

RECLAMATION

Managing Water in the West

Albuquerque Bernalillo County Water Utility Authority Contract for Storage of San Juan-Chama Water in Elephant Butte Reservoir

Draft Environmental Assessment



U. S. Department of the Interior
Bureau of Reclamation
Albuquerque Area Office
Environment Division
Albuquerque, New Mexico

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Front Cover Photo – Caption: Elephant Butte Reservoir 2003. Bathtub rings show higher levels from previous years. Drought and reduced stream flow from the Rio Grande in the early 2000's caused the water level to drop, along with a reduction in recreational visits.

Picture is from web page: <http://www.southwestclimatechange.org/impacts/people/tourism-and-recreation>

Photo Credit: George Frisvold, Agricultural and Resource Economics, The University of Arizona

Abstract

The US Department of the Interior, Bureau of Reclamation (Reclamation) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the environmental and socioeconomic impacts from the proposed action to execute a renewal contract between the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) and Reclamation for storage of San Juan Chama Project (SJCP) water in Elephant Butte Reservoir (Reservoir). The proposed contract will be for a 40-year term and will replace an existing contract executed in 1983 with similar terms and provisions.

SJCP contractors may store SJCP water in the Reservoir pursuant to a 1981 Public Law 97-140 which authorizes the Secretary of the Interior to enter into contracts with SJCP contractors for such purposes. The ABCWUA has an existing contract with the Secretary, through Reclamation, to store up to 50,000 acre-feet (AF) of SJCP water in the Reservoir. The ABCWUA and Reclamation propose to renew this 50,000 AF storage agreement for another 40 years (original contract in place since 1983). The City of Santa Fe has also requested a contract with Reclamation for storage of up to 50,000 AF of its SJCP water in the Reservoir which will be covered under a separate EA.

A 1974 Public Law created a 50,000 AF space in the Reservoir for recreational purposes (recreation pool). Although the law's provision for the initial 50,000 AF of SJCP water to be released to establish the pool, and up to 6,000 AF annually thereafter for evaporation losses, for a period of ten years, has expired, the space for the pool itself has not. Theoretically, SJCP contractors could request Reclamation to move SJCP water allocated and delivered to them into the recreation pool. If the ABCWUA contract is renewed, and if the proposed contract with the City of Santa Fe is executed, and if the maximum amount of water were stored in the recreation pool, there could exist potentially 150,000 acre-feet of storage space in the Reservoir occupied by SJCP water (50,000 af in the recreation pool, 50,000 af in the City of Santa Fe's pool and 50,000 af in ABCWUA's pool). Historically, Reservoir storage fluctuates between a high of 1,500,000 AF and a low of 300,000 AF. Based on the environmental consequences section of the EA, the proposed action would not result in significant impacts to the environment.

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List of Acronyms and Abbreviations

ABCWUA	Albuquerque Bernalillo County Water Utility Authority
AF	Acre-foot or AF
BA	Biological Assessment
BLM	Bureau of Land Management
BO	Biological opinion
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
cfs	Cubic feet per second
Compact	Rio Grande compact
Corps	US Army Corps of Engineers
EA	Environmental Assessment
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ITA	Indian trust Assets
NEPA	National Environmental Policy Act
NMDGF	New Mexico Department of Game and Fish
NRHP	National Register of Historic Places
Reclamation	Bureau of Reclamation
Reservoir	Elephant Butte Reservoir
RGP	Rio Grande Project
RGPD	Rio Grande Project Datum
ROD	Record of Decision
Service	US Fish and Wildlife Service
SJC	San Juan-Chama

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Chapter 1: Purpose of and Need for Action

Introduction

The US Department of the Interior (DOI), Bureau of Reclamation (Reclamation) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) to evaluate the environmental impacts from the proposed action, which is to renew a 40 year storage agreement (Contract) to store San Juan-Chama Project (SJCP) water in Elephant Butte Reservoir (Reservoir). Reclamation and the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) would be parties to the Contract.

SJCP contractors may store SJCP water in the Reservoir pursuant to a 1981 Public law which authorizes the Secretary of the Interior (Secretary) to enter into contracts with SJCP contractors for such purposes. The ABCWUA has a contract with the Secretary, through Reclamation, to store up to 50,000 acre-feet (AF) in the Reservoir.

Elephant Butte Dam and Reservoir were authorized by Congress on 25 February 1905, for irrigation and flood control as features of the Rio Grande Project (Project) (Public Law No. 58-104, 33 Stat. 814).

Historic elevations (figure 1) show the impact of low runoff to the Reservoir and the resultant water surface elevations since the Reservoir first started storing water in 1915. From 1915 to 1945, the Rio Grande Project's irrigated lands were not fully developed, and Reservoir storage levels remained relatively full. The Reservoir filled and spilled for the first time in May 1942.

With agricultural lands fully developed and put under irrigation production in 1946, delivery of the full Project irrigation demand each year became possible. However, the upper Rio Grande Basin went into a prolonged drought in the late 1940s and the drought intensified in the 1950s with the lowest Reservoir storage ever on record on 6 August 1954. It took another 25 years for the storage in the Reservoir to recover so that Reclamation could allocate full supplies again for irrigation on the Project.

Pursuant to the Act of October 27, 1974 (P.L. 93-493), (1974 Act) a minimum recreational pool was established. It contains an available space of 50,000 AF to be filled one-time only with SJCP water. The City of Albuquerque had an agreement with Elephant Butte (EB) State Park to offset evaporation losses; this agreement has since expired. Annual releases from Heron Reservoir to offset evaporation from this recreational pool were authorized for 10 years, at which time such releases terminated. The minimum recreational pool space still exists, and a SJCP contractor could still move its water to the pool. There has been no evaporation, because there has been no water stored in this pool since it spilled in 1985.

In the event of a spill the order is: 1) Water stored pursuant to 1981 Act (Contractors SJCP water) 2) Water stored pursuant to 1974 Act (recreation pool SJCP water) and 3) Native waters of the Rio Grande.

The ABCWUA has a need for storage in the Reservoir because available storage in upstream reservoirs is limited. ABCWUA stores SJCP water in Abiquiu Reservoir under a contract with the Corps of Engineers. Storage under this contract is at its maximum, and no room is available. Additional storage is needed for additional water. Storage of SJC water in the Reservoir allows the contractors to take delivery of water that they otherwise could not. Without the availability of storage or a suitable beneficial use, the contractors would be forced to leave undelivered water in Heron Reservoir. Storage in the Reservoir reduces the amount of water carried over in Heron Reservoir and thereby can increase the available space in Heron. On January 26, 1983, a contract was executed (1983 Contract), pursuant to the San Juan Project Water Act of December 29, 1981 (P.L. 97-140, 95 Stat. 1717) (1981 Act), between Reclamation and the City of Albuquerque providing for a separate 50,000 AF pool in the Reservoir. The contract was assigned to the ABCWUA by the City of Albuquerque through an agreement dated April 27, 2004. This contract has expired, and a one-year extension is due to expire January 29, 2010. The ABCWUA wishes to enter into a similar 40-year contract which will have terms and conditions similar to the contract expiring January 29, 2010.

Presently, the ABCWUA delivers stored water to third parties which take delivery of water directly from the Reservoir. The ABCWUA also uses stored water to offset ground water depletions pumping from wells that affect the Rio Grande Compact. ABCWUA's storage space is used primarily for temporary storage of its SJCP water.

Background

Both Project reservoirs, Elephant Butte and Caballo, are used to store native Rio Grande water for irrigation. Rio Grande water delivered to the Reservoir by the States of Colorado and New Mexico under the terms of the 1938 Rio Grande Compact is stored in the Reservoir for delivery to the State of Texas. Under the Rio Grande Convention of 1906, the United States normally delivers 60,000 AF of Rio Grande Project water annually to Mexico. Delivering this water is a Federal responsibility. Project storage also supplies about 730, 000 AF to water districts below the Reservoir in New Mexico and Texas in a typical year. SJCP water for the recreation pool may be stored pursuant to the 1974 Act, and some of ABCWUA's SJCP water is also stored in the Reservoir under the 1983 Contract. If a spill is to occur, water stored under contracts executed pursuant to the 1981 Act is the first to spill out of the Reservoir.

The Reservoir currently holds just under 35% of its total Rio Grande Project (RGP) storage capacity of 1,500,000 AF, as a result of prolonged drought in the Southwest. The total storage of the Reservoir Spillway elevation = 4,407 feet (RGPD), Surface Area = 35,984 acres, and the Storage capacity = 2,023,358 AF. Over the past decade as the Reservoir level has receded, large areas of vegetation (dominantly saltcedar (*Tamarix chinensis* Lour), Russian olive (*Elaeagnus angustifolia*), or native Goodding's Willow (*Salix gooddingii*), Geyer Willow (*Salix geyeriana* Andersson), coyote willow (*Salix exigua*), box elder (*Acer negundo*), or cottonwood (*Populus*

sp.) have established and flourished along the shores of the Reservoir, creating habitat ideal for use by the endangered Southwestern Willow Flycatcher (*Empidonax traillii extimus*; flycatcher or SWFL). When moisture returns to the Rio Grande valley in New Mexico, it is anticipated that the Reservoir storage levels will rise.

A prudent flood space is reserved at the top of the Reservoir which allows Reclamation to control flooding downstream of the dam up to a safe river channel capacity of 5,000 cubic feet per second (cfs). 50,000 AF of flood space (below the spillway crest) is reserved for the summer months and 25,000 AF (below the spillway crest) for the winter months.

This EA is prepared pursuant to NEPA; the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) 1500-1508); the Department of the Interior's NEPA Implementing Procedures (516 DM 1-15); and Reclamation's NEPA Handbook. In accordance with CEQ regulations (parts 40 CFR 1500.4(i), 1502.20, 1502.21, and 1508.28), Reclamation guidance, and the Paperwork Reduction Act of 1995, this EA is tiered to Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement (February 2003). This *Contract for Storage of SJCP Water in Elephant Butte Reservoir Draft Environmental Assessment* incorporates relevant data and findings of the Elephant Butte Five-Year Operational Plan Biological Assessment (February 2009) by reference. Tiering is defined by CEQ as a procedure that allows an agency to avoid duplication of paperwork through the incorporation by reference of the general discussions and relevant specific discussions from an EIS (Elephant Butte and Caballo Reservoirs Resource Management Plan and final EIS, February 2003) of broader scope into a document of lesser scope without duplication of the analysis prepared for the EIS (CEQ NEPA's 40 Most Asked Questions).

Need for the Action

A contract with Reclamation is required for ABCWUA to obtain a 40-year agreement for storage of 50,000 AF of SJCP water in the Reservoir for municipal, industrial and other purposes. This 40-year contract will replace the existing 1983 storage contract. Presently, the ABCWUA uses this storage space for temporary storage of SJCP water, to deliver water to third parties in the vicinity of the Reservoir, and to offset ground water depletions that have an effect on the Rio Grande Compact. The ABCWUA has delivered small amounts of water to local grape growers (wineries). These amounts are measured by Reclamation, El Paso Field Office. Costs to read meters and check pumps are charged to ABCWUA annually as operation and maintenance costs. Each year the State of New Mexico notifies Reclamation in writing, of groundwater depletions by ABCWUA upstream. These depletions are offset with water stored in Elephant Butte Reservoir through Reclamation's water operations accounting procedures.

Need by ABCWUA for storage of water in the Reservoir:

1. Additional storage for ABCWUA due to full reservoirs upstream.
2. Offset ground water effects that occur between November and March/April every year. This occurs by the Office of State Engineers (OSE) stating the amount of water (letter water) that would need to be moved from the ABCWUA San Juan-Chama pool into the

native Rio Grande pool. This is an accounting procedure that allows for easy payment to the State and approved by Interstate Stream Commission (ISC).

3. Water could be used for third parties.
4. Water could be moved from Elephant Butte Reservoir via accounting to Abiquiu.

Purpose for the Action

A renewal of the existing contract would enable the ABCWUA to maintain its ability to store SJCP water in the Reservoir. Such storage may be desirable when there is no available storage in upstream reservoirs. The ABCWUA currently uses SJC water stored in EB to offset the impact of its groundwater pumping program. Pumping from the aquifer increases surface water losses from the Rio Grande through recharge. The ABCWUA uses stored SJC water to offset this surface impact through arrangements with the state. The ABCWUA delivers water to third parties (up to 150 AF) for irrigation and wishes to maintain the ability continue such deliveries, although no such deliveries are anticipated in the near future. ABCWUA must call for SJCP water to be released from Heron Reservoir prior to December 31 every year. No carryover storage of SJCP water is allowed in Heron Reservoir.

Relevant Statutes, Regulations, and other Plans

The authority for the proposed contract is the 1902 Act, as amended and supplemented, in particular the Act of December 29, 1981, Public Law 97-140, 95 Stat. 1717 (1981 Act). The 1981 Act authorizes the Secretary of the Interior to enter into agreements for storage of SJCP water in the Reservoir. Section 5.(c) of that law states, "Any increase in operation and maintenance costs resulting from such storage not offset by increased power revenues resulting from that storage shall be paid proportionately by the entities for which the San Juan-Chama Project water is stored." Section 5.(d) states, "The amount of evaporation loss and spill chargeable to San Juan-Chama Project water stored pursuant to subsections (b) and (c) of this section shall be accounted as required by the Rio Grande Compact and the procedures established by the Rio Grande Compact Commission."

**Table 1
Required Consultations, Compliance Actions, and Permits**

Consultation/ permit	Agency/ organization	Description
Endangered Species Act (Section 7 consultation)	U.S. Fish and Wildlife Service (Service)	Consultation under section 7 of ESA is required to determine if the project will adversely affect threatened or endangered species or designated critical habitat.
Permits pursuant to sections 402, 404 of the Clean Water Act	U.S. Army Corps of Engineers (Corps) (also reviewed by the Service and the New Mexico Environment Department)	Section 404 permitting may be required for options that involve construction or discharge of material into wetlands and other waters of the U.S. National Pollutant Discharge Elimination System (section 402) permitting may be required for options that require discharge.
Section 106, National Historic Preservation Act Compliance	New Mexico Historic Preservation Division (State Historic Preservation Office)	Reclamation is required to consult with the State Historic Preservation Office regarding the effects of the project on historic properties (sites eligible for listing on the <i>National Register of Historic Places</i>) and to mitigate any adverse effects on these sites. The section 106 process provides the Advisory Council on Historic Preservation the opportunity to comment on adverse effects on historic properties.
Permits for water storage, place of use, or point of diversion	New Mexico Office of the State Engineer	Project actions may require permits to change water storage, type of use, place of use or points of diversion.

Public Scoping and Issue Identification

A notice will be placed in the Federal Register announcing the proposed contract action. A final draft contract will be made available for public review 60 days prior to execution, with a 30-day comment period provided for the EA.

Chapter 2: Alternatives

Introduction

Description of the Alternatives

Proposed Action

Reclamation and the ABCWUA are proposing to sign a 40-year Contract for SJCP water storage in the Reservoir.

No Action Alternative

Under the No Action Alternative, Reclamation would take no action, allowing the existing contract to expire without renewing it. Thus, Reclamation would not enter into a 40 year contract with the ABCWUA for SJCP water storage in the Reservoir.

Discussion of Proposed Action

Reclamation has selected the proposed action as its preferred alternative because it would renew an existing contract for the storage of the ABCWUA’s SJCP water in the Reservoir. The renewal contract will be executed with the ABCWUA and have no consequences to current Reservoir storage allocations (see table 2 below).

The 1974 Act created a 50,000 AF space in the Reservoir for recreational purposes. SJCP contractors could request Reclamation to move SJCP water allocated and delivered to them into the Recreation Pool. If the ABCWUA contract is renewed, and if the proposed contract with the City of Santa Fe is executed, and if the maximum amount of water were stored in the recreation pool, there could exist potentially 150,000 AF of storage space in the Reservoir occupied by SJCP water. It is not anticipated that any SJCP water will be moved to the Recreation Pool. None has occupied that space since the Reservoir spilled in 1985. Initial storage in the Reservoir is expected to be similar to current storage. Due to direct surface water diversion projects going online upstream in the future, storage needs may decline.

Below is a table showing year-end balances of water stored since the 1983 contract with ABCWUA.

Year	Year-end Storage (acre-feet)	Year	Year-end Storage (acre-feet)
1983	52,799	1996	0
1984	56,170	1997	2,556
1985	0	1998	2,322
1986	0	1999	2,107
1987	0	2000	10,835
1988	0	2001	9,494
1989	3,163	2002	8,207
1990	5,176	2003	6,984
1991	3,903	2004	5,886
1992	41,853	2005	5,220
1993	42,158	2006	4,517
1994	0	2007	4,048
1995	0	2008	31,938

Table 2. History of ABCWUA’s Storage Contract (Reclamation, Memorandum dated May 2008).

Chapter 3: Affected Environment

Introduction

Scope of Analysis

Study Area

Elephant Butte Reservoir currently stores just under 35% of its total storage capacity as a result of prolonged drought in the Southwest. Over the past decade as Elephant Butte Reservoir has receded, large areas of vegetation have become established, and flourished, along the shores of the reservoir pool.

Water Resources

Information pertaining to water resources at Elephant Butte Reservoir is incorporated by reference from the following documents which provide extensive detail on these subjects:

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/albuq/library>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html>

Climatic and Geomorphic Setting

As shown in Figure 1, historic elevations show the impact of low runoff to the Reservoir and the resultant water surface elevations since the Reservoir first started storing water in 1915. From 1915 to 1945, the Project's irrigated lands were not fully developed, so the storage levels remained relatively full. The Reservoir filled and spilled for the first time in May 1942. With agricultural lands fully developed and put under irrigation production in 1946, full irrigation demand each year became possible. However, the upper Rio Grande Basin went into a prolonged drought in the late 1940s and the drought intensified in the 1950s with the lowest storage ever on record on 6 August 1954. It took another 25 years for the storage in the Reservoir to recover so that Reclamation could allocate full supplies again for irrigation on the Project.

Conversely, the wettest period on record occurred in the 1980s and the first half of the 1990s. The second time that the Reservoir filled and spilled was in July 1985. It remained full and water was spilled through 1988. This is unprecedented considering the historical hydrology of the upper Basin. A short dry period ensued, but the Reservoir filled and spilled again in 1994 and

1995. Since then, the basin has been in a long-term drought for the last 13 years. Due to anticipated declining water supplies that can be stored (increases in demands) in the future, global effects should be negligible. The future of storage of EB water will be similar or declining due to direct surface water diversion projects going online upstream. Initial storage would be similar to past storage, dependent on upstream storage availability and hydrologic conditions.

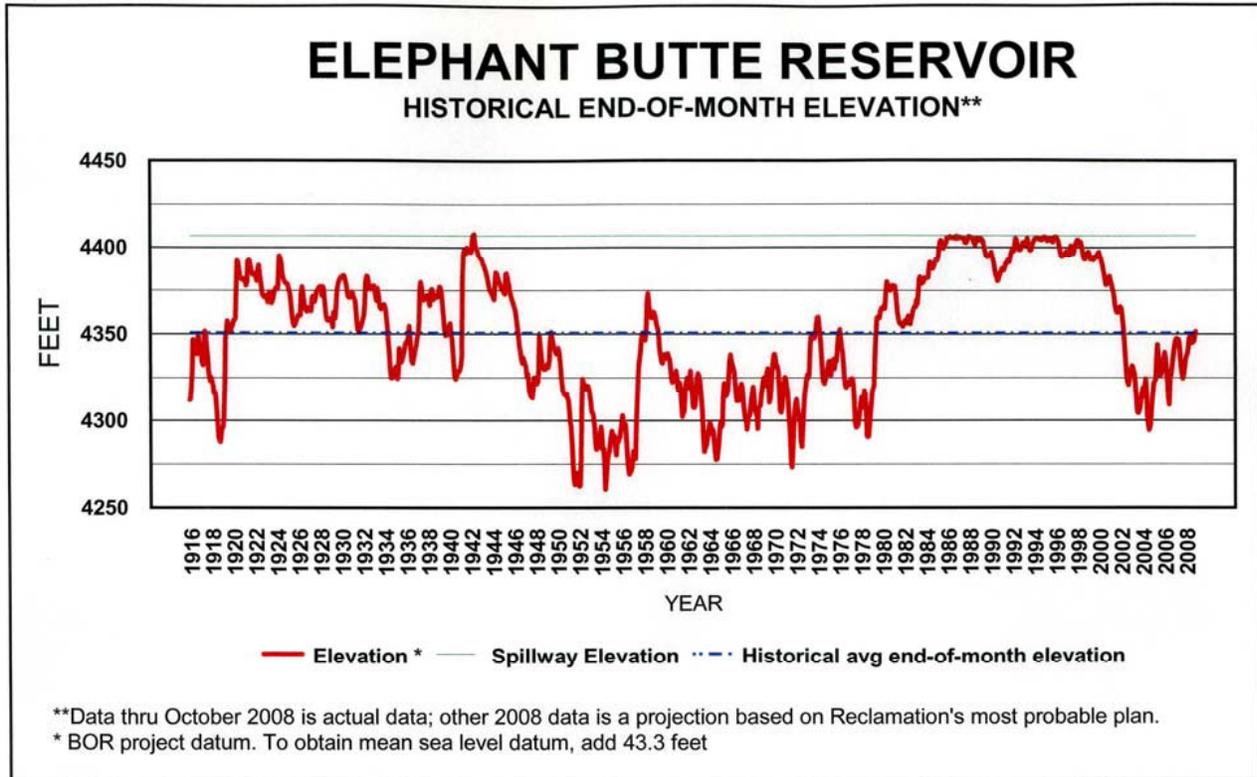


Figure 1. Historic end-of-month elevations for Elephant Butte Reservoir. (Elephant Butte Reservoir Five-year Operational Plan BA February 2009)

Reservoir Storage

Conversion of storage content at the Reservoir to water surface elevation is based on Reclamation's April 1999 Area and Capacity Tables. New sedimentation surveys of the Reservoir and Caballo Reservoir were conducted in the fall of 2007. The results of those surveys, including new area and capacity tables, are available and Reclamation has begun using the new tables for official data at the reservoirs as of 1 January 2009. Finally, all elevation data are per Rio Grande Project Datum (RGPD), so to obtain USGS mean sea level datum, add 43.3 feet (RGPD). The top of the ABCWUA's SJCP storage pool (50,000 AF) is elevation 4283.15 feet).

The influence of climate change on weather and hydrology is of considerable concern, and it is difficult to predict the changes that will occur at the Reservoir. One outcome may be shorter periods of wet and dry, but each of those events may be more intense, and with high variability. Therefore, the "average" trend five-year projections may be the closest to incorporating the effects of climate change in the short-term (Elephant Butte Reservoir Five-year Operational Plan BA February 2009).

Reservoir Evaporation

Reservoir evaporation is significant in the study area since all of the reservoirs are located in the semi-arid desert climate of New Mexico. Some reservoirs experience lower average annual evaporation rates per unit area because of their physical location in New Mexico. Annual open water evaporation at the Reservoir is approximately 7ft/year.

Water Quality

Information pertaining to water quality at the Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/albuq/library>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html>

Biological Resources

Wildlife and Habitat

Information pertaining to wildlife and habitat at Elephant Butte Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/albuq/library>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html>

This habitat supports a wide variety of birds, mammals, amphibians, and reptiles.

Changes to water levels and quality in the reservoir from the proposed action are expected to have negligible effects on reservoir fisheries, wildlife and habitat; therefore, they are not discussed in detail here.

Threatened, Endangered and Special Status Species

Information pertaining to the threatened, endangered and special status species is incorporated by reference from the following documents which provide extensive details on these subjects:

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/envdocs/index.html>

U.S. Fish and Wildlife Service. 2002. Final Southwestern Willow Flycatcher recovery plan. U.S. Fish and Wildlife Service, Albuquerque, N. M. 210 pp. + appendices (15).
http://www.fws.gov/southwest/es/arizona/Documents/SpeciesDocs/SWWF/Final%20Recovery%20Plan/ExecSummary_Contents.pdf

Flycatcher surveys have been conducted in the proposed project area for several consecutive years. The most recent flycatcher surveys conducted in 2009 (Moore and Ahlers *in prep.*) found breeding flycatchers through the currently-dry upper portion of the Reservoir to the southern end of the Narrows. In the summer of 2008, approximately 229 flycatcher territories were detected within the dry, vegetated portion of the Reservoir; in 2009 the number increased to 319.

Rio Grande Silvery Minnow (*Hybognathus amarus*)

Information pertaining to life history and habitat needs of the minnow is incorporated by reference from the following documents:

Dudley, R.K. and S.P. Platania. 1997. Habitat use of the Rio Grande silvery minnow. Report to the U.S. Bureau of Reclamation, Albuquerque, NM. 88 pp.

The USFWS has issued biological opinions, two of them quite recent, for other Reclamation activities in the Middle Rio Grande that describe the environmental baseline. The pertinent information regarding environmental baseline relevant to the endangered minnow and flycatcher in the current proposed action area is incorporated by reference from the following documents:

U.S. Fish and Wildlife Service. 2003. Biological and conference opinions of the effects of actions associated with the programmatic Biological Assessment of Bureau of Reclamation's water and river maintenance operations, Army Corps of Engineers' flood control operation, and related non-federal actions on the Middle Rio Grande, New Mexico, [variously paged].

U.S. Fish and Wildlife Service. 2007. Biological Opinion of the Effects of Actions Associated with the Biological Assessment for the Perennial Rio Grande Silvery Minnow Refugia at Drain Outfalls Project. 48 pp.

U.S. Fish and Wildlife Service. 2008. Biological Opinion on the effects of actions associated with the Elephant Butte Reservoir temporary channel maintenance project. 53 pp.

Surveys for minnows, conducted by the USFWS within the existing temporary channel through the upper half of the Reservoir during the winter of 2005 – 2006, found between 10 - 100 minnows associated with backwater features on point bars.

Recreation

Information pertaining to recreation at Elephant Butte Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/albuq/library>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html>

New Mexico State Parks Division, 2006. Elephant Butte State Park Plan Final May 2006. Prepared by NM State Parks. May 2006. Available at: <http://www.emnrd.state.nm.us/PRD/elephant.htm>

Over the years, recreation has developed into one of the primary uses of the Project Area. Recreational development is strongly tied to many of the other resources; for example, the socioeconomic condition of the Project Area. Surrounding communities largely depend on recreation-related income, employment, and other factors. In addition, the wildlife and fisheries resources provide recreational experiences such as wildlife viewing opportunities, hunting and fishing. A positive recreation experience coincides with maintaining minimal elevations and storage conditions.

Cultural Resources

Information pertaining to cultural resources at the Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Cultural Resources Survey. February 2009. Prepared by US Bureau of Reclamation. Available at: <http://www.usbr.gov/uc/albuq/library>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html>

This section identifies cultural resources that may be affected by the no action and the proposed action. Cultural resources include past and present expressions of human culture and history in the physical environment, such as prehistoric and historic archaeological sites, buildings, structures, objects, districts, natural features, and biota, which are considered important to a culture, subculture, or community. Cultural resources also include aspects of the physical

environment that are a part of traditional lifeways and practices, and are associated with community values and institutions. Historic properties are a subset of cultural resources that meet specific eligibility criteria found at 36 CFR 60.4 for listing on the National Register of Historic Places (NRHP).

At Elephant Butte Reservoir, two hundred and forty-four archaeological sites have been recorded. These sites occur on the west and east sides of the reservoir, most of which are above the maximum pool level. Sites included prehistoric and historic resources. Elephant Butte Historic District is a grouping of sites and structures that stem from construction activities related to Elephant Butte dam. The district is listed on the National Register of Historic Properties. Any proposed actions at Elephant Butte Reservoir must take into account the effect of such undertakings on these cultural resources. Previous archaeological/cultural surveys conducted include:

Class III Cultural Resources Survey of Elephant Butte Reservoir, Sierra and Socorro Counties, New Mexico. Phase 1: Archaeological Resources of the Elephant Butte Historic District. SWCA, Inc, 1997.

Class III Cultural Resources Survey of Elephant Butte Reservoir, Sierra and Socorro Counties, New Mexico. Phase 2: Archaeological Resources of the West Shore. SWCA, Inc, 1998.

Class III Cultural Resources Survey of Elephant Butte Reservoir, Sierra and Socorro Counties, New Mexico. Phase 3: Archaeological Resources of the East Shore. SWCA, Inc, 1998.

Historic Resources Related to Construction Activities at Elephant Butte Reservoir, by Douglas. K. Boyd and Meeks Etchieson, 1986. United States State Department of the Interior, Bureau of Reclamation.

Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust by the United States through the Department of the Interior, Bureau of Indian Affairs, for Indian tribes or individual Indians. This trust responsibility requires that all federal agencies, including Reclamation, ensure their actions protect Indian Trust Assets.

“Assets” are anything owned that has monetary value. The asset need not be owned outright but could be some other type of property interest, such as a lease or a right of way. They can be real property, physical assets, or intangible property rights. Common examples of trust assets may include lands, minerals, hunting and fishing rights, water rights, other natural resources, and money. “Legal interest” means there is a primary interest for which a legal remedy, such as compensation or injunction, may be obtained if there is improper interference. Trust assets do not include things in which a tribe or individual have no legal interest, such as off-reservation sacred lands in which a tribe has no legal property interest. It should be noted that other federal laws pertaining to religious or cultural laws should be addressed if impacts to such lands were to occur from Reclamation actions.

Information pertaining to Indian Trust Assets at Elephant Butte Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at:
<http://www.usbr.gov/uc/albuq/envdocs/index.html>

Environmental Justice

An evaluation of environmental justice impacts is mandated by Executive Order 12898 on Environmental Justice (February 11, 1994). Environmental justice addresses the fair treatment of people of all races and incomes with respect to Federal actions that affect the environment. Fair treatment implies that no group of people should bear a disproportionate share of high and adverse human health and environmental impacts from a Federal action.

The impacts of an action can be considered disproportionately distributed if the impacts imposed on a specific group are greater than the percentage of the total population represented by that group. A group is typically defined by race, ethnicity, income class, or community identity. Evaluating potential environmental justice concerns requires an understanding of where the project impacts are likely to occur and where potentially affected groups are located. The analysis relies on demographic data from sources such as the U.S. Census Bureau, individual counties and municipalities, and local school districts to determine the location of different groups of people. Census demographic data and state economic development figures are typically the most complete and comparable information available for individuals and households.

Information pertaining to Environmental Justice at Elephant Butte Reservoir is incorporated by reference from the following documents which provide extensive details on these subjects:

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at:
<http://www.usbr.gov/uc/albuq/envdocs/index.html>

Chapter 4: Environmental Consequences

Water Resources

The following indicator was selected to evaluate potential impacts on water resources:

Changes in quantities of water delivered to or stored in the Reservoir.

No Action Alternative

No change from current storage actions that have been under contract since 1983.

Proposed Action

If the ABCWUA contract is renewed, and if the proposed contract with the City of Santa Fe is executed, and if the maximum amount of water were stored in the Recreation Pool (50K each), there could exist potentially 150,000 AF of storage space in the Reservoir occupied by SJCP water. Based on the analysis, the proposed action would not result in any impacts to the environment. Of the total Reservoir’s storage capacity of 2,134,307 AF the ABCWUA’s proposed storage of 50,000 AF for this contract comprises 2.45 percent. The maximum 150,000 AF of combined SJCP water storage, if it occurred, would comprise 7.4 percent of total storage capacity. The table below depicts storage use by ABCWUA since 1983. Historically, besides the first 2 years (1983-1984) the 50,000 AF has never been stored in EB.

Year	Year-end Storage (acre-feet)	Year	Year-end Storage (acre-feet)
1983	52,799	1996	0
1984	56,170	1997	2,556
1985	0	1998	2,322
1986	0	1999	2,107
1987	0	2000	10,835
1988	0	2001	9,494
1989	3,163	2002	8,207
1990	5,176	2003	6,984
1991	3,903	2004	5,886
1992	41,853	2005	5,220
1993	42,158	2006	4,517
1994	0	2007	4,048
1995	0	2008	31,938

As an example of the possible effects of each quantity of water (50k, 100k and 150k) added as one event total, here is the assessment:

- 1) With current storage of 482,410 AF, an additional 50k acre feet (532,410AF), would raise elevation to 4343.08 or add 3.77 ft.
- 2) An additional 100 k AF (582,410 AF) would raise the elevation to 4346.68 or add 3.6 ft.
- 3) An additional 150 k AF (632,410 AF) would raise the elevation to 4350.12 or add 3.44 ft.

The Maximum elevation / storage per the Oct 2007 surveys is an elevation of 4410.00 and storage of 2,134,307 AF. There appears to be no negative impacts to this additional storage as there is available volume.

The short answer to the question “if the Reservoir itself were actually filled to capacity, what effect this would have? “

The additional volume of water would “Spill First’ as per Compact rules, before any New Mexico or Colorado “credit waters.”

Date	Elevation	Storage	Surface Area (acres)
11/27/2009	4339.06	479201	12790
11/30/2009	4339.31	482410	12847
Additional 50k AF	4343.08	532410	13573
Additional 100k AF	4346.68	582410	14278
Additional 150k AF	4350.12	632410	14935

The EB total storage is constantly changing due to runoff, irrigation uses and evaporation due to time of year.

Biological Resources

The following indicator was selected to evaluate potential impacts on biological resources:

Increased potential for overbank flows or inundation of habitats used by nesting shorebirds, terrestrial wildlife species, and wetland aquatic species.

No Action Alternative

The No Action Alternative would continue on-going effects from natural and operational fluctuation in the Reservoir from irrigation deliveries and storms on the potential for overbank flows, inundation of habitat, or changes in frequency, magnitude or duration of peak flows.

Proposed Action

If the proposed action is implemented, based on the water quantity and elevation levels, it would not result in any impacts to biological resources.

Recreation

The following indicators were selected to evaluate potential impacts on recreation:

Recreation visitation and associated expenditures as well as water levels and their effects on recreation at Elephant Butte Reservoir were used as indicators.

No Action Alternative

Under the No Action Alternative, there would be no change from current recreational conditions or trends at recreational sites along the Reservoir. The availability of recreational opportunities would continue to fluctuate widely based on water levels and location. The No Action Alternative would have no effect on instream or reservoir water levels and therefore no effect on recreation.

Proposed Action

The proposed action is expected to have negligible to positive impacts on recreation. The SJCP water helps support reservoir elevations for recreational boating and other lake water sports. Elevation levels reported in RGPD from web page. This has a tangible impact to the economic health of the local community. A direct link between the reservoir levels and recreation as shown:

Excellent Boating:	From 4,407 feet in elevation down to 4,339 feet in elevation (2,023,358 acre-feet down to 491,638 acre-feet in storage) 35,984 surface acres down to 12,859 surface acres
Good Boating:	From 4,339 feet in elevation down to 4,316 feet in elevation (all marinas available) (491,638 acre-feet down to 243,307 acre-feet in storage) 12,859 surface acres down to 8,711 surface acres
Fair Boating:	From 4,316 feet in elevation down to 4,290 feet in elevation (243,307 acre-feet down to 76,221 acre-feet in storage) 8,711 surface acres down to 4,171 surface acres
Congested Boating:	From 4,290 feet in elevation down to below 4,280 feet in elevation (76,221 acre-feet down to below 42,561 acre-feet in storage) 4,171 surface acres down to 2,562 surface acres

(Ref: <http://www.emnrd.state.nm.us/prd/BOATINGWeb/boatingwaterslakeelephantbutte.htm>)

Cultural Resources

The following indicator was used to evaluate changes to cultural resources:

Reservoir levels and fluctuation resulting from the action where there is a potential for directly disturbing resources, increasing access to resources, or exposing submerged resources.

No Action Alternative

The No Action Alternative is unlikely to affect cultural resources. Potential impacts would be limited geographically to known and unknown cultural resources in the existing water channels and active flood zones of the Reservoir.

Proposed Action

The proposed action is unlikely to affect cultural resources. No additional construction, ground disturbance, changes in water, control, storage and delivery infrastructure, or new land abandonment is proposed. Sites in the immediate vicinity of the reservoir or in flood zones have been subject to past disturbances, reducing the likelihood of their intact preservation. Proposed flow levels and flow fluctuations would be within the range of reservoir operations and would not be expected to exacerbate erosion of archaeological resources or exposure of submerged resources.

Indian Trust Assets

The following resource indicator is used to evaluate impacts on Indian trust assets: Actions which would adversely affect the value, use, or enjoyment of an ITA would be considered an impact. A Government to government Letter to nine tribes was sent out on October 27, 2009, no responses were received (attachment 1).

No Action Alternative and Proposed Action

No ITAs have been identified in the Rio Grande Project in the Reservoir. There are no reservations or ceded lands present. Because resources are not believed to be present, no impacts are anticipated to result from the No Action Alternative or the proposed action.

Environmental Justice

The following resource indicator is used to evaluate Environmental Justice:

The potential for the action to cause a disproportionate share of high and adverse human health and/or environmental impacts on low income and/or minority communities are used as indicators.

No Action Alternative

Under the No Action Alternative, there would be no change from current conditions and trends. The No Action Alternative would have no effect on ongoing socioeconomic and environmental trends affecting minority and low income populations.

Proposed Action

The action of storing and delivering water would have little or no effect on Environmental Justice. Negligible or no environmental impacts are anticipated for other resources. There would be no disproportionate human health, economic and environmental impacts on any group of people.

Irretrievable Commitment of Resources

The implementation of the proposed action could result in the commitment of storage space of up to 50,000 AF of SJC water in the Reservoir for another 40 years.

Cumulative Impacts

According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR §1508.7), a "cumulative impact" is an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. It focuses on whether the proposed action, considered together with any known or reasonable foreseeable actions by Reclamation, other Federal or state agencies, or some other entity combined to cause an effect.

No Action Alternative

No cumulative impacts from current storage actions that have been under contract since 1983.

Proposed Action

No cumulative impacts from the proposed renewal in storage actions that have been under contract since 1983. All past, present and future actions include the City of Santa Fe contract, hydrologic conditions, and climate change, regular and recurring Project water operations/deliveries.

Chapter 5: Environmental Commitments

Coordinate with all SJCP water owners and ABCWUA customers at the Reservoir for management and coordinated water operations for the Project.

Reclamation completed the Elephant Butte Reservoir Five-Year Operational Plan Biological Assessment in February 2009 and will follow all conservation measures listed in the BA.

Chapter 6: Consultation and Coordination

The following lists the individuals and organizations that were consulted in preparing this environmental assessment and in developing the proposed action:

Albuquerque Bernalillo County Water Utility Authority (ABCWUA)

Colorado Water Conservation Board (CWCB)

Pueblo and Tribal Governments: Kiowa Tribe of Oklahoma, Fort Sill Apache Tribe of Oklahoma, Apache Tribe of Oklahoma, Hopi Tribe, Navajo Nation, Jicarilla Apache Nation, Comanche Indian Tribe, Pueblo of Ysleta del Sur, Pueblo of Isleta, Mescalero Apache Tribe, Jicarilla Apache Tribe

Chapter 7: List of Preparers

Robert Doster, Wildlife Biologist
Jeff Hanson, AAO lead Archaeologist
Charles Fischer, Environmental Protection Specialist
Valda Terauds, Resource Manager Planner
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Chapter 8: References

US Bureau of Reclamation (Reclamation), 2009. Elephant Butte Reservoir Biological Assessment. February 2009. Prepared by US Bureau of Reclamation. Available at:
<http://www.usbr.gov/uc/albuq/envdocs/index.html>

US Bureau of Reclamation, 2002. Elephant Butte and Caballo Reservoirs Resource Management Plan Final Environmental Impact Statement. Statement Filing Number: FES 02-17. Prepared by US Bureau of Reclamation. February 2003. ROD available at:
<http://www.usbr.gov/uc/albuq/envdocs/index.html>

US Bureau of Reclamation, 2006. Supplement to the Rio Grande Supplemental Water Programmatic Environmental Assessment and Finding of No Significant Impact. Prepared by US Bureau of Reclamation. May 2006. Available at: <http://www.usbr.gov/uc/albuq/envdocs/index.html/>

New Mexico Energy, Minerals, and Natural Resources web page:
<http://www.emnrd.state.nm.us/PRD/BOATINGWeb/boatingwaterslakeelephantbutte.htm>

New Mexico State Parks Division, 2006. Elephant Butte State Park Plan Final May 2006. Prepared by NM State Parks. May 2006. Available at:
<http://www.emnrd.state.nm.us/PRD/elephant.htm>

US Bureau of Reclamation (Reclamation), 2000. Rio Grande and Low Flow Conveyance Channel Modifications. Prepared by US Bureau of Reclamation. September 2000. Available at: AAO

Draft

**Attachment 1
Government to Government Letter**

Draft