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### Decisionmaking and the EIS on Operations of Glen Canyon Dam

Rick L. Gold

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**DECISIONMAKING AND THE EIS ON OPERATIONS OF  
GLEN CANYON DAM**

**Rick L. Gold  
Deputy Regional Director  
Bureau of Reclamation  
125 South State Street, Room 6107  
Salt Lake City UT 84138-1102**

**Sustainable Use of the West's Water  
Natural Resources Law Center  
University of Colorado School of Law  
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Decisionmaking and the EIS on Operations of  
Glen Canyon Dam

Rick L. Gold

[An update of a paper previously presented at  
WaterPower 91]

Abstract

Competing for the scarce resources of our future is the byword of the 1990's. For the last century and more, the United States has been in the position of always having more resources to meet its ever growing needs. We now see the end of that era and enter a time when managers of all resources must look at the more difficult solutions of allocating what resources we have to a continually growing demand. Those solutions may not simply be for the development of more of the same kind of resource but more than likely will be for the utilization of the resources which exist in ways which now seem to many to be "better."

Many similar resource allocation problems currently face us. The current Environmental Impact Statement (EIS) effort on the operation of Glen Canyon Dam is the focus of this discussion. This paper relates the process of approaching the conflict, the differing views and conflicting strategies of the parties, the emotional and logical investment of the participants, and the concerns for fairness and openness derived from the historic distrust between those with differing views. The paper is prepared from the perspective of the Bureau of Reclamation (Reclamation), the lead Federal agency in the effort, and the perspectives of the author who has

been in a lead role in the agency's approach to the challenge. The paper describes the formulation of positions by the interested parties and the surrounding values and depth of concern exhibited in the process.

### Perspective

The relative value placed upon a particular good, service or situation has always been at the heart of any decision-making process undertaken. Values, after all, are the expression of what is desired and the basis for selection of the most desired. One of the most troubling situations occurs when decisions made in earlier times seem less than satisfactory when viewed utilizing contemporary values. What makes this situation even more challenging is when the earlier decision and, perhaps, the level of agreement on the current set of values are not universally, and possibly not even widely, supported. This condition is often the case when dealing with the far-reaching decisions relating to the allocation of natural resources. The prospect of simply determining what the majority desire (what option supports their highest value) and taking that course of action is becoming increasingly more difficult. Finding a majority opinion about anything is nearly impossible. Our public systems have become very effective in allowing our citizens to become knowledgeable, express their views, and take part in the decision-making process on a broad scale. Few, if any, individuals or groups are content with allowing some designated representative (individual, group, or elected official) to express their wishes or forward their values. As a result, we find that few clear majorities exist, but rather a multitude of opinions and expressions which tend to defy a combination into any position which could be viewed as supportable from many fronts and allow for major and long-term decisions to be made. Such is the case we find in most

situations where the decisions are significant and the public has high interest.

#### Background

As part of the West's major water resources development plan, particularly the development of the Colorado River, Glen Canyon Dam has been significant. The early allocation of the waters, based upon the Colorado River Compact, was a significant decision of its time. Subsequent judicial and legislative actions since that early 1920's milestone have added much to the body of information commonly called "The Law of the River." Within the legislative action is the Colorado River Storage Project Act of 1956 which authorized the construction of the Glen Canyon Dam (and other Initial Units) on the Colorado River. That legislation and the subsequent construction of the dam were certainly not without controversy. In the timespan up to 1963 when construction was complete, the action was both heralded as a major resource achievement and a major environmental failure. The National Environmental Policy Act (NEPA) was several years from being enacted. Many would probably agree that the seeds of the environmental movement in the United States were being sown and the traditional near unanimous support for major resource development was being questioned by some. The decisions of that time, however, seemed well supported and appeared to be for the good of the nation. The development of water supplies and the production of hydropower were some of the highest values in the country.

Glen Canyon Dam was designed to produce hydropower to meet the peak demands of power customers. Its method of operation is called load following in that it produces more energy during the peak use periods and less when energy is not needed. This type of operation is typified by higher energy requirements during the daytime hours

and lower requirements at night. It also meets higher summer cooling and winter heating electric demands and is, therefore, affected by changes in weather and season. The principle involved in the generation requires that as electric generation is increased, the flow of water through the powerplant is increased and vice versa. It is, in fact, the flow of water which provides and determines the amount of energy generated, and since the flows can be regulated by flow valves and gates, the amount of energy produced is, quite simply, a matter of how much water is allowed to flow through the powerplant.

It is this kind of operation that has become the focus of the current controversy over the operation of the dam. These fluctuating flows and the flood flows of the 1983 through 1986 period have been cited as causing significant damage to the downstream environment. The downstream environment in the case of the Glen Canyon Dam is the Glen Canyon National Recreational Area and Grand Canyon National Park.

#### The Controversy

In response to the energy crisis in this country, in the mid-1970's many options were evaluated by Reclamation which could have provided additional energy supplies. Included was the potential to add additional generators to the existing Glen Canyon Dam and the opportunity for the uprating and rewinding of the existing generators at that facility. As part of that investigation, Reclamation developed an environmental assessment for the uprating and rewinding options and circulated it during the late 1970's and early 1980's. Public meetings were held, and it was quickly evident that a great deal of opposition existed, not only to the potential for expanded generation but also to the current operation of the dam.

The above action by Reclamation and re-action by



the public are symptomatic of the historic approach to resource development. When the limit of resource availability is reached, the nation has moved to develop more of it. This occurs whether dealing with water, power, minerals, timber, or any other traditionally utilized resource. This phenomenon has been evident since the earliest days of our habitation of this continent. It seems quite likely that as the values of particular resources change, the same philosophy of continued expansion to meet growing demands may continue. Under this scenario, shifting values from power generation to environmental consideration, for example, could lead to major expansion of environmental resource development and utilization at the expense of power generation, much as the reverse has been the case in our past. It was the pursuit of the expanded generation of power that brought Reclamation to the studies as discussed above. Those studies also clearly focused the public view on the value of additional hydropower versus more concern for the environment.

Largely in response to that reaction, Reclamation began studies to evaluate the effects of the operation of Glen Canyon Dam in December 1982. These studies, which were completed in 1988, became known as the Glen Canyon Environmental Studies and focused on the impacts of current operation on the downstream environment. It is important to recognize that during the period of the studies, the runoff from the Colorado River System was extremely high. From 1963 to 1980, Lake Powell had been filling and the downstream flows had been held near the compact defined release rate of 8.23 million acre feet per year. The reservoir first filled in 1980, after which came four of the highest runoff years of record (1983-1986). It was during that high runoff period that the Glen Canyon Environmental Studies were conducted.

Limited opportunities were available to study fluctuating flows. Instead, extremely high flows dominated the period. One of the conclusions of the studies was that additional work was needed to fill in the missing information and to evaluate the impacts to both recreation and power production economics. As a result, additional studies, called Glen Canyon Environmental Studies Phase II, were initiated in October 1988. The purpose was to complete the evaluation of the impacts of current operations of Glen Canyon Dam.

Public interest and participation continued to grow and a controversy was developing over the potential for a solution. The agency's position was that the studies would help determine if some changes to the current operation should be made. Many of the public felt that adequate information existed to indicate the need for change. Many were unhappy that the decision process was not moving ahead at a faster pace and that the process was not as open as it could be. The politics of each position were loudly voiced and on July 27, 1989, the Secretary of Interior made the decision to begin the preparation of an EIS on the operation of the dam. With that step, the commitment was made to follow the NEPA process regulating public participation and agency decision making. It also assured that the process would be timely and that a broad base of cooperation and participation would be utilized.

#### Process

Beginning in 1989, Reclamation began the complex process of bringing together the necessary staff and other resources to accomplish this major EIS. Most would agree that Reclamation took far too long to get started. The public scoping process for the EIS began in March 1990. Trying to redirect a Glen Canyon Environmental Studies Phase II process which had been ongoing since

December 1988, into the necessary program to produce the information required by an EIS was complex and frustrating to all. In order to accomplish the EIS within a reasonable timeframe, the studies had to be compressed to fit a pre-defined EIS schedule. Only after several false starts and changing emphasis did the process finally come together.

In order to accomplish the studies, a series of research flows were designed to allow the measurement of environmental impacts on flows which could be designed and predicted rather than only measured if and when they occurred. The research flows were designed to occur over a period of 13 months, from June 1990 to July 1991. After the field research data was collected and the analysis completed, the information was utilized in the EIS to evaluate the current operations and the alternatives. This laboratory-like process was controversial in and of itself. As you might expect, not all were satisfied with the approach. A good deal of discussion and debate centered on each and every aspect of the studies and the EIS process.

The EIS process is now essentially complete. Public scoping meetings were completed in May 1990. The formulation of alternatives began in July 1990. The draft EIS was filed in December 1993. The final EIS was filed in March 1995. As could be anticipated, these timeframes are also very controversial with vocal opposition indicating the time is too long and others indicating that it is too short. Such is the dilemma of the decision maker.

#### Participants

There are far too many participants in the current process to effectively list them and discuss them here. In all, over 17,000 individual responses were received during the public scoping process and over 33,000

comments received on the draft EIS. Many of those responses were generated through the significant mail-in campaigns of several major organizations.

One of the key elements of the public involvement process was the regular meeting between Reclamation and an interested party group. This group represents the most active and vocal of the individuals and groups involved in the effort. It has averaged about 20-40 individuals for each meeting, usually held in Phoenix, Arizona. Among the most prominent participants are individuals representing: Grand Canyon Trust, Sierra Club, Western River Guides, Mothers for Clean Water, Arizona Fly Casters, Colorado River Energy Distributors Association, Arizona Department of Natural Resources, Upper Colorado River Commission, Colorado River Board of California, and Colorado River Resource Coalition.

In addition, there are 11 cooperating agencies as defined by the Council of Environmental Quality regulations. They are: National Park Service, Fish and Wildlife Service, Bureau of Indian Affairs, all of the Department of the Interior, Western Area Power Administration of the Department of Energy, Arizona Game and Fish Department, Navajo Nation, Hopi Tribe, Hualapai Tribe, San Juan Southern Paiute Tribe, Southern Paiute Consortium, and Zuni Pueblo.

It was clear from this mix of participants that the stage is truly set for very interesting dialogue and discussion, particularly when centered around issues like the values of hydropower versus the values of the Grand Canyon.

#### Public Interactions

The interaction has been and continues to be lively and pointed. Because of the previous criticism on the lack of openness of the process, Reclamation has tried to go the extra mile to assure that the views of

all are heard and evaluated. The above process with the interested parties is indicative of this commitment. As might be expected, in many situations we have found that the various groups and individuals tend to have significant discussions among themselves and sometimes on topics not related to the issue at hand. The opposing views and philosophies of these groups almost "require" that they engage each other in debate under almost any circumstance.

Public interaction has been a very healthy process in this effort in that it has allowed for the discussion and probing of the various positions and a clearer understanding of the issues which are of such great concern to the participants. Without that activity we would be forced to accept the representation of the public's views as portrayed by the vocal and persistent individuals involved in the process. It also seems quite clear that although there are some groupings of opinion that can be made, there are differing opinions within each general opinion. It is also very clear that many are uncomfortable with the idea of having others represent them and their views. Given the option, most feel better with the opportunity to directly express their own views.

One of the real challenges was to keep the activities focused on the step-by-step approach to the NEPA process. In virtually every case, all the participants wanted to rush the process to the final answer by stating their position on what the final decision should be. This problem was particularly troublesome in the scoping process where the purpose is to make sure that an appropriate range of issues, concerns, and alternatives are developed so that proper evaluation can take place. Most of the participants wanted to immediately press into the debate of which

alternative is best or worst and either forward a particular position or eliminate one. This tendency is in direct opposition to the NEPA process which requires the evaluation of an appropriate range of alternatives. Without this appropriate range, the EIS would be subject to significant challenge as to its sufficiency. Many of the participants seem determined to move directly to the preferred alternative without giving sufficient consideration to other alternatives. It is a logical approach for each to want to add emphasis to what they perceive to be the "best" alternative, particularly when the issue is so emotional and the significance of the values being discussed is so high.

#### The Issue of Values

The values involved here are deep seated and significant on both sides. Not all the values can be expressed here, but some of the major recurring themes bear discussion. In general, the issue is framed as one of "Power Generation vs. Environmental Consideration." This is a simplification and, admittedly, there are a number of subissues which some may even view as more important than these two. For purposes here, these two categories will be used to form the discussion.

Power generation is a significant value for the nation. The subtlety here is how much is enough and where should it be developed. The hydropower generation at Glen Canyon Dam is a relatively recent addition (circa 1960) to the resource development of the basin. The generation of hydropower is generally thought to be environmentally more acceptable than other forms like thermal plants of the fossil fuel and nuclear variety. It is not simply a choice between electricity and the Grand Canyon, but that approach does tend to focus on the values involved. Reduced to its emotional level, the choices are: (1) turn out the lights and turn off the

heat and air conditioning, or (2) destroy the Grand Canyon. The question is not nearly so clear, but the tendency on both sides is to force the emotional reaction to support a particular position.

At stake is not the total energy to be produced at the dam; that amount will be constant as long as the quantity of water flowing through the plant remains the same. At stake is the timing of the power produced and its value as a resource. Under historic operation, the energy was produced to follow (or meet) the demand. This produces the highest value for the energy. Since no method exists to store electricity in this situation, producing it in its highest demand period is superior to producing it when it is not needed.

One of the basic arguments is "Do we really need that energy?" Another argument is "Should we be reducing the demand instead of always meeting any expression of increased need?" The issue of energy conservation has broad support and has real potential to make sure that levels of use are not in excess of what is really needed. Many examples can be cited where energy is not used as efficiently as it could be. In reality, there is also significant realization that relying solely on conservation to deal with the future potential energy needs of the country is in essence saying "No more can/will be developed" and proceeding under that concept.

Another basic argument relates to the pricing of the energy and the impact it may have on demand. Many would say that the energy provided by Federal hydropower is priced too low. The label of "Cheap Federal Hydropower" is often attached. By comparison, the wholesale price paid by consumers for Federal energy and capacity is lower than the wholesale price paid in most cases on the private market. Many argue that by raising that price, the demand for Federal hydropower would be

reduced. This is indeed a complex argument since Federal legislation establishing the Colorado River Storage Project also establishes the circumstances for power development, marketing to preference customers, and the pricing of the power at a rate which will recover the cost of development, operation, and maintenance. The project and those that participate as defined by legislation are dependent upon these concepts for repayment and operations. At the heart of this situation is the issue of the continued validity of the preference power concept and the criticism that the power is too cheap and is often mislabeled as subsidized power. Many have and will continue to debate the controversy because it remains a conflict between basic values of the debaters.

The other side of this simplified approach is the value of Environmental Considerations. Among those of most concern seems to be: beach erosion, concerns for endangered species, archeological impacts, recreational concerns, concern for the riparian vegetation and the associated wildlife, and the overall concern for the Grand Canyon ecosystem. Some of these issues have financial considerations. Many, however, do not and are primarily inherent values. Considering the value of the endangered species, the archeological resources of the Grand Canyon, the vegetation and the wildlife, and the total ecosystem is much less technical in nature and much more personal and variable among those who are concerned. This category of values is sometimes called Non-Use Values and the real challenge is how to compare these values with others that have a monetary value. A significant debate exists as to whether this comparison should even be attempted at all. Many would argue that the approach would be incomplete without also looking at the Non-Use Value of having a reliable electric supply



and meeting the continuously growing needs of the population.

Each of the environmental considerations has strong support and, in many cases, different views exist among those concerned. Potentials for reducing the environmental impacts to one issue may, in fact, not be supported by those concerned with other environmental issues. Is it of greater value to protect trout or endangered species? This kind of question is only an example of the type of debates which occur.

One of the issues upon which a great deal of focus is being placed is the impact upon the beaches of the Grand Canyon. The beach structure in the Grand Canyon seems to be a key to many important items. It allows for camping and stopping points for the many white water boaters who use the canyon each day. It provides for the vegetation which in turn supports the wildlife associated with the canyon's ecosystem. It protects the archeological resources. The issue becomes the impact that the river has on those beaches and the rates of erosion which occur under current operation and would occur under alternative operational conditions.

The reason for the complexity of this total issue is that many see that there is no comparison between respective values. It is a very easy choice for them to decide that the values of one far exceed the values of the other. Many are ready to make strong statements that a particular situation should exist to assure that the highest valued resource is given superior and possibly exclusive priority over the other. The dilemma is that this situation is true for most people on BOTH SIDES of this issue. The result is polarization and emotional, if not hostile, approaches from most of the participants involved in attempting resolution. This situation makes reasoned judgment very difficult.

### Summary

The process of developing an EIS on the current and potential operations of Glen Canyon Dam is complete. The participants were numerous and the public's interest and vocal concerns were very evident. The process involved a classic allocation of scarce resources. Making the decision regarding the future operation of Glen Canyon Dam is serious business and was hotly debated throughout the process and likely will continue to be well after the conclusion. Reclamation remains committed to a serious evaluation of the issues. Our primary goal was to produce a quality EIS which will provide the necessary information so that a well-reasoned decision can be made. We accomplished an open and fair process which demonstrated the credibility of our efforts to do the right thing. We recognize the challenge and are committed to doing the best job possible. The decision to be made will have major and significant impact upon the hydropower and environmental resource of the basin for years to come.