Form No. 10-300 (Rev. 10-74) DATA SHEET

PH0681571

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED AUG 9 1978
DATE ENTERED APR 9 1979

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC
Elephant Butte Dam and Reservoir
AND/OR COMMON

2 LOCATION

STREET & NUMBER
NW of Elephant Butte off NM 51 __NOT FOR PUBLICATION
CITY, TOWN CONGRESSIONAL DISTRICT
Elephant Butte X VICINITY OF
STATE CODE COUNTY CODE
New Mexico 035 Sierra 051

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	X PUBLIC	X OCCUPIED	X AGRICULTURE	__MUSEUM
__BUILDING(S)	__PRIVATE	__UNOCCUPIED	__COMMERCIAL	__PARK
X STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
__SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	__GOVERNMENT	__SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	__INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME
U.S. Bureau of Reclamation
STREET & NUMBER

CITY, TOWN STATE
Washington, D.C. __ VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC. Sierra County Courthouse
STREET & NUMBER

CITY, TOWN STATE
Truth or Consequences New Mexico

6 REPRESENTATION IN EXISTING SURVEYS

TITLE
National Historic Civil Engineering Landmark
DATE
January, 1976 X FEDERAL __STATE __COUNTY __LOCAL
DEPOSITORY FOR SURVEY RECORDS American Society of Civil Engineers
CITY, TOWN STATE
New York New York

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	X UNALTERED	X ORIGINAL SITE
X GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

With a capacity of over two million acre feet, the Elephant Butte Reservoir is one of the largest water storage facilities in the Southwest. It is capable of holding the torrential floods which occur at regular intervals in the Middle Rio Grande Valley. The dam, built of cyclopean concrete, was a gravity-type structure with about twenty-five percent of the volume consisting of large stones. Containing a total volume of 600,000 cubic yards, it was one of the most massive engineering structures erected in the early 1900's.

The site chosen for the dam and reservoir is situated about one hundred miles northwest of El Paso. It is named after Elephant Butte, a large volcanic rock formation in the nearby vicinity of the project.

The dam, rising two hundred feet above the river bed, has a crest length of twelve hundred feet and a roadway running along the top of the structure. The dam is straight in design with plums and large igneous rocks embedded in 600,000 yards of concrete.

The structure is equipped with a spillway at the west end measuring four hundred feet in length. Four large wells, ten feet in diameter, furnishes additional spillway capacity. Each well is controlled by steel gates and a spillway lip discharges water from the wells into the spillway channel. This system controls the volume of water entering the spillway channel.

Twelve outlets with steel gates draw water from the reservoir, some of which drive turbine wheels for the hydroelectric plant. Two of the gates feed into rectangular sluicing tunnels with two sliding gates at four feet and seven and one half feet. One of these gates is used for regular service and the other for emergencies. Water passing through these gates is discharged into internal walls, from which it is drawn off by balanced valves. These valves are hydraulically closed in order to inspect or repair the upstream gates.

During the construction of the dam, the river was diverted into a flume, containing a capacity of 16,000 cubic feet per second, built on the right bank of the river. Paving of the Engle Roadway, initiated in 1912, was completed in early 1915. Later, two permanent roads were built connecting the east and west ends of the dam to outside road systems.

Grouting of the bedrock at the dam site insured the tightness of the foundation. By forcing 2,370 barrels of concrete into the underlying rock formation, ground water was sealed off from the dam proper.

The upstream face of the dam was plastered by a cement gun, a process which provided a water-tight seal five feet in thickness on the exposed face of the dam.

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Various irrigation works leading from Elephant Butte were constructed simultaneously with the dam and reservoir. In December 1915 Picacho Branch Canal and the Leasburg Diversion Dam Canal were connected to the Elephant Butte Reservoir. In addition to the canals, four dredges, three concrete drops, one wasteway, and several buildings were constructed by government forces.

Though more than sixty years old, the Elephant Butte Dam and Reservoir stand in good condition. The site is periodically maintained by the U.S. Bureau of Reclamation.

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8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW				
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	__LANDSCAPE ARCHITECTURE	__RELIGION	
__1400-1499	__ARCHEOLOGY-HISTORIC	X CONSERVATION	__LAW	__SCIENCE	
__1500-1599	X AGRICULTURE	__ECONOMICS	__LITERATURE	__SCULPTURE	
__1600-1699	__ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN	
__1700-1799	__ART	X ENGINEERING	__MUSIC	__THEATER	
__1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION	
X 1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)	
		__INVENTION			

SPECIFIC DATES 1910 - 1916 BUILDER/ARCHITECT Louis C. Hill (Design Engineer)

STATEMENT OF SIGNIFICANCE

The Elephant Butte Reservoir is significant for three reasons. First, for over a half-century it has provided a dependable water supply for irrigation along the Rio Grande. Second, the construction of the dam and reservoir touched off an historic debate over interstate and international aspects of water use. Finally, at the time of its completion (1916), Elephant Butte Dam created the largest irrigation reservoir in the world.

The original efforts to build a dam at Elephant Butte were expended by the Rio Grande Dam and Irrigation Company in 1897. Using English funds, the company planned to construct a masonry dam equipped with an inverted siphon to carry impounded water to agricultural lands.

The project never materialized, however, because of complaints from the Mexican government stemming from the fear that a dam at Elephant Butte would interfere with navigation along the Rio Grande. The first injunction was filed at the United States Circuit Court of New Mexico. In the summer of 1897, the court decided against the injunction on the grounds that the Rio Grande was unnavigable and that control of the river is a prerogative of local authority and, thus, could not be dictated by federal congressional action.

As a result of a second injunction, issued in December 1897 by the United States Justice Department, the Rio Grande Dam and Irrigation Company abandoned the Elephant Butte Project. This injunction maintained that the project violated Mexico's water rights by restricting the southward flow of the Rio Grande. Furthermore, the Justice Department argued that control of the river was vested in Congress. All work at the Elephant Butte ceased until the formation of the U.S. Reclamation Service in 1902.

Between 1904 and 1907 the U.S. Reclamation Service pressed hard for authorization to construct a large irrigation dam and reservoir at Elephant Butte. The most formidable obstacle encountered in this campaign was the opposition of the International Dam Commission, an assembly of Mexican and American engineers that met in El Paso, Texas in late 1904. The Commission asserted that more than five hundred acres of productive farm land in the United States could be submerged to provide a reservoir and that the Mexican boundary could be extended ninety-eight acres in order to place one end of the dam in the Republic of Mexico. Furthermore, the plan called for deeding one half of the dam, reservoir and water supply to the Mexican government. Finally, the Commission argued that any further dam construction along the Rio Grande in New Mexico should be prohibited by law.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

Boughton, V.T. "International Waters Allocated under Treaty with Mexico." Engineering News - Record, CXXXIV, No. 3 (January 25, 1945), 93-104. (Available at Library, Texas Tech University)

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 45 acres

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	13	295570	3676020
B	13	295800	3677030
C	13	295570	3676150
D	13	295340	3676390

VERBAL BOUNDARY DESCRIPTION

Property line extends from the northern point to the southeast in a circle and coincides with the southeastern end of the dam, comprising the extreme southwestern edge of the reservoir. The southern point of the property circle passes 200 feet south of the power house; the northwestern point of the property line intersects the northwestern end of the dam, extending north to the beginning of property line. Diameter of property circle is 1/4 mile.

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE T. Lindsay Baker, Research Associate
William L. Cumiford, Project Manager

ORGANIZATION: History of Engineering Program
DATE: January 27, 1978
STREET & NUMBER: Box 4089 Texas Tech University
TELEPHONE: (806) 742-3591
CITY OR TOWN: Lubbock
STATE: Texas

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL X STATE ____ LOCAL ____

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE Thomas W Neal

TITLE State Historic Preservation Officer DATE 2-19-79

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION DATE 4.9.79

ATTEST: Marcella Sherfy KEEPER OF THE NATIONAL REGISTER

KEEPER OF THE NATIONAL REGISTER DATE 4-6-79

GPO 892-453

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The U.S. Reclamation Service, motivated by a desire to assert its authority over important water projects and the more altruistic objective of selecting the most suitable site for the proposed dam, conducted extensive investigations in the Elephant Butte area. The geological and hydrological reports issued by the Reclamation Service reflected a decided preference for the Elephant Butte site as opposed to the creation of a dam and reservoir on the Mexican border. In terms of the acreage irrigated, storage capacity, flood control, evaporation losses and sluicing, the Elephant Butte site appeared to be much more favorable than the site proposed by the International Dam Commission. Moreover, the building of a dam and reservoir at Elephant Butte was viewed by the Reclamation Service as the pivotal works in a large-scale reclamation effort along the Rio Grande. The Rio Grande Irrigation Project eventually included a series of reservoirs, dams, diversion dams and canals that greatly increased the agricultural output of the Rio Grande Valley.

The formulation of the Rio Grande Irrigation Project by the Reclamation Service took place between 1904 and 1905. It provided for the impounding of the Rio Grande at Elephant Butte and the diversion of water six miles below the storage dam to irrigate land in the Rincon Valley. Leasburg Diversion Dam, located sixty miles below Elephant Butte, was constructed to irrigate 28,000 acres of land in the Upper Mesilla Valley; while eighty miles further down the river the Lower Mesilla Valley received water through the construction of the Mesilla Dam. Finally, 120 miles south of Elephant Butte, water was supplied to the El Paso Valley on both sides of the Mexican border.

Owing to the immensity of the operation, the Rio Grande Project was extended to Texas on June 12, 1906. Six months later the United States and Mexico signed a treaty providing for the distribution of water from the Rio Grande. On March 4, 1907 the U.S. Congress appropriated one million dollars for the construction of Elephant Butte Dam.

The completion of the Leasburg Dam, the first system in the Rio Grande Project, preceded the construction of Elephant Butte by nearly two years. Preliminary surveys and the construction of a work camp at the Elephant Butte site commenced in the early spring of 1909, but all preparatory work terminated in May due to negotiations over right-of-way and land for the reservoir. In July 1910 the work camp was reopened following the settlement of land negotiations.

On May 23, 1910 the Secretary of the Interior recommended the approval of U.S. Reclamation Service plans for Elephant Butte Dam. Two weeks later Reclamation Service engineers approved the construction plans, and on October 26, 1910 final approval on construction was granted by the Secretary of the Interior.

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After the land negotiations terminated in the mid-summer of 1910, work began on the Elephant Butte Railroad. The main line joined the Atchison, Topeka and Santa Fe Railroad between Engle and Cutter at a point called Butte Junction. From Butte Junction to the summitt at Elephant Butte, the railroad crossed six miles of plains. The A.T. & S.F. laid all but 1.33 miles of the track under contract to the Reclamation Service, and the railroad operated the line by fixed agreements with the federal government. These conditions provided that only feed, forage, groceries, and commissary supplies were subject to freight rates. The completion of the line in early March 1911 brought an end to the overland hauling of machinery, supplies and materials by wagon from Engle, a distance of twelve miles.

Meanwhile, construction of preliminary facilities at the dam site continued. A permanent water supply system was installed during the latter part of 1910. Other developments included the building of bath houses, sewers, two mess houses, one hospital, twenty-eight cottages, one jail, fifty-one tent houses, a laboratory building, and three blacksmith shops. A telephone system was completed shortly following the erection of these structures.

Construction of the dam and reservoir took nearly seven years. At a total cost of more than five million dollars, the project was completed in May 1916, forming the largest manmade reservoir in the world at that time.

Aside from serving the irrigation needs of the Rio Grande Valley, the reservoir has, in recent years, been used as a recreational facility. Elephant Butte Lake was added to the New Mexico State Park system as the sixteenth park in the state on July 1, 1964. On April 15, 1965 a ground-breaking ceremony was held at Elephant Butte, and exactly six months later Governor Jack Campbell officially dedicated the state park.

Elephant Butte Dam is one of the most significant historic engineering achievements in the state of New Mexico. It was the principal feature in the Rio Grande Project, one of the first major water programs undertaken by the U.S. Reclamation Service. Additional lands in the area have been put into cultivation as a result of this project, resulting in significant crop diversification along the Rio Grande. Operating for over six decades, the Elephant Butte Dam and Rio Grande Irrigation Project continue to possess vast economic importance. Without the services of the Elephant Butte Project, the Rio Grande Valley may well have remained a barren, unproductive plain.

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Forest, Newton. "The Rio Grande Irrigation Project. The Largest Reservoir in the World." Scientific American Supplement, Vol. LXX, No. 1806 (August 13, 1910), 97, 104. (Available at Library, Texas Tech University)

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U.S. Bureau of Reclamation: Sixteenth Annual Report of the Reclamation Service, 1916-1917. Washington, D.C.: U.S. Government Printing Office, 1917, p. 214. (Available at Library, Texas Tech University)

U.S. Bureau of Reclamation: Seventeenth Annual Report of the Reclamation Service, 1917-1918. Washington, D.C.: U.S. Government Printing Office, 1918, p. 227. (Available at Library, Texas Tech University)

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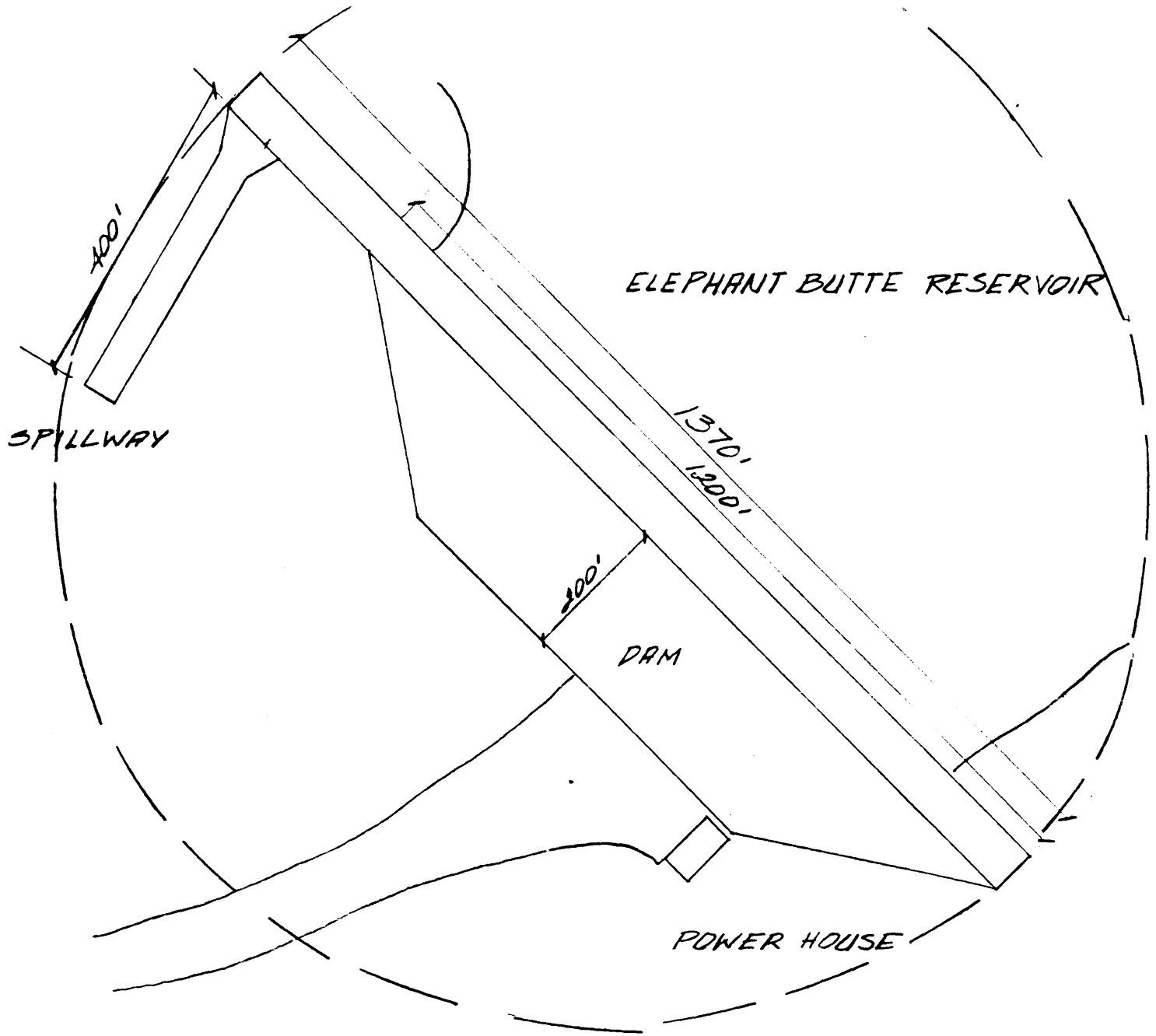
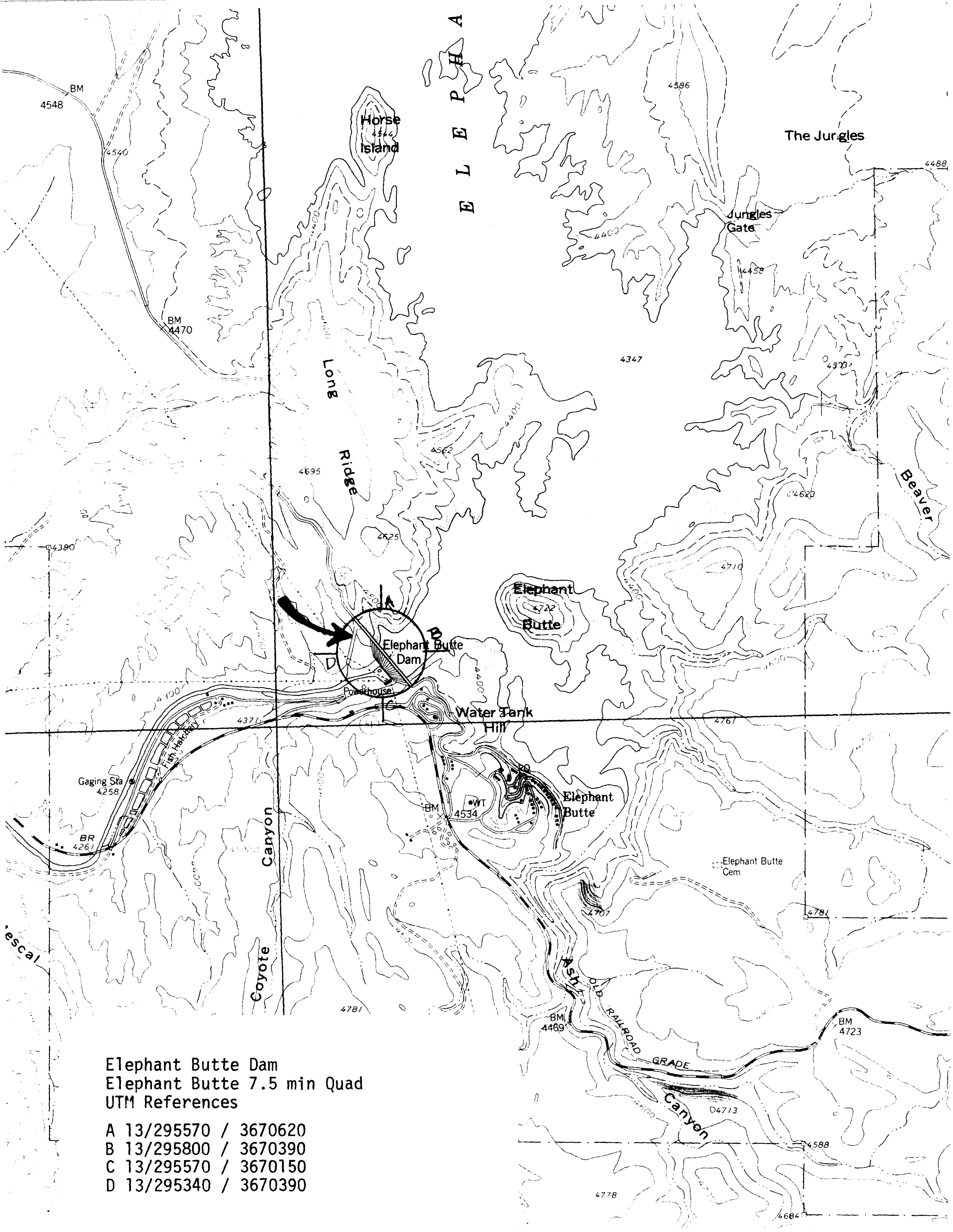


ELEPHANT BUTTE DAM SKETCH MAP

APPROXIMATE SCALE:

1" = 200'



Elephant Butte Dam
Elephant Butte 7.5 min Quad
UTM References

A 13/295570 / 3670620
B 13/295800 / 3670390
C 13/295570 / 3670150
D 13/295340 / 3670390