WATER-RIGHT DOCKET

Death Valley National Park

Docket No: 29

DEVIL'S HOLE

Preliminary Docket Information

05-03-1979: narrative of devil's hole; death valley national monument. ; may 03, 1979

DATE: May 3, 1979

DOCKET (FILE) TITLE

REGION Western AREA Death Valley National Monument

SITE Devil's Hole

STATE Nevada COUNTY Nye DOCKET NO AWR #46-52

LOCATION SW¼ SW¼, SE¼ Section 36 T17S, R50E, MDM

REGIONAL BASIN LOCAL BASIN

ACQUIRED BY

APPROPRIATION PERMIT CERTIFICATE

ACTION DUE PRIORITY RESERVATION January 17, 1952

QUANTITY USE

STATUS Inactive SOURCE see narrative

REMARKS Hydrologic Unit #18090202

NARRATIVE:

In 1952 President Truman set aside Devil's Hole as a part of Death Valley National Monument for the preservation of the native desert pupfish. It was determined that the pupfish needed a specified minimum water level in the pool to proliferate and the Park Service monitored the pool to insure the maintenance of this level. In 1962 the Nye County Land Company filed an application to appropriate water from Devil's Hole, an appropriation the monument did not agree to. The application was withdrawn shortly after the filing.

Of more pressing concern was the development of Spring Meadows, Inc.(later Cappaert Enterprises). Spring Meadows had drilled several wells in the vicinity of the pool and a noticable drop in the water level had occurred. The Park Service notified the State of Nevada, who in turn ordered the pumping to cease until the company conformed with state water law. The company then filed ten application to appropriate water from the area. About the same time as the Spring Meadows applications several other concerns made state filings on underground and surface sources in the area. The Service also protested these applications, as well as every other application that was filed within the general vicinity of the pool even if there was no indication the appropriation would affect the water level. (One of these protests was on an application for a well 150 miles from Devil's Hole - this application was not affected by any subsequent litigation and the Park Service protest was justifiably disregarded.) After the protests were filed several of the applicants withdrew their applications. The remaining applications were the subject of a State Water Rights hearing. The State Engineer ruled that Spring Meadows had a valid right and issued a permit for the wells. The U.S. took the matter to federal court and recieved an injunction. Cappaert appealled the ruling and the matter eventually went to the Supreme Court. The Court affirmed the decision of the district court (and 9th Circuit) to issue the injunction and proscribed a minimum level in the pool to satisfy the purpose of the reservation (see Cappaert v. U.S., 426 U.S. 128 (1976)).

This decision effectively shut down the Cappaert operation in the area. Currently the water level at Devil's Hole is kept at a minimum mean water level of 2.7 feet below a copper washer in the pool, and ground water pumpage in the area is limited to an amount so as not to interfere with the preservation of the pool in its present state. Since the federal right to water at Devil's Hole has been adjudicated, the questions of who is appropriating water in the area and how much are they appropriating are immaterial. Any further appropriation of water adversely affecting the water level in the pool can be enjoined under Cappaert v. U.S.

Compiled by T. Kern

Proved by

State Water Rights Documentation

10-08-1982: letter to peter morros, state engineer regarding concerns of groundwater levels at devils hole. ; october 08, 1982

Withdrawn
Mills 10/12
Cherry 10/12
Reg. Dir. 10/12

W-1823 (WR-RNW
xL54
DEVA/WR #29

October 8, 1982

Mr. Peter G. Morros
State Engineer
Division of Water Resources
Capitol Complex
201 S. Fall Street
Carson City, Nevada 89710

Dear Mr. Morros:

Recent legal notices appearing in newspapers in the vicinity of Death Valley National Monument prompt us to contact you with concerns about groundwater levels at Devils Hole. The notices concern applications to appropriate groundwater and related proposals regarding future developments in the Ash Meadows Basin.

As you are aware, the National Park Service has been given the responsibility to preserve and protect all Federal parklands. As a result of this Congressional mandate, the Park Service is responsible for the maintenance and protection of the resources, including the endangered pupfish at Devils Hole, a part of Death Valley National Monument.

In addition to our Congressional mandate, the U.S. Supreme Court in Cappaert v. United States established a Federal Reserved Right to groundwater in the area. As a party to that case and the related final decree issued by the U.S. District Court on March 23, 1978, you are undoubtedly aware of the responsibility we share to maintain the water level at Devils Hole or above the judicially prescribed minimum.

In response to these obligations, the National Park Service, in cooperation with the U.S. Geological Survey, has maintained a water level monitoring program at the site. To help us further carry out our responsibilities so as to ensure the protection of the vital resources at Devils Hole, it is imperative that we remain informed about groundwater use in the Ash Meadow Basin. Therefore, we request that you notify us of any decisions or any applications which are made concerning the withdrawal of groundwater from the area.

If we can be of any assistance in efforts to protect Devils Hole, or if you have any questions or comments concerning the subject, please contact Gerard Witucki, Chief, Division of Water Resources at (415) 556-8660 or at the above address.

Thank you for your continued cooperation and support in this matter.

Sincerely,

FOR (Sgd) John D. Cherry

Howard H. Chapman
Regional Director, Western Region

cc:
Superintendent, Death Valley
Field Solicitor, San Francisco

(WR)RNW:Tapia:Witucki:ms:10/8/82:6-8660

Photocopied from L54 Files
(DEVA - General Correspondence)

JA

RECEIVED AND FILED
MAR 24 10 03 AM '78
CAROL C. FITZGERALD
CLERK
BY [illegible] DEPUTY

ENTERED
MAR 24 1978
CLERK, US DISTRICT COURT
DISTRICT OF NEVADA
BY [illegible] DEPUTY

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF NEVADA

UNITED STATES OF AMERICA,)
Plaintiff,)
v.)
FRANCIS LEO CAPPAERT, et al.,)
Defendants,) Civil LV-1687
and)
STATE OF NEVADA, ex rel., ROLAND D. WESTERGARD, State Engineer,)
Intervenor.)

RECEIVED
MAR 27 5 01 PM '78
GENERAL LITIGATION SECTION
DEPARTMENT OF JUSTICE

ORDER MODIFYING FINAL DECREE

Pursuant to the order of this Court entered December 22, 1977, after a post remand evidentiary hearing, plaintiff's counsel, in compliance with said order, have filed herein, on January 1, 1978, proposed findings of fact and conclusions of law. The defendant Cappaerts filed objections to plaintiff's proposed findings of fact and conclusions of law on March 16, 1978.

The Court having this day signed the plaintiff's proposed findings of fact and conclusions of law as modified,

IT IS ORDERED that the final decree entered herein on April 9, 1974, be amended in part. Page 2 [illegible] lines 6 through 21

9-1-2-961
ENTERED
MAR 27 1978
U. S. D. C.
Water Resources Unit

is modified to read as follows:

"IT IS ORDERED, ADJUDGED AND DECREED that, except for domestic purposes, the defendants are forthwith permanently enjoined as follows:

"To limit the pumping from underground waters from wells Nos. 1, 2, 3, 4 and 5, located in Section 7, T. 18 S., R. 51 E.; well No. 6, located in Section 3, T. 18 S., R. 50 E.; wells Nos. 16 and 17, located in Section 8, T. 18 S., R. 51 E.; all other wells now existing or hereafter drilled within Section 28, 33 and 34, T. 17 S., R. 50 E.; within Sections 31 and 32, T. 17 S., R. 51 E.; within Sections 2, 3, 4, 9, 10, 11, 12, 13, 14 and 15, T. 18 S., R. 50 E.; and within Sections 5, 6, 7, 8, 17 and 18, T. 18 S., R. 51 E., M.D.B.&M., to the extent required to achieve and to maintain at Devil's Hole, Death Valley National Monument, a daily mean water level of 2.7 feet below the copper washer described in finding of fact No. 11."

DATED: March 23rd, 1978.

DISTRICT JUDGE

B. MAHLON BROWN
United States Attorney
WILLIAM C. TURNER
Assistant United States Attorney
P.O. Box 16030
Las Vegas, Nevada 89101
598-6336

ANDREW F. WALCH
Attorney, Department of Justice
Land and Natural Resources Division
Washington, D.C. 20530
(202) 739-4112

Attorneys for Plaintiff

MAR 24 10 02 AM '79
CAROL C. FITZGERALD
CLERK
BY DEPUTY
FILED AND ENTERED

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEVADA

UNITED STATES OF AMERICA,

Plaintiff,

v.

FRANCIS LEO CAPPAERT, MARILYN I. CAPPAERT, B. L. BARNETT, individuals, and SPRING MEADOWS RANCH,

Defendants.

STATE OF NEVADA, ex rel., ROLAND D. WESTERGARD, State Engineer,

Intervenor.

Civil No. 1687 (RDF)

ENTERED

MAR 24 1979

CLERK, U.S. DISTRICT COURT
DISTRICT OF NEVADA
BY DEPUTY

3/22/79

~~(PROPOSED)~~ FINDINGS OF FACT
AND CONCLUSIONS OF LAW

I.

INTRODUCTION

On June 5, 1973, this court entered a preliminary injunction limiting pumping from designated wells of defendants so as to return the water level of Devil's Hole to not more than 3.0' [1/] below the marker. The injunction was based upon the finding of the court that "there is grave danger that the Devil's Hole pupfish may be destroyed, resulting in irreparable injury to the United States." Detailed findings of fact and conclusions of law were made and the injunction was made permanent on April 9, 1974. 375 F.Supp. 456 (1974).

1973 3.3' by Appeals pending permanent injunction

The Court of Appeals for the Ninth Circuit affirmed, 508 F.2d 313 (1974), and held, inter alia, that "[t]he fundamental purpose of the reservation of the Devil's Hole pool was to assure that the pool would not suffer changes from its condition at the time the Proclamation was issued in 1952 . . . ." Id., at 318.

1974 Appeals Court Affirmed District

The Supreme Court affirmed, Cappaert v. United States, 426 U.S. 128 (1976), and again acknowledged the federal reserved water-rights doctrine. That doctrine provides that when the Federal Government withdraws its land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated, both surface and groundwater, to the extent needed to accomplish the purpose of the reservation. The court held, 426 U.S. at 147, "when the United States

---

1/ The Court of Appeals, in response to a motion from the Cappaerts to modify the injunction to permit them to pump to 3.7' below the copper marker, had permitted the Cappaerts to pump so long as the water level did not drop more than 3.3' below the marker. 483 F.2d 432 (1973).

reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the pool to preserve its scientific value and thereby implement Proclamation No. 2961."[2/]

The Supreme Court further stated:

> The implied-reservation-of-water doctrine, however, reserves only that amount of water necessary to fulfill the purpose of the reservation, no more. Arizona v. California, supra, at 600-601. Here the purpose of reserving Devil's Hole Monument is preservation of the pool. Devil's Hole was reserved "for the preservation of the unusual features of scenic, scientific, and educational interest." The Proclamation notes that the pool contains "a peculiar race of desert fish . . . which is found nowhere else in the world" and the "pool is of . . . outstanding scientific importance . . . ." The pool need only be preserved, consistent with the intention expressed in the Proclamation, to the extent necessary to preserve its scientific interest. The fish are one of the features of scientific interest. The preamble noting the scientific interest of the pool follows the preamble describing the fish as unique; the Proclamation must be read in its entirety. Thus, as the District Court has correctly determined, the level of the pool may be permitted to drop to the extent that the drop does not impair the scientific value of the pool as the natural habitat of the species sought to be preserved. The District Court thus tailored its injunction, very appropriately, to minimal need, curtailing pumping only to the extent necessary to preserve an adequate water level at Devil's Hole, thus implementing the stated objectives of the proclamation. 426 U.S., at 141.

2/ Proclamation of January 17, 1952. President Truman withdrew from the public domain a 40-acre tract of land surrounding Devil's Hole, making it a detached component of the Death Valley National Monument.

The Court of Appeals has remanded the case to this court to "determine whether, on the facts developed during the pendency of this appeal, the lower water level [3.3' below the copper washer] may be adequate to preserve the pupfish." 508 F.2d, at 322. On November 30, 1976, the United States moved to modify the permanent injunction[2a/] to raise the water level at Devil's Hole to 2.7' below the copper washer, the level necessary to insure the continuous survival of the pupfish, Cyprinodon diabolis. All of the evidence the parties wished to offer in connection with the duty imposed on remand by the Court of Appeals and in regard to the motion of the United States to raise the water level, including oral testimony, was received by the court at a hearing on December 9-10, 1976. The evidence demonstrating the necessity of a higher water level of 2.7' to sustain a viable pupfish population was introduced by the United States through its witness, Dr. James E. Deacon.

On December 22, 1977, this court entered its order. The court has concluded that the United States has established by a preponderance of the evidence that the minimum water level at Devil's Hole necessary to preserve the pupfish there is 2.7' below the copper washer. Accordingly, pumping of defendants' wells that are hydrologically connected with the water level at Devil's Hole must be curtailed to the extent necessary to permit maintenance of a minimum water level of 2.7' below the copper washer. The findings of fact and conclusions of law previously entered in this case are modified and supplemented, as follows:

2a/ On July 7, 1976, this Court had granted the motion of the United States, filed January 21, 1975, and ordered the water level at Devil's Hole raised to a minimum of 3.0' below the copper washer.

II.

FINDINGS OF FACT

1. All parties were represented by counsel at the hearing held December 9-10, 1976, on the motion of the United States to modify the permanent injunction. Mr. Samuel S. Lionel, Esquire, appeared for all defendants; Mr. George Allison, Esquire, appeared for intervening defendant, the State of Nevada; Mr. Andrew F. Walch, Esquire, appeared for the plaintiff, United States of America.

2. Dr. James E. Deacon, testifying on behalf of the United States as an expert witness, has been engaged in the study of the pupfish at Devil's Hole and other areas since 1961. Dr. Deacon has published numerous papers in the fields of ecology and biology, including 11 on pupfish, and has presented the results of his recent research on the Devil's Hole pupfish to the first annual symposium on research in the National Parks in 1976 and to the annual meetings of the Desert Fishes Council.

3. Dr. Deacon became principal investigator of the Devil's Hole pupfish in 1974 and has supervised the research efforts since that time. He supervises the work of the Devil's Hole Pupfish Recovery Team made up of government and other scientists for the purpose of conserving the pupfish. Data gathered by Dr. Deacon since 1973 include very carefully made fish counts to obtain as close as possible the maximum number of observable fish in Devil's Hole, 3/ and oxygen measurements for data on food production. This data gathering has continued since June of 1974. Detailed measurements of the variation in food production were obtained in

---

3/ Dr. Deacon's studies and conclusions were based on the maximum count of observable pupfish. No estimates of larvae and young fish were included in the counts. Subjectivity that may have existed in earlier counts by others as a result of estimates of larvae and young fish was thereby eliminated. The data thus show trends in population size.

the summer of 1976 between July 26 and September 3, a time of maximum food production. This data, of course, was not available at the time Dr. Deacon previously testified at the hearing on injunction during the summer of 1973.

4. During the summer of 1976, the Pupfish Recovery Team, under the direction of Dr. Deacon, completed a mapping project of the shelf area in Devil's Hole that was based on hundreds of measurements of the shelf.[4/] These measurements were utilized in a computer program which assimilated the data and generated (1) a contour map of the shelf[5/] (Pl's. Ex. 7), (2) data utilized in demonstrating by means of a graph the percent of shelf coverage at various water levels[6/] (Pl's Ex. 5), and (3) a table of the volume of water available as pupfish habitat at various water levels.[7/]

4/ The Pupfish Recovery Team used a datum of 1.42' below the copper washer as representing a pristine water level that existed before pumping by the Cappaerts began. The datum of 1.42' is based on the mean of the monthly minimum water levels for a period prior to pumping that began in 1969. It thus is a somewhat more conservative figure than the 1.2' level that this court used in Finding of Fact 13, 375 F.Supp., at 458-459. (Pl's. Ex. 5 and 6).

5/ Dr. Deacon examined the map while at Devil's Hole, comparing the configuration reflected on the map to the actual topography of the shelf. He determined that the map was a reasonably accurate representation of the actual conditions that currently exist on the natural shelf at Devil's Hole. Three overlays were prepared for exhibit 7 that illustrated the amount of shelf coverage at the 3.3', 3.0' and 2.7' water levels. These overlays provide a visual demonstration of the amount of shelf coverage at the various water levels, with the uncolored areas representing the land area and the blue colored areas representing that portion of the shelf covered by water.

6/ Plaintiff's Exhibit 5 is a plot of the percent of the shelf covered with water at various water levels. A water level of 1.42 represents the pristine conditions and 100% shelf coverage. The graph strikingly demonstrates that with a rise in the water level from 3.3' to 2.7' below the copper washer, the percent of shelf covered with water increases from approximately 55% at 3.3' to approximately 86% at 2.7'. The break between the shelf and the sides of Devil's Hole is demonstrated by the sharp break in the curve at about 2.5' to 2.7' on exhibit 5. This exhibit demonstrates that essentially all of the flat part of the shelf would be covered at a water level of 2.7'. (Pl's. Ex. 5)

7/ Plaintiff's Exhibit 6 is a tabluation of the water surface at Devil's Hole related to water volume on the shelf, with a calculation of percent volume at each water level. Again, using 1.42' as the base datum reflecting 100% of the volume of water over the shelf, at 3.31' below the copper washer only 15.6% of that water volume is available as habitat for the pupfish. At a water level of 2.7', 37.5% of the water volume overlies the shelf -- nearly 2 1/2 times the amount of living space for the pupfish that would be available at 3.31'. (Pl's. Ex. 6).

5. Populations of animals in general are limited by food and space availability. To develop quantitive data with respect to the influence of these limiting factors of food and space on the pupfish at Devil's Hole, the observed data acquired since 1973, plus data acquired earlier by Fish and Wildlife personnel, Dr. Robert Rush Miller and Carol James, a student of Dr. Deacon's, were analyzed statistically to test independently the limitations first of space and secondly of food on the pupfish population. The result was a determination of the water level necessary to sustain a viable population of pupfish.

6. A viable population of pupfish is one in which there is a reasonable expectation that the genetic variability of the population is sufficient to sustain it indefinitely without increasing its rate of extinction in the natural evolutionary order. That is, there must be enough diversity within the pupfish population that a stock of pupfish will survive the natural selective pressures of the environment. Any population, including the Devil's Hole pupfish, has a minimum number below which the environmental pressures will accelerate it to extinction.

A. A Minimum Population Of 200 Is Necessary To Preserve The Pupfish At Devil's Hole.

7. Dr. Deacon testified that 200 pupfish is the minimum size necessary for the Devil's Hole pupfish population to maintain genetic viability indefinitely. His opinion was based primarily upon studies by Dr. Robert Rush Miller, including (1) "Records of Some Native Fresh Water Fishes Transplanted Into Various Waters of California, Baja California, and Nevada," California Fish and Game, Volume 54, Number 3, pages 170-179 (1968) (Pl's. Ex. 1), (2) studies in the 1940's by Dr. Miller reported in his dissertation;

and (3) transplant attempts at the Hoover Dam refugium. Scientific studies and reports of this nature may properly be used and are reasonably relied upon by an expert such as Dr. Deacon in forming his opinions. Rule 703, F.R.E.

8. In the Miller paper, (Pl's. Ex. 1) Dr. Miller reported on the results of 15 transplants of the genus Cyprinodon from the Death Valley area into other natural springs. Only three of the 15 transplants were recorded as having positive results, those in which a large number were transplanted. (Pl's. Ex. 1, table 1) The number of fish transplanted in each of these three tests were 350 fish in River Springs, Adobe Valley, Mono County, 400 in pools at Soda Lake in San Bernadino County and 425 in the main spring at River Springs, Adobe Valley. (Pl's. Ex. 1, pp. 176-178) Of the three "successful" transplants, a student of Dr. Deacon determined that the transplant of pupfish from Salt Creek into a pool at Soda Lake in San Bernadino County was incorrectly reported as being successful; the species that actually existed in the pool was not the same one that Dr. Miller had transplanted.

9. Of the 12 transplants of Cyprinodon in which Dr. Miller reported the results as being "negative," many were transplants numbering less than 200 individuals. (Pl's. Ex. 1 pp. 175-178) Of those, where more than 200 individuals were transplanted, i.e., the 750 pupfish placed in the spring at Pahrump Ranch in Nye County, the 400 pupfish in spring-fed ditches at Little Lake in Owens Valley, and the more than 400 pupfish in spring-fed ditches of Deep Springs Valley, it was reported that carp or large-mouth bass were later observed, but no pupfish. (Pl's. Ex. 1, pp. 176-178)

10. Additional support for the conclusion reached by Dr. Deacon is found in the studies reported in Dr. Miller's dissertation. There, transplants of small populations of

pupfish were reported to have all died out within six generations. The Hoover Dam refugium was another transplant attempt based upon indroducing 27 individual pupfish to the refugium. The population increased to 200 individuals shortly after the transplant in October 1972. The population has since declined to approximately 50 to 70 individuals, suggesting at least the possibility that declining viability may be operating on the Hoover Dam population.

11. Dr. Deacon has observed the response of the pupfish population to the higher water levels (generally well above 3.0' since the fall of 1975). The minimum population size in Devil's Hole occurs in the winter and is about one-half of the maximum population size that occurs in the summer. (Pl's Ex. 2) In accord with his generally conservative approach as to the requirements for preserving the pupfish at Devil's Hole, Dr. Deacon has concluded that a minimum number of 200 pupfish is necessary to maintain a viable population at Devil's Hole.

12. Dr. Deacon's testimony was credible and supported by the studies to which he referred; his opinion that a minimum of 200 pupfish is required was not contradicted by any of defendants' witnesses. Accordingly, the court finds that 200 pupfish is the minimum number in the annual cycle necessary to maintain a viable population at Devil's Hole.

B. A Water Level Of 2.7' Below The Copper Washer Is Necessary To Maintain A Minimum Winter Population Of 200 Pupfish.

(1.) Data on population size, water levels (space) and food production were analyzed statistically to test Dr. Deacon's conclusions based on empirical relationships.

13. Two independent lines of reasoning were used to determine the water level necessary to sustain a minimum

population of 200 pupfish. First, it is derived from the empirical observations of the data presented in the graph of population and water level, 1972-1977 (Pl's. Ex. 2); the graph demonstrating percent of shelf covered at various water levels (Pl's. Ex. 5); the table of water volumes at various water levels (Pl's. Ex. 6); and, the topographic map of shelf, with overlays, illustrating shelf coverage at three water levels (Pl's Ex. 7). These data were statistically analyzed and the empirical observations confirmed by the graph showing the relationship of water level and population size. (Pl's Ex. 3). Secondly, an independent analysis of data on food production rates (primary productivity) statistically related to population size one month later provided a separate basis for determining the required water level. (Pl's. Ex. 4)

(2.) Space limitations imposed by a water level of 3.0' or 3.3' require raising the permanent level to 2.7'.

14. Biologic principles of general application state that a population is frequently limited by two factors, space and food. In regard to the space factor, there are two opposing tendencies operating on the pupfish population at Devil's Hole. First, reproductive activity begins in the spring, so that population tends to increase through the summer. However, because of the normal use of irrigation water in the operation of the Cappaert farm during the summer, the water level in Devil's Hole drops during the summer, thereby limiting the space and food available to support the population. Stated another way, the natural tendency of the population to increase because of reproduction starting in the spring is limited by the drop in water levels as a result of irrigation; there is less space into which the population of pupfish can expand.

15. The data demonstrating the relationship between

population size and water level (shown graphically on Pl's Ex. 2) have been analyzed statistically. (Pl's Ex. 3) The data illustrate the general principle that applies almost universally to animal populations; that is, one of the most important limiting factors to a population is the amount of habitat available to it. Thus, as water level declines, the amount of pupfish habitat likewise declines and begins imposing restrictions on population size. At Devil's Hole, the decline in available habitat occurs at about the same time that the reproductive cycle causes an expansion in the population size. Thus, while the population is expanding, its habitat is declining; accordingly, the population increase is curtailed at a critical time by the reduction in habitat caused by the Cappaert's pumping. It is this relationship that has been analyzed in Pl's. Ex. 3 examining the maximum summer population and water level at the time that maximum was achieved.

16. Analyses of two sets of data were performed and shown on Exhibit 3. First, the relationship of population size to water level utilizing data on maximum population sizes between 1967 and 1976 was performed. Secondly, the less precise population data gathered prior to 1972 was excluded and maximum population sizes achieved in 1972 through 1976 were analyzed. Both sets of data led to the same result -- a water level as high as 2.4' below the copper washer is necessary to maintain a maximum summer population of 400 individuals. (Pl's. Ex. 3)

17. However, in line with the conservative approach taken by Dr. Deacon, he tempered the 2.4' level based on the correlation of maximum summer population to water level (Pl's. Ex. 3) with an evaluation of the relationship of food (PPR) to population (Pl's. Ex. 4), and concluded that a 2.7' level is necessary.

3. Food limitations imposed by a water level of 3.0' or 3.3' require raising the permanent water level to 2.7'.

18. The water surface of Devil's Hole is actually located about 75' below the contour of the land, so that it is almost entirely shaded in the winter and exposed to the sun during the summer for increasing periods when the angle of the sun becomes more favorable to food production. During the winter time there is insufficient sunlight falling on the water to cause any measurable oxygen production through photosynthesis. The data acquired by Dr. Deacon that measures the effect of the plants on the level of oxygen in the water was acquired during generally May through October of each year from 1974 to the present.

19. The annual decline in population size (Pl's. Ex. 2) that occurs in the winter is a result of reduced food availability. The food that is in Devil's Hole is largely produced in the summer time by the process of algal growth that results in an algal mat; the algal mat gradually declines or reduces in size through the winter. The algae does not grow at a measurable rate during the winter; no photosynthesis occurs, and thus no variation in oxygen dissolved in the water is present for measurement of primary productivity. Throughout the winter, then, it is the algal mat that provides a significant food base for the population of pupfish, although diatoms and other food items are available.

20. With the rapid plant growth in the summer time, expansion of the fish population up to its maximum summer level takes place, limited only by available habitat. As the rate of food production declines, moving into the fall and winter, the fish population also declines. As the winter progresses, the availability of food reaches a low point which,

in turn, results in a decline of the fish population to its low point.

21. The inner shelf, the shallowest portion of the shelf (see Pl's. Ex. 7, especially with overlay 7-1, and 7A-1, the 2.7' level), is of critical importance throughout the life history of the pupfish. It is by far the most productive area for food of the entire shelf. Food production in the region of the inner shelf is about three times greater than food production over the middle and outer portions of the shelf. At the 3.3 foot water level, the important food production area on the inner shelf is not covered by water; it is a dry land area, unavailable for either food production or reproductive activities of the pupfish. (Pl's. Ex. 7 and 7-3 or 7A-2) At the 3.0' level, much of the inner shelf is dry land. At the 2.7' level, a significantly greater portion of the inner shelf is covered with water. (Pl's. Ex. 7, overlay 7-1, and 7A-1) The 2.7' level shown on the maps demonstrates that the natural shelf would be 85% covered at that elevation, with only a few areas around the periphery and a large rock in the outer and middle shelf being exposed, while at water levels of 3.0' and 3.3' only 71% and 55% respectively of the shelf would be covered by water. (Pl's. Ex. 5)

22. A second application of statistical analysis related rate of food production (primary productivity) to population size on month later. (Pl's. Ex. 4) Data used in illustrating this relationship have been gathered from June 1974 to the present.[8/] The food production rate was determined

---

8/ A base level of food production was obtained from more detailed measurements of the variations in food production in the summer of 1976, between July 26 and September 3, a time of maximum production. By utilizing the rates of maximum food production as a base from which to determine the water level necessary to permit a minimum population of 200 to be achieved (one-half of the maximum summer time population), the minimum (lowest) water level necessary for the continued survival of the pupfish was obtained.

by measuring the concentration of dissolved oxygen in the water during the course of the day (reflecting plant photosynthesis).[9/] As food production increases, population size increases with a one month lag. (Pl's. Ex. 4) The lag time reflects the amount of time it takes for the fish population to convert the food available to it into an increased number of fish.

23. In determining by this method that a water level of 2.7' below the copper washer was necessary, Dr. Deacon took the index for the maximum rate of food production (in milligrams per liter) and multiplied it times the number of liters of water over the natural shelf to determine the total production of food for that day. Dr. Deacon determined that an index number of approximately 5.5 grams of oxygen per day must be produced over the natural shelf to permit a summer time population of 400 pupfish. (Pl's. Ex. 4) This rate of food production will be achieved at a water level of 2.7' below the copper washer, and will result in a minimum winter population of 200 pupfish, the number required to maintain genetic variability of the population.

24. Plaintiff's exhibits 3 and 4 were admitted into evidence over the strenuous objection of defendants' counsel, who attacked them through the testimony of a statistician with a background in physics, mathematics, finance and economics, but no background in biology or understanding of biological principles. On the other hand, Dr. Deacon, in addition to utilizing statistics in his day-to-day work in

---

9/ The formula (Def's. Ex. J) for calculating primary productivity index that was used by Dr. Deacon came from a classic paper by Howard Odum, which appeared in the Journal, "Limnology and Oceanography" in 1959.

ecology and aquatic biology, consulted with two statisticians about the use of the statistics program here involved. These exhibits, plaintiffs exhibit 3 (population size related to water level) and exhibit 4 (primary productivity index (food supply) correlated with population size one month later), represent a statistical treatment and analysis of the data used by Dr. Deacon in concluding that a 2.7' water level is required. They demonstrate the correctness of Dr. Deacon's conclusion from a statistical viewpoint; however, Dr. Deacon would have reached the same conclusion as to water level from the presentation of data in plaintiff's exhibit 2, 5, 6, and 7 (discussed above). Accordingly, the Court finds that this evidence, the statistical data presented in plaintiff's exhibits 3 and 4, is competent and reliable evidence that supports and corroborates the testimony of Dr. Deacon and the other exhibits offered by plaintiff prepared by Dr. Deacon from work done by him and under his direction

25. The Court has reviewed all of the testimony and exhibits in evidence. Plaintiff has established by a preponderance of the evidence, and the Court so finds, that a minimum water level of 2.7' below the copper washer must be maintained at Devil's Hole in order to adequately protect the pupfish, Cyprinodon diabolis. A viable population of pupfish must be maintained, i.e., one that contains sufficient genetic variability to meet environmental challenges, keeping in mind that the species has a threshold number below which it will accelerate to extinction. The evidence has demonstrated that the threshold number, the minimum population size, should not fall below 200 pupfish. A minimum water level of 2.7' below the copper washer will provide the conditions necessary for a viable population of pupfish to survive

26. Pumping by defendants of its wells in the Spring Meadows Ranch area must be further restricted to the extent necessary to provide for the continued survival of the pupfish through maintenance of a minimum water level at Devil's Hole of 2.7 feet below the copper washer.

27. The parties have previously stipulated that, "The pumpage from the aquifer system in the Ash Meadows area can be regulated so as to produce stabilization of the water level in Devil's Hole at any desired position below its mean natural level of 1.2 feet below the copper washer." (Findings of Fact No. 23(d), June 5, 1973, reported in United States v. Cappaert, 375 F.Supp. 456, 459 (1974).

28. Rights to the use of groundwater in the Ash Meadows area may be obtained by citizens of the State of Nevada by compliance with the requirements of Chapter 533, Nevada Revised Statutes, which provide, inter alia, that an application for the right to use groundwater may be refused if to grant it would be "detrimental to the public welfare." N.R.S. 533.365 (See, United States v. Cappaert, 508 F.2d 313, 321 fn.9) This Court has previously found that "The public interest lies in the preservation of this endangered species." (Finding of Fact No. 28, June 5, 1973, reported in United States v. Cappaert, 375 F.Supp. 456, 460 (1974).

III.

CONCLUSIONS OF LAW

1. The Court of Appeals has remanded this case to the District Court to hear evidence on establishing a water level necessary to preserve the pupfish. United States v. Cappaert, 508 F.2d 313, 322 (9th Cir. 1975). Additionally, the United States has moved to modify this Court's permanent injunction. This Court has continuing jurisdiction to modify the injunctive relief previously granted the United States. Rule 60, F.R.Civ.P.

2. The United States has demonstrated by a preponderance of the evidence that it is entitled to have the permanent injunction heretofore entered modified to limit the amount of groundwater pumping from defendants' wells so that the water level in Devil's Hole does not drop below a daily mean water level of 2.7 feet below the copper washer.

3. The State of Nevada is under a continuing obligation to be aware of the requirement for a minimum 2.7' water level at Devil's Hole in its consideration of applications for groundwater permits in the Ash Meadows area, for groundwater use that would lower the water level at Devil's Hole below 2.7' below the copper washer would be detrimental to the public welfare.

4. The United States is entitled to modification of the permanent injunction and final decree against defendants and for its costs of suit, including costs and reasonable fees and expenses from the Cappaert defendants incurred by the United States and Dr. James E. Deacon in the preparation for and taking of the deposition of plaintiff's expert witness, Dr. James E. Deacon. See Rule 26(b)(4)(C).

Dated: March 23rd 1978

Judge, United States District Court

United States Department of the Interior

NATIONAL PARK SERVICE
WESTERN REGION
450 GOLDEN GATE AVENUE, BOX 36063
SAN FRANCISCO, CALIFORNIA 94102

IN REPLY REFER TO:
N1423
xL54
DEVA/Devils Hole
(WR)RW

July 6, 1976

Memorandum

To: Superintendents, Western Region
State Director, Hawaii
Chief, Arizona Archeological Center
Directorate, Western Region

From: Associate Regional Director, Resource Management and Planning, Western Region

Subject: U.S. Supreme Court Opinion, Pupfish Case, Devils Hole, Death Valley National Monument, California

Enclosed is a copy of the recent United States Supreme Court decision Cappaert, et al. v. United States, et al. Voting unanimously, the Court held in favor of preserving the Devils Hole Pupfish, and in so doing, clearly extended the implied reservation (Reservation Doctrine) to ground water.

Although its full significance can best be determined from a reading of the whole opinion, we would like to call your attention to two points. First, in regard to whether the Service must comply precisely with the State water law procedures when it uses water on lands originally within the public domain, the Court, on p. 15-16, states that "determination of reserved water rights is not governed by state law but derives from the Federal purpose of the reservation; ...." Further along on page 16, the Court notes that "Federal water rights are not dependent upon state law or state procedures ...." This language supports the decision of the Court of Appeals, which held that "'the United States is not bound by state water laws when it reserves land from the public domain' and does not need to take steps to perfect its rights with the State; ...." (p. 8.) The Supreme Court decision is in conformance with, and affirms, the Service policy of comity with the States, as mentioned on pages IV 13-14 of the Management Policies, U.S. Department of the Interior, National Park Service. This policy,

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

which has involved filing applications with the States together with a disclaimer of State jurisdiction, is intended to keep the States informed as to water usage in order to enhance an effective overall State water management program.

The second noteworthy point concerns the priority date (the date on which the right to use water begins) of the Federal water right under the Reservation Doctrine. On p. 8, the Court says "... the United States acquires a reserved right in unappropriated water which vests on the date of the reservation and is superior to the rights of future appropriators."

This enclosure is informational and our regional procedure for administering water rights will continue to be the same as in the past.

Bruce M. Kilgore

Enclosure

United States Department of the Interior

NATIONAL PARK SERVICE
WASHINGTON, D.C. 20240

IN REPLY REFER TO:

JUN 18 1976

RECEIVED
Western Regional Office
JUN 22 1976
Regional Director
Dep. Regional Dir.
Exec. Asst.
Administration
Operations
Res. Mgmt. Plan.
Prog. & Budget
EEO
Public Affairs
Mgmt. Appraisal
Action Taken

Memorandum

To: All Regional Directors and Director, National Capital Parks

From: Associate Director

Memo to all Supts. 7/6/76

Subject: Cappaert, et al. v. United States, et al., Civ. No. 74-1107
(Argued January 12, 1976 - Decided June 7, 1976)
(Pupfish Case)

Attached please find a copy of the unanimous decision made by the United States Supreme Court in the above-captioned case which found in favor of the United States for the Devil's Hole National Monument.

This case extends the doctrine of implied reservation of water rights to groundwater.

Enclosure

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States* v. *Detroit Lumber Co.*, 200 U.S. 321, 337.

SUPREME COURT OF THE UNITED STATES

Syllabus

CAPPAERT ET AL. *v.* UNITED STATES ET AL.

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

No. 74–1107. Argued January 12, 1976—Decided June 7, 1976*

Devil's Hole, a deep cavern on federal land in Nevada containing an underground pool inhabited by a unique species of desert fish, was reserved as a National Monument by a 1952 Presidential Proclamation issued under the Act for the Preservation of American Antiquities, which authorizes the President to proclaim as National Monuments, *inter alia*, "objects of historic or scientific interest" situated on federal land. In 1968 the Cappaerts, petitioners in No. 74–1107, who own a nearby ranch, began pumping groundwater coming from the same source as the water in Devil's Hole, thereby reducing the water level in Devil's Hole and endangering its fish. Subsequently, the Cappaerts applied to the Nevada State Engineer for permits to change the use of water from several of their wells. Although the United States was not made a party to that proceeding, the National Park Service filed a protest, seeking either a denial of the application or a postponement of a decision until it could be determined whether the pumping of the Cappaerts' wells should be limited to prevent lowering of the water in Devil's Hole. The State Engineer overruled the protest and granted the permits. The United States then filed suit in the District Court seeking to limit the Cappaerts' pumping of their wells. The District Court permanently enjoined pumping that would lower the water below a certain level necessary to preserve the fish, holding that in establishing Devil's Hole as a National Monument, the President reserved appurtenant, unappropriated waters necessary to the purpose of the reservation, including preservation of the pool and its fish, that the federal

*Together with No. 74–1304, *Nevada ex rel. Westergard* v. *United States et al.*, also on certiorari to the same court.

Syllabus

water rights antedated those of the Cappaerts, and that the United States was not estopped from injunctive relief against the use of water under land exchanged with the Cappaerts. The Court of Appeals affirmed. *Held:* As of 1952 when the United States reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the underground pool to preserve its scientific value and thereby implement the Presidential Proclamation. Pp. 8–18.

(a) When the Federal Government reserves land from the public domain, by implication it reserves water rights sufficient to accomplish the purposes of the reservation, and here the 1952 Proclamation expressed an intention to reserve unappropriated water. Pp. 8–11.

(b) The purpose of reserving Devil's Hole being the preservation of the underground pool, the District Court appropriately tailored its injunction to the minimal need, curtailing pumping only to the extent necessary to preserve a water level adequate to protect the pool's scientific value as the natural habitat of the fish species sought to be preserved. Pp. 11–12.

(c) The Act for the Protection of American Antiquities authorized the President to reserve the pool in Devil's Hole, since such pool and its rare inhabitants are "objects of historic and scientific interest" within the meaning of that Act. P. 12.

(d) Since the implied reservation of water doctrine is based on the necessity of water for the purpose of the federal reservation, the United States can protect its water from subsequent diversion, whether the diversion is of surface water or groundwater. Pp. 12–13.

(e) Since the Desert Land Act of 1877, which provides that patentees of public land acquire only title to land through the patent and must acquire water rights in nonnavigable water in accordance with state law, does not apply to water rights of federal reserved land, *FPC* v. *Oregon*, 349 U. S. 435, determination of such reserved water rights is not governed by state law but derives from the federal purpose of the reservation, and thus the fact that the water rights here reserved apply to nonnavigable rather than navigable water is irrelevant. Pp. 14–16.

(f) That the National Park Service filed a protest to the Cappaerts' pumping permit application in the state administrative proceeding, did not bar the United States, by res judicata or collateral estoppel, from litigating its water rights claim in

Syllabus

federal court. The United States was not made a party to the state proceeding, was not in privity with the Cappaerts, and did not assert any federal water rights claims in such proceeding; and thus the issue raised in the District Court was not decided in the state proceedings. Pp. 16–18.

508 F. 2d 313, affirmed.

BURGER, C. J., delivered the opinion for a unanimous Court.

NOTICE: This opinion is subject to formal revision before publication in the preliminary print of the United States Reports. Readers are requested to notify the Reporter of Decisions, Supreme Court of the United States, Washington, D.C. 20543, of any typographical or other formal errors, in order that corrections may be made before the preliminary print goes to press.

SUPREME COURT OF THE UNITED STATES

Nos. 74–1107 AND 74–1304

Francis Leo Cappaert et al., Petitioners,
74–1107 *v.*
United States et al.

Nevada ex rel. Roland D. Westergard, State Engineer, Petitioner,
74–1304 *v.*
United States et al.

On Writs of Certiorari to the United States Court of Appeals for the Ninth Circuit.

[June 7, 1976]

MR. CHIEF JUSTICE BURGER delivered the opinion of the Court.

The question presented in this case is whether the reservation of Devil's Hole as a National Monument reserved federal water rights in unappropriated water.

Devil's Hole is a deep limestone cavern. Approximately 50 feet below the opening of the cavern is a pool 65 feet long, 10 feet wide and at least 200 feet deep, although its actual depth is unknown. The pool is a remnant of the prehistoric Death Valley Lake System and is situated on land owned by the United States since the Treaty of Guadalupe Hidalgo in 1849, 9 Stat. 922. By the Proclamation of January 17, 1952, President Truman withdrew from the public domain a 40-acre tract of land surrounding Devil's Hole, making it a detached component of the Death Valley National Monument. Proc-

lamation No. 2961, 66 Stat. c.18, 17 Fed. Reg. 691.[1] The Proclamation was issued under the Act for the Preservation of American Antiquities, 16 U. S. C. § 431, 34 Stat. 225, which authorizes the President to declare as national monuments "objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States. . . ."

The 1952 Proclamation notes that Death Valley was set aside as a national monument "for the preservation of the unusual features of scenic, scientific, and educational interest therein contained." The Proclamation also notes that Devil's Hole is near Death Valley and contains a "remarkable underground pool." Additional preambular statements in the Proclamation explain why Devil's Hole was being added to the Death Valley National Monument:

> "Whereas the said pool is a unique subsurface remnant of the prehistoric chain of lakes which in Pleistocene times formed the Death Valley Lake System, and is unusual among caverns in that it is

[1] The final paragraph of the Proclamation withdrawing Devil's Hole from the public domain recites:

"Now, Therefore, I, Harry S. Truman, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 8, 1906, 34 Stat. 225 (16 U. S. C. 431), do proclaim that, subject to the provisions of the act of Congress approved June 13, 1933, 48 Stat. 139 (16 U. S. C. 447), and to all valid existing rights, the following-described tract of land in Nevada is hereby added to and reserved as a part of the Death Valley National Monument, as a detached unit thereof:

"Mount Diablo Meridian, Nevada T. 17 S., R. 50 E., sec. 36, SW ¼ SE ¼.

"Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this addition to the said monument and not to locate or settle on any of the lands thereof."

a solution area in distinctly straited limestone, while also owing its formation in part to fault action; and

"Whereas the geologic evidence that this subterranean pool is an integral part of the hydrographic history of the Death Valley region is further confirmed by the presence in this pool of a peculiar race of desert fish, and zoologists have demonstrated that this race of fish, which is found nowhere else in the world, evolved only after the gradual drying up of the Death Valley Lake System isolated this fish population from the original ancestral stock that in Pleistocene times was common to the entire region; and

"Whereas the said pool is of such outstanding scientific importance that it should be given special protection, and such protection can be best afforded by making the said forty-acre tract containing the pool a part of the said monument. . . ."

The Proclamation provides that Devil's Hole should be supervised, managed and directed by the National Park Service, Department of Interior. Devil's Hole is fenced off and only limited access is allowed by the Park Service.

The Cappaert petitioners own a 12,000-acre ranch near Devil's Hole, 4,000 acres of which are used for growing Bermuda grass, alfalfa, wheat, and barley; 1,700 to 1,800 head of cattle are grazed. The ranch represents an investment of more than 7 million dollars; it employs more than 80 people with an annual payroll of more than $340,000.

In 1968 the Cappaerts began pumping groundwater on their ranch on land two and one-half miles from Devil's Hole; they were the first to appropriate groundwater. The groundwater comes from an underground basin or aquifer which is also the source of the water in Devil's

Hole. After the Cappaerts began pumping from the wells near Devil's Hole, which they do from March to October, the summer water level of the pool in Devil's Hole began to decrease. Since 1962 the level of water in Devil's Hole has been measured with reference to a copper washer installed on one of the walls of the hole by the U. S. Geological Survey. Until 1968, the water level, with seasonable variations, had been stable at 1.2 feet below the copper marker. In 1969 the water level in Devil's Hole was 2.3 feet below the copper washer; in 1970, 3.17 feet; in 1971, 3.48 feet; and, in 1972, 3.93 feet.

When the water is at the lowest levels, a large portion of a rock shelf in Devil's Hole is above water. However, when the water level is at 3.0 feet below the marker or higher, most of the rock shelf is below water, enabling algae to grow on it. This in turn enables the desert fish (*cyprinodon diabolis*, commonly known as Devil's Hole pupfish), referred to in President Truman's Proclamation, to spawn in the spring. As the rock shelf becomes exposed, the spawning area is decreased, reducing the ability of the fish to spawn in sufficient quantities to prevent extinction.

In April 1970 the Cappaerts, pursuant to Nevada law, Nev. Rev. Stat. § 533.325, applied to the State Engineer, Roland D. Westergard, for permits to change the use of water from several of their wells. Although the United States was not a party to that proceeding and was never served, employees of the National Park Service learned of the Cappaerts' application through a public notice published pursuant to Nevada law. Nev. Rev. Stat. § 533.360. An official of the National Park Service filed a protest as did a private firm. Nevada law permits interested persons to protest an application for a permit; the protest may be considered by the State Engineer at a hearing. Nev. Rev. Stats § 533.365. A

hearing was conducted on December 16, 1970, and a field solicitor of the Department of Interior appeared on behalf of the National Park Service. He presented documentary and testimonial evidence, informing the State Engineer that because of the declining water level of Devil's Hole the United States had commissioned a study to determine whether the wells on the Cappaerts' land were hydrologically connected to Devil's Hole and, if so, which of those wells could be pumped safely and which should be limited to prevent lowering of the water level in Devil's Hole. The Park Service field solicitor requested either that the Cappaerts' application be denied or that decision on the application be postponed until the studies were completed.

The State Engineer declined to postpone decision. At the conclusion of the hearing he stated that there was no recorded federal water right with respect to Devil's Hole, that the testimony indicated that the Cappaerts' pumping would not unreasonably lower the water table or adversely affect existing water rights, and that the permit would be granted since further economic development of the Cappaert's land would be in the public interest. In his oral ruling the State Engineer stated in part "that the protest to the applications that are the subject of this hearing are overruled and the applications will be issued subject to existing rights." The National Park Service did not appeal. See N. R. S. § 533.450.

In August 1971 the United States, invoking 28 U. S. C. § 1345, 62 Stat. 933,[2] sought an injunction in the United

[2] 28 U. S. C. § 1345 provides as follows:

"Except as otherwise provided by Act of Congress, the district courts shall have original jurisdiction of all civil actions, suits or proceedings commenced by the United States, or by any agency or officer thereof expressly authorized to sue by Act of Congress."

States District Court for the District of Nevada to limit, except for domestic purposes, the Cappaerts' pumping from six specific wells and from specific locations near Devil's Hole. The complaint alleged that the United States, in establishing Devil's Hole as part of Death Valley National Monument, reserved the unappropriated waters appurtenant to the land to the extent necessary for the requirements and purposes of the reservation. The complaint further alleged that the Cappaerts had no perfected water rights as of the date of the reservation. The United States asserted that pumping from certain of the Cappaerts' wells had lowered the water level in Devil's Hole, that the lower water level was threatening the survival of a unique species and that irreparable harm would follow if the pumping were not enjoined. On June 2, 1972, the United States filed an amended complaint, adding two other specified wells to the list of those to be enjoined.

The Cappaerts answered, admitting that their wells draw water from the same underlying sources supplying Devil's Hole, but denying that the reservation of Devil's Hole reserved any water rights for the United States. The Cappaerts alleged that the United States was estopped from enjoining use of water under land which it had exchanged with the Cappaerts. The State of Nevada intervened on behalf of the State Engineer as a party defendant but raised no affirmative defenses.

On June 5, 1973, the District Court, by Chief Judge Roger D. Foley, entered a preliminary injunction limiting pumping from designated wells so as to return the level of Devil's Hole to not more than 3.0 feet below the marker. Detailed findings of fact were made and the District Judge then appointed a Special Master to establish specific pumping limits for the wells and to monitor the level of the water at Devil's Hole. The

District Court found that the water from certain of the wells was hydrologically connected to Devil's Hole, that the Cappaerts were pumping heavily from those wells, and that that pumping had lowered the water level in Devil's Hole. The Court found that the pumping could be regulated to stabilize the water level at Devil's Hole and that neither establishing an artificial shelf nor transplanting the fish was a feasible alternative that would preserve the species. The District Court found that if the injunction did not issue "there is grave danger that the Devil's Hole pupfish may be destroyed, resulting in irreparable injury to the United States."

The District Court then held that in establishing Devil's Hole as a National Monument, the President reserved appurtenant, unappropriated waters necessary to the purpose of the reservation; the purpose included preservation of the pool and the pupfish in it. The District Court held that the federal water rights antedated those of the Cappaerts, that the United States was not estopped and that the public interest required granting the injunction. On April 9, 1974, the District Court entered its findings of fact and conclusions of law substantially unchanged in a final decree permanently enjoining pumping that lowers the level of the water below the 3.0 foot level. *United States* v. *Cappaert*, 375 F. Supp. 456 (Nev. 1974).

The Court of Appeals for the Ninth Circuit affirmed, *United States* v. *Cappaert*, 508 F. 2d 313 (1974),[3] in a thorough opinion by Senior District Judge Gus J. Solomon, sitting by designation, holding that the implied res-

[3] Pending appeal, the Court of Appeals, in response to a motion from the Cappaerts to modify the injunction to permit them to pump to 3.7 feet below the copper water level, had permitted the Cappaerts to pump so long as the water level did not drop more than 3.3 feet below the marker. 483 F. 2d 432 (1973).

ervation of water doctrine applied to groundwater as well as to surface water. The Court of Appeals held that "[t]he fundamental purpose of the reservation of the Devil's Hole pool was to assure that the pool would not suffer changes from its condition at the time the Proclamation was issued in 1952 . . . ." 508 F. 2d, at 318. The Court of Appeals held that neither the Cappaerts nor their successors in interest had any water rights in 1952, nor was the United States estopped from asserting its water rights by exchanging land with the Cappaerts. In answer to contentions raised by the intervenor Nevada, the Court of Appeals held that "the United States is not bound by state water laws when it reserves land from the public domain" and does not need to take steps to perfect its rights with the State; that the District Court had concurrent jurisdiction with the state courts to resolve this claim; and, that the state administrative procedures granting the Cappaert's permit did not bar resolution of the United States' suit in Federal District Court.

We review this case to consider the scope of the implied reservation of water rights doctrine. 422 U. S. 1041 (1975). We affirm.

I

Reserved Water Rights Doctrine

This Court has long held that when the Federal Government withdraws its land from the public domain and reserves it for a federal purpose, the Government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation. In so doing the United States acquires a reserved right in unappropriated water which vests on the date of the reservation and is superior to the rights of future appropriators. Reservation of water rights is empowered by the Commerce Clause, Art. I, § 8,

which permits federal regulation of navigable streams, and the Property Clause, Art. IV, § 3, which permits federal regulation of federal lands. The doctrine applies to Indian reservations and other federal enclaves, encompassing water rights in navigable and nonnavigable streams. *Colorado River Water Conservation District* v. *United States*, — U. S. —, [p. 4] (1976); *United States* v. *District Court for Eagle County*, 401 U. S. 520, 522–523 (1971); *Arizona* v. *California*, 373 U. S. 546, 601 (1963); *FPC* v. *Oregon*, 349 U. S. 435 (1955); *United States* v. *Powers*, 305 U. S. 527 (1939); *Winters* v. *United States*, 207 U. S. 564 (1908).

Nevada argues that the cases establishing the doctrine of federal reserved water rights articulate an equitable doctrine calling for a balancing of competing interests. However, an examination of those cases shows they do not analyze the doctrine in terms of a balancing test. For example, in *Winters* v. *United States*, *supra*, the Court did not mention the use made of the water by the upstream landowners in sustaining an injunction barring their diversions of the water. The "Statement of the Case" in *Winters* notes that the upstream users were homesteaders who had invested heavily in dams to divert the water to irrigate their land, not an unimportant interest. The Court held that when the Federal Government reserves land, by implication it reserves water rights sufficient to accomplish the purposes of the reservation.[4]

In determining whether there is a federally reserved

[4] Nevada is asking, in effect, that the Court overrule *Arizona* v. *California*, 373 U. S. 546 (1963), and *United States* v. *District Court for the County of Eagle*, 401 U. S. 520 (1971), to the extent that they hold that the implied reservation doctrine applies to all federal enclaves since in so holding those cases did not balance the "competing equities." Nevada's Brief, at 15. However, since balancing the equities is not the test, those cases need not be disturbed.

water right implicit in a federal reservation of public land, the issue is whether the Government intended to reserve unappropriated and thus available water. Intent is inferred if the previously unappropriated waters are necessary to accomplish the purposes for which the reservation was created. See, *e. g., Arizona* v. *California*, 373 U. S., at 599–601; *Winters* v. *United States*, 207 U. S., at 576. Both the District Court and Court of Appeals held that the 1952 Proclamation expressed an intention to reserve unappropriated water and we agree.[5] The

[5] The District Court and the Court of Appeals correctly held that neither the Cappaerts nor their predecessors in interest had acquired any water rights as of 1952 when the United States' water rights vested. Part of the land now comprising the Cappaerts' ranch was patented by the United States to the Cappaerts' predecessors as early as 1890. None of the patents conveyed water rights since the Desert Land Act of 1877, 19 Stat. 377, 43 U. S. C. § 321, provided that such patents pass title only to land, not water. Patentees acquire water rights by "bona fide prior appropriation," as determined by state law. *California Oregon Power Co.* v. *Beaver Portland Cement Co.*, 295 U. S. 142, 162 (1935). Under Nevada law water rights can be created only by appropriation for beneficial use. Nev. Rev. Stat. §§ 533.030, 534.020, 533.325. *Jones* v. *Adams*, 19 Nev. 78, 6 P. 442 (1885). Under the doctrine of prior appropriation, the first to divert and use water beneficially establishes a right to its continued use as long as the water is beneficially diverted. See *Colorado River Water Conservation District* v. *United States*, — U. S. —, [3–4] (1975). See also Sax, Water Law, Planning and Policy—Cases and Materials, 218–224 (1968). Neither the Cappaerts nor their predecessors in interest appropriated any water until after 1952.

Some of Cappaert wells are on land acquired from the United States in 1969 through a land exchange under § 8 of the Taylor Grazing Act of 1934, as amended, 48 Stat. 1269, 43 U. S. C. § 315g (b). In this exchange the Cappaerts received land within one mile of Devil's Hole under a patent granting them "all rights, privileges, immunities and appurtenances . . . *subject to any vested and accrued water rights for mining, agriculture, manufacturing or other purposes. . . .*" The federal water rights in Devil's Hole had vested 17 years before that exchange.

Proclamation discussed the pool in Devil's Hole in four of the five preambles and recited that the "pool . . . should be given special protection." Since a pool is a body of water, the protection contemplated is meaningful only if the water remains; the water right reserved by the 1952 Proclamation was thus explicit, not implied.[6]

Also explicit in the 1952 Proclamation is the authority of the Director of the Park Service to manage the lands of Devil's Hole Monument "as provided in the act of Congress entitled 'An Act to establish a National Park Service, and for other purposes,' approved August 25, 1916 (39 Stat. 535; 16 U. S. C. 1–3) . . . ." The National Park Service Act provides that the "fundamental purpose of said national parks, monuments, and reservations" is "to conserve the scenery and the natural and historic objects and the wild life 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 implied reservation of water doctrine, however, reserves only that amount of water necessary to fulfill the purpose of the reservation, no more. *Arizona* v. *California*, 373 U. S., at 600–601. Here the purpose of reserving Devil's Hole Monument is preservation of the pool. Devil's Hole was reserved "for the preservation of the unusual features of scenic, scientific, and educational interest." The Proclamation notes that the pool contains "a peculiar race of desert fish . . . which is found nowhere else in the world" and that the "pool is of . . . outstand-

[6] The 1952 Proclamation forbids unauthorized persons to "appropriate, injure, destroy, or remove any feature" from the reservation. Since water is a "feature" of the reservation, the Cappaerts, by their pumping, are "appropriating" or "removing" this feature in violation of the Proclamation.

ing scientific importance . . . ." The pool need only be preserved, consistent with the intention expressed in the Proclamation, to the extent necessary to preserve its scientific interest. The fish are one of the features of scientific interest. The preamble noting the scientific interest of the pool follows the preamble describing the fish as unique; the Proclamation must be read in its entirety. Thus, as the District Court has correctly determined, the level of the pool may be permitted to drop to the extent that the drop does not impair the scientific value of the pool as the natural habitat of the species sought to be preserved. The District Court thus tailored its injunction, very appropriately, to minimal need, curtailing pumping only to the extent necessary to preserve an adequate water level at Devil's Hole, thus implementing the stated objectives of the Proclamation.

Both petitioners argue that even if the intent of the 1952 Proclamation were to maintain the pool, the Act for the Protection of American Antiquities, 34 Stat. 225, 16 U. S. C. §§ 431–433, did not give the President authority to reserve a pool. Under that Act, according to the Cappaert petitioners, the President may reserve federal lands only to protect archeologic sites. However, the language of the Act which authorizes the President to proclaim as national monuments "historic landmarks, historic and prehistoric structures, and objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government" is not so limited. The pool in Devil's Hole and its rare inhabitants are "objects of historic and scientific interest." See generally *Cameron* v. *United States*, 252 U. S. 450, 451–456 (1920).

II

Groundwater

No cases of this Court have applied the doctrine of

implied reservation of water rights to groundwater. Nevada argues that the implied reservation doctrine is limited to surface water. Here, however, the water in the pool is surface water. The federal water rights were being depleted because, as the evidence showed, the "groundwater and surface water are physically interrelated as integral parts of the hydrologic cycle." Corker, Groundwater Law, Management and Administration, National Water Commission Legal Study No. 6, p. xxiv (1971). Here the Cappaerts are causing the water level in Devil's Hole to drop by their heavy pumping. See Corker, *supra;* see also Water Policies for the Future—Final Report to the President and to the Congress of the United States by the National Water Commission 233 (1973). It appears that Nevada itself may recognize the potential interrelationship between surface and groundwater since Nevada applies the law of prior appropriation to both. Nev. Rev. Stat. §§ 533.010 *et seq.;* 534.020; 534.080; 534.090. See generally Trelease, Water Law—Resource Use and Environmental Protection 457–552 (2d ed. 1974); Meyers & Tarlock, Water Resource Management 553–634 (1971). Thus, since the implied reservation of water doctrine is based on the necessity of water for the purpose of the federal reservation, we hold that the United States can protect its water from subsequent diversion, whether the diversion is of surface or groundwater.[7]

[7] Both petitioners argue that the effect of applying the implied reservation doctrine to diversions of groundwater is to prohibit pumping from the entire 4500 acres above the aquifer which supplies water to Devil's Hole. First, it must be emphasized that the injunction limits but does not prohibit pumping.[8] Second, the findings of fact in this case relate only to wells within two and one-half miles of Devil's Hole. No proof was introduced in the District Court that pumping from the same aquifer which supplies Devil's Hole, but at a greater distance from Devil's Hole, would significantly

III

State Law

Both petitioners argue that the Federal Government must perfect its implied water rights according to state law. They contend that the Desert Land Act of 1877, 19 Stat. 377, 43 U. S. C. § 321 and its predecessors [8] severed nonnavigable water from public land, subjecting it to state law. That Act, however, provides that patentees of public land acquire only title to land through the patent and must acquire water rights in nonnavigable water in accordance with state law. *California Oregon Power Co.* v. *Beaver Portland Cement Co.*, 295 U. S. 142, 162 (1935); see Morreale, Federal-State Conflicts Over Western Waters—A Decade of Attempted "Clarifying Legislation," 20 Rutgers L. Rev. 423, 432 (1966).[9] This

---

lower the level in Devil's Hole. Nevada notes that such pumping "will in time affect the water level in Devil's Hole." Brief, at 25. There was testimony from a research hydrologist that substantial pumping 40 miles away "over a period of decades [would have] a small effect." App., at 79.

[8] The predecessors to the Desert Land Act of 1877, 19 Stat. 377, 43 U. S. C. § 321, are the Act of July 26, 1866, 14 Stat. 251, and the Act of July 9, 1870, 16 Stat. 217. Those Acts provide that water rights vested under state law or custom are protected. However, the Cappaerts did not have any vested water rights in 1952. See n. 5, *supra*.

[9] The cases relied upon by the Cappaerts are not to the contrary. *E. g.*, *United States* v. *Gerlach Live Stock Co.*, 339 U. S. 725 (1950); *Ickes* v. *Fox*, 300 U. S. 82 (1937); *California Oregon Power Co.* v. *Beaver Portland Cement Co.*, 295 U. S. 142 (1935); *Dority* v. *New Mexico ex rel. Bliss*, 341 U. S. 924 (1951). None involve a federal reservation and all involve a determination whether water rights had vested under state law. Here a Federal reservation is involved and neither the Cappaerts nor their predecessors in interest had any vested water rights in 1952 when the United States' water rights vested.

Nebraska v. *Wyoming*, 325 U. S. 589 (1945), also relied upon by the Cappaerts, involved a federal reservation pursuant to the

Court held in *FPC* v. *Oregon*, 349 U. S. 435, 448 (1955), that the Desert Land Act does not apply to water rights of federal reserved land.[10]

The Cappaert petitioners argue that *FPC* v. *Oregon*, *supra*, must be overruled since, *inter alia*, the Court was unaware at the time that case was decided that there was no longer any public land available for homesteading. However, whether or not there was public land available for homesteading in 1955 is irrelevant to the meaning of the 1877 Act. The Desert Land Act still provides that the water rights of those who received their land from federal patents are to be governed by state law. That there may be no more federal land available for homesteading does not mean the Desert Land Act now applies to all federal land. Since the Act is inapplicable, determination of reserved water rights is not governed by state law but derives from the

Reclamation Act of June 17, 1902, 32 Stat. 388, which directs the Secretary of Interior to "proceed in conformity with [State] laws" and which provides that "the right to the use of water acquired under the provisions of this Act shall be appurtenant to the land irrigated, and beneficial use shall be the basis, the measure, and the limit of the right." In *Nebraska* v. *Wyoming*, the court noted that the United States had acted in conformity with state law. The court said, "We intimate no opinion whether a different procedure might have been followed so as to appropriate and reserve to the United States all of these water rights. No such attempt was made." 325 U. S., at 615. Here the United States acquired reserved water rights through a reservation authorized not by the Reclamation Act, but by the Antiquities Act.

[10] Nevada argues that the discussion of the implied reservation doctrine in *FPC* v. *Oregon*, 349 U. S. 435 (1955), was dicta as that case involved the supremacy of the Federal Power Act, 49 Stat. 863, 16 U. S. C. §§ 791–828 (c) over state law. To the extent that the Federal Power Act authorized reservation of unappropriated water for the electrical needs of the federal project, so too did the Antiquities Act authorize implicit reservation of unappropriated water for the purposes of the Devil's Hole reservation.

federal purpose of the reservation; the fact that the water rights here reserved apply to nonnavigable rather than navigable waters is thus irrelevant.

Since *FPC* v. *Oregon*, *supra*, was decided, several bills have been introduced in Congress to subject at least some federal water uses to state appropriation doctrines, but none has been enacted into law. The most recent bill introduced is S. 28, 92d Cong., 1st Sess., introduced on January 25, 1971, and reintroduced under the same number in the 93d Cong., 1st Sess., on January 4, 1973. See Morreale, *supra*.

Federal water rights are not dependent upon state law or state procedures and they need not be adjudicated only in state courts; federal courts have jurisdiction under 28 U. S. C. § 1345 to adjudicate the water rights claims of the United States.[11] *Colorado River Water Conservation District* v. *United States*, — U. S., at [5–8]. The McCarran amendment, 43 U. S. C. § 666, 66 Stat. 560, did not repeal § 1345 jurisdiction as applied to water rights. *Ibid.* Nor, as Nevada suggests, is the McCarren amendment a substantive statute, requiring the United States to "perfect its water rights in the state forum like all other land owners." Nevada's Brief, at 37. The McCarren amendment waives United States' sovereign immunity should the United States be joined as a party in a state court general water rights' adjudication. *Colorado River Water Conservation District* v. *United States*, — U. S., at [p. 6–7] and the policy evinced by the amendment may, in the appropriate case, require the United States to adjudicate its water rights in state forums. *Id.*, at [16–19].

IV

Res Judicata

Finally Nevada, as intervenor in the Cappaerts' suit,

[11] See n. 2, *supra*.

argued in the Court of Appeals that the United States was barred by res judicata or collateral estoppel from litigating its water rights claim in federal court. Nevada bases this conclusion on the fact that the National Park Service filed a protest to the Cappaerts' pumping permit application in the state administrative proceeding. Since we reject that contention, we need not consider whether the issue was timely and properly raised. We note only that the United States was not made a party to the state administrative proceeding;[12] nor was the United States in privity with the Cappaerts. See *Blonder-Tongue Laboratories, Inc.* v. *University of Illinois Foundation*, 402 U. S. 313, 320–326 (1971). When the United States appeared to protest in the state proceeding it did not assert any federal water right claims, nor did it seek to adjudicate any claims until the hydrological studies as to the effects of the Cappaerts' pumping had been completed.[13] The fact that the United States did not attempt to adjudicate its water rights in the state proceeding is not significant since the United States was not a party. The State Water Engineer's decree explicitly stated that it was "subject to existing rights"; thus, the issue raised in the District Court was not decided in the proceedings before the State Engineer. See *Blonder-Tongue Laboratories, Inc.* v. *University of*

[12] The cases petitioners rely upon involve parties who collaterally attacked an administrative determination. Here the United States was never a party.

[13] The United States requested either that the permits be denied or decision postponed until the studies were completed. While the State Engineer did not postpone decision on the permit application, the Cappaerts' attorney said that the studies "will go forward whether or not the applications are granted; so let's not make the mistake of thinking that if these applications are granted the studies are moot, they are not." App. 307.

Illinois Foundation, 402 U. S., at 323. Cf. *United States v. Utah Construction & Mining Co.*, 384 U. S. 394, 422. We hold, therefore, that as of 1952 when the United States reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the pool to preserve its scientific value and thereby implement Proclamation No. 2961. Accordingly, the judgment of the Court of Appeals is

Affirmed.

...ers were bribing RDA officials, and ...certainly is an insufficient basis for ...cluding that Kates was part of the ...spiracy to defraud. Nor is the other ...ement of Albert on which the ...ernment relies sufficient to sustain a ...iction. In that statement, Kates al...ly told Albert that in the future he ...ld have to pay him (Kates) whether ...got the move or not. Since that ...ement suggests that Kates was de...ding payments on his own and was ...ating independently of the conspir... to defraud, we do not believe that a ... could logically infer from it that ...tes was part of the conspiracy ...rged.

...In sum, we believe that the evidence is ...fficient to support a jury finding ...t Kates entered into even an informal ...ement with the movers and the ...DA officials to defraud the Govern... Far from showing that he and ... others shared the "common design" ... defrauding the Government, the evi... tends only to show that Kates op... independently of the conspiracy ... insisting on payment from private ...ers for the right to move his clients, ... private firms. His actions bore no ...ssary relationship to the conspiracy ...blished at trial, and there was a pau... of evidence regarding Kates' knowl... of the workings of the conspiracy ... which his participation in it might ...sibly have been inferred.

...The judgment of the district court will ...reversed.



UNITED STATES of America, Plaintiff-Appellee,

v.

Francis Leo CAPPAERT et al., Defendants-Appellants,

State of Nevada ex rel. Roland D. Westergard, State Engineer, Intervenor.

UNITED STATES of America, Plaintiff-Appellee,

v.

Francis Leo CAPPAERT et al., Defendants,

State of Nevada ex rel. Roland D. Westergard, State Engineer, Intervenor-Appellant.

Nos. 74–1690, 74–2186.

United States Court of Appeals, Ninth Circuit.

Dec. 4, 1974.

Action was brought by the United States for declaration of rights as to so much of underground waters appurtenant to Devil's Hole, Death Valley National Monument, as might be necessary to maintain a pool and the endangered species of fish therein. On remand from the Court of Appeals, 483 F.2d 432, the United States District Court for the District of Nevada, Roger D. Foley, Chief Judge, 375 F.Supp. 456, entered judgment that the United States was entitled to a permanent injunction to permit maintenance of water level at pool and appeals were taken by nearby ranch owner and state. The Court of Appeals, Solomon, District Judge, held that the doctrine of implied reservation did apply to ground water, that the presidential proclamations withdrawing area from public domain impliedly reserved right in ground water sufficient to maintain pool, that ranch owner had not acquired rights in underground water and that state engineer's action in granting rancher drill-

ing permit was not res judicata with respect to Government's action.

Affirmed and remanded.

1. Waters and Water Courses ⇐7

United States may reserve not only surface water but also underground water for the use of any federal enclave.

2. Fish ⇐12

Presidential proclamation withdrawing Devil's Hole from the public domain and making it a part of the Death Valley National Monument was not solely for purpose of preserving only the Devil's Hole pool with its unique limestone formation but also to protect the pupfish, a unique and endangered species living in pool. 16 U.S.C.A. § 431.

3. Waters and Water Courses ⇐7, 9

When Nevada by selection acquired fee-simple title from the United States to certain lands under the Desert Land Act of 1877, the transfer was subject to statutory provision that the transfer of federal land out of the public domain would not pass title to any unappropriated appurtenant water and that water rights would be determined under the law of state in which land was located; Nevada got no water rights when it acquired title to the land and therefore the successors in interest of Nevada possessed no water rights unless they or a predecessor acquired rights under Nevada law. 16 U.S.C.A. § 1; Desert Land Act, § 1, 43 U.S.C.A. § 321.

4. Waters and Water Courses ⇐133

Under doctrine of "prior appropriation" first person to possess by beneficial use of water for domestic, mining, agriculture, or manufacturing purposes, has vested and approved rights to water as against any later appropriators; central principle of doctrine is beneficial use of water, not land ownership.

See publication Words and Phrases for other judicial constructions and definitions.

5. Waters and Water Courses ⇐140

Nevada has adopted the doctrine of prior appropriation for determining water rights. N.R.S. 533.030, 534.020.

6. Waters and Water Courses ⇐128

Where neither present owners of ranch property nor predecessors made actual beneficial use of underground water until 1968, they had not established a vested property right in water based on prior appropriations before Nevada declared in 1939 that ground water belonged to the public, and hence ranch owner had no ownership rights to the underground water which federal Government was required to take by eminent domain in order to stop ranch owners from pumping so much underground water as would endanger fish in Devil's Hole which was part of the nearby Death Valley National Monument. N.R.S. 533.030, 534.020.

7. Estoppel ⇐62.2(4)

Where ranch owners entered into exchange of land with United States and ranch owners received land within one mile of Devil's Hole, which was part of national monument, under a patent granting them all rights and privileges subject to any vested and accrued water rights and thereafter ranch owners drilled wells more than a mile from Devil's Hole as specified by government agents, Government was not estopped from requiring ranch owners to limit pumping to level at which the pupfish in Devil's Hole could survive.

8. Waters and Water Courses ⇐7, 9

United States' rights to necessary water was established by implied reservation in presidential proclamation of 1952 removing Devil's Hole, containing a unique pool and endangered species of fish, from public domain and attaching it to the Death Valley National Monument, and United States was not bound by Nevada water laws which required permit for appropriation of underground water. Desert Land Act, § 1, 43 U.S.C.A. § 321; 16 U.S.C.A. § 431; Endangered Species Act of 1973, § 4, 16 U.S.C.A. § 1533.

9. United States ⇐131

Statutory amendment waiving sovereign immunity of the United States in certain cases involving adjudication of water rights when United States is a

defendant in a state or federal action so that water rights may be fairly and fully adjudicated does not limit forums available to United States as a plaintiff by narrowing federal court jurisdiction. 43 U.S.C.A. § 666.

10. United States ⇐126

United States was not required to exhaust state procedures in Nevada courts for determining underground water rights with respect to land withdrawn from the public domain and attached to national monument before bringing action in federal court to enjoin nearby rancher from pumping underground water to such an extent that it would lower particular pool below certain level necessary to sustain unique fish therein. 43 U.S.C.A. § 666.

11. States ⇐4.15

Nevada state engineer granting permit to rancher to pump underground water did not have authority to adjudicate water rights of the United States with respect to nearby national monument where United States had not waived its sovereign immunity in state proceeding in which the United States was neither defendant nor served with process, so state engineer's permit was not res judicata with respect to Government's right to bring federal suit to enjoin rancher from infringing on Government's water rights.

12. Administrative Law and Procedure ⇐501

Res judicata doctrine with respect to administrative decisions is not encrusted with the rigid finality that characterizes precept in judicial proceedings, and while application of doctrine often serves useful purpose in preventing relitigation of administratively determined issues, practical reasons may exist for refusing to apply it.

Samuel S. Lionel, Lionel, Sawyer, Collins & Wartman, Las Vegas, Nev., for defendants-appellants.

V. DeVoe Heaton, U. S. Atty., District of Nevada, Las Vegas, Nev., for plaintiff-appellee.

Ralph E. Hunsaker, Phoenix, Ariz., for amicus curiae, Arizona Water Commission.

George V. Allison and Peter D. Laxalt, Special Deputy Atty. Gen., Carson City, Nev., for State of Nevada.

Before CARTER and CHOY, Circuit Judges, and SOLOMON,* District Judge.

* The Honorable Gus J. Solomon, Senior United States District Judge for the District of Oregon, sitting by designation.

OPINION

SOLOMON, District Judge:

Pupfish (cyprinodon diabolis) live in Devil's Hole, in the Death Valley National Monument in Nevada. They are a unique and endangered species. In an action filed by the United States (Government) to protect these fish, the district court limited the amount of water which the owners of a nearby cattle ranch may pump. The Cappaerts, owners of the ranch, and the State of Nevada, which intervened on the side of the Cappaerts, appeal.

The Cappaerts' ranch consists of 12,000 acres, of which 4,000 acres are in cultivation. The ranch, which represents an investment of more than 7 million dollars, has an annual payroll of more than $340,000 and employs more than 80 people. Between 1700 and 1800 head of cattle are fed on the ranch.

The Cappaerts drilled wells and pump groundwater [1] on their land for irrigation. Devil's Hole, a part of the Death Valley National Monument, is located within three miles of several wells on the ranch. Devil's Hole consists of a 40-acre tract in which there is a deep limestone cavern. At the bottom of this cavern there is a pool about 65 feet long, 10 feet wide, and more than 200 feet deep. There are steep rock walls on three sides of the pool, but on the fourth side there is a sloping rock shelf on which algae grows. This pool is part of the 4,500 square mile groundwater sys-

1. In this opinion "groundwater" will be used synonymously with "underground water".

formed by them, but is a fee imposed by the exchange directly on, and for the ultimate benefit of, nonmember traders.

Due to the phase-out of fixed commission rates, the necessity of shifting part of the costs of the exchange's operations to nonmembers can be reasonably expected in order to reduce the financial burden on members and the attendant danger of membership attrition.[5] Rule 136, in theory, is a conceivably reasonable and appropriate measure to share the respective costs and expenses of doing business on the exchange. It is clear to this Court that Rule 136 as it is constructed does not appear to violate the spirit or letter of this Court's June 8, 1973 Order.

[4] Further, the plaintiffs' contention is purely speculative that Section D of Rule 136 violates federal antitrust laws in that it provides, in the event of nonpayment, for "boycotting" nonmember customers and liquidation of their accounts. Any putative violation of the federal antitrust laws by Rule 136(D) is contingent on the unreasonable exercise by the Board of Trade or its members of their discretion involving the enforcement of the "exchange service fee." It is impossible to now find that the Board of Trade or its members will, in the future, abuse their discretion.

Accordingly, it is hereby ordered that the plaintiffs' motion for an order requiring defendants to show cause why they should not be adjudged in contempt is denied.

5. The CEA Administrator's Report on the Rules and Practices of the Chicago Board of Trade Concerning Minimum Rates of Commission and Brokerage Fees of July 1972 states in relevant part:

> "The Board might change its method of financing its operations to lighten the financial burden on members as compared to non-members, thereby creating an added incentive for buying/retaining a membership. One method could be to levy charges on transactions (paid by every trader) instead of using membership assessments.
>
> ". . . [The Board] could, for example, levy a small fee on each transaction and obtain enough income to operate the exchange without assessing members. Based on the 8,110,108 'round turn transactions' that were executed on the Board in 1970, a transaction fee of 10¢ per trade would have returned $811,011. This would have replaced the $736,050 collected from membership assessments in 1970 and left a gain of $74,961. . . . Under such conditions, buying or holding a membership on the exchange might be desirable even if a member did not trade heavily in commodities." (Report, pp. 77-78.)

UNITED STATES of America, Plaintiff,

v.

Francis Leo CAPPAERT et al., Defendants.

No. Civil LV-1687.

United States District Court, D. Nevada.

April 9, 1974.

Action by United States to have its rights declared to use of so much of waters appurtenant to land known as Devil's Hole, Death Valley National Monument, as might be necessary to maintain a pool and the desert pupfish therein. The Government also sought an injunction restraining landowners from pumping water except for domestic purposes. On remand, 483 F.2d 432, the District Court, Roger D. Foley, Chief Judge, held that evidence established that defendants' pumping underground water had drawn water from underground sources which supplied pool in Devil's Hole, that survival of pupfish would be threatened by drop in water level below certain point, that public had interest in preservation of pupfish, an endangered species, and that United States was entitled to permanent injunction preventing pumping to extent required to achieve and maintain at Devil's Hole a stated daily mean water level.

Judgment accordingly.

1. Fish ⇐12

In action by United States to have its rights declared to use of so much of waters appurtenant to land known as Devil's Hole, Death Valley National Monument, as might be necessary to maintain a pool and desert pupfish therein, wherein Government sought injunction restraining landowners from pumping wells except for domestic purposes, evidence established that defendants' pumping underground water from wells had drawn water from underground sources which supplied pool, that survival of pupfish would be threatened by drop in water level below certain point and that public had interest in preservation of pupfish, an endangered species. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; Desert Land Act of 1877, § 1, 43 U.S.C.A. § 321.

2. Fish ⇐12
Waters and Water Courses ⇐107(2)

Where defendant landowners drew water from underground sources which comprised supply of water for a pool in Devil's Hole, Death Valley National Monument, a drop in water level of pool below certain point would threaten survival of Devil's Hole pupfish, an endangered species, water rights of the United States were superior in time and right to those of landowners and United States had no adequate remedy at law in event pupfish were rendered extinct by the pumping, defendants would be permanently enjoined so as to limit pumping to achieve and maintain stated daily mean water level in pool. Endangered Species Act of 1973, § 2 et seq., 16 U.S.C.A. § 1531 et seq.; Desert Land Act of 1877, § 1, 43 U.S.C.A. § 321.

V. DeVoe Heaton, U. S. Atty., Las Vegas, Nev., John H. Germeraad, Dept. of Justice, Washington, D. C., for plaintiff.

Lionel, Sawyer, Collins & Wartman, Las Vegas, Nev., for defendants.

ROGER D. FOLEY, Chief Judge.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

Introduction

This is a civil action in which the United States as plaintiff has sought to have its rights declared to the use of so much of the waters appurtenant to the land known as Devil's Hole, Death Valley National Monument, as may be necessary for the needs and purposes of maintaining the pool and the desert pupfish therein, and that such rights be declared to have a priority date of January 23, 1952. The United States also has sought both a preliminary and a permanent injunction enjoining the defendants Francis Leo Cappaert, Marilyn I. Cappaert, B. L. Barnett, and Spring Meadows Ranch, and each of them, from pumping wells known as Nos. 1, 2, 3, 4, 5, 6, and 16 and 17, and from all other wells now existing or hereafter drilled on designated sections of land,[1] except for domestic purposes, which would be similarly detrimental to the water rights of the United States and the survival of the Devil's Hole pupfish. On June 5, 1973, this Court made its findings of fact and stated its conclusions of law, issued its preliminary injunction, and appointed a Special Master.

On appeal, the Court of Appeals made an order that this Court enter its final decree.

At a conference with this Court on February 15, 1974, counsel for all parties advised that they had no further evidence to offer and agreed that a final decree should be entered.

1. Wells Nos. 1, 2, 3, 4 and 5 are located in Section 7, T. 18 S., R. 51 E.; Well No. 6 is located in Section 3, T. 18 S., R. 50 E.; Wells Nos. 16 (1A) and 17 (1B) are located in Section 8, T. 18 S., R. 51 E. All other wells now existing or hereafter drilled within Sections 28, 33 and 34, T. 17 S., R. 50 E.; within Sections 31 and 32, T. 17 S., R. 51 E.; within Sections 2, 3, 4, 9, 10, 11, 12, 13, 14 and 15, T. 18 S., R. 50 E.; and within Sections 5, 6, 7, 8, 17 and 18, T. 18 S., R. 51 E., M.D.B. & M.

[426 US 128]

FRANCIS LEO CAPPAERT et al., Petitioners,

v

UNITED STATES et al. (No. 74–1107)

NEVADA ex rel. ROLAND D. WESTERGARD, State Engineer, Petitioner,

v

UNITED STATES et al. (No. 74–1304)

426 US 128, 48 L Ed 2d 523, 96 S Ct 2062

[Nos. 74–1107 and 74–1304]

Argued January 12, 1976. Decided June 7, 1976.

SUMMARY

Under Presidential Proclamation No. 2961 (66 Stat c 18), issued in 1952 under the Act for the Preservation of American Antiquities (16 USCS §§ 431 et seq.), which authorizes the President to declare as national monuments objects of historic and scientific interest on lands owned or controlled by the United States, a tract of land surrounding Devil's Hole—a deep limestone cavern with a pool inhabited by a unique species of desert fish—was withdrawn from the public domain and made a detached component of the Death Valley National Monument. After the owners of land near Devil's Hole began pumping groundwater from certain wells on their land which had the same water source as the pool in Devil's Hole, thereby lowering the water level of the pool, the United States brought an action against the landowners in the United States District Court for the District of Nevada to limit the landowners' pumping in such a way as to prevent the lowering of the pool's water level below that point which was important for the spawning of the fish in the pool. The District Court permanently enjoined pumping that would lower the level of the pool below the point which was crucial for spawning (375 F Supp 456), and the United States Court of Appeals for the Ninth Circuit affirmed (508 F2d 313).

On certiorari, the United States Supreme Court affirmed. In an opinion by BURGER, Ch. J., expressing the unanimous view of the court, it was held

Briefs of Counsel, p 971, infra.

that (1) when the United States reserved the Devil's Hole area as a National Monument by presidential proclamation, it also acquired water rights in unappropriated appurtenant waters, since the proclamation had expressed the requisite intention to reserve federal water rights in unappropriated appurtenant water under the reserved water rights doctrine, (2) neither the defendant landowners nor their predecessors in interest possessed any water rights in waters appurtenant to the Monument when the United States' rights vested at the time of the proclamation, (3) the District Court had properly restricted pumping only to the extent that the drop in the pool's water level did not impair the scientific value of the pool as the natural habitat of the fish, (4) the President had the authority under the Act for the Protection of American Antiquities to reserve the pool, (5) the United States could protect its water from subsequent diversion, whether the diversion was of surface or groundwater, since the reserved water rights doctrine was based on the necessity of water for the purpose of the federal reservation, (6) the United States did not have to perfect its water rights according to state law, and (7) the United States was not barred by res judicata or collateral estoppel from litigating its water rights claim in federal court, notwithstanding that the National Park Service had filed a protest to the defendant landowners' pumping permit application in a state administrative proceeding prior to the United States' action.

TOTAL CLIENT-SERVICE LIBRARY® REFERENCES

78 Am Jur 2d, Waters §§ 146 et seq., 229 et seq., 316 et seq.

24 Am Jur Pl & Pr Forms (Rev ed), Waters, Forms 111 et seq.

8 Am Jur Proof of Facts 2d 515, Interference with Use of Senior Well—Withdrawal from Common Aquifer

16 USCS § 431

US L Ed Digest, Waters § 18

ALR Digest, Waters § 14

L Ed Index to Annos, Parks; Waters

ALR Quick Index, Monuments; Waters and Watercourses; Wells

Federal Quick Index, Monuments; Water

ANNOTATION REFERENCE

Subterranean and percolating waters; springs; wells. 55 ALR 1385, 109 ALR 395.

CAPPAERT v UNITED STATES
426 US 128, 48 L Ed 2d 523, 96 S Ct 2062

HEADNOTES

Classified to U. S. Supreme Court Digest, Lawyers' Edition

Waters § 18 — United States — reservation of water rights — Devil's Hole National Monument

1a, 1b. As a result of the United States' reservation of a tract of land surrounding Devil's Hole—a deep limestone cavern with a pool inhabitated by a unique species of desert fish—as the Devil's Hole National Monument in Presidential Proclamation No. 2961 (66 Stat c 18), the United States also acquired water rights in unappropriated appurtenant waters sufficient to maintain the level of the pool in Devil's Hole to preserve its scientific value and thereby implement Proclamation No. 2961.

Waters § 18 — withdrawal of land — reserved rights doctrine

2. When the federal government withdraws its land from the public domain and reserves it for a federal purpose, the government, by implication, reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation; in so doing, the United States acquires a reserved right in unappropriated water which vests on the date of the reservation and which is superior to the rights of future appropriators.

Waters § 18 — reservation of rights — applicability — commerce clause — property clause

3. Reservation of water rights by the federal government is empowered by the commerce clause (Art I, § 8, cl 3), which permits federal regulation of navigable streams, and the property clause (Art IV, § 3, cl 2), which permits federal regulation of federal lands; the doctrine applies to Indian reservations and other federal enclaves, encompassing water rights in navigable and nonnavigable streams.

Waters § 18 — reserved rights doctrine — test

4a, 4b. Under the reserved water rights doctrine, whereby the United States, when it withdraws its land from the public domain and reserves it for a federal purpose, by implication reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation, the test is not an equitable one calling for a balancing of competing interests; rather, in determining whether there is a federally reserved water right implicit in a federal reservation of public land, the issue is whether the United States intended to reserve unappropriated, available water, and intent is inferred if the previously unappropriated waters are necessary to accomplish the purposes for which the reservation was created.

Waters § 18 — reserved rights doctrine — Devil's Hole National Monument

5. Under the test for determining if there is a federally reserved water right implicit in a federal reservation of public land whereby the issue is whether the United States intended to reserve unappropriated water, Presidential Proclamation No. 2961 (66 Stat c 18)—which withdrew from the public domain a tract of land surrounding Devil's Hole (a deep limestone cavern with a pool inhabited by a unique species of desert fish), making it a detached component of the Death Valley National Monument, and which discussed the Devil's Hole pool in four of five preambles, reciting that the pool should be given special protection—expressed the requisite intention to reserve federal water rights in unappropriated water appurtenant to the Devil's Hole Monument, and the water right reserved was explicit, not implied, since the contemplated protection of the pool is meaningful only if the water remains.

Public Lands § 246; Waters §§ 24, 27 — Devil's Hole National Monument — appurtenant water rights — patents

6a, 6b. Neither the owners of property near the Devil's Hole National Monu-

06-07-0976: us vs cappaert; pupfish case; court findings decided june 7,1976,cont. ; june 18, 1976

ment nor their predecessors in interest had acquired any rights in waters under their lands as of 1952 when the Monument was assured and the United States' rights in appurtenant waters vested, where (1) with respect to land patented by the United States to the owners' predecessors as early as 1890, none of the patents conveyed water rights since under the Desert Land Act of 1877 (43 USCS §§ 321 et seq.) such patents pass title only to land, not water, (2) the owners and their predecessors, as patentees, had appropriated water after, but not before, 1952, thus not acquiring water rights as patentees under the applicable state law pertaining to bona fide prior appropriation, and (3) with respect to land acquired by the owners in 1969 through a land exchange under § 8 of the Taylor Grazing Act of 1934 (43 USCS § 315g), the owners received lands under a patent granting them rights, subject to any vested or accrued water rights, and the United States' water rights had vested some 17 years before the exchange.

Public Lands § 246 — Desert Land Act — water rights — prior appropriation under state law

7a, 7b. Under the Desert Land Act of 1877 (43 USCS §§ 321 et seq.), allowing the entry and reclamation of desert lands in the western United States, patentees acquire water rights by bona fide appropriation as determined by state law.

Waters § 71 — appropriation — Nevada law

8a, 8b. Under Nevada law, water rights can be created only by appropriation for beneficial use.

Waters § 78 — prior appropriation — right to continued use

9a, 9b. Under the doctrine of prior appropriation, the first to divert and use water beneficially establishes a right to its continued use as long as the water is beneficially diverted.

Waters § 27 — Devil's Hole National Monument — presidential proclamation

10a, 10b. For purposes of Presidential Proclamation No. 2961 (66 Stat c 18), which withdrew from the public domain a tract of land surrounding Devil's Hole (a deep limestone cavern with a pool inhabited by a unique species of desert fish), making the tract a detached component of the Death Valley National Monument, and which forbids unauthorized persons to appropriate, injure, destroy, or remove any feature from the reservation, water is a "feature" of the reservation, and landowners near the reservation who pump groundwater on their land from an underground basin which is also the source of water in the Devil's Hole pool, by their pumping "appropriate" or "remove" such feature in violation of the proclamation.

Waters § 18 — reserved rights doctrine — amount reserved

11. The reserved water rights doctrine —whereby the United States, when it withdraws its land from the public domain and reserves it for a federal purpose, reserves, by implication, appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation—reserves only that amount of water necessary to fulfill the purpose of the reservation, no more.

Waters §§ 18, 27 — Devil's Hole National Monument — presidential proclamation — pool water

12. Under Presidential Proclamation No. 2961 (66 Stat c 18), withdrawing from the public domain a tract of land surrounding Devil's Hole (a deep limestone cavern with a pool inhabitated by rare fish) and making it a detached component of the Death Valley National Monument—which proclamation reserved Devil's Hole "for the preservation of the unusual features of scenic, scientific, and educational interests," and which noted that the pool contains a peculiar race of desert fish found nowhere else in the world and that the pool is of outstanding scientific importance—the pool in Devil's Hole need be preserved only to the extent necessary to preserve its scientific interest, and thus

the level of the pool may be permitted to drop through adjacent landowners' pumping of water from the underground basin supplying water to the pool, to the extent that the drop does not impair the scientific value of the pool as the natural habitat of the fish.

Public Lands § 8 — presidential proclamation — Devil's Hole National Monument

13. Presidential Proclamation No. 2961 (66 Stat c 18), under which a tract of land surrounding Devil's Hole (a deep limestone cavern with a pool inhabited by rare fish) was withdrawn from the public domain and made a detached component of the Death Valley National Monument, must be read in its entirety.

Public Lands § 8 — Act for Protection of American Antiquities — authority of President

14. The pool inhabitated by unique desert fish which is located in a limestone cavern known as Devil's Hole was properly reserved by the President of the United States under the Act for the Protection of American Antiquities (16 USCS §§ 431 et seq.), since the Act authorizes the President to proclaim as national monuments "historic landmarks, historic and prehistoric structures, and objects of historic or scientific interest" that are situated upon the lands owned or controlled by the government, and the pool in Devil's Hole and its rare inhabitants are objects of historic and scientific interest.

Waters § 18 — reserved rights doctrine — surface water — groundwater

15. Since the reserved water rights doctrine—whereby the United States, when it withdraws its land from the public domain and reserves it for a federal purpose, reserves, by implication, appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation—is based on the necessity of water for the purpose of the federal reservation, the United States can protect its water from subsequent diversion, whether the diversion is of surface water or groundwater.

Waters § 73 — Desert Land Act — applicability to water rights of federal reserved land

16. The Desert Land Act of 1877 (43 USCS §§ 321 et seq.), which provides that patentees of public land acquire only title to land through the patent and must acquire water rights in nonnavigable water in accordance with state law, does not apply to water rights of federal reserved land, and the fact that there may be no more federal land available for homesteading does not mean that the Desert Land Act now applies to all federal land; since the Desert Land Act is inapplicable to water rights obtained by the United States under the reserved water rights doctrine, the determination of reserved water rights is not governed by state law, but derives from the federal purpose of the reservation, thus making it irrelevant that water rights reserved might apply to nonnavigable rather than navigable waters.

Courts § 252; Waters § 18 — federal water rights — federal jurisdiction

17. Federal water rights are not dependent upon state law or state procedures, and they need not be adjudicated only in state courts; federal courts have jurisdiction to adjudicate the water rights claims of the United States under 28 USCS § 1345 giving the Federal District Courts original jurisdiction of all civil actions commenced by the United States, except as otherwise provided by Act of Congress.

Courts §§ 252, 709; United States § 100 — federal statute — water rights of federal government — state proceeding

18. The McCarran amendment (43 USCS § 666)—which provides for consent to join the United States as a defendant in any suit for the adjudication of rights to the use of water where the United States owns or is acquiring water rights and is a necessary party to such suit—

did not repeal the jurisdiction of the federal courts to adjudicate the water rights claims of the United States under 28 USCS § 1345, giving the Federal District Courts original jurisdiction of all civil actions commenced by the United States, except as otherwise provided by Act of Congress, and the McCarran amendment is not a substantive statute, requiring the United States to perfect its water rights in the state forum like all other landowners; rather, the McCarran amendment waives United States sovereign immunity should the United States be joined as a party in a state court general water rights' adjudication.

Courts § 709 — water rights of United States — forum for adjudication

19. Notwithstanding that federal courts have jurisdiction to adjudicate the water rights claims of the United States under 28 USCS § 1345, giving the Federal District Courts original jurisdiction of all civil actions commenced by the United States, except as otherwise provided by Act of Congress, the United States may be required, in an appropriate case, to adjudicate its water rights in state forums.

Administrative Law § 174 — state administrative proceeding — effect on United States' suit

20. In a Federal District Court action brought by the United States to enjoin the owners of land near the Devil's Hole National Monument from pumping water from wells which had the same water source as a pool in Devil's Hole, the United States is not bound by res judicata or collateral estoppel from litigating its claim to water rights in waters appurtenant to the Devil's Hole National Monument, notwithstanding that the National Park Service had earlier filed a protest to the landowners' pumping permit application in a state administrative proceeding, since (1) the United States was not made a party to the state administrative proceeding and was not in privity with the landowners, (2) the United States, when it appeared to protest in the state proceeding, did not assert any federal water rights claim and did not seek to adjudicate any claims until certain studies had been completed on the effects of the pumping, and (3) the decree in the state proceeding explicitly stated that it was subject to existing rights, so that the issue raised in the District Court had not been decided in the state proceeding.

SYLLABUS BY REPORTER OF DECISIONS

Devil's Hole, a deep cavern on federal land in Nevada containing an underground pool inhabited by a unique species of desert fish, was reserved as a national monument by a 1952 Presidential Proclamation issued under the American Antiquities Preservation Act which authorizes the President to proclaim as national monuments, inter alia, "objects of historic or scientific interest" situated on federal land. In 1968 the Cappaerts, petitioners in No. 74–1107, who own a nearby ranch, began pumping groundwater coming from the same source as the water in Devil's Hole, thereby reducing the water level in Devil's Hole and endangering its fish. Subsequently, the Cappaerts applied to the Nevada State Engineer for permits to change the use of water from several of their wells. Although the United States was not made a party to that proceeding, the National Park Service filed a protest, seeking either a denial of the application or a postponement of a decision until it could be determined whether the pumping of the Cappaerts' wells should be limited to prevent lowering of the water in Devil's Hole. The State Engineer overruled the protest and granted the permits. The United States then filed suit in the District Court seeking to limit the Cappaerts' pumping of their wells. The District Court permanently enjoined pumping that would lower the water below a certain level necessary to preserve the fish, holding that in establishing Devil's Hole as a

national monument, the President reserved appurtenant, unappropriated waters necessary to the purpose of the reservation, including preservation of the pool and its fish, that the federal water rights antedated those of the Cappaerts, and that the United States was not estopped from injunctive relief against the use of water under land exchanged with the Cappaerts. The Court of Appeals affirmed. *Held:* As of 1952 when the United States reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the underground pool to preserve its scientific value and thereby implement the Presidential Proclamation.

(a) When the Federal Government reserves land from the public domain, by implication it reserves water rights sufficient to accomplish the purposes of the reservation, and here the 1952 Proclamation expressed an intention to reserve unappropriated water.

(b) The purpose of reserving Devil's Hole being the preservation of the underground pool, the District Court appropriately tailored its injunction to the minimal need, curtailing pumping only to the extent necessary to preserve a water level adequate to protect the pool's scientific value as the natural habitat of the fish species sought to be preserved.

(c) The American Antiquities Preservation Act authorized the President to reserve the pool in Devil's Hole, since such pool and its rare inhabitants are "objects of historic or scientific interest" within the meaning of that Act.

(d) Since the implied-reservation-of-water doctrine is based on the necessity of water for the purpose of the federal reservation, the United States can protect its water from subsequent diversion, whether the diversion is of surface water or groundwater.

(e) Since the Desert Land Act of 1877, which provides that patentees of public land acquire only title to land through the patent and must acquire water rights in nonnavigable water in accordance with state law, does not apply to water-rights of federal reserved land, FPC v Oregon, 349 US 435, determination of such reserved water-rights is not governed by state law but derives from the federal purpose of the reservation, and thus the fact that the water rights here reserved apply to nonnavigable rather than navigable water is irrelevant.

(f) That the National Park Service filed a protest to the Cappaerts' pumping permit application in the state administrative proceeding, did not bar the United States, by res judicata or collateral estoppel, from litigating its water rights claim in federal court. The United States was not made a party to the state proceeding, was not in privity with the Cappaerts, and did not assert any federal water rights claims in such proceeding; and thus the issue raised in the District Court was not decided in the state proceedings.

508 F2d 313, affirmed.

Burger, C. J., delivered the opinion for a unanimous Court.

APPEARANCES OF COUNSEL

Samuel S. Lionel argued the cause for petitioners Cappaert et al.

George V. Allison argued the cause for petitioner Nevada ex rel. Westergard.

Raymond Randolph argued the cause for respondents United States et al.

Briefs of Counsel, p 971, infra.

OPINION OF THE COURT

[426 US 131]

Mr. Chief Justice **Burger** delivered the opinion of the Court.

[1a] The question presented in this litigation is whether the reservation

RECEIVED
OCT 8 1962
Death Valley Nat'l Mon.

L54
WR Docket 29

Lock
Also WR 46

October 2, 1962

L3023-RL

Memorandum

To: Regional Director, Western Region

From: Chief, Branch of Water Resources

Subject: Initiation of Docket, Devils Hole Area, Nevada, Death Valley

There is enclosed a copy of Acting Director Tolson's memorandum of September 4 to Assistant Secretary Carver regarding the withdrawal of certain lands in Death Valley including the subject area and of Proclamation 2961 which added the same area to the monument in January 1952.

Notwithstanding the warning incorporated in the proclamation (last paragraph) it is conceivable that some person with mining or other interests may have filed for appropriative rights in the past and suggest that this material along with any data on such a filing, especially should there be one in good standing, be the beginning of a new docket folder for this area. This will necessitate an investigation for such filings when time permits.

A. van V. Dunn

Enclosures 2

cc:
Superintendent, Death Valley, w/c encs.
Chief, WODC (2), w/c encs.

L3023-B

SEP 4 1962

Memorandum

To: Assistant Secretary, Public Land Management

From: Director, National Park Service

Problem: Prior authorization for withdrawal of lands in Death Valley National Monument, California-Nevada.

Discussion: This Service on September 30, 1957, applied for the withdrawal from mining and mineral leasing of some 35,848 acres of land in the Death Valley National Monument. At that time, it was not necessary to obtain prior authorization for the withdrawal application from the appropriate Program Assistant Secretary. We understand that this requirement, contained in Part 603.1.1 of the Administrative Manual, became effective September 22, 1959. Notice of the proposed withdrawal involving the 35,848-acre area at Death Valley was published in the Federal Register on September 11, 1959 (24 F. R. 7337).

We have continued our review of the mining problems at Death Valley and, as a result, concluded that the original application for withdrawal should be amended. The net effect of these amendments is to reduce the area involved in the withdrawal application by 14,403 acres. In doing so, we included some 4,077 acres of additional public land and excluded about 18,480 acres of other lands covered by the first application. The request to amend the original withdrawal application (filed before prior approval was required), was submitted to the California Office of the Bureau of Land Management without the prior approval of your Office. Notice of the proposed amendments was published in the Federal Register of August 2, 1962 (27 F. R. 7699). Although the net effect of the amendments is a substantial reduction of the area involved in the original withdrawal application, we recognize that prior clearance should have been requested since additional public lands are involved.

Included in the additional lands proposed for withdrawal is a 40-acre tract situated in the State of Nevada, for which application must be filed with the Nevada Office of the Bureau of Land Management. This tract was established as a detached portion of the Death Valley National Monument by Proclamation No. 2961 of January 17, 1952. When so added to the Monument it became subject to the provisions of the Act of June 13, 1933 (48 Stat. 139), which extended operation of the mining and mineral leasing laws to the Death Valley National Monument. We propose to withdraw this area, which contains a subterranean pool known as Devil's Hole, because of its unique geologic and scientific values. The subsurface pool it contains is a remnant of a prehistoric chain of lakes and contains a race of fish found nowhere else in the world.

Implementation: Upon your approval of the proposal to withdraw the above-mentioned 40-acre tract, an application will be filed with the Nevada Office of the Bureau of Land Management.

Recommendation: That you authorize the filing of an application for withdrawal of the 40-acre Devil's Hole tract in Nevada from operation of the mining and mineral leasing laws. We would appreciate having, also, your approval of the amended application already filed which has the net effect of reducing the original Death Valley Withdrawal Application by about 14,000 acres. Chairman Aspinall of the House Committee on Interior and Insular Affairs has been kept informed of the applications for amendment of the original withdrawal application and has agreed to them upon condition that certain information be furnished him in support of the amended application. This information has been furnished.

(SGD) Hilory A. Tolson

Acting Director

SEP 6 1962

Approved:
(sgd) John A. Carver, Jr.
Assistant Secretary, PLM

Copy to: Regional Director, Western Region (2)
Lands
Mr. Harrison
Mr. Buschman

JMLambe:EVB:bkr 8/29/62

RECEIVED
OCT 15 1962
Death Valley Nat'l Mon.

✓	Supt.	
✓	Ch. Rgr.	
✓	Nat.	
✓	Engr.	
✓	Adm. Asst.	
	Proc. & Prop. Mngt. Asst.	
	WODC	
	Sec.	

October 5, 1962

L54-RL

Memorandum

To: Regional Director, Western Region

From: Hydraulic Engineer, Branch of Water Resources

Subject: Initiation of docket, Devils Hole Area Nevada, Death Valley

On the marginal sketch on the copy of Proclamation 2961 enclosed with Mr. Dunn's memorandum to you of October 2 on the above subject please correct the range line to read 50E and 51E. The error stemmed from reading the SBM range indicated at the bottom of the quadrangle indicated on that sketch.

SIGNED

Gordon W. Robertson

cc:
Superintendent, Death Valley
Chief, WODC (2)

W.K Copy of single item in Dead Jacket

Federal Register of January 25, 1952. (Real Estate Deed 16)

TITLE 3—THE PRESIDENT

PROCLAMATION 2961

ADDITION OF DEVIL'S HOLE, NEVADA TO DEATH VALLEY NATIONAL MONUMENT—CALIFORNIA AND NEVADA

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS by Proclamation No. 2028 of February 11, 1933 (47 Stat. 2554), certain lands in California known as Death Valley were set aside and reserved as the Death Valley National Monument for the preservation of the unusual features of scenic, scientific, and educational interest therein contained; and by Proclamation No. 2228 of March 26, 1937 (50 Stat. 1823), the said monument was enlarged by adding thereto certain contiguous lands in California and Nevada; and

WHEREAS there is located outside the boundaries of the said monument but in the vicinity thereof a forty-acre tract of public land in Nevada containing a remarkable underground pool known as Devil's Hole; and

WHEREAS the said pool is a unique subsurface remnant of the prehistoric chain of lakes which in Pleistocene times formed the Death Valley Lake System, and is unusual among caverns in that it is a solution area in distinctly striated limestone while also owing its formation in part to fault action; and

WHEREAS the geologic evidence that this subterranean pool is an integral part of the hydrographic history of the Death Valley region is further confirmed by the presence in this pool of a peculiar race of desert fish, and zoologists have demonstrated that this race of fish, which is found nowhere else in the world, evolved only after the gradual drying up of the Death Valley Lake System isolated this fish population from the original ancestral stock that in Pleistocene times was common to the entire region; and

WHEREAS the said pool is of such outstanding scientific importance that it should be given special protection, and such protection can be best afforded by including the said forty-acre tract containing the pool a part of the said monument;

NOW, THEREFORE, I, HARRY S. TRUMAN, President of the United States of America, under and by virtue of the authority vested in me by section 2 of the act of June 8, 1906, 34 Stat. 225 (16 U.S.C. 431), do proclaim that subject to the provisions of the act of Congress approved June 13, 1933, 48 Stat. 139 (16 U.S.C. 447), and to all valid existing rights, the following-described tract of land in Nevada is hereby added to and reserved as a part of the Death Valley National Monument, as a detached unit thereof.

MOUNT DIABLO MERIDIAN, NEVADA

T. 17 S., R. 50 E., ~~LSIE~~
Sec. 36, SW¼ SE¼.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this addition to the said monument and not to locate or settle on any of the lands thereof.

The Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of the lands hereby added to the said monument as provided in the act of Congress entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1-3), and acts supplementary thereto or amendatory thereof.

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

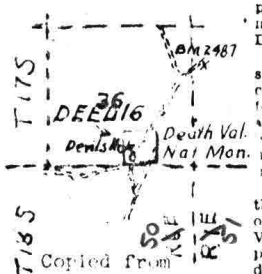
DONE at the City of Washington this 17th day of January in the year of our Lord nineteen hundred and [SEAL] fifty-two, and of the Independence of the United States of America the one hundred and seventy-sixth.

HARRY S. TRUMAN

By the President:

DEAN ACHESON,
Secretary of State.

[F. R. Doc. 52-953; Filed, Jan. 22, 1952, 10:06 a. m.]



Copied from Land status book "Death Valley" p. 23 (comprised of "Ash Meadows" Quadrangle Calif.-Nevada.)

DEATH VALLEY

DEED NO. 16

01-17-1952: memo to director of bureau of land management; subject: proclamation 2961 adding devils hole area to death valley

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON 25, D. C.

In reply refer to:
L2223 DEAT-L

DEATH VALLEY NATIONAL MONUMENT
RECEIVED
FEB 21 1952
Superintendent's Office

FEB 21 1952

Nat.	K
Engr.	
V. Clerk	
Steno	
Whse.	
P. Clerk	

Memorandum

To: Director, Bureau of Land Management

From: Chief of Lands, National Park Service

Subject: Proclamation No. 2961 of January 17, 1952, Adding Devils Hole Area to Death Valley National Monument

We understand that the Bureau intended, as soon as the subject Proclamation was issued, to determine the validity of a mining claim supposedly located on the land which has now been added to the Monument.

It will be appreciated if this determination can be made in the near future and if we may be advised as to your findings.

(SGD) CHARLES A. RICHEY

Charles A. Richey
Chief of Lands

Copy to: ✓ Regional Director, Region Four (2)

41

UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
WASHINGTON 25, D. C.

In reply refer to:
L2215 DEAT-L

Memorandum

To: Regional Director, Region Four

From: Chief of Lands

Subject: NPS-L-1 Form Covering the Devils Hole Area, Death Valley National Monument

There are attached three copies of form NPS-L-1 relating to a recent acquisition of land in Death Valley National Monument.

This land, 40.0 acres, was added to the Monument by Presidential Proclamation of January 17, 1952. A copy of the Proclamation has been placed in the National Park Service files, and has been designated as Death Valley National Monument Deed No. 16.

Will you please have entered upon the form the estimated value, the physical characteristics, the improvements on the land at the time of acquisition, existing reservations, easements, or rights, if any, and return the original to this Office.

(SGD) CHARLES A. RICHEY

Charles A. Richey
Chief of Lands

In duplicate

Attachments 3

42

United States Department of the Interior

GEOLOGICAL SURVEY

WATER RESOURCES DIVISION
333 West Nye Lane
Room # 203
Carson City, NV 89706

July 18, 1994

Owen R. Williams
National Park Service
1201 Oak Ridge Drive, Suite 250
Fort Collins, Colorado 80525

Dear Mr. Williams:

The Nevada District has recently completed a summary of the known surveys conducted at Devil's Hole National Monument. The work was prompted, in part, by a 1992 request for information from your office for which apparently there was never response. The other purpose of the summary was to provide for our own benefit some historical perspective of the work that has been conducted at Devil's Hole. I believe this summary may be a timely document in terms of the Devil's Hole workshop planned for later this month. I hope the information will benefit the National Park Service and any other users of Devil's Hole data.

If you find that you have additional data-collection needs at Devil's Hole, the Nevada District would be happy to schedule a meeting to discuss them along with our ability to fill those needs. We appreciate any opportunity to strengthen our ongoing, working relationship with the National Park Service. If you or your staff find that you have comments or questions related to these issues or other aspects of our data program, please feel free to contact me at (702) 887-7721.

Sincerely,

Stephen E. Hammond
Chief, Hydrologic Data

Enclosure

cc: Jon Nowlin, WRD, Carson City, NV
Richard Hayes, WRD, Carson City, NV
Doug Trudeau, WRD, Las Vegas, NV
Rhea Williams, WRD, Carson City, NV
Randy Laczniak, WRD, Las Vegas, NV

SEH:sm
OPM/Programs/NPS.Williams.Devil's.Hole.Summary.940718

DAVE BECK
702-887-4005

Surveys at Devil's Hole National Monument 1953 to 1994

Following is a summary of survey measurements conducted at Devil's Hole National Monument between 1953 and 1994. The summary has been written to respond to several questions asked of the U.S. Geological Survey (USGS) by the National Park Service (NPS) in a data request dated 09/23/92. A copy of the NPS request is attached. Questions from that request have been answered according to their original numbering sequence; responses to questions may overlap. In addition, several reference tables and figures are attached: figure 1, the relationship between Devil's Hole reference point and staff gages; figure 2, a timeline showing the establishment and/or use of reference points, benchmarks, staff gages, and recorders at or near Devil's Hole; table 1, survey location descriptions; and table 2, a summary of Devil's Hole surveys. Comments and questions can be directed to Chief, Hydrologic Data Section, USGS, 333 W. Nye Lane, Carson City, NV 89706. Phone inquiries can be made at (702) 887-7600.

The datum for all surveys discussed in this summary is NGVD 1929. An historical listing of known surveys conducted at Devil's Hole is given below. The 1962 survey was done by Reynolds Electrical and Engineering Company (REECO). A 1993 survey was conducted at which time several additional benchmarks were established. The elevations of those benchmarks were verified and additional points were surveyed in 1994.

survey date	surveyed by
01/22/53	USGS
09/21/62	REECO
07/20/76	USGS
01/17/80	USGS
11/29/89	USGS
09/22/90	USGS
11/16/93	USGS
05/11/94	USGS

Item 1. Copper-Washer Reference Point

A copper-washer (table 1) reference point (datum) was set in the rock wall above Devil's Hole on 01/22/53 (figure 1). There is no record of a survey that referenced any known benchmarks to the copper washer. The reference point was established for checking the water level of the Devil's Hole pool; water level was determined by a tape-down measurement from the datum marker to the water surface. During the 1953 survey an altimeter reading gave a water-surface elevation of 2,361 feet (table 2). Recorders and staff gages were referenced to the copper washer (table 2).

A 1962 survey determined the elevation of the REECO brass cap (table 1) near the lower Devil's Hole gate at 2,392.766 feet (table 2). It is unclear to which benchmarks the REECO brass cap was referenced. The copper washer was not surveyed in 1962. The elevation of the water surface was reported as 2,358.87 feet. This water-surface elevation plus a strip-chart water-level reading of 1.18 feet (depending on chart clock accuracy) results in a copper-washer elevation of 2,360.05 feet (table 2).

The 1976 survey was not referenced to known benchmarks. The center of the copper washer was assumed at 0.000 feet and was used as the reference point for other measurements (table 2). Measurements include staff-gage "D" (table 1) and the establishment of a bronze tablet (table 1, figure 1) as a second reference point. The bronze tablet was referenced at an elevation of -0.312 feet below the copper-washer reference point (table 2).

Historical photographs and field notes do not adequately provide the detail necessary to determine the diameter of the copper washer and the surface condition of the rock wall immediately surrounding the washer.

In 1979, the copper-washer reference point and nail securing the washer were found missing.

Item 2. Brass-Screw Reference Point

On 01/17/80, the brass-screw (table 1) reference point was established (figure 1). The brass screw was set in the rock wall above Devil's Hole in the same hole vacated by the copper washer. It appears from survey notes that the screw was placed in the hole prior to conducting the survey. The bronze-tablet reference point (table 1) was used as the primary reference point during the 1980 survey and the elevation of the brass screw arbitrarily was set as 0.000 feet. The bronze tablet was found to be -0.314 feet below the newly established brass screw (table 2). See item 4 below for a discussion of the adjustment of staff-gage "D" that occurred on 01/17/80.

The 1989 survey referenced the brass screw to the REECO brass cap at the lower gate at Devil's Hole. The water surface in Devil's Hole was surveyed as 2,358.042 feet (table 2). This water-surface elevation plus a tape-up from the water surface to the brass screw (1.87 feet) results in a brass-screw elevation of 2,359.912 feet (table 2). The bronze tablet could not be used as a reference because it was reported missing in 1985 (figure 1).

The 1990 survey did not include any measurements of Devil's Hole. The survey did include benchmarks measured in both the 1989 and 1994 surveys. The 1990 survey was referenced to BM-2377/RBR-47 (same as BM-0). Other benchmarks measured in this survey include the measuring point at Devil's Hole well and the Bureau of Land Management (BLM) section marker (BM-7).

The brass screw in the rock wall above Devil's Hole was removed and replaced by a steel bolt on 05/19/92 (oral communication, NPS, 07/06/94) (figure 1). No surveys were conducted just prior to the removal of the brass screw or immediately after the new steel-bolt reference point was established. Therefore, no comparison was made between the reference points.

Item 3. Removal & Replacement of the Copper-Washer Reference Point

The copper washer (and nail) was found missing in the summer of 1979 (figure 1). Survey notes suggest that vandalism was the probable cause.

On 01/17/80, the brass screw was installed in the same hole as the copper washer (figure 1). It is not known when the brass screw became loose. Also, it is not known whether the hole in the rock wall enlarged when the brass screw was established or over time.

Item 4. Staff-Gage Use at Devil's Hole

Prior to 1962, the use of a staff gage to measure the Devil's Hole water level cannot be determined from the record. During the period of USGS monitoring (after 1962), more than one staff gage was used as reference to calibrate monitoring equipment and adjust water-level records. For the purpose of this document the staffs are considered chronologically as "A","B","C","D", and "E" as shown in the attached figures and tables. These staff gages have been replaced or at least repositioned several times. Staff gage-height readings in relation to the various reference points in the rock wall above Devil's Hole have differed (figure 1). All water levels have been reported in feet below the reference points.

From 05/22/62 to 09/30/64, on staff-gage "A", an elevation of 1.70 feet corresponded to a (copper washer) reference-point elevation of 0.00 feet. Numerical values on this gage increased from bottom to top (figure 1).

From 09/30/64 to 09/09/70, on staff-gage "B" (attached to the stilling well and facing west), an elevation of 3.12 feet corresponded to a (copper washer) reference-point elevation of 0.00 feet. Numerical values on this gage increased from bottom to top (figure 1).

From 09/10/70 to present, on staff-gage "C" (attached to the stilling well and facing northwest), an elevation of 0.00 feet corresponds to a (copper washer, brass screw, and steel bolt) reference-point elevation of 0.00 feet. Numerical values on this gage increase from top to bottom (figure 1).

On 07/20/76, staff-gage "D" (attached to the stilling well and facing southwest) was installed; an elevation of 0.00 feet corresponds to a (copper washer, brass screw, steel bolt) reference-point elevation of 0.00 feet. Numerical values on this gage increase from top to bottom (figure 1).

Historical (1970, 1976) and recent (1994) photographs show that staff gages "C" and "D" are still in place and have not been moved.

On 08/30/89 (oral communication, NPS, 07/06/94), staff gage "E" (marked NPS) was established (near the stilling well and facing southwest, figure 2). An elevation on staff-gage "E" of 0.00 feet corresponds to a (brass screw, steel bolt) reference-point elevation of 0.00 feet. Numerical values on this gage increase from top to bottom (figure 1). This staff gage was included in the 1994 survey (table 2).

On 01/17/80, staff-gage "C" was raised 0.03 feet using the bronze tablet as the reference point. After further consideration it was determined that no correction was needed and the staff was lowered 0.03 feet. Confusion resulted from emplacement of the brass screw into the vacant copper-washer hole. Water levels from that time were all reported in feet below the brass screw.

Item 5. Reference Staff Gage(s)

Records indicate there has never been a significant discrepancy between the reference staff gage 0.00 foot mark and the elevation of the copper washer or the brass screw. There is only one documented incident where a staff-gage adjustment was deliberately made (see item 4). Water-level records have required no adjustment, except for a few days in January 1980 as noted in item 4. However, some minor pen corrections have been applied to the record throughout the period.

Either the staff gage 0.00 foot mark or the brass-screw elevation provide accurate representations for referencing the elevation of the original copper-washer datum.

Item 6. Establishment of Benchmarks

A description of survey locations is given in table 1. The reference benchmarks near Devil's Hole that were either established or had elevations verified in support of the USGS water-level monitoring program are:

- USCGS;
- REECO brass cap;
- BM-0; and
- BM-7.

The 1994 survey has been the most comprehensive thus far, using three of the above benchmarks as references (table 2). Water surface was surveyed as 2,357.828 feet (table 2). This water-surface elevation plus a tape-up from water surface to the center of the steel bolt (2.042 feet) resulted in a steel-bolt elevation of 2,359.870 feet (table 2). The water-surface elevation plus an NPS staff-gage "E" water-level reading of 2.045 feet resulted in an NPS staff-gage "E" 0.00 foot elevation of 2,359.873 feet (table 2).

The 1994 survey also established baseline elevations for 10 permanent monuments (BM-0 to BM-9). These monuments were established to compare elevation changes that may occur due to seismic activity. BM-0 and BM-7 have been used as benchmarks in previous surveys.

Additional Notes

For data and information on the actual changes in elevation of the Devil's Hole pool water level please refer to:

----1975, Water-resources data collected in the Devils Hole area, Nevada, 1974-75: U.S. Geological Survey Open-File Report _____, 12 p.

Carson, R.L., 1979, Water-resources data collected in the Devils Hole area, Nevada, 1976-77: U.S. Geological Survey Open-File Report 79-742, 22 p.

----1980, Water-resources data collected in the Devils Hole area, Nevada, 1976-77: U.S. Geological Survey Open-File Report 80-772, 15 p.

Hanes, W.T., 1976, Water-resources data collected in the Devils Hole area, Nevada, 1975-76: U.S. Geological Survey Open-File Report 76-797, 15 p.

Larson, J.D., 1974a, Water-resources data collected in the Devils Hole area, Nevada, 1972-73: U.S. Geological Survey Water-Resources Investigations Report 61-73, 20 p.

----1974b, Water-resources data collected in the Devils Hole area, Nevada, 1973-74: U.S. Geological Survey Open-File Report 74-330, 12 p.

Westenburg, C.L., 1993, Water-resources data collected in the Devils Hole area, Nye County, Nevada, July 1978-September 1988: U.S. Geological Survey Open-File Report 90-381, 13 p.

Some photographs of the Devil's Hole area related to historical surveys are available to view. For information, please contact the USGS, Nevada District, Public Information Assistant (702) 887-7600.

Table 1.--Description of Devil's Hole Survey Locations.

Reference Points

COPPER WASHER -- Driven in the rock wall with nail above the southeast side of Devil's Hole. Located about 6-8 feet from the southwest end of the pool. Established by the USGS as a reference point for measuring the water level in Devil's Hole.

BRASS SCREW -- Set in the rock wall above Devil's Hole. Established by the USGS to replace the copper washer.

STEEL BOLT -- Anchored in the rock wall above Devil's Hole. Established by the National Park Service to replace the brass screw.

"REECO" BRASS CAP -- During REECO'S 1962 survey, a concrete monument with a 3" brass cap was established; the cap was stamped "REECO" September 25, 1962/Elev. 2,392." Monument is located inside the bottom gate at Devil's Hole near the remains of a former gate.

BRONZE/BRASS TABLET -- USGS marker (???) that was established on the rock wall just above Devil's Hole pool. Located approximately 0.3 feet below the reference point.

Miscellaneous Survey Points

WATER SURFACE BELOW DEVIL'S HOLE REFERENCE POINT -- Elevation of the water surface of Devil's Hole pool in feet below the reference point.

WATER-SURFACE ELEVATION -- Elevation of the water surface of Devil's Hole pool in feet above mean sea level.

MEASURING POINT AT DEVIL'S HOLE WELL -- Red, painted dot on plate on top of casing at Devil's Hole well.

BRASS DISC NEAR POOL -- US Fish and Wildlife Service marker (???) that was established about two feet from the southwest end of Devil's Hole pool.

USGS STAFF GAGE "D" @ 0.00'--Refers to the 0.00 foot mark on staff gage "D". Gage is attached to the southwest side of the stilling well which is at the northeast edge of the rock shelf in Devil's Hole pool.

Table 1.--Description of Devil's Hole Survey Locations--continued.

Miscellaneous Survey Points--continued

USGS STAFF GAGE "D" @ 0.50' -- Refers to the 0.50 foot mark on staff gage "D".

NPS STAFF GAGE "E" @ 1.50' -- Refers to the 1.50 foot mark on staff gage "E". Gage is located about one foot southwest of the stilling well which is at the northeast edge of the rock shelf in Devil's Hole pool.

NPS STAFF GAGE "E" @ 0.00' -- Refers to the 0.00 foot mark on staff gage "E".

WOODEN WALKWAY -- Wooden walkway and observation platform located outside the fenced enclosure and above the lower Devil's Hole gate. A temporary "X" carved into the wood was a set-up point.

IRON BRACKET -- Bracket anchored to a large boulder above the southwest end of the pool. This is one of two brackets that were used in the 1970's to hold up an artificial lighting fixture over the water. The northwest corner of the bracket was surveyed.

RECORDER SHELF -- The National Park Service recorder sits on a wooden shelf and is located near the southwest end of Devil's Hole pool. The southwest corner of the shelf was surveyed.

Benchmarks

USCGS BM -- U.S. Coast and Geodetic Survey benchmark about 0.8 mile northeast of Devil's Hole. Stamped "BM-~~2488~~ 2486.7".

BM-0 -- Benchmark south of Devil's Hole; stamped "BM-2377/RBR-47". Located 1,517 feet south of BM-5.

BM-1 -- Old section benchmark southwest of Devil's Hole.

BM-2 -- Brass monument located 90 feet south of the lower gate at Devil's Hole and 248 feet southwest of BM-5.

BM-3 -- Brass monument located 129 feet northwest of BM-2 and 295 feet west of BM-5.

Table 1.--Description of Devil's Hole Survey Locations--continued.

Benchmarks--continued

BM-4 -- Brass monument above Devil's Hole inside the locked enclosure. Located 169 feet west of BM-5.

BM-5 -- Brass monument that was the set-up hub for the 1994 survey. Located east of the Devil's Hole enclosure.

BM-6 -- Brass monument located 149 feet north of BM-5.

BM-7 -- Brass cap (BLM section marker) near Devil's Hole well. The National Park Service boundary marker for the SE corner of Devil's Hole National Monument is also at this site. Located 828 feet southeast of BM-5.

BM-8 -- Brass monument at outcrop (Point of Rocks) on hillside located 1,953 feet east of BM-5.

BM-9-- Brass monument that is also the National Park Service boundary marker for the NE corner of Devil's Hole National Monument. Located 1,221 feet northeast of BM-5.

Figure 2.-- Timeline showing the establishment and/or use of reference points, benchmarks, staff gages, and water-level recorders at or near Devil's Hole.

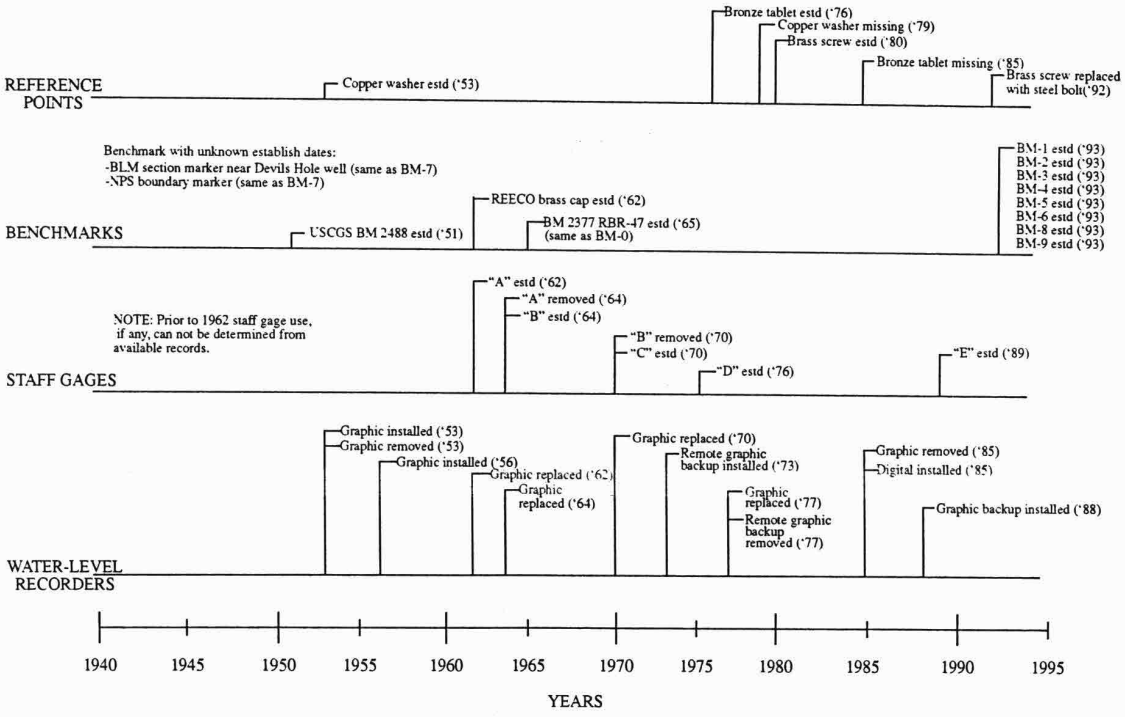
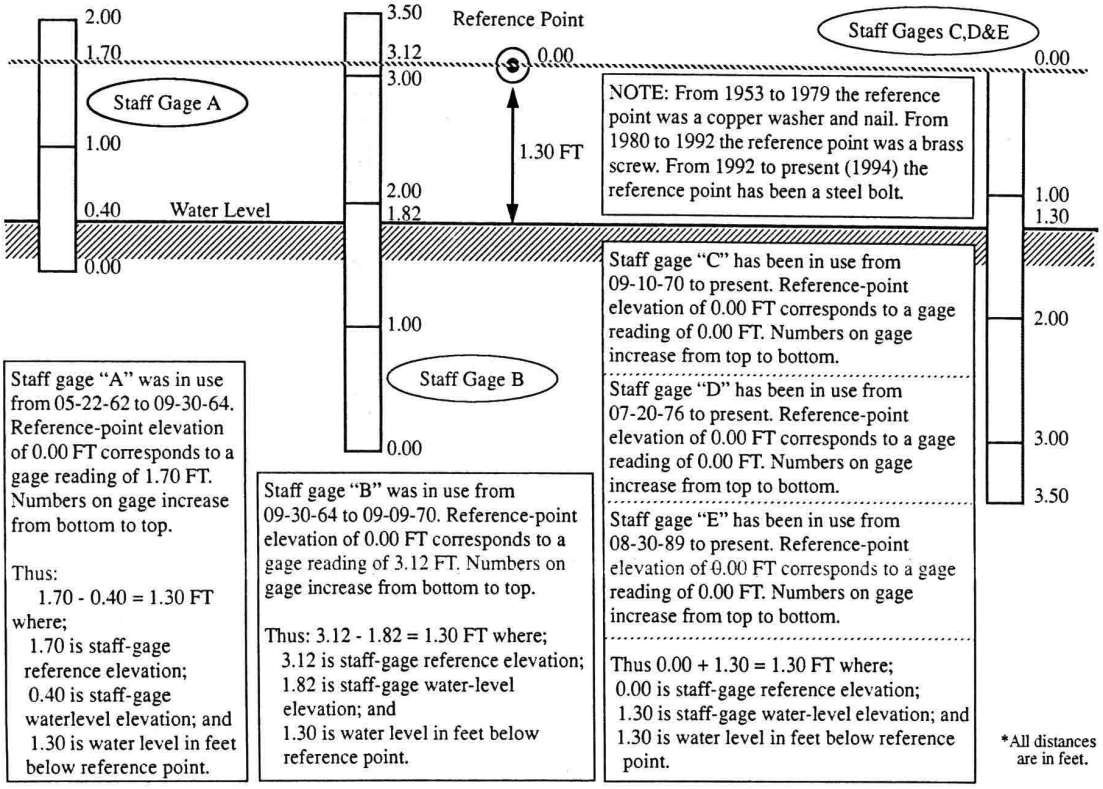


Figure 1. -- Relationship between Devil's Hole reference point and staff gages.



Dec. 1994 Duck et 2nd Williams

Table 2. --Summary of Devil's Hole surveys.

Survey Measurement Locations	1953	1962 (Reeco)	1976	1980	1989	1990	1992 (Topcon, NPS, unadj.)	1994
Reference Points								
Copper Washer	0.00[1]	2,360.05[2]	0.000[3,4]	Destroyed				
Brass Screw				0.00	2,359.912			
Steel Bolt								
"REECO" Brass Cap (2392.766)		2,392.766[3]			2,392.766[3]	(top) 2359.958 2392.766		2,359.870
Bronze/Brass Tablet			-0.312	-0.314[3]	Destroyed			Not Found
Miscellaneous Survey Points								
Water Surface below Devil's Hole Reference Point	1.43	1.18			1.87			2.042
Water-Surface Elevation	2,361	2,358.87			2,358.042			2,357.828
Measuring Point at Devil's Hole Well					2,404.900	2,404.96		2,404.920
Brass Disc near Pool					2,359.641			2,359.626[5] (depression)
* USGS Staff Gage "D" @ 0.00'			-0.101			2359.709 (1992)		
* USGS Staff Gage "D" @ 0.50'				-0.532				
NPS Staff Gage "E" @ 1.50'					2,358.411			
NPS Staff Gage "E" @ 0.00'					2,359.911[6]	2359.993		2,359.873
Wooden Walkway								2,407.878
Iron Bracket								2,365.666
Recorder Shelf								2,361.453

Footnotes:
1 - Arbitrary elevation of 0.00' was used as reference for tape-down measurement to water level below Devil's Hole reference point.
2 - Elevation computed as sum of water-surface elevation and tape-up measurement to Devil's Hole reference point.
3 - Reference location used to conduct the survey.
4 - Arbitrary elevation of 0.000' was used as reference for survey.
5 - Brass disc missing. Elevation is for imprint of brass disc.
6 - Elevation at 0.00' was computed by adding 1.50' to 2,358.411' (elevation established for staff-gage "E" at 1.50').

2321.13

Table 2. --Summary of Devil's Hole surveys -- continued.

Survey Measurement Locations	1953	1962	1976	1980	1989	1990	1994
Benchmarks							
USCGS BM							2,486.740[3]
BM-0						2,377.0 [3]	2,377.027[3]
BM-1							2,422.221
BM-2							2,416.886
BM-3							2,433.111
BM-4							2,412.054
BM-5							2,412.027
BM-6							2,430.038
BM-7					2,404.032	2,404.09	2,404.032[3]
BM-8							2,490.931
BM-9							2,434.240

Footnotes:
1 - Arbitrary elevation of 0.00' was used as reference for tape-down measurement to water level below Devil's Hole reference point.
2 - Elevation computed as sum of water-surface elevation and tape-up measurement to Devil's Hole reference point.
3 - Reference location used to conduct the survey.
4 - Arbitrary elevation of 0.000' was used as reference for survey.
5 - Brass disc missing. Elevation is for imprint of brass disc.
6 - Elevation at 0.00' was computed by adding 1.50' to 2,358.411' (elevation established for staff-gage "E" at 1.50').

Start @ Reco
+.00
to 2376.48 (47 BBL)
Measure 2372.76 Reco
Devils Hole
Measure back

Albright

TAKE PRIDE IN AMERICA

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 353
FT. COLLINS, COLORADO 80521

September 23, 1992

IN REPLY REFER TO:
L54(479)
DEVA/Water Rights

Memorandum

To: Jon Nowlin, Nevada District Chief,
U.S. Geological Survey

From: Chief, Water Rights Branch, Water Resources Division,
National Park Service

Subject: Devil's Hole Surveying (Elevation) Measurements

Since 1989, the National Park Service (NPS) has maintained a water-level monitoring program at Devil's Hole, a detached unit of Death Valley National Monument. Prior to 1989, the U.S. Geological Survey (USGS) monitored water level at Devil's Hole under a cooperative agreement with NPS.

We understand that the USGS conducted surveying (elevation) measurements at or near Devil's Hole for the purposes of establishing or checking elevations of onsite datum markers, benchmarks, and staff plates. NPS would like to obtain copies of all field notes, or equivalent information in similar format, to serve as detailed documentation regarding equipment, procedures and results for all USGS surveying measurements.

The NPS requests this information for three reasons. First, NPS recently installed a secure reference pin (steel bolt) at Devil's Hole to serve as a datum marker. This was done because the USGS-installed brass screw, the present datum marker, is sitting loosely at the base of a hole in the rock wall and no longer serves as a reliable reference. Results of USGS surveying measurements are needed by NPS to reference the elevation of the steel bolt to the elevation of the original onsite datum (copper washer and nail).

Second, since the federal reserved water right at Devil's Hole is stated as a minimum water level below the copper washer datum, it would seem prudent to assemble and interpret all surveying measurements collected so that they may be related to a common datum elevation. This is important both from a basic documentation standpoint, as well as from a data quality standpoint.

NATIONAL PARK SERVICE 75 1916 - 1991 ™

Third, there has been speculation that recent seismic activity has caused changes in the elevation of the land surface surrounding Devil's Hole. NPS would like to review all available historical surveying data that pertains to benchmarks near Devil's Hole to identify surveying tasks necessary to test this hypothesis. In this respect, data and information concerning any benchmarks that were established, or had elevations verified during the period of the USGS monitoring program would be useful.

The information needed by NPS includes surveying results obtained in 1976, 1980, 1989, and all other years in which this type of data were collected. We believe that surveying data may also have been collected at Devil's Hole in 1990, after termination of USGS water-level monitoring at the site, possibly as part of a cooperative study underway between the USGS and the Department of Energy. If such data exist, we request detailed information regarding this survey as well.

In addition to copies of field notes or equivalent information for all of the above referenced surveying efforts, NPS requests specific responses to the following questions:

1. With respect to the copper washer datum, during which surveys was the elevation of this datum surveyed? What were the results, in terms of elevation (AMSL) and associated accuracy? What procedure was used to measure elevation of the copper washer (e.g., tape-up measurements from water surface to datum marker, combined with surveyed elevations for a staff plate and a contemporaneous reading of water surface at the staff plate). What benchmarks were used, by individual survey, as a reference? What were the benchmark elevations (AMSL)? Is there any information indicating the part of the copper washer (i.e., top, middle, bottom) surveyed? Are there any photographs taken during the USGS water-level monitoring program that can be used to determine the diameter of the copper washer or that depict the surface condition of the rock wall immediately surrounding the washer?

2. Please provide us with the same information for the brass screw datum marker.

3. When and how was the copper washer datum removed? When was the brass screw installed? When did the brass screw become loose? Did the hole in the rock wall enlarge during the period of the brass screw emplacement?

4. During the period of USGS monitoring, was more than one staff plate used as the primary reference to calibrate monitoring equipment and adjust water-level records? If so, what periods of time are associated with each staff plate's use? During which surveying effort was each staff

plate surveyed, and what were the results, in terms of elevation (AMSL) for staff plate 0.00 marks and associated accuracy? What benchmarks were used, by individual surveying effort, as a reference for these measurements? What were the elevations (AMSL) associated with these benchmarks? Were staff plates ever deliberately adjusted (up or down) to effect a shift in water level reading at the staff plate? If so, what were the amounts and direction of these adjustments and when did they take place?

5. If surveying measurements, or other field evidence, indicated a discrepancy between the reference staff plate 0.00 mark and elevation of the copper washer datum for any period(s), were water-level records adjusted during data processing? Also, if discrepancies are in evidence for the time period subsequent to placement of the brass screw, what is the judgement of the USGS regarding the possibility that the staff plate 0.00 mark, not the brass screw, provides a more accurate representation for referencing the elevation of the original copper washer datum?

6. What benchmarks in the vicinity of Devil's Hole were either established or had elevations verified in support of the USGS water-level monitoring program at Devil's Hole? What were the results, by individual survey, in terms of elevation (AMSL) and associated accuracy for these benchmarks? What is the overall interpretation of the quality and accuracy of elevations for **any other** benchmarks used by the USGS to check elevations of datum markers and staff plates at Devil's Hole? What has the USGS's experience been with respect to earthquakes affecting water levels (either short term or long term) in this vicinity?

We appreciate your assistance in this matter. If you have any questions, please contact me or Jeff Albright of my staff at (303)493-1441.

Owen R. Williams

cc: WR - Kolipinski
DEVA - Superintendent
LVVWD - Katzer
SOL - Mihan, Palmer
479 - Kimball, Acting Program Coordinator, Jackson, Walsh, Johns, Christensen, Albright

John

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

IN REPLY REFER TO:

April 2, 1990

L54(479)
DEVA/Water Rights

Memorandum

To: Superintendent, Death Valley National Monument

From: Chief, Water Rights Branch

Subject: Water Level Monitoring at Devil's Hole

As you are aware, the Water Rights Branch (WRB) and Death Valley National Monument (DEVA) staff have completed installation and startup of water level monitoring equipment at Devil's Hole. The equipment is being operated by DEVA staff. After initial processing at DEVA, data is sent to the WRB for completion of processing and storage. The WRB is preparing a monitoring plan which will document, among other things, equipment operation and data recording and analysis. This monitoring plan is scheduled for completion by June 30, 1990.

In the interim, the enclosed materials will facilitate site operation at Devil's Hole, and initial data processing actions being done at DEVA. It is anticipated that these materials will be incorporated in the Devil's Hole monitoring plan. Included are: 1) "SITE OPERATION PROCEDURES", 2) field data forms, consisting of "START OF DATA CARD FILE" and "END OF DATA CARD FILE", 3) "GUIDELINES FOR PROCESSING DATA FROM STEVENS A/F DATA LOGGERS, 4) "DATA PROCESSING NOTES" form, and 5) a floppy diskette of the programs used to process electronic data.

Data processing actions conducted by WRB upon receiving data include review of paper chart data from the Steven's recorder, processing and review of electronic data from the Stevens data logger, compilation and archival of hard copy documentation for data collection and processing activities, archival of electronic and hard copies of raw data, and archival of electronic copies of reduced data files for plotting and analyis.

Similar data processing procedures will be necessary for electronic data collected from equipment at Nevares, Texas, and Travertine monitoring sites as part of the Bond Gold monitoring project. The WRB is preparing data management guidelines which will coordinate data collection, analysis, and reporting for information obtained from Devil's Hole, springs, monitoring wells, and other sites in the vicinity of DEVA.

Also enclosed for your information are plots indicating Devil's Hole water level for August 30, 1989 through January 31, 1990. These plots can be readily produced from electronic data files produced by data processing procedures described in the enclosed attachments. Please note that these plots are preliminary only, they are not intended for publication, or to serve as an official reporting of water level at Devil's Hole.

If you have any questions, please contact Jeff Albright at (303) 221-8306.

for Owen R. Williams
Chief, Water Rights Branch

Attachments

cc: WR - Kolipinski (w/o attachments)
DEVA- Essington, Coonan (w/o attachments)
479 - Pettee, Johns, McGlothlin (w/o attachments)

United States Department of the Interior

NATIONAL PARK SERVICE
DEATH VALLEY NATIONAL MONUMENT
DEATH VALLEY, CALIFORNIA 92328

IN REPLY REFER TO:



L54(479)

March 14, 1990

Memorandum

To: Chief, Water Rights Branch

From: Superintendent, DEVA

Subject: Protocol - DEVA's Water Monitoring Programs.

The Water Resources Division has provided immeasurable assistance to DEVA over the past two years. That assistance has resulted in the formal protests of a veritable host of recent water appropriation applications and both the design and installation of water monitoring programs. The programs are designed to provide essential baseline data and early detection of negative impact to ground water aquifers supplying the springs of DEVA thereby allowing for timely and effective NPS response.

The long term maintenance of the water monitoring programs is essential to the protection of DEVA's water resources and carries with it legal and professional responsibilities. While DEVA's Resources Management Division is fully prepared to assume the responsibility of the long term maintenance of the monitoring program, we believe the in depth data analysis and final reporting of the data is better suited for completion by the professional hydrology staff of WRD. We wish, therefore, to call upon the services of the WRD for such further assistance with the program.

Discussions with members of our respective staffs have concluded a preference of having all primary data storage, analysis and formal periodic report preparation by WRD. DEVA will maintain duplicate files as required and conduct some data analysis for its internal needs. The raw data supplied by DEVA will require conversion and analysis by the professional hydrologists of WRD. It is expected that WRD will provide the superintendent DEVA, State Engineer, Bond Gold, U.S.G.S with no less that quarterly reports of the spring flow and level data. Specialized reports addressing specific aspects of the program, response to selective inquiries or distribution of essential information derived from the analysis of the data will also be provided by WRD. It may be advisable to consider an annual publication of the data for public record in consideration of the significance of water issues to this region.

WRD, in addition to the Resources Management Division, DEVA, will provide the superintendent with recommendation for management action or decisions to be taken by the superintendent. We trust this protocol will be acceptable to you and your staff. If you visualize modification to these suggestions please provide us with your input. We look forward to a continued excellent working relationship between our respective staffs.

Sincerely,

Edwin L. Rothfuss
Superintendent

cc: Meiteck Kolpinski, WRO

Owen -
do this something we should commit to
or would it be better handled through contract.
Lets - discuss

Stan

Jan
File w/ Deva / water Rights.

4/4/90

Stan, FYI
Chuck
Dan FYA & Follow up
Monitoring Plan stuff

If/when # from WR instructions come these, we can contract this work out

J.A. Should be able to handle all data reductions as it comes in.

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
L54(479)
WR/DEVA

September 25, 1989

Memorandum

To: Regional Director, Western Region

From: Chief, Water Resources Division

Subject: Trip Report for Travel by Jeff Albright to Death Valley National Monument, August 27-31, 1989

A trip report concerning travel by Jeff Albright to Death Valley National Monument is attached. The purpose of the trip was to install water level monitoring equipment at Devil's Hole.

If you have any questions, please call Jeff Albright or Owen Williams at (303) 221-8306 or (303) 221-8301, respectively.

Stanley J. Parce

Attachment

cc: DEVA - Superintendent, Essington, Coonan
WR - Kolipinski
WRD - Johns

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

TAKE PRIDE IN AMERICA

IN REPLY REFER TO:
L54(479)
WR/DEVA

September 5, 1989

Memorandum

To: Chief, Water Resources Division S. Power 9/26/89

Thru: Chief, Water Rights Branch 9/26/89

From: Jeffrey S. Albright, Hydrologist, Water Rights Branch

Subject: Trip Report for Travel by Jeff Albright to Death Valley National Monument, August 27-31, 1989

PURPOSE: The purpose of the trip was to install water level monitoring equipment at Devil's Hole.

ITINERARY: Departed Fort Collins for Death Valley National Monument (DEVA) on August 27, 1989. Site installation was completed August 31, 1989.

CONTACTS: Mel Essington, Mining Engineer, DEVA
Tim Coonan, Resource Management Specialist, DEVA
Joe Barala, Mine Safety Crew, DEVA
Roger Reynolds, Applications Engineer, Leupold & Stevens, Inc.

DISCUSSION: From August 28-30, 1989, Essington, Coonan, Barala, and I installed water level monitoring equipment at Devil's Hole. Reynolds arrived at Devil's Hole on August 30 to assist startup of monitoring equipment and to provide technical information on operating procedures. Water level monitoring with the new equipment commenced on this date. Reynolds demonstrated downloading of automated data files from the data logger to a portable computer on August 31. On this same date, Reynolds and I made separate visits to Devil's Hole to verify that the monitoring equipment was functioning correctly.

Some minor aspects of installation are yet to be completed. Remaining tasks include: improving site appearance (e.g., painting the newly installed equipment), securing equipment against vandalism, and installing different gears in the recorder to increase water stage resolution of the paper chart record. A determination was made of the supplies needed to complete remaining tasks. Essington indicated that DEVA staff would follow through on completing them.

Essington and I also discussed the need for a formal survey of the current USGS and newly installed NPS staff gauges relative to the reference datum at Devil's Hole. As part of the same survey, the elevation of the reference datum should be verified relative to an established geodetic survey benchmark.

ACTION ITEMS:

1. Paint equipment as necessary to minimize visual impact of the new installation. Construct and install a locking cover to secure the recorder and data logger against vandalism. Braze or otherwise attach a cross-piece to the pulley assembly on the middle rock bolt to prevent the float cable from being pulled away from the pulley support. Braze or otherwise attach hardware cloth to the ventilation holes on the battery lock-box. Install battery terminal connectors to wire leads inside the battery lock-box. Install gears (being sent from manufacturer) to improve resolution of the paper chart record. Responsible party: Essington. To be completed by October 31, 1989.

2. Arrange for a formal survey of the brass screw that marks the location of the former copper washer at Devil's Hole, and of the vertical placement of USGS and NPS staff gauges relative to the brass screw. The survey should include the installation of a new benchmark in the immediate vicinity of the monitoring equipment. Responsible parties: Essington/Albright. To be completed by November 30, 1989.

3. In conjunction with Action Item #2, the two NPS gauge's 0.00' elevation marks will be adjusted, by surveying, to agree with the level of the brass screw. Responsible party: Essington. To be completed by December 15, 1989.

Jeffrey Albright

06-26-1989: memo from acting chief, water resources division; subject: trip report for travel to death valley national monument. ; j

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

June 26, 1989

IN REPLY REFER TO:

L54(479)
WR/DEVA

Memorandum

To: Regional Director, Western Region

From: Acting Chief, Water Resources Division

Subject: Trip Report for Travel by Jeff Albright and Jacquie Nolan to Death Valley National Monument on June 6-8, 1989

A trip report concerning travel by Jeff Albright and Jacquie Nolan to Death Valley National Monument (DEVA) is attached. The purpose of the trip was to make field measurements in preparation of an equipment installation plan for water level monitoring at Devil's Hole. Also, documentary slides were taken of springs within the monument and of sites of proposed and existing water-use developments outside the monument. The slides will be used in presentations by the Water Rights Branch Chief.

If you have any questions, please call Jeff Albright or Owen Williams at (303) 221-8306 or (303) 221-8301, respectively.

Attachment

cc: DEVA - Superintendent, Essington
WR - Kolipinski
WRD - Jackson, Johns, Nolan

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

TAKE PRIDE IN AMERICA

June 9, 1989

IN REPLY REFER TO:

L54(479)
WR/DEVA

Memorandum

To: Chief, Water Resources Division

Thru: Chief, Water Rights Branch

From: Jeff Albright, Hydrologist, Water Rights Branch

Subject: Trip Report for Travel to Death Valley National Monument on June 6-8, 1989.

PURPOSE: The purpose of the trip was to make field measurements in preparation of an equipment installation plan for water level monitoring at Devil's Hole. Also, slides were taken of springs within the monument and of sites of proposed and existing water-use developments outside the monument. The slides will be used in presentations by the Water Rights Branch Chief.

ITINERARY: Jacquie Nolan and I departed Fort Collins for DEVA on June 6, 1989. We completed field measurements and documentary photography during the period of June 6-8, returning to Fort Collins on June 8.

CONTACTS: Mel Essington, DEVA

DISCUSSION: Upon arrival, Nolan and I met with Essington at Devil's Hole on June 6 to discuss equipment installation. That same day, Essington assisted us in locating water use developments for photographic documentation. On June 7, Essington, Nolan, and I made field measurements at Devil's Hole. Nolan made preliminary sketches that incorporated these measurements.

We also determined that two issues need to be resolved. First, the original water-level datum (copper washer), referred to in court decisions concerning the Devil's Hole Federal reserved right, has been missing for some time. The point where the washer was located needs to be determined. Second, two alternative designs for equipment installation were identified. Information from the equipment manufacturer will be needed to determine which design will be used.

On June 8, Nolan and I visited water sources within the monument for photographic documentation.

ACTION ITEMS:

1. Contact the U.S. Geological Survey for documentation on the original location of the copper washer at Devil's Hole. Responsible party: Jeff Albright. To be completed by June 29, 1989.

2. Contact the equipment manufacturer to obtain information pertaining to equipment installation design. Responsible party: Jeff Albright. To be completed by June 29, 1989.

3. Prepare the installation plan and sketch map for water level monitoring at Devil's Hole. Responsible parties: Jeff Albright and Jacquie Nolan. To be completed by July 14, 1989.

Jeffrey Albright

Jeffrey Albright
JA
Alice Johns
Owen Williams

May 30, 1989

L54(479)
WR/DEVA Water Rights

Memorandum

To: Superintendent, Death Valley National Monument

From: Chief, Water Rights Branch

Subject: Recommended Monitoring Equipment for Devil's Hole (Response to Your Memorandum of May 1, 1989)

The following is in response to your memorandum of May 1, 1989, in which you indicated your concurrence with the recommendation of Option 3, a Stevens A-71 Chart Recorder, and posed several questions concerning equipment installation. Those questions, in summary, were as follows:

1. Is a calibration period necessary?

2. Will the Water Resources Division (WRD) provide to Death Valley National Monument (DEVA) the specifications and drawings of the new equipment needed?

3. What measures can be taken to minimize visual and other impacts?

4. Will the new monitoring equipment occupy the same space as the present U.S. Geological Survey (USGS) monitoring equipment?

In response to the first question, it is my recommendation that the USGS equipment remain onsite at least until the end of the fiscal year, if at all possible. This will not only provide a period of calibration, but will also minimize the risk of data loss during the transition from USGS to National Park Service monitoring by allowing DEVA staff to become familiar with the new equipment while an independent back-up system is in operation. However, full resolution of this question is dependent upon the resolution of questions 3 and 4, discussed below. The second question is also addressed in the following discussion.

In response to questions 2, 3, and 4, I feel it necessary for WRD staff to make a site inspection of Devil's Hole to better address these questions. Following the site visit, an equipment installation plan will be prepared by the WRD for approval by DEVA. This plan will list equipment specifications,

indicate where equipment support and access structures need to be placed, and suggest possible construction methods to meet these needs with minimum visual impact. A conceptual sketch of the installation will be included. Determination of specific construction materials and methods will require interaction between WRD and park maintenance staff. The services of park staff will also be needed for constructing and installing the necessary support structures. WRD will, of course, cover associated costs. If this is acceptable to you, Jeff Albright of my staff will contact Mel Essington to coordinate the site visit.

WRD would also like to advise DEVA of the possibility of extra assistance from Stevens Water Resources Products for installing and troubleshooting their chart recorder and data logger equipment. The company has indicated a desire to assist in this application of their equipment to the harsh DEVA setting--for commercial reasons, I am sure, but at no cost to NPS. DEVA would benefit from this arrangement in the case where high temperatures, dust, or other environmental extremes cause equipment malfunction requiring specialized troubleshooting procedures and equipment modification. The manufacturer would benefit by, among other things, citing the DEVA installations as an example of the ability of their equipment to provide reliable data under extreme environmental conditions. If you are interested in pursuing such an arrangement with Stevens Water Resources Products, we will provide you with additional information.

Please contact me or Jeff Albright at (303) 221-8301 or (303) 221-8306, respectively, if you have any further questions.

Alice Johns

cc: WR - Kolipinski
DEVA - Aardahl, Essington
WRD - Ponce, Jackson

FNP:JAlbright:bv:221-8306:05/23/89:WANG #203
Revised:FNP:JALBRIGHT:jr:221-8306:05/30/89:WANG #501

Johns

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

March 28, 1989

IN REPLY REFER TO:

L54(479)
DEVA/Water Rights

Memorandum

To: Superintendent, Death Valley National Monument

From: Acting Chief, Water Rights Branch, Water Resources Division

Subject: Recommended Monitoring Equipment for Devil's Hole

The attached Hydrologist's Summary, which includes an Executive Summary, presents three instrumentation options and indicates the Water Resources Division's recommended option for monitoring water level in Devil's Hole. Please review and indicate your agreement by signing below.

If you have any questions, or wish to discuss any of the options further, please contact me at (303) 221-8301.

Alice E. Johns

Attachment

cc: DEVA - Aardahl, Essington, Coonan (w/attachment)
WRB - Johns, Albright, Hughes (w/attachment)

___ Approved _____
Signature

___ Disapproved _____
Date

HYDROLOGIST'S SUMMARY

INSTRUMENTATION ALTERNATIVES FOR

DEVIL'S HOLE WATER LEVEL MONITORING

DEATH VALLEY NATIONAL MONUMENT

March 17, 1989

Executive Summary

Three instrumentation options for monitoring water level in Devil's Hole are reviewed in terms of equipment selection criteria. Individual options were selected to represent different measurement technologies: Option 1 utilizes electronic measurement and data recording; Option 2 relies on mechanical sensing and data recording; and Option 3 combines both electronic and mechanical components and produces two data records, one electronic and one mechanical. Each option has particular strengths and weaknesses relative to the equipment selection criteria. The recommended system is Option 3, which provides the most integrity for data collected while emphasizing quick identification of short-term trends and less complicated maintenance of site equipment.

The Water Resource Division (WRD) has committed to assisting Death Valley National Monument (DEVA) staff in developing a water level monitoring program to protect the Federal reserved water right for Devil's Hole. The National Park Service (NPS) will implement and maintain the program according to guidelines set forth in the Devil's Hole Monitoring Plan prepared by WRD. WRD has responsibility for recommending, purchasing, and installing equipment; training DEVA staff in equipment operation, maintenance, and other data collection procedures; and analyzing data and preparing annual reports. DEVA has responsibility for operating equipment and collecting data, and maintaining the equipment in proper working order.

The goal of the monitoring program is to assure that the mean daily water level in Devil's Hole does not fall below the level associated with the reserved water right for Devil's Hole (2.7 feet below a copper washer) as defined by the U.S. District Court on March 23, 1978. Equipment selection criteria were chosen to incorporate this goal and to reflect other important monitoring considerations. The chosen selection criteria are listed below.

A. Minimize threats (of monitoring activity) to the Devil's Hole pupfish, and other flora and fauna at Devil's Hole.

B. Tolerate airborne dust and extremely high and moderately low temperatures.

C. Operate in a manner that facilitates data analysis for timely detection of threats.

D. Provide water level measurement accuracy to at least +/- 0.05 feet.

E. Minimize time and technical expertise required to maintain the equipment.

F. Be consistent with past U.S. Geological Survey (USGS) measurement frequency and accuracy to facilitate easy data comparison.

G. Minimize visual impact of monitoring equipment.

Three instrumentation options were considered for monitoring the water level in Devil's Hole. Option 1 is essentially an all electronic set-up, utilizing a portable data logger to provide monitoring control and data processing, a sensor to measure water level, and removable data storage modules to provide electronic data storage between site visits.

Option 2 is a mechanical set-up, using a float and tape connected to a pulley and gear assembly on a chart recorder to provide a continuous record of water level on a paper chart.

Option 3 combines elements of the first two options. It would use a chart recorder (Option 2), but would also incorporate a digital shaft encoder attached to the recorder's pulley and gear assembly and a simple data logger to provide electronic data storage on removable modules (Option 1). This option would provide both an electronic and a backup paper chart record of water level.

The three options represent alternative approaches to data collection, each having particular strengths and weaknesses relative to the selection criteria. Options will be discussed individually, followed by the WRD's recommended option for monitoring the water level in Devil's Hole.

Option 1

This approach relies on electronic measurement and data recording. Several commercial data loggers representing different levels of sophistication and cost were considered, and two, which appeared to best meet the selection criteria, were examined in greater detail. Different types of water level sensors were considered. Among those, a pressure transducer was judged to be most suited to the selection criteria. The following comments are ordered by selection criteria.

A. With special precautions to isolate and secure the battery power supply, Option 1 should protect against contamination of Devil's Hole surface water by leakage or vandalism, thus meeting Criterion A.

B. Because of electronic components, all data loggers can malfunction or be damaged by hot, dusty conditions that are typical at Devil's Hole. Exposure to dust can be avoided by careful enclosure of the data logger. Similar measures can be taken to protect the data logger against heat extremes. It is not clear whether data storage modules can be relied on at the same high temperatures. If modules periodically fail during hot summer periods, important data would likely be lost because most data loggers do not provide a backup data record. Option 1 may meet this criterion, but evaluation requires field operation for a period of time to provide repeated and extended exposure to typical environmental extremes. Criterion B is either met only in part or with qualifications.

C. Data can be easily transferred from the data storage module to a computer data base. Routine management of the computer data base would be fairly easy, unless electronic "noise" or other factors affect recorded data values, thereby, compromising data integrity and requiring adjustment of the computer data base. Correcting data in these cases is often problematic due to difficulty in determining the cause of error and the proper correction factor.

Computer processing of electronic data bases is required to produce a graphic record. Therefore, DEVA personnel could not easily identify short-term trends at the time of the site visit. This may also lengthen the period of data loss, because some types of malfunctions would not be apparent without visual reference to the data record.

A data logger would provide capability to incorporate a communication system where data could be transmitted by radio frequency or direct phone link. This would allow DEVA personnel to establish computer communication with the data logger to inquire about current water level or values recorded since the last site visit. The data logger could also be programmed to call a computer at DEVA if a critical water level occurs.

Option 1 receives a mixed evaluation for Criterion C. If all components function correctly, it would meet them quite well. If the extreme environmental conditions cause instrumentation problems, data processing could require substantial time and the quality of the data base could be greatly compromised.

D. Option 1 meets Criterion D. Accuracy cannot be ascertained without conducting measurement trials under typical field conditions, but instrument specifications suggest measurement accuracy should be at least as good as +/- 0.05 feet.

E. Field equipment would be serviced once monthly. Routine operation would be fairly simple and quick. To the extent that malfunctions occur, Option 1 would likely require more time and expertise to troubleshoot than the other options due to the "black box" nature of electronic equipment. Identification of problems may not occur until processing of data from the previous site visit. Repairs under this option would usually be more expensive and more likely to require manufacturer service. Data loss could also occur due to technician error. While Option 1 may meet Criterion E, complete evaluation would require actual field use for a period of time.

F. Option 1 provides measurement frequency consistent with USGS monitoring at Devil's Hole. While it would not match the +/- 0.01 foot accuracy of USGS monitoring, for most purposes of comparison, Option 1 would adaquately meet Criterion F.

G. It may be possible to locate the data logger and pressure transducer entirely out of the sight of Devil's Hole visitors. For this reason, Option 1 minimizes visual impact better than the other options. Criterion G is therefore met.

Option 2

This approach relies on mechanical measurement and data recording.

A. Option 2 meets Criterion A to the same degree as for Option 1.

B. Option 2 should tolerate the temperature extremes expected, although pen cartridges, which provide the ink trace on the chart, could be vulnerable to drying out during heat extremes. Dust contamination should not be a problem. Therefore, Option 2 should meet Criterion B.

C. Creating a computer data base would require manual interpretation and recording of values from the chart record. The resulting data base would not likely be as detailed, and calculated daily mean values possibly not as precise as for Option 1. Faulty data values could be corrected in some cases, depending on the cause of the malfunction. As with Option 1, no backup data record would be provided. While no remote communication system is possible for this option, the paper chart record would allow DEVA personnel to identify significant short-term trends at the time of the site visit. Therefore, Option 2 should meet Criterion C.

D. Option 2 meets Criterion D, and instrument specifications suggest measurement accuracy could be as good as +/- 0.01 feet.

E. Field equipment would be serviced once monthly. Routine operation would be fairly simple and quick. Because this option relies on mechanical linkages, less time and skill should be required to identify and repair

malfunctions for Option 2. Spare parts could be available at DEVA for most types of repairs and additional site visits to make repairs are less likely. Data loss could still occur due to technician error. Nevertheless, Criterion E is met.

F. Option 2 provides measurement frequency and accuracy consistent with USGS monitoring, meeting Criterion F.

G. Option 2 would result in about the same visual impact as present USGS monitoring at Devil's Hole, although the number of recorder devices would be reduced from the present two to only one. Criterion G is, therefore, only met in part.

Option 3

This approach combines electronic and mechanical components to measure and record water level, but uses a different data logger, water level sensor, and chart recorder than are used in the other options. For Option 3, the electronic data collected from a digital shaft encoder would serve as the primary data record. The chart record would provide a visual reference (of equipment performance and short-term trends) to DEVA personnel during site visits, and act as a backup record when necessary.

A. Criterion A is met to the same extent it was in Option 1 and 2.

B. Heat sensitivity is the same as Options 1 and 2. The digital shaft encoder is moderately sensitive to contamination by dust because of the manner in which it is mounted on the chart recorder. Option 3 appears to meet Criterion B, however, verification requires field evaluation for a period of time to provide repeated and extended exposure to typical environmental extremes.

C. Option 3 is similar to Option 1 for this criterion. A chart record should be available in most cases if the electronic record is faulty or lost due to equipment malfunction. However, the electronic and chart recording systems rely on the same power supply and float and tape drive assembly, so some types of equipment failure would cause loss to both records. This option does, however, allow on-site determination of short-term trends.

Option 3 could be upgraded with a direct phone link communication system to provide opportunity for retrieval of current water level data. No emergency call-out feature would be feasible for this option. Option 3 meets Criterion C.

D. This option will meet Criterion D.

E. With a monthly site visit frequency, use of a dual recording system would require only slightly more time for routine equipment servicing. In the event of equipment malfunction, DEVA personnel would not be under as much pressure to immediately diagnose and correct the problem, provided that both recording systems were not disabled. As with the other options, data loss could occur due to technician error. Option 3 meets Criterion E better than the other options.

F. Option 3 would be consistent with USGS frequency and accuracy of monitoring at Devil's Hole, meeting the requirements of Criterion F.

G. Option 3 has the same visual characteristics as Option 2. Therefore, Option 3 partially meets the requirements of Criterion G.

Recommendation

At the present time, the equipment selection criteria are best satisfied by a single cost-effective and reliable measurement system at Devil's Hole. More intensive and sophisticated monitoring, possibly involving additional measurement sites, could become warranted as new information about area ground water conditions becomes available, or if a reduction in water level at Devil's Hole is detected. A remote communication link is currently not cost effective, but could be a desireable addition in the future.

Option 3 is recommended as the best alternative to meet the objectives of the NPS monitoring program at Devil's Hole. It is partly-mechanical, which should make it easier for DEVA personnel to identify and correct equipment problems. It also provides an electronic data base for ease of data processing under routine conditions. The likelihood of lost or impaired data is reduced for some types of malfunctions with a backup record. For these reasons, Option 3 is judged to be the most reliable and to provide the greatest integrity for data collected. In addition, this option has a remote communication capability.

Option 1 is not recommended for two important reasons. First, we could not adaquately determine how well the electronic equipment will function under the severe environmental conditions expected. Second, this more sophisticated option would also require more effort on the part of DEVA and WRD staff to ensure effective identification and resolution of instrument malfunctions. These problems are significant because the option does not provide a backup data record. Installing an independent chart recording system at Devil's Hole would resolve these problems and result in even more reliability and integrity than for Option 2, but would be a more costly and somewhat more complicated arrangement to operate than Option 2. The clear advantages of Option 1 are the superior capability for remote communications and the lesser visual impact associated with site monitoring.

Option 2 is the least sophisticated system, making it desireable from a maintenance standpoint, which may result in less data quality problems than for Option 1. However, this option does not provide a backup data record. In addition, Option 2 would not allow a remote communication ability.

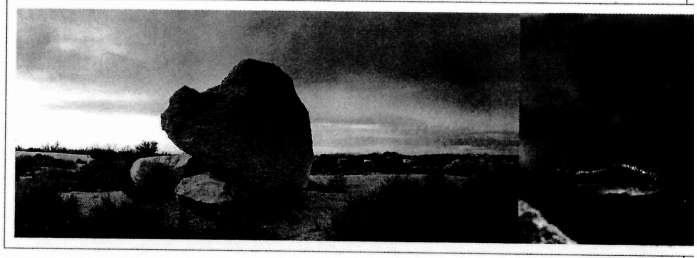
Jeffrey Albright

Jeffrey Albright
Hydrologist, Water Rights Branch
Water Resources Division

Nature Conservancy M agzine, Spring 2002

Land of Tiny Giants

TO THE EYES OF DON SADA, an aquatic ecologist at the University of Nevada's Desert Research Institute in Reno, hugeness describes an area the size of a desktop. That's the size of a spring in the Mojave Desert that harbors the entire distribution of a certain species of snail. // The desert is speckled green by such little oases, many holding their own unique brands of animal forged by unwavering isolation over the post-Pleistocene millennia. Sada and an obscure cadre of spring-snail specialists have helped describe about a hundred new species in just the past few years. Nevada, the driest state in the nation, boasts the country's record diversity of aquatic mollusks—most all of them found in springs bridgeable in one stride by the average-legged biologist.



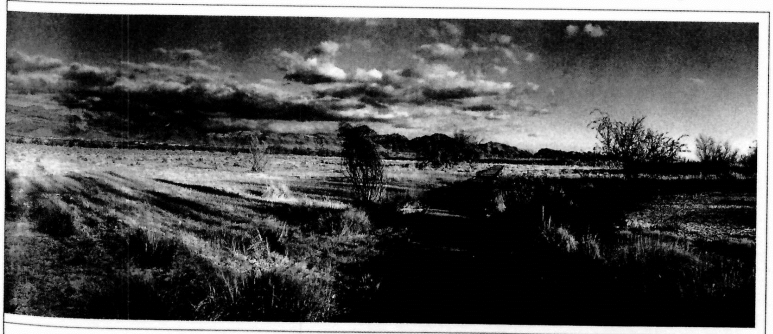
Such little fountains of endemism come together in one particularly famous cluster 40 miles east of Death Valley, along the California-Nevada border. Ash Meadows is a complex of some 50 springs and seeps, harboring its own line of biota. Ten snails, eight plants, five fish, two insects and one mammal are Ash Meadows specialties. Their individual ranges are wincingly small—some on the order of 10 acres, others of bathtub dimensions.

When, in the late 1970s, developers threatened to tap the aquifer that feeds the springs, biologists with the U.S. Fish and Wildlife Service and The Nature Conservancy set to work delineating a more comprehensive boundary of protection.

That boundary, ordered under hurried deadline, was drawn by one man, on foot. Sada, a distance runner, donned his sneakers and began running a lap around the pools of aquatic animals and pockets of rare plants. He ran until he had encircled them all. Sada's circle stands today as the official boundary of the 22,000-acre Ash Meadows National Wildlife Refuge.

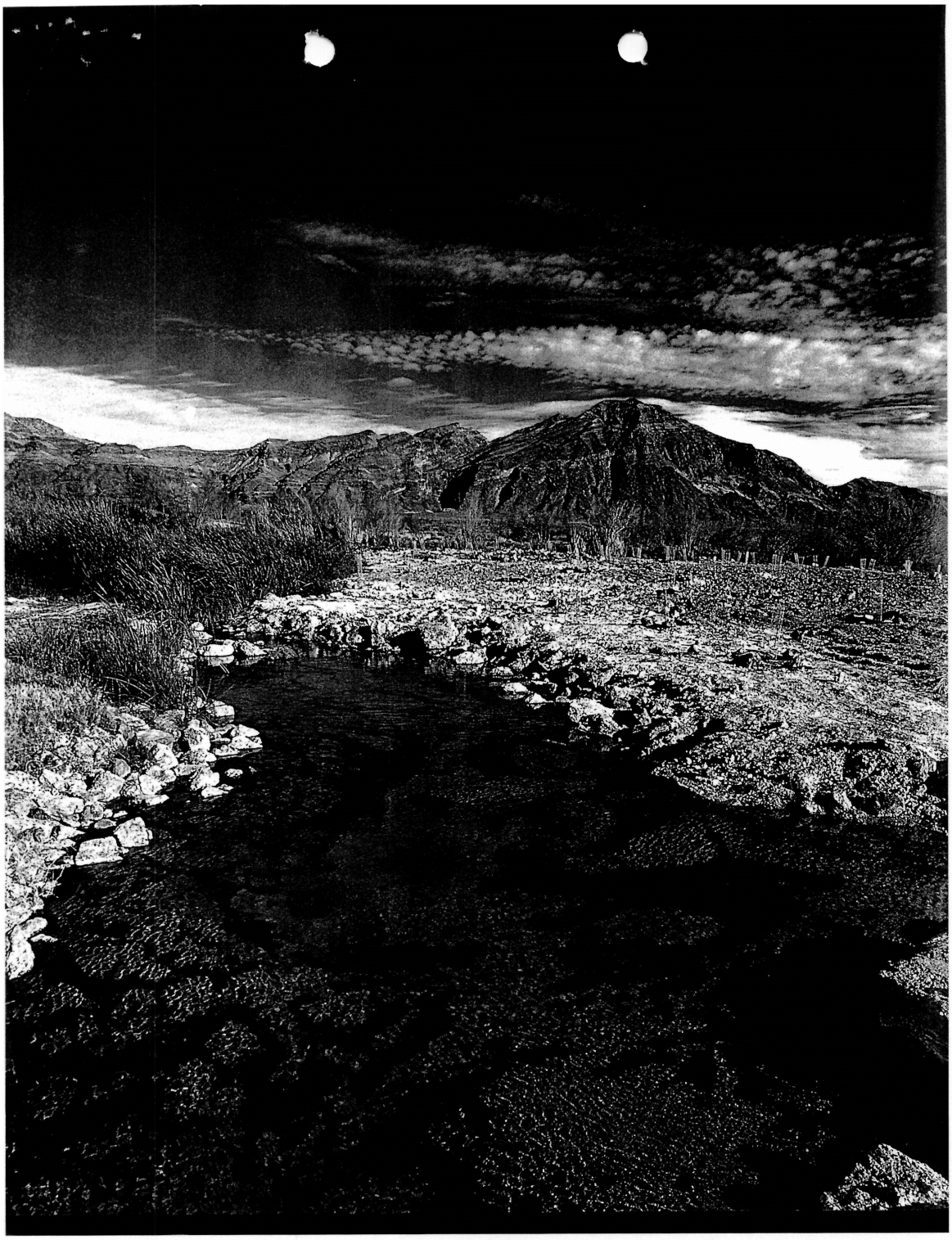
Small by many standards of modern sanctuary, the tiny pools of Ash Meadows loom disproportionately large on the weight of their biological cargo. Each has living entities like no other place on Earth. Each carries the caution: Drain this pool, drain 30,000 years of evolution.

According to Sada, there are many more like them going unnoticed. They are conservation's "little orphan sites," overlooked in the increasing haste for grander prizes. Though there are many good reasons for going large, there remain many more for keeping one eye trained for things small. Either way, says Sada, "you have to be guided by the life."



PHOTOGRAPHS (LEFT TO RIGHT) © MACDUFF EVERTON; MACDUFF EVERTON; MACDUFF EVERTON; MICHAEL ANDREWS/ ANIMALS ANIMALS

Where water springs from the desert, small miracles happen. Stubborn remnants of wetter times in the Pleistocene, the pools of Nevada's Ash Meadows have cradled snails and plants and little fish in the evolutionary crucibles of time and isolation, breeding distinction. Ash Meadows is the United States' epicenter of endemism; more forms of life are peculiar to here than to anywhere else. Its most famous creation, the Devil's Hole pupfish (ABOVE RIGHT), lives in a pool measuring 10 by 14 feet, the smallest range of any known vertebrate.



United States Department of the Interior

NATIONAL PARK SERVICE
DEATH VALLEY NATIONAL MONUMENT
DEATH VALLEY, CALIFORNIA 92328

IN REPLY REFER TO:
L54 (479)
DEVA/Water Rights

Memorandum

To: Chief, Water Resources Division

From: Superintendent, Death Valley National Monument

Subject: Water Level Monitoring Program, Devil's Hole

As discussed between Owen Williams, WRD, and Don Tiernan, DEVA, on December 15, the action plan as detailed in your memo of December 12, is acceptable to us. We look forward to working with you.

Edwin L. Rothfuss

Alice

December 12, 1988

L54 (479)
DEVA/Water Rights

Memorandum

To: Superintendent, Death Valley National Monument

From: Chief, Water Resources Division

Subject: Water Level Monitoring Program, Devil's Hole

At a meeting in the summer of 1988, you expressed to me your concerns regarding the U.S. Geological Survey monitoring program at Devil's Hole, and in particular the program's $20,000 annual cost.

The WRD has commited to assisting DEVA in developing a monitoring program at Devil's Hole which would be conducted by the NPS. The WRD has prepared an action plan to investigate the monitoring needs and obligations at Devil's Hole and to complete monitoring and installation plans (attached). The recommended monitoring plan would provide for data collection by DEVA resource management staff, with the WRD purchasing and installing equipment, analyzing the collected data, and providing training to DEVA staff in data collection and equipment maintenance.

If the action plan is acceptable to you I will proceed accordingly. Please contact Owen Williams at (303) 221-8301 by December 19, 1988, with your comments.

Stanley L. Ponce

Attachment

cc: WRD, WRB - Williams
WR - Kolipinski, Huddleston
DEVA - Tiernan

PNP:AJOHNS:jr:221-8304:12/09/88:WANG #171

ACTION PLAN

WATER LEVEL MONITORING PROGRAM

DEVIL'S HOLE

DEATH VALLEY NATIONAL MONUMENT

Water Rights Branch
Water Resources Division
National Park Service
301 S. Howes Street
Fort Collins, Colorado 80521

Prepared By:

Alice E. Johns — Hydrologist — 12/12/88 — Date

Recommended By:

O-R Williams — Water Rights Branch Chief — 12/12/88 — Date

Approved By:

Stanley L. Pence — Water Resources Division Chief — 12-13-88 — Date

ACTION PLAN

WATER LEVEL MONITORING PROGRAM

DEVIL'S HOLE
DEATH VALLEY NATIONAL MONUMENT

INTRODUCTION

In 1952, a 40-acre tract of land encompassing Devil's Hole was reserved and added to Death Valley National Monument. Devil's Hole contains the Devil's Hole Pupfish "...a peculiar race of desert fish, and zoologists have demonstrated that this race of fish, which is found nowhere else in the world, evolved only after the gradual drying up of the Death Valley Lake System isolated this fish population from the original ancestral stock that in Pleistocene times was common to the entire region, and WHEREAS the said pool is of such outstanding scientific importance that it should be given special protection ..." (Presidential Proclamation 2691; F.R. Doc. 52-953; January 22, 1952).

In 1968, the Cappaerts, owners of a nearby ranch, began pumping ground water about 2.5 miles from Devil's Hole. Thereafter, the water level in Devil's Hole began dropping. Devil's Hole contains a shallow shelf upon which algae grows and the Devil's Hole Pupfish breeds. In 1970, 1971, and 1972, water levels dropped below the level which inundates the shelf; thus the continued existence of the pupfish was threatened. In 1971, the United States sought an injunction in U.S. District Court to limit the Cappaerts' pumping. The District Court held that the water level could not drop more than 3 feet below a copper washer which served as a datum. The District Court's decision was appealed to the U.S. Court of Appeals and then the U.S. Supreme Court.

The United States Supreme Court, affirmed the lower Courts' findings (Cappaert et al. v. United States, et al., Civ. No. 74-1107; June 7, 1976) and held that "...as of 1952 when the United States reserved Devil's Hole, it acquired by reservation water rights in unappropriated appurtenant water sufficient to maintain the level of the pool to preserve its scientific value and thereby implement Proclamation No. 2691...."

On March 23, 1978, the United States District Court issued a permanent injunction "...to limit the pumping from underground waters from wells...to the extent required to achieve and to maintain at Devil's Hole, Death Valley National Monument, a daily mean water level of 2.7 feet below the copper washer...." This injunction, based on a study of the habitat requirements of the Devil's Hole Pupfish, allowed the United States a higher water level for the purposes of Devil's Hole than was stated in the original U.S. District Court Decision.

Since 1971, the U.S. Geological Survey (USGS) has been monitoring the water level at Devil's Hole. DEVA provides $20,000 per annum to the USGS to conduct such monitoring, which probably includes springs and wells in the Ash Meadows area.

At the request of the Superintendent, DEVA, the Water Resources Division (WRD) is investigating means to reduce this expense and still protect the water resource values at Devil's Hole. The action plan presented below will guide the WRD in the development of a cost effective monitoring program to protect water resource values and Federal reserved water rights at Devil's Hole.

OBJECTIVES

1. Determine, by December 31, 1988, the extent to which present obligations and agreements limit the ability of the National Park Service (NPS) to alter the existing monitoring program.

2. Develop, by January 15, 1989, a monitoring program, consistent with limitations described in 1) above, which is cost effective, and provides the means by which water-related resource values and Federal reserved water rights at Devil's Hole will be protected.

3. Prepare an installation plan by January 31, 1989, which defines the steps and tasks necessary to implement the recommended monitoring program in FY89.

4. Install equipment by February 28, 1989, and calibrate to existing USGS equipment, as needed from February 28, 1989, to September 30, 1989.

5. By March 3, 1989, provide training in data collection and equipment maintenance to park personnel, and provide park personnel with a comprehensive equipment operator's manual.

IMPLEMENTATION

The WRD will review past agreements and obligations for monitoring and protecting Devil's Hole and surrounding environs. This will require review of the NPS files at the WRD office and at DEVA and contact with other agencies, for example, the USGS, the Nevada Division of Water Rights, and the U.S. Fish and Wildlife Service. If past agreements and obligations are not prohibitive, and scientific integrity will not be compromised, the WRD will recommend an alternative monitoring program.

The alternative monitoring program will be designed to cost the park less than the existing program, while still providing the means by which water resource values and Federal reserved water rights will be protected. The monitoring program will address the following:

-- Monitoring goals and objectives
-- Review of past monitoring efforts
-- Data analysis requirements
-- Monitoring equipment and installation requirements
-- Frequency and type of sampling
-- Frequency of site visits and field data retrieval
-- Data transmittal and storage
-- Annual reporting
-- Annual cost
-- Contingencies for increasing monitoring efforts, if threats are detected
-- Outline of other actions to be taken if threats are detected

The WRD will prepare an installation plan describing the sequence of steps and supporting tasks required to implement the monitoring program. The WRD will purchase, install equipment, and ensure that an adequate calibration period has transpired before recommending that the USGS equipment is removed.

DEVA staff will be responsible for collecting data, transmitting collected data to the WRD, and maintaining equipment. The WRD will provide training in data collection and maintenance, prepare a comprehensive equipment operator's manual for use by park staff, and will analyze collected data.

United States Department of the Interior
NATIONAL PARK SERVICE
WATER RESOURCES DIVISION
301 SOUTH HOWES ST., ROOM 335
FT. COLLINS, COLORADO 80521

IN REPLY REFER TO:

July 29, 1988

L70(479)
DEVA/General

Memorandum

To: Chief, Water Rights Branch
Water Resources Division

From: Chief, Water Resources Division

Subject: Technical Assistance Regarding Water Rights at DEVA

As you are aware, I travelled to DEVA recently. In the course of my discussions with Superintendent Rothfuss and Mel Essington of his staff, several water rights concerns were raised. They are as follows:

1. The park is currently paying the USGS $20,000 annually to monitor the water level at Devils Hole. The Superintendent would like to know if there is a way to reduce this expense while meeting our obligation to protect the water resource values at Devils Hole.

2. We need to investigate the status of water rights, uses and needs at Furnace Creek. Of particular concern is a) the market value of water we provide to the Furnace Creek Ranch and b) the status of an Indian claim to water.

I would like for you and your staff to address these issues as soon as you can. Please coordinate with Mel Essington at the park and cooperate with other appropriate NPS operational units. As you scope these issues, please apprise me of the work tasks identified, responsibility assignments and proposed due dates.

Stanley L. Pace

Water at Valentine
Navarro
Texas,

cc: DEVA - Superintendent; Essington
WR - Cherry, Kilgore, Kolipinski

Ryan - Int. 3439

DEPARTMENT OF THE INTERIOR

INFORMATION SERVICE

NATIONAL PARK SERVICE

For Release JANUARY 30, 1952

DEVIL'S HOLE AREA ADDED TO DEATH VALLEY NATIONAL MONUMENT

Devil's Hole in southwestern Nevada, a unique pool inhabited by a peculiar race of desert fish found nowhere else in the world, has been established as a detached unit of Death Valley National Monument, California-Nevada, by a proclamation signed recently by President Truman. The monument, established in 1933 to afford protection to an extensive unspoiled desert region rich in scientific and human interest, is administered by the National Park Service of the Department of the Interior.

With this Devil's Hole addition, consisting of 40 acres, Death Valley National Monument contains 1,860,178 acres of Federal land, 1,744,938 acres of which are in California and 115,240 in Nevada.

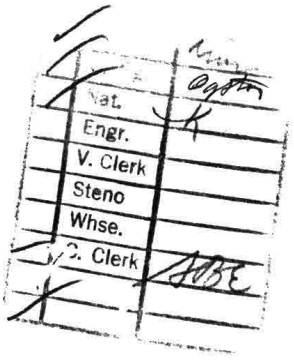
Devil's Hole is a remnant of a prehistoric chain of lakes which in the late glacial, or Pleistocene, epoch formed the Death Valley Lake System. The Hole, according to the President's proclamation, "is unusual among caverns in being a solution area in distinctly striated limestone, while also owing its formation in part to fault action." The peculiar desert fish (Cyprinodon diabolis)) in the Hole evolved after a gradual drying up of the Death Valley Lake System isolated this fish population from the original ancestral stock that was common in the entire region. Devil's Hole is approximately 50 feet long and its clear, warm water ranges in depth from a few inches at one end to 10 or 15 feet at the other end.

From Furnace Creek Ranch near Death Valley National Monument headquarters, Devil's Hole is reached over 39 miles of paved road and 8 miles of primitive trail. Much of the credit for its establishment as a Federal area is due to the interest taken by Dr. Carl L. Hubbs of The Scripps Institution of Oceanography of the University of California who contended that without Federal protection the unique fish might well be exterminated.

x x x

DEATH VALLEY NAT. MON.
RECEIVED
FEB 4 1952
Superintendent's Office

P.N. 12725



48

STATEMENT ON
THE SCIENTIFIC IMPORTANCE OF
THE DEVIL'S HOLE AREA, NEVADA

By: Lowell Sumner

April 12, 1951

Devil's Hole, Nevada, is an underground pool of such outstanding scientific importance that its protection is in the national interest. It is a unique, subsurface remnant of the prehistoric chain of lakes which in Pleistocene times formed the Death Valley Lake System. It is unusual among caverns in being a solution area in distinctly striated limestone, while also owing its formation in part to fault action.

The geologic evidence that Devil's Hole is an integral part of the hydrographic history of the Death Valley region is further confirmed by the presence in this subterranean pool of a peculiar race of desert fish. Zoologists have demonstrated that this race of fish, which is found nowhere else in the world, evolved only after the gradual drying up of the Death Valley Lake System isolated the Devil's Hole fish populations from the original ancestral stock that in Pleistocene times was common to the entire region.

The unique features of Devil's Hole are vulnerable to thoughtless and vandalistic destruction unless placed under the protection of an appropriate administrative agency. This area should be added to Death Valley National Monument because of the need for preserving the cavern's own special scientific values and also because it rounds out the scientific and interpretive story of the latter area.

Substantiating References

Hubbs, Carl L., and Miller, Robert R.

1948 The Great Basin, with Emphasis on Glacial and Postglacial times. II The Zoological Evidence; correlation between Fish Distribution and Hydrographic History in the Desert Basins of Western United States. Bulletin Univ. of Utah, Vol. 38, No. 20: pp 18-166

Miller, Robert

1946 Correlation between Fish Distribution and Pleistocene Hydrography in Eastern California and Southwestern Nevada, with a map of the Pleistocene Waters; Journal of Geology, Vol. 54: pp 43-53

1949 The Cyprinodont Fishes of the Death Valley System of Eastern California and Southwestern Nevada; Miscellaneous Publications, Museum of Zoology, University of Michigan, No. 68

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON 25, D. C.

L1415 DEAT

DEC 10 1951

DEATH VALLEY NATIONAL MON.
RECEIVED
DEC 31 1951
Superintendent's Office

Through: The Bureau of the Budget
Through: The Attorney General
Through: The Division of
the Federal Register,
The National Archives
and Records Service

My dear Mr. President:

The attached form of Proclamation would effect the addition of approximately 40 acres of Federally owned land, located in the State of Nevada, to the existing Death Valley National Monument. This Monument, as established by Presidential Proclamation No. 2028 dated February 11, 1933, and subsequently added to by Proclamation No. 2228 of March 26, 1937, contains many unusual features of scenic, scientific, and educational interest, including a number of new and rare species of plants and a variety of rocks representative of various geologic eras.

The 40-acre tract proposed for addition to the Monument contains an underground pool known as Devil's Hole which is approximately 18 air miles from the present boundary of the Monument. This pool is of such outstanding scientific importance that a number of prominent scientists have urged its protection in the national interest. It constitutes a unique subsurface remnant of the prehistoric chain of lakes which in Pleistocene times formed the Death Valley Lake System. The subterranean pool contains a number of desert fish of a race found nowhere else in the world. The tract containing this pool should be added to the existing Monument because of the need for preserving the special scientific values contained therein and because it rounds out the scientific and interpretive story of Death Valley National Monument.

The addition of these lands to the Monument would not involve the expenditure of additional funds on the part of the Federal Government.

I recommend that you sign the attached form of Proclamation, thereby adding this tract to Death Valley National Monument as a detached unit thereof.

Sincerely yours,

(Sgd) R. D. SEARLES

Acting Secretary of the Interior

The President

The White House

Enclosure

Copy to: Regional Director, Region Four (2) (by NPS)



50

Docket Information

Number of Documents in Docket 113

Documents Dated from 4/12/1951 to 7/18/1994

Docket Compiled: 5/26/2016