

**Glen Canyon Environmental Studies** While the National Park Service, Native Americans, river runners, and scientists had noticed that some beaches were disappearing and that plant and animal life along the Colorado River were changing since Glen Canyon Dam was completed in 1963, the Glen Canyon Environmental Studies program of the Bureau of Reclamation was the first systematic effort to investigate the effects of dam operations on downstream resources. The program began in 1982 and lasted through 1996. The Glen Canyon Environmental Studies did identify a mix of positive and negative consequences of dam operations on the downstream environment. In response to substantial public concern over the findings of the Glen Canyon Environmental Studies, in 1989 the Secretary of the Interior announced that an environmental impact statement would be completed to evaluate the operation of Glen Canyon Dam. With this announcement, the Glen Canyon Environmental Studies focused on providing specific data for use in the Glen Canyon Dam Environmental Impact Statement (Reclamation 1995).

**Grand Canyon Protection Act** The Grand Canyon Protection Act (Appendix A) was enacted on October 30, 1992. Section 1802 states: (a) IN GENERAL.—The Secretary shall operate Glen Canyon Dam in accordance with the additional criteria and operating plans specified in Section 1804 and exercise other authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established, including, but not limited to natural and cultural resources and visitor use. (b) COMPLIANCE WITH EXISTING LAW.—The Secretary shall implement this section in a manner fully consistent with and subject to the Colorado River Compact, the Upper Colorado River Basin Compact, the Water Treaty of 1944 with Mexico, the decree of the Supreme Court in Arizona vs. California, and the provisions of the Colorado River Storage Project Act of 1956 and the Colorado River Basin Project Act of 1968 that govern allocation, appropriation, development, and exportation of the waters of the Colorado River Basin. (c) RULE OF CONSTRUCTION.—Nothing in this title alters the purposes for which the Grand Canyon National Park or the Glen Canyon National Recreation Area were established or affects the authority and responsibility of the Secretary with respect to the management and administration of the Grand Canyon National Park and Glen Canyon National Recreation Area, including natural and cultural resources and visitor use, under laws applicable to those areas, including, but not limited to, the Act of August 25, 1916 (39 Stat. 535) as amended and supplemented. The Secretary of the Interior was also directed to establish and implement long-term monitoring programs and activities to ensure that Glen Canyon Dam is operated in a manner consistent with the Grand Canyon Protection Act. These programs include necessary research and studies to determine the effect of management of the dam on the natural, recreational, and cultural downstream resources. These actions will also be undertaken in consultation with other federal agencies, the Governors of the Basin States, Indian Tribes, and the general public, including representatives of academic and scientific communities, environmental organizations, the recreation industry, and contractors for the purchase of federal power produced at Glen Canyon Dam. To accomplish these requirements, the Glen Canyon Dam Adaptive Management Program was established.

**Glen Canyon Dam Environmental Impact Statement** The Glen Canyon Dam Environmental Impact Statement (Reclamation 1995) was completed in March 1995. Its purpose was to “determine specific options that could be implemented to minimize—consistent with law—adverse impacts on the downstream environmental and cultural resources and Native American

interests in Glen and Grand Canyons.” The Glen Canyon Dam Environmental Impact Statement analyzed nine alternatives to allow the Secretary of the Interior to balance competing interests and to meet statutory responsibilities for protecting downstream resources and producing hydropower, and to protect affected Native American interests. The preferred alternative was the Modified Low Fluctuating Flow Alternative. Record of Decision on the Operation of Glen Canyon Dam On October 9, 1996, the Secretary of the Interior signed the Record of Decision that presented the rationale for choosing the Modified Low Fluctuating Flow Alternative. As noted in the **Record of Decision**: The goal of selecting a preferred alternative was not to maximize benefits for the most resources, but rather to find an alternative dam operating plan that would permit recovery and long-term sustainability of downstream resources while limiting hydropower capability and flexibility only to the extent necessary to achieve recovery and long-term sustainability. [Reclamation 1996:10] The Record of Decision (Appendix G) included seven environmental and monitoring commitments:

- Adaptive Management
- Monitoring and Protection of Cultural Resources
- Flood Frequency Reduction Measures
- Beach/Habitat-Building Flows
- New Population of Humpback Chub
- Further Study of Selective Withdrawal
- Emergency Exception Criteria

The commitments are explained in detail in the Record of Decision (Reclamation 1996; Appendix G) and in the Glen Canyon Dam Environmental Impact Statement (Reclamation 1995:33-34); however, it should be noted that subsequent work of the Technical Work Group and Adaptive Management Work Group have altered some commitments (Technical Work Group 1998) with Endangered Species Act and National Environmental Policy Act compliance.

**Statutes, Policies, and Resolutions** The Colorado River is managed and operated under numerous compacts, federal and state laws, court decisions and decrees (including Native American water claim settlements), contracts, treaties, and regulatory guidelines collectively known as the Law of the River. This collection of documents apportions the water among the seven Basin States and Mexico, and regulates and manages the river flows of the Colorado River. Some of the statutes included within the Law of the River that have a major impact on dam operations are the Colorado River Compact of 1922, the Upper Colorado River Basin Compact of 1948, the Colorado River Storage Project Act of 1956, the Colorado River Basin Project Act of 1968, and the Grand Canyon Protection Act of 1992. In addition to Colorado River specific legislation, the Endangered Species Act of 1973 and court decrees including *Arizona v. California* affect the extent to which water developments and diversions can be utilized in the Colorado River Basin. The Law of the River and this additional legislation control and influence the Adaptive Management Program. Additional laws, Acts of Congress, executive orders, policies, tribal resolutions, etc., that control or influence the Adaptive Management Program include the National Park Service Organic Act, enabling legislation for Grand Canyon National Park and Glen Canyon National Recreation Area, and Executive Orders that established reservation boundaries for the Navajo Nation and the Hualapai Tribe. In addition, Section 204 of Title II of Public Law 106-377 controls the level of funding of Adaptive Management Program

activities from Colorado River Storage Project power revenues. The Federal Advisory Committee Act controls operation of the Adaptive Management Work Group and the Technical Work Group. Environmental laws and regulations are important to the Adaptive Management Program. These include, but are not limited to, the Endangered Species Act, National Historic Preservation Act of 1966, and National Environmental Policy Act of 1969. Adaptive Management Program compliance with these statutes, regulations, policies, directives, etc., is described in a later section.

**Guidance Document for the Adaptive Management Program** Since the Adaptive Management Program became fully operational in 1997, questions and uncertainties have arisen over the relationships of program elements, compliance priorities, and other legal matters. Answers were sought from a Department of the Interior Solicitor. The questions posed and answers received from the Department of the Interior's Solicitor (Loveless 2000) are called the "Guidance Document for the Adaptive Management Program." This document is provided as Appendix B in the GCDAMP Strategic Plan.