Summary of Scoping Comments for Glen Canyon Dam Long-Term Experimental and Management Plan Environmental Impact Statement (LTEMP EIS)

Presented by:

Kirk LaGory

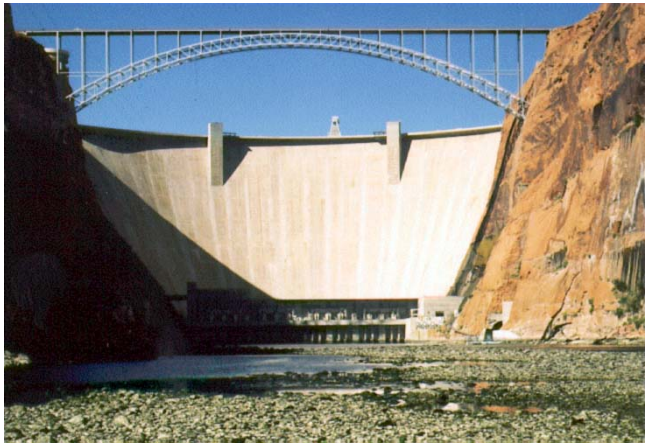
Argonne National Laboratory

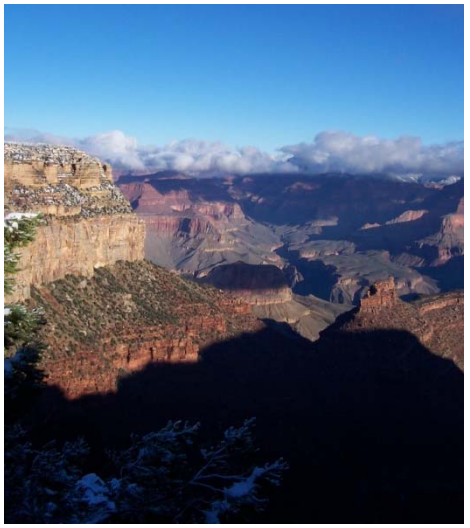
Purpose of this Presentation

- Present a summary of the scoping report
  - Available on the project website on the "Documents" page : http://ltempeis.anl.gov/documents
- Note:
  - Audio is being recorded
  - You will be able to ask questions at the end of the presentation
  - We are not taking comments at this time

Scoping Process

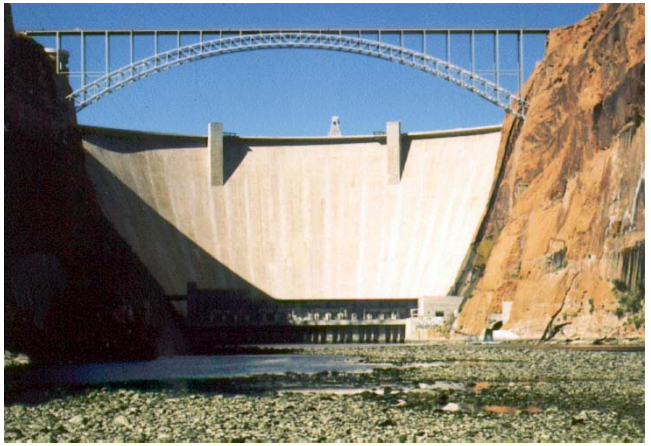
- Early phase of the NEPA process
- Gives the public an opportunity to comment on the scope of the LTEMP, recommend alternatives, and identify and prioritize the resources and issues to be considered in the EIS analysis
- There will be other opportunities to provide feedback, including this meeting, an alternatives workshop next week, and opportunities to comment on the draft EIS, which is expected to be published at the end of this year

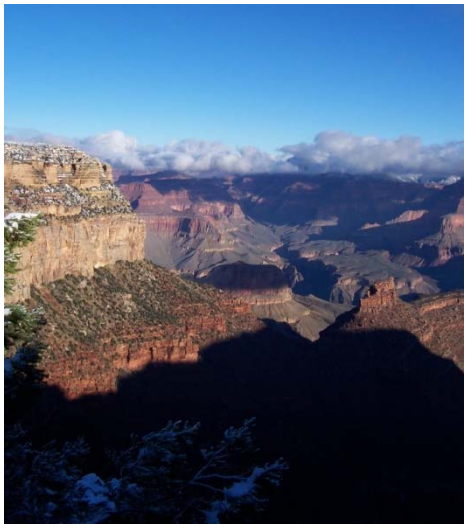




LTEMP Scoping

- The scoping period started with the publication of the NOI in the *Federal Register* (July 6, 2011) and ended January 31, 2012
  - Notice of public scoping meetings published on October 17, 2011
- Six open-house-style public meetings in November (~220 people)
- One Web-based meeting (12 people)





Scoping Statistics

- 447 correspondences
- Individuals, recreational groups, environmental groups, power customers or organizations, federal and state government agencies, and other organizations.
  - 41 states and 3 foreign countries
  - 60% from three states near the project area: Arizona, Utah, and Colorado
  - 14% from California and New Mexico
  - < 3% each from other states
- No formal campaign letters, although some commenters chose to submit entire letters or portions of letters from various other commenting organizations

Organizations that Provided Scoping Comments

- American White Water
- Arizona Department of Water Resources
- Arizona Power Authority
- Arizona Raft Adventures
- Arizona Game and Fish Department
- Arizona State Council of Trout Unlimited
- Colorado River Basin State Representatives of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming
- Colorado River Energy Distributors Association
- Environmental Defense Fund
- Farmington River Club
- Federation of Fly Fishers
- Glen Canyon Institute
- Grand Canyon Private Boaters Association
- Grand Canyon River Guides, Inc.
- Grand Canyon River Outfitters Association
- Grand Canyon River Runners Association
- Grand Canyon Trust
- Grand Canyon Whitewater
- Grand Canyon Wildlands Council, Inc.
- Irrigation and Electrical Districts Association of Arizona
- Living Rivers
- Marble Canyon Business Interests
- Salt River Project Agricultural Improvement & Power District (SRP)
- San Pedro Flycasters
- Sun City Grand Fly Fishing Club
- U.S. Fish and Wildlife Service
- Utah Associated Municipal Power Systems
- Western Area Power Administration
- Western Resource Advocates
- White Mountain Fly Fishing Club

Issues Raised in Scoping Comments

- Purpose and Need
- Environmental Issues
- Dam Operations and Hydropower
- Geographic and Temporal Scope
- Policy and Regulatory Concerns
- Approach and Considerations
- Alternatives
- Stakeholder Involvement
- Other Issues

Comments on Purpose and Need

- Reflect the purpose and intent of the Grand Canyon Protection Act (GCPA)
  - Glen Canyon Dam's primary purpose is water delivery and preservation and recovery of downstream resources, with hydropower generation reduced to the extent needed to achieve these objectives
- Recognize the importance of hydropower generation
  - 1956 Colorado River Storage Project (CRSP) Act
  - 1996 Record of Decision (ROD) on the Operation of Glen Canyon Dam Final Environmental Impact Statement

Comments on Environmental Issues

- Water resources
- Sediment resources
- Aquatic resources
- Terrestrial resources
- Tribal and cultural resources
- Recreation
- Climate change
- Air quality
- Socioeconomics

Water Resources

- Flow regime
  - Observations on effects of past operations
  - Support for specific low flows with little to moderate fluctuations
  - Concern for camps and day-use areas not being cleaned by variable flows
  - Restore natural water and sediment flows emulating pre-dam patterns
  - Return to pre-ROD hydropower operations
- Avoid a 10-15 year single flow regime
- Water temperatures
  - Comments for and against releasing warmer water from Glen Canyon Dam
- Lake Powell water levels and water quality
  - Evaluate Lake Powell's dropping water levels and resulting impacts to water quality in the Lake and in the river

Sediment Resources

- Ongoing loss of sediments and organic nutrients
  - Affects cultural sites and archeological resources
  - Affects native fish species and habitats
- Evaluate if sediments benefit, protect, and/or improve individual resources
- Mechanically add sediment downstream of Glen Canyon Dam
- Preserve remaining beaches in Grand Canyon for recreational experience and as an ecological resource
- Research ways to restore and maintain beaches and sandbars with flow and non-flow actions
- Design controlled floods for optimal sandbar deposition

Aquatic Resources—Native Aquatic Species

- Study status and ecological requirements of native species in the mainstem Colorado River
- Identify baseline objectives for flows, sediments, temperatures, and nutrients to stimulate recovery of native species
- Monitor and restore rare and endangered species, including extirpated species

Aquatic Resources—Humpback Chub

- Conduct reassessment of this species, including health of habitat
- Address steps necessary for full population recovery
- Implement a management plan for the Little Colorado River to protect the population and habitat
- Examine impacts of warmer water and sediment augmentation on food base, influx of warmwater nonnative species, and proliferation of invasive species

Aquatic Resources—Trout

- Pro:
  - Determine beneficial effects to river ecology and visitor experience
  - Stop capturing and killing, particularly above Lees Ferry
  - Analyze stomach contents to evaluate rainbow trout diet and effect on humpback chub
- Con:
  - Preys on humpback chub and competes with them for forage and spawning sites
  - Remove all nonnative fish species between Glen Canyon Dam and Lake Mead
  - Evaluate methods, including mechanical harvesting, for nonnative fish suppression to improve native fish habitat

Aquatic Resources—Other Nonnative Species

- Warmwater nonnative fish
- New Zealand mudsnail
- Quagga mussels
- Asian tapeworm

Terrestrial Resources

- Assess impacts on birds and their habitats
  - Southwestern willow flycatcher, peregrine falcon, and bald eagles
- Assess impacts on native plant species
  - Redeposition of sediment will provide new sites for colonization
  - Arrowweed and coyote willow dominate some beaches, making them unusable by campers
  - Restore shade trees to anchor and stabilize silt and sand substrates
- Consider effects on nonnative plant species
  - Tamarisk, camelthorn, and other nonnatives encroach shorelines
  - Research is needed on the effects of the tamarisk leaf beetle

Tribal and Cultural Resources

- Unique historic and archaeological resources along river
- Impacts of Glen Canyon Dam on cultural resources and tribal values
- Include tribal values and knowledge in decisionmaking
- Inventory, monitor, and restore sites with emphasis on restoring sediment and reducing erosion

Recreation—Fishing and Boating

- Fishing
  - Need comprehensive fish management plan
  - Need to find balance between quality trout fishery and protecting native fish
  - High flows and fluctuating flows makes wading dangerous
- Boating
  - Restore flows that preserve the unique experience of a trip on Colorado River
  - Address safety and navigability
  - Announce dam releases in advance
  - Provide information on visitor safety, accidents, water quality, and diseases
  - Monitor water quality and recreational use of Lake Powell

Recreation—Camping and Wilderness Values

- Numerous campable sandbars and beaches needed to alleviate crowding
- Camping space lost to vegetation encroachment
- Capacity of the ecosystem to absorb visitor impacts
- Provide opportunity for solitude, connection with nature, personal contemplation, joy, excitement, natural sounds and quiet, unique environment without trappings of civilization

Climate Change and Air Quality

- Climate change
  - Effects of climate change on ecological resources
  - Effects of more frequent droughts on operations
- Air quality
  - Quantify impacts of replacement power sources

Socioeconomics

- Recreational economics
  - Perform a full valuation of impacts on recreational and tourism economics
  - Assign economic value to sediments (beaches, camping space, cultural resource protection, etc.)
- Include broad socioeconomic analysis that includes market, nonmarket, and non-use values
- Evaluate effects on hydropower generation and costs
- Tribal socioeconomics
  - 57 tribal entities benefit from contracts with Western Area Power Administration
  - Evaluate impacts on communities of changes in hydroelectric generation

Dam Operations

- Current operating plan
  - Current operations have a large effect on downstream resources
  - Commenters suggested specific operational changes
  - Operations need to achieve compliance with laws and regulations
  - Maintain operations as originally planned when Glen Canyon Dam was built
- Assess the impacts of equalization flows
- Manage the dam proactively, not reactively

Hydropower Production

- Clean, low-cost, reliable source of energy
- Flows maximizing hydropower adversely impact river ecosystem
- Capacity constrained by maximum and minimum flow and ramp rate releases
- Assess costs/benefits from management policies and dam operations
- Avoid hydropower bias
- Use resources from dam's operation to mitigate the loss to downstream resources

Geographic and Temporal Scope

- Glen Canyon Dam to the headwaters of Lake Mead in keeping with GCPA
- Lake Powell, Colorado River, and Lake Mead to Hoover Dam
- Consider upstream effects of Glen Canyon Dam, including access to Lake Powell from tributaries during low reservoir elevations
- Encompass entire Colorado River Basin
- Proposed 10-15 year plan too short, longer plan needed (100 + years)

Policy and Regulatory Concerns

- Need scientifically justifiable and credible management decisions without influence of special interest groups
- Alternatives must comply with numerous laws, regulations, mandates, Law of the River, and policies
- Primary purpose of Glen Canyon Dam is power production
- Hydropower listed as incidental purpose in legislation authorizing Glen Canyon Dam
- GCPA compliance should be primary focus
- Revisit Colorado River Compact in light of current river limitations and changing societal demands
- Amend Colorado Interim Guidelines for Lower Basin Shortages and the Coordinated Operations of Lake Powell and Lake Mead (2007) to include consideration of GCPA requirements

LTEMP Approach and Considerations

- Adaptive management
  - Continually adapt practices based on ever-changing information
- Ecosystem management
  - Link flow, nutrient dynamics, water-quality, aquatic food base, human goods and services, and other models
- Experimentation
  - Use science to design, giving adequate time to study and monitor, then analyze
  - Test hypotheses
  - Develop control sites
  - Continue HFEs but study sediment deposition, trout response , vegetation, food base
- Baseline conditions
  - Use pre-dam state as baseline, especially to evaluate MLFF
- Desired future conditions
  - Use to assess effects of alternatives

General Comments on Alternatives

- Delineate between management and experimentation
- Consistent with laws, regulations, and policies governing water delivery, quality, and releases, but there may be competing goals
- Economically feasible
- Describe and analyze environmental impacts and predicted outcomes on park and other resources and values
- Scientifically defensible and credible with well-defined hypotheses
- Avoid a 10-15 year single flow regime

Proposed Alternatives

- Grand Canyon First!
- Fill Lake Mead First
- Run-of-the-River
- Decommission Glen Canyon Dam
- Frequent High-Flow Releases Separated by Steady Flows
- Pre-1996 ROD Operations
- Full-Powerplant Capacity Operations
- Modified Low Fluctuating Flows
- 12-Year Experiment of Two Steady-Flows and MLFF
- Species Community and Habitat-Based
- Stewardship

Suggested Alternative Considerations

- Sediment augmentation
- Temperature control device
- Forebay bubblers
- Trout control
  - Do not mechanically remove trout
  - Mechanically remove brown trout only
  - Control trout to improve fishery and benefit humpback chub population
  - Implement greater fluctuations to expose trout redds in spring
- Native species
  - Restore extirpated and other native species to Grand Canyon
  - Relocate more humpback chub to tributaries
- Paria River check dams to increase turbidity in river
- Continue research and experimentation

Suggested Alternative Considerations (Cont.)

- Flow modifications
  - Modify monthly and annual flows
  - Release equalization flows in ways that minimize impacts and provide benefits
  - Implement high-flow releases in rapid response to sediment inputs
  - Implement high-flow releases that are greater than 45,000 cfs
  - Reduce flow fluctuations
  - Increase flow fluctuations
  - Establish minimum flow of 8,000 cfs
  - Adjust ramping rates
- Restrict camping on certain beaches with alternative camp shelving in lieu of beaches
- Store water underground

Comments on Stakeholder Involvement

- Clearly define agency responsibilities, roles, and level of involvement in preparing, commenting on, and finalizing the LTEMP EIS and its implementation
- Improve federal communication and outreach to stakeholders and the public
- Involve American Indian Tribes affiliated with Grand Canyon and Colorado River respectfully and substantively at all stages

Comments on Stakeholder Involvement

- Glen Canyon Dam Adaptive Management Program
  - AMWG dominated by basin states, hydropower marketers and consumers, and environmental and recreational interests, all of which have no legal responsibility
  - Balance composition of AMWG because of its significant role in recommending management actions on dam operations
  - Greater role for GCDAMP Science Advisors
  - Conduct independent audit of performance
- Grand Canyon Monitoring and Research Center
  - Should be a central and significant resource for EIS, decision-making, and implementation of experiments
  - GCMRC should be outside DOI to avoid agency bias

Upcoming Events

- Preliminary alternatives will be posted on project website this week
- Alternatives workshop next week in Flagstaff, Arizona
  - High Country Conference Center
  - April 4 and 5
  - 9 am to 5 pm each day
  - Pre-register for meeting and to present an alternative
- News items will be regularly posted
  - Project website (http://ltempeis.anl.gov)
  - Reclamation's and NPS Intermountain Region's twitter feed (#gcltemp)
  - Reclamation's Facebook page

Questions?