreement (PA).
- 27 • Provides technical advice as requested by the GCMRC or AMWG.
- 28 • Provides science assessments of proposed research plans and programs, technical
- 29 reports and publications and other program accomplishments, as requested.
- 30 • Conducts a five-year review of GCMRC monitoring and research protocols.

31

32

33 **INSTITUTIONAL SCOPE ³/₄ WHAT THE PROGRAM INFLUENCES OR IS**

34 **INFLUENCED BY**

35

36 **Annual Operating Plan**

37

38 The AOP process was designed by Reclamation to project future Colorado River system

39 reservoirs contents and downstream releases for the upcoming water year to allow the

40 Secretarial determination of Colorado River Basin water delivery obligations. This

41 process is conducted with input from the Colorado River Management Work Group and

42 other members of the public in accordance with the *Criteria for Coordinated Long-Range*

43 *Operation of Colorado River Reservoirs* (Operating Criteria), and Sections 1802(b) and

44 1804(c) of the GCPA of 1992 (P.L. 102-575).

45

1 Individual reservoir operations in the Colorado River reservoir system are based on
2 “appropriate consideration of uses of the reservoirs for all purposes,” as required by the
3 Operating Criteria. Because hydrologic conditions will vary from any assumptions
4 utilized in the AOP process, the AOP-projected reservoir operations and dam releases
5 will be subject to monthly revision during the year to accommodate changing hydrologic
6 conditions. However, releases must be governed in accordance with the “Law of the
7 River.”

8
9 As a part of this AOP process, the decision on releases for the Lower Division states must
10 be made in accordance with a “surplus,” “normal,” or “shortage” determination.
11 Releases must also meet treaty delivery obligations to the Republic of Mexico.

12
13 The GCPA requires criteria, operating plans, and reports “separate from and in addition
14 to” those mandated by the Operating Criteria, noting that the GCPA is implemented fully
15 consistent with and subject to the water allocation and development provisions of
16 previous compacts and statutes contained in the “Law of the River.” As noted in the
17 GCPA report language, these criteria primarily affect the Glen Canyon Dam powerplant
18 operations, and do not affect any delivery obligations to the Lower Basin or to Mexico.

19 20 **Programmatic Agreement**

21
22 The PA regarding the operation of Glen Canyon Dam is a legally binding document
23 among the Advisory Council on Historic Preservation, Reclamation, Arizona State
24 Historic Preservation Officer, NPS, Havasupai Tribe, Hopi Tribe, Hualapai Tribe, Kaibab
25 Paiute Tribe, Navajo Nation, San Juan Southern Paiute Tribe, Paiute Indian Tribe of
26 Utah, and Zuni Pueblo (see Appendix XX). The PA represents fulfillment by
27 Reclamation and the NPS of their responsibilities under Section 106 of the NHPA. It is
28 anticipated that the Western Area Power Administration (Western) and the GCMRC will
29 be added as signatories in the near future.

30
31 The PA has stipulations which include: (1) identification and evaluation of all cultural
32 resources within the area of potential effects; (2) development of a plan for monitoring
33 the effects of Glen Canyon Dam operations on historic properties and for carrying out
34 remedial actions to address the effects of ongoing damage to historic properties; and (3)
35 preparation of an historic preservation plan.

36
37 In the AMP, PA signatories and GCMRC science activities provide input to AMWG and
38 TWG members on cultural resource issues. However, TWG and AMWG do not oversee
39 PA activities but are considered as interested parties to decisions made by the PA
40 signatories. Only through the budget process do TWG and AMWG have a direct effect
41 on PA activities.

42
43 Some of the AMP processes or activities are used to help fulfill responsibilities under the
44 PA. For example, cultural resource monitoring trips have been combined with other
45 scientific trips to obtain expertise or save money. The GCMRC database will be used to
46 maintain cultural resource information and the LIDAR maps will be used to map the area

1 of potential effect. The AMP activities are intertwined with PA responsibilities since
2 many AMP activities can impact cultural resources. These include different flow and
3 release regimes, recovery of species or habitat, recreational use, and scientific
4 monitoring.

5 6 **Biological Opinion**

7
8 Section 7(a)(2) of the ESA 1973, as amended, requires that any action a federal agency
9 authorizes, funds, or carries out must not jeopardize the continued existence of any listed
10 species or adversely modify designated critical habitat. Regulations containing the
11 procedures for implementing the ESA are found at 50 CFR Part 402 entitled Interagency
12 Cooperation - Endangered Species Act of 1973, as Amended; Final Rule. In brief, to
13 comply with the ESA, an evaluation of the affects of any discretionary federal action
14 must be conducted by the action agency in conjunction with informal consultation with
15 the FWS. For minor activities, this can be limited to verbal communication. For a larger
16 or more complex action, or for any major construction activity as defined, the action
17 agency is required to prepare a biological assessment (BA). The BA describes the action
18 and evaluates the affect to each species that may be present in the action area by
19 comparing the current condition of the population and habitat to what it is expected to
20 occur during and following the action. A determination is limited to either “no affect,”
21 which equates to no effect at all, positive, negative, or neutral, or to “may affect,” which
22 equates to any effect, positive, negative, or neutral. “May affect” can be further qualified
23 with a determination of ‘likely to adversely affect’ or ‘not likely to adversely affect.’ A
24 “may affect and is likely to adversely affect” determination triggers formal consultation
25 with the FWS. A determination of “may affect and not likely to adversely affect” can be
26 addressed with informal consultation with the FWS.

27
28 Any “may affect” determination triggers formal consultation which may result in either a
29 “not likely to adversely affect” determination or in issuance of a BO. Once consultation is
30 requested, the FWS has 90 days to render a BO and an additional 45 days to write the
31 BO. The FWS usually prepares a draft BO. The period of time that the draft is under
32 review does not count toward the 135 days. Consultation is between the action agency,
33 an applicant if there is one, and the FWS. If there is an affect on tribal lands or waters,
34 the tribes must be consulted. If the FWS determines that the proposed action will
35 jeopardize the continued existence of the species by appreciably reducing the likelihood
36 of both survival and recovery of the species in the wild by further reducing its number,
37 reproduction, or distribution (the jeopardy threshold), they prepare a BO which must
38 contain a reasonable and prudent alternative (RPA). An RPA must be within the
39 jurisdiction of the action agency, technologically and economically feasible, consistent
40 with the original intended purpose of the project, and one which the FWS believes will
41 remove jeopardy. The BO must also contain an “incidental take” statement if any take is
42 expected to occur, reasonable and prudent measures, and terms and conditions designed
43 to reduce take and address adverse modification of designated critical habitat. The BO
44 can contain conservation measures, conservation recommendations, and other topics as
45 well. Once the action agency receives the draft BO, they may choose to share the
46 document with other stakeholders (see March 1988 Consultation Handbook, FWS).

1
2 The BO is the FWS's recommendation to the action agency. Consultation is concluded
3 when the action agency responds to the FWS by accepting the BO as written, or
4 describing if and how they will implement the BO. Once this commitment has been
5 made, the action agency is responsible for implementing the agreed to RPA or to re-
6 consult with the FWS. Any commitments made by Reclamation would be of higher
7 priority than discretionary actions.

8
9 In short, the ESA affects the AMP through: (1) the requirement to consult with the FWS
10 on any discretionary action which may affect listed species or adversely modify
11 designated critical habitat prior to taking the action, and (2) through commitments an
12 action agency makes to conserve species in response to RPAs in BOs. With respect to
13 the AMP, several BOs contain RPAs with significant responsibilities for Reclamation.
14 These include the requirements of:

- 15
- 16 • the development of an adaptive management program that will include
- 17 implementation of studies required to determine impact of flows on listed and
- 18 native fish,
- 19 • the implementation of a program of experimental flows to benefit the endangered
- 20 and native fish,
- 21 • the feasibility evaluation of a temperature control device,
- 22 • determining responses of native fish to various temperature regimes and river
- 23 flows,
- 24 • coordinating the preparation of a Little Colorado River management plan,
- 25 • the establishment of a second spawning aggregation of humpback chub in the
- 26 mainstem or tributaries,
- 27 • conducting a Razorback sucker workshop, and
- 28 • the evaluation of the overwinter survival of young-of-year humpback chub
- 29 • the relocation and collection of approximately 75 percent of the Kanab ambersnail
- 30 individuals from 50 percent of the habitat expected to be inundated by test flows
- 31

32 From this list, it is clear that ESA issues are a primary concern of the AMP.

33 34 **National Park Service Activities**

35
36 The activities of the AMP occur within the confines of two areas administered by the
37 NPS: Grand Canyon National Park and Glen Canyon National Recreation Area.
38 Therefore, AMP activities will have an influence on the NPS resources, and the NPS
39 activities will influence resources under the purview of the AMP. The management of
40 the national park system and of NPS programs is guided by and consistent with public
41 laws, treaties, proclamations, Executive Orders, regulations, and directives of the
42 Secretary and the Assistant Secretary for Fish and Wildlife and Parks.

43
44 Of great importance are the NPS Organic Act of 1916, the General Authorities Act of
45 1970 and the 1978 amendments to this Act (the Redwoods Amendment). Although the
46 Organic Act and the Redwoods Amendment use different language, they define a single

1 standard for the management of the national park system. National Parks have two
2 primary purposes; first, to conserve park resources and values, and second, to provide for
3 the enjoyment of park resources and values by the people of the United States. By
4 enjoyment, it is meant to encompass all the people of the United States not just those who
5 visit parks. It also includes benefits such as scientific knowledge and inspiration as well
6 as other forms of enjoyment.

7
8 The NPS has three levels of guidance documents: (1) Management Policies 2001, the
9 basic policy document of the NPS, (2) interim updates or amendments accomplished
10 through Director's Orders, and (3) detailed and comprehensive handbooks or reference
11 manuals issued by associate directors. These documents provide NPS field employees
12 with sufficient guidance to carry out Management Policies and Director's Orders.

13
14 The primary responsibility of NPS managers is to preserve park resources and values
15 without impairment. The NPS cannot conduct or allow activities in parks that would
16 impact park resources and values to a level that would constitute impairment, unless
17 directly and specifically provided for by legislation or by the proclamation establishing
18 the park. In cases of doubt as to the impact of activities on park resources, the NPS will
19 decide in favor of protecting the resources.

20
21 Impairment is defined as impact that would harm the integrity of park resources or
22 values. Whether an impact meets this definition depends on the specific resources or
23 values affected; the severity, duration, and timing of the influence; the direct and indirect
24 effects of the influence; and the values and purposes for which a particular park unit was
25 established. However, the laws do give the NPS the management discretion to allow
26 impacts to park resources and values when necessary and appropriate to fulfill the
27 purposes of a park, so long as the impact does not constitute impairment.

28
29 The NPS has established a tiered process for planning and decision making. General
30 management plans are the highest of these tiers. The GMP focuses on why the park was
31 established, and what management should be achieved and maintained over time. Action
32 plans for dealing with complex, technical, and sometimes controversial issues are a level
33 of detail and analysis beyond that appropriate at the GMP or strategic plan level.
34 Implementation planning provides this level of detail and analysis. Park resource
35 management plans, river management plans, and wilderness management plans are
36 examples of implementation plans.

37 38 **Operation of the CRSP Power System**

39
40 The Glen Canyon Dam powerplant is tied to a vast system of generators, transmission
41 lines and delivery points in the western United States, Canada, and Mexico. It is legally
42 obligated to provide electricity to wholesale electrical customers and others in the West.
43 Reclamation operates Glen Canyon Dam in close coordination with Western. Western
44 markets the electrical power produced and owns and operates the federal transmission
45 system which delivers the electricity.

46

1 Long-Term Firm Electrical Power

2
3 Under the authorizing legislation for the CRSP, federal dam operators are required to
4 produce “the greatest practicable” amount of long-term firm power at Glen Canyon Dam,
5 integrating the operation of Glen Canyon Dam with the other CRSP powerplants and
6 other federally-owned electrical powerplants.
7

8 Western’s long-term contracts for electricity are with small municipalities, rural electrical
9 cooperatives, federal defense facilities and other federal and state institutions, and Indian
10 tribes. This power is sold strictly in the CRSP market area which includes Colorado,
11 Wyoming, Utah, Arizona, New Mexico, and Nevada. Revenue from these sales is placed
12 into the Basin Fund, a fund which repays to the U.S. Treasury the capital costs of the
13 CRSP mainstem dams and the irrigation assistance portion of the Upper Basin
14 participating projects.
15

16 Long-term firm electrical power has been marketed according to a marketing plan
17 established by Western. The contracts for electricity made possible under this plan end in
18 2024. Western is obliged to deliver electricity in the amounts specified in these contracts.
19 This can be supplied by the CRSP generators or Western may purchase some of this
20 power from other generators. The contract amount can be adjusted every five years to
21 take into account changing circumstances or resources.
22

23 Operation for a Federal Load Control Area

24
25 Western operates two load control areas that are electrically tied to Glen Canyon Dam. A
26 load control area is a geographical area assigned to a controller to monitor electrical
27 demand and generation and make sure that they “match” on a moment-by-moment basis.
28 This is referred to as “regulating.” Currently, Glen Canyon Dam generation can change
29 by up to 1,000 cfs to adjust to these “swings” in demand. The contribution by Glen
30 Canyon Dam to these two load control areas is evenly divided. Western’s Operation
31 Center in Phoenix, Arizona sends a “regulation” signal every few seconds directly to
32 Glen Canyon Dam.
33

34 Reserve Sharing Groups

35
36 Reserves are required by electrical production and distribution companies to serve as a
37 “back-up” in case of unforeseen electrical system problems. The existence of reserves
38 minimizes the possibility of interruption of electrical service. Western has contractual
39 agreements with two reserve sharing groups. Reserve sharing groups are formed to share
40 the “damage” caused by generator and transmission outages, transmission overloads and
41 other emergencies or unplanned events.
42

43 For the two reserve sharing groups, Western is obligated to provide up to 70 Megawatts
44 of power from one or more of the CRSP powerplants. Typically, Glen Canyon Dam has
45 provided the bulk of this service.
46

1 Emergency Service

2
3 Western calls upon Glen Canyon Dam and other CRSP dams to respond to a variety of
4 electrical system emergencies. These emergencies and the response to them by Western
5 and Reclamation are a requirement of all participating members of the Western Systems
6 Coordinating Council. These are described in the EIS for the operation of Glen Canyon
7 Dam and are authorized in the ROD. Further details on the emergency exception criteria
8 are contained in the Operating Agreement Associated with Glen Canyon Dam Operating
9 Criteria between Reclamation and Western dated July 7, 1997. Generally, these
10 emergencies are related to transmission line and generation outages. During these
11 emergencies, the operating limitations on Glen Canyon Dam contained in the ROD may
12 be exceeded.

15 **PROTOCOLS AND PROCEDURES ^{3/4} HOW THE AMP WORKS**

17 **Charter**

18
19 The current Charter of the AMP is attached as an appendix. This Charter was recently
20 renewed as a formal FACA committee for an additional two years.

22 **Operating Procedures of AMWG and TWG**

23
24 Attached as appendices are the current operating procedures of the AMWG and the
25 TWG. These have been formally recommended by these two groups, and are in harmony
26 with the AMP Charter. They serve to give formal structure to AMP meetings.

28 **Tribal Consultation and Coordination**

29
30 Federally recognized Indian tribes are domestic dependent nations, and the legal
31 relationship between the Federal Government and tribes is one as set forth in the
32 Constitution of the United States, treaties, statutes, executive orders, and court decisions.
33 Indian tribes have a guaranteed right to self-govern and to exercise inherent sovereign
34 powers over their members and reservations. The United States government works with
35 Indian tribes on a government-to-government basis to address issues concerning Indian
36 tribal self-government, trust resources, and Indian tribal treaty and other rights. Tribal
37 trust resources include land and natural resources either on or off Indian reservations and
38 other assets, retained by, or reserved by or for Indian tribes held by the Federal
39 Government in trust and are protected by a fiduciary obligation on the part of the United
40 States.

41
42 In order to establish regular and meaningful consultation and collaboration with Indian
43 tribal governments various Executive Orders, Secretarial Orders and Memorandums have
44 been issued over the last eight years. Some of these include Executive Order 13084
45 Consultation and Coordination with Indian Tribal Governments signed May 14, 1998,
46 and reissued on November 6, 2000; Executive Order 13007 Indian Sacred Sites signed

1 May 24, 1996; Secretarial Order 3175 Department of the Interior Responsibilities for
2 Indian Trust Resources signed November 8, 1993; (now Departmental Manual release
3 303 DM 2); Secretarial Order 3206 American Indian Tribal Rights, Federal-Tribal Trust
4 Responsibilities, and the ESA signed June 5, 1997; Memorandum for the Heads of
5 Executive Departments and Agencies - Government-to-Government Relations with
6 Native American Tribal Governments signed April 29, 1994.

7
8 To ensure the fulfillment of the federal Indian trust responsibility, the Department of the
9 Interior has established policies and procedures for government-to-government
10 consultation with federally recognized Indian tribes and tribal members for the
11 identification, conservation, and protection of American Indian trust resources, trust
12 assets, or tribal health and safety. Indian trust assets are values derived from land
13 resources including surface water and groundwater, natural vegetation and wildlife, and
14 air quality. Any potential impacts from federal actions or activities to tribal trust assets
15 must be properly addressed between the affected tribe and the appropriate federal agency
16 prior to any disturbance to such resources.

17 18 **How Compliance is Integrated into the AMP**

19
20 Every management action by the Glen Canyon Dam AMP is assessed for necessity of
21 compliance with the ESA, NEPA, and the NHPA. Reclamation, as the agency taking the
22 action to modify dam operations, is most often the lead federal agency on these actions.

23
24 In the case of ESA, the action agency follows the procedure as referenced in the
25 Biological Opinion section above. If the consultation results in a BO and the action
26 agency accepts the BO, the resulting RPAs and terms and conditions are binding and
27 control those activities of the AMP. Since the ESA has such a high priority among
28 Federal laws, endangered species appropriately have a high priority among AMP
29 resources.

30
31 In the case of NEPA, the ROD detailed specific changes in dam operations designed to
32 benefit downstream resources. The nature of the AMP is to monitor the effects of the
33 ROD and experiment to verify that these changes are indeed producing these expected
34 benefits and are meeting the intent of GCPA. If changes to the Glen Canyon Dam
35 operating criteria are recommended to the Secretary, additional NEPA compliance will be
36 addressed to implement those changes.

37
38 In the case of NHPA, Reclamation's compliance for dam operations follows the three
39 stipulations of the PA, identification and evaluation of historic properties, monitoring to
40 determine effect, and adoption of an historic preservation plan which will describe a
41 process to resolve adverse effects of dam operations on historic properties. Decisions are
42 made through consultation with all PA signatories with the TWG and AMWG acting as
43 the public interested in historic preservation.

44 45 46 **CALENDAR**

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Budget Development Process

(To be provided by Budget Ad Hoc Group by end of May 2001, including timeline for developing the AMP budgets.)

Annual Report to Congress

As authorized by the GCPA, each year the AMP prepares a report to be transmitted to Congress. The report includes actions taken to meet the mandates of the GCPA, dam operations, and other management actions.

The report also serves to provide an update on the status of the resources addressed by the GCPA. The annual State of the Colorado River Ecosystem (SCORE) report prepared by the GCMRC provides valuable input to this report.

SCORE Report

Communication between scientists and managers is one of the most important components of the AMP. The SCORE report serves the critical purpose of reporting on the status of the ecosystem, including a comprehensive reporting of change and trends among all resources. Through the use of qualitative and quantitative targets, it also provides a mechanism for determining if the management objectives are being met.

Results of annual monitoring and research activities should be made available to the adaptive managers as soon as possible, but no later than six months after each sampling period. Copies of scientific documents are available at GCMRC, many of which are available via the Internet.

Annual Science Plan

Each year GCMRC prepares a detailed science plan describing the monitoring and research activities proposed for the upcoming year. The plan is discussed with the TWG and the TWG budget ad hoc group in an effort to identify both important monitoring and research questions and relative priorities among the scientific activities. Final recommendation to the Secretary rests with the AMWG.

The science plan is critical to the evaluation of the effectiveness of actions taken to protect downstream resources. The plan must have a stable long-term monitoring component to address long-term trends. It must have a research component to address new questions that arise through scientific investigations. Finally, it must have the statistical rigor required to substantiate its conclusions. The annual work plan will include a report on the prior year's activities.

Request for Proposal Process

1 As recommended by the National Research Council (1996), the GCMRC will utilize a
2 competitive proposal solicitation process open to government employees, public-section
3 contractors, and universities through an open Request for Proposals (RFPs). Monitoring
4 and research projects will be selected on the basis of their support of scientific capability
5 and merit, submission timeliness on previous work (as evaluated through an independent,
6 objective and unbiased peer review process), management objectives and information
7 needs, demonstrated capabilities of proposers, and cost effectiveness. Following the
8 selection of proposals, appropriate procurement mechanisms (i.e., grants, contracts,
9 cooperative agreements) will be utilized for supporting selected projects. Most cultural
10 resources programs, falling under the Secretary's trust responsibilities, will be subjected
11 to the same review protocol with a decision point only under after required revision.
12

13 The GCMRC's commitment to ensuring the high quality of the scientific information
14 produced by its programs highlights the importance of peer review at all levels of
15 GCMRC scientific activities. GCMRC is committed to the use of scientific peer review
16 and is drafting a set of peer review guidelines to describe the level of review received by
17 all GCMRC proposals, programs, publications, and other products; and clearly convey
18 the unambiguous standard of scientific objectivity and credibility followed by GCMRC.
19

20 These guidelines for scientific peer review will ensure that GCMRC matches the level of
21 peer review to the nature of the proposal, program, publication or other product being
22 reviewed, and describe the selection of qualified scientific peers, independence of the
23 review process, and the inclusion of external (i.e., outside GCMRC) reviewers in the
24 scientific peer review process.
25

26 In general, following approval by the AMWG of the long-term monitoring and research
27 strategic plan, an annual monitoring and research program will be completed and
28 approved each year in April. After approval of the annual monitoring and research plan,
29 RFPs will be issued. Proposals will be screened by the program managers for their
30 responsiveness to the RFP and all qualified proposals will undergo an independent and
31 objective scientific peer review. Awards will be made on the basis of the results of peer
32 review, along with the program manager's evaluation of project relevance, and technical
33 contracting requirements.
34
35

36 **ACTION PLAN ³/₄ WHAT, WHO, WHEN, AND HOW**

37
38 (The Action Plan will be developed after completion of the management objectives)
39

40 **Plan for Periodic Review**

41
42 The AMP Strategic Plan is a guidance document for the AMWG and the Secretary that,
43 when all its elements have been met, achieves the intent of the GCPA.
44

45 It is recommended that the AMP Strategic Plan be reviewed at the beginning of every
46 other fiscal year. As set forth in the AMWG Charter, the AMWG is charged with

1 reviewing “long-term monitoring data to determine the status of resources and whether
2 the AMP Strategic Plan goals and objectives are being met. If necessary, [AMWG will]
3 develop recommendations for modifying the Glen Canyon Dam ROD, associated
4 operating criteria, and other resource management actions pursuant to the GCPA.”

5
6 Ad Hoc groups may be established to assist the AMWG with such a review, or the
7 AMWG could delegate the task to the TWG. If changes are needed to the strategic plan,
8 including any of the goals, management objectives, or information needs,
9 recommendations will be made to the AMWG for approval to proceed with such changes.

10
11 The review process should be completed within six months of the beginning of the fiscal
12 year that the review takes place.

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1 **Glen Canyon Dam Adaptive Management Work Group**
2 **Federal Advisory Committee**

3
4 **CHARTER**

5
6 Official Designation: Glen Canyon Dam Adaptive Management Work Group.
7

8 Scope and Objectives: The Committee will provide advice and recommendations to the
9 Secretary of the Interior relative to the operation of Glen Canyon Dam in accordance with
10 the additional criteria and operating plans specified in Section 1804 of the Act and to the
11 exercise of authorities under existing laws in such a manner as to protect, mitigate
12 adverse impacts to, and improve the values for which Grand Canyon National Park and
13 the Glen Canyon National Recreation Area were established, including but not limited to
14 the natural and cultural resources and visitor use.
15

16 The Secretary of the Interior is implementing the Grand Canyon Protection Act (Act) of
17 October 30, 1992, embodied in Public Law 102-575. The Act calls for implementation of
18 long-term monitoring, research, and experimental programs and activities. As part of
19 long-term monitoring, the Secretary's Record of Decision (ROD) mandated development
20 of an Adaptive Management Program (AMP). The AMP provides for monitoring the
21 results of the operating criteria and plans adopted by the Secretary and research and
22 experimentation to suggest appropriate changes to those operating criteria and plans.
23

24 The AMP includes an Adaptive Management Work Group (AMWG). The AMWG will
25 facilitate the AMP, recommend suitable monitoring and research programs, and make
26 recommendations to the Secretary as required to meet the requirements of the Act. The
27 AMWG may recommend research and monitoring proposals outside the Act which
28 complement the AMP process, but such proposals will be funded separately, and do not
29 deter from the focus of the Act.
30

31 Duration: It is the intent that the AMWG shall continue indefinitely, unless otherwise
32 terminated by the Secretary.
33

34 Agency or Official to Whom the Committee Reports: The AMWG reports to the
35 Secretary through the Secretary's designee who shall serve as the chairperson and
36 Designated Federal Official of the AMWG. In the absence of the Chairperson, a senior
37 level Interior representative will act as Chairperson for the AMWG.
38

39 The Secretary's designee shall be responsible for preparation of meeting agendas and
40 scheduling meetings of the AMWG. The Secretary's designee shall attend and chair all
41 meetings of the AMWG. The Secretary's designee will also be responsible for sending a
42 formal summary report after each Advisory Committee meeting directly to the Secretary
43 of the Interior with copies of subject summary report to be provided to all AMWG
44 members.
45

1 Bureau Responsible for Providing Necessary Support: The logistical and support
2 services for the meetings of the AMWG shall be provided by the Bureau of Reclamation
3 (Reclamation).

1 Estimated Annual Operating Costs: The operating costs are estimated at \$200,000 annually for
2 the establishment and support of the AMWG. This includes costs for required staff support,
3 Reclamation staff and AMWG members, and expenses incurred in the recording and
4 reproduction of meeting minutes, reports, notices, etc.

5
6 Description of Duties: The duties or roles and functions of the AMWG are in an advisory
7 capacity only. They are to:

- 8
- 9 a. Establish AMWG operating procedures.
- 10
- 11 b. Advise the Secretary in meeting environmental and cultural commitments of the Record
12 of Decision.
- 13
- 14 c. Recommend the framework for the AMP policy, goals, and direction.
- 15
- 16 d. Define and recommend resource management objectives for development and
17 implementation of a long-term monitoring plan, and any necessary research and studies
18 required to determine the effect of the operation of Glen Canyon Dam on the values for
19 which the Grand Canyon National Park and Glen Canyon National Recreation Area were
20 established, including but not limited to natural and cultural resources, and visitor use.
- 21
- 22 e. Review and provide input on the report required in Section 1804 (c)(2) of the Act to the
23 Secretary, the Congress, and the Governors of the Colorado River Basin states. The report
24 will include discussion of dam operations, the operation of the AMP, status of resources,
25 and measures taken to protect, mitigate, and improve the resources defined in the Act.
- 26
- 27 f. Annually review long-term monitoring data to determine the status of resources and
28 whether the AMP Strategic Plan goals and objectives are being met. If necessary, develop
29 recommendations for modifying the GCDEIS ROD, associated operating criteria, and other
30 resource management actions pursuant to the Grand Canyon Protection Act.
- 31
- 32 g. Facilitate input and coordination of information from stakeholders to the Secretary to
33 assist in meeting consultation requirements under Sections 1804 (c)(3) and 1805 (c) of the
34 Act.
- 35
- 36 h. Monitor and report on compliance of all program activities with applicable laws,
37 permitting requirements, and the Act.
- 38

39 Allowances for Committee Members (compensation, travel, per diem, etc.) While engaged in
40 the performance of official business at AMWG and AMWG sub-group meetings (regular, ad
41 hoc, and Protocol Evaluation Panel meetings) away from home or their regular places of
42 business, all AMWG members or AMWG sub-group members shall, upon request, be
43 reimbursed for travel expenses in accordance with current Federal travel regulations.

1
2 Estimated Number and Frequency of Meetings: The AMWG is expected to meet biannually.
3 The Secretary's designee, who will serve as the Designated Federal Official, may call additional
4 meetings as deemed appropriate. Fifteen members must be present at any meeting of the
5 AMWG to constitute a quorum.
6

7 In accordance with FACA, a notice of each meeting of the AMWG shall be published in the
8 Federal Register at least 15 days prior to the meeting advising the date, time, place, and purpose
9 of the meeting. If it becomes necessary to postpone or cancel an announced meeting, a
10 subsequent notice shall be published in the Federal Register as early as possible and shall explain
11 the reasons for the postponement or cancellation. A news release for each meeting,
12 postponement, or cancellation shall also be provided to selected major newspapers in Arizona,
13 California, Colorado, Nevada, New Mexico, Wyoming, and Utah. News releases shall also be
14 provided to agencies and organizations expressing interest in publishing meeting announcements
15 in newsletters.
16

17 In accordance with FACA, all meetings of the AMWG shall be open to the general public. Any
18 organization, association, or individual may file a written statement or, at the discretion of the
19 AMWG, provide verbal input regarding topics on a meeting agenda in accordance with FACA.
20

21 Termination Date: It is the intent that the AMWG shall continue indefinitely, unless otherwise
22 terminated by the Secretary. The committee is subject to the provisions of the Federal Advisory
23 Committee Act (FACA), 5.U.S.C. Appendix 2, and will take no action unless the charter filing
24 requirements of section 9 of FACA have been complied with. The Committee is subject to
25 biennial review and will terminate 2 years from the date the charter is filed, unless, prior to that
26 time, the charter is renewed in accordance with Section 14 of the FACA.
27

28 Committee Membership: Members of the AMWG to be appointed by the Secretary shall be
29 comprised of:
30

- 31 a. Secretary's Designee, who shall serve as chairperson for the AMWG.
32
- 33 b. One representative each from the 12 cooperating agencies associated with the EIS:
34
 - 35 (1) Bureau of Reclamation
 - 36 (2) Bureau of Indian Affairs
 - 37 (3) U.S. Fish and Wildlife Service
 - 38 (4) National Park Service
 - 39 (5) Western Area Power Administration
 - 40 (6) Arizona Game and Fish Department
 - 41 (7) Hopi Tribe
 - 42 (8) Hualapai Tribe
 - 43 (9) Navajo Nation

- 1 (10) San Juan Southern Paiute Tribe
- 2 (11) Southern Paiute Consortium
- 3 (12) Pueblo of Zuni
- 4

5 c. One representative each from the seven Basin States:

- 6
- 7 (1) Arizona
- 8 (2) California
- 9 (3) Colorado
- 10 (4) Nevada
- 11 (5) New Mexico
- 12 (6) Wyoming
- 13 (7) Utah
- 14

15 d. Two representatives each from:

- 16
- 17 (1) Environmental groups
- 18 (2) Recreation interests
- 19 (3) Contractors who purchase Federal power from Glen Canyon Powerplant
- 20

21 Members will be appointed to the AMWG by the Secretary, with input and recommendations
22 from the cooperating agencies, states, tribes, contractors for Federal power from Glen Canyon
23 Dam, environmental representatives, and other stakeholders. To be eligible for appointment to
24 the AMWG, a person must (a) be qualified through education, knowledge, or experience to give
25 informed advice on water supply, diversion and delivery facilities, and their operation and
26 management, or the environmental aspects of such operation; and (b) have the capability to
27 constructively work in a group setting toward a common objective of structuring a mechanism
28 for program implementation.

29
30 Members of the AMWG will be appointed for a 4-year term. At the discretion of the Secretary,
31 members may be reappointed to additional terms. Vacancies occurring by reason of resignation,
32 death, or failure to regularly attend meetings will be filled by the Secretary for the balance of the
33 vacating member's term using the same method by which the original appointment was made.
34 The Secretary, may at his discretion, initiate a new term where the remaining term of the vacancy
35 is less than 2 years. Failure of an organization to be represented at two consecutive meetings
36 will substantiate grounds for dismissal. The Chairperson will make the final determination in
37 dismissing a member.

38
39 To avoid conflict of interest issues arising from entities, including Federal agencies, having
40 representatives on the AMWG and also submitting responses to request for proposals to perform
41 work, the Federal procurement process shall be strictly adhered to. While members of the
42 AMWG may give advice to the Secretarial Designee, all decisions in the procurement process
43 shall be made by Federal procurement officials free of influence from AMWG members.

1 Subgroups: The committee may establish such workgroups or subcommittees as it deems
2 necessary for the purposes of compiling information, discussing issues, and reporting
3 back to the AMWG.

4
5 Authority: The Grand Canyon Protection Act (Act) of October 30, 1992, embodied in
6 Public Law 102-575, directs the Secretary of the Interior (Secretary), among others, to
7 operate Glen Canyon Dam in accordance with the additional criteria and operating plans
8 specified in section 1804 of the Act and to exercise other authorities under existing law in
9 such a manner as to protect, mitigate adverse impacts to, and improve the values for
10 which Grand Canyon National Park and the Glen Canyon National Recreation Area were
11 established, including but not limited to the natural and cultural resources and visitor use.
12 The Secretary shall implement this section in a manner fully consistent with and subject
13 to Section 1802 of the Act. Section 1805 of the Act calls for implementation of long-
14 term monitoring programs and activities that will ensure that Glen Canyon Dam is
15 operated in a manner consistent with that of Section 1802.

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22 _____
Secretary of the Interior

Date signed

23
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27 Date Filed
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GLEN CANYON DAM
ADAPTIVE MANAGEMENT WORK GROUP
OPERATING PROCEDURES

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FOREWARD

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The Grand Canyon Protection Act (Act) of October 30, 1992, (Public Law 102-575) directs the Secretary of the Interior (Secretary) to establish and implement long-term monitoring programs and activities that will ensure that Glen Canyon Dam is operated in a manner consistent with that of section 1802" of the Act. The monitoring programs and activities shall be established and implemented in consultation with the Secretary of Energy; the Governors of the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming; 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. In order to comply with the consultation requirement of the Act, the Glen Canyon Dam EIS recommended formation of a Federal Advisory Committee. To fulfill this requirement, the Glen Canyon Dam Adaptive Management Work Group (AMWG) was established. The AMWG Charter imposes the following criteria: (1) the AMWG shall operate under the Federal Advisory Committee Act (Public Law 92-463); (2) the Chairperson shall be designated by the Secretary; (3) the Secretary's Designee, shall also serve as the Designated Federal Official under the Federal Advisory Committee Act; (4) the Bureau of Reclamation will provide the necessary support in taking accurate minutes of each meeting; and (5) the AMWG shall continue in operation until terminated or renewed by the Secretary of the Interior under the Federal Advisory Committee Act.

OPERATION

1. Meetings. The AMWG is expected to meet semiannually. The Secretary's Designee may call additional meetings as deemed appropriate. A minimum of one meeting will be held annually. All meetings shall be announced by notice in the Federal Register and by news release to local newspapers.

Fifteen members must be present at any meeting of the AMWG to constitute a quorum.

Robert's Rules of Order will be generally followed, except that some flexibility will be allowed as needs dictate.

The Bureau of Reclamation is responsible for arranging meetings and for other duties associated with operation of the AMWG. They will arrange for meeting location, provide staff for the Designee, minutes, Federal Register Notices and other operational requirements of the AMWG.

Meetings of the AMWG will be held in Phoenix, Arizona, to allow for better travel accessibility for the members as well as provide greater opportunity for the public to attend.

1 2. Chairperson. The Chairperson will be the Secretary's Designee, who will preside over the
2 meetings of the AMWG. In the absence of the Chairperson, the Chairperson will appoint an
3 alternate. The Chairperson will designate an alternate who is an employee of the Department of
4 the Interior. The Chairperson or designated alternate must be present before a meeting of the
5 AMWG may convene. The Chairperson or his alternate is authorized to adjourn an AMWG
6 meeting at any time.

7
8 3. Members. Membership shall follow the guidelines in the AMWG Charter. Members of the
9 AMWG will be designated by the Secretary of the Interior. They shall serve for a term of four
10 years. Members may be re-designated to serve for more than one term.

11
12 4. Alternate Committee Members. Each AMWG member may designate an alternate to serve
13 for the same term as the member. Alternates must be identified to the Chairperson in writing. If
14 the alternate is to represent the member at any AMWG meeting, the member will so notify the
15 chairperson 1.5 days prior to such meeting. Alternates must meet the same qualifications as the
16 member. Alternates will have authority to participate in AMWG business, including quorum and
17 voting privileges. Representation by an alternate does not satisfy the minimum personal
18 attendance requirement of the member as described in the Charter. A list of members and
19 alternates shall be maintained and made available to AMWG members.

20
21 5. Agenda. At least 30 days prior to any meeting of the AMWG, a draft of the proposed agenda
22 and related information will be sent to the group members. Members shall review the agenda
23 and return comments and proposed agenda items to the Designee within two weeks of the agenda
24 mailing date. The final agenda will be sent to the members 15 days prior to the meeting. The
25 Secretary's Designee shall approve the agendas.

26
27 6. Voting. The maker of a motion must clearly and concisely state and explain his or her
28 motion. Motions may be made verbally or submitted in writing in advance of the meeting.
29 Notice of motions to be made by any member of the AMWG should be announced in the Federal
30 Register and presented on the agenda. Motions may be proposed by any member in meetings
31 where they are related to an agenda topic. After a motion there should be presentations by staff
32 followed by a discussion and a call for questions. The public will be given opportunity to
33 comment during the question period as allowed by the Chairperson. Any member of the public
34 asked to address the AMWG, shall have a minimum of two minutes to comment. The
35 Chairperson can limit the total time allowed to the public for comments. Comments shall
36 address the motion and not be repetitive to presentations, group discussions or other comments
37 previously presented. The motion must be fully documented for the minutes and restated clearly
38 by the Chairperson before a vote is taken.

39
40 The group should attempt to seek consensus but, in the event that consensus is not possible, a
41 vote should be taken. Voting shall be by verbal indication or by raised hand. Approval of a
42 motion requires a two-thirds majority of members present and voting. The views of any
43 dissenting member or minority group shall be transmitted to the Secretary along with the
44 majority recommendation. Voting shall occur only with the formal meetings of the group.

1 7. Minutes. Detailed minutes of each meeting will be kept. The minutes will contain a record of
2 persons present and a description of pertinent matters discussed, conclusions reached, and
3 actions taken on motions. Minutes shall be limited to approximately 5-15 pages. The
4 corrections and adoption of the minutes will be by vote of the AMWG at the next subsequent
5 meeting. The Secretary's Designee shall approve all minutes. The Bureau of Reclamation is
6 responsible for recording and disseminating minutes to AMWG members within 60 days of the
7 subject meeting.

8
9 9. Public Involvement. No later than 15 days prior to each meeting of the AMWG or any
10 subcommittee thereof, a notice will be published in the Federal Register. Meetings will be open
11 to the public and advertised in local newspapers. Interested persons may appear in person, or file
12 written statements to the AMWG. Public comments can be on any issue related to operation of
13 the Glen Canyon Dam. A specific time for public comment will be identified in the agenda.
14 Advance approval for oral participation may be prescribed, and speaking time may be limited.
15 Minutes of the AMWG meetings and copies of reports submitted to the AMWG will be
16 maintained for public review at the Bureau of Reclamation's Upper Colorado Regional Office in
17 Salt Lake City, Utah, and at the Library of Congress in Washington, D.C. They will also be
18 posted to the Bureau of Reclamation web site (www.uc.usbr.gov/amp).

19
20 10. Payment of Travel. Members of the AMWG may receive compensation for travel expenses
21 under current Federal regulations. Alternates representing the official committee member may
22 also receive compensation for travel expenses.

23
24 11. Open/Closed Meetings. If any member proposes discussion of a sensitive issue felt to
25 require a closed session, he or she should so state in a proposal submitted to AMWG members in
26 sufficient time to include it in the agenda published in the Federal Register Notice announcing
27 the next meeting. A closed executive session may be held during a regular meeting, but should
28 be used rarely. Any sensitive cultural issues will require consultation with Native Americans
29 prior to meeting.

30
31 Telephone conference meetings must have a notice in the Federal Register 15 days prior to the
32 call. There must be adequate opportunity for the general public to listen to the conference call.

33
34 The AMWG may conduct business outside of formal meetings through telephone polls
35 conducted by the Chairperson or his/her designee. In emergency situations, telephone polls can
36 be requested by the AMWG member to act on clearly defined written motions for AMWG
37 approval. Following approval by the Chairperson, a telephone poll will be conducted within
38 seven working days. During a telephone poll, all members will be contacted and requested to
39 vote. Approval of a motion requires a two-thirds majority of all members voting. The
40 Chairperson is responsible for documenting in writing how each member voted and distributing
41 the record to all AMWG members.

1 12. Reports and Record Keeping. The Annual Report (AR) required by the Grand Canyon
2 Protection Act shall be written by the AMWG. The State of the Natural and Cultural Resources
3 in the Colorado River Ecosystem report developed by the Grand Canyon Monitoring and
4 Research Center will be attached to the AR and shall contain information on the condition of the
5 resources impacted by the operation of Glen Canyon Dam. The AR shall be concise, containing
6 critical resource issues and recommendations to the Secretary on future dam operations.
7

8 AMWG staff will supply GSA the required information to complete the summary report for
9 Federal Advisory Committees.
10

11 13. Committee Expenses and Cost Accounting. An accounting of the expenses for operation of
12 the AMWG shall be maintained by Reclamation. Expenses and other information will be
13 submitted to GSA as required by FACA. Committee expenses are limited to approximately
14 \$154,000 annually.
15

16 SUB-GROUPS 17

18 1. Formation. The AMWG may form sub-groups in order to facilitate the mission of the
19 AMWG as identified in the Act and the AMWG Charter. Sub-groups will be formed for
20 completion of specific tasks or for specified periods of time. Sub-group members will be named
21 by the members of the AMWG. Upon formation of a sub-group, the Chairperson of the AMWG,
22 with the advice of AMWG members, will approve nominated members to serve on the sub-
23 group. Effort shall be made to keep sub-groups small. Sub-groups will be formed or dissolved
24 by a vote of the AMWG.
25

26 2. Requirements. Sub-groups may choose their chairperson from among the AMWG named
27 sub-group members. The chairperson of any sub-group may convene group meetings at his or
28 her discretion. Sub-groups may develop their own operating procedures. Sub-group meetings
29 must follow requirements of FACA, except they need not be chartered and members need not be
30 appointed by the Secretary. One standing sub-group or subcommittee of the AMWG will be the
31 Glen Canyon Dam Technical Work Group (TWG). The TWG membership shall consist of one
32 representative names from each organization represented in the AMWG, with the exception that
33 two members from the National Park Service representing the Grand Canyon National Park and
34 the Glen Canyon Recreational Area, and one representative from the US Geological Survey. All
35 sub-groups will elect their own officers. Names of all sub-group members will be announced to
36 the AMWG at regular meetings and will be attached to the minutes. Sub-group members may
37 designate alternates subject to approval of the Designee and the AMWG.
38

39 3. Charge. Sub-groups will receive their charges from the AMWG. Sub-groups will work only
40 on issues assigned them by the AMWG. They will not be empowered to follow other issues on
41 their own. They are encouraged to submit issues to the AMWG they feel worthy of
42 consideration and discussion, but the AMWG must approve work on all new issues. The
43 AMWG may require the sub-groups to develop plans and direct them to come to a consensus or
44 majority opinion at their discretion. Sub-groups shall determine their own operating procedures,
45 which must be reduced to writing and included with the AMWG and sub-group records.

1 4. Reporting. Sub-groups will report at least annually to the AMWG at the request of the
2 Chairperson. Sub-groups shall report only to the AMWG. They shall provide
3 information as necessary for preparing annual resource reports and other reports as
4 required for the AMWG.

5
6 5. Ad Hoc Groups. Ad hoc groups shall consist of members of the sub-group only.
7 These groups may meet to discuss assignments from the sub-group. Ad hoc meetings
8 will not require Federal Register notices. Minutes are recommended but, not required.
9 Ad hoc groups shall report only to the main body of the sub-group. On a case-by-case
10 basis, the AMWG will provide direction to the subgroups on the flexibility they have in
11 forming Ad hoc groups.

12
13 Adopted by vote of the TWG on _____ In Phoenix, Arizona.

14
15 Approved: _____

16 Chairperson

17 Date

18
19
20 rev. 00jul06
21

1 GLEN CANYON DAM
2 TECHNICAL WORK GROUP
3 OPERATING PROCEDURES
4

5 FOREWORD
6

7 The Grand Canyon Protection Act (Act) of October 30, 1992, (Public Law 102-575)
8 directs the Secretary of the Interior (Secretary) to establish and implement long-term
9 monitoring programs and activities that will ensure that Glen Canyon Dam is operated in
10 a manner consistent with that of section 1802 of the Act. The monitoring programs and
11 activities shall be established and implemented in consultation with the Secretary of
12 Energy; the Governors of the States of Arizona, California, Colorado, Nevada, New
13 Mexico, Utah, and Wyoming; Indian tribes; and the general public, including
14 representatives of academic and scientific communities, environmental organizations, the
15 recreation industry, and contractors for the purchase of Federal power produced at Glen
16 Canyon Dam. In order to comply with the consultation requirement of the Act, the Glen
17 Canyon Dam EIS recommended formation of a Federal Advisory Committee and a
18 Technical Work Group. To fulfill this requirement the Glen Canyon Adaptive
19 Management Work Group (AMWG) was established. The AMWG held their first
20 meeting on September 10-11, 1997 and officially formed the Glen Canyon Technical
21 Work Group (TWG) as a subgroup. This group is comprised of technical representatives
22 who represent the various stakeholders on the AMWG. The TWG shall perform those
23 tasks charged to them by the AMWG. Additional responsibilities of the TWG are to
24 develop criteria and standards for monitoring and research programs; provide periodic
25 reviews and updates; develop resource management questions for the design of
26 monitoring and research by the Grand Canyon Monitoring and Research Center; and
27 provide information, as necessary, for preparing annual resource reports and other
28 reports, as required, for the AMWG. The TWG shall comply with all regulations of the
29 Sunshine Act and the Federal Advisory Committee Act pertaining to sub-committees.
30 (See 41 CFR 101-6.10 Federal Advisory Committee Management). Staff resources for
31 the TWG shall be provided by the Grand Canyon Monitoring and Research Center and
32 Reclamation.
33

34 OPERATION
35

36 1. Meetings. - TWG meetings will be held quarterly or more frequently as required.
37 Where possible meetings will be scheduled 2-3 months in advance. Information will be
38 provided to all interested parties. The Bureau of Reclamation (Reclamation) will be
39 responsible for submitting meeting notices to be published in the Federal Register 15
40 days prior to meetings. Federal register notices may provide information on up to 3
41 meetings at a time. The Chairperson will draft a reminder meeting notice to the TWG
42 members and the staff will distribute it at least 10 days prior to the meeting. Meeting
43 format will be in accordance with these Operating Procedures. Sixteen members must be
44 present at any meeting of the ~~AMWG~~ TWG to constitute a quorum.
45

1 2. Officers. - The TWG will elect its own officers. The Chairperson will be elected for a 1-year
2 term and selected by a vote of the TWG. The elected chairperson shall have the option of
3 appointing an alternate member to represent the stakeholder for the term of the chairperson,
4 however, the stakeholder shall have only one vote. With the recommendation of the TWG,
5 compensation for the chairperson may be provided from Adaptive Management Program (AMP)
6 funds. A Vice-chair will be selected to assist the Chairperson and will be an employee of
7 Reclamation to ensure requirements of federal regulations are met and to provide assistance.
8 Reclamation and GCMRC will provide staff and meeting resources. Reclamation shall be
9 responsible for, and shall assure compliance with, the applicable federal regulations including
10 those referenced above. The Chairperson shall be elected in the ~~December~~ summer July meeting
11 of the TWG or the first meeting prior to the ~~first calendar~~ start of the fiscal year meeting of the
12 ~~AMWG TWG.~~ The new Chairperson will take office at the first meeting of the TWG following
13 the first meeting of the AMWG of the year. The term of the TWG Chairperson will be October 1
14 - Sept. 30. The current chairperson will serve until the new chairperson takes office.

15
16 *Chair responsibilities:*

17
18 Attend all TWG and AMWG meetings when possible.

19
20 Facilitate TWG meetings by leading discussions, arranging for an outside facilitator when
21 required, and inviting input from TWG members, technical experts, and the public.

22
23 Organize or disband Ad Hoc task groups per TWG direction.

24
25 Ensure recognition of consensus or voting on decision items as appropriate, including
26 development of minority opinion papers when consensus cannot be reached.

27
28 Present overview of TWG activities and recommendations at AMWG meetings.

29
30 *Vice-Chair responsibilities include:*

31
32 Attend all TWG and AMWG meetings when possible.

33
34 Assist the chairperson in facilitating the TWG meetings, ensuring that action items,
35 responsible parties, and future agenda items are summarized and reviewed with the group
36 by close of meeting.

37
38 Contact speakers, ad hoc committee chairpersons, and other contributors at least three
39 weeks before the next TWG meeting to review assignments and determine how much
40 time should be allotted for their presentations.

41

- 1 Prepare draft agenda for next meeting and provide review copies by E-mail to co-
- 2 chairperson, GCMRC program managers, and speakers about three weeks before the next
- 3 meeting. Finalize agenda and send to co-chairperson two weeks before meeting.
- 4

1 Track and coordinate contributions of products for TWG/AMWG review with
2 stakeholders, GCMRC, ad hoc groups, and others.

3
4 Ensure complete meeting preparations (meeting room, motel, audio visual equipment,
5 recording of minutes, etc.)

6
7 Review and distribute TWG products to AMWG.

8
9 3. Grand Canyon Monitoring and Research Center (GCMRC)

10 Develop GCMRC planning documents for TWG review.

11
12 Provide scientific opinions, documents, presentations, and reviews of TWG documents.

13
14 Develop research designs and proposals for implementing monitoring and research
15 identified by the AMWG, including draft budget estimates.

16
17 Provide scientific information and updates to the TWG for all resources of concern
18 identified in the EIS. Coordinate, prepare, and distribute technical reports and
19 documentation for review and as final products.

20
21 Prepare and forward technical management recommendations and annual reports as
22 specified in Section 1804 of the GCPA to the TWG.

23
24 4. Members. - The TWG membership shall consist of one representative named from each
25 organization represented in the AMWG, with the exception of two members from the National
26 Park Service representing the Grand Canyon National Park and the Glen Canyon Recreational
27 Area, and one representative from the U.S. Geological Survey. The TWG organizational
28 membership was nominated by the AMWG, with the USGS representative having been
29 nominated by the Secretary's Designee. Members were selected by the respective organizations
30 representatives. A list of TWG members will be distributed to the AMWG at regular meetings.
31 TWG members may designate alternates.

32
33 5. Alternate Committee Members. Alternates shall be designated by TWG members.
34 Members can designate an alternate for any TWG or Ad Hoc group meeting they will be unable
35 to attend, or for which the alternate is better prepared to represent the organization's interests.
36 Alternates shall sign-in on the attendance sheet noting that they are the alternate to the official
37 member. The officially designated alternate, in the absence of the member, is allowed to fully
38 participate and vote in TWG meetings without prior notification and be counted in the quorum.
39
40

1 6. Agenda. - Members, and others, requesting an item be added to the agenda should notify the
2 Chairperson in writing (by mail, fax, or E-mail) at least 15 days prior to the meeting. The
3 following information should be provided with each request: a discussion topic or title, the
4 nature of the topic (i.e., sharing of information, discussion of an issue, or a proposed action),
5 name(s) of the presenter(s), total amount of time required for presentation, and any other relevant
6 points for meeting planning. The agenda will be finalized when the schedule is filled or when
7 the pre-meeting briefing documents are distributed. Requests received after the agenda is
8 finalized may be considered under new business (time permitting), or may have to be postponed
9 until a future meeting. An agenda will be prepared and approved by the Chairperson and
10 forwarded to the TWG meeting recorder. The meeting recorder will distribute the final agenda
11 (by e-mail and/or by other means) to the TWG members and others on the distribution list.
12 Reclamation is responsible for compliance with federal regulations. Reclamation will include in
13 the Federal Register Notice: meeting dates, times, location, and a list of meeting agenda items.
14

15 7. Guidelines for Discussions. - The following ground rules will guide all discussions while
16 the meeting is in session: Members will endeavor to arrive, return from breaks, and depart the
17 meeting on schedule. Any person needing to continue private discussions after the meeting has
18 been called to order will take their business outside the conference room. Members, alternates,
19 and visitors wishing to address the TWG will wait to be recognized by the Chairperson or
20 designated discussion leader before speaking. Speakers will make their points succinctly and
21 yield the floor to the next speaker, waiting to again be recognized for rebuttals. Comments are to
22 be applicable to the motion and not repetitive to presentations, group discussion or other
23 comments previously presented. Discussions of new or unrelated business will be postponed
24 until the appointed time on the agenda.
25

26 8. Voting. - The maker of a motion must clearly and concisely state and explain their motion.
27 Motions may be made verbally or submitted in writing in advance of the meeting. Motions may
28 be proposed by a member in meetings where they are related to an agenda topic. After a motion
29 and a second to the motion there shall be presentations by staff, where they are necessary or
30 desired. Presentations shall be followed by discussion and a call for questions. The public will
31 be given opportunity to comment during the question period as provided for in these operating
32 procedures. Any member of the public who has asked to address the TWG, shall be provided a
33 reasonable time to comment. The Chairperson may limit the total time allowed to the public for
34 comments. Comments shall be applicable to the motion and not be repetitive of prior
35 presentations, group discussions, or other comments. The motion shall be fully documented for
36 the minutes and restated clearly by the Chairperson before seeking a determination of consensus
37 or a vote is taken.

38 Consensus is the desired result. All reasonable efforts will be made to bring the group to a
39 consensus decision or recommendation, including, for example, formation of ad hoc groups. If
40 consensus cannot be achieved, a vote will be taken on motions and recommendations to be
41 forwarded to the AMWG. Only members of the TWG or their alternate may vote. A majority
42 recommendation will go forward along with a minority opinion report (containing the alternate
43 recommendation and identification of who constitutes the minority). Ad hoc groups consisting

1 of the dissenting members may be formed as needed to prepare minority opinions. Each
2 appointed TWG representative is expected to explain and/or clarify issues to their respective
3 AMWG member.
4

1 Recommendations to the TWG or AMWG will be summarized in report form, will contain
2 relevant background material on the issues, and will include a brief summary of previous
3 discussions related to the issue (i.e., ad hoc group or TWG discussions). Requests for actions
4 associated with a briefing document will be posed as a specific written recommendation that can
5 be approved as written, approved with modification, or not approved. Reports and
6 recommendations forwarded to the AMWG will be identified as having been approved through
7 consensus of the entire TWG, except when a minority opinion is submitted to the Chairperson in
8 writing prior to the agreed date for forwarding TWG recommendations to the AMWG (generally
9 60 days before the next AMWG meeting). Members subscribing to the minority opinion will be
10 listed in the minority report, which shall follow the same format outlined above for the consensus
11 or majority report. The TWG Chairperson may invite a representative of the minority group to
12 present the minority opinion to the AMWG.

13
14 9. Ad Hoc Groups and Meetings. - Ad hoc groups can be formed by the TWG as needed with
15 membership consisting of TWG members and alternates only. Groups may invite technical
16 advisors outside the TWG membership to assist on some issues. These groups may meet to
17 discuss assignments from the TWG. Ad hoc meetings will not require federal register notices.
18 Minutes are recommended, but not required. Ad hoc groups shall report of their deliberations
19 and findings to the TWG. Presentations of findings from Ad Hoc groups may be given by
20 individual members of the group. Ad hoc groups shall report only to the main body of the TWG.
21 The AMWG may provide direction to the TWG on the flexibility they have in forming ad hoc
22 groups. Ad hoc groups shall be formed by the consensus or vote of the TWG and shall terminate
23 as soon as the assigned task is completed.

24
25 10. Minutes, Reports, and Record Keeping. - Minutes will be recorded by TWG staff support
26 from Reclamation. Minutes will address the key topics of the TWG meetings including
27 proposals, motions, voting/approval of motions, majority/minority opinions, public comments,
28 presentations, findings from ad hoc groups, and other pertinent information. Minutes will not be
29 a complete transcript of the discussions. An audio tape recording of the meeting will be kept for
30 each meeting. The corrections and adoption of the minutes will be reached by consensus of the
31 TWG at the following meeting.

32
33 Minutes, attachments, agendas, and materials for upcoming TWG meetings will be distributed
34 according to the schedule below:

35
36 A. Submittal of materials for upcoming TWG Meetings.

<u>15 Business Days Prior to TWG Mtg:</u>	<u>Responsible Person</u>	<u>Submit To</u>
_Agenda items	Committee Members	Chairman
_Materials for duplication & dist.	Committee Members	Staff

1 TWG members responsible for materials for an upcoming meeting shall forward them to the
2 designated staff member in time to be included with the distribution which will occur 10 days
3 prior to the meeting. Materials may be provided via e-mail or hard copy. Where copies of
4 material are not provided to the designated staff member in time for normal distribution, the
5 person or organization will be responsible for making their own copies and bringing them to the
6 meeting. They may either: (1) e-mail, fax or other means; (2) duplicate prior to and distribute at
7 the meeting. Staff, members, and public providing materials for distribution at the meeting
8 should bring at least 40 copies. Meeting documents distributed at the meeting are to be provided
9 first to the meeting recorder, TWG members, and the GCMRC Chief. Copies of all handouts
10 will be placed in a designated location for official visitors and the public. If action is anticipated
11 to be taken on or as a result of that material, all reasonable effort will be made to provide those
12 materials to the members in advance of the meeting. In the event materials are not provided in
13 advance of the meeting, action on this topic may be delayed at the Chairperson's discretion.
14 Individuals making presentations at TWG meetings shall notify TWG staff of any special audio
15 visual equipment or supply needs at least two weeks before the meeting.
16

17 A mailing list containing members' mailing addresses, phone numbers, fax numbers, and E-mail
18 addresses, as appropriate, will be maintained and distributed as needed. Updates will be
19 prepared and the list re-distributed as appropriate. A copy of the roster of TWG members or
20 alternates attending any meeting of the TWG shall be attached to the minutes, and shall include a
21 list of all others in attendance.
22

23 B. Meeting material distribution to TWG members

<u>10 Calendar Days Prior to TWG Meeting:</u>	<u>Responsible:</u>
27 _Minutes and attachments from the previous meeting	Staff
28 _Agenda for the upcoming meeting	Staff
29 _Materials needed for the upcoming meeting	Staff

30
31 E-mail, regular mail, or other means shall be used for the distribution.
32

33 Reclamation will be responsible for reports and distribution of materials to AMWG, and
34 providing copies of information to the Library of Congress. The TWG shall assist
35 GCMRC in preparation of the draft Annual Report to Congress pursuant to the Grand
36 Canyon Protection Act.
37

38 Minutes, documentation from meetings, and reports shall be made available to the public
39 at the Library of Congress in Washington, D.C. and the Upper Colorado Regional Office
40 of the Bureau of Reclamation in Salt Lake City, Utah.
41

1 11. Arranging meetings and other duties associated with operation of the TWG. - Where
2 possible, meetings will be scheduled 2-3 months in advance. All meetings shall also have
3 a Federal Register Notice published 15 days or more in advance of any meeting. Meeting
4 locations will be determined by the group in a preceding meeting. The staff will arrange
5 meeting rooms and audio visual equipment, and block a number of hotel guest rooms.
6 Meeting rooms will be arranged so that each of the 26 TWG members can be seated
7 around the table. Alternates representing an absent TWG member should take their place
8 at the table. Additional seating will be provided around the margin or rear of the room
9 for alternates who are attending with the member, for official visitors and for the general
10 public.

11
12 12. Public, Visitors, and Open and Closed Meetings. - All meetings are open to the
13 public. It is not anticipated the group will require closed sessions unless a provision is
14 made to do so. Only members of the TWG or their alternate may participate in
15 discussions of the group. Appropriate staff of Reclamation and the GCMRC shall
16 provide pertinent information from their organization to respond to questions or make
17 presentations when approved by the group. The public will be allowed to comment after
18 discussion of each agenda item requiring a decision of that group and at the end of the
19 TWG meeting or as provided in the agenda. Each person will be given up to 10 minutes
20 to address the TWG members at the time specified on the agenda for public comment.
21 Greater consideration will be given to individuals submitting discussion issues and/or
22 requesting time in advance of the meeting to the Chairperson. The Chairperson will
23 control adherence to the time limit so the meeting is not unduly prolonged. Each speaker
24 will be expected to provide their name and affiliation for the meeting minutes. The
25 Chairperson will accept written comments from the public, and will allow their
26 distribution if copies are available for all members (40 copies required). Written
27 comments will be attached to the meeting minutes if they are identified with the name,
28 address, and affiliation of the provider.

29
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33
34 Adopted by vote of the TWG on _____, Phoenix, Arizona.

35
36
37 Approved: _____
38 Chairperson

Date

39
40
41
42 Updated: 2/13/01
43
44

1 **GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM**
2 **AMWG FACA COMMITTEE GUIDANCE**

3
4 **Purpose of this Document**

5 During the first two years of implementing the Glen Canyon Dam Adaptive
6 Management Program, it has become apparent that several aspects of the program,
7 specifically relating to the Record of Decision, the Glen Canyon Dam EIS and the Grand
8 Canyon Protection Act need to be clarified in order to facilitate and focus the activities of
9 both the Adaptive Management Work Group Committee (AMWG) and its subcommittee,
10 the Technical Work Group (TWG). It is the purpose of this document to provide that
11 direction. The following guidance represents the Department's understanding and intent
12 concerning the purpose and role of the AMWG Committee and the scope of work given
13 to the Committee in its Charter, pursuant to all relevant law and Departmental policy.
14 This guidance has been assembled with the assistance and legal guidance of the Office of
15 the Solicitor and has been shared with all members of the AMWG prior to finalization.
16

17 **Background**

18
19 During the past century, there have been numerous developments affecting the
20 Colorado River that have led to the present juncture. On November 24, 1922, the
21 Colorado River Compact was signed at Santa Fe, New Mexico, allocating the water of
22 the river between the Upper and Lower Basins, as defined therein, as well as establishing
23 the rules, rights, and obligations governing the use of that water among the seven
24 respective states within the Colorado River Basin. The United States also has a treaty
25 with the United Mexican States (Mexico) guaranteeing Mexico 1.5 million acre feet
26 annually from the Colorado River. Among the other obligations established in the
27 Compact was that of the Upper Basin not to deplete the flow of the river at Lee Ferry
28 "below an aggregate of 75,000,000 acre-feet for any period of 10 consecutive years."

29 Earlier, in 1908, Congress set aside the Grand Canyon as a national monument
30 and in 1919 expanded the reservation and redesignated it as a national park. There are
31 only about fifteen river miles separating the outlet works of Glen Canyon Dam and the
32 upstream boundary (on the northerly side of the river) of Grand Canyon National Park.
33 Later, Congress also established the area surrounding Lake Powell and extending down
34 river to the Park boundary (except for the area within the pre-existing Navajo
35 Reservation) as the Glen Canyon National Recreation Area, also managed by the
36 National Park Service.

1 In large part in order to assure that the rights and obligations in the Colorado River
2 Compact and the Upper Colorado River Basin Compact could be met without jeopardizing the
3 water uses of the Upper Basin states in the future, Congress passed the Colorado River Storage
4 Project Act on April 11, 1956, which provided the authority for the construction of the four
5 “initial units” of CRSPA, namely Flaming Gorge, Aspinall, Navajo, and Glen Canyon dams.
6 Glen Canyon Dam, storing more than 26 million acre feet, over 24 million of which represent
7 active capacity, is situated immediately above Lee Ferry, the delivery point to the Lower Basin.
8 In 1968 Congress passed the Colorado River Basin Project Act which among other things
9 provided for coordinated operations of Colorado River Basin reservoirs. Until recently, Glen
10 Canyon Dam has been operated with essentially two functions in mind: compact deliveries to the
11 Lower Basin, and hydropower generation. Compact deliveries from Glen Canyon assure that the
12 Upper Basin can meet its delivery obligations to the Lower Basin states and effectively manage
13 other Upper Basin reservoirs to meet Upper Basin water supply needs. Hydropower generation
14 provides the revenues necessary to cover operation and maintenance costs as well as the
15 revenues needed to assure repayment of CRSP projects.

16 During the 1980s, it became apparent that the existing pattern of dam operations was
17 adversely affecting some of the riparian resources in the Park and the Recreation Area below the
18 dam. The Department began studying the situation, initiated the preparation of an EIS, and then
19 Congress passed the Grand Canyon Protection Act of 1992 to attempt to address this problem.

20
21 **Authority (Questions 1a, 1b, 1c, 2a, 3, 4c, 5a, 5c, 5e, 6a, 6b, 7a, 7c, 8, 12c, 13a, 14)**

22 23 **Grand Canyon Protection Act, Legislative History, and Law of the River**

24
25 It is quite clear that when Congress enacted the Grand Canyon Protection Act of 1992,
26 106 Stat. 4669 (GCPA), it intended to maintain all that had gone before **B** the Compacts, the Park
27 units, and Glen Canyon Dam **B** and to find a way to operate the dam so as to “protect [sic],
28 mitigate adverse impacts to and improve”¹ downstream NPS resources without interfering with
29 the “Law of the River,” including compact and treaty obligations for water delivery (GCPA,
30 section 1802(a) and (b)). The Senate Report on the bill puts it quite simply: **A**The primary
31 purpose of this title is to authorize changes in the operation of Glen Canyon Dam to prevent
32 damage to downstream resources, principally the dam’s power operations.**@**The Secretary’s
33 responsibilities for water storage, allocation and delivery act as limits on the Secretary’s
34 discretion in implementing the GCPA. It is also clear that Congress understood that these
35 objectives would have certain costs in the form of lost incremental hydropower generating
36 opportunity (GCPA, section 1809) and that the existence of the dam was to be taken as a given.

37 The basic question Congress was addressing was how Glen Canyon Dam operations
38 might be modified within the provisions of existing law so as to improve conditions for
39 downstream NPS resources (with similar benefits certainly occurring on other similarly situated
40 lands). The GCPA itself does not direct consideration of cultural resources within the
41 boundaries of Native American reservations, only “the values for which Grand Canyon National
42 Park and Glen Canyon National Recreation Area were established,” although all federal agencies

¹ The GCPA as printed contains a typographical error, using “project” instead of “protect.” The legislative history makes clear that “protect” is what was intended; that word will be used throughout this document.

1 have similar obligations under other law. The entire adaptive management program (AMP),
2 including the Grand Canyon Monitoring and Research Center and the Adaptive Management
3 Work Group, must be understood within this context. In accordance with section 1804 of the
4 GCPA, the EIS was conducted to attempt to find an answer to that question, and the 1996 ROD
5 was the Department's best first answer. Recognizing that more experience and knowledge with
6 operations might enable further refinements in operations and might further improve downstream
7 resource conditions, however, Congress added section 1805 to the GCPA. This section required
8 the Secretary to "establish and implement long-term monitoring programs and activities that will
9 ensure that Glen Canyon Dam is operated in a manner consistent with section 1802," namely, "to
10 protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National
11 Park and Glen Canyon National Recreation Area were established," within the parameters of
12 other applicable law and the physical constraints of the dam. Accordingly, the Department
13 included in the EIS and in the ROD the provisions setting up the AMP, thereby allowing for
14 further refinement of and changes to dam operations to better meet the GCPA objectives.

15 The charge given to the AMWG in its Charter is to "facilitate the AMP, recommend
16 suitable monitoring and research programs, and make recommendations to the Secretary as
17 required to meet the requirements of the Act." The scope of the AMWG responsibility,
18 therefore, is to identify aspects of dam operations that can be modified to beneficially affect the
19 downstream resources identified as the focus of study (i.e. "the target") in the EIS. This covers
20 flow rates, ramping rates, periodicity of peak flows, monitoring sediment input rates and the
21 relation of sediment movement to water release and ramping rates, chemical content and
22 temperature of releases, among possible others -- any aspect of dam operations, in other words,
23 which has a reasonably demonstrable effect on the downstream resources sought to be improved
24 by the GCPA. The key to the scope of AMWG's responsibilities is whether a specific desired
25 resource effect downstream of the dam can be achieved through some manipulation of dam
26 operations. Under the ROD, the upper limit of planned release level is 45,000 cfs. Long-term
27 monitoring and research, including test flows within the current range of authorized operations,
28 are intended to enable finer and finer tuning of operations over time, as additional knowledge
29 and experience are gained, to better achieve the target mix of resource benefits, as outlined in the
30 EIS, pages 54-65.

31 Without losing track of this primary focus on improving conditions for downstream
32 resources, the Charter also specifies that the AMWG may recommend research and monitoring
33 proposals outside the Act which complement the AMP process, but such proposals will be
34 funded separately, and do not deter from the focus of the Act." This would include anything the
35 AMWG committee considers relevant but tangential or attenuated in its effects on riparian
36 resources downstream of the dam, as identified above. The relevant Senate Report language
37 says, after the discussion of the primary purpose of the Act, that: "Other reasonable remedial
38 measures may be available to the Secretary. The phrase "exercise other authorities under existing
39 law" means that the Secretary should consider and may implement non-operational measures to
40 address downstream effects of Glen Canyon Dam if such other remedial measures meet this
41 title's goal of protecting, mitigating damage to, and improving the resources downstream of the
42 dam." Again, as emphasized in the Senate Report, "the water storage, allocation and delivery
43 requirements of the Law of the River place substantial limits on the Secretary's ability to change
44 other elements of GCD operations. All measures undertaken pursuant to the authority of this Act
45 have as their focus the improvement of conditions for downstream resources within the two Park
46 Service units." The TWG's responsibility is similarly limited, but even more so; it is to carry out

1 only specific assignments within the scope of the AMWG's responsibility, as directed by the
2 AMWG.

3 The AMWG was set up pursuant to the Federal Advisory Committee Act (FACA) and
4 must comply with FACA's requirements for notice and public meetings, etc., as laid out in the
5 GSA regulations at 41 CFR Subpart 101-6.10. The AMWG and TWG may establish their own
6 internal operating procedures as they wish, so long as they comply with the specific requirements
7 of FACA and its implementing regulations.

8 One area that has been a source of recent discussion has been the question of planned
9 high releases from Glen Canyon Dam for such purposes as "beach habitat building flows." The
10 Department expects the AMWG to work and provide its recommendations within the following
11 context. Since the GCPA is clear that it was not intended to modify the compacts or "the
12 provisions of the Colorado River Storage Project Act of 1956 and the Colorado River Basin
13 Project Act of 1968 that govern allocation, appropriation, development, and exportation of the
14 waters of the Colorado River Basin" (GCPA, section 1802(b)), any operational changes under
15 the auspices of the GCPA are clearly subordinate to and must fit within the constraints of those
16 provisions. Historically, there have been differences of legal opinion over some related issues,
17 such as whether releases of water above powerplant capacity, if made for authorized purposes,
18 can be considered as not constituting "spills" within the meaning of section 602(a) of the
19 Colorado River Basin Project Act of 1968 and the Operating Criteria implemented pursuant to
20 section 602, and more recently over whether the GCPA "amends" existing law by adding
21 additional authorized purposes for the operation of Glen Canyon Dam. These legal issues have
22 not been finally resolved, but given the limitations provided in the ROD, the Glen Canyon Dam
23 operating criteria, and the 1996 agreement between the Department and the Basin States, it is
24 believed that they have been adequately addressed. Clearly, section 7 of the CRSPA, which
25 directs the Secretary "to produce the greatest practicable amount of power and energy that can be
26 sold at firm power and energy rates" provided that the primary purposes of compact deliveries
27 and state compact allocation development are not precluded or impaired, remains in effect, even
28 though the GCPA (section 1809) authorized, and the EIS/ROD implemented, an incremental
29 reduction in the value of the hydropower resource. Under the conditions of those documents (the
30 ROD, the operating criteria, and the 1996 agreement), flows above powerplant capacity would be
31 conducted utilizing reservoir releases required for dam safety purposes. The Department is
32 currently focusing on operational modifications at release levels below 45,000 cfs.
33 Modifications to the operating criteria involving flows above 45,000 cfs would require additional
34 NEPA compliance.

35
36 **EIS/ROD (Questions 1b, 4c, 5a, 5c, 7b, 7c, 12a, 12b, 12c, 13a, 13b, 13c, 13d, 13e,
37 13f, 15)**

38
39 As mentioned above, the EIS conducted on Glen Canyon Dam operations contains the
40 Department's selection of a mix of targeted resource benefits and its attempt to balance these
41 benefits against costs to hydropower generation. As stated in the ROD:
42

1 The goal of selecting a preferred alternative was
2 not to maximize benefits for the most resources, but
3 rather to find an alternative dam operating plan that
4 would permit recovery and long-term sustainability of
5 downstream resources while limiting hydropower
6 capability and flexibility only to the extent necessary to
7 achieve recovery and long-term sustainability.

1
2 The ROD represents the Department’s “first cut” on providing an answer as to how that
3 target might be achieved. The EIS and ROD are relevant to the AMP process in several respects.
4 First of all, the EIS identifies the specific downstream resources sought to be benefited (i.e.
5 Aprotected, mitigated for, or enhanced@) by changes in dam operations (see EIS, pp. 54-57 and
6 Table II-7). Secondly, its discussions and analyses of various alternatives provide a starting
7 point for the state of the science at the time the decision was made to implement the Amodified
8 low fluctuating flow@pattern of operations with a commitment for long-term modifications in
9 response to further research. In the language of the ROD, “the Modified Low Fluctuating Flow
10 Alternative was selected as the preferred alternative because it would provide the most benefits
11 with respect to the original selection criteria, given existing information.”

12 The monitoring, research and experimental programs are intended to develop additional
13 information, working with the AMWG recommendations, “which could result in some additional
14 operational changes.” The selection criteria against which such changes are to be measured,
15 however, remain unchanged. Elsewhere the ROD amplifies that this alternative was selected
16 because it “meets the critical requirements of the sediment resource by restoring some of the pre-
17 dam variability through floods and by providing a long-term balance between the supply of sand
18 from Grand Canyon tributaries and the sand-transport capacity of the river” with corresponding
19 benefits to habitat. The ROD, in part in conjunction with the EIS, also describes in detail the
20 decision made, including modifications to the selected alternative, specific environmental and
21 monitoring commitments, the scope and objectives of the AMP, the role and function of the
22 Grand Canyon Monitoring and Research Center (GCMRC), and the role expected for the
23 AMWG and TWG. It is important to understand that before either the targeted resource blend or
24 the operational pattern in the Glen Canyon Dam operating criteria can be changed materially,
25 additional NEPA work would have to be done.

26 Among the environmental commitments made in the ROD was the commitment to
27 restrict Glen Canyon Dam release upramp rates to 4,000 cfs per hour and downramp rates to
28 1,500 cfs per hour. Consistently with interagency agreements between BOR and the Western
29 Area Power Administration (WAPA) both prior and subsequent to the 1996 ROD, these figures
30 should be understood to represent a firm limit on changes in release rates integrated over each
31 hourly interval, to be enforced by the Secretary, subject to being exceeded only in times of
32 emergency unless and until changed by subsequent decision of the Secretary.

33 As part of the adaptive management process, studies and information needs specified in
34 the EIS/ROD are expected to be completed and to result in the identification of new information
35 needs or definitions of effects, impacts and mitigation requirements.

36 All applicable federal laws must be complied with, including NEPA, NHPA, ESA,
37 FACA, and the APA, in addition to the federal laws considered part of the ALaw of the River.@
38 It is not expected that the Adaptive Management Program will result in additional required
39 NEPA compliance unless additional resources (i.e. “management objectives”) are identified and
40 targeted for inclusion in the revised dam operations beyond those identified in the existing EIS.

41
42
43 **Organization (Questions 8, 9, 10, and 11)**

44
45 Prior to the EIS and ROD various Federal Agencies (i.e., BIA, WAPA, BOR,
46 NPS, FWS) had various statutory responsibilities for compliance with laws involving such areas

1 as the environment, historical and cultural resources, and threatened and endangered species.
2 These agencies have frequently entered into agreements among themselves to take specific
3 actions to meet those statutory requirements. It was assumed when the AMP was adopted by the
4 Secretary that it would include all studies necessary to determine the effects of GCD operations
5 on the designated resources selected in the ROD. Some of these studies meet scientific needs
6 and also meet statutory requirements under NEPA, ESA and NHPA. In fact the EIS identified
7 some specific studies that would be a part of the AMP, such as the study of low steady flows.

8 The Secretary of the Interior established the AMP with four key elements:
9 AMWG, TWG, GCMRC, and the IRP (Independent Review Panel). The four have distinct roles,
10 but ultimately the Secretary of the Interior is responsible for seeing that the monitoring and
11 necessary research is done to evaluate the impacts of adjustments made to dam operations. The
12 EIS document prepared by the Secretary envisioned the AMP program to be a somewhat all-
13 encompassing investigation of impacts, while still respecting the statutory obligations of each of
14 the Departmental agencies. One of the mechanisms chosen by the Secretary to receive feedback
15 through the AMP is the AMWG, which is to provide recommendations on the content of the
16 various budgeting and planning documents. The AMWG can *recommend* studies and priorities
17 for implementing individual studies during those reviews, preferably by consensus. In doing so,
18 all members of the AMWG are assumed to be equal in importance when voting on
19 recommendations, including federal agencies. However, final decisions as to the management of
20 Interior facilities and resources, what studies to implement, when, and using funds from which
21 sources remain, by statute, with the Secretary of the Interior and the appropriate Interior
22 agencies.

23 24 25 **Funding (Questions 2b, 4a, 4b, 5b, 5d, 6a, 7a, 17, 18, 19, 20, and 21)**

26
27 Funding for any federal effort comes from the statutory authorities provided by
28 enacted laws. In the case of the AMP, several funding authorities can come into play -- the most
29 visible being the Grand Canyon Protection Act (GCPA) of 1992. The GCPA makes several
30 statements with regard to potential sources of funds and also imposes some restrictions. With
31 regard to the use of revenues generated from the sale of electric power, section 1807 is specific
32 and restrictive. The hydropower revenues may be used for preparation of the EIS, including
33 supporting studies, and the long-term monitoring programs and activities described in section
34 1805. Both hydropower revenues and appropriated funds can be used for administrative
35 expenses to implement the specified work. However, the use of such funds to pay expenses of
36 non-government employees may be covered under FACA and other fiscal regulations and must
37 be treated on a case by case basis. The GCPA also authorizes such sums to be appropriated as are
38 necessary and encourages use of other authorities under existing law to determine the effect of
39 the Secretary's actions under section 1804 (c) and 1805 (b) on the natural, recreational, and
40 cultural resources of Grand Canyon National Park and Glen Canyon National Recreation Area.
41 The activity and its authorization determine the funding. To date, hydropower revenues have
42 been the source of funding for almost all AMP activities because they meet the definition above.
43 Research and monitoring proposals outside the Act which complement the AMP process are to
44 be separately funded.

45 As stated in the authorities section above, the focus of the GCPA is downstream
46 of the dam and primarily on the operations of the powerplant. The existence or construction of

1 the dam and its associated impacts is not a focus. This is clear in both the EIS and ROD, i.e. in
2 the EIS at page 2, top of page, right hand column ASince the dam has long been completed,
3 alternatives to the dam itself have been excluded from the scope of the analysis.@

4 To illustrate the range of activities and associated funding, some examples are
5 provided below:

6
7 o Studies of control sites in Cataract Canyon or on reservation lands, for example,
8 may be supported by revenues, if the studies are determined through scientific peer
9 review to be necessary for determining the effects of the Secretary's actions downstream
10 within the park units under 1804(c).

11
12 o Studies of water quality in Lake Powell are allowable if necessary to determine
13 the effects on downstream resources. Studies of the effects on cultural resources around
14 the rim of Lake Powell are not allowable under AMP (GCPA) funding.

15
16 o It is reasonable to assume that while the primary focus is on powerplant releases
17 the releases from the bypass tubes and spillway outlet works also fall into the operational
18 category and funding could be used to conduct experiments and study impacts from their
19 operation. In fact, this has already occurred to a degree during the 1996 beach habitat
20 building test flow when the bypass tubes were used.

21
22 All Federal agencies have a special responsibility to Native Americans by law, including
23 statutes, treaties, and executive orders. With the Secretary of the Interior being trustee,
24 Department of the Interior agencies have a special role. Certainly the direct impacts of the dam
25 operations on the Native American trust resources within the park units can and should be
26 funded from hydropower revenues, but such impacts outside the boundaries of the river corridor
27 in the park units must be studied using other appropriated funds. Participation in the AMP or
28 education activities should be funded from appropriate sources. For instance education activities
29 may come under self-governance and self-determination programs and be funded from BIA
30 funds, activities surrounding general NPS requirements may be funded from NPS funds, and
31 participation in AMP work group activities may be specific enough to be funded by revenues or
32 appropriations from BOR. Funding of Native American activities should be a shared
33 responsibility.

34 35 **Other Compliance and Consultations (Questions 11, 16, and 21)**

36
37 Prior to passage of GCPA and formation of the AMP, federal agencies had many
38 responsibilities embodied in existing law. Those responsibilities remain today. The GCPA,
39 EIS/ROD, and AMP did not take over responsibility for nor remove the legal obligations of the
40 agencies to fulfill existing legal mandates. The GCPA states as much in several places. The
41 AMP is a process by which the Secretary of the Interior has chosen to include all studies and
42 other compliance activities necessary to determine the effects of GCD operations on designated
43 resources and to modify operations to meet the purposes of the GCPA.

44 It is possible that some of the studies recommended and performed under the AMP and
45 the AMP budget will coincide with and help to satisfy obligations of the federal agencies under
46 other laws, such as the Endangered Species Act. The obligations imposed by other laws must be

1 complied with by the responsible agencies, whether they are funded as part of the AMP process
2 or separately. The AMP budget does not imply that these compliance functions will
3 automatically be assumed or raised to a higher priority through the AMP process, although
4 where reasonable, the AMP process may assist or even satisfy such functions in a given instance
5 -- “two birds with one stone,” so to speak.

6 While the AMWG and TWG should be aware that the involved federal agencies face
7 these responsibilities, those factors should not detract from the committee’s focus as described in
8 the GCPA, EIS, ROD, and Charter. The committee’s recommendations for studies and their
9 relative priorities should remain on the effects of dam operations on downstream resources
10 within the park units. The implementation of such studies, their timing and funding and the like
11 remain the decision of the Secretary and the federal agencies, as noted earlier.

12 Embodied in the NEPA process is the requirement to comply with ESA and cultural laws
13 in order to discuss and present the impacts on all resources and eventually arrive at a preferred
14 alternative. For example, the AMWG is not chartered to be a formal participant in ESA
15 consultation processes. However, the AMP does not prevent AMWG members from
16 participating as members of the public or in their other official capacities. In this regard,
17 AMWG should focus on helping Reclamation determine how to apply the reasonable and
18 prudent alternatives within the area of concern of the GCPA. In regards to the consultation
19 requirements under NHPA, the action federal agencies and affected tribes have signed a
20 programmatic agreement (PA) document and hold periodic meetings. Parties not signatory to the
21 PA are welcome to attend and comment. Here too, however, the ultimate decision on how to
22 proceed rests with the Secretary of the Interior and the federal agencies delegated the
23 responsibility for management of the resources.

24 25 **Other Program Relationships**

26
27 While programs in other areas of the Colorado River do not require direct input from the work
28 performed for the GCPA, it is certainly envisioned that information will be shared and that
29 participants will keep abreast of other relevant basin activities. The GCPA requires compliance
30 with existing laws and consultations with a variety of groups. To meet that requirement it is
31 important that all members share knowledge obtained from activities arising from i.e., the upper
32 basin recovery program, the salinity control program, and the lower Colorado multi-species
33 conservation program.

1
2
3
4 **APPENDICES:**

5
6 **QUESTIONS**
7

8 Scott Loveless has responded to and the TWG has discussed a list of questions which was
9 prepared by Bob Winfree on December 15, 1998, and which was attached to Steve
10 Magnussen's memo of December 29, 1998. Those discussions generated the following
11 additional questions for Scott from TWG. The following numbered list embodies the
12 questions that led to the above guidance document.
13

- 14 **1.** (a) What is the scope of the AMWG Charter?
15
16 (b) How do the EIS, the ROD, and the Act impact the scope?
17
18 (c) Can the AMWG charter expand upon the scope and authorities in the Act?
19 (EIS & ROD)
20
21 **2.** (a) Is the AMP limited by section 1804? Can AMWG recommend changes in
22 the operating criteria?
23
24 (b) Can the program expend funds to study (research) impacts of proposed
25 (recommended) changes that are clearly beyond the limitations of Sec. 1804(c)?
26
27 **3.** What constitutes the target?
28
29 **4.** (a) Can funds as designated in 1807 be used to fund studies outside the effects
30 of dam operations (outside the operational confines of the dam)?
31
32 (b) How direct must the impacts be to allow funding under 1807?
33
34 (c) Where does the burden of proof lie for determining the effects of dam
35 operations?
36
37 **5.** (a) Is the AMP limited to powerplant operations when hydrologic triggering
38 criteria are not met? (paraphrase, Can you do an experimental flood when
39 not required for dam safety purposes.)
40 (b) Does the GCPA authorize funding to be used for mitigation of powerplant
41 operations, or is it broader; i.e., mitigate for spillways, bypass tubes, dam
42 existence (Furnace Flats)? (i.e., Can AMP funding be used to mitigate sediment
43 reduction, temperature averaging effects due to the existence of GCD.)
44
45 (c) Does NHPA require mitigation for damage to properties eligible for listing
46 on the National Register of Historic Sites as a result of the dam's existence?

- 1
2 (d) Does the law allow for funding mitigation activities related to construction
3 [existence] of the dam versus operations of the dam?
4
- 5 (e) Were powerplant spills other than those hydrologically induced authorized
6 by the Act?
7
- 8 6. (a) Does the monitoring program allow for research and monitoring of
9 potential effects of releases up to 256,000 cfs?
10
- 11 (b) What is the legal boundary for lateral extent for all resources?
12
- 13 7. (a) When is it appropriate to propose experiments outside the preferred
14 alternative?
15
- 16 (b) Can experiments be performed which are outside of the ROD?
17
- 18 (c) What are the limitations when performing an experiment outside the
19 ROD?
20
- 21 8. What are the TWG responsibilities relative to review and editing of the
22 monitoring and research plans prepared by GCMRC?
23
- 24 9. What organization is responsible for developing needed AMP planning
25 documents and reports other than science program reporting?
26
- 27 10. Do recommendations of all stakeholders represented in TWG and AMWG carry
28 equal weight in [TWG/AMWG] decisions?
29
- 30 11. The AMP has only been in place for a few years. Before the AMP, the various
31 Federal Agencies involved had certain statutory responsibilities for
32 environmental, historical and ESA compliance and they entered into agreements
33 to take specific actions. Does the existence of an AMP budget automatically
34 assume these compliance responsibilities for the agencies; and if so, do the
35 agencies compliance responsibilities automatically become the dominant focus of
36 the program? (i.e., Biological Opinion, Cultural Resources, etc.)
37
- 38 12. (a) Can the management objectives as outlined in the EIS be changed and, if
39 so, how much can they be changed?
40
- 41 (b) Are the management objectives as outlined in the EIS different from the
42 expected changes in management goals adopted by the Secretary when he
43 selected the preferred alternative?
44
- 45 (c) Were the recommended changes in powerplant operating criteria made to
46 achieve the desired changes in management goals?

- 1
2 **13.** (a) What is the force and effect of the ROD?
3
4 (b) What limits does it put on our actions?
5
6 (c) Are there any parts of the paper, prepared by Reclamation and WAPA and
7 distributed at AMWG, which are illegal?
8
9 (d) Are the numbers in the ROD hard and fast?
10
11 (e) Is it possible to exceed them?
12
13 (f) What is the penalty for exceeding limits specified in the ROD?
14
15 **14.** Does the GCPA authorize activities on Native American reservation lands (for
16 example, above 124,000 cfs outside Grand Canyon National Park on Hualapai
17 land)?
18
19 **15.** When is it appropriate to propose experiments outside the ROD?
20
21 **16.** Are there any prohibitions about AMWG contributing to the formal consultation
22 on BO for Kanab Ambersnail?
23
24 **17.** What are the limits of the use of GCPA funds on other areas outside those
25 specified in the GCPA, Grand Canyon National Park and the Glen Canyon
26 National Recreation Area? For example, what is the restriction on the use of
27 funds on tribal lands? Further, what about the effects that are caused by the action
28 but do not have a resultant influence downstream? For, example what if there
29 were effects of dam operations in Lake Mead? Could GCPA funds be used to
30 study impacts to Lake Mead caused by operational impacts of Glen Canyon Dam?
31 I'm thinking here of whether these funds could be used to study the effects of
32 operations on an endangered bird species in delta area of Lake Mead.
33
34 **18.** Can GCPA funds (nonreimbursable power revenues) be used for agency
35 compliance responsibilities related only to the operation of Glen Canyon Dam?
36 Specifically, can they be used to pay for continuing activities related to BOR or
37 NPS NHPA, Endangered Species Act Biological Opinion requirements, NEPA
38 compliance etc. The BOR has made a very strong argument in the past that these
39 activities are strictly an agency responsibility and outside the purview of the AMP
40 (The AMWG makes no recommendations to the secretary on these issues). If so,
41 and because they are not related directly to section 1804 or 1805 of the GCPA
42 how can GCPA funds be used to support them?
43
44 **19.** Can GCPA funds be used to support salaries, travel, per diem etc. not directly
45 related to Section 1804 and 1805 activities? For example, it would seem that there
46 is a fundamental question related to the legitimacy of the use of GCPA funds for

1 agency or stakeholder salary costs related to administration of the AMP. Sections
2 1804 and 1805 make no mention of administration costs for an AMP, and AMP is
3 not directly related to research, studies, or the preparation of the EIS
4

5 **20.** Can GCPA funds be used to assist tribes to attend and participate in the AMP
6 process?
7

8 **21.** If the BOR has legal obligations as a result of the Biological Opinion, are these
9 obligations automatically the obligation of the AMWG?
10

11 **AMWG OPERATIONS**

12
13 FACA Overview
14

15 AMWG Member List and statement of their constituency and mission, including
16 potential conflicts
17

18 AMWG Charter
19

20 Proposal for Renewal of AMWG Charter
21

22 AMWG Operating Procedures
23

24 Appropriations Committee language re: budget
25

26 Budget (current)
27

28 Issues papers and AMWG Guidance Document
29

30 Other issues yet to be resolved
31

32 **TWG OPERATIONS**

33
34 TWG Member List
35

36 TWG Operating Procedures, Proposal to Modify OP, Ground Rules, Consensus
37 Definition,
38

39 Recommendations regarding travel payments to TWG members
40

41 Ground rules for meetings
42

43 Code of conduct
44

45 Definition of consensus
46

46 **GCMRC OPERATIONS**

1
2 Letter Establishing GCMRC
3
4 GCMRC Monitoring and Research Center Guidelines
5 Center Protocols
6 RFP's and AMWG input
7 Peer Review
8 Administrative review (focus on priority information needs, permitting
9 and compliance
10 responsibilities
11 Awarding contracts, competition
12 Information transfer (reports, workshops, etc.)
13
14 Annual Plan (current)
15
16 Strategic Plan (current)
17 **LAWS, AGREEMENTS**
18
19 Law of the River synopsis
20
21 Colorado River Compact, November 24, 1922
22
23 Colorado River Storage Project Act, April 11, 1956
24
25 Colorado River Basin Project Act, September 30, 1968
26
27 Long-Range Operating Criteria, 1970
28
29 Long-Range Operating Criteria, October 30, 1992
30
31 National Environmental Policy Act (Section 7 consultation)
32
33 Grand Canyon Protection Act, October 30, 1992 and Legislative History
34
35 National Historic Preservation Act (Sections 106 and 110)
36 Programmatic Agreement on Cultural Resources, August 30, 1994
37
38 Historic Preservation Plan
39
40 Endangered Species Act
41
42 36 CFR 2.5 (research and specimen collection in National Park Service
43 areas)
44
45 Record of Decision, Glen Canyon Dam Final Environmental Impact
46 Statement. 10/25/96

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BOR-WAPA Operating Agreement

Biological Opinions
Final GCD EIS (included by reference)

Rebecca Tsosie article on trust responsibility

GLENN CANYON DAM OPERATING CRITERIA

Operating Criteria for Glen Canyon Dam In Accordance with the GCPA,
2/24/97

Operating Guidelines Associated with Glen Canyon Dam Operating
Criteria 7/7/97

Operating Criteria and other Operating Parameters (C. Palmer 7/97)

Annual Operating Plans

AMP REPORTS AND RECOMMENDATIONS:

TWG Position Paper - Glen Canyon Dam Spillway Gate Extensions

Integration of Programmatic Agreement with AMP, Federal/Tribal Trust
Responsibilities

BHBF Triggering Criteria

Spill avoidance

Glen Canyon Dam release issues recommended for further study, and
GCMRC reply

Report of the NEPA/ESA Issues Subgroup

Recommendations to the TWG for expediting environmental compliance
and improving coordination on Biological Opinion Issues

Letter to Secretary Babbitt from non-federal members

Management Objectives (current)

Information Needs (current)

Resource Criteria (current)

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Report to Congress (current)
State of Natural and Cultural Resources in the Colorado River Ecosystem
(current)

Lake Powell Assessment

BHBF Flow alternatives

**TWG, TWG, AND AMWG
MEETING AGENDA AND MINUTES
1995, 1996, 1997**

**TWG, TWG, AND AMWG
MEETING AGENDA AND MINUTES
1998**