



WATER-RIGHT DOCKET

Timpanogos Cave National Monument

Docket No: 5

FEDERAL RESERVED RIGHTS

Preliminary Docket Information

04-15-2004: Note to the File

NOTE TO THE FILE

See the Adjudication File Describing the History of the Timpanogos Cave Water Rights Settlement, Jordan River Adjudication (Civil No. 360057298). The File describes the history of the settlement discussions with the State of Utah and the approval process.

See individual dockets for detail re: appropriative water rights shown in Appendix B. The settlement discussions defined the volumetric limits and other attributes of the state based rights.

Wm. R. Hansen
April 15, 2004

**TIMPANOGOS CAVE NATIONAL MONUMENT
WATER RIGHTS SETTLEMENT AGREEMENT**

This Agreement is made and entered into by the United States of America (United States) and the State of Utah (Utah).

RECITALS

A. Utah has initiated a statutory adjudication of water rights entitled, "In the Matter of the General Determination of Rights to the Use of Water, Both Surface and Underground, within the Drainage Area of Utah Lake and the Jordan River in Utah, Salt Lake, Davis, Summit, Wasatch, Sanpete and Juab Counties, Utah," filed as Civil No. 360057298 in the Third Judicial District Court in and for Salt Lake County, Utah. This adjudication is commonly referred to as the Utah Lake and Jordan River Adjudication ("Adjudication") and includes Timpanogos Cave National Monument.

B. The United States was joined as a party to the Adjudication pursuant to the provisions of 43 U.S.C. § 666. The United States filed a "Statement of Water User's Claim," dated May 7, 1987, which among other things claimed "that minimum amount of surface and ground water occurring on and under lands reserved from the public domain which is necessary to fulfill the purposes," including the preservation of "the Timpanogos Cave system and its associated environs; to secure favorable conditions of water flow; and, to provide for administration and visitation to the cave system and its associated environs." The United States also claimed "the right to divert and use 52 AF/annum from surface and ground water sources for picnic areas, visitor centers, concessions and other visitor-use areas; park administration facilities, shop, maintenance and storage facilities, ranger stations, entrance stations, visitor contact stations, employee residences, and attendant facilities; lawns surrounding park buildings and structures and other public-use areas to offset heavy human impact; construction of roads and

trails; revegetation activities, and waste water treatment facilities" and the right "to use non-quantifiable amounts of water for, but not limited to, controlling and suppressing wildfire and structural fires."

C. On or about December 10, 1990, the Utah State Engineer (State Engineer) issued a Proposed Determination for the area including the Timpanogos Cave National Monument (American Fork River Subdivision, Area 55, Book No. 2). Thereafter, on May 1, 1991, the United States filed its "Objection to the Proposed Determination" contesting perceived errors and an omission in listed state appropriative rights, and the omission of federal reserved water rights for the Timpanogos Cave National Monument.

D. To remove causes of present and future controversy over use of water at Timpanogos Cave National Monument, the United States and Utah have conducted negotiations regarding federal reserved and state appropriative water rights claims for the Monument, resulting in this agreement.

AGREEMENT

NOW, THEREFORE, to settle the issues recited above, and to recognize the federal reserved and state appropriative water rights of the United States for Timpanogos Cave National Monument, subject to conditions set forth below, and based on the mutual promises contained herein, the parties agree as follows:

1. Timpanogos Cave National Monument was established from the Wasatch Forest Reserve (Presidential Proclamation No. 3226 [34 Stat. 3225], dated August 16, 1906) by Presidential Proclamation No. 1640 (42 Stat. 2285), dated October 14, 1922, pursuant to the Antiquities Act of June 8, 1906, 34 Stat. 225, 16 U.S.C. § 431. The Proclamation and the National Park Service Organic Act of August 25, 1916, 64 Stat. 535, 16 U.S.C. § 1, establish the purposes for Timpanogos Cave National Monument:

to preserve "a natural cave" that "is of unusual scientific interest and importance...with as much land as may be necessary for the proper protection thereof" (Presidential Proclamation No. 1640) and to conserve "the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 U.S.C. § 1). The lands comprising Timpanogos Cave National Monument are shown in Appendix A and are described in Presidential Proclamation No. 1640.

2. The United States owns the following two types of water rights for Timpanogos Cave National Monument:

- a. A federal reserved water right to all naturally occurring water underlying, originating within or flowing through Timpanogos Cave National Monument, including perennial, intermittent and ephemeral streams, springs, seeps, lakes, ponds, ground water, and other natural sources of water, pertaining or belonging to the reserved lands, that was unappropriated as of the date of reservation of the lands now within the boundaries of the Monument, which water is to remain in a free flowing natural condition. This is a non-consumptive water right with a priority date of October 14, 1922.
- b. State based appropriative rights (identified under their respective water right numbers and priority dates as shown in Appendix B) owned by the United States for use at Timpanogos Cave National Monument. These are consumptive water rights.

The Utah State Engineer shall assign a separate water user claim number in his records for the water right described under 2a above. Claim numbers associated with the rights under 2b have been previously evaluated and assigned, and are as shown in Appendix B.

3. This agreement settles all water rights, of every type and character for Timpanogos Cave National Monument including those based on the federal reserved rights doctrine and Utah appropriation statutes. The federal reserved water rights recognized hereby include all water rights of every nature and description derived from the doctrine of federal reserved water rights from all sources of water, both surface and underground, and include all types and kinds of uses whatsoever, and encompasses all federal reserved water rights claims asserted by or through the United States for Timpanogos Cave National Monument as now constituted. The reserved water rights originate and are defined in federal law. Absent Congressional or Presidential action, the federal reserved water rights for the lands now constituting Timpanogos Cave National Monument shall not be enlarged, expanded or re-quantified.

4. In addition to the federal reserved water rights recognized herein, the United States has state appropriative water rights for Timpanogos Cave National Monument, which Utah hereby acknowledges and recognizes as valid. Appendix B lists the state appropriative water rights held by the United States and describes the present diversion works and water sources used by Timpanogos Cave National Monument pursuant to such rights. The table shows the source of water, priority date, point of diversion, type of use, period of use, and existing diversion rate for each diversion works and water source. The United States may divert a maximum of 0.1072 cfs, resulting in a maximum depletion of twelve (12) acre-feet per annum, from the sources and the points of diversion described in Appendix B to satisfy present and future requirements for the operation, administration, and protection of the Monument.

5. The American Fork River is an identifiable and discrete watercourse that flows through Timpanogos Cave National Monument. The parties recognize minimum instream flows within Timpanogos Cave National Monument, with a priority date of October 14, 1922, for the time periods and flow rates described below, to be

measured at the point where the river crosses the east boundary of the Monument, which is located at a point approximately North 440 feet and West 2,050 feet from the E $\frac{1}{4}$ corner of Section 27, T.4S., R.3E., SLB&M:

a. January 1 - January 31	6 cfs
b. February 1 - February 28	6 cfs
c. March 1 - March 31	6 cfs
d. April 1 - April 30	8 cfs
e. May 1 - May 31	10 cfs
f. June 1 - June 30	12 cfs
g. July 1 - July 31	7 cfs
h. August 1 - August 31	6 cfs
i. September 1 - September 30	6 cfs
j. October 1 - October 31	6 cfs
k. November 1 - November 30	6 cfs
l. December 1 - December 31	6 cfs

6. The United States hereby expressly subordinates its federal reserved water right for all non-consumptive purposes at Timpanogos Cave National Monument to all valid existing perfected water rights and approved applications with priority dates of January 1, 2000 or earlier.

7. Utah shall establish a ground-water protection zone for Timpanogos Cave National Monument as shown in Appendix C, which is attached hereto and made a part of this Agreement, to protect the flow of ground water and the hydrologic features of the Monument. The ground-water protection zone will include those portions of the SE $\frac{1}{4}$ and SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ and the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$, Section 27, within the Monument, and portions of the Uinta National Forest south of the Monument, including the E $\frac{1}{2}$ of the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$, Section 27, and those portions of the NE $\frac{1}{4}$ of the NW $\frac{1}{4}$ and the NW $\frac{1}{4}$ of the NE $\frac{1}{4}$, Section 34, Township 4 South,

Range 2 East, Salt Lake Base & Meridian. Utah will not approve any water rights applications to develop or use ground water in the protection zone.

8. The United States may seek enforcement of its water rights recognized herein through applicable law in the event the United States believes that specific water right applications in American Fork Canyon approved after January 1, 2000 are causing or may cause adverse impacts to Timpanogos Cave National Monument.

9. The United States agrees to follow procedures described under Utah law in exercising its state appropriative rights described in Appendix B.

10. If any provision of this Agreement is found by a court of competent jurisdiction to be unlawful and of no effect, the remaining provisions shall remain in effect and fully binding on the parties and, if necessary, the parties hereto shall resume negotiations to revise any such unlawful provision.

11. Upon a proper showing of necessity, the provisions of this Agreement may be modified only in writing and upon the mutual consent of the parties to this Agreement, which consent shall not be unreasonably withheld.

12. Because Timpanogos Cave National Monument is unique, nothing in this Agreement shall constitute an admission, waiver or precedent for any other federal reserved water right claim.

13. Nothing in this Agreement shall be construed or interpreted to:

- a. In any way affect the water rights of the United States for agencies and interests other than Timpanogos Cave National Monument;
- b. Establish any precedent or standard to be used for the quantification of federal reserved water rights in any other judicial or administrative proceeding;

- c. Limit in any way the rights of the parties or any person to litigate any issue or question not resolved by this Agreement;
- d. Restrict the power of the United States to reserve water in the future, or to acquire additional rights to the use of water under the laws of Utah;
- e. Restrict the power of Utah or the State Engineer to allocate, administer or distribute the waters of the State; or
- f. Settle other federal reserved water right issues of the United States.

14. The federal reserved water rights of the United States, as set forth and quantified herein, shall be protected under State law in the same manner as any water right originating under State law, without losing their character or the attributes of a federal reserved water right as provided under federal law.

15. The provisions of this Agreement and the reserved water rights provided for herein shall be taken into consideration by the State Engineer in acting upon applications, under State law, for new appropriations or change applications located within the protection zone or up-gradient of Timpanogos Cave National Monument and shall be afforded the same consideration in such proceedings as state appropriative rights; however, the United States shall have the primary responsibility to protect its own rights and to file appropriate protests in any proceedings before the State Engineer.

16. The United States and Utah agree that this Agreement will define the United States' water rights for Timpanogos Cave National Monument in the Utah Lake and Jordan River Adjudication. Utah agrees to issue, within a reasonable time, an Addendum to the Proposed Determination for the area including Timpanogos Cave National Monument (American Fork River Subdivision, Area 55, Book No. 2). The parties hereto will then cooperate to obtain an interlocutory decree on the

Addendum. If the parties hereto are unsuccessful in securing the interlocutory decree, this Agreement shall nevertheless remain binding as between the parties until a final decree is issued incorporating the provisions of this agreement.

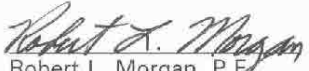
17. Utah water right records are available for public inspection. The State Engineer agrees to provide assistance to the United States in obtaining information regarding new water right applications near Timpanogos Cave National Monument.

18. This Agreement is executed in duplicate. Each of the duplicate copies bearing original signatures shall be deemed an original.

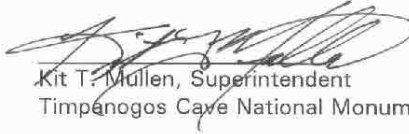
It being resolved and agreed to as delineated above, the undersigned parties express their mutual agreement hereto this 22nd day of March, 2004.

For Utah:

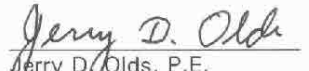
For the United States:



Robert L. Morgan, P.E.
Executive Director, Department
of Natural Resources



Kit T. Mullen, Superintendent
Timpanogos Cave National Monument



Jerry D. Olds, P.E.
State Engineer



Lawrence J. Jensen
Acting Regional Solicitor
Intermountain Region

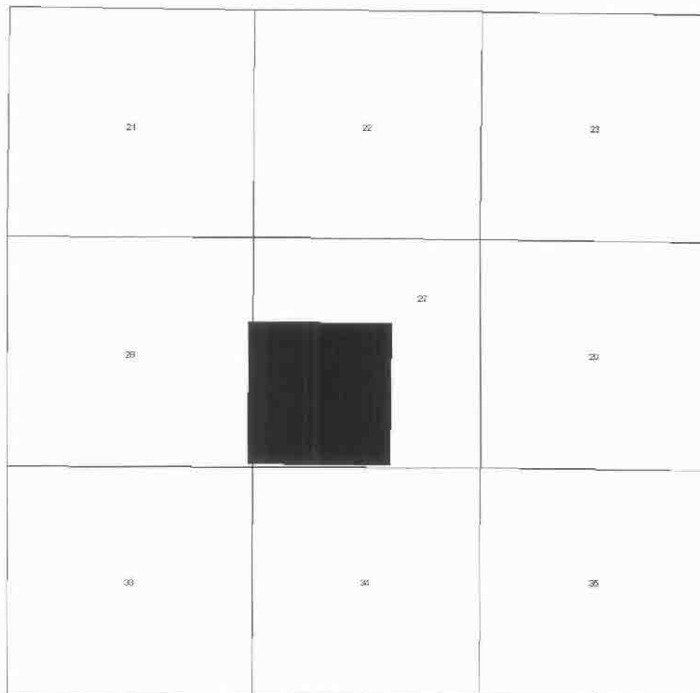


Norman Johnson
Assistant Attorney General
Chief, Natural Resources Division



Andrew F. Walch
Department of Justice

Appendix A
Timpanogos Cave National Monument
Date of Land Reservation



(Township 4 South, Range 2 East, Salt Lake B & M)

Legend

 Proclamation of October 14, 1922
(Transferred to the NPS from the U.S. Forest Service on August 10, 1933.)



2000 0 2000 4000 Feet

APPENDIX B

**State Appropriate Water Rights and
Diversion Works at Timpanogos Cave National Monument**

WUC No.	Right Evidenced By	Priority Date	Diversion Works	Water Source	Point of Diversion (Salt Lake Base & Meridian)	Place of Use	Type of Use	Period of Use	Volume (AF) And Diversion Rate (Acre-ft)
55-95	CERT a-393 in the name of the USA National Park Service	02/24/1930	Intake box, pipeline, gravity flow to existing reservoir	Swinging Bridge Canyon Spring	S. 89° 25' W 478.58 ft. from North Witness ¼ Cor. Sec. 27, T4S R2E, thence traversing W 150 ft., N 500 ft., E 300 ft., S 500 ft., W 150 ft., to beginning.	Within the Exterior Boundaries of the Monument	Domestic, Administrative and Visitor Center, Campground and Related Monument Purposes	01/01 to 12/31	45.0 AF 0.0622 cfs
55-7074	CERT a1106 in the name of Lehi Irrigation Company	00/00 /1852	Intake box, pipeline, gravity flow to existing reservoir	Swinging Bridge Canyon Spring	N 4839, E 2820 SW corner Sec. 27, T4S, R2E	Within the Exterior Boundaries of the Monument	Domestic, Administrative and Visitor Center, Campground and Related Monument Purposes	01/01 to 12/31	3.5 AF 0.015 cfs
55-7075	CERT a1105 in the name of American Fork Irrigation Company	00/00 / 1859	Intake box, pipeline, gravity flow to existing reservoir	Swinging Bridge Canyon Spring	N 4839, E 2820 SW corner Sec. 27, T4S, R2E	Within the Exterior Boundaries of the Monument	Domestic, Administrative and Visitor Center, Campground and Related Monument Purposes	01/01 to 12/31	4.0 AF 0.015 cfs
55-7076	CERT a1062 in the name of Pleasant Grove Irrigation Company	00/00 / 1859	Intake box, pipeline, gravity flow to existing reservoir	Swinging Bridge Canyon Spring	N 5000, E 2400, SW corner Sec. 27, T4S, R2E	Within the Exterior Boundaries of the Monument	Domestic, Administrative and Visitor Center, Campground and Related Monument Purposes	01/01 to 12/31	4.5 AF 0.015 cfs

Ground-Water Protection Zone Boundary
Timpanogas Cave National Monument Boundary



A vertical number line with markings at 2000, 0, 2000, and 4000 Feet. A shaded region is shown between 2000 and 4000 Feet.

73. Timpanogos Cave National Monument

Establishment: Proclamation (No. 1640) of October 14, 1922: Page 304

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

[No. 1640—Oct. 14, 1922—42 Stat. 2285]

WHEREAS, a natural cave, known as the Timpanogos Cave, which is situated upon unsurveyed lands within the Wasatch National Forest in the State of Utah, is of unusual scientific interest and importance, and it appears that the public interests will be promoted by reserving this cave with as much land as may be necessary for the proper protection thereof, as a National Monument.

NOW, THEREFORE, I, Warren G. Harding, President of the United States of America, by virtue of the power in me vested by section two of the Act of Congress approved June eight, nineteen hundred and six, entitled, "An Act for the preservation of American antiquities," do proclaim that there is hereby reserved from all forms of appropriation under the public land laws, subject to all prior valid adverse claims, and set apart as a National Monument, the tract of land in the State of Utah shown as the Timpanogos Cave National Monument on the diagram forming a part hereof.

The reservation made by this proclamation is not intended to prevent the use of the lands for National Forest purposes under the proclamation establishing the Wasatch National Forest, and the two reservations shall both be effective on the land withdrawn but the National Monument hereby established shall be the dominant reservation and any use of the land which interferes with its preservation or protection as a National Monument is hereby forbidden.

Warning is hereby given to all unauthorized persons not to appropriate, injure, deface, remove, or destroy any feature of this National Monument, or to locate or settle on any of the lands reserved by this proclamation.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

DONE at the City of Washington this fourteenth day of October, in the year of our Lord one thousand nine hundred and twenty-two,
[SEAL] and of the Independence of the United States of America the one hundred and forty-seventh.

WARREN G. HARDING.

By the President:
CHARLES E. HUGHES,
Secretary of State.

National Monument

October 14, 1922

Page
304

UNITED STATES OF AMERICA

PROCLAMATION

[2—42 Stat. 2285]

the Timpanogos Cave, which is
the Wasatch National Forest in the
west and importance, and it appears
that by reserving this cave with as
the proper protection thereof, as a

Harding, President of the United
States, in the vested by section two of
the nineteen hundred and six, entitled,
"Antiquities," do proclaim that there
is appropriation under the public land
laws, and set apart as a National
Monument of Utah shown as the Timpanogos
Cave forming a part hereof.

It is not intended to prevent the
possession under the proclamation estab-
lished the two reservations shall both be
the National Monument hereby
prohibited any use of the land which
is a National Monument is

authorized persons not to appropriate,
capture of this National Monument,
reserved by this proclamation.
do set my hand and caused the seal

fourteenth day of October, in the
second nine hundred and twenty-two,
the United States of America the
President.

WARREN G. HARDING.

VIII. NATIONAL MONUMENTS—TIMPANOGOS CAVE

305

TIMPANOGOS CAVE NATIONAL MONUMENT

within

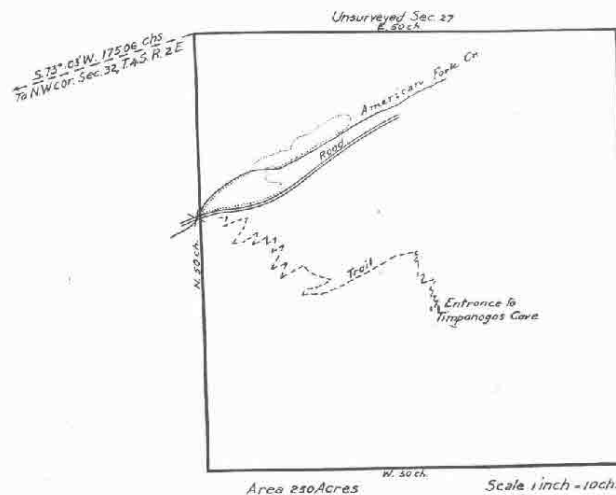
WASATCH NATIONAL FOREST

Partly surveyed Township 4 South Range 2 East

UTAH

Salt Lake Base and Meridian

National Monument Boundary



Area 250 Acres
Scale 1 inch = 10 chs.
DIAGRAM FORMING A PART OF PROCLAMATION DATED OCTOBER 14, 1922.

PROCLAMATIONS, 1906.

3225

By the President of the United States of America.

A PROCLAMATION.

August 16, 1906.

WHEREAS, the public lands in the State of Utah, which are hereinafter indicated, are in part covered with timber, and it appears that the public good would be promoted by setting apart said lands as a public reservation;

Wasatch Forest
Reserve, Utah.
Proclamation

March 26, 1905.

And whereas, it is provided by section twenty-four of the Act of Congress, approved March third, eighteen hundred and ninety-one, entitled "An act to repeal timber-culture laws, and for other purposes," "That the President of the United States may, from time to time, set apart and reserve in any State or Territory having public land bearing forests, in any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations, and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof";

3226

Forest reserve,
Utah.

Now, therefore, I, Theodore Roosevelt, President of the United States of America, by virtue of the power in me vested by section twenty-four of the aforesaid act of Congress, do proclaim that there are hereby reserved from entry or settlement and set apart as a Public Reservation, for the use and benefit of the people, all the tracts of land in the State of Utah, shown as the Wasatch Forest Reserve on the diagram forming a part hereof.

Lands excepted.

This proclamation will not take effect upon any lands withdrawn or reserved at this date, from settlement, entry, or other appropriation, for any purpose other than forest uses, or which may be covered by any prior valid claim, so long as the withdrawal, reservation, or claim exists.

Reserved from
settlement.

Warning is hereby given to all persons not to make settlement upon the lands reserved by this proclamation.

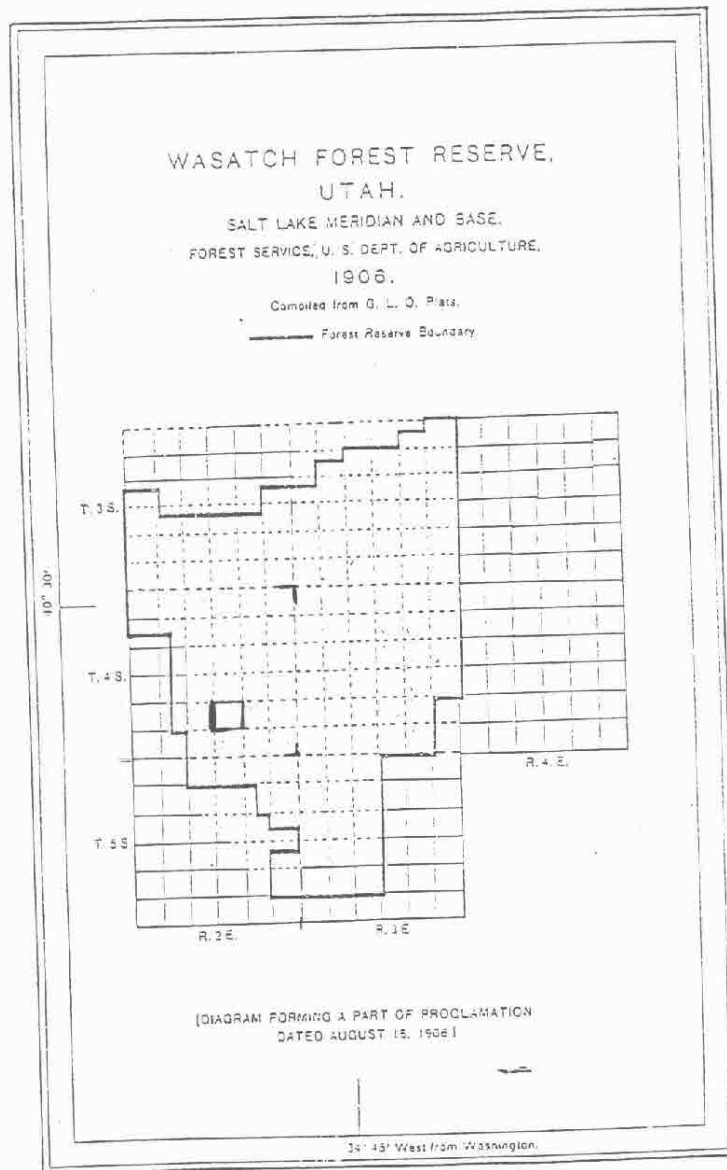
IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this 16th day of August, in the year of our Lord one thousand nine hundred and six, and of the Independence of the United States the one hundred and thirty-first.

THEODORE ROOSEVELT

By the President:

ALVEY A. ADE
Acting Secretary of State.



Other Supporting Information



IN REPLY REFER TO:

L54 (TICA)

United States Department of the Interior

NATIONAL PARK SERVICE
Timpanogos Cave National Monument
Rural Route 3, Box 200
American Fork, Utah 84003



May 17, 2004

Memorandum

To: Director, Intermountain Region

From: Superintendent, Timpanogos Cave National Monument 

Subject: Transmittal of Water Rights Settlement Agreement

Attached please find a copy of the Timpanogos Cave Water Rights Settlement Agreement made between the United States of America and the State of Utah. The Settlement Agreement was signed in Salt Lake City, Utah on March 22, 2004. This is the seventh such agreement between a national park system unit in Utah and the State of Utah. The National Park Service copy of the Settlement Agreement with original signatures is stored in the Water Resources Division, water rights repository in Ft. Collins, Colorado.

The agreement sets forth the details of both federal reserved water rights and State-based appropriative water rights. In addition, the State of Utah agreed to establish a ground-water protection zone for the watershed feeding Timpanogos Cave, much of which is outside the monument boundary. This agreement is key to protecting water quality and quantity in Timpanogos Cave National Monument.

Several individuals deserve recognition and praise for their work on this agreement. I thank Bill Hansen of the National Park Service Water Rights Branch, Jim Karkut from the Office of the Solicitor, and Andy Walsh from the Department of Justice for their years of diligence in negotiating, preparing and refining this agreement to be in the best interest of Timpanogos Cave National Monument. Their highly successful efforts have assured long-term protection of surface and ground water in the monument.

Please contact me if you have any questions concerning the Settlement Agreement.

Attachment

Future Consumptive Water Use For Timpanogos Cave National Monument, Utah

Prepared By Eric Moser
Water Rights Branch
Revised May 6, 2002

Introduction

The objective of this report is to estimate the quantity of water needed for future consumptive use purposes at Timpanogos Cave National Monument (TICA). Future water needs were estimated for a 50-year period projected to the year 2050. This report is prepared in support of federal reserved and state appropriative water rights claims and settlement discussions with Utah in the Jordan River Adjudication.

Water Use

Water at TICA is presently delivered from a spring in Swinging Bridge Canyon. TICA has undergone three events that have substantially changed its water use. In 1991, the headquarters and visitor center burned down and open faucets were refitted with water conserving devices. In 1993, irrigation was discontinued except for 0.25 acre of lawn at the picnic area. In 1998, TICA opened the visitor center all year. Prior to 1988, the visitor center was only open half the year (about 184 days per year). Water use at TICA includes visitor use (sanitation and drinking water) and administrative use (staff use, residential use, facility and vehicle maintenance, and irrigation). These uses are not distinguished in metered water data.

Existing Water System

The flow meter on the water system is located upstream of the 100,000-gallon storage tank and just downstream from the chlorination point. The system is vented into the American Fork River in TICA through two garden hoses that run continuously. The water system is vented to prevent the build up of potential contaminants and freezing in the winter. Flow discharged through the hoses was described as about one-third capacity (personal communication, Kristi Ferguson, August 24, 2001). Conservatively, this venting could result in a discharge of about 86,400 gallons (one gallon per minute per hose) in a 30-day period, or at least a million gallons per year (3.3 acre-feet/year). Historically, there have been breaks in the water system primarily during winter months. Effluent for all facilities is piped to leach fields (personal communication, Don Robinson, July 12, 2001). TICA has historically, but intermittently, irrigated natural vegetation around the visitor center to reduce fire hazards. Periods and quantities of use and venting are poorly documented in flow records.

Visitation

Annual visitation for 1951-2000 at TICA is shown in Table 1. Visitation for the last 50 years has been cyclic with a compound annual growth of 1.1 percent per year for the period of 1951-2000. The last ten years were also evaluated to determine if recent growth (1991-2000) was different than long-term growth. The compound annual growth rate for 1991-2000 was 0.19 percent per year. Visitation is highly suspect prior to 1990 (Kit Mullen, email communication dated Feb. 5, 2002). Superintendent Mullen offers the following about visitation beginning in 1993: 1) Visitation for 1993-96 dropped because the park decreased tour sizes from 30 to 20 people for resource protection; 2) Visitation for 1997-2001 increased because the tour season was lengthened to 7 months due to fee demo money; and 3) Visitation in 2000 went down because of closures due to wildfires in the area. No regional comparison of growth rates was possible because TICA is the only park located near Salt Lake City and other parks in southeastern Utah were not considered representative.

Projection - Methods and Results

Due to the unreliability of flow records and poor documentation about past water use, including quantities of water vented into the American Fork River, we have chosen to estimate present and future use based upon park visitation and staff use at existing facilities. These facilities include the visitor center, three residences, a maintenance building and the picnic area restroom.

We assumed that each visitor consumes about three gallons of water per visit. Multiplying this by 2000 visitation of 115,115 yields a present water use of 1.06 acre-feet. Staff supporting visitor use is assumed to be included in this estimate. The three residences were estimated to use 1.35 acre-feet per year (0.45 acre-feet per year per residence – personal communication, Jerry Olds, Utah State Engineer's Office, 2001). The maintenance facility and irrigation of the picnic area (about 0.25 acre in extent) are assumed to consume about 1.0 acre-feet per year. Therefore, present water use is estimated to be about 3.4 acre-feet per year.

Table 1. Visitation at Timpanogos Cave National Monument, 1945-2000.

Year	Visitors	Year	Visitors
1951	66,291	1976	76,500
1952	68,532	1977	102,900
1953	70,638	1978	118,644
1954	72,000	1979	125,080
1955	72,400	1980	107,041
1956	76,700	1981	104,497
1957	78,900	1982	104,630
1958	89,400	1983	98,475
1959	98,200	1984	119,688
1960	110,100	1985	128,622
1961	117,900	1986	124,410
1962	133,500	1987	137,279
1963	165,700	1988	138,694
1964	165,200	1989	126,876
1965	165,500	1990	114,247
1966	193,600	1991	104,745
1967	207,200	1992	120,374
1968	221,400	1993	90,803
1969	192,800	1994	77,528
1970	166,500	1995	79,641
1971	111,400	1996	97,250
1972	194,525	1997	112,777
1973	174,600	1998	119,074
1974	228,600	1999	122,778
1975	65,500	2000	115,115

We have assumed that staff, residential, maintenance facility, and irrigation use will be concomitant with visitation. Future water use will then be dependent on the number of visitors at TICA. Compound annual growth rates for TICA and the National Park System were evaluated to determine what growth rate should be used to estimate water use in 2050. National Park Service visitation (nation-wide) has grown at an annual rate of 4.2% for 1951-2000 (see Appendix A). This growth rate appears to be excessive given the actual growth at TICA for the same period (1.1%). Due to the difficulty of predicting future growth rates over fifty years at TICA and the inconsistent counting methods over the last decade we have assumed a conservative growth rate of 2.5 %.

Estimated future consumptive use in 2050 is estimated by:

$$3.41 (1.025)^{50} = 11.72 \text{ acre-feet per year}$$

Conclusion

It is recommended that the NPS file a claim for 12 acre-feet per year of depletion at TICA in the Utah Lake and Jordan River Adjudication in Utah.

APPENDIX A
Determination of National Park Service
Visitation For 1951 – 2000

Compound annual growth (CAGR) is computed using the equation:

$$\text{CAGR} = (\text{Visitation in the last year} / \text{Visitation in the first year})^{1/n} - 1) * 100$$

Where n = period of years evaluated

$$\text{Growth for fifty years of record (1951-2000)} = ((285,891,275 / 37,106,440)^{1/50} - 1) * 100 = 4.2\%$$

Year	Visitors	Year	Visitors
1951	37,106,440	1976	216,554,800
1952	47,379,438	1977	210,559,700
1953	52,268,174	1978	222,184,042
1954	54,210,200	1979	205,369,808
1955	56,572,800	1980	220,463,199
1956	61,602,300	1981	238,592,669
1957	68,016,000	1982	244,924,579
1958	65,460,900	1983	243,616,747
1959	68,900,500	1984	248,785,509
1960	79,229,000	1985	263,441,808
1961	86,665,161	1986	281,094,850
1962	97,040,762	1987	287,244,996
1963	102,712,763	1988	282,451,441
1964	111,387,664	1989	269,399,837
1965	121,313,965	1990	258,682,828
1966	133,083,066	1991	267,840,999
1967	139,677,567	1992	274,694,549
1968	150,837,568	1993	273,120,925
1969	163,991,969	1994	268,636,169
1970	172,006,570	1995	269,564,307
1971	153,693,200	1996	265,796,163
1972	165,653,324	1997	275,236,335
1973	168,922,900	1998	286,739,115
1974	171,054,800	1999	287,130,879
1975	190,390,600	2000	285,891,275

NOTE TO THE FILE

See the Issue File for Water Use Records (May 1993 – July 2001) for the Swinging Bridge System at Timpanogos Cave NM.

Documents Dated from 8/16/1906 to 5/17/2004

Docket Compiled: 6/25/2012

