AMWG – Public Outreach Ad Hoc Group

Budget Progress Report

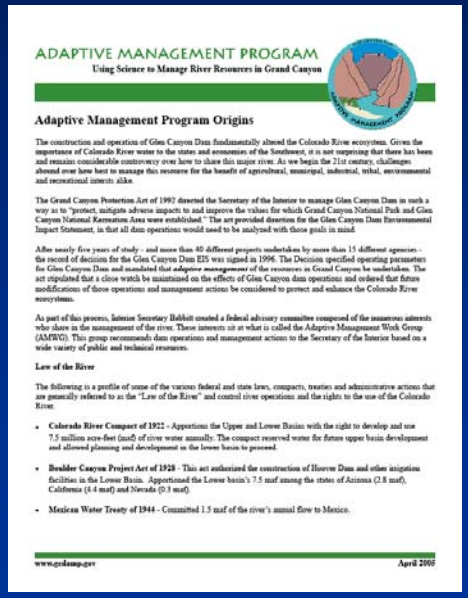
AMWG Meeting – Phoenix, AZ

August 12-13, 2009

Completed Products

Phase I

Approved Fact Sheets



ADAPTIVE MANAGEMENT PROGRAM

Using Science to Manage River Resources in Grand Canyon

Adaptive Management Program Origins

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

The Grand Canyon Protection Act of 1992 directed the Secretary of the Interior to manage Glen Canyon Dam in such a way as to "protect, mitigate adverse impacts to and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established." The act provided direction for the Glen Canyon Dam Environmental Impact Statement, in that all dam operations would need to be analyzed with those goals in mind.

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

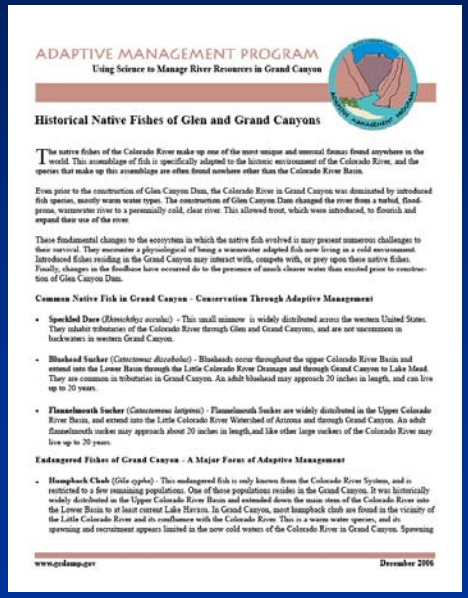
As part of this process, Interior Secretary Babbitt created a federal advisory committee composed of the numerous interests who share in the management of the river. These interests sit at what is called the Adaptive Management Work Group (AMWG). This group recommends dam operations and management actions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

Law of the River

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

- **Colorado River Compact of 1922** - Apportions the Upper and Lower Basins with the right to develop and use 7.5 million acre-feet (maf) of river water annually. The compact reserved water for future upper basin development and allowed planning and development in the lower basin to proceed.
- **Boulder Canyon Project Act of 1928** - This act authorized the construction of Hoover Dam and other irrigation facilities in the Lower Basin. Apportioned the Lower basin's 7.5 maf among the states of Arizona (2.8 maf), California (4.4 maf) and Nevada (0.3 maf).
- **Mexican Water Treaty of 1944** - Committed 1.5 maf of the river's annual flow to Mexico.

www.gcdamp.gov April 2000



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Historical Native Fishes of Glen and Grand Canyons

The native fishes of the Colorado River make up one of the most unique and unusual faunas found anywhere in the world. This assemblage of fish is specifically adapted to the historic environment of the Colorado River, and the species that make up this assemblage are often found nowhere other than the Colorado River Basin.

Even prior to the construction of Glen Canyon Dam, the Colorado River in Grand Canyon was dominated by introduced fish species, mostly warm water types. The construction of Glen Canyon Dam changed the river from a turbid, flood-prone, warmwater river to a perennially cold, clear river. This allowed trout, which were introduced, to flourish and expand their use of the river.

These fundamental changes to the ecosystem in which the native fish evolved is may present numerous challenges to their survival. They encounter a physiological of being a warmwater adapted fish now living in a cold environment. Introduced fishes residing in the Grand Canyon may interact with, compete with, or prey upon these native fishes. Finally, changes in the floodbase have occurred do to the presence of much clearer water than existed prior to construction of Glen Canyon Dam.

Common Native Fish in Grand Canyon - Conservation Through Adaptive Management

- **Speckled Dace** (*Rhinichthys osculus*) - This small minnow is widely distributed across the western United States. They inhabit tributaries of the Colorado River through Glen and Grand Canyons, and are not uncommon in backwaters in western Grand Canyon.
- **Bluehead Sucker** (*Catostomus discobolus*) - Bluheads occur throughout the upper Colorado River Basin and extend into the Lower Basin through the Little Colorado River Drainage and through Grand Canyon to Lake Mead. They are common in tributaries in Grand Canyon. An adult bluehead may approach 20 inches in length, and can live up to 20 years.
- **Flannelmouth Sucker** (*Catostomus latipinni*) - Flannelmouth Sucker are widely distributed in the Upper Colorado River Basin, and extend into the Little Colorado River Watershed of Arizona and through Grand Canyon. An adult flannelmouth sucker may approach about 20 inches in length,and like other large suckers of the Colorado River may live up to 20 years.

Endangered Fishes of Grand Canyon - A Major Focus of Adaptive Management

- **Humpback Chub** (*Gila cypha*) - This endangered fish is only known from the Colorado River System, and is restricted to a few remaining populations. One of those populations resides in the Grand Canyon. It was historically widely distributed in the Upper Colorado River Basin and extended down the main stem of the Colorado River into the Lower Basin to at least current Lake Havasu. In Grand Canyon, most humpback chub are found in the vicinity of the Little Colorado River and its confluence with the Colorado River. This is a warm water species, and its spawning and recruitment appears limited in the now cold waters of the Colorado River in Grand Canyon. Spawning

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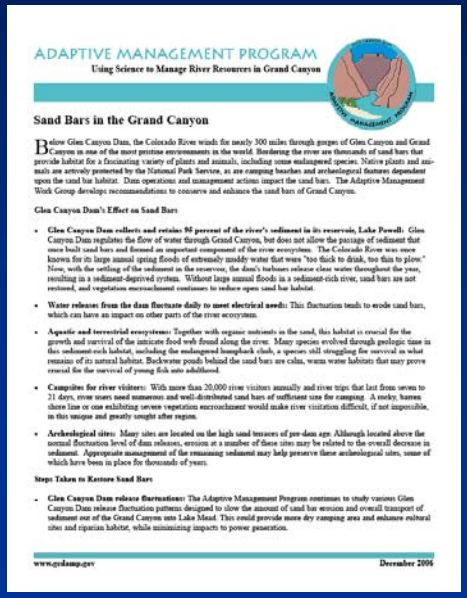

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Sand Bars in the Grand Canyon

Below Glen Canyon Dam, the Colorado River winds for nearly 300 miles through gorges of Glen Canyon and Grand Canyon in one of the most pristine environments in the world. Bordering the river are thousands of sand bars that provide habitat for a fascinating variety of plants and animals, including some endangered species. Native plants and animals are actively protected by the National Park Service, as are camping beaches and archaeological features dependent upon the sand bar habitat. Dam operations and management actions impact the sand bars. The Adaptive Management Work Group develops recommendations to conserve and enhance the sand bars of Grand Canyon.

Glen Canyon Dam's Effect on Sand Bars

- **Glen Canyon Dam collects and retains 98 percent of the river's sediment in its reservoir, Lake Powell:** Glen Canyon Dam regulates the flow of water through Grand Canyon, but does not allow the passage of sediment that once built sand bars and formed an important component of the river ecosystem. The Colorado River was once known for its large annual spring floods of extremely muddy water that were "too thick to drink, too thin to plow." Now, with the settling of the sediment in the reservoir, the dam's turbines release clear water throughout the year, resulting in a sediment-deprived system. Without large annual floods in a sediment-rich river, sand bars are not restored, and vegetation encroachment continues to reduce open sand bar habitat.
- **Water releases from the dam fluctuate daily to meet electrical needs:** This fluctuation tends to erode sand bars, which can have an impact on other parts of the river ecosystem.
- **Aquatic and terrestrial ecosystems:** Together with organic nutrients in the sand, this habitat is crucial for the growth and survival of the intricate food web found along the river. Many species evolved through geologic time in this sediment-rich habitat, including the endangered humpback chub, a species still struggling for survival as what remains of its natural habitat. Backwater ponds behind the sand bars are calm, warm water habitats that may prove crucial for the survival of young fish into adulthood.
- **Campsites for river visitors:** With more than 20,000 river visitors annually and river trips that last from seven to 21 days, river users need numerous and well-distributed sand bars of sufficient size for camping. A rocky, barren shore line or one exhibiting severe vegetation encroachment would make river visitation difficult, if not impossible, in this unique and greatly sought after region.
- **Archeological sites:** Many sites are located on the high sand terraces of pre-dam age. Although located above the normal fluctuation level of dam releases, erosion at a number of these sites may be related to the overall decrease in sediment. Appropriate management of the remaining sediment may help preserve these archeological sites, some of which have been in place for thousands of years.

Steps Taken to Restore Sand Bars

- **Glen Canyon Dam release fluctuations:** The Adaptive Management Program continues to study various Glen Canyon Dam release fluctuation patterns designed to slow the amount of sand bar erosion and overall transport of sediment out of the Grand Canyon into Lake Mead. This could provide more dry camping area and enhance cultural sites and riparian habitat, while minimizing impacts to power generation.

www.gcdamp.gov December 2006

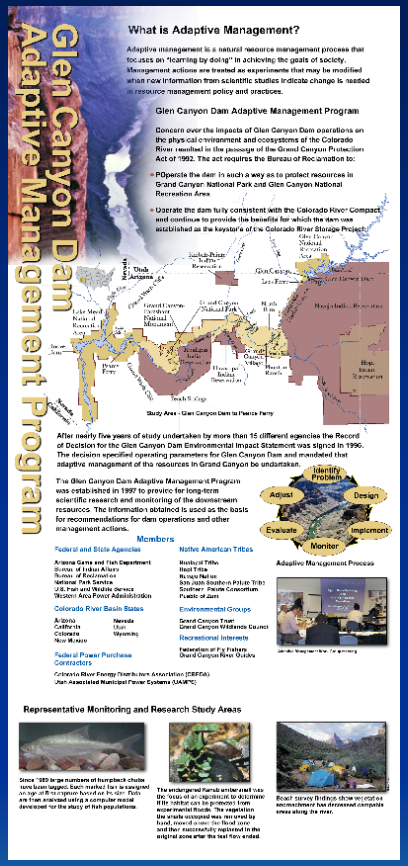
List of Fact Sheets

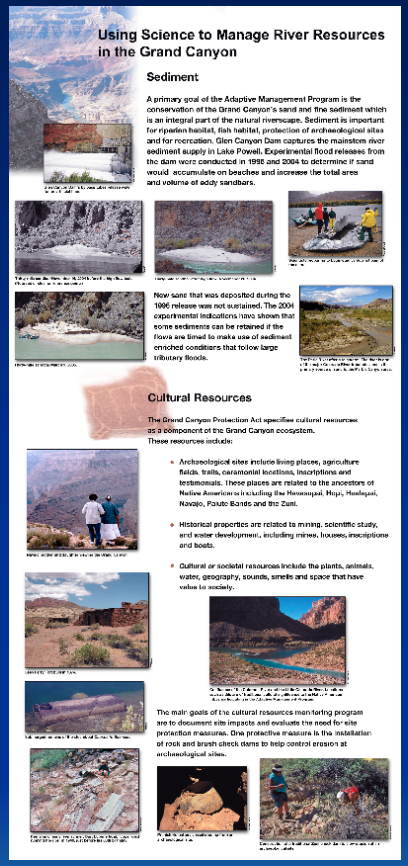
- Adaptive Management Program Origins
- Adaptive Management Program Purpose and Goals
- Who We Are
- Cultural Resources
- Current Status of Resources in the Grand Canyon
- Endangered Species
- Historical Native Fishes of Glen and Grand Canyons
- Hydropower and the Adaptive Management Program
- Colorado River Storage Project
- Lees Ferry Trout Fishery
- Recreational River Rafting
- Sand Bars in the Grand Canyon
- Glen Canyon Dam Temperature Control Device

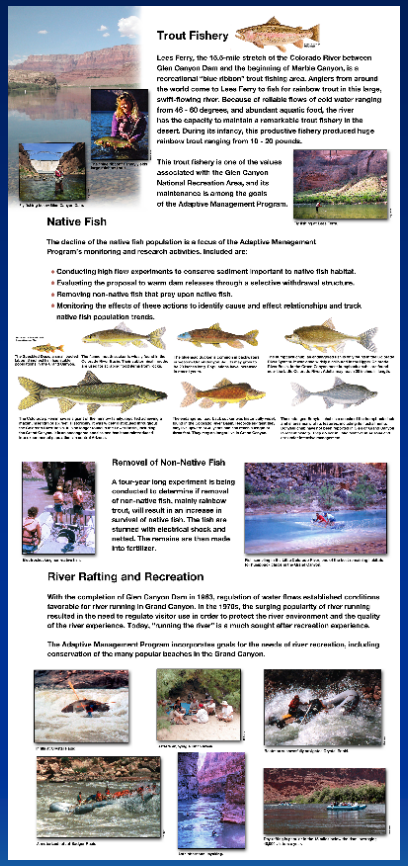
Logo & Tagline

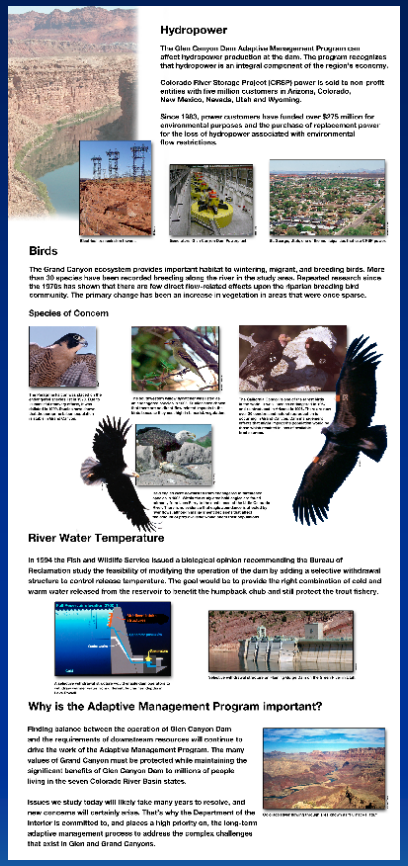
"Using Science to Manage River Resources in Grand Canyon"

Portable & Stationary Display Panels

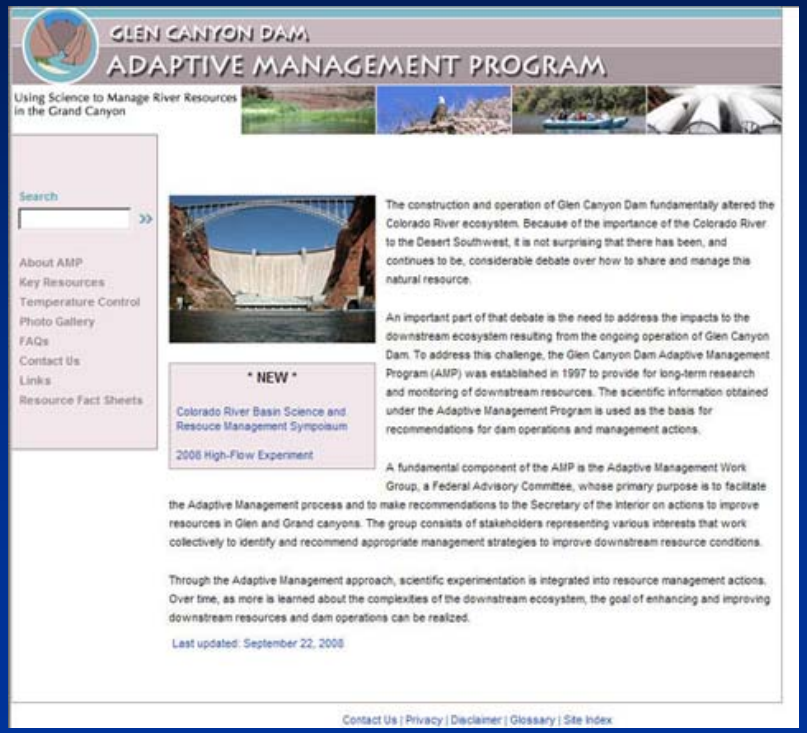








Public Outreach Website



Site address: www.gcdamp.gov

Proposed Products

Phase II

FY 2010 & 2011

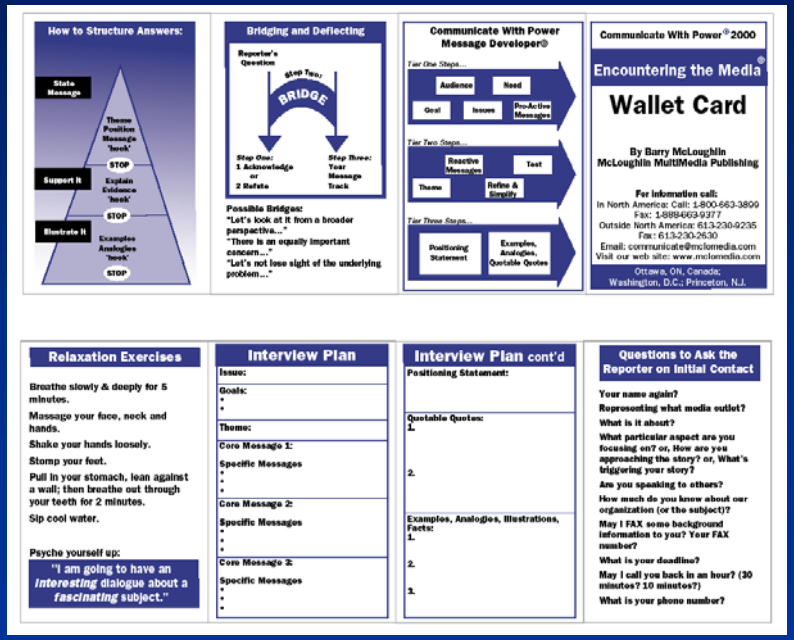
Phase II – Proposed Products

- ✓ Science Status Updates
- ✓ Retractable Banner Display (in process)
- ✓ Tribal Outreach Materials
- ✓ Media Kit Folders (in process)
- ✓ Video B-roll Kits (in process)
- ✓ Trade Show Participation
- ✓ Guide Resource Materials
- ✓ Media Events
  - ❑ Science Day
  - ❑ News Media Tour
  - ❑ Translocation Efforts
- ✓ Educational Materials

Proposed New Fact Sheet Topics

- High Flow Test Overview (in process)
- Monitoring of Native Fish
- Tribal Values
- Non-native Fish Suppression
- Fall Steady Flows

Guide Materials



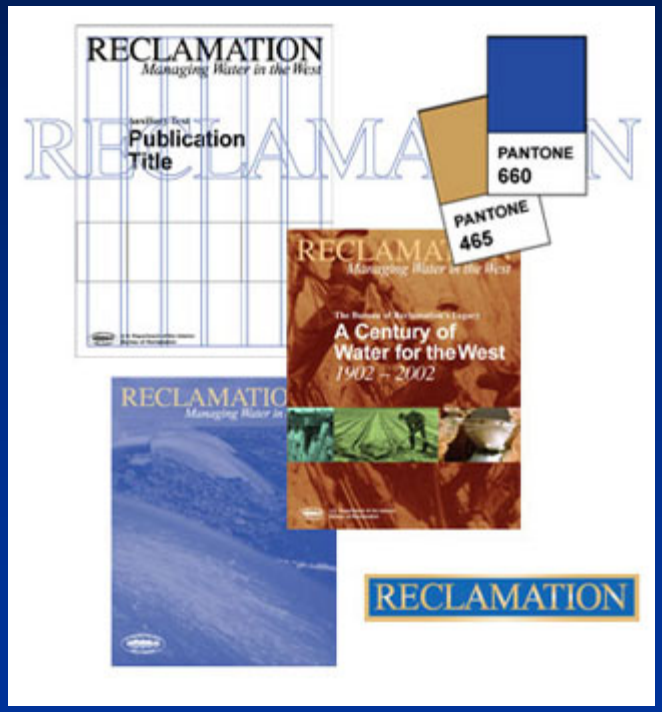
Wallet card

- Profile AMP research activities for handout to Grand Canyon visitors
  - ❑ 50,000 wallet cards

Ammo can info

- ❑ Laminated fact sheets

Media Kit Folder



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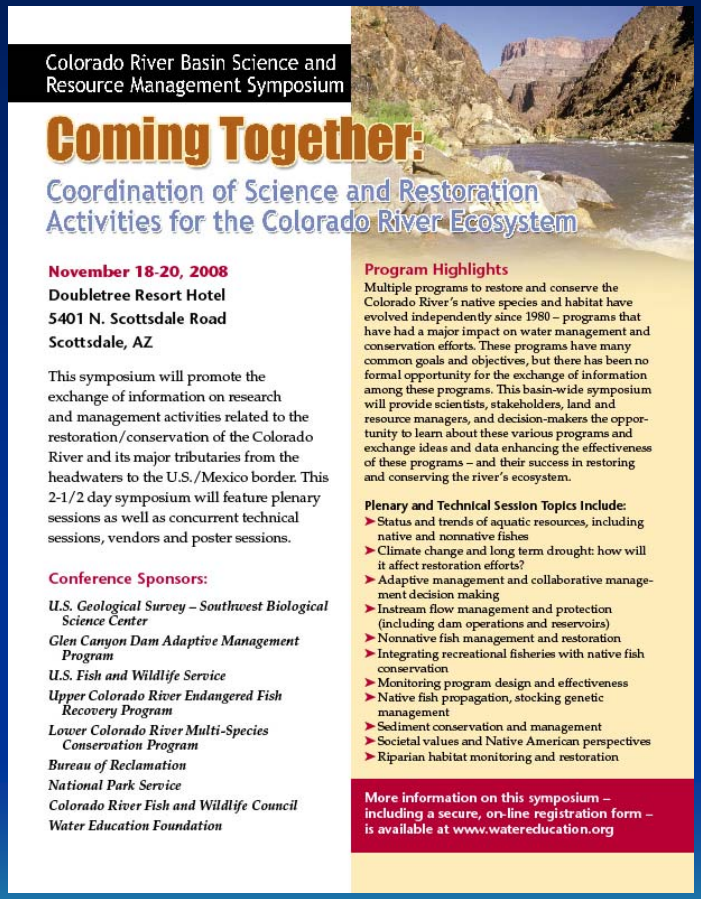
Educational Materials - Grant

Example: For illustration purposes only

Media Event – Science Day



General Program Support Activities

Special Events & Media Coordination

Media Relations - March 2008 High Flow Test

Public Meetings Support

Experimental Flows