

A Washington Post Article Lauds Wiki Page by River Runners for Wilderness

OCTOBER 01, 2007
BY TOM MARTIN

River Runners for Wilderness' Rafting Grand Canyon Wiki was cited in a September 30, 2007, Washington Post trip planning guide as a resource for good rafting advice and can be read by [clicking here](#).

The guide is a companion piece to an article written by Sharon Barrett, which chronicles the river journey of a first-time non-commercial river runner rafting Grand Canyon and can be read by [clicking here](#). She muses about safety and clothing issues in the wildly-varying temperatures of Grand Canyon, especially as it applies to her breast prosthesis.

Barrett notes that RRFW's Wiki is "particularly helpful for do-it-yourselfers". The Rafting Grand Canyon Wiki is a free web-based "how-to" guide for all aspects of river rafting in Grand Canyon. Written by river runners for river runners, the topics include pre- and post-river trip planning information, on-the-river information, the Grand Canyon National Park river runner orientation video, and a resources section. There's also a link to a Yahoo online discussion group of over 400 river runners you can access by [clicking here](#).

New additions to the Wiki include a section on Glen Canyon Dam, human waste disposal after the river trip, and an amazing just-released video called "Carnage at Lava Falls" by Duwain Whitis, which is linked by [clicking here](#).

Visitors can read the Wiki from beginning to end or search on a particular topic of interest.

Anybody wanting to update or add information can simply set up a user ID and password for the site, then go to the topic you are interested in and click the "discussion" tab. Discussions will be read by the editors and appropriate content added to the topic.

The Rafting Grand Canyon Wiki web site is located at this link: [click here](#).

Motorized Rafting – An Illegitimate Industry?

OCTOBER 02, 2007
BY BYRON HAYES

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Motorized Rafting – An Illegitimate Industry?

The 35 Year Wilderness War for Grand Canyon

by Byron Hayes

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“As long as the commercial passenger gets easier and more preferential treatment than the non-commercial user, you can be absolutely certain that the struggle will never end.” Joe Munroe - June 16, 1980[1]

The Frustrating Reality (1998 - Commercial Revenues \$27 Million; Non-commercial Passengers Wait 20 years)

A 20 year wait to take your own raft down a river, penalties that selectively send you to the end of the line if you go earlier, motorized rafts with helicopter exchanges on America’s premier wilderness river, and commercial river operators emphatically insisting that everything is fine and should stay the way it is. Ever wonder how things got to this point and how not just one, but two virtually final non-motorized wilderness decisions somehow evaporated into the described scenario?

This article brings together a unique historical examination of the behind the scene activities that delivered this seemingly incredible outcome into current day reality. It provides a true story of how familial ties and political maneuvering succeeded in facilitating National Park access to those Americans most able to contribute to the Grand Canyon river concessionaires’ bottom line. Ignored were existing laws, the public process, and the independent boating public who are now waiting 20 years for river access in the crown jewel of America’s National Parks, the Colorado River through the Grand Canyon.

The Park and Public Involvement (1975 - Commercial Revenues \$6 million; Private Wait 0 years)

With the passage of the Wilderness Act of 1964, Congress directed the National

Park Service (NPS) to conduct an inventory to determine which of its lands were suitable for Wilderness classification. Multiple segments of the Canyon were under threat of inundation by proposed reservoirs and Glen Canyon Dam was filling up. In 1967 only 2,099 people visited the river, but reportedly “Passengers and boatmen were still scuttling beer cans in the river (‘Open them at both ends to make them sink.’), squatting behind big rocks or tall bushes, and burying garbage wherever the sand was soft.”[2] Under these virtually unregulated conditions visitation rapidly increased to 16,432 visitors annually by 1972, facilitated by the existence of 22 commercial river companies, many of which operated motorized rafts.[3] It was becoming readily evident that the Canyon was coming under a real and severe threat of damage from haphazard use.

In 1970 the Grand Canyon National Park (GCNP, or the “Park”) commenced its Wilderness inventory process with the release of its Preliminary Wilderness Study for Grand Canyon National Park, Marble Canyon National Monument, and Grand Canyon National Monument.[4] In 1969 Congress had already passed the National Environmental Policy Act (NEPA) which required that significant environmental decisions must be considered with the input of those affected. Consequently, public hearings on this Wilderness issue began in May 1971 at Grand Canyon and in Phoenix, Arizona. Additionally, public comments were solicited in newspapers in Williams and Flagstaff, Arizona and in Kanab, Utah.[5] Management of the river corridor was recognized to be an important issue during these hearings.[6] The Colorado River Outfitters Association (CROA) was established to lobby the outfitter’s perspective and became an important participant in these hearings.

After compiling the public’s overall input, the Hearing Officer explicitly reported, “The desired river experience is felt to be a slow float trip in small parties.” However, after recognizing that the existing NPS management directives were to allow continued use of motorized rafts, the hearing officer concluded that “The plan for continued use of motors precludes wilderness classification for the river itself.”[7] As a result, the Colorado River was excluded from consideration for inclusion in the Canyon’s NPS Wilderness Recommendation despite public opinion otherwise.[8] The Wilderness Recommendation was then forwarded on September 14, 1972 to then President Nixon who officially communicated the plan to Congress on September 21, 1972.[9]

Meanwhile, the Park was continuing to be plagued with the problems caused by the River’s rapidly increasing popularity. On December 5, 1972, after soliciting broad and varied public comment, the Park announced adoption of a plan to control the use of the River and the adjacent lands. This Colorado River Management Plan (CRMP) provided for the freezing of commercial user days at the existing level (89,000) and for the complete phase out of motors by 1977.

This action functionally removed the basis for the prior exclusion of the river from Wilderness consideration.

On March 20, 1973 Senator Barry Goldwater (R-AZ) introduced (93) Senate Bill 1296 that provided for the enlargement of the Grand Canyon National Park.[10] Included in this bill was a section that provided for Wilderness in the expanded Park that was consistent with the NPS and President Nixon's earlier recommendation which failed to include the river. While introducing the bill, Goldwater acknowledged the new December 5th regulations that removed motorized rafts from the River by stating, "... I believe it is unnecessary to legislate on this (motorized rafting) matter while it is being resolved administratively." [11] Consequently, under Goldwater's interpretation, the administrative track to phase out motorized rafts by 1977 could continue, but the river corridor would remain outside of consideration for Wilderness protection.

Outfitters Enraged

Needless to say, the recommendation to phase over to non-motorized trips was not greeted with much enthusiasm by the solidly established motorized outfitters. One approach that was pursued by the motorized outfitters was to oppose the NPS decision on the legal front. Western River Expeditions itself brought a suit in Salt Lake City, Utah against the Park Service alleging the decision to eliminate motors was "arbitrary" and that no data had been acquired to support the decision.[12]

Although he generally supported the Western lawsuit, Fred Burke, owner/operator of Arizona River Runners, a motorized outfitter then located at Marble Canyon, took on a political tact in dealing with the motor controversy. Burke had been fighting Canyon Wilderness designation individually, as President of Arizona River Runners, and with the Colorado River Outfitters Association (CROA). Besides political experience derived directly from river issues, Burke had developed significant additional experience by running for a seat on the Arizona state legislature. At that time U.S. Congressman Sam Steiger (R-AZ) was one of the most prominent supporters of Bridge Canyon Dam, a project that, if implemented, would have put almost a third of the Canyon's river miles under a water.[13] Burke and Steiger each saw any Wilderness designation of the Canyon, and especially the river itself as their mutual enemy. Consequently, they became good friends.

In the course of Burke's unsuccessful November 1972 attempt at a seat in the Arizona State Senate, Barry Goldwater had helped Burke, a fellow Republican, with his commercial campaign spots.[14] Once Burke became aware of Goldwater's bill and his statements in Congress, he contacted Goldwater imploring him to listen to his perspective and those of fellow outfitter Jerry

Sanderson and Gay Staveley, the owner/operator of Canyoneers, a completely motorized rafting company located in Flagstaff. Fred requested Goldwater change the wording of his bill to provide for the ongoing use of both motors and oars. He went on to claim that he was opposed to fast trips and that “There is no monetary gain under my plan if motors were left on.”[15]

NPS Wants River As “Potential Wilderness”

When hearings on Goldwater’s S. 1296 commenced on June 20, 1973, both the Interior Secretary and NPS, the originators of the 1972 Wilderness Recommendation, jointly requested the river corridor itself now be included as an additional 4500 acres of “Potential Wilderness” since motorized rafts were now officially being phased out.[16] NPS Director Ronald Walker stated during the hearings that these new provisions were necessary because the NPS had been allowed “no input” into Goldwater’s bill.[17]

Upon hearing the NPS proposal to include the river, the Utah Congressional delegation, which had numerous river company interests at stake, immediately blasted the Park Service for their proposition to phase out motors. Utah Congressman Gunn McKay said that the presence of motors did not shatter the sanctity of a wilderness experience and that the noise they created was only a “technical problem” that would be solved in the future. He also inferred that motors were necessary to safely navigate the difficult rapids and that the larger size motorized rafts provide for the removal of human waste and trash that would otherwise be left on the beaches.[18]

Utah Senator Frank Moss joined the attack on the NPS proposal stating that the absence of motorized trips would effectively remove access to both children and the elderly. Sen. Moss repeated Gunn’s accusation that small boats are less safe and promote garbage. Moss discounted NPS Regional Director Howard Chapman’s report that a recent hearing in the Salt Lake Western suit had disclosed that motorized river craft produce significant numbers of injuries, especially from the propeller. Although active at the time, this suit against the Park’s decision to eliminate motorized rafts would eventually be dismissed. Chapman continued by explaining to Moss that the NPS was trying to manage a total system and in the Canyon and their objective was to provide an experience different from the numerous motorized options available on other rivers. If people wanted a motorized experience, they had available many options elsewhere.

Moss appeared to gain the upper hand in the argument when he discovered that Park action was based only on unscientific observations and that no formal studies had been undertaken to justify the elimination of motors or a reduction of use. Citing this administrative deficiency, Moss proposed that both motors and

user days be maintained at current use levels until sufficient scientific studies were completed sometime in the future.[19]

Due to the controversy it had generated with the Utah delegation, by the time the Committee Report for S 1296 was filed on September 21, 1973, the wilderness provision of Goldwater's bill had been completely dropped. At least in part due to this controversy and in part due to the still pending Western lawsuit, implementation of the CRMP became sufficiently delayed that on October 31, 1973 NPS Regional Director Howard Chapman announced deferment of the decision to eliminate motors. Current use and allocations would be maintained until newly commissioned studies on the impact of motor use levels were complete.

Restarting the Public Process Since the Grand Canyon Enlargement Act's Wilderness component had been dropped, a provision was added that called for the Secretary of the Interior to report within two years all areas suitable for preservation as Wilderness.[20] Once the Grand Canyon Enlargement Act finally became law in 1975, an exhaustive public input process commenced in an effort to determine the public's feelings regarding Wilderness status for the Canyon. A series of meetings were held in September and October of 1975[21].

In July of 1976, following the release of the Preliminary Wilderness Proposal (DES 76-28), an additional series of meetings were held in St. George, Utah and in Flagstaff, Grand Canyon, and Phoenix, Arizona. Comments were acquired from a total of 23 Federal agencies, 17 state agencies, 3 Indian tribes, 39 organizations, 24 companies, and 501 individuals.[22] The five-year series of meetings consistently showed public sentiment strongly favored Wilderness designation for the Canyon below the rim and for the river itself, including the elimination of motorized river travel[23].

The conclusion of the wilderness study process resulted in the February 1977 Final Wilderness Recommendation that was signed by the NPS Director and called for immediate Wilderness designation of over one million acres within the Canyon, including the river corridor. Instead of promptly forwarding this now fully approved Recommendation to then President Carter, the NPS Legislative Counsel effectively stalled its Congressional approval by recommending that it be held until completion of the Colorado River Management Plan (CRMP).[24] Instead of using the approved Final Wilderness Recommendation as the driving force for setting management policies for the river, its presentation to the President was instead postponed until the final outcome of the CRMP became known and compatible. As you will find, this critical two-year delay based on somewhat questionable reasoning at least partially contributed to altering the environment on the river for well over 20 years into the future.

The 1975 Enlargement Act also had a direct effect on the CRMP itself. Indexed off the Wilderness pre-planning meetings held in the Fall of 1975, six river management workshops were held in March of 1976 in Phoenix, Los Angeles, San Francisco, Salt Lake City, and Denver, as well as at the Grand Canyon. Comments of 365 participants and over 100 organizations were acquired, including those of the Hualapai Tribe, the Sierra Club, Western River Guides, and independent river runners from across the country.[25] As a result, in January of 1978 the Draft Environmental Statement - Proposed Colorado River Management Plan was released for public consideration.

In February of the same year, six more public meetings were held in the same cities and in March an additional meeting was held in Washington D.C. In all, 2,716 comments were received with 1476 respondents, or 54% favoring the elimination of motorized trips.[26] It is notable that only four people expressed opposition to Wilderness designation for the river corridor.[27]

In July of 1979 the final Environmental Impact Statement (EIS) which provided for the phase out of motor powered trips over a five-year period was released. Some of the specific conclusions of the plan were that the transition to all oar powered trips would cause no significant increase in trip costs, that oar powered trips were recognized to be a better buy for consumers, that commercial guides would benefit from a longer commercial running season and increased guide to passenger ratios, and that there would be no significant impact on the local or regional economies.[28]

One of the primary features of the ensuing 1980 Colorado River Management Plan was to limit river use by the number of launches, rather than by user days as in the past. This approach was intended to minimize the on-river congestion and inter-group contact problems produced by the user day system and unlimited launches. The 497 commercial launches of 1979 were thus reduced to 443 launches while the 89,000 commercial user days of 1979 were increased to 115,500. Total commercial passengers would remain at approximately 11,500 per year. This action was intended to both reduce congestion and accommodate the longer duration oar-powered trips, while delivering an increased "economic base" to smaller concessionaires.[29]

Of particular interest was a statement by the Park that the 70% commercial/30% non-commercial user day allocation ratio presented in the 1980 plan was only an estimate and would need to be adjusted in the future. More specifically, the 1980 CRMP states: "The allocation ratio is, because of the above factors, a best estimate based on the experience and interpretation of the above data. This ratio will be reviewed and adjusted as more reliable information becomes available."

[30] From this statement it is readily apparent that, at the time, the Park wanted to avoid situations like the present where some Americans are being required to wait 20 years while others freely access the River almost on demand.

The 1980 Colorado River Management Plan

Implementing the provisions of the final EIS was signed on December 20, 1979 by Park Superintendent Merle Stitt, NPS Western Regional Director Howard Chapman, and NPS Director William J. Whalen. This action commenced what should have been a five-year process of slowly eliminating motorized raft trips from the Canyon by the end of December, 1984.

Dam & Motors Anyone? (1979)

In 1979 in an effort to expand their clout with Congress, Fred Burke and Gaylord Staveley, together, reincarnated the earlier CROA into what was now called PROA, the Professional River Outfitters Association, (not to be confused with the contemporary PRO, Professional River Outfitters, a private trip outfitting and equipment company, ed.) chaired by Staveley. PROA purported to present a unified voice for the river outfitters who had historically been factional on a variety of issues.

Second term Congressman Robert Lee “Bob” Stump (R-AZ) had taken up the cause of Grand Canyon dam building from the efforts of his predecessor Sam Steiger. Stump, a Phoenix area farmer wanted more water for valley farming. Stump introduced a bill in March 1979, which, if passed, would have eliminated the motors vs. oars question, and possibly that of Wilderness altogether. Stump's proposal, House Bill (96) H.R. 3034, was to license construction of Hualapai Dam (also known as Bridge Canyon Dam) and would have cut a third of the river miles under dispute by drowning them under a proposed reservoir. Steiger had unsuccessfully sponsored a similar effort during 1975 with his introduction of (94) H.R. 6745. Stump had futilely attempted to revive Steiger's project during his first term as (95) H.R. 6906, and would again during in his third term as (97) H.R. 3167. To this day Stump reportedly continues to support construction of Bridge Canyon dam.[31]

Despite his ongoing efforts to drown the Canyon, the outfitters turned to Stump after the July 1979 release of the final CRMP EIS. Paying no attention to nearly a decade of NPS gathered public input urging the elimination of motorized trips, Stump fully subscribed to the outfitters position. In October of 1979, Stump introduced a bill to prohibit the Park Service from reducing the number of commercialized motorized trip user days to less than 1978 levels (96 H.R. 5712 - Oct 25, 79). The bill was officially summarized as follows:

"Prohibits the United States Park Service, for any calendar year beginning after the date of enactment of this Act, from reducing the number of user days of commercial motorized water craft travel permitted on the Colorado River in the Grand Canyon National Park to less than the number of such days permitted during calendar year 1978."

Stump's bill was referred to the House Committee on Interior and Insular Affairs, then chaired by the late Mo Udall (D -AZ), where it never received a hearing and was allowed to die. No public review or discussion of the bill's provisions was ever held. Despite the fact that Stump's proposals for both motors and the dam had floundered in committee, the foundation was being laid for both the elimination of Wilderness management and the generation of the 20 year wait that non-commercial Canyon rafters now face.

Enter James Watt, the Mountain States Legal Foundation, and Beer (1980)

Burke, Staveley, and PROA were not content to limit their efforts to throw out the NPS Wilderness recommendations only to Stump's obscure and poorly received bill. Staveley and Burke soon turned to the Mountain States Legal Foundation (MSLF).

The MSLF was established by and has been continuously funded by Adolph Coors, the famous western beer magnate. At that time, the fledgling organization's chief legal officer and President was James Watt, an outspoken fellow who would later become Secretary of the Interior under the yet to be elected Ronald Reagan. James Watt, a Wyoming native, joined the U.S. Chamber of Commerce in 1966 where he directed the natural resources section. [32] He began his federal career in 1969, appointed by President Nixon to the Interior Department as Deputy Assistant Secretary for Water and Power Resources. In 1972 he became Director of the Bureau of Outdoor Recreation. At that time he spoke of that job, "I am a manager by profession. I could be managing widgets. I happen just now to be managing recreation." [33] In 1975 Watt became vice chairman of the Federal Power Commission until he resigned in 1977 when the Democratic Carter administration made him a persona non-gratis. In July of 1977, Watt became President and Chief Legal Officer of the Mountain States Legal Foundation (MSLF).

On March 27, 1980, the MSLF, still headed by Watt, filed suit on behalf of Canyoners, Arizona River Runners, Hatch River Expeditions, and other motorized outfitters against NPS Director William J. Whalen in an effort to halt the elimination of motorized raft trips (MSLF vs. Whalen, et al).[34] Assisting PROA, Staveley, Burke, and the Mountain States Legal Foundation was a lawyer by the

name of Jon Kyl, who at that time worked for the Phoenix law firm Jennings, Strouss & Salmon.[35] Unknown to anyone at that time, Jon Kyl would be elected in 1986 to his first of four terms in the U.S. House of Representatives and, in 1994, would become the freshman and current Republican U.S. Senator from Arizona.

Park Politically Pressure Cooked 1980 - Industry Gross \$7 Million Private Wait 6 Years

Consistent with their expanded political efforts, PROA and the outfitters persistently complained to the Arizona Congressional delegation about the provisions of the 1980 plan. These political efforts first became publicly evident during an Interior Appropriations hearing in May of 1980. At that time Senator Dennis DeConcini (D-AZ) acknowledged that he had received "complaints" about the 1980 CRMP plan during a meeting between the Park Service and outfitters in his Washington office.

At the request of Senator DeConcini, the Park granted the outfitters a meeting on June 5, 1980 allowing them an opportunity to suggest adjustments to the 1980 river plan. The Park emphasized no direct discussion of the decision to phase out motors would be allowed. Without any doubt, the efforts of the PROA consortium were starting to get results.

Staveley, Burke, and their wives attended the meeting along with Park officials and representatives from the offices of Senators DeConcini and Goldwater, and Congressmen Stump, Rhodes (R-AZ), and Rudd (R-AZ). The subject matter primarily focused around determining the number of passengers accommodated in 1979 (11,665) and then giving motorized companies additional passengers to offset potential profit losses from their conversion to rowing. This provided for an annual "economic increase" of 1400 additional passengers, a 12% increase to the motorized outfitters over 1979 levels. Since the new rowing trips were inherently longer, this would effectively deliver well over 15,000 new user days and annually millions of dollars of new revenues to the motor companies. At the same time non-motorized outfitters consequently would receive less market share and non-commercial users would continue to increase their wait. Staveley later, in a press release, would describe the meeting simply as "very solid and productive" and that it resolved the scheduling issues related to the phase out of motors.[36]

A summary of the meeting was sent by the NPS to all river concessionaires that did not attend the meeting and to others who would be affected by modifications to the 1980 plan. After receiving extensive responses from other outfitters and interested parties, Regional Director Howard Chapman reported to Gaylord Staveley in an August 13, 1980 letter that at least a third of the river

concessionaires disagreed with the Staveley and Burke's proposed modifications to the 1980 plan. Chapman also informed Staveley that, according to the Department of Interior Solicitor's (administrative law) Office, any implementation of their suggestions without a full public review would violate the provisions of the National Environmental Policy Act. Effectively, Chapman, with the concurrence of Interior Secretary Cecil Andrus, was rejecting the provisions of the June 5th meeting and upheld continuation of the 1980 CRMP and its provision to eliminate motors.

Staveley, stung by the Regional Director's rebuke, wrote to Stump on August 19th stating that all the arguments provided by the "ecopeople" who disagreed with him were generated by the Park. He suggested that his "opponents" were being manipulated and "... they are just saying what they are told to say." He went on to claim "untrue and unreal" comments and "lies" were being delivered by his opponents. Staveley charged as false the argument that increasing concessionaire allocations would in any way diminish opportunities for private, non-commercial boating. He described the argument as: "The lie that private (non-concessionaire) use is threatened by giving concessionaires the 1979 passenger levels." [37] In a subsequent letter dated August 21, 1980 to NPS Western Regional Director Chapman, Staveley continued attacking the "fabrications" of those in the "ecobizness"(sic).

Just a Concerned Taxpayer

After PROA's embarrassing summer defeat, it became apparent that a new approach would be needed. Congressman Eldon Rudd (R-AZ) had already requested details on GCNP river expenditures from then Acting NPS Director Ira Hutchison. Rudd, in an August 29 letter to C . J. Ross, forwarded Hutchison's August 19, 1980 response and invited the outfitters to any input they deemed appropriate.[38] One person responding to Rudd's expenditure inquiries was Pamela Manning, then Executive Vice President for Burke's Arizona River Runners business. Without disclosing her affiliation with ARR, Manning alleged that the GCNP had significantly increased their operational costs by hiring five permanent river staff and an extra patrol crew to accommodate the new management plan. She further alleged that the Park had incurred significant expense and "bureaucratic waste" in purchasing a trailer to accommodate the non-commercial permittees. Manning went on to state that one motorized patrol crew could perform as much work as two oar crews, and inferred that oar trips were popular with Park personnel simply because they had to do less work.[39] Manning concluded by stating that she was concerned about the waste of tax dollars, and that did not wish her name to be attached to the letter's contents since she was known in the river community.

Rudd responded to Manning with a letter stating he was confident that Bob Stump's previously ignored proposed legislation would be reintroduced to combat "the unfair CRMP" and thereby protect the rights of river runners.[40] That same day Rudd sent another letter to Hutchison paraphrasing Manning's allegations of misuse of funds and demanded a detailed budget for the GCNP River Management Unit. Hutchison compiled the requested information and, in his November 28, 1980 response, explained to Rudd that the trailer under dispute was surplus property given to the GCNP by Glen Canyon National Recreation Area, and that permanent GCNP river personnel had increased not by the alleged five, but only by a single person since 1973.[41] Although the information previously provided to the Congressman by Manning was proven to be incorrect, by the end of November it really didn't matter; something else had already happened that would change the whole river horizon for decades to come.

The Hatch (River Expeditions) Amendment

In 1980 first term Senator Orrin Hatch (R-Utah) was in his fourth year in office. Orrin is the great grandson of Jeremiah Hatch, the founder of Vernal, Utah. Orrin's father, Jesse, was cousin to Bus Hatch, the founder of Hatch River Expeditions, who was also a grandson of Jeremiah. Bus' son Ted Hatch, like Orrin, was a great grandson of Jeremiah. Ted was then, and currently still is the owner of Hatch River Expeditions, the oldest and, at that time, the largest motorized raft company in the Grand Canyon. Hatch maintains a warehouse in Marble Canyon where ARR was located at the time.

Fred and Carol Burke along with Pam Manning telegraphed Senator Hatch on November 4, 1980 stating that motor elimination would deliver a negative economic impact on Southern Utah and Northern Arizona. They also stated, "We urgently support your amendment to the Appropriation bill." [42] By this communication, it was now evident that the outfitters were very aware that Hatch was preparing to introduce legislation in their behalf.

On Nov. 14, 1980, Sen. Orrin Hatch hastily introduced from the Senate floor Amendment SU175 to the 1981 Interior Appropriations Bill (96 H.R. 7724). This Interior Appropriations Bill provided the crucial annual funding necessary to maintain the operations of the Department of the Interior for the fiscal year ending September 30, 1981. It was common knowledge to the Senate that any appropriations amendment would be effective only for the single year the bill provided funds to run the Department of Interior.

SU175, which would later become known as the "Hatch Amendment," was first considered by the Senate on the Friday just prior to its Tuesday, November 17th

final approval. Neither the amendment nor its content ever received public review, even in the form of a committee hearing. The Amendment was cosponsored by Senator Barry Goldwater (R-AZ) and Jake Garn (R-UT)[43] and consisted of the following words:

(a) None of the funds appropriated in this Act shall be used for the implementation of any management plan for the Colorado River within the Grand Canyon National Park which reduces the number of user days or passenger-launches for commercial motorized watercraft excursions, for the preferred use period, from all current launch points below that which was available for the same period of use in the calendar year 1978.

(b) For the purposes of this section "preferred use period" denotes the period May 1, through Sept. 30, inclusive.

Hatch's and others' presentations in support of the Amendment, spanning four pages of the Congressional Record, was in no way subtle. Throughout the testimony process, Hatch made no public mention of his familial relationship to the companies his action would ultimately benefit. Hatch commenced by echoing the same safety and access issues that his predecessor, Frank Moss, had voiced 8 years earlier. He indisputably demonized the Park Service for even offering the CRMP, stating that they were "jeopardizing the availability" of the Canyon. He extolled the virtues of motorized rafts as the most cost-effective way to get the greatest numbers of people into the Canyon. He continued by stating that the Park Service was inflicting its non-motorized oar provisions on an "unwilling and often unknowing public without regards to cost. And, I might add under more dangerous circumstances.[44]"

Hatch's cost arguments were flawed, completely ignoring the fact that non-commercials were dramatically less expensive than any commercial trip, motorized or not. He never mentioned to the Senate that the CRMP he opposed was part of a 10 year NEPA compliant public decision process. He never acknowledged that continuation of motorized rafts would enhance public demand for a resource already outstripped in its ability to handle it. Hatch never acknowledged that his amendment would provide his relatives and the motorized outfitters dramatically increased profits.

An Ambivalent Passage

Some Senators expressed concern that the amendment was inappropriate for this appropriations bill and that no hearings were ever held on this specific matter. In particular, Senator Huddleston moved that the Hatch Amendment should not be allowed since it should have been more fully considered in the

appropriate committee[45]. In effect Huddleston recognized that the Senate was unable to vote on this subject from a position of knowledge.

Retrospectively, Hatch was probably aware that if he forthrightly introduced a bill opposing NPS actions, it would spur debate and the subsequent analysis would expose the extensive history behind the NPS actions. Such an effort to defeat the issue on its merits would be certain to fail, as had Stump's earlier attempt. Cleverly, Hatch opted for the much easier alternate and apparently successful approach of legislatively defunding his NPS opponents. Since it was attached to a one year appropriations bill, it was obvious to the Senate that the provisions of the Hatch Amendment were not permanent and could only affect management policy for one year. Rather than waste precious time in this late stage of the legislative session and after senators on the Energy and Natural Resources Committee promised hearings on the issue during the following year, the Senate accepted the amendment on a voice vote. As a result SU 1754 was quietly absorbed into the appropriations bill which eventually evolved into public law 96-514.

Reveling in his apparent success, Burke wrote to Lisa Jackson of Rep. Stump's office with his recommendations for implementation of the Hatch Amendment. In a November 29th letter, Burke recommended an increase in launches so that the motorized outfitters could be able to accommodate the 150 people per day maximum historical use provided for in the Amendment. In his letter, Burke additionally asked for Congressional hearings early in 1981 so that as soon as possible a determination could be made as to the scheduling of motor trips and whether motors would be allowed during the 1982 season.[46] Burke's correspondence shows that both he and the outfitters were aware that Hatch's Amendment, as passed, was only temporary and that the phase out of motors might begin anew the following season.

Introducing - Secretary of the Interior James Watt (Watt's Senate Confirmation Hearings)

Staveley, Burke, and the other motorized outfitters were probably delighted by the good fortune that had befallen them as a result of the November 1980 election of Ronald Reagan as President. When Senator Clifford Hansen (R - WY) declined Reagan's offer of Secretary of Interior, on December 22nd, 1980 the position was then offered to the same James Watt, President of the Mountain States Legal Foundation, who was already helping the motorized outfitters by suing the Park to retain motorized rafts.[47] As virtually everyone in the country would soon know, Watt, who had already described environmentalists as "the greatest threat to the ecology of the West,"[48] accepted the position as

Secretary of Interior, the trustee of America's public lands.

Reagan's election to the presidency became official on January 6, 1981 when a joint session of Congress counted the votes of the Electoral College.[49] The following day Watt's confirmation hearing in the Committee on Senate Energy and Natural Resources began. The Committee was particularly interested in Watt's potential for conflict of interest since, as President of the MSLF, he had sponsored numerous suits against the Department of Interior. The committee's interest was justified. During questioning about the MSLF, Watt made the surprising claim that he didn't even know who the contributors to the MSLF were. Senator John Seiberling (D-Ohio), Chairman of the Interior Subcommittee on Public Lands informed Watt with the specifics of who the financial supporters of the MSLF were and then concluded with the following observation. "These are people whose primary interest in public lands is to exploit them for their own profit. Their idea of multiple land use is to have everything with any conceivable value developed, even if its primary value is Wilderness." [50]

Watt had been asked to submit to the committee a summary of those MSLF cases that involved the agency. Watt's prepared summary incorrectly cited his Arizona suit to retain motorized rafts in the Canyon. Instead of describing the MSLF v. Whalen case as filed, the description supplied to the committee was "MSLF v. Dickenson," the NPS Director that succeeded Whalen. In Watt's statement, the suit was summarized as follows: "MSLF seeks to protect the right of the public to reasonable, environmentally sound access to the Grand Canyon for recreation by challenging the Park Service's decision to ban all motorized raft trips on the Colorado River through the Grand Canyon." [51]

During the hearing segment questioning Watt's involvement with motorized rafting, Senator Dale Bumpers (D-AR) explicitly stated that the Senate (against his [Bumpers] own vigorous protest) had adopted only a one-year postponement of the Park Service river management plan.[52] Bumpers even directly asked Watt, "Do you favor the Wilderness Act." Watt's response: "Absolutely."

Before the hearings had begun, Watt had generated a recusal statement wherein he consented only to refrain from assisting the MSLF in any further prosecution of the Interior cases. Watt submitted his statement to the Committee after having already discussed its content with the chairman of the Committee, Senator James McClure (R. Idaho).

Curiously absent from Watt's commitment was any promise to, as Secretary of the Interior, refrain from involving himself in the issues surrounding the MSLF's Interior Department litigations. The statement successfully made it through the hearing without any mention of this deficiency. Time would prove that Watt would

utilize this oversight to MSLF's fullest advantage.

More Concessions, Motors, and the Brave New World of Watt

Once Watt was confirmed and sworn in there soon became little doubt that he had an agenda and that he would do whatever it took to get it through. A main feature of the Watt plan for the parks was a significantly larger role for the concessionaires, displaying an almost zealous drive to involve them in park operations wherever possible. In a March 9, 1981 appearance before the Conference of National Park Concessionaires, Watt pledged, "It is time for a new beginning and the private enterprise system must be looked to for rejuvenation and enthusiasm as we try to make the parks more accessible and usable for the people... You folks (the concessionaires) are going to play a tremendously important role and a growing role in the administration of our National Parks and we are going to reach out and involve you in some areas that you haven't been asked to be involved in before." [53]

So zealous was Watt's desire to facilitate concessionaire involvement, he expressed a ready willingness to remove anyone who might be in his path. "If we need to change personnel under Russ (Dickenson – NPS Director) to accomplish a more aggressive concessionaires program, we will change the people." [54] Watt continued, "If a personality is giving you (the concessionaires) a problem, we are going to get rid of the problem or the personality, whichever is faster." [55]

Besides his overt enthusiasm for more privatization of the parks, Watt felt no need to withhold his opinion supporting motorized rafting in the Canyon. "I don't like to paddle and I don't like to walk." James Watt would say, almost with a touch of pride. [56] Watt himself saw little value for extended river trips. Relating about his own Grand Canyon motorized raft trip, "The first day was spectacular... The second day started to get a little tedious, but the third day I wanted bigger motors to move that raft out. There is no way you could get me on an oar-powered raft on that river – I'll guarantee you that. On the fourth day we were praying for helicopters and they came." [57]

The country now had a Secretary of Interior that thought the motor trips were too long and the motorized Wilderness was still much too tedious.

On the Monday following Watt's confirmation hearing, January 12, 1981, a press release came from NPS Western Regional Director Howard Chapman announcing "... the public will have the option of motor or oar trips in the future." Chapman also disclosed that he would be using the Hatch Amendment as a guide to future river management.

The next day, GCNP Superintendent Dick Marks both called and wrote Fred Burke with the good news that the commercial "preferred use season" allocation would be for 105,500 user days. Use would be based upon user days, rather for the "total number of people" method provided in the 1979 plan.[58] This single provision emphasizing user days handed to the outfitters the economic motivation to supply the public with the shorter motorized trips that deliver the most profit, rather than to provide the longer oar powered trips which cost patrons less per day. This same increased frequency of short trips set the stage for the current use of helicopters, which now service more than 50% of the commercial river passengers.

On February 10, 1981, the MSLF wrote to Fred Burke advising him that the MSLF would be putting their suit on inactive status as they waited for the Park, now officially under the supervision of their former leader, to take the "appropriate action" to fulfill their new promises[59]

1981 Draft Alternatives – Motors, Motors, or Motors?

Other than Watt's intermittent comments in support of motorized rafts, little was conveyed to the public about the status of the river until that summer. On June 8, 1981 ignoring ten years of public input calling for the elimination of motors, a new set of fully motorized management alternatives emerged for public comment with release of "Draft Alternatives for the Colorado River Management Plan." This completely new set of four separate motor-oar combination alternatives, each of which provided for continuation of motor use throughout the summer season, was announced by NPS Western Regional Director Howard Chapman who now claimed that the 1979 plan had been "vetoed by Congress." [60] These new alternatives did not allow the historical public preference for the elimination of motors to even be considered.

This draft document stated that the new set of presented alternatives were needed because "The (Hatch) Amendment prohibited a reduction of user days or passenger launches for commercial motorized craft below 1978 levels during the summer season. The commercial use level in 1978 was 89,000 user days." [61] The press release accompanying the draft plan further echoed Chapman's erroneous conclusion that "... the plan adopted by the Park Service in 1979 was subsequently vetoed by Congress last year." [62] A two-month public comment period was provided and closed on August 12, 1981.

With the release of this new plan the Senate's vote for a single year postponement of the implementation of the 1980 CRMP had somehow been transformed into a full purge of the motor phase-out concept. Also, conveniently forgotten were the Senate hearings that were promised to have occurred in early

1981 that would have more thoroughly examined the facts Orrin Hatch abruptly introduced on the Senate floor on November 14, 1980. Completely forgotten was the Park's plan to revise the user day allocations. Using the same misinterpretation of Congressional directives, the 1980 plan's temporary 70% commercial user day ratio spontaneously, in the 1981 Plan, became inflexible at 115,500 user days for the commercials and 54,450 for the privates.[63] The die was now being cast for the twenty-year wait currently confronting those Americans who choose to access the Canyon non-commercially.

Quite happy with the completely motorized horizon the 1981 draft provided, Watt's Mountain States Legal Foundation abandoned their lawsuit on July 16, 1981.

1981 CRMP – The Incredible End to the Decade of Public Input

In December of 1981 came the issuance of the final 1981 CRMP that provided continuation of motors and the foundation upon which the river is managed today. This 1981 document also repeated and further codified the earlier draft version's dubious interpretation of the Hatch Amendment with the statement, "The amendment prohibited a reduction of user days or passenger launches for commercial motorized craft below 1978 levels during the summer season." Without ever mentioning that the only alternatives presented for public comment in the June of 1981 Draft were combinations of motor and oar use, the plan justifies its final conclusion with the statement, "The preponderance of these (public) comments favored some combination of oars and motors, while voicing interest to have a period of oar only use." [64]

This 1981 CRMP contained no mention of any consideration of the non-motorized options consistently requested and preferred by the public. The preceding 1980 CRMP had been developed through processes that complied with the National Environmental Policy Act. Such NEPA processes, which require that "all reasonable alternatives be considered," form legal, binding decisions that require implementation by the administering agency. A decision arrived at via the NEPA process cannot be withdrawn or a new decision made without going through a similar NEPA compliant process. Clearly, the publicly preferred no motor option was a "reasonable" alternative that was never considered in the 1981 plan. The failure to include those "no motor" options in the development of the 1981 plan would seem to be in violation of the NEPA process. The temporary defunding of a project had been magically transformed into an illegal "veto" of a decade of public input.

Of particular note is the 1981 CRMP document that was signed by

Superintendent Richard "Dick" Marks on 11/25/81, Western Regional Director Howard Chapman on 12/8/1981, and by NPS Director Russell Dickenson on 12/13/1981. Significantly, at the time of each of their 1981 CRMP authorization signatures, the federal government had already entered into the 1982 fiscal year. Since the provisions of both public law 96-514 and its Hatch Amendment had already expired with the September 30th end of the 1981 fiscal year (94 Stat. 2957), the very basis for the provisions of the 1981 plan no longer existed.

At that time of its signing there weren't any grounds for deviation from the elimination of motors provided in the publicly reviewed 1979 Final EIS and 1980 CRMP. That fact was apparently forgotten despite numerous references on the Senate floor and during Watt's Confirmation hearing that the Hatch Amendment was "solely a one year postponement of the 1979 decision." [65] As stated earlier, even the outfitters had recognized that the Amendment provided only for a single year postponement and "that motors may not be allowed in 1982." [66] Somehow, all this was forgotten by the National Park Service while it was under the supervision of James Watt.

1999 Have Your Cake And Eat It Too (Commercial Outfitters Gross over \$27,000,000 - Privates Wait 20+Years)

The 1981 plan provided for 1979 commercial use levels of 89,000 user days to be increased by 26,500, a 30% increase. This increase resulted in the current total commercial allocation of 115,000 user days, none of which includes the 30,000 user days allocated to crew members that accompany the commercial passengers. This commercial user day level was originally provided in the 1980 plan as an "economic base" to effectively compensate the outfitters for reduced total revenues created by conversion to the longer oar powered trips. Now, under the 1981 CRMP, the motorized outfitters were able to keep their motors while still being compensated as if they had converted to oars. For Ted Hatch of Hatch River Expeditions alone, the increased user days indirectly provided for by his distant cousin's Amendment translated to almost 1,000 more user days per year, or 17,000 more user days over the last seventeen years. [67] Since Orrin Hatch had failed to disclose his family's benefit from the outcome of his amendment, the Senate could not have been aware that they would be providing the Hatch family with more than \$4,250,000 [68] in cumulative gross revenues over the next 17 years. In fact the "economic increase" by itself delivered the group of motorized outfitters additional gross revenues of \$78,800,000 between 1981 and 1998 once the 1980 CRMP was aborted. [69]

No matter how you look at it, the monetary returns from Staveley and Burke's one-year effort were excellent. The motorized raft industry in the Canyon is now approximately a \$20 million dollar a year industry. Staveley's Canyoners

business alone now grosses more than \$1,000,000 per year. Arizona River Runners, no longer owned by Burke, similarly grossed over \$3 million in 1998. Today motors prevail in America's foremost river Wilderness while non-commercial river runners are now waiting 20 years for access.

All this, while the river flows and the outfitters continue to insist, everything is fine; don't change it.

[1] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, handwritten correspondence to Supt. Richard Marks from Joe Munroe, Wilderness Public Rights Fund, June 16, 1980.

[2] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, November 13, 1972 correspondence to The Honorable Barry Goldwater from Carol Burke.

[3] "Final Environmental Statement, Proposed Colorado River Management Plan" (FES 79-30), finalized July 31, 1979, pg. I-1.

[4] "Draft Wilderness Management Plan, Grand Canyon National Park", April 1998, pg. C-1.

[5] Revised Draft Environmental Statement, Proposed Wilderness Classification, Grand Canyon Complex, Arizona, pg. 22, included in Additions to the National Wilderness System, Communication from the President to Congress, Part 5, Grand Canyon Complex, Arizona, House Document 92-357, September 21, 1972.

[6] "Final Environmental Statement, Proposed Colorado River Management Plan" (FES 79-30), finalized July 31, 1979, pg. IX-1.

[7] Wilderness Recommendation, Grand Canyon Complex, Arizona, pg. 20, included in Additions to the National Wilderness System, Communication from the President to Congress, Part 5, Grand Canyon Complex, Arizona, House Document 92-357, September 21, 1972.

[8] Wilderness Recommendation, Grand Canyon Complex, Arizona, pg. 20, included in Additions to the National Wilderness System, Communication from the President to Congress, Part 5, Grand Canyon Complex, Arizona, House Document 92-357, September 21, 1972.

[9] Additions to the National Wilderness System, Communication from the President to Congress, Part 5, Grand Canyon Complex, Arizona, House Document 92-357, September 21, 1972.

[10] See (93) S. 1296 discussions Subcommittee on Parks and Recreation, Committee on Interior and Insular Affairs, June 20, 1973.

[11] Congressional Record, March 20, 1973, pg. 8691, col. 3.

[12] Western River Expeditions, Inc., et al, versus Roger C. B. Morton, et al.

[13] See House Report 93-1374, 9/25/74, pg. 4.

- [14] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, November 13, 1972 correspondence to The Honorable Barry Goldwater from Carol Burke.
- [15] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, April 4, 1973 correspondence to The Honorable Barry Goldwater from Fred Burke, President, Arizona River Runners.
- [16] U.S. Senate Subcommittee on Parks and Recreation, 6/20/73.
- [17] U.S. Senate Subcommittee on Parks and Recreation, 6/20/73, pg. 53.
- [18] U.S. Senate Subcommittee on Parks and Recreation, 6/20/73, pp. 30-1.
- [19] U.S. Senate Subcommittee on Parks and Recreation, 6/20/73, pp. 47-53.
- [20] See House Report 93-1374, 9/25/74, pp. 35-6.
- [21] "Final Environmental Statement, Proposed Colorado River Management Plan" (FES 79-30), finalized July 31, 1979, pg. IX-1.
- [22] "Draft Wilderness Management Plan, Grand Canyon National Park," April 1998, pg. C-2.
- [23] Final Environmental Statement FES 79-30 – Proposed Colorado River Management Plan, July 31, 1979, pg. IX-1.
- [24] "Draft Wilderness Management Plan, Grand Canyon National Park", April 1998, pg. C-2.
- [25] Final Environmental Statement FES 79-30 – Proposed Colorado River Management Plan, July 31, 1979, pg. IX-1.
- [26] "Final Environmental Statement, Proposed Colorado River Management Plan" (FES 79-30), finalized July 31, 1979, pg. IX-7,8.
- [27] "Final Environmental Statement, Proposed Colorado River Management Plan" (FES 79-30), finalized July 31, 1979, pg. IX-12.
- [28] Final Environmental Statement FES 79-30 – Proposed Colorado River Management Plan, July 31, 1979, pg. III-23.
- [29] Colorado River Management Plan, Grand Canyon National Park, 1980, see pp. 15-21.
- [30] Colorado River Management Plan, Grand Canyon National Park, 1980, p. 21.
- [31] Author's conversation with Stump's chief aide Lisa Jackson in March of 1998 affirmed that Stump still adheres to the belief that Bridge Canyon Dam remains a good idea for the Grand Canyon, even in light of the late Barry Goldwater's expressed regret for voting for Glen Canyon dam.
- [32] Congressional Quarterly, 12/27/80, pg. 3649.
- [33] National Parks, September/October 1982, p 15.
- [34] U.S. Court, Arizona District (Phoenix), Case: 2:CV-80-233PHX CLH, opened 03/27/80, closed 07/16/81.
- [35] See Kyl biography entry present on personal Senate web site 2/26/99: - "Lawyer with Jennings, Strouss & Salmon in Phoenix, Arizona 1966-1986."

- [36] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, PROA Press Release dated June 6, 1980.
- [37] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, August 19, 1980 correspondence to Bob Stump from Professional River Outfitters Association, signed by Gaylord I. Staveley.
- [38] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, August 29, 1980 correspondence to Miss C. J. Ross from Eldon Rudd, Member of Congress, signed by Eldon Rudd.
- [39] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, October 16, 1980 correspondence to Eldon Rudd from Pamela Manning, signed by Pamela Manning.
- [40] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, October 20, 1980 correspondence to Pamela Manning from Eldon Rudd, Member of Congress, signed by Eldon Rudd.
- [41] 11/28/80 correspondence from acting NPS Director Ira Hutchison to Eldon Rudd.
- [42] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, Western Union Mailgram confirmation dated 11/04/80, signed by Fred Burke, Carol Burke, Pam Manning, Allison Schmidt, and Judy Welch.
- [43] Congressional Record, 11/14/80, p S14467, col. 2.
- [44] Congressional Record, 11/14/80, p S14467, col. 1.[45] Congressional Record, 11/14/80, p S14469, col. 1.
- [46] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, Correspondence from Fred Burke to Congressman Bob Stump, dated November 29, 1980.
- [47] Congressional Quarterly, December 27, 1980, pg. 3650.
- [48] Wall Street Journal, May 18, 1979 (see Congressional Quarterly, 12/27/80, p 3649)
- [49] Congressional Quarterly, January 10, 1981, pg. 52.
- [50] "Reagan Names Five More Cabinet Members", Congressional Quarterly, Dec 27, 1980, pg. 3649.
- [51] Senate Committee on Energy and Natural Resources, Proposed Nomination of James G. Watt to be Secretary of the Interior, Publication #97-1, January 7-8, 1981.
- [52] Senate Committee on Energy and Natural Resources, Proposed Nomination of James G. Watt to be Secretary of the Interior, Publication #97-1, January 7-8, 1981, pg. 123.
- [53] Statements made during March 9, 1981 meeting before the Conference of National Park Concessionaires, reported in Stealing The National Parks, Don Hummel, p 372. Also in National Parks, June 1981, p 16.
- [54] March 9, 1981 meeting with the Conference of National Park Concessionaires.

- [55] March 9, 1981 meeting with the Conference of National Park Concessionaires
- [56] Sierra, July/August 1981, p. 7.
- [57] Sierra, July/August 1981, p 7.; also National Parks, June 1981, p 18.
- [58] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, January 13, 1981 correspondence from Richard Marks to Fred Burke, reply reference C3823-ARIZ. [59] ARR Inc. Collection, Northern Arizona University, Cline Library Special Collections, Manuscript #30, February 10, 1981 correspondence from William Mellor (MSLF) to Fred Burke.
- [60] Federal Register, 46:109, June 8, 1981, p 30397 [61] Draft Alternatives for the Colorado River Management Plan, June 1981, pg. 3. Note: no signatures were attached and no authors attested to its content.
- [62] Draft Alternatives for the Colorado River Management Plan, June 1981, pg. 3.
- [63] Colorado River Management Plan, December 1981, Grand Canyon National Park, Arizona, pp. 7-9.
- [64] Colorado River Management Plan, December 1981, Grand Canyon National Park, Arizona, pg. 4.
- [65] Senate Committee on Energy and Natural Resources, Proposed Nomination of James G. Watt to be Secretary of the Interior, Publication #97-1, January 7-8, 1981. Senator Bumpers statement to James Watt, pg. 123.
- [66] 11/29/80 correspondence to Bob Stump (attn. Lisa Jackson) from Fred Burke, Arizona River Runners, Inc.
- [67] As of 1979 Hatch River Expeditions had been allocated 10,080 user days/year. In 1989, after final assignment of all summer and winter dates, the Hatch allocation had increased to 11,027 user days/year. Source: Colorado River Management Plan, 1989, Grand Canyon National Park, page C-14.
- [68] In 1998 dollars, based upon the consideration that trip per day fares/value are the same from year to year, valued at the 1998 average per day fare of \$250.
- [69] In 1998 dollars. Motor operators comprise 70% of commercial river running activities. They received 70% of the additional annual award of 26,500 more commercial user days granted in 1981 to concessionaires. That is a total of nearly 315,000 user days made available for motor trips since 1981.
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The Colorado Riverbed Case, 1929-1931

OCTOBER 17, 2007
BY JOHN WEISHEIT

The Colorado Riverbed Case, heard by a special master from the United States Supreme Court, evolved when the State of Utah desired to extract natural resources along the bed of the Colorado River. Before this development could proceed, a legal determination of the riverbed's ownership, between the federal government and the state of Utah, was required.

In this case the plaintiff was the United States, and the defendant was the State of Utah. The final decision would hinge on whether the Colorado (the Green and San Juan rivers too) could be declared a navigable, or a non-navigable river.

The court issued its final decree in 1931, giving possession of the riverbed to the United States in non-navigable sections, for example, the rapids of Cataract Canyon.

Possession of the riverbed in navigable sections were given to the State of Utah, for example, the flatwater of Meander Canyon below Moab, Utah.

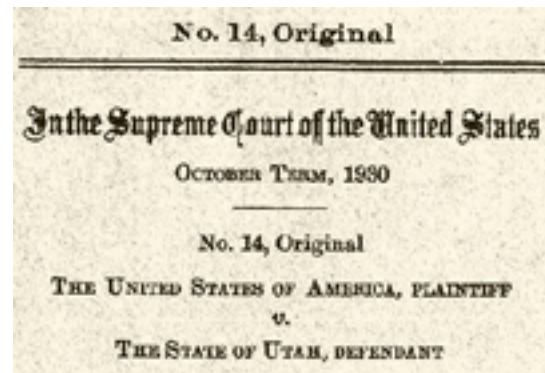
The court, presided by Charles Warren, began acquiring testimony in October 1929, which is the month of Black Tuesday, the infamous crash of the stock market and the beginning of the Great Depression.

The decision of determining what was navigable and non-navigable was entirely dependent on the testimony of individuals who had actual experience navigating the Colorado River and its major tributaries in Utah.

Most of the witnesses were river runners, both professional and recreational; scientists and engineers, who worked for either the United States Geological Survey or the Bureau of Reclamation. Other testimony came from petroleum geologists and placer miners.

Persons of notable historic importance included Frederick Dellenbaugh, a member of the second Powell expedition; Franklin Nims, photographer of the Brown-Stanton expedition; members of the James Best expedition; photographer Ellsworth Kolb; members of the Clyde Eddy expedition; and members of the Pathe-Bray film expedition--to name but a very few.

It could be said that the Colorado Riverbed Case is the largest known oral history of the men and women who utilized the Colorado River basin in Utah prior to 1929. Paper documents of the Colorado Riverbed Case appear to be very rare and are known to be archived in institutions such as the Utah State Historical Society and the Utah State Archives.



An abridged version of the testimony was published at one time, by a non-government printing company. It would appear that this abridged narrative, in two volumes, is quite scarce and unavailable to the general public.

In 1997 I donated a complete microfilm set of the testimony, which I purchased from the Utah State Archives, to the Special Collections Department of the J. Willard Marriott Library, University of Utah.

The digitization of the microfilm was provided by a grant from the Bureau of Reclamation.

Approximately 2,125 pages of the Colorado Riverbed Case were digitized from these microfilm records by iArchives of Orem, Utah.

The link to the records at the Marriott Library, University of Utah is here: [The Colorado Riverbed Case](#)

ADDITIONAL INFORMATION

- The River Bed Case
 - [1931 - The Decree and Utah State Objections](#)
 - [1930 - Riverbed Case Brief USA](#)
 - [1929 - Riverbed Case Brief Utah](#)
 - [1929 - Riverbed Case Brief USA](#)
 - [Testimony Abridged: Volume One with Table of Contents](#) (searchable)
 - [Testimony Abridged: Volume Two with Table of Contents](#) (searchable)
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A New and Interactive Web Site Tracks Drought

NOVEMBER 01, 2007
BY JOHN WEISHEIT

On November 1, the National Oceanic and Atmospheric Administration (NOAA) unveiled a new web site (www.drought.gov) for the public and for water managers nationwide to help them monitor and assess drought conditions instantaneously. This site was specifically created in response to the severe and extended drought conditions of the past decade.



The site is designed to be a clearinghouse for accessing resources and information about drought conditions as they develop or persist. The web site is call the "US Drought Portal" and was developed for the National Integrated Drought Information System (NIDIS), which is led by NOAA, and with collaboration with numerous federal agencies and several state governments.

The web site provides forecasts, how drought may impact individual communities, and what kinds of mitigation measures might exist for them.

Considering the recent and intense wildfire conditions that have prevailed in most of the western states this year, as well as the serious water shortages happening right now in the southeastern United States, this inaugural portal is a bit late, but nonetheless much appreciated.

Hopefully, the Congress and the President will act more swiftly in the future, since the concept of developing a national policy on water scarcity was first proposed in 1973, which never gained any traction even after the drought of 1976-1977, nor after the drought of 1988-1992.

Reclamation Issues Final EIS for Colorado River Operations under Low Reservoir Conditions

NOVEMBER 02, 2007
BY JOHN WEISHEIT



Hoover Dam

On November 2, the Bureau of Reclamation announced the publication and distribution of their Final Environmental Impact Statement (FEIS) for determining guidelines to operate the two largest reservoirs in the United States, Lake Powell and Lake Mead, under low reservoir conditions and in light of probable shortages for the water users of the Colorado River. The popular name for the plan is called Shortage Criteria.

The Final EIS is now available for the public's review on Reclamation's project website. [Click here](#)

Since 1999, when the two reservoirs were nearly full, the total water storage capacity in the two reservoirs has declined steadily to 50%. The last eight years of drought have been observed as the most severe in the last 100 years of recorded history. Reclamations' operating criteria on the opposite end of the spectrum, a plan called Surplus Criteria, was completed in 2001. Both plans will be in effect until 2026, with the possibility of a reconsultation during this interim time period.

The Final EIS presents a Preferred Alternative, which proposes that certain water levels in Lake Mead be used to determine when a shortage condition would be declared in the lower basin of the Colorado River, and how that shortage would be shared by the states of Arizona, California and Nevada.

It also proposes a mechanism to implement river augmentation and conservation of water supplies in Lake Mead to minimize future shortages should the drought persist. The impacts of climate change were not considered by Reclamation in this environmental study.

What this study also does not address is the full range of results from the various paleoclimate studies of the last 30 years. This data is derived from a scientific analysis of tree-rings to reconstruct the historic streamflow patterns of the Colorado River over a time period that spans 1,200 years. Such studies reveal that the long-term annual yield of the Colorado River can be lower than it has been in the last century, and that drought can endure for a few, to many, decades.

The plan is expected to be adopted by the Secretary of the Interior in December, and take effect in January 2008. Reclamation will use this criteria to develop the Annual Operating Plan for Colorado River reservoirs through 2026 .

Additional information:

Read the [comment letter](#) (2007 Draft EIS for Shortage Criteria) by Living Rivers and Center for Biological Diversity. This letter explains that the Bureau of Reclamation took the softest approach possible in developing an operating plan for a systemized river that has nothing left to give.

Desolation Canyon: History along the Green River

NOVEMBER 13, 2007
BY JAMES ATON

Desolation Canyon is part of a canyon/river system in one of the most remote sections of Utah. The Green River cuts a 118-mile, serpentine swath through part of a larger geomorphic unit called the Tavaputs Plateau. It creates a north-south running canyon with east-west drainages. At its deepest section, the river is more than 5,000 feet below some of the wildest country in the lower 48 states; in places it is deeper than the Grand Canyon. The region's massively crumpled topography of steep canyons and deep ravines is topped with hundreds of square miles of evergreen forests. Because the region is remote and protected by such daunting ramparts, it is rich in wildlife, from flying squirrels to black bears.

While some canyon systems of the Colorado River Basin are more difficult to access, Desolation is not an especially inviting place. The rugged terrain and aridity associated with the river, plateau, and canyon have discouraged large scale settlement. Yet people have come to the canyon for over 12,000 years. The area preserves evidence of a wealth of human history, from prehistoric granaries to early twentieth century ranches, ferries, and moonshiner's cabins. Thus, in many ways for various peoples over the millennia, Desolation Canyon was the last best place.

Our story of Desolation's history will divide into five chapters: natural history, prehistory, exploration, settlement, and the federal government. While this book does not qualify as an environmental history per se, the river and canyon figure prominently in understanding the history of the area.

This book will tell the story of all those peoples who have come and gone over the millennia. It will illuminate how they made a living in a canyon system that did not possess natural resources in abundance like other places in the West--grass and/or minerals. Yet it had enough of those to attract individual entrepreneurs. In some

DESOLATION CANYON



HISTORY ALONG THE GREEN RIVER



Photographs by Dan Miller

instances, however, that remoteness worked as an asset for those people; in other instances it doomed their operations.

The attraction of the canyon has always been its water, both in its mainstream channel and in its side-canyon streams and dry washes. The Fremont people, in particular, used the river and drainages for growing food and storing it. The Ute Indians who succeeded (or may have been) the Fremont also were attracted to the water, but especially to the game which used the canyon and side canyon system. While no large Ute villages were nestled down in Desolation, the Utes' presence there in the prehistoric and early historic periods was significant.

The exploration of the Green River and Desolation Canyon was part of the larger saga of the exploration of the Green and Colorado River system beginning with the famous fur trapper William Ashley, continuing with such explorers as John Wesley Powell and subsequent government surveys, as well as adventurer/trappers like George Flavel and Nathaniel Galloway. Many explored the canyon to exploit its animals; some surveyed it to serve as a transportation corridor; and some traveled the canyon with the idea of damming it for irrigation and power. Nothing ultimately came of any of these various exploitive ventures. The adventurers, however, were the first wave in what has become the major use of the canyon: recreational river runners.

The first Anglo settlers in the area were cattlemen and cattle rustlers--the two going hand in hand. A number of ranches such as McPherson's Cradle M and the Seamounts' Rock Creek Ranch operated within the canyon and around its edges. The ranches which coexisted with, then succeeded the outlaws, were part of an unusual settlement pattern in Utah. All were pioneered by non-Mormon individuals outside the village pattern that characterized most late 19th and early 20th century settlement in the state.

A combination of events such as the Great Depression, the Taylor Grazing Act of 1933, the Indian Reorganization Act of 1934, and World War II led to the establishment of more federal government control over the river corridor and surrounding lands. The Bureau of Land Management, the Bureau of Reclamation, the Uintah-Ouray Ute Tribe, and the U.S. Fish and Wildlife Service all have sometimes competing jurisdictions over the river. Issues such as river recreation, endangered species, wilderness, hydroelectric power, cultural resources, and hydrocarbon extraction all play out in Desolation. It is a microcosm of the conflicts going on elsewhere in the federal-land-concentrated West.

Desolation is one of the wildest rivers in the West. Certainly humans have altered some of the natural patterns of flora and fauna, and our book examines these changes. Yet despite a fair amount of use and comings and goings by humans over the many millennia, the riparian corridor retains its wild and pristine qualities. Ultimately, however, the focus of the book will be on the various attempts to make a living in this rugged place and the very human stores behind those attempts. Likewise, the book will look at the hows and whys of this region's abandonment and what its future is as a de facto, federally managed wilderness.

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Utah State University Press will release the book in Spring 2009. It will feature over one hundred black and white and color photographs, plus a DVD film of oral histories from Arden Stewart, Waldo Wilcox, and Clifford Duncan.

ALSO BY JAMES ATON

- [John Wesley Powell. Western Writers Series #114.](#) Boise State University.
-

OTC launches new Colorado River Simulator

NOVEMBER 14, 2007
BY JOHN WEISHEIT

Two weeks ago the Bureau of Reclamation released its first ever plan for managing the Colorado River under shortage conditions. However, their strategy is based on a narrow set of assumptions that underestimate the potential for future shortfalls, and the risks to the region's \$1.7 trillion economy.

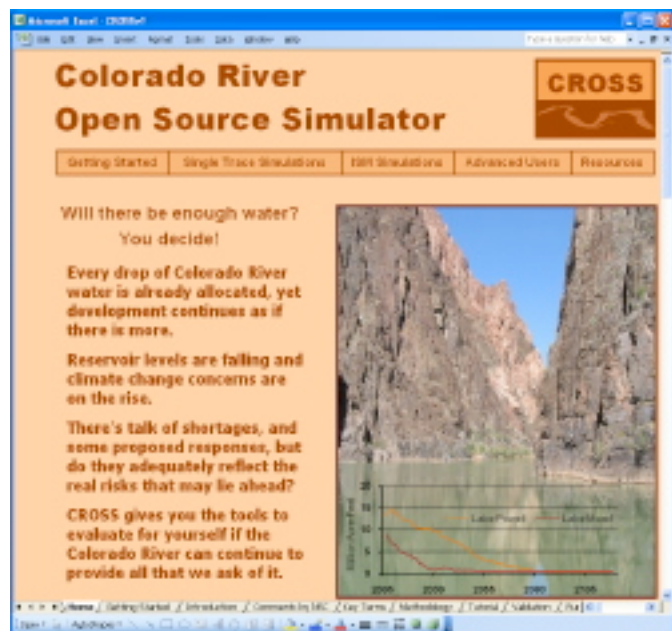
Using the same techniques employed by Reclamation's forecasters, the Colorado River Open Source Simulator (CROSS)* has been developed to allow the public the opportunity to explore a more complete range of scenarios which nature may have in-store for Colorado River water users.

[Click here to download CROSS](#)

CROSS's simple interface is designed for anyone to use, whether familiar with the Colorado or not, says Niklas Christensen, who developed the simulator for OTC and is releasing it today at the American Water Resources Association's annual conference in Albuquerque. Most importantly, using the same inputs, CROSS outputs validate well against Reclamation's far more sophisticated and expensive model, making this a credible and valuable public tool in this era of Colorado River uncertainty.

As a leading scientist on assessing the impact of climate change on the hydrology and water resources of the Colorado River, Christensen is fully aware of the risks that may lie ahead for the watershed. Results from his [research](#), funded by the Department of Energy, predict up to a ten percent reduction in flows by the end of the century. Findings by other scientists, such as Martin Hoerling from the National Oceanic and Atmospheric Administration, predict the change could be much greater and come more quickly, up to a 40 percent reduction in flows by the middle of the century.

None of us can say with precision what's going to happen, but what the science is telling us is that something very likely will, and it's quite surprising that such an important variable has been omitted from Reclamation's shortage forecasting, adds Christensen.



CROSS shows that a reduction in the middle range of predictions, 20% by the year 2100, would render it highly unlikely that Lake Mead, the nation's largest reservoir, would ever fill again, and a strong likelihood of being empty for good by 2050. By contrast, Reclamation's shortage assumptions have Lake Mead holding steady throughout their 2008 - 2060 forecast period. Worse still, should flows mimic what the basin has experienced so far this century, CROSS shows how Lake Powell, the Nation's number two reservoir, and Lake Mead would likely become operationally empty within the next five years.

"With the region in its longest recorded drought, and reservoirs at below 50% capacity, it's amazing that Reclamation modelers assume the Colorado of the future will likely mimic its high flow periods of the past," says Owen Lammers, Executive Director of Living Rivers. With every drop of water already allocated, and just a 2% mistake equivalent to losing Las Vegas' Colorado River water supply, providing the public with comprehensive forecasting is no trivial matter.

Even if climate change were not an issue, Reclamation's forecasts still errors toward the positive. Current estimates of the long-term annual flow of the Colorado River range from 13.0 to 14.7 million acre-feet (maf). Reclamation's forecasting is largely based on flows of 15.0 maf--the recorded average streamflow from 1900 - 2005. These 20th century flows, however, are now recognized to be among the wettest in 1,200 years. While Reclamation acknowledges this, and has conducted some alternative analysis with flows as low as 14.6 maf, it failed to examine the full range of variability offered by researchers.

CROSS illustrates how at 14.0 maf Reclamation's new shortage policy will be immediately taxed, very likely requiring consultation with the Secretary of Interior to determine who gets what water and when, the precise action these policies were designed to avoid. At 13 maf, the new system collapses altogether with Lake Mead likely operationally empty by 2020, rising for only brief periods through the rest of the century.

"It's not that we feel such scenarios are any more valid than what Reclamation has offered, its just their omission misrepresents the potential for shortages that science suggest we ought to acknowledge", stresses Lammers. Fortunately with CROSS, anyone can explore the full range of possibilities, as well as the amount of water conservation we can employ to successfully navigate any uncertainty.

*CROSS requires the use of Microsoft Excel installed on a Microsoft Windows operating system. CROSS is designed to be a self-contained application and does not require the user have previous experience with Microsoft Excel.

We would like to remind everybody that a hydrological model is what humans have created, rather than what really happens in nature.

Additional information:

- [Comment letter and water budget of April 2007 by Living Rivers on the Draft EIS of Interim Guidelines](#)
 - [Scripps Institute press release of February 2008 "When Will Lake Mead Go Dry?"](#)
 - [Paper by Scripps's Pierce and Barnett](#)
 - Reclamation web page: [Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead](#)
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California Coastal Commission tentatively okays seawater desalination plant

NOVEMBER 17, 2007
BY JOHN WEISHEIT

The California Coastal Commission has tentatively approved a proposal to construct a desalination plant near San Diego. The vote was 9-3. The staff recommended that the proposal be denied. Some suspect the commission's deciding factor was to avoid future litigation with the developer. However, the possibility of legal action from citizens now seems just as likely. The final decision will arrive in December or January.

The intention of this facility is to convert sea water into potable water, by using reverse-osmosis technology, for 300,000 residents at the coastal community of Carlsbad. Proposed by Poseidon Resources, the desal project would be built next to an existing, natural gas-fired, electric power station, and at a cost of \$300 million.

San Diego County has been hard pressed to find the water supplies it needs for spreading more urban sprawl. Increasing water supplies from the Colorado River has also been a tenuous process for the county water managers, now spanning a decade of planning and environmental review.

The Colorado River Basin Project Act of 1968 encourages plans to find alternative sources of water for the users of Colorado River water. Besides desalination, water managers are pursuing other forms of augmentation: conservation, cloud seeding, removal of water-thirsty (non-native) plants, water transfers from farms to cities, and water imports from far away rivers such as the Columbia or Mississippi.

This kind of conservation and augmentation is not the answer, since the intention of the new water acquisition is to rapidly convert it into more urban sprawl. This perpetual quest for more and more water has become redundant and completely absurd.

There are 11,000 desal plants in 120 countries at the present time and, at full capacity, create only 4 billion gallons per day. If you do the conversion, the maximum annual world capacity of desalinated water is only 4.48 million acre-feet, which does not even match the annual flow of the Green River, which is the major tributary of the Colorado River.

Instead of hounding new water supplies as fuel for growth, the managers need to look, instead, at developing two kinds of projects: one, a reliable water reserve (aquifer recharge programs come to mind) to get their existing customers through the tough times of water scarcity, and two, to provide habitat for their other customers--the wildlife and reserve lands protected by state and federal laws.

Additional Information:

- [Click here to read article from San Diego Union Tribune](#)
 - [Desalination report by World Wildlife Fund](#)
 - [Southern Nevada Water Authority augmentation study](#)
 - [Comments from state of Colorado on augmentation](#)
 - [Southwest Hydrology issue on desalination](#)
 - [Desal roadmap by Reclamation and Sandia Lab](#)
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Hydropower is likely to have no future on the Colorado

NOVEMBER 30, 2007
BY JOHN WEISHEIT

Sediment deposits at Lake Powell
Shaun McKinnon of the Arizona Republic wrote a piece on November 24, 2007 about an overall reduction in the snow pack along the headwaters of the Colorado River--a consequence of climate change. According to [government forecasters](#), a reduced snow pack is predicted through the winter and early spring. The article by McKinnon is linked [here](#).



Sediment deposits at Lake Powell

This piece went beyond the normal coverage of water scarcity events by extending the reach to look at other things. For example, the revenue losses for hydropower and recreation, the battering that watershed ecosystems are currently taking on, and how [aquifer recharge](#) programs can offer a positive management solution.

I will take some exception to the discussion about hydropower. Contrary to popular perceptions, the production of hydropower from Colorado River dams is actually quite insignificant. For example, the coal-burning Navajo Generating Station near Lake Powell will produce more electricity annually than all the [hydropower facilities](#) on the Colorado River combined. Hydropower operations cannot run at maximum capacity on an annual basis. If they were operated in this manner, they would effectively drain the reservoirs in no time.

Another popular perception is that hydropower is utilized by a typical suburban household in metropolitan Phoenix, Las Vegas or Los Angeles. In reality, typical hydropower customers are irrigation projects, rural communities, and various government facilities. [Click here](#) to see a spreadsheet of hydropower customers.

Hydropower revenues are down significantly at the dams before the biggest reservoirs on the Colorado River, namely Lake Powell and Lake Mead. For example in early 2005, the efficiency of the power plant at Glen Canyon Dam was 60% of normal, which is about as efficient as a junk yard pick-up truck.

Both reservoirs are presently half-full, which means there is not enough water in storage to provide the water pressure, or [hydraulic head](#), necessary to spin the generators into dollars sufficient enough to be economically viable.

The loss of revenue due to the system's continuing inefficiency has required the [re-negotiation of contracts](#) with customers that use this subsidized federal power and, stifled the [payback schedule \(see spreadsheet\)](#) to the U.S. Treasury for the construction loans provided to build the water projects of the Colorado River basin.

In the Arizona Republic piece Tim Culbertson, a spokesperson for the hydropower industry, reports to the public that this form of energy production is a clean, renewable resource--which is a stretch.

Reservoirs may not necessarily emit carbon dioxide or methane at the power station, but greenhouse gas emissions do occur at the places where rivers and tributary streams dump their organic loads (leaf litter and driftwood) into the reservoir, where it begins to decay. This natural breakdown of organic materials affects altered river corridors in negative ways ([Report](#)).

For example, it depletes the oxygen levels at lower layers of the reservoir, which are called "dead zones," because fish can suffocate. Sometimes this layer of depleted oxygen actually passes through the turbines and into the Colorado River below the dams.

Besides emitting carbon dioxide and methane gas into the atmosphere, the decay process also produces hydrogen sulfide, which is corrosive and foul-smelling. In fact, when weather conditions are favorable, I have observed the upper reservoir fizz like a carbonated drink, and with matches have ignited the bubbling vents of methane on the exposed mud deposits. Click [here](#) to see photos of a methane gas vent at Lake Powell in 2005 ("mud volcano").

A discussion of greenhouse gases from reservoirs can be read by clicking [here](#). To learn more about the science of limnology [click here](#).

Algae blooms too are a health and ecosystem problem in reservoirs, such as is occurring on the reservoirs on the [Klamath River](#) in California and the [Green River](#) in Wyoming.

Along with the organic detritus, sediment is also deposited into the reservoir's river arms and tributary canyons. These sediment deposits are currently perched above the current level of the reservoirs. They are massive and over 30 miles in length along the main stem river arms.

They are anything but clean: when it rains, the deposits turn into thick, gooey mud. When the weather is dry and windy, dust fills the sky. The tumbleweeds and salt cedar grow so thickly that camping, and hiking opportunities into side canyons, are usually impossible.

Hydropower on the Colorado River is presently not a renewable resource--anymore than a solar panel at the Arctic Circle in the winter time is renewable.

In fact, hydropower on the Colorado River may never work efficiently again, since Colorado River water managers are allowing the demand for water to match, and even exceed, the supply, which is all the more exacerbated by this persistent drought and the looming impacts of a warming global atmosphere.

ADDITIONAL INFORMATION

- [2012 - Oakridge Lab Hydropower Report on Impacts of Climate Change](#)
 - [2011 - Testimony by Leslie James. CREDA.](#)
 - [Harnessing Hydropower: The Earth's Natural Resource. WAPA.](#)
 - [2011- 2014: Summary western reservoir conditions. WAPA.](#)
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Pipe Dreams and Schemes: Escalating Costs for Diminishing Returns

DECEMBER 08, 2007
BY JOHN WEISHEIT

The **Animas - La Plata Project** is the Bureau of Reclamation's latest construction endeavor, which recently **celebrated** the final dump truck load for its

earthen-fill dam. The reservoir is 500 feet above the Animas River and just outside of the city limits of Durango, Colorado. Across the river from a city park, where uranium ore was once processed, lies the pumping station that will lift the river water to the reservoir.

The price tag for this project has escalated from \$338 to **\$564 million** (does not include the energy cost to lift the water) and the water management gain is a mere 50,000 acre-feet. The water from this perched reservoir is dispensed by putting it back in the river to spread the consumption for downstream users on an annual basis. The activists who oppose the project call it "Jurassic Pork."

Thus the stage has been set for the development of Colorado River resources for the 21st century: big expensive projects for small amounts of water from a river that has absolutely nothing left to give.

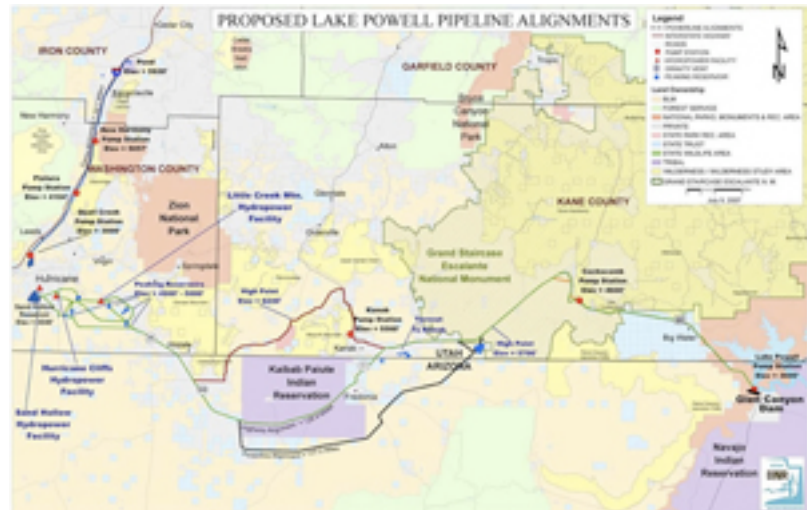
Here is a list of some of the other Vitamin P (pork) projects for the welfare developers dependent on the Colorado River. For a complete list [click here](#).

Drop 2 Reservoir

This **project** will store extraordinary irrigation water in a reservoir along the All American Canal in California. The water in storage (supplements from heavy rainstorms) will be transferred for consumption by Las Vegas from its pumping station next to Lake Mead. The projected cost for the Southern Nevada Water Authority to build this 8,000 acre-foot storage reservoir, is now projected to cost \$206 million, according to the **Associated Press** on 12/7/07. This augmentation project is totally dependent on inclement weather and the annual yield for Nevada will range from zero to 40,000 acre-feet and for a cumulative total of 280,000 acre-feet.

Nevada Groundwater Project

The Southern Nevada Water Authority (SNWA) **proposes** to build over 300 miles of pipelines from pumping stations at groundwater basins in Nevada for a total yield of 40,000 acre-feet annually for 10 years. Afterwards, SNWA will be allowed an additional



20,000 acre-feet annually from the basin based on the results of monitoring and impact analysis. Various newspapers have recently cited the project cost to be over \$3 billion.

St. George Pipeline

The Washington County Water Conservancy District of southwest Utah proposes to build 160 miles of pipeline from Lake Powell with pump stations to lift the water over a divide (elevation of 6,240 feet) to St. George. The priority date for this water right is 1958. The annual Colorado River depletion for Washington County is 70,000 acre-feet, with a pipeline lateral to carry 10,000 acre-feet to Kane County. There is discussion for a lateral pipeline to carry 20,000 acre-feet to Iron County. The total projected price has been escalating over time and presently estimated to be \$1 billion. For more information [click here](#) & [click here](#). See also [FERC](#) (Docket # is P-12966).

Navajo-Gallup Water Supply Project

The proposed pipeline and laterals (270 miles) would deplete 36,000 acre-feet of water annually from the San Juan River for the Navajo and Jicarilla Apache tribes and for the city of Gallup, New Mexico. The cost estimate is not precisely known and ranges from \$700 million to \$1 billion. For more information [click here](#).

Navajo-Flagstaff Pipeline

A pipeline from Lake Powell (or Lake Mead) for consumption at Navajo and Hopi reservations, and various cities of Coconino County such as Flagstaff, Tusayan and Williams, and for a low ball cost estimate of \$650 million. For more information [click here](#). For Reclamation water study [click here](#). ([archive](#))

Flaming Gorge Pipeline

A 400-mile pipeline from Flaming Gorge Reservoir in Wyoming to Fort Collins, Colorado. The depletion from the reservoir could range from 165,000 to 400,000 acre-feet at an estimated cost of \$4 billion dollars. For more information [click here](#).

Colorado River Shortage Agreement Falls Short

DECEMBER 17, 2007
BY JOHN WEISHEIT

The [agreement](#) signed last week by Interior Secretary Kempthorne and the seven states of the Colorado River basin at Caesar's Palace in Las Vegas, is not a heroic achievement at all.



[Click here](#) to read the Record of Decision.

[Click here](#) for the Biological Opinion.

[Click here](#) for coverage in the Arizona Republic.

[Click here](#) for coverage in the New York Times.

The Department of Interior needs good news right now, even if it is contrived, since the ethics of the department have been crumbling in cronyism, according to this [Associated Press story](#).

This water shortage management plan merely reflects the unfinished work initiated by the [Colorado River Basin Project Act](#) of 1968, which is the Congressional response to the Supreme Court decision called [AZ v CA](#) (1963-4).

Incidentally, this is the legislation that saved Grand Canyon from dams as a result of the [campaign](#) from the Sierra Club and the state of California.

This agreement is about the preparation of one document on an annual basis: the [Annual Operating Plan](#) (AOP) for the Colorado River. Specifically in response to whatever the projected circumstances will be on an annual basis. For example, If they have surpluses, this is what they will do. If they have shortages, this is what they will do. When they have supplies from augmentation, this is what they will do.

Augmentation to the river supply are things that have not yet been built or finished. For example, the proposed [Drop 2 Reservoir](#) and the [Yuma Desalting Plant](#).

There really is nothing long-term or, more importantly, visionary, about this plan at all. It is an "interim plan". If the situation gets worse, the states will re-consult and initiate a revised plan. This is about, at best, micro-managing water resources and with an

attitude of let's-wait-and-see-what-happens.

Why it took 40 years to finish the job is because this was a time period of surplus, which was created at first by a lack of consumption in the Upper Basin states, and then later by the abundant snow packs of the 1980s and 1990s. It is interesting that the managers have this wait-and-see attitude, which means they are not really managers at all, but opportunists. To paraphrase honest authors of western water history: they are [mountebanks](#).

The long-term components of forgotten but necessary action items yet to be determined are:

- how will they finance and build massive augmentation projects?
- how will they operate the system when a reservoir empties?
- how will they manage hydropower collapse?
- how will they vacate the sediment accumulating in the reservoirs?
- how will they manage probable maximum floods when one finally arrives?
- how will they decommission obsolete dams without interrupting water deliveries?

The major rescue idea from the hydraulic despots, for the moment, is the massive desalination of ocean water. The 1968 Act allows augmentation activities for Colorado River basin states. However, because they have not initiated any arrangements for planning or financing over the last 40 years, [until now](#), whatever they might have up their sleeves is probably--too late. It will take decades to get this infrastructure in place.

Since the Iraq War has robbed the US Treasury and the present economy is precariously resting on jack stands, it is not clear that the capital for augmentation planning and development can be acquired easily anytime soon.

This situation should force the water managers to do what could have done in the first place: planning within the confines of finite resources, stop coveting other water communities, maintaining affordability for citizens, and conserving the water that Nature provides as much as possible. Conservation that creates a reserve supply and not conservation that creates more resource dependency by reaching beyond appropriate build-out, which fosters only more demoralizing congestion and pollution.

More information:

[Climate change and the death of stationarity: A new era for western water?](#) Stephen Gray.

Las Vegas: Mirage in the Mojave

FEBRUARY 05, 2008
BY EMILY UNDERWOOD



Water, water, water... There is no shortage of water in the desert but exactly the right amount, a perfect ratio of water to rock. Of water to sand, insuring that wide, free, open, generous spacing among plants and animals, homes and towns and cities, which makes the arid West so different from any other part of the nation. There is no lack of water here, unless you try to establish a city where no city should be. Edward Abbey

Las Vegas is in one of the driest valleys of the driest state in the U.S. From the view of a **satellite**, the wrinkled topography surrounding the city is the color of tanned hide, with only rough patches of green that spackle the mountains, and the dark blue fissure of the Colorado River on the Nevada/Arizona border.

Artesian springs once sustained pioneers as they crossed the harsh Mojave desert, giving Las Vegas its Spanish name, The Meadows. But in 1905, Las Vegas mechanically tapped the aquifer, interrupting the springs' natural flow. They soon dried up, and the meadows they supported are now gone.

Las Vegas's population ballooned as military industry took off and big-time resorts began to boom. By the 1940's, the city had depleted the aquifer to the point that Las Vegas could not continue to grow without seeking water elsewhere. Nevada had gained an annual allotment of 300,000 acre-feet of Colorado River water from the 1922 Colorado River Compact and the 1928 Boulder Canyon Project Act. The expansion of the 1940s provided the money and the incentive to build a **delivery system** for transporting the water from Lake Mead to Las Vegas Valley. In the 1980s and 90s, the city finally managed to create a system that could transport the full allotment.

Today, Las Vegas Valley relies on the Colorado to survive; more than 90% of its annual water supply comes from Lake Mead reservoir. And survive it has, with the tenacity and

opportunism of any spiny desert creature. With 70,000 newcomers per year, Las Vegas is the fastest growing city in America

Pat Mulroy, Nevada's "Water Czar" and manager of the Southern Nevada Water Authority (SNWA), has enabled this expansion. She has nearly doubled the amount of water that the SNWA can extract from Lake Mead with the clever use of **return-flow credits**, which allow the city to subtract the wastewater that it treats and returns to the reservoir from its yearly allotment.

Combined with conservation methods that also appear to increase water supply while simply enabling growth, Mulroy has created an illusion of plenty that keeps Las Vegas fountains flowing, golf courses green, and investors smiling.

The SNWA projects that, if current growth continues, Las Vegas Valley's annual water needs will rise from 500,000 acre-feet to 1,200,000 acre-feet by 2054. The graph in their **2006 report** shows a line rising steadily away from the x/y axis toward infinity.

However, as of September 2007, drought had shrunk Lake Mead by 51%. For Mulroy, this was an unanticipated catastrophe. In order to decrease its reliance on the Colorado, SNWA developed a diverse portfolio of resources. Some of the water will be recovered from water banks, aquifers that are recharged artificially, rather than filling naturally with snowmelt. Nevada maintains an in-state water bank, as well as banking water in Arizona and California.

In the future, the SNWA hopes that Nevada will be able to exchange construction of seawater desalinization plants in ocean states for water rights, but the agency emphasizes that this is not a short-term possibility.

However, banking, trading, buying and reusing water will account for only about 66-79% of the anticipated demand. The remaining water, at least 21%, at most 34%, is slated to come from in-state resources. In August 2004, the SNWA submitted a proposal to extract up to 200,000 acre-feet of water per year from seven hydrographic basins in the Great Basin Aquifer System.

No one knows if the aquifer can sustain this flow, or if, once depleted, it will fail to recharge like the **Ogallala aquifer** in the Midwest. Nevertheless, in April 2007, the Nevada State Engineer approved a segment of the plan that will allow a pipeline, stretching approximately 256 miles from White Pine County to Las Vegas, to pump 40,000 acre-feet per year from Spring Valley. After ten years of environmental monitoring, this amount may grow to 60,000 acre-feet per year. It will be the **largest groundwater project** of its kind ever built in the United States.

In November, a Jim Lehrer News Hour addressed **water in the West**. To a panel including rancher Dean Baker, community activist Lisa Mayo-DeRiso, University of Nevada faculty-member Ron Smith, and marketing CEO Billy Vassiliadis, Judy Woodruff posed the question, "Has growth been good or bad for Nevada?" The panelists had

mixed responses. Sustainability, they all seemed to agree, is a worthy goal, but they had varying degrees of hope for attaining it.

The perspective of Dean Baker, a rancher in White Pine County where the pipeline will begin, is rooted in the limitations of desert life. While growth has benefited Nevada in many ways, he argued, "It's unsustainable and you just can't keep spreading over the desert, and raising one house after another, and putting water to it when there isn't any water."

He has seen the environmental effects of agricultural irrigation. With alarming frequency, but little predictability, tapping into groundwater causes springs to dry up, and leaves behind dusty, bare depressions in the ground. The SNWA project will pump far more water from far deeper aquifers, and Baker does not believe that the agency has correctly predicted how much water is available and what the environmental effects of pumping it will be. He fears that it will cause irrevocable damage to ranchland, farmland, and wilderness preserves of northeast Nevada and northwest Utah.

Billy Vassiliadis, head of the marketing firm R&R Partners and distinguished in 2004 by the New York Times as Las Vegas's adman, huckster and dealer extraordinaire, warned about stopping growth in Las Vegas. In response to Judy Woodruff's question, Vassiliadis replied, "I'm a realist. And the reality is that if growth stops, many, many bad things will happen to the economy of this state."

Indirectly, he referred to a [study](#) commissioned by Pat Mulroy and the SNWA that projects the economic effects of a sudden end to growth in Las Vegas's Clark County. (This sudden end of growth is what Pat Mulroy predicts will happen by 2015 if Las Vegas doesn't get the all the water it is asking for from White Pine and Lincoln counties.) The results, which some consider contrived to favor business interests, are nevertheless arresting: hundreds of thousands of unemployed and \$200 billion lost in state tax collections over 14 years.

In light of such impending catastrophe, Vassiliadis argued, "The growth in this state--good, bad or otherwise--fuels state government, it fuels schools, it fuels transportation, it fuels health care. And right now maybe we're addicted to it, but the fact is it's a part of our life and something we have to come to grips with."

Ron Smith, vice president for research at the University of Nevada, and the executive director of the Urban Sustainability Initiative, fears that the people of Las Vegas have failed to come to grips with the issue on either side.

"I think there's a huge amount of people in the middle that are neither pro-growth or anti-growth. They are not cognizant at all of what the issues are. They are not concerned. They're newcomers. They've been here on the average in Las Vegas 13 years. We've got 5,000 people moving here a month at this point. The real issue is, do we have the political and social will to deal with sustainability? That is the issue."

Seen from space at night, Las Vegas is a lonely constellation on the North American continent. The eastern seaboard is lit up like an obsessive doodler's geometric Etch-A-Sketch. But the arid Southwest retains substantial areas of darkness--rural ranch and farmland, open space. In these expanses, less visible and less audible than the glowing frenzy of Las Vegas, live Nevadans of all species who do not emit enough light to catch a satellite's attention but still eke out a desert living.

The pipeline is a gamble that would cost Las Vegas billions of dollars should the project fall through. Pat Mulroy herself agrees that the hydrological studies that have been conducted are, "At best, an educated guess." But money, unlike water, is not a limited resource in Las Vegas. Should the project fail to deliver everything the agency promises, should the water table drop unexpectedly, for example, or the technical feat of constructing the pipeline be too difficult, Las Vegas's survival is not at stake. Its growth rate might slow, or even stop. Investors might, at least temporarily, retreat. But affluence gives Las Vegas a cactus-like resilience that is not available to the ranches and ecosystems of rural Nevada. For them, the water diverted to meet the needs of Las Vegas may prove to be their lifeblood.

In Dean Baker's experience, the popular will to find sustainable alternatives to building the pipeline does not exist. He has protested, publicized, and testified, appearing on countless radio and television programs, writing editorials and spending more time fighting for his cause than ranching. The SNWA project has moved forward unimpeded. Pat Mulroy calls conservation measures that Tucson and Albuquerque have used with great success, "politically impossible in Las Vegas." With his statement, "I'm a realist," Billy Vassiliadis dismisses the environmentalists, community activists, and rural interests who would challenge growth in Nevada.

Baker has attempted to distance himself from politics, "God help us if this is a party issue." But his predicament, and that of every other life and livelihood dependent on Nevada's water, is inescapably political. When Baker testified at a hearing for two environmental bills that would have slowed the SNWA project, he found that, behind closed doors, under heavy pressure from powerful business interests and the SNWA, the bills had been rejected before his arrival. More than ironically, perhaps tragically, his disappointment was described by the [Reno Gazette Journal](#) as, "A lesson in politics.

Most politicians, including Obama and Clinton, speak about Nevada's resource problems in vague terms of mediation: ensuring that growth continues while somehow still protecting rural and environmental interests. John Edwards, recently lost from the race, was the only candidate to emphasize the importance of conservation and sustainable growth over making everybody happy. But even he did not seem able, or willing, to risk describing specifically what sustainable growth in Nevada would look like.

The [Progressive Leadership Alliance of Nevada](#) (PLAN) calculates that if Las Vegas could reduce its daily per capita water consumption to the level that Tucson has achieved, the city could save 190,424 acre-feet of water every year. Contrast this with the controversial 40,000 acre-feet that will be taken annually from eastern Nevada if the

pipeline goes forward as planned. It would require a transformation of aesthetics and expectations, but with that saved water, PLAN explains, the city could continue to grow without tapping into rural Nevada's groundwater.

PLAN's vision, of water served in restaurants only by request, and bed sheets changed only once every three days for long-term guests in hotels, is inspiring. However, by softening its message of conservation with the reassurance that the city could continue growing, PLAN still sidesteps the larger issue. If conservation only fuels more growth, more growth will inevitably lead to a greater demand for water.

As the New Urban West develops, Western water may, for a time, continue to follow the same old physics-defying axiom, "running uphill toward money." This is what scholar [Hal Roth contends](#), insisting that no Western city has ever been truly inhibited by lack of water, only by the lack of funds.

However, climate scientists expect severe, global warming-related drying trends to further dessicate the West in coming decades (see the February 2008 issue of [National Geographic](#) for a sobering article on this subject). In the case of Las Vegas, it may be science, rather than history, that proves predictive of the future of the New Urban West.

One thing is clear: by framing growth in Nevada as all-or-nothing, New Urban West or economic collapse, community leaders like Billy Vassiliadis and Pat Mulroy offer nothing new. Nor do they speak for Las Vegasans themselves. In 2004, halfway through the current drought, [a poll](#) commissioned by the Las Vegas Review-Journal found that 75 percent of the residents in Clark County were willing to limit construction until the drought lifted.

By insisting that maintaining the momentum of Las Vegas's growth is the only viable alternative, Vassiliadis and Mulroy jeopardize not only the interests of those who currently must make a living in Nevada, but also those who will have to live there in the future. All sides of the debate pay lip service to the necessity of striking some kind of balance between rural and urban interests, desert and city, environment and economics. But so long as the discussion is restricted by a myopic realism that merely, inadequately, cynically, describes the status quo, the word balance will remain meaningless, or worse, euphemistic.

Choose your verb: Las Vegas is limited/constrained/supported/made ridiculous/inspired by the desert. The relationship between the Mirage and the Mojave will have to be redefined in the next decades. It will be up to Nevadan voters to do the redefining.

Announcing: public comment period on operations of Glen Canyon Dam

FEBRUARY 09, 2008
BY THE EDITORS

Upper Colorado Regional Office

Media Contact: Doug Hendrix or Dennis Kubly



Mimicking river floods at Glen Canyon Dam

(801) 524-3837 (801) 524-3715 Release Date:
February 8, 2008

Comments due: February 22, 2008

Reclamation Releases Environmental Assessment for Public Comment on Proposed High-Flow and Steady Flow Experiment on the Colorado River

Salt Lake City, UT - The Department of the Interior's Bureau of Reclamation today released for public comment an Environmental Assessment that describes a proposed early-March 2008 high-flow test and fall steady flow experiment from Glen Canyon Dam downstream through the Grand Canyon. Comments will be due by close of business February 22, 2008.

"Reclamation continues to support the application of science and adaptive management to the operation of Glen Canyon Dam and the management of natural resources in Glen and Grand Canyon," Reclamation Commissioner Robert W. Johnson said in announcing the availability of the Environmental Assessment. "Experiments such as the proposed high-flow and fall steady flow continue to advance our understanding of the ecosystem while providing tangible benefits to the fishery, river environment, and recreational users in Grand Canyon National Park."

The environmental assessment evaluates the impact of the proposed test on a wide range of environmental and socioeconomic resources. A decision by the Department of the Interior is anticipated in late February 2008, with plans to conduct the high flow in early March 2008, if the decision is to move forward with the experiment.

The high-flow experiment and associated research activities, should they occur, will be undertaken cooperatively by scientists and

resource managers from Interior's U.S. Geological Survey (USGS), Reclamation, National Park Service, U.S. Fish and Wildlife Service, and Bureau of Indian Affairs.

The 2008 test would be similar to the previous high-flow tests conducted in 1996 and 2004, but the amount of sediment available is considerably larger. In particular, scientists have concluded that more sand is needed to rebuild sandbars throughout the 277-mile reach of Grand Canyon National Park than was available in 1996 or 2004. Currently, sand supplies in the river are at a 10-year high with a volume about three times greater than in 2004 due to tributary inflows below the dam over the past 16 months.

The Environmental Assessment is available for public review on the Internet by following this link--[click here](#)--or by contacting Dennis Kubly, Bureau of Reclamation, Upper Colorado Regional Office, 125 S. State Street, Salt Lake City, Utah 84138, and by telephone at (801) 524-3715.

Lake Mead Will Go Dry

FEBRUARY 19, 2008

BY JOHN WEISHEIT



Intake towers at Hoover Dam

Scripps Institution of Oceanography at the University of California San Diego created quite a stir in the media February 12, 2008 with their [press release](#), which stated that there is a 50 percent chance Lake Mead, a key source of water for millions of people in the southwestern United States, will be dry by 2021, if climate changes as expected and future water usage is not curtailed. [Click here](#) to read the science paper.

The Colorado River water managers immediately discounted the independent work of these scientists. Larry Dozier, deputy general manager of the Central Arizona project had this to say, "[Our] studies evaluated a broad range of potential hydrologic conditions and several alternative operating criteria. Lake Mead did not 'go dry' at any time during the various scenarios. Shortages were manageable." (Arizona Daily Star.)

Terry Fulp, area manager of Hoover Dam operations for the Bureau of Reclamation [said the following](#), "There is nothing new about the findings in the Scripps study. Such 'doom and gloom' predictions have been circulating for years now. In my lifetime, I don't expect to ever see it."

Thomas Piechota, an associate professor at University of Nevada, Las Vegas, [remarked](#), "First, an assumption was made that no shortages would be declared on the Colorado River under low reservoir conditions. This is in opposition to the shortage criteria that the basin states recently established in the [Final Environmental Impact Statement](#): Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead."

The study by Scripps referenced CROSS, or Colorado River Open Source Simulator, which is available [on this very web site](#). With this simulator you can run, if you choose to, your own worst case scenario that DOES take into consideration declared shortages and climate change projections.

Why take anybody's word for it when you can decide the truth for yourself?

References:

- [Central Arizona Project: official press release](#).

- [Associated Press by Amanda Lee Myers.](#)
 - [Lake Powell Chronicle by Bob Phillips.](#)
 - [Las Vegas Review Journal by Henry Brean.](#)
 - [When Will Lake Mead Go Dry?](#)
 - [CROSS](#)
-

Rearranging deck chairs at Glen Canyon Dam

APRIL 13, 2008

BY JOHN WEISHEIT

The experimental flood release last month from Glen Canyon Dam was merely another **public relations façade** staged by the Department of the Interior believing three times is a charm. Luck is not how one restores the Grand Canyon.



Jet tubes at Glen Canyon Dam mimic natural floods

The first media hoopla was in **1996**, then again in **2004**, and now in 2008. Twelve years, three experimental floods, same results: a degraded ecosystem for this prized national park. These experiments do nothing but rearrange the furniture and most of the shuffling occurs in Marble Canyon, which is the first 61 miles of Grand Canyon National Park.

Sometimes mistakes occurred, such as the 2004 high flow test which, due to circumstances revolving around logistical problems, prevented any gains in scientific knowledge concerning the biological resources threatened by the fluctuating hydropower flows from Glen Canyon Dam.

How much sand has been removed from Marble Canyon since operations at Glen Canyon Dam began? According to the USGS, 16,000,000 metric tons of sand were initially scoured away in the spring months of 1965 (two years after the the initial filling Lake Powell began) between the Lee's Ferry gage (Mile 0) and the gage at Phantom Ranch (Mile 88) (**Rubin, 2001**). These clear water dam releases peaked at 58,100 cfs on June 13, 1965.

You can view the historic data of Lake Powell **here** once power generation began, upon reaching the minimum pool elevation of 3490 feet above sea level, and also during the snow melt of 1965.

During the initial filling of the reservoir, and to provide water for downstream use at the same time, the concrete plug in the left diversion tunnel was designed to bypass water through **3 steel gates (photo)** that could be operated from a chamber that had access from the dam superstructure (**see page 42: dam construction and specifications**). After the reservoir reached the level of the penstocks to commence power generation, and the testing of the various waterworks, the bypass gates and chamber were back-filled with concrete on **July 7, 1965**.

The reduction of sand since the scouring event of 1965 in Marble Canyon has been 6,000,000 metric tons ([Wright, 2008](#)), and this removal rate remains ongoing despite the sand conservation mandate of the Grand Canyon Protection Act of [1992](#).

Even if Interior began to operate the dam with the single purpose of rebuilding the beach and habitat conditions as they existed in 1992, it would take 40 to 45 years to achieve this goal, they say. The odds are clearly against the status quo player.

To view photos of beaches near the time of Glen Canyon Dam construction and after the 2008 experimental flood [click here](#).

To view photos of beaches as they appeared in 1889 [click here](#) and search for photographs of Grand Canyon by Robert Brewster Stanton.

Why is this charade tolerated? Why does Interior continue to stage farcical media sensations instead of providing results that are tangible and real?

The scientists [explained in 2005](#) that the sand replenishment hypothesis from the 1995 EIS is flawed. The scientists recommended that mechanical sediment augmentation may need to be implemented afterall.

[Mechanical sediment augmentation](#) is physically extracting sediment that is currently being stored in the reservoir, Lake Powell. A system of dredges and pipelines would need to be funded and built to pump a slurry of sediment into the river below Glen Canyon Dam or 15 miles downstream at Lees Ferry. If not a slurry pipeline, the alternative would be 500 trucks a day hauling sediment over roads.

To view photos of the sediment accumulation occurring at Lake Powell, [click here](#).

To view satellite imagery of Lake Powell sediment, [click here](#).

It is clear: there will never be enough sediment for the ecosystem until different applications are seriously examined. Namely, mechanical sediment augmentation and restoring a free-flowing river through Grand Canyon by dismantling Glen Canyon Dam.

Before the big dams of the upper Colorado River basin were built, the total annual amount of suspended sediment in the river from 1925 to 1940 was 195 million tons. Lake Mead accepted a serious load of sediment during its initial filling period, which started in 1935.

Scientists noted how a change in climate patterns (the intensity of summer storms have decreased overall) occurred around 1940. From 1941 to 1957, the annual sediment load in the river dropped to 85 million tons. 1957 is the year that the upper Colorado River basin dam construction began. These reservoirs now intercept the sediment load of the Colorado River basin. The flow of sediment that enters Lake Powell is now 44 million tons annually.

[Click here](#) to read a science article about sediment.

[Click here](#) to see what happens to a sediment-choked reservoir in flood stage.

Very few people have seen Cataract Canyon above Lake Powell. Those who have, like myself, will tell you how the sediment passing through Cataract Canyon creates [ample beaches](#) and sandbars every year. And yes, Cataract Canyon has endangered species too, but at least they are not extirpated (regionally extinct) like they are in Grand Canyon. Scientists are not studying Cataract Canyon sediment dynamics at all, even though the [National Research Council](#) has advised they do.

Meanwhile, behind the curtain of these staged events, Interior continues their bureaucratic stalling, obstructionism, lying to the public, and wasting their revenues on useless programs. No different than a polluter paying the fine, instead of correcting the problem.

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As of September 9, 2008 and reported by the [Associated Press](#), the sandbars created by the experimental flood last March have eroded away.

[Watch](#) this time-lapse photography of eroding sandbars.

[Sediment Response to Construction and Recent Adaptive Management of Glen Canyon Dam, Colorado River, Arizona](#). Booth, 2005.([cache](#))

Towing icebergs to San Pedro: Augmenting dwindling water supplies

APRIL 25, 2008

BY JOHN WEISHEIT

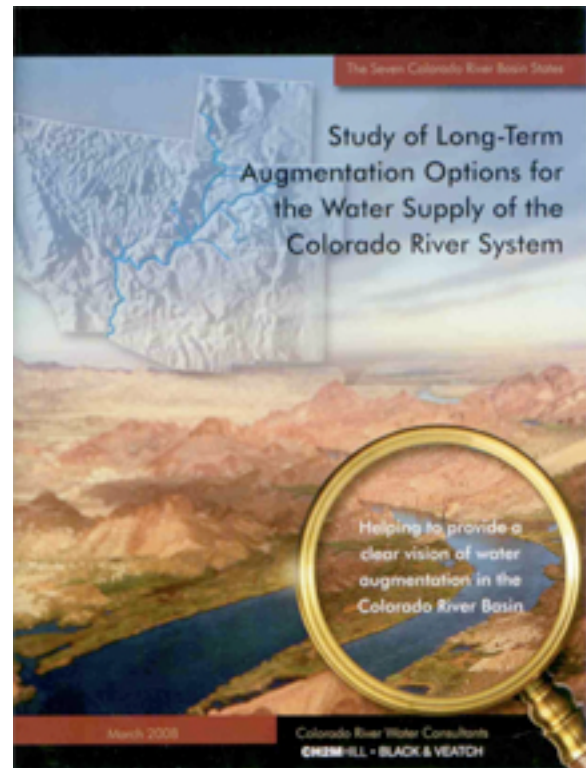
Not satisfied that the entire contents of the Colorado River sloshes inside the bloated bellies of the seven basin states, this monster is now searching for water beyond their horizons. They call it river augmentation, or the mechanical harvesting of water to artificially enhance their ever-dwindling supplies at home, as represented by the two largest reservoirs in the United States [going empty](#).

They intend to convert water that is not pristine and make it potable through reverse-osmosis, pump river water from farawayplaces up and over the Great Divide, sprinkle clouds with silver iodine crystals so moisture will condense in the Colorado River watershed instead of the Mississippi watershed, and tow Arctic icebergs to southern California harbors. [Click here \(cached\)](#) & [here \(cached\)](#) to read stories in the press.

To accomplish this they have determined that it is okay to consume more limited resources like fossil fuels and uranium, and pollute our atmosphere and expose us to radiation, so that electricity can provide what God has forsaken.

The water purveyors finished their mission decades ago to make the land productive, but they just can't stop and leave well enough alone. Commissioned with \$750,000 from the [Southern Nevada Water Authority](#) and steered by the monster itself, two self-serving engineering firms, [CH2MHILL & Black & Veatch](#), have produced an imaginative playbook called "[Study of Long-Term Augmentation Options for the Water Supply of the Colorado River System](#)."

Its bad enough that this breed of engineers have designed dams and reservoirs that will be rendered useless by sediment fill or old age, whichever comes first, but now they are going to double stack the paradigm with more expensive infrastructure that is just as vulnerable.



Colorado River augmentation study

As historian Donald Worster, who wrote *Rivers of Empire*, said in 1985, "Democracy cannot survive where technical expertise, accumulated capital, or their combination is allowed to take command."

Surely the public must realize if the monster gets its way, a third stack of infrastructure will soon follow. Is this really what you want? Did they even ask you? Are you aware how much this is going to cost?

Missing from this devouring document are things everyday people like me want: wet river beds, national parks that function, steady-state planning, cradle-to-grave economic planning, conservation to build a water reserve instead of debilitating congestion, growing crops for reasons other than maintaining a water right, and energy conservation and efficiency that brightens our air, water and future.

[Click here](#) to read "The One-Dam Solution"

[Click here](#) to read National Research Council's report on Colorado River water supplies

[Click here](#) to read National Research Council's new report on desalination.

Click [here](#) to read on article on desalination.

Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona.

**SCOPING DOCUMENT 1
LAKE POWELL PIPELINE PROJECT**

MAY 06, 2008
BY THE EDITORS

FERC PROJECT No. 12966

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

Federal Energy Regulatory Commission
Office of Energy Projects
Division of Hydropower Licensing
Washington, DC

Please direct any questions about the licensing of this pipeline to Jim Fargo at (202) 502-6095, james.fargo@ferc.gov.

May 2008

[Click here](#) to review the Scoping Document by the Federal Energy Regulatory Commission.

[Click here](#) to study the project documents from the website of Utah Division of Water Resources.

Comments due July 7, 2008.

NOTICE: FEDERAL ENERGY REGULATORY COMMISSION
Washington, DC 20426

DATE: May 5, 2008

MEMORANDUM TO: The Agency/Party Addressed

SUBJECT: Scoping of environmental issues for the proposed Lake Powell Pipeline Project, FERC No. 12966, Utah and Arizona.

The Federal Energy Regulatory Commission (Commission) is doing National Environmental Policy Act (NEPA) scoping for the proposed Lake Powell Pipeline Project and the anticipated license application for the Lake Powell Hydroelectric System FERC No. 12966 (Hydro System), a component of the water supply pipeline, located in Utah and Arizona.

The Utah Board of Natural Resources (Utah) filed its Notice of Intent and Pre-Application Document (PAD) for the Hydro System on March 4, 2008 and will use the Commissions Integrated Licensing Process (ILP) for the Hydro System licensing, and to prepare the environmental record needed by other federal agencies reviewing the project.

Because the Hydro System is only one component of the proposed 180-mile-long water supply pipeline project, construction of substantial parts of the overall project will require permits from other federal agencies. Utah intends its PAD (and subsequent studies) to be used by all the agencies that would need to issue permits for the pipeline, developing a record that can be used to prepare a single environmental analysis document covering the entire water supply pipeline.

Pursuant to NEPA, we intend to prepare an environmental impact statement (EIS) for the entire Lake Powell Pipeline Project, in cooperation with other federal agencies, that would be used by the Commission to determine whether, and under what conditions, to issue an original hydropower license for the Hydro System and that would be used by other federal agencies for their decisions. To support and assist our environmental review, we are beginning the public scoping process to ensure that all pertinent issues are identified and analyzed.

We invite you to participate in the scoping process and are circulating the attached Scoping Document 1 (SD1) to provide you with information on the project and to ask for comments and suggestions on our preliminary list of issues and alternatives to be addressed in the EIS. Please review this SD1 and, if you wish to provide comments, follow the instructions included in section 5.0 Request for Information.

The Commission's regulations for the ILP require that parties wishing to submit comments on the PAD or staff's SD1, or wishing to request studies, do so within 60 days of the issuance date of SD1.

As part of our scoping process and in an effort to identify issues, concerns, and opportunities associated with the proposed action, we will hold three scoping meetings on June 10, 11, and 12, 2008, to receive comments on the scope of the EIS. The public scoping meetings will be held at the Dixie Center, 1835 Convention Center Drive, St. George, Utah; Cedar City Festival Hall Conference Center, 105 North 100 East, Cedar City, Utah; and Kanab Middle School, 690 Cowboy Way, Kanab, Utah. More information on the meetings is available in the attached SD1.

A site visit is typically held in conjunction with the scoping meeting. The site visit for the projects is scheduled to take place on June 9 and June 10, 2008. The SD1 also has details on the site visit, including the person to contact if you are interested in attending.

Please direct any questions about the licensing of the Hydro System to Jim Fargo at (202) 502-6095, james.fargo@ferc.gov.

Enclosure: Scoping Document 1

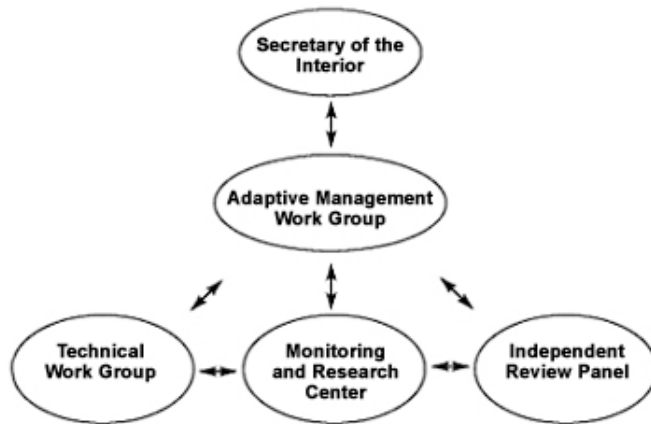
cc: Utah Board of Water Resources
1594 W. North Temple
P.O. Box 14620
Salt Lake City, UT 84114-6201

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
 - October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
 - September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
 - August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
 - June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
 - December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
 - March 21, 2011 - [Lake Powell Pipeline Documents](#)
 - June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
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Structure of AMP



The Beginning Years of the Adaptive Management Program for operations at Glen Canyon Dam

AUGUST 21, 2008
BY JOHN WEISHEIT

For twelve years now, the Glen Canyon Dam (GCD) Adaptive Management Program (AMP) has provided volumes of knowledge and understanding of the Colorado River ecosystem in Grand Canyon National Park, but has yet to fulfill its primary mandate to stop the cultural and biological degradation of this sublime landscape.

The reason why the program does not work and remains an embarrassment to the watching world of ecosystem management professionals is the recalcitrant attitude of state agencies concerning the management of subsidized federal hydropower.

THE CHRONOLOGY

October 30, 1992 - [Grand Canyon Protection Act](#) (GCPA) passed by Congress, which specifies that Glen Canyon Dam be operated in a manner that recovers the resource values of Grand Canyon National Park.

February 14, 1993 - The lead researchers of aquatic ecology recommend the reestablishment of natural hydrological patterns below Glen Canyon Dam to restore the endangered fish populations in Grand Canyon National Park and submit their report ([1994 version](#)).

April 25, 1993 - Western Area Power Administration ([WAPA](#)) [requests modifications](#) to the proposed preferred alternative on operations at Glen Canyon Dam (GCD). The request is beneficial to hydropower production, rather than park values at Grand Canyon. Thus the stage is set for a management strategy to circle around the GCPA for the next 15 years.

January, 1994 - [Draft Environmental Impact Statement](#) on operations at GCD is published ([Federal Notice](#)).

1994 - A Beach/Habitat Building Flow (BHBF), an experimental high flow release from GCD to restore beaches and sandbars is proposed. The water/power agencies claim it violates the **Colorado River Basin Project Act of 1968** as an unwarranted spill (water bypassing the generators and the revenue they produce). Interior believes **GCPA changed the definition of spill**, because the bypassed water is now used for an additional purpose, the restoration of natural and cultural values in Grand Canyon. As of 2008, this fundamental debate remains unresolved and has undermined the intent of the GCPA.

March 21, 1994 - Final ruling on critical habitat for the endangered fish of the Colorado River.

November 17, 1994 - Meeting held to initiate planning for a science center to conduct monitoring (quantitative) and research (qualitative) in the Grand Canyon specific to adaptive management. **Adaptive management** is defined as a management plan designed from the outset to "learn by doing," and to actively test hypotheses and adjust treatments as new information becomes available.

November 9, 1994 - [Non Use Economic Value Policy Analysis](#)

December 21, 1994 - Biological Opinion (BO) of GCD for Modified Low Fluctuating Flow (MLFF), the preferred alternative of the Environmental Impact Statement (EIS) on operations of GCD. The BO is explicit about the importance of initiating experimental flows: "If the Service believes there is not sufficient progress, Glen Canyon Dam would be operated as SASF flows (Seasonally Adjusted Steady Flow) during spring through fall (April to October) beginning in 1998. If the Service determines a study design can not be developed that is expected to provided information to support removal of jeopardy to the razorback sucker and humpback chub populations in the Grand Canyon and associated tributaries, such will be considered new information and may be grounds for reinitating formal consultation."

January 5, 1995 - Bureau of Reclamation (Reclamation) staff meet in Denver. **Glen Canyon Environmental Studies (GCES)** to transition out for new **Adaptive Management Program (AMP)**.

January 12, 1995 - The first AMP Transition Working Group (TWG) meets in Phoenix. [Minutes](#).

February 22, 1995 - Transition Monitoring Group meets in Tempe, AZ. [Minutes](#).

March 9, 1995 - Meeting with Duncan Patton (GCES chief scientist) in Tempe, AZ, on concept of research center at Flagstaff, AZ, and called Grand Canyon Observatory. This program for long-term monitoring of Grand Canyon resources will later be called **Grand Canyon Monitoring and Research Center (GCMRC)** of the US Geological Survey.

March 21, 1995 - **GCD FEIS** is filed with Environmental Protection Agency (EPA).

March 23, 1995 - Transition Working Group meets in Phoenix. **Minutes**.

March 24, 1995 - FEIS availability is published in **Federal Register**.

March 28, 1995 - **Letter** from environmental groups (NGOs) to Reclamation Commissioner Daniel Beard and Reclamation's response.

March 1995 - Government Accountability Office (GAO) begins audit of FEIS, as mandated by the GCPA. Signing the Record of Decision (ROD) must wait for completion of audit.

April 6, 1995 - **Reclamation's response** to Biological Opinion.

April 11, 1995 - Briefing paper for first experimental Beach/Habitat Building Flow (BHBF) of 52,000 cfs. **Draft Programmatic Agreement for Cultural Resources** presented.

April 28, 1995 - Meeting with Steve Magnussen (staff of Interior's Deputy Secretary for Water and Science). Magnussen will become the chairperson for the Adaptive Management Working Group (AMWG), otherwise known as the Secretary's Designee and appointed directly by the Secretary of Interior (Bruce Babbitt). **Minutes**.

May 2, 1995 - Transition Monitoring Working Group meets in Phoenix.

June 20, 1995 - Meeting for Programmatic Agreement on Cultural Resources for Glen Canyon Dam Operations in Phoenix.

June 21, 1995 - Transition Work Group meets in Phoenix. **Minutes**.

June 21, 1995 - Begin draft appraisal of Selective Withdrawal (Temperature Control Device).

August 11, 1995 - **Non-use Value Report** is peer-reviewed by National Academy of Sciences.

August 30, 1995 - TWG meets in Phoenix. **Minutes**.

September, 1995 - Non-Use Value economic report to be issued.

Sept, 30 1995 - GCES Phase II programming ends.

November 30, 1995 - Transition Working Group meets in Phoenix where goals and objectives are discussed. A draft of **final objectives** is presented July 2, 1996. For example, that endangered fish populations will be maintained or enhanced at levels that were observed ten years prior (1987) and on a ten year rolling average; to attain sustainable population of humpback chub in the mainstem of the Colorado River by

2005. The population of Humpback Chub **has declined** from approximately 9,322 adults in 1989 to 6,017 adults in 2006, and no sustainable population yet exists in the mainstem. **Minutes**.

January 11-12, 1996 - Razorback Sucker Workshop

February 13, 1996 - TWG meets in Phoenix. A draft appraisal of **Selective Withdrawal** (Temperature Control Device or TCD) is presented, and a **final appraisal** was completed in 1999. The purpose of the TCD is to warm the water from GCD so that endangered fish can spawn in the mainstem of the Colorado River, which is a primary objective of the AMP. See note below for October 21, 1996. **Minutes**.

March 22 - April 6, 1996 - Experimental flows start and end with low, steady flows to measure the volume of beaches and sandbars. The main event is an experimental flood flow of 45,000 cfs from GCD to lift sand from the bottom of the river to the margins of the river. **Studies since 1996** refute the original findings of the 1995 GCD FEIS concerning sediment conservation in Grand Canyon.

May 21, 1996 - TWG meets in Phoenix. **Minutes**.
Initial **results of BHBF** are presented.
The first **AMWG Charter** is presented (revised in 2006).
The first **guidelines for GCMRC** are presented.
The first **schedule for a Long-Term Monitoring Plan** is presented.

June 19, 1996 - First meeting of GCMRC (Planning Work Group) in Phoenix, AZ. **Minutes**.

July 2, 1996 - TWG meets in Phoenix. **Final objectives** are presented.

August 29, 1996 - TWG meeting in Phoenix. **Minutes**.

October, 1996 - GAO completes **audit** of 1995 EIS on GCD operations.

October 9, 1996 - Secretary of Interior Bruce Babbitt signs the **Record of Decision** for operations of GCD.

October 21, 1996 - Reclamation announces the first public scoping for potential impacts from installing a temperature control device (TCD) at GCD. **Public scoping** occurred again in 2004, but as of 2008 a final action plan has yet to be delivered by Reclamation. See note for February 13, 1996 above.

November 21, 1996 - TWG meeting in Phoenix. **Minutes**.

January 9, 1997 - Temperature Control Device Workshop meets in Phoenix.

January 22, 1997 - GCMRC meeting in Phoenix. **Minutes**.

February 3-4, 1997 - TWG meets in Phoenix. [Draft of Long-Term \(five year\) Monitoring and Research Strategic Plan](#) is presented. [Minutes](#).

March 3, 1997 - [Federal Register Notice](#) that stipulates, among other things, that Congress will receive an annual report on the progress of fulfilling the requirements of the GCPA, and the Annual Operating Plan (AOP) process would include public participation in setting the operations at Glen Canyon Dam specific to fulfilling the mandates of the GCPA. Contrarily, only one final Report to Congress has been produced (see below) and the operating criteria specified to work with the goals of the GCPA and the Biological Opinion (see the above entry of December 21, 1994 to begin Seasonally Adjusted Steady Flows by April, 1998) were compromised by the protectors of hydropower revenue. See also the Federal Register Notice of [February 24, 1998](#) and the AOP of [1998](#), which affirms status quo operations for Glen Canyon Dam.

[Draft 1998 Report to Congress](#) is presented to AMP.
[Final 2002 Report to Congress](#) is formally transmitted.
[2008 motion](#) to finalize a Report to Congress.

March 6, 1997 - TWG meets in Phoenix to discuss Long-term Monitoring Plan.

April 8-10, 1997 - First Science Symposium held in Albuquerque, NM, with papers published by the sponsor, the George Wright Society.

August 26, 1997 - Special meeting in Phoenix to consider BHBF in Spring, 1998, which will not occur until November of 2004.

September 10, 1997 - First Adaptive Management Working Group (AMWG) meeting in Tempe, AZ. [Minutes](#).

October 2-3, 1997 - TWG meeting. [Minutes](#).

October 13, 1998 - [Federal Register Notice](#) on 4.5 foot extensions for spillway gates at Glen Canyon Dam.

November 3-5, 1997 - A three-day experimental [Habitat Maintenance Flow](#) (HMF) of 30,600 cfs was performed to rebuild mid-elevation beaches and low-lying sandbars that had eroded away after the March, 1996 experimental BHBF.

November 4-5, 1997 - TWG meeting. [Minutes](#).

December 10-11, 1997 - TWG meeting. [Minutes](#).

January 15-16, 1998 - AMWG meets in Phoenix. [Minutes](#).
[Results of HMF](#) experimental flow.

October, 2001 - [Comments on the recovery goals for endangered fish](#). Coggins and Gloss; GCMRC.

###

Additional information:

[1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.

AMP CORE DOCUMENTS (Archive)

- [1992 - Grand Canyon Protection Act of 1992](#)
- [1994 - Biological Opinion](#)
- [1995 - Reclamation response to BiOp](#)
- [1995 - Environmental Impact Statement](#)
- [1996 - Record of Decision](#)

Charter

- [1996 AMP Charter](#)
- [2006 AMP Charter](#)
- [2008 AMP Charter](#)

REVIEWS BY NATIONAL ACADEMY OF SCIENCES

- [1990 - Colorado River ecology and dam management](#)
- [1991 - Colorado River Reservoir Operations](#)
- [1994 - Review: Glen Canyon Dam long-term monitoring plan](#)
- [1996 - Review: River Resource Management in the Grand Canyon](#)
- [1999 - Review: Glen Canyon Dam adaptive management program](#)

Science

- [1996 - Guidelines of Grand Canyon Monitoring and Research Center \(USGS\)](#)
- [2000 - Protocols of Science Advisors](#)
- [1999 Draft SCORE Report](#)
- [2005 - SCORE Report](#)

Annual Reports

- [1997 - Federal Register Notice for Annual Reports to Congress](#)
- [2002 - First Annual Report](#)
- [2010 - Second Annual Report](#)

Strategic Plan

- [2001 - Strategic Plan with Appendices](#)

Desired Future Conditions

- [1996 - Objectives](#)
- [2010 - Desired Future Conditions](#)
- [2011 - Desired Future Conditions](#)

ADDITIONAL INFORMATION

- [Recommendations to the Secretary of Interior](#) (combined)
- [2009 - Supplemental Biological Opinion](#)

Click [here](#) (Susskind) and [here](#) (Camacho) and [here](#) (Fellers) to read objective evaluations of the Adaptive Management Program. Fellers' summary as a powerpoint presentation is [here](#). Click [here](#) to read report by Lenard. And finally a paper by [Ann Brower et al.](#)

Click [here](#) to read *Environmental History of the Colorado River: A Changing Focus of Science*. Bennati and Shannon.

[Balancing a Complex Set of Interests: Glen Canyon Dam and Adaptive Management](#). Water Education Fund, 2010.

Click [here](#) ([cached](#)) to read Reclamation's response (10/21/09) to the critiques of the AMP. This fascinating article demonstrates that the agency is clearly not going to solve the Grand Canyon impairment issue anytime soon.

[2008 - Report to the Secretary's Designee](#) on clarifications of roles in GCD Adaptive Management Program.

- - Click [here](#) to read a history of operations at GCD before Adaptive Management.
 - Click [here](#) to read letter by litigants about AMP to Secretary of Interior.
 - Click [here](#) for AMP primary documents not available on its web page.

 - [2009 - List of extirpated species at Grand Canyon](#)
 - [2009 - New York Times article](#)
 - [2009 - Hydropower study by David Marcus. Table 1. Tables 2 and 3.](#)

 - [2010 - Desired Future Conditions](#)
 - [2010 - Answers](#) from Grand Canyon Trust and National Parks and Conservation to Subcommittee Chairs Napolitano and Grijalva about AMP.
 - [2011 - Analysis of the 2000 low steady flow](#). Ralston.
-

Escalante National Monument: A history of the first proposal

AUGUST 27, 2008
BY JOHN WEISHEIT

Harry Aurand, a petroleum geologist, believed that the best resource value for the Canyonlands province of the Colorado Plateau was its superlative scenery. While looking for oil throughout the landscape, he decided that it was more appropriate to protect the landscape under the auspices of the national park system and, in 1934, planted a seed within the Department of Interior.



The Maze District and the Orange Cliffs. Phot by Josh Mahan.

In 1936 [Harold L. Ickes](#), then Secretary of Interior, presented the idea to President Franklin Roosevelt and Utah Governor Harry H. Blood, without success. In fact, he tried several more times without success, even after World War II when Harry Truman was president.

Click [here](#) to read the preliminary report.

The long correspondence for the creation of this federal reserve land can be read by clicking [here](#).

A chronology for this correspondence, prepared by the National Park Service, can be read by clicking [here](#).

An article from the Utah Historical Quarterly (Spring, 1965), can be read by clicking [here](#).

The national monument would have encompassed 4 million acres and protected the canyons of the San Juan, Green and Colorado rivers in southeastern Utah, including all of gentle beauty of Glen Canyon, which is presently under hundreds of feet of water as the result of completing Glen Canyon Dam sufficiently enough to begin the filling of the reservoir in 1963.

The reason why the monument was never enacted into law, through the [Antiquities Act of 1906](#), was due to the objections of Utah politicians. They thought this landscape was best used for extractive purposes which, through the years, has never proven to have

any lasting economic value. This was the argument Harry Aurand was trying to make, even in the tough times of the Great Depression.

Roosevelt did what he could in Canyon Country, by successfully creating [Capitol Reef National Monument](#) in 1937, which became a national park in 1971.

During the administration of President Lyndon Johnson, [Canyonlands National Park](#) was created by an act of Congress in 1964, and in 1996 President William Clinton created [Grand Staircase-Escalante National Monument](#) (1.9 million acres), which is administered by the Bureau of Land Management.

Click [here](#) to read an article from the Salt Lake Tribune (October 6, 1996) about Grand Staircase-Escalante NM.

In 1996 [Harold M. Ickes](#), the son of Secretary Harold L. Ickes, was Clinton's deputy chief-of-staff.

The Colorado River Research Program

SEPTEMBER 09, 2008
BY JOHN WEISHEIT

The Colorado River Research Program in Grand Canyon National Park was initiated by the National Park Service in 1973 to secure scientific data to provide a factual basis for the development and the implementation of a plan for appropriate visitor-use of the Colorado River from Lee's Ferry to Grand Wash Cliffs and for the effective management of the natural and cultural resources within the Inner Canyons. The intensified research program consists of a series of interdisciplinary investigations that deal with the resources of the riparian and the aquatic zones and with the visitor-uses including river-running, camping, hiking, and sight-seeing of these resources, as well as the impact of use and the upstream operations of Glen Canyon Dam upon canyon resources and visitor enjoyment.



Colorado River
Research Program

REPORT SERIES
GRAND CANYON NATIONAL PARK

United States
Department of the Interior
National Park Service

Here are the Technical Reports:

No. 1: [Design and Method of the Sociological Research in the Grand Canyon](#). Bo Shelby and Joyce M. Nielsen. June, 1976.

No. 2: [Motors and Oars in the Grand Canyon](#). Bo Shelby and Joyce M. Nielsen. June, 1976.

No. 3: [Use Levels and Crowding in the Grand Canyon](#). Bo Shelby and Joyce M. Nielsen. June, 1976.

No. 4: [Private and Commercial Trips in the Grand Canyon](#). Bo Shelby and Joyce M. Nielsen. June, 1976.

No. 5: [Survey of Fishes, Mammals and Herpetofauna of the Colorado River in Grand Canyon](#). Royal D. Suttkus, Glenn H. Clemmer, Clyde Jones, and C. Robert Shoop. June, 1976.

NOTE: Study #5 recommended the following on page 48: "Economic, biological, political and time facets should be explored for every conceivable plan to restore the habitat. A plan to restore a portion of the Colorado River in Grand Canyon area on a seasonal

basis (seasonally adjusted flows) to coincide with the spawning of [humpback chub] should be explored. Possible plans include: Removal of Glen Canyon Dam and construction of a by-pass around Glen Canyon Dam.

No. 6: [A Periphytic Microflora Analysis of the Colorado River and Major Tributaries in Grand Canyon And Vicinity](#). David B. Czamecki, Dean W. Blinn, Terrill Tompkins. June, 1976.

No. 7: [Alterations of Terrace Deposits and Beaches of the Colorado River in Grand Canyon](#). Alan D. Howard and Robert Dolan. July, 1976.

No. 8: [Limnologic Studies on the Colorado River from Lees Ferry to Diamond Creek](#). Gerald Cole and Dennis M. Kubly. June, 1976.

No. 9: [User Carrying Capacity for River-Running the Colorado River in the Grand Canyon](#). F. Yates Bordon. November, 1976.

No. 10: [An Ecological Survey of the Riparian Zone of the Colorado River between Lees Ferry and Grand Wash Cliffs](#). Steven W. Carothers and Others. June, 1976.

No. 11: [Human Waste Disposal on Beaches of the Colorado River in Grand Canyon](#). Robert A. Phillips and Cynthia Sortor Lynch. February, 1977.

No. 12: [Survey of Bacteria, Phytoplankton and Trace Chemistry of the Lower Colorado River and Tributaries in the Grand Canyon National Park](#). Milton R. Sommerfeld, Wayne M. Crayton and Nancy L. Crane. July, 1976.

No. 13: [Hydrology and Sedimentology of the Colorado River in Grand Canyon](#). Emmett M. Laursen and Elliot Silverston. December, 1976.

No. 14: [Summer Distribution and Reproductive Status of Fish of the Colorado River in Grand Canyon National Park and Vicinity, 1975](#). C. O. Minckley and Dean W. Blinn. June, 1976.

No. 15: [Aquatic Investigation on the Colorado River from Separation Canyon to the Grand Cliffs, Grand Canyon National Park](#). James E. Deacon and John R. Baker. June, 1976.

No. 16: [An Economic Analysis of the River Running Industry in the Grand Canyon National Park](#). C. R. Michael Parent and F. E. Robeson. December, 1976.

No. 17: [Synthesis and Management Implications of the Colorado River Research Program](#). R. Roy Johnson, September, 1977.

No. 18: [Sound-Level Evaluations of Motor Noise from Pontoon Rafts in the Grand Canyon](#). D. N. Thompson, A. J. Rogers, Jr., F. Y. Borden. 1974.

MANAGEMENT PLANS OF GRAND CANYON NATIONAL PARK

- 1970 - Wilderness Study Report
- 1971 - Final Wilderness Recommendation
- [1973 - Revised Final Wilderness Recommendation](#)
- 1976 - Preliminary Wilderness Study Report (included below in 1980 Final Wilderness Recommendation)
- [1979 - Colorado River Management Final EIS](#)
- [1979 - Colorado River Management Plan](#)
- [1980 - Grand Canyon Wilderness Recommendation](#)
- [1988 - Backcountry Management Plan](#)
- [1989 - Colorado River Management Plan](#)
- [1993 - Wilderness Recommendation Plan](#)
- [1995 - General Management Plan](#)
- [1997 - Scoping Report](#)
- [1998 - Draft Wilderness Management Plan](#)
- [2004 - Draft EIS Volume One](#)
- [2004 - Draft EIS Volume Two](#)
- [2004 - Draft EIS Appendices](#)
- [2005 - Final EIS Volume One](#)
- [2005 - Final EIS Volume Two](#)
- [2005 - Final EIS Volume Three](#)
- [2005 - Final EIS Appendices](#)
- [2006 - Record of Decision](#)

Additional Information:

[Celebrating the Grand Canyon](#). An environmental history of Grand Canyon by Jeff Ingram.

[Link](#) to website of Grand Canyon National Park's Colorado River Management Plan

[Link](#) to Federal Code for Grand Canyon National Park

[1999 - Wilderness Management Plan for Grand Canyon National Park and the Colorado River](#). McCully.

[2002 - Motorized River Ranger Patrols in the Grand Canyon: Are They the Minimum Required for the Administration of Wilderness?](#) Boussard.

A Legal History of Operations at Glen Canyon Dam

OCTOBER 03, 2008
BY JOHN WEISHEIT



For 34 years, the Bureau of Reclamation has performed a dog and pony show, that currently costs taxpayers

\$36,000 a day to avoid effective environmental compliance for the protection and preservation of Grand Canyon National Park. This agonizing spectacle has been a complete waste of public resources and will continue to be until the current constructs of federal law are better defined by Congress to eliminate the clever manipulation of state and federal managers of hydropower. These managers hide behind a public relations messaging system they created, explaining how hydropower is cheap, renewable and plentiful, which in every case is **false**. The hidden costs and trade-offs to mitigate the environmental harm brought on to water quantity, water quality and destruction of **critical habitat**, completely nullifies the so-called benefits of federal hydropower.

Special thanks to Robert Lippman for his help to compose this chronology.

[1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.

July 19, 1962 - **Lake Powell** filling and **Glen Canyon Dam** (GCD) operating criteria are set by Department of the Interior (**27 Fed. Reg. 6851**). **Stewart Lee Udall** is Interior Secretary. The criteria provided for, among other things, minimum flows of 1,000 cubic feet per second (cfs), and annual minimal release of 8.23 million acre-feet (maf). There are no comprehensive federal or state environmental laws to be compliant with. Glen Canyon Dam is operated to maximize hydropower revenue as a **peaking power** facility.

January 1, 1970 - The National Environmental Policy Act (**NEPA**) becomes effective, which provides that all federal decision makers must systematically consider and document environmental impacts (either a comprehensive Environmental Impact Statement (**EIS**), or a less detailed Environmental Assessment (EA)), of all major federal actions having a significant impact on the quality of the human environment, and with the goal "to create and maintain conditions under which man and nature can exist in productive harmony and fulfill the social, economic and other requirements of present and future generations of Americans."

June 10, 1970 - Department of the Interior (**DOI**) publishes, pursuant to the Colorado River Basin Project Act (**CRBP**) of 1968, "**criteria** for coordinated long range operation of Colorado River reservoirs" (70 Fed. Reg. 7138). DOI and the Bureau of Reclamation (**Reclamation**) fail to initiate NEPA compliance for this major federal action.

Even as of today, the five-year and annual operating plans (AOP) for the Colorado River basin does not undergo any formal public review process outside of elite "working groups" that typically meet at McCarran Airport in Las Vegas. Therefore, for example, the beaches and sandbars in Grand Canyon, that were enhanced by an **artificial flood flow** last March, are being **destroyed** by higher fluctuating hydropower releases from Lake Powell upstream to help refill Lake Mead downstream (**read article**).

- 2005 - **Long-Range Operating Criteria** (LROC)
- 2004 - **Environmental Assessment** of 2005 LROC
- 2002 - **Letter from Upper Colorado River Commission** discouraging public participation

October 27, 1972 - **Public Law 92-593** establishes Glen Canyon National Recreation Area from Lee's Ferry, Arizona to the Orange Cliffs west of Canyonlands National Park. Glen Canyon was **first proposed** as a national monument in 1935 by the Roosevelt administration. National recreation areas are managed under a multiple use agenda, which is a tier below national monuments and parks. However, designated **wilderness** areas are not necessarily precluded in a national recreation area.

April 21, 1973 - Friends of the Earth (FOE) v. Armstrong (**360 F Supp, 165, 1973**). Joining **FOE** in this suit for relief and injunction are **Wasatch Mountain Club** and outfitter **Kenneth Sleight**. The defendants are DOI and Reclamation; **Armstrong** is Reclamation Commissioner. The purpose is to prevent the rising waters of Lake Powell from creeping into Rainbow Bridge National Monument (**RBNM**) as a violation of the Colorado River Storage Project Act (**CRSP**) of 1956, which states the intent to keep impounded waters out of RBNM. The case was upheld by the federal District Court in Utah, but was lost in the appeal process.

June 1973 - The National Science Foundation begins to publish studies related to Lake Powell and called the **Lake Powell Research Project Bulletin**. The reports provide baseline data and analysis for the reservoir and the surrounding region.

July, 31, 1973 - Grand Canyon Dories v. Walker. Two river trip concessioners, **Grand Canyon Dories** and **OARS**, bring forward to federal court a temporary **injunction** regarding Reclamation's announcement (July 27, 1973) about extreme low water releases from GCD following extreme peaking power releases in the morning. The defendants are National Park Service (NPS), Reclamation and DOI; **Walker** is Director of National Park Service (NPS).

Water year 1973 created a significant elevation rise at Lake Powell reservoir, which increases the **efficiency** of hydropower production. People such as myself were visiting Lake Powell that summer and remember mature, green cottonwood trees completely underwater, as well as ancient **Indian ruins** and rock art. The federal government, during the Great Depression, tried to **protect** the cultural heritage of Glen Canyon, but insensitivity to this concept by Utah politicians prevailed. The **National Historic Preservation Act** was passed by Congress in 1966.

August 1, 1973 - Grand Canyon Dories v. Walker. A court order of **dismissal** was entered.

August 2, 1973 - FOE v. Armstrong. The defendants appeal and the court decides that CRSP does not prohibit Lake Powell from entering RBNM because Congress denied funding to construct a proposed **concrete dike** to keep Lake Powell reservoir water from entering the monument. An appeal to US Supreme Court was presented, but the high court refused to hear the case.

September 5, 1973 - Grand Canyon Dories v. Walker. Plaintiffs file an **appeal** stating that Reclamation cannot arbitrarily set operations of GCD without first initiating NEPA compliance procedures.

December 28, 1973 - Endangered Species Act (**ESA**) is passed by Congress. The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend upon may be conserved, and to provide a program for the conservation of **endangered** and threatened species.

August 20, 1974 - Grand Canyon Dories v. Walker (**500 F. 2d. 588**). Plaintiffs bring forward a **complaint** to the federal court on the issue of Reclamation's non-compliance with NEPA regarding operations at GCD and seek injunctive relief.

The appellants allege that operations at GCD interfered with the safe operation of licensed float trips, and that the continuing operations of GCD are indeed a major federal action, and therefore NEPA requires the preparation of an EIS. The court denied judicial relief on the grounds that no evidence was produced to show DOI had considered how NEPA applies to the operations at GCD. The court thus held, in those adolescent days of NEPA litigation, that a determination must be undertaken by the agency prior to any judicial review.

With this action the DOI was effectively put on notice for future NEPA compliance and, in the following year, Reclamation did undertake a formal study to prepare an EA on operations at GCD, but it was never finalized.

In fact, Reclamation will never follow through on finishing a properly prepared EA or EIS for another 22 years, which finally occurred in October, 1996 with the signing of the Record of Decision (**ROD**), and only because Congress mandated completion by passing the Grand Canyon Protection Act (**GCPA**), 1992. This multi-decadal NEPA experiment in agency recalcitrance came with a multi-million dollar price tag for taxpayers and a ruined ecosystem in Grand Canyon National Park.

Reclamation is currently involved in an EIS called **LTEP** (**cached**), or Long-Term Experimental Plan. This EIS is the result of a 2006 **court settlement**. Reclamation is again dragging its feet and has recently stretched a 2 year **EIS schedule** into a five year (or more) schedule. It is possible Reclamation may terminate (**see page 6**) (**cached**) this new EIS altogether, as was Reclamation's fashion in the 1970s and 80s.

September 3, 1974 - The Navajo Legal Aid Society ([DNA](#)) files suit in federal court to keep Lake Powell reservoir water from inundating RBNM. The case will evolve into *Badoni v. Higginson*. Badoni is a Navajo medicineman and [Higginson](#) is Commissioner of Reclamation. Click [here](#) for history of Navajo legal claims.

January 3, 1975 - Grand Canyon National Park Enlargement Act essentially doubled the size of park to 1.18 million acres (1,904 square miles). The Act also enlarged [Havasupai Indian Reservation](#).

January, 1976 - DOI circulates for public review a Draft Assessment of Environmental Impacts Regarding Operation of Glen Canyon Dam and Lake Powell ([Draft EA](#)), to serve as the "basis for determining whether or not a formal environmental statement will be required by NEPA." The draft not only addressed downstream impacts of the dam, but discussed "alternatives to provide replacement peaking capacity at GCD in order to facilitate a release more oriented to recreation and boating." DOI and Reclamation never followed through with hearings or the preparation of a final EA, nor was any Finding Of No Significant Impact ([FONSI](#)) issued. (In 1982 a FONSI was eventually issued, which concluded that GCD impacts to park values would be negligible and therefore no action program was required.)

July 1, 1976 - NPS publishes, among [many](#) others, a [scientific report](#) on the degraded conditions of beaches and sandbars of Grand Canyon National Park as a result of operations at GCD and human visitation.

July 23, 1976 - Federal Register Notice announces public hearings concerning the [Preliminary Wilderness Proposal](#) for Grand Canyon submitted by the National Park Service. The final recommendation is issued in February 1977, but is subsequently delayed until August 1980 to complete an [Environmental Impact Statement](#) for developing a Colorado River [Management Plan](#). After this public process, the National Park Service recommends that Congress grant wilderness protection to the Colorado River in Grand Canyon and that oar boats replace motor boats within seven years. This management plan and wilderness recommendation were derailed by the [river outfitters](#) using the legislative influence of Utah Senator [Orrin Hatch](#), in the 1981 Interior Appropriations Bill.

Thus, like Reclamation, the outfitters are self-exposed by their actions for manipulating public resources for a privilege over a shared obligation to improve the integrity of the Colorado River and enhance the Grand Canyon experience. Read [Hijacking a River](#) by Jeffrey Ingram.

1977 - DOI and Reclamation released its Western Energy Expansion Study ([WEES, Full Report](#)), which summarized the "results of an assessment of Reclamation's opportunities to respond to urgent needs for electrical power and energy in the West." The report focused upon enhancing peaking power generation through significant operational and structural modifications at existing Reclamation facilities, including GCD. The study identified a proposal for a 250 megawatt power plant addition to the existing outlet works at GCD, rewinding of existing generators for 104 megawatts of

capacity, and proposals for the coordination of power marketing criteria and transmission techniques for instantaneous operations. WEES did not reference any NEPA compliance study.

Spring, 1977 - *Badoni v. Higginson* ([455 Fed. Supp. 641](#)). Navajo medicinemen allege that Reclamation had not complied with NEPA regarding not only operations at GCD and Lake Powell, but the entire CRSP. Plaintiffs sought to prevent destruction to a natural area and desecration of sacred areas at RBNM resulting from threatened inundation by Lake Powell. The district court ruled consistent with *Dorries v. Walker* that the NEPA issue was not yet ripe for review. This decision was subsequently appealed by the plaintiffs.

May 25, 1978 - US Fish and Wildlife Service issues [Biological Opinion](#) on operations of GCD and its effect on endangered fish in Grand Canyon National Park.

June 21, 1978 - Environmental Defense Fund (EDF) v Higginson ([655 FR 2d, 1981](#)). EDF files a complaint against DOI and Reclamation in federal district court (District of Columbia) on the issue of a comprehensive EIS (CEIS) for the entire Colorado River basin. Joining [EDF](#) in the suit is [Wilderness Society](#) and [Trout Unlimited](#).

September 28, 1978 - Peaking Power Status [Report](#) is issued, and describes various sites and applications where additional dams and their reservoirs would be located. One [dam site](#) (see also [WEES, Full Report](#)) is located directly above Lee's Ferry, Arizona. River flows from behind Glen Canyon Dam (15 miles above Lee's Ferry) would be as high as 68,000 cfs for 6 hours during the day, and as low as 2,000 cfs for the rest of the day. River flows behind the dam near Lee's Ferry (60-feet tall) would be a constant 12,000 cfs.

1979 - Pursuant to WEES and Peaking Power Status Report (1978), Reclamation initiated a study "to determine the economic, environmental and engineering feasibility of expanding the Glen Canyon Dam [Power Plant](#)." A proposal for project alternatives were articulated and technical teams engaged to review planning for biological, social and recreational aspects, with a view towards a "feasibility report and EIS by 1981." (Glen Canyon Dam Power Plant Expansion Study Newsletter No. 1, November 1979). Proposals included increasing high flows between 28,000 to 33,000 cfs, and even 40,000 cfs for short periods of time, and with a corresponding decrease in average low flows for longer periods of time. [US Geological Survey](#) records at [Lees Ferry gage](#) show that proposed flows were already implemented by Reclamation without any regard to a public review process. Click [here](#) to see a table of high water releases.

Click [here](#) to view selected Reclamation literature.

1979 - Grand Canyon is designated by the United Nations as a [World Heritage Site](#).

US Fish and Wildlife Service present a [recovery plan](#) for the endangered fish of the Colorado River.

September, 1979 - Reclamation publishes a five page Environmental Evaluation for the GCD Power Plant Generator Rewinding Project, noting that the rewinding of two of eight generators were already finished. The completed project was stated as yielding an increase in the capacity of GCD from 1,150 megawatts to 1,336 megawatts and increasing the maximum release from 32,000 cfs to 33,700 cfs.

1980 - More specific operating criteria are proposed for GCD, and to be revised in 1985 and every five years thereafter. The effect of these operational proposals (major federal actions) is evident in documented plans for enhanced peaking power generation by Western Area Power Administration (WAPA), which markets and distributes federal subsidized hydropower from GCD.

November 3, 1980 - *Badoni v. Higginson* (638 F. 2d. 172). The Court of Appeals affirms the decision of District Court that the issue of NEPA compliance was not yet ripe for judicial review and acknowledged that Reclamation had formally decided to draft a CEIS for the entire Colorado River Basin Project: "The information gathered in the preparation of the DEA on the operation of Glen Canyon Dam and Reservoir is intended to be used in the preparation of a comprehensive basin wide EIS, which will evaluate the operation of all the Bureau of Reclamation projects on the Colorado River and its tributaries. The determination to prepare a comprehensive basin wide EIS on the Colorado River dams is a reasonable one within the administrative discretion of the Department of Interior" (Brief of Federal Appellees, *Badoni v. Higginson*, 1978, pp. 26-27).

The Court agreed that the government's decision to draft the CEIS, as opposed to a site specific EIS, was reasonable since GCD and Lake Powell were important links in the Colorado River development scheme and cannot be considered alone (*Badoni v. Higginson*, p. 181). However, the initial work in 1977 by Reclamation for NEPA compliance was abandoned, even though Congress has never specifically denied funds for such a project.

March 27, 1981 - *Badoni v. Higginson*. The plaintiffs appealed and the court maintained, as in *EDF v. Higginson* (655 F. 2d 1244), that the agency would seek funding for the CEIS. Reclamation decided instead to meet its NEPA obligations by continuing "its past practice of addressing cumulative and synergistic impacts in site specific impact statements for individual projects and their components in the Colorado River Basin." (Appellee's Memorandum to Court, p. 1.) The Court of Appeals thus affirmed the District Court's decision based upon the government's original promise to complete the CEIS, but remanded the case to the District Court for determination of the legality of the government's shift from a CEIS to a site specific project EIS, emphasizing that NEPA compliance was required one way or another, and that EIS's must be prepared addressing cumulative impacts.

April 3, 1981 - *EDF v. Higginson*. Plaintiffs include Trout Unlimited and Wilderness Society. The appeal is argued in the District of Columbia.

November, 1981 - Public and administrative pressure over the Power Plant expansion

at GCD caused Reclamation to revise their Draft **Environmental Assessment** for the uprating of the generators. A preliminary document was released "in accordance with the NEPA and current DOI and Reclamation guidelines," which concluded that environmental and recreational impacts were insignificant or nonexistent.

January, 1982 - As the generating rewinding project is nearing completion, a Draft **Environmental Assessment** on the project was issued. Again, the conclusion of the environmental impacts were considered negligible.

April 20, 1982 - EDF v. Broadbent. EDF, Wilderness Society, Trout Unlimited offer a **settlement agreement** in federal court (District of Columbia), wherein Reclamation and DOI agreed to prepare EIS's on Colorado River hydropower facilities, specifically addressing cumulative and synergistic environmental impacts within each document. The cases pending were thus dismissed pursuant to the stipulation filed and accepted by the court. **Broadbent** replaced Higginson as Reclamation Commissioner. **James Watt** is DOI Secretary.

April 30, 1982 - **Philip Williams and Associates** provide professional public comments for proposed uprating plans at GCD power plant.

December 9, 1982 - Reclamation publishes the final EA and FONSI for the Glen Canyon Power Plant Uprating, stating that the "preferred plan would not be a major federal action resulting in significant environmental impacts." Public and professional comments were ignored contrary to the NEPA process.

December 1982 - Glen Canyon Environmental Studies (**GCES**) begins as a component of the environmental assessment developed for the uprating and rewinding of generators at GCD. The studies are to focus on a broad range of ecological and recreation issues related to the operations at GCD, but were not to address any economic or societal issues. This program was terminated after the eventual completion of an EIS of 1995 and the signing of the Record of Decision in 1996. The replacement is called the **Adaptive Management Program**.

March 24, 1983 - **Statement** of National Wildlife Federation (NWF) before the Senate Subcommittee on Water and Power opposing Reclamation's proposed hydropower expansion plans.

April 30, 1983 - The Sierra Club proposes a **resolution** to oppose peaking power at Glen Canyon Dam to protect park values at Grand Canyon National Park, for DOI to complete an EIS, and to initiate oversight meetings in Congress.

June, 1983 - Warm temperatures and rain on melting snow in the Rocky Mountains caused near record levels of **total annual streamflow** to roar through the canyons of the Colorado River. Failure by Reclamation to prudently leave filling space in the reservoirs for flood control purposes is ignored, for reasons that spills of reservoir water do not turn generators and maximize potential hydropower revenue. The mandate of flood control

has always been superior (and remains so today) to the incidental purpose of hydropower production at federal dams, which is the same tier as reservoir recreation.

Emergency spills resulted in [unprecedented damage](#) not only to the river corridor in Grand Canyon (dam releases do not contain a natural river's life supporting sediment and organic material, like leaf litter and driftwood), but also to the residents and businesses in the [floodplain communities](#) of Arizona, California and Mexico. Structural damage was incurred to the spillways at Glen Canyon and Hoover dams; [the emergency at Glen Canyon Dam](#) nearly reached a threshold event of dam failure. [Flood control protocols](#) for Colorado River reservoirs began in 1982 by Reclamation and US Army Corps of Engineers (finalized in 1984) and without NEPA guidance. Obviously these fresh protocols were not determined correctly by the federal government. Perhaps involving the public would have provided the realistic objectives Colorado River managers need.

While DOI and Reclamation paint this incident as an example of federal engineers mastering the trickery of Nature, the problem was indeed self-imposed by greed and playing the odds. This rolling of the dice, as it were, with billions of dollars in infrastructure on the line and, if the dams had [busted](#), interrupting water deliveries to farms and cities that would have lasted for decades. The potential for a great abandonment of metropolitan cities such as Las Vegas, Los Angeles and San Diego (Phoenix and Tucson were not quite online with their Colorado River [aqueduct](#)) would have become a reality. And for what, a few extra million dollars in hydropower revenues? There is no greater piece of evidence about Reclamation's impudence than this one incident.

Click [here](#) to read article by novelist Steve Hannon.

November 15, 1983 - [Comments](#) by EDF and NWF to WAPA about proposed general power marketing criteria.

March 2, 1984 - [Comments](#) by NWF to WAPA regarding post-1989 power marketing criteria.

March 6, 1984 - Testimony on Federal Reclamation Hydroelectric Powerplant Act before House Subcommittee on Water and Power.

Friends of the River ([FOR](#)) [testimony](#).

EDF [testimony](#).

October 26, 1984 - EDF [comments](#) to WAPA on revised proposed general power marketing criteria.

December 21, 1988 - NWF, [Grand Canyon Trust](#), [American Rivers](#), [Western River Guides Association](#) petition federal court to [consolidate](#) their complaint with the similar complaint by Salt Lake City (SLC v WAPA), for reasons of saving resources. This action,

in both complaints, is based on WAPA failing to conduct a proper EIS in compliance with NEPA.

September 29, 1989 - NWF v. WAPA. A court [injunction](#) orders WAPA to stop its Call for Applications for Power. The reason is lack of preparing an EIS. Joining as plaintiffs are: [Trout Unlimited](#), Stonefly Society of the Wasatch, Utah Wildlife Leadership Coalition, Salt Lake County Fish and Game Association and Utah Wildlife Federation. Joining the defendant is Colorado River Energy Distributors Association ([CREDA](#)).

The Plaintiffs will prevail in District Court (Utah) and WAPA is ordered to prepare an EIS. WAPA is permitted to market power on a court approved interim plan, which still provides for the generation and sale of peaking power pursuant to their previous marketing criteria.

October 30, 1989 - In response to the implications of this court decision, the Secretary of DOI, [Manuel Lujan Jr.](#), orders Reclamation to prepare an EIS on GCD operations, which is published in the Federal Register and specifically "to examine the operation of Glen Canyon Dam and its impacts on downstream natural resources within the Grand Canyon National Park and Grand Canyon National Recreation Area ([GCNRA](#))," which is what Reclamation (and NPS) had been doing since 1974.

Reclamation subsequently articulates a two-year study schedule which, despite a congressional intervention, will take seven years to complete (Record of Decision is signed, October 8, 1996). The purpose of the completed EIS in 1995, according to the [Federal Register](#) is "to minimize adverse impacts on the downstream environmental and cultural resources and Native American interests in Glen and Grand Canyons." Ten years later, the [Federal Register](#) informs us the intent of the 2006 EIS ([LTEP](#)) is to "protect, mitigate adverse impacts to, and improve the values for which Grand Canyon National Park and Glen Canyon National Recreation Area were established." Nothing has essentially changed except for the lack of results.

Click [here](#) and [here](#) to read about the failing programs of the 1995 EIS.

[1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.

[List of extirpated species in Grand Canyon](#). 2009.

[NPS memo of impairment](#). 2008.

[2011 - Testimony by Leslie James](#). CREDA.

Coal-burning Power Plants of the Colorado River Basin

OCTOBER 23, 2008
BY JOHN WEISHEIT

GEOLOGY, HYDROLOGY & CONSUMPTION

- [Update and provided by the Kyl Center at Arizona State University in 2022](#)



Navajo Generating Station, Page AZ

Most of the coal-fired generation stations in the Colorado River basin are on the province of the [Colorado Plateau \(map\)](#), which is a high elevation desert of thick sedimentary rock layers that host abundant hydrocarbon deposits.

The water for steam and cooling is supplied, in most cases, by the Colorado River and its many tributaries; groundwater is the other source. The Colorado Plateau is located in eastern Utah, western Colorado, northwest New Mexico, and northern Arizona.

A bit beyond the Colorado Plateau are the headwaters of the Colorado River in the Rocky Mountain province, which includes southwest Wyoming, northeast Utah, and central Colorado. The major tributaries of the Colorado River are the Green and San Juan rivers, which all join as one in southeastern Utah ([map](#)). The Colorado River ends in Mexico at the Gulf of California.

On the eastern side of the Great Divide, Wyoming leads the nation in [coal mining](#) (37%). In fact, [50 trains](#) (39 in 2001) now leave the Powder River Basin every day and 36 of these trains can push/pull railroad cars that total two miles in length. The mines of Wyoming (Mid-America Energy), the railroads (BNSF), and many of the coal plants (Rocky Mountain Power and PacifiCorp) that burn this coal are corporate investments of Hathaway Berkshire. The CEO of this company is Warren Buffett.

The Colorado River basin is predominately arid (85%) and evaporation rates are usually six or seven times greater than the total annual rainfall. The water used to produce steam is completely consumed through evaporative cooling, so fortunately there are no return flows to alter the temperature of the river. However, this water consumption does reduce instream flows, which are designated by the federal government as [critical habitat](#) for threatened and endangered fish species.

The power is exported by long transmission lines to metropolitan cities surrounding the Colorado Plateau, such as Salt Lake City, Denver, Albuquerque, Phoenix and Los Angeles. The distances are staggering, as are the cumulative losses of power along the way. Transmission towers and long lines of cable stretch across a superlative landscape that is essentially pristine. So the rural populations of the Colorado Plateau receive the brunt of chemical and sight pollution as the consequence of this industry. Contrarily,

power plants near urban areas, in consideration of the people who live there, burn cleaner fossil fuels such as natural gas. This is a double standard and discriminatory toward rural communities.

Power consumption in the southwestern region of the United States is off the charts compared to the rest of the nation. For example, the power is largely used to pump scarce water supplies uphill to arid and semi-arid metropolises such as Phoenix and Los Angeles. Agriculture here is almost entirely dependent on energy to lift water either from the river or from deep aquifers. Not to mention that all these desert cities have extreme summer and winter outdoor temperatures, and utilize consumptive air conditioning units to control the climate of their interior spaces, which in many cases are unreasonably spacious. In fact, many people maintain two homes (or more) and chase preferable climate by season or elevation.

THE OTHER HARD ROCK HYDROCARBON

Coal is king on the Colorado Plateau for reasons of cost-effective extraction, but the plateau also contains more oil shale and tar sands ([read report](#)) than Saudi Arabia has liquid petroleum. In fact, this domestic deposit of oil shale and tar sands is the **largest** in the world and it remains--so far--untapped and for reasons of water scarcity ([report](#)).

I must digress from coal briefly to inform readers that the oil companies are poised to exploit these huge deposits of hard rock oil, which would likely impact the drinking water quality of the Colorado River basin and effectively increase global warming impacts worldwide.

Oil shale is an organic rich mud stone that contains kerogen which, when heated, releases crude oil and natural gas. Oil companies require tremendous amounts of energy and natural resources to convert that kerogen into useable products. If oil shale, or tar sands, are extracted by conventional mining methods, the amount of waste rock is considerable, as is the case with mountain top (or high plateau) removal for accessing coal deposits.

The preferred extraction method for oil shale is to heat the rock in its original position (in-situ). This requires drill holes to stop the migration of oil with a curtain of frozen water, drills holes to heat the oil shale, and drills holes to extract the oil and gas. The road and platform construction in arid lands for such an extraction method would devastate this watershed that supports 30 million people (Mexico included) and endangered species.

Surplus water in the Colorado River basin simply does not exist anymore. In fact, the Colorado River Basin is already **past peak water** according to many climate scientists. The [Scripps Institute](#), for example, predicts that hydropower production at Hoover and Glen Canyon dams has a 50% chance of ceasing in the 2020s (100% in the 2030s), because the reservoirs will empty due to over-consumption and, as a consequence of climate change, diminished streamflow. This is a considerable impact when one

considers that the Colorado River, which is only the 25th largest river in the United States, has the two largest man-made reservoirs in the nation--Lakes Mead and Powell.

Contrary to popular perceptions, the production of hydropower from dams on the Colorado River is actually quite insignificant. For example, the coal-burning Navajo Generating Station near Lake Powell will produce much more electricity annually than all the [hydropower facilities](#) on the Colorado River combined. Hydropower operations cannot run at maximum capacity on an annual basis. If they were operated in this manner, they would effectively drain the reservoirs in no time and hydropower production would cease altogether.

INDIAN LANDS

Much of the coal mining and power plant operations occur on, or next to, tribal lands, which include the Navajo, Hopi, Zuni, Ute, Paiute and Apache. The mines are owned by national and international corporations who are far-removed from the harm and displacement they bring to this landscape and its people. Though these coal-related facilities provide jobs to indigenous people, the situation has otherwise demoralized the traditional culture of its native people.

There are many indigenous environmental groups on the Colorado Plateau that are opposed to coal mining and coal burning such as [Diné Care](#), [Black Mesa Coalition](#) and [Black Mesa Trust](#). The debates about resource extraction on tribal lands, however, is similar to the debates of the dominant society. For example, in 2005 the [Navajo Nation](#) [banned](#) all uranium mining and milling on their lands forever, but in 2009 the Navajo and Hopi tribal governments [banned mainstream environmentalist groups](#) from engaging in tribal affairs over coal extraction and coal-fired power plants, and much to the chagrin of the [indigenous environmental groups](#) ([and here](#)).

PUBLIC LANDS

The Colorado Plateau has one of the highest concentrations of preserved natural and cultural features in the world. The high pollution, the altered water, and the poor visibility all affect the enjoyment of our public lands, national parks and wilderness areas, which are all federally protected ecosystems for the entire world to enjoy. For example, there are times when haze prevents one from [viewing the other side](#) of the Grand Canyon.

[Click here](#) to read air quality report by National Parks Conservation Association.

Health advisories throughout the Colorado River basin suggest that pregnant women not consume fish taken from the Colorado River and its tributaries for reasons of mercury contamination. A US Geological Survey [study](#) released in September of this year reported that 40% of smallmouth bass and 1/3 of largemouth bass (not native) sampled in the Colorado River had male organs with partially developed female organs inside (intersexed).

A LIST OF COAL-FIRED POWER PLANTS IN THE COLORADO RIVER BASIN

[Map](#) of Colorado River Basin

Jim Bridger Power Plant is located in Wyoming near Rock Springs and operated by PacificCorp Energy and Idaho Power Company. The 4 unit plant produces 2,119,000 kilowatts per hour. The sub-bituminous coal is delivered from the Bridger Mine and the Black Butte Mine. The water is delivered by a 50-mile pipeline from the Green River. The total annual consumption of coal is 8 million tons. The first unit was completed in 1974 and the fourth unit was completed in 1979. See: [SourceWatch website](#)

Other Wyoming Power plants:

- [Naughton Power Plant](#)
- [General Chemical Green River Power Plant](#)

Navajo Generating Station (2,250 Megawatts (MW)) was built between 1969 and 1976. Three units are located near Page, Arizona next to Lake Powell, which is the second largest man-made reservoir in the United States when full (**now half-full**). The facility is located on the Navajo Reservation and the owners are [Salt River Project](#), Los Angeles Department of Water and Power, Arizona Public Service, Nevada Power Company, and Tucson Electric Power Company. [Note: This plant is being dismantled]

Some of the allocated power from this facility is used to pump Colorado River water from Lake Havasu (336 miles south) for the [Central Arizona Project](#) (Metro Phoenix and Tucson). The coal is strip mined by [Peabody Coal Company](#) from [Black Mesa](#) on the Navajo and Hopi Indian reservations and delivered by a conveyor belt system and [electric train](#) that crosses the Rainbow Plateau. The total annual consumption of coal is 8 million tons

Existing pollution control equipment at NGS includes electrostatic precipitators for particulate matter removal and specific burners designed for NOx control. The plant also includes an SO2 emission limiter. Compliance with the SO2 emission limit was phased-in by unit in 1997, 1998, and 1999. [Legal action](#) was required to improve air quality at NGS.

[2009 - NGS white paper](#). Central Arizona Project.

Four Corners Power Plant (2,040 MW) was constructed from 1962 to 1970. There are five units near Farmington, New Mexico, and next to the San Juan River. This coal-fired power plant is located on the Navajo Indian Reservation. The facility is owned jointly by [Arizona Public Service Company](#), the Southern California Edison Company, the Salt River Project Agricultural Improvement and Power District, the Public Service Company of New Mexico, the El Paso Electric Company, and the Tucson Electric Power Company.

Every year the plant emits over 15 million tons of sulfur dioxide, nitrogen oxides, and

carbon dioxide emissions. It also emits 590 pounds of mercury. The plant's annual emission of nitrogen oxides, 40,742 tons, is **the highest** of all coal-fired power plants in the USA.

Existing pollution control equipment at FCPP includes baghouses and scrubbers for SO₂ control and specific burners designed for NO_x control. **Legal action** was required to improve air quality at Four Corners.

San Juan Generating Station (1,800 MW) is a four unit facility which began construction in 1973 and is located near Farmington, New Mexico along the San Juan River. The major owner is **Public Service Company of New Mexico**. Environmental controls include a limestone forced-oxidation system for removing sulfur dioxide and electrostatic precipitators for removing fly ash. **Legal action** was required to improve air quality at SJGS.

Mohave Generating Station (1,580 MW) has two units with construction beginning in 1967. The power plant is not operational at the moment due to a decision by the owners to not install upgrades to meet environmental compliance laws, and as a result of **litigation** from environmental groups. The operator of the plant is **Southern California Edison** and the facility is located next to the Colorado River near Laughlin, Nevada. The other owners are Salt River Project, Nevada Power and Los Angeles Department of Water and Power. [Note: This plant was dismantled]

The coal is delivered by a water slurry pipeline from Black Mesa, Arizona. The water to transport the coal as a slurry comes from groundwater resources that Navajo and Hopi people depend upon for their drinking water. The depletion of this groundwater was highly controversial and very unpopular with the public. Click **here** to visit the web page of Black Mesa Trust.

Hunter Power Plant (1,472 MW) is a three unit station located south of Castle Dale, Utah and water for the plant comes from the drainage of the San Rafael River, a tributary of the greater Colorado River basin. The plant is owned by **PacificCorp** and first started operating in June, 1978; the plant uses 14,000 tons of coal per day. Nearby is the **Huntington Power Plant**, which produces 895 MW and the cooling water, from the Huntington River, is stored in a reservoir called Electric Lake.

Craig Station (1,274 MW) has three units constructed from 1974 to 1984 and is Colorado's largest coal-fired generating station. The facility is located next to the Yampa River, a tributary of the greater Colorado River basin, near the town of Craig. The facility cost \$1.2 billion and is owned and operated by **Tri-State Generation and Transmission** and four other regional utilities. In 2002, the association embarked on a \$121 million, multi-year retrofit to Units 1 and 2 to address opacity concerns and the mitigation of particulate matter. The upgrades were prompted by a settlement agreement with environmental groups.

Springerville Generating Station (1,178 MW) with three units built between 2003 and

2006 is located in east-central Arizona. The owners are **Tucson Electric Power** and Tri-State Generation and Transmission. The coal for this plant comes from Wyoming at 10 train loads per month (128, 120-ton railcars) and the water for operations comes from local wells. Environmental controls include a flue gas cleanup system, such as low NOx burners and selective catalytic reduction (SCR) for NOx control, dry flue gas desulfurization (DFGD) system for SO2 control and the pulse jet baghouse for particulate control

Cholla Power Plant (995 MW), a four unit facility in northeastern Arizona near Holbrook. The owners are Arizona Public Service (APS) and PacifiCorp (PAC). These utilities participate in a seasonal power exchange in which PAC customers in the Pacific Northwest receive electricity from the APS system in the winter when their electricity demands are high and APS receives PAC power in the summer, during APS' peak demand. Cholla is fueled by coal from the McKinley Mine in New Mexico.

Huntington Power Plant (944 MW) has two units located near the mouth of Huntington Canyon of the San Rafael River drainage. The first generator came online in 1974 and the plant is owned by PacifiCorp.

Coronado Generating Station (773 MW) has two units located along the Little Colorado River near the town of St. Johns, Arizona. The owner is the Salt River Project of Arizona and construction began in 1975 with expenditures totaling \$920 million. The coal is delivered by rail from New Mexico and Wyoming. Environmental control equipment includes electrostatic precipitators to control fly ash, scrubbers to remove sulfur dioxide (SO2), and the water reservoir is lined to help recover and contain process waste.

Reid Gardner Power Plant (605 MW), along Interstate 15 as you approach Las Vegas, is a four unit station that first became operational in 1965 and owned by **Nevada Power**. The facility is located next to the Moapa Indian Reservation in the **Muddy River** drainage of the greater Colorado River basin. This coal plant has the **highest rate** of CO2 emissions per MW generated in the entire nation. The units have SO2 scrubbers and Unit 4 contains a baghouse for fly ash capture to reduce the particulate emissions. **Fact sheet**. [Note: This plant is decommissioned]

Bonanza Plant (460 MW) is located on Ute tribal lands near Ouray, Utah and was completed in 1985. The plant is owned and operated by **Deseret Power**. The coal is delivered by electric train and the facility is in drainage of the White River.

Hayden Generating Station (446 MW) is a two unit facility is located four miles east of Hayden (northern Colorado) along the Yampa River. The facility is owned by Colorado Public Service Company (**Xcel**), Arizona's Salt River Project, and PacifiCorp. Construction began on the first unit in 1962 and the second unit was completed in 1976.

Carbon Power Plant (190 MW) became operational in 1954. This two unit facility is owned by PacifiCorp and located next to the Price River near Helper, Utah. [Note: This plant was dismantled]

Nucla Station (100 MW) has one unit next to the San Miquel River near Nucla, Colorado and built from 1957 to 1959. The facility was the world's first utility-scale power plant to utilize (1985 - 1987) atmospheric circulating fluidized-bed combustion. Total project cost was \$112 million and the owner is Tri-State Generation and Transmission. [Note: This plant is being dismantled]

Cameo Power Plant (77MW) has operated along the Colorado River in Mesa County, Colorado since 1957. The owner, Xcel, would like to close the facility in the near future. [Note: This plant was dismantled]

PROPOSED COAL-FIRED POWER PLANTS

White Pine Power Plant (1,590 MW) - **White Pine Energy Associates** (LS Power and Dynergy) would like to build a conventional pulverized coal plant in eastern Nevada. In April 2007, a draft environmental impact statement reported that the plant would emit, among other pollutants, 330 pounds of mercury, 4,812 tons of nitrogen oxides and 6,071 tons of sulfur dioxide per year. In addition the plant and the nearby Ely Energy Center would consume over 2.6 billion gallons of water each year in an area already struggling to meet water demands. Eastern Nevada is in the Colorado River watershed.

The National Park Service has raised serious concerns about the impact it would have at nearby Great Basin National Park. Nevada has the second strongest renewable energy standards in the country, but allowing the construction of additional coal plants would lead Nevada away from reaching its renewable resource potential.

Ely Energy Center (1,500 MW) - A conventional pulverized coal near Ely, Nevada is proposed by **Sierra Pacific Resources**. Nevada is already a major producer of mercury emissions due to hard rock mining operations, and the Center would add an additional 87 pounds of mercury to the air each year. Its other annual emissions would include 10.4 million metric tons of carbon dioxide, 3,044 tons of nitrogen oxides, 3,044 tons of sulfuric oxides, particulates and other dangerous pollutants. The **Nevada Clean Energy Coalition** (NCEC) is fighting the plant through mobilizing grassroots support and educating the public and the media.

Update: as of 2/9/09, this proposed project has been postponed.

Desert Rock (1,500 MW) - **Desert Rock Energy Company**, a **Sithe Global Power** subsidiary, has proposed to build a 1,500 MW supercritical coal plant along the San Juan River near Farmington New, Mexico. Diné Power Authority, a Navajo Nation enterprise established to develop natural resources on Navajo lands, has entered into a project agreement with Desert Rock Energy. Diné Citizens Against Ruining Our Environment (Diné CARE) and the San Juan Citizens Alliance are collaborating to stop the development of the Desert Rock plant. The power generated by the plant would not

go to the Navajo people, but rather into Las Vegas and Arizona. The two organizations are working to educate the community and raise grassroots support both on and off the Navajo Reservation to stop the plant.

Toquop Power Plant (750 MW) - To be built near Toquop Indian Reservation (northwest of Mesquite, Nevada, which is next to the Virgin River), by Sithe Global as a supercritical pulverized coal facility that will cost \$1.2 billion. The Toquop plant was originally proposed as a 1,100 MW natural gas plant in 2003, but due to rising prices of natural gas, was re-proposed as a coal plant. Sithe Global states that they hope to begin construction and have it online by 2011. The company claims that they will use the latest technology to control air pollutants from the plant, but also say that carbon dioxide is not an air pollutant.

Hunter Power Plant (400 MW) - PacifiCorp intends to build a fourth unit at their existing plant near Castledale, Utah with old coal technologies; the total cost of the plant is estimated to be \$800 million. Originally, unit 4 was scheduled to come online in 2011, but PacifiCorp has indicated that this will no longer be possible. The emissions from the plant would affect visibility and environmental quality at Utah's five national parks, in addition to the residents in the surrounding areas. Environmental groups are actively opposing the construction of the plant.

Bowie Power Plant (600 MW) - This power plant near Tucson, Arizona was originally proposed by the [Southwestern Power Group](#) as a 1,000 MW natural gas facility, but due to high natural gas prices, it was later re-proposed as an Integrated Gasification Combined Cycle facility, scheduled to open in 2012. While SWPG did receive a permit for the original natural gas plant, there are different regulations for coal and a new air permit will be required. Locally, concerns have been raised about water usage, air pollution and height of the 18 stacks, seven of them over 100 feet high.

Mustang Power Plant (300 MW) - In September 2006, [Peabody Energy](#) announced its plans to withdraw the Mustang application for a conventional pulverized coal-fired plant near Farmington, New Mexico. The New Mexico Environment Department demanded that Peabody look into Integrated Gasification Combined Cycle (IGCC) technology as the best available coal technology, and Peabody refused to provide more information about why it believed that IGCC was neither technically nor economically possible. Peabody has stated that it may construct a synthesis gas (syngas) plant instead, but has not provided more information.

Sigurd Power Plant (270 MW) - Proposed by [Nevco](#), this power plant near Sigurd, Utah, which is actually in the Great Basin province, but directly adjacent to the Colorado Plateau and its national parks. Local residents have formed a group, [Sevier Citizens for Clean Air and Water](#), to oppose the construction.

Bonanza (80 MW) - Deseret Generation and Transmission plans to add a third unit to its existing facility in northeast Utah. This circulating fluidized bed facility, if constructed,

would release 3.37 million tons of carbon dioxide, 1,038 tons of sulfur dioxide, 5,692 tons of nitrous oxides and 36 pounds of mercury per year.

NEWS

- 2014, Washington Post - [Vintage USA Coal-fired Power Plants Now Aging, 'A Fleet of Clunkers'](#)
- 2020, Vox - [4 Astonishing Signs of Coal's Declining Economic Viability](#)

ADDITIONAL INFORMATION

[America's Biggest Polluters: Carbon Dioxide Emmissions from Power Plants in 2007.](#)
Arizona Environment.

[American Indian Cultural Support](#)

[Black Mesa Indigenous Support](#)

[Black Mesa Water Coalition](#)

[Dine' CARE](#)

[Report: Dirty Kilowatts](#)

[Source Watch](#)

[Utah and coal](#)

[Wyoming and coal](#)

Baseline Data

[Heavy metal loading in Lake Powell](#)

[Air quality in the Lake Powell region](#)

[Mercury in the Lake Powell ecosystem](#)

[Demographic Change Among the Hopi and Navajo Indians](#)

[The Effects of Power Production and Strip Mining on Local Navajo Populations](#)

[The Impact of Power Developments in the Navajo Nation](#)

Aquifer Recharge, Storage and Recovery

NOVEMBER 04, 2008
BY JOHN WEISHEIT

The Reservoir Alternative: Aquifer Recharge and Recovery

The rapid depletion of pristine aquifers during the twentieth century was a miscalculation for water managers in the arid lands of the Southwest. As a consequence, vital springs and streambeds **dried up**, land surfaces began to **fissure and subside**, pumping costs **increased**, **water quality** deteriorated, and emergency water reserves to endure conditions of persistent drought were compromised.



Aquifer recharge basins in Arizona

However, this miscalculation is now an opportunity for water managers of the twenty-first century, because depleted aquifers can now serve as safe, underground reservoirs for storing surface water. Managers can thus avoid the huge **costs, insecurities and trade-offs** associated with traditional dam construction.

Additionally, in the case of the Colorado River system of dams, which is overbuilt by a **factor of two**, aquifer storage can minimize water loss to evaporation in hot desert climates. Since the filling of Lake Mead in 1935 (73 years of operation) and the filling of Lake Powell (45 years) in 1963, a combined total of 84 million acre-feet (**maf**) has been **lost to evaporation** at these two reservoirs.

In the southwestern United States, the practice of refilling an underground aquifer with water for retrieval later is commonly called "Aquifer Storage and Recovery," or ASR. The concept of recharging an aquifer is quite simple and achieved by meeting four prerequisites: 1) locating a feasible aquifer of known character; 2) deciding which recharging method to use; 3) providing water of suitable quality; 4) building a conveyance system to deliver and recover that water.

The expertise to add reliable aquifer recharge programs to a managers water portfolio is world-wide, with over **four decades** of knowledge and experience to work upon. ASR programs also enjoy a growing public acceptance similar to the support for developing renewable energy alternatives, such as wind and solar. Millions of people are currently tapped into ASR programs across the country and its full potential is yet to be fully utilized.

The **benefits** of ASR programs include: reduced overall operation costs, increased water yields by minimizing evaporation losses, improved water quality, and reducing impacts from long-term drought. Incidentally, ASR programs will arrest subsidence and saltwater intrusion problems, and revive springs and river beds for human enjoyment and wildlife habitat.

Once ASR programs are fully operational, managers can effectively start to work on their long-term challenges from the previous 100 years of dam-building, such as the removal of sediment and removing dams that serve no function. In so doing, efficiencies can be maximized and critical habitat for endangered species enlarged and restored.

There are two ways to refill an aquifer: indirect and direct. Indirect recharging is accomplished by placing the water in confined basins, which allows the water to percolate down into the aquifer below and at rates that range from one foot to twelve feet per day. Direct recharging is done instantaneously with mechanical pumps that physically inject water into the aquifer. Direct injection is usually required where layers underneath include fine clays, which slow or impede percolation rates.

Click [here](#) to view examples of aquifer recharge methods.

A good primer about ASR programs is available from this issue of *Southwest Hydrology*.

A groundwater glossary can be found [here](#).

Discussion of Arizona Groundwater depletion and the Central Arizona Project: [2003 - Cadillac Desert Revisited \(Central Arizona Project\)](#). Holland et al.

New Reservoirs are Inappropriate

Building more surface reservoirs is a direction for managers to move away from, because **maintaining**, repairing and eventual **removal** of the existing **79,000 dams** in the United States, is already a considerable **budget** item. Not to mention the maintenance and repairs of ancillary projects such as power plants, substations, aqueducts, canals, levees, **quagga mussel** control, and **habitat restoration**.

Aging infrastructure issues are discussed in this issue of *Southwest Hydrology*.

An example of new and expensive dam construction is the reservoir created by the Metropolitan Water District (MWD) called **Diamond Valley Lake**, which was finished in 2002 at a price tag of \$2 billion. The reservoir stores 800,000 acre-feet of Colorado River water via aqueduct and primarily to ensure that there would be no interruption of water deliveries during an emergency situation. In comparison, MWD's ASR program at **Hayfield** can also store 800,000 acre-feet of Colorado River water underground via aqueduct for emergencies and for a price tag of \$68 million.

The cost of repairing a dam is **two to five times** the cost of original construction. Funding mechanisms to pay for serious repairs or the removal of unsafe dams simply do not exist. Managers need to start focusing and organizing on this future financial burden

right now. Should a major **repair**, removal, or even **dam failure** occur, ASR programs will provide managers with a strategy to deliver water during any interruption of traditional services.

Other emergency situations affecting reservoirs could also include impacts from massive wildfires (drawdowns and sediment loading), mitigating quagga infestations, accidental pollution, and even sabotage. Having a safe and secure water supply instantaneously available for drinking water is something an ASR program can provide to communities and managers will avoid or minimize serious legal actions.

This is truly a management alternative whose time has arrived if the leadership embraces the opportunity. The loss of water in surface reservoirs to evaporation and seepage, which is not recoverable, should no longer be considered as "the price of doing business." Getting more water for less money, and with less impact to the environment is reasonable course of action.

The Colorado River Reservoir System

The annual yield of the Colorado River has dropped **2 million acre-feet** (maf) in the last 100 years, and this trend is expected to continue since Rocky Mountain **snowpacks** are increasingly debilitated by evaporation from a warming atmosphere, caused by the human consumption of fossil fuels.

The water managers in the basin states are responding cooperatively, so far, by creating **internal guidelines** for managing potential shortages and preparing for the implications of lowering reservoir. For example, extending the length of pipeline intakes at Lake Powell for **Navajo Generating Station**, and at Lake Mead for **water delivery to Las Vegas**.

In times past the Colorado River system of reservoirs were able to pass through periodic reductions in mountain snowpack unscathed, since the overall supply still exceeded the overall demand. The **burgeoning growth** of metropolitan areas in the Southwest, however, has changed the paradigm to where demand now equals supply. By 2026, when the agreed upon guidelines for shortages will be re-negotiated, the demand will exceed supply. This situation will make it very difficult, if not impossible, to refill the reservoirs presently in decline.

Obviously, lower cost/impact management schemes, such as ASR programs, should be implemented as soon as possible since the reservoirs will likely empty by 2026. If not by 2026, assuredly by **2036**. Water quality will plummet when the reservoirs bottom out and major lawsuits will result.

Increasing the carrying capacity of existing aqueducts and canals may be one of the more pressing issues to overcome in creating a reliable ASR system in the Colorado River service area, but this is not an insurmountable obstacle. Once ASR systems are in place and fully operational, managers can then objectively deal with the other pressing issues that presently are overlooked, such as sediment removal from existing reservoirs

to increase the storage capacity of existing surface reservoirs. This would also include dismantling Glen Canyon Dam, which represents unnecessary storage in the system that needlessly compromises water quality for downstream users, and the biological integrity of Grand Canyon National Park.

With these problems solved, the management will eliminate contentious litigation over noncompliance with the Law of the River, the Clean Water Act, and the Endangered Species Act.

Groundwater Storage Capacity

The **annual consumption** of groundwater in the the Basin and Range province of Utah, Nevada, California and Arizona is currently about 6.3 million acre-feet per year. On average, only half this amount will naturally and incidentally be recharged back into the system. This practice of overdrafting groundwater supplies during the last century has created considerable storage capacity in the Basin and Range Province. In fact, the capacity exceeds the combined storage capacity of Lakes Mead and Powell, which is 52 million acre-feet (**maf**).

[Estimated use of water in the United States](#). US Geological Survey. 2000.

ARIZONA

From 1915 to 1980 Arizona **withdrew 184 maf** from their aquifers and 90 maf was naturally and incidentally recharged back into the system. This means there is at least 94 maf of aquifer storage in Arizona alone. Unfortunately, some of this available space has been lost to the subsidence and the intrusion of poor quality water.

In 1980 the **Arizona Ground Water Management Code** was passed by the state legislature. The Code has three primary goals. The first is to control the severe overdraft currently occurring in many parts of the state. The second goal is to provide a means to allocate the state's limited ground water resources. The third goal is to augment Arizona's groundwater through artificial recharge programs. Arizona water managers have already recharged their aquifers with about 5 maf of water, so far.

The Arizona Department of Water Resources (ADWR) estimates there is a range of 15 - 20 million acre-feet of underground storage available right now in basins directly adjacent to the aqueduct of the Central Arizona Project. There is even more capacity available in basins within a reasonable distance to the aqueduct.

CALIFORNIA

In 1985, the counties in California's Mojave Desert withdrew about **1.74 maf** from their groundwater reserves and, unlike Arizona, not all service providers in California have uniform codes to protect their groundwater resources for further degradation. The Association of Groundwater Agencies of California (AGWA) estimates that over **21.5 maf** of groundwater storage is available for recharge in the groundwater basins of southern California.

Coachella Valley near Palm Springs has overdrafted their groundwater supplies by **150,000 acre-feet** each year. From 1973 to 2005, about **2 maf** has been recharged into the Whitewater River sub-basin. The Coachella Valley is an ideal candidate for intensive aquifer recharge programs because of the **San Andreas Fault system**. This fault system acts as natural barriers to keep groundwater from migrating to other basins. Basically the Coachella Valley is compartmentalized into four **distinct ground-water subbasins** that have **storage capacity** in millions of acre-feet. Additionally, there are two Colorado River water delivery conduits that can deliver Colorado River water to the Coachella Valley, the Colorado River Aqueduct and the Coachella Canal.

Another reason why California is ideal for ASR programs is their ability to pull water from other state water projects, such as the western and eastern slopes of the Sierra Nevada Mountains, and from the local mountains surrounding the Los Angeles basin. This vast network of aqueducts and canals in California gives great potential for transferring water between the various service districts for maximizing the potential of ASR programs.

Other **aquifers** with ample capacity adjacent to the Colorado River Aqueduct in California's Mojave Desert include Cadiz (972,856 acre-feet), Upper Chuckwalla (500,210 acre-feet) and Hayfield (800,174 acre-feet).

[Maps: List of California basins;](#) [Colorado River Basin;](#)

[Description of basins](#)

[Hayfield and Chuckwalla ASR](#)

The capacity for groundwater storage in the immediate Los Angeles metro area ranges from 3 to 7 million acre-feet.

[MWD's assessment of ASR programs](#)

[MWD ASR locations](#)

[Water Replenishment District of Southern California](#)

NEVADA

Even though Las Vegas was once totally dependent on local groundwater resources, it is now entirely dependent on Colorado River surface water. The city has been seriously engaged in **ASR programs** for two decades now and have comfortably refilled their aquifers with surplus Colorado River water. The city uses electric pumps to recharge their aquifers in the winter time when demand is low and then recovers that water in the summer time when the demand is high.

Nevada has made legal agreements with Arizona and California to store surplus water in their aquifers. This program will serve as an exchange mechanism for Nevada to withdraw water from Lake Mead when needed. This mechanism is called **water banking**. Because Las Vegas has committed to continue their urban growth beyond their fixed

entitlement to Colorado River water, they will exhaust this water banking account of **1.4 maf** in the very near future.

COLORADO

- [Feasibility of ASR in Upper Colorado River Basin](#). Smith.

ADDITIONAL INFORMATION: AQUIFER STORAGE AND RECOVERY (ASR)

GLOSSARY

- [ASR Glossary](#). Municipal Water District of Orange County.
- [Groundwater Glossary](#). Watershed Management Project.

FEDERAL AGENCIES AND INSTITUTIONS

Bureau of Reclamation

- Water 2025: [Preventing Crises and Conflict in the West](#). Bureau of Reclamation. 2005.

Census Data

- [United States Census Bureau](#)
- [County and State Population Data](#). Department of Agriculture. 2004.

National Academy of Sciences: National Research Council

- [2008 - Prospects for Managed Underground Storage of Recoverable Water](#). National Research Council. 2008.

National Oceanic and Atmospheric Administration (NOAA)

- [Western Water Assessment](#) (WWA). Homepage.
- Climate Change: [Trends and Projections](#). WWA.

United States Geological Survey (USGS)

Arizona

- [An Online Interactive Map Service for Displaying Ground-Water Conditions in Arizona](#).
- [The Interactive Map Web Page](#)

International

- [Australia ASR Program](#)

National

- [USA Groundwater Atlas](#). 1995.

- [Circular 1182](#) - Land Subsidence in the United States. Galloway et al. 1999.
- [Circular 1279](#). Estimated Withdrawals from Principle Aquifers in the United States, 2000. Maupin and Barber. 2005.
- [Circular 1323](#) - Groundwater Availability in the United States. Reilly et al. 2008.

Southwest Region

- Groundwater Atlas: [Arizona, Colorado, New Mexico and Utah](#).
- [California and Nevada](#).
- Groundwater Atlas: [Basin and Range Aquifers](#)
- [Professional Paper 1703](#) - Groundwater [Natural] Recharge in the Arid and Semiarid Southwestern United States. Stonestrom et al. 2007.
- [Fact Sheet](#) - Groundwater Resources for the Future: Desert Basins of the Southwest.

STATE WATER AGENCIES

Arizona

- [2009 -Successful application of Managed Aquifer Recharge in the improvement of the water resources management of semi-arid regions: Examples from Arizona and the Southwestern U.S.A.](#) Lluria.
- Arizona Department of Water Resources: [ASR Projects](#)
- Arizona Rural Water Association: [ASR Projects](#)
- [Arizona Water Banking Authority](#)
- [Central Arizona Groundwater Replenishment District](#)
- Central Arizona Project: [ASR Projects](#)

California

- Metropolitan Water District: [ASR Projects](#)
- [Bulletin 118](#). California's Groundwater. California Department of Water Resources.

Nevada

- Southern Nevada Water Authority: [ASR Projects](#).

UNIVERSITIES AND INSTITUTIONS

- *Arroyo* - [Arizona Water Banking, Recharge and Recovery](#). 2017.
- *Arroyo*: [Artificial Recharge a Multi-purpose Water Management Tool](#). Newsletter of the University of Arizona, Tucson.
- *Southwest Hydrology: Aquifer Recharge, Storage and Recovery*. A trade magazine published by the University of Arizona, Tucson.
- [Conjunctive Use Opportunities in Southern California](#). Pulido-Velazquez. 2003.

- [Economic values for conjunctive use and water banking in southern California.](#)
Pulido-Velazquez et al. 2003.

BOOKS

- [Water Follies: Groundwater Follies and the Fate of America's Fresh Waters.](#)

MAPS

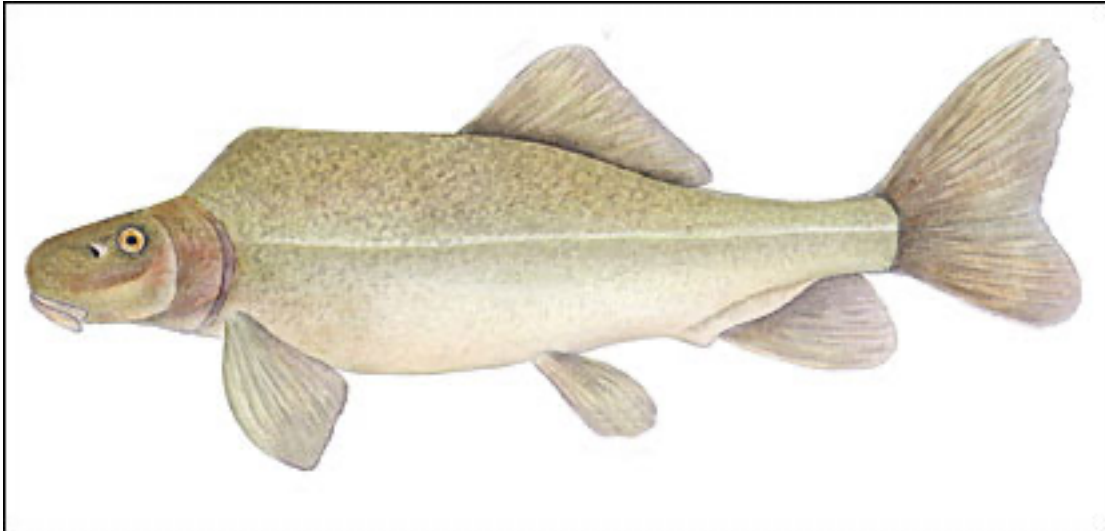
California: Colorado River Region ([hyperlinked here](#))

Arizona: Colorado River Region ([hyperlinked here](#))

Colorado and New Mexico Rio Grande Aquifer Basins; open and closed basins
([hyperlinked here](#)).

The Endangered Fish of the Colorado River Basin

JANUARY 01, 2009
BY JOHN WEISHEIT



Razorback sucker drawing by Gloria Brown

By improving the quality of life for wild creatures, we improve the quality of life for people. This is the intent of the **Endangered Species Act** (ESA). It is a legislative act of hope to preserve our heritage and a marker that society has a responsibility toward community and stewardship.

Aldo Leopold recognized in 1949 what the distraction is against the preservation ethic, "the land-relation is still strictly economic, entailing privileges but not the obligations."

President Eisenhower might have said it best, "A people that values its privileges above its principles soon loses both."

Since Congress passed the ESA in 1973, recovery programs on the Colorado River have yet to stabilize a single imperiled species. Because there is no honest enforcement from federal and state agencies, the ESA has become a legislative embarrassment to the nation and lawsuits abound.

The Department of Interior currently boasts that the endangered humpback chub population in Grand Canyon is **improving** under their tutelage, but fails to mention that the **razorback sucker and other species** were simultaneously lost.

The dialogue of the privileged to reform the ESA is more about their greed, inconvenience, and zookeeping remedies. The hope is turning into despair.

Besides throwing blame on the government, we need to look at the whole of society, as Leopold observed. Specifically our acute consumption of natural resources to fuel the growth economy theory, which is impossible to sustain in perpetuity despite the cheerleading.

Achieving a **steady-state** population and economy for humans is indeed desirable, if not absolutely essential to reverse the struggle toward extinction, because it otherwise mirrors the inclusion of the human race.

Our society must face the fact that for too long, we have consumed too much, and this carelessness does not offer a final reward.

Read: [Prosperity without growth](#).

The native fish of the Colorado River

The native fish populations in the southwestern United States have the **highest rate** of jeopardy toward extinction in the nation.

If not for the undeveloped tributary streams of the Colorado River basin, where natural habitat still exists, these fish would have become extinct long ago. **2001 - Tyus and Saunders**.

Click [here](#) to watch a movie clip of native fish (either humpback chub or bluehead sucker) spawning at the mouth of Havasu Creek, a spring-fed tributary of the Colorado River in Grand Canyon National Park.

Historically, the native fish fauna of the Colorado River Basin was dominated by the minnow (cyprinids) and sucker (catostomids) families. Of the 34 known native species to the Colorado River basin, 74% are found nowhere else in the world, or **endemic**.

Threats to these species include streamflow regulation and habitat modification (dams and diversions), altered **food web**, predation (**eaten as prey**) by nonnative fish species, parasitism (**Asian tapeworm**), **hybridization** with other native fish species, and pesticides, toxins and pollutants. These changes to the river environment have occurred so quickly that the species have been unable to adapt, so pro-active human intervention is the only hope they have. Since the river is truncated by 83 dams in the upper basin and 10 dams in the lower basin (**reference**), this loss of genetic diversity will also impede their recovery.

Fish ladders have been constructed at small diversion dams in the upper basin river reaches, which increase the range of habitat for a few dozen miles. Fish ladders at high dams, such as Glen Canyon and Hoover dams, are probably impossible to construct. Whereas **removing Glen Canyon Dam**, which is not essential water infrastructure, would increase river habitat by 500 miles on the Colorado, San Juan, and all the convergent tributaries of Canyon Country.

Glen Canyon Dam exists solely for reasons of delaying the downstream movement of water at a **fixed geographical location** (**Lee's Ferry**, Arizona), a function that Hoover Dam is able to perform. Also, of course, to provide **hydropower revenue** (a federal subsidy) to pay for the dams and water projects of the basin, a function that farmers and cities are able to perform.

In other words, bureaucratic bean counting is essentially why these fish suffer.

The four species of greatest concern

1. Colorado squawfish (*Ptychocheilus lucius*) ([photo](#))
2. humpback chub (*Gila cypha*) ([photo](#)) ([close-up](#))
3. bonytail chub (*Gila elegans*) ([photo](#))
4. razorback sucker (*Xyrauchen texanus*) ([photo](#))

Photos for identification

1. [Bluehead sucker](#)
2. [Flannelmouth sucker](#)
3. [Colorado Pikeminnow](#)
4. [Razorback sucker](#)
5. [Rondtail chub](#)

Listing in the Federal Register

1. Colorado squawfish - March 11, 1967 ([32 FR 4001](#))
2. humpback chub - March 11, 1967 ([32 FR 4001](#))
3. bonytail chub - April 23, 1980 ([45 FR 27713](#))
4. razorback sucker - October 23, 1991 ([56 FR 54957](#))

River sections of extirpation

Extirpation means a self-reproducing plant or animal species has become locally extinct ([definition](#)). Protection under the ESA includes preserving critical habitat and implementing recovery programs to reverse the trend toward extinction.

1. Above Lake Powell, all endangered species are present, but populations have yet to be stabilized sufficient enough for delisting, especially the bonytail chub and razorback sucker.
2. In the Grand Canyon, three of the four endangered fish (Colorado pikeminnow, bonytail chub, razorback sucker) are extirpated. Additionally, a threatened species, the roundtail chub, is extirpated in the Grand Canyon.
3. Below Hoover Dam all endangered fish are extirpated, but hatchery-born fish have been introduced in various river sections and reservoirs, such as Lake Mohave. The natural breeding and rearing of endangered fish in the lower reaches of the Colorado River have not been successful, so far.

Designated critical habitats

- [Federal Register](#)
- 4. Green River from Gates of Lodore (Dinosaur National Monument) to the Colorado River confluence, Colorado and Utah.
- 5. Yampa River in Dinosaur National Monument, Colorado.
- 6. White River from Rio Blanco Lake Dam to the Green River confluence, Colorado and Utah.
- 7. Duchesne River from river mile 2.5 to Green River Confluence, Utah.
- 8. Colorado River from Colorado River Bridge (I-70, exit 90 in Rifle) to North Wash (Lake Powell), Colorado and Utah.
- 9. Gunnison River from the confluence of the Uncompahgre River to the Colorado River confluence, Colorado.
- 10. San Juan River from State Route 371 Bridge (Farmington) to Neskahai Canyon (Lake Powell), New Mexico, Colorado and Utah.
- 11. Colorado River from confluence of Paria River to Imperial Dam, Arizona, Nevada and California.
- 12. Little Colorado River from river mile 8 to Colorado River confluence.
- 13. Gila River from New Mexico border to Coolidge Dam, Arizona.
- 14. Salt River from Highway 60 Bridge to Roosevelt Diversion Dam.
- 15. Verde River from boundary of Prescott National Forest to Horseshoe Dam.

Note: Includes 100-year river floodplain and full pool elevation of reservoirs. Lake Powell is not critical habitat except for the uppermost arms of San Juan and Colorado rivers. Total river mileage is 1,980.

Minimum streamflow requirements

[Flow Recommendation web page](#)

- San Juan River: 500 cfs. Based on average flow of four gages between Farmington, NM and [Bluff UT](#), with adjustments made to accommodate for variables such as river speed, high evapo-transpiration rates and irrigation withdrawals. ([Biological Opinion](#))
- Green River at [Jensen, UT](#): 900 cfs
- Green River at [Green River, UT](#): 1,100 cfs ([USFWS flow recommendation](#))
- Gunnison River near [Grand Junction, CO](#): 1,050 cfs.([graphic](#))
- Colorado River at [Utah/Colorado border](#): 1,800 cfs ([USFWS flow recommendation](#))

Recovery plans (currently being revised by US Fish and Wildlife Service)

1. [Colorado pikeminnow](#)
2. [humpback chub](#)
3. [bonytail chub](#)
4. [razorback sucker](#)

RECOVERY PLANS

Upper Colorado River

- [2001 - An Evaluation of the Role of Tributaries for the Recovery of Endangered Fishes in the Upper Colorado River and Recommendations for Future Recovery Actions](#). Tyus and Saunders.

Lower Colorado River

- [1999 - First Meeting of Lower Colorado Recovery Implementation Plan by the Scientific Work Group \(RIP SWG\)](#).
- [2003 - A Conservation Plan for Native Fishes of the Lower Colorado River](#). Minckley et al.

Gila River Basin

- [2003 - Part One: Status Report of Listed Arizona Fishes in Gila River Basin With Recommendations for Recovery](#). Desert Fishes Team.
- [2003 - Part Two: Status Report of Listed Arizona Fishes in Gila River Basin With Recommendations for Recovery](#). Desert Fishes Team.
- [2003 - Part Three: Analysis of Recovery Plan and Implementation for Threatened and Endangered Fish in the Gila River Basin](#). Desert Fishes Team.

Five-year Reviews

- [2011 - Humpback chub 5-year review](#)
- [2011 - Colorado pikeminnow 5-year review](#)
- [2012 - Bonytail chub 5-year review](#)
- [2012 - Razorback sucker 5-year review](#)

Recovery and adaptive management programs

1. [Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin](#)
 2. [San Juan River Basin Recovery Implementation Program](#)
 3. [Glen Canyon Dam Adaptive Management Program](#)
 4. [Lower Colorado Multiple-Species Conservation Program](#)
- [2001 - Comments on the recovery goals for endangered fish](#). Coggins and Gloss; GCMRC.

Program action plans

1. [Upper Colorado River](#). April, 2007.
 2. [San Juan River](#). August 2006
 3. [Glen Canyon Dam](#). August, 2001
 4. [Lower Colorado](#). June, 2004.
- [2007 - Green River Study Plan](#).

SIGNIFICANT PROGRESS REPORTS

- [2018 - Colorado River Sufficient Progress Memo](#)
- [2017 - Suff Prog Final Signed](#)
- [2016 - Final Signed Sufficient Progress](#)
- [2015 - Suff Progress Memo](#)
- [2015 - Revised Stocking Plan For RS & BTC](#)
- [2014 - Sufficient Progress Memo](#)
- [2013 - Sufficient Progress Memo](#)
- [2012 - Sufficient Progress Memo](#)
- [2011 - SP Memo](#)
- [2010 - SP Memo Revised](#)
- [2009 - SP Memo](#)
- [2008 - SP Memo](#)
- [2006 - SP Memo](#)
- [2005 - SP Memo](#)
- [2004 - SP Memo](#)
- [2003 - SP Memo](#)
- [2002 - SP Memo](#)
- [2001 - SP Memo](#)
- [2000 - SP Memo](#)
- [1999 - SP Memo](#)
- [1998 - SP Memo](#)
- [1997 - SP Memo](#)
- [1996 - SP Memo](#)
- [1995 - SP Memo](#)
- [1992 - SP Memo](#)

Colorado pikeminnow description

1. Average total length (TL) - 1.8 m (71 inches)
2. Average weight - 36 kg (79 lbs)
3. Average lifespan - 40+ years
4. River temperature to spawn - 18 and 23°C (64 -73° F)
5. Adult populations - Green River, 6,000-8,000; upper Colorado River, 600-900; San Juan River, 19-50.

The Colorado pikeminnow is a long-distance migrator and historically ranged from Wyoming to Mexico; moving hundreds of miles to and from spawning areas. Adults require pools, deep runs, and eddy habitats maintained by high spring flows. These high spring flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, form gravel and cobble deposits used for spawning, and rejuvenate backwater nursery habitats. Spawning occurs after spring runoff when the temperature reaches 64 -73° F. After hatching and emerging from spawning substrate, larvae drift downstream to nursery backwaters that are restructured by high spring flows and maintained by relatively stable base flows (non-fluctuating).

Humpback chub description

1. Average total length (TL) - 480 mm (19 inches)
2. Average weight - 1.2 kg (2.6 lbs)
3. Average lifespan - 20 to 30 years
4. River temperature to spawn - 16 and 22°C (61-72° F)
5. Adult populations - Black Rocks, Colorado River in Colorado, 900-1,500; Westwater Canyon, Colorado River in Utah, 2,000-5,000; Yampa Canyon, Yampa River in Colorado, 400-600; Desolation/Gray Canyons, Green River in Utah, 1,500; Cataract Canyon, Colorado River in Utah, 500; Grand Canyon and Little Colorado River in Arizona, 2,000-4,700.

Historically ranged from below present-day Hoover Dam in the Colorado River upstream into Colorado, and in the larger portions of Colorado River tributaries in Arizona, Utah, Colorado, and Wyoming. The humpback chub is restricted to deep, swift, canyon-bound regions of the mainstem and large tributaries of the Colorado River. This specialized habitat, as it were, is probably why the species was unknown to the world until 1946. Adults require eddies and sheltered shoreline habitats maintained by high spring flows for spawning. High spring flows maintain channel and habitat diversity, flush sediments from spawning areas, rejuvenate food production, and form gravel and cobble deposits used for spawning. Eggs are dispersed when the water temperature reaches 61-72° F. The young require low-velocity shoreline habitats, including eddies and backwaters, that are more prevalent under base-flow (non-fluctuating) conditions.

Bonytail chub description

- Average total length (TL) - 550 mm (22 inches)
- Average weight - 1.2 kg (2.4 lbs)
- Average lifespan - 40+ years
- River temperature to spawn - unknown; probably same as humpback.
- Adult populations - Currently no self-sustaining populations of bonytail exist in the wild and recovery is dependent on the success of brood stock from hatcheries. Click [here](#) to see photo by Robin Silver of the last wild bonytail captured in Lake Mohave by Paul Marsh.

Razorback sucker description

1. Average total length (TL) - 1m (39 inches)
2. Average weight - 5-6 kg (11-13 lbs)
3. Average lifespan - 40+ years
4. River temperature to spawn - $>14^{\circ}\text{C}$ ($>57^{\circ}\text{F}$)
5. Adult populations - Middle Green River in Utah, 100; scant population in Colorado River, Colorado; scant population in San Juan River, Utah. Recovery of this fish, like the bonytail chub, is dependent on brood stock from hatcheries. In the Grand Canyon, razorback sucker has not been captured since the early 1990s; a **hybridized razorback** was observed in the Grand Canyon at the mouth of Kanab Creek, May 2008. It is generally assumed the razorback requires floodplain habitat to spawn. Floodplain inundation has not occurred on the Colorado river basin since 1984.

Historically, razorback sucker were widely distributed in warm-water reaches of larger rivers of the Colorado River Basin from Mexico to Wyoming. Habitats required by adults in rivers include deep runs, eddies, backwaters, and flooded off-channel environments in spring; runs and pools often in shallow water associated with submerged sandbars in summer; and low-velocity runs, pools, and eddies in winter. Spring migrations of adult razorback sucker were associated with spawning in historic accounts, and a variety of local and long-distance movements and habitat-use patterns have been documented. Spawning in rivers occurs over bars of cobble, gravel, and sand substrates during spring runoff at widely ranging flows and water temperatures (typically greater than 57°F). Spawning also occurs in reservoirs over rocky shoals and shorelines. Young require nursery environments with quiet, warm, shallow water such as tributary mouths, backwaters, or inundated floodplain habitats in rivers, and coves or shorelines in reservoirs.

Additional reading

- [1962 - The Rotenone Project](#) (native fish genocide). Halverson.
- Click [here](#) to view bibliographies of endangered fish research
- [List of extirpated species in Grand Canyon](#). 2009.
- Gulf of California endangered species:
 - [Vaquita Porpoise](#)
 - [Totoaba](#)
- Case Study of the Endangered Fish Recovery Program of the Upper Colorado River. [Karen Hopgl](#); [John Hamill](#);
- [Collaborative Management of Glen Canyon Dam: The Elevation of Social Engineering over Law](#). Joseph M. Feller.
- [Desert Fishes Council](#)
- [Resolutions](#) (including ESA reform). Colorado River Water Users Association (CRWUA).
- [Selenium Effects on Endangered Fish in the Colorado River Basin](#)

- *Southwest Hydrology: Endangered Species Act*
 - 2008 testimony from Reclamation Commissioner
 - Undamming Glen Canyon: Lunacy, Rationality, or Prophecy. Scott Miller.
-

The Powell Survey of the 1870s: Art & Science from the Saddle

JANUARY 23, 2009
BY JOHN WEISHEIT



Point Sublime by William Henry Holmes

The most excellent professional papers produced by the Powell Survey (1871 to 1879), and formally called the [United States Geographical and Geological Survey of the Rocky Mountain Region](#), were accomplished more from land-based expeditions, than the famous river expeditions of 1869 and 1871.

The professional papers of the Powell Survey are:

- 1875 - [Exploration of the Colorado River of the West and its tributaries; 1869 to 1872](#). Powell.
- 1876 - [Geology of the Eastern Portion of the Uinta Mountains](#) by John Wesley Powell
- 1877 - [The Geology of the Henry Mountains](#) by Grove K. Gilbert
- 1879 - [Lands of the Arid Regions of the United States](#) by Powell, Gilbert, Dutton and Almon H. Thompson.
- 1880 - [Report on the Geology of the High Plateaus of Utah](#) by Clarence E. Dutton.

- 1882 - [Tertiary History of the Grand Canyon District](#), also by Dutton.
- 1891 - [Congressional testimony, 1891: Ceding the Arid Lands to States & Territories](#). Powell & Dutton.
- The collective work of Powell, Thompson, Dutton and Gilbert laid the foundation for the earth science we now call **geomorphology**.

The artwork of the Powell Survey are:

- **Photos** by E. O. Beaman (and others) and **photos** by John K. Hillers.
- Art by [William Henry Holmes](#).
- **Maps** by Almon Thompson and others.

The women of science in the Colorado River Basin

- [Alice Eastwood](#). Wikipedia.
- [Emma Dean and Ellen Powell](#).

Anthology of John Wesley Powell

- [1969 - The Colorado River Region and John Wesley Powell](#). USGS PP 669.

NARRATIVE

John Strong Newberry (1822-1892) was the most influential mentor of the individuals who became the Powell Survey. Eleven years before Powell completed his river trip, Newberry had already explored the lowermost section of the Colorado River by steamboat, and then by horseback surveyed roughly the bottom of the Grand Canyon at Diamond Creek. Later, Newberry observed the ruins of the Ancestral Puebloans near Mesa Verde and reached, by horseback and probably within a few miles, the Confluence in Canyonlands (the junction of the Green and Colorado rivers); all three areas are now national parks.

- [Report on the Lower Colorado River Expedition by Ives and Newberry in 1857](#).
- [Report on the Exploring Expedition of 1859 in the Canyonlands sub-province](#).

Newberry was a charter member of the **National Academy of Sciences**. He used his influence with Congress to secure funding for the Powell Survey. Newberry's influence also convinced Congress to consolidate the four national surveys into one entity, the **United States Geological Survey** (USGS), of which Powell served as its second director.

As director of the Ohio Survey, Newberry personally mentored Grove K. Gilbert, who became America's great engine of scientific research. Both Newberry and Gilbert have written professional papers on the igneous intrusive mountains of the Colorado Plateau--the Abajos and the Henry's, respectively.

- [2018 - James Dwight Dana and John Strong Newberry in the US Pacific Northwest: The Roots of American Fluvialism](#). O'Conner.
- [Click here](#) to read more about the federal surveys before the Civil War.

[John Wesley Powell](#) (1834-1902). Without a doubt, no man of the 19th century knew the Colorado Plateau better than Powell. The first chapter in [Exploration of the Colorado River of the West](#) testifies to this fact.

The Colorado Plateau geophysical province is divided into six sections, all traveled by Powell on the saddle: the Uinta Basin, Canyonlands, High Plateaus, Grand Canyon, Navajo, and Datil. See [Cenozoic Geology of the Colorado Plateau](#) by Charles Hunt (1956).

Powell also had an intimate knowledge of the Colorado River through the geophysical provinces of the Rocky Mountains and the Basin and Range. Generally, in his prepared talks or testimony, Powell framed the river's big picture with his audience via the [watershed approach](#).

- [1876 - Geology of the Eastern Portion of the Uinta Mountains](#). Washington DC: Government Printing Office.
- [1903 - John Wesley Powell Memorial: Explorer & Scholar](#). Lincoln & Gilbert.
- [1961 - The Exploration of the Colorado River and Its Canyons](#). Mineola: Dover.
- [1969 - JW Powell and the Anthropology of the Canyon Country](#). USGS PP 670.
- [1969 - The Colorado River Region and John Wesley Powell](#). USGS PP 669.
- [1980 - John Wesley Powell: Soldier, Explorer & Scientist](#). Rabbit.
- [1983 - John Wesley Powell: Science & Reform in a Positive Context](#). Zernel.

[Grove K. Gilbert](#) (1843-1918). Gilbert defected from the survey of Lt. [George Wheeler](#) upon Powell's invitation to attend his. Gilbert was with Wheeler in the autumn of 1871 when that survey rowed/towed boats up the Colorado River to Diamond Creek in Western Grand Canyon, and then left the area by trail on horseback.

- [Notebook of Grove K. Gilbert from 1871 Colorado River Expedition](#). Transcribed by George Simmons, USGS.

Gilbert did this because Powell sincerely intended to produce the highest quality science and literature without wasting time and money. Gilbert understood that this could not happen under [Wheeler's direction](#).

Edwin McKee, considered the father of Grand Canyon geology, viewed Grove K. Gilbert as America's greatest geologist. Few would argue this point: twice Gilbert served as the president of the [Geological Society of America](#). Gilbert was Powell's first choice to serve as his successor in the USGS. The post went to [Charles Walcott](#), another famous Grand Canyon geologist. Gilbert instead preferred to serve as chief geologist for the USGS, where he established the principles of nomenclature and cartography.

His writings are masterpieces interpreting such subjects as igneous intrusive mountains ([Iaccolith](#)), Basin and Range extension, the glacial phenomenon, pluvial lakes ([Lake Bonneville](#)), the denudation of the Colorado Plateau, and debris flows. After the death of his wife Fannie (whom he met at a dance in Powell's home) he partnered with [Alice Eastwood](#) (whom he met on a Sierra Club excursion). Ms. Eastwood was a botanist who conducted research on the Colorado Plateau before meeting her soon-to-be husband (the marriage ceremony did not occur due to Gilbert's untimely death at age 75).

- [1877 - Geology of the Henry Mountains](#). Gilbert.
- [1953 - Geology and Geography of the Henry Mountains & 22 Plates](#). Hunt.

[Clarence E. Dutton](#) (1841-1912); [a biography](#). Powell borrowed Dutton from the U. S. Army where he served as an officer in the Ordinance Corps (weaponry). His specialty was chemistry and metallurgy, which prepared him for the assignments Powell gave him, namely, igneous extrusive structures (volcanism). Dutton worked on the igneous extrusive structures of western Grand Canyon, western New Mexico, Hawaii and the Cascades (Newberry actually preceded Dutton in describing the extrusives of the Basin and Range and the Cascades).

His monograph [The Tertiary History of the Grand Canyon District](#) (1882) is highly prized by modern-day book collectors. Dutton's geologic insight was impressive, but his ability as a nature writer was uncanny. Dr. Wallace Stegner did his graduate thesis on the literary work of Dutton and called him "the John Muir of the Colorado Plateau." Stegner's infamous book [Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West](#) is an outreach of that graduate work.

Almon H. Thompson (1839-1906). Thompson's contribution to the Powell Survey is a story of incredible fortitude, perseverance and unselfishness. He was Powell's cartographer and produced the first accurate map of the Utah Territory. Thompson, from the saddle, discovered the last unknown river of the contiguous United States, the [Escalante River](#). He also was the first known Euro-American to reach the summit of the [Henry Mountains](#), Mt. Ellen, named after his wife and sister of John Wesley Powell. The Henry Mountains were the last mountainous range of the contiguous United States to receive a name, which was gifted to [Joseph Henry](#), the first director of the Smithsonian Institute and benefactor of the Powell Survey.

The professional papers of the Powell Survey, though over 130-years old, are very impressive works of science and art, especially Gilbert's monograph on the Henry Mountains. This report also serves as a geological history of the Colorado River and is, actually, the most brilliant investigation I have ever read.

Additional reading:

- [The 150th Anniversary of the 1869 Powell Expedition](#). USGS, 2020.
- [Great Surveys of the American West](#), by Richard A. Bartlett
- [A River Running West: The Life of John Wesley Powell](#), by Donald Worster.

- [Grove Karl Gilbert: A Great Engine of Research](#), by Stephen J. Pyne.
 - [How the Canyon Became Grand](#), by Stephen J. Pyne.
 - [John Wesley Powell](#). James Aton. Western Writers Series #114. Boise State University.
 - [1903 - John Wesley Powell Memorial: Explorer & Scholar](#). Lincoln & Gilbert.
 - [1969 - JW Powell and the Anthropology of the Canyon Country](#). USGS PP 670.
 - [1969 - The Colorado River Region and John Wesley Powell](#). USGS PP 669.
 - [1980 - John Wesley Powell: Soldier, Explorer & Scientist](#). Rabbit.
 - [1983 - John Wesley Powell: Science & Reform in a Positive Context](#). Zernel.
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Rainbow Bridge National Monument and Navajo Mountain, Utah

MARCH 17, 2009
BY JOHN WEISHEIT

Rainbow Bridge when Lake Powell reservoir levels are very low.

Rainbow Bridge is a timeless natural wonder that became a National Monument in 1910 by [Executive Order](#) from President William H. Taft.

Congress gave such authority to any president of the United States under the [Antiquities Act](#) of 1906, to protect lands of the [Public Domain](#) that contain Indian ruins and artifacts, or to protect landscapes for their contributions to science.



Rainbow Bridge when Lake Powell reservoir levels are very low.

The administration of national monuments currently falls under the jurisdiction of [National Park Service](#), which was formally established in 1916 as an agency of the Department of Interior.

[Navajo Mountain](#) is an igneous intrusive mountain (a [laccolithic](#) structure) in the [Navajo Nation](#), which is the largest and most populous Indian reservation in the United States involving three states (Arizona, Utah and New Mexico). The mountain and its community are in the state of Utah, [San Juan County](#), with [Monticello](#) being the distant county seat. Access to Navajo Mountain requires traveling on the highways of northern Arizona. The largest community in the immediate area is [Page](#), Arizona.

Navajo Mountain [history](#).

[Lawsuit](#) USA v Board of Education San Juan County School District

Rainbow Bridge National Monument is a case study about internal contradictions within the U.S. Congress and the Department of Interior. On one hand Interior has a preservation mandate to fulfill, and on the other hand a mandate of economic development. Interior also has an obligation by treaty toward Indian heritage, which includes the Navajo Nation. For Rainbow Bridge this clash of missions is manifested between three agencies of Interior, namely the National Park Service, the Bureau of Reclamation and the Bureau of Indian Affairs.

The Bureau of Reclamation began building Glen Canyon Dam in 1957, which created the second largest man-made reservoir in the United States, Lake Powell. When full, the waters of Lake Powell reach into the monument, and even beyond the natural abutments of Rainbow Bridge. The reservoir inundated many sacred sites of the Navajo culture, which begs the question: how would you feel if the government buried your sacred places under a reservoir?

This tragedy should never have occurred for reasons of respect toward culture, agency mission statements and federal law, and demonstrates how such willful disrespect breaks the integrity of government. Click [here](#) and [here](#) for objective analysis on the controversies.

A Chronology of Rainbow Bridge

20,000 BP (before present) - Global cooling, during the [last ice age](#), peaks. The climate on the Colorado Plateau experienced more moisture and less evaporation which, compared to today's climate, increased streamflow and runoff for the Colorado River and its tributaries. During this time-period Rainbow Bridge formed when the original meandering stream bed ([diagram](#)), that once looped around a solid fin of Navajo sandstone, was abandoned, and the flow was then redirected straight through the fin. Subsequent erosion has since created a near-perfect natural bridge.

The bridge dimensions ([diagram](#)) are: 290-foot-high with the open area of the span at 275 feet across. The top of the span it is 42 feet thick and 33 feet wide.

Note: The source of the diagrams for this article come from the book *Rainbow Bridge: An Illustrated History*, by Hank Russell, and available for purchase at [Utah State University Press](#).

1863 - Colonel [Christopher Kit Carson](#) of the US Army defeats the Navajo and marched them ([The Long Walk](#)) into exile at the Bosque Redondo Reservation at Ft. Sumner, New Mexico; this unjust captivity ends in 1968. However, several Navajo groups evade the Army and hide in the [Navajo Mountain](#) region of Utah, which is also inhabited by Paiutes. Except for these indigenous people, knowledge of Rainbow Bridge remains hidden from the rest of the outside world.

1906 - John and Mary Louisa Wade [Wetherill](#) established a trading post at Oljeto, Utah, and hear stories of this natural bridge.

1907 - [Dr. Byron Cummings](#), Dean of Ancient Languages and Literature at the University of Utah undertakes a survey of the three huge natural sandstone bridges in Utah's White Canyon, west of Blanding.

1908 - The natural bridges of White Canyon are designated for federal protection by President [Theodore Roosevelt](#) as [Natural Bridges National Monument](#).

1909 - Cummings and William B. Douglas form a discovery expedition to locate Rainbow Bridge, which is organized by John Wetherill. The guides are Jim Mike, a Ute, and Nasja Begay, a Paiute.

[Map](#) of route.

[Article](#) of expedition by Stephen C. Jett.

1910 - President [William H. Taft](#) proclaims Rainbow Bridge a [National Monument](#).

1913 - Theodore Roosevelt and [Zane Grey](#) visit Rainbow Bridge.

1956 - The building of Glen Canyon Dam on the Colorado River was authorized in 1956 by Congress and [debates](#), about this new reservoir inundating a federally protected national monument, escalate.

1963 - The river bypass gates at Glen Canyon Dam close and the reservoir (Lake Powell) begins to fill. The rising waters will encroach into the monument in the early 1970s.

1973 - Friends of the Earth (founded by [David Brower](#)), Wasatch Mountain Club and outfitter [Kenneth Sleight](#) file suit in federal court to keep the rising waters of Lake Powell out of Rainbow Bridge NM. The defendants are Department of Interior, Bureau of Reclamation and National Park Service. The case was upheld by US District Court in Utah, but was later lost in the appeal process.

1974 - Navajo medicinemen, who live in the vicinity of Navajo Mountain, [file suit](#) in U.S. District Court against the Secretary of the Interior, Bureau of Reclamation, and National Park Service.

See also:

[A Legal History of Operations at Glen Canyon Dam](#)

[Article about dams in national parks](#)

1993 - The National Park Service adopts a [General Management Plan](#) for Rainbow Bridge. It offered a long-term plan for mitigating visitor impacts and preserving the resources of Rainbow Bridge, despite the ironic fact that the Department of Interior did not provide the necessary leadership to protect the monument from degradation as the consequence of constructing Glen Canyon Dam.

Additional information:

[Administrative History](#) of Rainbow Bridge NM ([cached](#)). National Park Service.

[Photo](#) of Rainbow Bridge when Lake Powell is full.

[Aerial photo](#) of Rainbow Bridge.

[Photos along the trail](#) from Navajo Mountain to Rainbow Bridge.

[Repeat photography](#) of Rainbow Bridge.

[Satellite view](#) of Navajo Mountain region. NASA.

[Maps](#) of Rainbow Bridge.

[Navajo Mountain and Rainbow Bridge Religion](#). Museum of Northern Arizona. Karl W. Luckert, 1977.

[Did Prospectors See Rainbow Bridge Before 1909?](#) Utah Historical Quarterly article by James Knipmeyer.

[Sacredness of Rainbow Bridge](#). Plateau Magazine, 1973. Stephen C. Jett.

[Amicus Brief](#) from coalition of Indian groups.

[Trail to Rainbow Bridge](#). Desert Magazine. 1941.

[Professional field trips](#) to Navajo Mountain and Rainbow Bridge.

[Visitation statistics](#).

Adaptive Management Program Documents for Operations at Glen Canyon Dam

AUGUST 19, 2009

BY JOHN WEISHEIT



The documents of the Adaptive Management Program (AMP) for operations at Glen Canyon Dam (GCD) are provided here at On The Colorado as an alternative archive to the official web site maintained by the Bureau of Reclamation located [here](#).

The program is charged by Congress to stop impairment of the biological and cultural resources of the Grand Canyon. The impairment is caused by hydropower operations at Glen Canyon Dam. These operations are to be modified by science and policy to improve national park values.

The main reason why we decided to provide this archive is the federal site does not contain a complete list of documents.

Though the AMP started formatively in 1995, the archive for AMWG ([Adaptive Management Work Group](#)) does not begin until 1997 and the TWG ([Technical Work Group](#)) archive begins in 1999.

Reclamation's site had a lot more broken links than it does today and has gradually improved the archive over time, so we appreciate these adjustments, but the missing years are...well...still missing.

They are not missing here at On The Colorado. However, you will notice that gaps remain, and when and if we acquire these documents, we will post them here.

Second, documents will be located on a single page in chronological order to eliminate unnecessary site surfing.

Third, sometimes the federal court system shuts down the web sites of the Department of Interior, so it is convenient to have this alternative site when that situation occurs.

An additional purpose is to demonstrate that some of the commitments this program is obligated to complete remain undone, or were completed after unreasonably long delays (or ironically fast-tracked). These include the annual report to Congress, integrating the Grand Canyon Protection Act (GCPA) into the Annual Operating Plan (AOP), completion of the temperature control device, reversing the persistent depletion of sediment, finalizing and implementing a programmatic agreement with the tribes,

implementing seasonally adjusted steady flows, finishing the Core Monitoring Plan, completing the socioeconomic analysis, and other matters.

You will also notice how unreasonable amounts of time are spent on meeting process rather than progress toward renewal of park resources, and that this obvious behavior is consistently initiated by the protectors of hydropower revenues.

[Click here](#) to begin...

ADDITIONAL INFORMATION

REVIEWS BY NATIONAL ACADEMY OF SCIENCES

- [1990 - Colorado River ecology and dam management](#)
- [1991 - Colorado River Reservoir Operations](#)
- [1994 - Review: Glen Canyon Dam long-term monitoring plan](#)
- [1996 - Review: River Resource Management in the Grand Canyon](#)
- [1999 - Review: Glen Canyon Dam adaptive management program](#)
- [AMP Core Documents](#)

Adaptive Management Reviews: [Susskind](#); [Camacho](#); [Fellers](#); [Fellers Powerpoint](#); [Lenard](#); [Benenati](#);

Click [here](#) to read *Environmental History of the Colorado River: A Changing Focus of Science*. Bennati and Shannon.

[2008 - Report to the Secretary's Designee](#) on clarifications of roles in GCD Adaptive Management Program.

Click [here](#) to read a history of operations at GCD before Adaptive Management.

Click [here](#) to read letter by litigants about AMP to Secretary of Interior.

Click [here](#) for AMP primary documents not available on its web page.

[2009 - List of extirpated species at Grand Canyon](#)

[2009 - Hydropower study by David Marcus. Table 1. Tables 2 and 3.](#)

[2010 - Desired Future Conditions](#)

[2010 - Answers](#) from Grand Canyon Trust and National Parks and Conservation to Subcommittee Chairs Napolitano and Grijalva about AMP.

[2011 - Testimony by Leslie James](#). CREDA.

January, 1994 - [Draft Environmental Impact Statement](#) on operations at GCD is published ([Federal Notice](#)).

March 21, 1994 - **Final ruling** on critical habitat for the endangered fish of the Colorado River.

November 9, 1994 - **Non Use Economic Value Policy Analysis**

December 21, 1994 - **Biological Opinion** (BO) of GCD for Modified Low Fluctuating Flow (MLFF), the preferred alternative of the Environmental Impact Statement (EIS) on operations of GCD.

March 21, 1995 - **GCD FEIS** is filed with Environmental Protection Agency (EPA).

March 23, 1995 - Transition Working Group meets in Phoenix. **Minutes**.

March 24, 1995 - FEIS availability is published in **Federal Register**.

March 28, 1995 - **Letter** from environmental groups (NGOs) to Reclamation Commissioner Daniel Beard and Reclamation's response.

March 1995 - Government Accountability Office (GAO) begins audit of FEIS, as mandated by the GCPA. Signing the Record of Decision (ROD) must wait for completion of audit.

April 6, 1995 - **Reclamation's response** to Biological Opinion.

April 11, 1995 - **Draft Programmatic Agreement for Cultural Resources** presented.

August 11, 1995 - **Non-use Value Report** is peer-reviewed by National Academy of Sciences.

November 30, 1995 - Transition Working Group meets in Phoenix where goals and objectives are discussed. A draft of **final objectives** is presented July 2, 1996. For example, that endangered fish populations will be maintained or enhanced at levels that were observed ten years prior (1987) and on a ten year rolling average; to attain sustainable population of humpback chub in the mainstem of the Colorado River by 2005. The population of Humpback Chub **has declined** from approximately 9,322 adults in 1989 to 6,017 adults in 2006, and no sustainable population yet exists in the mainstem. **Minutes**.

January 11-12, 1996 - Razorback Sucker Workshop

February 13, 1996 - TWG meets in Phoenix. A draft appraisal of **Selective Withdrawal** (Temperature Control Device or TCD) is presented, and a **final appraisal** was completed in 1999. The purpose of the TCD is to warm the water from GCD so that endangered fish can spawn in the mainstem of the Colorado River, which is a primary objective of the AMP. See note below for October 21, 1996. **Minutes**.

May 21, 1996 - The first [AMWG Charter](#) is presented (revised in [2006](#)).
The first [guidelines for GCMRC](#) are presented.

October, 1996 - GAO completes [audit](#) of 1995 EIS on GCD operations.

October 9, 1996 - Secretary of Interior Bruce Babbitt signs the [Record of Decision](#) for operations of GCD.

October 21, 1996 - Reclamation announces the first public scoping for potential impacts from installing a temperature control device (TCD) at GCD. [Public scoping](#) occurred again in 2004, but as of 2008 a final action plan has yet to be delivered by Reclamation. See note for February 13, 1996 above.

March 3, 1997 - [Federal Register Notice](#) that stipulates, among other things, that Congress will receive an annual report on the progress of fulfilling the requirements of the GCPA, and the Annual Operating Plan ([AOP](#)) process would include public participation in setting the operations at Glen Canyon Dam specific to fulfilling the mandates of the GCPA.

[Draft 1998 Report to Congress](#) is presented to AMP.
[Final 2002 Report to Congress](#) is formally transmitted.
[2008 motion](#) to finalize a Report to Congress.

October 13, 1998 - [Federal Register Notice](#) on 4.5 foot extensions for spillway gates at Glen Canyon Dam.

October, 2001 - [Comments on the recovery goals for endangered fish](#). Coggins and Gloss; GCMRC.

[US Geological Survey Publications](#) & [here](#) (October 2010)

[2011 - Analysis of the 2000 low steady flow](#). Ralston.

The Water Imbalance of the Colorado River Basin

JANUARY 16, 2010
BY JOHN WEISHEIT

There is sufficient information available right now to make a simple determination that surplus water in the Colorado River basin **does not exist** anymore.

It is also **evident** that cutbacks to the lower basin states will likely begin in early 2012, if the drying trend for Lake Mead continues.



Hoover Dam in 1935 just before filling

The consequence of massive fossil fuel consumption is a spoiled snowpack. Degrading the primary component of water wealth is why the system is in decline. The behavior of consumers indicates this will continue to be a problem for the rest of the century, if not longer.

There is talk of restoring the balance, but it is background noise compared to the talk of completing traditional big water projects. Utah, for example, believes it has an entitlement to deplete another **361,500 acre-feet**, and the state of Colorado another **700,000 acre-feet**.

An acre-foot of water is a football field, one foot deep (325,851 gallons).

Some of this fantasy water may be dedicated to oil shale extraction to render low-grade oil and gas products that will only make the water scarcity situation even worse.

Read: [Why you should know about oil shale](#)

Stationarity Is Dead

Nature is not fixed, but water managers make fixed assumptions nonetheless that trend towards the optimistic. It is a system with disappointment built into the matrix and the Colorado River is the finest example of illusionary accounting there is.

Read: [Stationarity is Dead: Whither Water Management](#)

One of the first hydrology studies that analyzed the gaging data to determine the annual water yield of the Colorado River at the Compact Point (Lee's Ferry, Arizona) was written by **Raymond A. Hill** in 1953 for the state of Colorado. The study's main result,

which has prevailed 50-years hence, revealed that the average annual stream flow for the 20th century is 15 million acre-feet (maf), and not 17.5 maf as assumed by the founders of the 1922 Colorado River Compact.

The subsequent studies after Hill, that arrived at the same basic yield (15 maf), include the report in 1965 by [R. J. Tipton](#) for the Upper Colorado River Commission, and the hydrologic determinations of [1988](#) and [2007](#) by the Bureau of Reclamation. This would also include the [spreadsheet](#) of Colorado River natural flow compiled by James Prairie of the Bureau of Reclamation, as revised in 2009.

The problem with this accounting procedure is that the instrument record is only 110 years old, and the Colorado River drainage is 6 million years old. The river and its fauna have weathered ice ages and desertification before. Water developers used faulty and incomplete data and built the system accordingly. Unlike Nature, human engineering is not designed to work outside of assumed parameters, especially if they are wrong. So, of course, reservoir extremes will be exceeded in their lifetimes on both sides of the spectrum, namely big droughts and big floods. With luck they may survive these extremes but the engineering is, unfortunately, not as clever as Nature.

It is now understood that the 20th century was the [wettest century](#) in the last ~1,200 years, according to tree-ring record. Statistically this means that the 21st century will be drier, which so far has proven to be true. In fact [30%](#) drier, which means the real-time instrument record is more alarming than the tree-ring record of the past and climate change models of the future.

The Declination of Colorado River Streamflow ([view trendline](#))

A significant peer-reviewed [document](#) was issued in June of 2009 by scientists from the University of Colorado at Boulder, the National Atmospheric and Oceanic Administration, and AMEC. Inc. Balaji Rajagopalan was the lead author. This paper was a component of a project of the Western Water Assessment called: [Reconciling Projections of Future Colorado River Streamflow](#).

The document indicates that under the current [interim guidelines](#), the management of the Colorado River's system of reservoirs will remain robust and flexible until 2026. However, for the subsequent decades to 2057, water managers will need to find solutions to mitigate an annual system loss of 3 million acre-feet, or 20%, and as a consequence of persistent drying caused by greenhouse gas emissions.

The authors of this report have also looked at the present conditions of supply and demand. For example, Kenneth Nowak [presented](#) a water budget of the basin based on the 15 maf annual yield for the Colorado River. The budget ([graphic](#)) indicates what remains in the system right now for depletion is a mere 400,000 acre-feet. This is the amount of water that [Nevada](#) uses every year.

If Nowak had created this water budget based on the annual yield according to the tree-ring record of the last 1,200 years, there would be only 100,000 acre-feet remaining in

the system for depletion. This yield is derived from the most conservative of [tree-ring studies](#), namely 14.7 maf.

Furthermore, if Nowak had created this water budget based on the estimate that climate change has already depleted the Colorado River by 6%, or 900,000 acre-feet, then water managers need to find ways to put 1/2 million acre-feet back into the system right now to balance the water budget. This amount may be conservative as well, since the reservoir elevation at Lake Mead is fast-approaching the [designated first tier](#) where water diets begin for the states of Nevada and Arizona. ([current elevation @ Lake Mead](#)) ([@ Lake Powell](#)).

If Lake Mead recedes to elevation 1025, a reconsultation of the current management plan ([Shortage Criteria](#)) would begin (see [2007 ROD](#)). This indicates that the water managers would not entirely drain the reservoir. However, for Lake Powell there is no set elevation tier that would trigger reconsultation, which begs the question: just how far will the managers let Lake Powell drop in elevation?

With subsequent reservoir lowering Arizona goes into a situation of forced dehydration and Phoenix becomes an irony to the mythological bird it is named after.

From here on out, it is not going to be easy and it is going to get very expensive and litigious. But what is really telling in this basin is the obsessive behavior it has to develop the maximum supply of water to the last drop. Until this attitude changes, water security will never be.

What can be done is to finally heed the [advice](#) of John Wesley Powell to be humble in our approaches to manage water in arid climates, rather than setting expectations that go beyond the service limits of the native watershed.

Additional information:

- [The One-Dam Solution](#)
- [Salt Lake Tribune Editorial 01/25/2010](#)
- [River Empire](#). Powell.
- [Proposal](#) by Reclamation for a Colorado River basin study with the seven states to fulfill the SECURE Water Act.
- [WaterSMART Program](#)
- [Basin Study Program Overview](#)
- [SECURE Water Act Implementation](#)
- [Secretarial Order No. 3289](#)
- [Water Conservation Initiative](#)
- [Colorado River Basin Water Supply & Demand Study](#)
- [Plan of Study](#)
- [Public Involvement Plan](#)
- [Water Smart Order](#)
- [2009 - Climate Change Literature Synthesis](#). USBR
- [DOI's plan to address climate change impacts](#)

- [1971 - Lower Colorado Region Comprehensive Framework Study](#)
- [2007 - Reclamation Basin Study Framework](#)

February 23 & 24, 2010 Water SMART Kick Off Workshop

- [Invitation](#)
- [Registration Form](#)

SECURE Water Act Deliverables

- [2011, April - SECURE Water Report](#). Reclamation.
 - [2011, June - Interim Report Part One](#) (complete). Reclamation.
 - [2011 - Living Rivers Comments on Basin Study](#)
-

The Lake Powell Research Project

FEBRUARY 08, 2010
BY JOHN WEISHEIT

The Lake Powell Research Project (formally known as Collaborative Research on Assessment of Man's Activities in the Lake Powell Region) is a consortium of university groups funded by the Division of Advanced Environmental Research and Technology in RANN (Research Applied to National Needs) in the National Science Foundation.

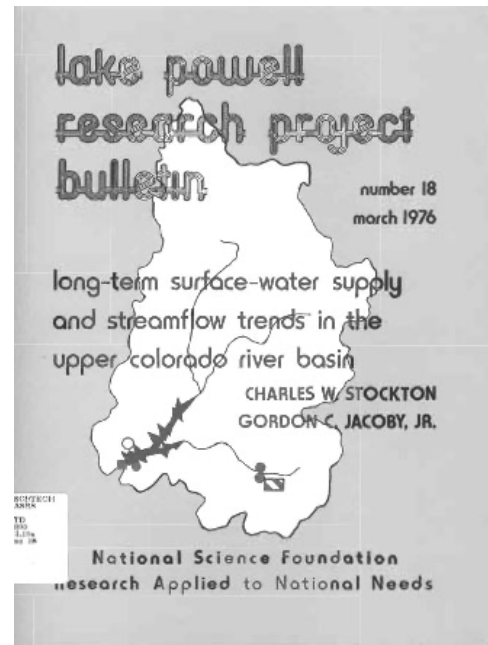
Researchers in the consortium bring a wide range of expertise in natural and social sciences to bear on the general problem of the effects and ramifications of water resource management in the Lake Powell region. The region currently is experiencing converging demands for water and energy resource development, preservation of nationally unique scenic features, expansion of recreation facilities, and economic growth and modernization in previously isolated rural areas.

The Project comprises interdisciplinary studies centered on the following topics: (1) level and distribution of income and wealth generated by resources development; (2) institutional framework for environmental assessment and planning; (3) institutional decision-making and resource allocation; (4) implications for federal Indian policies of accelerated economic development of the Navajo Indian Reservation; (5) impact of development on demographic structure; (6) consumptive water use in the Upper Colorado River Basin; (7) prediction of future significant changes in the Lake Powell ecosystem; (8) recreational carrying capacity and utilization of the Glen Canyon National Recreational Area; (9) impact of energy development around Lake Powell; and (10) consequences of variability in the lake level of Lake Powell.

One of the major missions of RAW projects is to communicate research results directly to user groups of the region, which include government agencies, Native American Tribes, legislative bodies, and interested civic groups. The Lake Powell Research Project Bulletins are intended to make timely research results readily accessible to user groups. The Bulletins supplement technical articles published by Project members in scholarly journals.

THE PROPOSAL

- [1971 - First Progress Report](#). Anderson.
- [1972 - Proposal To NSF](#). Anderson.
- [1973 - Second Progress Report](#). Anderson.
- [1974 - Proposal To NSF](#). Anderson.



PRELIMINARY DOCUMENT

- [1973 - Some Consequences Restricting Maximum Elevation Lake Powell.](#) Anderson.

THE BULLETINS

- [No. 0: Bibliography](#)
- [No. 1:](#) Mercury in the Lake Powell ecosystem.
- [No. 2:](#) Demographic Change Among the Hopi and Navajo Indians.
- [No. 3:](#) Air quality in the Lake Powell Region.
- [No. 4:](#) Legal-political History of Water Resource Development in the Upper Colorado River Basin. D. Mann. September, 1974.
- [No. 5:](#) Geochemistry Lake Powell. Reynolds.
- [No. 7:](#) The Impact of Power Developments in the Navajo Nation.
- [No. 8:](#) Theoretical Analysis Air Quality. Williams.
- [No. 9:](#) Science Information in the Decision to Dam Glen Canyon. P. Perkins. May, 1975.
- [No. 10:](#) A Case Analysis of Policy Implementation (NEPA). Cortner.
- [No. 11:](#) Macroeconomic Impact Energy Development. Schulze.
- [No. 12:](#) Management of Collaborative Science. Anderson.
- [No. 14:](#) An Overview of the Effect of Lake Powell on Colorado River Basin Water Supply and Environment. G. Jacoby. November, 1975.
- [No. 16:](#) Bacterial Contamination of Lake Powell Waters: An Assessment of the Problem. D. Kidd. December, 1975.
- [No.18:](#) Long-term Surface Water Supply and Streamflow Trends in the Upper Colorado River Basin. Stockton and Jacoby. March, 1976.
- [No. 22:](#) The Effects of Power Production and Strip Mining on Local Navajo Populations.
- [No. 24:](#) Water Policy and Decision-Making in the Colorado River Basin. 1976.
- [No. 26:](#) Air Pollutants Generating Stations. Walther.
- [No. 27:](#) Navajo Environmental Protection. Cortner.
- [No. 28:](#) Boomtown Impacts of Energy Development. Ives.
- [No. 29:](#) Shoreline ecology of Lake Powell. September, 1976.
- [No. 30:](#) Kaiparowits Handbook: Coal Resources.
- [No. 33:](#) The impact of energy development on recreation use and value in the Glen Canyon National Recreation Area. November, 1976.
- [No. 34:](#) The Effect of Lake Powell on Dissolved Silica Cycling in the Colorado River
- [No. 37:](#) Macroinvertebrates and diatoms on submerged bottom substrates, Lake Powell. Potter. March, 1977.
- [No. 38:](#) Costs of transporting coal from the Kaiparowits Plateau to Southern California. March 1977.
- [No. 43:](#) Energy Decision-Making. Cortner.
- [No. 44:](#) Shoreline Materials Geological Strata. Potter.
- [No. 46:](#) Modeling Pollutant Concentrations. Williams.

- **No.48:** Evaporation, Bank Storage, and Water Budget at Lake Powell. G. Jacoby. July, 1977.
- **No. 50:** Transportation of Energy. Anderson.
- **No. 52:** The excellent but deteriorating air quality in the Lake Powell Region. September, 1977.
- **No. 53:** Kaiparowits EIS. Ingram.
- **No. 57:** Boomtown Consequences. Little.
- **No. 63:** Analysis of metallic cations in the Lake Powell ecosystems and tributaries. Kidd. June, 1978.
- **No.64:** Sedimentation in Lake Powell. W. Condit et al. June, 1978.

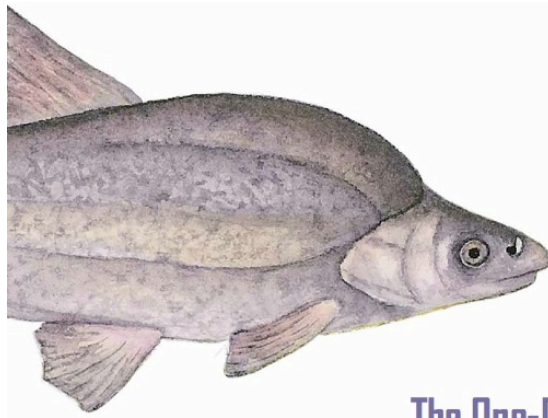
ADDITIONAL REPORTS

- 1969 - Bank Storage. Murdock.
- 1992 - Lake Powell Water Quality. Tinkler.

The One-Dam Solution

APRIL 11, 2010
BY JOHN WEISHEIT

Preliminary report to the Bureau of Reclamation on proposed re-operation strategies for Glen Canyon and Hoover Dam under low water conditions. July 2005



The One-Dam Solution

We welcome public feedback toward the development of a subsequent edition of this report to be concluded following release of Bureau of Reclamation draft recommendations for the re-operations of Glen Canyon and Hoover Dam.

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Cover illustration of Humpback Chub© Gloria Brown from A Naturalist's Guide to Canyon Country by Falcon Publishing www.falcon.com

"We've got to rethink the use of water. But if you think it's [the drought] going to go away, the people that think well, we're going to go back to a wet cycle, don't bet on it."

Stewart Udall, former Secretary of the Interior, December 2003.

SUMMARY

Life in the Southwest depends on the Colorado River. Preserving this resource requires achieving a sustainable balance between water supply and demand. However, population growth and climate change are disrupting this equilibrium and pushing the management of this resource to its limit.

Federal laws and water projects regulating the consumption of Colorado River water do not adequately reflect this imbalance. Current laws allocate more water to the basin states than the river actually provides. More federal dams have been built than are needed wasting at least 13 percent of the river's flow annually.(1) Sediment backing up behind dams represents a multi-billion-dollar management challenge that has so far been ignored. Meanwhile hundreds of millions of dollars are being invested in failed efforts to manage environmental problems resulting from dam operations.

At the heart of these challenges lie the nation's largest reservoirs, Lake Powell behind Glen Canyon Dam near the Utah/Arizona border and Lake Mead behind Hoover Dam on the Arizona/Nevada border. Combined they cause the loss of 10 percent of the Colorado's annual flow(2), while declining surplus flows render the future filling of these reservoirs an unlikely occurrence.

Grand Canyon National Park, which lies between Glen Canyon Dam and Lake Mead, has seen its native ecosystem devastated by dam operations. Four native fish are now extinct, one is in jeopardy and another is of special concern. Glen Canyon Dam has trapped the sediment necessary to maintain habitat and beaches for wildlife and recreation, as well as the stabilization of archeological sites. So far, measures to reverse the decline of these park resources as directed by the 1992 Grand Canyon Protection Act have failed.

The desire to prevent the further filling of Lake Mead with sediment played a major role in influencing the construction of Glen Canyon Dam. However, sediment is now reducing Lake Powell's storage and if left unresolved will compromise the safe operation of Glen Canyon Dam, as well as Hoover Dam should Glen Canyon Dam fail.

As the Bureau of Reclamation now explores strategies to address the operations of Lake Powell and Lake Mead under low reservoir conditions, it is critical that the scope of this analysis be expanded. A far more comprehensive review must be undertaken that explores the overall relevance of these two facilities for storing and distributing scarce Colorado River water, including:

- Reducing the use of inefficient above-ground water storage facilities, while expanding the use of underground storage to minimize evaporation losses. Regional aquifers could provide greater storage capacity than Lake Powell and Lake Mead combined.(3)

- Employ Lake Mead as the principal water storage and distribution facility for water delivery to the lower basin states. Lake Powell storage is in excess of current and future needs resulting in unnecessary evaporative losses to a limited water supply.
- Employ Lake Mead as the starting point for transporting sediment around the lower Colorado River system.
- Updating federal laws, especially the Colorado River Compact, to reflect the Colorado River's limitations and changing societal demands.

Developing a forward-looking policy on the future operations of Glen Canyon and Hoover Dams is critical to meeting the immense challenges facing Colorado River managers. It is not something to be relegated to a stopgap response to immediate concerns, but must be a central component of the federal government's fulfillment of its legal responsibility to provide leadership and direction for the management of the Colorado River. To this end, it is vital that a comprehensive Environmental Impact Statement be conducted on the future operations of these dams, and that this be done in consort with other water conservation measures to preserve the economic, ecological and cultural vitality of the Colorado River region.

COLORADO RIVER

The Colorado River is central to the economy of the Southwest. The basin spans 242,000 square miles as it descends 1,450 miles from the Rocky Mountains to the Gulf of California in Mexico. More than 25 million people utilize water from the Colorado River, including the metropolitan areas of Los Angeles, Las Vegas, Phoenix, Salt Lake City, Denver and Albuquerque. Agriculture consumes on average 70 percent of the river. Industry and households consume the rest. In an attempt to meet increasing demands, the Colorado River has become the most regulated river in North America. Nearly every tributary has been dammed.

THE COMING CRISIS

Colorado River flows have averaged just 60 percent of normal since 2000. Even with the average snow-pack in the spring of 2005, reservoir levels are unlikely to reach 60 percent of full capacity this year. These flows will barely accommodate current demands, doing little to overcome the storage deficit created by the region's use of nearly two gallons of water for every one gallon that nature has provided.⁽⁴⁾ Absent a dramatic change in long-term weather patterns, a substantial reduction in Colorado River water use will soon become a necessity.

History shows that the current drought is not unusual. Over the past century the Colorado River experienced reduced flows around 1900, the 1930s and 1950s.⁽⁵⁾ Moreover, the present downturn represents a minor reduction in precipitation when compared to severe droughts that occurred between 900 and 1300.⁽⁶⁾

During the more recent droughts, Colorado River water users were spared serious shortages because supply still far exceeded demand. This is no longer the case. As water use continues to increase there will be little, if any, surplus water to be placed in storage.

The National Academy of Sciences estimated that over the past century the Colorado River's average annual flow was 14 million acre-feet (MAF) (an acre-foot equals 325,851 gallons).(7) However, analysis using tree-ring data concludes the average annual flow of the Colorado River over the past 400 years is approximately 13.5 MAF. (8) With current Colorado River water use at approximately 12.6 MAF annually and rising, it will soon become clear that reservoir storage capacity will far exceed what can be used.(9)

Even more alarming is the Department of Energy's prediction that climate change will cause Colorado River flows to decline 14 percent by 2010, and 18 percent by 2040.(10)

While a brief period of higher flows may bring temporary respite, permanent shortages are likely to become the norm. It is therefore essential that solutions be crafted before such shortages occur.

FLAWS IN THE SYSTEM

WATER OVER-ALLOCATED

While managers and scientists debate whether Colorado River reservoirs will ever fill again, the drought has highlighted an 83-year-old problem that policy makers have ignored: more Colorado River water is allocated than the river actually produces.

In 1922 the federal government, acting as water master for the Colorado River, entered into an agreement, the Colorado River Compact, with seven western states to divide the river's total flow into two portions: the Upper and Lower Basins. The Upper Basin comprises the states of Colorado, New Mexico, Utah and Wyoming. The Lower Basin states are Arizona, California and Nevada. The Upper and Lower Basins were each awarded 7.5 MAF of water annually. In 1944 a treaty agreement awarded the Republic of Mexico 1.5 MAF, with 0.75 MAF coming from each basin.

Climate history reveals that this combined allocation of 15 MAF is 11 percent above the 400-year average of 13.5 MAF.(11) The U.S. Geological Survey and others report that the period from 1906 to 1921, partly used to formulate the Compact allocation, had been the wettest period of the 20th century if not the wettest period in nearly 800 years. (12)

In 1979 the Government Accounting Office advised Congress that unless aggressive management policies were pursued, the Colorado River system would begin to fail on the supply side by the year 2000.(13) Since 1999 system-wide storage has declined more than 40 percent.(14)

Department of Energy research predicts that by 2010 the Upper Basin will not be able to meet its full water delivery allocations to the Lower Basin 20 percent of the time, dropping to nearly 40 percent of the time thereafter.(15) Despite these warnings, there has yet to be any substantive movement to correct the over-allocation problem.

INEFFICIENT WATER STORAGE

The federal government has constructed more than 40 major dams on the Colorado River and its tributaries, principally for storing and diverting water. These reservoirs have a combined storage capacity equivalent to four and one-half years of the river's average annual flow, but they also cause the loss of up to 13 percent of these flows.(16)

Studies show that an optimum relationship exists between the basin's annual water flow and its storage capacity, since more reservoirs and canals cause more water to be lost to evaporation and seepage. Optimal water storage for the Colorado River was calculated to be about 30 MAF.(17) However, this analysis could not sway the momentum toward building fewer dams.

Lake Powell and Lake Mead are the most inefficient components in this system. Their locations are known for extremely low humidity, high summer temperatures and strong winds that maximize evaporative losses. Since its completion in 1963, Lake Powell has lost approximately 21.1 MAF to the atmosphere and Lake Mead, completed 30 years prior, has lost 57.1 MAF.(18)

In addition, the porosity of the rock that surrounds the reservoirs compounds the water loss through seepage. The problem is most pronounced at Lake Powell, where the surrounding sandstone is soft and extremely permeable resulting in 18.7 MAF being lost. At Lake Mead, where the rock is more resistant, about 1 MAF has been lost.(19) It is believed that some percentage of the seepage may return as the reservoirs recede, but it is unclear how much and how soon.

This water is incredibly valuable. Based on recent wholesale prices for untreated Colorado River water, Lake Mead and Lake Powell annually lose on average \$350 million worth of water to evaporation.(20)

THE LOOMING PROBLEM OF SEDIMENT

The Colorado River is the most sediment-laden river in the country. Prior to the construction of Glen Canyon Dam, sediment had already filled ten percent of Lake Mead.(21) When Glen Canyon Dam was built, engineers estimated that its river outlet tubes would be compromised by sediment within 100 years, affecting the safe operation of the dam.(22) The Bureau of Reclamation reiterated this in 2002.(23)

Hydrologists and geomorphologists warn that sediment could affect dam operations even sooner.(24) Lake Powell's declining level (92 feet below full pool in July 2005) has

exposed more than 100 miles of sediment deposits in the tributaries flowing into the reservoir. These streams are reworking or remobilizing these deposits and advancing them towards Glen Canyon Dam.

Additionally, the side canyons and tributaries of the Colorado River contain six decades of accumulated sediment that are poised to be flushed into the reservoir. A major flood, as experienced in the past, could carry this material in one large event, rapidly diminishing the operational life of the reservoir.(25)

The National Academy of Sciences estimates that 44 million tons of sediment enters Lake Powell every year, or 84 tons per minute.(26) In order for Glen Canyon Dam to be sustained over time, the annual inflow of sediment will need to be dredged and removed.

The Glen Canyon area is one of the most remote and rugged landscapes in North America. Developing and maintaining such a massive dredging, hauling and disposal program would be very costly. If the sediment is moved to the most environmentally responsible location, the Colorado River delta, transportation costs alone could be \$2.6 billion annually.(27)

Sediment represents the most serious long-term problem facing the Colorado River water storage system and must no longer be ignored.

THE UNDERGROUND SOLUTION

The most efficient way to store water in a dry climate is below ground where water is not exposed to the atmosphere's evaporative forces. While large reservoirs such as Lake Powell and Lake Mead can collectively cause the loss of upwards of 17 percent(28) of the water reaching them each year, storing this water underground can reduce these losses to as little as one percent once delivered to recharge facilities.(29)

Methods to introduce surface water into aquifers include direct injection using mechanical pumps and percolation in or near dry riverbeds. The primary losses associated with such recharging of underground reservoirs occur while moving the water to where it will be injected or absorbed. To minimize evaporation and conserve electricity, percolation methods can be intensified during winter months and mechanical injection methods during mild months when demand for electricity is reduced.

The arid regions dependent on the water resources of the Colorado River are endowed with natural underground locations which combined could accommodate six years of the Colorado River's annual flow.(30) Some of the largest aquifers are located adjacent to existing aqueducts such as the Central Arizona Project and the California Aqueduct. Along these aqueducts about 26 MAF of storage capacity is available for California and at least 15 MAF for Arizona. Another 25-46 MAF of storage may also be available via additional aquifers in Arizona. While Nevada and Utah's groundwater storage potential is not as well endowed or explored, they too are engaged in recharge activities in and

around Las Vegas and Salt Lake City. They also could utilize the significant storage potential in Arizona and California as water banks to be used as credits against surplus withdrawals from the river.(31)

Some infrastructure to utilize aquifers for Colorado River water storage has been in place for nearly 20 years. The main factor inhibiting its expanded use is that above-ground reservoirs are being used instead. By shifting to a program to maximize underground storage, nearly all the water that would otherwise be stored in Lake Powell and Lake Mead could become available for artificial recharge. This could save 809,000 AF of water annually that would otherwise be lost to reservoir evaporation and seepage. (32)

By eliminating Lake Powell and employing Lake Mead principally to capture the annual floods for water distributed to recharge locations it is estimated that approximately 5 MAF of annual ground water recharge capacity would be necessary to capture surplus flows at Lake Mead.(33) Present recharge capacity for Colorado River water is in excess of 1.3 MAF per year.(34) Costs associated with expanding programs of artificial recharge would not be inconsistent with ongoing investments in aqueduct and pipeline development.(35)

Recharging these aquifers could also reverse the mounting problems associated with their rapid depletion, including higher pumping costs, property damage, contamination from invading seawater and plumes of human-induced pollution. In Las Vegas, for example, aquifer levels have dropped 300 feet in some areas.(36) Although ground subsidence cannot be reversed, recharging these aquifers with Colorado River water will prevent further damage. A rising water table would also revive desert riparian zones and springs that benefit wildlife habitat.

While the benefits of expanding groundwater recharge present a strong case for evaluating the future role of storage reservoirs along the Colorado River, there is already a compelling need to examine the merits of the system's most troublesome facility, Glen Canyon Dam.

RETHINKING GLEN CANYON DAM

UNNECESSARY & UNCERTAIN WATER STORAGE

Glen Canyon Dam was built to aid the Upper Basin states to deliver 8.23 MAF of water annually to the Lower Basin.(37) The rationale was that during periods of drought, Lake Powell's storage would allow the Upper Basin to fulfill this commitment without impacting its own water use.

However, a Bureau of Reclamation model demonstrated that Glen Canyon Dam's contributions to meet these deliveries are negligible.(38) Lake Mead alone would have provided all of the storage needed for the Lower Basin until recently. Not until autumn of 2004, 41 years after Glen Canyon Dam was completed, had the water stored in Lake

Powell been a factor in supplementing Upper Basin water delivery to the Lower Basin.
(39)

While it may appear that Lake Powell has for the first time been fulfilling its intended purpose, this has come at a significant cost. Obtaining that 23.5 MAF (the amount in Lake Powell when the drought began in July 1999) of water in Lake Powell after 41 years resulted in 35.7 MAF being lost to evaporation and seepage. This combined loss represents just 40 percent efficiency for long-term water storage.(40)

Additionally, the refilling of Lake Powell will be a rare occurrence. When the reservoir began filling in 1963, there was less demand on available water. This allowed an average surplus of 2.6 MAF annually to flow into Lake Powell, filling it in 17 years.(41) Demand has since increased nearly 100 percent in the Upper Basin and is projected to average 5.4 MAF by 2020.(42) Subtracting this annual projected use by the Upper Basin from the river's average annual flow of 13.5 MAF, then subtracting the 8.23 MAF that Glen Canyon Dam must annually release downstream leaves no surplus to help refill the reservoir. This average annual surplus goes into the red when accounting for the Department of Energy's anticipated declines in river flows due to climate change.
(43)

REVIVING GRAND CANYON'S ECOSYSTEM

The river ecosystem in Grand Canyon National Park began declining as Lake Powell began to fill in 1963. Since then, river resources in the park have steadily deteriorated to a state of near collapse. If more effective measures are not taken soon, the integrity of this ecosystem will be forever compromised. The operation of Glen Canyon Dam has caused four of the Canyons eight native fish species to become extinct. A fifth is headed in this direction and a sixth is now considered a species of special concern. Native birds, mammals, reptiles and amphibians along the river corridor have been affected as well.(44)

In an effort to reverse this decline, Congress passed the Grand Canyon Protection Act in 1992. In 1995 an Environmental Impact Study (EIS) established mitigation measures relating to Glen Canyon Dams operations.(45) Since the recovery program began, and after more than \$223 million has been spent, one native fish disappeared from the Canyon and another has declined to nearly unrecoverable levels.(46)

As outlined in a recent report to Congress by the Secretary of the Interior,(47) no progress has been made toward meeting the mandate of the Grand Canyon Protection Act, the objectives of the EIS, or the recovery goals which attempt to bring the dam into compliance with the Endangered Species Act.(48)

In addition, the core of the National Park Service Organic Act(49) to leave [national parks] unimpaired for the enjoyment of future generations is being violated as resources continue to deteriorate in Grand Canyon National Park.

A major limitation of efforts to restore Grand Canyon thus far has been the inability to deliver sediment and nutrients to the ecosystem.(50) With nearly all the sediment trapped behind Glen Canyon Dam, there has been a continued decline in the food base and backwater habitat for endangered fish, disturbances at archeology sites and a loss of camping beaches. Resource managers have been prohibited from examining the solution that offers the greatest chance of habitat recovery restoring the rivers natural processes by decommissioning Glen Canyon Dam.

SEDIMENT COSTS

Water managers must develop a program to manage the sediment entering Lake Powell. As there is no feasible method to flush this sediment through Glen Canyon Dam, not to mention the dams downstream, sediment must be mechanically removed.

The overall scale of such a project in design, implementation and cost would rival any of the Colorado River water projects to date. Like Hoover Dam, it would be an unprecedented undertaking. A range of alternatives will need to be explored, including allowing the sediment to flow downstream and removing it from Lake Mead.

From the standpoint of convenience, Lake Mead affords much easier access to the sediment than Lake Powell. Superior transport systems are already available at Lake Mead, both highway and railroad. Topographically, Lake Mead offers a better range of disposal sites with fewer constraints should a pipeline/slurry system be preferred. Should it be deemed appropriate to transport the sediment to nature's intended destination, the Colorado River delta, the distance from Lake Mead would be half as far as from Lake Powell.

Managers must also assess the value of the sediment toward achieving compliance with federal laws guiding endangered species recovery in Grand Canyon National Park. Sediment augmentation moving sediment around the dam has already been discussed as a necessary next step to reverse Glen Canyon Dam's impacts on Grand Canyon.(51) However, such augmentation approaches may not contain necessary nutrients like carbon, which is essential to rebuilding a healthy, native food web in Grand Canyon.(52)

GLEN CANYON DAM'S IMPACTS ON GRAND CANYON'S ECOSYSTEM

- The water below the dam is constantly cold at 47 degrees Fahrenheit. The natural river fluctuated seasonally from near freezing to 80 degrees Fahrenheit.
- River flows fluctuate daily between 8,000 and 20,000 CFS (cubic feet per second). Naturally they would fluctuate seasonally from 3,000 to 100,000 CFS.
- The dam has trapped the sediment required to maintain sandbar habitat and supply nutrients to the food web.
- The dam blocks fish migration, limiting their genetic integrity and habitat diversity.
- Non-native fish inhabit this new environment and compete with the native fish.

UNCERTAIN POWER

FAR FROM IRREPLACEABLE

When Lake Powell is at full or near full, Glen Canyon Dam can on average generate enough power to service 389,000 homes.(53) Declining reservoir storage has caused power production to drop 40 percent.(54) Production could fall to zero should below normal inflows persist and water consumption remain unchanged.(55)

Glen Canyon Dam's customers normally enjoy a 40 percent subsidy over the prevailing market rates. Now they must obtain replacement power at competitive rates.(56) Substitute power is readily available and will continue to absorb Glen Canyon Dam's shortfalls, even if power generation falls to zero.

Since 2000, declining power revenues from Glen Canyon Dam have brought repayments on federal loans for Colorado River infrastructure to a near standstill.(57) While periodic high flows may help power production and enhance revenues for a short time, climate change and increased water demand have rendered power generation from Glen Canyon Dam far from certain.

To the extent electricity is produced, this comes at a cost of water lost to evaporation and seepage. This water itself has economic value and would provide a comparable revenue stream should the dam be decommissioned. More importantly, there is no substitute for the lost water. Since scarcity of water was the driving force behind construction of Glen Canyon Dam, recovery of this water should influence the dam's future.

TOURISM

Lake Powell and the surrounding Glen Canyon National Recreation Area contribute to a tourism economy centered at Page, Arizona. However, visitation there has declined nearly 50 percent over the past 15 years.(58)

Low reservoir levels restricting boater access have accelerated these declines. In November 2004, Aramark, the area concessionaire, was forced to close facilities that had previously been open year-round.(59) The National Park Service (NPS) has invested heavily to improve facilities. Despite spending \$22 million in 2004 alone,(60) NPS was unable to keep boat ramps fully operational. These problems will continue as lower reservoir levels likely become the norm.

A portion of the Navajo Nation shares its border with Lake Powell and contributes to the tourism industry as well. Their concession contractor, Antelope Point Holdings, opened a marina in 2004, but declining reservoir levels prevented the launching of boats. While modifications have been made, a cliff prevents the marina from operating when the reservoir is about 115 feet low, a reoccurring problem should low water levels persist. The Navajo Nation's desire to construct a water pipeline from the Colorado River,

however, can proceed without Lake Powell.

Recreational trout fishing in the Colorado River below Glen Canyon Dam has experienced a decline in visitation similar to that of Lake Powell, from 52,000 angler days in 1983, to 25,000 in 1999.(61) A recent survey of visitors spending the night at Page revealed that Lake Powell boating was not the only attraction. More than 50 percent of respondents were not engaged in water recreation on Lake Powell.(62) This is likely due to the town's central location along a widely used tourist route between the Grand Canyon and other popular national parks, national monuments and recreation areas.

Prior to Glen Canyon Dam, the Colorado River through Glen Canyon was emerging as a tourist destination on its own. Glen Canyon was one of the most spectacular features of the American landscape. Even now, Aramark and others are attempting to attract visitors by publicizing the uncovering of Glen Canyon's natural features at a diminishing reservoir.

The restoration of Glen Canyon by decommissioning Glen Canyon Dam could spawn a river recreation industry comparable to what now exists in Grand Canyon National Park. Hiking, biking and other land-based activities could also be as popular as they are elsewhere in the Canyon County of the Colorado River.

ELIMINATING CONCERNS FOR SAFETY

Glen Canyon Dam has a dangerous safety record. In 1983, snowmelt caused an emergency situation that nearly ended in dam failure. A faulty design in the dam's spillways led to hydraulic pressure excavating bedrock and forced dam managers to abandon the spillways' full use. Luckily, disaster was averted when inflows subsided prior to water overtopping the dam.(63)

The Bureau of Reclamation has forecasted that if Glen Canyon Dam failed when full, a wall of water 580 feet high would enter Grand Canyon.(64) A wave 68 feet high would overcome Hoover Dam and begin a flood that would subside eleven days later. Such a failure could devastate critical water distribution and transportation networks for Arizona, Nevada, Southern California and Mexico, along with the homes and businesses of tens of thousands of people.

Historically, flood control storage has not been a high priority for managers of the Colorado River system, requiring just 5.35 MAF annually to be available system-wide at the beginning of each year.(65) It was this low requirement that allowed the 1983 problems at Glen Canyon Dam to materialize. By eliminating Lake Powell and operating Lake Mead for efficient ground water diversions, nearly four times the current flood control protection could be achieved.(66)

INDIAN NATIONS

Glen Canyon Dam inundated the cultural heritage of the First Nations upstream and is slowly eroding what remains downstream in Grand Canyon National Park.

Navajo, Hopi, Zuni, White Mesa Ute, Southern Paiute, Kaibab Paiute, Shivwits Paiute, Havasupai, and Hualapai all have connections to the Colorado River in Glen and Grand Canyons, including sacred sites and artifacts dating back 10,000 years. Reports on roughly 2000 sites submerged by Lake Powell describe shelter caves, dwellings, granaries, irrigation systems, rock art panels, burials, ceramics, and projectile points. (67) Included were revered sacred sites of the Navajo for ceremonies and prayer, such as Rainbow Bridge National Monument, a 291-foot-high natural bridge.

The operation of Glen Canyon Dam currently affects some 264 archeological sites in Grand Canyon. Fluctuating river flows in response to hydropower demands destabilize riverbanks where the sites reside. These fluctuating flows disturb the cultural properties in the process. Furthermore, a failure of Glen Canyon Dam would completely obliterate some 964 known cultural sites.(68) Federal laws require the preservation of these ancestral artifacts and National Park Service and First Nation policies require that artifacts and burials be preserved in place.

Only a few remaining medicine people are truly aware of what has been submerged under Lake Powell. Some still say that choking the river with a dam brought disharmony and discontent to their people and only with the restoration of these sacred sites can their physical and spiritual health become restored.(69)

FEDERAL RESPONSIBILITY

The Colorado River passes through seven states as well as many national parks and monuments before entering Mexico. The complexity of interstate, tribal and international agreements places the federal government at center stage in charting management strategies for the Colorado River. Congress has passed much legislation pertaining to its management, forming a body of law referred to as The Law of the River. Many of these laws are no longer effective. They fail to achieve a sustainable balance between water supply and demand, and to adequately protect fragile ecosystems associated with the river. It is critical that Congress revisit this legislation and remedy the problems that have developed.

In 1922 Congress approved the Colorado River [Interstate] Compact that quantified Colorado River water allocations for each state and, in 1944, Mexico. Unfortunately the Compact greatly over-estimated the amount of water actually available within the watershed and allocated 3-4 MAF more than the river can now provide.

Congress passed the Colorado River Storage Project of 1956, and the Colorado River Basin Project Act of 1968, authorizing water projects that impounded or diverted water on nearly every tributary.(70) These projects increased system-wide storage to 62 MAF,

well beyond the level of diminishing returns. The legislation did not include a plan or a source of funding to manage the removal of sediment from the reservoirs.

In response to public concern over the impacts of Glen Canyon Dam on the resources of Grand Canyon National Park, Congress passed the Grand Canyon Protection Act (GCPA) in 1992.(71) This act directed the Secretary of the Interior to complete an Environmental Impact Study (EIS) on the operations of Glen Canyon Dam. The GCPA also directs the Interior Secretary to protect, mitigate adverse impacts to, and improve the natural, cultural, and recreational resource values downstream from the dam, for which Grand Canyon National Park and Glen Canyon National Recreation Area were established. On average \$11 million is being spent annually in efforts that have failed to reverse declines in native species, and to restore sandbar and beach deposits.

Additionally, the National Park Service Organic Act of 1916 provides clear Congressional guidance to protect resources like Grand Canyon. Units of the National Park System are managed to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same by such means as will leave them unimpaired for the enjoyment of future generations. (72)

Lastly, the Endangered Species Act(73) requires the US Fish and Wildlife Service to protect and provide recovery for endangered species. Since the GCPA was passed the Razorback Sucker has been extirpated and the Humpback Chub population is in serious decline.

RE-EXAMINE THE COLORADO RIVER COMPACT

Since the Colorado River Compact was approved in 1922 over-allocation, reduced supply and population growth have greatly altered the ability of the Compact to serve its intended purposes.

The goals of the Compact are to provide for equitable division and apportionment of the use of the waters of the Colorado River System; to establish the relative importance of different beneficial uses of water; to promote interstate comity; to remove causes of present and future controversies; and to secure the expeditious agricultural and industrial development of the Colorado River basin, the storage of its waters, and the protection of life and property from floods.(74)

The Compact has not achieved an equitable division of water for the constituency. With the river providing on average 13.5 MAF (instead of the 15 MAF allocated by the Compact), and with Mexico receiving 1.5 MAF, just 12 MAF remains for the two basins. The Lower Basin is guaranteed 6.75 MAF (7.5 MAF minus its 0.75 MAF contribution to Mexico). Thus, in the best of circumstances the Upper Basin could on average count on just 5.25 MAF (13.5 MAF of river flow minus 7.5 MAF of Lower Basin consumption minus its own 750,000 AF contribution to Mexico) or 22 percent less than the Lower Basin.

The Compact lacks provisions for addressing real shortages. The lowering of Lake Powell and present climate conditions render this an immediate possibility today, and medium- to long-term supply and demand trends suggest that this situation is not likely to improve in the future. If Lake Powell is empty there may be times when the Upper Basin may not be able to meet its 8.23 MAF obligation to the Lower Basin.

A responsible attempt to craft a new agreement that reflects the reality of river supply must be initiated. This could be done by adjusting allocations annually to reflect actual river flows. It is becoming more evident that the current system, which evaluates the allocation to the Upper Basin after its delivery to the Lower Basin has been satisfied, has needlessly delayed prudent approaches to ensure balance in the system and to meet the challenges of future shortages.

The Compact establishes the most important use of Colorado River water to be domestic and agricultural purposes, with other uses subservient. The destruction of Grand Canyon's river ecosystem illustrates how important environmental considerations are as well. But nothing illustrates the environmental challenge more clearly than the demise of the Colorado River delta, where reduction in flows has caused the ecosystem to virtually disappear.⁽⁷⁵⁾ Future discussions of allocation must therefore include environmental flows.

The decommissioning of Glen Canyon Dam and the expansion of aquifer storage systems is not only consistent with this priority, but actually better facilitates the achievement of Compact purposes. Lake Mead can capture surplus water and ensure its storage for the Lower Basin, in the reservoir and through groundwater aquifers. Furthermore, as noted in Article VIII of the Compact, only 5 MAF of storage is needed in the Lower Basin to safeguard its perfected rights. Lake Mead on its own clearly satisfies this requirement.

The Compact does not provide for an equitable and timely means to reduce allocations. In order to avert major complications a basin-wide evaluation of current water use, coupled with an assessment of senior-perfected water rights, needs to be conducted. With this information, a systematic plan to allocate water rights between the states, Tribes and Mexico can be achieved, and will minimize future impacts to the economy and the environment.

CONCLUSION

Colorado River water managers have long ignored resolving administrative and structural problems affecting a critical component of the Southwest's water supply. Continued inaction will invite conflict, forcing a response to emerge from crisis as opposed to reason. More likely than not, reactionary decisions would compound the problem, merely providing an urgent response to solve a minor detail and avoiding movement towards a comprehensive solution for the watershed.

The leadership in the Bureau of Reclamation has not stepped forward in this regard. As

concern over the present drought intensified, the agency merely stated that the reservoirs were performing as intended: delivering water in times of shortage.(76) Planners must re-examine how efficient the system really is based on the reality of increased demand and decreased supply. This must include how Colorado River water, whatever the amount nature chooses to provide, can be stored as efficiently as possible.

In so doing, planners should not be impeded by the other incidental uses of Colorado River water, such as power generation and recreation. The prevailing need is to manage the river's finite water supply as efficiently as possible. Though power production and recreation have substitutes, there is no substitute for Colorado River water.

Nor are there substitutes for the ecosystems impacted by water projects on the Colorado River. Grand Canyon National Park is a core element of our natural heritage and laws have been enacted specifically to ensure its protection. Nonetheless, dam operations continue to undermine the famous ecosystems of the Colorado River.

With these issues in mind, and in conjunction with a larger objective of achieving sustainable water management and ecological restoration on the Colorado River, it is recommended that future operations of Lake Powell and Lake Mead be explored in conjunction with a much broader evaluation to:

- Pursue transfers of Lake Powell and Lake Mead storage to groundwater aquifers.
- Develop a sustainable sediment management program for Lake Powell and Lake Mead.
- Determine the costs and benefits of decommissioning Glen Canyon Dam to restore natural flows through Glen and Grand Canyons.
- Identify new water allocation guidelines to reflect the amount of water the Colorado River actually provides, how it should be distributed and what amounts are needed to protect critical habitats in Grand Canyon and elsewhere.

THE END

NOTES

1. Historic evaporation losses for Colorado River main stem reservoirs have averaged 1.8 million acre-feet (MAF) annually (not adjusted for the river's natural evaporation), 13 percent of the river's average annual paleoclimatic flow of 13.5 MAF. Bureau of Reclamation. Upper Colorado Region: Water Operations. Table LC-1 and UC-1. Colorado River System Consumptive Uses and Losses Report (1971-2000). The paleoclimatic stream flow of 13.5 MAF at the Compact Point (Lee's Ferry, Arizona) is based on a 400-year, tree-ring database. Stockton, C. W. and G. C. Jacoby. Long Term Surface Water Supply and Stream Flow Trends in the Upper Colorado River Basin. Lake Powell Research Project Bulletin No. 18 (University of California at Los Angeles:

Institute of Geophysics and Planetary Physics, 1976). A tree-ring reconstruction study completed in 2000 has proposed the long-term yield for the Colorado River is 13.2 MAF. Hidalgo, Hugo G., Thomas C. Piechota and John A. Dracup. Alternative Principal Components Regression Procedures for Dendrohydrologic Reconstructions. *Water Resources Research*, Vol. 36, No. 11 (November, 2000), 3241-3249.

2. On average, Lake Powell evaporates 516,000 acre-feet (AF) and Lake Mead evaporates 828,000 AF for a total of 1.34 MAF, 10 percent of the average annual paleoclimatic flow. See: Note 1 (Bureau of Reclamation).

3. Arizona has approximately 15 MAF of available groundwater storage along the Central Arizona Project at existing, direct aquifer recharge facilities. Robson, S. G. and E. R. Banta. *Ground Water Atlas of the United States*. U.S. Geological Survey Atlas HA 730-C (1995), figures 42 and 43. Online: http://capp.water.usgs.gov/gwa/ch_c/C-text3.html Tim Henley, Arizona Water Banking Authority. Personal communication, June 30, 2005. Another 25-46 MAF may be available in the state when considering nearby aquifer volume minus aquifer depletion as reported by the U.S. Geological Survey *Ground Water Atlas* (above). California has the potential to store 26 MAF of Colorado River water underground along the Colorado Aqueduct. California Department of Water Resources. *Californias Groundwater: Bulletin 118* (Updated in 2003 with aquifer storage capacity estimates). Bill Hassencamp, Metropolitan Water District. Personal communication, July 18, 2005. Mark Buehler, Coachella Valley Water District. Personal communication, July 18, 2005.

4. Bureau of Reclamation. *Upper Colorado Region: Water Operations. Operations Summary and Reservoir Status. Annual Operating Plan for the Colorado River System Reservoirs (2000-2006)*. Bureau of Reclamation. *Upper Colorado Region: Water Operations. Beneficial Consumptive Uses and Losses. Colorado River System Consumptive Uses and Losses Report (1971-2000)*.

5. Webb, Robert H., Gregory J. McCabe, Richard Hereford and Christopher Wilkowske. *Climatic Fluctuations, Drought, and Flow in the Colorado River Basin*. U.S. Geological Survey Fact Sheet 2004-3062 (June, 2004).

6. Cook, Edward R., Connie A. Woodhouse, C. Mark Eakin, David M. Meko and David W. Stahle. Long-Term Aridity Changes in the Western United States. *Science* Vol. 306 (November 5, 2004), 1015-1018.

7. Dawdy, David R. *Hydrology of Glen Canyon and Grand Canyon, Colorado River Ecology and Dam Management: Proceedings of a Symposium May 24-25, 1990*. Santa Fe, New Mexico (Washington D.C.: Academy Press, 1991), 46.

8. See: Note 1 (Stockton et al and Hidalgo et al).

9. Based on the 8.25 MAF delivered at the Compact Point (Lee's Ferry, Arizona) plus Upper Basin consumption of 4.4 MAF for a total of 12.65 MAF. Bureau of Reclamation.

Upper River Region: Water Operations. Upper Colorado River Tributaries. Colorado River System Consumptive Uses and Losses Report (1996-2000), 14.

10. Christensen, Niklas S., Andrew Wood, Nathalie Voisin, Dennis P. Lettenmaier and Richard N. Palmer. The Effects of Climate Change on the Hydrology and Water Resources of the Colorado River Basin (2004), 1-2.

11. See: Note 1 (Stockton et al and Hidalgo et al).

12. See: Note 5 (Webb et al). Gray, Stephen T., Stephen T. Jackson and Julio L. Betancourt. Tree-Ring Reconstructions of Interannual to Decadal Scale Precipitation Variability for Northeastern Utah Since 1226 A.D. Journal of the American Water Resources Association (August, 2004), 947-960.

13. Government Accounting Office. Comptroller General's Report to the Congress. Colorado River Basin Water Problems: How to Reduce Their Impact CED-79-11 (1979), 1.

14. See: Note 4 (Bureau of Reclamation).

15. See: Note 10 (Christensen et al).

16. See: Note 1 (Bureau of Reclamation).

17. Langbein, Walter B. Water Yield and Reservoir Storage in the United States. U.S. Geological Survey Circular 409 (1959).

18. See: Notes 1 & 2 (Bureau of Reclamation).

19. Bureau of Reclamation. Upper Colorado Region: Water Operations. 24-Month Study Reports. (Lake Powell and Lake Mead bank storage columns.) Online: <http://www.usbr.gov/uc/water/crsp/studies/index.html>

20. With wholesale prices of Colorado River water of at least \$258 per acre-foot, and average annual evaporation losses of Lake Powell and Lake Mead of 0.516 and 0.828 MAF respectively (not adjusted for the river's natural evaporation), and results in \$347 million in economic losses. San Diego County Water Authority. Historic Water Transfer Agreement Gets Final Approval as QSA Falter. San Diego Water Authority press release (December 31, 2002).

21. Average annual rate of sedimentation in Lake Mead is estimated to be 102,000 AF, representing a total of 2.86 MAF deposited over the 28 years Hoover Dam operated prior to the completion of Glen Canyon Dam, or 10 percent of Lake Mead's storage capacity. Smith, W. O., C. P. Vetter, and G. B. Cummings. Comprehensive Survey of Sedimentation in Lake Mead, 1948-49. U.S. Geological Survey Professional Paper 295 (1960), 195 & 231.

22. Schultz, Ernest R. Design Features of Glen Canyon Dam: Paper for Presentation at ASCE April, 1961 Convention. (Phoenix: Bureau of Reclamation Construction Division), 30.
23. Spangler, Jerry. Draining Powell Called a Pipe Dream. Deseret News. Salt Lake City (June 18, 2002).
24. Dohrenwend, John C. Rapid Progradation of the Colorado and San Juan River Deltas into Lake Powell Reservoir, July 2002 to March 2004. Four Corners Geological Society Newsletter, April 2004. (Durango, Colorado), 4. University of Arizona. Exposed Upper Colorado River Delta is Rapidly Eroding into Lake Powell. University of Arizona press re-lease (May 7, 2003).
25. Graf, William L. The Colorado River: Instability and Basin Management. (Washington D.C.: Association of American Geographers, 1985), 34. Hereford, Richard. Valley-Fill Alluviation (ca. 1400-1880) During the Little Ice Age, Paria River Basin and Southern Colorado Plateau, U.S.A. Geological Society of America Bulletin v. 114 (2002), 1550-1563.
26. Andrews, Edmund D. Sediment Transport in the Colorado River Basin. Colorado River Ecology and Dam Management: Proceedings of a Symposium May 24-25, 1990 Santa Fe, New Mexico. (Washington D.C.: Academy Press, 1991), 68.
27. Annual sediment of 44 million tons would require approximately two million truckloads at standard loads of 22 tons per truck. The distance from Lake Powell's Hite Marina to the Colorado River delta is 1,300 miles round trip, requiring a fleet of 15,000 trucks working around the clock. At \$1 per mile per truck, the total operating costs alone would be \$2.6 billion annually. Owner-Operator Independent Drivers Association. Cost Per Mile Worksheet. Online: http://www.ooida.com/Education%26BusinessTools/Trucking_Tools/Index.shtml
28. The average annual water flow entering Lake Powell since 1963 is estimated to be 10.9 MAF. When full, Lake Powell can cause the loss of 606,000 AF (1999). When the remainder of this water flows into Lake Mead, when it is full, another 1.23 MAF (1999) can be lost. Combined, this represents 1.84 MAF lost, or 17 percent of the 10.9 MAF inflows. Bureau of Reclamation. Upper Colorado Region: Water Operations. Historic Data: Lake Powell Inflows. Online: <http://www.usbr.gov/uc/crsp/GetSiteInfo> See: Note 9 (Bureau of Reclamation), 21 & 31.
29. Artificial recharge projects in Arizona using Colorado River water have reported evaporation losses of one percent or less. Central Arizona Project. Groundwater Recharge Projects: Operations. Online: <http://www.cap-az.com/recharge/index.cfm?action=Aqua&subSection=70>
30. Robson, S. G. and E. R. Banta. Ground Water Atlas of the United States. U.S.

Geological Survey Atlas HA 730 (1995). Online: <http://capp.water.usgs.gov/gwa/gwa.html>

31. The Southern Nevada Water Authority currently has agreements to store 1.25 MAF in the state of Arizona. Southern Nevada Water Authority. Southern Nevada Water Authority Water Resources Plan (2005), 3:19.

32. Eliminating Lake Powell would save on average 414,000 AF of evaporation losses (516,000 AF of annual evaporation loss minus 102,000 AF lost (see Myers below) from river evaporation). Myers, Tom. Water Balance of Lake Powell: An Assessment of Groundwater Seepage and Evaporation. (Salt Lake City: Glen Canyon Institute, 1999), 3. Maintaining Lake Mead's useable storage (not including dead pool storage) to 5 MAF (1,007 feet above sea level), the minimum required by the Colorado River Compact would reduce its average annual evaporation from 828,000 AF to approximately 433,000 AF. Stanley, J. W. Chapter I: Reservoir Storage. Comprehensive Survey of Sedimentation in Lake Mead, 194849. U.S. Geological Survey Professional Paper 295 (1960), 87 & 90. Langbein, W. B. Chapter J: Water Budget. Comprehensive Survey of Sedimentation in Lake Mead, 194849. U.S. Geological Survey Professional Paper 295 (1960), 97.

33. The wettest decade of the historic record (1911-1920) had an average annual surplus of 5 MAF. California Department of Water Resources. Observed Natural Flow at Lee's Ferry. Colorado River Drought Information. Online: http://www.salttonsea.water.ca.gov/data/co_river.cfm

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37. Glen Canyon Dam only releases 8.23 MAF because the Upper Basin's Paria River

(below the dam and above the Compact Point at Lee's Ferry, Arizona) contributes 20,000 acre-feet annually for a total of 8.5 MAF.

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40. In 1999, Lake Powell was nearly full and stored 23.5 MAF of water. Lake Powell's average annual evaporation is 414,000 AF (after deducting 102,000 AF for river evaporation were the dam not there) and the total after 41 years of operation is 17.0 MAF. The total lost to seepage at Lake Powell is 18.7 MAF, for a total of 35.7 MAF (evaporation and seepage). It has therefore required a grand total of 59.2 MAF to obtain the 23.5 MAF actually used. This 23.5 MAF is just 40 percent of the total. See: Note 9 (Bureau of Reclamation), 23 & 31. See Note 19 (Bureau of Reclamation).

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43. See: Note 10 (Christensen et al).

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45. Department of the Interior. Report to Congress: Operations of Glen Canyon Dam Pursuant to the Grand Canyon Protection Act of 1992, Water Years 1999-2001, Secretary of the Interior (May, 2002), 2-8.

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Lessons from the Grand Canyon Ecosystem. Grand Canyon Monitoring and Research Center: Colorado River Ecosystem Science Symposium, (October, 2003).

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49. The National Park Service Organic Act (16 U.S.C. 1 2 3, and 4), as set forth herein, consists of the Act of Aug. 25 1916 (39 Stat. 535) and amendments thereto.

50. See: Note 45 (Department of the Interior).

51. National Academy of Sciences: Commission on Geosciences, Environment and Resources. River Resource Management in the Grand Canyon (Washington D.C.: Academy Press, 1996), 4. Bureau of Reclamation. Upper Colorado Regional Office: Glen Canyon Dam Adaptive Management Program. Fiscal Year 2006 Budget & Work Plan (March, 2005), 19 & Worksheet 4.

52. Haden, G. Allen, Dean W. Blinn, Joseph P. Shannon, and Kevin P. Wilson. Driftwood: An Alternative Habitat for Macroinvertebrates in a Large Desert River. *Hydrobiologia* 397 (1999), 179-186.

53. Based on the average annual output of Glen Canyon Dam (5,166,000 MWh), and average annual Arizona residential electricity use at 13,300 kWh per household. Southwest Energy Efficiency Project. Arizona: Energy Efficiency and Energy Consumption. (Boulder, Colorado: Southwest Energy Efficiency Project).

54. Bureau of Reclamation. Drought or Opportunity: Remarks Delivered by John W. Keys, III, Commissioner, Bureau of Reclamation, Colorado River Water Users Association, 2003 Annual Meeting, Las Vegas. Bureau of Reclamation press release (December 12, 2003). Power generation for 2004 from Colorado River Storage Project dams, of which Glen Canyon is the primary contributor, dropped 40 percent from when the reservoir was near full in 1999. Western Area Power Administration. Salt Lake City Area/Integrated Projects: Powerplants. Annual Report: Statistical Appendix (1999-2004). Online: <http://www.wapa.gov/newsroom/pubs.htm>

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56. Western Area Power Administration. Continued Drought Brings Many Questions. Closed Circuit (May 28, 2004).

57. From 2000-2004 repayments to the federal treasury for projects in the Colorado River Storage Project Act averaged just \$6.2 million on an outstanding loan due in 2050 of \$2.6 billion. See: Note 54 (Western Area Power Administration).

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60. National Park Service. \$22 Million in Facility Improvement Projects Completed or Ongoing at Glen Canyon National Recreation Area. Glen Canyon National Recreation Area press release (October 4, 2004).
61. Jonas, Lilian. Lake Powell Preliminary Socioeconomic Impact Analysis. (Salt Lake City: Glen Canyon Institute, 1999), 27.
62. Ibid, 30.
63. Carothers, Steven W. and Bryan T. Brown. The Colorado River through Grand Canyon: Natural History and Human Change. (Tucson: University of Arizona Press, 1991), 26-29.
64. Latham, Stephen E. Glen Canyon Dam, Arizona: Dam Failure Inundation Study. (Denver: Bureau of Reclamation, 1998), 7-9.
65. Bureau of Reclamation. Lower Colorado Region: Water Operations. Flood Control Operation. Colorado River Interim Surplus Criteria, Final Environmental Impact Statement (2000), 1:2021.
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69. Luckert, Karl W. Navajo Mountain and Rainbow Bridge Religion (Flagstaff: Museum of Northern Arizona, 1977).
70. Colorado River Storage Project Act. 43 U.S.C. §§ 620-620o, April 11, 1956, as amended 1962, 1964, 1968 and 1980. Colorado River Basin Project Act. 43 U.S.C. §§ 1501- 1556, September 30, 1968, as amended 1974, 1978, 1980, 1982, 1984 and 1992.
71. Reclamation Projects Authorization and Adjustment Act of 1992. Title XVIII Grand

Canyon Protection, Section 1803-1806.

72. See: Note 49 (National Park Service Organic Act).

73. Endangered Species Act. 7 U.S.C. 136; 16 U.S.C. 460 et seq. 1973.

74. Colorado River Compact. Signed at Santa Fe, New Mexico. Ratified by act of Congress December 21, 1928. 45 Stat. 1057. Congressional Record, 70th Cong. 2d Sess. At 324-325.

75. Newcom, Joshua S. Deciding About the Colorado River Delta: Rejuvenated Wetlands Raise New Issues About Where Flood Flow Should Go. River Report, Spring 1999 (Sacramento: Water Education Foundation).

76. Reese, April. Current Colorado River Basin Dry Spell Could Be Worst in 500 Years. Land Letter. Washington D.C. (June 24, 2004).

OTHER SOLUTIONS

[2014 -Truth and Consequences of the 1968 Colorado River Basin Project Act.](#) Udall.

Blue Castle Holdings: Nuclear power proposal along the Green River in Utah

MAY 18, 2010

BY JOHN WEISHEIT

Update: The water right transfer for this propose Nuclear Powerplant from San Juan County Water Conservancy District has been annulled. [Letter of 2/12/2021 from Uranium Watch to Utah Division of Water Rights](#). This indicates that there is no investor confidence in this project.

EBOOK

- [2024 - Dirty Secrets of Nuclear Power in an Era of Climate Change](#). Brugge.

LITIGATION AND ADMINISTRATIVE RECORD OF PROPOSED WATER RIGHT TRANSFERS TO EMERY COUNTY

Water Rights Hearing in Utah's 7th District Court

- NEWS: Utah's First Proposed Nuclear Plant Goes On Trial - [Click here](#)
- Read Judge Harmond's Decision - [Click here](#)
- Transcript of the five-day trial - [Click here](#)

Utah Disvision of Water Rights Approves Water Right for Nuclear Power Plant

- [Click here](#) to read the story by Judy Fahys of the Salt Lake Tribune announcing Utah's positive decision by the state engineer to approve the water transfer for the proposed nuclear power plant near Green River, Utah.
- [Click here](#) to read the press release by Utah State Engineer.
- [Click here](#) to read the decision of Kane County water transfer.
- [Click here](#) to read decision of San Juan County water transfer.
- [Click here](#) to read the request for reconsideration by Uranium Watch et al.
- [Click here](#) to read the request for reconsideration by HEAL et al.
- [Click here](#) to read the Engineer's denial to reconsider.
- Read transcript of the January 12, 2010 protest hearing conducted by the State Engineer [here](#).



The Green River

Kane County Water Right Transfer (The year of priority is 1965 and, according to Judge Harmon's Court Order, is now subordinate to the Central Utah Project)

- [Archive from Utah Division of Water Rights](#)

San Juan County Water Right Transfer (The year of priority became 2000 after the water right was reinstated; the water right was granted extensions in 2006 and 2011; the next extension is due in 2017)

- [Archive from Utah Division of Water Rights](#)

Water diversions in Eastern Utah are dependent on federal contracts from a water right called Ultimate Phase.

- Read this article called: [Ultimate Phase Water Rights Stored in Flaming Gorge Reservoir](#)

NOTE: Since the water rights are bifurcated, and nearly half of the combined water supply has a junior water right, the operations of the proposed nuclear powerplant are likely to be curtailed during a water shortage in the Colorado River basin. The Bureau of Reclamation is anticipating a 50/50 chance of shortages occurring in the lower basin in 2016, and the Department of Energy is also expecting power generation at Glen Canyon Dam to be curtailed in 2016.

- [Associated Press](#)

Securities Corruption by Financial Partner of Blue Castle Holdings

- [Click here](#) to read this story by Judy Fahys and Steven Oberbeck in the Salt Lake Tribune about a fraud case involving a financial partner of Blue Castle Holdings, LeadDog Capital.
- [Click here](#) for the archived press release of Blue Castle Holdings' partnership agreement with LeadDog Capital that has since been removed from the web page of Blue Castle Holdings.
- [Click here](#) to read this story by Judy Fahys and Steven Oberbeck in the Salt Lake Tribune, which includes the administrative record of the State Engineer's review.

Emery County Economic Development Director Resigns

- [Utah State Auditor Releases Report On Alleged Impropriety in Emery County Economic Development Department](#). Emery County Progress.

Willow Creek Pipeline Company and Acquisition by Blue Castle Holdings

- [2010- BCH press release announces 100% acquisition of Willow Creek Pipeline Company](#)
- [2015 - Nuclear Intelligence Weekly mentions BCH sold this pipeline company](#) (this article was posted on the BCH website and later scrubbed)

Dominate utility in Utah not interested in developing nuclear power

- [2013 - Salt Lake Tribune news feature by Judy Fahys](#)
- [2015- Intergrated Resource Plan](#). Rocky Mountain Power.

Op Eds About Nuclear Power

- [Nuclear Power: Dead in the Water it Poisoned](#). John LaForge.
- [Dr. Cooper in Forbes](#)
- [Harvey Wasserman](#)
- [Union of Concerned Scientists](#)

National Academy of Sciences

- [2012 - Dangers of living near nuclear facilities](#)
- [2014 - 50 Reasons to Fear the Worst from Fukushima](#) (timeline of nuclear proliferation)

NGOs

- [Letter from NGOs to climate scientists who support nuclear energy](#).

Other News

- Scientific American has published a 100% wind, water & solar energy proposal for the entire world by 2030 [here](#).
- Read article in Salt Lake Weekly of May 2011 [here](#).

###

The proposed nuclear power plant and industrial park on State-owned lands near Green River, Utah was originally an inspiration of Transistion Power Development LLC, which was formed in October of 2007. The company was restructured in September of 2009 under the corporate name [Blue Castle Holdings](#). BCH claims to be registered as a corporation in the state of Delaware. The company was first based in Salt Lake City and is now based in Provo.

The CEO of BCH is [Aaron Tilton](#), a former member of the Utah legislature turned energy [lobbyist](#). The BCH website is devoid of any pertinent information about the project and instead reads like a white paper to convince investors and the public that nuclear energy is safe and affordable. The nuclear industry has three strikes that tells us otherwise: [Three Mile Island](#), [Chernobyl](#), and [Fukushima](#).

Investors have always stated that without public subsidies and limited liability insurance, nuclear energy is a risky business adventure. For example, Bloomberg Business informs readers [here](#) that the decommissioning of the damaged nuclear reactor in Japan will take 30 years and cost Tokyo Electric 12 billion dollars.

A possible alternative proposal to this turn key boondoggle is to place solar panels on every south-facing roof in sun-drenched Utah. Such a proposal would have broader public acceptance, is less expensive, faster to implement, uses less water overall, preserves open space, avoids massive vapor plumes in the viewsheds of national parks, and avoids the controversy of radioactive waste, leaks, accidents and issues of homeland security.

The electricity from the nuclear facility is [targeted](#) for the Wasatch Front (Salt Lake City) with surplus for Wyoming, California, Nevada and Arizona. It is also possible that the energy could be targeted to develop [oil shale](#) and [tar sands](#) in the Uinta Basin of the Colorado Plateau, which would resemble [mountain top removal](#) in Appalachia, or the [destruction](#) of the boreal forests and watersheds of Alberta, Canada.

The [total low ball cost](#) is projected to be 16 billion dollars (decommissioning costs not included) with a projected completion date of Unit One in 2020, which is too optimistic when considering the actual construction calendar of Unit One at Arizona's [Palo Verde Nuclear Generating Station](#). Nor does the schedule and price tag account for protests, rallies, direct action and legal challenges from the general public. The Colorado Plateau does have, after all, the highest concentration of national parks and monuments in North America.

Green River is a cozy, small farming town with sleep over motels, but the price tag does not consider the zero housing available for the necessary [staff and construction workers](#) of the power plant, nor the cost of improving basic utilities, services, schools, and the expansion of the city sewer system. Green River City doesn't even have a hospital.

The proposed facility is [located](#) on 1,627 acres of School Institutional Trust Lands (SITLA) near the Intersection of Hwy 6 and Interstate 70 ([photo](#)), a few miles west of Green River City. SITLA is a state land agency that behaves like an obsessive real estate broker who would [approve](#) an oil derrick next to your grandmother's garden without the decency of telling her.

The water [intake](#) would be near the I-70 bridge crossing the Green River with a high-security pipeline corridor to the power plant ([layout](#)). The total annual amount of water to be consumed by the power plant is 54,000 acre-feet; there are no return flows to the Green River. There is no [contract with the federal government](#) to supply water from Flaming Gorge Reservoir to the project in times of shortages, so when the demand for water is high in July and August, the withdrawal will pose a significant threat to endangered fish. Sandbar nursery habitats are closed to entry or exit when the river drops in elevation. This event can either reduce available habitat for juvenile fish, or strand fish that will then succumb to poor water quality or predators.

This project is really about securing more rights to water for the state of Utah, than it is about securing energy for the nation. Water in search of a project is another way of putting it. The decision before Utah Division of Water Rights is about approving the **transfer of two water rights** to Emery County, one from San Juan County and the other from Kane County (**lease agreement**). The original points of diversion (POD) are the San Juan River and Lake Powell. The two counties would lease their water rights to Blue Castle Holdings and then use those funds to develop small surface water projects in their perspective counties. In otherwords, this proposed transfer will increase the overall consumption of surface water in three Utah counties.

For more information about the protests to the water rights for this project, click [here](#).

The problems are two-fold: **surplus water does not exist** in the Colorado River basin and the **endangered species problem** does.

The state of Utah is the last hope for the recovery of endangered fish species because the Green River flows free for 425 miles between Flaming Gorge Reservoir and Lake Powell. In the summertime the river flows are dangerously low due to over-consumption and evaporation. It is quite common to see comatose fish floating upside down along the Green River, victims of summertime hypoxia (lack of oxygen).

The other problem is the water supply of the Colorado River has peaked basin-wide. In fact, every metropolis in the arid west is at peak water. Their conservation programs are not about easing water stress for their communities, since the water savings is quickly converted into yet more urban sprawl.

Four species of native fish are endangered, and populations are augmented artificially from fish hatchery stock. Additionally, three threatened fish species in the Green River are approaching endangerment. If the looming fish problem is not solved soon, which is unlikely considering 28 years of unsuccessful programming, the fish will eventually get the higher priority for water. If the Endangered Species Act is gutted by Congress, the water quantity/quality problem would still exist in the form of Lakes Powell and Mead **going empty**. For example, Lake Mead only has to drop another 20 feet before cutbacks to Nevada and Arizona begin. If the problem escalates further, the hydrosociety will be dependent on a system called "run of the river" which is what existed before Hoover Dam was built. A return to dust, as it were.

The water agencies are not thrilled about the proposal of Blue Castle Holdings. The **Bureau of Reclamation** is concerned that water for the **Central Utah Project** is at risk. The **US Fish and Wildlife Service** is concerned about the recovery of endangered fish, as is **Utah Division of Water Resources**. See also **Dr. Holden's comments** on this proposed project.

There is compelling information for the State Engineer of the Utah Division of Water Rights to deny this water transfer application, but Blue Castle Holdings has the ear of

the state legislature, which finds the time to pass dubious resolutions like [denying climate change \(cached\)](#), scolding [professors](#) at Brigham Young University, and challenging the [public ownership](#) of federal lands in the court system with the legal fees paid for by the SITLA sleaze fund.

Additional Information

- [Uranium Watch](#)
- [Water Transfer Application Documents](#)
- [You Tube](#)
- [High Country News](#)

Read letter by [Heal Utah](#) about speculation by BCH [here](#).

Read letter by Utah Division of Water Rights that denies application by Mancos Resources for a uranium mill at proposed Green River Industrial Park [here](#).

USGS daily stream data for Green River gage: [Plots](#); [Raw data](#);

Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir

JUNE 03, 2010

BY JOHN WEISHEIT

THE ULTIMATE PHASE OF THE CENTRAL UTAH PROJECT

The story of a paper water right looking for wet water projects and the billions that will be spent to chase it.

SUMMARY: The [40-year plan](#) for water right 41-3479 (Flaming Gorge Water Right)

In 1996, the U.S. Bureau of Reclamation (BOR) assigned the majority of approved Utah Water Right [41-3479](#) (A30414d) (Flaming Gorge Water Right) to the Utah Board of Water Resources (Board). This right allowed the storage of 500,000 acre-feet of water in Flaming Gorge Reservoir and was to be used for the Ultimate Phase of the Central Utah Project.

After the decision was made to not build the Ultimate Phase and after discussions with the state of Utah, the BOR transferred the majority of the right (447,500 acre-feet of diversion and 158,800 acre-feet of depletion) to the Board.

See: [Market Assessment of Flaming Gorge Reservoir](#) by Reclamation in 2007; the total storage in Flaming Gorge Reservoir for consumptive use by Wyoming, Colorado & Utah is only 165,000 acre-feet per year.

See also: [Memo from Eric Kuhn to Joint West Slope Risk Study Update](#) (2016). The upper basin states are developing contingency planning documents to preserve hydropower production at Lake Powell. One strategy includes evacuating a prescribed amount of reservoir water from Flaming Gorge Dam.

The Board desired to make this water available to Utah water users within the Colorado River Basin that could put the water to beneficial use. The Board went through a process of receiving applications for this water, approving those applications, then segregating and transferring portions of the right to those applicants. The applicants were given a time-frame for developing the water, and water not developed within that time would revert to the Board.

As part of this allocation process, the Board set aside 73,000 acre-feet of the Flaming Gorge Water Right in anticipation of the future Lake Powell Pipeline (LPP). In 2006, the Utah Legislature passed the Lake Powell Pipeline Development Act ([73-28 UCA](#)) which authorizes and directs the Board of Water Resources to develop the LPP. This project will divert water at Lake Powell, upstream of Glen Canyon Dam, and will deliver it to southwest Utah. The project is needed to supply the water needs of the growing population and provide for economic development.

The Board has filed a Request for Extension of Time to File Proof of Beneficial Use for the unused portion of the Flaming Gorge Water Right as well as for other portions of the right that have reverted, or will revert to the Board and to the Lake Powell Pipeline, including the following water rights:

RIGHT DIVERSION

- 41-3516 - 2,000 af
- 41-3529 - 655 af
- 41-3532 - 200 af
- 49-1654 - 2,400 af
- 89-1595 - 682 af
- 89-1596 - 417 af
- 89-1614 - 930 af
- 89-1616 - 242 af
- 97-2220- 300 af
- 97-2237 - 240 af
- 91-5075 - 2,880 af
- 92-638 - 8,239 af
- 92-656 - 522 af
- 93-3750 - 2,478 af

If the extensions are granted, the Board will request that all segregated rights be consolidated back to Water Right 41-3479. The water represented by these rights will be delivered by the Board, through the LPP, to supply the municipal and industrial water needs of Kane County Water Conservancy District, Washington County Water Conservancy District and Central Iron County Water Conservancy District. Iron County has since dropped out of the Lake Powell Pipeline, claiming the project was financially burdensome.

The Board has also agreed to subordinate their Flaming Gorge Water Rights to the BOR's water right for the Central Utah Project, and to the portions of the Flaming Gorge Water Rights that were transferred to the Uintah and Duchesne County Water Conservancy Districts for use in the Uintah Basin, subject to the districts also subordinating their rights to the BOR's water right for the Central Utah Project.

UTE INDIAN WATER COMPACT

According to Utah law ([Title 73, Chapter 21 Ute Indian Water Compact](#)), and in perpetuity, the Ute Indian Tribe and others can deplete 248,943 acre-feet per annum from a total diversion of 471,035 acre-feet per annum. This water compact is more fully set out in the "Tabulation of Ute Indian Water Rights," which is on file with the Utah State Engineer. The oldest priority date of this appropriation is October 3, 1861; there are other tribal priority rights that are in the 1880s.

See: [Uinta Ouray Ute Nation](#); [Tabulation of Ute Indian Water Rights](#) & [1973 Interior Press Release](#); [Why the projects were never built](#).

LAKE POWELL PIPELINE

This project will require a federal contract for a water release of 86,249 acre-feet per year from Flaming Gorge Dam. Also a NEPA document and a Biological Opinion.

- Water right documents for City of St. George (89-1559): [CLICK HERE](#)
- Water right documents for Washington County Conservancy District (89-1525): [CLICK HERE](#)

EASTERN UTAH WATER DEVELOPMENT PROJECTS

- [2007 - Uinta & Green River Water Development Report](#). CH2MHill.

Green River Pumping Project

This project requires a federal contract for a water release from Flaming Gorge Dam. The diversion is limited to 10,000 acre-feet per year and for a maximum time-period of five years. After the initial five years the project can enter a 40-year contract with Reclamation, which is the maximum time-frame allowed.

- [2010 - FONSI and Biological Assessment of GRPP](#). USBR.
- [Biological Opinion Green River Pumping Project](#). USFWS.
- [Environmental Assessment: Green River Pumping Project. \(archived\)](#). USBR.
- [Biological Assessment for Green River Pumping Project](#). USBR.
- On August 11, 2009 the District segregated 8,500 af (Water Right No. [43-12263](#)) off of Water Right No. [41-2963](#) (A30414) and filed Change Application No. a35811 to move this water to the GRPP.
- Water Right No. [41-3487](#) (A30414db) for 8,400 af
- Water Right No. [41-3523](#) (A30414do) for 43,400 af from the Ultimate Phase water right.

PROPOSED PROJECTS COMPETING FOR WATER IN EASTERN UTAH

Potash development near Crescent Junction

The project requires 20,000 acre-feet per year to be financially viable. This project's groundwater diversion is limited to 5,000 acre-feet and requires a groundwater monitoring program, so as not to infringe on the springs in Arches National Park. The remaining 15,000 acre-feet would come from the Green River. The State Engineer's Order states that it is not necessary to apply for a federal contract for water from Flaming Gorge Reservoir. The letter of concern from Reclamation stated it would be wise and prudent to initiate a federal contract.

- Pinnacle Potash International: [92-674](#)
- [2013 - Order from State Engineer](#)

Tar sands development near PR Springs and Main Canyon

This project requires 360 acre-feet per year and the production water comes from groundwater; if additional water needs are required they would be delivered by trucks using water from the Green River. The state engineer's Order requires the company to

apply for a federal contract with Reclamation. An Order from Utah Division of Oil, Gas & Mining requires a groundwater monitoring plan.

- US Oil Sands: [49-2274](#)
- [2015 - UDOGM Order for a Groundwater Monitoring Program](#)
- [2016 - Order of the State Engineer](#)

Green River City Nuclear Power Plant (Blue Castle Holdings)

The point of diversion for water to produce steam would be transferred to Emery county. The holders of the water rights are in San Juan and Kane counties. The diversion is 53,600 acre-feet. Blue Castle Holdings claims a federal contract for a water release from Flaming Gorge Dam is not required. Reclamation issued a letter of concern that a federal contract would be wise and prudent. This water right was litigated and Judge Harmon demoted the Kane County priority date to be inferior to the priority date of the Central Utah Project. The priority date of San Juan County is 2000, which is vulnerable to curtailment should shortages ever be declared. Judge Harmon also required a federal review of the withdrawal by the US Fish and Wildlife Service to protect endangered fish species. This will ensure that a federal contract with Reclamation will indeed be required. A NEPA document and a Biological Opinion will be required.

- Kane County Water Conservancy District: [89-74](#)
- Kane County Water Conservancy District: [89-1285](#)
- San Juan Water Conservancy District: [09-462](#)
- [Judge Harmon's Court Order](#)

Background Information:

- [History of the Central Utah Project: A Federal Perspective.](#)
- [2006 - From Cadillac to Chevy: Environmental Concern Compromise of Central Utah Project Completion Act.](#) Eastman.
- [Website - Office of Central Utah Project Completion Act](#)
- [1965 - Central Utah Project Ultimate Phase Inventory: Inventory of Available Data: \(high resolution\).](#) Reclamation.
- This water right also was set aside for the [Uinta Ouray Ute Nation](#) and the water rights are tabulated in this [document](#). ([1973 Interior Press Release](#))
- [40-year plan](#). Utah Division of Water Resources.

Environmental Impact Statements

- [1973 - Central Utah Project Bonneville Unit](#)
- [1975 - Central Utah Project Jensen Unit](#)
- [1975 - Kaiparowits Power Project](#)
- [1978 - Uintah Unit Central Utah Project](#)

Utah Division of Water Rights

- SEARCH ENGINE for water right queries is [HERE](#) (Utah Division of Water Rights)
- [Utah Water Rights Law Index](#)

ADDITIONAL INFORMATION

- [Utah Water Rights \(a complete list\). \(archived here\)](#). UDWR.
 - [1994 - Utah's Policy Regarding Applications to Appropriate Water from Green River](#). UDWR.
 - [2009 - Current status of Utah Water Rights](#). State Engineer Presentation in Moab.
-

Strip Mining for Tar Sands Proposed in Canyon Country

JUNE 17, 2010

BY JOHN WEISHEIT

PR Springs in the Uinta Basin. Elevation 8,000 ft.

On May 20, 2009 the Utah Division of Oil, Gas and Mining (UDOGM) approved a [plan of operations](#) by an Alberta, Canada mining company called Earth Energy Resources (EER) to commence the strip mining of tar sands (bitumen) in the Uinta Basin of the Colorado Plateau.

STATUS: The application to begin mining operations has been challenged by [Living Rivers](#) and their attorneys [Western Resource Advocates](#). The application for a Conditional Use Permit from Grand County has yet to be submitted by EER (now called US Oil Sands (Utah), Inc).



The first formal hearing was February 23, 2011 with Utah Division of Oil, Gas and Mining and the next scheduled meeting is May 16 & 17, 2012 with the Utah Division of Water Quality, and each day, the hearings will begin at 10:00 a.m. and end by 5:00 p.m. Address is 195 North 1950 West; Salt Lake City, UT 84114-4870 ([stipulations](#)).

[Click here](#) to read this color booklet created by Living Rivers and the Colorado Riverkeeper

WEBSITES FOR ADDITIONAL INFORMATION

- [Tar Sands in Utah's Tavaputs Plateau](#)
- [Oil Shale in Utah's Tavaputs Plateau](#)

To submit a letter to UDOGM [click here](#)

Read [article](#) by the Associated Press that had considerable coverage in the nation.

The proposed plan will blast and chew into the slopes of canyon headwaters at possible depths up to 500 feet. The overburden and waste rock (sand, clay, and rubble) will then be placed back into the empty cavity and adjacent valleys, and then sprinkled with [top soil](#), mulch, seeds and prayer, with hopes the infamous winds & [cloudbursts](#) of this high plateau won't wash and blow it all away ([photo of debris flow in Uinta Basin](#)).

Nevermind the weed crop that will actually replace this landscape of sage, Gambel oak, pinyon pine, aspen and Douglas fir. A habitat ideal for wildlife populations such as elk, deer, bear, bison (recently introduced), turkey, nightjars, grouse and owls. The pretty pictures on the ERR [website](#) leave readers with the impression that the landscape will actually be improved by their handsome visits.

The proposal includes processing the bitumen into a liquid at the mining site so that it can be trucked to Salt Lake City where it is typically refined into kerosene, diesel and aircraft fuel. The on site sand/bitumen separating process uses a concentrated citrus-based solvent mixed with hot water. Even though the solvent is strong enough to liquify tar, EER says the chemical signature is harmless to the environment. When asked to reveal the chemical signature of the solvent, EER claims it does not have to reveal proprietary company secrets. The chemical has to be replenished during processing and that which is lost ends up in the unlined waste pit where it is exposed to percolation from rain storms, which will carry it into the aquifer or into stream beds. The chemical is also expensive (\$36 a gallon) and there isn't enough citrus in the world to support large scale tar sands mining in the first place.

The other speculative part of this proposal is the limited groundwater available for processing. Water that is not saline is hard to come by in the Uinta Basin. There are shallow aquifers in the mining area, but the quantity is anything but sufficient. EER will have to chase water and drill more wells as they exhaust their supply time and time again.

The Uinta Basin ([map](#)) is in the northeast corner of Utah and the northwest corner of Colorado. Some people refer to the Uinta Basin in Utah as the Tavaputs Plateau or the Book Cliffs. In the state of Colorado the Uinta Basin is also known as Piceance Creek Basin or the Roan Cliffs.

This geophysical subprovince is loaded with kerogen and bitumen embedded in sandstones and shales of the Green River Formation ([report](#)). Various documents claim there are more hydrocarbons in the Green River Formation, which also extends into Wyoming, than in Saudi Arabia. However, the reason why oil bearing rocks have never been extracted here before, is the high cost of production and the general lack of water for processing ([report](#)).

This is the first serious application for large-scale extraction of tar sands in the United States, outside of experimental and small town asphalt operations. The proposed mine

will affect the watershed of the Green River, which is the major most tributary of the Colorado River.

The Utah counties affected are Grand County (Moab is the county seat) and Uintah County (Vernal is the county seat). The national parks in the vicinity are Canyonlands, Arches, Dinosaur and Colorado National Monument near Grand Junction.

The permit is for an area of 213 acres at a place called PR Springs ([photos](#)), but EER has leased a total of 5,930 acres of state land managed by School Institutional Trust Lands Administration (SITLA). There may be no federal nexus that would warrant a full Environmental Impact Statement, unless the mining operations move into federal lands managed by the Bureau of Land Management, which may or may not happen depending on when Congress gets real about climate change legislation. In the meantime, there is a [Secretarial Order](#) ([and here](#)) for federal agencies to adjust to climate change and reduce greenhouse gases.

When the 24-hour a day, seven year project is complete, which includes blasting, ripping, hauling, primary processing and conveyance by tanker trucks over dusty roads to waiting refineries in air impaired urban areas like Salt Lake City, the contribution to the total US energy consumption per day will be a whopping 6 hours ([here's the math](#) & [an article](#)). Ironically, EER will consume 2 of those 6 hours to produce the final product for market.

Midnight shifts mean the blaring lights and noise will be seen and heard from Dinosaur National Monument, a federal reserve that has captured the most stunning canyon scenery in North America ([photos here](#) & [here](#)).

In return the sole-source Colorado River watershed for seven states and Mexico get a mauled landscape, increased carbon emissions (3 times more than conventional oil production) and [fugitive dust](#) that will eviscerate the snowpacks of the Rocky Mountains and ensure the reservoir system will fail and foul.

At this time, EER is reported to be searching for \$35 million for start-up expenses and reclamation bonding, so mining operations have yet to occur. Additionally, an informal administrative hearing by Utah-based environmental groups this last winter resulted in a settlement to extend the public comment period more broadly. Furthermore, the government of Grand County will need time to implement a Conditional Use Permit (CUP) for these operations. The CUP from Uintah County has already been granted.

Living Rivers and Peaceful Uprising recently protested this disaster-in-the-making at a scheduled informal hearing before DOGM administrators ([news clippings](#)) and it became very clear that nothing will stop this mine from proceeding because the state of Utah blatantly refuses to adjust to climate change by implementing renewable energy alternatives. They do provide some lip service to these policies, but only to answer critiques such as mine.

The activists were advised by DOGM to take the matter up with the governor and the

legislators. This is the same legislative body that has recently filed a lawsuit against the federal government with the hope the court will favor the **handing of the public domain over** to Utah. Nevermind that revenue from taxpayers from all 50 states is what built the basic infrastructure that allows Utah to function.

The amazing thing about Utah's position as the ultimate deniers of climate change is their surface water yield is indeed **declining** despite a fully funded **cloud-seeding program**. Water conservation will never happen in Utah, until the goal of appropriating as much water as possible is achieved first.

The Utahns that do drink water from the Colorado River basin, for example the folks of Salt Lake City and Provo, do not utilize surface water from the Uinta Basin. Their water comes from the slopes of the Uinta Mountains and the Wasatch Plateau, which is of excellent quality. The biggest threat to their water supplies is from the air pollution and greenhouse gases they themselves generate, which includes four oil refineries. For short-term particle pollution, **Salt Lake City is #6** in the nation.

Grand County has the largest proportion of state lands by county in Utah. In fact 15% or 550 square miles, and most of it is lumped where the tar sands and oil shale occurs (**map - blue squares are state lands**).

How did this heavy oil reserve for state exploitation occur?

As you are probably aware, the western states have a lot of federal lands that were never dispensed to individuals and corporations through various programs (for example the Homestead Act of 1862), and mostly for reasons of having no soil or water. Eventually enough people filled the western states so that its citizens could apply for statehood. Even after statehood, federal lands were dispensed to the public, usually to benefit returning veterans from the two World Wars. All programs of dispensement ended in 1976 (except Alaska for a period of ten years) when Congress passed the Federal Land Policy Management Act (FLPMA).

Public lands are managed by various federal agencies for the benefit of all US citizens, though foreigners on holiday can visit these lands just as freely. Some of the public domain is preserved as national parks, monuments, wilderness and wildlife refuges, but the rest (the majority) has a multiple-use agenda and can be permitted by corporations and citizens to graze livestock, cut timber, or mine.

At statehood, 4 of the 36 sections in a township (Public Land Survey System), were dispensed to the state government to generate revenue for state education programs. If the US Congress formally designates a national park, recreation area or wildlife refuge, for example, the state-owned sections within the designated boundaries are exchanged from the multiple-use sections of the public domain. Usually the exchanges are clustered to provide more economic opportunities for the state, and why there is such a large concentration of state lands in the hydrocarbon-rich Uinta Basin.

If the nation is to adapt to climate change by reducing greenhouse gases in the atmosphere, then strip mining low-grade hydrocarbons in the second driest state in the Union is not an appropriate way of demonstrating one's leadership skills toward intelligent land-use planning.

Reduced streamflow is interfering with the goals and investments of regional water rights and delivery, salinity control and the recovery programs for endangered species.

Corporations and government agencies must abandon traditional petroleum-based energy programs and invest their time and resources in developing energy products that do not conflict with the fundamental water supplies and programs of Colorado River basin, or with national and international goals and programs to reduce greenhouse gas emissions that contribute to global warming and regional climate change.

Additional Information

[Canyon Country Rising Tide](#)

[Canyonlands Watershed Council](#)

[Living Rivers](#)

[Peaceful Uprising](#)

[Utah Tar Sands Resistance](#)

Who Will We Blame When the Tap Runs Dry?

NOVEMBER 19, 2010
BY EMILY BROPHY

If the desert reservoirs dry up because consumers will not change their consumptive patterns of water use, will the water authorities step in and force changes for them? If they do, will the mandates be predictable and orderly, or will they wait until a panic arrives and chaos ensues? Will they install true conservation programs that actually store water, for example, in **depleted aquifers** to serve as a savings buffer? Or will the saved water be used instead to build yet another house or business that further hardens the demand and compounds the problem?



Hoover Dam at elevation 1,100 feet

Judging by the lack of concrete solutions proposed by the governors of the western states and the Secretary of Interior, and that this leadership has had over 50 years to prepare for the inevitable, the answers would appear to be: no, they are not prepared; no, they will not save water; and yes, there will be a panic.

Nearly 27 million people rely on the Colorado River. Without it, the **Imperial Valley**, which provides jobs for 1.1 million Californians and provides over 10% of U.S. agricultural production, would dry up. Las Vegas, which **relies** on Lake Mead for 90% of its water, would go dark. Development in the west would cease as we know it.

On October 17, 2010, Lake Mead dropped below its lowest recorded **level** of 1083.2 feet above sea level. The reservoir currently sits at 1082.1 feet, or 38% of capacity. At full pool, the reservoir reaches 1,229 feet and can hold more than 28.5 million **acre-feet** (maf) of **water**.

If this alone does not induce panic in the residents of the lower basin states, the policies that accompany a further decline in the reservoir surely should. The current reservoir

height lingers precariously close to 1,075 feet, the level at which the [Colorado River Interim Guidelines](#), signed in 2007, would go into effect. The plan mandates [forced water shortages](#) upon the lower basin states of Nevada and Arizona for a total of [333,000 acre-feet](#). Arizona's supply would be reduced by 320,000 acre-feet and Nevada's reduction would be 13,000 acre-feet. California is exempt from this call of shortage, because it has senior water rights. (See: [Record of Decision](#), page 37).

The Bureau of Reclamation is expected to increase releases from Lake Powell downstream to Lake Mead to equalize (balance) the two reservoirs and keep Mead above this threshold level. Releases from Lake Powell in water year 2011 are expected to increase ~10%, and [could increase](#) more should Lake Powell get some recovery in the snowmelt of 2011 ([9/10/10 update](#)). This is not expected to happen due to a strengthening [La Niña](#), which bodes a situation of continued reservoir decline ([forecast](#)).

However, the upper Basin states are facing the same challenges as the lower basin as development and drought continue to place additional demands on the already stressed river. Relying on the Upper Basin to meet the needs of the Lower Basin is a fool's errand as increased water deliveries will only lessen the challenges to the one region by increasing those to the other, exacerbating the social and ecological threats to the system as a whole.

The Interim Guidelines offer a structured plan to sort the deckchairs on the Titanic, with the option to change the arrangement should the states so choose. What the plan does not offer is a solution to the problem. It does not address a scenario where neither reservoir (Mead nor Powell) is full enough to provide the minimal water needed to keep the power-generators at Hoover Dam online. Furthermore, the guidelines maintain a two-reservoir operating plan and does not explore [the option](#) of decommissioning Glen Canyon Dam to maintain a functionable water level in Lake Mead. Along these lines, they also does not offer a solution should one reservoir drain completely.

To further complicate the issue, four of the seven Basin states (Colorado, New Mexico, Utah, and Wyoming) don't use their full allocation of water, but that is not expected to be the case for long. Since 2000, the population of the seven states in the Colorado River basin has cumulatively [increased by 15%](#), or one and a half times the national growth rate of 10%.

The population of the Basin states is expected to increase another 13% by 2020, compared to a 9% projected population growth nationally (Las Vegas is losing population right now, but Clark County demographer anticipates positive [growth rates through 2050](#)).

Furthermore, industrial development in the Southwest continues to be water heavy, especially in the fastest growing industries. To combat energy scarcity, the nation is banking on solar development across the southwest, but a typical solar thermal plant (a 100 mega-watt facility) requires over one million gallons of water per day in order [to operate](#).

Arizona is on track to build the world's **largest solar plant**, a 250-megawatts facility two and a half times the size of a typical plant. A similarly sized plant has recently been approved **in California**, but will operate on a less water-intensive, and less efficient system.

Climate change is also likely to decrease water supply in the region. Sources almost ubiquitously project that the Southwest will experience significant declines in precipitation in the **coming decades** (see also **here**). The same sources find that region will have one of the largest increases in freshwater demand over the same period, leading to a greater risk to the sustainability of the area's water resources.

The nation is cheering for a losing team if they think the west will be able to support national energy growth in the coming decades.

As demand continues to increase, and supply trends downwards, conservation is the only feasible solution to maintaining current development and projected growth in the region. The meager conservation methods outlined in the interim plan are limited and not mandatory. While the Basin states have independently sought self-serving policies, no system-wide solution has been proposed.

California may have passed **state legislation** to decrease per capita water use by 20% by 2020, but this year the Metropolitan Water District of South California (**MWD**), which supplies more than 50% of Californians, reduced its conservation budget by nearly 70%.

The Southern Nevada Water Authority (SNWA) is helping itself by drilling a **third intake** into Lake Mead by tunneling a three-mile pipe line under the reservoir at a cost of \$700 million. The tunnel would be capable of providing water to Nevada at a reservoir level of 1,000 feet, and the greater distance into the reservoir avoids taking in wastewater return flows (treated) from Las Vegas Bay; the project is expected be completed by 2013. However, the project has faced several **setbacks** including the flooding of the underground chamber where the drilling machine was to be assembled.

Water managers may be able to pat themselves on the back for developing minimal local conservation methods. They can congratulate themselves for discovering new ways to suck the reservoirs of the Colorado River to the dregs. What they fail to accomplish, though, is the development of a basin-wide conservation plan based on realistic population and industrial needs of the future, in light of climate change and drought.

The Bureau of Recreation was formed to reclaim the wild spring waters of the Colorado River Basin for use by western industrial and municipal customers during periods of drought and decreased runoff. Today, the anticipated surplus runoffs have been replaced by annual shortages, and the Bureau must instead focus on reclaiming the water from wasteful uses that have been perpetuated by decades of unchecked development and ignorant water policies. Without mandatory and concrete conservation plans implemented basin wide, all users will suffer when the tap runs dry.

###

Emily Brophy is a multi-day raft guide on the Colorado, Green, and San Juan rivers. When she is not in a boat, she works as an ecological economist and is an advocate for sustainable communities. Her research and interests include ecologically-minded planning, inter- and intra-basin water policy, and dynamic resource modeling. She is currently developing a non-profit to connect youth to the green industry through environmental community projects.

The Hoover Dam Documents

DECEMBER 18, 2010
BY JOHN WEISHEIT

The complete series of historical and legal documents for managing the water resources of the Colorado River, and collectively known as "The Law of the River," were first compiled in 1933 by the Department of Interior. The series were periodically updated through the years and cited as The Hoover Dam Documents. The entire collection was recently archived digitally by the Bureau of Reclamation and presented to the public on DVD media at the 2010 annual meeting of the [Colorado River Water Users Association](#) at Caesar's Palace, Las Vegas.



Reclamation signs contract to begin Hoover Dam construction

In these documents you will find a legal history of problem solving to deliver water in an arid landscape to seven states, one foreign country, scores of sovereign tribes and, as an after thought, without entirely extinguishing its native wildlife and stunning wilderness.

The Law of the River has more to do. It has yet to control sediment, aging infrastructure, earthquake damage, invasive species, probable maximum floods, severe and sustained drought, and climate change. Solving the most challenging of problems for last, will make Part Five of the Hoover Dam Documents the most interesting to assemble and read.

The following files are searchable using PDF viewer clients for operating systems both Mac and Windows.

See also:

[History of Bureau of Reclamation](#)

[The Legal History of Glen Canyon Dam](#)

[Law of the River](#)

THE HOOVER DAM DOCUMENTS

- **Part I:** The [1933 Hoover Dam Documents](#) were compiled by Ray Lyman Wilbur, who was Interior Secretary in the Hoover administration (1929-1932), and his executive secretary Northcutt Ely, who would later represent the State of California in the Supreme Court decision known as Arizona vs. California.
- **Part II:** The [1948 Hoover Dam Documents](#) was an update compiled again by Ray Lyman Wilbur and Northcutt Ely.
- **Part III:** The [1978 Hoover Dam Documents](#) were compiled by Milton N. Nathanson for the Bureau of Reclamation.
- **Part IV:** The [2008 Hoover Dam Documents](#) were compiled by [Robert Johnson](#), the Commissioner of the Bureau of Reclamation from 2006 - 2009.

APPENDICES

- 2008 - [Glen Canyon Dam Adaptive Management Work Group Charter](#)
- 2007 - [Record of Decision Interim Shortage Guidelines](#)
- 2007 - [Joint US & Mexico Statement \(August 13\)](#)
- 2007 - [Arizona Indian Water Settlements Act Firming Agreement](#)
- 2007 - [Amended Navajo Power Marketing Plan](#)
- 2006 - [Temporary Re-regulation Metropolitan Water District](#)
- 2006 - [Temporary Re-regulation Imperial Irrigation District](#)
- 2006 - [System Conservation Policy](#)
- 2006 - [Subtitle J: All American Canal Projects](#)
- 2006 - [Record of Decision Operation of Flaming Gorge Dam](#)
- 2006 - [Record of Decision of Navajo Reservoir Operations](#)
- 2006 - [Arizona v California Dated Decree](#)
- 2005 - [Record of Decision Lower Colorado River Multi-Species Conservation Plan](#)
- 2005 - [Modified Long Range Op Criteria](#)
- 2005 - [Lower Colorado Water Supply Act Amendment](#)
- 2005 - [Annual Operating Plan Mid-Year Review](#)
- 2004 - [Storage Interstate Release Agreement: MWD, SNWA & BOR](#)
- 2003 - [Inadvertent Overruns and Payback Policy](#)
- 2003 - [Colorado River Water Delivery Agreement](#)
- 2002 - [Storage and Interstate Release Agreement: AWBA, SNWA & BOR](#)
- 2001 - [Yuma Mesa Administrative Determination](#)

- 2001 - [Record of Decision Interim Surplus Guidelines](#)
- 2001 - [Memorandum of Understanding with International Boundary & Water Commission](#)
- 2000 - [Minute 306](#)
- 2000 - [Joint Declaration of USA and Mexico on Delta](#)
- 1999 - [Packard Amendment of Reclamation Act](#)
- 1999 - [Offstream Storage of Unused Colorado River Water in Lower Basin](#)
- 1997 - [Operating Criteria & Annual Plan for Glen Canyon Dam](#)
- 1996 - [Record of Decision for Operations at Glen Canyon Dam](#)
- 1992 - [Grand Canyon Protection Act](#)
- 1989 - [Decision of Commissioner & Laughlin River Tours](#)
- 1988 - [San Luis Rey Settlement Act](#)
- 1988 - [Decision of Regional Director & Laughlin River Tours](#)
- 1986 - [Lower Colorado Water Supply Act](#)
- 1986 - [Boulder Canyon Project Act Power Regulations](#)
- 1984 - [Hoover Power Plant Act](#)
- 1984 - [Field Working Agreement](#)
- 1980 - [Termination of Lake Powell Filling Criteria](#)
- 1973 - [Minute 242](#)
- 1972 - [Colorado River Conservation Measures with Lower Basin](#)
- 1964 - [Arizona v California Decree](#)
- 1948 - [Upper Colorado River Basin Compact](#)
- 1944 - [Mexican Water Treaty](#)
- 1944 - [Water Delivery Contract to Lower Basin](#)
- 1931 - [Seven Party Agreement](#)
- 1931 - [General Regulations](#)
- 1922 - [Colorado River Compact](#)

SUPPLEMENTAL DOCUMENTS

- 2009 - [IBWC: USA Section Report Colorado River Salinity Operations Minute 242](#)
- 2008 - [Record Of Decision Lower Duchesne Wetlands Mitigation Project](#)
- 2008 - [MWD and Drop 2 Funding Agreement](#)
- 2008 - [Interim Guidelines Shortage](#)
- 2008 - [Interim Determination Coachella Canal Lining Project](#)
- 2008 - [Final BO Glen Canyon Dam](#)
- 2008 - [CAWC Delection to Participate Drop 2 Funding Agreement](#)
- 2007 - [UCRC Resolution Upper Basin Depletion Estimates](#)
- 2007 - [Restoration Salton Sea Summary Report](#)
- 2007 - [LCR MSCP Final Science Strategy](#)
- 2007 - [Drop 2 Funding Agreement](#)
- 2007 - [Contract USA with City of Needles MWD for LCWSP](#)
- 2007 - [Central Arizona Project Master Repayment Contract Supplement 1](#)
- 2007 - [Centra IArizona Project Master Repayment Contract Amendment 2](#)

- 2007 - [CAWCD Stipulation Judgment](#)
- 2007 - [CAWCD Stipulated Judgment 2](#)
- 2007 - [BO Proposed Interim Guidelines](#)
- 2007 - [UCRC water availability from Flaming Gorge Reservoir.](#)
- 2006 - [UCRC Resolution Availability Water Navajo Reservoir](#)
- 2006 - [Supplemental Information Report All American Canal Lining Project](#)
- 2006 - [LCR MSCP Final Fish Augmentation Plan](#)
- 2006 - [LCR MSCP Draft Guidelines Potential Conservation Areas](#)
- 2006 - [Final BO Navajo Reservoir Operations](#)
- 2006 - [Extension San Juan River Cooperative Agreement](#)
- 2006 - [CAP allocation](#)
- 2006 - [Arizona Water Settlement Master Agreement](#)
- 2006 - [Arizona v. California Consolidated Decree](#)
- 2005 - [Yuma Desalting Plant Cienega De Santa Clara Workgroup Report](#)
- 2005 - [UCRC Resolution Retention Water Upper Basin Reservoirs](#)
- 2005 - [Report Congress Yuma Desalting Plant Other Actions](#)
- 2005 - [LCR MSCP Section 10 Permit](#)
- 2005 - [LCR MSCP Implementing Agreement](#)
- 2005 - [LCR MSCP Funding Management Agreement](#)
- 2005 - [Final BO Flaming Gorge Dam](#)
- 2005 - [Biological Conference Opinion LCR MSCP](#)
- 2005 - [Arizona v. California Special Master McGarr Final Settlements](#)
- [Recommendations](#)
- 2004 - [Yuma Desalting Plant Readiness Assessment Update](#)
- 2004 - [Secretarial Reservation Additional LCWSP Water for Federal Use](#)
- 2004 - [Record Of Decision Utah Lake Drainage Basin Water Delivery System](#)
- 2004 - [Notice of Availability ROD IOPP](#)
- 2004 - [LCR MSCP Habitat Conservation Plan](#)
- 2004 - [LCR MSCP Final BA](#)
- 2004 - [Interim 602a Storage Guideline](#)
- 2004 - [CAP allocation](#)
- 2004 - [Arizona Water Settlements Act](#)
- 2004 - [Amendment Number 1 Record Of Decision Coachella Canal Lining Project](#)
- 2003 - [Salton Sea Study Status Report](#)
- 2003 - [Record Of Decision Colorado River Water Delivery Agreement IOPP](#)
- 2003 - [Flow Recommendations Endangered Fish Colorado Gunnison Rivers](#)
- 2003 - [Conservation Agreement Without Attachments](#)
- 2003 - [CAWCD Revised Stipulation](#)
- 2003 - [CAP Allocation](#)
- 2003a - [UCRC Resolution Use Accounting Water Lake Powell Pipeline](#)
- 2003b - [UCRC Resolution Use Accounting Water Navajo Gallup Water Supply Project](#)
- 2003 - [BO Reinitiation Consultation Proposed Releases Glen Canyon Dam](#)
- 2003 - [BO Proposed Releases Glen Canyon Dam](#)
- 2003 - [Allocation Agreement](#)

- 2003 - [Agreement Supplemental Water](#)
- 2003 - [Agreement Conveyance Water](#)
- 2002 - [Yuma Desalting Plant Yuma Readiness Assessment](#)
- 2002 - [Record Of Decision Coachella Canal Lining Project](#)
- 2002 - [BO Proposed Releases Glen Canyon Dam Removal Non-Native Fish](#)
- 2002 - [BO OM Mead to SIB](#)
- 2002 - [Amendment One 1992 Contract USA, City of Needles for LCWSP](#)
- 2001 - [Interim Surplus Guidelines](#)
- 2001 - [Implementation Agreement](#)
- 2001 - [Extension Upper Colorado River Basin Cooperative Agreement](#)
- 2001 - [Colorado River Delta Binational Symposium](#)
- 2001 - [BO Interim Surplus Criteria](#)
- 2000 - [Summary Salton Sea Restoration Project Draft EIS EIR](#)
- 2000 - [CAWCD Stipulation](#)
- 2000a - [CAP Allocation](#)
- 2000b - [CAP Allocation](#)
- 2000c - [CAP Allocation](#)
- 2000 - [Arizona v. California Supplemental Decree](#)
- 2000 - [Arizona v. California Opinion](#)
- 1999 - [Key Terms Quantification Settlement](#)
- 1999 - [Draft BO Impacts of CAP to Gila Topminnow Santa Cruz River Basin](#)
- 1999 - [Arizona v. California Special Master McGarr Report Recommendations](#)

Appendix

- 1998 - [Agreement Between Reclamation and BLM](#)
- 1997 - [Review Existing Coordinated Long-Range Operating Criteria](#)
- 1997 - [MSCP Joint Participation Agreement](#)
- 1997 - [Modification of LCR MSCP Agreement](#)
- 1997 - [BO Fall GCD Test Flow](#)
- 1997 - [BO Conference Opinion LCROM Mead to SIB](#)
- 1996 - [Record Of Decision Glen Canyon Dam](#)
- 1996 - [Notice Completion CAP New Waddell & Modified Roosevelt Dams](#)
- 1996 - [MOU Clarification Development LCR MSCP](#)
- 1996 - [LCR MSCP Agreement](#)
- 1996 - [BO Operation of Modified Roosevelt Dam](#)
- 1996 - [Biological Conference Opinions Glen Canyon Dam](#)
- 1996 - [1996 & 2005 Supplemented OMR Transfer Valley Division Yuma Project](#)
- 1996 - [Amendment 2 LCR MSCP Agreement](#)
- 1996 - [Amendment 1 to LCR MSCP Agreement](#)
- 1995 - [MOU between USA, ADWR, CRBC, CRCN, AGFE, CDFG & NDW](#)
- 1995 - [MOU for Development of LCR MSCP](#)
- 1995 - [Final BO Glen Canyon Dam MLFF Alternative](#)
- 1995 - [Contract USA and IID for OMR of LCWSP](#)
- 1995 - [Assignment of 1992 Contract for Robert Griffith Project by SNWA](#)
- 1994 - [UCRC Resolution Opper States Depletion Tables](#)
- 1994 - [Substantiating Report of Glen Canyon Dam with Fish and Wildlife Coordination Act](#)

- 1994 - [Record Of Decision All American Canal Lining Project](#)
- 1994 - [BO Central Arizona Project Water in Gila River Basin](#)
- 1994 - [Amendment 1 of SNWA Contract with BMI](#)
- 1993 - [Notice of Completion Central Arizona Project Water Supply System](#)
- 1992 - [Title 1 Colorado River Basin Salinity Control Act Report to Secretary & Congress](#)
- 1992 - [California Agricultural Entitlements Colorado River Water](#)
- 1992 - [Final Report Colorado River Floodway Protection Act](#)
- 1992 - [Final BO Flaming Gorge Dam](#)
- 1992 - [Cooperative Agreement San Juan River Basin Recovery Implementation Program](#)
- 1992 - [Contract USA, IID, CVWD to Exchange Water from LCWSP](#)
- 1992 - [Contract USA and City of Needles for LCWSP](#)
- 1992 - [Contract Delivery of Water to SNWA](#)
- 1992 - [MOU between BoR and FERC](#)
- 1992 - [Amendatory, Supplementary & Restating Contract with Robert Griffith Project in Nevada](#)
- 1992 - [Amendatory, Supplementary & Restating Contract with Nevada](#)
- 1992a - [Allocation for Cap](#)
- 1992b - [Allocation for CAP](#)
- 1991a - [Allocation for CAP](#)
- 1991b - [Allocation for CAP](#)
- 1989 - [UCRC Resolution Funding Weather Modification Research](#)
- 1989 - [Letter of Agreement for Implementation of Water Conservation Program](#)
- 1988 - [UCRC Resolution Funding Weather Modification Research](#)
- 1988 - [Cooperative Agreement Recovery Implementation Program Upper Colorado River Basin](#)
- 1988 - [Central Arizona Project Master Repayment Contract Amendment1](#)
- 1987 - [UCRC Resolution Proposed Hydrologic Determination](#)
- 1987 - [Supplemental Plan 6 Agreement](#)
- 1987 - [OMR Transfer for Central Arizona Project](#)
- 1987 - [Navajo Power Marketing Plan](#)
- 1986 - [UCRC Resolution Construction of Animas-LaPlata Project](#)
- 1986 - [Plan 6 Agreement](#)
- 1986 - [Interim Navajo Power Marketing Plan](#)
- 1985 - [UCRC Resolution Cooperative Snow Survey Water Supply Forecasting Program](#)
- 1984 - [MOU for Upper Basin](#)
- 1984 - [UCRC Resolution Proposal Galloway Group](#)
- 1984 - [Arizona v. California Second Supplemental Decree](#)
- 1983 - [UCRC Resolution CRSP Power Rate Adjustment](#)
- 1983 - [OMR Transfer Indian Unit Yuma Project](#)
- 1983 - [CAP allocation](#)
- 1983 - [Arizona v. California Opinion](#)
- 1983 - [Amendatory & Supplementary Contract with Nevada](#)
- 1982 - [UCRC Resolution Enhanced Snowpack Test](#)

- 1982 - [Resolution National Wildlife v. Gorsuch](#)
- 1982 - [OMR Transfer Imperial & Laguna Dams & Senator Wash Pumping Plant](#)
- 1982 - [OMR Transfer Gravity Main Canal of Gila Project](#)
- 1982 - [Arizona v. California Special Master Tuttle Report](#)
- 1981 - [OMR Transfer Bard Unit Yuma Project](#)
- 1981 - [Amendatory Contract Surplus Water Nevada](#)
- 1980 - [UCRC Resolution Appropriation Funds Farm Salinity Control](#)
- 1980a - [AllocationCAP](#)
- 1980b - [AllocationCAP](#)
- 1979a - [UCRC Resolution Releases Colorado River Reservoirs](#)
- 1979b - [UCRC Resolution Cooperative Snow Survey Water Supply Forecasting Program](#)
- 1979c - [UCRC Resolution Gaging Stations](#)
- 1979d - [UCRC Resolution Adjustment Power Rates](#)
- 1979 - [BoR & WAPA Memo Transfer of Functions & Property](#)
- 1979 - [Arizona v. California Supplemental Decree](#)
- 1978 - [Coachella Canal Unit Definite Plan Report](#)
- 1976 - [Allocation CAP](#)
- 1975 - [Allocation CAP](#)
- 1972 - [Central Arizona Project Master Repayment Contract](#)
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- 1970 - [Long Range Operating Criteria](#)
- 1964 - [Arizona v. California Decree](#)
- 1963 - [Arizona v. California Opinion](#)
- 1960 - [Arizona v. California Special Master Rifkind Report](#)
- 1944 - [Supplemental Contract Delivery Water Nevada](#)
- 1942 - [Contract Delivery Water Nevada](#)
- 1931 - [Seven Party Agreement for PVID](#)

RECLAMATION HISTORY

- [Reclamation History Archive](#)
- [Historical Essays](#)
- [Large Federal Dams](#)
- [Reclamation: Brief History](#)
- [Reclamation History Volume 1](#)
- [Reclamation Selected Bibliography](#)
- [Floyd Dominy Interview](#)

ADDITIONAL INFORMATION

- [1954 - Testimony of Northcutt Ely on controversy of authorizing Glen Canyon Dam](#)
-

DISCUSSION: [Talk about this article...](#)

Lake Powell Pipeline Documents

MARCH 21, 2011

BY JOHN WEISHEIT

Proposed easement for Lake Powell Pipeline

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.



- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

LATEST NEWS:

- 2018, September - FERC decides to limit its jurisdiction to the hydropower generation component of the Lake Powell Pipeline. This means the other components of the LPP Project will involve the jurisdictions of other federal agencies.
- Read FERC's Order [here](#).
- Read [this story](#) about FERC's decision by *The Associated Press*.

LAKE POWELL PIPELINE

The Washington County Water Conservancy District of southwest Utah proposes to build 140 miles of pipeline from Lake Powell with pump stations to lift the water over a divide (elevation of 6,240 feet) to St. George and Kanab.

The water right for the Lake Powell Pipeline is **junior** to the projects that are currently operational under the Central Utah Project and its Units. The proposed annual Colorado River depletion for Washington County is 82,249 acre-feet, with a pipeline lateral to carry 4,000 acre-feet to Kane County; the combined depletion is 86,249 acre-feet. There was once a discussion for a lateral pipeline to carry 13,249 acre-feet to Iron County, but Iron County has since exited the planning process because of project's high

costs. The total projected price has been escalating over time and presently estimated to range from \$1.5 billion to \$2.5 billion. So far \$25 million dollars has been spent on planning documents by the state of Utah.

The reservoir that stores water for the proposed Lake Powell Pipeline is actually Flaming Gorge Reservoir, which is on the Green River in Utah and Wyoming. Flaming Gorge Dam would release the water to flow down the Green River and eventually into Lake Powell.

Lake Powell is merely the point of diversion for this project. The water rights stored in Flaming Gorge Reservoir were segregated from the Central Utah Project in 1996. This water is called the "Ultimate Phase" and the total depletion is limited to 158,800 acre-feet per year.

Additionally, the water right for the LPP was to expire in 2009 and the State Engineer granted **an extension** with a caveat that the project must begin depletions by October 31, 2020. It seems unlikely that the deadline will be met and the Division of Water Resources will have to ask and justify an extension.

The competition for Ultimate Phase water are various irrigation projects near the Green River. For example, the proposed Green River Nuclear Powerplant, several proposed solution mining operations for potash, conventional oil and gas development, and unconventional tar sands and oil shale development. However, the states of Wyoming and Colorado are also competitors for water stored in Flaming Gorge Reservoir. For example, the proposed Flaming Gorge Pipeline that parallels Interstate 80 in Wyoming and Interstate 25 in Colorado.

In 2007 the Bureau of Reclamation sent this **letter** to the Upper Colorado River Commission explaining the projected 40-year supply of water in Flaming Gorge Reservoir for the headwater states of the basin is only 165,000 acre-feet per year. When the seven states conclude their "contingency planning" document in 2016 (now delayed two years), this 40-year projection will probably be reduced by at least 30%.

In reality, what needed to occur is: the water rights of the Ultimate Phase should have been completely extinguished from the system. Because this did not happen, these water rights will become a future administrative nightmare that will eventually have to be settled in the judicial system or by an act of Congress.

2015 - 2017 ACTIVITIES

- [2017- State of the Colorado River and Implications for Utah](#). Millis.
- [2017 - Washington County Water Impact Fee Facilities Plan Analysis](#)
- [2017 - Governor Herbert's Fiscal 2017 Budget for Water](#)
- [Clarification of proposal and interested parties](#).
- [2016 - Feasibility of Lake Powell Pipeline Development Act and Proposed Water Conservation Alternatives](#). Criddle.
- [December 2015 - Preliminary Licensing Proposal \(combined\)](#). UDWR. (large download)

- [November 2015 - Draft Study Reports \(combined\)](#). UDWR. (large download)
- [MAPS \(combined\)](#).
- [2015- A Performance Audit of Projections of Utah's Water Needs](#). Legislative audit.
- [2015 - LLP Update](#). LLP Management Committee.
- [2015 - LPP Economic Analysis](#). U of U Letter to Utah's governor and state legislature.
- [2015 - Response by Utah to economists](#). St. George Spectrum.
- [2015 - LPP Impacts: Executive Summary](#). URC.
- [2015 - Analysis Summary](#). URC.
- [2015 - Six Month Report to FERC](#). UDWR.
- [2015 - Environmentalists Say Vague Lake Powell Pipeline Plans Hide High Cost For Utahns](#). Salt Lake Tribune.
- [2016 - Water Needs Assessment Final](#)

NEWS & OPINION

- [May, 2014 - Update](#). Taxpayers of Kane County.
- [March 20, 2014 - Pipeline Project Studies Continue](#). St. George Spectrum.
- [Lake Powell Pipeline Funding Clears First Hurdle](#) in Deseret News
- [Lake Powell Pipeline May Take Share of Statewide Sales Tax](#) by Salt Lake Tribune Editorial Board
- [Don't Soak Utahns](#) OpEd by Salt Lake Tribune
- [Lake Powell Pipe](#) OpEd by Salt Lake Tribune

ADMINISTRATIVE RECORD: LAKE POWELL PIPELINE

[CLICK HERE](#) to visit the FERC document library for the administrative record of the Lake Powell Pipeline **The docket # is: P-12966**

OR

[CLICK HERE](#) to download a pdf file with active hyperlinks to the complete administrative record as of November 24, 2013

- [Home page of the Lake Powell Pipeline Project](#) (proponents)
- [Home page of Lake Powell Pipeline Facts](#) (opponents)
- [Washington County Water Conservancy District](#)
- [Community Integrated Resources Planning Advisory Committee](#) (CIRPAC)

FINANCIAL MODELING PRESENTATIONS

Community Integrated Resources Planning Advisory Committee (CIRPAC)
November 21, 2013 Meetings

- [Via You Tube](#)
- [Video 01](#)
- [Video 02](#)

- [Video 03](#)
- [Video 04](#)
- [Video 05](#)
- [Video 06](#)
- [Video 07](#)
- [Video 08](#)
- [Powerpoint: Financial Modeling](#)
- [Letter from Economists at University of Utah](#)
- [Economic analysis from University of Utah](#)

Letters can be sent to:

Ms. Kimberly D. Bose, Secretary
 Federal Energy Regulatory Commission
 888 First Street, N.E.,
 Washington, D.C. 20426
 RE: Lake Powell Hydroelectric Project Number P-12966

Electronic Comments up to 6000 characters can be submitted [here](#)

Comments above 6000 characters can be submitted by registering on FERC's website [here](#)

Note: Comments cannot be submitted in Word 2007. For a list of acceptable formats click [here](#)

[Click here](#) for more detailed information on submitting comments

COMMENT LETTERS:

- [Comments by FERC of August 21, 2008](#)
- [Comments by FERC of May 9, 2011](#)
- [Comments by the Kaibab Paiute Nation](#)
- [2011 - Coalition comments](#)
- [2012 - Coalition comments](#)
- [EDF comments](#)
- [State of Colorado comments](#)
- [Western Resource Advocates](#)
- [Response by Utah Division of Water Resources](#)
- [2009 - Coalition comments revised study plan](#)
- [2008 - Coalition scoping comments](#)
- [2007 - Living Rivers scoping comments](#)
- [2011 - Local Waters Alternative](#). Western Resource Advocates.

THE INITIAL STUDY DOCUMENTS

The sensitive material of the archeology report will not be made public. The ethnographic report is still pending.

These documents were submitted in accordance with the Federal Energy Regulatory Commission (FERC) by the Utah Division of Water Resources for the potential licensing of Lake Powell Hydroelectric Project No. 12966, otherwise known as the Lake Powell Pipeline. Originally the proposed project would deliver 100,000 acre-feet (annually) of Colorado River water from Lake Powell to Kanab, Washington and Iron counties. Recently, Iron County decided to drop out of project because of the exorbitant cost. The new projected depletion is 73,000 acre-feet. The project proposal also includes a component to generate electricity to defer a portion of the operating costs.

- [March 11, 2011 - Draft Study Report Transmittal Letter to FERC](#)
- [Draft Air Quality Report](#)
- [Draft Aquatic Resources Report](#)
- [Draft Geology & Soils Report](#)
- [Draft Groundwater Resource Technical Report](#)
- [Draft Land Use Report](#)
- [Draft Noise Report](#)
- [Draft Paleontological Resources Report](#)
- [Draft Recreation Resources Study](#)
- [Draft Socioeconomic & Water Resources Report](#)
- [Draft Special Status Aquatic Species Habitats Report](#)
- [Draft Special Status Plant Species](#)
- [Draft Special Status Wildlife Species Report](#)
- [Appendix B Avian Survey Report](#)
- [Appendix C Avian Survey Report](#)
- [Appendix D Mohave Desert Tortoise Survey Report](#)
- [Appendix E Utah Prairie Dog Survey Report](#)
- [Draft Transportation Report](#)
- [Draft Vegetation Community Report](#)
- [Draft Visual Resources Report](#)
- [Draft Surface Water Quality Report](#)
- [Draft Surface Water Resources Report](#)
- [Draft Climate Change Report](#)
- [Draft Water Needs Assessment Report](#)
- [Draft Wetland Riparian Resources](#)
- [Draft Wildlife Resources Study](#)
- [Draft Alternatives Development Report V3](#)
- [March 2011 - Meeting summary of the study presentations](#)

Modified study reports issued in February of 2012

- [01 - Air Quality Modified](#)
- [07 - Noise Modified](#)

- [10 - Socioeconomic Modified](#)
- [16 - Visual Resources Modified](#)
- [CDF concerns of LPP study reports](#)
- [Utah's response to study reports](#)

ADDITIONAL DOCUMENTATION

- [1995 - Lake Powell Pipeline Feasibility Study](#). Boyle.
- [1995 - Need and Purpose Study](#). Boyle.
- [2000 - Washington County Water Supply Report](#). Hydrosphere.
- [2006 - Enabling Utah legislation for the Lake Powell Pipeline](#)
- [2007 - Application Preliminary Permit LP Pipeline Project](#)
- [2007 -40-year yield of Flaming Gorge Reservoir](#). Reclamation.
- [2008 - Notice of Intent for Lake Powell Pipeline](#). Utah Water Resources.
- [2008 - LP Pipeline Report Socioeconomic Resources](#). Tufte.
- [2009 - Utah Policy for Water Rights on Green River](#). State Engineer.
- [2009 - Upper Colorado River Basin Policy & Issues](#). UDWR.
- [2011 - August Water Issues Task Force Meeting: Funding difficulties for the Lake Powell Pipeline & September Water Issues Task Force meeting](#). MP3 recording. Supporting Document & Salt Lake Tribune [article](#).
- [2011 SECURE Water Report](#). Reclamation.[Document archive at FERC's search engine](#) (Docket P-12966)
- [Lake Powell Pipeline Facts](#)
- [Citizen's for Dixie's Future](#)
- [Western Resource Advocates](#)
- [Motion to intervene: Citizen's For Dixie's Future et al.](#)
- [Motion to intervene: Kaibab Paiutes](#)
- [Motion to intervene: Central Arizona Water Conservation District.](#)
- [LLP Comments by DOI](#)
- [LPP Colorado Comments](#)
- [LPP presentation to Nevada](#)
- [Comments of Living Rivers](#)
- Graphic: [Water per capita use in the Intermountain West](#)

NEWS & OPINION ABOUT LPP

- [Lake Powell Pipeline Funding Clears First Hurdle](#) in Deseret News
- [Lake Powell Pipeline May Take Share of Statewide Sales Tax](#) by Salt Lake Tribune Editorial Board
- [Don't Soak Utahns](#) OpEd by Salt Lake Tribune
- [Lake Powell Pipe](#) OpEd by Salt Lake Tribune

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)

- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
 - September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
 - August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
 - June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
 - December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
 - March 21, 2011 - [Lake Powell Pipeline Documents](#)
 - June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

Oil Shale and Tar Sands Programmatic EIS by the Bureau of Land Management

MAY 05, 2011
BY JOHN WEISHEIT



The Tavaputs Plateau on the approach East Canyon approach in eastern Utah

UPDATES

- All federal leasing for oil shale development in Utah and Colorado have expired or have been relinquished.
- Activities for tar sand development in Utah have ceased.

BACKGROUND

The Energy Policy Act of 2005 generated a Programmatic Environmental Impact Statement (PEIS) conducted by the Bureau of Land Management (BLM) to evaluate the development of tar sands reserves in Utah and oil shale deposits in Colorado, Utah and Wyoming ([Map](#)).

A [lawsuit](#) was later generated by a coalition of environmental groups on the grounds that the PEIS did not sufficiently address the cumulative impacts on the environment. A [settlement](#) was achieved with the federal government to reopen the process to address these concerns.

Of special concern is the impact oil shale and tar sand (OSTS) extraction will have on water resources, especially since the demand for water in the Colorado River basin exceeds supply.

In October of 2010, the Government Accountability Office (GAO) issued this report:

[Energy-Water Nexus: A Better and Coordinated Understanding of Water Resources Could Help Mitigate the Impacts of Potential Oil Shale Development](#)

On 2/15/11 Interior Secretary Ken Salazar issued this [press release](#) with Bob Abbey, the director of the BLM.

On April 14, 2011, BLM published in the Federal Register a [Notice of Intent](#) to Prepare a Programmatic Environmental Impact Statement (PEIS) and Possible Land Use Plan Amendments for Allocation of OSTs.

In the current Notice of Intent, the BLM will consider whether it is still appropriate for the land identified in 2008 to remain open for oil shale and tar sands leasing and development, in light of the nascent character of the technology for development of these resources.

- [Click here](#) to read the press release by Bureau of Land Management. This press release includes the schedule for public scoping meetings in Utah, Wyoming and Colorado.
- [Click here](#) to visit the BLM web site for this Programmatic Environmental Impact Statement
- [Click here](#) to review US Geological Survey documents on oil shale. A USGS Interactive web page is [here](#).
- [Visit Far Country](#) for documents about tar sands and oil shale in the Uinta Basin of Utah.
- [Scoping Summary Report 2006](#)
[Scoping Summary Report 2011](#)

THE ISSUES

BLM needs reliable information on how much oil shale development would change the landscape, and it must understand the potential effects on water supplies, air quality, public health and wildlife before it considers commercial leasing. The BLM does not have enough information to consider dedicating public lands to commercial leasing at this point.

A watershed of two million acres will be destroyed

The BLM plan released in 2008 for oil shale allocated 2 million acres in UT, WY and CO for commercial leasing. This is a massive amount of public, taxpayer land that would be sacrificed for a singular use of the landscape; the BLM should reconsider this decision, and consider alternatives that protect the wildlife habitat, water, and air in the West.

Oil shale is projected to have huge impacts on water supplies in the West.

We don't know about the real impacts of commercial oil shale on water supplies in the West, but we know they will be significant. The latest water use estimates range from 3 times the amount consumed annually in Mesa County, Colorado (110,000 acre ft) to 50% more than the Denver Metro area consumes annually (378,000 acre ft). Either scenario would have enormous impacts on the West. We should not consider commercial development of oil shale before we know those impacts.

Oil shale would require a huge amount of electricity.

Oil shale requires a huge amount of electricity to heat it enough to extract a liquid from the rock. The

Bureau of Land Management's (BLM) initial estimates show that producing 1 million barrels per day would require ten new coal-fired power plants, each with a capacity to power a city of 500,000 people. The BLM should very carefully consider the serious impacts of new energy required for oil shale development.

Oil shale would have significant impacts on wildlife and fish populations.

The land overlying oil shale resources in Utah, Colorado and Wyoming is some of the best wildlife habitat in the West. We don't know the true impacts that oil shale could have on wildlife populations, but we know that elk, deer, and aquatic species could be seriously impacted by a full-scale oil-shale industry. BLM estimated in its draft EIS that large-scale oil shale development would result in the permanent loss of up to 50 percent of BLM stream fisheries in the area of development, up to 35 percent of Colorado River cutthroat trout fisheries, and up to 11 percent of available nest and brood range for blue and sage grouse.

Research and development leases have shown us nothing so far.

We have had 6 research and development projects in place on federal lands since 2007, with 3 more recently approved by Secretary Salazar, and tens of thousands of acres of oil shale on private lands owned by industry. The BLM should not consider allocating millions of acres of western lands for oil shale without any information from oil shale research and development leases on federal lands.

Oil shale is a dirty fuel of the past. We should be focusing on clean fuels of the future.

Simply put, as a nation we should be investing in clean energy sources of the future, not wasting our time promoting dirty energy sources of the past like oil shale and tar sands.

NEWS

- [Click here](#) to read the story by David Williams in the Colorado Independent
- [Click here](#) to read the story by Dennis Web in the Grand Junction Sentinel.
- [Click here](#) to read this Associated Press article by Chi-Chi Zhang.

REPORTS

- [Document archive](#). Far Country.
- [Document archive](#). Western Resource Advocates.
- [1953 - Depletion of water supplies allocated to state of Colorado by Colorado River Compacts](#). Hill. Colorado Water Conservation Board.
Note: Includes discussion of oil shale development.
- [2005 - RAND Report](#).
- [2009 - Colorado University at Boulder Report](#).
- [2010 - CERES Report on Oil Shale/Water Nexus](#).
- [2010 - Fossil Foolishness](#)

DOCUMENT ARCHIVE

Previous Oil Shale & Tar Sands Programmatic EIS

- [Home Page](#)
- [Federal Notice](#)
- [Environmental Impact Statement](#)
- [Record of Decision](#)
- [Additional Information](#)
- Tar Sands: [Basic Information](#)
- Oil Shale: [Basic Information](#)
- [Endangered Species List](#)
- [Comments of California Attorney General](#)

MAPS

- [Most prospective oil shale reserves](#)
- [Special tar sand units in Utah](#)
- [Oil shale - Overburden less than 500 feet](#)
- [Location of research and development tracts](#)
- [Map of lands managed by federal agencies](#)
- [Oil shale lands available Colorado](#)
- [Oil shale lands available Utah](#)
- [Oil shale lands available Wyoming](#)
- [Oil shale tri-state area](#)
- [Tar sands lands available Utah](#)
- [Utah tar sands](#)
- Google Earth kmz file - Oil shale preferred
- Google Earth kmz file - Tar sands preferred

DOCUMENT CACHE
2008 Final PEIS

- [Volume One](#)
- [Volume Two](#)
- [Volume Three](#)
- [Volume Four](#)

1973 Prototype Oil Shale Leasing EIS

- [Volume One](#)
- [Volume Two](#)
- [Volume Three](#)
- [Volume Four](#)
- [Volume Five](#)
- [Volume Six](#)

1983 Naval Oil Shale Reserves EIS

- [Volume One](#)

Public scoping meetings for the Department of Energy Uranium Leasing Program

JULY 28, 2011
BY JOHN WEISHEIT



The Dolores River above Bedrock, Colorado

Note: The Draft PEIS has been released and public comments are due on May 31, 2013.

[Click here](#) to visit the DOE website

####

Scoping Comments of participating NGOs:

- [Dolores River Coalition](#)
- [City of Ophir & Telluride](#)
- [Sheep Mountain Alliance](#)
- [The Wilderness Society](#)
- [Uranium Watch; Exhibit A: Ecological Effects; Exhibit B: ULP History](#)

[Chronology of the 20-year withdrawal of Grand Canyon uranium claims](#). Grand Canyon Trust.

###

Public scoping meeting for the U.S. Department of Energy (DOE) Uranium Leasing Program Programmatic Environmental Impact Statement (DOE/EIS-0472)

COMMENTS ARE DUE SEPTEMBER 9, 2011

- [Click here](#) to read a press article from the Durango Herald
- [Click here](#) to read a press article from the Telluride Daily Planet
- [Click here for Federal Register Notice](#)
- [Link to Sheep Mountain Alliance action alert](#)

Contact Information

Mailing Address:

Laura Kilpatrick, Realty Officer
11025 Dover Street, Suite 1000
Westminster, CO 80021
Telephone: (720) 880-4338
E-mail: ULinfo@lm.doe.gov

MEETING SCHEDULE

August 8, 2011
6:30 to 9 pm
Montrose Paviion
1800 Pavilion Drive
Montrose, Colorado 81401

August 9, 2011
6:30 to 9 pm
Sheridan Opera House
110 North Oak Street
Telluride, Colorado 81435

August 10, 2011
6:30 to 9:00 pm
Naturita Community Building
411 West 2nd Street
Naturita, Colorado 81422

August 11, 2011
6:30 to 9:00 pm
San Juan County Court House
Commission Chambers
117 South Main Street
Monticello, Utah 84532

Background Information

The [Energy Policy Act of 2005](#) is responsible for the increasing energy related activities and controversies across the nation and in the upper Colorado River basin. For example, hydrofracking of natural gas fields, exploitation of oil shale and tar sand reserves, and the mining and milling of nuclear fuels.

In the case of nuclear fuels, the market is not orientated towards domestic needs; these resources will be exported and will render the Colorado River basin to deal with the subsequent pollution and radiological exposure impacts.

For job creation, the reclamation of existing mining and milling operations during the Cold War Era is a more appropriate activity for the Uravan Mineral Belt of western Colorado.

DOE and citizens must make recommendations to Congress to repeal the Energy Policy Act of 2005 and create instead a domestic policy that initiates energy conservation/efficiency with a framework of aggressively implementing renewable energy resources. Such energy policies exist in many developing countries, especially in the wake of the Fukushima Daiichi nuclear disaster in Japan, which is also responsible for the current depressed prices in uranium open market.

To be continued....

This study was generated by a [lawsuit](#)

[Link to Programmatic Environmental Impact Statement](#) (PEIS)

Links to the previous Environmental Assessment

- [Link to Program Summary](#)
 - [Link to Current Status](#)
 - [Link to the Environmental Assessment](#)
 - [Link to FONSI](#)
 - [Link to Map](#)
-

Flaming Gorge Pipeline Documents

AUGUST 03, 2011
BY JOHN WEISHEIT



Canyon of the Lodore in Dinosaur National Monument

FERC has dismissed (2/23/12) the application by WYCO on grounds that the application is premature. [Click here](#) to read the order.

[Press from Wyoming](#) about modifying operations at Flaming Gorge Reservoir for possible releases to recover downstream reservoirs such as Lakes Powell & Mead.

PRESS COVERAGE

- [The Coloradoan](#)
- [Deseret News](#)
- [The Republic](#)
- [The Denver Post](#)
- [Salt Lake Tribune](#)

- [The Pueblo Chieftain](#)

[CLICK HERE](#) to read press release and motion to intervene by coalition of environmental groups

On July 22, 2011 the US Army Corp of Engineers (ACoE) [issued a notice](#) that the permit application (and EIS) was canceled for the Million Conservation Resource Group for a proposed pipeline project from Flaming Gorge Reservoir (Green River in Utah and Wyoming) to the Front Range cities and farms of Colorado.

The application will now be the consideration of Federal Energy Regulatory Commission for reasons of including small hydropower facilities where gravity along the pipeline route allows for power generation.

The assigned Docket Number for the application of the Regional Watershed Supply Project is P-14263, and was submitted by Aaron Million of Wyco Power and Water Inc. The FERC website is [here](#), but be aware the two documents listed are not yet downloadable for some reason. After several attempts, we did manage to get one document, which is listed below.

[Application](#) to FERC by Wyco Power and Water

This site will post new information when it becomes available.

- [Public notice of withdrawal](#)
- [Flaming Gorge Cost Analysis](#). Western Resource Advocates.

PUBLIC ADVOCACY CAMPAIGNS

- [Western Resource Advocates](#)
- [What you can do](#)
- [Sign a petition](#)
- [Watch a video](#)

NEWS

- [Click here](#) to read further information about this story from the Denver Post
- [Click here](#) to read further information about this story from The Coloradoan
- [Click here](#) to read this story from the Associated Press
- [Click here](#) to read this story from High Country News
- [Click here](#) to read about the Flaming Gorge Pipeline in the Denver Post
- [Click here](#) to read the story from the Grand Junction Free Press

DOCUMENTS

Public Notices

- [March 20, 2009 - Public Notice One](#)
- [May 8, 2009 - Public Notice Two](#)

- [June 4, 2009 - ACoE Newsletter](#)
- [August 11, 2009 - Public Notice Three](#)

Federal Register

- [March 20, 2009 - Federal Register One](#)
- [May 8, 2009 - Federal Register Two](#)
- [August 11, 2009 - Federal Register Three](#)

Scoping

- [April 9, 2009 - Public Scoping Information](#)
- [February 12, 2010 - Scoping Report](#)
- [Public Meeting Notes](#)
- [Tribes](#)
- [Citizen Comment Forms Redacted](#)
- [Citizen Email Redacted](#)
- [Citizen Redacted](#)
- [Cities](#)
- [Counties](#)
- [Federal](#)
- [Organizations](#)
- [Special District](#)
- [States](#)

Analysis

- [Reconnaissance Level Cost Estimates for Agricultural and New Supply Strategy Concepts Technical Memorandum](#)
- [Bureau of Reclamation Report to Upper Colorado River Commission](#)

Maps

- [March 27 2009 - Overall Map MCRG Preferred Alignment](#)
 - [April 17, 2009 - Reservoir Cactus Hill](#)
 - [April 17, 2009 - Reservoir Lake Hattie](#)
 - [April 17, 2009 - Reservoir T Cross](#)
 - [April 17, 2009 - Reservoir West End](#)
 - [June 23, 2009 - Alternative B](#)
 - [June 23, 2009 - Alternative C](#)
 - [June 23, 2009 - Alternative D](#)
 - [June 23, 2009 - Alternative E](#)
 - [June 24, 2009 - Diversion Alternatives Overview](#)
-

Administrative Record of Mining Oil Shale Deposits in Eastern Utah

AUGUST 10, 2011
BY JOHN WEISHEIT

Oil shale and tar sands remains a speculative industry in the arid lands of the Colorado Plateau. A general lack of water is why the industry will never be viable. Even if alternative chemical washes are used to separate bitumen from sand, for example, it still requires 1.5 to 2 barrels of water to refine a single barrel of synthetic crude. What this extraction will accomplish is physical damage to the Colorado River watershed, which supplies culinary water to nearly 30 million people. It will also create more CO₂ in the atmosphere, which is the #1 killer of the Rocky Mountain snowpack, which provides 85% of the Colorado River's total annual water supply. Our watershed needs investors to create a reliable energy supply that will heal the water supply of the Colorado River, not destroy it.

HOW TO GET INVOLVED

Click here to send a message to the **Department of Water Quality** about proposed strip mining operations by **Red Leaf Resources** in the Uinta Basin.

New Information Regarding Red Leaf Resources Mining Permit

- [Experimental Capsule Description](#) (Earth Ovens)
- [Water Discharge Permit](#)

STATE LAND INVENTORY FOR OIL SHALE IN UTAH

- 93,000 State Trust acres are leased for oil shale
- A typical lease lasts 10-years
- Not all land can be surface mined (some requires underground mining)

ADMINISTRATIVE RECORD: Red Leaf Resources

- [Living Rivers v Red Leaf Resources](#)
- [Final Memo in Opposition Motion in Limine](#)
- [Final MSJ Response](#)
- [Final Response to DOGM's Pre-Hearing Brief](#)
- [Final Response to DOGM's Reply](#)
- [DOGM Pre-Hearing Brief](#)
- [RED LEAF'S PRE-HEARING BRIEF](#)
- [RLR PRE-HEARING REPLY BRIEF](#)
- [RLR'S MEMO IN SUPPORT OF MOTION FOR PARTIAL SUMMARY DECISION](#)
- [RLR'S MEMO IN SUPPORT OF MOTION IN LIMINE](#)
- [RLR'S MOTION FOR PARTIAL SUMMARY DECISION](#)

- [RLR'S MOTION IN LIMINE](#)
- [DEQ comments Red Leaf 2012 Feb](#)
- [DOGM Red Leaf Hearing Notice Feb 2012](#)
- [DWR comments Red Leaf 2012 Feb](#)
- [LivingRivers RAA Red Leaf](#)
- [Red Leaf Informal Hearing Transcript 2012 March](#)
- [Red Leaf NOI protest](#)
- [Weisheit Declaration](#)

ADMINISTRATIVE RECORD: Discharge permit Red Leaf Resources

- [Draft Permit](#)
- [Draft Statement of Basis](#)
- [Ground Water Discharge Permit Application June 2013](#)
- [SOB Figure 1 Site Location Map](#)
- [SOB Figure 2 EPS Site Plan](#)
- [SOB Figure 3 Generalized Strat Column Green River Formation](#)
- [SOB Figure 4 EPS Capsule Roof Floor and Wall Details](#)
- [Supplemental Seep and Spring Inventory May 2013](#) (large file)

Utah Division of Oil, Gas and Mining (UDOGM)

- [UDOGM permit files \(complete\)\(Username and Password: ogmguest\)](#)
- [UDOGM Board Notes and Dockets](#)

Red Leaf Resources Inc. (oil shale mining permits)

- [Red Leaf Resources @ Southwest #1](#)
- [Red Leaf Resources @ Southwest #1b](#)
- [Red Leaf Resources @ Site #1](#)
- [Red Leaf Resources @ Site #3](#)
- [Red Leaf Resources @ Site #4](#)
- [Red Leaf Resources @ Site #6](#)
- [Red Leaf Resources @ Site #7](#)
- [Red Leaf Resources @ Site #8](#)
- [Red Leaf Resources @ Site #9](#)

OIL SHALE STRIP MINING @ INDIAN RIDGE

- [Notice of Intent \(NOI\) to Commence Large Mining Operations.](#) Red Leaf Resources.
- [November 2011 - Red Leaf NOI Protest.](#) Living Rivers and Western Resource Advocates.
- [February 2012 - Notice of informal hearing for Red Leaf Resources.](#)
- [February 2012 transcript of Red Leaf hearing.](#)
- [March 2012 - Living Rivers request for agency action](#)
-

To SUBMIT A LETTER of concern to Utah Division of Oil, Gas and Mining [click here](#)

BUREAU OF LAND MANAGEMENT

- [BLM EA on paving of Seep Ridge Road in Uintah County](#)

Oil Shale & Tar Sands Programmatic EIS

- [Home Page](#)
- [Federal Notice](#)
- [Environmental Impact Statement](#)
- [Record of Decision](#)
- [Additional Information](#)
- Tar Sands: [Basic Information](#)
- Oil Shale: [Basic Information](#)
- [Endangered Species List](#)
- [Comments of California Attorney General](#)

CORPORATE WEBSITES

- [Company Profiles](#)
- [National Oil Shale Association](#)
- [AuraSource \(China\)](#)
- [Nevtah](#)
- [Earth Energy Resources](#)
- [Enshale & Bullion Monarch Mining](#)
- [Enefit](#)
- [Oil Shale Exploration Company \(Now Enefit\)](#)
- [Red Leaf Resources](#)
- [Red Leaf Presentation](#)
- [Video about Red Leaf](#). EcoFLight.
- [Red Leaf oil shale update](#)
- [Shell Mahogany Research Project](#)
- [Temple Mountain Energy](#)
- [TomCo Energy](#)
- [National Oil Shale Association](#)

DOCUMENTS

- [1967 - Northcutt Ely's Water Budget for Oil Shale Production](#)
- [1974 - Oil Shale Development](#). League of Women Voters.
- [Oil shale library](#). Headwaters Institute.
- [2011 - Testimony of Bill Eikenberry \(PIONEERS Act\)](#)
- [2010- Oil Shale in the West: 14 Unanswered Questions](#). Headwater Economics.
- [2010 - Oil shale update](#). National Oil Shale Association.
- [2010 - CERES Report on Oil Shale/Water Nexus](#).
- [2010 - Energy-Water Nexus: Better Understanding of Water Resources](#). GAO.

- [2008 - Oil Shale Report](#). Congressional Research Service.
- [2008 - Water Rights and Oil Shale](#). Congressional Research Service.
- [2012 - Energy Water Nexus for Utah](#)
- [Oil Shale Politics in Utah: Holding Government Officials, Lobbyists, and Corporate Management Accountable to the Public](#)

ECONOMIC VIABILITY

- [2013 - Executive Summary: Tar Sands Oil Shale Market Assessment](#). U of U.
- [2013 - Oil Shale Market Assessment](#). U of U.
- [2011 - Economic Impact of Marcellus Shale Gas](#). Cornell.
- [2011 - Marcellus Shale: What Are The Limitations?](#) Cornell.
- [2010 - Oil Shale: 14 Unanswered Questions](#). Headwater Economics.
- [2008 - North American Oil Sands History Development Prospects](#). Congressional Research Service.
- [2008 - Developments In Oil Shale](#). Congressional Research Service.
- [2007 - Testimonies Oil Shale](#). RAND.
- [2006 - Oil Shale History Incentives Policy](#). Congressional Research Service
- [2005 - Oil Shale Development USA](#). RAND.

ENDANGERED AND THREATENED SPECIES

- [Critical Habitat Designation](#). USFWS.
- [Mexican-spotted owl](#)
- [Greater sage grouse](#)
- [Graham's Penstemon \(beardtongue\)](#) ([Photo](#)) ([Recent news](#)) ([Aid to identify](#))
- [Screen of endangered species at Red Leaf Resources](#)
- [Map 01 & Map 02: endangered species @ Red Leaf Resources](#)
- [Critical Habitat Map](#). The Wilderness Society.
- [Graham's beardtongue](#). Salt Lake Tribune.

EPA - ENVIRONMENTAL PROTECTION AGENCY

- [2010 - Fact sheet on ozone standards](#)
- [NSPS Subpart Ja](#)

GEOLOGY

- [Oil Shale and Tar Sands web page](#). Utah Geologic Survey.
- [Tar Sands Bibliography](#) (2009). UGS.
- [USGS publications library](#)
- [2008 - Oil shale and tar sands Programmatic EIS](#). BLM.
- [2008 - Holocene Debris Flows on the Colorado Plateau](#). Webb.
- [2007 - Analysis of Utah Tar Sands](#). UGS.
- [1992 - Hydrocarbons along proposed Book Cliffs Highway](#). UGS.
- [1975 - Mineral Resources of Uintah Ouray Reservation](#). USGS.

BIBLIOGRAPHIES

- [Uinta Basin Geology](#)

LEGAL

- 2014 - [White River development](#). Press release from Western Resource Advocates.
- [Comments on Air Quality from Oil and Gas Development in Dixie Nat. Forest](#)
- [2010 - Montana Environmental Information Center v BLM](#)
- [2010 - Mexican spotted owl critical habitat decision](#)
- [2010 - History of Mexican spotted owl appeal](#)

MAPS & GIS

- BLM PEIS: [Tri-state deposits](#)
- [Uinta Basin](#)
- **Green River Refinery** (proposed) ([click here](#))

SITLA

- [Oil shale resource ownership](#)
- [Parcels in Grand County](#) (14.9%; about 550 sq. miles)

University of Utah

- [Interactive Map](#)

PHOTOS

- [Book Cliffs Divide Road Grand County; Reduced East Canyon Grand County Approach; Reduced Red Leaf Resources @ Indian Ridge, June 2010](#)

NEWS

- [6/15/10 - Wildflower vs. Oil Shale](#). Salt Lake Weekly.
- [11/30/10 - GAO: More research needed on oil shale, water](#)
- [9/17/2007 - Tar sands, oil shale](#). Energy Bulletin.
- [3/24/10 - Decision on wildflower protection expected soon](#). Assoc. Press.
- [3/29/10 - Sage Grouse will play role in Western energy development](#). Marten Law.
- [4/29/10 - Salazar aide - Oil shale not ready for prime time](#)

NON-PROFIT ORGANIZATIONS

- [Document archive](#). Western Resource Advocates.
- [Oil Shale Facts](#)

- [Fossil Foolishness](#). Western Resource Advocates
- [Northern Rockies Rising Tide](#)
- [CERES Report on Oil Shale/Water Nexus](#).
- [Tar Sands: Feling the climate crisis](#). FOE Europe.
- Dirty Oil. Greenpeace.
- [2011 - Between a Rock and a Dry Place: The Impact of Oil Shale Development and Climate Change on the Colorado River Basin Water Supply](#). NRDC.

TRADE ASSOCIATIONS

- [White Paper](#). Utah Mining Association.

UNIVERSITY

- [2009 - Oil Shale Report](#). University of Colorado at Boulder.
- [University of Utah ICSE Digital Repository](#)

USGS

- [Oil shale and tar sands interactive web page](#) (excellent resource)
- [1995 - Surface disturbances and the role of accelerating erosion](#). Belnap.

UTAH GOVERNMENT

- [Home page](#): Utah Oil, Gas & Mining
- [Public records](#): Utah Oil, Gas & Mining. (Username and password is ogmguest)
- [FTP Site](#). Utah Oil Gas & Mining
- [PR Springs water right 01 and 02](#). Utah Division of Water Rights.
- [1980 - An Assessment of Oil Shale and Tar San Development](#)
- [2009 - Bibliography of tar sand deposits & map](#). Utah Geological Survey.
- [2009 - Approval of PR Springs strip mine for tar sand](#). UDOGM.
- [2010 - Notice regarding PR Springs Mine to Grand County Council](#). UDOGM.
- [2012 - Energy Water Nexus for Utah](#)

VIDEO

- [Fossil Foolishness](#). Western Resource Advocates.
- [A film by Leslie Iwerks](#)
- [The Tar Sands Blow](#)
- [Tar Sands](#), Canadian Broadcasting Corporation
- [Red Leaf Resources](#). EcoFLight.

WILDLIFE

Southest Utah (includes East Tavaputs Plateau)

- [Amphibian Inventory](#). DWR.
- [Avian Inventory](#). DWR.

- [Bison Reintroduction](#). DWR.
 - [Black Bears](#). DWR
 - [Ecosystem Evaluation](#). DWR.
 - [Mammal Inventory](#). DWR.
 - [Reptile Inventory](#). DWR.
-

Clark, Lincoln, and White Pine Counties Groundwater Development Project



SEPTEMBER 02, 2011
BY JOHN WEISHEIT

COMMENT PERIOD HAS CLOSED

- [Home Page](#). BLM website
- [Draft EIS](#). BLM website.
- [Final EIS](#). BLM website.
- [Record of Decision](#). BLM website.
- [Documents and Maps](#). BLM website.
- [SNWA's document archive](#).
- [SNWAs Ability To Finance Project \(Exhibit 383\)](#). Hobbs & Bonow Report.
- [Publications of Great Basin Water Network](#).

ADDITIONAL INFORMATION:

- [Great Basin Water Network](#)
- [Progressive Leadership Alliance of Nevada](#)
- [Federal Register Notice](#)
- [Resources: documents and maps](#)
- [Draft EIS web site location](#)
- [BLM Newsletters](#)

- [Frequently asked questions](#)

Send comment letters by October 11, 2011 to:

Penny Woods
Project Manager
BLM Nevada Groundwater Projects Office
P.O. Box 12000
Reno, NV 89520
Phone: 775-861-668
Via fax: 775-861-6689
Via e-mail: nvgwprojects@blm.gov

The BLM ([project home page](#)) has prepared an environmental impact statement (EIS) on a proposed action submitted by Southern Nevada Water Authority (SNWA) in 2004 to obtain rights-of-way across land managed by the BLM. If granted, the rights-of-way would enable SNWA to develop groundwater rights authorized for development by the Nevada State Engineer. SNWA's need for the project is to diversify its water resources to ensure it can continue to meet water supply obligations and meet projected future water demands. The project would convey up to 155,000 acre-feet per year (afy) of water, with up to 122,000 afy of groundwater developed by SNWA and the remaining capacity provided for Lincoln County. The SNWA portion includes pending water rights applications in Spring, Cave, Delamar, Dry Lake and Snake valleys. The proposed facilities associated with this Project are described below:

Water Facilities

- Pipelines: approximately 306 miles of buried water pipelines, between 16 and 84 inches in diameter
- Pumping Stations: five pumping station facilities
- Regulating Tanks: six regulating tanks, anticipated to have a capacity of between 3 and 10 million gallons each
- Pressure Reducing Stations: three facilities
- Water Treatment Facility/Buried Storage Reservoir: one facility site with the Water Treatment Facility anticipated to be a 150 million-gallon per day facility and the buried storage reservoir a 40-million gallon buried facility.

Power Facilities

- Power Lines: approximately 323 miles of 230 kilovolt (kV), 69 kV, and 25 kV overhead power lines
- Electrical Substations: two primary electrical substations (230 kV to 69 kV) and five secondary substations (69 kV to 25 kV)

SNWA Agreement with Lincoln County Water District

In January 2006, SNWA and the Lincoln County Water District entered into an agreement allowing Lincoln County to obtain capacity rights in the SNWA Project. This

agreement allows Lincoln County to transfer water through the SNWA pipeline. Lincoln County is responsible for obtaining the water rights for the water that would be conveyed and any actions required to develop and convey the water to the SNWA pipeline. While a specific agreement on a capacity amount has not yet been determined, it is anticipated that the SNWA Project may be used by Lincoln County to convey up to 36,000 afy for Lincoln County customers in Coyote Spring Valley. Lincoln County does not currently have any specific plans or proposals for development of water to be conveyed through the SNWA Project.

Water Rights Process

The BLM participates in the water rights process in the same manner as any member of the public. This includes protesting water rights applications that may affect resources for which BLM is responsible. BLM was a protestant on the Spring, Dry Lake, Delamar, Cave, and Snake valleys water rights applications submitted by SNWA. The BLM withdrew their protests for Spring, Dry Lake, Delamar, and Cave valleys after completing Stipulated Agreements with SNWA.

Glen Canyon Dam Long-Term Experimental and Management Plan & Environmental Impact Statement

OCTOBER 18, 2011
BY JOHN WEISHEIT

It is apparent that the seven basin states and the advocates for maximum hydropower revenue remain resistant to the Grand Canyon Protection Act of 1992. This essentially means that water molecules and electrons are more important than the Grand Canyon.

Once again, any discussion of dam decommissioning has been eliminated from the EIS process. However, excessive human consumption is performing so well that Lakes Mead and Powell should be empty in no time.

In the meantime, the "water buffalos" continue to pray for rain because it is the only response they have left, having squandered 70-years of opportunity to amend this situation that the "water owls" said would be their 21st century inheritance.

The current state of ocean temperatures in the Atlantic and the Pacific are in charge of the climate regime of aridity for the moment, if not for the rest of the century. If the foretold watershed train wreck does indeed occur, the recalcitrant western states deserve the consequences of their poor performance and behavior.

[CLICK HERE](#) to read Final LTEMP DEIS comments by Living Rivers, et al., posted on May 9, 2016.

DISCUSSIONS OF ALTERNATIVES WITH ADAPTIVE MANAGEMENT MEMBERS

- [May 8, 2013 - Discussion of LTEMP EIS Alternatives](#). Adaptive Management Program.
- [August 20, 2013 - Discussion of EIS Alternatives](#). Adaptive Management Program.
- [February 20, 2014 - Discussion of LTEMP EIS Alternatives](#).
- [April 21, 2014 - Discussion of LTEMP EIS Alternatives](#).
- [Hydropower advocacy](#). Western Area Power Administration.

ADDITIONAL INFORMATION ([click here](#)): July 2, 2012 is deadline for additional comments on proposed alternatives and there is a two day meeting beginning August 22nd with the federal scientists of the Adaptive Management Program in FLagstaff.

Note: This meeting was postponed. Letters submitted included the following:

- [Basin States](#)
- [CREDA](#)
- [Grand Canyon Trust](#)

- [IEDA](#)

LETTERS OF CONCERN FROM LIVING RIVERS TO SECRETARY SALAZAR

- [Click here](#) to download a letter from Living Rivers and presented to Secretary Salazar on Monday April 2, demanding his immediate intervention on the handling of the LTEMP EIS.
- [Click here](#) to download Salazar's response to Living Rivers letter of Monday April 2, demanding his immediate intervention on the handling of the LTEMP EIS.
- [Click here](#) to download the LRs' response to Salazar on May 27, 2012, demanding again his immediate intervention on the handling of the LTEMP EIS.
- [Living Rivers' scoping letter](#)

LTEMP EIS Upcoming Public Meetings and Webinars to Discuss Alternatives

The public is invited to participate in a two-day meeting on alternatives being considered for inclusion in the Glen Canyon Dam Long Term Experimental and Management Plan Environmental Impact Statement (LTEMP EIS) being prepared by the Bureau of Reclamation (Reclamation) and the National Park Service (NPS). The meeting will be held on April 4 and 5 at the High Country Conference Center located at 201 West Butler Avenue, Flagstaff, AZ 86001. The meeting is tentatively scheduled for 8 a.m. to 5 p.m. both days.

The preliminary draft alternatives being considered for evaluation will be presented and discussed at this meeting hosted by Reclamation and the NPS. Stakeholders and other attendees who have alternatives to propose should bring those ideas to the meeting. PowerPoint slides and posters are welcome. To be added to the agenda, register for the meeting as explained below, provide your email address, and indicate that you will be presenting an alternative.

Those wishing to attend the meeting are encouraged to register through the LTEMP EIS Web site at <http://ltempeis.anl.gov/involve/pubschedule/>, but registration is not required.

Alternatives to be considered in the EIS must meet the purpose and need of the LTEMP. The EIS will document and evaluate the impacts of the alternatives carried forward for analysis.

WEBINARS

<http://ltempeis.anl.gov/involve/pubschedule/>

Tuesday, March 27, 2012, 1:00pm to 3:00pm Mountain Daylight Time

URL for meeting:

<https://doilearn.webex.com/doilearn/j.php?J=685259744&PW=NNWI3N2QxOTY2>

Meeting number: 685 259 744

[Register for Meeting](#)

Tuesday, March 27, 2012, 6:00pm to 8:00pm Mountain Daylight Time
URL for meeting:

<https://doilearn.webex.com/doilearn/j.php?J=684486224&PW=NZjQ1MGY5ZjFk>

Meeting number: 684 486 224

[Register for Meeting](#)

Note: The public scoping period was closed on January 31, 2012

List of letters from participating organizations

- [Living Rivers, Colorado Riverkeeper, Center for Biological Diversity and River Runners for Wilderness](#)
- [Lee's Ferry Anglers](#)
- [Glen Canyon Institute](#)
- [Grand Canyon River Guides](#)
- [Grand Canyon Trust and National Parks & Conservation](#)
- [Grand Canyon Wildlands Council](#)
- [River Concessions](#)
- [The Seven States](#)
- [March 2012 - LTEMP EIS Scoping Report \(complete\)](#)
- [1990 - Scoping Report for GC Dam EIS](#)

###

Argonne National Laboratory will prepare the EIS and the website is located [HERE](#).

- [PRESS RELEASE](#) by National Park Service
- [July 2011 Federal Register notice](#)
- [October 2011 Federal Register notice](#)
- [December 2011 Federal Register notice](#)
- [Frequently Asked Questions](#)

SCOPING COMMENTS are due January 31, 2012. The date was extended from the original due date of December 30, 2011.

Here is how or where to submit comments:

- Website: <http://ltempeis.anl.gov>. (the preferred method)
- Mail: Glen Canyon LTEMP EIS Scoping, Argonne National Laboratory, EVS/240, 9700 S. Cass Avenue, Argonne, IL 60439.

DOCUMENTS OF THE SUSPENDED EIS OF 2007

- Talking Points: [Click here](#) to read the scoping document of Living Rivers, Colorado Riverkeeper and the Center for Biological Diversity from the **suspended** EIS of 2007 called Long-Term Experimental Plan (LTEMP).
- More talking points: [Click here](#) to read the 2005 scoping document of Living Rivers & Colorado Rivekeeper.

- And more talking points: [Click here](#) to read scoping document asking for a Supplemental EIS in 2004.

DOCUMENTS OF THE SUSPENDED EIS OF 2007

- [Click here](#) to visit the web site of the suspended LTEP EIS of 2007.
- [Click here](#) to read the legal settlement agreement that launched the LTEP EIS of 2007, which was ultimately suspended by the Department of Interior.

CITIZEN'S GUIDES TO NEPA

- [Citizen's Guide to NEPA](#)
- [Section 7 Consultation Handbook](#)
- [Regulations for implementing the procedural provisions of NEPA](#)
- NEPA 101. Dinah Bear.
- [Climate Change Effects Proposed Actions Effects On Proposed Actions Under NEPA](#). Dinah Bear.

PROJECT LEADS

- Kirk LaGory (Argonne): 630-252-3169; lagory@anl.gov
- Rob Billerbeck (NPS): 303-987-6789; rob_p_billerbeck@nps.gov
- Beverley Heffernan (Reclamation): 801-524-3712; BHeffernan@usbr.gov

PUBLIC RELATIONS

- Barry Wirth (Reclamation) 801-524-3774; BWirth@usbr.gov
- Maureen Oltrogge (NPS) - 928-638-7779; maureen_oltrogge@nps.gov

SCOPING DOCUMENTS

The scoping meetings were conducted in November of 2011.

- [Posters](#)
- [Powerpoint Presentation](#)
- [Fact Sheet](#)
- [Decommissioning Alternative](#). Living Rivers.
- [Water Conservation Alternative](#). Glen Canyon Institute.

ON THE COLORADO ARTICLES ABOUT GC DAM

- [A Legal History of Operations at GC Dam](#)
- [The Beginning Years of the Adaptive Management Program](#)
- [Adaptive Management Program Documents](#)
- [Rearranging the Deck Chairs at GC Dam](#)
- [Hydropower is likely to have no future on the Colorado](#)
- [The Endangered Fish of the Colorado River](#)

BASELINE DATA (Department of Interior)

- [Click here](#) to visit the "Science" section
- [1974 - National Park Service Documents](#)
- [1970s - Lake Powell Research documents](#)
- [1987 - GCES Draft Report](#)
- [1988 - GCES Final Report](#)
- [1988 - GCES Technical Summaries](#)
- [1996 - Original EIS on operations at GC Dam.](#)

DESIRED FUTURE CONDITIONS

- [1996 - Objectives](#) (Original Goals and Objectives)
- [2010 - Desired Future Conditions](#)
- [2011 - Desired Future Conditions](#)
- [2012 - Desired Future Conditions](#)

SCIENCE DOCUMENTS

- [Home page of Grand Canyon Monitoring and Research Center \(USGS\)](#)
- [2003 - Science Advisors Evaluating a Temperature Control Device for Glen Canyon Dam.](#) Garrett.
- [2005 - SCORE Report](#)
- [2007 - Mechanical Sediment Augmentation.](#)
- February 2010 - [Completed science reviews on 2008 high flow experiment \(HFE\)](#)
- [2010 - Completed science reviews on 2008 HFE](#)
- [2010 - Sediment Transport During Three Controlled-Flood Experiments](#)
- [2011 - Analysis of 2000 low steady flow](#)

ENVIRONMENTAL ASSESSMENTS (Recent)

- [2011 - Protocol for High Flow Experiment to 2020; HFE Biological Assessment;](#)
- [2011 - Non-native Fish Control; NNFC Biological Assessment](#)
- [2008 - High Flow Experiment;](#)
- 2002 - Proposed Experimental Releases from Glen Canyon Dam and Removal of Non-Native Fish: [Environmental Assessment;](#) [Supplemental Draft EA;](#) [Response to public comments.](#)
- [1999 - EA on Temperature Control Device; Science Review.](#)

CRITIQUES OF THE ADAPTIVE MANAGEMENT PROGRAM

- To read objective evaluations of the Adaptive Management Program Click [here](#) (Susskind) and [here](#) (Camacho) and [here](#) (Fellers).
- Fellers' summary as a powerpoint presentation is [here](#).
- Click [here](#) to read report by Lenard.

THE DAM DECOMMISSIONING ALTERNATIVE

- [The One-Dam Solution](#)
- [2000 - Undamming Glen Canyon](#). Miller.

OTHER

- [Key Documents of the Adaptive Management Program \(AMP\)](#)
 - [Document archive of AMP](#)
 - [1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.
 - [Hydropower at Glen Canyon Dam](#). Harpman.
-

GASCO's proposed watershed invasion of Desolation Canyon

MARCH 19, 2012
BY JOHN WEISHEIT

[News from Greenwire](#)

[From the Salt Lake Tribune](#)

[Response by Living Rivers](#)

Waiting Period Ends April 16, 2012

Following conclusion of the waiting period, a Record of Decision (ROD) will be prepared and signed to disclose the BLM's final decision and any project Conditions of Approval.

- [BLM web site for the GASCO Project](#)
- [The alternatives](#)
- [All maps of the alternatives](#)
- [AltA; AltB; AltC; AltD; AltE; AltF;](#)
- [BLM's Desolation wilderness map](#)

Under Alternative F, the Agency Preferred Alternative, up to 1,298 new gas wells would be drilled from 575 well pads over a period of 15 years, resulting in approximately 3,604 acres of disturbance (about 2 percent of the total project area). Water evaporation facilities were reduced to 78 acres. This is adequate for the first 5 years of the project while other disposal options are developed and implemented. The BLM also incorporated the measures to minimize impacts to resources, while allowing for the development of valid existing rights. No surface disturbance would occur below the rim of Nine Mile Canyon, within one-half mile of the Green River, in 100-year floodplains, or endangered fish critical habitat.

Under the Proposed Action (Alternative A), Gasco Energy Inc. would develop their existing oil and gas leases by drilling 1,491 wells from the same number of well pads over a period of 15 years, and by constructing 143 acres of evaporative ponds to dispose of produced water. The Proposed Action would result in approximately 7,584 acres of surface disturbance.

This Final EIS is not a decision document. Following conclusion of the 30-day availability period, a ROD will be signed to disclose the BLM's final decision and any project Conditions of Approval. Availability of the ROD will be announced through local media, the Vernal BLM Web site, and Utah BLM's Environmental Notification Bulletin Board.

Copies of the Final EIS are available for public inspection at the BLM Vernal Field Office, 170 South 500 East, Vernal, Utah, and at the following Web site:

http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_.html

Contact information:

Stephanie Howard
Environmental Coordinator
435-781-4400
170 South 500 East
Vernal, Utah, 84078
email: BLM_UT_Vernal_Comments@blm.gov

DOCUMENTS

[GASCO EIS Entire Document](#)

- [00 Gasco Errata to Final EIS.pdf](#)
- [01 Gasco Dear Reader Letter.pdf](#)
- [02 Gasco Abstract.pdf](#)
- [03 Gasco Table of Contents.pdf](#)
- [04 Gasco Executive Summary.pdf](#)
- [05 Gasco Chapter 1. Introduction and Background.pdf](#)
- [06 Gasco Chapter 02. Proposed Action and Alternatives](#)
- [07 Gasco Chapter 3. Affected Environment](#)
- [08 Gasco Chapter 4. Environmental Consequences](#)
- [09 Gasco Chapter 5. Consultation and Coordination](#)
- [10 Gasco References](#)
- [11 Gasco Abbreviations and Glossary](#)
- [12 Gasco Index](#)
- [13 Gasco Maps](#)
- [14 Gasco Appendix A. Interdisciplinary Team Checklist](#)
- [15 Gasco Appendix B. TES Plant Conservation Measures](#)
- [16 Gasco Appendix C. Visual Analysis](#)
- [17 Gasco Appendix D. Special Status Species Analysis](#)
- [18 Gasco Appendix E. Soil Characteristics](#)
- [19 Gasco Appendix F. Determination on Special Status Species](#)
- [20 Gasco Appendix G. Surface Reclamation and Monitoring Plan](#)
- [21 Gasco Appendix H. Near-field Air Quality](#)
- [22 Gasco Appendix I. Far-field Air Quality](#)
- [23 Gasco Appendix J. Ozone Impact Assessment](#)
- [24 Gasco Appendix K. Greenhouse Gas Emissions](#)
- [25 Gasco Appendix L. Evaporation Pond Near-field Air Quality](#)
- [26 Gasco Appendix M. Transportation Plan](#)
- [27 Gasco Appendix N. Sample Spill Response Plan](#)
- [28 Gasco Appendix O. Long-term Water Monitoring Plan](#)
- [29 Gasco Appendix P. Public Comment and Response](#)
- [30 Gasco Appendix Q. Programmatic Agreement](#)

31 Gasco Appendix R. Ambient Air Quality Analysis-Alt. E.
32 Gasco Appendix S. Biological Opinion

Part One: Public Scoping for Salinity Control in the Paradox Valley

OCTOBER 15, 2012
BY JOHN WEISHEIT

Note: This reference article (2012) about the Paradox Salinity Program is the first of two parts.

Part two (2019) is located [HERE](#)

COMMENT PERIOD IS NOW CLOSED.

The existing deep-injection well, which began operations in 1996, is nearing the end of its useful life (generating earthquakes) and action will be needed by Reclamation to continue long term salinity control at the Paradox Unit. A new injection well alternative and an evaporation pond alternative, as well as other alternatives are being considered for future brine disposal. Reclamation intends to conduct a study/Environmental Impact Statement to develop and evaluate alternatives for the continued operations of the Paradox Unit.

As part of this study, the Colorado River Basin Salinity Control Forum (Forum) has requested that Reclamation develop a pilot study to gather information to evaluate the use of evaporation ponds as an alternative to deep well injection to control salt brine from entering the Dolores River near Bedrock, Colorado. The Forum is comprised of representatives appointed by the governors from the respective states in the Colorado River Basin (Colorado, Wyoming, Utah, New Mexico, Arizona, Nevada, and California) and was created for interstate cooperation and to provide the states with the information necessary to reduce salinity concentrations in the Colorado River and to comply with Section 303 (a) and (b) of the Clean Water Act.

###

PUBLIC PARTICIPATION WAS REOPENED AND COMMENTS DUE ON NOVEMBER 26, 2012

[Click here to read the Federal Register Notice](#)

[Click here to study the scoping meeting presentation](#)

[Click here to visit Reclamation's site for this EIS](#)

Send your comments regarding the scope and content of the EIS should be sent to:

Mr. Brett Uilenberg
Bureau of Reclamation, Western
Colorado Area Office, 2764 Compass
Drive, Suite 106, Grand Junction,

Colorado 81506
telephone (970) 248-0641
facsimile (970) 248-0601
email at paradoxeis@usbr.gov

###

Note: The first round of the scoping comment period closed on January 31, 2012.
[Click here](#) to read the scoping letter from Living Rivers et al.

[Click here](#) to read the comments of an NGO coalition and also [here](#)

[Click here](#) to read the scoping report (February, 2013)

Paradox Valley salinity control scoping documents

- [Paradox Scoping Report of February 2013](#)
- [Paradox Salinity Scoping Document](#)
- [Paradox Scoping Letter Nov 2011](#)
- [Salinity Scoping Map](#)
- [Salinity Paradox Valley USBR press release](#)

Law of the River

- [1972 - Clean Water Act](#)
- [1973 - Minute 242](#)
- [1974 - Colorado River Basin Salinity Control Act](#)

Websites

- [Reclamation's Salinity Control Program](#)
- [Reclamation's Paradox Valley Project](#)

Additional Information

- [1978 - Paradox Valley Unit: Definite Plan Report](#). Reclamation.
- [1979 - Environmental Impact Statement](#). Reclamation.
- [Biological Opinion for the Dolores Project](#)
- [1985 - Economic Review of Salinity Control Program](#). Gardner et al.
- [1986 - Evaporation data for Lake Powell](#). Reclamation.
- [1986 - Decree 83 CW 14](#)
- [1986 - Decree 83 CW 14 \(Findings\)](#)
- [1993 - Salinity Control Report](#)
- [1993 - Report to Congress](#)
- [1997 - FONSI](#). Reclamation.
- [1997 - Paradox SDDR](#). Reclamation.
- [1999 - Salinity Control Report](#)
- [Salinity Control Story UCRB](#). Danzer.
- [History of the Salinity Control Project](#). Reclamation.

- [2003 - Progress Report](#). Reclamation.
 - [2004 Progress Report](#). Reclamation.
 - [2005 - Salinity Control Report](#)
 - [2006 - Memo of Injury and Mitigation](#). CWCB.
 - [2008 - Salinity Control Report](#)
 - [2008 - Summary Report](#). Franson Engineering.
 - [2010 - Decree 10 CW 21](#)
 - [2011 - Salinity Control Draft Report](#)
 - [2011- Salinity Control Final Report](#)
 - [2011 - Progress Report](#). Reclamation.
 - [Paradox UIC Permit](#). EPA.
-

Part Two: Paradox Valley Salinity Control Unit DEIS & public comments

DECEMBER 08, 2019
BY JOHN WEISHEIT

Note: This reference article (2019) about the Paradox Salinity Program is the second of two parts.

Part one (2012) is located [HERE](#)

THE COMMENT PERIOD IS CLOSED (The Deadline was extended to February 19, 2020)

- Federal Register Amended Notice of 2/6/2020: EIS No. 20190287, Draft, BR, CO, Paradox Valley Unit of the Colorado River Basin Salinity Control Program Environmental Impact Statement, Comment Period Ends: 02/19/2020
- Contact: Lesley McWhirter 970-248-0608
- Revision to FR Notice Published 12/06/2019; Extending the Comment Period from 2/4/2020 to 2/19/2020.

Two public meetings will be held on:

- Tuesday, Jan. 14, 2020 in Paradox, Colorado at the Paradox Valley Charter School, 21501 6 Mile Rd., at 5 p.m
- Wednesday, Jan. 15, 2020 in Montrose, Colorado at the Holiday Inn Express & Suites, 1391 S. Townsend Ave., at 6 p.m.

The draft Environmental Impact Statement is available online at:

- www.usbr.gov/uc/progact/paradox/index.html
- or a copy can be requested by contacting Reclamation

Comments are due (time-period was extended)

- 11:59 p.m. Mountain Standard Time on Feb. 19, 2020

Submit comments by email to:

- Via eMail: paradoxeis@usbr.gov

Via US Postal Service to:

Ed Warner, Area Manager
Bureau of Reclamation
445 West Gunnison Ave, Suite 221
Grand Junction, CO 81501

NEWS

[Click here](#) to read this story by Luke Runyon of *KUNC Public Radio*

[Click here](#) to read this Press Release from *Bureau of Reclamation*

To view documents from the **Scoping Period**, please visit this post from 2012: [On The Colorado](#) (OTC)

To view documents about the **Salinity Control Program**, please visit this [OTC resource page](#)

PUBLIC COMMENT SUBMISSIONS

- [Living Rivers & Colorado Riverkeeper - DEIS comments](#)
- [Living Rivers & Colorado Riverkeeper - References for DEIS comments](#). zip file.
- [San Juan Citizens Alliance - DEIS comments](#)
- [Colorado Wildlands Project - DEIS comments](#)
- [Dolores River Boating Advocates- DEIS comments](#)
- [American Whitewater - DEIS comments](#)
- [American Rivers - DEIS comments](#)

NEW DOCUMENTS FOR PARADOX UNIT

- DEIS and Appendices (**combined**). 2019.
- [DEIS Volume 1](#)

APPENDICES

- [DEIS Volume 2, Apps A to D](#)
- [DEIS Volume 3 Apps E to J](#)
- [DEIS Volume 4, Apps K to M](#)

TECHNICAL REPORTS AND MEMOS

- [Review: Geologic Investigations](#). Block, 2012.
- [Assessment 2nd Injection Well](#). Atkins, 2013.
- [Paradox Valley 2nd Well Design Report](#). Petrotek, 2014.
- [Far-field Reservoir Pressurization](#). USBR TM, 2016.
- [2nd Well Site Investigation](#). Block, 2016.
- [2nd Injection Well REPORT](#). CRBR, 2017.
- [Injection Data \(csv file\)](#)

ADDITIONAL INFORMATION

- [OTC Resource Page on Salinity](#)
-

Energy Fuels' Piñon Ridge Uranium Mill Proposed for Paradox Valley

NOVEMBER 07, 2012

BY JOHN WEISHEIT

NEW INFORMATION about Uranium Milling Projects by Energy Fuels

- [April 30, 2018 - Colorado Denies License for Paradox Uranium Mill](#). Jim Mimiaga of *The Cortez Journal*.
- The project in Paradox Valley is on hold because the uranium market crashed (again). News clip: [Durango Herald](#)
- The water right for the proposed mill in Paradox Valley has been cancelled by the state of Colorado: [ORDER](#)
- Intent to Sue (60-day Notice) over operation violations by Grand Canyon Trust against Energy Fuels uranium processing facility at White Mesa, near Blanding, Utah. [Press Release](#); [60-day Notice](#)

[WEBSITE](#) of Colorado Department of Public Health and Environment (CDPHE)

- [Public Notice](#)
- [CDPHE Press Release](#)
- [CDPHE Press Release 02](#)
- [Map location of proposed mill](#)
- [NGO Comment Letter submitted November 12, 2012](#)

On November 18, 2009, Energy Fuels submitted an application to the Colorado Department of Public Health and Environment for a radioactive materials license for the proposed Piñon Ridge Mill, located about 12 miles west of Naturita, Colorado, in the Paradox Valley.

The mill is designed to process uranium and vanadium ores. As a part of reviewing the application, the Department prepared an Environmental Impact Assessment (EIA).

The purpose of the hearing is to receive comment and evidence on the application and the EIA. The hearing will be presided over by an independent hearing officer. At the hearing members of the public can provide written and/or verbal comments on the license application and the Department's Environmental Impact Assessment.

Written public comment may be sent to the hearing officer as indicated below.

Richard Dana
Judicial Arbitrator Group, Inc.
1601 Blake Street, Suite 400
(303) 572-1919 or 1 (800) 272-4837

Tentative schedule for pre- and post-hearing procedures is as follows:

- August 17, 2012 - initial deadline for party status applications.
- August 23 - case management hearing.
- September 6 - identification of issues to be addressed at hearing from prospective parties.
- September 20 - expert witness disclosures due per Colo. Rules of Civil Procedure, Rule 26(a)(2).
- September 25 - final deadline for party status applications October 5 - pre-hearing conference
- October 15 - hearing convened (parties may attend by telephone)
- November 2 - optional written expert rebuttal testimony; end expert discovery.
- November 7 - hearing reconvenes.
- November 13 - completion of presentation of evidence of parties. December 4 - deadline for parties proposed findings of fact and conclusions of law and orders.
- January 11, 2013 - hearing officers written findings of fact and conclusions of law issued.
- January 25 - deadline to file exceptions to the hearing officers decision.
- February 1 - responses to exceptions to the hearing officers decision.
- February 4 - replies to responses due (replies only permitted if the response brief raises issues that were not raised in the opening brief).
- February 25 - ruling on exceptions to hearing officer's decision.
- April 27 - final agency action on the license application.

State of Colorado Environmental Review Documents

- [Colorado Uranium Recovery Regulations](#)
- [Piñon Ridge Location Map](#)
- [Piñon Ridge State Review](#)

Preliminary Application by Energy Fuels

- [All Volumes with appendices](#)
- [Volume 01 complete](#)
- [Volume 02 complete](#)
- [Volume 03 complete](#)

Comments of Sheep Mountain Alliance

- [Piñon Ridge Sheep Mountain Alliance Comment Letter](#)
- [Piñon Ridge Environmental Comments](#)
- [Piñon Ridge Geological Comments](#)
- [Piñon Ridge Socio EconomicComments](#)
- [Piñon Ridge Wildlife Comments](#)

Administrative Hearing in Nucla, Colorado, November 2012

- [Web Pages Colorado Department of Public Health and Environments](#)
- [Public Notice](#)

- [CDPHE Press Release](#)
 - [CDPHE Press Release 02](#)
 - [Intervenors Complaint](#)
 - [Judges Ruling 13 June, 2012](#)
 - [Piñon Ridge Proposed Impacts Dolores River](#)
 - [SMA Complaint](#)
 - [SMA Amended Complaint](#)
-

Oil Shale and Tar Sands Final PEIS Issued in November & Protests issued in December

NOVEMBER 09, 2012
BY JOHN WEISHEIT

UPDATES

- All federal leasing for oil shale development in Utah and Colorado have expired or have been relinquished.
- Activities for tar sand development in Utah have ceased.

###

60-Day Notice of Intent to Sue from NGOs (Issued May 23, 2013)

- [Press Release](#)
- [60-Day Notice](#)

RECORD OF DECISION (Issued March 22, 2013)

DRAFT REGULATIONS

- [Draft Regulations BLM Economic Analysis March 2013](#)
- [Draft Regulations BLM Threshold Analysis March 2013](#)
- [Draft Regulations EA March 2013](#)

PROTESTS filed on December 10, 2012

- [CBD, SC, GCT & LR Protest & Response.](#)
- [WRA, NRDC & SUWA Protest](#)
- [National Wildlife Federation Protest](#)
- [American Petroleum Industry Protest](#)
- [MAP: Utah Oil Shale Tar Sands State & Feds](#)

WEBSITES FOR ADDITIONAL INFORMATION

- [Tar Sands in Utah's Tavaputs Plateau](#)
- [Oil Shale in Utah's Tavaputs Plateau](#)

RELEASE OF THE FINAL PEIS in November of 2012

Click here to read the BLM Press Release

Click here to visit the BLM's web page on the documents of the Final PEIS.

Click here to proceed directly to the documents.

[Click here](#) to submit comments on the Final PEIS

Be advised that two research and development leases for oil shale on federal lands in Colorado are now under review as a Final Environmental Assessment . [Click here](#) to visit the appropriate BLM web page.

Protest Information:

Publishing the Notice of Availability in the Federal Register of the Final PEIS initiates a 30-day protest period for the proposed plan amendment decisions. The period closes on December 10, 2012. Publication of the Notice of Availability also begins a 60-day period for Governors Consistency review which closes on January 9, 2013.

[Click here](#) for more information on the requirements for filing a valid protest.

All protests, including the follow-up letter to emails or faxes, must be in writing and mailed to one of the following addresses:

Regular Mail

Director (210)
Attn: Brenda Hudgens-Williams P.O. Box 71383
Washington, D.C. 20024-1383

Overnight Mail

Director (210)
Attn: Brenda Hudgens-Williams 20 M Street SE, Room 2134LM Washington, D.C.
20003

THE RECORDS BELOW ARE RELATED TO THE ANALYSIS OF THE DRAFT PEIS AND THE INITIATION OF THE PUBLIC SCOPING PERIOD

[Letter: Comments by Living Rivers et al](#)

[Letter: Comments by Western Resource Advocates et al](#)

[Letter: Comments by Outdoor Alliance](#)

WEBSITES FOR ADDITIONAL INFORMATION

- [Tar Sands in Utah's Tavaputs Plateau](#)
- [Oil Shale in Utah's Tavaputs Plateau](#)

Comments are due on May 4, 2012

Send letters to:

Draft OSTs PEIS
Argonne National Laboratory
9700 S. Cass Ave.

EVS/240
Argonne, IL 60439

Contacts: For further information about this PEIS, you may contact Sherri Thompson, Project Manager, BLM Colorado State Office, 2850 Youngfield Street, Lakewood, Colorado 80215-7093; (303) 239-3758.

[Visit the online comment submission template](#)

[BLM Press Release](#)

[Oil Shale and Tar Sands Website](#) (BLM & Argonne National Lab)

[How to get involved](#)

[EcoWatch](#)

The public meetings for the DEIS on oil shale is as follows:

Monday, March 12, 2012
BLM Colorado River Valley Office
2300 River Frontage Road, Silt, Colorado
7:00 p.m.-9:30 p.m.

Tuesday, March 13, 2012
Westin Plaza Hotel
1684 West Highway 40, Vernal, Utah
7:00 p.m.-9:30 p.m.

Wednesday, March 14, 2012
Grand America Hotel
555 South Main Street, Salt Lake City, Utah
7:00 p.m.-9:30 p.m.

Thursday, March 15, 2012
BLM Rock Springs Field Office
280 Highway 191 North, Rock Springs, Wyoming
7:00 p.m.-9:30 p.m.

These will be "open house" meetings with tables and displays set-up and the BLM on hand to answer questions. Folks can submit written comments at these hearings.

THE DETAILS

There are approximately 2.3 million acres of BLM-administered lands within this area that are the subject of this programmatic environmental impact statement (PEIS).

Alternative 1

No Action Alternative, would not amend land use plans. The lands available for lease under the 2008 land use plan amendment decisions would remain available for future leasing consideration.

Alternative 2(a)

Would exclude certain lands from leasing and would amend 10 land use plans in Colorado, Utah, and Wyoming to make approximately 461,965 acres available for future consideration for commercial oil shale leasing and 91,045 acres available for application for commercial tar sands leasing.

Alternative 2b (preferred alternative)

The Preferred Alternative would make approximately 461,965 acres available for future consideration for commercial oil shale leasing and 91,045 acres available for application for commercial tar sands leasing, but only for research, development, and demonstration (RD&D) leases.

Alternative 3

Would amend 10 land use plans in Colorado, Utah, and Wyoming to limit public lands available for commercial leasing to the those lands encompassed by existing oil shale RD&D leases and their associated preference right lease acreage, plus the areas encompassed by the three RD&D lease applications currently under review. Under this alternative, 32,640 acres would be open for potential future leasing of oil shale. For the tar sands resources under Alternative 3, the lands identified as available for application for commercial leasing would be limited to those lands in the Vernal, Utah, planning area, for which there is a pending tar sands lease application (approximately 2,100 acres).

Alternative 4(a)

Would exclude certain lands from commercial oil shale or tar sands leasing, similar to Alternative 2 and would amend 10 land use plans in Colorado, Utah, and Wyoming to designate acreage less than 2,017,714 acres as available for future consideration for leasing for commercial oil shale leasing and less than 430,686 acres as available for application for commercial tar sands leasing.

Alternative 4(b)

would open the same acreage as those lands opened in Alternative 4(a) but only for RD&D leases. The BLM would issue a commercial lease only when a lessee satisfies the conditions of its RD&D lease and the regulations at 43 CFR Subpart 3926 for conversion to a commercial lease. The preference right acreage, if any, which would be included in the converted lease, would be specified in the RD&D lease.

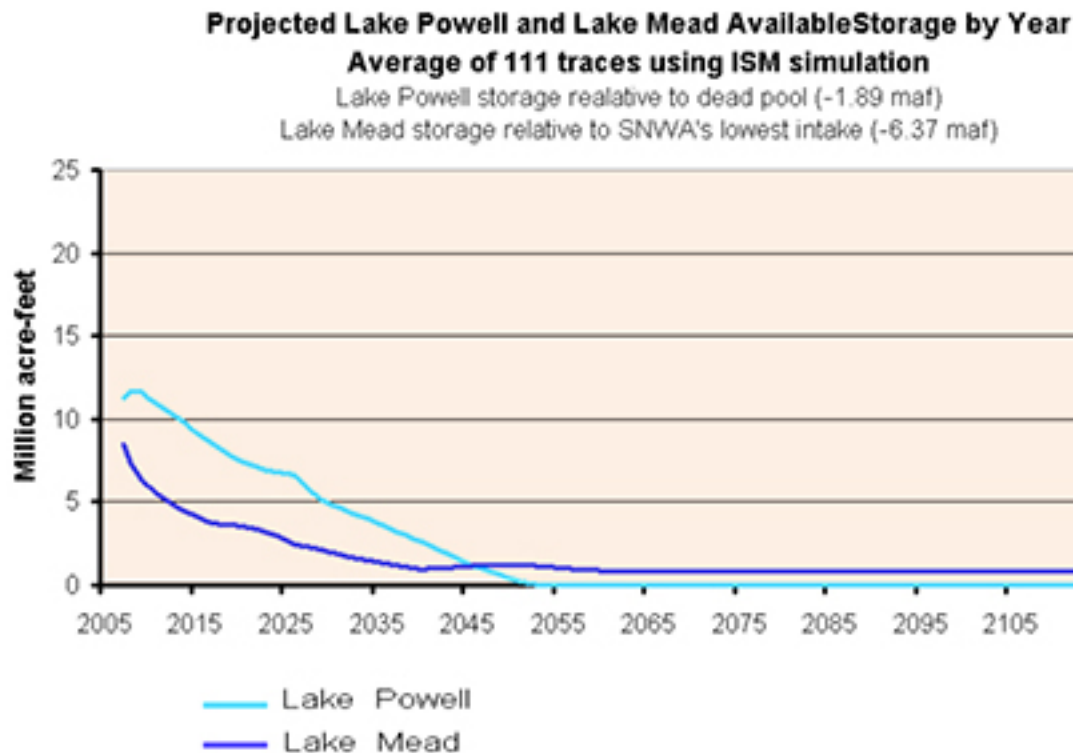
DOCUMENTS

- [BLM Land Use Handbook](#)
- [OSTS Draft EIS with Appendices](#)

- [VOLUME 1](#)
 - [VOLUME 2](#)
 - [VOLUME 3](#)
 - [VOLUME 4](#)
 - [Appendix A](#)
 - [Appendix B](#)
 - [Appendix C](#)
 - [Appendix D](#)
 - [Appendix E](#)
 - [Appendix F](#)
 - [Appendix G](#)
 - [Appendix H](#)
 - [Appendix I](#)
 - [Appendix J](#)
-

USBR's Demand and Supply Study for the Colorado River Basin of 2012

DECEMBER 12, 2012
BY JOHN WEISHEIT



This study, prepared by the Bureau of Reclamation and the seven states of the Colorado River basin (with technical assistance from a few contractors), was completed because Congress forced the issue through legislation and modest funding mechanisms. It must be appreciated, however, that the public has been asking the Natural Resource Committees and Reclamation to perform a long-term and basin-wide assessment for more than a half-century. The reason was to avoid the condition the basin now faces: human consumption has over-extended the natural supply, and water curtailments and empty reservoirs will be the consequence.

This study is unique in that the demand side is assessed for the first time and includes the projected impacts of climate change to year 2060. As important as this far-reaching study is, the National Academy of Sciences, for example, was not asked to provide an independent review of the methodology and conclusions.

The document is tame in explaining the persistent decline in the natural flow since 1906 ([trend of decline](#)). Why it took this long for Reclamation and the states to address this

[known rate of decline](#) until now, is a serious miscalculation. Worst case scenarios of reservoir levels should have been provided to visually demonstrate the seriousness of the problem to the public, but instead the risk analysis graphics were [poorly presented](#).

Whereas the graphics presented to the subcommittees of the Basin Study had exceptional interpretative values. For instance the graphics (not published for public review) of [Trace 21](#), which was provided to the Modeling Assumption Sub-group in 2011. Trace 21 is a CRRS run that represents a persistent dry period in the Colorado River Basin that occurred between 1928 and 1982. See: [Graph by Pulwarty and Melis, 2001](#) to visually understand this critical dry period.

The study offers an assumed hope that humans might actually start to curb their consumptive behavior, that corporations will lower their greenhouse gas emissions, and planning for smart growth will somehow not become an oxymoron.

In the last century, documents were provided to Congress to assess the supply side of the Colorado River, and generous funding for grandiose engineering projects soon followed.

The documents about the hydrology were not entirely correct, and in this post-construction era the water managers now understand that drying times can last for centuries and [flood magnitudes](#) can overwhelm spillway capacities.

Generous state and federal funding will not happen in this century for solving the problem of imbalances caused by over-reaching the demand side of the equation, which includes the subsequent damage brought upon the natural water cycle, and caused by the excessive human consumption of fossil energy fuels.

If funding is somehow pulled out of a magician's hat, the administrative record indicates clearly that maximum human consumption will continue and the problem will never be solved.

The age of abundance is over, with or without adjusting to climate change, and water managers must accept the supply the basin has been given and abandon the ideology of chasing the balloons of demand.

COMMENT LETTERS: BASIN STUDY

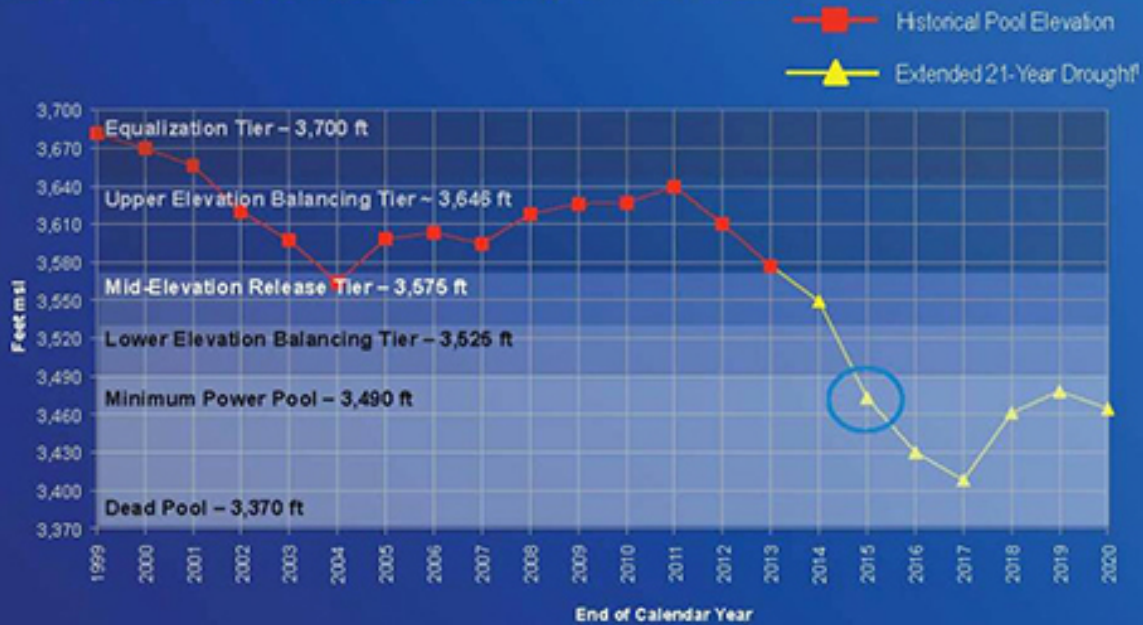
Living Rivers and Center for Biological Diversity

- [July 8, 2011](#)
- [March 13, 2013](#)

BASELINE INFORMATION

- [Click here](#) to read a 1958 *Arizona Highways* magazine feature called "Flying the Colorado River."
- [Click here](#) to read a 1983 *Sunset Magazine* article called the "Mighty and Troubled Colorado."
- [Click here](#) to read this story by Brett Walton in *Circle of Blue*.

Lake Powell End of Calendar Year Pool Elevation



†May 2013 CRSS trace 96. 2014-2020 uses 2001-2007 hydrology

RECLAMATION

[CLICK HERE](#) to download the combined documents of the Colorado River Basin Supply and Demand Study (1,655 pages).

[CLICK HERE](#) for the two-page Fact Sheet.

[2018 - Tribal Water Study of the Ten-Tribe Partnership](#) (documents combined and starting with the press release). This study is a new feature of the 2012 Basin Study.

Here is the work of the other [BASIN STUDIES](#) in the arid lands of the USA.

STUDY WEBSITE

<http://www.usbr.gov/lc/region/programs/crbstudy.html>

Email: ColoradoRiverBasinStudy@usbr.gov

U.S. mail to:
Bureau of Reclamation
Attention: Ms. Pam Adams, LC-2721
P.O. Box 61470
Boulder City, NV 89006-1470
Facsimile transmission: 702-293-8418

SECURE WATER ACT

- [2009 - Public Law: SECURE Water Act](#)
- [2009 - SECURE Water Act](#)
- [2011 - SECURE Water Report](#)
- [2016 - SECURE Water Report](#)
- [Chapter 3 - Colorado River](#)

WATER SUSTAINIBILITY

United Nations

- [2003 to 2016 - Integrated Water Resources Management](#)

White House

- [2016 - Committents To Action On Building Sustainable Water Future](#). White House.
- [2016 - Long-Term Drought Resilience Action Plan](#). White House.
- [2016 - Presidential Memorandum Building National Capabilities for Long-Term Drought Resilience](#). White House.

ACADEMIC SYNTHESIS

- 2014 - [Research Needs in the Colorado River Basin](#). CRGI.
- 2015 - [Lower Basin](#). University of California at Santa Barbara.
- 2016 - [Upper Basin](#). Yale University.
- 2016 - [Climate Change and the Colorado River: What We Already Know](#). CRRG.
- 2016 - [Survey Results: Colorado River Water Users Association](#). Berggren.

REPOSE FROM ACADEMICS

- [CLICK HERE](#) to read the letter from 23 academics to Sally Jewell.
- [CLICK HERE](#) to read DOI's response letter of Febuary 9, 2016
- [Click here](#) to read the response letter from Nevada's Colorado River Commissioner
- [Click here](#) to read the response from Utah's Colorado River Commissioner
- [Click here](#) to read the response from Colorado River Energy Distributors Association (CREDA)

PREVIOUS STUDIES

- [1950 - CRSP](#)
- [1963 - PSWP App](#)
- [1964 - PSWP Report](#)
- [1969 -Probabilities and Test Studies on Operating Criteria for the Colorado River. Reclamation.](#)

- [1971 LCR Study](#)
- [1971 - LCR App V](#)
- [1971 - LCR App X](#)
- [1971 - LCR App XI](#)
- [1971 - UCR Study](#)
- [1971 - UCR App V](#)
- [1971 - UCR App X](#)
- [1971 - UCR App XI](#)

2010 - INTERIM REPORT No. 1

- [Executive Summary](#)
- [Status Report](#)
- [Tech Memo \(website\)](#)
- [Tech Report A](#)
- [Tech Report B](#)
- [Tech Report B appendices](#)
- [Tech Report C](#)
- [Tech Report D](#)

2010 - Public Comments

- [ITCA](#)
- [KB Engineering](#)
- [Living Rivers](#)
- [NGOs](#)
- [NPCA](#)
- [NRDC](#)
- [NWF](#)
- [Pascua Yaqui](#)
- [PTF](#)
- [TNC](#)
- [Yavapai Apache](#)

Public Options

- [Categorizations Report](#)
- [Descriptions Report](#)
- [Fact Sheet Imbalance Options](#)
- [Options Submittal Report](#)

REVISIONS OF TECHNICAL REPORTS

Technical Part B

- [Technical Report B](#)
- [Technical Report B appendix revised](#)
- [Technical Report B appendix](#)

Technical Part C

- [Technical Memo C report](#)
- [Tech C1](#)
- [Tech C2](#)
- [Tech C3](#)
- [Tech C4](#)
- [Tech C5](#)
- [Tech C6](#)
- [Tech C7](#)
- [Tech C8](#)
- [Tech C9](#)
- [Tech C10](#)
- [Tech detail \(website\)](#)
-

Technical Report D

- [Technical Report D](#)
- [Tech Report D Revised](#)

2012 - FINAL SUPPLY AND DEMAND STUDY

- [All files combined](#)
- [Executive Summary](#)
- [Study Report](#)
- [Study Report Appendices](#)
- [Technical A Report Scenario Development](#)
- [Technical B Report Water Supply Assessment](#)
- [Technical C Report Water Demand](#)
- [Technical D Report System Reliability Metrics](#)
- [Technical E Report Options Evaluation](#)
- [Technical F Report Options Strategies](#)
- [Technical G Report System Reliability](#)

LIST OF TIMELY COMMENTS

- [Comments by Living Rivers & Center for Biological Diversity](#)
- [All Comments Comined \(alphabetically\)](#)
- [American Whitewater](#)
- [Aurora Water](#)
- [Coalition Protect Missouri River](#)
- [Department Wildland Resources](#)
- [Missouri Department Natural Resources](#)
- [National Park Service](#)
- [Natural Energy Resources Company 1](#)
- [Natural Energy Resources Company 2](#)
- [Navajo Nation](#)

- [Rocky Mountain Climate Organization](#)
- [Western Area Power Administration](#)

INDEPENDENT REVIEWS

- 2011 - [Inflated demand scenarios](#). Pacific Institute and Western Resource Advocates.
- [2012 - Management of Water Shortage Colorado River Evaluate Policy Viability Interstate Water](#). Wildman.
- [2013 - Adapting to a Changing Colorado River](#) or [Summary](#). RAND.
- [2014 - Understanding Uncertainties in Future Colorado River Streamflow](#). Vano et al. See reference to Seager et al [HERE](#).
- [2014 - Research Needs in the Colorado River Basin](#). Colorado River Governance Initiative

EDUCATIONAL OUTREACH

Webinars

- [Click here](#) to view screen shots of the January 9 webinar
- [Webinar of January 9, 2013 \(Watch on You Tube\)](#)
- [Webinar of January 25, 2013](#)
- [Click here](#) to view screen shots of January 25 webinar

Webinar of April 3, 2013

- [Click here](#) to watch the April 3, webinar
- [Click here](#) to view the pdf of the April 3, webinar
- [Click here](#) to view screen shots of the April 3 webinar

Public Relations

- [March 23, 2010 - Agenda](#)
- [March 23, 2010 - Comment Form](#)
- [March 23, 2010 Power Point](#)
- [June 14, 2011 - Power Point](#)
- [September 23, 2010 - Power Point](#)
- [December 6, 2011 - Power Point](#)
- [Colorado River Basin Study Proposal](#)
- [May 2011 - Fact Sheet](#)
- [Leadership Change](#)
- [Long-term Augmentation Report](#)
- [Partners](#)
- [USBR News: Water Supply Demand Study Seeks Input To Resolve Imbalances](#)
- [USBR News: Water Supply Demand Study Interim Report](#)

2013 - THE NEXT STEPS

The 50-year remedies are arbitrarily under the purview of the Bureau of Reclamation, the seven states, the tribes, and selected environmental groups. Their preliminary reports are overdue.

- [Click here](#) to read the fact sheet called "Moving Forward."
- [Click here](#) to see who is participating on the three official Workgroups
- [Click here](#) to review the official website of the Basin Study

CONTINGENCY PLANNING

- [Resolution to adopt contingency planning to avoid shortages of water deliveries and hydropower generations.](#) Upper Colorado River Commission.

FEDERAL CLIMATE CHANGE ASSESSMENT FROM THE FEDERAL GOVERNMENT

- [2013 - Report: National Climate Assessment Development Advisory Committee](#) (big file)

Links to ON THE COLORADO articles on this subject

- [The One-Dam Solution](#)
 - [The Water Imbalance of the Colorado River Basin](#)
 - [Towing Icebergs to San Pedro](#)
 - [Pipe Dreams and Schemes](#)
 - [Aquifer Recharge and Recovery](#)
-

Green River Tusher Wash Diversion Dam Rehabilitation Project

MAY 29, 2013

BY JOHN WEISHEIT



Tusher Wash Dam construction in 1936

Note: This federal process started last year as an Environmental Assessment and has since been elevated to an Environmental Impact Statement.

DRAFT EIS RELEASED (March 2014)

- [Public Notice](#)
- [Complete Draft EIS with Appendices.](#)

PRESS

- [Read the story](#) by Brian Maffly in the Salt Lake Tribune

PROJECT DESCRIPTION

The Natural Resources and Conservation Service and Utah Division of Agriculture and Food are analyzing alternatives to rehabilitate damage to the Green River diversion dam from the late 2010 and early 2011 flood events. The diversion dam was constructed in the early 1900s and has been modified over the years to maintain the dam. During the 2010/2011 flood events, flows in the Green River caused severe damage to the diversion dam compromising its structural integrity. If the dam fails, water supply to two irrigation canals, a historic irrigation water wheel delivery system, and one hydropower plant would be eliminated.

As part of dam rehabilitation, the Upper Colorado Endangered Fish Recovery Program (Recovery Program) is proposing to fund and install a fish barrier on the west irrigation and hydropower plant canal to prevent Endangered Species Act (ESA) listed fish species from entering the canal and/or hydropower plant. As part of the dam rehabilitation, upstream and downstream fish passage may also be incorporated into the design. These fish protection and passage components are proposed for inclusion in the Green River diversion dam rehabilitation project to help reduce fish mortality and increase ESA listed fish species populations in the Green River.

Currently, the project is analyzing the following design elements listed in order of priority:

1. Rehabilitate Dam to Protect Irrigation and Hydropower Water Rights
2. ESA Listed Fish Species Barrier into the Powerhouse and Irrigation Canals
3. Upstream and Downstream ESA Listed Fish Species Passage over the Dam
4. Downstream Boat Passage past the Dam (may include an in-stream channel and/or upland portage around the dam)

DRAFT EIS SCOPING

Draft EIS Public Comment Period

Open: Friday, March 14, 2014

Close: Wednesday, April 30, 2014

Draft EIS Public Meeting

Date: Thursday, April 10, 2014

Time: 6:00 p.m. - 8:00 p.m. (MST)

Place: John Wesley Powell River History Museum

1765 East Main Street, Green River, UT

- [Public Notice](#)
- [Draft EIS and Appendices](#)

SEND COMMENTS TO:

Greg Allington McMillen, LLC
1401 Shoreline Dr.
Boise, ID 83702
Phone: 208-342-4214
Fax: 208-342-4216
greenriver@mcmillen-llc.com

###

Official Web Page

- [Official NRCS web page](#) for Tusher Wash Dam Rehabilitation EIS of 2013
- [Schedule](#) for the EIS Process

Document archive for the initial phase of the Environmental Assessment period in 2012

- [Final Green River EA Scoping Notice 30 Oct 2012](#)
- [Green River Scoping Project Description](#)
- [Scoping Public Meeting Presentation](#)
- [Scoping Report](#)
- [Supplemental Comments from Living Rivers](#)

Additional Information

- [2009 - NRCS Salinity Control Environmental Assessment](#)
 - [2006 - Hydrology, Water Quality of Green River Agricultural Areas in Emery & Grand Counties. USGS.](#)
-

The Administrative Record Regarding the Proposed Mining of Tar Sands in Eastern Utah

JUNE 02, 2013
BY JOHN WEISHEIT



Headwaters of Main Canyon in the PR Spring Area

Oil shale and tar sands remains a speculative industry in the arid lands of the Colorado Plateau. A general lack of water is why the industry will never be viable. Even if alternative chemical washes are used to separate bitumen from sand, for example, it still requires 1.5 to 2 barrels of water to refine a single barrel of synthetic crude. What this extraction will accomplish is physical damage to the Colorado River watershed, which supplies culinary water to nearly 30 million people. It will also create more CO₂ in the atmosphere, which is the #1 killer of the Rocky Mountain snowpack, which provides 85% of the Colorado River's total annual water supply. Our watershed needs investors to create a reliable energy supply that will heal the water supply of the Colorado River, not destroy it.

Click [here](#) to read this color booklet created by Living Rivers and the Colorado Riverkeeper

[Read this article about strip mining tar sands in Grand County](#)

To **SUBMIT A LETTER** of concern to Utah Division of Oil, Gas and Mining [click here](#)

[Article with talking points](#)

INVENTORY OF TAR SAND DEPOSITS IN UTAH

State Land ([SITLA](#))

- 141,020 State Trust acres on which tar sands are known or expected.
- 52,887 State Trust acres under lease for tar sands
- A typical lease lasts 10-years

- Only a very small part of the above acres could be surface mined
- [US Oil Sands Lease with SITLA](#)
- [US Oil Sands Contract Report](#). SITLA.

Federal Lands (BLM)

- NOTE: there are no tar sands in Colorado or Wyoming.
- 2008 - Total identified is 430,686 acres
- 2012 - The proposed preferred alternative identifies 91,045 acres
- **RECORD OF DECISION** (Issued March 22, 2013)

AMERICAN SANDS ENERGY (West Tavaputs Plateau near Mt. Bruin)

[2014 - Notice of Intent to Commence Large Mining Operations](#)

ADMINISTRATIVE RECORD OF UTAH DIVISION OF OIL, GAS & MINING (UDOGM)

- [UDOGM permit files \(complete\)](#)
- **Username and password is: ogmguest**
- [UDOGM Board Notes and Dockets](#)

ADMINISTRATIVE RECORD OF PROPOSED STRIP MINING @ PR SPRINGS

US Oil Sands (Utah) Inc., (formally Earth Energy Resources)

- [2014 - Amended Operation Plan](#)
- [Docket of PR Springs litigation](#)
- [UDOGM docket for PR Springs litigation](#)
- [DWQ docket for PR Springs litigation](#)
- [Earth Energy Resources @ PR Springs for large mining & alternate](#)
- [Earth Energy Resources @ PR Spings for small mining & alternate](#)
- [2007 - EER Mining Plan PR Springs in Grand and Uintah County](#)
- [2009 - EER Mining Plan PR Springs in Grand and Uintah County](#)
- [2009 - Presentation by Earth Energy Resources](#)
- [2010 - EA for public comment on water well for PR Springs](#). BLM
- **Public Notice:** EER proposal for large scale mining of tar sands at PR Springs. Comments are due: 30 days after March 23, 2010.
- [Grand County Council Comments](#)
- [2010 - Initial Comments by Non-Profit Groups](#)
- [2011 - Notice of Intent for exploratory drilling of bitumen deposits at PR Springs by Oil Sands USA](#)
- **Math** - The PR Springs project will provide the nation with 6 hours of oil consumption.
- [Analysis Spreadsheet](#) (xls)
- **Ophus Process** - What we know about the citrus based processing chemical. MSDA reports.

- [Patent Application; Lemon Terpenes; Akzo Surfactant 01; Akzo Surfactant 02](#)

ADMINISTRATIVE RECORD OF UTAH DIVISION OF WATER RIGHTS @ PR SPRINGS (State Engineer)

Water Right for US Oil Sands 49-2274 (a33805)

- [Geochemistry of Springs in the Vicinity of Main Canyon](#). Johnson et al.
- [Hydrochemical Data from Perennial Springs in the PR Spring Area of Southern Uinta Basin](#). Johnson et al.
- [Scanned documents for 49-2274](#)
- [Map of water rights, leases and properties of US Oil Sand & DeLambert Ranch](#)
- [Drill logs for 5 water production wells](#)
- [Administrative record @ Utah Division of the State Engineer](#)
- [Water right 41-3523 \(Uintah County Water Conservancy District\)](#)
- [Request For Extension Of Time To File Proof Of Beneficial Use](#)
- [Hearing of the Protest for Extension to File Proof](#) (audio file)
- [Photos](#) of destructive road and well pad activities

Other water rights (adjacent to proposed mine @ 4.5 gallons per minute)

- [Water right 49-1567](#)
- [Water Right 49-122](#)
- [\(Docs\)](#)

Additional water well information (state and federal)

- [Willow Watershed 1406006 \(Lower Green/Desolation Canyon\)](#).EPA.
- [Willow Watershed Water Resources Links](#). USGS.
- [EPA groundwater summary of Uinta Basin](#)
- [Map: Water well and pipeline](#)
- [Map: Topo of PR Springs](#)
- [Proposed water well](#). Division of Water Rights.
- [2010 - Comments on BLM's EA for water well at PR Springs](#). Living Rivers.
- [Map of well site](#)
- [Satellite image of well pad for PR Springs mine](#)
- [FOIA - BLM Water Right-of-Way @ PR Springs mine](#)

ADMINISTRATIVE RECORD UTAH DIVISION OF WATER QUALITY (DWQ) for PR SPRINGS

- [Consolidated Initial Record as of January 2012](#)
- [DWQ website archive](#)
- [March 2011 - Appeal to Utah Division of Environmental Quality](#)
- [November 2011 - Order on motion to dismiss denied](#)
- [May 2012 - Transcript of Hearing Vol. 1 & Vol. 2.](#)

TRANSCRIPTS OF HEARINGS FOR PR SPRINGS STRIP MINING OPERATION

- [Informal hearing transcription of 7/27/10](#)
- [Compilation of reference materials](#)
- 2011- Prepared testimony from expert witnesses: Elliott Lips & Charles Norris 01 & Charles Norris 02
- [2011 - Transcript of Formal UDOGM Hearing of Feb. 2011.](#)
- [2012 - Transcript of expert witness William Johnson](#)
- [May 2012 - Transcript of DWQ Hearing Vol. 1 & Vol. 2.](#)

ADMINISTRATIVE RECORD OF ENVIRONMENTAL PROTECTION AGENCY (EPA)

Air Quality at Proposed PR Springs Mine

- [Part One](#); [Part Two](#); [Part Three](#); [Part Four](#); [Part Five](#);
- [Air Resources and Chemical Processing](#)
- [NSPS Subpart Ja](#)
- [2010 - Fact sheet on ozone standards](#)

ASPHALT RIDGE MINING OPERATIONS (near Vernal, Utah)

- [Map - Asphalt Ridge Projects.](#)
- [Brief History of Asphalt Ridge Development.](#)

Crown Asphalt Ridge (CAR) Korea Technology Industry of America (Defunct)

- Website - [JAM Industrial, Inc.](#) (Tar sands demonstration project that ended in bankruptcy).
- [2004 - Study Demonstration Process Bitumen Utah Tar Sand.](#) Society of Petroleum Engineers.
- [CAR Google Earth](#)

- **CAR - Department of Water Quality (DWQ)**
- [CAR - Public Notice Public Notice](#)
- [CAR - Application Letter.](#) 2012.
- [CAR - Application.](#) 2012.
- [CAR - Application Appendix A Lab Report.](#) 2012.
- [CAR - Application Appendix B Well Logs.](#) 2012.
- [CAR - Application Attachments.](#) 2012.
- [CAR - Statement Of Basis.](#) 2012.
- [Comments - Western Resource Advocates and Living Rivers.](#) 2012.
- [Response - To WRA and LR.](#) 2012.

MCW Energy Group @ Asphalt Ridge

- [MCW Energy - GoogleEarth.](#)
- [MCW Energy - Public Notice.](#)

- [MCW Energy - DWQ Application.](#)
- [MCW Energy - Construction Permit.](#)
- [MCW Energy - Statement of Basis.](#)

BUREAU OF LAND MANAGEMENT

- 1983 - Uinta Basin Synfuels Development, Final Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMsynfuelsFEIS1983.pdf
- 1983 - Utah Combined Hydrocarbon, Regional Draft Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMregionalDEIS1983a.pdf
- 1984 - Utah Combined Hydrocarbon, Regional Final Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMregionalFEIS1984.pdf
- 1984 - Book Cliffs Resource Management Plan, Final Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMveranalRMP1984.pdf
- 1984 - Air quality assessment for the Environmental Impact Statement on the Federal Oil Shale Management Program. www.riversimulator.org/Pubs/OSTS/Ref/BLMAirQualityOSTS1984.pdf
- 1985 - PR Spring Combined Hydrocarbon Lease Conversion Draft Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMprSpringsDEIS1985.pdf
- 1985 - PR Spring Hydrocarbon Lease Conversion Final Environmental Impact Statement. www.riversimulator.org/Pubs/OSTS/Ref/BLMprSpringsFEIS1985.pdf
- 1990 - Winter Ridge Wilderness Study Area. www.riversimulator.org/Pubs/OSTS/Ref/BLMwinterRidgeWSA1990.pdf
- 1999 - Utah Wilderness Inventory. www.riversimulator.org/Pubs/OSTS/Ref/BLMwilderness1999.pdf
- 2013 - Oil Shale & Tar Sands, Programmatic Environmental Impact Statement: Official web site. ostseis.anl.gov/documents/index.cfm
- **RECORD OF DECISION** (Issued March 22, 2013)

Paving Seep Ridge Road in Uintah County

- [Environmental Assessment](#)

2008 Oil Shale & Tar Sands Programmatic EIS

- [Home Page](#)
- [Federal Notice](#)
- [Environmental Impact Statement](#)
- [Record of Decision](#)
- [Additional Information](#)
- Tar Sands: [Basic Information](#)
- Oil Shale: [Basic Information](#)
- [Endangered Species List](#)
- [Comments of California Attorney General](#)

CORPORATE WEBSITES

- **NEW:** [Company Profiles](#)
- [Nevtah Capital Management](#)
- [US Oil Sands formerly Earth Energy Resources](#)
- [2007 - EER Mining Plan PR Springs in Grand and Uintah County](#)
- [2009 - EER Mining Plan PR Springs in Grand and Uintah County](#)
- [2013 - US Oil Sands Corporate Presentation](#)
- [2009 - Presentation by Earth Energy Resources](#)
- Korea Technology Industry of America (Defunct)
- [Presentation: Mining in Uintah County](#)
- [Temple Mountain Energy](#)
- Wentworth Energy (Asphalt Ridge tar sands)
- [American Sands Energy Corp](#)

DOCUMENTS

- 2007 - [Analysis of Utah Tar Sands](#). Baxter.
- 2008 - [History of Tar Sands in North America](#). Congressional Research Service.
- 2010 - [Energy-Water Nexus: Better Understanding of Water Resources](#). GAO.
- 2010 - [American Tar Sands](#). Williams.
- 2010 - [Water Availability for Tar Sands and Oil Shale](#). Keiter.
- 2012 - [Energy Water Nexus for Utah](#)
- [Oil Shale Politics in Utah: Holding Government Officials, Lobbyists, and Corporate Management Accountable to the Public](#)

ECONOMIC VIABILITY

- [2013 - Executive Summary: Tar Sands Oil Shale Market Assessment](#). U of U.
- [2013 - Oil Shale Market Assessment](#). U of U.
- [2013 - Capitalization Rate Study for Centrally Assessed Properties](#). Utah Tax Commission.
- [2011 - Economic Impact of Marcellus Shale Gas](#). Cornell.
- [2011 - Marcellus Shale: What Are The Limitations?](#) Cornell.
- [2010 - Oil Shale: 14 Unanswered Questions](#). Headwater Economics.
- [2008 - North American Oil Sands History Development Prospects](#). Congressional Research Service.
- [2008 - Developments In Oil Shale](#). Congressional Research Service.
- [2007 - Testimonies Oil Shale](#). RAND.
- [2006 - Oil Shale History Incentives Policy](#). Congressional Research Service
- [2005 - Oil Shale Development USA](#). RAND.

ENDANGERED AND THREATENED SPECIES

- [Critical Habitat Designation](#). USFWS.
- [Mexican-spotted owl](#)
- [Greater sage grouse](#)

- [Graham's Penstemon \(Photo\) \(Recent news\) \(Aid to identify\)](#)
- [Screen of endangered species at Red Leaf Resources](#)
- [Map 01 & Map 02: endangered species @ Red Leaf Resources](#)
- [Sage grouse brood habitat at PR Springs](#)
- [Critical Habitat Map. The Wilderness Society.](#)

GEOLOGY

[Oil Shale and Tar Sands web page.](#) Utah Geologic Survey.

[Tar Sands Bibliography](#) (2009). UGS.

[USGS publications library](#)

- [2008 - Oil shale and tar sands Programmatic EIS.](#) BLM.
- [2008 - Holocene Debris Flows on the Colorado Plateau.](#) Webb.
- [1996 - Tar Sands Resources Uinta Basin.](#) Blackett.
- [1992 - Hydrocarbons along proposed Book Cliffs Highway.](#) UGS.
- [1984 - Characteristics of PR Springs Tar Sands.](#) Dana.
- [1984 - Economic Potential of PR Springs Tar Sands.](#) UGS.
- [1983 - Potential Impacts on Hydrology from Tar Sands Industry.](#) USGS.
- [1980 - PR Springs Tar Sands.](#) UGS; Dahm.
- [1980 - Characteristics of PR Springs Tar Sand Deposits.](#) DOE.
- [1980 - Characterization of Utah Bitumen.](#) BoM.
- [1980 - Properties of Utah Tar Sands.](#) BoM.
- [1979 - Geology Oil Impregnated Sandstone Utah.](#) UGS; Campbell.
- [1975 - Hydrologic Reconnaissance of Southern Uinta Basin, Utah and Colorado.](#) Price & Miller.
- [1975 - Mineral Resources of Uintah Ouray Reservation.](#) USGS.
- [1971 - Grand County Tar Sands.](#) UGS; Gwynn.
- [1970 - PR Springs Tar Sands.](#) UGS; Byrd.
- [1966 - PR Springs Tar Sands.](#) Open File Report; UGS.
- [1966 - PR Springs stratigraphic column of tar sand deposits](#)
- [1964 - Bituminous Sandstone Uinta Basin.](#) Covington.

Geologic Bibliography

- [Uinta Basin Geology](#)

LEGAL DOCUMENTS

- [2009 - Letter from Western Resource Advocates.](#)
- [Petitioners withdraw with prejudice](#)
- [PR Springs Settlement.](#) SUWA, Sierra Club, Western Resource Advocates.
- [Comments on Air Quality from Oil and Gas Development in Dixie Nat. Forest](#)
- [2010 - Montana Environmental Information Center v BLM](#)
- [2010 - Mexican spotted owl critical habitat decision](#)
- [2010 - History of Mexican spotted owl appeal](#)

MAPS & GIS

- [BLM PEIS: Tri-state deposits](#)
- [Uinta Basin](#)

Google Earth

- [Tar sand deposits 01](#). Data from BLM PEIS.
- [Tar sand deposits 02](#). Data from BLM PEIS.
- [Satellite image of well pad for PR Springs mine](#)

PR Springs

- [Map of 1966](#)
- [Tar sand saturation map of 1966](#)
- [1966 - PR Springs stratigraphic column of tar sand deposits](#)
- [Stratigraphic column Section 27](#) (Monument Ridge Road Junction)
- [Location of spings](#)
- [Map: Topo of PR Springs](#)
- [Map: Proposed mining operations @ PR Springs](#)
- [Location of tar sand deposits in Uinta Basin](#)

Green River Refinery (proposed) ([click here](#))

SITLA

- [Oil shale resource ownership](#)
- [Parcels in Grand County](#) (14.9%; about 550 sq. miles)
- [US Oil Sands Lease with SITLA](#)
- [US Oil Sands Contract Report](#). SITLA.

University of Utah

- [Interactive Map](#)

Other

- [Critical Habitat Map](#). The Wilderness Society.
- [Map - Where tar sand oil is refined](#)
- [Map: PR Springs water well and pipeline](#)
- [Map: Topo of PR Springs](#)
- [Map: Proposed mining operations @ PR Springs](#)

NEWS

- [6/15/10 - Wildflower vs. Oil Shale](#). Salt Lake Weekly.
- [11/30/10 - GAO: More research needed on oil shale, water](#)
- [9/17/2007 - Tar sands, oil shale](#). Energy Bulletin.

- [3/17/2010 - First US Tar Sands to Break Ground in Utah.](#)
- [3/18/10 - Tar sand industry comes to eastern Utah.](#)
- [3/24/10 - Decision on wildflower protection expected soon.](#) Assoc. Press.
- [3/28/10 - Company seeks first U.S. oil sands project in Utah.](#) SL Tribune.
- [3/29/10 - Sage Grouse will play role in Western energy development.](#) Marten Law.
- [4/29/10 - Salazar aide - Oil shale not ready for prime time](#)

NON-PROFIT ORGANIZATIONS

- Document archive. Western Resource Advocates.
- Fossil Foolishness. Western Resource Advocates
- [Northern Rockies Rising Tide](#)
- [CERES Report on Oil Shale/Water Nexus.](#)
- [Tar Sands: Feeling the climate crisis.](#) FOE Europe.
- Dirty Oil. Greenpeace.
- [2011 - Between a Rock and a Dry Place: The Impact of Oil Shale Development and Climate Change on the Colorado River Basin Water Supply.](#) NRDC

PHOTOS

- [Baseline Map: Drill Test Sites PR Springs](#)
- [Book Cliffs Divide Road Grand County; Reduced](#)
- [Camp One; Reduced](#)
- [Camp Two; Reduced](#)
- [Drill Pads; Reduced](#)
- [East Canyon Grand County Approach; Reduced](#)
- [Equipment Yard; Reduced](#)
- [Landscapes; Reduced](#)
- [Neighboring Gas Well; Reduced](#)
- [Pit; Reduced](#)
- [Processing Site; Reduced](#)
- [Products; Reduced](#)
- [PRsprings; Reduced](#)
- [Water Well Site One; Reduced](#)
- [Earth Energy Resources @ PR Springs, June 2010](#)
- Earth Energy Resources test pit: #1; #2; #3; #4;
- BLM PEIS photos

Aerial Photos

- [Aerial photos of East Tavaputs Plateau.](#) Large file. Includes operations by US Oil Sands and Red Leaf Resources; areas of chained trees; wilderness and roadless areas.
- [Tar sand mining boundary of PR Spring 01](#) (blue line is Grand & Uintah border)
- [Tar sand mining boundary of PR Spring 02](#)

Satellite Images

- [Satellite image of well pad for PR Springs mine](#)

TRADE ASSOCIATIONS

- [White Paper](#). Utah Mining Association.

UNIVERSITY

- [2007 - Utah Tar Sands: Worth the Energy?](#)
- [2009 - Oil Shale Report](#). University of Colorado at Boulder.
- [University of Utah ICSE Digital Repository](#)
- [2009 - Western US Tar Sands Conference](#)

USGS

- [Oil shale and tar sands interactive web page](#) (excellent resource)
- [1995 - Surface disturbances and the role of accelerating erosion](#). Belnap.
- Graphic: [tar sand deposits in the USA](#).

UTAH GOVERNMENT

- [Home page](#): Utah Oil, Gas & Mining
- [Public records](#): Utah Oil, Gas & Mining. (Username and password is ogmguest)
- [FTP Site](#). Utah Oil Gas & Mining
- [PR Springs water right 01 and 02](#). Utah Division of Water Rights.
- [1980 - An Assessment of Oil Shale and Tar Sands Development](#)
- [2009 - Bibliography of tar sand deposits & map](#). Utah Geological Survey.
- [2009 - Approval of PR Springs strip mine for tar sand](#). UDOGM.
- [2010 - Notice regarding PR Springs Mine to Grand County Council](#). UDOGM.
- [2012 - Energy Water Nexus for Utah](#)

VIDEO

- [Fossil Foolishness](#). Western Resource Advocates.
- [A film by Leslie Iwerks](#)
- [The Tar Sands Blow](#)
- [Tar Sands](#), Canadian Broadcasting Corporation
- [Red Leaf Resources](#). EcoFLight.

WILDLIFE

Southest Utah (includes East Tavaputs Plateau)

- [Amphibian Inventory](#). DWR.
- [Avian Inventory](#). DWR.
- [Bison Reintroduction](#). DWR.

- [Black Bears](#). DWR
 - [Ecosystem Evaluation](#). DWR.
 - [Mammal Inventory](#). DWR.
 - [Reptile Inventory](#). DWR.
 - [Bison Herd Unit Management Plan](#)
 - [Inventory of birds](#)
-

Asphalt Ridge Leasing of Federal Lands for Proposed Tar Sands Strip Mining Operations

JUNE 04, 2013

BY JOHN WEISHEIT

Comments are due June 13, 2013.

- [May 2013 - EA for Asphalt Ridge Tar Sands Leasing](#). Vernal BLM.
- [Appendix A: checklist](#)
- [Appendix B & C: sensitive species](#)
- [Appendix D: maps](#)

Please reference Tar Sands Leasing EA when submitting comments. Written comments may be mailed or emailed, using the following:

Mailing Address

Bureau of Land Management
Vernal Field Office
170 South 500 East
Vernal, Utah 84078

Email Address

BLM_UT_Vernal_Comments@blm.gov

Geology and Geography

The tar sands are in the Duschene Formation and because of rock layers are tilted (sloping downward to the southwest), the tar sands are exposed at the surface and as a ridge; hence the name, Asphalt Ridge. As the easy-to-get surface deposits are removed, the mining district will have to chase the ore deposits that are deeply buried within the ridge, which means the miners will have to deal with the overburden at some point. At that time the mining will either end, or the mining activities will shift to either underground mining techniques, or withdrawal by steam-injection procedures.

The tar sands mining district of Asphalt Ridge is immediately next to the city limits of Vernal. Mining activities will literally occur in the backyards of residential homes, schools and churches, and these mining activities will operate 24 hours a day, seven days a week. Obviously the city of Vernal and Naples will eventually look, smell and sound like an industrialized energy colony.

When, the oil and gas boom is over and the oil corporations leave, which will happen in less than 25-years, Vernal and Naples will become a discarded and ruined community.

Article: [How Vernal Utah Learned to Love Big Oil](#)

ASPHALT RIDGE MINING OPERATIONS (adjacent to Vernal, Utah)

- [Map - Asphalt Ridge Projects.](#)
- [Brief History of Asphalt Ridge Development.](#)
-

Crown Asphalt Ridge (CAR) Korea Technology Industry of America (Defunct)

- Website - [JAM Industrial, Inc.](#) (Tar sands demonstration project that ended in bankruptcy).
- [2004 - Study Demonstration Process Bitumen Utah Tar Sand.](#) Society of Petroleum Engineers.
- [CAR Google Earth](#)

Crown Asphalt Ridge (CAR)

Department of Water Quality (DWQ) Documents

- [CAR - Public Notice Public Notice](#)
- [CAR - Application Letter.](#) 2012.
- [CAR - Application.](#) 2012.
- [CAR - Application Appendix A Lab Report.](#) 2012.
- [CAR - Application Appendix B Well Logs.](#) 2012.
- [CAR - Application Attachments.](#) 2012.
- [CAR - Statement Of Basis.](#) 2012.
- [Comments - Western Resource Advocates and Living Rivers.](#) 2012.
- [Response - To WRA and LR.](#) 2012.

MCW Energy Group @ Asphalt Ridge

- [MCW Energy - GoogleEarth.](#)
- [MCW Energy - Public Notice.](#)
- [MCW Energy - DWQ Application.](#)
- [MCW Energy - Construction Permit.](#)
- [MCW Energy - Statement of Basis.](#)

History of this Federal Action Since 2005 Energy Policy Act

In January 2009, numerous plaintiffs filed a complaint in the District Court of Colorado to prevent the Record of Decision for the 2008 Programmatic Environmental Impact Statement (PEIS) for oil shale and tar sands from going into effect.

A settlement agreement reached in February 2011 specifically exempts ongoing consideration of the expression of interest (EOI) for tar sands leasing in Asphalt Ridge, as well as the possible sale or issuance of a lease for parcels identified in the EOI.

Additionally, the BLM undertook a new public planning process related to oil shale and tar sands leasing in April 2011 and finalized a new PEIS in November 2012. The 2012 PEIS similarly exempted ongoing BLM-Utah decision-making efforts regarding the lands included in the pending Asphalt Ridge tar sands leasing application.

This PEIS amends land use plans and describes the most geologically prospective areas administered by the BLM in Utah where tar sands resources are present, and identifies areas open to application for commercial leasing, exploration and development. Tar sand leasing can only take place in designated STSAs under orders issued by the Department of Interior on November 10, 1980 (45 FR 76800), and January 21, 1981 (46 FR 6077).

Asphalt Ridge STSA is specifically analyzed in the PEIS and 5,310 acres of Federal lands and 125 acres of non-federal surface/federal minerals are identified for commercial tar sand development in the STSA.

The present Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of leasing one tar sand parcel comprised of 6 pieces totaling 2,116 acres located in the Asphalt Ridge Special Tar Sand Area (STSA).

[CLICK HERE](#) to read additional information about the ongoing PEIS process

Environmental Impact Statements of the 1980s by BLM

- [1983 - Uinta Basin Synfuels Development, Final Environmental Impact Statement](#)
- [1983 - Utah Combined Hydrocarbon, Regional Draft Environmental Impact Statement](#)
- [1984 - Utah Combined Hydrocarbon, Regional Final Environmental Impact Statement](#)
- [1984 - Book Cliffs Resource Management Plan, Final Environmental Impact Statement](#)
- [1984 - Air quality assessment for the Environmental Impact Statement on the Federal Oil Shale Management Program](#)
- [1985 - PR Spring Combined Hydrocarbon Lease Conversion Draft Environmental Impact Statement](#)
- [1985 - PR Spring Hydrocarbon Lease Conversion Final Environmental Impact Statement](#)
- [1990 - Winter Ridge Wilderness Study Area](#)
- [1999 - Utah Wilderness Inventory](#)

The Bureau of Land Management (BLM) has received an expression of interest for this parcel, which may be offered as a competitive lease. This tar sand parcel occurs adjacent to 16,241 acres of leases issued by the State of Utah School and Institutional Trust Lands Administration (SITLA) and directly south of an existing mine and processing plant on private land.

Red Leaf Resources' Eco-Shale Project in Eastern Utah

OCTOBER 18, 2013
BY JOHN WEISHEIT

UPDATES

- All federal leasing for oil shale development in Utah and Colorado have expired or have been relinquished.
- Activities for tar sand and oil shale development in Utah have ceased.

Like tar sands, oil shale is one of the dirtiest fuels on the planet. Its mining, processing and tailings threaten to industrialize vast swaths of land, pollute air and water, harm wildlife, and emit carbon at rates far exceeding conventional oil development.



Exploratory pit of kerogen bearing shale

The U.S. Geological Survey estimates that between 353 billion and 1.146 trillion barrels of oil in the Green River Formation oil shale deposits have a high potential for development, which is 2 to 7 times as much as Alberta's 170 billion barrels targeted by the Keystone XL pipeline.

To date, industry hasn't been able to economically turn oil shale into fuel. But they're trying.

Red Leaf Resources is gearing up to test new oil shale technology near the Book Cliffs in one of the Colorado River Basins' most wild areas. They plan to strip mine shale deposits into a 160-foot deep capsule, line it with clay, and then backfill, bury and bake shale in it for months to extract kerogen that will be refined into diesel fuel.

If it works, the process could spur runaway development. The consequences for land, wildlife, water and efforts to curb climate change, would be overwhelming.

NEW INFORMATION ABOUT TOMCO

TomCo is a British company that will use Red Leaf Resources experimental technology to retort oil shale (hard rock kerogen)

- [Click here](#) to read this story by Brian Maffly of the Salt Lake Tribune
- [TomCo's Small Mining Permit Application](#)

HOW TO GET INVOLVED

[Click here](#) to read a sample letter to the Department of Water Quality about proposed strip mining operations by Red Leaf Resources in the Uinta Basin.

NEW INFORMATION: Regarding Red Leaf Resources Mining Permit

- [Experimental Capsule Description](#) (Earth Ovens)
- [Water Discharge Permit](#)
- [Comments for Draft Red Leaf Ground Water Permit](#). WRA et al.

NEW INFORMATION: Regarding the economic feasibility of unconventional fuels in Utah

- [2013 - Executive Summary: Tar Sands Oil Shale Market Assessment](#). U of U.
- [2013 - Oil Shale Market Assessment](#). U of U.

STATE LAND INVENTORY FOR OIL SHALE IN UTAH

- 93,000 State Trust acres are leased for oil shale
- A typical lease lasts 10-years
- Not all land can be surface mined (some requires underground mining)

ADMINISTRATIVE RECORD: Red Leaf Resources

- [Living Rivers v Red Leaf Resources](#)
- [Final Memo in Opposition Motion in Limine](#)
- [Final MSJ Response](#)
- [Final Response to DOGM's Pre-Hearing Brief](#)
- [Final Response to DOGM's Reply](#)
- [DOGM Pre-Hearing Brief](#)
- [RED LEAF'S PRE-HEARING BRIEF](#)
- [RLR PRE-HEARING REPLY BRIEF](#)
- [RLR'S MEMO IN SUPPORT OF MOTION FOR PARTIAL SUMMARY DECISION](#)
- [RLR'S MEMO IN SUPPORT OF MOTION IN LIMINE](#)
- [RLR'S MOTION FOR PARTIAL SUMMARY DECISION](#)
- [RLR'S MOTION IN LIMINE](#)
- [DEQ comments Red Leaf 2012 Feb](#)
- [DOGM Red Leaf Hearing Notice Feb 2012](#)
- [DWR comments Red Leaf 2012 Feb](#)
- [LivingRivers RAA Red Leaf](#)
- [Red Leaf Informal Hearing Transcript 2012 March](#)
- [Red Leaf NOI protest](#)

ADMINISTRATIVE RECORD: Discharge permit Red Leaf Resources

- [Draft Permit](#)
- [Draft Statement of Basis](#)
- [Ground Water Discharge Permit Application June 2013](#)
- [SOB Figure 1 Site Location Map](#)

- [SOB Figure 2 EPS Site Plan](#)
- [SOB Figure 3 Generalized Strat Column Green River Formation](#)
- [SOB Figure 4 EPS Capsule Roof Floor and Wall Details](#)
- [Supplemental Seep and Spring Inventory May 2013](#) (large file)

Utah Division of Oil, Gas and Mining (UDOGM)

- [UDOGM permit files \(complete\)](#)(Username and Password: ogmguest)
- [UDOGM Board Notes and Dockets](#)

Red Leaf Resources Inc. (oil shale mining permits)

- [Red Leaf Resources @ Southwest #1](#)
- [Red Leaf Resources @ Southwest #1b](#)
- [Red Leaf Resources @ Site #1](#)
- [Red Leaf Resources @ Site #3](#)
- [Red Leaf Resources @ Site #4](#)
- [Red Leaf Resources @ Site #6](#)
- [Red Leaf Resources @ Site #7](#)
- [Red Leaf Resources @ Site #8](#)
- [Red Leaf Resources @ Site #9](#)

OIL SHALE STRIP MINING @ INDIAN RIDGE

- [Notice of Intent \(NOI\) to Commence Large Mining Operations](#). Red Leaf Resources.
- [November 2011 - Red Leaf NOI Protest](#). Living Rivers and Western Resource Advocates.
- [February 2012 - Notice of informal hearing for Red Leaf Resources](#).
- [February 2012 transcript of Red Leaf hearing](#).
- [March 2012 - Living Rivers request for agency action](#)

BUREAU OF LAND MANAGEMENT

- [BLM EA on paving of Seep Ridge Road in Uintah County](#)

BLM's Oil Shale & Tar Sands Programmatic EIS

- [Home Page](#)
- [Federal Notice](#)
- [Environmental Impact Statement](#)
- [Record of Decision](#)
- [Additional Information](#)
- [Tar Sands: Basic Information](#)
- [Oil Shale: Basic Information](#)
- [Endangered Species List](#)
- [Comments of California Attorney General](#)

CORPORATE WEBSITES

- NEW: [Company Profiles](#)
- [National Oil Shale Association](#)
- [AuraSource](#) (China)
- [Nevtah](#)
- [Earth Energy Resources](#)
- [Enshale & Bullion Monarch Mining](#)
- [Enefit](#)
- [Oil Shale Exploration Company](#) (Now [Enefit](#))
- [Red Leaf Resources](#)
- [Red Leaf Presentation](#)
- [Video about Red Leaf](#). EcoFLight.
- [Red Leaf oil shale update](#)
- [Shell Mahogany Research Project](#)
- [Temple Mountain Energy](#)
- [TomCo Energy](#)
- [National Oil Shale Association](#)

DOCUMENTS

- Oil shale library. Headwaters Institute.
- [Oil Shale Politics in Utah: Holding Government Officials, Lobbyists, and Corporate Management Accountable to the Public](#)
- [2014 - Oil Shale Climate Nexus Letter from Rep. Polis to Council on Environmental Quality.](#)
- [2012 - Energy Water Nexus for Utah](#)
- [2011 - Testimony of Bill Eikenberry \(PIONEERS Act\)](#)
- [2010- Oil Shale in the West: 14 Unanswered Questions.](#) Headwater Economics.
- [2010 - CERES Report on Oil Shale/Water Nexus.](#)
- 2010 - Oil shale update. National Oil Shale Association.
- [2010 - Energy-Water Nexus: Better Understanding of Water Resources.](#) GAO.
- 2008 - Oil Shale Report. Congressional Research Service.
- [2008 - Water Rights and Oil Shale.](#) Congressional Research Service.
- [1974 - Oil Shale Development.](#) League of Women Voters.
- [1967 - 4th symposium on oil shale.](#) Colorado School of Mines.

ECONOMIC VIABILITY

- [2013 - Executive Summary: Tar Sands Oil Shale Market Assessment.](#) U of U.
- [2013 - Oil Shale Market Assessment.](#) U of U.
- [2011 - Economic Impact of Marcellus Shale Gas.](#) Cornell.
- [2011 - Marcellus Shale: What Are The Limitations?](#) Cornell.
- [2010 - Oil Shale: 14 Unanswered Questions.](#) Headwater Economics.
- [2008 - North American Oil Sands History Development Prospects.](#) Congressional Research Service.

- [2008 - Developments In Oil Shale](#). Congressional Research Service.
- [2007 - Testimonies Oil Shale](#). RAND.
- [2006 - Oil Shale History Incentives Policy](#). Congressional Research Service
- [2005 - Oil Shale Development USA](#). RAND.
-

ENDANGERED AND THREATENED SPECIES

- [Critical Habitat Designation](#). USFWS.
- [Mexican-spotted owl](#)
- [Greater sage grouse](#)
- [Graham's Penstemon \(Photo\) \(Recent news\) \(Aid to identify\)](#)
- [Screen of endangered species at Red Leaf Resources](#)
- [Map 01 & Map 02: endangered species @ Red Leaf Resources](#)
- [Critical Habitat Map](#). The Wilderness Society.

EPA - ENVIRONMENTAL PROTECTION AGENCY

- [NSPS Subpart Ja](#)
- [2010 - Fact sheet on ozone standards](#)

GEOLOGY

- [Oil Shale and Tar Sands web page](#). Utah Geologic Survey.
- [Tar Sands Bibliography \(2009\)](#). UGS.
- [USGS publications library](#)
- [2008 - Oil shale and tar sands Programmatic EIS](#). BLM.
- [2008 - Holocene Debris Flows on the Colorado Plateau](#). Webb.
- [2007 - Analysis of Utah Tar Sands](#). UGS.
- [1992 - Hydrocarbons along proposed Book Cliffs Highway](#). UGS.
- [1975 - Mineral Resources of Uintah Ouray Reservation](#). USGS.

BIBLIOGRAPHIES

- [Uinta Basin Geology](#)

LEGAL

- [Comments on Air Quality from Oil and Gas Development in Dixie Nat. Forest](#)
- [2010 - Montana Environmental Information Center v BLM](#)
- [2010 - Mexican spotted owl critical habitat decision](#)
- [2010 - History of Mexican spotted owl appeal](#)

MAPS & GIS

- BLM PEIS: [Tri-state deposits](#)
- [Uinta Basin](#)
- Green River Refinery (proposed) ([click here](#))

SITLA

- [Oil shale resource ownership](#)
- [Parcels in Grand County](#) (14.9%; about 550 sq. miles)

University of Utah

- [Interactive Map](#)

PHOTOS

- [Book Cliffs Divide Road Grand County; Reduced](#)
- [East Canyon Grand County Approach; Reduced](#)
- [Red Leaf Resources @ Indian Ridge, June 2010](#)

NEWS

- [6/15/10 - Wildflower vs. Oil Shale](#). Salt Lake Weekly.
- [11/30/10 - GAO: More research needed on oil shale, water](#)
- [9/17/2007 - Tar sands, oil shale](#). Energy Bulletin.
- [3/24/10 - Decision on wildflower protection expected soon](#). Assoc. Press.
- [3/29/10 - Sage Grouse will play role in Western energy development](#). Marten Law.
- [4/29/10 - Salazar aide - Oil shale not ready for prime time](#)

NON-PROFIT ORGANIZATIONS

- [Document archive](#). Western Resource Advocates.
- [Oil Shale Facts](#)
- [Fossil Foolishness](#). Western Resource Advocates
- [Northern Rockies Rising Tide](#)
- [CERES Report on Oil Shale/Water Nexus](#).
- [Tar Sands: Feling the climate crisis](#). FOE Europe.
- [Dirty Oil](#). Greenpeace.
- [2011 - Between a Rock and a Dry Place: The Impact of Oil Shale Development and Climate Change on the Colorado River Basin Water Supply](#). NRDC

TRADE ASSOCIATIONS

- [White Paper](#). Utah Mining Association.

UNIVERSITY

- [2009 - Oil Shale Report](#). University of Colorado at Boulder.
- [University of Utah ICSE Digital Repository](#)

USGS

- [Oil shale and tar sands interactive web page](#) (excellent resource)

- [1995 - Surface disturbances and the role of accelerating erosion](#). Belnap.

UTAH GOVERNMENT

- [Home page](#): Utah Oil, Gas & Mining
- [Public records](#): Utah Oil, Gas & Mining. (Username and password is ogmquest)
- [FTP Site](#). Utah Oil Gas & Mining
- [PR Springs water right 01 and 02](#). Utah Division of Water Rights.
- [1980 - An Assessment of Oil Shale and Tar San Development](#)
- [2009 - Bibliography of tar sand deposits & map](#). Utah Geological Survey.
- [2009 - Approval of PR Springs strip mine for tar sand](#). UDOGM.
- [2010 - Notice regarding PR Springs Mine to Grand County Council](#). UDOGM.
- [2012 - Energy Water Nexus for Utah](#)

VIDEO

- [Fossil Foolishness](#). Western Resource Advocates.
- [Red Leaf Resources](#). EcoFLight.

WILDLIFE

Southeast Utah (includes East Tavaputs Plateau)

- [Amphibian Inventory](#). DWR.
 - [Avian Inventory](#). DWR.
 - [Bison Reintroduction](#). DWR.
 - [Black Bears](#). DWR
 - [Ecosystem Evaluation](#). DWR.
 - [Mammal Inventory](#). DWR.
 - [Reptile Inventory](#). DWR.
-

Enefit's Utah Oil Shale Project near the White River: An Environmental Impact Statement

OCTOBER 18, 2013
BY JOHN WEISHEIT

UPDATE as of September 2023

- Enefit's water right has been vacated and the federal leasing permit has been relinquished.
- [Reference](#)

Under the proposal, Enefit American Oil would construct 19 miles of water supply pipeline, 8 miles of natural gas supply pipeline, 10 miles of oil product line, 29 miles of single or dual overhead 138-kilovolt H-frame powerlines, and upgrade an estimated five miles of Dragon Road on BLM-administered lands in the Vernal Field Office. If approved, the project, referred to as the Enefit American Oil Utility Corridor Project, would provide access, natural gas, electricity, and water to, and move processed oil from, Enefit American Oils South Project, which is planned on private land and minerals owned by Enefit. The Enefit American Oils planned South Project is a non-Federal connected action which will include development of a commercial oil shale mining, retorting, and upgrading operation located in Uintah County, Utah.

- [News about Enefit USA](#)
 - [Website of Enefit USA](#)
 - [Comments of Western Resource Advocates et al.](#)
 - [Public Scoping Meeting Presentation](#)
 - [Final BLM Newsletter for Enefit Project](#)
 - [Final Enefit Project Study Area Map](#)
 - [Enefit Project Study Area Map for Scoping 24x36](#)
 - [BLM Scoping Report](#)
 - [BLM Scoping Report Appendices](#)
-

White River Flow Recommendations and Programmatic Biological Opinion

NOVEMBER 01, 2013
BY JOHN WEISHEIT

Thirteen years ago the respected ecologists Dr. Tyus and Dr. Saunders determined that the White River was second to the Yampa River for ensuring the recovery of endangered fish in the greater Green River basin, the major-most tributary of the Colorado River.

Tyus and Saunders recognized that the White River also provided direct contributions (endangered fish habitat) to recovery based on abundant captures of adult Colorado pikeminnow, and the occasional capture of young-of-the-year Colorado pikeminnow and adult razorback sucker.

Unfortunately, the White River could lose that position if the extraction of oil shale and tar sands proceeds within the landscape of this imperiled watershed. To support corporate interests to exploit dirty and carbon intensive fuel extraction programs, the states of Colorado and Utah could approve depletions of about 20% from the White River, which would eliminate yet another hope that water managers would finally begin to embrace a future of river restoration and ecosystem recovery.

The Department of Interior, has decided to initiate a management plan for the White River, which will hopefully adopt a flow recommendation report. Another component of this proposed management plan would include a Programmatic Biological Opinion and Section 7 Consultation.

DOCUMENT ARCHIVE

[Click here](#) to visit the RESOURCE page about endangered fish

- [2014 - White River Storage Feasibility Study](#). Rio Blanco Water Conservancy District.
- [2014 - White River development](#). Press release from Western Resource Advocates.
- [2013 - Notice of Flow Recommendations](#). USFWS.
- [2013 - Public Comments](#). Living Rivers & Colorado Riverkeeper.
- [1980 - DEIS White River Dam Project](#) (proposed). BLM.
- [1982 - FEIS White River Dam Project](#). BLM.
- [2009 - White River Basin Information](#). Colorado.
- [2004 - White River Base Flow Study](#). USFWS.
- [2000 - White River endangered Species Report](#). Utah.
- [1986 - Endangered Fish & White River Taylor Draw Project](#). Colorado.
- [1984 - White River Baseline Water Quality Report](#). USGS.

THE PROPOSED WHITE RIVER STORAGE PROJECT (Wolf Creek)

- Feature: [On the Colorado](#)
-

Green River Refinery Proposed for Emery County near Green River, Utah

NOVEMBER 06, 2013

BY JOHN WEISHEIT

Previous Green River Refinery (now bankrupt)

Note: a second refinery has been proposed near Green River called Iron Fox Refinery.

[Click here](#) to review the application.

- [Click here](#) to visit the website of Utah Division of Air Quality
- [History of the defunct Green River Refinery on Old Highway 50](#)

NEW INFORMATION:

- [March 25, 2014 - Intent to Approve Emery Refinery \(draft\) & Public Notice.](#) Division of Air Quality. Public meeting announcement is pending.
- [Request for Agency Action](#)
- February 3, 2014 - Administrative Law Judge [Recommends Stay](#) to Executive Director

Emery Refining (LLC), based in Houston, Texas, proposes to build a refinery near Green River, Utah ([map](#)) to process heavy crude into transportation fuels (diesel and kerosene) and for petroleum products you would typically find in a hardware store.

Emery Refining (LLC) was previously called Bridgehouse Refining (LLC). One year prior (2012), the application for this proposed facility came from High Desert Refining (LLC).

To add to the confusion, there is an existing refinery in Green River on the east side of town (see photos below) but this refinery, managed by EcoDomain (according to the signs on the property), has been closed for some time now. The first application submitted by Bridgehouse Refining was for a facility to be built on the property of this defunct refinery. Now, apparently, the High Desert/Bridgehouse/Emery refining project will be built on the west side of town near the junction of Interstate 70 and US Hwy 6.

The refinery under review has been linked to the production of unconventional fuels by Red Leaf Resources, which has proposed strip mining for oil shale in Uintah County in

the Tavaputs Plateau, between the Book Cliffs and the White River. Oil shale is a hard rock embedded with waxy-like kerogen.

The following is an excerpt from the Utah Division of Air Quality:

A 30-day public comment period will be held in accordance with UAC R307-401-7. A notification of the intent to approve will be published in the Emery County Progress on February 5, 2013. During the public comment period the proposal and the evaluation of its impact on air quality will be available for the public to review and provide comment. If anyone so requests a public hearing within 15 days of publication, it will be held in accordance with UAC R307-401-7. The hearing will be held as close as practicable to the location of the source. Any comments received during the public comment period and the hearing will be evaluated. The proposed conditions of the AO may be changed as a result of the comments received.

Comments are due close of business on Thursday March 7, 2013. We suggest you submit them on February 6th. Send your comment letter to:

- Timothy R. Andrus
- Division of Air Quality
- PO Box 144820
- Salt Lake City, UT 84114-4820
- Fax: 801-536-4099
- Phone: 801-536-4414
- email for Tim Andrus is tandrus@utah.gov

DOCUMENT ARCHIVE

- March 7, 2013 - [Comment letter by Grand Canyon Trust, et al.](#)
 - February 1, 2013 - [Division of Air Quality: Intent To Approve](#)
 - February 5, 2013 - [Public notice](#) (Green River Refinery)
 - December 2012 - [Corporate Repsonse to DAQ Questions](#)
 - November, 2012 - [Emery Refinery Notice of Intent](#)
 - February, 2012 - [Bridgehouse Refinery Intent To Approve](#)
 - February, 2012 - [Public Notice](#) (Bridgehouse)
 - February, 2012 - [Bridgehouse Refinery Proposal](#)
 - May 3, 2011 - [Public notice](#)
 - April, 2011 - [High Desert Refinery Intent To Approve](#)
 - 2008 - [Green River Refinery link to Red Leaf Resources' proposed oil shale project](#) (page 11)
 - March, 2007 - [Emery Progress: Green River Says Yes To Refinery](#)
 - June, 2013 - [Way Cleared In Utah for 1st New USA Refinery Since 1976](#). Salt Lake Tribune.
 - Photos - [Exisiting Green River Refinery](#) (inactive)
 -
-

Potash Development Proposals Adjacent to Arches and Canyonlands National Park

NOVEMBER 22, 2013
BY JOHN WEISHEIT

New information: The federal lease to American Potash and K20 Potash for exploratory drilling has expired for lack of payment.



Potash ponds below Dead Horse State Park

New Information: Pinnacle Potash is seeking the option to lease surface water from Flaming Gorge Reservoir, which will require a federal water contract with the Department of Interior. This will require an environmental assessment and consultation with US Fish and Wildlife and other federal agencies.

Underneath the heart of the Canyonlands Province is a huge 300 million-year-old reserve of gypsum, salt and potash. The result of a coastal basin repetitively filling with sea water that evaporated away, until the basin was completely filled with seawater precipitates, and then subsequently buried by additional layers of sedimentary deposits in the thousands of feet.

Since 1963, and 20 miles downstream of Moab along the Colorado River, various potash companies (now Intrepid Potash) have been extracting potash and salt for fertilizer and other industrial purposes. At first the salty minerals were mined by workers underground until a methane explosion killed 18 workers. Thereafter, the chosen extraction method was to inject Colorado River water into the horizontal layers to dissolve the salts into a solution, which are then pumped into surface ponds so that the liquid brine will evaporate, and then the salt crystals are harvested and packaged for transport via trucks and railroad cars. The total annual water consumption of this existing potash facility is estimated to be about 3,300 acre-feet.

In 1963, surplus water in the Colorado River was available--but no longer. Because the price of Potash (potassium chloride), speculative mining companies are stacking up. Currently three companies are preparing applications and commencing drilling to determine the feasibility of the ore bodies for development. That part is easy--how they will acquire the water is an entirely different matter. Other impediments include permits for roads, pipelines to deliver natural gas and transmission lines to supply electricity. The three companies are K2O Potash; Pinnacle Potash; and American Potash. Below is the administrative record of these three companies:

K2O POTASH COMPANY

Comment period closed on November 30, 2012 for an Environmental Assessment to commence exploratory drilling in the Hatch Point area of the [Canyon Rims Recreation Area](#), and east of Canyonlands National Park.

The Moab Field Office of the Bureau of Land Management seeks public comment on an Environmental Assessment (EA) analyzing the potential impacts of exploratory drilling for potash—a powdery salt commonly used in fertilizers.

Under the proposal, K2O Utah LLC, would drill four exploratory core holes in the Hatch Point/Canyon Rims area of San Juan County. The proposed action would disturb approximately 39 acres.

The proposed action and maps may also be viewed on the Internet at: <https://www.blm.gov/ut/enbb/index.php>

Send written comments to:
Bureau of Land Management
Moab Field Office
82 East Dogwood
Moab, UT 84532
Phone: (435) 259-2100

Written comments may also be submitted via email to:
BLM_UT_MB_Comments@blm.gov

- [Proposed Action](#)
- [BLM Web Page: General Announcements](#)
- [BLM Web Page for K2O Potash](#)
- [K2O EA Fonsi Roads 2011](#)
- [K2O Hatch Point EA](#)
- [App D Fugitive Dust Control Plan](#)
- [App E Air Emissions Inventory](#)
- [App F VI SCREEN Air Modeling Results](#)
- [Map 1 Proposed Action](#)
- [Map 2 Dismissed Locations](#)
- [Map 3 Soils](#)
- [Map 4 Recreation](#)
- [Map 5 Visual](#)
- [Map 6 Pronghorn](#)
- [Map 7 Vegetation](#)
- [Map C1 Riparian](#)

BACKGROUND INFORMATION

- [2011 - Water right for potash development near Hatch Point](#)
- [Maps of wells belonging to San Juan County Commissioner Bruce Adams](#)

K2O, Inc. (Potash Minerals Limited)

- [K2O Utah Project](#)
- [Map of K2O project](#)
- [K2O Geophysical Report](#)
- [K2O Corporate Report](#)
- [2011- Corporate Overview](#)

PINNACLE POTASH

New Information

- [Order of the State Engineer](#)
- [Proposed groundwater management plan](#)

Summary: The groundwater extraction yield has been reduced from 20,000 acre-feet to 5,000 acre-feet and a rigorous groundwater management plan must be adhered to. In the meantime, Pinnacle Potash is attempting to procure water from Flaming Gorge Reservoir via a Change Application with Daggett County for 8,000 acre-feet. The point of diversion would be along the Green River in Grand County (near Elgin) and the pipeline would basically follow the railroad tracks to Crescent Junction.

BACKGROUND INFORMATION

Pinnacle Potash of Austin, Texas has submitted an application for the withdrawal of 20,000 acre-feet annually for a period of 30 years (600,000 acre-feet total) to commence solution mining for potash north of Arches National Park.

To keep up to date on this issue, please visit [this web site](#) at the Utah Division of Water Rights. The water right number is 92-674 (A79183).

For information on the proposed change application from Daggett County to Grand County (8,000 acre-feet), please visit [this web site](#) at the Division of Water Rights. This water right is 41-3687; (A30414bb). If acquired, this water would be used by Pinnacle Potash for solution mining near Crescent Junction along Highway 191 and directly above Arches National Park.

The first [hearing](#) occurred on May 9, 2012 at 1:30 pm at the County Council Chambers in Moab, Utah.

The Daggett County change application hearing is scheduled for September 26, 2013 at Green River City Hall at 11:00 am.

- [2013 - Order of State Engineer for Dagget County & Pinnacle Potash](#)
- [2017 - Dutch John Concern about Pinnacle Potash](#)
- [2017 - Update from State Engineer about Pinnacle Potash & Dagget County](#)

To get involved, please call John Weisheit for assistance at 435-259-1063.

- [Application by Pinnacle Potash \(searchable\)](#)
- [Protest by William Love](#)
- [Protest by Canyonlands Watershed Council](#)
- [Protest by Grand Water & Sewer Service Agency](#)
- [Protest by Living Rivers](#)
- [Protest by National Park Service](#)
- [Proof of Publication](#)
- [Protest by Bureau of Reclamation](#)
- [Map of Pinnacle Potash Sections](#)
- [Powerpoint presentation](#). NPS.
- [Endorsement by SITLA](#)

Additional information

Denied: Water right application for potash exploration near Canyonlands Field Airport (Bob Norman)

- [2012 - State Engineer denies the water right application](#)
- [Application to Appropriate Water For Potash Exploration](#)
- [BLM protest](#)
- [Norman's response to protest](#)
- [NPS protest](#)
- [Water Right Arches UDWR 2011](#)
- [Water right protests combined](#)
- [Map - Watersheds Arches NP](#)

AMERICAN POTASH(Green River Project)

Comments were due on Monday March 4th, 2013; close of business day (4:30 pm).

Send written comments to:

Bureau of Land Management

Moab Field Office

82 East Dogwood

Moab, UT 84532

Phone: (435) 259-2100

Written comments may also be submitted via email to:

BLM_UT_MB_Comments@blm.gov

American Potash proposes to drill four exploration core hole locations to assess potash resources in the pring Canyon Point are of Grand County. Access to rill locations would be along designated routes. Proposed drill pads would be 400 feet x 400 feet in ize and

an estimated 645 feet at 15 feet wide of new road construction is proposed to access the pads. Total estimated surface disturbance is about 15 acres. BLM is still waiting for information on improvements to designated routes that would increase the acreage for surface disturbance. The exploration work is proposed to begin in Spring 2013 and end in the fall of 2013.

- [Green River Project Vicintiy Map](#)
- [Green River Project Description Draft](#)
- [American Potash Exploration Plan](#)
 - BLM Webpage - [Green River Potash Exploration Project](#) (search word: Green River Potash)
 - BLM webpage - [Moab District Resource Management Plan](#)
 - [Green River Project Vicintiy Map](#)
 - [Green River Potash Project Description Draft](#)
 - [American Potash Exploration Plan](#)

Corporate Presentations

- [Green River Potash July 2012](#)
- [Green River Potash Sept 2012](#)

Corporate Reports

- [Technical Report Aug 2009](#)
- [Technical Report Green River Potash Project June 2012](#)

Corporate Press Releases

- [01 Dec 2011](#)
- [04 Aug 2011](#)
- [04 Dec 2012](#)
- [06 Sept 2011](#)
- [13 Sept 2012](#)
- [19 Jan 2012](#)
- [30 May 2012](#)
- [Green River Potash Project Technical Report](#)

NEWS CLIPS

- [Local Groups Protest Water Application for Proposed Potash Mine](#)
 - [BLM Okays Potash Exploratory Drilling Project Near Labyrinth Canyon](#)
 - [BLM Gives Green Light to Hatch Point Potash Exploration](#)
-

Long Canyon Hydropower Pumpback Project

NOVEMBER 24, 2013
BY JOHN WEISHEIT

FERC has cancelled this application due to the failure of Utah Independent Power to submit a timely **Progress Report**. It remains to be seen if UIP will request an extension or reapply yet again.



Long Canyon adjacent to Dead Horse Point Park

[Story in Times Independent](#) by Rudy Herndon

[May 30, 2014 - Notice of UPI's permanent withdrawal](#)

- [Motion to Intervene by Canyonlands Watershed Council, Grand Canyon Trust, Living Rivers/Colorado Riverkeeper](#)
- [Letter by Southern Utah Wilderness Alliance](#)
- [Letter by BLM](#)

ONLINE DOCUMENT ARCHIVE

- [Federal Register Notice of 3/20/12](#)
- Search engine: http://elibrary.ferc.gov/idmws/docket_search.asp
- **Enter this docket #: P-14354**
- [Record as of December 31, 2013](#). Linked PDF file.
- The docket number for this company's pumpback project in Arizona is: **P-14061**
- The docket for the proposed Plateau Creek pumpback project near Dolores, Colorado is: **P-14328 & P-14426**

Kimberly D. Bose
Secretary Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, DC 20426

SAMPLE LETTER:

- [Sample comment letter by Living Rivers](#)
- [2008 letter by Southern Utah Wilderness Alliance](#)

HOW TO SUBMIT COMMENTS

- 1) For comments under 6,000 words (eComment), go [HERE](#) (registration not required)
- 2) To file detailed comments, you must first register [HERE](#)
- 3) To submit your comment letter (eFiling) go [HERE](#)
- 4) SAMPLE LETTER: [2008 Comment letter by Living Rivers](#)

Document archive

- January 2012 - [Application For Preliminary Permit](#)
- February 2012 - [Deficient Notice of Preliminary Permit](#)
- February 2012 - [Response to Deficiency](#)
- March 2012 - [Acceptance of Preliminary Application](#)
- March 2012 - [BLM notification; Other Notifications.pdf; Contact info.xls](#)
- March 2012 - [Solicitation For Public Comments](#)

DOCUMENTS OF 2008 APPLICATION

- [2008 - Comment letter of Living Rivers](#)
- [2008 - Story in Times-Independent by Ron Georg](#)
- [2011 - Story by Amy Joi O'Donoghue of KSL](#)
- 2011 - Read letter from FERC regarding applicant's failure to comply in providing progress report for Long Canyon Project.
- 2011 - Read letter from applicant announcing surrender of Long Canyon Project.
- 2011 - to read letter from applicant announcing surrender of Bull Canyon Project.

FERC Archive of 2008 application

- FERC Search Engine: http://elibrary.ferc.gov/idmws/docket_search.asp
- 2008 Docket # is P-13146
- [ALL 2008 DOCUMENTS COMBINED](#)

Geology Reports

- [1992 - Soil and Rock Causing Engineering Problems in Utah](#). UGS.
- [2000 - Geology of Dead Horse Point](#). Doelling.
- [2003 - Geologic Hazards of Moab-Spanish Valley. Plate 01; Plate 02; Plate 03; Plate 04](#). UGS.

News

- [Click here](#) to read this story by Charli Engelhorn in the Moab Times-Independent
 - [Click here](#) to read this story by Amy Joi O'Donoghue in the Deseret News
-

Selenium Control Program for Eastern Utah

JANUARY 08, 2014
BY JOHN WEISHEIT

State Turns Attention To Selenium Levels In River

- [Click here](#) to read this story by Rudy Herndon of the Moab Times Independent.
- [Click here](#) to read the comments of Living Rivers
- [Click here](#) to view public notices from the Utah Division of Water Quality

DOCUMENTS

- [Colorado River Public Notice](#)
 - [Colorado River Selenium Draft](#)
 - [Colorado River Selenium App A](#)
 - [Colorado River Selenium App B](#)
-

Refineries in the Colorado River Basin and within its water service districts

JANUARY 08, 2014
BY JOHN WEISHEIT

[Water use at refineries.](#) EPA.

[Refinery Report.](#) Oil Change International

[Refineries that process tar sands.](#) Oil Change International.

Wyoming

- Cheyenne Refinery (HollyFrontier), Cheyenne 47,000 bbl/d (7,500 m³/d)
- Evanston Refinery (Silver Eagle Refining), Evanston 3,000 bbl/d (480 m³/d)
- Sinclair Refinery (Sinclair Oil), Sinclair 85,000 bbl/d (13,500 m³/d)

Utah

- North Salt Lake Refinery (Big West Oil, a subsidiary of FJ Management), North Salt Lake 35,000 bbl/d (5,600 m³/d)[46]
- Salt Lake City Refinery (Chevron), Salt Lake City 50,000 bbl/d (7,900 m³/d)
- Salt Lake City Refinery (Tesoro), Salt Lake City 57,500 bbl/d (9,140 m³/d)
- Woods Cross Refinery (HollyFrontier), Woods Cross 25,050 bbl/d (3,983 m³/d) Nelson Complexity Index 12.5[36]
- Woods Cross Refinery (Silver Eagle Refining), Woods Cross 15,000 bbl/d (2,400 m³/d)

New Mexico

- Navajo Refinery (HollyFrontier), Artesia 102,000 bbl/d (16,200 m³/d) Nelson Complexity Index 11.8[36]
- Bloomfield Refinery (Western Refining), Bloomfield 16,800 bbl/d (2,670 m³/d) Closed 2012[28]
- Ciniza Refinery (Western Refining), Gallup 25,500 bbl/d (4,050 m³/d)

Nevada

- Eagle Springs Refinery (Foreland Refining), Ely 2,000 bbl/d (320 m³/d)

Colorado

- Commerce City Refinery (Suncor Energy (U.S.A.) Inc.), Commerce City, 103,000 bbl/d (16,400 m³/d)[28]

California

- Carson Refinery (Tesoro), Carson, 257,300 bbl/d (40,910 m³/d),[31] Nelson Complexity Index 12.07[4]
- El Segundo Refinery (Chevron), El Segundo, 269,000 bbl/d (42,800 m³/d)[31]
- Long Beach Refinery (Alon USA), Long Beach, 26,000 bbl/d (4,100 m³/d)
- Los Angeles Refinery (Phillips 66), Wilmington and Carson, 139,000 bbl/d (22,100 m³/d)
- Los Angeles Refinery (Tesoro), Wilmington, 104,500 bbl/d (16,610 m³/d)
- Paramount Refinery (Paramount Petroleum, subsidiary of Alon USA), Paramount, 50,000 bbl/d (7,900 m³/d)
- South Gate Refinery (Lunday Thagard Co, subsidiary of World Oil Corp), South Gate, 8,500 bbl/d (1,350 m³/d)
- Torrance Refinery (PBF Energy), Torrance, 149,500 bbl/d (23,770 m³/d) 14.9 Nelson Complexity Index
- Wilmington Asphalt Refinery (Valero), Wilmington, 6,300 bbl/d (1,000 m³/d)
- Wilmington Refinery (Valero), Wilmington, 85,000 bbl/d (13,500 m³/d),[28] Nelson Complexity Index 15.9

Mexico

- PEMEX refineries in Mexico are situated along the Gulf of Mexico
-

The Bishop Process: Eastern Utah Public Lands Exchange Proposal for Wilderness and Mineral Extraction

JANUARY 15, 2014
BY JOHN WEISHEIT



Drill pad for exploratory potash resources

There certainly is plenty of wilderness, potash, and oil shale deposits in eastern Utah. And marginal deposits of tar sands, and conventional oil and gas fields.

However, there certainly isn't plenty of water. In fact, the Colorado River has nothing left to give. The water you see in this landscape, is already spoken for, because the Colorado River is shared with 35 million people.

Despite the upper basin state's desire to develop another one million acre-feet per year, the total supply has been declining by one million acre-feet every 50-years since the beginning of the 20th century. This trend will continue to the end of the present century, according to the agency that regulates the basin's surface water, the Bureau of Reclamation ([Final Report](#))

Why then, is the Utah congressional delegation so eager to make a deal with the public they serve? Knowing that sizeable depletions from the Colorado River system for water intensive extractive industries will send the entire basin into huge legal battles over water rights?

Not only will this deal be bad for Utah's water security, it will be bad for all the people who depend on the gift of the Colorado River.

Summary of what the extractive industries want:

- Placing restraints on the Antiquities Act.
- Reforms of the National Environmental Policy Act (NEPA).
- Reforms of the Endangered Species Act (ESA).
- The release of wilderness study area's that have energy and mineral resources below the surface.

GRAND COUNTY ALTERNATIVES

- [Alternative 1](#)
- [Alternative 2](#)
- [Alternative 3](#)
- [Possible Book Cliffs Highway Route](#)

NEWS COVERAGE

- [This Land Was Your Land](#). American Prospect.
- [Wilderness Bills Blocked: Utah's Bishop Singled Out](#). Salt Lake Tribune.
- [Grand County Seeks Uintah County's Feedback on New Book Cliffs Road Study](#). Moab Times-Independent.
- [Bishop Bill Would Restrict National Monument Creation](#). Salt Lake Tribune.
- [County Takes Early Step Toward Book Cliffs Road](#). Moab Sun News.
- [March 2014 - Protest about oil & gas in Grand County](#)
- [Statistics Show That Residents Favor Land Protection](#). Moab Sun News.
- [Moab's Dilemma: Can Recreation Coexist with Energy?](#) Deseret News.
- [Mapping Grand County's Future](#). Moab Sun News.
- [Sego Canyon Road: Path to Prosperity or Harm](#). Salt Lake Tribune.

- [Council Appears Divided Ahead of Final Vote on Public Lands Initiative](#). Times-Independent.

LETTERS to the Grand County Council due May 7th, 2014

- [Letter from Living Rivers](#)
- [Letter from Canyonlands Watershed Council & Addendum](#).

LETTERS to the Grand County Council due January 30, 2014

- [Press release on the public process for Grand County](#).
- [Citizen's Report: Letters on Public Lands](#)
- [Sample letter by Living Rivers](#)
- [Complete record of letters from citizens](#)

CONGRESSIONAL TESTIMONY

- [Lynn Jackson](#). Member of Grand County Council and potash consultant to industry.

DOCUMENT ARCHIVE

- [Letter to Uintah County about Sego Canyon Transportation Corridor Feasibility Study](#)
- [Congressional Staff Report](#). November, 2013.
- [Letter from Representative Rob Bishop](#)
- [Utah Wilderness Coalition Final Bishop Response](#)
- [Grand Canyon Trust Priorities](#)
- [Process ask from Grand Canyon Trust, National Trust for Historic Preservation, Great Old Broads, Canyonlands Watershed Council, Utah Environmental Congress](#)

BLM'S 1992 BOOK CLIFFS HIGHWAY DRAFT EIS

- [Preliminary Draft EIS For Highway from Ouray to Cisco](#).
- [Draft EIS Highway from Ouray to Interstate 70](#).
- [EA for Proposed Ouray to Cisco Highway Survey](#).
- [EA for Proposed Ouray To Cisco Highway](#).
- [Bookcliffs Highway Correspondence](#).

MAPS

- [Hatch Point Proposed Land Exchange](#)
 - [Hatch Point Trade Proposals](#)
-

Gray Canyon Energy Proposes a Refinery at the City of Green River, Utah

FEBRUARY 05, 2014
BY JOHN WEISHEIT

Note: to review the application of another proposed refinery near Green River City (west side of town) and called Green River Refinery, [CLICK HERE](#).

APPLICANT

Gray Canyon Energy
Previously called Iron Fox Refining Inc.
Green River Refinery (east side of town)
Jim Andersen
160 W. Canyon Crest Road
Alpine, UT 84004
801-647-1007

Location is Emery County, Utah
3.2 miles east of Green River City, Utah
Will replace the existing and defunct refinery infrastructure with new components
Production rate is 9,000 barrels of crude oil per day

Regulatory Agency is Division of Air Quality
Camron Harry
caharry@utah.gov
801-536-4232

DOCUMENTS

- [Notice of Intent](#)
 - [June 17, 2014 Public Notice](#). Emery County Progress.
 - [BLM Press Release pipeline right-of-way](#)
 - [Notice of Public Scoping for pipeline right-of-way](#). BLM.
 - [Alternative notice](#)
 - [Greentown Gas Condensate Field](#). Wikipedia.
 - [Map of Greentown gas condensate field](#)
 - [Photo 01 - Greentown Gas Condensate Field](#)
 - [Photo 02 - Greentown Gas Condensate Field](#)
 - [Photo 03 - Greentown Gas Condensate Field](#)
-

Scholarly Reviews of Governance on the Colorado River

JUNE 27, 2014

BY JOHN WEISHEIT

Here you will find links to interesting papers written by scholars and attorneys about the governance of the Colorado River watershed

- [1946 - Light on the Mexican Water Treaty](#)
- [1965 - Statement of attorney Northcutt Ely regarding Arizona v California](#)
- [1974 - Legal-political history of water resource development in the upper Colorado River basin](#). Lake Powell Research Project Bulletin #4.
- [1980 - Navajo Water Rights: Pulling the Plug in the Colorado River](#). Back.
- [1985 - Competing Demands for the Colorado River](#). Getches.
- [1988 - Management and Marketing of Indian Water: From Conflict to Pragmatism](#). Getches.
- [1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.
- [1995 - The Law of the Colorado River: Coping with Severe Sustained Drought](#). MacDonnell.
- [1996 - New Options for the Lower Colorado River Basin](#). Macdonnell.
- [1982 - Reclamation Reform Act](#)
- [1997 - Colorado River Governance: Sharing Federal Authority as an Incentive to Create a New Institution](#). Getches.
- [2000 - Undamming Glen Canyon: Lunacy, Rationality, or Prophecy?](#) Miller. (cache)
- [2002 - The Central Arizona Project](#). Hanemann.
- [2004 - A New Law of the River to Address the New Era of Limits on the Colorado](#). Rossman.
- [2006 - Bureau of Reclamation in San Juan County New Mexico: Cadillac Desert or Sensible Development](#). Moore.
- [2007 - From Colorado River Compact Challenge to the Next Era of Cooperation Among the Seven Basin States](#). AZ Law Review.
- [2007 - Revisiting the Colorado River Compact: Time for a change?](#) Adler.
- [2007 - Colorado and Western Water Law](#). Greg Hobbs.
- [2007 - The Colorado River: The story of a quest for certainty on a diminishing river](#). Kuhn.
- [2007 - Law, Environment, Dynamism, Reliability; The Rise And Fall of CALFED](#). Owen.
- [2008 - 43 CFR Part 417 does not authorize federal agency adjudication of IID beneficial use of Colorado River](#). Osias & Hicks.
- [2008 - Collaboration and the Colorado River Compact](#). Mulroy.
- [2009 - Upper Colorado River Basin Compact: Sharing the Shortage](#). Hobbs.
- [2009 - San Francisco Bay Delta Failure of Decision Making Capacity](#). Hanemann.
- [2010 - Rethinking the Future of the Colorado River](#). CRGI.

- [2010 - "Stationarity Is Dead" - Long Live Transformation: Five Principles for Climate Change Adaption Law.](#) Craig.
- [2011 - New Adventures Old Bureau: Modern Day Reclamation & Congress's Unfinished Business.](#) Benson.
- [2011 - Draft: Risk Management Strategies for the Upper Colorado River Basin.](#) Kuhn
- [2011- The Colorado River and the Inevitability of Institutional Change.](#)
- Kenney et al.
- [2011 - Colorado River Law and Policy: Frequently Asked Questions.](#) CRGI.
- [2012 - Equity and the Colorado River Compact.](#) Robison.
- [2012 - Management of Water Shortage Colorado River: Evaluate Policy and Viability of Interstate Water Trading.](#) Wildman.
- [2013 - Was Arizona Vs California a Victory for Arizona?](#) Glennon.
- [2013 - Upper Basin Voluntary Demand Cap: Means of Mitigating Uncertainty.](#) CRGI.
- [2013 - Cross Jurisdictional Water Marketing.](#) CRGI.
- [2014 - Truth and Consequences of the 1968 Colorado River Basin Project Act.](#) Udall.
- [2014 - Research Needs in the Colorado River Basin.](#) Colorado River Governance Initiative.

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David Getches (law professor)

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Favorite Documents: On The Colorado Website

AUGUST 23, 2014

BY JOHN WEISHEIT

ADAPTIVE MANAGMENT: GLEN CANYON DAM OPERATIONS

- [1999 - Review: Glen Canyon Dam adaptive management program](#). National Academy of Sciences.
- [2005 - SCORE Report](#). USGS.
- [2010 - A Cautionary Tale](#). Susskind.

BUREAU OF RECLAMATION

- [1922 - The Fall Report: Problems of Imperial Valley and Vicinity](#).
- [1929 - Weymouth Report](#). Technical record of Hoover Dam. Bureau of Reclamation.
- [1933 - The Construction of Hoover Dam: Investigation, Design & Progress](#).
- [1936 - Construction of Boulder \(Hoover\) Dam](#). (ocr)
- [1939 - Boulder Canyon Project Final Reports Part V: Technical Investigations](#).
- [1946 - A national menace becomes a natural resource](#)
- [1950 - CRSP and Participating Projects](#)
- [1961 - Design features of Glen Canyon Dam](#)
- [1963 - Pacific Southwest Water Plan](#)
- [1964 - Pacific Southwest Water Plan](#)
- [1965 - Lake Powell: Jewel of the Colorado](#).
- [1970 - Glen Canyon Dam technical record of design and construction](#). (searchable doc); [Chronology](#); [Intro](#); [Geology](#); [Foundation](#); [Dam](#); [Spillways](#); [River Outlets](#); [Penstocks](#); [Powerplant](#); [Switchyard](#); [Visitor Center](#); [Construction](#), [Appendix](#).
- [1977 - Report of Western Energy Expansion Study](#)
- [1998 - Dam failure inundation study & Inundation Maps](#).
- [2002 - Evolution of the Hoover Dam Inflow Design Flood: A Study in Changing Methodologies](#)

FLOODS

- [1944 - Water Supply Paper 918](#). USGS; Dickinson.
- [1948 - Floods in Colorado](#). USGS; Follansbee.
- [1946 - Cloudburst floods in Utah](#). Woolley. US Geological Survey.
- [1994 - Paleofloods in Grand Canyon](#). O'Conner and Baker.
- [1998 - Dam failure inundation study & Inundation Maps](#). Bureau of Reclamation.
- [2001 - Floods and riparian vegetation on the San Juan River](#). (Poster). Webb et al. US Geological Survey.
- [2008 - Evolution of Hoover Dam Inflow Design and Flood Study](#). (2002 version). Swain.

- [2009 - The Big Washout: The 1862 Flood in Santa Clara](#). Compton.
- [2010 - Flooding in the Dolores River Basin, Colorado and Utah: Insights from Paleofloods, Geochronology and Hydroclimatic Analysis](#). Cline.
- [2013 - Atmospheric Rivers](#). Dettinger & Ingram.
- [2014 - A 2000 Year Record of Magnitude and Frequencies of Largest Upper Colorado River Floods near Moab, Utah](#). Greenbaum et al.

Flood Graphics

- [Minimum Required Colorado River System Storage Space](#)
- [Minimum Flood Control Releases at Hoover Dam](#)
- [Notable Floods above Hoover Dam](#)
- [Contents of major dams \(including dead pool capacity\) above Hoover](#)
- [High Water Line \(80 feet\) at Boulder Canyon before Hoover Dam construction](#)
- [Dam Safety Reports: Glen Canyon, Fontenelle and Navajo dams](#). ICOLD.
- [1889 - Schematic of Red Rock Bridge \(Topock, AZ\) indicating high water line of the 1857 and 1884 floods; ENLARGED](#)
- [1941 - Spillway damage at Hoover Dam](#)
- [1976 - Teton Dam Failure](#)
- [1983 - Color photo of Glen Canyon Dam spillway failure from cavitation](#)
- [1983 - Plywood extensions on spillway gate at Glen Canyon Dam](#)
- [1983 - Flooding in the lower Colorado River near Blythe](#)
- [1983 - Schematic of water releases of spillway emergency at Glen Canyon Dam](#).

HYDROLOGY

- [1959 - Probability Analysis Applied to a Water-Supply Problem](#). Leopold.
- [1965 - Water Supplies of the Colorado River](#). Tipton. Upper Colorado River Commission. ([notes on report](#)).
- [1976 - Long-term surface-water supply and streamflow trends in the upper Colorado River basin](#). Stockton and Jacoby. National Science Foundation.
- [1977 - Climate, Climate Change, and Water Supply](#)
- [1983 - Effects of Carbon-Induced Climatic Change on Water Supplies in the Western USA](#). Revelle and Wagoneer.
- [1993 - The Colorado River Basin and Climatic Change: The Sensitivity of Streamflow and Water Supply to Variations in Temperature and Precipitation](#). Nash and Gleick. Environmental Protection Agency.

TESTIMONY

- [1954 - Testimony of Northcutt Ely on controversy of authorizing Glen Canyon Dam](#)
- [1965 - Congressional testimony in August & September; \(searchable\)](#)
- [1965 - Statement of attorney Northcutt Ely regarding Arizona v California](#)
- [1966 - Congressional hearings in May](#)
- [1967 - Congressional hearings in March; \(searchable\)](#).

- 1967 - Congressional testimony of Sierra Club (David Brower, Hugh Nash, Jeffrey Ingram) and Stephen Jett of the Navajo Nation.
- [1968 - Congressional hearing in January & February, Part2](#)

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- 1962 - The Rotenone Project (native fish genocide). Halverson.
- [1979 - Colorado River Basin Problems](#). GAO.
- [2000 - Undamming Glen Canyon: Lunacy, Rationality, or Prophecy?](#) Miller. (cache)
- [2008 - Water Scarcity in the Colorado River basin](#). GAO.

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[1960 - Comprehensive study of Lake Mead sediment and hydrology](#). US Geological Survey and Bureau of Reclamation.

- [Table of Contents](#)
 - [a. The Lake Mead Problem](#)
 - [b. Organization of the Work & Equipment](#)
 - [c. Geologic Setting of Lake Mead](#)
 - [d. Drainage Basin Tributary to Lake Mead](#)
 - [e. Precise Leveling](#)
 - [f. Interpretation of the Precise Leveling](#)
 - [g. Survey of the Lake](#)
 - [h. Survey of Lower Granite Gorge](#)
 - [i. Reservoir Storage](#)
 - [j. Water Budget Mead Survey](#)
 - [k. Character of the Flowing Water](#)
 - [l. Chemistry of the Water](#)
 - [m. Circulation & Evaporation](#)
 - [n. Character of the Accumulated Sediment](#)
 - [o. Bacteriology & BioChemistry of the Sediments](#)
 - [p. Amount of Sediment](#)
 - [q. Turbidity Currents](#)
 - [r. Erosion of Reservoir](#)
 - [s. Sedimentation in Relation to Reservoir Utilization](#)
 - [t. Life of the Reservoir](#)
 - [u. The Sediment Problem in Reservoirs](#)
 - [v. Index](#)
 - [1987 - Lake Powell sediment survey](#). Bureau of Reclamation.
 - [1990 - Colorado River Sediment](#). Andrews.
 - [1991 - Sediment Transport in the Colorado River Basin](#). National Research Council.
-

The Eastern Utah County Coalition for the Development of Oil and Gas Infrastructure

DECEMBER 15, 2014
BY JOHN WEISHEIT

Uintah County used public funds to pave Seep Ridge Road, which provides an advantage to the proposed development of bitumen (tar sands) and hard rock kerogen (oil shale). The highway construction ends at the northern boundary of Grand County. Many dirty energy proponents would like to see this highway connect to Interstate 70 and the adjacent railroad.

The eastern counties of Utah have since formed a coalition to advance transportation infrastructure for the benefit of oil corporations. Grand County has made the decision to not join this coalition.

The other six counties proposed a railroad that would parallel Highway 191 to deliver waxy crudes from Duchene and Uintah counties and using public funds to provide a down payment for a federal construction loan.

The project was expensive from the start, but revised and increased cost estimates put the total debt obligation out of reach.

It is not the responsibility of county governments to help corporations over the needs of the citizens that are already impacted negatively by these industries extracting hydrocarbons with low energy return.

BREAKING NEWS

- [Leaders Drop Wells-to-Rails Plan For Uinta Basin Oil](#). Salt Lake Tribune.
- [Grand County Bails on Eastern Utah Infrastructure Group](#). Salt Lake Tribune.
- [Vision for "National Parks Highway" has Grand County Hole](#). Salt Lake Tribune.

BASIC INFORMATION: For railroad study, construction and federal loan

- [2013 Presentation: Uintah Basin Energy & Transportation Study](#). Pope.
- [Fact Sheet - Uinta Basin Rail Road](#). Utah DOT.
- [Program Guide - Transportation Infrastructure Finance and Innovation Act \(TIFIA\)](#). US DOT.
- [Website - "Learn More About TIFIA"](#). Office of Innovative Program Delivery.

SEVEN COUNTY COALITION MEETINGS

- [Agendas: September to November 2014](#)
- [September and October 2014: Coalition Minutes](#)
- [September 26, 2014: Solicitation for Partnerships](#)
- [October 7, 2014: Amended and Original Request for Qualifications for Engineering Planning Survey](#)
- [December 6, 2014: Rules and Regulations for the 7 County Coalition](#)

ENGINEERING QUALIFICATION PROPOSALS

- [Request for Qualified Engineer Proposals](#)
- [670, LLC](#)
- [Ames](#)
- [HDR](#)
- [Jones and DeMille](#)
- [WATCO](#)

COMMUNITY IMPACT BOARD (CIB)

- [Utah Code](#)
- [Guidelines](#)
- [Community Impact Board \(CIB\) - 2013 Program Summary](#)
- [CIB - 2013 Legislative Report](#)
- [CIB - Agenda for October 2014](#)
- [CIB - Minutes of September 3, 2014](#)

CIB MEETING AUDIO

- [September 3, 2014](#)
- [September 12, 2014](#)
- [October 2, 2014](#)
- [October 3, 2014](#)
- [November 7, 2014](#)
- [December 5, 2014 - Part One](#)
- [December 5, 2014 - Part Two](#)

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- [Citizen Comments Received After The Sept. 2014 Public Forum](#)
- [Christina Sloan - Letter of Question about 7 CC](#) (September 2014).

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- [Salt Lake Tribune](#)
- [Castle Country Radio](#)
- [Letter to the Editor](#)
- [ETV 10 News](#)
- [Moab Sun News Op Ed](#)
- [7CC Op Ed](#)

STUDIES

- [UDOT - Grand Uintah County Connection Final Feasibility Study](#)
-

The 70-year Administrative Record of Impending Water Shortages and the Failure to Act Appropriately

FEBRUARY 28, 2015
BY JOHN WEISHEIT



View from Harper's Corner in Dinosaur National Monument

THE PUBLIC RECORD IS CLEAR: The present degradation of water quantity and water quality in the Colorado River basin was predicted to occur as early as 1946. Here is a summary of the administrative record:

The Career of Northcutt Ely - During the administration of Herbert Hoover, Northcutt Ely served as deputy secretary in the Department of Interior. He is also the co-author of [The Hoover Dam Documents \(Part One\)](#), which is a compendium of legal documents known as the "Law of the River." Later on, he represented the Colorado River Board of California. He was lead counsel for California during the infamous US Supreme Court

hearing known as Arizona vs California. It took 12 years to resolve this court proceeding (1952 to 1964).

It is true that Ely was a fierce advocate for protecting the water allocation of California and the investment of it's infrastructure to deliver that water, but this advocacy can just as easily be mirrored, or transformed, into an advocacy for the entire watershed from mountain to the sea. Ely's over-reaching goal was watershed sustainability for human needs. Indirectly, however, he was a casual champion for preserving sections of the river's ecological integrity.

Ely strongly believed that watershed resiliency did not mean building more and more dams. He understood the threshold point of diminishing returns were going to be exceeded by the Colorado River Storage Act of 1956, and even further extended by the Colorado River Basin Project Act of 1968. Excessive reservoir storage increases consumptive losses in the form of evaporation and seepage. Over-developing the watershed with numerous diversions and reservoirs also decreases the quality of the water by loading the river water with salt and heavy metals.

As a result of his advocacy, two dams were not built on the Green River in Dinosaur National Monument, and two dams were not built in the Grand Canyon. Though most historians would give this credit solely to the Sierra Club, other historians have identified Northcutt Ely's important role in this outcome.

See: [Still the Wild River Runs: Congress, the Sierra Club, and the fight to save the Grand Canyon](#). Byron Pearson.

Please also read Jeff Ingram's review of Pearson's book here: [Grand Canyon Futures](#). Jeff served the Sierra Club as the Southwest Regional Director.

THE ADMINISTRATIVE RECORD

1946 - "[Light on the Mexican Water Treaty](#)" (of 1944) by California water attorney Northcutt Ely. Introduced in Salt Lake City during the annual conference of the [Colorado River Water Users Association](#).

Page 20 - A water budget was completed in 1946 by the state of California using the best available hydrologic data of the Colorado River basin. The Colorado River Compact was 24-years old at that time. The treaty with Mexico is a fixed allocation of 1.5 million acre feet (1.7 maf in times of surplus). This water budget may be the earliest acknowledgement in the public record that the annual average flow of the Colorado River basin cannot satisfy the demands of the 1922 Colorado River Compact.

Said Ely, "No sound planning can be done for new projects until the water budget is balanced again in some way." Seventy years hence, the water budget has yet to be balanced again "in some way."

1954 - [Congressional testimony by California's water attorney Northcutt Ely](#).

Page 585 (of the above linked testimony) - Ely testifies that California does not oppose water development in the upper basin, only the construction of huge reservoirs that did not directly support a consumptive use, namely Glen Canyon and Echo Park dams. These huge proposed upper basin reservoirs would be built to generate electricity. He correctly reminded Congress that hydropower is an incidental use and not a consumptive use, which is the primary objective of the Colorado River Compact.

He projected by year 2000, when maximum consumption in the basin would occur, that these large reservoirs would not have sufficient reservoir elevations for the efficient generation of hydropower to reimburse the debt to the federal treasury, nor to mechanically lift water from the Colorado River reservoirs into aqueducts and canals for consumptive uses. California also objected to the needless and massive loss of water to evaporation in these "holdover" reservoirs, which increases salinity and which could be applied to a consumptive use in the lower basin for at least 50 years, or until the time the upper Colorado River basin fully developed its Compact allocation.

As it turned out, Echo Park Dam was not built for reasons that the reservoir would destroy the values of Dinosaur National Monument and not for the reasons cited by the state of California. They still objected to the building of Glen Canyon Dam, which was authorized by Congress in 1956.

Page 600 - Northcutt Ely brings up the issue of water quality and the promise by the Commissioner of Colorado in 1922 that his state would limit Colorado River diversions across the Continental Divide to 300,000 acre-feet. Ely argues that the intent of this promise in the administrative record is to maintain low salinity levels for consumptive uses in the lower basin states and Mexico. Thus, the 1922 Compact is also an agreement for preserving the integrity of the river's water quality.

The Bureau of Reclamation's development plan for the state of Colorado in 1950 called for 2 million acre-feet to cross the Divide, thus aggravating the salinity issue for the lower basin users and, in this regard, the forthcoming Colorado River Storage Project Act of 1956 (CRSP) would degrade the intent of the 1922 Compact.

The congressional authorization of the CRSP did indeed foul the lower basin's water quality and forced Congress to pass the [Colorado River Salinity Control Act](#) of 1974 to mitigate the problem. Damages from salinity to the lower basin states ranges from [500 million to 750 million dollars per year](#). Damages from salinity in Mexico are unknown.

1967 - "[The Oil Shale Industry's Water Problems](#)" by Northcutt Ely. A speech delivered to the Colorado School of Mines at Golden Colorado.

In this address, Ely mentions importing water from other river basins as a possible remedy to address the over-allocation problem of the Colorado River basin. Remember please, that the point of this article is to demonstrate that the water managers have always known the Colorado River was headed for shortages.

This issue had been an ongoing discussion in Congress since 1963, which was strongly opposed by the distant states being asked to give water to the states within the Colorado River basin. To this day the pursuit continues, but the states of the Columbia River basin, the Great Lakes region and the Missouri River basin have adopted policies against water imports to the the users of the Colorado River system. And for excellent reasons, since they fully understand the water managers of the Colorado River continue to generate bad public policies in their insatiable quest for more and more water.

DOCUMENTS

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ADDITIONAL INFORMATION

The following chronology demonstrates the legacy of dedicated scientists providing the best available science to water managers for the purpose of developing good management practices in a watershed:

- 1864 - George Perkins Marsh defines the watershed management approach to avoid future issues of scarcity by conforming to the laws of nature. [Man and Nature.](#)
- 1879 - John Wesley Powell presents a bold watershed management plan that yields to the laws of nature. Using field data collected by federal scientists, he demonstrated that the populist promise, "rain will follow the plow," was grossly misleading to the settlers moving to [Lands of the Arid Regions.](#)
- 1891 - Clarence Dutton explains to Congress that the prior appropriation doctrine is flawed in regards to the equitable sharing of water at maximum development. [Ceding the Arid Lands to States & Territories.](#)
- 1902 - Following the authorization of the Reclamation Act, Frederick H. Newell of U.S. Geological Survey, [reminded](#) dam builders that sediment fill would eventually render their reservoirs useless.
- 1933 - The [Hoover Dam Commission](#) determines that the best way to provide flood control is through reservoir management and to avoid spillway operations. Reinforced concrete cannot withstand the extreme velocity of falling water in closed conduits for long periods of time.
- 1946 - Hydrologists from California [informed](#) the seven states of the Colorado River Compact that the annual flow of the Colorado River was over-appropriated by 1.8 million acre-feet.
- 1954 - Northcutt Ely, the former Deputy Secretary of Interior during the Herbert Hoover administration, informs Congress that operations at Hoover Dam will not

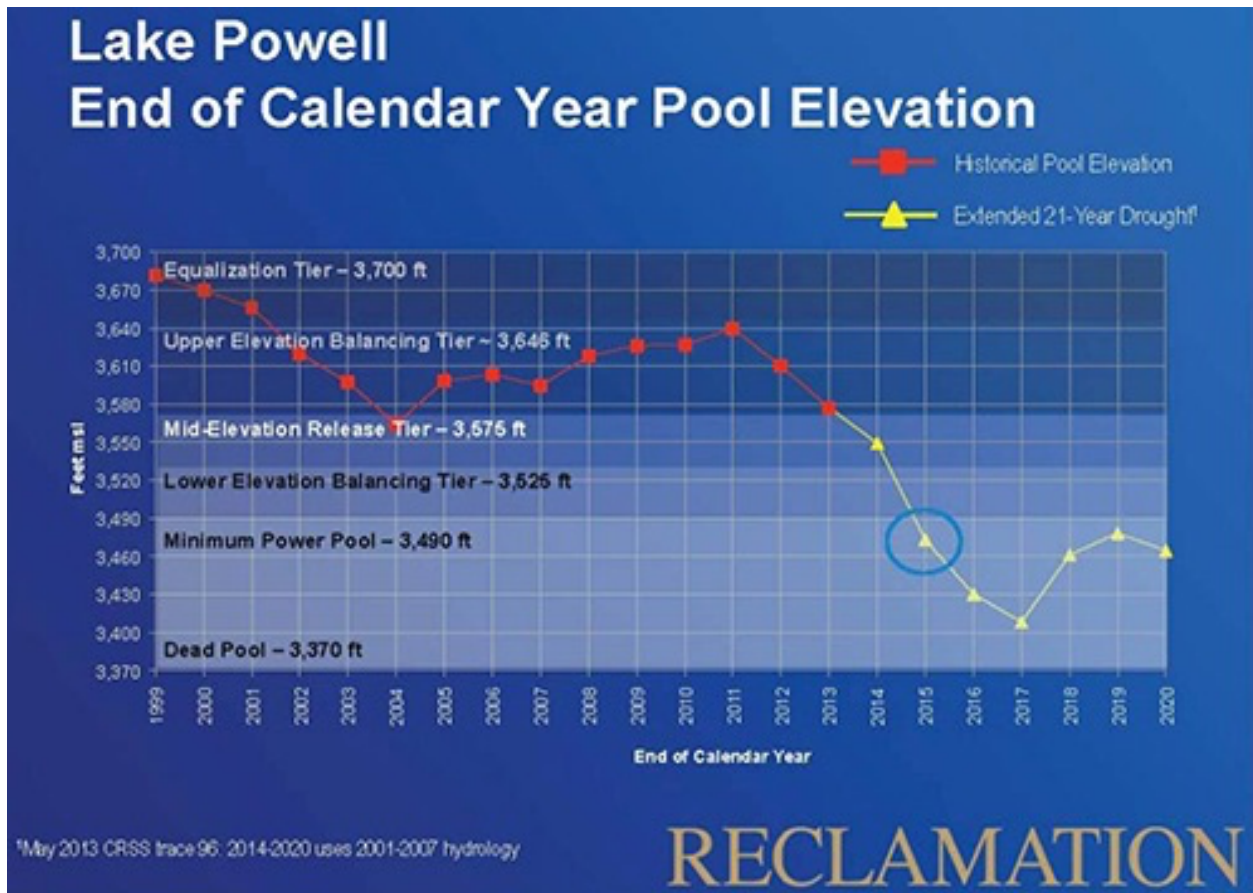
fulfill hydropower contracts in the first decade of the 21st century for reasons of exhausted reservoirs caused by redundant dam construction in the upper basin and the overallocation of Colorado River water. [Congressional Testimony of Northcutt Ely](#).

- 1957 - Geophysicists from UC San Diego (Scripps) provided data to [demonstrate](#) that greenhouse gas emissions, sourced to human activities, would negatively alter the hydrologic cycle of the planet.
- 1960 - H. R Gould of the Bureau of Reclamation informs water managers that water storage and flood control capacities are compromised when sediment storage in a reservoir reaches 50 percent. [Sedimentation in Relation to Reservoir Utilization](#).
- 1976 - Geophysicists working with UC Los Angeles [analyzed](#) tree-ring data from the Colorado River Basin and determined the long-term annual supply at the Lee's Ferry gage was 2.8 million acre-feet lower than the total apportionments of the Colorado River Compact.
- 1974 - As JW Powell forewarned, water projects at the headwaters of the Colorado River Basin that transfer water across divides and into adjacent river basins did indeed foul water quality in the lower basin (salt loading), which necessitated Congress to pass the [Colorado River Salinity Control Act](#) to mitigate this expensive problem. Damage from salinity to the lower basin states range from [500 to 750 million](#) dollars per year. Damages from salinity in Mexico are unknown.
- 1978 - Citizens appealed to the federal courts over failure by the Bureau of Reclamation to initiate Environmental Impact Studies for modifying hydropower operations in the Colorado River Basin. Congress, however, never provided the necessary appropriations to initiate this basin-wide study. Though the timeframe of the 2012 Basin Study extends to year 2060, this document does not conform to the rigorous guidelines and public consultation opportunities provided by the National Environmental Policy Act and the Council on Environmental Quality. [EDF v Higginson](#).
- 1979 - The Government Accountability Office advises Colorado River water managers to initiate new policies and modify infrastructure to prepare for water shortages in the first decade of the 21st century. [Colorado River Basin Water Problems](#)
- 1983 - Dam managers maintained high pool elevations at Lakes Mead & Powell during a strong El Niño event. This decision compromised the ability to safely bypass a snow melt that totaled 14 million acre-feet. The spillways at Glen Canyon and Hoover dams were needlessly damaged and the bypass flows to the Gulf of California destroyed infrastructure and private property. Paleoflood hydrology was then an emerging science in the Colorado River Basin and field work since has provided evidence that Colorado River flood events have magnitudes that are at least 4 times greater than the snow melt of 1983. [A 2000 Year Record of Magnitude and Frequencies for Floods in the Upper Colorado River](#).

- 2008 - Geophysicists from UC San Diego (Scripps) **warned** Colorado River managers that Lakes Mead & Powell will likely run dry despite cooperative agreements to conserve water.
 - 2014 - Hydrologists from UC Irvine **warned** Colorado River managers that the groundwater of the Colorado River is being consumed by humans faster than nature can replenish the aquifers.
 - 2015 - Twenty-three academics **urged** Secretary of Interior Sally Jewell to engage the National Academy of Sciences to review the science and policy assessments the *Colorado River Basin Supply and Demand Study*.
-

Document archive for the Next Step Committees & Public Comment Period

JUNE 29, 2015
BY JOHN WEISHEIT



Trace 96 from simulation modeling by BuRec

[Website of Bureau of Reclamation Moving Forward Program](#)

[On The Colorado: A 2012 Basin Study archive](#)

Reclamation's May 12, 2015 [Press Release](#)

SECURE WATER ACT

- [Public Law: SECURE Water Act](#)
- [SECURE Water Act](#)
- [SECURE Water Report](#)

The public is invited to SUBMIT COMMENTS by August 12, 2015.

COMMENTS:

[2015 - Living Rivers and Center for Biological Diversity](#)

[2013 - Living Rivers and CBD](#)

SEND YOUR COMMENTS to:

e-mail: ColoradoRiverBasinStudy@usbr.gov

fax: 702-293-8042

phone: 702-293-8500

Previous On The Colorado archives related to the Basin Study can be accessed [here](#)

All DOCUMENTS COMBINED: [Moving Forward Phase One](#)

ALL DOCUMENTS SEPARATED

- [Coordination Team](#)
- [Cover](#)
- [CRBS map](#)
- [Executive Summary](#)
- [Chapter 1](#)
- [Chapter 2](#)
- [Chapter 3](#)
- [Chapter 4](#)
- [Chapter 5](#)
- [Chapter 6](#)
- [Appendix 3A](#)
- [Appendix 3B](#)
- [Appendix 3C](#)
- [Appendix 4A](#)
- [Appendix 4B](#)
- [Appendix 4C](#)
- [Appendix 4D](#)
- [Appendix 4E](#)
- [Appendix 5A](#)
- [Appendix 5B](#)

DOCUMENT ARCHIVE

- [Summary of Public Options Received - Appendix F1](#)
-

Glen Canyon Dam Final EIS released after a six-year delay

JANUARY 25, 2016

BY JOHN WEISHEIT

The Final EIS analysis has the following components:

- In ten years, the prescribed treatments will be reevaluated, which indicate the decision-making process is not robust.
- The treatments were accomplished in face-to-face workshops with selected stakeholders and contract stateholders, which is "how things get done in the Colorado River Basin." It should be noted that discussions about the long-term cumulative impacts identified by the public were dismissed for another time and the delay will only compound those impacts.
- The decision-making process is framed to assist stakeholders who desire economic certainty in real-time, which is impossible to achieve when other known impacts were excused.
- The process was therefore not fully inclusive, and the resource will remain in jeopardy pending a decision to stop kicking this can down the road.

DOCUMENT ARCHIVE

The Final EIS for the Long-Term Experimental Management Plan (LTEMP) for Operations at Glen Canyon Dam is archived here:

- [2009 - Press Release announcing experimental operations at Glen Canyon Dam](#)
- [Record of Decision](#). December, 2016.
- [Biological Opinion](#). US Fish & Wildlife Service.
- [OpEd of December 30, 2015](#). Editorial Board of Arizona Daily Sun.
- [Complete document: 2016 Glen Canyon Dam Final EIS](#)

SECTIONS

- [01 - Executive Summary](#)
- [02 - Vol 1 Front Matter](#)
- [03 - Chapter 1 Introduction](#)
- [04 - Chapter 2 Alternatives](#)
- [05 - Chapter 3 Affected Environment](#)
- [06 - Chapter 4 Consequences](#)
- [07 - Chapter 5 Consultation](#)
- [08 - Chapter 6 References](#)
- [09 - Chapter 7 Preparers](#)
- [10 - Chapter 8 Glossary](#)
- [11 - Vol 2 Front Matter](#)
- [12 - Appendix A Desired Future Conditions](#)
- [13 - Appendix B Performance Metrics](#)

- [14 - Appendix C Decision Analysis](#)
- [15 - Appendix D Hydrology](#)
- [16 - Appendix E Sediment](#)
- [17 - Appendix F Aquatic](#)
- [18 - Appendix G Vegetation](#)
- [19 - Appendix H Cultural](#)
- [20 - Appendix I Tribal](#)
- [21 - Appendix J Recreation](#)
- [22 - Appendix K Hydropower](#)
- [23 - Appendix L Socioeconomics](#)
- [24 - Appendix M Air Quality and Climate](#)
- [25 - Appendix N Government-to-Government](#)
- [26 - Vol 3 Front Matter](#)
- [27 - Appendix O Biological Assessment](#)
- [28 - Appendix P HFE Protocol](#)
- [29 - Appendix Q Comments and Responses](#)

DRAFT EIS SECTION

The comment period deadline has been extended from April 7 to May 9, 2016.

[CLICK HERE](#) to read Final LTEMP DEIS comments by Living Rivers, et al.

Visit the [LTEMP home page](#) (Argonne Laboratory).

Submit written comments to:

Glen Canyon Dam LTEMP Draft EIS
Argonne National Laboratory
9700 S. Cass Ave. EVS/240
Argonne, IL 60439

Submit electronic comments at:

<https://parkplanning.nps.gov/commentForm.cfm?documentID=70123>

Upcoming Public Meetings on the DEIS

Four public meetings will be held to present an overview of the findings of the LTEMP DEIS and allow the public to ask questions about the DEIS:

Webinar Tuesday, February 16, 2016, 6:30 pm MST

Meeting URL: <https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e6c7409be963b12893a8fa215771e2b93>

Phone Number: 888-390-1272

Passcode: 5747082

[Register for Meeting](#)

Flagstaff, AZ Monday, February 22, 2016, 6:00 pm MST
USGS Grand Canyon Monitoring and Research Center
2255 N. Gemini Road, Flagstaff, AZ 86001

[Directions/Map](#)

[Register for Meeting](#)

Tempe, AZ Thursday, February 25, 2016, 6:00 pm MST
Embassy Suites Phoenix-Tempe
4400 S. Rural Road, Tempe, AZ 85282

[Directions/Map](#)

[Register for Meeting](#)

Webinar Tuesday, March 1, 2016, 1:00 pm MST

Meeting URL: <https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e7231e52ab57940df0d0fe1a7b12d7109>

Phone Number: 888-390-1272

Passcode: 5747082

[Register for Meeting](#)

NEWS

- [January 20, 2016 - Vail Daily](#)
- [April 26, 2016 - Arizona Daily Sun](#)

DOCUMENT ARCHIVE OF DEIS

- [Press Release of 8 January, 2016](#)
- [Notice of Availability](#)
- [Executive Summary](#)
- [LTEMP Draft EIS](#) (complete)

OFFICIAL DEIS WEBSITE

- [Home Page](#) (Argonne Laboratory)
- [Documents](#)

ADDITIONAL INFORMATION

- [Article and document archive](#) about LTEMP DEIS scoping process.
 - [Scoping letter of Living Rivers et al.](#)
-

Carbon Tax and Trading

FEBRUARY 08, 2016
BY JOHN WEISHEIT

CARBON PRICING

[The Corner House website \(UK\)](#)

A Critical Perspective for Community Resistance

by Tamra Gilbertson

FIRST PUBLISHED 10 NOVEMBER 2017

Carbon Pricing

Twenty years' experience has proved that carbon trading is making climate change worse. Rather than combating the continued use of fossil fuels, it is designed in a way that keeps them coming out of the ground. Faced with this reality, some environmentalists, states and corporations are advocating carbon taxes as an "alternative". But carbon taxes are no better equipped to address the roots of global warming than carbon trading.

Convinced that the ineffectiveness, injustices, racism and colonialism inherent in both kinds of carbon pricing demands a unified, international resistance, the Indigenous Environmental Network and the Climate Justice Alliance have produced this report, the first of an anticipated series. "We want to see 80 per cent of known fossil fuel reserves remain under the soil and beneath the ocean floor," the two groups conclude, "in conjunction with a ban on all new exploration and exploitation of oil, tar sands, oil/gas shale, coal, biofuels, uranium and natural gas, including for transportation infrastructures."

DOCUMENTS

- [2009 - Carbon Trading: How It Works and Why It Fails](#). Hammar skjold Foundation.
-

The Utah CIB and a Public Give-Away

MARCH 03, 2016
BY BILL RAU

Above: An example of a bulk product terminal
[CLICK HERE](#) to download this report.

[CLICK HERE](#) to review the website called STOP the Uinta Basin Railway.



Above: An example of a bulk product terminal

[CLICK HERE](#) to review the reports about the Community Impact Board and the Seven County Infrastructure Coalition.

The application to the Utah Permanent Community Impact Fund Board (CIB) for \$53 million by four rural counties (Carbon, Emery, Sanpete, and Sevier) to buy a stake in a bulk export terminal (for shipment of coal and other commodities) in Oakland, California, reflects economic desperation compounded by naiveté and corporate manipulation. At the same time, the initial granting of the loan by the CIB members is an example of insufficient information leading to speculative decisions, made worse by cronyism.

The desperation is a result of rural politicians seeing only the immediate economic gains that might be achieved by sustaining a declining industry. The naiveté arises from doing the bidding of outside and self-serving corporate interests. Speculation drove the county applicants to apply for the loan, but the CIB members themselves readily went along without conducting a thorough review of the plan. Coal was the commodity, but much of the speculation revolved around pretty scenarios painted for local authorities by corporate powers.

This paper describes what is known or can be implied from public documents about the processes that led to granting of the \$53 million loan by the CIB. It concludes with some observations about the CIB as a public body and the limitations of its work.

IN THE BEGINNING

The story begins decades ago when sections of rural Utah's economies relied heavily on extraction industries, in this case coal. The more immediate beginning is in 2013 when a Kentucky-based coal company, Bowie Resource Partners, purchased three coal mines in Utah and the Utah leases of another coal company. Sufco was one of those mines, located in Sevier County, Utah, 30 miles east of Salina. Bowie is one of the largest coal mining companies in the U.S. Like other coal mining companies it has been

feeling the pinch of declining coal sales in the U.S., in response to power companies switching to less expensive natural gas and regulatory controls on the burning of coal.

Bowie shipped most of its coal via truck to a rail terminal in Levan, Utah, or by truck to Utah power plants. At the Levan rail siding, the coal was loaded onto rail cars, some of which traveled to a bulk coal terminal in Stockton, California, for subsequent international shipment. Up to 750 trucks a day traveled from the Salina mine to Levan. Some 1500 trucks (round trip) traveled through the town of Salina daily (1). The transport was expensive, adding to the cost of coal sales. For over a decade, Sevier County's Economic Development Director, Malcolm Nash, had been seeking environmental approvals for a rail line from the mine to Levan. He was supported in the effort by the Six County Association of Governments consisting of Sevier, Juab, Sanpete, Millard, Piute, and Wayne counties. The rail line (known as the Central Utah Railroad Project) would reduce truck traffic but even more it would reduce the costs of coal, thereby increasing Bowie's profits. Although the company had long-term contracts with U.S. buyers, Bowie looked to international markets, especially in Asia, for increased sales (2).

Bowie Resource's partners included Galena Asset Management which held a 46% ownership in Bowie. Galena's website notes that its investment strategy is to maintain their investments for three to seven years and then sell to achieve a profit. Galena is a wholly-owned subsidiary of Trafigura AG. In 2015 Galena sold its holding in Bowie. In turn, Bowie acquired new partners including with several banks and investment firms.

The other partner is Trafigura AG, a Singapore-based commodity trading company. It has substantial experience in buying, selling and transporting bulk commodities, such a coal. Trafigura became (and remains) the exclusive marketing agent for Bowie coal.

The origin of the relationship between Malcolm Nash and Bowie executives is unclear, but they had a common interest in sustaining and expanding coal production in Sevier County. In an interview in April 2015, Nash said the permits for the rail line were nearly finalized. He is cited as saying, "When representatives of the CIB and Bowie found out about the possibility of a permitted rail project, it led them to discussion about the [Oakland] port..." (3). The rail line would be a useful transportation asset for Bowie. In October 2014, the Director of Utah's Transportation Commission, Jeff Holt, became involved in the discussions about the rail line (4). In November 2014, Holt wrote to Nash and described what needed to be done to make the case for investment in the railway (5). The following month Nash submitted an application to the CIB for \$100,000 to be used to build the case for the rail line. Also in December, Holt sent Nash a draft contract for Holt's employer, the Bank of Montreal, to provide advisory services on the railway.

Jeff Holt played a central role in the Central Utah Railroad Project, the Oakland Bulk Terminal, and the CIB. He was director of the Utah Transportation Commission, and thus had extensive knowledge about counties' transportation issues. And, as a member of the CIB he had access to a potential source of seed capital for large transportation projects, as well as regular contact with other CIB members. Finally, he was (and remains as of early 2016) a Managing Director of the Public Finance Group at BMO Capital Markets Corporation, a branch of the Bank of Montreal. In other words, he is an investment banker with extensive political, corporate, and bureaucratic contacts across Utah and beyond (6).

An example of Holt's role in arranging funding for projects comes from Huntsville in Weber County. The town wanted to increase its portion of water it shared with a neighboring faith community. The town needed money to build new infrastructure for acquiring the additional water. The Mayor, Jim Truett, reported during a town council meeting in January 2015 that CIB staff had told the town that it did not qualify for CIB funding because the county did not have industries that generated royalties for the state. However, the Mayor added, "Jeff Holt was busy behind the scenes talking with CIB board members trying to help the town." At the January 2015 CIB meeting, "the Mayor represented the Town and told the CIB board our story." According to notes of the Huntsville Town Council meeting of January 8, 2015, "The CIB board loved the story. Everyone on the committee is a chairman of a county commission somewhere, as well as heads of areas of government, two water representatives, and a UDOT person." As a result of the love-fest, the CIB board voted unanimously to grant Huntsville's request for \$606,000 (7).



Jeff Holt, former Director Utah Transportation Commission

ABUSING THE CIB

As the notes from the Huntsville town council meeting indicate and the minutes from the CIB meetings of January and February 2015 show, the CIB board was not adverse to advancing funding requests that staff had indicated were not permitted. Cronyism outweighed legal niceties and appropriate review of applications.

At some point in 2014, interest in a rail line for the coal mine in Sevier County overlapped with and was subsumed by interest in a proposal for shipment of coal to a bulk product terminal in Oakland, known as the Oakland Bulk and Oversize Terminal (OBOT). A former U.S. Army base was being converted to a terminal for deep-draft ships capable of carrying tens of thousands of tons of cargo. The terminal was to be developed by Phil Tagami, but required funding.

We can assume that Jeff Holt became aware of the Oakland project through his position as director of the Utah Transportation Commission. A bulk terminal for coal exports would appeal to several companies and counties in Utah. By March 2015 county commissioners from Carbon, Emery, Sanpete, and Sevier counties had, at tax payer expense, traveled to Oakland for guided tours of the proposed terminal and port. Holt or a Bank of Montreal colleague organized the tours.

We can also assume that prior to and during the tours a proposal was finalized for the four counties to apply to the CIB for \$53 million--\$50 million as an investment in the bulk terminal thereby which would buy a guarantee for priority for coal and other products from those Utah counties in shipping from the terminal. An additional \$3 million was for Holt's investment employer for advisory services.

JUSTIFYING LARGE CIB LOANS

CIB grants and loans are mandated to mitigate the impacts of mineral extraction on local municipalities and counties. The money usually is requested for road repairs, public service buildings improvements, water and sewage systems, and planning for similar local initiatives. Most grants and loans are for under \$2 million; usually, a cap of \$5 million exists on combined loan/grant applications on single public service projects.

CIB loans of tens of millions of dollars are justified by applicants and the board members as necessary to increase mineral extraction through infrastructure projects. The improved infrastructure, it is often argued, will increase mineral output and thus add more money to the CIB coffers. For example, in putting forward its justification for a \$55 million loan for a rail line in the Unita Basin, the applicants argued that "the large infrastructure projects that the Coalition plans to pursue will be revenue producing and will increase take-out capacity for extractive industries, which in turn, will increase mineral lease royalties return to the State and given to the CIB" (8).

CIB Large Loans: Examples

The \$53 million application for investment in a California coal terminal was not the only large expenditure loan provided by the CIB. In September 2014 the CIB allocated \$55 million for a rail line through Indian Canyon from the Unita Basin oil fields. This would be a financial base so the Six County Infrastructure Coalition could then apply for a \$2-3 billion loan from the Federal Railroad Administration. That project eventually was determined to be financially unfeasible and the money was returned to the CIB.

A combination of loans and grants totaling \$55 million was provided for a paved road to provide “access into the energy zone of southern Uintah County.” The main users were expected to be private companies mining tar sands and oil shale.

Thus, rather than directly benefiting community public-service needs, the large infrastructure loans would only potentially add revenue to the state and the CIB. There was no built-in guarantee that the infrastructure projects would increase production or sales of minerals or generate additional revenue to the state or CIB. This frequently used assumption was not subject to intensive study by the CIB to demonstrate that it was correct.

THE CIB LOAN FOR THE OAKLAND BULK AND OVERSIZE TERMINAL

Efforts to obtain a CIB loan for investment in the Oakland terminal were moving fast. According to County Commissioner Gary Mason of Sevier County, the four counties had

only found out about the proposal for involvement in the bulk port in February 2015 (9). Four counties were involved: Carbon, Emery, Sanpete, and Sevier. They expected to form an association independent of the county structures as a way to protect county tax payers from potential losses. However, the CIB had to lend to local governments or combinations of local governments, not to private associations or companies. Holt kept pushing the counties to get their act together to formalize the association, but it did not occur prior to the CIB April 2015 meeting. He did send, however, a draft contract which county governments had to run through their legal authorities.

A week before the CIB April 2015 meeting, county commissioners received a preliminary Term Sheet which provided some details about the bulk port project. In his cover email, Holt wrote "Please Keep these confidential between the Counties involved (10)." Among the details in the Term Sheet were:

- Bowie Resource Partners (BRP) will assure it will ship enough coal through the bulk terminal for the project managers to secure \$200 million in financing
- Jobs in the coal mining industry will be protected
- The four Utah counties will contribute \$50mm in return for a 10% annual return
- The four counties will form an interlocal agency to manage the loan
- Bowie Resource Partners and the four counties will agree to gain a parallel investment in the new Central Utah Railroad so that the railroad and terminal will be linked.

At its April 2nd, 2015 meeting, the CIB heard the four county request for a \$53 million loan. Interestingly, Holt made the presentation, although county representatives sat at the table with him. Those representatives included: Commissioner Gary Mason of Sevier County; Commissioner Keith Brady of Emery County; and Commissioners Jake Mellor and Casey Hopes of Carbon County. The presentation emphasized the future value to Utah. It was stated that the project would be a public-private partnership (the public part being Utah taxpayer monies and City of Oakland ownership of the port). Questions from the CIB board members were primarily clarifications of the project; no skepticism or major concerns were raised. The presentation and questions and answers lasted nearly 90 minutes. The CIB board then approved moving ahead with the loan (11).

The discussion at the CIB meeting gives the impression that representatives of the four counties and Holt had some background information about the project. However, it is unclear what level of detail and understanding of risks and other long-term outcomes county representatives and CIB board members had about the project. It appears that the promise of a 10 percent return on the counties' investment was a persuasive factor, but no financial analysis was presented. And early in 2015 it was widely known that coal demand in the U.S. was declining, but it was expected that demand from China, South Korea, India, Japan and other Asian countries would continue, if not increase. That latter assumption turned out to be wrong, and could be foreseen early in 2015. China's coal imports from the U.S. fell by 80% in 2014 from 2013 levels and fell further in 2015

In addition to company proposing to build the bulk terminal, the company led by Phil Tagami, the terminal once completed would be operated by another company, Terminal Logistics Solutions (TLS). TLS has been aggressive in lining up support for the terminal with faith communities in Oakland, thereby dividing opposition.

(12). All of a sudden, U.S. coal exports were exposed to the boom-bust cycle that tends to follow most mineral commodities.

The \$50 million in Utah public funds was seen by the bulk terminal developer, Phil Tagami, as a critical sign to other potential investors that the project had a credible financial foundation. Tagami wanted the Utah money by June 2015 so he could work with other investors to secure the full \$250-\$275 million for the project. It is worth noting that Tagami is a long-time supporter, advisor and financial contributor to Governor Jerry Brown of California. Several commenters have noted that Brown's advocacy for climate change (including his participation at the 2015 Paris climate change summit) also should call for him to speak out on using the Oakland port for coal exports (13). As of early 2016 Brown had not issued a comment.

IT HITS THE FAN

Five days after the April 2nd CIB meeting, the Richfield Reaper reported the story (14). Sevier county economic development director, Malcolm Nash, is quoted as saying, "It's all about finding a new home for Utah's products and in our neighborhood, that means coal." Nash said that Governor Gary Herbert had verbally endorsed the project. Nash goes on to say, "The purchase of Sufco [coal mine] by Bowie [Resource Partners] is what's driving all this... "

The county commissioners were not pleased with the publicity generated by the Richfield newspaper story; some panicked. Jeff Holt fired off an email to commissioners on April 8th. He wrote: "Please discuss any comments to the press ahead of time with the rest of the team. If anything needs to be said, the script was to downplay coal, and discuss bulk products." His memo continued: "Phil Tagami [the bulk terminal construction contractor] had been pleased at the low profile was bumping along... on the terminal and it looked for a few days like it would just roll into production with no serious discussion." He ended the email: "Controlled message is critical" (15)." Two weeks later, as stories about the CIB loan appeared in the Salt Lake City newspapers, Holt wrote to Jae Potter of Carbon County, Claudia Jarret of Sanpete County, Keith Brady of Emery County, and Malcolm Nash of Sevier County. He argued: "this is a County Investment in

the project and no one should speak for the Counties, but the Counties themselves, and to be consistent in the message..." Holt suggested that Potter be the counties' point of contact for all press and similar inquiries (16). At the end of April, county commissioners of the four counties received copies of the presentation script used at the CIB meeting. This would be a basis for their future public comments. What had started as an opportunity for expanding coal sales now turned into a public relations message of good-for-all economic project. Proponents of the financial investment in the bulk terminal emphasized how the project would benefit all of Utah and that numerous products, including hay and salt, could be exported through the terminal. But it was coal and the out-of-state investment of Utah money that received public attention.

The Salt Lake Tribune and *The Deseret News* picked up on the story toward the end of April 2015. Journalists in the Oakland area, too, began to file stories about the project. Oakland political leaders and citizens' groups began questioning the shipment of coal through the city and the use of the bulk terminal for coal exports (17).

In Oakland the surrounding communities of the San Francisco Bay area activists began organizing in May 2015 to oppose the shipment of coal through the proposed bulk terminal. During the summer months of 2015 environmental, public health, community, and faith-based groups built public opposition. Some 10,000 signatures were collected in opposition. When the Oakland City Council held a public meeting on the proposed terminal in September, hundreds of people signed up, most to speak against coal shipments through their communities. It will not be until the middle of 2016 that the Oakland City Council issues its opinion on the coal shipments through the city to the bulk terminal. It is awaiting a report on the environmental, safety, and health impacts of moving coal through Oakland (18). However, three council members did voice opposition in the wake of the public hearing. Promoters of the bulk terminal have not been quiet, either. They have organized some faith leaders to support the project and have offered some environmental groups a small portion of the terminal's profits in return for their support for the project (19).

In Utah, the CIB loan had been questioned by the State Treasurer who has a seat on the board as potentially illegal and beyond the scope of CIB authority. On October 22, 2015, at the behest of several clients, the law offices of Christina Sloan in Moab, Utah, sent a letter to the Utah Attorney General, Sean Reyes, asking for a review of the CIB decision to make the \$53 million loan. That was followed on November 2, 2015, when environmental, public health, and citizens' organizations in Utah and California formally asked the Utah Attorney General to find that the CIB loan violated both federal and Utah law in making the loan. In the middle of December, it was reported in the press that the Attorney General likely would not issue an opinion on the legality of the loan. It was noted that the state legislature or courts were the appropriate bodies to address the issue (20). The CIB itself says the loan is under legal review and the findings of that review will be discussed at its May 2016 meeting. Also in December, Jeff Holt resigned from his position as director of the Utah Transportation Commission, citing his transfer by his employer the Bank of Montreal to New York.

Central Utah Railroad Project

Our story began with a proposed rail line from Salina to Levan. After a 14-year wait, in September 2015 the line finally passed all the environmental and administrative reviews. As far as the U.S. government was concerned, the project could proceed. For promoters in Utah, all that was needed to begin construction was some \$140 million.

And that is where the issue of the \$53 million CIB loan stands as of early February 2016. Possible outcomes that might be foreseen include:

- The Oakland City Council comes out in opposition to the coal bulk terminal and or coal trains running through the city and amends its agreement with Tagami's company, thereby blocking coal shipments from the bulk terminal. That may be sufficient to have supporters of the project back off, although Tagami insists the project will move forward.
- The four Utah counties that requested the loan may withdraw the request and return the money (which had not actually been transferred).
- Without Jeff Holt to guide the process, this may be a reasonable scenario.
- Or, the four counties may find that the changing market for coal makes the investment unfeasible.
- A legal ruling may find the CIB violated the law and its mandate in making the loan, thereby making the loan invalid.
- The CIB board may reconsider its original decision and vote to cancel the loan.
- Bowie's investment partners may withdraw their investments, leaving Bowie without the capital to guarantee coal deliveries to the Oakland port.
- A combination of the above.

SOME LESSONS

The CIB prefers to keep its decisions, especially for large loans, quiet. The agendas do not include a place for public comments. Minutes of meetings are superficial, including only the statement for a request and the board decision. An audio recording is available

online, but lacks instructions at what point in the three-plus hour recording to hear specific agenda item discussions.

It appears that the CIB board receives little background information on large projects or it receives that information outside of the formal meetings. Thus, decisions may be made on the basis of vague statements or expectations. Especially for those large projects seeking funding in the tens of millions of dollars, the board appears to prefer to trust the applicants rather than dig into financial feasibility, impacts, and other issues.

The CIB is a relatively closed society. Members know one another, know town and county officials. Those inter-personal relations can be a basis for trust and collaboration. In the case of the \$53 million loan for the Oakland bulk terminal, that trust and sense of collaboration were manipulated by sophisticated international corporate interests for their own self-interest. Rural municipalities and counties often are hard-pressed for adequate funding to sustain their basic infrastructure. Where coal has been a major employer and contributor to the local tax base, a view that sees lay-offs, mine closings or sales, and declining royalties can be frightening to small jurisdictions. The Oakland project seemed to open an opportunity for the four sponsoring counties to forestall economic change by keeping coal moving. The investment bankers and the project developers played on these vulnerabilities, promising easily obtained seed money (the CIB loan), jobs, and a 10 percent return on the loan acquired by the four counties.

The absence of legal review by state authorities, whether in the executive office or the legislature, is strange. Reasonable queries from Utah organizations about the legality of the CIB loan have been, at least up to February 2016, ignored. Queries to the CIB staff about any internal legal review of the loan were not answered. It seems clear that the desire to minimize public awareness of the loan now carries over into some of the highest levels of state government.

Finally, the reliance by many rural Utah counties on extraction industries is no longer a viable form of economic development. Many of those industries go through boom-and-bust cycles that leave rural communities vulnerable to wild swings in available employment and financing. Also, most of those industries are in serious decline; their products are less in demand than in decades past. CIB lending for infrastructure projects may prolong declining industries, but also perpetuates speculation by local governments on continued reliance on those industries. As a state agency, the CIB has not taken the initiative to assist local governments to make the transition to infrastructure for newer economic activities. In this regard, the CIB is simply following the decisions of Utah's state government and both are negligent of rural needs and interests.

A FINAL NOTE

Two decisions will be made in the middle of 2016 which will determine, in part, whether the CIB will actually put up the \$53 million to the four counties for investment in the bulk terminal in Oakland. The first decision will occur as a result of the legal review of the

loan; at its May 2016 meeting the CIB will hear about the legality of the loan. Toward that end, the four counties may find that they do not have a legitimate basis for accepting the loan.

The other decision will probably occur in June 2016 when the Oakland City Council considers whether to change the conditions of its agreement for the development of the bulk terminal. If the City Council determines that coal shipments through the city and from the port raises too many safety, health, and environmental issues, it may invoke its right to alter the contract to exclude coal exports at the bulk terminal.

This paper will be updated as new information becomes available, especially as a result of these two decisions.

FOOTNOTES

- (1) <http://www.nephitimesnews.com/0403/040903/1.htm>
- (2) Bowie Resource Partners, Securities and Exchange Commission filing, June 19, 2015.
- (3) Project could transform local market to international, April 7, 2015. http://www.richfieldreaper.com/news/local/article_e13121f0-dd67-11e4-b956-3ff480cc1929.html
- (4) Malcolm Nash to Jeff Holt, email dated October 22, 2014. Accessed through GRAMA request.
- (5) Jeff Holt to Malcolm Nash, email dated November 21, 2014. Access through GRAMA request.
- (6) The role of international banks and investments companies in this whole process is effectively described in a series of articles by Darwin BondGraham writing for the East Bay Express newspaper. See his articles of August 19, 2015 and October 7, 2015.
- (7) <http://huntsvilletown.com/Minutes2015/Jan8-15-min.pdf>
- (8) Six County Infrastructure Coalition Talking Points, CIB meeting of September 3, 2014. [CIB Meeting 03 Sept., 2014 minutes](#).
- (9) "Project could transform local market to international," April 7, 2015. http://www.richfieldreaper.com/news/local/article_e13121f0-dd67-11e4-b956-3ff480cc1929.html
- (10) Jeff Holt email, March 25, 2015. Obtained by GRAMA request by David Abell of the Sierra Club Environmental Law Program.
- (11) CIB audio and minutes from April 2, 2015 meeting. The audio begins at 3:04:25. <http://jobs.utah.gov/housing/cib/cib.html>
- (12) U.S. Energy Information Agency, Quarterly Coal Report, January 26, 2016.
- (13) For example, an article in the Wall Street Journal that received wider distribution. <http://ieefa.org/opponents-of-oakland-coal-export-scheme-urge-california-governor-to-take-a-stand/>. Also see, Oakland Coal Terminal Becomes a Political Flash Point, Port News, October 19, 2015, <http://www.hellenicshippingnews.com/oakland-coal-terminal-becomes-a-political-flash-point/>

- (14) Project could transform local market to international, April 7, 2015. http://www.richfieldreaper.com/news/local/article_e13121f0-dd67-11e4-b956-3ff480cc1929.html
- (15) Jeff Holt email to Keith Brady, Malcolm Nash, Gary Mason, Gordon Topham, Garth Tooter Ogden, Jae Potter, Casey Hopes, James Burr, etc. April 8, 2015. Names of several recipients were redacted in the GRAMA-request document.
- (16) Jeff Holt email, April 24, 2015. Obtained by GRAMA request.
- (17) One of the first stories from the Oakland area was published on April 23, 2015 in the Contra Costa Times. It notes the anger of both city officials and environmental groups to the proposed use of the bulk terminal. http://www.contracostatimes.com/breaking-news/ci_27981684/unlikely-partners-utah-investing-53-million-export-coal
- (18) Coal Money Divides Oakland's Churches, Darwin BondGraham, East Bay Express, February 10, 2016. <http://www.eastbayexpress.com/oakland/coal-money-divides-oaklands-churches/Content?oid=4673334>
- (19) Buying Support for Coal, Darwin BondGraham, East Bay Express, September 21, 2015. <http://www.eastbayexpress.com/SevenDays/archives/2015/09/21/buying-support-for-coal>
- (20) http://www.moabtimes.com/view/full_story/27007537/article-AG-s-office-unlikely-to-issue-opinion-on-legality-of-CIB-funding-for-major-infrastructure-projects?

ADDITIONAL INFORMATION

- [County Coalition to use Community Impact funds to Deliver Coal to Oakland Port](#). Far Country.
- [The Eastern Utah County Coalition for the Development of Oil and Gas Infrastructure](#). Far Country.
- [Citizens of eastern Utah submit letter to Utah's Attorney General on use of CIB funds for proposed coal transport facility in Oakland, CA](#). Living Rivers.
- [Groups write U.S. Attorney General asking for investigation of coal shipping terminal deal](#). Living Rivers.

CIB REFORM

Documents and News

- [2021 - Utah Oil Slick: Funding Polluters Instead of Rural Communities](#). Center for Biological Diversity.
- Katie McKellar for Deseret News - [Utah misusing public funds for fossil fuel projects, environmental groups allege](#).
- [2016 - Letter to USA Attorney General requesting Investigation Utah 53 Million Mineral Leasing Payments Coal Export Terminal Oakland California](#). Living Rivers.
- Ben Lockhart for Deseret News - [Groups Write US Attorney General Asking For Investigation Coal Shipping Terminal Deal](#).

- Brian Maffly for Salt Lake Tribune - [Utah Groups Demand Federal Probe Into Utah Role Coal Port.](#)
 - Manuel Quiñones, E&E reporter - [Groups Ask DOJ to Probe Utah Funding For Export Project.](#)
-

Programmatic Environmental Impact Statement for New Federal Coal Leasing Program

JUNE 21, 2016
BY JOHN WEISHEIT

Written comments may be submitted until July 28, 2016 (the original posted deadline for submitting written comments was changed), using one of the following methods:

Mail: Coal Programmatic EIS Scoping
Bureau of Land Management
20 M St. SE, Room 2134 LM
Washington, D.C. 20003

Email: BLM_WO_Coal_Program_PEIS_Comments@blm.gov

[Home page](#) by the Bureau of Land Management and as follows:

The Department of the Interior has launched a comprehensive review to identify and evaluate potential reforms to the federal coal program in order to ensure that it is properly structured to provide a fair return to taxpayers and reflect its impacts on the environment, while continuing to help meet our energy needs.

The review, in the form of a Programmatic Environmental Impact Statement (PEIS), will take a careful look at issues such as how, when, and where to lease; how to account for the environmental and public health impacts of federal coal production; and how to ensure American taxpayers are earning a fair return for the use of their public resources.

A [news release](#) announcing a Notice of Intent (NOI) for the PEIS was issued on March 24, 2016. The NOI can be viewed [here](#).

A [news release](#) announcing the proposed rule was distributed January 15, 2016. The BLM plans to publish a Notice of Intent to conduct the PEIS.

Related Documents: [Secretarial Order](#) | [Fact Sheet](#) | [Questions and Answers](#) | [Coal PEIS Scoping Meeting Presentation](#)

Additional information on the federal coal program can be found [here](#).



Coal Seam in the Mesa Verde Group

The BLM will host the following six public scoping meetings to solicit public input on the Federal Coal Program PEIS. Information on how to comment can be found [here](#).

MEETINGS in Casper, Wyo., Salt Lake City, Knoxville, Seattle, and Grand Junction, Colo., will be held from 10 a.m. to 4 p.m. local time. The Pittsburgh meeting will be held from 1 to 7 p.m. local time. Specifics for all of the upcoming public scoping meetings can be found below:

May 17, 2016

Casper Events Center
1 Events Drive
Casper, WY 82601

Doors open for speaker registration at 8:30 a.m.; meeting 10 a.m. to 4 p.m.

May 19, 2016

Salt Palace Convention Center
90 South West Temple
Salt Lake City, UT 84101

Doors open for speaker registration at 8:00 a.m., meeting 10 a.m. to 4 p.m.

May 26, 2016

Tennessee Theatre
604 S. Gay Street
Knoxville, TN 37902

Doors open for speaker registration at 8:00 a.m.; meeting 10 a.m. to 4 p.m.

June 21, 2016

Sheraton Seattle Downtown
1400 6th Avenue
Seattle, WA 98101

Doors open for speaker registration at 8:00 a.m.; meeting 10 a.m. to 4 p.m.

June 23, 2016

Two Rivers Convention Center Avalon Theatre
645 Main Street
Grand Junction, CO 81501

Doors open for speaker registration at 8:00 a.m.; meeting 10 a.m. to 4 p.m.

June 28, 2016*

Pittsburgh Convention Center
1000 Fort Duquesne Boulevard
Pittsburgh, PA 15222

Doors open for speaker registration at 11:00 a.m.; meeting 1 to 7 p.m.

*PLEASE NOTE this is a new date; the meeting originally scheduled for June 16, 2016, is now scheduled for June 28, 2016.

The meetings in Casper, Wyo., Seattle and Pittsburgh will be live-streamed at

www.blm.gov/live; meetings in Salt Lake City, Knoxville, Tenn., and Grand Junction, Colo., will have a toll-free, listen-only audio link available via telephone.

Those who attend the meetings in person and who wish to speak will be asked to sign in. Speakers will be called upon on a first-come, first-served basis determined by sign-in order. Attendees wishing to speak will be accommodated to the fullest extent possible given the time available. The maximum speaking time per speaker is three minutes.

DOCUMENT ARCHIVE

- [Federal Register Notice](#)
 - [Secretarial Order 3338](#)
 - [BLM Press Release](#)
 - [Coal PEIS Scoping Meetings Presentation](#)
 - [Coal Reform Fact Sheet](#)
 - [Questions & Answers](#)
 - [PEIS BLM Website](#)
 - [Coal Operations BLM Website](#)
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The Little Colorado River & Coconino Plateau

SEPTEMBER 06, 2016

BY JOHN WEISHEIT

INTRODUCTION TO THE WATERSHED

The Little Colorado River is 340 miles long and drains 26,500 square miles; about 10% of the total for the entire Colorado River basin. The headwaters of the Little Colorado River (LCR) begin at the west side of the Continental Divide in northwest New Mexico; the headwaters on the east side of the divide flow into the Rio Grande. The direction of flow for the LCR main stem, in eastern Arizona, is toward the northwest and it joins the Colorado River in Grand Canyon National Park. This watershed is in the most southern part of a geophysical province known as the Colorado Plateau, which is a bowl-shaped province of uplifted sedimentary rocks, both marine and terrestrial in origin. The Plateau is also ringed with various kinds of igneous features, both extrusive and intrusive.

The Colorado Plateau is divided into six sub-provinces and the LCR flows through three: 1) the Navajo Section; 2) the Grand Canyon Section, and; 3) the Datil Section. The Navajo Section is generally comprised of terrestrial sedimentary rocks. The Grand Canyon Section is generally comprised of marine sedimentary rocks, and where this Section adjoins the Basin and Range Province to the south, there are igneous features (volcanos and cinder cones). The Datil Section is also adjoined to the Basin and Range Province and includes numerous extrusive igneous features, as well. The largest volcanic feature in the LCR watershed is the San Francisco Peaks near Flagstaff, AZ at 12,600 feet in elevation. In very recent geologic time, a flow of lava flowed into the gorge of the LCR near Leupp, AZ, where the river begins its rapid descent to the bottom of the Grand Canyon. This huge plug of lava forced the river to reroute its course around this natural obstruction, and then the river returns to its original bed by plunging over the canyon rim as a waterfall.

Annual rainfall in the watershed is 10 inches and annual snowmelt is 15 to 20 inches. The LCR is an interrupted river which means some parts flow perennially and some parts flow ephemerally. Large springs, beginning about 13 miles above the mouth of the LCR in the Grand Canyon, provide a perennial supply of water. These springs are sacred to the Hopi and Zuni nations; the springs also provide critical habitat for an endangered fish called the humpback chub. Cloudbursts in the late summer are generally intense and damages from flash flooding are a frequent problem. For example, in September of 1923 a cloudburst, or possibly an atmospheric river, produced a peak flow of 120,000 cfs at the mouth of the LCR.

The natural flow of the LCR is not really known, but records from the lowest-most gage at Cameron, AZ indicate the total to be about 138,000 acre-feet. According to the Annual Operating Plans from the Bureau of Reclamation the total annual contribution to the Colorado River main stem in 2015 was 82,000 acre-feet, but the total in 2014 was only 33,000 acre-feet.

The precipitation that falls on the LCR watershed recharges five different aquifers; adjoining watersheds contribute to the recharging of the deeper aquifers. The five aquifers of the LCR region are named after layers of sedimentary rock and called, from shallow to deep: T- (Toreva), D- (Dakota), N- (Navajo) and C- (Coconino) and R- (Redwall) aquifers.

The T-Aquifer underlies the Hopi Villages and supplies water to numerous artesian springs, which are all in serious decline. The primary recharge areas of the D- and N- aquifers occur along the southern and eastern periphery of the LCR watershed. The D- Aquifer is of poor quality for reasons of dissolved solids.

The N-Aquifer is the drinking water supply for the Hopi and Navajo nations. The declines in the water table for the N-aquifer has ranged from 23 to 72 feet and is associated with the strip mining operations of Peabody Coal Company at Black Mesa. In 2005, groundwater extraction at Black Mesa, to specifically deliver a slurry of crushed coal via pipeline to Laughlin, NV, was terminated when Southern California Edison decommissioned the power plant. The consequence of massive withdrawals from the N- Aquifer have increased the load of arsenic to dangerous levels, according to various reports by the USGS. Other heavy metal contaminants include uranium.

The University of Arizona reports that, "About three quarters of the population on the Hopi Reservation live in areas, such as the community of Sichomovi, which have water resources with twice the EPA limit for arsenic in drinking water. High cancer rates on the Hopi reservation have been reported and preoccupy the Hopi population. Even though they are aware of the presence of arsenic in their water sources, the struggle to fund projects that would guarantee safe drinking water has prolonged their exposure to this toxic metal. The EPA awarded the tribe about \$6 million to drill two deep water wells, however, the tribe requires an extra \$18 to \$20 million to complete the project"

The C-Aquifer is the largest and more than 1,000 wells in New Mexico and Arizona are tapped into this aquifer of 22,000 square miles, and in 1995 about 140,000 acre-feet were consumed annually. In 2004 the state of Arizona reported that the water table of C- Aquifer has declined 30 feet near Flagstaff and at operational power plants (coal-fired) near St. Johns and Springerville. Research to develop a safe drinking water system for the tribes and from the C-Aquifer near Luep, AZ has been completed, but the funding to build the infrastructure has not been authorized.

The R-Aquifer feeds the springs of the LCR gorge near its confluence with the Colorado River in Grand Canyon National Park. These springs are the most sacred of sites for the Hopi and Zuni tribes.

The LCR is a scientific and culturally important watershed. The federal reserve lands include: 1) Grand Canyon NP; 2) Petrified Forest NP; 3) Sunset Crater NM; 4) Wapiti NM, and; 5) Walnut Canyon NM; Apache-Sitgreaves NF; Coconino NF; Kaibab NF. There are also state reserve lands in the LCR watershed that include recreation areas

and wildlife refuges.

There are three indigenous tribes living in the watershed of the Little Colorado River: 1) Navajo; 2) Hopi, and; 3) Zuni. It is well-understood that the villages of the Hopi mesas are the oldest communities in North America. European interventions did not occur until 1540 when a Spanish expedition, led by Francisco Vazquez de Coronado, encountered the Zuni Pueblo in present day New Mexico on a tributary of the LCR called the Zuni River. Using military force the expedition occupied the pueblo of Zuni while a scouting party traveled west to investigate and verify the existence of the Hopi pueblos and the Grand Canyon of the Colorado River. This scouting party basically followed the natural course of the LCR and temporarily subjugated the Hopi people, which included procuring guides to lead the Spaniards to the bottom of the Grand Canyon. The scouting party was led by Garcia Lopez de Cardenas and the anticipated encounter with the flowing Colorado River never happened. Cardenas was eventually convicted of war crimes against the people of the Tewa Pueblos of the Rio Grande River.

In 1680 the pueblo people united and launched a successful revolt against the Spaniards and drove the settlers south to the Mexican mainland. Twelve years later the Spaniards returned with a somewhat kinder form of colonialism, which lasted until 1821 when the subjects of Mexico become an independent nation. After a two-year war that began in 1846, Mexico ceded its northern frontier to the willful expansionism of the United States of America. The 1848 Treaty of Hidalgo Guadalupe honored the original land grants (properties) authorized by the colonial Spanish government to the residents of what is now called: New Mexico, Colorado, Arizona and California; the Spaniards did not have permanent settlements in the states of Utah & Nevada. The prior appropriation system of water rights in the North American west was also an inheritance of colonial Spain. Unfortunately, though the indigenous cultures have the oldest water rights in the Colorado River basin, they have yet to fully secure their rights to a safe supply of drinking water.

DOCUMENTS

- [Geology: Little Colorado River](#). Durango Bill's [Website](#).
- [Hydrology of Eastern Plateau](#). AZ Dept. Water Resources.
- [1991 - Coronado Expedition](#). NPS.
- [2001 - Growth on the Coconino Plateau: Potential Impacts of Water Pipeline](#). Morrison Institute.
- [2002 - Hydrogeology of C-Aquifer Verde, Salt Rivers](#). USGS.
- [2005 - Groundwater Change Model of C-Aquifer Clear, Cheylon Creeks](#). USGS.
- [2006 - LCR Watershed Based Plan](#). NEMO.
- [2011 - LCR Watershed \(Chapter 6\)](#). USFWS.
- [2013 - Hydrology & Water Resources Hopi Reservation](#). Hopi Tribe.
- [2015 - Final Hydrographic Survey Report Hopi Indian Reservation LCR System](#). ADWR.
- [2016 - LCR Winslow AZ Flood Risk Management Draft Feasibility Report & EIS](#). ACoE.

THREATS

Radioactive Waste

The Puerco River is the most northern tributary of the LCR. In July of 1979 a flash flood breached a dam that impounded uranium ore waste at the Church Rock Uranium Mill in New Mexico; the owner of the mill was United Nuclear Corporation. About 1,100 tons of radionuclides and 93 million gallons of toxic sludge raged downstream into lands of the Navajo Nation. The release of radioactive materials into the environment exceeded the release during the incident at the nuclear reactor at Three Mile Island in Pennsylvania, which also occurred in 1979. The state of New Mexico and the federal government have essentially done nothing for reasons of racism. To this day, the human and natural harm to the river and the aquifers have not been sufficiently remediated. Thirty million tons of uranium ore has been mined from the Navajo Nation and the reclamation of these mining activities has not been properly funded. https://en.wikipedia.org/wiki/Puerco_River

Black Mesa Coal Mining

The rocks of the Cretaceous Period in the Colorado Plateau contain deposits of coal that are largely mined underground in Colorado and Utah, but in Arizona these deposits are stripped from the surface. Each year, at the Kayenta Mine, about 400-acres are stripped and then reclaimed for an annual total of 8 million tons. The development of the Kayenta Mine began in 1962 by Peabody Coal Company (United Kingdom) and the destination of this coal would be two power plants owned by a consortium of partners: 1) Mojave Generating Station (MGS) at Laughlin, Nevada, and operated by Southern California Edison, and; 2) Navajo Generating Station (NGS) at Page, Arizona, and operated by Salt River Project; power from NGS pumps Colorado River uphill to farming communities and to the metropolises of Phoenix and Tucson. The coal for NGS is delivered by electric train and the coal for MGS was delivered via a pipeline that pumped a slurry of groundwater and crushed coal. The MGS was decommissioned in 2005. A Utah attorney, John S. Boyden, negotiated the lease agreement between the Bureau of Indian Affairs, the Hopi Nation and Peabody Coal, which turned out to be an audacious conflict of interest that was not revealed to the public until Charles F. Wilkinson published his book called *Fire on the Plateau: Conflict and Endurance in the American Southwest* in 1999. In April of 2016 Peabody Coal Company filed proceedings for Chapter 11 Bankruptcy.

- [A People Betrayed](#). Phoenix New Times.
- [PeabodyEnergy and Native Americans in Dispute Over Mining in Arizona](#). NY Times.
- [Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts](#). NREL.

The Arsenic Problem

Depletion of the N-aquifer by Peabody Coal since the 1960s lowered the water table and the consequence was an increase in arsenic at dangerous public health levels.

The Environmental Protection Agency has required that the Hopi Cultural Center provide bottled water to their guests and to develop a filtration system for this tribal business that provides services to visitors and tourists. The Keams Canyon service area has high levels of arsenic in their drinking water. Bottled water was provided to the residents and visitors, but the program was discontinued. (news feature)
Sacred Site Protection

1) Sipapuni (c/pa/pu/nee): An artesian spring at the bottom of the Little Colorado River Gorge near the confluence of the Colorado River. The flow of Sipapuni is diminished because depletions of groundwater exceed the natural rate of recharge. This mining of groundwater is a most serious threat because Sipapuni is considered as one of the most sacred sites in the world. Sipapuni is the point of emergence from the third world to the fourth world and represents the connection of water to the survival of all living things.

2) Grand Canyon Escalade Resort & Tramway - This issue involves a compact agreement between the Hopi Tribe and the Navajo Nation to respect Hopi sacred sites where the Little Colorado River joins the Colorado River. A development corporation desires to build a resort at the canyon rim and a tramway to the canyon bottom, which is a violation of the compact agreement. The Navajo Nation is processing this proposal within various political committees and may eventually be rejected. If not, the Hopi intention is to litigate this matter, which is the ethical thing to do and will have broad-based support throughout the world.

- [Home page for Save The Confluence \(http://savetheconfluence.com\)](http://savetheconfluence.com)
- [2017 - Fact Sheet on Escalade Project at Mouth of Little Colorado River](#)

3) San Francisco Peaks - Wastewater from the City of Flagstaff sewage treatment facility is used to make snow for the winter ski resort called the Snow Bowl. The San Francisco Peaks are sacred to all tribes of the Little Colorado River watershed. This desecration is unethical and grassroots campaigns to end this practice included advocacy and litigation with all branches of government, which did not prevail. This disrespectful practice is poor stewardship toward plants, animals, human health and spirituality.

- [Save The Peaks](#)
- [What Part of Sacred Don't You Understand?](#) NPR.

Coal-fired Generating Stations

The LCR watershed has two operations: Cholla Power Plant and Springerville Generating Station. Coal is delivered by train from New Mexico and Wyoming. Poor air quality and mercury affect the health of the people who live in the Little Colorado River basin, and beyond. Visibility affects numerous Class I PSD areas (Prevention of Significant Deterioration) in the Colorado Plateau. These power plants exploit surface water and groundwater resources. <http://www.onthecolorado.com/articles.cfm>

[mode=detail&id=1224816661155](#)

Potash

In 2011 the price of potash increased due to market manipulation and applications were filed for exploratory drilling into deep deposits of the Permian Holbrook Basin, which is a sedimentary layer of seawater evaporates. The price of potash plummeted and drilling programs were abandoned. Potash mining involves tremendous amounts of surface water or groundwater to dissolve the potassium chloride with in the earths crust (solution mining). Should a processing plant became operational, solution mining would further devastate the poor condition of these depleted aquifers.

Stormwater Capture Impoundments

Impoundments approved by the Army Corp of Engineers near Black Mesa were built to capture storm water from cloudbursts to supply water for suppressing dust produced by strip mining activities. This water depletion also suppresses aquifer recharge and traditional farming practices of the indigenous people.

Little Colorado River Settlement Agreement

Hopis for thousands of years have a covenant with the Great Spirit Masauu to provide stewardship over water and land. Federal water right negotiators do not respect this covenant with Masauu and this is why the negotiations failed. Water is sacred to all life and should not be viewed solely as a commodity that is quantified. In these times of scarcity, the old water rights system will not work in the future and they must adjust to a new system of water distribution that is holistic. Developing a new water ethic which would include more collaboration with Native American Indian Tribes and to appreciate their water wisdom to share water equilaterally with all living things.

NEWS

- [2018 - Trial Begins To Determine Hopi Tribe's Water Rights To Little Colorado River](#). Hopi Observer.
- [2020 -Coal Stacks at Navajo Generating Station in Arizona Demolished](#). By Ryan Randazzo of *The Arizona Republic*.

Suite of news in 2020: The following articles in The Arizona Republic were written by Ian James with photographs by David Wallace and Nick Oza

- [With Drought And Pumping Hopi Natural Springs Are Drying Up](#)
 - [The Navajo Nations Wait For Water Persists With Few Answers](#)
 - [Hopi Tribe Pushes For Solutions For Many Without Clean Drinking Water](#)
 - [For The Hopi Tribe Withering Corn Crops Show Impact Of Climate Change](#)
 - **PHOTO GALLERY** of Hopi Springs by the photographers of *The Arizona Republic*
-

Moab Master Leasing Plan: A Document Archive

JANUARY 05, 2017
BY JOHN WEISHEIT

[Press Release: BLM Approves First Master Leasing Plan in Utah](#)

Key elements from the BLM press release:

- The Approved Plan focuses protection on areas with high scenic quality, high-use recreation areas, and other areas with sensitive resources and focuses energy development and exploration in areas with fewer resource conflicts.
- Prioritizing new leasing of oil, gas and potash in different parts of the Planning Area to reduce conflicts from overlapping development and allow for orderly development;
- Phasing potash leasing to test the feasibility of potash development;
- Minimizing surface disturbance in sensitive areas by reducing the density of well sites;
- Protecting National Park scenic qualities by strategically closing 145,000 acres of BLM- administered lands to mineral leasing;
- Allowing energy development while providing additional surface protection to about 306,000 acres that are highly valued for scenery and recreation, through the use of No Surface Occupancy stipulations on future leases;
- Using a comprehensive list of the most current and state-of-the-art best management practices to reduce, prevent, or avoid adverse environmental or social impacts; and
- Providing additional protections for the Old Spanish National Historic Trail.

[2016 - Federal Register Notice](#)

[2016 - Record of Decision: Moab Master Leasing Plan](#)

[2016 - Final EIS: Moab Master Leasing Plan](#)

- [Maps: From Chapter Two MLP DEIS](#) (combined)
- [Maps: From Chapter Three MLP DEIS](#) (combined)

MOAB MASTER LEASING PLAN: DRAFT ENVIRONMENTAL IMPACT STATEMENT

Released: August 21, 2015
90-day comment period ended November 21, 2015
BLM website information:
<http://www.blm.gov/ut/st/en/fo/moab/MLP.html>
Send your comments via eMail to:
eMail: blm_ut_mb_mlpcomments@blm.gov

NOTE: To facilitate analysis of comments and information submitted, we strongly encourage you to submit comments in an electronic format.

Mailing Address:

Bureau of Land Management
Canyon Country District Office
Attn: MLP
82 East Dogwood
Moab, Utah 84532

DOCUMENT ARCHIVE

- [Moab Master Leasing Plan Draft Environmental Impact Statement](#) (documents are combined)
 - [Maps: Chapter Two MLP DEIS](#) (combined)
 - [Maps: Chapter Three MLP DEIS](#) (combined)
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Paleoflood Analysis of the Colorado River Basin

JANUARY 13, 2017



BY JOHN WEISHEIT

Excavating slackwater deposits on the Colorado River above Moab, Utah. Red line is the elevation of Probable Maximum Flood (~300,000 cfs), which has occurred 3 times in the last 2,000 years.

While most water managers are currently focused on extreme drought in the Colorado River Basin (CRB), the other side of the hydrologic spectrum is the impact of extreme flooding. Drought has a slow impact on the human economy of the CRB and flooding has an immediate impact on the economy of the CRB.

Additionally, releases greater than 28,000 cfs from Hoover/Davis dams begins to damage private and commercial properties in Nevada, Arizona, California and Mexico. Maximum spillway releases to handle the magnitude of floods that have occurred in the last 500-years is sufficient to fill the Salton Sink (ancestral Lake Cahuilla and now called the "Salton Sea" of Imperial Valley, California), which is a depression on the Earth's crust and below sea level. Not to mention the havoc these magnitudes would cause to pipelines, cables, and bridges that span the river corridor.



Shoreline of Lake Cahuilla marked by tufa deposits on the rock formation called Coral Reef, as seen by W. P. Blake on November 17, 1853. On that date Blake made the first written record of the Cahuilla Indian oral tradition of the lake and of occupation of its shores. The view is toward the southeast with Travertine Point faintly visible on the far left. From Volume V of the *Pacific Railroad Reports* (1856).

Water managers prefer to keep their reservoirs as full as possible, leaving no space to accommodate the unexpected flood events that periodically hit a watershed, whether a massive basin-wide snow melt or localized maximum precipitation event. Reservoirs cannot be evacuated quickly enough to make room for such flood volumes and forces managers to use spillways that may, or may not, have the engineered capacity to handle the event and avoid catastrophic dam failures.

This article will explore the flood history of the CRB in the last 2,000 years, because enough data exists to reconstruct that history. Sediment deposits are a contribution to this data and another is the wood from trees (stabilized and mobilized).

- Presentation by Dr. Victor Baker ([Video](#))
- What a "slackwater deposit (SWD)" of flood sediment looks like: [PHOTO](#) (Moab site)
- [Photos of Pits 1 - 14](#) (Moab site)
- A slackwater deposit research [PAPER](#) from 2014 (Moab site). A discussion of this paper is provided below.
- [PHOTO](#) in Cataract Canyon; the Powell Expedition of 1871; a cottonwood tree that germinated in the high water zone, which then survived another high water event, as evidenced by the driftwood snag wrapped around the trunk. Thus, the Powell photo records two high water events in the 19th century. This tree is still there, except it is now a fallen carcass laying on the floodplain ([1999 repeat photo](#)). Note the lack of non-native tamarisk trees in the 1999 photo, which did not dominate the floodplain until the snowmelt of 1941. Since 1871, no flood has reached the elevation of this tree carcass. This includes the large snowmelts of 1884 (~225,000 cfs) and of 1921 (~147,000 cfs). It is suspected the flood of 1862 may be responsible for the driftwood snag, and perhaps the flood of 1802 (or later) is responsible for the germination of this cottonwood tree. These two flood events of the 19th century will be discussed in this narrative, below. (See: [Cataract Canyon: a human and environmental history of the rivers in Canyonlands](#). Webb, et al. 2004)
- There is written evidence that indicates a major flood may have occurred just before the two Powell Expeditions. [Diaries from the Powell Expedition's of 1869 and 1871](#). This may have been the historic flood of 1862, which was caused by an enduring atmospheric river. This flood had a magnitude that completely inundated the Central Valley of California. ([Photo](#) of flooding in Sacramento, 1862)

This article will also explore the impact and benefits of flooding on the natural environment. The benefits are related to the fact that the Colorado River, during its 6 million year history, has been molded by thousands of floods that humans today would label as catastrophic. Nature would disagree with that assessment, because Nature is doing what it has always done, and droughts and floods did not wreak havoc on the human economy until which time humans decided to build very big things in all the wrong places.

A discussion on the characteristics of floods mostly involve the transport of massive quantities of organic material (and seeds), nutrients, sediment, and large boulders; that the true purpose of water, is to quench, cleanse, renew and beautify the earth.

The Colorado River has so far escaped massive flooding in the 21st and 20th centuries. Instrument gages to measure streamflow did not arrive on the scene until after the establishment of the US Geological Survey (1879) and after the construction of the continental railroads. The first major flood to show up with gages in place, occurred in 1884. Every one of those gages were damaged by the magnitude of this flood and the entrained driftwood. However, the administrative record does contain sufficient physical and historical data to tell the story of floods on the Colorado.

- An archive of documents, photos and graphics related to Colorado River floods is located [HERE](#)

THE 1800s: THE BIG SNOWMELTS OF THE COLORADO RIVER BASIN

THE FLOOD OF 1802 - The evidence of this event is the result of a tree ring analysis of hackberry trees in Cataract Canyon (below the confluence of the Green River and the Upper Colorado River). This native elm grows along a distinct and consistent horizontal line in the high water zone ([PHOTO](#)). A sample from a hackberry tree at this line indicated its germination occurred in 1802. It should be noted that hackberry trees grow at higher elevations, and it is hard to determine if the germination is the result of animals foraging on seeds, from floods, or a combination of both.

THE FLOOD OF 1816 - This event is related to the highly explosive eruption in 1815 at [Mt. Tambora](#), Indonesia. Chronologers worldwide referred to the impact this eruption had on world climate as "the year of no summer." Airborne volcanic ash typically creates an ample snowpack in the headwaters of the Colorado River, but no scientist or chronologer was present to observe the magnitude of a flood event that probably visited the CRB. The snowmelt of 1884 was preceded by the eruption of [Mt. Krakatoa](#), Sumatra.

THE FLOODS OF 1844 & 1864 - Evidence from the Rocky Mountain headwaters of the Mississippi River; the Front Range in the state of Colorado. Floods on the Western Slope of the Rockies were likely, but records from chronologers range from non-existent to scant. (See: [Page 10 in Floods of Colorado. 1948, Follansbee](#)).

THE FLOOD OF 1862 - this event is related to a phenomenon of climate now described as an "atmospheric river," or AR (See: [Dettinger and Ingram](#)). This event was chronicled as it happened by California newspapers, and in the diary of a scientist ([William H. Brewer](#)) working in the Central Valley of California, and by a Mormon pioneer ([John D. Lee](#)) in southwest Utah. Railroad engineers noted evidence of this flood in a schematic for building a bridge across the Colorado River above Topock Gorge near Needles, California ([SCHEMATIC](#)). Topock Gorge is 95 miles below Hoover Dam. The engineers took a guess that the flood occurred in 1857, but the evidence (described above) has led to a determination that this event actually occurred in 1862. There are two numbers

for the flood magnitude at the Topock Bridge: the first analysis put the volume at 400,000 cfs and the second analysis put the number at 500,000 cfs ([TABULATION](#)).

- [1862 - The Great Flood of 1862](#). Wikipedia.

If the flow at Topock, AZ was 400,000 cfs, than the corresponding flow at Cataract Canyon, UT, was ~300,000 cfs. And if 500,000 cfs at Topock, the flow at Cataract was ~375,000 cfs.

Why are these numbers important? if Lake Mead is full, Hoover Dam's maximum discharge capacity is only 322,200 cfs. If the reservoir is empty, this lessens the concern of dam failure. Unfortunately, water managers prefer their reservoirs to be as full as possible. Even if the reservoir was completely empty, Hoover Dam would still have to discharge half the total volume of the snow melt. In 1862 the April to August snowmelt was probably around 50 million acre-feet; nearly twice the total volume of Lake Mead (I am deducting the sediment storage in the reservoir).

Hoover Dam will likely fail, mostly because Glen Canyon Dam upstream will fail first. Glen Canyon Dam only has a maximum discharge capacity of 253,000 cfs. If both dams fail, 100 million acre-feet are headed for the Salton Sink and the Gulf of California, taking every piece of infrastructure with it.

- Significant property damage below Hoover Dam begins at flows over 28,000 cfs. [Flood of 1983](#); GAO.
- The capacity of the levees below Hoover Dam is no greater than 80,000 cfs. [Colorado River Front Work and Levee System](#); USBR.
- The five month volume of the snowmelt in 1884 (32,000,000 acre-feet) has been calculated [HERE](#) by Reclamation on page 199.
- [Glen Canyon Dam Inundation Study](#). USBR, 1998.

THE RESULTS FROM THE PALEOFLOOD SITE NEAR MOAB, UTAH

The purpose of this research was to provide data to the Department of Energy (DOE) to support the removal of the second largest uranium waste pile in the nation from the floodplain of the Colorado River near Moab, which is indeed happening. So far, over 50% of the radioactive waste has been removed and taken by railroad to a burial site 30 miles north at a place between the Book Cliffs and Interstate 70 (Crescent Junction). The cost of removing the pile is projected to be \$1 billion.

Funding for the paleoflood research was provided by The Citizen's Monitoring and Technical Assessment Fund (www.mtafund.org). The grant received was \$40,000 and the work commenced in May of 2005. The preliminary report was presented to the DOE in 2006. Over 250 copies were mailed to agencies, stakeholders and tribes in the CRB. The peer-reviewed paper was released in 2014 and published by the American Geophysical Union.

- 2006 preliminary report: [The Moab Mill Project: A technical report towards reclaiming uranium mill tailings along the Colorado River in Grand County, Utah](#). Dohrenwend and Greenbaum, 2006.

- 2014 peer-reviewed report: [2000 Year natural record of magnitudes and frequencies for the largest Upper Colorado River floods near Moab, Utah.](#) Greenbaum, et al. 2014.

Highlights of this report include:

- River: Upper Colorado River (above the Green River confluence and below the Dolores River, the last major tributary).
- Site location: 10.5 miles above the Moab Bridge.
- Time frame: The last 2,140 years (+/- 220 years).
- Number of floods: 44
- Range of floods in cfs: 60,036 to 349,616
- 34 to 40 floods have exceeded the magnitude of the USGS 100-year flood determination.
- 20 - 25 floods have exceeded the magnitude of the USGS 500-year flood determination.
- 5 floods have exceeded a peak discharge of 282,000 cfs.
- The two largest floods were slightly over 349,000 cfs.
- The 100-year flood would have a peak discharge ranging from 156,440 to 179,050 cfs.
- The 500-year flood would have a peak discharge ranging from 224,780 to 265,570 cfs.
- A 1000-year flood would have a peak discharge ranging from 256,740 to 310,770 cfs

A history of Lake Cahuilla: Using tree-ring data to determine the filling and dessication of water from the Colorado River, below sea level in the Salton Trough.

The Salton Trough is an active pull-apart basin; crustal extension rather than crustal compression; a sag on the Earth's crust rather than a bulge; the inhale and exhale of a living planet; all very cool stuff.

This crustal deformation is caused by the action of the San Andreas Fault system and the East Pacific Rise. This trough is also called the Salton Sink. The low point of the crust in this structural depression is 84 meters below sea level (-276 feet).

The trough hosts a body of water called The Salton Sea. The current source of water for this "sea" is the run-off from the irrigated crop lands of the Imperial Valley (agricultural waste water). Since there is no outlet for this water, it pools in the depression and evaporates. The excessive evaporation in this hot desert region is why The Salton Sea is currently 25% saltier than the Pacific Ocean.

Presently, the Colorado River flows south to the Gulf of California in Mexico. The Salton Trough lies to the west. When the Colorado River has an extraordinary flood, the river will overtop its bank and change its course to the west and fill the Salton Trough. This natural flow into a natural depression creates a natural lake that geologists and archeologists call Lake Cahuilla, and named after the indigenous people that have

occupied this region since time-immemorial.

Eventually Lake Cahuilla will reach elevation 12 meters above sea level (+40 feet) and flow to the Gulf of California via the southwest corner of the Salton Trough and toward the border town of Mexicali (the Hardy River). The maximum volume of Lake Cahuilla at this elevation is 405 million acre-feet (Lake Mead times 14). Eventually sediment deposits will naturally repair the breach and the Colorado River will once again flow south to the Gulf of California. The stranded Lake Cahuilla will eventually evaporate away, entirely, and what remains is a fresh layer of Colorado River sediment that received great attention in the 19th and 20th centuries by future farmers.

The time period from dessication to filling involves a century or more and the time period from filling to dessication is about one to three decades. Here are approximate dates when filling began:

- 920 A.D.
- 1015 A.D.
- 1165 A.D.
- 1460 A.D.
- 1640 A.D.
- 1700 A.D.

References: Lake Cahuilla in the Salton Trough

- [1978 - Late Prehistoric Human Ecology of Lake Cahuilla](#). Wilke.
- [1980 - Lake Cahullla: Late Quarternary Lucustrine History of Salton Trough](#). Waters.
- [2018 - Late Holocene Ages of Lake Cahuilla High Stands at Imperial Valley, California](#). Rockwell.
- [2018 - San Andreas Fault: Precise Dating of Lake Cahuilla](#). Rockwell.

Lake Powell Pipeline Approved for Environmental Analysis (Temporarily Suspended)

DECEMBER 26, 2017



BY JOHN WEISHEIT

Flaming Gorge Reservoir

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune
-

LATEST NEWS:

- 2018, September - FERC decides to limit its jurisdiction to the hydropower generation component of the Lake Powell Pipeline. This means the other components of the LPP Project will involve the jurisdictions of other federal agencies.
- Read FERC's Order [here](#).
- Read [this story](#) about FERC's decision by *The Associated Press*.
- [January 29, 2018 - Utah Spent \\$33 Million on Pipeline Application it Never Finished; the Feds Approved it Anyway](#). Salt Lake Tribune.
- [January 11, 2018 - FERC temporarily suspends the public process](#). Note: original deadline for Intervenor was March 9, 2018 and public comments were due on March 26, 2018.
- We suggest you begin writing comments anyway and post them on the FERC site (instructions below).
- [Utah Reluctantly Asks Feds To Push Pause On States Lake Powell Pipeline](#). Emma Penrod, *The Salt Lake Tribune*.
- [Click here](#) to read this story by David DeMille of *The Spectrum*
- [Letter from the Utah Board of Water Resources](#).
- [Response from American Rivers](#).
- [Response from Western Resource Advocates](#).

INTERVENOR SUBMISSIONS (Original due date was February 9, 2018)

- [eMail Addresses for Intervenor](#)
- [Central Arizona Water Conservation District](#)
- [Washington County Water Conservancy District](#)
- [Center for Biological Diversity](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [Save The Colorado](#)
- [August 30, 2018 - Pinal County, Arizona, files as an intervenor against the Lake Powell Pipeline](#)

UTAH CONGRESSIONAL DELEGATION

- [Delegation Letter to FERC](#)
- [Center for Biological Diversity Rebuttal](#)

EXCHANGE CONTRACTS FOR LAKE POWELL PIPELINE & GREEN RIVER BLOCK

- [Green River Exchange Contract for Lake Powell Pipeline](#). Reclamation.

- [Green River Exchange for Lake Powell Pipeline](#). Reclamation.
- [Green River Block Exchange Contract](#). Reclamation.
- [Contract Comments](#). Conserve Southwest Utah.
- [Contract Comments](#). Living Rivers & Colorado Riverkeeper.
- [Draft EA for Green River Block](#). Reclamation.

NOTE: It is important to understand that the water for Lake Powell Pipeline is actually stored in Flaming Gorge Reservoir near the Wyoming/Utah border. Once the water is released, it flows down the Green River and then into Lake Powell, where the proposed pipeline begins.

NOTE: Scroll down for information to help you submit timely comments to the Federal Energy Regulatory Commission.

From *The Salt Lake Tribune* by Emma Penrod ([December 13, 2017](#))

The Federal Energy Regulatory Commission (FERC) has given its initial approval to Utah's application to build the controversial Lake Powell Pipeline to pipe Colorado River water from Glen Canyon Dam 140 miles to St. George, but many hurdles remain for the project. Federal regulators have tentatively approved Utah's application to build the Lake Powell Pipeline, but they've also thrown the state an unexpected curveball.

On Tuesday, the Federal Energy Regulatory Commission (FERC) issued a notice that it had accepted Utah's application to construct the 140-mile pipeline, intended to pump Colorado River water from Glen Canyon Dam to St. George and 12 other southern Utah communities. That, FERC said, clears the way for a full study of the project's environmental impacts.

This is a major milestone toward meeting Southern Utah's need to diversify its water supply and develop additional resources to meet anticipated demand, Eric Millis, director of the state Division of Water Resources, said in a statement. Permitting a water project is a lengthy process and this is a significant step.

But FERC also said it was reviewing just how much jurisdiction it actually has over the project, a move that could slow down ultimate approval for the billion-dollar-plus underground pipeline, which is already running behind schedule.

State officials filed the permit application with FERC in 2016 because the Lake Powell Pipeline at least as currently proposed, is expected to include hydroelectric generating stations along its route through Arizona and Utah. Officials with the Division of Water Resources had long expected that FERC would also be the lead federal agency on the entire project, giving it a key role in obtaining additional permits.

But in its Tuesday notice, FERC said it may only have jurisdiction over the six hydroelectric sites along the route, not the whole pipeline and network of pumping stations and water storage facilities.

If that proves true, it could put Utah more directly in charge of navigating a lengthy review from a host of other federal agencies, forcing additional work on to the Division of Water Resources, which has already spent more than \$30 million in taxpayer funds to obtain permits for the pipeline so far.

As proposed, the pipeline would pump water from Lake Powell about 50 miles northwest to a high point within the area of the former Grand Staircase-Escalante National Monument, according to the FERC notice. The water would then flow just under 90 miles downhill through a series of six hydroelectric turbines before arriving at Sand Hollow Reservoir, east of St. George. Officials with the Division of Water Resources have said they expect the pipeline to cost between \$1.1 to \$1.8 billion.

FERC spokeswoman Celeste Miller said Tuesday the agency had assumed it would not take jurisdiction over the entire water project just the hydroelectric turbines. She said the commission still planned to produce documentation required by other agencies, such as the National Park Service and the Bureau of Land Management, that have a say in the pipeline's fate.

A spokesman for the Division of Water Resources said late Tuesday it was unclear exactly what the FERC announcement means, given that state officials had written their application assuming FERC would lead the permitting process.

While a shift in jurisdiction would not necessarily boost the number of permits Utah officials have to obtain before breaking ground, those permits could be subject to new and different kinds of review if FERC does not play the role state leaders thought, raising the potential for further delays.

Zach Frankel, executive director of the Utah Rivers Council and a long-time opponent of the pipeline, noted that if other agencies play a bigger role in the permitting process, that could subject the pipeline to more in-depth review of whether the project is necessary.

Establishing the purpose and need for a pipeline, said Frankel, will be an important part of the environmental assessment study, which FERC said will be conducted according to the National Environmental Policy Act. If it isn't properly satisfied, Frankel said, the courts can rule against an agency in the event a permitting decision is challenged.

But FERC's move could also allow the agency to evaluate the pipeline solely with respect to demand for hydroelectricity, and not water opening the possibility that state officials would not have to prove, as has been asserted, that the pipeline is necessary to prevent southwestern Utah from running out of water.

By not considering the rest of the project features, it could be easier to approve, Frankel said in an email. It's not a slam dunk for anyone. FERC has also asked for public comments regarding the pipeline proposal. Comments are due in early February and

may be submitted online at:

ferc.gov/docs-filing/ecomment.asp

- NOTE: Stay tuned. The public process has temporarily been suspended as of 1/11/18. [FERC Announcement](#).
- ORIGINAL SCHEDULE: Submissions for interventions and filings are due 60 days from December 11th (February 9, 2018), and public comments are due 105 days from December 11th (March 26, 2018).
- Comments should reference the proposal's docket number, P-12966-004.
- [Click here](#) to read the document from FERC that initiates the analysis.

MAIL A LETTER TO:

Kimberly D. Bose

Secretary(Federal Energy Regulatory Commission

888 1st Street, N.E.(Washington, D.C. 20426

RE: P- 12966-001

ONLINE COMMENT

eComment: under 6000 characters

- Step 1: Go to <http://www.ferc.gov/docs-filing/ecomment.asp> and fill out the form, including your email. You will be emailed a link.
- Step 2: Open the link in the FERC email and use the Lake Powell Pipeline docket number to comment: Select P-12966-001
- Step 3: Write and submit questions, comments and feedback.

Comments from Organizations, Comments Over 6,000 Characters, and Comments Including Photos or Graphics:

- User guide: <http://www.ferc.gov/docs-filing/efiling-user-guide.pdf>
- Step 1: Create an account here at <https://ferconline.ferc.gov/eRegistration.aspx>
- Step 2: Follow the instructions for FERC's eFiling System. Select: Hydro/ Washington; application License; file 12966-001

eSubscription here at:

- <http://www.ferc.gov/docs-filing/esubscription.asp>
- When you register for eSubscription and subscribe to a specific docket, P-12966 you'll be notified via email about all future submittals and issuances. You will also be able to retrieve public documents through the links in the emails.

###

ADDITIONAL INFORMATION

ADMINISTRATIVE RECORD: LAKE POWELL PIPELINE

[CLICK HERE](#) to visit the FERC document library for the complete administrative record of the Lake Powell Pipeline **The docket # is: P-12966.**

The docket is huge. You can reduce the query by selecting a subdocket, which are: 001; 002; 003; 004 & 005 (the files are in chronological order).

NEWS

- [Click here](#) to read this story by David DeMille of *The St. George Daily Spectrum*
- [Click here](#) to read this OpEd from Robert Gehrke of *The Salt Lake Tribune*
- [Click here](#) to read this OpEd from the Editorial Board of *The Salt Lake Tribune*

TALKING POINTS TO HELP COMPOSE YOUR LETTER TO FERC

- [Click here](#) to learn more about the Lake Powell Pipeline (LLP) and to review the archive of documents
- [Click here](#) to learn more about the LLP water stored in Flaming Gorge; the Ultimate Phase water right
- [Click here](#) to read great information from the website of *Conserve Southwest Utah*

It is important to understand that the water for Lake Powell Pipeline is actually stored in Flaming Gorge Reservoir near the Wyoming/Utah border. Once the water is released, it flows down the Green River and then into Lake Powell, where the proposed pipeline begins.

- [Green River Exchange Contract for Green River Diversions](#). Reclamation.
- [Green River Exchange for Lake Powell Pipeline](#). Reclamation.
- [Contract Comments](#). Conserve Southwest Utah.
- [Contract Comments](#). Living Rivers & Colorado Riverkeeper.

The priority of this water right is [junior to the Central Utah Project](#) and the [cost to build this project is high](#), and so it is a speculative gamble. The authority to even move the project forward is based on human documents for a supply that Nature cannot provide. So the water to fill the pipeline will arrive from water transfers from agriculture. This is the hidden cost of the project and for perpetuity. In the near future, every municipality in the basin will be chasing water transfers and the market will become highly competitive and consequently expensive.

1) On May 6, 2011, the day the coalition of intervenors filed their comment letter with FERC opposing the project, the Bureau of Reclamation and the state of Utah signed the following: [Agreement of Utah and the United States for Securing the Central Utah Project Water Supply](#).

The agreement states that the water rights for Lake Powell Pipeline are now subordinate to the younger water rights of the Central Utah Project. When a shortage declaration is announced, or when there is a Compact Call--and depending on the severity of the shortage--water to the Lake Powell Pipeline will be cut-off before deliveries to the Central Utah Project. This agreement is much like the water right of the Central Arizona Project, which is subordinate to the state of California.

2) In 2007 the Bureau of Reclamation responded to the Upper Colorado River Commission about the safe yield of water withdrawals from Flaming Gorge Reservoir. The water in Flaming Gorge is available not only to Utah, but also to Wyoming and Colorado. Reclamation determined the annual safe yield is 165,000 acre-feet. The mandate of Reclamation is to ensure hydropower generation and maintain instream flows for the critical habitat of endangered fish (and recreation) of the Green River.

See: [Water Marketing from Flaming Gorge Reservoir](#)

3) A different use for this water is now being developed by the upper basin states: Drought Contingency Planning. Though the plan has not been formally adopted, the preliminary information provided so far includes the emergency release of surplus water from upper basin reservoirs to maintain hydropower generation at Lake Powell. This likely means the water right of Lake Powell Pipeline will be subordinate to the mandate of Drought Contingency Planning. The states may unwisely give the LLP an exemption, so the public will have to see what the final agreement entails.

The fact that Drought Contingency Planning documents are under development clearly indicates the water budget of the Colorado River is seriously impaired, and any-and-all future projects in the Colorado River should be abandoned for the simple reason that it is the intelligent choice.

See: [Drought Contingency Planing Update](#) (October, 2017)

The document above indicates the maximum evacuation of upper basin reservoirs to Lake Powell would be as high as 2 million acre-feet. Incidentally, the generators at Glen Canyon Dam would discharge 2 million acre-feet in about 3 months. When considering the 2007 document by Reclamation cited in #2 (above), this estimate of 2 million acre-feet must be an exaggeration. The document from Reclamation explains that the annual release could not exceed more than 165,000 acre-feet per year. Flaming Gorge Reservoir is the third largest reservoir by volume in the Colorado River Basin. The smaller upper basin reservoirs, such as Blue Mesa on the Gunnison River and Navajo Reservoir on the San Juan River, could not possibly release more than 165,000 acre-feet.

4) UTE INDIAN WATER COMPACT: This tribal water right has yet to be fully developed; the tribes water right is senior to the Central Utah Project and the Lake Powell Pipeline. According to Utah law ([Title 73, Chapter 21 Ute Indian Water Compact](#)), and in perpetuity, the Ute Indian Tribe and others can deplete 248,943 acre-feet per annum from a total diversion of 471,035 acre-feet per annum. This water compact is more fully set out in the "Tabulation of Ute Indian Water Rights," which is on file with the Utah State Engineer. The oldest priority date of this appropriation is October 3, 1861; there are other tribal priority rights that are in the 1880s.

- [Uinta Ouray Ute Nation](#)
- [Tabulation of Ute Indian Water Rights](#)
- [1973 Interior Press Release](#)

5) Economics (from [Utah Rivers Council](#)): A group of 20 economists from several Utah universities analyzed the impact that \$2 billion of debt would have on residents of Washington and Kane Counties. They found that repaying this debt would require dramatic increases in water rates, impact fees and property taxes far outweighing the benefits of extra water.

In fact, the cost was so prohibitive that when Iron County residents who were also slated to receive water learned the true cost of the pipeline, they pressured their elected officials to formally withdraw from the project. Iron County's reversal is a warning to Washington & Kane County residents: Shouldering massive debt and rate increases for unneeded water is a bad recipe for the future.

- Read the letter from the economists [HERE](#)

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018 - [Lake Powell Pipeline Permitting Process Renewed](#)
- June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
- December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
- March 21, 2011 - [Lake Powell Pipeline Documents](#)
- June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
- May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)

BLM releases Final EIS for Enefit America's Utility Corridor to Mine and Process Oil Shale

MAY 18, 2018

BY JOHN WEISHEIT

Photo: Enefit's
Demonstration Mine near
Evacuation Creek

UPDATE as of September
2023

- Enefit's water right has been vacated and the federal leasing permit has been relinquished.
- [Reference](#)
- All federal leasing for oil shale development in Utah and Colorado have expired or have been relinquished.
- Activities for tar sand development in Utah have ceased.



LATEST NEWS

- [Why Did Utah Oil Shale Developers Give Away Priceless Water Rights?](#) Brian Maffly for *Salt Lake Tribune*.
- [Could Dispute Over Water Rights Derail Utah Oil Shale Plant?](#) Jennifer Yachnin for *E&E News*.
-

SUBMITTED COMMENT LETTERS: Comments were due on July 9, 2018

- July 2 - Letter from Living Rivers, Colorado Riverkeeper, Green River Action Network, Upper Green River Network, and Canyon Country Rising Tide is [HERE](#).
- July 9 - Letter from NGO Coalition is [HERE](#)

- July 9 -Letter from river guides and outfitters [HERE](#)

LAWSUIT

- 2019 - [Enefit Complaint: Living Rivers v. Bureau of Land Management](#)

###

The Bureau of Land Management Vernal Field Office is releasing a final Environmental Impact Statement (EIS) analyzing potential impacts of the proposed Enefit American Oil Utility Corridor Project, located approximately 40 miles south of Vernal, Utah.

Under the proposal, Enefit American Oil would construct 19 miles of water supply pipeline, eight miles of natural gas supply pipeline, 10 miles of oil product line, 29 miles of single or dual overhead 138-kilovolt H-frame power lines, and upgrade an estimated five miles of Dragon Road on public lands in the Vernal Field Office.

The BLM prepared the final EIS to analyze the potential impacts of Enefits five right-of-way applications. The BLM used comments and feedback received during the 60-day comment period in spring 2016 to disclose cumulative impacts. This final EIS does not contain any decisions.

The BLMs decision regarding the project will be published in a Record of Decision after the final wait period closes. The 45-day wait period for the publication of the Notice of Availability of the final EIS in the Federal Register runs from May 18 through July 2. Documents and maps are available for public review online at: <http://go.usa.gov/csa9>

For additional project information, please contact Stephanie Howard at (435)781-4469. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service (FRS) at 1-800-877-8339 to leave a message or question with the above individual. The FRS is available 24 hours a day, seven days a week. Replies are provided during normal business hours.

MAY 2018 FINAL EIS RELEASE

- 0. [All Documents Combined](#)
- 1. [BLM'S Press Release](#)
- 2. [Dear Reader Letter](#)
- 3. [Volume One FEIS](#)
- 4. [Appendices A-C](#)
- 5. [Appendices D-H](#)
- 6. [Appendix I](#)

ADDITIONAL INFORMATION

- [2013 -Comments by Environmental Protection Agency](#)
- [2017 -Oil Shale and Tar Sands Technical Memo](#). Ecoshift.
- [2017 - Oil Shale and Tar Sands Report & Policy Brief](#). Ecoshift.
- [Far Country Website](#). Canyonlands Watershed Council.

UTAH DIVISION OF OIL, GAS AND MINING (UDOGM)

Administrative webpage for the public

- username is: ogmguest
- password is: ogmguest

Every mine in Utah is hyperlinked here:

- <http://ogm.utah.gov/minerals/MineralsPDO/angularmineralsfilesbypermtiinfo.php>

There are two mines for Enefit

- 1) White River Oil Shale (no activity since 2016) <http://ogm.utah.gov/minerals/MineralsPDO/angularmineralsfilesbypermit.php?M0470092>
- 2) White River Shale Project (no activity since 2006) <http://ogm.utah.gov/minerals/MineralsPDO/angularmineralsfilesbypermit.php?M0470017>

SEEKING ALPHA

- A financial analysis of tar sands strip mining in the Uinta Basin <https://seekingalpha.com/article/3975647-utah-oil-sands-best-left-un-mined>

MAY, 2016 DRAFT EIS PROCESS

BLM Seeks Public Comment on Rights of Way for Enefit Project Draft Environment Impact Statement Available for Review & Comment

The 60-day public comment period for the Draft EIS will conclude on June 14, 2016.

[CLICK HERE](#) to read the comments by Grand Canyon Trust, Living Rivers, Sierra Club, Southern Utah Wilderness Alliance, Western Resource Advocates, the WaterKeeper Alliance, American Rivers, the Natural Resource Defense Council, the Center for Biological Diversity, The Wilderness Society, Utah Physicians for a Healthy Environment, the Science and Environmental Health Network, and Wildearth Guardians.

Please reference Enefit EIS when submitting comments. Comments may be submitted by any the following methods:

- E-mail: UT_Vernal_Comments@blm.gov
- Fax: (435) 781-4410
- Mail: Bureau of Land Management, 170 South 500 East, Vernal, Utah 84078
- BLM NEPA Register: <http://go.usa.gov/csa9j>

April 7, 2016
BLM PRESS RELEASE
Vernal, Utah

NOTE: COMMENTS ARE DUE June 14, 2016

The Bureau of Land Management (BLM) Vernal Field Office has announced a 60-day comment period on the Enefit American Oil Utility Corridor Project Draft Environmental Impact Statement (EIS). The Draft EIS was prepared to analyze the potential impacts of the five rights-of-way (ROW) applications filed by Enefit American Oil across BLM-administered lands.

The ROW applications cover three proposed pipelines, a 138-kV power line, and the expansion of an existing road. The project area is located approximately 12 miles southeast of Bonanza, Utah. Enefit has applied for the ROWs to provide utilities to and transport oil from its South Project. The South Project, located entirely on private land, will include development of a 7,000- acre to 9,000-acre commercial oil shale mining, retorting, and upgrading operation in Uintah County, Utah. The project is expected to produce 50,000 barrels of oil per day at full build out for up to 30 years using oil shale ore rock mined from Enefits private property holdings.

The 60-day public comment period for the Draft EIS will conclude on June 14, 2016. The BLM will carefully review and respond to the comments received before publishing a Final EIS and releasing a Record of Decision for this project.

This Draft EIS analyzes in detail the proposed action and a no-action alternative. The proposed action consists of granting ROWs for: 19 miles of water supply lines (116 acres), 8.8 miles of buried natural gas supply lines (52.6 acres), 11.2 miles of buried oil product lines (68.3 acres), 5.7 miles of upgrades and pavement to Dragon Road (41.7 acres), and a 30-mile 138-kV power line (501.4 acres). Under the no action alternative, the proposed ROWs would be denied. According to the company if the proposed ROWs were not approved, it would rely on other means, including onsite power generation and the trucking of oil and natural gas, to provide utilities to and transport product from the South Project. Because Enefits South Project targets private minerals and is on private land, the BLM has no jurisdiction over the use of those minerals or how the project is built or operated.

Because of the relationship between the South Project and the proposed action, the Draft EIS includes an evaluation of the environmental impacts of the South Project as indirect impacts of the proposed action. This analysis includes, among other things, an evaluation of air quality, greenhouse gases emissions, and wildlife impacts. Mitigation measures analyzed in the Draft EIS related to sage grouse are consistent with the recently approved sage grouse conservation plans.

To provide the public an opportunity to ask questions about the proposal and EIS, the BLM will host open-house meetings as follows:

- Vernal, Utah May 3, 2016 from 6 to 8 p.m. Uintah County Library, 204 E 100 N

- Rangely, Colo. May 4, 2016 from 6 to 8 p.m. Western Rio Blanco Recreation and Park District, 611 S Stanolind Ave.
- Salt Lake City, Utah May 5, 2016 from 6 to 8 p.m. Hilton Garden Inn, 4975 Wiley Post Way

The meetings will be conducted by BLM staff. Representatives from Enefit will attend and will be available to explain details of the proposal. Additional information about the proposed project is included in the Draft EIS. An electronic copy of the EIS can be found on the BLMs ePlanning NEPA register at: <http://go.usa.gov/csa9j>

Please reference Enefit EIS when submitting comments. Comments may be submitted by any the following methods:

- E-mail: UT_Vernal_Comments@blm.gov
- Fax: (435) 781-4410
- Mail: Bureau of Land Management, 170 South 500 East, Vernal, Utah 84078
- BLM NEPA Register: <http://go.usa.gov/csa9j>
-

Before including an address, phone number, email address, or other personally identifiable information in any comments, commenters should aware that the entire comment including personal identifying information may be made publicly available at any time. Requests to withhold personal identifying information from public review can be submitted, but the BLM cannot guarantee that it will be able to do so.

For further information, contact:

Stephanie Howard at (435)781-4469.

Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, seven days a week, to leave a message or question with the above individual. Replies are provided during normal business hours.

The BLM manages more than 245 million acres of public land, the most of any federal agency. This land, known as the National System of Public Lands, is primarily located in 12 Western states, including Alaska. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation. The BLM's mission is to manage and conserve the public lands for the use and enjoyment of present and future generations under our mandate of multiple-use and sustained yield. In fiscal year 2014, the BLM generated \$5.2 billion in receipts from public lands.

BLM

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DOCUMENTS

- [Notice of Intent](#). Federal Register.
- [DEIS - Enefit American Oil Utility Corridor Project](#). BLM.

ADDITIONAL INFORMATION

- [Scoping Report & Appendices](#). BLM.
- [June 2013 Newsletter](#). BLM.

MEMOS AND TALKING POINTS

- [Enefit ROW DEIS Talking Points](#). Grand Canyon Trust.
 - [Enefit Talking Points \(longer version\)](#). Grand Canyon Trust.Longer.pdf
 - [Living Rivers Challenge BLM Enefit POD Approval Follow Up](#). Wester Resource Advocates.
 - [Letter to EPA](#). Grand Canyon Trust et al.
 - [Water Use and Impacts on Fish](#). Earthjustice.
-

Water Horse Resource's Export Application for Proposed Water Pipeline from Utah to Colorado's Front Range

JUNE 05, 2018

BY JOHN WEISHEIT

HEARING HAS BEEN CONCLUDED

- Public comments can be submitted for 120 days starting from November 7th, 2018.

ORDER OF THE STATE ENGINEER

- November 19, 2020 - [Utah State Engineer Rejects Plan to Divert Green River Water for Colorado Entrepreneur](#). Salt Lake Tribune.
- [Read the ORDER; \(archived here\)](#).
- [2025 - Utah Supreme Court Decision](#)

The public is invited to attend the first administrative hearing for this water export application for a diversion from the Green River and a pipeline to carry water to the communities of Colorado's Front Range. The pipeline will basically follow Interstate 80 through Wyoming and then the Interstate 25 corridor through Colorado. The withdrawal is 50,000 acre-feet per year and includes hydroelectric power generation (pumpback projects) and the installation cost, at minimum, will likely be over 4 billion dollars; \$1,600 per acre foot for a time period of 50-years.

In 2012, the Federal Energy Regulatory Commission denied the application for a water pipeline from the Green River to the Front Range. [CLICK HERE](#) for more information.

INFORMAL HEARING BEFORE UTAH DIVISION OF WATER RIGHTS

Date: Wednesday, November 7, 2018

Time: 9:00 AM

Address: Room 1050; 1594 West North Temple; Salt Lake City, Utah 84114

The entire administrative record for this application is located on the website of Utah Division of Water Rights [HERE](#).

The website for Water Resources LLC is located [HERE](#)

NEWS

- Salt Lake Tribune - [Environmentalists, Feds and Utahns Agree: Don't Send Green River Water to Colorado](#). Brian Maffly.
- Deseret News - [Divert Green River Water for Colorado? Utah Says Proposal All Wet](#). Amy Joi O'Donoghue.

DOCUMENTS

- [2015 - Master of Science Thesis by Aaron P. Million](#)

- [Letter from Water Horse Attorneys Regarding Letter from Colorado Water Conservancy Board.](#)

NEWS

- [Is There Water Left To Be Developed In The Colorado River Basin? Yes, says Water Horse Resources.](#) Runyon, KUNC.

PROTEST LETTERS

- [American Whitewater](#)
- [Center for Biological Diversity](#)
- [Central Colorado Water Conservancy District](#)
- [Central Utah Project Completion Act Office](#)
- [Central Utah Water Conservancy District](#)
- [Colorado River Water Conservancy District](#)
- [Duchesne County Water Conservancy District](#)
- [Emery County Water Conservancy District](#)
- [San Juan Water Conservancy District](#)
- [Kane County Water Conservancy District](#)
- [Living Rivers](#)
- [PacifiCorp](#)
- [Pipeliners' Union](#)
- [Procedural Meeting Letter.](#) Reclamation
- [Provo River Water Users Association](#)
- [Save The Colorado](#)
- [Solicitor.](#) DOI.
- [Terry Carwile](#)
- [Timely Protestant Letter.](#) UDWRights.
- [Tim Vetere](#)
- [Trout Unlimited](#)
- [Uintah Water Conservancy District](#)
- [Upper Yampa Water Conservancy District](#)
- [USBR Provo Office](#)
- [Utah Board Water Resources](#)
- [Utah Rivers Council](#)
- [Washington County Water Conservancy District](#)
- [Wayne County Water Conservancy District](#)
- [Western Resource Advocates](#)

DOCUMENTS FROM APPLICANT TO UTAH DIVISION OF WATER RIGHTS

- [Answer to Request for Additional Information to Appropriate.](#) Water Horse Resources; February 8, 2019.

For new posts to the administrative record for this application, go [**HERE**](#)

Drought Contingency Planning in the Colorado River Basin

JUNE 07, 2018

BY JOHN WEISHEIT

Lake Mead reservoir level in 2018

REPORT: JANUARY 19, 2019

By [Henry Brean of Las Vegas Review Journal](#)

The proposed Colorado River Drought Contingency Plan (DCP) currently being debated by officials in Arizona calls for the following state-by-state cuts based on the water level in Lake Mead.

- Current Elevation at Lake Mead: 1,083 feet above sea level
- Desired minimal elevation of Lake Mead: 1,045 feet

The DCP revised Shortage Declarations would occur on January 1, of any given year until January 1, 2026, between elevations of 1,090 and 1,045 feet:

- Nevada: 8,000 acre-feet.
- Arizona: 192,000

At or below 1,045 and above 1,040 feet:

- Nevada: 10,000 acre-feet
- Arizona: 240,000
- California: 200,000

At or below 1,040 feet:

- Nevada: 10,000 acre-feet
- Arizona: 240,000
- California: starts at 250,000 and increases by 50,000 for each additional 5-foot drop in the lake.

One acre-foot of water will supply two average Las Vegas Valley homes for just over one year.

NEWS

- [October 22, 2018 - Gila River Indian Community balks at Arizona's scheme for DCP.](#)
- [October 5, 2018 - Final Review Draft Agreements for Drought Contingency Planning.](#) Reclamation.

DEPARTMENT OF INTERIOR

- [Website: Aridity in the Colorado River Basin](#)

NARRATIVE

Since February 2014 ([Memo to initiate Drought Contingency Planning](#)) the water agencies of the seven states in the Colorado River Basin have been immersed into a program called Drought Contingency Planning (DCP) and for reasons that the federal government made it very clear that failure to comply would result in a direct intervention by the Secretary of Interior. This statement occurred at the end of year 2015 ([news clip](#)). Why the 4-year delay? To various degrees, all the states have issues to work out, but the state that is dragging its feet the most, and for reasons that they have the most to lose, is Arizona. Why? To get federal authorization for the construction of the Central Arizona Project (CAP) in 1968, Arizona agreed to take a low priority water right because Congress was aware that the water demand for this project might incite water shortages at a future time.

Fifty years have since passed and mandatory cuts to Arizona's water supply are no longer a distant threat ([graphic](#)). Should Arizona approve the Lower Basin DCP in year 2018, a shortage declaration for the state will occur on January 1, 2019, and for the reason that preliminary discussions between the states of the lower basin have included raising the elevation for a shortage declaration at Lake Mead from elevation 1075 feet to 1090 feet. It is not unreasonable to say that Arizona will not sign the agreement until after January 1, 2019.

Incidentally, on July 31, 2018, the elevation of Lake Mead was at 1077 feet, and on June 30, 2016, the elevation of Lake Mead was at 1073 feet.

Note: According to the current guidelines, if the elevation of Lake Mead is exactly 1075 feet on January 1st of any given year between 2008 and 2026, a shortage is officially declared; to be specific, the first of three shortage tiers. The second tier is 1050 feet, and the third tier is 1025 feet. For each tier the reduction is significantly reduced. The maximum carrying capacity of the CAP aquaduct is 1.6 million acre-feet per year.

- [Shortage and Surplus Tier Elevations at Lake Mead](#)
- [How Arizona and Nevada divide the shortage declaration](#)
- [NEWS: Why One Arizona County Could Upend The Southwest's Drought Plan.](#)
Water Deeply.

Meanwhile, the Upper Basin states are about to repeat the same mistake as Arizona with their proposed water projects that carry junior water rights, which will be discussed in more detail, below.

Note: When Lake Mead reaches elevation 1020 feet, it means Lake Powell is at or below elevation 3525 feet, which is the elevation the Upper Basin DCP hopes to maintain, even at the cost of draining the contents of upstream reservoirs, for example, Flaming Gorge Reservoir, Blue Mesa Reservoir and Navajo Reservoir.

This latest sense of urgency was not a first. In 2004 the reservoir level of Lake Powell was critically low, and to the degree that hydropower production was diminished by 40%

- [Graphic](#)
- [News clip](#)
- [News clip](#)

Then Interior Secretary Gale Norton insisted the seven states of the basin develop a shortage sharing agreement in case the situation worsened and, if they did not succeed, she promised to do it for them. Two and a half years later (2007) the states and the feds signed an agreement called Interim Guidelines. The word interim refers to the expiration of the Guidelines at 12 am on January 1, 2026. Now, some ten years later, the conditions of the reservoirs have not improved. In fact, the snow melts of 2012 and 2013 were dismally low, and the chance of shortages arriving by the end of the decade increased to 50%. Thus, the DCP process began in 2014 and 12-years before the expiration of Interim Guidelines, which was the intended action to solve the problem.

Here are three fatal flaws about 2007 Interim Guidelines, which are paraphrased and explained, as follows:

(1) The water savings stored in Lake Mead is voluntary and not mandatory, and the states will not comply until it becomes absolutely necessary. Intentional savings by the states to stabilize Lake Mead did not occur earnestly until a few years ago and with Arizona lagging behind California and Nevada. Mexico will participate, once the DCP is completed. The Native Americans have also pledged assistance, once the DCP is completed. We would agree that this new position is comforting, but we insist that was the appropriate position to take in 2007.

(2) Despite these guidelines, the reservoir supply at Lake Mead will continue to decline beyond 2026. In 2007, the Bureau of Reclamation believed the chances of shortage through 2026 was in the range of 1% to 2% ([newsclip](#)). There is a possible 65% chance that shortages will officially be declared by the Secretary of Interior in 2020 ([June 2018 "stress test" presentation by USBR](#)). Thus, Interim Guidelines has indeed proven to be a half-measure; too little and too late.

(3) Interim Guidelines allows the upper basin states to annually divert an additional 1 million acre-feet of water, which will eventually compromise water storage at Lake Powell. So far, the upper basin states have yet to develop more water diversion projects, but projects are currently in the permitting stage. They include, for example, Lake Powell Pipeline, a pipeline to Colorado's Front Range, Gross Reservoir expansion, Windy Gap Firming Project, Fontenelle Reservoir expansion, Green River nuclear generating station, strip mining for oil sands and kerogen shale, solution mining for potash, and many others. Though these projects have been neutralized, for the moment, by intense campaigns from opposition movements, the hydropower units at Glen Canyon Dam are nearing a shut-down situation. For example, the goal of Drought Contingency Planning is to make sure Lake Powell never goes below elevation 3,525 feet. For the last two years, the average total amount of water above 3,525 feet was about 7 million acre-feet (MAF). According to Interim Guidelines, Lake Powell must discharge 9 MAF in 2018, which is also the most probable discharge for 2019, for a two-

year total of 18 MAF. Some back-of-the-envelope arithmetic can help us understand how truly dire the situation is: 18 MAF minus 7 MAF is 11 MAF, and therefore 11 MAF must enter Lake Powell next year to keep the reservoir stable. Will nature supply Lake Powell with that much needed 11 MAF? Time will tell, but for water year 2018, nature only supplied 6 MAF (this amount is included in the total volume above 3525 for water year 2018) ([July 2018 presentation by USBR](#)). Should next years inflow imitate years 2002, 2003, 2012, or 2013, the goals of the proposed DCPs will be challenged immediately.

We understand how grim this narrative presents itself. However, thinking about system failure with percentage points as high as 65% for an economy that produces 1.4 trillion dollars annually for 40 million people is not easy to dismiss. To be fair, timely leadership has emerged from Secretary of Interior, however, the states appear to be burning the furniture to stay warm.

###

BACKGROUND

- [January 2017 - Order #3344 from the Secretary of Interior](#). Jewell.
- How bad can it get? [DOWNLOAD](#) this June 2018 powerpoint presentation by Reclamation and Arizona Dept. of Water Resources
- On The Colorado produced the following [TABLE](#) that answers this question: How much water is left in Lakes Powell and Mead before the safe yield is exhausted and jeopardy begins for water and hydropower contracts?
- [PHOTO](#) of a Lake Mead at Hoover Dam at elevation ~1075 in 2015. Reclamation.

WEATHER MODIFICATION (Cloud-seeding)

- [News: Pitkin County Commissioners Leery Of Cloud Seeding Project](#). Hugh Carey of Summit Daily.
- [2014 - Executive Summary: Wyoming Weather Modification Pilot Program](#)
- [1999 - Review of Cloud Seeding Experiments to Enhance Precipitation and New Prospects](#). Bruintjes.
- [1980 - Weather Modification by Cloud Seeding](#). Dennis.
- [2007 - Weather Modification for Augmentation](#). CH2MHill.

###

From a [fact sheet](#) provided by Colorado River Water Conservancy District in Glenwood Springs, Colorado:

The seven Colorado River basin states and the US Bureau of Reclamation are working on a contingency plan to avoid the unacceptable consequences of the continuing drought. The Colorado River District, Southwestern Water Conservation District, Colorado Water Conservation Board, The Nature Conservancy and Front Range Water Council are jointly investigating the feasibility of a water bank. The [water bank](#) is a tool that might be used with either the contingency or insurance concepts.

There are many overlapping issues so its easy to get confused. This FAQ answers many of the most frequent questions.

1. What is the contingency plan, and why is one needed?

- Since 2000, the Colorado River Basin has experienced a prolonged drought. There have been a few wet years 2008, 2010, and 2014, but the remaining years have been dry. 2002 was one of the driest years on record and 2012-2013 were the driest consecutive two years on record.
- Consequently, to meet demands, the basins reservoirs have been drawn down by about 30 million acre feet. If the drought conditions continue, Lake Powell could drop below the elevation necessary to produce power (3,490) or at about 4 million acre feet of storage).
- The goal of the contingency plan is to avoid water levels in Lake Powell from falling below the minimum level and still produce power.
- If Lake Powell no longer produced electricity, up to \$120 million per year in power revenues would be lost. These revenues cover the operation of power generation and the transmission grid; repay the federal treasury for the construction of these reservoirs; and, cover the costs of critical environmental recovery programs such as the San Juan and Upper Colorado River Basin endangered fishes recovery programs and the Salinity Control Program. Additionally, federal power customers could see their power costs skyrocket.

2. What will be included in the contingency plan?

Three basic elements:

- a. Extended operations. Federal reservoirs upstream of Lake Powell Flaming Gorge, Aspinall and Navajo Reservoirs would release additional water for storage and use in Lake Powell.
- b. System augmentation. Enhanced cloud seeding and accelerated removal of non-native vegetation such as tamarisk.
- c. Demand management. Additional conservation by municipal and irrigation users and deficit irrigation or fallowing by agricultural users.
- The extended operations and augmentation elements will be the first lines of defense. The demand management element is only a concept at this point. None of the four Upper Division (WY, UT, CO and NV) states has agreed to implement demand management. There are currently no management mechanisms in place to actually implement demand management.
- In the Lower Basin (NV, AZ, CA), possible actions include: better managing over-deliveries, improving system conveyance, reducing or eliminating groundwater banking, and assigning reservoir evaporation to lower basin states.

3. How will extended operations of the upstream Colorado River Storage Project (CRSP) units work?

- Under the proposed contingency plan, Reclamation and the Upper Division states would evaluate the risk of Lake Powell dropping below minimum power. If

action is deemed necessary, the parties would consider if adequate water is available in upstream reservoirs for release to Lake Powell. Because of its size and inflow, it appears that Flaming Gorge Reservoir has the most flexibility.

- As we envision the contingency plan today, the demand management option would only be used once all of our flexibility with extended operations has been exhausted and the forecast is for continued drought.

4. How will the 2007 Interim Guidelines affect the contingency plan?

- Because releases from Glen Canyon Dam (Lake Powell) are controlled by the 2007 Interim Guidelines, the contingency plan will be specifically tailored to work in tandem with them. They are interim because they are only in effect through Water Year 2026. Thus, the contingency plan is interim as well.
- Under the Interim Guidelines, Powells and Meads operations are coordinated. Releases are based on forecasted, year-end reservoir levels in Powell and Mead. Lake Powell is divided into four tiers; Lake Mead is divided into a number of different tiers. The critical levels at Lake Mead are 1,075', the level at which shortages are imposed on lower basin water users and 1,025'. 1,025' is considered uncomfortably close to the 1,000' level that cuts off Las Vegas access to Lake Mead water.
- One of the challenges for the contingency plan will be to keep enough water in Lake Powell to maintain hydropower production, while at the same time not releasing so much upstream water into Powell that it would bump up releases from Lake Powell to Lake Mead under the Guidelines.

5. What are the chances that we will need to implement the contingency plan by 2026?

- For the Upper Basin, it all depends on future hydrologic conditions. If dry conditions continue, it is almost certain that we will need to implement the contingency plan. However, if hydrologic conditions return to the longer term average, then the chances are still real, but much lower. Whether or not the drought continues is a difficult prediction. Based on the 1906 to present observed record, we are in the longest drought of record. However, looking at the longer term, reconstructed natural flow record (using tree rings), droughts such as the current one are rare but not unprecedented.
- The bottom line is that under most hydrologic futures a contingency plan is necessary. If we prepare one, but don't have to use it, we will consider ourselves fortunate.
-

6. Why should the Upper Basin be concerned about whats happening in the Lower Basin?

- The 2007 Interim Guidelines interconnect the operation of Lake Powell and Lake Mead,. If the Lower Basin reduces its use of Colorado River water, less water needs to be released from Lake Mead, and under the Interim Guidelines, Lake Powell releases will average less. This interconnection between Lake Mead and

Lake Powell is why the seven basin states and the Department of the Interior view the contingency plan as a basin-wide effort.

•
7. What is meant by the Lower Basins structural deficit?

- In the Upper Basin were primarily at risk from continued drought. The Lower Basin is threatened by both dry hydrology and the structural deficit caused by over use. In a normal year, which is defined as releasing 8.23 million acre feet (maf) from Lake Powell, about 9.0 maf flows into Lake Mead (8.23 maf from Powell, the rest from tributary inflow between Powell and Mead). However, demands in the lower basin range from 10.0 to 10.5 million acre feet. Thus, in the Upper Basin, we could experience a string of average years (like 2014) and Lake Powell would continue to slowly recover, but in the Lower Basin, the demand continues to exceed supply and Lake Mead levels keep falling.
- Water users in the Lower Basin fully understand this structural deficit problem and are actively engaged in difficult discussions to solve it.

8. Is the Lower Basins structural deficit a threat to the Upper Basin?

- The practical implications for the entire basin of continued overuse in the Lower Basin are real and significant. If Lake Mead drops below 1,025', the 2007 Interim Guidelines require re-consultation.
- From a compact perspective, there is virtually no chance that the Lower Division states or the Interior Secretary could use the 1922 Compact to require a cutback or curtailment of uses in the Upper Basin because of overuse in the Lower Basin. The more likely scenario is that to prevent Lake Mead from dropping below 1,000', current water users in the Lower Basin would have to conserve or save additional water beyond the 500,000 acre foot cutback required by the Interim Guidelines.
- It is possible that the Upper Division states would be asked to provide additional stored water that would be considered surplus, but even this option should only be considered as a last resort.
- Additionally, if (perhaps when) Lake Mead approaches 1,000', there will be great political pressure for expanded water marketing. Traditionally, the Basin States and water agencies have adamantly opposed efforts to market water between the upper and lower basins.
- The best certainty for all users on the Colorado River system is full reservoirs. One method the Basins municipalities could use to maintain storage in system reservoirs would be to acquire large amounts of agricultural lands and retiring or changing crops on these lands to reduce water use. But such transfers of water use, even temporarily, would have dramatic impacts on the economy, land use and lifestyles of the basin.

ADDITIONAL AGENCY INFORMATION

- [May, 2019 - Management of the Colorado River: Water Allocations, Drought, and the Federal Role.](#) CRS.
- [Flexible water sharing reduces risk in dry times.](#) Jon Stavney
- [Basinwide Drought Planning.](#) Eric Kuhn.
- [May, 2018 - Colorado River Basin: Current Conditions and Operational Update.](#) Reclamation.
- [August, 2019 - Four West Slope Roundtables: Colorado River Risk Study Discussion.](#) CRWCD.

ADDITIONAL NEWS

- [Feds: Fix Colorado River Problems or We Will](#)
- [1946: The year of no decision](#)
- [Circle of Blue](#)
- [Albuquerque Journal](#)
- [E & E](#)
- [Reclamation](#)

CONGRESSIONAL RESEARCH SERVICE (May, 2019)

- [Management of Colorado River: Water Allocations, Drought and Federal Role.](#) CRS.
- [Figure 1: Areas That Import Colorado River Water](#)
- [Figure 1.10: Tribal Water Rights and Diversions](#)
- [Figure 2: Colorado River Basin Allocations](#)
- [Figure3: Lake Powell Mead Storage Inflows](#)
- [Figure4: Lower Basin States ICS balance 2010 to 2017](#)
- [Table2: Basin Water Curtailment Volumes By Agreement](#)

UPPER COLORADO RIVER COMMISSION

- [Drought Contingency Planning in the Colorado River Basin.](#) Haas.

COLORADO

- [February, 2014 - Memo to initiate Drought Contingency Planning](#)
- [Fact Sheet.](#) CRWCD.
- [October, 2017 - Drought Contingency Planning and Colorado River Risk Study: An Overview and Status Report for the Colorado River District Board of Directors.](#) Hydros Consulting.
- [Contingency Planning.](#) Northern Water.
- [Colorado River Planning Convergence.](#) Colorado Water Conservation Board.

CALIFORNIA

- [June, 2016 - Board Packet.](#) Colorado River Board of California.
- [June, 2016 - Colorado River Update.](#) San Diego Water Authority.

- [June, 2016 - Report on Colorado River Drought Contingency Planning.](#) Metropolitan Water District of California.

NEVADA

- [Colorado River Planning Convergence.](#) Southern Nevada Water Authority.

ARIZONA

- [Overview.](#) Website ADWR.
- [2016 - Colorado River Drought Contingency Planning.](#) CAP.
- [2018 - Shortage Preparedness](#)
- [2018 - Workgroup Final Report](#)

RECLAMATION

- [May, 2018 - Colorado River Basin: Current Conditions and Operational Update.](#) Reclamation.
 - [July, 2014 - Executed Pilot SCP Funding Agreement.](#)
 - [5- year Projection](#)
-

Proposal to amend the Arizona Strip Resource Management Plan (RMP)

JUNE 28, 2018

BY JOHN WEISHEIT

DEADLINE is August 3, 2018

- [Announcement and details of scoping process](#)
- [BLM presentation for scoping meeting](#)
- Resource Management Plan Documents from the Arizona Strip Field Office are located [HERE](#)
- The management plan is archived [HERE](#)
- [MAP](#) of the proposed Lake Powell Pipeline route
- Resource Management Plan Documents from the Kanab Field Office are located [HERE](#)

Submitted Comments

- [American Rivers](#)
- [Utah Rivers Council](#)
- [Living Rivers](#)

ST. GEORGE, Utah -- ([Press Release](#)) The Bureau of Land Management (BLM) is accepting the public's input on a proposal to amend the Arizona Strip Resource Management Plan (RMP) as part of its evaluation of the proposed Lake Powell Pipeline route in the Kanab Creek Area of Critical Environmental Concern (ACEC), located south of the Kaibab Paiute Reservation.

Approximately 1.5 miles of the proposed pipeline would run through the Kanab Creek ACEC, with a small portion (900 of 13,148 acres) affected. Of this, approximately 1.0 miles would be located within a designated utility corridor. The BLM must complete the RMP amendment in order to address planning inconsistencies between the proposed water pipeline route and the existing designated utility corridor.

We are committed to hearing from all area stakeholders about the use of public lands in their backyards, said Arizona Strip Field Manager Lorraine Christian. The BLM works with the public to determine responsible uses of working landscapes, such as this proposed water pipeline project, which has the potential to benefit local communities through improved infrastructure, job creation, and economic growth.

The Utah legislature passed the Lake Powell Pipeline Development Act in 2006. When completed the 140-mile-long pipeline is estimated to generate 300 megawatts of power and divert 82,249-acre feet of water from Lake Powell to Washington County and 4,000 acre-feet to Kane County annually. The Utah Division of Water Resources is the Lake Powell Pipeline Project proponent. The Federal Energy Regulatory Commission (FERC) is the lead agency to complete the Environmental Impact Statement for the pipeline project, and the BLM is a cooperating agency.

The BLM has scheduled public scoping meetings in communities near the Kanab Creek ACEC. During these meetings, the public can provide input to the BLM on relevant issues that will influence the scope of the environmental analysis, including alternatives, and help guide the planning process. In addition to the public scoping meetings, the BLM plans to host an Economic Strategies Workshop to provide an opportunity for regional businesses, governments, and community organizations to discuss regional economic and social conditions and trends related to the RMPA only.

The meetings are scheduled for the following dates, times and locations:

- Tuesday, July 17 from 5-8 p.m. Public scoping meeting at the Fredonia Elementary School Gym, 222 N. 200 E. Fredonia, AZ 86022
 - Wednesday, July 18 from 5-8 p.m. Public scoping meeting at the Dixie Center, 1835 S. Convention Center Drive St. George, UT 84790
 - Thursday, July 19 from 1-4 p.m. Economic Strategies Workshop at the Kaibab Village Community Center 2230 N. Pipe Spring Road, Fredonia, AZ 86022
- Comments may also be submitted via mail and email. The comment period ends August 3, 2018, which is 15 days after the last public meeting as stated in the NOI.

Written comments may be mailed to BLM Arizona Strip Field Manager Lorraine Christian, Arizona Strip Field Office, at 345 East Riverside Drive, St. George, Utah 84790. Comments may also be faxed to Lorraine Christian at 435-688-3258 or emailed to:

BLM_AZ_ASFO_comments@blm.gov.

Please include, Proposed Arizona Strip Resource Management Plan Amendment in the subject line of your letter, fax or email. All comments will be made available to the public.

The Notice of Intent, which was published today in the Federal Register, announces BLMs intent to analyze the proposed amendment to the Arizona Strip RMP related to the Kanab Creek ACEC. The BLM will incorporate the analysis for the RMP amendment into FERCs Environmental Impact Statement for the larger Lake Powell Pipeline Project. FERC will analyze the proposed pipeline project and the proposed RMP amendment to consider allowing development of the Lake Powell Pipeline within the Kanab Creek ACEC.

The BLM manages more than 245 million acres of public land located primarily in 12 Western states, including Alaska. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation. The agency's mission is to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations. Diverse activities authorized on these lands generated \$75 billion in sales of goods and services throughout the American economy in fiscal year 2016 - more than any other agency in the Department of the Interior. These activities supported more than 372,000 jobs.

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
 - October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
 - September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
 - August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
 - June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
 - December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
 - March 21, 2011 - [Lake Powell Pipeline Documents](#)
 - June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

New Mexico Unit of Central Arizona Project: Notice of Intent To Prepare an Environmental Impact Statement, Gila River and San Francisco River

JULY 09, 2018

BY JOHN WEISHEIT

NOTE: As of June 19, 2020, The New Mexico Interstate Stream Commission voted to discontinue the NEPA review of the NM Unit. Read the story from Silver City Daily Press [HERE](#).

On June 8th deadline, Living Rivers & Colorado Riverkeeper submitted the following [COMMENTS](#) to Reclamation for the Draft EIS on the NM Unit.

The website for the NEPA review of the NM Unit, is [HERE](#)

RECENT NEWS

- [2017, October - Still No Solid Plans For Gila River Diversion, Despite Millions Spent.](#) New Mexico Political Report.
- [2018, July - Arizonans Surprised by Gila Diversion Lack of Info.](#) Silver City Daily Press.
- [2018, July - Crowd Critiques Gila Diversion.](#) Silver City Daily Press.
- [2018, August - Amid Drought 50-year Old Rule Could Let New Mexico Use Arizona Water.](#) Arizona Republic.
- [2018, July - Gila Diversion Group Plans Scope, Seeks Power.](#) Silver City Daily Press.
- [2019, December - Feds Deny Extension for Gila Diversion Millions.](#) Silver City Daily Press.
- [2020, April - Plan calls for diverting, storing water from Gila River.](#) Associated Press.
- [2020, June - Interstate Stream Commission votes to stop work of Gila River diversion.](#) Silver City Daily Press.
- [2021, February - Gila diversion group asserts primacy as legislation threatens.](#) Geoffrey Plant, SCDP.

PREPARATION AND PUBLIC SCOPING OF EIS

Federal Register Notice is [HERE](#) & [archived here](#)

- Date of notice: 6/12/2018
- Scoping comments are due: extended to 7/20/2018

Mail comments to:

Phoenix Area Office, Bureau of Reclamation
(ATTN: NM Unit EIS)

6150 West Thunderbird Road, Glendale, Arizona 85306

Send Email comments to:

NMUnitEIS@empci.com
Subject line is: NM Unit EIS

For further information contact:

Mr. Sean Heath at (623) 7736250
Or email at NMUnitEIS@empci.com

DOCUMENT ARCHIVE (website)

- [Document archive for New Mexico Central Arizona Project Entity](#)

CONDITIONS of this EIS process:

- The Secretary must have issued in the Federal Register not later than December 31, 2019, a Record of Decision approving the project based on an environmental analysis required pursuant to applicable Federal law and on a demonstration that construction of a project for the New Mexico Unit that would deliver an average annual safe yield, based on a 50-year planning period, greater than 10,000 acre feet per year, would not cost more per acre foot of water diverted than a project sized to produce an average annual safe yield of 10,000 acre feet per year. If New Mexico exercises all reasonable efforts to obtain the issuance of such Record of Decision, but the Secretary is not able to issue such Record of Decision by December 31, 2019, for reasons outside the control of the State of New Mexico, the Secretary may extend the deadline for a reasonable period of time, not to extend beyond December 31, 2030.
- [2015 - Principles, Requirements and Guidelines for Federal Investments in Water Resources](#). CRS.
- [2018 - Project Confirmation Letter](#)
- [2018 - Project Summary OF Proposed Action2018](#)

STUDIES

- [1987 - Upper Gila Water Supply Study](#). USBR.

PUBLIC SCOPING DOCUMENTS

- [Scoping Report Ummmary](#). USBR.
- [Scoping from Individuals](#)
- [Scoping from Agencies and Organizations](#)
- [Coalition letter with attachments](#)
- [Living Rivers & Center for Biological Diversity](#)

2020 DRAFT ENVIRONMENTAL IMPACT STUDY

- [Executive Summary](#)
 - [Volume One](#)
 - [Volume Two](#)
-

Proposal for Transfer of Federal Land Parcels in Uintah County to State of Utah

JULY 11, 2018

BY JOHN WEISHEIT

News Release

Vernal Field Office, Utah

Contact: Heather O'Hanlon

July 9, 2018

(801) 539-4129

Proposal for Transfer of Federal Land Parcels in Uintah County to State of Utah

Vernal, Utah School and Institutional Trust Lands Administration (SITLA) has requested title to 440 acres of federal parcels in T11S-R25E, Sections 5, 6, and 8 of Uintah County under the authorities of the Utah Enabling Act of July 16, 1894. Transfer of the parcel would fulfill the intent of the Utah enabling act to support the states schools through the land grant managed by the state.

The Bureau of Land Management, Vernal Field Office (VFO) has completed an Environment Analysis to analyze the transfer of these lands from BLM to State administration. A 30-day public comment period will open on July 9.

The parcel requested, both surface and subsurface, are isolated from other BLM lands, said Travis Kern, VFO Manager, so they are administratively difficult to manage by themselves, and are entirely surrounded by private lands.

The Environmental Assessments are available for review at the following ePlanning links: <http://go.usa.gov/xNwRJ>. Comments can be added by clicking the Documents tab, then click the Comment on Document button.

For additional information, please contact Stephanie Howard at 435-781-4469. Persons who use a telecommunications device for the deaf may call the Federal Relay Service (FRS) at 1-800- 877-8339 to leave a message or question for the above individual. The FRS is available 24 hours a day, seven days a week. Replies are provided during normal business hours.

Comments due August 9, 2018

DOCUMENT ARCHIVE

- [Comment Letter by Living Rivers et al.](#)

- [Comment letter by Earthjustice et al.](#)
 - [BLM News Release](#)
 - [BLM EA for Public Comment](#)
 - [List of EA Preparers](#)
 - [Geologic Assessment](#). Perkes.
-

Water Horse Resource's Export Application for Proposed Water Pipeline from Utah to Colorado's Front Range

JUNE 05, 2018

BY JOHN WEISHEIT

HEARING HAS BEEN CONCLUDED

- Public comments can be submitted for 120 days starting from November 7th, 2018.

ORDER OF THE STATE ENGINEER

- November 19, 2020 - [Utah State Engineer Rejects Plan to Divert Green River Water for Colorado Entrepreneur](#). Salt Lake Tribune.
- [Read the ORDER](#); ([archived here](#)).

The public is invited to attend the first administrative hearing for this water export application for a diversion from the Green River and a pipeline to carry water to the communities of Colorado's Front Range. The pipeline will basically follow Interstate 80 through Wyoming and then the Interstate 25 corridor through Colorado. The withdrawal is 50,000 acre-feet per year and includes hydroelectric power generation (pumpback projects) and the installation cost, at minimum, will likely be over 4 billion dollars; \$1,600 per acre foot for a time period of 50-years.

In 2012, the Federal Energy Regulatory Commission denied the application for a water pipeline from the Green River to the Front Range. [CLICK HERE](#) for more information.

INFORMAL HEARING BEFORE UTAH DIVISION OF WATER RIGHTS

Date: Wednesday, November 7, 2018

Time: 9:00 AM

Address: Room 1050; 1594 West North Temple; Salt Lake City, Utah 84114

The entire administrative record for this application is located on the website of Utah Division of Water Rights [HERE](#).

The website for Water Resources LLC is located [HERE](#)

NEWS

- Salt Lake Tribune - [Environmentalists, Feds and Utahns Agree: Don't Send Green River Water to Colorado](#). Brian Maffly.
- Deseret News - [Divert Green River Water for Colorado? Utah Says Proposal All Wet](#). Amy Joi O'Donoghue.

DOCUMENTS

- [2015 - Master of Science Thesis by Aaron P. Million](#)
- [Letter from Water Horse Attorneys Regarding Letter from Colorado Water Conservancy Board.](#)

NEWS

- [Is There Water Left To Be Developed In The Colorado River Basin? Yes, says Water Horse Resources.](#) Runyon, KUNC.

PROTEST LETTERS

- [American Whitewater](#)
- [Center for Biological Diversity](#)
- [Central Colorado Water Conservancy District](#)
- [Central Utah Project Completion Act Office](#)
- [Central Utah Water Conservancy District](#)
- [Colorado River Water Conservancy District](#)
- [Duchesne County Water Conservancy District](#)
- [Emery County Water Conservancy District](#)
- [San Juan Water Conservancy District](#)
- [Kane County Water Conservancy District](#)
- [Living Rivers](#)
- [PacifiCorp](#)
- [Pipeliner's Union](#)
- [Procedural Meeting Letter.](#) Reclamation
- [Provo River Water Users Association](#)
- [Save The Colorado](#)
- [Solicitor.](#) DOI.
- [Terry Carwile](#)
- [Timely Protestant Letter.](#) UDWRights.
- [Tim Vetere](#)
- [Trout Unlimited](#)
- [Uintah Water Conservancy District](#)
- [Upper Yampa Water Conservancy District](#)
- [USBR Provo Office](#)
- [Utah Board Water Resources](#)
- [Utah Rivers Council](#)
- [Washington County Water Conservancy District](#)
- [Wayne County Water Conservancy District](#)
- [Western Resource Advocates](#)

DOCUMENTS FROM APPLICANT TO UTAH DIVISION OF WATER RIGHTS

- [Answer to Request for Additional Information to Appropriate](#). Water Horse Resources; February 8, 2019.

For new posts to the administrative record for this application, go [HERE](#).

Drought Contingency Planning in the Colorado River Basin

JUNE 07, 2018

BY JOHN WEISHEIT



Lake Mead reservoir level in 2018

REPORT: JANUARY 19, 2019

By [Henry Brean of Las Vegas Review Journal](#)

The proposed Colorado River Drought Contingency Plan (DCP) currently being debated by officials in Arizona calls for the following state-by-state cuts based on the water level in Lake Mead.

- Current Elevation at Lake Mead: 1,083 feet above sea level
- Desired minimal elevation of Lake Mead: 1,045 feet

The DCP revised Shortage Declarations would occur on January 1, of any given year until January 1, 2026, between elevations of 1,090 and 1,045 feet:

- Nevada: 8,000 acre-feet.
- Arizona: 192,000

At or below 1,045 and above 1,040 feet:

- Nevada: 10,000 acre-feet
- Arizona: 240,000
- California: 200,000

At or below 1,040 feet:

- Nevada: 10,000 acre-feet
- Arizona: 240,000
- California: starts at 250,000 and increases by 50,000 for each additional 5-foot drop in the lake.

One acre-foot of water will supply two average Las Vegas Valley homes for just over one year.

NEWS

- [October 22, 2018 - Gila River Indian Community balks at Arizona's scheme for DCP.](#)
- [October 5, 2018 - Final Review Draft Agreements for Drought Contingency Planning.](#) Reclamtion.

DEPARTMENT OF INTERIOR

- [Website: Aridity in the Colorado River Basin](#)

NARRATIVE

Since February 2014 ([Memo to initiate Drought Contingency Planning](#)) the water agencies of the seven states in the Colorado River Basin have been immersed into a program called Drought Contingency Planning (DCP) and for reasons that the federal government made it very clear that failure to comply would result in a direct intervention by the Secretary of Interior. This statement occurred at the end of year 2015 ([news clip](#)). Why the 4-year delay? To various degrees, all the states have issues to work out, but the state that is dragging its feet the most, and for reasons that they have the most to lose, is Arizona. Why? To get federal authorization for the construction of the Central Arizona Project (CAP) in 1968, Arizona agreed to take a low priority water right because Congress was aware that the water demand for this project might incite water shortages at a future time.

Fifty years have since passed and mandatory cuts to Arizona's water supply are no longer a distant threat ([graphic](#)). Should Arizona approve the Lower Basin DCP in year

2018, a shortage declaration for the state will occur on January 1, 2019, and for the reason that preliminary discussions between the states of the lower basin have included raising the elevation for a shortage declaration at Lake Mead from elevation 1075 feet to 1090 feet. It is not unreasonable to say that Arizona will not sign the agreement until after January 1, 2019.

Incidentally, on July 31, 2018, the elevation of Lake Mead was at 1077 feet, and on June 30, 2016, the elevation of Lake Mead was at 1073 feet.

Note: According to the current guidelines, if the elevation of Lake Mead is exactly 1075 feet on January 1st of any given year between 2008 and 2026, a shortage is officially declared; to be specific, the first of three shortage tiers. The second tier is 1050 feet, and the third tier is 1025 feet. For each tier the reduction is significantly reduced. The maximum carrying capacity of the CAP aqueduct is 1.6 million acre-feet per year.

- [Shortage and Surplus Tier Elevations at Lake Mead](#)
- [How Arizona and Nevada divide the shortage declaration](#)
- [NEWS: Why One Arizona County Could Upend The Southwest's Drought Plan.](#)
Water Deeply.

Meanwhile, the Upper Basin states are about to repeat the same mistake as Arizona with their proposed water projects that carry junior water rights, which will be discussed in more detail, below.

Note: When Lake Mead reaches elevation 1020 feet, it means Lake Powell is at or below elevation 3525 feet, which is the elevation the Upper Basin DCP hopes to maintain, even at the cost of draining the contents of upstream reservoirs, for example, Flaming Gorge Reservoir, Blue Mesa Reservoir and Navajo Reservoir.

This latest sense of urgency was not a first. In 2004 the reservoir level of Lake Powell was critically low, and to the degree that hydropower production was diminished by 40%

- [Graphic](#)
- [News clip](#)
- [News clip](#)

Then Interior Secretary Gale Norton insisted the seven states of the basin develop a shortage sharing agreement in case the situation worsened and, if they did not succeed, she promised to do it for them. Two and a half years later (2007) the states and the feds signed an agreement called Interim Guidelines. The word interim refers to the expiration of the Guidelines at 12 am on January 1, 2026. Now, some ten years later, the conditions of the reservoirs have not improved. In fact, the snow melts of 2012 and 2013 were dismally low, and the chance of shortages arriving by the end of the decade increased to 50%. Thus, the DCP process began in 2014 and 12-years before the expiration of Interim Guidelines, which was the intended action to solve the problem.

Here are three fatal flaws about 2007 Interim Guidelines, which are paraphrased and explained, as follows:

(1) The water savings stored in Lake Mead is voluntary and not mandatory, and the states will not comply until it becomes absolutely necessary. Intentional savings by the states to stabilize Lake Mead did not occur earnestly until a few years ago and with Arizona lagging behind California and Nevada. Mexico will participate, once the DCP is completed. The Native Americans have also pledged assistance, once the DCP is completed. We would agree that this new position is comforting, but we insist that was the appropriate position to take in 2007.

(2) Despite these guidelines, the reservoir supply at Lake Mead will continue to decline beyond 2026. In 2007, the Bureau of Reclamation believed the chances of shortage through 2026 was in the range of 1% to 2% ([newsclip](#)). There is a possible 65% chance that shortages will officially be declared by the Secretary of Interior in 2020 ([June 2018 "stress test" presentation by USBR](#)). Thus, Interim Guidelines has indeed proven to be a half-measure; too little and too late.

(3) Interim Guidelines allows the upper basin states to annually divert an additional 1 million acre-feet of water, which will eventually compromise water storage at Lake Powell. So far, the upper basin states have yet to develop more water diversion projects, but projects are currently in the permitting stage. They include, for example, Lake Powell Pipeline, a pipeline to Colorado's Front Range, Gross Reservoir expansion, Windy Gap Firming Project, Fontenelle Reservoir expansion, Green River nuclear generating station, strip mining for oil sands and kerogen shale, solution mining for potash, and many others. Though these projects have been neutralized, for the moment, by intense campaigns from opposition movements, the hydropower units at Glen Canyon Dam are nearing a shut-down situation. For example, the goal of Drought Contingency Planning is to make sure Lake Powell never goes below elevation 3,525 feet. For the last two years, the average total amount of water above 3,525 feet was about 7 million acre-feet (MAF). According to Interim Guidelines, Lake Powell must discharge 9 MAF in 2018, which is also the most probable discharge for 2019, for a two-year total of 18 MAF. Some back-of-the-envelope arithmetic can help us understand how truly dire the situation is: 18 MAF minus 7 MAF is 11 MAF, and therefore 11 MAF must enter Lake Powell next year to keep the reservoir stable. Will nature supply Lake Powell with that much needed 11 MAF? Time will tell, but for water year 2018, nature only supplied 6 MAF (this amount is included in the total volume above 3525 for water year 2018) ([July 2018 presentation by USBR](#)). Should next years inflow imitate years 2002, 2003, 2012, or 2013, the goals of the proposed DCPs will be challenged immediately.

We understand how grim this narrative presents itself. However, thinking about system failure with percentage points as high as 65% for an economy that produces 1.4 trillion dollars annually for 40 million people is not easy to dismiss. To be fair, timely leadership has emerged from Secretary of Interior, however, the states appear to be burning the furniture to stay warm.

BACKGROUND

- [January 2017 - Order #3344 from the Secretary of Interior](#). Jewell.
- How bad can it get? [DOWNLOAD](#) this June 2018 powerpoint presentation by Reclamation and Arizona Dept. of Water Resources
- On The Colorado produced the following [TABLE](#) that answers this question: How much water is left in Lakes Powell and Mead before the safe yield is exhausted and jeopardy begins for water and hydropower contracts?
- [PHOTO](#) of a Lake Mead at Hoover Dam at elevation ~1075 in 2015. Reclamation.

WEATHER MODIFICATION (Cloud-seeding)

- [News: Pitkin County Commissioners Leery Of Cloud Seeding Project](#). Hugh Carey of Summit Daily.
- [2014 - Executive Summary: Wyoming Weather Modification Pilot Program](#)
- [1999 - Review of Cloud Seeding Experiments to Enhance Precipitation and New Prospects](#). Bruintjes.
- [1980 - Weather Modification by Cloud Seeding](#). Dennis.
- [2007 - Weather Modification for Augmentation](#). CH2MHill.

From a [fact sheet](#) provided by Colorado River Water Conservancy District in Glenwood Springs, Colorado:

The seven Colorado River basin states and the US Bureau of Reclamation are working on a contingency plan to avoid the unacceptable consequences of the continuing drought. The Colorado River District, Southwestern Water Conservation District, Colorado Water Conservation Board, The Nature Conservancy and Front Range Water Council are jointly investigating the feasibility of a water bank. The [water bank](#) is a tool that might be used with either the contingency or insurance concepts.

There are many overlapping issues so its easy to get confused. This FAQ answers many of the most frequent questions.

1. What is the contingency plan, and why is one needed?

- Since 2000, the Colorado River Basin has experienced a prolonged drought. There have been a few wet years 2008, 2010, and 2014, but the remaining years have been dry. 2002 was one of the driest years on record and 2012-2013 were the driest consecutive two years on record.
- Consequently, to meet demands, the basins reservoirs have been drawn down by about 30 million acre feet. If the drought conditions continue, Lake Powell could drop below the elevation necessary to produce power (3,490) or at about 4 million acre feet of storage).
- The goal of the contingency plan is to avoid water levels in Lake Powell from falling below the minimum level and still produce power.
- If Lake Powell no longer produced electricity, up to \$120 million per year in power revenues would be lost. These revenues cover the operation of power generation

and the transmission grid; repay the federal treasury for the construction of these reservoirs; and, cover the costs of critical environmental recovery programs such as the San Juan and Upper Colorado River Basin endangered fishes recovery programs and the Salinity Control Program. Additionally, federal power customers could see their power costs skyrocket.

2. What will be included in the contingency plan?

Three basic elements:

- a. Extended operations. Federal reservoirs upstream of Lake Powell Flaming Gorge, Aspinall and Navajo Reservoirs would release additional water for storage and use in Lake Powell.
- b. System augmentation. Enhanced cloud seeding and accelerated removal of non-native vegetation such as tamarisk.
- c. Demand management. Additional conservation by municipal and irrigation users and deficit irrigation or fallowing by agricultural users.

- The extended operations and augmentation elements will be the first lines of defense. The demand management element is only a concept at this point. None of the four Upper Division (WY, UT, CO and NV) states has agreed to implement demand management. There are currently no management mechanisms in place to actually implement demand management.
- In the Lower Basin (NV, AZ, CA), possible actions include: better managing over-deliveries, improving system conveyance, reducing or eliminating groundwater banking, and assigning reservoir evaporation to lower basin states.

3. How will extended operations of the upstream Colorado River Storage Project (CRSP) units work?

- Under the proposed contingency plan, Reclamation and the Upper Division states would evaluate the risk of Lake Powell dropping below minimum power. If action is deemed necessary, the parties would consider if adequate water is available in upstream reservoirs for release to Lake Powell. Because of its size and inflow, it appears that Flaming Gorge Reservoir has the most flexibility.
- As we envision the contingency plan today, the demand management option would only be used once all of our flexibility with extended operations has been exhausted and the forecast is for continued drought.

4. How will the 2007 Interim Guidelines affect the contingency plan?

- Because releases from Glen Canyon Dam (Lake Powell) are controlled by the 2007 Interim Guidelines, the contingency plan will be specifically tailored to work in tandem with them. They are interim because they are only in effect through Water Year 2026. Thus, the contingency plan is interim as well.

- Under the Interim Guidelines, Powells and Meads operations are coordinated. Releases are based on forecasted, year-end reservoir levels in Powell and Mead. Lake Powell is divided into four tiers; Lake Mead is divided into a number of different tiers. The critical levels at Lake Mead are 1,075`, the level at which shortages are imposed on lower basin water users and 1,025`. 1,025` is considered uncomfortably close to the 1,000` level that cuts off Las Vegas access to Lake Mead water.
- One of the challenges for the contingency plan will be to keep enough water in Lake Powell to maintain hydropower production, while at the same time not releasing so much upstream water into Powell that it would bump up releases from Lake Powell to Lake Mead under the Guidelines.

5. What are the chances that we will need to implement the contingency plan by 2026?

- For the Upper Basin, it all depends on future hydrologic conditions. If dry conditions continue, it is almost certain that we will need to implement the contingency plan. However, if hydrologic conditions return to the longer term average, then the chances are still real, but much lower. Whether or not the drought continues is a difficult prediction. Based on the 1906 to present observed record, we are in the longest drought of record. However, looking at the longer term, reconstructed natural flow record (using tree rings), droughts such as the current one are rare but not unprecedented.
- The bottom line is that under most hydrologic futures a contingency plan is necessary. If we prepare one, but don't have to use it, we will consider ourselves fortunate.

6. Why should the Upper Basin be concerned about whats happening in the Lower Basin?

- The 2007 Interim Guidelines interconnect the operation of Lake Powell and Lake Mead,. If the Lower Basin reduces its use of Colorado River water, less water needs to be released from Lake Mead, and under the Interim Guidelines, Lake Powell releases will average less. This interconnection between Lake Mead and Lake Powell is why the seven basin states and the Department of the Interior view the contingency plan as a basin-wide effort.

7. What is meant by the Lower Basins structural deficit?

- In the Upper Basin were primarily at risk from continued drought. The Lower Basin is threatened by both dry hydrology and the structural deficit caused by over use. In a normal year, which is defined as releasing 8.23 million acre feet (maf) from Lake Powell, about 9.0 maf flows into Lake Mead (8.23 maf from Powell, the rest from tributary inflow between Powell and Mead). However, demands in the lower basin range from 10.0 to 10.5 million acre feet. Thus, in the Upper Basin, we could experience a string of average years (like 2014) and Lake

Powell would continue to slowly recover, but in the Lower Basin, the demand continues to exceed supply and Lake Mead levels keep falling.

- Water users in the Lower Basin fully understand this structural deficit problem and are actively engaged in difficult discussions to solve it.

8. Is the Lower Basins structural deficit a threat to the Upper Basin?

- The practical implications for the entire basin of continued overuse in the Lower Basin are real and significant. If Lake Mead drops below 1,025', the 2007 Interim Guidelines require re-consultation.
- From a compact perspective, there is virtually no chance that the Lower Division states or the Interior Secretary could use the 1922 Compact to require a cutback or curtailment of uses in the Upper Basin because of overuse in the Lower Basin. The more likely scenario is that to prevent Lake Mead from dropping below 1,000', current water users in the Lower Basin would have to conserve or save additional water beyond the 500,000 acre foot cutback required by the Interim Guidelines.
- It is possible that the Upper Division states would be asked to provide additional stored water that would be considered surplus, but even this option should only be considered as a last resort.
- Additionally, if (perhaps when) Lake Mead approaches 1,000', there will be great political pressure for expanded water marketing. Traditionally, the Basin States and water agencies have adamantly opposed efforts to market water between the upper and lower basins.
- The best certainty for all users on the Colorado River system is full reservoirs. One method the Basins municipalities could use to maintain storage in system reservoirs would be to acquire large amounts of agricultural lands and retiring or changing crops on these lands to reduce water use. But such transfers of water use, even temporarily, would have dramatic impacts on the economy, land use and lifestyles of the basin.

ADDITIONAL AGENCY INFORMATION

- [May, 2019 - Management of the Colorado River: Water Allocations, Drought, and the Federal Role.](#) CRS.
- [Flexible water sharing reduces risk in dry times.](#) Jon Stavney
- [Basinwide Drought Planning.](#) Eric Kuhn.
- [May, 2018 - Colorado River Basin: Current Conditions and Operational Update.](#) Reclamation.
- [August, 2019 - Four West Slope Roundtables: Colorado River Risk Study Discussion.](#) CRWCD.

ADDITIONAL NEWS

- [Feds: Fix Colorado River Problems or We Will](#)
- [1946: The year of no decision](#)

- [Circle of Blue](#)
- [Albuquerque Journal](#)
- [E & E](#)
- [Reclamation](#)

CONGRESSIONAL RESEARCH SERVICE (May, 2019)

- [Management of Colorado River: Water Allocations, Drought and Federal Role.](#) CRS.
- [Figure 1: Areas That Import Colorado River Water](#)
- [Figure 1.10: Tribal Water Rights and Diversions](#)
- [Figure 2: Colorado River Basin Allocations](#)
- [Figure3: Lake Powell Mead Storage Inflows](#)
- [Figure4: Lower Basin States ICS balance 2010 to 2017](#)
- [Table2: Basin Water Curtailment Volumes By Agreement](#)

UPPER COLORADO RIVER COMMISSION

- [Drought Contingency Planning in the Colorado River Basin.](#) Haas.

COLORADO

- [February, 2014 - Memo to initiate Drought Contingency Planning](#)
- [Fact Sheet.](#) CRWCD.
- [October, 2017 - Drought Contingency Planning and Colorado River Risk Study: An Overview and Status Report for the Colorado River District Board of Directors.](#) Hydros Consulting.
- [Contingency Planning.](#) Northern Water.
- [Colorado River Planning Convergence.](#) Colorado Water Conservation Board.

CALIFORNIA

- [June, 2016 - Board Packet.](#) Colorado River Board of California.
- [June, 2016 - Colorado River Update.](#) San Diego Water Authority.
- [June, 2016 - Report on Colorado River Drought Contingency Planning.](#) Metropolitan Water District of California.

NEVADA

- [Colorado River Planning Convergence.](#) Southern Nevada Water Authority.

ARIZONA

- [Overview.](#) Website ADWR.
- [2016 - Colorado River Drought Contingency Planning.](#) CAP.
- [2018 - Shortage Preparedness](#)
- [2018 - Workgroup Final Report](#)

RECLAMATION

- [May, 2018 - Colorado River Basin: Current Conditions and Operational Update.](#)
Reclamation.
 - [July, 2014 - Executed Pilot SCP Funding Agreement.](#)
 - [5- year Projection](#)
-

Proposal to amend the Arizona Strip Resource Management Plan (RMP)

JUNE 28, 2018

BY JOHN WEISHEIT

DEADLINE is August 3, 2018

- [Announcement and details of scoping process](#)
- [BLM presentation for scoping meeting](#)
- Resource Management Plan Documents from the Arizona Strip Field Office are located [HERE](#)
- The management plan is archived [HERE](#)
- [MAP](#) of the proposed Lake Powell Pipeline route
- Resource Management Plan Documents from the Kanab Field Office are located [HERE](#)

Submitted Comments

- [American Rivers](#)
- [Utah Rivers Council](#)
- [Living Rivers](#)

ST. GEORGE, Utah -- ([Press Release](#)) The Bureau of Land Management (BLM) is accepting the public's input on a proposal to amend the Arizona Strip Resource Management Plan (RMP) as part of its evaluation of the proposed Lake Powell Pipeline route in the Kanab Creek Area of Critical Environmental Concern (ACEC), located south of the Kaibab Paiute Reservation.

Approximately 1.5 miles of the proposed pipeline would run through the Kanab Creek ACEC, with a small portion (900 of 13,148 acres) affected. Of this, approximately 1.0 miles would be located within a designated utility corridor. The BLM must complete the RMP amendment in order to address planning inconsistencies between the proposed water pipeline route and the existing designated utility corridor.

We are committed to hearing from all area stakeholders about the use of public lands in their backyards, said Arizona Strip Field Manager Lorraine Christian. The BLM works with the public to determine responsible uses of working landscapes, such as this proposed water pipeline project, which has the potential to benefit local communities through improved infrastructure, job creation, and economic growth.

The Utah legislature passed the Lake Powell Pipeline Development Act in 2006. When completed the 140-mile-long pipeline is estimated to generate 300 megawatts of power and divert 82,249-acre feet of water from Lake Powell to Washington County and 4,000 acre-feet to Kane County annually. The Utah Division of Water Resources is the Lake Powell Pipeline Project proponent. The Federal Energy Regulatory Commission (FERC) is the lead agency to complete the Environmental Impact Statement for the pipeline project, and the BLM is a cooperating agency.

The BLM has scheduled public scoping meetings in communities near the Kanab Creek ACEC. During these meetings, the public can provide input to the BLM on relevant issues that will influence the scope of the environmental analysis, including alternatives, and help guide the planning process. In addition to the public scoping meetings, the BLM plans to host an Economic Strategies Workshop to provide an opportunity for regional businesses, governments, and community organizations to discuss regional economic and social conditions and trends related to the RMPA only.

The meetings are scheduled for the following dates, times and locations:

- Tuesday, July 17 from 5-8 p.m. Public scoping meeting at the Fredonia Elementary School Gym, 222 N. 200 E. Fredonia, AZ 86022
- Wednesday, July 18 from 5-8 p.m. Public scoping meeting at the Dixie Center, 1835 S. Convention Center Drive St. George, UT 84790
- Thursday, July 19 from 1-4 p.m. Economic Strategies Workshop at the Kaibab Village Community Center 2230 N. Pipe Spring Road, Fredonia, AZ 86022
Comments may also be submitted via mail and email. The comment period ends August 3, 2018, which is 15 days after the last public meeting as stated in the NOI.

Written comments may be mailed to: BLM Arizona Strip Field Manager Lorraine Christian, Arizona Strip Field Office, at 345 East Riverside Drive, St. George, Utah 84790. Comments may also be faxed to Lorraine Christian at 435-688-3258 or emailed to:

BLM_AZ_ASFO_comments@blm.gov

Please include, Proposed Arizona Strip Resource Management Plan Amendment in the subject line of your letter, fax or email. All comments will be made available to the public.

The Notice of Intent, which was published today in the Federal Register, announces BLMs intent to analyze the proposed amendment to the Arizona Strip RMP related to the Kanab Creek ACEC. The BLM will incorporate the analysis for the RMP amendment into FERCs Environmental Impact Statement for the larger Lake Powell Pipeline Project. FERC will analyze the proposed pipeline project and the proposed RMP amendment to consider allowing development of the Lake Powell Pipeline within the Kanab Creek ACEC.

The BLM manages more than 245 million acres of public land located primarily in 12 Western states, including Alaska. The BLM also administers 700 million acres of sub-surface mineral estate throughout the nation. The agency's mission is to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations. Diverse activities authorized on these lands generated \$75 billion in sales of goods and services throughout the American economy in fiscal

year 2016 - more than any other agency in the Department of the Interior. These activities supported more than 372,000 jobs.

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
 - October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
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 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

Proposal to amend the Arizona Strip Resource Management Plan (RMP)

JUNE 28, 2018

BY JOHN WEISHEIT

DEADLINE is August 3, 2018

- [Announcement and details of scoping process](#)
- [BLM presentation for scoping meeting](#)
- Resource Management Plan Documents from the Arizona Strip Field Office are located [HERE](#)
- The management plan is archived [HERE](#)
- [MAP](#) of the proposed Lake Powell Pipeline route
- Resource Management Plan Documents from the Kanab Field Office are located [HERE](#)

Submitted Comments

- [American Rivers](#)
- [Utah Rivers Council](#)
- [Living Rivers](#)

ST. GEORGE, Utah -- ([Press Release](#)) The Bureau of Land Management (BLM) is accepting the public's input on a proposal to amend the Arizona Strip Resource Management Plan (RMP) as part of its evaluation of the proposed Lake Powell Pipeline route in the Kanab Creek Area of Critical Environmental Concern (ACEC), located south of the Kaibab Paiute Reservation.

Approximately 1.5 miles of the proposed pipeline would run through the Kanab Creek ACEC, with a small portion (900 of 13,148 acres) affected. Of this, approximately 1.0 miles would be located within a designated utility corridor. The BLM must complete the RMP amendment in order to address planning inconsistencies between the proposed water pipeline route and the existing designated utility corridor.

We are committed to hearing from all area stakeholders about the use of public lands in their backyards, said Arizona Strip Field Manager Lorraine Christian. The BLM works with the public to determine responsible uses of working landscapes, such as this proposed water pipeline project, which has the potential to benefit local communities through improved infrastructure, job creation, and economic growth.

The Utah legislature passed the Lake Powell Pipeline Development Act in 2006. When completed the 140-mile-long pipeline is estimated to generate 300 megawatts of power and divert 82,249-acre feet of water from Lake Powell to Washington County and 4,000 acre-feet to Kane County annually. The Utah Division of Water Resources is the Lake Powell Pipeline Project proponent. The Federal Energy Regulatory Commission (FERC) is the lead agency to complete the Environmental Impact Statement for the pipeline project, and the BLM is a cooperating agency.

The BLM has scheduled public scoping meetings in communities near the Kanab Creek ACEC. During these meetings, the public can provide input to the BLM on relevant issues that will influence the scope of the environmental analysis, including alternatives, and help guide the planning process. In addition to the public scoping meetings, the BLM plans to host an Economic Strategies Workshop to provide an opportunity for regional businesses, governments, and community organizations to discuss regional economic and social conditions and trends related to the RMPA only.

The meetings are scheduled for the following dates, times and locations:

- Tuesday, July 17 from 5-8 p.m. Public scoping meeting at the Fredonia Elementary School Gym, 222 N. 200 E. Fredonia, AZ 86022
 - Wednesday, July 18 from 5-8 p.m. Public scoping meeting at the Dixie Center, 1835 S. Convention Center Drive St. George, UT 84790
 - Thursday, July 19 from 1-4 p.m. Economic Strategies Workshop at the Kaibab Village Community Center 2230 N. Pipe Spring Road, Fredonia, AZ 86022
- Comments may also be submitted via mail and email.

The comment period ends August 3, 2018, which is 15 days after the last public meeting as stated in the NOI.

Written comments may be mailed to BLM Arizona Strip Field Manager Lorraine Christian, Arizona Strip Field Office, at 345 East Riverside Drive, St. George, Utah 84790. Comments may also be faxed to Lorraine Christian at 435-688-3258 or emailed to:

BLM_AZ_ASFO_comments@blm.gov

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 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

New Mexico Unit of Central Arizona Project: Notice of Intent To Prepare an Environmental Impact Statement, Gila River and San Francisco River

JULY 09, 2018

BY JOHN WEISHEIT

NOTE: As of June 19, 2020, The New Mexico Interstate Stream Commission voted to discontinue the NEPA review of the NM Unit. Read the story from Silver City Daily Press [HERE](#).

On June 8th deadline, Living Rivers & Colorado Riverkeeper submitted the following [COMMENTS](#) to Reclamation for the Draft EIS on the NM Unit.

The website for the NEPA review of the NM Unit, is [HERE](#)

RECENT NEWS

- [2017, October - Still No Solid Plans For Gila River Diversion, Despite Millions Spent.](#) New Mexico Political Report.
- [2018, July - Arizonans Surprised by Gila Diversion Lack of Info.](#) Silver City Daily Press.
- [2018, July - Crowd Critiques Gila Diversion.](#) Silver City Daily Press.
- [2018, August - Amid Drought 50-year Old Rule Could Let New Mexico Use Arizona Water.](#) Arizona Republic.
- [2018, July - Gila Diversion Group Plans Scope, Seeks Power.](#) Silver City Daily Press.
- [2019, December - Feds Deny Extension for Gila Diversion Millions.](#) Silver City Daily Press.
- [2020, April - Plan calls for diverting, storing water from Gila River.](#) Associated Press.
- [2020, June - Interstate Stream Commission votes to stop work of Gila River diversion.](#) Silver City Daily Press.
- [2021, February - Gila diversion group asserts primacy as legislation threatens.](#) Geoffrey Plant, SCDP.

PREPARATION AND PUBLIC SCOPING OF EIS

Federal Register Notice is [HERE](#) & [archived here](#)

- Date of notice: 6/12/2018
- Scoping comments are due: extended to 7/20/2018

Mail comments to:

Phoenix Area Office, Bureau of Reclamation
(ATTN: NM Unit EIS)
6150 West Thunderbird Road, Glendale, Arizona 85306

Send Email comments to:

NMUnitEIS@empci.com
Subject line is: NM Unit EIS

For further information contact:

Mr. Sean Heath at (623) 7736250
Or email at NMUnitEIS@empci.com

DOCUMENT ARCHIVE (website)

- [Document archive for New Mexico Central Arizona Project Entity](#)

CONDITIONS of this EIS process:

- The Secretary must have issued in the Federal Register not later than December 31, 2019, a Record of Decision approving the project based on an environmental analysis required pursuant to applicable Federal law and on a demonstration that construction of a project for the New Mexico Unit that would deliver an average annual safe yield, based on a 50-year planning period, greater than 10,000 acre feet per year, would not cost more per acre foot of water diverted than a project sized to produce an average annual safe yield of 10,000 acre feet per year. If New Mexico exercises all reasonable efforts to obtain the issuance of such Record of Decision, but the Secretary is not able to issue such Record of Decision by December 31, 2019, for reasons outside the control of the State of New Mexico, the Secretary may extend the deadline for a reasonable period of time, not to extend beyond December 31, 2030.
- [2015 - Principles, Requirements and Guidelines for Federal Investments in Water Resources](#). CRS.
- [2018 - Project Confirmation Letter](#)
- [2018 - Project Summary OF Proposed Action2018](#)

STUDIES

- [1987 - Upper Gila Water Supply Study](#). USBR.

PUBLIC SCOPING DOCUMENTS

- [Scoping Report Ummary](#). USBR.
- [Scoping from Individuals](#)
- [Scoping from Agencies and Organizations](#)
- [Coalition letter with attachments](#)
- [Living Rivers & Center for Biological Diversity](#)

2020 DRAFT ENVIRONMENTAL IMPACT STUDY

- [Executive Summary](#)
 - [Volume One](#)
 - [Volume Two](#)
-

Proposal for Transfer of Federal Land Parcels in Uintah County to State of Utah

JULY 11, 2018

BY JOHN WEISHEIT

News Release

Vernal Field Office, Utah

Contact: Heather OHanlon

July 9, 2018

(801) 539-4129

Proposal for Transfer of Federal Land Parcels in Uintah County to State of Utah

Vernal, Utah School and Institutional Trust Lands Administration (SITLA) has requested title to 440 acres of federal parcels in T11S-R25E, Sections 5, 6, and 8 of Uintah County under the authorities of the Utah Enabling Act of July 16, 1894. Transfer of the parcel would fulfill the intent of the Utah enabling act to support the states schools through the land grant managed by the state.

The Bureau of Land Management, Vernal Field Office (VFO) has completed an Environment Analysis to analyze the transfer of these lands from BLM to State administration. A 30-day public comment period will open on July 9.

The parcel requested, both surface and subsurface, are isolated from other BLM lands, said Travis Kern, VFO Manager, so they are administratively difficult to manage by themselves, and are entirely surrounded by private lands.

The Environmental Assessments are available for review at the following ePlanning links: <http://go.usa.gov/xNwRJ>. Comments can be added by clicking the Documents tab, then click the Comment on Document button.

For additional information, please contact Stephanie Howard at 435-781-4469. Persons who use a telecommunications device for the deaf may call the Federal Relay Service (FRS) at 1-800- 877-8339 to leave a message or question for the above individual. The FRS is available 24 hours a day, seven days a week. Replies are provided during normal business hours.

Comments due August 9, 2018

DOCUMENT ARCHIVE

- [Comment Letter by Living Rivers et al.](#)
- [Comment letter by Earthjustice et al.](#)
- [BLM News Release](#)
- [BLM EA for Public Comment](#)
- [List of EA Preparers](#)

- [Geologic Assessment](#). Perkes.
-

Lake Powell Pipeline Permitting Process is Renewed

AUGUST 22, 2018

BY JOHN WEISHEIT

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

UPDATES: MARCH, 2019

- [March 20 - Green River Block Water Right Contract signed](#). St. George News.
- [March 21 - Green River Block Water Right Contract litigated](#). Associated Press.
- [March 21 - LLP Management Committee Presentation](#)

WHY IS THE LAKE POWELL PIPELINE PROJECT EVEN ON THE TABLE?

- Because growth drives the economy. Since it is impossible to exceed the speed limit of nature, this economic model eventually ends in failure. The transition to the replacement of this model is happening right now. We live in exciting times and it is imperative to pay attention.
- Even though actual wet water does not exist anymore in the Colorado River Basin, the Law of the River, as it is currently written, allows new diversions to occur (See [Upper Basin Depletion Schedule to Year 2060](#) in 2007 Interim Guidelines). Water management in the Colorado River basin has become a junk yard, pickup truck. It runs, but it ain't going beyond the horizon.
- It is totally reasonable to say: every proposed water project in the Colorado River Basin is a threat to the public interest. The regional mandate should be: we will fix this mess and do no more harm. Contrarily, the water managers continue to run on [auto-pilot](#) and continue to [make-things-up](#) as they roll along.
- What does exist are potential agreements between farmers and cities to exchange water with financial contracts, which will add to the total cost burden of any project, like the Lake Powell Pipeline. Meaningful discussions with the farmers have yet to occur.
- It is logical that such water transfer agreements should be secured before the actual construction of any project begins, because it remains uncertain if the farmers are even interested in participating. To restore the balance between demand and supply, about 2 million acre-feet is required.
- It is reasonable to assume that some farmers will negotiate a deal. However, most farmers will not negotiate a deal, because they have deep ethics about feeding the nation.

- The population increase projection of Washington County, Utah, is to Year 2060. This projection is completely tied to the promise of the [Upper Basin Depletion Schedule](#).
- This depletion schedule is tied to a document that is totally wrong, 2007 Interim Guidelines. It is wrong because new Drought Contingency Planning Documents are being developed to address the flaws of Interim Guidelines. Both documents expire at midnight on December 31, 2025.
- Indeed, time has proven that Interim Guidelines are flawed and, since they were inaugurated in December of 2007, and so is each and every proposed water project on the table. The Lake Powell Pipeline Project formally started in 2008.
- This mess is just getting more and more painful to watch.
- [Here is the most useful graphic from the Final EIS of 2007 Interim Guidelines](#). Colorado River System Simulation (CRSS); the baseline data is the hydrologic record of the 20th century; three traces juxtaposed with the 10th, 50th and 90th percentiles, under No Action Alternative (business-as-usual) and to Year 2060. System failure, due to empty reservoirs for multiple-years will eventually happen, as will full reservoir recovery, when the epic snowmelt finally arrives. The management of the hydrologic extremes is the imperative for dam operations, not the statistical norm. Until full adaptation to this hydrologic imperative is accomplished, the system will fail long before sediment fill compromises water storage and flood control. Interim Guidelines will be replaced before December 31, 2025. If the replacement document is more of the same, the Reclamation Era ends and its place in history will be bookmarked as a complete failure.

###

Public comments to UBWR's response (next headings) are due March 11, 2019; [FERC notice](#).

DOCUMENTS OF CITIZENS AND AGENCIES. In response to response of UBWR.

- [Western Resource Advocates: Comments of response with exhibits](#).

DOCUMENTS OF UTAH WATER RESOURCES BOARD (UBRW). Response to Citizens and Agencies.

- The subsequent 45-day response period deadline is January 3, 2019
- The Utah Water Resources Board requested an extension of time and their report was formally transmitted on January 18, 2019.
- [All documents combined](#)
- [Reply of UWRB](#)
- [Attachment A](#)
- [Attachment B \(1 of 3\)](#)
- [Attachment B \(2 of 3; Maps\)](#)
- [Attachment B \(3 of 3\)](#)
- [Attachment C](#)
- [Attachment D](#)

- [Attachment E](#)
- [Attachment F](#)
- [Attachment G](#)

PUBLIC LETTERS SUBMITTED FOR THE DEADLINE OF 11/19/18. Read FERC's Order [here](#).

- [Living Rivers](#)
- [Conserve Southern Utah](#)
- [Kaibab Band of Paiute Indians](#)
- [Southern Ute Tribe](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [American Rivers](#)
- [State of Colorado](#)
- [Western Resource Advocates](#)
- [Motion to Intervene: Colorado River Water Conservancy District](#)
- [Mr. Howard](#)
- [Motion to Intervene: Las Vegas Paiute Tribe](#)
- [Motion to Intervene: Pinal County](#)
- [Save The Colorado](#)
- [Utah Rivers Council](#)
- [Motion to Intervene: Sierra Club: Utah Chapter](#)
- [Motion to Intervene: Great Basin Water Network](#)

SUPPLEMENTAL INFORMATION

- [US Army Corps of Engineers](#)
- [Office of Environmental Policy and Compliance](#). DOI.
- [Center for Biological Diversity](#)

To comment, citizens can visit:

- <http://ferc.gov/docs-filing/efiling.asp>
- The project number is P-12966-000

If you need information to help with your comment, go to:

- <http://conserveswu.org/>

When you're ready to submit, here's how to submit a Lake Powell Pipeline comment to FERC:

- Go to ferc.gov/docs-filing/efiling.asp
- Click the orange eRegister button.

- Fill out your personal information, including an email address (which serves as your username), and create a password.
- At the bottom, select Next by the sentence that begins Proceed to full registration.
- As prompted, fill out your address information and another company contact (or file as a private individual), and click on Done.
- FERC will send an email from eRegistrationProd@ferc.gov to the email address provided.
- In the email from FERC, click the link that reads to confirm your email address and complete your registration to complete the registration and take you back to FERCs online portal.
- Below your personal information and under the Enter Docket box, type in P-12966-000 (the Lake Powell Pipelines docket number).
- Click the blue plus sign to the right of the first entry that shows up (Application for a Preliminary Permit for the Lake Powell Pipeline Project. RM).
- Add a comment (fewer than 6,000 characters) in the box directly below (to right of Comment).
- Select Send Comment to submit.

If this is all too confusing, just type, print and mail your comments to the following address:

Kimberly D. Bose, Secretary
 Federal Energy Regulatory Commission
 888 1st Street, N.E.
 Washington, D.C. 20426
 RE: P-12966-004

ADMINISTRATIVE RECORD: LAKE POWELL PIPELINE

CLICK HERE to visit the FERC document library for the complete administrative record of the Lake Powell Pipeline **The docket # is: P-12966.**

The docket is huge. You can reduce the query by selecting a subdocket, which are: 001; 002; 003; 004 & 005 (the files are in chronological order). You can also narrow the search by selecting a range of dates.

NEWS:

- 2018, October - [The Precarious Plan for the Lake Powell Pipeline](#). Emma Penrod for High Country News.
- 2018, October - [Probe Into Lake Powell Pipeline Project Continues, Public Comments Due](#). Rutherford.
- 2018, September - FERC decides to limit its jurisdiction to the hydropower generation component of the Lake Powell Pipeline. This means the other

components of the LPP Project will involve the jurisdictions of other federal agencies.

- Read FERC's Order [here](#).
- Read [this story](#) about FERC's decision by *The Associated Press*.

[CLICK HERE](#) to read about the suspension of the permitting process that began in December of 2017.

- [News clip](#) about request for reinstatement by Mori Kessler of St. George News

NEW DOCUMENTS SINCE DECEMBER SUSPENSION

- [August 22, 2018 - Letter from Utah Water Resources Board to FERC](#)
- [February 20, 2018 - Campaign for Accountability requests Utah Attorney General to investigate Representative Mike Noel for conflicts of interest regarding Lake Powell Pipeline](#)
- [August 23, 2018 - Utah Rivers Council posts this letter \(March 15, 2018\) on the FERC administrative website](#)
- [August 30, 2018 - Pinal County, Arizona, files as an intervenor against the Lake Powell Pipeline](#)

NEWS

- [National Ethics Group Calls For Investigation of Utah Rep. Noel Failing To Disclose Conflict.](#)
- [Utah Rep. Noel To Benefit Personally and Professionally From New Reduced GSENM Boundary.](#)
- [OpEd: Funding Lake Powell Pipeline Is Possible.](#)

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- May 06, 2008 - Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona
-

Water Quality and Limnology On the Colorado River

AUGUST 24, 2018
BY JOHN WEISHEIT

Photo caption: A spring in the upper Colorado River arm of Lake Powell. This spring has emissions of methane and hydrogen sulfide. Also note the white precipitates of unknown chemicals on exposed reservoir sediment.



WEBSITES

- [The Water Report](#). Water Rights, Water Quality and Water Solutions

NEWS

- [Groundwater Contamination at Wyoming Power Plants](#). Water and Wastes Management.
- [Nevada Must Take Environmental Protection Into Its Own Hands Now](#). Editorial Board Las Vegas Sun.
- [How Drought and Other Extremes Impact Water Pollution](#). Berkeley Lab.
- [Study Will Look at Mining Pollution at Lake Powell](#). Desert News.
- [Utah and Feds Study Lake Powell Pollution After Gold King Mine Spill](#). Associated Press.
- [Invitation to Reporters to View Sediment Core Collection at Lake Powell](#). USGS.

LEGISLATION

- [H.R. 1353 - Introduced by Representative Raul Grijalva in 2013](#)

ENVIRONMENTAL COMPLIANCE DOCUMENTS

- [1974 - DEIS for Las Vegas Wash/Bay Pollution Abatement Project](#). EPA.

WEBSITES

San Juan River And San Juan Arm of Lake Powell

- [San Juan Watershed Monitoring Program](#). EPA.
- [San Juan Watershed Project](#). Utah DWQ.
- [Lake Powell Coring Project](#). Utah DWQ.

Adaptive Management Program for Glen Canyon Dam

- [Working Group and Technical Working Group](#)

Lake Mead National Recreation Area

- [Long-term Limnological and Aquatic Resource Monitoring for Lakes Mead and Mohave Category 1](#)
- [Water Quality of Lake Mead](#)
- [A Synthesis Aquatic Science: Lake Mead and Lake Mojave](#). Rosen (USGS)

Glen Canyon National Recreation Area

- [Water Quality on Lake Powell](#)
- [2014 - Water Quality Monitoring for Escalante River and Coyote Gulch in GCNRA](#). Dryer.

Southern Nevada Water Authority

- [Lake Mead Water Quality](#)
- [Colorado River Water Quality](#)

DOCUMENTS

Lower Basin

- [1971 - Pollution Affecting Las Vegas Wash, Lake Mead and the Lower Colorado River](#). EPA.
- [1980 - Nutrient Interactions Reservoirs Colorado River](#). Paulson.
- [1981 - Chemical and Biological Structure of Lake Mead Sediments](#). Prentki.
- [1983 - Influence of Lake Powell Suspended Sediment-Phosphorus Dynamics, Colorado River Inflow Lake Mead](#). Evans.
- [2007 - Water Quality Constituents](#). USBR DEIS Interim Guidelines.
- [2015 - Mercury and Selenium Accumulation in Colorado River Food Web, Grand Canyon](#). Walters et al.
- [2018 - Conceptual and Numerical Models for Dissolved Solids, Colorado River, Hoover Dam to Imperial Dam & Appendix 01.xlsx & Appendix 02.xlsx](#)
- [2018 - Comprehensive Review of Fill Lake Mead First Initiative](#). Carey.

Upper Basin

- [Bibliography of Water Quality in the Upper Colorado River Basin](#). USGS.
- [1965 - Water Resources of the Upper Colorado River; \(archived\)](#). USGS.
- [1974 - Geochemistry of Lake Powell](#). Reynolds.
- [1975 - Mercury in the Lake Powell Ecosystem](#).
- [1975 - Bacterial Contaminations of Lake Powell Water: An Assessment of the Problem](#). Kidd.
- [1976 - The Effect of Lake Powell on Dissolved Silica Cycling in the Colorado River](#).
- [1978 - Analysis of Metallic Cations in the Lake Powell Ecosystem and Tributaries](#). Kidd.
- [1992 -Lake Powell Water Quality Report](#). Tinkler.
- [1996 - Physical and Chemical Characteristics of Lake Powell at the Forebay and Outflows of Glen Canyon Dam, Northeastern Arizona, 1990-91](#). Hart.
- [2005 - Sediment Chemistry of Colorado River at Delta of Lake Powell](#). Hart.
- [2014 - Colorado River Selenium Draft; App A; App B](#)
- [2015- Historical Physical and Chemical Data of Water at Lake Powell and Glen Canyon Dam Releases, 1964 to 2013](#). Vernieu.
- [2017 - Review of Salinity Control Program](#). Forum.
- [2018 -Temperature data for proposed temperature control device at Glen Canyon Dam](#). Adaptive Management Program.
- [2018 - San Juan Watershed Program; a Lake Powell sediment coring analysis](#). UDWQ.

SEDIMENT

See: Archive of sediment documents [HERE](#)

[1960 - Comprehensive study of Lake Mead sediment and hydrology](#). US Geological Survey and Bureau of Reclamation.

- [Table of Contents](#)
- [a. The Lake Mead Problem](#)
- [b. Organization of the Work & Equipment](#)
- [c. Geologic Setting of Lake Mead](#)
- [d. Drainage Basin Tributary to Lake Mead](#)
- [e. Precise Leveling](#)
- [f. Interpretation of the Precise Leveling](#)
- [g. Survey of the Lake](#)
- [h. Survey of Lower Granite Gorge](#)
- [i. Reservoir Storage](#)
- [j. Water Budget Mead Survey](#)
- [k. Character of the Flowing Water](#)
- [l. Chemistry of the Water](#)
- [m. Circulation & Evaporation](#)
- [n. Character of the Accumulated Sediment](#)
- [o. Bacteriology & BioChemistry of the Sediments](#)

- [p. Amount of Sediment](#)
- [q. Turbidity Currents](#)
- [r. Erosion of Reservoir](#)
- [s. Sedimentation in Relation to Reservoir Utilization](#)
- [t. Life of the Reservoir](#)
- [u. The Sediment Problem in Reservoirs](#)
- [v. Index](#)

DATA

- [Quality of Water Colorado River Basin. USGS.](#)

LEGAL REVIEWS

- [1989 - Water Quality and Water Rights in Colorado. MacDonnell.](#)
 - [1991 - Controlling Water Use: The Unfinished Business of Water QualityProtection. Getches.](#)
 - [1991- The Connection Between Water Quality and Water Quantity. Wilcher.](#)
-

Green River Block Environmental Assessment for a Federal Water Contract with Eastern Utah Counties

SEPTEMBER 18, 2018
BY JOHN WEISHEIT

UPDATES JULY 2023: Decision of the Federal Appellate Court in the 10th District

- [Majority Opinion](#)
- [Judge Timothy M. Tymkovich](#)
- [Judge Nancy Louise Moritz](#)
- [Minority Opinion](#)
- [Judge Veronica Sophia Rossman](#)
- [Amicus Brief](#)
- Uintah Ouray Ute Tribe

NEWS

- [2023 - 10th Circuit backs Green River Water Exchange Contract between federal government and Utah](#). By Amanda Pampuro for Courthouse News Service.
- [2022 - 10th Circuit probes Trump Era deal with Utah to exchange Green River water](#). By Amanda Pampuro for Courthouse News Service.

UPDATES: MARCH, 2019

- [March 20 - Green River Block Water Right Contract signed](#). St. George News.
- [March 21 - Green River Block Water Right Contract litigated](#). Associated Press.

Synopsis: A Federal contract with the state of Utah for Green River withdrawals via releases from Flaming Gorge Dam that total 72,641 acre-feet per year, and for the next 50-years, for the use of the eastern counties of Utah, including the counties that border the Colorado River and not the Green River.

THE COMMENT PERIOD HAS CLOSED: Here is the Final EA and FONSI

- [Final Environmental Assessment and Finding of No Significant Impact: Green River Block Water Exchange Contract](#); January, 2019. USBR
- [Appendix A \(CRSS Modeling\)](#)
- Trace 63 is a poor choice for worst-case scenario. [Review the results if Trace 21 were utilized instead.](#)

COMMENT LETTERS

- [Utah Rivers Council](#)
- [Conserve Southwest Utah](#)
- [Western Resource Advocates](#)
- [American Rivers](#)
- [Living Rivers, Colorado Riverkeeper, Center for Biological Diversity](#)
- [Uintah Ouray Utes](#)

COMMENT PERIOD HAS BEEN EXTENDED TO: November 2, 2018

ANNOUNCEMENT FROM RECLAMATION, as follows:

The Bureau of Reclamation has extended by two weeks the comment period on the draft Environmental Assessment for the Green River Block Water Exchange Contract. The document considers the possible impacts of the contract on the human and natural environment as required by the National Environmental Policy Act.

The water exchange contract, between Reclamation and the State of Utah, would facilitate the development of the Green River Block portion of the States Ultimate Phase water right. Releases from Flaming Gorge Dam could be altered to meet annual water demands under the exchange contract. However, operations of Flaming Gorge Dam would remain within the parameters analyzed in the 2005 Operation of Flaming Gorge Dam Final Environmental Impact Statement and established in the 2006 Record of Decision. The Green River Block water exchange contract is distinct and separate from the contract proposed for the Lake Powell Pipeline project.

Multiple resources were considered in the assessment, including the hydrology of the Green River, recreational opportunities, floodplains, fish and wildlife habitats, endangered species, among others. A draft version of the EA can be found at <https://www.usbr.gov/uc/envdocs/index.html>.

Stakeholder input is essential to the environmental review process members of the public are invited and encouraged to provide comment. Comments should be submitted by November 2, 2018 **via mail** (greenriverblock@usbr.gov) to Bureau of Reclamation, Attn: Jared Baxter, 302 E 1860 S, Provo, Utah 84606.

###

ORIGINAL COMMENT PERIOD WAS: Octobe 19, 2018

ANNOUNCEMENT FROM RECLAMATION, as follows:

Dear Interested Persons,

On September 26, 2018 the Bureau of Reclamation will hold a public meeting in Vernal, Utah to solicit comments regarding the environmental impacts of the Green River Block

water exchange contract. This contract, between Reclamation and the State of Utah, would facilitate the development of the Green River Block portion of the States Ultimate Phase water right. Releases from Flaming Gorge Dam could be altered to meet annual water demands under the exchange contract. However, operations of Flaming Gorge Dam would remain within the parameters analyzed in the 2005 Operations of Flaming Gorge Dam Final Environmental Impact Statement and established in the 2006 Record of Decision. The Green River Block water exchange contract is distinct and separate from the contract proposed for the Lake Powell Pipeline project.

Reclamation has developed an Environmental Assessment (EA) that considers the possible impacts of the contract on the human and natural environment. Multiple resources were considered in the assessment, including the hydrology of the Green River, recreational opportunities, floodplains, fish and wildlife habitats, endangered species, among others. A draft version of the EA can be found at <https://www.usbr.gov/uc/envdocs/index.html>. (Internet Explorer may be best for viewing the document.) The EA is also attached to this email for your convenience.

Stakeholder input is essential to the environmental review process members of the public are invited and encouraged to provide comment.

COMMENTS CAN BE SUBMITTED BY EMAIL BY OCTOBER 19, 2018, to:

- greenriverblock@usbr.gov by October 19, 2018

OR IN-PERSON AT THE PUBLIC MEETING, held on:

- September 26, 2018
- From 6-8pm
- Vernal City Hall
- 374 E Main St., Vernal, Utah 84078

Sincerely,
Bureau of Reclamation
Provo Area Office

- [Draft EA for Green River Block](#). Reclamation.

###

DOCUMENTS: EXCHANGE CONTRACTS FOR LAKE POWELL PIPELINE & GREEN RIVER BLOCK

- [2017 - Green River Exchange Contract for Lake Powell Pipeline](#). Reclamation.
- [2018 - Fact sheet for Lake Powell Pipeline Exchange Contract](#). Reclamation.
- [2017 - Green River Block Exchange Contract](#). Reclamation.
- [Contract Comments](#). Conserve Southwest Utah.
- [Contract Comments](#). Living Rivers & Colorado Riverkeeper.

2019 GREEN RIVER PUMPING PROJECT

- [Reclamation Project Website](#)
- [Final EA and BA and FONSI](#). Reclamation.

- [Biological Opinion](#). USFWS.
- [Appendices](#)
- [Figures](#)
- [Letter from Living Rivers and Center for Biological Diversity](#)

DATA FOR COLORADO RIVER SIMULATION SYSTEM

- [CRSS data for Flaming Gorge Dam](#). Spreadsheet.

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
- June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
- December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
- March 21, 2011 - [Lake Powell Pipeline Documents](#)
- June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
- May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)

Fontenelle Dam and Reservoir

OCTOBER 12, 2018
BY JOHN WEISHEIT

The small volume reservoirs that immediately capture the run-off from the melting snow fields of the Rocky Mountains are earthen dams with inadequate spillway capacities. The advancements made in the study of paleoflood hydrology in the last 40-years indicate that our understanding of flood events, in every watershed on this planet, are grossly misunderstood. For the Colorado River Basin we now understand that maximum flood volumes are typically 3 times greater than the original assessments made in the 20th century, and developed to provide a determination of the magnitude and frequency for an assumed probable maximum flood event, and to then design a functional dam that could safely bypass such volumes.

In 1983, the integrity of Fontenelle Dam was compromised by a large snow melt that had a volume below the presumed yield of an 100-year flood event. Even the concrete dams embedded in the bedrock canyons of the Colorado River had difficulties bypassing this snowmelt. So what happens when a real 100-year flood event occurs? Will these earthen dams placed immediately below the perched snow fields of the Rockies function safely, or not? What about the assumed 500-year flood event, which is layered with five 100-year flood events in between. When does the five-hundred year flood arrive? Can this event even be forecasted so that dam managers can prepare? To find out please visit the section called [Floods](#), in the Resource Section of this website.

- [Fontenelle Dam Incident](#). BoR.
- [Watching Fontenelle Dam Anxiety Rising With Water](#). 1986 - LA Times.
- [Wyoming Seeks US Help To Repair Leaky Dam](#). 1986 - NY Times.
- [The Fontenelle Dam Incident: The Investigation](#). 2011.
- [Fontenelle Dam: Chapter 3](#).
- [Program Revisiting the Race to Save Fontenelle Dam](#).
- [Seedskadee Project History](#). 1997 - USBR.
- [Green River Could Boost Industrial Complex Dream](#).

Some history from John Shields, USBR
From: John Fleck's Ink Stain Blog
June 26, 2015 at 11:57 am

HR 2273. Hearing held yesterday. Testimony by the Director of the Wyoming Water Development Commission is available at:

<http://naturalresources.house.gov/uploadedfiles/labondetestimony.pdf>

The need to add riprap is to simply allow the reservoir to be drawn down there are existing contracts for water supply out of Fontenelle that Wyoming would be unable to

service because the reservoir can not be drawn down. It was built as a diversion dam rather than as a water supply reservoir. More details below:

The water right for Fontenelle Reservoir indicates its primary purposes are irrigation, domestic, industrial, municipal, stockwatering, fish and wildlife and recreation; and when not required for the primary purposes, storage water can be used for power generation, the secondary purpose. However, the major existing benefits of Fontenelle Reservoir relate to industry.

The construction of Fontenelle Dam was completed in December, 1967, under water right Permit No. 6629 Res. Fontenelle Reservoir has a total capacity of 345,397 acre feet. Originally, only 190,250 acre feet was designated as active capacity for the above listed purposes and 154,584 acre feet was designated as inactive capacity. The remaining 563 acre feet was the designated dead storage, as it could not be physically released. In 1962, the State of Wyoming contracted with the Bureau of Reclamation for 60,000 acre feet of the active capacity for a price of \$900,000. This amount was loaned to the State of Wyoming at an interest rate of 2.632% at a term of 50 years, plus the state was obligated to share in the actual operation, maintenance and replacement costs for the facilities.

Originally, the purpose of the inactive capacity (154,584 acre feet) was to raise the reservoir surface to an elevation high enough to release water to the proposed East Side and West Side Canals. In 1973, it was apparent that the two canals would not be constructed. Therefore, an enlargement to the original permit was granted (Permit No. 9502). The enlargement served to move the previously designated inactive capacity to active capacity; thereby increasing the active capacity from 190,250 acre feet to 344,834 acre feet, which could be used for the permitted purposes, previously discussed. In 1974, the State of Wyoming again contracted with the Bureau of Reclamation for 60,000 additional acre feet of active capacity; thereby increasing its total interest in Fontenelle Reservoir to 120,000 acre feet. The price was \$11,410,000 for the additional 60,000 of active capacity, which was loaned to the State of Wyoming at an interest rate of 2.632% at a term of 40 years, plus the state was obligated to share in the actual operation, maintenance and replacement costs for the facilities.

In the 1974 contract, 5,000 acre feet was designated for the Seedskafee Wildlife Refuge. The United States reserved 65,000 acre feet of capacity for its uses, subject to provisions that the Bureau of Reclamation would not compete with the State of Wyoming in the water market. This contract also required the United States and State of Wyoming to ensure operations that would provide for the maintenance of 50 cfs in the Green River at the USGS streamgage near Green River, Wyoming.

Presently, the State of Wyoming, through the Wyoming Water Development Commission, has allocated 46,550 acre feet of its entitlements to Fontenelle water through the following water supply or readiness to serve contracts: Jim Bridger Power Plant (35,000 acre feet per year), FS Industries (10,000 acre feet per year), Church and Dwight (1,250 acre feet per year, and Exxon, USA (300 acre feet per year). The fact that

there is unused and unallocated water in Fontenelle Reservoir has caused some to question its value. Fontenelle Reservoir provides hydropower, recreational, and environmental benefits. Further, its present operation supplements natural flow in the Green River. In addition, it can be surmised that the availability of water in Fontenelle Reservoir, and Wyoming's entitlements in the reservoir, were key considerations in the siting of the Jim Bridger Power Plant and the chemical fertilizer plant presently owned and operated by FS Industries. In addition, and perhaps most importantly, it offers future economic development opportunities for the Green River Basin.

The Administrative Record of Interim Guidelines

OCTOBER 15, 2018
BY JOHN WEISHEIT

March 5, 2005

- [Federal Register: Review of Coordinated Long-range Operating Criteria](#)

April 18, 2005 - Letter from the Upper Basin States to the Secretary of Interior

- [Lake Powell Water Releases](#)

May 2, 2005 - Mid-Year Review of Annual Operating Plan

- [Department of the Interior Decision for 2005 Annual Operating Plan Mid-Year Review](#)
- [Powerpoint Presentation](#)
- [Press Release: Department of the Interior](#)
- LETTERS, as follows:
- [Arizona](#). Lynch.
- [Colorado](#). Owens.
- [Colorado](#). Water Boards.
- [CREDA](#). James.
- [LMNRA](#). Dickenson.
- [Lower Basin](#). Commissioners.
- [Nevada](#). Davenport.
- [NPS](#). Henderson.
- [UCRC](#). Ostler.
- [Upper Basin](#). Commissioners.
- [Utah](#). Hunstsman.
- [Wyoming](#). Freundenthal.

June 9, 2005

- [News: Associated Press](#)

June 15, 2005

- [Federal Register Notice \(Vol.70, No.114\)](#)

June 15, 2005

- [Press Release: Reclamation](#)

June 16, 2005

- [News: Rocky Mountain News](#)

July 18, 2005

- [Conservation Before Shortage: a proposal by national conservation organizations](#)

July 18, 2005

- [Press Release: Environmental Defense](#)

July 22, 2005

- [Press Release: Reclamation](#)

July 25, 2005

- [The One-Dam Solution: A Preliminary report by Living Rivers and 144 non-profit organizations](#)

July 25, 2005

- [Press Release: Living Rivers](#)

July 25, 2005

- [News: Las Vegas Sun](#)

July 26 & 28, 2005

- [Reclamation: public meeting presentation](#)

July 26, 2005

- [News: Las Vegas Review Journal](#)

July 29, 2005

- [News: Salt Lake Tribune](#)

July 30, 2000

- [News: Santa Fe New Mexican](#)

August 25, 2005

- [News: Arizona Republic](#)

September 20, 2005

- [News: Las Vegas Review Journal](#)

September 30, 2005

- [Federal Register Notice \(Vol.70, No.189\)](#)

September 30, 2005

- [Press Release: Reclamation](#)

October, 2005

- [Reclamation: Fact Sheet](#)

November, 2005

- [Reclamation: Public Meeting Presentation](#)

February 01, 2006

- [News: Las Vegas Review Journal](#)

February 6, 2006

- [Basin States Transmittal Letter](#)
- [Basin States Preliminary Letter](#)
- [Basin States Draft Agreement](#)

February, 2006

- [Reclamation: Fact Sheet](#)

March 7, 2006

- [Reclamation's Public Involvement Plan](#)

March 2006

- [Press Release: Reclamation](#)

March, 2006

- [Scoping Summary Report](#)

March 31, 2006

- [Federal Register Notice \(Vol. 71, No. 62\)](#)

June, 2006

- [Reclamation: Fact Sheet](#)

July 7, 2006

- [Conservation Before Shortage II: a revised proposal by national conservation organizations](#)
- [Letter to the Secretary of the Interior](#)
- [Attachment A: Original Proposal](#)
- [Attachment B: Taking ICS to Mexico](#)

July 13, 2006**Draft Alternatives Summary**

- [Table 1: Matrix of Draft Alternatives](#)
- [Table 2: Lake Mead Operational Diagram](#)
- [Table 3: Lake Powell Operational Diagram](#)

September 18, 2006

- [Reclamation: Change of EIS Schedule](#)

February 28, 2007

- [Draft Environmental Impact Statement](#)

February 28, 2007

- [Press Release: Reclamation](#)

February 28, 2007

- [Federal Register Notice \(Vol. 72, No. 39\)](#)

February, 2007

- [Reclamation Fact Sheet](#)

March, 2007

- [Reclamation Modeling Workshop Presentation](#)

April, 2007

- [Reclamation: DEIS public meeting presentation](#)

April, 2007

- [DEIS public meeting participants](#)

May 4, 2007

- [DEIS public comments](#)

June 15, 2007

- [Preferred Alternative Summary](#)
- [Table 1: Matrix of Alternatives](#)
- [Table 3: Lake Mead Operational Diagram](#)
- [Table 2: Lake Powell Operational Diagram](#)

June 18, 2007

- [Press Release: Reclamation](#)

October, 2007 - Reclamation releases the Final EIS

- [Official website](#). Reclamation.
- [Shortage FEIS complete](#)
- [Appendix N: Analysis of Hydrologic Variability Sensitivity](#)
- [Appendix U: Climate Technical Work Group Report](#)

December 10, 2007

- [Updated Draft Guidelines of December 10, 2007](#)
- [Section 7 only](#) - (pages 34-36)

December 13, 2007

- The Record of Decision for Interim Guidelines is signed by Interior Secretary Kempthorne and the seven states of the Colorado River basin at Caesar's Palace in Las Vegas.
- [Click here](#) to read the Record of Decision.
- [Shortage FEIS \(complete record\)](#)
- [Click here](#) for the Biological Opinion.
- [Click here](#) for coverage in the Arizona Republic ([archived](#)).
- [Click here](#) for coverage in the New York Times ([archived](#)).

February 12, 2008

- [Scripps release paper called "When Will Lake Mead Go Dry?"](#)
- [Officials declare "Lake Mead will not go dry."](#)

March, 2008

- [Study of long-term augmentation options for the water supply of the Colorado River system](#). CH2MHill and the Southern Nevada Water Authority.

December 18, 2020 - 7.D. Review of Interim Guidelines

- [7.D. Review Report](#)

CONCLUSION

- [The most useful graphic from the Final EIS of 2007 Interim Guidelines](#). Lake Mead scenarios that seriously challenge hydropower operations: Colorado River System Simulation (CRSS); baseline data is the hydrologic record of the 20th century; three traces juxtaposed with the 10th, 50th and 90th percentiles, under No Action Alternative (business-as-usual) and to Year 2060. Here is the [Lake Powell graphic](#) which indicate a range of scenarios from serious challenges for flood control to curtailments of hydropower. A system failure will eventually happen long before sediment fill compromises water storage and flood control. The management of the hydrologic extremes is the imperative for dam operations, not the statistical norm. Until full adaptation to this imperative is accomplished, the system will be compromised. Interim guidelines is scheduled to be replaced before December 31, 2025. If the replacement document is more of the same, the Reclamation Era ends and its place in history will be bookmarked as an unsuccessful social experiment.

USEFUL GRAPHICS

- [Upper Basin Depletion Schedule](#)
- [Table: shortage and surplus levels](#)
- [Shortage sharing for Arizona and Nevada](#)
- [Central Arizona Project Delivery Priorities](#)
- [Scenarios of Lake Mead levels: Trace 1, Trace 21 & Trace 48](#)
- [Scenarios of Lake Powell levels: Trace 1, Trace 21 & Trace 48](#)

ADDITIONAL RECLAMATION REFERENCE MATERIALS

- [Interim Surplus Criteria Final EIS](#)
- [Lower Colorado River Multi-Species Conservation Program Final Habitat Conservation Plan](#)
- [Lower Colorado Region Documents Archive](#)
- [Shortage FEIS complete](#)
- [Biological Opinion, Shortage Criteria](#)
- [Record of Decision, Shortage Criteria](#)

INSTRUMENT GAGE STREAMFLOW DATA

- [Reclamation's instrument data from 1906 to 2004](#)
- [US Geological Survey's instrument data starting in 1896](#)

PALEO STREAMFLOW DATA

- [Stockton & Jacoby](#)
- [Michaelsen](#)
- [Hidalgo](#)
- [Woodhouse](#)
- [Meko 762-2005](#)
- Tree-ring record by century & in million acre-feet from David Meko (data): 8th (partial); 9th; 10th; 11th; 12th (MegaDrought); 13th; 14th; 15th; 16th; 17th; 18th; 19th; 20th;

RESERVOIR DATA

- [Elevation Storage and Surface Area Relationships](#)
- [Evaporation Coefficients](#)
- [Flow below Hoover Dam](#)
- [CRSS data for Flaming Gorge Dam](#). Spreadsheet.

HISTORIC TEMPERATURE DATA

- [Historic Temperature Data](#)

ADDITIONAL INFORMATION

- [1965 - Tipton Report: Streamflow study for the Upper Colorado River Commission](#)

REFERENCES

- [1\) Barnett 2004](#)
 - [2\) Cayan 2001](#)
 - [3\) Christensen 2004](#)
 - [4\) Christensen Lettenmaier 2007](#)
 - [5\) Dawdy 1991](#)
 - [6\) Gray 2003](#)
 - [7\) Herweijer 2007f](#)
 - [8\) Hidalgo 2000](#)
 - [9\) Hidalgo 2004](#)
 - [10\) Hoerling 2007](#)
 - [11\) McCabe 2007](#)
 - [12\) McCabe Clark 2005](#)
 - [13\) Miller 1997](#)
 - [14\) Milly 2005](#)
 - [15\) Mote 2005](#)
 - [16\) National Academy of Sciences 2007](#)
 - [17\) Nash Gleick 1993](#)
 - [18\) Piechota 2004](#)
 - [19\) Piechota 2004 Eos](#)
 - [20\) Stewart 2003](#)
 - [21\) Stockton Jacoby 1976](#)
 - [22\) Tootle 2006](#)
 - [23\) Webb 2005](#)
 - [24\) Woodhouse 2003](#)
 - [25\) Woodhouse Gray Meko 2006](#)
 - [26\) Woodhouse 2005](#)
-

Compilation of Graphics about Colorado River Resources and its Management

OCTOBER 16, 2018
BY JOHN WEISHEIT

Supply and Demand

- [Supply & Demand Comparison of Colorado River Basin. 1923 to 2016.](#)
- [Upper Basin consumptive use percentages](#)
- [Upper Basin percentages adjusted for 20% reduction in supply](#)

Streamflow

- [Decline of the 30-year Mean of Unregulated Flows into Lake Powell](#)
- [Unregulated FLOW Into Lake Powell \(2000 to 2016\)](#)
- [Annual yield summary of Colorado River](#)
- [Lake Powell Inflow and Glen Canyon Dam Outflow, 2000 to 2016](#)
- [Lake Powell Inflow 1964 to 2009](#)
- [Natural flow in various watersheds of the Colorado River Basin in MAF.](#)
- [Comparing "Critical Periods:" 1953 - 1964 & 2000 - 2013](#)
- [Natural flow @ strategic USGS gages](#)
- [100-year trend of Colorado River annual flow](#)
- [Instrument data \(1906-2008\) of natural flow @ Lee's Ferry](#)
- [Natural flow last 50 years](#)
- Tree-ring record by century & in million acre-feet from David Meko (data): 8th (partial); 9th; 10th; 11th; 12th (MegaDrought); 13th; 14th; 15th; 16th; 17th; 18th; 19th; 20th;

Flooding

- [Flood peaks for 100-yr, 500-yr, 1000-yr & probable maximum in CFS](#)
- [Magnitude of paleofloods \(Paleoflood reserach & documents\)](#)
- [Photo of slackwater deposits with legend. Moab site.](#)
- [Photo of slackwater deposits with legend of flow in cubic meters per second. Moab site.](#)
- [Graphics of slackwater deposits; 3 pages: OSL dates, cross-sections and river profile. Moab site.](#)
- [Timescale of Atmospheric River Events in Central Valley, CA](#)
- [Graphic designer's conceptual image of 1 million cubic feet per second flowing over the crest of Hoover Dam after Glen Canyon Dam failure.](#)

Hydropower

- [Glen Canyon Dam powerplant capacity and output by reservoir elevation. Argonne.](#)
- [Annual hydropower production of Colorado River](#)
- [Electricity use per capita, per state](#)
- [Reservoir Elevation and Efficiency at Hoover Dam and Glen Canyon Dam](#)

Sediment

- [Annual sediment inventory of Colorado River](#)
- [Colorado River sediment fill at Hite Marina, Lake Powell](#)
- [Lake Powell delta: river mobilization of sediment amounts 2002-2004](#)

Evaporation

- [Colorado River Basin Evaporation. 1971 to 2007 averaged.](#)

Glen Canyon Dam Operations

- [Annual Average Release From Glen Canyon Dam](#)
- [Grand Canyon beach erosion from Glen Canyon Dam operations](#)
- [Flow regime in Grand Canyon 1964-1965 \(sediment scour event\)](#)
- [Leakage At Glen Canyon Dam](#)

Lake Powell Elevations

- [Glen Canyon Dam @ dead pool](#)
- [Glen Canyon Dam @ minimum power pool](#)
- [Lake Powell Reservoir Contents By Percentage](#)

Hoover Dam Operations

- [Historic flow at Hoover Dam Site 1906 to 2013](#)
- [Comparing Reclamation modeling for Lake Mead with actuals](#)

Lake Mead Elevations

- [Strategic reservoir elevations @ Hoover Dam intake towers](#)
- [Lake Mead sediment storage according to pool](#)

Colorado River Augmentation

- [World desalination capacity compared to Colorado River flow](#)

Other

- [Beetle stress on tamarisk along river corridor near Moab, Utah](#)
- [Rivers, dams, reservoirs & hydropower](#)
- [Free-flowing river miles between dams](#)
- [Evaporation Lakes Powell & Mead by second, minute, day and year.](#)

Photos

- [Photo below Glen Canyon Dam](#). Credit John Weisheit.
- [Photo Hoover Dam & Lake Mead at elev. 1100](#). Credit John Weisheit.
- [Photo Hoover Dam & Lake Mead at elev. 1073](#). Credit John Weisheit.

ARIZONA DEPARTMENT OF WATER RESOURCES OR CAP

- [Shortage sharing in percent for lower basin](#)
- [Arizona & Nevads shortage budget](#)
- [CAP Delivery Priorities](#)
- [Projected Lake Mead Elevation by 2019 at 8.23 Release](#). CAP.
- [Lake Mead Budget](#). CAP.
- [Arizona's Annual Water Budget](#)

BUREAU OF RECLAMATION

Temperature and Precipitation

- [CR basin temperatures 1895 - 2006](#)
- [UB Precipitation 1895 - 2006](#)
- [Temperature departures from 1895 - 2000 average](#)
- [Inflow of Lake Powell: breakdown by tributary](#)
- [Lake Powell Volume to Elevation Comparison](#)
- [Reservoir physical and biochemical processes](#)

Water Yield of Colorado River

- [Lower Basin Inflows from Glen Canyon to Hoover Dams](#)
- [Best available data as of 1922 Compact](#). Leopold and Prairie.
- [Natural flow @ Lee's Ferry 1896 to 1956](#). Leopold.
- [Instrument data \(1906-2008\) of natural flow @ Lee's Ferry](#). Prairie

- [Natural flow @ Lee's Ferry 1906 to 2010](#)
- [Basin hydrology](#)
- [Upper basin depletion schedule](#)
- [Lake Powell inflow since 2000](#)
- [Eleven-year inflow into Lake Powell](#)
- [Thirteen-year inflow into Lake Powell](#)

Flood Control

- [Minimum Required Colorado River System Storage Space](#)
- [Minimum Flood Control Releases at Hoover Dam](#)
- [Notable Floods above Hoover Dam](#)
- [Contents of major dams \(including dead pool capacity\) above Hoover](#)

Lake Powell or Glen Canyon Dam

- [54-year record of April to July unregulated flows into Lake Powell](#)
- ["Trace 96" - Modeling persistent drought to 2020](#)
- [GCD Steady Flows of Sept/Oct from 2000-2011](#)
- [GCD Annual Releases 1963 to 2011](#)
- [GCD Monthly and Annual Release Volumes 1970 to 1981](#)
- [Glen Canyon Dam important elevations](#)
- [Lake Powell operational tiers \(2007 ROD\)](#)
- [Lake Powell tier elevations in feet above sea level](#)
- [Lake Powell equalization tiers through 2026](#)
- [Lake Powell tiers in detail](#)
- [Important Elevations @ Glen Canyon Dam](#)
- [Schematic of penstock section @ Glen Canyon Dam](#)
- [Schematic of river outlets @ Glen Canyon Dam](#)
- [Schematic of spillway tunnel @ Glen Canyon Dam](#)
- [Schematic of the powerplant @ Glen Canyon Dam](#)
- [1982 - Range of powerplant efficiency with reservoir elevation](#)
- [1982 - Probabilities of Lake Powell Elevations \(to 2040\)](#)
- [1983 - Photo of "river left" spillway damage](#)
- [Photo of GC Dam penstock intakes](#)
- [Photo 01 of Penstocks & River Outlets before reservoir filling](#)
- [Photo 02 of Penstocks & River Outlets before reservoir filling](#)

Lake Mead or Hoover Dam

- [Tributary inflow Lake Mead \(below Glen Canyon Dam\)](#)
- [Hoover Dam important elevations](#)
- [Lake Mead surplus trigger elevations](#)
- [Lake Mead tier elevations in feet above sea level](#)

- [Longitudinal profile of sediment storage](#)
- [Shortage/surplus tiers @ Lake Mead](#)
- [Lake Mead elevation archive 1935-2010](#)
- [Water budget at Lake Mead](#)
- [Photo of Hoover Dam intakes](#)

Lakes Powell and Mead

- [State of Colorado River system 1999 - 2008](#)
- [State of Storage 1999-2009](#)
- [Lake Mead & Powell operations: trigger elevations](#)
- [April 2010 - State of the system](#)

Basin State Allocations & Consumption

- [Acre-foot description](#)
- [Hydrological assumptions of 1922 Compact](#). CRWCD.
- [Apportionments for USA and Mexico](#). SNWA.
- [Pie Chart of seven state allocations](#)
- [Upper basin depletion schedule](#)
- [1906 to 2005 - Consumptive Use of Colorado River Basin](#)
- [Colorado River Basin historical supply and use](#)
- [Apportions according to various flow scenarios](#)
- [Colorado River flow at Gulf of California](#)
- [Upper Basin consumptive use](#). CADWES.

Basin Supply & Demand Study

- [Historical Supply and Demand to 2005](#)
- [Supply & Demand Projection to 2060](#)
- [Historic consumption by basin](#)
- [Historic consumption by category](#)
- [Consumption for both basins and Mexico, 1906 to 2005](#) (no evaporation)

Lower Basin

- [Map: dams and diversions](#)

Project Inventory

- [Contents of major dams \(including dead pool capacity\) above Hoover](#)
- [Statement of Commissioner Connor](#)

Western Region Projects and Power Transmission Lines

- [1977 - Map: Reclamation Power Facilities](#)
 - [1977 - Map: River Basins and Reservoirs](#)
-

CALIFORNIA'S COLORADO RIVER BOARD

- [Monthly total Colorado River basin storage](#)

METROPOLITAN WATER DISTRICT of Southern California

- [MWD reservoir storage](#)
 - [MWD's 2014 Estimate of Colorado River Diversions](#)
-

COLORADO DEPARTMENT OF NATURAL RESOURCES ([archive](#))

- [Colorado's Transbasin Diversions](#)
 - [Colorado River annual yield at Lee's Ferry](#)
 - [Lake Powell inflow & release](#)
 - [Powell storage](#)
 - [Salinity chart](#)
 - [Lake Mead storage](#)
 - [Hoover flows](#)
 - [Estimated virgin flow at Lee's Ferry 1896 to 2004](#)
 - [Tree ring inflow at Lee's Ferry](#)
 - [Map of trans-mountain diversions and amounts](#)
 - [Map of tran-basin diversions and amounts](#)
-

DROUGHT & PERSISTENT DRYING

- [1935 & 1956 PDSI](#). Woodhouse and Overpeck.
 - [10-year periods of wide-spread drought in USA](#). Woodhouse.
 - [PDO and AMO influences on drought frequency](#). USGS.
 - [20th century river flow with drought periods highlighted](#). USGS.
 - [Global indicators of warming](#). Western Water Assessment.
 - [Colorado temperature projections](#). Western Water Assessment.
 - [Palmer Drought Severity Index for year 2006 to 2060](#). Western Water Assessment.
 - [Temperature departures from 1895 - 2000 average](#). Reclamation
 - [UB Precipitation 1895 - 2006](#). Reclamation.
 - [Drought in California: 2000 to 2014](#)
-

ENSO

- [Oceanic Nino Index 1950 - 2015](#)
 - [AMO and PDO since 1895; also here.](#)
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MAPS

- [Map: Colorado River Service Areas \(high resolution\)](#). Reclamation.
 - [Map of Colorado River Indian Tribes](#). Pontius.
 - [Colorado River basin map](#). Pacific Institute.
 - [Colorado River basin map](#). Wikipedia.
 - [Colorado River basin map](#) . Colorado Dept. Natural Resources.
 - [Map: dams and diversions](#) . Reclamation.
 - [Geophysical provinces of the Colorado Plateau](#). USGS.
 - [Southern California aqueduct system](#)
 - [Water service districts of California](#)
 - [Colorado River Map 01](#). National Geographic.
 - [Colorado River Map 02](#). National Geographic.
 - [The Plumbing System](#). High Country News.
 - [San Juan River Basin](#).
 - [San Juan River Diversions](#)
 - [Upper Colorado River Basin](#).
 - [Upper Basin satellite image](#)
 - [Watershed boundaries in the arid lands](#). Powell Survey.
 - [1928 - Colorado River Proposed Projects](#)
 - [Colorado River basin](#). USGS.
 - [Map: dams and diversions lower basin](#)
 - [Map of transmountain diversions](#)
 - [Upper Green River](#) (12 dams)
 - [Upper Colorado River \(Yampa & White\)](#) (17 dams)
 - [Gunnison & Dolores rivers](#) (11 dams)
 - [San Juan River](#) (5 dams)
 - [Central Utah](#) (11 dams)
 - [Central Utah Project](#)
 - [Nevada, SW Utah and NW Arizona](#)
 - [Salt River Project Service Area](#)
-

NATURAL RESOURCES CONSERVATION SERVICES

- [Snowpack GIS](#)
 - [Snowpack of western region](#)
 - [Snowpack of Colorado River Basin](#)
 - [FTP site](#)
-

SOUTHERN NEVADA WATER AUTHORITY

- [Ten year average flow 2000 - 2009 \(Reclamation graphic\)](#)
 - [Fact sheet of basin](#)
-

US GEOLOGICAL SURVEY

- [Colorado River basin fact sheet](#)
 - [Lake Mead dead pool sediment thickness \(cache\)](#)
 - [Colorado River flow trend @ Lee's Ferry](#)
 - [Lake Powell stratification profile and temperature](#)
 - [Lake Powell dissolved oxygen concentrations](#)
 - [1997 to 2008 power generation@ Glen Canyon Dam](#)
 - [Water per capita use in the Intermountain West](#)
 - [AMO and PDO since 1895; also here.](#)
-

OTHER

Dams

- [List of dams in Colorado River Basin](#). Wikipedia.
- [Schematic of Hoover dam showing water capacity by percent](#). Rogers.

Delta

- [Delta historic flows from 1910 to 2000](#)

Drought

- [21 centuries of drought in New Mexico](#). (graphic). New York Times.

Storage

- [1500 - 2005 North American Drought Atlas](#). Cook et al.
- [Storage of Lakes Powell & Mead & combined](#)
- [Lake Mead storage](#)

Flow

- [Lee's Ferry gage \(annual water yield\)](#)
- [Colorado Basin net flow balance](#). CADWES.

Consumptive use

- [Lower Basin Present Perfected Rights](#) (senior water rights)
- [Upper Basin Present Perfected Rights](#). Kuhn, 2012.
- [Historic Consumptive Use and Supply \(1922-2002\)](#). Lochhead, 2003.
- [Upper Basin consumptive use](#). CADWES.
- [Projected Upper Basin consumption](#). Doug Kenney.
- [2012 - Consumptive use in both basins](#). Kuhn.

Energy

- [Pie chart of energy production USA](#)
- [Electric generating stations](#). WECC.

Run-off

- [Percent runoff Upper Colorado sub-basins](#). Western Water Assessment.
- [Percent runoff Upper Colorado by elevation](#). WWA.

Temperature

- [Temperatures at Phoenix Sky Harbor Airport](#). ASU.

Sediment

- [Cross section of sediment accumulation at San Juan Arm](#) (Lake Powell). Stevenson.

Uranium

- [Western Colorado uranium mill sites](#). Denver Post.
 - [Uranium production worldwide in 2009](#)
 - [Uranium claims in Grand Canyon watershed](#)
-

The Water Rights of Central Utah Project, including Ultimate Phase

OCTOBER 22, 2018
BY JOHN WEISHEIT

[Home Page](#) - Water right records in Utah are online at the website of Utah Division of Water Rights; also known as the office of the State Engineer, a position held by Mr. Kent Jones

[Search Engines](#) - There are various ways to search for the administrative records of all water rights in the state of Utah. The search engine for water rights by number is located [here](#).

The hyperlinked web pages below have two tabs. The first (Home Display) is a description of the water right and the second tab (Scanned Documents) is an archive of the administrative record for this water right.

WATER RELEASES FROM FLAMING GORGE DAM or RESERVOIR DIVERSIONS

Ultimate Phase Water Rights, Green River water for Eastern Utah Counties. The exception is Washington County, which is actually in the Lower Basin of the Colorado River.

Lake Powell Pipeline: A proposed pipeline diversion from Lake Powell in Kane County to Washington County.

- [89-1559](#) - City of Saint George in Washington County
- [89-1525](#) - Washington County Water Conservancy District

UTAH BOARD OF WATER RESOURCES; GREEN RIVER; EASTERN COUNTIES

Note: Water Right #41-3479 is the water of the Green River Block Water Right Exchange Contract.

[41-3479](#) - UBWR for Daggett County

[41-3516](#) - UBWR assigned to Red Cut Water Company in Emery County

[41-3529](#) - UBWR for Daggett County

[41-3532](#) - UBWR for Daggett County

[49-1654](#) - UBWR for Uintah County

[89-1595](#) - UBWR for City of Tropic in Garfield County

[89-1614](#) - UBWR for Garfield County

[89-1616](#) - UBWR for Garfield County

[91-5075](#) - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County

[92-638](#) - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County

[92-656](#) - Chris Dunham in Grand County

93-3750 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County

Eastern Utah Counties

- 41-2963 - BoR in Daggett County
- 45-3489 - BoR in Uintah County (Jensen Unit)
- 41-3471 - BoR in Daggett County
- 41-3479 - UBWR for Daggett County

Segregated from 41-3479 - UBWR

- 41-3487 - Stock companies in Uintah County
- 92-622 - Green River Companies in Grand County
- 92-645 - SITLA in Grand County

Segregated from 92-645 - SITLA in Grand County

- 97-2132 - SITLA in Garfield County
- 92-646 - SITLA in Grand County
- 97-2312 - SITLA in Garfield County
- 49-1609 - Brent and KaLynn Sheffer Family Trust in Uintah County
- 49-1654 - UBWR in Uintah County
- 92-642 - City of Green River in Emery County
- 05-2992 - Wilson Arch Water & Sewer Special Service District in San Juan County
- 41-3516 - Assigned to Red Cut Water Company in Daggett County
- 89-1592 - UBWB for Town of Cannonville in Garfield County
- 89-1583 - Town of Canninville in Garfield County
- 97-2220 - UBWR for Town of Boulder in Garfield County
- 97-2214 - UBWR for Town of Escalante in Garfield County
- 05-3163 - Grand County Water Conservancy District
- 41-3523 - Uintah Water Conservancy District
- 41-3529 - UBWR for Daggett County

Segregated from 41-3529

- 41-3529 - UBWR for Daggett County
- 41-3530 - Duchesne County Water Conservancy District
- 41-3523 - Stock companies in Uintah County

Segregated from 92-638

- 92-638 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County
- 41-3532 - UBWR for Daggett County

Segregated from **89-1595**

- **89-1595** - UBWR for City of Tropic in Garfield County
- **41-3479** - UBWR for Daggett County
- **92-633** - Green River Companies in Grand County
- **97-2214** - UBWR for Town of Escalante in Garfield County
- **97-2280** - Garfield County School District

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
 - October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
 - September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
 - August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
 - June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
 - December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
 - March 21, 2011 - [Lake Powell Pipeline Documents](#)
 - June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

Army Corps of Engineers accepting public comments for Lake Powell Pipeline

JANUARY 07, 2019
BY JOHN WEISHEIT

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune
-

NEWS

- [Click here](#) to read this story by the *Associated Press*
- [Click here](#) to read the letter from the Army Corps of Engineers to Utah Division of Water Resources

COMMENT PERIOD IS CLOSED

Date of public notice: 12/18/2018

Deadline of public comments: Originally 1/21/2019 and then on 1/17/18 the deadline was extended to 2/18/19

- [Public Notice Website](#). Sacramento Office of the US Army Corps of Engineers (ACOE)
- [Letter of February 26, 2019](#). ACOE denied the request by commenters for public meetings.

COMMENT LETTERS

- [American Rivers](#)
- [Conserve Southwest Utah](#)
- [Living Rivers](#)
- [Utah Rivers Council](#)

SUBMITTING COMMENTS: Written comments, referencing Public Notice [SPK-2008-00354](#) must be submitted to the office listed below on or before February 18, 2019.

Matt Wilson, Project Manager
US Army Corps of Engineers, Sacramento District
Bountiful Regulatory Office
533 West 2600 South, Suite 150

Bountiful, Utah 84010-7744
(801)295-8380, ext. 8311
Email: Matthew.S.Wilson@usace.army.mil

UPDATED 1/17/19

SUBJECT: This public notice has been revised to extend the public comment period, to clarify which Agencies may require water quality certification, and to ensure a wider distribution of the public notice within the State of Arizona. No other aspects have changed.

The U.S. Army Corps of Engineers, Sacramento District, (Corps) is evaluating a permit application to construct the Lake Powell Pipeline project, which would result in impacts to approximately 10.54 acres / 51,636 linear feet of waters of the United States, including wetlands, in or adjacent to Lake Powell and the Virgin River. This notice is to inform interested parties of the proposed activity and to solicit comments.

AUTHORITY: This application is being evaluated under Section 10 of the Rivers and Harbors Act of 1899 for structures or work in or affecting navigable waters of the United States and Section 404 of the Clean Water Act for the discharge of dredged or fill material in waters of the United States.

APPLICANT: Utah Division of Water Resources, Attn: Mr. Eric Millis, 1594 West North Temple, Salt Lake City, Utah 84116

LOCATION: The approximately 150-mile-long project site is located in parts of Coconino and Mohave counties, Arizona, and Kane and Washington counties, Utah. The latitude/longitude of the approximate center of the pipeline alignment is 39.9892°N, -112.4276°W. The Lake Powell Intake would occur in Section 24, Township 41 North, Range 8 East of the Gila and Salt River Meridian, AZ. The terminal point of the pipeline at Sand Hollow Reservoir would occur in Section 30, Township 42 South, Range 13 West of the Salt Lake Meridian, UT. The project location can be seen on the Little Creek Mountain, The Divide, Smithsonian Butte, Lost Spring Mountain East, Colorado City, Maroney Well, Pipe Valley, Pipe Spring, Clear Water Spring, Shinarump Point, Muggins Flat, Johnson Lakes, Petrified Hollow, Pine Hollow Canyon, Eightmile Pass, Fivemile Valley, West Clark Bench, Bridger Point, Glen Canyon City, Lone Rock, Ferry Swale, and Page USGS Topographic Quadrangles.

PROJECT DESCRIPTION: The Lake Powell Pipeline (LPP) Project would deliver a portion of the State of Utah's Colorado River water from Lake Powell to the service areas of Washington County Water Conservancy District (WCWCD) and Kane County Water Conservancy District (KCWCD), and would include energy recovery through hydropower generation (Figure 1-1). The Applicants proposed project would include six lateral intake tunnels from Lake Powell, 140 miles of a 69-inch-diameter steel pipeline (starting at Lake Powell and terminating at Sand Hollow Reservoir), a forebay, an afterbay, hydro stations, booster pump stations, a regulating tank, and a power transmission line (including substations and switch stations). Based on the available

information, the overall project purpose is to construct a water conveyance and hydroelectric system spanning from Lake Powell's Glen Canyon Dam in Page, Arizona, to water storage facilities near St. George, Utah, to bring a necessary second source of water to Washington and Kane Counties to meet future water demands through 2060. The applicant believes that LPP will diversify the regional water supply portfolio and enhance its reliability, while also generating electric supplies. The LPP will supply up to 86,249 acre-feet of existing Colorado River water rights to Washington County (82,249 acre-feet) and Kane County (4,000 acre-feet), while supplying water to operate the proposed hydroelectric developments at multiple points along the pipeline. The applicant believes there is a need to bring a necessary second source of water to Washington and Kane Counties to meet future water demands through 2060 and to diversify the regional water supply portfolio and enhance its reliability, while also generating electric supplies. The attached drawings provide additional project details.

ADDITIONAL INFORMATION:

Environmental Setting. There are approximately 10.54 acres of ephemeral, intermittent, and perennial streams within the project area, as well as a small portion of Lake Powell. The site is characterized by Mojave Desert uplands that are drained by numerous ephemeral and washes. Several riparian areas also exist in the vicinity of the project, and support riparian vegetation such as saltcedar (*Tamarix ramosissima*), narrowleaf willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), Fremont cottonwood (*Populus fremontii*), rough cocklebur (*Xanthium strumarium*), and pale spikerush (*Eleocharis macrostachya*). One wetland area was identified in the project area.

Alternatives. The applicant has provided information concerning project alternatives, which are discussed in the attachments to this notice. Additional information concerning project alternatives may be available from the applicant or their agent. Other alternatives may develop during the review process for this permit application. All reasonable project alternatives, in particular those which may be less damaging to the aquatic environment, will be considered.

Mitigation. The Corps requires that applicants consider and use all reasonable and practical measures to avoid and minimize impacts to aquatic resources. If the applicant is unable to avoid or minimize all impacts, the Corps may require compensatory mitigation. The applicant has proposed to avoid any impacts to wetlands and implement construction best management practices, including minimizing clearing of riparian vegetation, working in dry or low-flow conditions, stockpile native substrates from impacted waters and restore temporarily impacted areas to approximate pre-project conditions wherever practicable. The applicants proposed mitigation for unavoidable impacts to approximately 4.21 acres/32,540 linear feet of dry ephemeral drainages that would be filled or flooded as a result of the project includes 1) conducting a functional assessment of the drainages that would be lost and ensuring that the forebay and afterbay would provide some replacement functions, 2) establishment and enhancement of riparian vegetation along the Virgin River, and 3) construction of

replacement ephemeral drainages.

OTHER GOVERNMENTAL AUTHORIZATIONS:

Water quality certification or a waiver, as required under Section 401 of the Clean Water Act, is required for this project. We anticipate that certification will be required from the Utah Division of Water Quality, the Arizona Department of Environmental Quality, and The U.S. Environmental Protection Agency (for activities on Tribal lands in Arizona). The applicant has not indicated they have applied for certification. Projects are usually certified where the project may create diffuse sources (non-point sources) of wastes which will occur only during the actual construction activity and where best management practices would be employed to minimize pollution effects.

Written comments on water quality certification in Utah should be submitted to:

Ms. Jodi Gardberg
Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Or email: jgardberg@utah.gov.

Written comments on water quality certification in Arizona should be submitted to:

Ms. Rosi Sherrill
Arizona Department of Environmental Quality
1110 West Washington Street
Phoenix, Arizona 85007

Or email:
Sherrill.Laurie@azdeq.gov

Written comments on water quality certification on Tribal lands in Arizona should be submitted to:

Mr. Joseph Morgan
U.S. Environmental Protection Agency
Water Division
75 Hawthorne Street
San Francisco, California 94105,

Or email: Morgan.Joseph@epa.gov

All comments should be submitted on or before February 18, 2019.

HISTORIC PROPERTIES: Potentially eligible cultural resources may be affected by the proposed project. The Corps has designated the Federal Energy Regulatory Commission (FERC) as lead Agency for Section 106 National Historic Preservation Act

compliance. Cultural resources coordination for the project are ongoing.

ENDANGERED SPECIES: The proposed activity may affect Federally-listed endangered or threatened species or their critical habitat. The Corps has designated FERC as lead Agency for Section 7 Endangered Species Act compliance. As lead Agency, FERC is consulting with the U.S. Fish and Wildlife Service for Endangered Species Act compliance.

ESSENTIAL FISH HABITAT: The proposed project would not adversely affect Essential Fish Habitat (EFH) as defined in the Magnuson-Stevens Fishery Conservation and Management Act.

The above determinations are based on information provided by the applicant and our preliminary review.

EVALUATION FACTORS: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the described activity will be considered, including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people. The activity's impact on the public interest will include application of the Section 404(b)(1) guidelines promulgated by the Administrator, Environmental Protection Agency (40 CFR Part 230). The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

SUBMITTING COMMENTS: Written comments, referencing Public Notice SPK-2008-00354 must be submitted to the office listed below on or before February 18, 2019.

Matt Wilson, Project Manager
US Army Corps of Engineers, Sacramento District
Bountiful Regulatory Office

533 West 2600 South, Suite 150
Bountiful, Utah 84010-7744
Email: Matthew.S.Wilson@usace.army.mil

The Corps is particularly interested in receiving comments related to the proposal's probable impacts on the affected aquatic environment and the secondary and cumulative effects. Anyone may request, in writing, that a public hearing be held to consider this application. Requests shall specifically state, with particularity, the reason(s) for holding a public hearing. If the Corps determines that the information received in response to this notice is inadequate for thorough evaluation, a public hearing may be warranted. If a public hearing is warranted, interested parties will be notified of the time, date, and location. Please note that all comment letters received are subject to release to the public through the Freedom of Information Act. If you have questions or need additional information please contact the applicant or Corps project manager Matt Wilson, (801) 295-8380, ext. 8311, Matthew.S.Wilson@usace.army.mil.

If you have questions or need additional information please contact the applicant or Corps project manager Matt Wilson, (801)295-8380, ext. 8311, Matthew.S.Wilson@usace.army.mil.

ATTACHMENTS

Revised Documents

- 1 - [Application Narrative](#)
- 2 - [Drawings](#)
- 3 - [Tables 1 to 3](#)

Old Documents

- 1 - [Application Narrative](#)
- 2 - [Drawings](#)
- 3 - [Tables 1 to 3](#)

ON THE COLORADO

Articles about the Lake Powell Pipeline

- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
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- May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)

Final Green and Colorado Comprehensive Management Plan Development and Mineral Leasing Plan

JUNE 26, 2019
BY JOHN WEISHEIT

Gray Canyon in the foreground and Desolation Canyon in the background; Green River.

Utah's Resource Development Coordinating Committee (RDCC) of the Public Lands Policy Coordination Office

- [Projects](#) (website & project search engine)

FINAL DOCUMENTS: RELEASED ON JANUARY 6, 2020

- [Public Postcard](#)
- [Record of Decision for Colorado River](#)
- [Record of Decision for Green & Colorado Rivers](#)
- [Comprehensive Management Plan and ROD for Colorado River](#)
- [Mineral Leasing Plan and ROD for Green & Colorado Rivers](#)
- [Comprehensive Management Plan for Colorado River](#)
- [Mineral Leasing Plan for Green & Colorado Rivers](#)

Green and Colorado Rivers Comprehensive Management Plans & Mineral Leasing Plan

- [Website for Green and Colorado CMP and MLP Project](#)

The Utah Division of Forestry, Fire and State Lands (FFSL) is developing the first comprehensive management plans (CMPs) for state-owned, sovereign land sections of the Colorado and Green Rivers, and updating the existing Mineral Leasing Plan (MLP) for these sovereign lands in Uintah, Grand, Emery, Wayne, Garfield, Kane, and San Juan Counties. Utah Admin Code R652-2-100 authorizes FFSL to prescribe land management objectives for sovereign lands. The beds of navigable waters within the state, including portions of the Green and Colorado River, are owned by the state but held in trust for the public. FFSL is required to ensure that all uses on, beneath, or above the bed of the Green and Colorado Rivers are regulated to ensure the protection of navigation, fish and wildlife habitat, aquatic beauty, public recreation and water quality. The development of a comprehensive management plan will help to ensure that FFSL maintains clear and consistent guidance regarding the management of the Green and Colorado River resources. The development of a specific minerals resource management plan will allow FFSL to implement detailed guidelines on resource development on sovereign lands.

Public Involvement

We welcome your input throughout the planning process. During the months of March

and April 2018, FFSL will present information regarding the CMP and MLP process and seek public participation at open house meetings in each county that contains state-owned sovereign land sections of the rivers. Please attend the open house most convenient for you. If you cannot attend a meeting in person, you may also make comments via the project website. Please visit the project website for more details.

Public comments for the Draft CMP are due on July 19, 2019

Comments can be submitted at the public meetings, online at the project website, or via e-mail to the addresses below:

Project Website

Gretchen Semerad
gsemerad@swca.com
801-322-4307

Laura Vernon
lauravernon@utah.gov
801-538-5530

It is anticipated that the final CMPs and MLP and Decision Document will be completed by December 2019.

- [Press Release](#). Utah Department of Natural Resources.
 - [Draft CMP for Green and Colorado Rivers](#)
 - [Draft CRMP for the Colorado River](#)
 - [Draft for the Green River](#)
-

Uinta Basin Railway Environmental Impact Statement

AUGUST 06, 2019
BY JOHN WEISHEIT

LATEST NEWS

- [Click here to read the court decision](#)
- The court's decision also ruled that John Weisheit (declarant) of Living Rivers & Colorado Riverkeeper has standing.
- [Click here](#) to read the press release by Center for Biological Diversity
- [Click here](#) to read the story by Sam Metz for The Associated Press.

PART TWO: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

Project Updates

- On October 30, 2020, the Board issued the Draft EIS for public review and comment.
- Comment period was EXTENDED to January 28, 2021

Project Introduction

- The Seven County Infrastructure Coalition (Coalition) has filed a petition with the Surface Transportation Board (Board) requesting authority to construct and operate an approximately 85-mile common-carrier rail line connecting two termini in Utah's Uinta Basin near South Myton Bench and Leland Bench to the national rail network. The construction and operation of this proposed project has the potential to result in significant environmental impacts. Therefore, the Board's Office of Environmental Analysis (OEA) has determined that the preparation of an EIS is appropriate pursuant to the National Environmental Policy Act (NEPA).

Comments are due December 14, 2020 (extended to January 28, 2021)

- Visit this website to participate: [Public Involvement](#)

Documents

- [Uinta Basin Railway DEIS](#) (all documents combined).

PART ONE: SCOPING

[Home Page](#) for the public to visit and participate in this process

[All incoming documents](#) (FD_36284_0) submitted to the Surface Transportation Board

[All outgoing documents](#) (FD_36284_0) submitted to the Surface Transportation Board

All documents

- The Office of Environmental Analysis (OEA) has extended the scoping public comment period. Electronic and written comments must be received and/or postmarked by September 3, 2019.
- Please contact the Environmental Impact Statement project manager if you have any questions about the Surface Transportation Board's environmental review process at:
- Joshua Wayland
Surface Transportation Board
c/o 9300 Lee Highway
Fairfax, VA 22031
Attention: Environmental filing, Docket No. FD 36284
- For further information, you may also call the OEA's toll-free number for the project at 855-826-7596.
- You can also contact ICF, OEA's third-party contractor, at the email address below and ICF will direct your message to OEA. ICF is an environmental consulting firm that is assisting OEA in preparing environmental documentation. ICF is solely managed and directed by OEA, consistent with NEPA regulations.
- Project email address: uinta.eis@icf.com

PROJECT OVERVIEW

The Surface Transportation Board's Office of Environmental Analysis (OEA) is preparing an Environmental Impact Statement (EIS) on the Seven County Infrastructure Coalition's (Coalition) proposed 80-mile rail line connecting two termini in the Uinta Basin near South Myton Bench, Utah and Leland Bench, Utah to the national rail network. The Coalition has evaluated potential routes connecting the Uinta Basin to the national rail network and has identified three alternative routes that would be both technically and commercially feasible. Those proposed alternatives are the Indian Canyon Route, the Craig Route, and the Wells Draw Route, as described in further detail below:

- **The Indian Canyon Route** would be approximately 80 miles long and would connect an existing rail line owned by Union Pacific Railway Company (UP) near Kyune, Utah to a terminus point in the Uinta Basin near Leland Bench, Utah, approximately 9.5 miles south of Fort Duchesne, Utah. Starting at Leland Bench, this route would proceed westward, past the South Myton Bench area, until intersecting Indian Canyon approximately 2 miles south of Duchesne, Utah. After entering Indian Canyon, the route would turn southwest and follow Indian Creek upstream toward its headwaters below Indian Creek Pass, paralleling U.S. Highway 191 for approximately 21 miles. The Indian Canyon Route would use a summit tunnel to pass through the West Tavaputs Plateau and, after emerging from the tunnel, would descend the Roan Cliffs to reach Emma Park, an open grassy area at the base of the Roan Cliffs. The route would then run westward through Emma Park and connect to the UP Provo Subdivision near the railroad timetable station at Kyune. The route would cross land owned or managed by the

State of Utah, the U.S. Forest Service (USFS), the Bureau of Land Management (BLM), and the Ute Indian Tribe. At this time, the Coalition has identified the Indian Canyon Route as its preferred alternative.

- **The Craig Route** would be approximately 185 miles long and would connect an existing UP rail line near Axial, Colorado, to two terminus points in the Uinta Basin near South Myton Bench (approximately 3.5 miles southwest of Myton, Utah) and Leland Bench, Utah. The lines from those two terminus points would meet at a junction approximately 4 miles north of Leland Bench. From the junction, the Craig Route would proceed generally northward for approximately 7 miles, then turn and proceed generally eastward, crossing the Green River approximately 5 miles south of Jensen, Utah. The route would then proceed southeasterly, entering Colorado approximately 3 miles northwest of Dinosaur, Colorado, and would connect to the Deseret Power Railroad (DPR) south of Dinosaur. The Craig Route would utilize approximately 13 miles of the DPR to proceed eastward and would depart the DPR approximately 2 miles west of the Deserado Mine. It would then proceed generally eastward to connect to the UP Craig Subdivision near the railroad timetable station at Axial. This route would cross land owned or managed by the BLM, the State of Colorado, and the State of Utah. It would not cross USFS or tribal land.
- **The Wells Draw Route** would be approximately 105 miles long and would connect an existing UP rail line near Kyune, Utah, to two terminus points in the Uinta Basin near South Myton Bench and Leland Bench, Utah. The lines from those two terminus points would meet at a junction approximately 6.5 miles south of South Myton Bench. From the junction, the Wells Draw Route would run southward, generally following Wells Draw toward its headwaters. After reaching the headwaters of Wells Draw, the route would turn westward and enter Argyle Canyon. It would remain on the north wall of Argyle Canyon for approximately 25 miles, eventually reaching the floor of the canyon near the headwaters of Argyle Creek. The route would then enter a summit tunnel through the West Tavaputs Plateau and, after emerging from the tunnel, would descend the Roan Cliffs to reach Emma Park. The route would run westward through Emma Park and connect to the UP Provo Subdivision near the railroad timetable station at Kyune. The Wells Draw Route would cross land owned or managed by the BLM and the State of Utah. It would not cross USFS or tribal land.

● PRESS

- [March 5, 2022 - Utah rail line could bring 10 crude oil trains through Denver daily, drawing concern across Colorado.](#) By Conrad Swanson for The Denver Post.
- [January 2021 - OpEd by Deeda Seed and John Weisheit](#)
- [December, 2020 - Fossil Fuel Fund Set Aside To Help Utahns Being Returned To Industry, Lawsuit Says.](#) *The Guardian.*
- [A New Freight Train Route For Utah? Uinta Basin Hopes So.](#) *Deseret News*

- [Feds Looking For Public Input On Uinta Basin Railway Proposed Route Through Moffat County. *Craig Daily Press.*](#)
- [Panel Shifts Gears On Best Rail Route To Move Oil From Eastern Utah. *Salt Lake Tribune.*](#)

ARCHIVE

- [STB Decision: Notice of Intent to begin to prepare the EIS](#)
 - [STB Decision: Extension of comment period](#)
 - [Map 1 - Uinta Overview](#)
 - [Map 2 - Uinta Indian Canyon Overview](#)
 - [Map 3 - Uinta Craig Overview](#)
 - [Map 4 - Uinta Wells Draw Overview](#)
 - [SCIC Response To OEA Information Request](#)
 - [UBR Public Scoping Meeting Slides](#)
 - [Uinta Basin Railway Alternatives Evaluation](#)
 - [Uinta Basin Railway Information Paper](#)
 - [Uinta Basin Railway Map Displays](#)
 - [Uinta Rail Railway Display Boards](#)
 - [2015 UDOT Uinta Basin Railroad Feasibility Study Report](#)
 - [2018 RL Banks Pre-feasibility study Uinta Basin Railway](#)
-

Administrative Record of Long Term Experiental and Management Plan for Glen Canyon Dam Operations

AUGUST 18, 2019
BY JOHN WEISHEIT

OFFICIAL LTEMP WEBSITE

- [Home Page](#) (Argonne Laboratory)
- [Documents](#)

June 23, 2011 - [Federal Register Notice to initiate LTEMP EIS](#)

October 17, 2011 - [Federal Register Notice](#)

October 18, 2011 - [Press Release](#). National Park Service

PUBLIC SCOPING PRESENTATIONS

- [DEIS Schedule](#)
- [Frequently Asked Questions](#)
- [LTEMP April 4 and 5 Meeting Slides](#)
- [LTEMP Scoping Presentation](#)
- [LTEMP Scoping Posters](#)
- [LTEMP March 2012 Newsletter](#)
- [LTEMP DEIS presentation](#)
- [LTEMP Alternatives Matrix OF February 2016](#)
- [LTEMP 2016 Posters](#)
- [Decommissioning Alternative](#). Living Rivers.
- [Water Conservation Alternative](#). GCI.

December 30, 2011 - [Federal Register Notice](#)

December 30, 2011 - Original due date of Scoping Comments

January 31, 2012 - Extended due date for Scoping Comments

SCOPING LETTERS

- [Living Rivers, Colorado Riverkeeper, Center for Biological Diversity and River Runners for Wilderness](#)
- [Lee's Ferry Anglers](#)
- [Glen Canyon Institute](#)
- [Grand Canyon River Guides](#)
- [Grand Canyon Trust and National Parks & Conservation](#)
- [Grand Canyon Wildlands Council](#)
- [River Concessions](#)

- [The Seven States](#)

March, 2012 - [LTEMP EIS Scoping Report \(complete\)](#)

- [1990 - Scoping Report for GC Dam EIS](#)

March 27, 2012 - Public Webinars are conducted

April 2, 2012 - [Letter from Living Rivers to Secretary Salazar demanding immediate intervention on organizing the LTEMP EIS.](#)

April 23, 2012 - [Salazar's response to Living Rivers](#)

May 27, 2012 - [LRs' response to Salazar.](#)

May 10, 2012 - [Announcing Schedule for Glen Canyon Dam \(GCD\) Long Term Experimental and Management Plan \(LTEMP\) Draft Environmental Impact Statment \(DEIS\).](#)

July 2, 2012 - [LTEMP Proposed Alternative.](#) Colorado River Basin States and the Upper Colorado River Commission.

July 2, 2012 - [Balanced Resource Alternative.](#) CREDA.

July 2, 2012 - [Comments by Grand Canyon Trust](#)

July 2, 2012 - [Comments by IEDA](#)

May 8, 2013 - [Discussion of LTEMP EIS Alternatives.](#) Adaptive Management Program.

August 8-9, 2013 - [Hydropower advocacy.](#) Western Area Power Administration.

August 20, 2013 - [Discussion of EIS Alternatives.](#) Adaptive Management Program.

February 20, 2014 - [Discussion of LTEMP EIS Alternatives.](#)

April 21, 2014 - [Discussion of LTEMP EIS Alternatives.](#)

December, 2015 - [Executive Summary of LTEMP DEIS](#)

December, 2015 - [LTEMP Draft EIS \(complete\)](#)

January 8, 2016 - [Press Release.](#) Department of Interior

January 8, 2016 - [Federal Register Notice](#)

May 9, 2016 - [Final LTEMP DEIS comments by Living Rivers, et al.](#)

November 28, 2016 - [Biological Opinion.](#) US Fish & Wildlife Service.

December 15, 2016 - [Record of Decision.](#) Reclamation.

FINAL ENVIRONMENTAL IMPACT STATEMENT

- [Complete document: 2016 Glen Canyon Dam Final EIS](#)
- [01 - Executive Summary](#)
- [02 - Vol 1 Front Matter](#)
- [03 - Chapter 1 Introduction](#)
- [04 - Chapter 2 Alternatives](#)
- [05 - Chapter 3 Affected Environment](#)
- [06 - Chapter 4 Consequences](#)
- [07 - Chapter 5 Consultation](#)
- [08 - Chapter 6 References](#)
- [09 - Chapter 7 Preparers](#)
- [10 - Chapter 8 Glossary](#)
- [11 - Vol 2 Front Matter](#)
- [12 - Appendix A Desired Future Conditions](#)
- [13 - Appendix B Performance Metrics](#)
- [14 - Appendix C Decision Analysis](#)
- [15 - Appendix D Hydrology](#)
- [16 - Appendix E Sediment](#)
- [17 - Appendix F Aquatic](#)
- [18 - Appendix G Vegetation](#)
- [19 - Appendix H Cultural](#)
- [20 - Appendix I Tribal](#)
- [21 - Appendix J Recreation](#)
- [22 - Appendix K Hydropower](#)
- [23 - Appendix L Socioeconomics](#)
- [24 - Appendix M Air Quality and Climate](#)
- [25 - Appendix N Government-to-Government](#)
- [26 - Vol 3 Front Matter](#)
- [27 - Appendix O Biological Assessment](#)
- [28 - Appendix P HFE Protocol](#)
- [29 - Appendix Q Comments and Responses](#)

Press about the conclusion of LTEMP EIS

December 16, 2016 - [OpEd](#). Editorial Board of Arizona Daily Sun.

January 20, 2016 - [Vail Daily](#)

April 26, 2016 - [Arizona Daily Sun](#)

Lawsuit against LTEMP EIS

October 2, 2019 - [Associated Press](#)

ADDITIONAL INFORMATION

- [Article about the Colorado River Basin Supply and Demand Study](#)
- [Article about Drought Contingency Planning](#)

DOCUMENTS OF THE SUSPENDED EIS OF 2007

- Talking Points: [Click here](#) to read the scoping document of Living Rivers, Colorado Riverkeeper and the Center for Biological Diversity from the **suspended** EIS of 2007 called Long-Term Experimental Plan (LTEP).
- More talking points: [Click here](#) to read the 2005 scoping document of Living Rivers & Colorado Rivekeeper.
- And more talking points: [Click here](#) to read scoping document asking for a Supplemental EIS in 2004.

DOCUMENTS OF THE SUSPENDED EIS OF 2007

- [Click here](#) to visit the web site of the suspended LTEP EIS of 2007.
- [Click here](#) to read the legal settlement agreement that launched the LTEP EIS of 2007, which was ultimately suspended by the Department of Interior.

ON THE COLORADO ARTICLES ABOUT GC DAM

- [A Legal History of Operations at GC Dam](#)
- [The Beginning Years of the Adaptive Management Program](#)
- [Adaptive Management Program Documents](#)
- [Rearranging the Deck Chairs at GC Dam](#)
- [Hydropower is likely to have no future on the Colorado](#)
- [The Endangered Fish of the Colorado River](#)

BASELINE DATA (Department of Interior)

- [Click here](#) to visit the "Science" section
- [1974 - National Park Service Documents](#)
- [1970s - Lake Powell Research documents](#)
- [1987 - GCES Draft Report](#)
- [1988 - GCES Final Report](#)
- [1988 - GCES Technical Summaries](#)
- [1996 - Original EIS on operations at GC Dam](#)

DESIRED FUTURE CONDITIONS

- [1996 - Objectives \(Original Goals and Objectives\)](#)
- [2010 - Desired Future Conditions](#)
- [2011 - Desired Future Conditions](#)
- [2012 - Desired Future Conditions](#)

SCIENCE DOCUMENTS

- [Home page of Grand Canyon Monitoring and Research Center \(USGS\)](#)
- [2003 - Science Advisors Evaluating a Temperature Control Device for Glen Canyon Dam](#). Garrett.
- [2005 - SCORE Report](#)
- [2007 - Mechanical Sediment Augmentation](#).
- February 2010 - [Completed science reviews on 2008 high flow experiment \(HFE\)](#)
- [2010 - Completed science reviews on 2008 HFE](#)
- [2010 - Sediment Transport During Three Controlled-Flood Experiments](#)
- [2011 - Analysis of 2000 low steady flow](#)
-

ENVIRONMENTAL ASSESSMENTS (Recent)

- [2011 - Protocol for High Flow Experiment to 2020; HFE Biological Assessment](#);
- [2011 - Non-native Fish Control; NNFC Biological Assessment](#)
- [2008 - High Flow Experiment](#);
- 2002 - Proposed Experimental Releases from Glen Canyon Dam and Removal of Non-Native Fish: [Environmental Assessment](#); [Supplemental Draft EA](#); [Response to public comments](#).
- [1999 - EA on Temperature Control Device; Science Review](#).

CRITIQUES OF THE ADAPTIVE MANAGEMENT PROGRAM

- To read objective evaluations of the Adaptive Management Program Click [here](#) (Susskind) and [here](#) (Camacho) and [here](#) (Fellers).
- Fellers' summary as a powerpoint presentation is [here](#).
- Click [here](#) to read report by Lenard.

THE DAM DECOMMISSIONING ALTERNATIVE

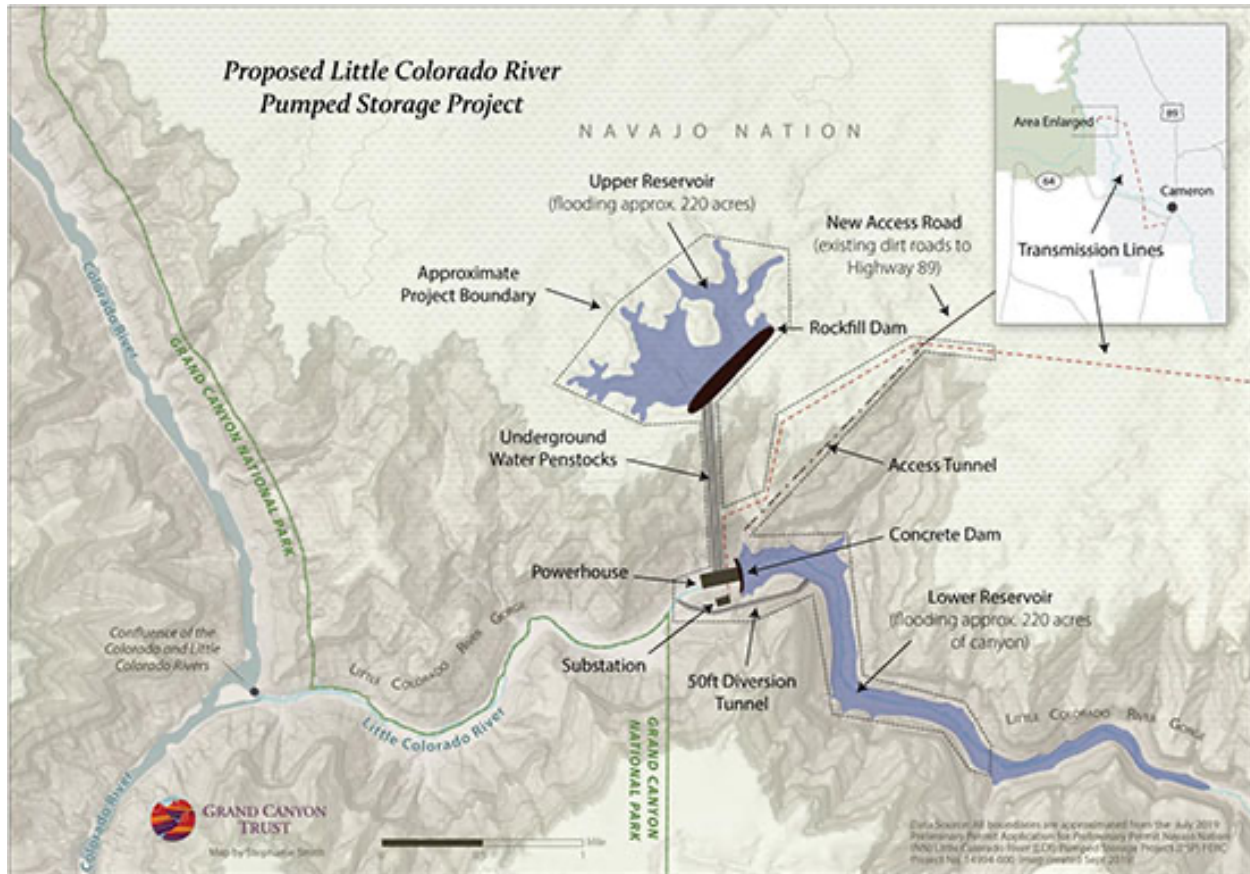
- [The One-Dam Solution](#)
- [2000 - Undamming Glen Canyon](#). Miller.

OTHER

- [Key Documents of the Adaptive Management Program \(AMP\)](#)
 - [Document archive of AMP](#)
 - [1990 - Agency Recalcitrance and Evasion Regarding Compliance with NEPA Relating to GC Dam Operations: A Documented Need for Congressional Intervention](#). Lippman.
 - [Hydropower at Glen Canyon Dam](#). Harpman.
-

FERC grants two Preliminary Permits for two dams in gorge of Little Colorado River and two dams on rim's bench

SEPTEMBER 26, 2019
BY JOHN WEISHEIT



Graphic courtesy of Grand Canyon Trust

SUCCESS!

FERC has denied the Big Canyon application as of April 25, 2024

- [Big Canyon pumped hydro project: order to deny application by FERC](#)
- The original application of 2019 for a pumped hydro project on the mainstem of the Little Colorado River (LCR) was abandoned in 2020.
- Immediately thereafter, the Big Canyon Project was initiated at a nearby tributary canyon of the LCR.

NARRATIVE FOR THE ORIGINAL LITTLE COLORADO RIVER PROJECT OF 2019

In the Spring of 2019 a start-up company based out of Phoenix, Arizona prepared two permits with the Federal Energy Regulatory Commission (FERC) to build two dams/

reservoirs in the gorge of the Little Colorado River (LCR) and two dams/reservoirs on the flat rim tops of this high plateau. These lands belong to the Navajo Nation and are also adjacent to Grand Canyon National Park.

- The docket numbers for the two proposed project are: P-14992 & P-14994. ([FERC's Docket Search Engine](#))
- [List by FERC](#) of proposed pumpback storage facilities as of September 2019

Permit applications such as this are part of a nationwide rush to file federal permit applications with FERC for what is known as a pumped storage hydroelectricity facility. During a 24-hour day, the sale of electricity increases when high demands are placed upon the power grid (typically in the morning and during the working hours of daylight).

If a landscape can accommodate two dam sites within a few miles of each other, and the dam locations have a large enough elevation difference between them, the location has pumped storage potential. During high demand, the water is released from the high reservoir to the low reservoir and the gravity fall of this water will then spin generators at a power station, instantly. When demand is low (typically at night while people are sleeping), the reservoir water is then mechanically pumped uphill from the low reservoir and back into the high reservoir.

At the Little Colorado River Gorge, the Phoenix company decided to file two permits for back-to-back pump storage facilities in a stair step fashion. One set of dams, one low and one high, would be paired with another set of dams upstream, again one low and one high. Two giant reservoirs would be built up on the rim of the gorge and two giant reservoirs would flood the gorge below.

The most downstream dam in the gorge would inundate a sacred site of the Hopi Tribe. This project would also violate the mandates of the Grand Canyon Protection Act of 1992, because the proposed reservoirs would cut off the flow of spring water that maintain the critical habitat of the endangered humpback chub. The reservoirs in the gorge would greatly diminish much-needed sediment and nutrient inputs from the LCR watershed, which are vital to the restoration of the riparian corridor. This ecosystem was originally compromised by the construction and operations of Glen Canyon Dam, which is located 75 river miles above the mouth of the LCR.

[Click here](#) to read this story by Felicia Fonseca of *The Associated Press*

###

INFORMATION FROM THE FEDERAL NOTICE BY FERC

The 60-day comment period closes at the end of the business day (Eastern Time) on November 22, 2019.

- **NOTE:** This Federal Notice is not entirely accurate and should be revised.

Applicant Contact: Steve Irwin, Pumped Hydro Storage, LLC, 6514 S 41st Lane, Phoenix, AZ 85041; phone: (602) 696-3608; eMail: Swirwin7@gmail.com

FERC Contact: Tim Konnert; phone: (202) 502-6359.

Deadline for filing comments, motions to intervene, competing applications (without notices of intent), or notices of intent to file competing applications: 60 days from the issuance of this notice (9/23/2019). Competing applications and notices of intent must meet the requirements of 18 CFR 4.36 (/select- citation/2019/09/23/18-CFR-4.36).

The Commission strongly encourages electronic filing. Please file comments, motions to intervene, notices of intent, and competing applications using the Commission's eFiling system at (<http://www.ferc.gov/docs-filing/efiling.asp>). Commenters can submit brief comments up to 6,000 characters, without prior registration, using the eComment system at (<http://www.ferc.gov/docs-filing/ecomment.asp>). DATED: September 17, 2019. You must include your name and contact information at the end of your comments.

For assistance, please contact

- FERC Online Support at FERCOnlineSupport@ferc.gov (<mailto:FERCOnlineSupport@ferc.gov>), (866) 208-3676 (toll free)
- (202) 502-8659 (TTY)

In lieu of electronic filing, please send a paper copy to:

Secretary, Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

The first page of any filing should include docket number P-14992 & P-14994

More information about this project, including a copy of the application, can be viewed or printed on the eLibrary link of the Commission's website at (<http://www.ferc.gov/docs-filing/elibrary.asp>). Enter the docket number (P-14992 or P-14994) in the docket number field to access the document. For assistance, contact FERC Online Support.

REVIEW: STEP-BY-STEP FILING PROCESS WITH FERC

To comment, citizens can visit:

- <http://ferc.gov/docs-filing/efiling.asp>
- The project number is P-14992 & P-14994

When you're ready to submit to FERC, here's how you do that:

- Go to ferc.gov/docs-filing/efiling.asp
- Click the orange "eRegister" button.

- Fill out your personal information, including an email address (which serves as your username), and create a password.
- At the bottom, select "Next" by the sentence that begins "Proceed to full registration."
- As prompted, fill out your address information and another company contact (or file as a private individual), and click on "Done."
- FERC will send an email from eRegistrationProd@ferc.gov to the email address provided.
- In the email from FERC, click the link that reads "to confirm your email address and complete your registration" to complete the registration and take you back to FERCs online portal.
- Below your personal information and under the "Enter Docket" box, type in "P-14992 or P-14994."
- Click the blue plus sign to the right of the first entry that shows up.
- Add a comment (fewer than 6,000 characters) in the box directly below (to right of "Comment").
- Select "Send Comment" to submit.

If this is all too confusing, just type, print and mail your comments to the following address:

Kimberly D. Bose, Secretary
 Federal Energy Regulatory Commission
 888 1st Street, N.E.
 Washington, D.C. 20426
 RE: P-14992 & P-14994

ADMINISTRATIVE RECORD

- [Federal Register Notice](#). FERC.
- [Public notice of approved application process](#). FERC.
- [Application Submission](#). PHS, LLC.
- [Request for more information](#). FERC.
- [Revised Permit Application](#). PHS, LLC.
- [Notice to PHS, LCC of approved application process](#). FERC.

NEWS

- [Press Release](#). Center for Biological Diversity.
- [Click here](#) to read this story by Debra Utacia Krol of *The Arizona Republic*

COMMENTS

- [Howard Dennis](#). Hopi elder from Second Mesa.
- [Department of Interior](#). Compliance.
- [Upper Colorado River Commission](#)

INTERVENORS (not complete)

- [Nation Parks Conservation Association 14994; NPCA 14992](#)
- [River Runners for Wilderness 14992; RRFW 14994](#)
- [American Rivers 14994; AR 14992](#)
- [Arizona Game and Fish 14494; AzGF 14992](#)
- [Center for Biological Diversity 14994; CBD14992](#)
- [Colorado River Commisiion, Nevada 14992; CRCNV 14994](#)
- [EarthJustice \(NGO coalition\) 14992; EarthJustice 14994](#)
- [Havasupai Tribe.\(14992 & 14994\)](#)
- [Southwest Transmission Dependent Utility Group 14992; SWTDUG 14994](#)

DOCUMENT ARCHIVE

- [1977 - Western Energy Expansion Study. Reclamation.](#)

BLOG POST

- [The proposal for a hydropower pump back project in Grand County, Utah. Far Country.](#)
-

Reclamation announces scoping for Lake Powell Pipeline Project

DECEMBER 05, 2019
BY JOHN WEISHEIT

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

DEPARTMENT OF THE INTERIOR
Bureau of Reclamation

WEBSITE

Notice of Intent to Prepare a Draft Environmental Impact Statement and Public Scoping Period for the Lake Powell Pipeline Project

AGENCY: Bureau of Reclamation, Upper Colorado Basin, Interior Region 7. **ACTION:** Notice of Intent; request for scoping comments. **(SUMMARY:** The Bureau of Reclamation (Reclamation) intends to prepare an Environmental Impact Statement (EIS) on the Lake Powell Pipeline (LPP) Project. Reclamation is requesting public scoping comments to identify significant issues or other alternatives to be addressed in the EIS.

DATES: Submit comments on or before January 10, 2020. (Three scoping meetings will be held during the scoping period from 6:00pm to 8:00pm on January 7-9, 2020.

ADDRESSES: Provide written scoping comments and requests to be added to the mailing list to:

Mr. Rick Baxter, Program Manager
Bureau of Reclamation, Provo Area Office
302 East Lakeview Parkway
Provo, UT 84606

Via submittal form: <https://www.usbr.gov/uc/envdocs/eis/LakePowellPipeline/index.html>

Via eMail: lpp@usbr.gov

The three scoping meetings will be held at the following locations:

- January, 7th 6PM - 8PM; Kanab Center, 20 North 100 East, Kanab, UT, 84741
- January, 8th 6PM - 8PM; Dixie Center, 1835 South Convention Center Dr., St. George, UT, 84790

- January, 9th 6PM - 8PM; Valley High, 325 West 11000 South, South Jordan, UT, 84095

FOR FURTHER INFORMATION CONTACT: Mr. Rick Baxter, Program Manager, Bureau of Reclamation, Provo Area Office, 302 East Lakeview Parkway, Provo, UT 84606; telephone (801) 379-1078; facsimile (801) 379-1159; e-mail lpp@usbr.gov. Persons who use a telecommunications device for the deaf may call the Federal Relay Service (FedRelay) at 1-800-877-8339 TTY/ASCII to contact the above individual during normal business hours or to leave a message or question after hours. You will receive a reply during normal business hours. Information on this project may also be found at: <https://www.usbr.gov/uc/envdocs/eis/LakePowellPipeline/index.html>

SUPPLEMENTARY INFORMATION: Reclamation is issuing this notice pursuant to the National Environmental Policy Act of 1969, as amended (NEPA), 42 U.S.C. 4321 et seq.; the Council on Environmental Quality's regulations for implementing NEPA, 40 CFR parts 1500 through 1508; Department of the Interior's NEPA regulations, 43 CFR part 46; and Bureau of Land Management regulations at 43 CFR 1610.2.(Background.

Reclamation will prepare an EIS for the LPP Project as proposed by the Utah Board of Water Resources (UBWR). The LPP is a proposed 140-mile, 69-inch- diameter water delivery pipeline that begins at Lake Powell near Glen Canyon Dam in Page, Arizona, and ends at Sand Hollow Reservoir near St. George, Utah. The pipeline would deliver up to 86,249 acre-feet of water from Lake Powell to Sand Hollow Reservoir. UBWR proposes building the LPP in order to bring a second source of water to Washington and Kane Counties in Utah to meet future water demands, diversify the regional water supply portfolio, and enhance the water supply reliability.

UBWR previously proposed a pipeline project with an intake at Lake Powell that included a hydroelectric peaking station at Hurricane Cliffs, Utah. The Federal Energy Regulatory Commission (FERC) was the lead Federal agency for that project because it would have required a hydroelectric license issued by the FERC. The UBWR withdrew its application to the FERC on September 25, 2019, and the project was terminated effective October 10, 2019. (https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20191016-3069) Reclamation has been designated the lead Federal agency by the Department for the LPP NEPA process. The Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (FWS), Bureau of Indian Affairs (BIA) and National Park Service (NPS) are cooperating agencies. Based on the changes to project design and the lead federal agency, Reclamation is initiating a new public scoping process, which will require interested parties to submit new comments on the current proposal. Reclamation is also reinitiating government to government consultation with Indian tribes under section 106 of the National Historic Preservation Act and in accordance with Executive Order 13175.

Two pipeline alignments have been proposed: the Southern Alternative and the Highway Alternative. Both alternatives begin and end in the same locations. The Southern Alternative would travel south of the Kaibab Indian Reservation while the alignment for the Highway Alternative would cross lands held in trust by the United

States for the benefit of the Kaibab Band of Paiute Indians, following Arizona State Route 389. The Southern Alternative would cross land administered by the BLM in Utah and Arizona and would require multiple right-of-way (ROW) grants and an amendment to the Arizona Strip Resource Management Plan (RMP), because a small portion of the pipeline would go outside an approved utility corridor.

The Highway Alternative would cross BLM and Tribal trust lands, which would require the BLM and BIA to issue ROW grants and require a tribal resolution from the Kaibab Band of Paiute Indians. Both alternatives would cross lands administered by Reclamation and the NPS, requiring Reclamation to issue a license agreement and the NPS to issue a ROW permit under either alternative.

In addition, UBWR has requested a water exchange contract with Reclamation. Under the exchange contract, UBWR would forbear the diversion of a portion of the natural flows to which UBWR is entitled and allow these flows to contribute to meeting the Endangered Species Act Upper Colorado River Recovery Implementation Program requirements in the Green River. In exchange, UBWR would deplete an equal amount of water released from Flaming Gorge Dam throughout the year and available at Lake Powell. This exchange contract would not entitle UBWR to call for releases from Flaming Gorge. (Public Disclosure.

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment - including your personal identifying information - may be made publicly available at any time. While you may ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Brent Esplin,

Regional Director,(Upper Colorado Basin
Interior Region 7, Bureau of Reclamation.
[FR Doc. 2019-26357
Filed: 12/5/2019 8:45 am
Publication Date: 12/6/2019

Intro and Project Overview

In accordance with the National Environmental Policy Act of 1969, the Bureau of Reclamation will prepare an Environmental Impact Statement for the Lake Powell Pipeline Project proposed by the Utah Board of Water Resources. The LPP is a 140-mile, 69-inch-diameter water delivery pipeline that begins at Lake Powell near Glen Canyon Dam in Page, Arizona, and ends at Sand Hollow Reservoir near St. George, Utah. UBWR proposes building LPP in order to bring a second source of water to Washington and Kane Counties in Utah to meet future water demands, diversify the regional water supply portfolio, and enhance the reliability of the water supply.

A map showing two proposed alternatives for the Lake Powell Pipeline project: The Highway Alternative and the Southern Alternative. Both alternatives begin and end in

the same locations. The Southern Alternative would travel south of the Kaibab Indian Reservation. The Highway Alternative would cross lands held in trust by the United States for the benefit of the Kaibab Band of Paiute Indians, following Arizona State Route 389.

This **MAP** shows the two proposed alternative water conveyance systems for the Lake Powell Pipeline to carry water from Lake Powell to Sand Hollow Reservoir. The Highway Alternative is shown in blue while the Southern Alternative is shown in green. UBWR previously proposed a pipeline project with an intake at Lake Powell that included a hydroelectric peaking station at Hurricane Cliffs, Utah. The Federal Energy Regulatory Commission was the lead Federal agency for that project because it would have required a hydroelectric license issued by the FERC. The UBWR withdrew its application to the FERC on September 25, 2019, and the project was terminated effective October 10, 2019. (https://elibrary.ferc.gov/idmws/file_list.asp?accession_num=20191016-3069)

Reclamation has been designated the lead Federal agency by the Department of the Interior for the LPP National Environmental Policy Act process. Based on the changes to project design and the lead federal agency, Reclamation is initiating a new public scoping process, which will require interested parties to submit new comments on the current proposal. Reclamation is also reinitiating government-to-government consultation with Indian tribes under section 106 of the National Historic Preservation Act and in accordance with Executive Order 13175.

EIS Process

General Information

Scoping is the first step in the NEPA process and can include various means of information-gathering activities. It is to be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. (40 CFR 1501.7)

Public participation is an integral part of scoping because it gives the public an opportunity to help Reclamation identify issues of special concern and alternatives to the proposed action that may be included in the Environmental Impact Statement. Public scoping period for Reclamation's Notice of Intent to prepare an EIS for the pipeline project was announced in the Federal Register on December 6, 2019, and in a press release from Reclamation. The purpose of soliciting input is to identify relevant issues, alternatives, mitigation measures, and analytical tools so that they can be incorporated into the EIS. Comments may be submitted by 11:59 p.m. MST on January 10, 2020.

Getting input from as many affected and interested parties as possible is an important part of preparing an EIS. These usually include:
Citizens who live, work, or play in the area where the proposed project may occur.

Public interest groups and Native communities that have concerns about possible impacts to environmental, social, or economic resources.

Federal, State, and local government agencies that have responsibilities for managing public resources or services.

Scientists and other technical experts with knowledge of the area's natural resources and the possible impacts of the project development.

Impact Analysis

An EIS analyzes the environmental concerns that were identified for each alternative. The objective of the analysis is to determine the nature, severity, and duration of impacts that might occur and to compare the impacts of the alternatives. Numerous technical aids are used in making the assessment, including 23 ecological and socioeconomic studies that were completed when Federal Energy Regulatory Commission was the lead agency. These studies will be updated and incorporated as appropriate for Reclamation's EIS.

Draft EIS and Public Review

The impact analysis is first documented in a draft EIS. The draft EIS is made available to the public for 45 days for review and comment. The availability of the draft EIS is announced in a Federal Register notice and in press releases. Copies of the document are made available to the public on our web page. Requests for hard copies can also be submitted by email or phone using the "Contact Us" information. In order to make sure Reclamation can adequately respond to issues or concerns raised by the public, we ask that all comments be written and submitted via the methods described in the Notice of Intent or in the "Contact Us" section of this web page.

Final EIS

The principal objective when developing the final EIS is to address public comments on the draft EIS. The final EIS includes a summary of comments and Reclamation's responses.

After the comments on the draft EIS are reviewed, Reclamation will revise the document to correct technical errors and add any relevant new information that became available since the draft EIS was published. Once again, the availability of the final EIS is announced in a Federal Register Notice and press releases.

ON THE COLORADO

Articles about the Lake Powell Pipeline

- September 23, 2019: [The Administrative History of Lake Powell Pipeline](#)
- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)

- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
- June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
- December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
- March 21, 2011 - [Lake Powell Pipeline Documents](#)
- June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
- May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)

LIVING RIVERS ET AL: Submissions to the Public Scoping Process

- [Coalition letter submitted to Reclamation](#)

Submitted References

- [LR References Section 1A](#)
- [LR References Section 3A](#)
- [LR References Section 3B](#)
- [LR References Section 3C](#)
- [LR References Section 3D](#)
- [LR References Section 3E](#)
- [LR References Section 3F](#)
- [LR References Section 3G](#)
- [LR References Section 3I](#)
- [LR References Section 3J](#)
- [LR References Section 3K](#)
- [LR References Section 3L](#)
- [LR References Section 3L Part 1](#)
- [LR References Section 3L Part 2](#)
- [LR References Section 3L Part 3](#)
- [LR References Section 3L Part 4](#)
- [LR References Section 3L Part 5](#)
- [LR References Section 3L Part 6](#)
- [LR References Section 3L Part 7](#)
- [LR References Section 3L Part 8](#)
- [LR References Section 3L Part 9](#)
- [LR References Section 3L Part 10](#)
- [LR References Section 3L Part 11](#)
- [LR References Section 3L Part 12](#)
- [LR References Section 3L Part 13](#)
- [LR References Section 3O](#)
- [LR References Section 3P](#)
- [LR References Section 3Q](#)
- [LR Appendix A](#)

Part Two: Paradox Valley Salinity Control Unit DEIS & public comments

DECEMBER 08, 2019
BY JOHN WEISHEIT

Note: This reference article (2019) about the Paradox Salinity Program is the second of two parts.

Part one (2012) is located [HERE](#)

THE COMMENT PERIOD IS CLOSED (The Deadline was extended to February 19, 2020)

- Federal Register Amended Notice of 2/6/2020: EIS No. 20190287, Draft, BR, CO, Paradox Valley Unit of the Colorado River Basin Salinity Control Program Environmental Impact Statement, Comment Period Ends: 02/19/2020
- Contact: Lesley McWhirter 970-248-0608
- Revision to FR Notice Published 12/06/2019; Extending the Comment Period from 2/4/2020 to 2/19/2020.

Two public meetings will be held on:

- Tuesday, Jan. 14, 2020 in Paradox, Colorado at the Paradox Valley Charter School, 21501 6 Mile Rd., at 5 p.m
- Wednesday, Jan. 15, 2020 in Montrose, Colorado at the Holiday Inn Express & Suites, 1391 S. Townsend Ave., at 6 p.m.

The draft Environmental Impact Statement is available online at:

- www.usbr.gov/uc/progact/paradox/index.html
- or a copy can be requested by contacting Reclamation

Comments are due (time-period was extended)

- 11:59 p.m. Mountain Standard Time on Feb. 19, 2020

Submit comments by email: paradoxeis@usbr.gov

Via US Postal Service to:

Ed Warner, Area Manager
Bureau of Reclamation
445 West Gunnison Ave, Suite 221
Grand Junction, CO 81501

[Click here](#) to read this story by Luke Runyon of *KUNC Public Radio*
[Click here](#) to read this Press Release from *Bureau of Reclamation*

To view documents from the **Scoping Period**, please visit this post from 2012: [On The Colorado](#) (OTC)

To view documents about the **Salinity Control Program**, please visit [this OTC resource page](#)

PUBLIC COMMENT SUBMISSIONS

- [Living Rivers & Colorado Riverkeeper - DEIS comments](#)
- [Living Rivers & Colorado Riverkeeper - References for DEIS comments](#). zip file.
- [San Juan Citizens Alliance - DEIS comments](#)
- [Colorado Wildlands Project - DEIS comments](#)
- [Dolores River Boating Advocates- DEIS comments](#)
- [American Whitewater - DEIS comments](#)
- [American Rivers - DEIS comments](#)
-

NEW DOCUMENTS FOR PARADOX UNIT

- [DEIS and Appendices \(combined\)](#). 2019.
- [DEIS Volume 1](#)

APPENDICES

- [DEIS Volume 2, Apps A to D](#)
- [DEIS Volume 3 Apps E to J](#)
- [DEIS Volume 4, Apps K to M](#)

TECHNICAL REPORTS AND MEMOS

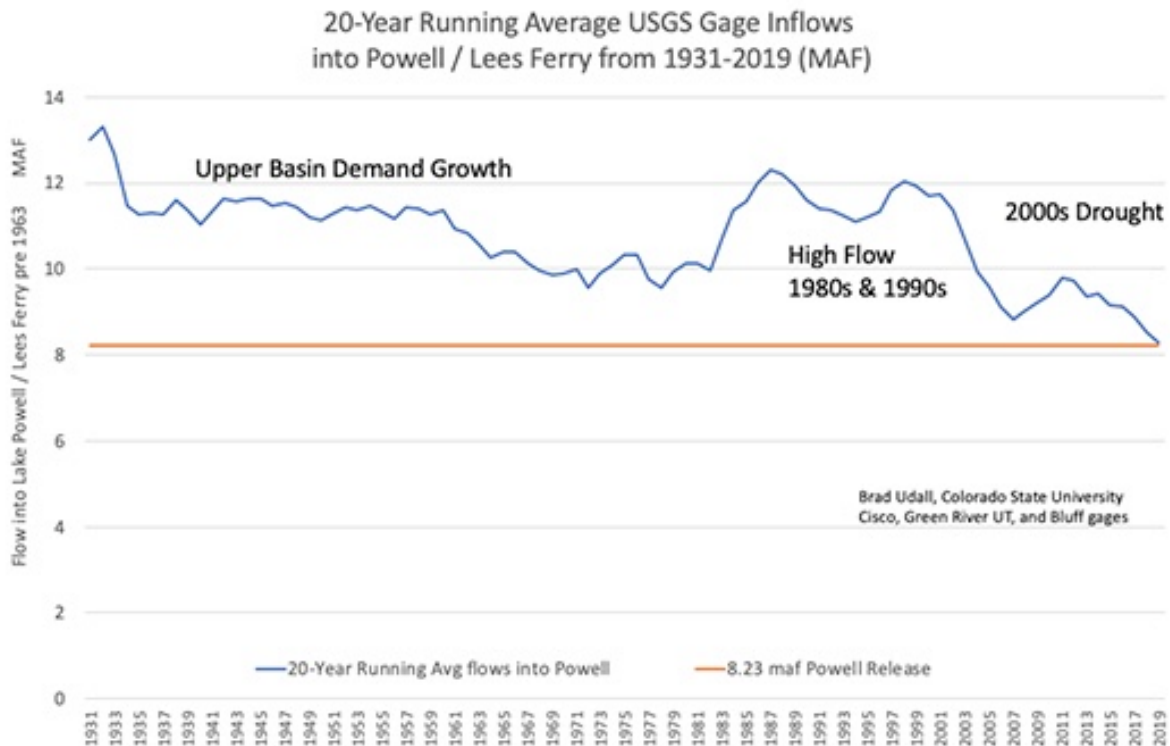
- [Review: Geologic Investigations](#). Block, 2012.
- [Assessment 2nd Injection Well](#). Atkins, 2013.
- [Paradox Valley 2nd Well Design Report](#). Petrotek, 2014.
- [Far-field Reservoir Pressurization](#). USBR TM, 2016.
- [2nd Well Site Investigation](#). Block, 2016.
- [2nd Injection Well REPORT](#). CRBR, 2017.
- [Injection Data \(csv file\)](#)

ADDITIONAL INFORMATION

- [OTC Resource Page on Salinity](#)
-

The many conversations in the Colorado River Basin to prepare for different reservoir operations by 12/31/2025

February 21, 2020
by John Weisheit



Note: This site will be modified on a regular basis; this piece is a work in progress.

###

A chronology of the conversations initiated in 2005 for the development of Shortage Criteria Environmental Impact Statement (EIS), and finalized as 2007 Interim Guidelines EIS.

- **Note:** The Interim Guidelines of 2007 combines Surplus Criteria (finalized in 2001) with Shortage Criteria (initiated in 2005). The original provisions of Surplus Criteria EIS were set to expire in 2016. The combined provisions of 2007 Interim Guidelines will expire on December 31, 2025 (the completion of the 2026 Annual Operating Plan).

Foundation Documents

- [Planning History of the Colorado River](#); documents provided by 2012 Basin Study, which begin in 1946 (post-Great Depression/World War II).

- [The Hoover Dam Documents](#); (Law of the River); 1922 to 2008. Initially compiled in 1933 by Interior Secretary Ray Lyman Wilbur and Deputy Secretary Northcutt Ely.

INTRODUCTION

[2005 - Mid-Year Review](#). On page 3, in response to increasing aridity, Interior Secretary Gale Norton advises the seven states of the Colorado River Basin (CRB) that:

*"...the Department intends to issue a notice through the Federal Register on or before June 15, 2005 to begin work on these matters. At a minimum, we will address the following matters in our upcoming Federal Register notice : **1) Development of Lower Basin Shortage Guidelines, and, 2) Development of Conjunctive Management Guidelines for Lake Powell and Lake Mead.** It is my expectation that, regardless of the particular process utilized, the Department will complete these processes by December 2007."* (page 3)

[2007 - National Academy of Sciences](#). From the Epilogue:

*"This report points to several important scientific findings as they relate to Colorado River hydrology and climate. It also includes findings related to cooperation among the basin states and between scientists and water managers. It recommends that a comprehensive assessment of contemporary urban water management practices and other relevant water supply-demand issues be conducted, and that this assessment consider issues such as implications of agriculture-to-urban water transfers and regional water demand forecasting. In doing so, it defines an action-oriented study that could provide a more systematic blueprint for better managing water across the rapidly-growing and arid Colorado River basin. The cooperation that such a study would entail could also be useful. As the Colorado River basin enters another phase of coping with aridity and drought, future challenges promise to be more exacting than those faced in the past. As such, **good scientific information, and good cooperation and communication at all levels, will be more important than ever.**"*

[2008 - When Will Lake Mead Go Dry?](#) From the Introduction:

*"A water budget analysis shows that under current conditions [2007 Interim Guidelines] there is a 10% chance that live storage in Lakes Mead and Powell will be gone by about 2013 and a 50% chance that it will be gone by 2021 if no changes in water allocation from the Colorado River system are made. This startling result is driven by climate change associated with global warming, the effects of natural climate variability, and the current operating status of the reservoir system. **Minimum power pool levels in both Lake Mead and Lake Powell will be reached under current conditions by 2017 with 50% probability.*** While these dates are subject to some uncertainty, they all point to a major and immediate water supply problem on the Colorado system. **The solutions to this water shortage problem must be time-dependent to match the time-varying, human-induced decreases in future river flow.**"*

***Note:** In 2014 the state of Colorado acknowledged potential hydropower loss at Glen Canyon Dam [in this memo](#) and recommended initiating contingency planning as the appropriate response.

PART ONE

The Universities

1937 - University of Arizona - Pioneers in the assessment of climate regimes in the Holocene Epoch in regards to aridity, pluvials and floods. This includes dendrochronology (Andrew Ellicott Douglass) and paleoflood hydrology (Victor R. Baker), and other interdisciplinary sciences related to geochronology.

1957 - Scripps Institute - Pioneers on the effects of greenhouse gases that initiated global warming based on time-proven accuracy and consistent appeals to society to initiate climate adaptation programs.

We start this conversation with a paper that was written in 1956 and published in 1957 by Roger R. Revelle and Hans E. Suess called, "[Carbon Dioxide Exchange Between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO₂ during the Past Decades.](#)"

Revelle and Suess tested a hypothesis that carbon dioxide molecules in the atmosphere, from burning fossil fuels since the beginning of the Industrial Revolution, were being sequestered in the sedimentary rock layers under the ocean. Their findings demonstrated that the transfer of carbon dioxide from the atmosphere to the ocean had already reached its saturation point before 1956. Therefore, the increasing load of carbon-based emissions would remain in the atmosphere and create a greenhouse effect, and then global temperatures would progressively rise and the heat would increase the mean temperatures of the atmosphere and ocean. They admitted that further research was required, which they provided in 1983.

That research was published by Roger R. Revelle and Paul E. Waggoner and called, "[Effects of a Carbon Dioxide-Induced Climatic Change on Water Supplies in the Western United States](#)". When this paper was published, every reservoir in the CRB was brim full. However, the data and equations in this document are stunning and the climate scientists of the 21st century have since confirmed the accuracy of their temperature projections.

The cautionary summary of this 1983 paper by Revelle and Waggoner, is as follows: "*Planning and construction of major water-resource systems have a time constant of 30 to 50 years. In the past, **these activities have been based on the explicit assumption of unchanging climate.** The probable serious economic and social consequences of a **carbon dioxide-induced climatic change within the next 50 to 100 years warrant careful consideration by planners** of ways to create more robust and resilient water-resource systems that will, insofar as possible, mitigate these effects.*"

List: Relevant papers from Scripps Institute

- [1957 - Carbon Dioxide Exchange Between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO₂ during the Past Decades](#). Revelle.
- [1983 - Effects of Carbon-Induced Climatic Change on Water Supplies in the Western USA](#). Revelle and Wagoneer.
- [2004 - The effects of climate change on the water resources of the west: Introduction and overview](#). Barnett et al. Climate Change Journal.
- [2008 - Human-Induced Changes in the Hydrology of the Western United States](#). Barnett, et al. Science.
- [2008 - When will Lake Mead go dry?](#) Barnett and Pierce. Journal of Water Resources Research.
- [2009 - Sustainable water deliveries from the Colorado River in a changing climate](#). Barnett & Pierce.

2010 - COLORADO RIVER GOVERNANCE INITIATIVE at CU Boulder

- [Website](#)
- [2011 - Navigating the Future of the Colorado River](#) (Martz Summer Conference)

2014 - COLORADO RIVER RESEARCH GROUP at CU Boulder

- [CRRG Website](#)
- [CRRG Members Bios & Contact](#)
- [2014.06 - Research Needs for the Colorado River Basin](#)
- [2014.12a - Charting a New Course for the Colorado River Guiding Principals](#)
- [2014.12b - The First Step In Repairing Colorado Rivers Broken Water Budget](#)
- [2015.05 - The Case for Conservation](#)
- [2015.10 - A Look at Interim Guidelines at Mid Point: How Are We Doing](#)
- [2016.02 - Prioritizing Management Protection Colorado River Environmental Resources](#)
- [2016.06 - Tribes and Water in the Colorado River Basin](#)
- [2016.10 - Climate Change and the Colorado River: What We Already Know](#)
- [2017.06 - Innovations in Agriculture, Water Conservation and Use](#)
- [2018.03 - When is a Drought Not a Drought and the New Normal](#)
- [2018.08 - It's Hard to Fill a Bathtub When the Drain is Wide Open](#)
- [2019.5 - ThinkingAboutRiskOnCRB.pdf](#)
- [2019.08 - The Emerging Tribal Role in the Colorado River Basin](#)

2016 - WATER JUSTICE SYMPOSIUM at CU BOULDER & UW Laramie

- [2016 - Indigenous Water Justice Symposium & Document Archive](#)
- [2016 - Martz Summer Conference & Document Archive](#)
- [2018 - Indigenous Water Justice](#). Robison et al.

2016 - CENTER FOR COLORADO RIVER STUDIES at USU Logan

- [Website](#)
- 2016.11 - [Summary of White Paper 01](#) & [Full White Paper 01](#); The Fill Lake Mead First Proposal.
- 2018.10 - [Public Presentations at Star Hall in Moab, Utah](#) ([archived here](#))
- 2019 - [Summary of White Paper 02](#) & [Full White Paper 02](#); Water Resource Modeling of the Colorado River: Present and Future Strategies.
- 2020 - [Summary of White Paper 03](#) & [Full White Paper 03](#); Strategies for Managing the Colorado River in an Uncertain Future.
- 2020 - [Summary of White Paper 04](#) & [Full White Paper 04](#); The Future Hydrology of the Colorado River Basin.
- 2020 - [Summary of White Paper 05](#) & [Full White Paper 05](#);
- 2021 - [Summary of White Paper 06](#) & [Full White Paper 06](#); [NEWS about White Paper # 06](#) 06.

2017 - CENTER FOR CLIMATE ADAPTATION SCIENCE AND SOLUTIONS at UA Tucson

- [Home Page](#) for CCASS
- [Colorado River Conversations](#). Center for Climate Adaptation Science and Solutions
- [Resources for Colorado River studies](#). CCASS
- [October 2017 - Colorado River Workshop Report](#)
- [April 2018 - Colorado River Workshop Report](#)
- [October 2019 - Conference Report](#)
- [Scenario Planning Workshop Summary](#)
- [June 2020 - Scenario Planning Workshop Report](#)

2017 - WATER & TRIBE INITIATIVE (WTI)

Center for Natural Resources and Environmental Policy @ UM Missoula

- [2018 - Tribal Water Study of the Ten-Tribe Partnership](#) (documents combined and starting with the press release). This study is a new feature of the 2012 Basin Study.
- [Water and Tribes Initiative of the Colorado River Basin](#). Center for Natural Resources and Environmental Policy. University of Montana at Missoula.
- News: [This System Cannot Be Sustained](#). HCN interview.

WTI Document (2020): Toward a Sense of the Basin

- This report summarizes the results of more than 100 confidential interviews, three workshops, and countless conversations with tribal and other leaders throughout the basin -- all focused on designing a collaborative process to develop the next set of guidelines for the Colorado River. The Colorado River provides water to more than 40 million people in two countries, seven states, and 29 Indian tribes. The demand for water currently exceeds available supply in any given year and is complicated by chronic drought and the uncertainty of impacts

from climate change. The river is governed by a set of laws, policies, and institutions collectively referred to as the “Law of the River.” Several key components of this framework, including the 2007 Interim Guidelines, Minute 323, and the 2019 Drought Contingency Plan all expire in 2026, creating a unique opportunity to revise and update the framework for managing the river. Since 2017, the Water & Tribes Initiatives has pursued two complimentary objectives: to enhance tribal capacity to participate in basin-wide policy decisions and to advance sustainable water management in the basin through collaborative decision-making.

-
- [Press Release](#)
- [Document: *Making Sense of the Basin*](#)
- [Distribution List](#)

2019 - SCREE at UW Laramie

- [Website](#)
- [Podcasts](#)
- [Film](#)
- [Vision and Place](#) (the book)

GETCHES - WILKINSON CENTER FOR NATURAL RESOURCES, ENERGY, AND THE ENVIRONMENT AT COLORADO LAW

2019 - 40th Annual GWC Summer Conference: Charting a Better Course for the Colorado River: Identifying the Data and Concepts to Shape the Interim Guidelines Renegotiation

- [GWC Program and Speaker Presentations](#)
- [California, the DCPs, the Salton Sea, and the Next Interim Guidelines](#). Harris.
- [Colorado River Indian Tribes: A New Partner DCP](#). Vick.
- [Considering Alternative Management Paradigms: Opportunities and Challenges](#). Schmidt.
- [Development: The Systematic Construction of the Structural Deficit](#). Berggren.
- [Fill Mead First: Different Approach to the Managing of the Colorado River](#). Balken.
- [Incorporating Hydrologic Uncertainty into Colorado River Basin Planning](#). Prairie.
- [The Colorado River Future: The Full Suite of Assumptions](#). Overpeck.
- [Prospects and Options For Building a Real Demand Management Program in Upper Basin](#). Haas.
- [Reviewing the Mistake in the Colorado River Compact](#). Fleck.
- [Finally, a Role for the Tribes](#). Becker.
- [US and Mexico Cooperation: What Next](#). Pitt.
- [What Does the Road Forward Look Like in Arizona?](#) Buschatzke.
- [Stepping Outside of the Box: Upper Basin Demand Cap \(Grand Bargain\)](#). Wheeler.
- [When Hydrology and Management Collide](#). Udall.

- [When the River Meets the Salton Sea](#). Cohen.

PART TWO - THE STRUCTURAL DEFICIT

- [Development: The Systematic Construction of the Structural Deficit](#). Berggren.

PART THREE - DEMAND MANAGEMENT

- [2010 - Water Demand Management: Potential and Pitfalls](#). Molle.
- [Prospects and Options For Building a Real Demand Management Program in Upper Basin](#). Haas.

PART FOUR - THE GRAND BARGAIN

The Grand Bargain involves capping the present total depletions of the Upper Basin in exchange for eliminating the Compact obligation of Upper Basin delivering 75 million acre feet every 10-years to the Lower Basin at Lee Ferry, AZ. This plan would eliminate the possibility of a "Compact Call" (curtailments to the Upper Basin) with the Lower Basin, but it would not eliminate the risk of curtailment within the Upper Basin itself, especially for LPP since it resides in the Lower Basin.

This idea is essentially a rewrite of the Colorado River Compact of 1922 and this conversation should have happened immediately following the USA Senate's approval of the Mexican Treaty in 1944. If not then, most definitely after the conclusion of USA Supreme Court decision of Arizona vs California in 1963. The tardiness about moving in this direction is why Lakes Powell and Mead will fall to empty, with or without the depletion of global warming impacts.

- [2012 - Risk Management Strategies for the Upper Colorado River](#). Kuhn.
- [2013 - The "Upper Basin Voluntary Demand Cap" a Means of Mitigating Legal Uncertainty in the CRB: Modeling Results](#). Kenney.
- [2019 - The Case for the Grand Bargain](#). Kenney.
- [2019 - Stepping Outside of the Box: Upper Basin Demand Cap \(Grand Bargain\)](#). Wheeler.
- [2019 - Reservoir Memory complicates water management in the Upper Colorado River Basin](#). Harding.
- [2019 - Upper Basin, Lower Basin & Mexico: Coexisting on the Post 2026 Colorado River](#). Kuhn & Fleck.
- [2019 - The Risk of Curtailment under the Colorado River Compact](#). Castle & Fleck.

PART FIVE

7D REVIEW BY DEPARTMENT OF INTERIOR

- [Reclamation website for 7D Review](#)

Memo (2/7/20) from Bureau of Reclamation about the Section 7.D review of Interim Guidelines, now underway until December of 2020. In his 12/13/2019 remarks at Annual Conference of Colorado River Water Users Association ([video](#)),

Interior Secretary Bernhardt stated:

- 'Section 7.D of the 2007 Guidelines [the update of 12/10/2007, listed below] calls for Reclamation to initiate work prior to Dec. 31, 2020 on a formal review of the effectiveness of the 2007 Guidelines.'
- 'This provision provides an opportunity to take an objective look at where we've been, and where we are, with our operational rules.'
- 'We want to wrap up this effort, culminating in the 'Section 7.D Report,' around this time next year.'
- 'The report will be a Reclamation product but it will rely on important input from the Basin States, Tribes, NGOs and the public, as the report is developed.'

7D DOCUMENTS

- [Updated Draft Guidelines of December 10, 2007; Section 7 only](#) - (pages 34-36)
- [2007 Record of Decision of December 13, 2007](#)
- [2007 Final EIS \(October\)](#)

Approach

- The Section 7.D Review will be retrospective; a **'look-back'** at past operations and not a consideration of future activities.
- The Review will result in a Report that: 1) evaluates the effectiveness of the Guidelines and 2) documents our operational experience with the Guidelines.
- Through this Review, we hope to build a solid foundation that informs decision-makers in future negotiations and bring partners, stakeholders and the public to a common understanding of past operations and their effectiveness.
- Input from the Basin States, Tribes, NGOs, other Federal agencies, and the public will be factored into the Review.
- Outreach with Basin States, Tribes, NGOs, and other Federal agencies will occur at 2 primary milestones: 1) at the start of the Review, with a discussion of the Report scope, approach, and schedule and 2) when the draft Report is ready for review.
- In March, we anticipate holding webinar(s) to present and discuss the Report scope, approach, and schedule with the Basin States, Tribes, and NGOs. Additional meetings with groups of tribes and individual tribes will follow as requested.
- In late summer, we anticipate holding webinar(s) to provide the draft Report to the Basin States, Tribes, and NGOs for review. Received comments will be considered and factored into the draft Report as appropriate. Additional meetings with groups of tribes and individual tribes will follow as requested.
- We anticipate publishing the final Report near the end of 2020.

PUBLIC PARTICIPATION OF 7D REVIEW

- Public Webinar: posted at <https://www.usbr.gov/lc/region/programs/strategies.html>
- [Public Webinar as a pdf](#)
- Draft Comments: due May 1, 2020. However, this is not a hard deadline due to the Covid-19 pandemic.
- Send comments to: 7DReview@usbr.gov

7D Review: Letters of Submission

- [Tribes of the Colorado River Basin](#)
- [Academic Consortium](#)
- [Ak Chin Indian Community](#)
- [Central Utah Water Conservancy District](#)
- [Colorado River Basin States](#)
- [Colorado River Energy Distributors Association](#)
- [Colorado River Indian Tribes](#)
- [Dolores Water Conservancy District](#)
- [Fort McDowell Yavapai Nation](#)
- [Havasupai Tribe](#)
- [Living Rivers](#)
- [National Park Service](#)
- [NGO Consortium](#)
- [Pacific Institute](#)
- [Quechan Indian Tribe](#)
- [Western Area Power Administration](#)
- [Yavapai Apache Nation](#)

###

THE PREFERRED ALTERNATIVE FOR 2007 INTERIM GUIDELINES

Combination of two alternatives: Basin States Alternative & Conservation Before Shortage Alternative (NGOs)

- [2007 Record of Decision \(ROD\) of December 13, 2007](#)

The purposes of the Preferred Alternative (ROD; Page 4)

1. discrete levels of shortage volumes associated with Lake Mead elevations to conserve reservoir storage and provide water users and managers in the Lower Basin with greater certainty to know when, and by how much, water deliveries will be reduced in drought and other low reservoir conditions;
2. a coordinated operation of Lake Powell and Lake Mead determined by specified reservoir conditions that would minimize shortages in the Lower Basin and avoid the risk of curtailments in the Upper Basin;
3. a mechanism to encourage and account for augmentation and conservation of water supplies, referred to as Intentionally Created Surplus (ICS), that would minimize the

likelihood and severity of potential future shortages; and the modification and extension of the **Interim Surplus Guidelines** (ISG) through 2026.

- Interim Surplus Criteria - [66 Fed. Reg. 7772, Jan 25, 2001](#). Federal Register.

Defining reservoir conditions (ROD; pages 5 & 6)

1. **A “Normal Condition”** exists when the Secretary determines that sufficient mainstream water is available to satisfy 7.5 million acre-feet (maf) of annual consumptive use in the Lower Division states (Arizona, California, and Nevada). If a state will not use all of its apportioned water for the year, the Secretary may allow other states of the Lower Division to use the unused apportionment, provided that the use is authorized by a water delivery contract with the Secretary.
 2. **A “Surplus Condition”** exists when the Secretary determines that sufficient mainstream water is available for release to satisfy consumptive use in the Lower Division states in excess of 7.5 maf annually. The water available for excess consumptive use is surplus and is distributed for use in Arizona, California, and Nevada pursuant to the terms and conditions provided in the ISG. The current provisions of the ISG are scheduled to terminate in 2016. In general terms, the ISG link the availability of surplus water to the elevation of Lake Mead. When Lake Mead is full and Reclamation is making flood control releases, surplus supplies are unlimited. As Lake Mead’s elevation drops, surplus water amounts are reduced, and ultimately eliminated. The ISG also link surplus availability to continued progress by California in reducing its agricultural use of water to benchmarks established in the ISG. If a state does not use all of its apportioned water for the year, the Secretary may allow other Lower Division states to use the unused apportionment, provided that the use is authorized by a water delivery contract with the Secretary.
 3. **A “Shortage Condition”** exists when the Secretary determines that insufficient mainstream water is available to satisfy 7.5 maf of annual consumptive use in the Lower Division states. To date, the Secretary has never made such a (determination, as flow in the Colorado River has been sufficient to meet Normal or Surplus delivery amounts. When making a shortage determination, the Secretary must consult with various parties as set forth in the Consolidated Decree and consider all relevant factors as specified in the LROC, including 1944 Treaty obligations, the priorities set forth in the Consolidated Decree, and the reasonable consumptive use requirements of mainstream water users in the Lower Division states. If a state does not use all of its apportioned water for the year, the Secretary may allow other Lower Division states to use the unused apportionment, provided that the use is authorized by a water delivery contract with the Secretary.
- [Consolidate Decree of 2006](#)
 - See also "[The Hoover Dam Documents](#)" (Law of the River)

Balancing and Equalization of Storage at Lakes Mead and Powell (ROD; Section 6 on page 49)

The Active Storage of water in Lakes Mead and Powell will be balanced before January 1st of each year. Active Storage refers to sufficient reservoir levels to keep hydropower operational. Hydropower production is a contract obligation. The water level below safe hydropower operations is called Inactive Storage. For Lake Mead this level begins at 1045 feet (27% of full capacity) and for Lake Powell this level begins at 3525 feet (35% of full capacity). **Note:** The ROD does not provide this level of detail.

Intentionally Created Surplus (ICS) on Page 11

- **It is anticipated that the maximum cumulative amount of ICS would be 2.1 maf pursuant to Section XI.D. of this ROD; however, the potential effects of a maximum cumulative amount of ICS of up to 4.2 maf have been analyzed in the Final EIS. This alternative also includes modification and extension of the ISG (Interim Surplus Criteria) through 2026.**

IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS (page 16)

Page ?? - Lower Colorado River Multi-Species Conservation Program (LCRMSCP)

- [2020- Report, Plan & Budget for LCRMSCP](#). Reclamation.

PART SIX - THE MISSING ISSUES

- The ecosystem impacts to Grand Canyon during an equalization release at Glen Canyon Dam after the large snowmelt of 2011
- The looming problems of salinity and other reservoir related water quality issues
- Invasive species such as quagga mussels and New Zealand mudsnails
- Non-native fish hatcheries and artificial coldwater fisheries below dams
- The looming problem of reservoir sedimentation that will compromise flood control and water storage
- Aging and incompetent infrastructure

PART SEVEN - WHAT WE KNOW

- The planet needs an enforceable international agreement to reduce greenhouse gas emissions.
- Scarcity will change the foundations of governance and markets.
- Consumption is bound to the limits of nature.
- Technology is confined to the limits of nature.
- The future of planning and zoning will include: recycling, rebuilding, removing, and relocating.
- Adaptation to long-term climate includes global warming and global cooling.
- Extraordinary precipitation from summer monsoons and strong ENSO cycles are not persistent through time.
- Conserving water is important, but lost when water savings are immediately transferred to new consumptive uses.

- Legal tools and opportunities already exist to better use, share and manage water supplies.
- Water dedicated to ecosystem functions improves water quality and human joy.
- The consensus process is extremely important but, eventually, bold leadership must be asserted.

PART EIGHT - RELEASE FROM THE HYDRAULIC TRAP

[Epilogue: Rivers of Empire](#). Donald Worster.

A prevalent conception for the water managers of the Colorado River Basin is that the system can only be changed incrementally by working within the established legal frameworks and the water delivery infrastructure. However, this preference toward gradual change is not time-scaled to be effective over time:

- The Reclamation Act of 1902 is a social experiment and requires vigilant adaptation.
 - The Colorado River Basin was developed carefully and systematically at the front ends, but the problems identified at the back ends were ignored. Conversations about these contradictions, as we approach the limits of this social experiment, remain evasive.
 - Vested legal frameworks that harm the public trust are deeply embedded.
 - Ecological and societal collapse is indeed possible, because of the political paralysis that exists.
 - Infrastructure has limitations at minimum and maximum stages that must never be exceeded, yet exceedance is inevitable.
 - Because entropy is a fixed law of nature, infrastructure is not forever.
 - This hydraulic society must develop new ways of thinking about how our political economy should walk more lightly on the land.
-

Lake Powell Pipeline Project Draft Environmental Impact Study

June 11, 2020
by John Weisheit

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffly for the Salt Lake Tribune

The Draft EIS/Draft RMPA analyzes the potential direct, indirect, and cumulative physical, biological, and socioeconomic environmental effects that may result from construction and operation of the two action alternatives: The Highway Alternative and the Southern Alternative, including three RMPA sub-alternatives for the Southern Alternative.

Both alternatives consist of a water delivery pipeline that begins at Lake Powell near Glen Canyon Dam in Page, Arizona, and ends at Sand Hollow Reservoir near St. George, Utah. The pipeline would deliver up to 86,249 acre-feet of water from Lake Powell to Washington County. Both alternatives also include a water exchange contract between Reclamation and UBWR.

The BLM Arizona Strip Field Office is considering amending a portion of the Arizona Strip Field Office (ASFO) Resource Management Plan (RMP) related to the Kanab Creek Area of Critical Environmental Concern (ACEC). Pursuant to 43 CFR 1610.7–2(b), the BLM is required to publish a notice in the Federal Register of proposed ACECs, including changes to existing ACECs, and specify the resource use limitations.

- [Website for the official documents of the Draft Environmental Impact Statement \(DEIS\)](#). Reclamation.
- [Federal Register Notice for LPPP DEIS](#)

DUE DATE (now closed): The 90-day public comment period ended on September 8, 2020

Comments on the draft EIS/draft RMPA and requests to be added to the mailing/notification list were submitted by mail, e-mail or fax to:

Lake Powell Pipeline Project
Bureau of Reclamation
Provo Area Office
302 East Lakeview Parkway

Provo, Utah 84606
lpp@usbr.gov
801-379-1159

PUBLIC COMMENTS FOR DEIS & RECEIVED DURING 90-DAY COMMENT PERIOD ENDING 9/8/20

- [Nevada](#)
- [Six States](#)
- [LPP Coalition Comments](#). Conserve Southwest Utah.
- [Utah Rivers Council](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [Great Basin Water Network & Great Basin Waterkeeper](#)
- [National Parks and Conservation Association](#)
- [Arizona Game and Fish](#)
- [Peter Mayer](#). Technical Memo.
- [Harding & Lynker](#). Technical Memo.
- [WaterDM](#). Technical Memo.

ALL COMMENTS & COMPILED BY RECLAMATION ([Website](#))

- [Public Comments via Form Letters](#)
- [Public Comments Part One](#) (large file)
- [Public Comments Part Two](#) (large file)
- [LPP MOU: LPP Water Exchange Contract](#). Reclamation.
- [LPP Opt Out Letter](#). KCWCD.
- [LPP Virtual Public Meeting Presentation](#). Reclamation.

Other Public Information about LPP DEIS

- WEBINAR: [Western Resource Advocates](#) on August 25, 2020 "Lake Powell Pipeline Leaky Proposal Doesn't Hold Water Under Scrutiny"
- [Slide presentations](#) for the webinar
- [Transcript](#) for presentation by Eric Kuhn.

News about public participation of LPP DEIS

- [Click here](#) to read this story by Hillary Davis from *Las Vegas Sun*
- [Click here](#) to read this OpEd by Tick Segerblom called "Utah Pipeline Plan An Affront to Nevada"
- [Click here](#) to read this OpEd by Kyle Roerink called "St. George's Water Grab Worth Fighting"

News announcing the publication of LPP DEIS

- Salt Lake Tribune by B. Maffly, June 2020: [Feds Release Environmental Analysis on Possible Powell Pipeline Routes, Critics Point to Flaws](#)

- Salt Lake Tribune by B. Maffly, June 2020: [Lake Powell Pipeline Will Make River Angry, Southern Paiutes Warn as Feds Release Analysis](#)

PUBLIC SCOPING COMMENTS

- [Scoping Comments LPP 2020 & Compiled](#). USBR.

DEIS DOCUMENT ARCHIVE

From Environmental Protections Agency

- [All DEIS Documents Combined](#) (Searchable & requires Arcobat Reader software)
- [01 - LPP DIES Volume One](#)
- [02 - Appendices A, B & C](#)
- [03 - Appendix C13 Vegetation](#)
- [04 - Appendix C19 Visual Resources](#)
- [05 - Appendix C Supplemental 01](#)
- [06 - Appendix C Supplemental 02](#)
- [Appendix C Supplemental 01 & 02 Combined](#)
- [07 - Appendix C20 Cultural Resources](#)
- [08 - Appendix D & E Tribes](#)

From Bureau of Reclamation

- [Federal Register Notice for LPPP DEIS](#)
- [Draft EIS Vol 1](#)
- [Appendix A: Consultation and Coordination](#)
- [Appendix B: Purpose and Need Report](#)
- [Appendix C: Supplemental Resource Reports](#)
- [Appendix C-13: Vegetation Communities](#)
- [Supplement 01: Vegetation Species of Tribal Concern](#)
- [Appendix C-19: Visual Resources](#)
- [Appendix C-20: Cultural Resources](#)
- [Appendix C: Supplemental Information \(Part One\)](#)
- [Appendix C Supplemental Information \(Part Two\)](#)
- [Appendix D: Analysis and Perspective of the Tribes](#)
- [Supplement 03: Environmental Justice](#)
- [Supplement 04: Cultural Affiliation & Cultural Ethnographic Resources](#)
- [Supplement 05: FERC Appendix on Cultural & Ethnographic Resources](#)
- [Appendix E: Plan of Development](#)
- [ALL DOCUMENTS ABOVE COMBINED](#)
- [All Public Scoping Comments](#) (large file). USBR.

PUBLIC COMMENTS

- [Nevada](#)
- [Six States](#)

- [LPP Coalition Comments](#). Conserve Southwest Utah.
- [Utah Rivers Council](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [Great Basin Water Network & Great Basin Waterkeeper](#)
- [National Parks and Conservation Association](#)
- [Arizona Game and Fish](#)
- [Peter Mayer](#). Technical Memo.
- [Harding & Lynker](#). Technical Memo.
- [WaterDM](#). Technical Memo.

Other Public Information about LPP DEIS

- WEBINAR: [Western Resource Advocates](#) on August 25, 2020 "Lake Powell Pipeline Leaky Proposal Does'nt Hold Water Under Scrutiny"
- [Slide presentations](#) for the webinar
- [Transcript](#) for presentation by Eric Kuhn.

News about LPP DEIS

- [Click here](#) to read this story by Hillary Davis from *Las Vegas Sun*
- [Click here](#) to read this OpEd by Tick Segerblom called "Utah Pipeline Plan An Affront to Nevada"
- [Click here](#) to read this OpEd by Kyle Roerink called "St. George's Water Grab Worth Fighting"

ADDITIONAL INFORMATION

Humpback chub extirpation in Dinosaur National Monument

- [2018 - Humpback Chub 5-year Review](#). USFWS.
- [2001 - An Evaluation of the Role of Tributaries for the Recovery of Endangered Fishes in the Upper Colorado River and Recommendations for Future Recovery Actions](#). Tyus and Saunders.

ON THE COLORADO: Articles about the Lake Powell Pipeline

- September 23, 2019: [The Administrative History of Lake Powell Pipeline](#)
- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
- June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)
- December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
- March 21, 2011 - [Lake Powell Pipeline Documents](#)

- June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

Another Water Grab by Utah in the West Desert

August 01, 2020
by John Weisheit

The groundwater reserves in Wah Wah Valley and Pine Valley of the West Desert in Utah are at extreme risk: damage to a sole-source aquifer and critical wildlife habitat. And, for humans, water curtailments, economic hardship and eventual community abandonment.

For more information, please visit the website of [Great Basin Water Network](#). Much like the visuals of empty reservoirs in the canyons of the Colorado River, land subsidence is the visual when communities deliberately over-appropriate their groundwater reserves, as is the case in Iron County, Beaver County and Millard County, Utah.

These closed groundwater basins were filled to capacity during the last ice age and in less than one century, the rate of depletion exceeds the rate of natural recharge. This is a national issue, of course, but in the arid lands of the West, the issue is crucial when your only surrogate water supply is depleted, geologically impaired by subsidence, and never to be available again in the time-scale of a geologic Epoch.

The [Central Iron County Water Conservancy District](#) (CICWCD) recently secured 26,275 acre-feet of groundwater water rights from Utah's West Desert. The district has worked since 2006 to acquire these rights that will eventually lead to importing water to Cedar Valley from Wah Wah and Pine valleys, which are 50 miles northwest of Cedar City.

Currently the state estimates that Cedar Valley receives 21,000 acre-feet of water, with 28,000 acre-feet usage. This annual deficit of 7,000 acre-feet has caused aquifer water levels to drop at an increasing rate over the past few decades.

More evidence that the development of prudent water management practices in Utah will never be serious or timely.

USGS REPORT ON PINE AND WAHWAH VALLEYS

- [2019 - Hydrogeologic and Geochemical Characterization of Groundwater Resources in Pine and Wah Wah Valleys, Iron, Beaver, and Millard Counties, Utah](#). USGS.
- Pg 9 and 17 flow maps
- Pg 5 climate-precip
- Pg 28-39 water age
- Pg 40-42 water budget

USGS REPORT ON SNAKE VALLEY

- [2014 - Hydrology and numerical simulation of groundwater movement and heat transport in Snake Valley and surrounding areas, Juab, Miller, and Beaver Counties, Utah, and White Pine and Lincoln Counties, Nevada.](#) USGS.
- Pg 92–94 flow paths don't matter if there is too much groundwater pumping

STIPULATED JUDGMENT

- [2019 - Stipulated Judgement.](#) Central Iron County WCD v Kent Jones.

SETTLEMENT AGREEMENT

- [2019 - Settlement Agreement between CIRWCD and State Engineer](#)
- [Admin for Water Right No. 14-118 & Water Right No. 69-101](#)

IRON COUNTY POPULATION ESTIMATES

- [Iron County Population, Growth and Water Needs.](#) Stanley Consultants.

PROTESTS BY THE FEDERAL AGENCIES

- [2006 - Protest of US Department of Agriculture](#)
- [2006 - Protest by Department of Interior](#)
- [2012- Protest by US Fish and Wildlife Service](#)
- [2007 - Protest by National Park Service \(late\)](#)
- [Map of the Federal Agency Interests](#)
- [Assessment of Affected Springs and Wildlife by Federal Agencies](#)

NEWS

- [Beaver County Hopes to Block Neighbor's Groundwater Pumping Project.](#) SL Trib.
 - [Cedar Valley Moves Ahead with Pine Valley Water Pipeline Project.](#) SGN.
 - [Iron County Water District Accomplishes Monumental Steps to Importing Water into Cedar Valley.](#) SGN.
 - [OpEd: Iron County Water Needs are 1st Priority.](#) SGN.
 - [Overappropriation Water Rights Threatens Iron County.](#) SGN.
 - [Pine Valley Water Supply Project Scoping Meeting Draws Few Attendees.](#) SGN.
 - [Searching New Water Sources: Ways to Balance Aquifer.](#) SGN.
 - [Sister County Controversy Over Pine Valley Pipeline.](#) SGN.
 - [Water Board One Step Closer to Securing New Water Rights.](#) SGN.
-

Part One: The Administrative Record for the Lake Powell Pipeline Project

August 05, 2020
by John Weisheit

Part Two is located [HERE](#).

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffly for the Salt Lake Tribune

THIS POST IS UNDER CONSTRUCTION (This is a huge admin record)

THE ADMINISTRATION RECORD OF THE LAKE POWELL PIPELINE

What we now know as a proposed river diversion called the Lake Powell Pipeline Project (LPP or LPPP), was actually conceived in the early 1960s as the Dixie Project, and during the proceedings in the USA House and Senate for the eventual authorization of the Colorado River Basin Storage Project Act of 1968. It was then a federal project for the Lower Division of the Colorado River Basin, of which Washington County, Utah belongs. The original funding for construction of the Dixie Project was federal taxpayer dollars. Reforms in the 1980s basically ended the "Reclamation Era" of dam construction. Today, the funding for this project has been, and will be, generated by the rate payers and taxpayers of Utah. The licensing of this project must meet, however, the criteria of federal public law.

Without doubt, the LPP is a project that can only provide a water delivery based entirely on paper promises, and not actual wet water. Actual wet water in the Colorado River Basin hasn't existed since the 1968 authorization of the Central Arizona Project, which history has now proven to be the tipping point for creating water instability in the entire Colorado River Basin. What this essentially means is the system works, until it doesn't.

DEPARTMENT OF THE INTERIOR (Lead Agency in 2019)

Bureau of Reclamation [WEBSITE](#)

FEDERAL ENERGY REGULATORY COMMISSION (Lead Agency prior to 2019)

- [CLICK HERE](#) to visit the FERC document library for the administrative record of the Lake Powell Pipeline **The docket # is: P-12966**
- [CLICK HERE](#) to download a pdf file with active hyperlinks of the complete administrative record from 2007 to 2013
- [CLICK HERE](#) to download a pdf file with active hyperlinks of the complete administrative record from 2014 to 2019

OTHER WEBSITES

- [Home page of the Lake Powell Pipeline Project](#) (proponents)
- [Home page of Lake Powell Pipeline Facts](#) (opponents)
- [Washington County Water Conservancy District](#)
- [Community Integrated Resources Planning Advisory Committee](#) (CIRPAC)

1964

- [Dixie Project; Lower Division, Region 3: USA House Committee Hearing](#)

1965

- [Central Utah Project Ultimate Phase Inventory & Available Data](#); & ([in high resolution](#)).

1966

- [Dixie Project Data of Lower Division](#). USBR.

1973

- [Ute Agreement For Assured Water Rights From USA](#). DOI.
- [Central Utah Project Bonneville Unit EIS](#)

1974

- [Uintah Ouray Indian Reservation Resources Development Potential](#). BIA.

1975

- [Secretary Morton Assures Ute Indians On Water Rights Protection](#)
- [Central Utah Project Jensen Unit EIS](#)
- [Kaiparowits Power Project DEIS](#)

1978

- [Uintah Unit Central Utah Project EIS](#)

1980

- [Ute Water Right Tabulation](#)

1992

- [Public Law Central Utah Project Construction](#)
- [Public Law Reclamation Projects Authorization Adjustment Act](#)

1993

- [Ute Agreement for Water From USA](#)

1994

- [Utah Policy Regarding Applications To Appropriate Water From Green River](#). UDWR.

1995

- [Ute Indian Water Compact](#)
- [Water Right 89-1525; Washington County Water Conservancy District](#). UDWRi.
- [LPP feasibility Study](#). Boyle.
- [LPP Purpose and Need Study](#). Boyle.

1996

- [41-3479 Water Right Admin History](#). UT Div of Water Rights.

- [Water Right Extension Approval](#)
- [Application Protests of LLP](#)

1997

- [Utah Title 73 Chapter 21 Ute Indian Water Compact](#)
- [Admin record for Water Right 89-1559; City of St. George](#). UDWRi.
- [Ute Water Right 41-2963](#)(ocr). UDWR. The Ute Indian Unit water right will be used for non-indian purposes.

1999

- [Water Right Extension Approval](#)

2000

- [Washington County Water Supply Report](#). Hydrosphere.

2001

- [History Of Central Utah Project: Federal Perspective](#)

2002

- [Unbuilt Ultimate Phase Units: History of CUP](#). USBR.
- [History of Central Utah Project Federal Perspective](#)
- [Green River Pipeline Draft](#) (transbasin diversion to Bear River). UDWR.

2003

- [Use and Accounting of Upper Basin Water For Lower Basin Lake Powell Pipeline](#). Upper Colorado River Commission.

2006

- [Lake Powell Pipeline Development Act](#)
- [LPP Development Act Passed](#)
- [From Cadillac to Chevy: Environmental Concern Compromise Central Utah Project Completion Act](#). Eastman.

2007

- [Water Marketing From Flaming Gorge Reservoir](#). USBR. A 40-year limitation of 165,000 acre-feet from Flaming Gorge Reservoir for the Upper Basin.
- [Application Preliminary Permit LP Pipeline Project](#)
- [LLP Comments](#). Dept. of Interior.
- [Western Water Projects](#). Carpe Diem.

WORLD-WIDE ECONOMIC "RECESSION" BEGINS

2008

- [Notice of Intent: Lake Powell Pipeline](#). Utah Board of Water Resources.
- [FERC Scoping Document](#). (ocr).
- [LPP Colorado State Comments](#)
- [LPP Nevada State Comments](#). Mulroy.
- [LPP Report: Socioeconomic Resources](#). Tufte.
- [Paiute Comments LPP](#). (ocr).
- [Scoping Comments](#). LPP Coalition.
- [Scoping 02 Comments](#). LPP Coalition.

- [Motion to Intervene](#). LPP Coalition.
- [Comments to FERC](#). Southern Nevada Water Authority.

2008 ZIP FILES: Pre-Application Documents (PAD)

- [PAD Volume One](#).zip
- [App A](#).zip
- [App B All Others](#).zip
- [App B Arizona Agency](#).zip
- [App B Consultants](#).zip
- [App B NPS](#).zip
- [App B NRCS](#).zip
- [App B UGS 01](#).zip
- [App B UGS 02](#).zip
- [App B USBR](#).zip
- [App B USFWS](#).zip
- [App B USGS 01](#).zip
- [App B USGS 02](#).zip
- [App B Utah Agency](#).zip

2009

- [Upper Colorado River Basin Policy Issues](#). UDWR.
- [Colorado Water Rights for Utah](#). UDWR.
- [Extension Request: Duchesne Water Conservancy District](#). Reclamation.

2010

- [40-year Plan: Flaming Gorge Water Right](#). (ocr).
- [40-year Plan: Flaming Gorge Water Right](#)
- [Minutes: July 2010 LPP Management Committee](#)
- [Green River Pumping Project](#)
This project requires a federal contract for a water release from Flaming Gorge Dam. The diversion is limited to 10,000 acre-feet per year and for a maximum time-period of five years. After the initial five years the project can enter a 40-year contract with Reclamation, which is the maximum time-frame allowed.
 - [2010 - FONSI and Biological Assessment of GRPP](#). USBR.
 - [Biological Opinion Green River Pumping Project](#). USFWS.
 - [Environmental Assessment: Green River Pumping Project](#). (archived). USBR.
 - [Biological Assessment for Green River Pumping Project](#). USBR.
- On August 11, 2009 the District segregated 8,500 af (Water Right No. [43-12263](#)) off of Water Right No. [41-2963](#) (A30414) and filed Change Application No. a35811 to move this water to the GRPP. Water Right No. [41-3487](#) (A30414db) for 8,400 af

Water Right No. [41-3523](#) (A30414do) for 43,400 af from the Ultimate Phase water right.

2011

- [Federal Agreement with Utah](#). The water right for the Lake Powell Pipeline is now junior to Central Utah Project and its Units.
- [Order of State Engineer](#). The water right for the LPP expired and the State Engineer granted an extension with a caveat that the project must begin depletions by October 31, 2020.
- [Lake Powell Pipeline Funding Clears First Hurdle](#) in Deseret News
- [Lake Powell Pipeline May Take Share of Statewide Sales Tax](#) by Salt Lake Tribune Editorial Board
- [Don't Soak Utahns](#) OpEd by Salt Lake Tribune

2011 - The Initial Study Documents

The sensitive material of the archeology report will not be made public. The ethnographic report is still pending.

These documents were submitted in accordance with the Federal Energy Regulatory Commission (FERC) by the Utah Division of Water Resources for the potential licensing of Lake Powell Hydroelectric Project No. 12966, otherwise known as the Lake Powell Pipeline. Originally the proposed project would deliver 100,000 acre-feet (annually) of Colorado River water from Lake Powell to Kanab, Washington and Iron counties. Recently, Iron County decided to drop out of project because of the exorbitant cost. The new projected depletion is 73,000 acre-feet. The project proposal also includes a component to generate electricity to defer a portion of the operating costs.

- [March 11, 2011 - Draft Study Report Transmittal Letter to FERC](#)
- [Draft Air Quality Report](#)
- [Draft Aquatic Resources Report](#)
- [Draft Geology & Soils Report](#)
- [Draft Groundwater Resource Technical Report](#)
- [Draft Land Use Report](#)
- [Draft Noise Report](#)
- [Draft Paleontological Resources Report](#)
- [Draft Recreation Resources Study](#)
- [Draft Socioeconomic & Water Resources Report](#)
- [Draft Special Status Aquatic Species Habitats Report](#)
- [Draft Special Status Plant Species](#)
- [Draft Special Status Wildlife Species Report](#)
- [Appendix B Avian Survey Report](#)
- [Appendix C Avian Survey Report](#)
- [Appendix D Mohave Desert Tortoise Survey Report](#)
- [Appendix E Utah Prairie Dog Survey Report](#)
- [Draft Transportation Report](#)
- [Draft Vegetation Community Report](#)

- [Draft Visual Resources Report](#)
- [Draft Surface Water Quality Report](#)
- [Draft Surface Water Resources Report](#)
- [Draft Climate Change Report](#)
- [Draft Water Needs Assessment Report](#)
- [Draft Wetland Riparian Resources](#)
- [Draft Wildlife Resources Study](#)
- [Draft Alternatives Development Report V3](#)
- [March 2011 - Meeting summary of the study presentations](#)

2011 - Additional Documents

- [LPP Coalition Comments to FERC](#)
- [Colorado Water Conservation Board Comments](#)
- [EDF Comments on LPP Study Report](#)
- [Federal Agreement with Utah](#)
- [NPS comments LPP](#)
- [FERC Comments to Utah's Response](#)
- [Initial Study Report Meeting Summary LPP](#)
- [Letter from FERC to Utah Draft Study Plans](#)
- [LPP Extension Order](#)
- [LPP Funding and/or Recording](#) (mp3 file).
- [LPP Presentation to Nevada](#)
- [Study Reports Comments](#)
- [Utah's Response to FERC](#)
- [WRA Comments to FERC](#)
- **Flaming Gorge Pipeline:** [2011 - Coalition of Intervenors to FERC with Exhibits.](#) Earthjustice.

2012

Modified study reports issued in February of 2012

- [01 - Air Quality Modified](#)
- [07 - Noise Modified](#)
- [10 - Socioeconomic Modified](#)
- [16 - Visual Resources Modified](#)
- [CDF concerns of LPP study reports](#)
- [Utah's response to study reports](#)

2012 - Additional Documents

- [Modified Reports Comments](#)
- [Coalition Comments to FERC \(Modified Reports\)](#)
- [Funding for Lake Powell Pipeline \(mp3\)](#)
- [Funding for Lake Powell Pipeline 02 \(mp3\)](#)

2013

- [Ultimate Phase: Pinnacle Potash Order](#)
- [Adjudication Presentation](#). UDWR.
- [CIRPAC 01 \(mp4\)](#)
- [CIRPAC 02 \(mp4\)](#)
- [CIRPAC 03 \(mp4\)](#)
- [CIRPAC 04 \(mp4\)](#)
- [CIRPAC 05 \(mp4\)](#)
- [CIRPAC 06 \(mp4\)](#)
- [CIRPAC 07 \(mp4\)](#)
- [CIRPAC 08 \(mp4\)](#)
- [CIRPAC Financial Modeling](#)
- [Lake Powell Pipeline Economic Analysis](#)
- [Letter: LPP Repayment](#). Utah University Economists.
- [Local Waters Alternative to Lake Powell Pipeline](#). WRA.
- [LPP docket of 24 November 2013](#)

2014

- [LPP Update](#). Kane County Taxpayers.
- [Pipeline Project Studies Continue](#). St. George Spectrum.

2015

- [A Performance Audit of Projections of Utah's Water Needs](#). Legislative audit.
- [LLP Update](#). LLP Management Committee.
- [LPP Economic Analysis](#). U of U Letter to Utah's governor and state legislature.
- [Response by Utah to economists](#). St. George Spectrum.
- [LPP Impacts: Executive Summary](#). URC.
- [Analysis Summary](#). URC.
- [Six Month Report to FERC](#). UDWR.
- [Clarification of proposal and interested parties](#).
- [Environmentalists Say Vague Lake Powell Pipeline Plans Hide High Cost For Utahns](#). Salt Lake Tribune.
- [Draft Study Reports \(combined\)](#). UDWR. (large download)
- [Preliminary Licensing Proposal \(combined\)](#). UDWR. (large download)

2016

- [Memo from Joint West Slope Risk Study](#). CRWCD. Proposal for a new use for surplus water in Flaming Gorge Reservoir for Drought Contingency Planning.
- [Ultimate Phase: Order Main Canyon Water Rights2016](#)
- [Comments Lake Powell Pipeline Coalition](#)
- [Feasibility: Lake Powell Pipeline Development Act Proposed Water Conservation Alternatives](#). Criddle.
- [Water Needs Assessment](#)

2017

2017 February Report

- [Paleontological Resources Monitoring and Mitigation Plan](#)

2017 March Reports

- [BLM Comment, Responses and Narratives](#). UDWRe.
- [NPS Comment, Responses and Narratives](#). UDWRe.
- [Letter to FERC in Response to BLM and NPS filing](#). UDWRe.

2017 Other Reports

- [LPP Draft Exchange Contract](#)
- [Lake Powell Pipeline Conservation Alternative White Paper](#). CSU.
- [Lake Powell Pipeline Update](#). CSU.
- [Solicitation of Comments Lake Powell Pipeline](#). FERC.
- [State of the Colorado River and Implications for Utah](#). Millis.
- [Washington County Water Impact Fee Facilities Plan Analysis](#)
- [Governor Herbert's Fiscal 2017 Budget for Water](#)

2017 FERC

- [December, 2017 - Notice Ready for Environmental Analysis](#). FERC.
- [2017, August - Request for Additional Information](#). FERC.

2017 News Feature

- Gehrke at Salt Lake Tribune - [Utah Needs Good Data Before Taxpayers Dive Headfirst Into Lake Powell Pipeline Scam](#)
- [USBR Starts Green River Water Exchange Contract Negotiations With Utah](#)
- [Lake Powell Pipeline Approved For Environmental Analysis](#)

2017 Reclamation's Water Exchange Contracts

- [2017 - Green River Block Exchange Contract](#). Reclamation.
- [2017 - Contract for Lake Powell Pipeline](#). Reclamation.

2018

Arizona Strip Resource Management Amendment

- [2008 - Arizona Strip Management Plan FEIS & ROD](#)
- [2008 - Arizona Strip Resource Management Plan](#)
- [Arizona Strip Road FEIS](#)
- [Map of AZ SFO RMP \(jpeg\)](#)
- [Public Scoping Process ASFO](#)
- [Route Designations](#)
- [American Rivers Comments](#)
- [Living Rivers Comment](#)

- [Utah Rivers Council comments](#)
- [Scoping Report AZ Strip RMP Amendment](#)

2018 Green River Block Water Rights Contract between Utah and Reclamation Also Lake Powell Pipeline Water Exchange Contract

- [2017 - Green River Block Exchange Contract](#). Reclamation.
- [2017 - Contract for Lake Powell Pipeline](#). Reclamation.
- [2018 - Fact sheet for Lake Powell Pipeline Exchange Contract](#). Reclamation.
- [2018 - Contract Comments](#). Conserve Southwest Utah.
- [2018 -Contract Comments](#). Living Rivers & Colorado Riverkeeper.

2018 Former Utah Representative Mike Noel's Corruption Charges

- [Complaint to Utah Attorney General Regarding Mike Noel and Conflict of Interest](#). CFA.
- [Complaint to Utah AG about Kane County Water Conservancy District](#). URC.
- [God Said Make the Desert Bloom: Mormons are Using Biblical Amounts of Water](#). MJ.
- [National Ethics Group Calls for Investigation into Utah Rep Mike Noel's Conflicts of Interest](#). SL Trib.
- [The Green Green Grass of Utah](#). Outside Mag.
- [Utahn's May Be Pouring Even More Water on Lawns Than Previously Thought](#). SL Trib.
- [Utah's Rep Noel Benefits Personally and Professionally from Reduced GSE NM Boundary](#). WVP.

2018 Federal Energy Regulatory Commission Environmental Impact Study

- [2018, January - Response to Utah Water Resources Board](#). FERC.
- [Summary of phone call between FERC and Kaibab Tribe](#)
- [Answer to Suspension of Procedural Schedule](#). American Rivers.
- [Rebuttal to Utah Delegation Endorsement of LPP](#). CBD.
- [Supplemental Record](#). CBD.
- [2018 August - Request to Reinstate Procedural Schedule](#). UBWR.
- [2018, September - Order Denying Petition for Declaratory Order on Jurisdiction](#). FERC.

2018 Motions to Intervene

- [List of Standing Intervenors of LPP](#)
- [Southern Ute Tribe](#)
- [Pinal County, AZ](#)
- [American Rivers](#)
- [State of Colorado](#)
- [Colorado River Water Conservancy District](#)
- [Save the Colorado](#)

- [Howard](#)
- [Las Vegas Paiute](#)
- [Utah Rivers Council](#)
- [Western Resource Advocates](#)
- [Sierra Club Utah Chapter](#)
- [Great Basin Water Network](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [Washington County Water Conservancy District Intervention](#)
- [Conserve Southwest Utah](#)
- [Central Arizona Water Conservation District](#)
- [Center for Biological Diversity](#)

2018 Comments

- [Western Resource Advocates](#)
- [Kaibab Band Paiutes](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [American Rivers](#)
- [Office of Environmental Policy and Compliance](#). DOI.

Army Corps of Engineers (ACOE) 404 Permit Application (November, 2018)

- [Website Public Notices](#). ACOE Sacramento.
- [Application Narrative Revised](#)
- [Application Summary](#)
- [Application Drawings Revised](#)
- [Application Tables 1 to 3 Revised](#)
- [Public Hearing Response](#). ACOE.

2018 Other Documents

- [White paper about Lake Powell Pipeline](#). CSU.

###

Part Two is located [HERE](#).

Part Two: Lake Powell Pipeline Project's Administrative Record, Beginning in Year 2019

August 04, 2020
by John Weisheit

PART ONE is located [HERE](#)

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

2023

- [20 Year Plan to secure NEW water supplies for Washington County, Utah](#)

2019

Federal Energy Regulatory Commission (FERC) License Application

- [Public Comments Due March 11, 2019](#). FERC.

Utah Board of Water Resources (UBWR) to FERC License Application

- [Reply of UWRB](#)
- [Attachment A](#)
- [Attachment B, 1 of 3](#)
- [Attachment B, 2 of 3 \(Maps\)](#)
- [Attachment, B 3 of 3](#)
- [Attachment C](#)
- [Attachment D](#)
- [Attachment E](#)
- [Attachment F](#)
- [Attachment G](#)
- [Management Committee Presentation LPP](#)

Public Comments for FERC (March, 2019)

- [Western Resource Advocates](#)
- [American Rivers](#)
- [Conserve Southwest Utah](#)
- [Living Rivers](#)
- [Utah Rivers Council](#)

PUBLIC LETTERS SUBMITTED FOR THE DEADLINE OF 11/19/18. Read FERC's Order [here](#).

- [Living Rivers](#)
- [Conserve Southern Utah](#)
- [Kaibab Band of Paiute Indians](#)
- [Southern Ute Tribe](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [American Rivers](#)
- [State of Colorado](#)
- [Western Resource Advocates](#)
- [Motion to Intervene: Colorado River Water Conservancy District](#)
- [Mr. Howard](#)
- [Motion to Intervene: Las Vegas Paiute Tribe](#)
- [Motion to Intervene: Pinal County](#)
- [Save The Colorado](#)
- [Utah Rivers Council](#)
- [Motion to Intervene: Sierra Club: Utah Chapter](#)
- [Motion to Intervene: Great Basin Water Network](#)

Army Corps of Engineers (ACOE) 404 Permit Application (November, 2018)

- [Letter to FERC by US Army Corps of Engineers about 404 Permit](#)
- [Website Public Notices](#). ACOE Sacramento.
- [Application Narrative Revised](#)
- [Application Summary](#)
- [Application Drawings Revised](#)
- [Application Tables 1 to 3 Revised](#)
- [Public Hearing Response](#). ACOE.
- [Letter of February 26, 2019](#). ACOE denied the request by commenters for public meetings.
- **News of 404 Permit**
- [Click here](#) to read this story by the *Associated Press*
- [Click here](#) to read the letter from the Army Corps of Engineers to Utah Division of Water Resources

Comment Letters for 404 Permit

- [American Rivers](#)
- [Conserve Southwest Utah](#)
- [Living Rivers](#)
- [Utah Rivers Council](#)

SUPPLEMENTAL INFORMATION

- [Office of Environmental Policy and Compliance](#). DOI.
- [Center for Biological Diversity](#)

Bureau of Reclamation EIS Process (USBR) (December, 2019)

- [Federal Notice Lake Powell Pipeline](#)
- [FR Notice to Prepare DEIS for LPP](#)
- [Notice of Withdrawal of License Application by FERC](#)
- [Pipeline Alignments LLP](#). USBG.

Year 2020

Public Scoping for Lake Powell Pipeline by Bureau of Reclamation

- [BOR Handout Scoping in January 2020](#)
- [Living Rivers Cover Letter about Admin Record at Kanab Scoping Meeting in January 2020](#)
- [LR Inventory of Admin Record](#)
- [Scoping Comments LPP 2020](#). USBR.
- [Photos of Scoping Meeting at Kanab](#)
- [Presentation voice recording of Scoping Meeting in Kanab](#). Mr. Baxter.

Comments by Living Rivers & Colorado Riverkeeper

- [LR Coalition letter submitted to Reclamation](#)
- [LR References Section 1A](#)
- [LR References Section 3A](#)
- [LR References Section 3B](#)
- [LR References Section 3C](#)
- [LR References Section 3D](#)
- [LR References Section 3E](#)
- [LR References Section 3F](#)
- [LR References Section 3G](#)
- [LR References Section 3I](#)
- [LR References Section 3J](#)
- [LR References Section 3K](#)
- [LR References Section 3L](#)
- [LR References Section 3L Part 1](#)
- [LR References Section 3L Part 2](#)
- [LR References Section 3L Part 3](#)
- [LR References Section 3L Part 4](#)
- [LR References Section 3L Part 5](#)
- [LR References Section 3L Part 6](#)
- [LR References Section 3L Part 7](#)
- [LR References Section 3L Part 8](#)
- [LR References Section 3L Part 9](#)
- [LR References Section 3L Part 10](#)
- [LR References Section 3L Part 11](#)
- [LR References Section 3L Part 12](#)
- [LR References Section 3L Part 13](#)

- [LR References Section 3O](#)
- [LR References Section 3P](#)
- [LR References Section 3Q](#)
- [LR Appendix A](#)

All Public Scoping Comments

- [Scoping Comments LPP 2020](#). USBR.

Documents of LPPP DEIS from Reclamation

News of LPPP DEIS

- Salt Lake Tribune by B. Maffly, June 2020: [Feds Release Environmental Analysis on Possible Powell Pipeline Routes, Critics Point to Flaws](#)
- Salt Lake Tribune by B. Maffly, June 2020: [Lake Powell Pipeline Will Make River Angry, Southern Paiutes Warn as Feds Release Analysis](#)

DEIS DOCUMENT ARCHIVE

From the Environmental Protections Agency

- [All DEIS Documents Combined](#) (Searchable & requires Arcobat Reader software)
- [01 - LPP DIES Volume One](#)
- [02 - Appendices A, B & C](#)
- [03 - Appendix C13 Vegetation](#)
- [04 - Appendix C19 Visual Resources](#)
- [05 - Appendix C Supplemental 01](#)
- [06 - Appendix C Supplemental 02](#)
- [05 & 06 Supplementals Combined](#)
- [07 - Appendix C20 Cultural Resources](#)
- [08 - Appendix D & E Tribes](#)

From the Bureau of Reclamation

- [Federal Register Notice for LPPP DEIS](#)
- [Draft EIS Vol 1](#)
- [Appendix A: Consultation and Coordination](#)
- [Appendix B: Purpose and Need Report](#)
- [Appendix C: Supplemental Resource Reports](#)
- [Appendix C-13: Vegetation Communities](#)
- [Supplement 01: Vegetation Species of Tribal Concern](#)
- [Appendix C-19: Visual Resources](#)
- [Appendix C-20: Cultural Resources](#)
- [Appendix C: Supplemental Information \(Part One\)](#)
- [Appendix C Supplemental Information \(Part Two\)](#)
- [Appendix D: Analysis and Perspective of the Tribes](#)

- [Supplement 03: Environmental Justice](#)
- [Supplement 04: Cultural Affiliation & Cultural Ethnographic Resources](#)
- [Supplement 05: FERC Appendix on Cultural & Ethnographic Resources](#)
- [Appendix E: Plan of Development](#)
- [ALL DOCUMENTS ABOVE COMBINED](#) (requires Acrobat Reader app)
- [All Public Scoping Comments](#) (large file). USBR.

Public Comments for LPP DEIS

- [Nevada](#)
- [Six States](#)
- [LPP Coalition Comments](#). Conserve Southwest Utah.
- [Utah Rivers Council](#)
- [Living Rivers & Colorado Riverkeeper](#)
- [Great Basin Water Network & Great Basin Waterkeeper](#)
- [National Parks and Conservation Association](#)
- [Arizona Game and Fish](#)
- [Peter Mayer](#). Technical Memo.
- [Harding & Lynker](#). Technical Memo.

Other Public Information about LPP DEIS

- WEBINAR: [Western Resource Advocates](#) on August 25, 2020 "Lake Powell Pipeline Leaky Proposal Doesn't Hold Water Under Scrutiny"
- [Slide presentations](#) for the webinar
- [Transcript](#) for presentation by Eric Kuhn.

News about LPP DEIS

- [Click here](#) to read this story by Hillary Davis from *Las Vegas Sun*
- [Click here](#) to read this OpEd by Tick Segerblom called "Utah Pipeline Plan An Affront to Nevada"
- [Click here](#) to read this OpEd by Kyle Roerink called "St. George's Water Grab Worth Fighting"

ADDITIONAL INFORMATION

Humpback chub extirpation in Dinosaur National Monument

- [2018 - Humpback Chub 5-year Review](#). USFWS.

###

PART ONE is located [HERE](#)

Colorado River System Mid- to Long-term Projections

September 18, 2020

by John Weisheit

Reclamation's Upper and Lower Colorado Regions utilize a suite of reservoir operations models for short-, mid-, and long- term planning. The 24-Month Study, the Mid-Term Operations Model ([MTOM](#)), and the Colorado River Simulation System (CRSS) are comprehensive models of the Colorado River system implemented in the commercial river modeling software called [RiverWare™](#) developed by the Center for Advanced Decision Support for Water and Environmental Systems ([CADSWES](#)) at the University of Colorado. The models are updated and maintained continually by Reclamation's Upper and Lower Colorado Regions.

The [24-Month Study](#) is used for one-month to two-year projections. Pursuant to the 2007 Interim Guidelines ([ROD](#)), the 24-Month Study is used to set the operating tier for the coordinated operation of Lake Powell and Lake Mead for the following year. Both CRSS and MTOM are used in developing probabilistic projections of future Colorado River system conditions over the timeframe of two years to several decades. The most recent set of projections currently extend through 2026, the year in which the 2007 Interim Guidelines expire.

Projections of future system conditions are most sensitive to assumptions about future Colorado River Basin hydrology. For this reason, Reclamation generates additional projections under different future hydrology scenarios, available at Colorado River System Projected Future Conditions - Alternative Future Hydrology Scenarios. Additionally, Reclamation is actively exploring new methods through its [Colorado River Basin Research-to-Operations Program](#).

Projections of longer term (through 2060) Colorado River system conditions under multiple future hydrology scenarios are available in the [Colorado River Basin Water Supply and Demand Study](#).

NEWS

- [Click here](#) to read this story by Sam Metz of *The Associated Press*
- [Click here](#) to read this story by Tony Davis of *Arizona Daily Star*
- [Click here](#) to read this story by Ian James of *Arizona Republic*

2018, April - Colorado River System 5-Year Projected Future Conditions by the Bureau of Reclamation in the Lower Colorado Division.

Part One - General Modeling Information: (1) Overview; (2) Future Hydrology; (3) Lake Mead and Lake Powell Coordinated Operations; (4) Model Assumptions

- [USBR website](#) & archived [here](#) (hyperlinks nonfunctional in pdf format (??))

Part Two - Colorado River System 5-Year Projected Future Conditions: (1) Overview; (2) Modeling Approach; (3) Future Projections

- [USBR website](#) & archived [here](#)
- [USBR Table download](#) & archived [here](#)

2020, September - Colorado River System 5-Year Projected Future Conditions by the Bureau of Reclamation in the Lower Colorado Division.

- [USBR website](#) - Overview & archived [here](#)

Part One - General Modeling Information:

- [USBR website](#) & archived [here](#)

Part Two - Colorado River System 5-Year Projected Future Conditions:

- [USBR website](#) & archived [here](#)
- [USBR Table Download](#) & archived [here](#)

Part Three - Colorado River System Projected Future Conditions - Alternative Future Hydrology Scenarios:

- [USBR website](#) & archived [here](#)

Other Information

- [2008 and 2020 Combined](#) (charts only)

REFERENCES

- [MTOM Stakeholder User Manual 2.0](#)
-

Water Right Hearing for the Lake Powell Pipeline in Washington County

September 24, 2020

by John Weisheit

NOTE: The Bureau of Reclamation has formally terminated the process to develop an Environmental Impact Statement for the construction of the Lake Powell Pipeline Project.

- September 9, 2020 - [Surrounding states bash Utah's Lake Powell pipeline project](#). By Brain Maffley for the Salt Lake Tribune

REGARDING APPLICATION FOR WATER RIGHT #41-3479

- [Public Hearing information about Water Right #41-3479](#) & transcribed below: A hearing on the above-numbered application has been scheduled for 1:00 PM on Wednesday, October 21, 2020, in the auditorium (Room I 040) of the Department of Natural Resources Building located at 1594 West North Temple, Salt Lake City, Utah.

Social Distancing Protocol

Due to social distancing requirements associated with the COVID-19 pandemic, physical seating within the DNR auditorium will be limited. Consequently, in order to ensure that the applicants and protestants (i.e., parties) are able to participate in person, the State Engineer will reserve a maximum of two (2) seats per party. The hearing proceeding will also be live-streamed online at the following URL: <https://waterights.utah.gov/watchlive/>

Remote Access to Hearing

To facilitate parties to the application who wish to participate from remote locations, the hearing will also be accessible electronically via web-conference and telephone. Instructions on how to participate in the hearing via web-conference or telephone can be found at the following URL: <https://wateriahts.utah.gov/hearings/>

Hearing Format

The hearing for this application will be conducted in accordance with Utah Code Section 630-4-203 and Utah Administrative Rule R655-6. The hearing is an administrative proceeding allowing the State Engineer to collect information to evaluate the application. The hearing is not the sole basis from which a decision will be made; however, it is an opportunity for the parties to bring the State Engineer's attention to any information relevant to the statutory decision-making criteria (Utah Code Sections 73-3-3 and 73-3-8).

Subject: Permanent Change Application 41-3479 (a45683)

During the course of the hearing, participants will be provided with pre-determined time limits to make their presentations. The Hearing Officer will enforce adherence to these time limits. The first to present will be the applicant - who will be allowed 45 minutes in

which to make their initial presentation. Following the applicants' presentation, each protestant will be provided 15 minutes to present information and provide data and information regarding the statutory criteria governing the approval or rejection of the application. Upon conclusion of the protestants' allotted time, the Hearing Officer will allow 2 minutes (per entity/person) for other interested members of the public to provide additional information or testimony. Upon conclusion of the public comment period, the applicants will then be provided with 30 minutes to summarize their application, answer any questions, and address issues raised by the protestants and/or members of the public. Protestants with similar data and information should choose to combine their individual allocation of time in order to accommodate a longer presentation. If this is the case, please contact me directly prior to the hearing so I can coordinate the respective time allocations.

As you prepare for the hearing, please do so with the time limits in mind. Due to the limited time, it is not necessary for a party to restate previously presented information. Instead, parties may simply express agreement with that information as appropriate. Recognizing the difficulty in anticipating and answering questions that may arise, the Hearing Officer may allow for some additional flexibility to the time limits in order to facilitate the investigative process.

Hearing Exhibits

The hearing facilities will accommodate the use of PowerPoint presentations. Please arrive early with a copy of your presentation on a detachable flash drive that can be loaded onto a Division of Water Rights computer for presentation and inclusion on the water right file. Other exhibits may also be submitted. Please bring enough hard copies for all parties and one additional copy to be placed on the water rights file.

To present exhibits from a remote location, parties may utilize the web-conference interface to share the screen of their respective computer. Alternatively, the Hearing Officer will display the exhibits during the hearing at the submitting parties' request if parties mail exhibits to our Salt Lake City office to the attention of Clark Adams, or submit them electronically via email at: clarkadams@utah.gov

Exhibits ought to be displayed by the Hearing Officer must be received no later than 24 hours in advance of the hearing.

If you have questions regarding the hearing, please contact me directly at 801-538-7345 or blakebingham@utah.gov

###

UTAH DIVISION OF WATER RIGHTS (UDWRi)

- [Water Right Details for Water Right #41-3479](#) (UDWRi webpage)
 - [Administrative Record for Water Right #41-3479](#) (UDWRi webpage)
-

Cove Reservoir Dam and Reservoir Project

December 09, 2020
by John Weisheit

Cove Reservoir Watershed Project & Environmental Assessment; East Fork of the Virgin River in Kane County, Utah.

Description

The United States Department of Agriculture Natural Resources Conservation Service (NRCS), with the Kane County Water Conservancy District as the project sponsor, is proposing to partially fund through the Watershed Protection and Flood Prevention Act (Public Law [PL] 83-566), the Cove Reservoir Watershed located in Kane County, Utah. The proposed improvements include the construction of a new, approximately 6,055-acre-foot water storage reservoir (Cove Reservoir), principal and auxiliary spillways, a recreation area and boat ramp, a hydroelectric power plant, a transmission line, and an access road on private lands near Orderville, Utah. These improvements under consideration will address water conservation and agricultural and municipal demands and provide for increased opportunities for water-based recreation in the area while benefitting aquatic species habitat downstream.

NEWS

- [Kane County Looking to Dam Virgin River Latest Major Project](#). Brian Maffly of *Salt Lake Tribune*.
- [Last Chance to Comment for Cove Reservoir](#). Helene Jorgensen of *Southern Utah News*.
- [Water Managers Promote Cove Reservoir Near Zion National Park](#). Joan Meiners of *St. George Spectrum & Daily News*.
- [Water Officials Propose New Reservoir Off Virgin River To Benefit Kane & Washington Counties](#). Mori Kessler of *St. George News*.

Lead Agency: Natural Resources Conservation Service (NRCS)

Sponsor: Kane County Water Conservancy District (KCWCD)

[Website](#) for this project

Comments due: December 31, 2020

Contact Information

Brian Parker – Transcon Environmental
1745 South Alma School Road, Suite 220
Phoenix, AZ 85210

(480) 807-0095 phone
bparker@transcon.com

NEPA Analysis

The project is being partially funded by the NRCS Watershed Protection and Flood Prevention Program (PL 83-566), which authorizes funding and technical assistance to construct projects that will address water conservation, aquatic species habitat, public safety, and other eligible concerns supporting existing agricultural land use. NRCS, as the lead federal agency, is initiating National Environmental Policy Act (NEPA) analysis in the form of a new Watershed Plan-Environmental Assessment (Plan-EA) to analyze this project's impacts to the natural and human environment. The Plan-EA will comply with the Council on Environmental Quality's regulations at 40 CFR Parts 1500-1508, which require an evaluation of potential environmental impacts associated with federal projects and actions.

Current Status

The project is currently in the Draft Plan-EA review period, and the public, organizations, and agencies are invited to provide comments on the proposed project. A public meeting which will describe the alternatives analyzed, potential impacts to the environment, and the Preferred Alternative for the project will be held. Details for the public comment period and public meeting are included below.

Scoping Public Comment Period

Open: Monday, November 25, 2020
Close: Wednesday, December 31, 2020

Download the comment form [here](#).

- [How to Leave a Comment / Notice of Availability](#)

Public Meeting - Virtual

Date: Wednesday, December 9, 2020
Time: 6:00 p.m. – 7:00 p.m.
Location:

Online Via Zoom: zoom.join/us (Enter Meeting ID: 922 7721 9285)
By Phone: (253) 215-8782 (Enter Meeting ID)

Project Documents Draft Plan-EA

- [Cove Reservoir Draft Plan-EA](#) & [archived here](#)
- [Cove Reservoir Draft Plan-EA Total Report](#) & [archived here](#)

Cove Reservoir Draft Plan-EA Appendix Pages

- [Appendix A](#) & [archived here](#)
- [Appendix B](#) & [archived here](#)
- [Appendix C](#) & [archived here](#)
- [Appendix D](#) & [archived here](#)
- [Appendix E](#) & [archived here](#)

Scoping

- [Scoping Report](#) & [archived here](#)

Public Comments for Draft Watershed Plan and Environmental Assessment

- [Coalition Comments](#): Utah Rivers Council, Rio Grande Waterkeeper, WildEarth Guardians, Colorado Riverkeeper, Living Rivers, Utah Audubon Council, Center for Biological Diversity, Save the Colorado, Colorado River Waterkeeper Network, Great Basin Water Network, Glen Canyon Institute.
 - Coalition documents for the administrative record: [ZIP File](#)
-

Film: The Unfinished Fight Of Seldom Seen Sleight

January 01, 2021
by John Weisheit



PHOTO: Moab's Star Hall, the venue for the debut of this documentary.

UPDATE: Live Stream - The Unfinished Fight of Seldom Seen Sleight

FREE SCREENING OF THIS DOCUMENTARY IS NOW SOLD OUT

If you would like to watch the film, it is still available through Cinema On Demand with proceeds benefiting Living Rivers and various film makers of the Colorado River [HERE](#). The admission fee is \$9.99 and this offer ends January 31, 2021.

Please view the Q & A session [HERE](#)

DATE: January 12th, 2021 at 7 p.m.

[News clip from *The Salt Lake Tribune* by Zak Podmore on January 19, 2021](#)

- [The One-Dam Solution](#) & archived [here](#)

###

FREE FILM SCREENING and presented nationally by the Utah Film Center

January 12, 2020; 7 pm (Mountain time)

Question/answer session to follow

[REGISTER](#) for this event here

[LINK](#) to the official website of Utah Film Center

[LINK](#) for this documentary at the website for the Wild & Scenic Film Festival in Nevada City, California.

[Podcast](#) from *Podship Earth* that includes an interview about the making of this documentary about Sleight.

[Click here](#) to read this story by Maggie McQuire of *Moab Sun News*

[Click here](#) to read this story in the *Moab Happenings*

The Documents for the 7D Review of 2007 Interim Guidelines

January 03, 2021
by John Weisheit

[Reclamation's website for the 7D Review](#)

7D REVIEW BY DEPARTMENT OF INTERIOR

Memo (2/7/20) from Bureau of Reclamation about the Section 7.D review of Interim Guidelines, now underway until December of 2020. In his 12/13/2019 remarks at Annual Conference of Colorado River Water Users Association ([video](#)), Interior Secretary Bernhardt stated:

- 'Section 7.D of the 2007 Guidelines [the update of 12/10/2007, listed below] calls for Reclamation to initiate work prior to Dec. 31, 2020 on a formal review of the effectiveness of the 2007 Guidelines.'
- 'This provision provides an opportunity to take an objective look at where we've been, and where we are, with our operational rules.'
- 'We want to wrap up this effort, culminating in the 'Section 7.D Report,' around this time next year.'
- 'The report will be a Reclamation product but it will rely on important input from the Basin States, Tribes, NGOs and the public, as the report is developed.'

7D DOCUMENTS

- [Updated Draft Guidelines of December 10, 2007; Section 7 only](#) - (pages 34-36)
- [2007 Record of Decision of December 13, 2007](#)
- [2007 Final EIS \(October\)](#)

Approach

- The Section 7.D Review will be retrospective; a **'look-back'** at past operations and not a consideration of future activities.
- The Review will result in a Report that: 1) evaluates the effectiveness of the Guidelines and 2) documents our operational experience with the Guidelines.
- Through this Review, we hope to build a solid foundation that informs decision-makers in future negotiations and bring partners, stakeholders and the public to a common understanding of past operations and their effectiveness.
- Input from the Basin States, Tribes, NGOs, other Federal agencies, and the public will be factored into the Review.
- Outreach with Basin States, Tribes, NGOs, and other Federal agencies will occur at 2

primary milestones: 1) at the start of the Review, with a discussion of the Report scope, approach, and schedule and 2) when the draft Report is ready for review.

- In March, we anticipate holding webinar(s) to present and discuss the Report scope, approach, and schedule with the Basin States, Tribes, and NGOs. Additional meetings with groups of tribes and individual tribes will follow as requested.
- In late summer, we anticipate holding webinar(s) to provide the draft Report to the Basin States, Tribes, and NGOs for review. Received comments will be considered and factored into the draft Report as appropriate. Additional meetings with groups of tribes and individual tribes will follow as requested.
- We anticipate publishing the final Report near the end of 2020.

PUBLIC PARTICIPATION OF 7D REVIEW

- [Kick-off Public Webinar as a pdf](#)
- Draft Comments: due May 1, 2020. However, this is not a hard deadline due to the Covid-19 pandemic.
- Send comments to: 7DReview@usbr.gov

7D Review: Letters of Submission for the Draft

- [Tribes of the Colorado River Basin](#)
- [Academic Consortium](#)
- [Ak Chin Indian Community](#)
- [Central Utah Water Conservancy District](#)
- [Colorado River Basin States](#)
- [Colorado River Energy Distributors Association](#)
- [Colorado River Indian Tribes](#)
- [Dolores Water Conservancy District](#)
- [Fort McDowell Yavapai Nation](#)
- [Havasupai Tribe](#)
- [Living Rivers](#)
- [National Park Service](#)
- [NGO Consortium](#)
- [Pacific Institute](#)
- [Quechan Indian Tribe](#)
- [Western Area Power Administration](#)
- [Yavapai Apache Nation](#)

Draft Report Webinar

- [7D Review Draft Report Webinar](#). October, 2020.

Draft Report & Appendix A

- [7.D. Review Draft Report](#)
- [7.D. Review Draft Appendix](#)

7D Draft Report Comments

- [State of Wyoming](#)
- [State of Utah](#)
- [Tohono O'odham Nation](#)
- [San Diego Water Authority](#)
- [San Carlos Apache Tribe](#)
- [Pacific Institute](#)
- [NGO coalition](#)
- [State of New Mexico](#)
- [Metropolitan Water District of Southern California](#)
- [Living Rivers](#)
- [Imperial Irrigation District](#)
- [Irrigation and Energy Distributors Association of Arizona](#)
- [Gila River Indian Community](#)
- [State of California](#)
- [State of Colorado](#)
- [Collective Tribal Letter](#)
- [Central Utah Water Conservancy District](#)
- [Central Arizona Water Conservancy District](#)
- [State of Arizona](#)
- [State of Nevada](#)
- [Western Area Power Administration](#)
- [Southern Nevada Water Authority](#)
- [Dolores Water Conservancy District](#)
- [Colorado River Energy Distributor Association](#)
- [Central Utah Water Conservancy District](#)

Final Report & Appendix

- [7.D. Review Final Report](#)
- [7.D. Final Appendix](#)

Stakeholder Meeting Overview

- [7.D. Review Stakeholder Discussions Overview](#)

Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines

February 22, 2021

by John Weisheit



Kirk Walters from The Toledo Blade, 2004

Thanks For visiting. This post is now a four part series. Please redirect to the following choices:

- [Click here](#) for Part One A: News and Opinion BY DATE
- [Click here](#) for Part One B: News and Opinion BY SUBJECT
- [Click here](#) for Part Two: Narratives - Old and New.
- [Click here](#) for Part Three: The Physical and Social Sciences
- [Click here](#) for Part Four: Solutions- Climate Adaptation, Sustainability and Resilience

Part One A: Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines

JULY 26, 2021

BY JOHN S. WEISHEIT

PART ONE A:

BY DATE: News and Opinion

This page is Part One A (news by date)

- [Click here](#) for Part One A: By date - News and Opinion
- [Click here](#) for Part One B: By subject - News and Opinion
- [Click here](#) for Part Two: Narratives - Old and New.
- [Click here](#) for Part Three: The Physical and Social Sciences
- [Click here](#) for Part Four: Solutions - Climate Adaptation, Sustainability and Resilience.

NOTE: This series will be updated through the preparation of the 2026 Annual Operating Plan (**AOP**).

- We present recent and relevant news features about the very serious issues that face the Colorado River Basin.
- We present baseline policy documents, climate science, social science, traditional knowledge, and solutions.
- The problem is human-caused: 1) over-consumption of surface water and aquifers; 2) water conservation programs are actually water transfer programs and will not reduce consumption and will harden the embedded demand; 3) the reservoir system is over-built and yet it can only manage little droughts and little floods; 4) misguided planning and zoning (not resilient and not sustainable); 5) climate disruption: altered circulation patterns in ocean and atmosphere in response to greenhouse gas loading from burning fossil fuels at rates greater than the planet's ability to absorb carbon emissions into the ecosystems of ocean and land.
- The solution is: work with nature's geography and climate; restoring balance is the key objective; an international climate accord is imperative; do the legislative things that weren't properly attended to between 1902 and 1948; prepare citizens to adjust to the sacrifices that will be required, so that the necessary transition will be just and safe and affordable.
- We recommend that the nonsense and distractions stop immediately and get this house in order.

NEPA Review: What needs to happen? Will it happen?

- Understand the problem: This is a desert and naturally exists in a state of permanent depletion. This is not a drought; a drought eventually ends. This is aridification; the last time aridification occurred on this planet, it lasted for centuries (Woodhouse, 2010).
- It must be recognized that the Basin States Alternative of 2006 was unsuccessful; it is not necessary to repeat or modify this very disappointing experiment.
- The Upper Basin Depletion Schedule must be eliminated, and the Structural Deficit of the Lower Basin and Mexico must be zeroed (Breggren, 2019). Had this been done 15-years ago, the jeopardy of reservoir elevations dropping to dead pool would not exist.
- The Upper Basin is not prepared for the shortages that will arrive (Wheeler, 2021). The Upper Colorado River Commission must create a robust and equitable shortage agreement because the proposed demand management strategies do not really exist at the scale that is necessary (UCRC 2020 Report).
- The theme of the Preferred Alternative must be about Climate Adaptation and in the time-scale of the next 100-years. This means an international climate accord is required to significantly reduce greenhouse gas emissions (Craig, 2010).
- The mining of groundwater must stop and depleted aquifers should be recharged. Human activities that deplete aquifers will reduce groundwater seepage into rivers; as will increased surface/soil evaporation due to increasing aridity (USGS, 2021).
- There should be a public scoping meeting in each state that will facilitate attendance at rural and tribal communities, and resources should be provided to Mexico for conducting public meetings in the Spanish language.
- Resources should be provided for the communities of the Salton Through (California) to address the problems of this region's terminal lake, the "Salton Sea."
- The public scoping period should be six months, rather than three months, and justified for reasons of social disruptions caused by the persistence of the Covid-19 pandemic.
- In addition to operations at Hoover Dam and Glen Canyon Dam, the scope of dam operations must include Flaming Gorge Dam, Blue Mesa Dam and especially Navajo Dam, which has an existing and separate shortage agreement.
- Operations at McPhee Dam and the Paradox Valley Salinity Control Program on the Dolores River require attention; this river ecosystem is essentially dead (News: Jonathan Thompson & Shannon Najmabadi).
- The Biological Opinions of the Basin must be revised to address the quickening of climate disruptions, with special considerations given to the Grand Canyon Ecosystem below Glen Canyon Dam, and the harm that equalization flows from Glen Canyon Dam cause. Contrarily, when hydropower production at Glen Canyon Dam stops, and the river bypass tubes are opened, prepare for dramatic water quality changes and invasion of non-native species for the ecosystem of Grand Canyon NP.
- Prioritize green infrastructure, rather than gray infrastructure.

2021, September 22: FIVE-YEAR PROJECTIONS

Note: The 30-year average for the 2023 Annual Operating Plan (AOP) will be 9.6 million acre-feet (maf) The prior 30-year average was 10.83 maf and before that it was 12.04 maf. The overall total loss is negative 2.44 maf. This number represents the minimum objective for the savings that the water managers must achieve by the completion of the 2026 AOP. After that, the water managers must prepare for additional losses due to atmospheric heat stresses.

- [24-month Report](#). USBR.
- [Two- and Five-Year Projections](#). USBR.
- [Taking Climate Change Seriously: The Colorado River Stress Test](#). Kuhn et al.
- [NOAA: Drought Task Force Report on the 2020–2021 Southwestern USA Drought](#).
- ['Dead Pool' at Lakes Mead and Powell a real possibility says Arizona water chief](#). Tony Davis for *Arizona Daily Star*.
- [OpEd: Lake Mead and Lake Powell are clearly in trouble. How do we help?](#) Joanna Allhands for *Arizona Republic*.
- [October 24-Month Report; including minimum flow projection result](#).
- November 14, 2021 - [Gloomier Forecast for Colorado River Still 'too rosy' Expert Says](#). Tony Davis for *Arizona Daily Star*.

Note: USBR projections, since 2007, have consistently fallen between the 50th percentile and the 10th percentile. If this pattern remains consistent through the next decade, then all the reservoirs will indeed vacate; the consequence of mega-drought.

Note: On The Colorado (OTC) understands that projections into the 90th percentile (wetter hydrology) are possible, because global climate disruption includes anticipating swings in long-term hydrology; a swing that could include mega-flood events. For example, in Year 2021 there have been devastating floods in China, Germany, Turkey and Canada. [Wikipedia](#).

2008, February 12: WHEN WILL LAKE MEAD GO DRY?

"Pierce said the conclusions in the Scripps study are based partially on an estimated reduction in runoff of 20 percent over the next 50 years. He said that figure was used because it split the difference between the 10 to 30 percent decrease in runoff the Intergovernmental Panel on Climate Change predicts will occur over the next 50 years."
Associated Press.

Note: Under the operating criteria of 2007 Interim Guidelines, when a shortage tier elevation arrives at Lake Mead, it also means that the capacity at Lake Powell is significantly diminished. The management of the two reservoirs is similar to a transportation vehicle that operates with two fuel tanks.

- **2008** - Scripps Institute of Oceanography press release: [Lake Mead Could Be Dry by 2021](#).

- Paper by Barnett and Pierce: "[When Will Lake Mead Go Dry?](#) Water Resource Research.
- Central Arizona Project press release: [Officials declare "Lake Mead will not go dry."](#)
- [Lakes Mead Powell Could Be Dry by 2021](#). Tahoe Daily Tribune.
- [Researchers: Lake Mead Could Dry Up by 2021](#). Vail Daily.
- [Study Gives 50/50 Odds Lake Mead Will Dry Up by 2021](#). Las Vegas Review Journal.
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Background

- December, 2007 - [Record of Decision](#). Reclamation.
 - March, 2008 - [Annual Operating Plan](#). Reclamation.
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SPECIAL FEATURES

- August 16, 2021 - [The Lost Canyon Under Lake Powell](#). Elizabeth Kolbert for *The New Yorker*.
- August 17, 2021 - [Postcard From Thermal: Surviving the Climate Gap in Eastern Coachella Valley In the climate crisis, it's possible to live in the same place but inhabit different worlds](#). By Elizabeth Weil and Mauricio Rodríguez Pons for ProPublica.
- August 21, 2021 - [The Southwest's most important river is drying up: The Colorado River irrigates farms, powers electric grids and provides drinking water to 40 million people. But as its supply dwindles, a crisis looms](#). By Drew Kann, Renée Rigdon and Daniel Wolfe, *CNN*.
- August 26, 2021 - [The Unbearable Summer: Disastrous environmental events are converging like never before](#). By Ronald Brownstein for *The Atlantic*.
- October 3, 2021 - [Seven States in Jeopardy as Prolonged Drought Threatens Power Generation: A new report from the federal government brings urgency to a veteran geologist's longtime warnings about the crippling of the Colorado River](#). By Clay S. Jenkinson for *Governing*.
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- November 5, 2021 - [It's Time to Drain Lake Powell](#). Peter Deneen for *Gizmodo*.
- November 23, 2021- [Water in the West: Can Biden's Infrastructure Bill Reverse Western Drought?](#) And a [Live interview with Richard White and Kyle Roerink, including interviews with Tanya Trujillo, Bidtah Becker and Bart Fisher](#). MP3 file.

- December 13, 2021 - [Shrinking Snowpacks in Utah, Wyoming, Colorado require states to cut their water use from Colorado River and its tributaries or risk 'Call on the River.'](#) Press release & report by local NGO coalition with news features.
- December 28, 2021 - [Utah, Colorado, New Mexico are Overusing Colorado River Supplies Environmental Group Says.](#) Tony Davis for *Arizona Daily Star*.
- December 27, 2021 - [2021's climate was one of contrasts, contradictions and extremes. There was one constant: Heat.](#) Jonathan Thompson for *High Country News*.
- February 5, 2022 - [A third of Americans are already facing above-average warming.](#) Oliver Milman for *The Guardian*.
- May 25, 2022 - [San Diego pays a lot for abundant water: Tijuana pays a different price for water scarcity.](#) Vicente Caldero & MacKenzie Elmer for *Voice of San Diego*.

NEWS & OPINION

News by Date

- July 18, 2019 - [In 1983 Plywood Was All That Kept Glen Canyon Dam from Overflowing.](#) John D'Anna for *The Arizona Republic*.
- September 12, 2019 - [Could "Black Swan" Events Spawned by Climate Change Wreak Havoc in the Colorado River Basin?](#) Gary Pitzer of *Water Education Foundation*.
- February 7, 2021 - [Exclusive: Hedge funds eye water markets that could net billions, as levels drop in Lake Powell.](#) Zak Podmore of *Salt Lake Tribune*.
- February 26, 2021 - [USU Study #6: Alternative Management Paradigms for the Future of the Colorado and Green Rivers.](#) (archived [here](#)).
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- April 19, 2021 - [The April 2021 24-Month Study was a shocker, but is it too optimistic?](#) Eric Kuhn.
- April 27, 2021 - [Pumping up fear along the Colorado River.](#) George Sibley.
- April 29, 2021 - [9th Circuit Revives Navajo Nation's Water Rights Claim Against DOI.](#) Reuters.
- April 30, 2021 - [Colorado River Basin Hydrology Forecasts Paint Grim Picture.](#) Dave Kanzer for *Colorado River District*.
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- May 11, 2021 - [Arizona Legislature Urges Congress to study feasibility of harvesting Mississippi River floodwaters to replenish Colorado River supply.](#) Rep. Dunn.
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- May 14, 2021 - [The Hoover Dam made life in the West possible. Or so we thought.](#) Timothy Egan in *NY Times*.

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- May 18, 2021 - [Arizona's aquifers remain at risk from "unsustainable" pumping](#). Tony Davis of *Arizona Daily Star*.
- May 24, 2021 - [Amid calls for more water storage in arid West, large dam projects stall](#). Karin Rives of *S & P Global*.
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- May 27, 2021 - [Predicting the future: Science Moab speaks with Dr. Kevin Wheeler about the future of the Colorado River](#) in *Moab Sun News*.
- May 27, 2021 - [Epic drought tests Hoover Dam as water levels In Lake Mead plummet](#). Ian James of *Arizona Republic*.
- May 29, 2021 - [Once again, Arizona hopes to import out-of-state water in face of crisis](#). Tony Davis of *Arizona Daily Star*.
- June 2, 2021 - [Foreign firms sucking "virtual" water from America's parched Southwest](#). Diana Kruz of *Mother Jones*.
- June 2, 2021 - [Mega-Dairies: Disappearing wells and Arizona's deepening water crisis](#). Tony Davis in *The Guardian*.
- June 2, 2021 - [Amid dire Colorado River outlook States plan to tap their Lake Mead savings accounts](#). Brett Walton of *Circle of Blue*.
- June 6, 2021 - [Dry times, dire consequences, poor runoff, adds to water woes](#). Dennis Webb of Grand Junction's *Daily Sentinel*.
- June 10, 2021 - [Red Alert: Lake Mead declines to new low as Colorado River crisis deepens](#). Ian James of *Arizona Republic*.
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- June 11, 2021 - ['Worse-case' CAP shortages threaten the Tucson aquifer's delicate balance](#). Tony Davis of *Arizona Daily Star*.
- June 13, 2021 - [Lake Powell Pipeline targets water promised to Utes in scheme Tribe sees as another racially based scheme](#). Emma Penrod and special for *Salt Lake Tribune*.
- June 14, 2021 - [Salton Sea, long a disaster, is on the brink of major collapse](#). OpEd by Frank Ruiz in *The Desert Sun*.
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- June 19, 2021 - [Las Vegas Pushes Land Swap to Balance Growth and Conservation](#). Sam Metz of *Associated Press*.
- June 18, 2021 - [The West has a dangerous lack of water and will: The management strategy to slow the draining of Lake Mead does not appear to be working](#).. Todd Fitchette of *Farm Press*.

- June 18, 2021 - [Extreme Heat Wave Threatens Vulnerable Communities In The West: Heat is responsible for more deaths in the U.S. than all other natural disasters combined](#). Anita Snow of *Associated Press*.
- June 27, 2021 - [Here's What You Need To Know About Lake Mead's Falling Water Levels](#). Hillary Davis of *Las Vegas Sun News*.
- June 28, 2021 - [OpEd: Lake Mead is dropping. Time to think about Worst Case Scenario?](#) Joanna Allhands in *Arizona Republic*.
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- July 15, 2021 - [Press coverage combined](#). A press conference at Hoover Dam. Coalition of citizens and elected officials. And this story in *Moab Sun News*.
- July 19, 2021 - [Conservation Groups Want Feds to Investigate Water Districts Use of Federal Funds](#). Owen Tucker-Smith & Brian Maffly of the Salt Lake Tribune. [Group Letter](#) to the U.S. Inspector General.
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- July 20, 2021 - OpEd: [Feeling The California Drought On My Family Farm](#). David Massumoto; LAT.
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- July 21, 2021 - OpEd: [The Thirsty West's Dreaded Water Crisis Is Here](#). David Von Drehle; WaPo.
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- July 23, 2021 - [Is the Colorado River 'Stress Test' Stressful Enough?](#) Brad Udall & John Fleck.
- July 23, 2021 - [Lake Powell Level about to Hit Historic Low as West's Water Crisis Deepens](#). Brian Maffly of *Salt Lake Tribune*.
- July 23, 2021 - [Demand management discussions continue amid worsening Colorado River crisis](#). Heather Sackett at *Aspen Journalism*.
- July 25, 2021 - [Three Part Series: Drought on the Colorado River](#). By Willy Lowry for *The National News*.
- July 26, 2021 - [OpEd: Arizonans know future they want for 'Arid-zona'](#). Leon Kolankiewicz in *Arizona Capitol Times*.
- July 26, 2021 - [Tribal nations are essential to 'Build Back Better'](#). Hillary C. Tompkins at *Indian Country Today*.
- July 27, 2021 - [Wyoming looks to store, divert more water as Lake Powell dries up](#). Angus M. Thuermer of *Wyoming File*.
- July 28, 2021 - [While facing a historic drought, Utah officials don't have a handle on how much water slips through their fingers](#). Eric S. Peterson in *Salt Lake City Weekly*.
- July 29, 2021 - ['Climate change has become real': extreme weather sinks prime US tourism site](#). Annette McGivney in *The Guardian*.
- July 30, 2021 - [Is Utah using all the Colorado River water it's entitled to? New state agency wants to find out](#). Bryan Schott of *Salt Lake Tribune*.

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- August 7, 2021 - [National Park Service struggles to keep boat ramps open as Lake Powell hits historic low](#). Zak Podmore for *Salt Lake Tribune*.
- August 7, 2021 - [Lake Powell water levels dip to record lows, leaving tourists and businesses scrambling](#). Sophia Eppolito for *Associated Press*.
- August 8, 2021 - [From a Raft in the Grand Canyon, the West's Shifting Water Woes Come Into View](#). Judy Fahys for *Inside Climate News*.
- August 9, 2021 - [Hydropower Levels Under Careful Watch as Drought Ravages the West](#). Sonal Patel for *Power Magazine*.
- August 10, 2021 - [As Lake Powell woes worry West, experts call for yet more reduced use](#). Katharhynn Heidelberg for *Montrose Press*.
- August 10, 2021 - [How low will Ruedi Reservoir go? Bureau of Reclamation warns of potential impacts to Aspen hydro plant, water contract holders](#). Heather Sackett for *Aspen Journalism*.
- August 11, 2021 - [Can Water Megaprojects Save The US Desert West?](#) By Jennifer Sensiba for *Clean Technica*.
- August 12, 2021 - [First water cuts in U.S. West supply to hammer Arizona farmers](#). By Felicia Fonseca for *Associated Press*.
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- August 16, 2021 - [WAPA: Statement on Reclamation's August Projections for Colorado River](#). Western Area Power Administration ([WAPA's home page](#)).
- August 16, 2021 - [Appeal Challenges Federal Approval of Water Contract Threatening Utah's Green River / Agency Failed to Consider Climate Change Science, Future Water Shortages Amid Megadrought](#). Press Release from *Center for Biological Diversity*.
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- August 17, 2021 - [First-ever water cuts declared for Colorado River in historic drought](#). By Rachel Ramirez for *CNN*.
- August 16, 2021 - [OpEd: Climate upheaval is upon Utah, and we can't dither. Robert Gehrke explains](#). By Robert Gehrke of *Salt Lake Tribune*.
- August 16, 2021 - ["St. George is not going to get their pipeline." Some look to Utah amid Colorado River cuts](#). By Joan Meiners for *St. George Spectrum & Daily News*.
- August 16, 2021 - [Water shortage declared on the Colorado, triggering cuts to Arizona, Nevada and Mexico Declining flows don't bode well for Utah's dreams of expanding its share of the West's mightiest river](#). By Brian Maffly for *Salt Lake Tribune*.
- August 25, 2021, - [Forecasters couldn't predict how quickly Colorado River reservoirs would dry up this year. Scientists are trying to improve their models. As climate change disrupts weather patterns in mountain regions across the world, scientists are recognizing the need to innovative new research models](#). By Zak Podmore for *Salt Lake Tribune*.
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- September 22, 2021 - ['Dead Pool' at Lakes Mead and Powell a real possibility says Arizona Water Chief](#). By Tony Davis for *Arizona Daily Star*.
- September 27, 2021 - [OpEd: Lake Mead and Lake Powell are clearly in trouble. How do we help?](#) Joanna Allhands for *Arizona Republic*.
- October 15, 2021 - System Conservation Pilot Program: [Money for Water Experiment Gaining Steam in Colorado River Basin](#). Sarah Tory for *Aspen Journalism*.
- October 18, 2021 - [Streamflows in Southern Half of Upper Colorado River Basin Declining Faster](#). Heather Sackett for *Aspen Journalism*.
- October 23, 2021 - Gov. [Ducey Gives Tribe \\$30M for Water Rights](#). Howard Fischer for *Capitol Media Services*.

- October 28, 2021 - [Groundwater Baseflow to Colorado River May Decline a Third Over Next 30-years](#). *USGS*.
 - November 1, 2021 - [Dangerous Precedent: Feds Say No to Controlled Flood on Colorado River](#). Blake Apgar for *The Las Vegas Review Journal*.
 - November 3, 2021 - [Tribes Seek Water Management Role as Colorado River Shrivels](#). Jeremy P. Jacobs for *E&E*.
 - November 4, 2021 - [The Colorado River Poses Stark Example of Climate Crisis](#). Ian James for *LA Times*.
 - November 4, 2021 - [MemoriesOfTheRiverOfSorrow2021JonathanThompsonLandDesk.pdf](#)
 - November 4, 2021 - [As Warming Drought Increase a New Case for Ending Big Dams](#). Jacques Leslie for *Yale 360*.
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 - November 13, 2021 - [Users of Dwindling Colorado River Admonished: 'We All Need to Get Off Our High Horses'](#). Tony Davis for *Arizona Daily Star*.
 - November 14, 2021 - [Gloomier Forecast for Colorado River Still 'too rosy' Expert Says](#). Tony Davis for *Arizona Daily Star*.
 - December 15, 2021 - [Tribes Seek to Secure Their Water Rights as Colorado River Dries](#). Jeniffer Solis for *Nevada Current*.
 - December 15, 2021 - [New Colorado River Water Savings Plan Doesn't Go Far Enough Researcher Warns](#). Tony Davis for *Arizona Daily Star*.
 - December 15, 2021 - [California, Arizona and Nevada Agree to Take Less Water from Ailing Colorado River](#). Jahweed Kaleem & Ian James for *Los Angeles Times*.
 - December 16, 2021 - [New Colorado River Report Claims Utah and Other States Using More Water Than They Have Rights To](#). Mori Kessler for *St. George Spectrum*.
 - December 16, 2021 - [Why the Second Driest State \(Utah\) Rejects Water Conservation](#). Mark Olalde for *ProPublica*.
 - December 16, 2021 - [Tribes to Take a Greater Role in Colorado River Talks](#). Debra Krol for *The Arizona Republic*.
 - December 16, 2021 - [Assistant Secretary Tanya Trujillo Outlines Drought Mitigation Initiatives During Annual Colorado River Conference](#). *DOI*.
 - December 26, 2021 - [Editorial Board: Why Utah must take back control from the water buffaloes. Water policy shouldn't be set by people in the business of selling water](#). *Salt Lake Tribune*.
 - December 26, 2021 - [As Western states pledge to take less water from Colorado River, tribes seek a bigger role](#). By Ian James and Jaweed Kaleem for *Los Angeles Times*.
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This page is Part One A (news by date)

- [Click here](#) for Part One A: By date - News and Opinion
 - [Click here](#) for Part One B: By subject - News and Opinion
 - [Click here](#) for Part Two: Narratives - Old and New.
 - [Click here](#) for Part Three: The Physical and Social Sciences
 - [Click here](#) for Part Four: Solutions - Climate Adaptation, Sustainability and Resilience.
-

Part One B: Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines

JULY 25, 2021

BY JOHN WEISHEIT



Walters of the Toledo Blade, 2004.

PART ONE B:
BY SUBJECT: News and Opinion

This page is Part One B (news by subject)

- [Click here](#) for Part One A: By date - News and Opinion
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NOTE: This series will be updated through the preparation of the 2026 Annual Operating Plan (**AOP**).

- We present recent and relevant news features about the very serious issues that face the Colorado River Basin.
- We present baseline policy documents, climate science, social science, traditional knowledge, and solutions.
- The problem is human-caused: 1) over-consumption of surface water and aquifers; 2) water conservation programs are actually water transfer programs and will not reduce consumption and will harden the embedded demand; 3) the reservoir system is over-built and yet it can only manage little droughts and little floods; 4) misguided planning and zoning (not resilient and not sustainable); 5) climate disruption: altered circulation patterns in ocean and atmosphere in response to greenhouse gas loading from burning fossil fuels at rates greater than the planet's ability to absorb carbon emissions into the ecosystems of ocean and land.
- The solution is: work with nature's geography and climate; restoring balance is the key objective; an international climate accord is imperative; do the legislative things that weren't properly attended to between 1902 and 1948; prepare citizens to adjust to the sacrifices that will be required, so that the necessary transition will be just and safe and affordable.
- We recommend that the nonsense and distractions stop immediately and get this house in order.

NEPA Review: What needs to happen? Will it happen?

- Understand the problem: This is a desert and naturally exists in a state of permanent depletion. This is not a drought; a drought eventually ends. This is aridification; the last time aridification occurred on this planet, it lasted for centuries ([Woodhouse, 2010](#)).
- It must be recognized that the [Basin States Alternative of 2006](#) was unsuccessful; it is not necessary to repeat or modify this very disappointing experiment.
- The [Upper Basin Depletion Schedule](#) must be eliminated, and the Structural Deficit of the Lower Basin and Mexico must be zeroed ([Breggren, 2019](#)). Had this been done 15-years ago, the jeopardy of reservoir elevations dropping to dead pool would not exist.
- The Upper Basin is not prepared for the shortages that will arrive ([Wheeler, 2021](#)). The Upper Colorado River Commission must create a robust and equitable shortage agreement because the proposed demand management strategies do not really exist at the scale that is necessary ([UCRC 2020 Report](#)).
- The theme of the Preferred Alternative must be about Climate Adaptation and in the time-scale of the next 100-years. This means an international climate accord is required to significantly reduce greenhouse gas emissions ([Craig, 2010](#)).
- The mining of groundwater must stop and depleted aquifers should be recharged. Human activities that deplete aquifers will reduce groundwater seepage into rivers; as will increased surface/soil evaporation due to increasing aridity ([USGS, 2021](#)).

- There should be a public scoping meeting in each state that will facilitate attendance at rural and tribal communities, and resources should be provided to Mexico for conducting public meetings in the Spanish language.
- Resources should be provided for the communities of the Salton Through (California) to address the problems of this region's terminal lake, the "Salton Sea."
- The public scoping period should be six months, rather than three months, and justified for reasons of social disruptions caused by the persistence of the Covid-19 pandemic.
- In addition to operations at Hoover Dam and Glen Canyon Dam, the scope of dam operations must include Flaming Gorge Dam, Blue Mesa Dam and especially Navajo Dam, which has an existing and separate shortage agreement.
- Operations at McPhee Dam and the Paradox Valley Salinity Control Program on the Dolores River require attention; this river ecosystem is essentially dead (News: [Jonathan Thompson](#) & [Shannon Najmabadi](#)).
- The Biological Opinions of the Basin must be revised to address the quickening of climate disruptions, with special considerations given to the Grand Canyon Ecosystem below Glen Canyon Dam, and the harm that equalization flows from Glen Canyon Dam cause. Contrarily, when hydropower production at Glen Canyon Dam stops, and the river bypass tubes are opened, prepare for dramatic water quality changes and invasion of non-native species for the ecosystem of Grand Canyon NP.
- Prioritize green infrastructure, rather than gray infrastructure.

2021, September 22: FIVE-YEAR PROJECTIONS

Note: The 30-year average for the 2023 Annual Operating Plan (AOP) will be 9.6 million acre-feet (maf) The prior 30-year average was 10.83 maf and before that it was 12.04 maf. The overall total loss is negative 2.44 maf. This number represents the minimum objective for the savings that the water managers must achieve by the completion of the 2026 AOP. After that, the water managers must prepare for additional losses due to atmospheric heat stresses.

- [24-month Report](#). USBR.
- [Two- and Five-Year Projections](#). USBR.
- [Taking Climate Change Seriously: The Colorado River Stress Test](#). Kuhn et al.
- [NOAA: Drought Task Force Report on the 2020–2021 Southwestern USA Drought](#).
- ['Dead Pool' at Lakes Mead and Powell a real possibility says Arizona water chief](#). Tony Davis for *Arizona Daily Star*.
- [OpEd: Lake Mead and Lake Powell are clearly in trouble. How do we help?](#) Joanna Allhands for *Arizona Republic*.
- [October 24-Month Report; including minimum flow projection result](#).
- November 14, 2021 - [Gloomier Forecast for Colorado River Still 'too rosy' Expert Says](#). Tony Davis for *Arizona Daily Star*.

Note: USBR projections, since 2007, have consistently fallen between the 50th percentile and the 10th percentile. If this pattern remains consistent through the next decade, then all the reservoirs will indeed vacate; the consequence of mega-drought.

Note: On The Colorado (OTC) understands that projections into the 90th percentile (wetter hydrology) are possible, because global climate disruption includes anticipating swings in long-term hydrology; a swing that could include mega-flood events. For example, in Year 2021 there have been devastating floods in China, Germany, Turkey and Canada. [Wikipedia](#).

2008, February 12: WHEN WILL LAKE MEAD GO DRY?

"Pierce said the conclusions in the Scripps study are based partially on an estimated reduction in runoff of 20 percent over the next 50 years. He said that figure was used because it split the difference between the 10 to 30 percent decrease in runoff the Intergovernmental Panel on Climate Change predicts will occur over the next 50 years."
Associated Press.

Note: Under the operating criteria of 2007 Interim Guidelines, when a shortage tier elevation arrives at Lake Mead, it also means that the capacity at Lake Powell is significantly diminished. The management of the two reservoirs is similar to a transportation vehicle that operates with two fuel tanks.

- **2008** - Scripps Institute of Oceanography press release: [Lake Mead Could Be Dry by 2021](#).
- Paper by Barnett and Pierce: ["When Will Lake Mead Go Dry? Water Resource Research](#).
- Central Arizona Project press release: [Officials declare "Lake Mead will not go dry."](#)
- [Lakes Mead Powell Could Be Dry by 2021](#). Tahoe Daily Tribune.
- [Researchers: Lake Mead Could Dry Up by 2021](#). Vail Daily.
- [Study Gives 50/50 Odds Lake Mead Will Dry Up by 2021](#). Las Vegas Review Journal.
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SPECIAL FEATURES

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[inhabit different worlds](#). By Elizabeth Weil and Mauricio Rodríguez Pons for ProPublica.

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- May 25, 2022 - [San Diego pays a lot for abundant water: Tijuana pays a different price for water scarcity](#). Vicente Caldero & MacKenzie Elmer for *Voice of San Diego*.

FEATURES BY SUBJECT

Central Arizona Project and Groundwater Depletions

- [Groundwater Baseflow to Colorado River May Decline a Third Over Next 30-years. USGS](#).
- [Arizona's aquifers remain at risk from "unsustainable" pumping](#). Tony Davis of *Arizona Daily Star*.

- [The Myth of Safe-Yield: Pursuing the Goal of Safe-Yield Isn't Saving Our Groundwater.](#) Kathleen Ferris of Kyl Center at Morrison Institute; ASU.
- [Some experts welcome alarm bells about Arizona groundwater.](#) Tony Davis for Arizona Daily Star.
- [Once again, Arizona hopes to import out-of-state water in face of crisis.](#) Tony Davis of *Arizona Daily Star*.
- ['Worse-case' CAP shortages threaten the Tucson aquifer's delicate balance.](#) Tony Davis of *Arizona Daily Star*.

Climate Adaptation

- [The West has a dangerous lack of water and will: The management strategy to slow the draining of Lake Mead does not appear to be working..](#) Todd Fitchette of *Farm Press*.
- ['Worse-case' CAP shortages threaten the Tucson aquifer's delicate balance.](#) Tony Davis of *Arizona Daily Star*.
- [Extreme Heat Wave Threatens Vulnerable Communities In The West: Heat is responsible for more deaths in the U.S. than all other natural disasters combined.](#) Anita Snow of *Associated Press*.
- [Appeal Challenges Federal Approval of Water Contract Threatening Utah's Green River / Agency Failed to Consider Climate Change Science, Future Water Shortages Amid Megadrought.](#) Press Release from *Center for Biological Diversity*.
- [Users of Dwindling Colorado River Admonished: 'We All Need to Get Off Our High Horses.'](#) Tony Davis for *Arizona Daily Star*.

Drought Contingency Planning (DCPs) & Demand Management

- [Twelve featured stories about evacuating upper basin reservoirs to protect hydropower production at Glen Canyon Dam.](#)
- [Dry times, dire consequences, poor runoff adds to water woes.](#) Dennis Webb of Grand Junction's *Daily Sentinel*.
- [Wall Street eyes billions in Colorado's Water.](#) Howe of New York Times.
- [Exclusive hedge funds eye water markets that could net billions as levels drop in Lake Powell,](#) Podmore of Salt Lake Tribune.
- [Here's how to save the Colorado River.](#) Babbitt in *Writers on the Range*.
- [Western Slope needs to suspend irrigation to replenish Lake Powell.](#) Richter in *Denver Post*.
- [Don't hurt farmers to save the Colorado River.](#) Mueller in *Writers on the Range*.
- [Letter to Colorado River District Board.](#) Communication by Richter.
- [Saving the Colorado River.](#) James Eklund in *The Water Report*.
- [Colorado is examining water speculation, and finding it's 'all the problems' in one.](#) Heather Sackett of *Aspen Journalism*.
- [If Lake Powell's Water Levels Keep Falling, A Multi-State Reservoir Release May Be Needed.](#) Michael Elizabeth Sakas of *Colorado Public Radio*.

- [Is the Colorado River 'Stress Test' Stressful Enough?](#) Brad Udall & John Fleck.
- [Lake Powell Level about to Hit Historic Low as West's Water Crisis Deepens.](#) Brian Maffly of *Salt Lake Tribune*.
- [Demand management discussions continue amid worsening Colorado River crisis.](#) Heather Sackett at *Aspen*
- [Wyoming looks to store, divert more water as Lake Powell dries up.](#) Angus M. Thuermer of *Wyoming File*.
- [While facing a historic drought, Utah officials don't have a handle on how much water slips through their fingers.](#) Eric S. Peterson in *Salt Lake City Weekly*.
- [Is Utah using all the Colorado River water it's entitled to? New state agency wants to find out.](#) Bryan Schott of *Salt Lake Tribune*.
- [Streamflows in southern half of Upper Colorado River Basin declining faster.](#) By Heather Sackett for *Vail Daily*.
- System Conservation Pilot Program: [Money for Water Experiment Gaining Steam in Colorado River Basin.](#) Sarah Tory for *Aspen Journalism*.
- [Gloomier Forecast for Colorado River Still 'too rosy' Expert Says.](#) Tony Davis for *Arizona Daily Star*.
- [Shrinking Snowpacks in Utah, Wyoming, Colorado require states to cut their water use from Colorado River and its tributaries or risk 'Call on the River.'](#) Press release & report by local NGO coalition with news features.
- [New Colorado River Water Savings Plan Doesn't Go Far Enough Researcher Warns.](#) Tony Davis for *Arizona Daily Star*.
- [California, Arizona and Nevada Agree to Take Less Water from Ailing Colorado River.](#) Jahweed Kaleem & Ian James for *Los Angeles Times*.
- [Assistant Secretary Tanya Trujillo Outlines Drought Mitigation Initiatives During Annual Colorado River Conference.](#) DOI.
- [Colorado hits a "Hard Pause" on water demand management as it waits for the other states.](#) Chris Outcalt for *The Colorado Sun*.

Hydropower

- [WAPA: Statement on Reclamation's August Projections for Colorado River.](#) Western Area Power Administration ([WAPA's home page](#)).
- [Here's What You Need To Know About Lake Mead's Falling Water Levels.](#) Hillary Davis of *Las Vegas Sun News*.
- [Twelve feature stories about evacuating upper basin reservoirs to protect hydropower production at Glen Canyon Dam.](#)
- OpEd: The dirty dam truth. Ryan Gellert in *Boston Globe*.
- [Tribes cheer withdrawal of 2 Little Colorado hydropower projects but fear a 3rd.](#) Debra Krol in *Arizona Republic*.
- [Hydropower Levels Under Careful Watch as Drought Ravages the West.](#) Sonal Patel for *Power Magazine*.
- [INSIGHT-Inconvenient truth: Droughts shrink hydropower, pose risk to global push to clean energy.](#) By Sharon Bernstein, Jake Spring, David Stanway for *Reuters*.

- [As Warming Drought Increase a New Case for Ending Big Dams](#). Jacques Leslie for Yale 360.
- [Electric Costs in Colorado Set to Surge as Lake Powell Struggles to Produce Hydropower](#). Jerd Smith for *Water Education Colorado*.

Infrastructure

- [Senate infrastructure bill's Western water provisions worthy of passage](#). Editorial Board for *Las Vegas Sun*.

Recreation and National Parks

- ['Climate change has become real': extreme weather sinks prime US tourism site](#). Annette McGivney in *The Guardian*.
- [Declining Lake Powell water level sparks concern in Arizona town](#). Blake Apgar in *Las Vegas Review Journal*.
- [From a Raft in the Grand Canyon, the West's Shifting Water Woes Come Into View](#). Judy Fahys for *Inside Climate News*.
- [The Lost Canyon Under Lake Powell](#). Elizabeth Kolbert for *The New Yorker*.
- [Dangerous Precedent: Feds Say No to Controlled Flood on Colorado River](#). Blake Apgar for *The Las Vegas Review Journal*.
- [Memories of the River Of Sorrow](#). Jonathan Thompson for *The Land Desk*.

River Augmentation

- [Arizona Legislature urges Congress to study feasibility of harvesting Mississippi River floodwaters to replenish Colorado River supply](#). Rep. Dunn.
- [Amid calls for more water storage in arid West, large dam projects stall](#). Karin Rives of S & P Global.
- [How to save the Salton Sea: Proposal to import seawater across California desert is biggest since Hoover Dam](#). Gustavo Solis of *The Desert Sun*.
- [Governor Cox is eager for a nuclear future: Utah's should tell him why we're not](#). Robert Gehrke of *Salt Lake Tribune*.
- [How to save the Salton Sea: Proposal to import seawater across California desert is biggest since Hoover Dam](#). Gustavo Solis of *The Desert Sun*.
- [Once again, Arizona hopes to import out-of-state water in face of crisis](#). Tony Davis of *Arizona Daily Star*.
- [Can Water Megaprojects Save The US Desert West?](#) By Jennifer Sensiba for *Clean Technica*.

Salton Sea (a geologic structural depression below sea level)

- [Salton Sea, long a disaster, is on the brink of major collapse](#). OpEd by Frank Ruiz in *The Desert Sun*.

- [How to save the Salton Sea: Proposal to import seawater across California desert is biggest since Hoover Dam.](#) Gustavo Solis of *The Desert Sun*.

Scenario Planning and "Black Swan Events"

- [In 1983 Plywood Was All That Kept Glen Canyon Dam from Overflowing.](#) John D'Anna for *The Arizona Republic*.
- [Could "Black Swan" Events Spawned by Climate Change Wreak Havoc in the Colorado River Basin?](#) Gary Pitzer of *Water Education Foundation*.
- ['Worse-case' CAP shortages threaten the Tucson aquifer's delicate balance.](#) Tony Davis of *Arizona Daily Star*.
- [OpEd: Lake Mead is dropping. Time to think about worst-case scenario?](#) Joanna Allhands in *Arizona Republic*.
- ['Dead Pool' at Lakes Mead and Powell a real possibility says Arizona Water Chief.](#) By Tony Davis for *Arizona Daily Star*.
- [OpEd: Lake Mead and Lake Powell are clearly in trouble. How do we help?](#) Joanna Allhands for *Arizona Republic*.

Shortage Declaration of August 16, 2021

- [Appeal Challenges Federal Approval of Water Contract Threatening Utah's Green River / Agency Failed to Consider Climate Change Science, Future Water Shortages Amid Megadrought.](#) Press Release from *Center for Biological Diversity*.
- [First CAP shortage for Colorado River declared; more cuts may be coming soon.](#) Tony Davis for *Arizona Daily Star*.
- [In a First, U.S. Declares Shortage on Colorado River, Forcing Water Cuts.](#) Henry Fountain for *New York Times*.
- [As Colorado River Basin states confront water shortages, it's time to focus on reducing demand.](#) Robert Glennon for *The Conservation; Univ of AZ*.
- [First-ever water cuts declared for Colorado River in historic drought.](#) By Rachel Ramirez for *CNN*.
- [OpEd: Climate upheaval is upon Utah, and we can't dither, Robert Gehrke explains.](#) By Robert Gehrke of *Salt Lake Tribune*.
- ["St. George is not going to get their pipeline." Some look to Utah amid Colorado River cuts.](#) By Joan Meiners for *St. George Spectrum & Daily News*.
- [Water shortage declared on the Colorado, triggering cuts to Arizona, Nevada and Mexico Declining flows don't bode well for Utah's dreams of expanding its share of the West's mightiest river.](#) By Brian Maffly for *Salt Lake Tribune*.
- [Forecasters couldn't predict how quickly Colorado River reservoirs would dry up this year. Scientists are trying to improve their models. As climate change disrupts weather patterns in mountain regions across the world, scientists are recognizing the need to innovative new research models.](#) By Zak Podmore for *Salt Lake Tribune*.

- [Anatomy of a drought: How the West may change for decades to come. Water woes are gripping no fewer than 17 states.](#) By Amy Joi O'Donoghue for *Deseret News*.

Tribal Waters

- [Is hope on the horizon for Western Tribe's water woes?](#) Teirstein of Grist Online Magazine.
- [9th Circuit revives Navajo Nation's water rights claim against DOI.](#) Reuters.
- [9th Circuit rebukes U.S. on Native interests in Colorado River rights.](#) Hank Lacey of *Law Week Colorado*.
- [Lake Powell Pipeline targets water promised to Utes: Tribe sees another racially based scheme.](#) Emma Penrod and special for *Salt Lake Tribune*.
- [Tribal nations are essential to 'Build Back Better'.](#) Hillary C. Tompkins at *Indian Country Today*.
- [Tribes cheer withdrawal of 2 Little Colorado hydropower projects but fear a 3rd.](#) Debra Krol in *Arizona Republic*.
- [Tribal influence over Arizona water growing.](#) Brad Poole for *Courthouse News Service*.
- [Tribes Seek Water Management Role as Colorado River Shrivels.](#) Jeremy P. Jacobs for *E&E*.
- [Tribes Seek to Secure Their Water Rights as Colorado River Dries.](#) Jeniffer Solis for *Nevada Current*.
- [Tribes to Take a Greater Role in Colorado River Talks.](#) Debra Krol for *The Arizona Republic*.
- [As Western states pledge to take less water from Colorado River, tribes seek a bigger role.](#) By Ian James and Jaweed Kaleem for *Los Angeles Times*.

Unsustainable Growth

- [Las Vegas Pushes Land Swap to Balance Growth and Conservation.](#) Sam Metz of *Associated Press*.
- [Extreme Heat Wave Threatens Vulnerable Communities In The West: Heat is responsible for more deaths in the U.S. than all other natural disasters combined.](#) Anita Snow of *Associated Press*.
- [Press coverage combined.](#) A press conference at Hoover Dam. Coalition of citizens and elected officials.
- [Drought In Utah Town Halts Growth.](#) Jack Healy; NYT.
- [OpEd: Arizonans know future they want for 'Arid-zona'.](#) Leon Kolankiewicz in *Arizona Capitol Times*.
- [OpEd: As bad as this summer has been, it may get worse for the rest of our lives.](#) Editorial Board of *Las Vegas Sun*.
- Part One: [Not Just The Megadrought — Are Driving The West's Water Crisis.](#) Caitlin Ochs in *BuzzFeed*. Part Two: [People in Arizona are About to Face the West's First Major Water Crisis.](#) Ochs. Part 3: ["This Is Climate Change Barging](#)

[Through The Front Door”: Water Scarcity Is Forcing Changes In How The Colorado River Is Shared.](#) Caitlin Ochs for *Buzzfeed*.

- [The Colorado River Poses Stark Example of Climate Crisis.](#) Ian James for *LA Times*.
- [A Colorado Town Nearly Ran Out of Drinking Water Amidst Drought.](#) Shannon Najmabadi for *Colorado Sun*.
- [Why the Second Driest State \(Utah\) Rejects Water Conservation.](#) Mark Olalde for *ProPublica*.

Vulneribilities

- [In 1983 Plywood Was All That Kept Glen Canyon Dam from Overflowing.](#) John D'Anna for *The Arizona Republic*.
- [Could "Black Swan" Events Spawned by Climate Change Wreak Havoc in the Colorado River Basin?](#) Gary Pitzer of *Water Education Foundation*.
- [Exclusive: Hedge funds eye water markets that could net billions, as levels drop in Lake Powell.](#) Zak Podmore of *Salt Lake Tribune*.
- [USU Study #6: Alternative Management Paradigms for the Future of the Colorado and Green Rivers.](#) (archived [here](#)).
- [Colorado River Basin Hydrology Forecasts Paint Grim Picture.](#) Dave Kanzer for *Colorado River District*.
- [Streamflows in Southern Half of Upper Colorado River Basin Declining Faster.](#) Heather Sackett for *Aspen Journalism*.
- [New Colorado River Report Claims Utah and Other States Using More Water Than They Have Rights To.](#) Mori Kessler for *St. George Spectrum*.
- [Editorial Board: Why Utah must take back control from the water buffaloes. Water policy shouldn't be set by people in the business of selling water.](#) *Salt Lake Tribune*.

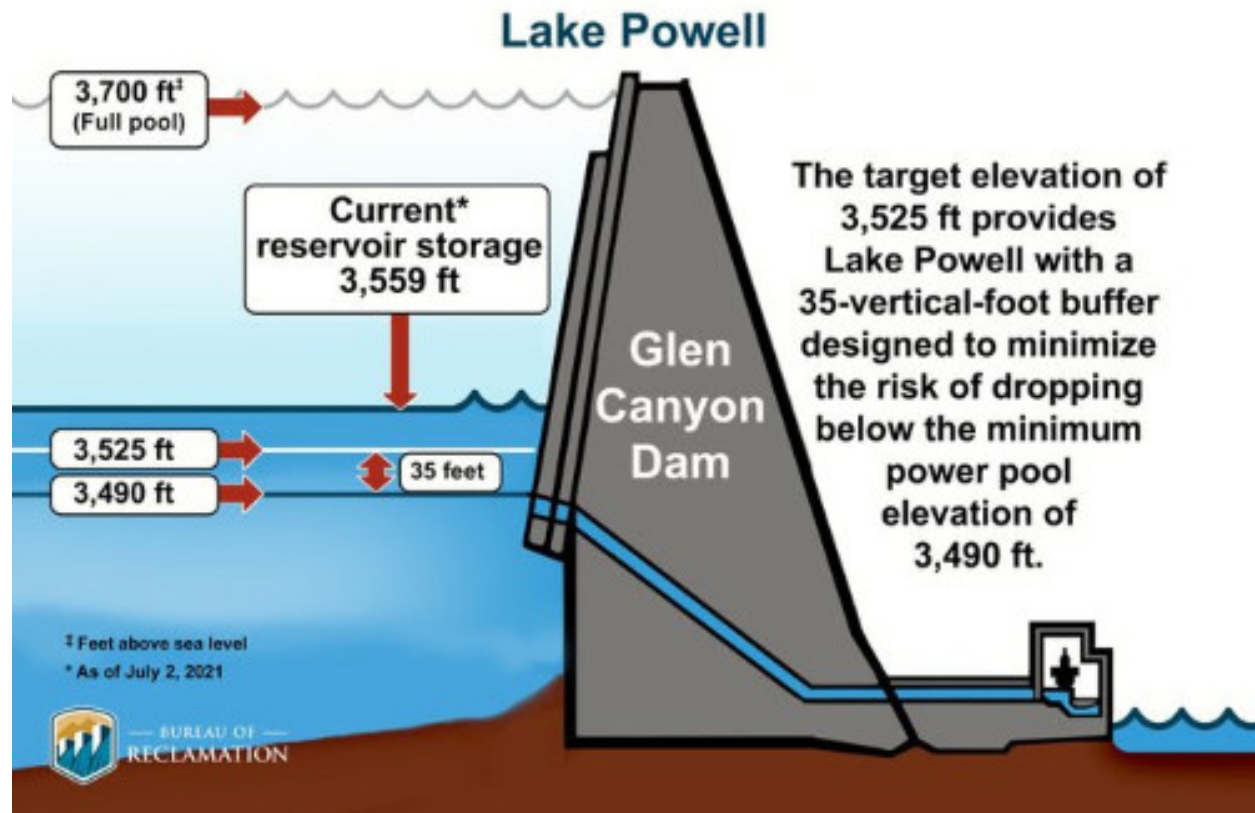
###

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###

Part Two: Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines



JULY 24, 2021
BY JOHN S. WEISHEIT

Hydropower cessation at Glen Canyon Dam is possible in Year 2022

This Section is Part Two

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PART TWO: Narratives Old and New

- **Daniel B. Luten, Jr:** *"I suggest to you that moving water is more to be admired than used, that the primary purpose of water is to beautify the earth."* Luten on **Energy & Water** (with kind permission from Guilford Press).
- **Wallace Stegner:** *"We need a Congress that will say no to any more water boondoggles in the West. We need a moratorium on boosters and developers and raiders who can't or won't see the consequences of their acts. We need to scale down our expectations and advise a lot of hopeful immigrants that what they seek is not here."* **LA Times Op Ed.**
- **Luna Leopold:** **Water and the Conservation Movement & A Reverence for Rivers & Bibliography.** *"...we seem not to have learned how the political and economic aspects of our lives are related to geography and climate, nor have we been able to bend social custom to accept the constraints placed on us by geography and climate. One of the obvious constraints is the finite nature of nonrenewable resources. Even those resources that are not physically destroyed by use, as oil and coal are destroyed by burning, are usually so geographically dispersed by use that they can never again be collected together in usable concentrations."*
- **Donald Worster:** **Epilogue** (a vision statement). *Rivers of Empire.* Oxford Press; 1985. *"A river, to be sure, is a means to economic production, but before that it is an entity unto itself, with its own processes, dynamics, and values. In a sense it is a sacred being, something we have not created, and therefore worthy of our respect and understanding. To use a river without violating its intrinsic qualities will require much of us. It will require our learning to think like a river, our trying to become a river-adaptive people."*
- **Universities Council On Water Resources:** **Water Promises: Much Ado About Nothing, 2009.** *"...the manager's challenge is to balance supply and demand in an ever-changing natural and social environment, with a constantly-moving target. In this respect, the expertise of hydrologists, fluvial geomorphologists and geo-hydrologists, is fundamental to any scientific modeling of the water world."*
- **The many conversations in the Colorado River Basin to prepare for different reservoir operations by 12/31/2025.** **The pathway that is warming the ocean and atmosphere requires a change of course for Colorado River management.**

###

On The Colorado Narrative: It could be said that movements to create sustainable and resilient communities—which include functional ecosystems—are considered unAmerican, if not illegal, in the sense that **legislators** have yet to acknowledge that the planet's natural resources have transitioned from abundance, to scarcity and uncertainty. Moreover, that this transition period will carry a sizeable investment package and that cooperation with other states and sovereigns will be difficult (**Griggs, 2014**). That moving through this transition period, to unravel very complex issues, will require many decades of persistent hard work. This is why this country will need to develop an ethical national water policy, which was attempted in the mid-1960s and early 1970s, and with very limited success.

- **Water Policies for the Future: National Water Commission.**
- 1968 - National Water Commission; [Pubic Law 90-515](#).
- [Table of Contents only](#); [Text only](#); [Complete Document](#); [Best Quality Document](#).
- [1973 - Reclamation's Overview of the Report](#). Commissioner Stamm.
- [1974 - Review of the National Water Commission Report](#).
- [2009 - 35-Years After: The National Water Commission Report](#). Congressional Research Service (CRS).
- **2009 CRS Report Summary:** *"While many support better coordination of federal water activities and a clearer national "vision" for water management, Congress has not enacted overarching water policy legislation since the [1965 Water Resources Planning Act](#). Instead, water policy has largely evolved through executive and judicial actions, in many cases in response to piecemeal legislation."*

The purpose of 2007 Interim Guidelines was to generate a process in which shortage declarations could be avoided for the seven states of the Colorado River Basin (CRB) and Mexico, and simultaneously continue to be generous about providing more water uses for more people, and without changing the Law of the River. In other words, the proposed solution was a circle back.

Therefore, it is reasonable to conclude that to have sustainability in the CRB, the growth paradigm is no longer feasible and the Law of the River must be changed.

In 2014 it was recognized that program accomplishments were insufficient and 5-years later the seven states and Mexico finally entered into emergency drought contingency planning contracts and treaty minutes, which also has not yet accomplished positive results, because mandatory shortages begin in January 1, 2022 for Arizona, Nevada and Mexico, and the amount of that shortage is [613,000 acre-feet](#) (the monthly average of water passing through the turbines at Glen Canyon Dam is 685,833 acre-feet). Further cutbacks and hydropower cessation could happen in Water Year 2022 (October to September), should the basin's hydrology continue to be impacted by heat traps, dry soils, increased consumption by thirsty plants and people, and all due to disrupted circulation patterns of ocean and atmosphere.

What this means is that the approaches of the last 14-years, which truly range from kick-the-can to gradualism, are not the energetic strategies required to inspire the public's trust toward management in the Colorado River Basin; the very river management paradigm that the rest of the world has decided to emulate.

The essence of the problem is the Colorado River Compact of 1922 and the [language of compromise](#) that it contains; it is an unfinished document; it was the best effort under the circumstances of it's time; it is a document destined for circle back discussions.

Though this formative document has never been changed, a compilation of surrogate laws, agreements and policies were created and called, at first, "[The Hoover Dam Documents](#)," and now more commonly called, "[The Law of the River](#)." This layered

stack of legal papers has not solved the water security problems of our times, and neither do the public laws and codes of the state and federal governments. In other words, we just aren't prepared for the pace of change that is quickening with every passing decade.

The single-most controversial topic of 1922 was the water budget of the entire Colorado River Basin. The deficits that were intentionally embedded into this document still remain the dominate issue today, after four generations of passing time. The second issue was how will the real-time water budget, which is variable by decade and century, be equitably allocated amongst the seven states, Mexico, the tribes, and wildlife. See: [OTC Discussion](#) about Northcutt Ely, co-author of the Hoover Dam Documents.

Why is this so difficult? Everybody knows how to balance a checkbook and create a household budget, and everybody understands the consequences when accidental and deliberate blunders occur. What this history suggests is that the principle of precautionary planning was not addressed at the front ends of these negotiations, and that the back end negotiations are merely ineffectual stop gap measures that waste money and time.

"Creative" water marketing contracts and various engineering solutions to augment the supply have been proposed, but it is vitally important to understand that the completion of these solutions will take many decades to implement, and then, it is highly likely that the water budget will be exceeded yet again, and yet another circle back.

This is why sustainability and resiliency goals are just words, rather than vigorous action items. If substantive reform does not happen in the next five years, then the basin's only assurance is this: it works, until it doesn't. This is also known as reckless abandon and if it does unravel, it is entirely deserved.

The Eventualities and Imperatives

- The first step is to accept that the system has been broken for many decades and water managers have failed to **balance** the **water budget** in the upper basin and the lower basin; the pace of this growing deficit is quickening.
 - In the 20th century, this imbalance grew negative 1 million acre-feet every 50-years.
 - In the 21st century, this imbalance has grown negative 1 million acre-feet per decade.
 - The second step is a walk back to Year 2006 and completely abandon the miscalculations for the **Preferred Alternative of the Seven States**.
 - The third step is to recognize that in addition to having a water scarcity issue, the basin has serious planning and zoning problems.
1. What the future NEPA process should be: basin-wide in scope, programmatic, comprehensive, well-funded and well-staffed.
 2. Prioritize the natural environment and include conservation biologists as consultants.

3. Prioritize consultation with the sovereign tribes and the Republic of Mexico.
4. Initiate a focus on developing local, regional, national, and international climate adaption programs.
5. Work with nature and focus attention on rehabilitating the functions of the natural watershed.
6. Abandon the preferred and myopic climate record from 1906 to 2019 ([stationarity is dead](#)). The natural supply data of the 20th century is skewed.
7. Incorporate the long-term paleoclimate record with the purpose of preparing management plans to prevent the consequences of "mega-drought" and "mega-flood." Enduring aridity and floods were persistent during the [Medieval Warm Period](#) (+1 degree C) and the [Little Ice Age](#) (-1 degree C).
8. Expand the information initially provided in Appendix N and U from 2007 Interim Guidelines EIS and use this information to produce fresh narratives about cumulative impacts and affected environments for multiple centuries.
9. We suggest that prioritizing the care and health of wildlife, is what will accomplish resiliency and sustainability for humans.

HISTORY OF CLIMATE DISRUPTION

- [16,000 years ago - Utah's Lake Bonneville](#) (last ice age; -5 degrees C). Wikipedia.
- [1850 to 2020: Great Salt Lake Elevations](#). Salt Lake Tribune.
- [Timeline of the Salton Sea History \(archived\)](#). Salton Sea Authority.
- [Lake Cahuilla fill and evaporation history](#) (Salton Through). Wikipedia.
- [1605 - California Flood of 1605](#). Wikipedia.
- [19th century droughts](#). Wikipedia.
- [1816 - The Year of No Summer](#). Wikipedia.
- [1862 - The Great Flood of 1862](#). Wikipedia.
- [Colorado River Floods](#). Inkstain. ([archived](#))
- [20th century pluvial \(archived\)](#). American Geophysical Union.
- [1930s - Dust Bowl Decade](#). Wikipedia.
- [1983 - El Nino event and Glen Canyon Dam](#). Wikipedia.
- [1999 to 2002 - North American Drought](#). NOAA.

This page is Part Two (narratives old and new)

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Part Three: Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines

JULY 23, 2021

BY JOHN S. WEISHEIT



Aftermath of 1983 snow melt: East spillway repairs at Glen Canyon Dam

THIS IS PART THREE: The Physical and Social Sciences

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ORDER OF PRIORITIES FOR COLORADO RIVER MANAGEMENT

- [2006 - Arizona v California Decree](#)
- [2001 - Boulder Canyon Project Act & Arizona Vs. California](#). Norris Hundley.
- [2014 - Water Policy Special Edition On Water Federalism Project](#). Harvard.
- 1) River regulation, improvement of navigation, and flood control;
- 2) Irrigation and domestic uses, including the satisfaction of present perfected rights (see notes below);
- 3) Hydropower;
- 4) Satisfy 1944 Mexican Treaty.
- **Note:** Present perfected water rights before June 25, 1929 (the effective date of Boulder Canyon Project Act). The water right holders between 1929 and 2021 carry the most risk toward shortage declarations; the younger the water right, the greater the risk.
- **Note:** Unlike state rights under prior appropriation systems, federal reserved water rights may remain unused for many years, and they are not subject to abandonment or relinquishment. ([Reference](#))
- **Note:** Federal laws and treaties are always subject to executive, legislative and judicial changes.

STREAM FLOW AT CRITICAL GAGE STATIONS (Real Time)

Note: There are flow requirements for the recovery of endangered fish

- [San Juan River at Bluff, Utah](#). USGS. Minimum flow target: 500 cfs.
- [Colorado River at Cisco, Utah](#). USGS. Minimum flow target: 1,240 cfs.
- [Green River at City of Green River](#). USGS. Minimum flow target: 1,300 cfs.
- [Cataract Canyon below confluence of Colorado & Green rivers](#). American Whitewater.
- [Dolores River near Bedrock](#) (before San Miquel River confluence). USGS.
- [Colorado River at Lee's Ferry](#) (above 8,000 cfs)
- October 2021 - [Conditions: Launch facilities at Lake Powell](#)
- December, 2021 - [Bullfrog Main Spur Ramp and Stanton Creek Primitive Ramp is Closing on January 3, 2022](#). NPS.

- News: [Streamflows in southern half of Upper Colorado River Basin declining faster](#). By Heather Sackett for *Vail Daily*.

ENDANGERED FISH

- **Note:** Solving the issue of jeopardy toward endangered species is the measure for achieving sustainability and resilience in the Colorado River Basin. It is likely this experiment cannot be achieved and the final outcome is ecosystem and economic collapse. We propose that it is imperative to try, and vigorously.
- **OTC Resource Page:** Biological Opinions, Sufficient Progress Reports, Flow and Temperature Requirements & More
- **OTC Article:** The Endangered Fish of the Colorado River Basin

ADMINISTRATIVE RECORDS

On The Colorado Website

- [1999 to 2000: Interim Surplus Criteria](#). Reclamation.
- [2003 to 2012: Principles for Implementation of Recommendations for San Juan River Operations and Administration](#). Navajo Nation et al.
- [2005 to 2007: Admin Record for Interim Guidelines](#) (NEPA process)
- [*2006 - Seven Basin States' Preliminary Proposal Regarding Colorado River Operations](#).
- [2007 - Record of Decision for Interim Guidelines](#). Reclamation website.
- [2010 to 2012: Reclamation's Admin Record for "The Basin Study"](#)
- [2012 Basin Study](#); all documents combined by OTC; Combined documents are useful for harvesting information by subject using a search engine.
- [2011 to 2019: Admin Record for Long-Term Experimental and Management Plan for Glen Canyon Dam](#) (NEPA)
- [2014 to 2019: Admin Record for Drought Contingency Planning \(DCPs\)](#)
- [2018: Finished Tribal Water Basin Study](#)
- [2018: Develop 5-year projected future conditions](#)
- [2019: Conclude the development of Drought Contingency Planning](#)
- [2020: Admin Record of 7D Review from the 2007 Record of Decision](#)
- [2021: Begin reconsultation of 2007 Interim Guidelines](#) (NEPA)

THE PUBLISHED POSITIONS FROM COMMENTERS OF 2007 DEIS

- [All Comments Compiled](#)
- **The Seven Basin States:** "The Basin States have made tremendous progress over the last two years in setting aside contentious issues and reaching agreements regarding operation of the Colorado River system reservoirs. Since the Basin States originally forwarded a Preliminary Proposal and draft Seven States' Agreement to your predecessor on February 3, 2006 ("Preliminary Proposal"), the Basin States have finalized a number of agreements and proposals. These documents, which are described in detail below, incorporate and give further definition to each of the elements of the Preliminary Proposal

and the Basin States' Alternative in the DEIS. The Basin States believe that if all material terms of the Basin States' Proposal are included in the ROD, it will establish the first comprehensive set of detailed operating guidelines in the history of the Colorado River."

- **Dr. Tim Barnett (Scripps Institute):** "I believe the model forcing changes could be estimated from existing information. They could be added to the existing simulations and the whole probability structure of future possibilities be made available to decision makers; at least then we would be taking a fairly realistic look at the future of the Colorado system under the climate change scenario.
- **NGO Coalition:** "We believe that the current NEPA process represents a significant potential turning point in the history of the Law of the River, one which offers significant opportunities for both water users and environmental values on the River – but which also carries with it significant economic, environmental, and diplomatic risks. The Basin States Alternative, and the Seven States Agreement upon which it is built, represents a significant potential step forward for water management in the Lower Basin; however, in isolation it does not step far enough to ensure the protection of environmental values in the Lower Basin and Mexico and assist the development of an international agreement between the U.S. and Mexico that will be necessary to implement the States' proposed shortage policy."
- **Living Rivers & Center for Biological Diversity:** "We therefore urge Reclamation and the Basin States to take a step back and revisit the assumptions that went into this process so they better reflect the changing world around them. Only then can some real alternatives for dealing with the real shortages problems be developed, analyzed and presented to the public. The longer Reclamation and the Basin States delay attending to all this, the fewer the options, the more contentions the atmosphere, and the more costly the solutions become. **See: LR Graphics: water budget projections to 2060; shortage projections for Lower and Upper basins.**

CONSISTENT CLIMATE SCIENCE

- [1957 - Carbon Dioxide Exchange Between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO₂ during the Past Decades.](#) Revelle and Suess.
- [1983 - Effects of Carbon-Induced Climatic Change on Water Supplies in the Western USA.](#) Revelle and Wagoneer.
- [2008 - When will Lake Mead go dry?](#) Barnett and Pierce.
- [2009 - Sustainable water deliveries from the Colorado River in a changing climate.](#) Barnett and Pierce.
- [2021 - Colorado Water: Climate Change and Adaptation.](#) Climate documents compiled by Brad Udall and Jonathan Overpeck and useful for the administrative record.

ESSENTIAL SCIENCE

- [Hydrology Part One](#). OTC.
- [Hydrology Part Two](#). OTC
- [Floods](#). OTC.

COLORADO RIVER SCIENCE (a wiki website)

- <http://coloradoriverscience.org>
- Admin:: Julie Vano, Jeff Lukas and Brad Udall.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

- [EPA Climate Adaptation Home Page](#)
- [Climate Adaptation Plans](#)

CENTER FOR CLIMATE ADAPTATION SCIENCE AND SOLUTIONS at UA Tucson

- [Home Page](#) for CCASS
- [Colorado River Conversations](#). Center for Climate Adaptation Science and Solutions
- [Resources for Colorado River studies](#). CCASS
- [October 2017 - Colorado River Workshop Report](#)
- [April 2018 - Colorado River Workshop Report](#)
- [October 2019 - Conference Report](#)
- [Scenario Planning Workshop Summary](#)
- [June 2020 - Scenario Planning Workshop Report](#)

NATIONAL ACADEMY OF SCIENCES (NAS)

A suite of materials provided to the public by NAS on June 8, 2021

- [2010 - Adapting to Impacts of Climate Change](#). NAS.
- [2010 - Limiting Magnitude of Future Climate Change](#). NAS.
- [2010 - Informing an Effective Response to Climate Change](#). NAS.
- [2010 - Advancing Science of Climate Change](#). NAS.
- [2011 - National Security Implications of Climate Change For U.S. Naval Forces](#). NAS.
- [2011 - America's Climate Choices](#). NAS.
- [2013 - Climate and Social Stress: Implications for Security Analysis](#). NAS.
- [2016 - From Maps to Models: Augmenting the Nations Geospatial Intelligence Capabilities](#). NAS.
- [2019 - Decadal Survey of Social Behavioral Sciences: Research and Agenda for Advancing Intelligence Analysis](#). NAS.
- [2021 - Global Change Research Needs and Opportunities For- 2022 to 2031](#). NAS.

- **All documents above combined.** Combined documents are useful for harvesting information by subject using a search engine.

More from NAS

- [1968 - Water and Choice in the Colorado River Basin](#)
- [1977 - Climate, Climate Change, and Water Supply](#)
- [1977 - Energy and Climate: Studies in Geophysics](#)
- [1985 - Safety Of Dams: Flood Earthquake Criteria](#)
- [1988 - Estimating Probabilities of Extreme Floods](#)
- [1990 - Colorado River ecology and dam management](#)
- [1991 - Colorado River Reservoir Operations](#)
- [1991 - Managing Water Resources in the West Under Conditions of Climate Uncertainty](#)
- [1002 - Water Transfers in the West: Efficiency, Equity, and Environment](#)
- [1994 - Review: Glen Canyon Dam long-term monitoring plan](#)
- [1996 - Review: River Resource Management in the Grand Canyon](#)
- [1999 - Review: Glen Canyon Dam adaptive management program](#)
- [2003 - Critical Issues in Weather Modification Research](#)
- [2004 - Confronting the Nations Water Problems: The Role of Research](#)
- [2007 - Colorado River Basin Water Management](#)
- [2008 - Prospects for Managed Underground Storage of Recoverable Water](#)
- [2008 - Desalination: A National Perspective](#)
- [2009 - Irreversible Climate Change](#)
- [2009 - America's Energy Future Technology Transformation](#)
- [2010 - Adapting to Impacts Climate Change](#)
- [2012 - Water Reuse Potential Expanding Nation Water Supply](#)
- [2012 - Preparing for the Third Decade: National Water Quality Assessment](#)
- [2012 - Disaster Resilience: A National Imperative](#)
- [2012 - Dam Levee Safety: Community Resilience and Vision of Future Practice](#)
- [2014 - Lessons Learned from the Fukushima Nuclear Accident](#)

NATIONAL SCIENCE FOUNDATION

- 1970s - [Lake Powell Research Project](#)
- 2017 - [Colorado River: Building a Science; Agenda Final Workshop Report](#)

CONGRESSIONAL RESEARCH SERVICE

- [2009 - 35-years After National Water Commission Report.](#) CRS.
- [2011- Adaptive Management for Ecosystem Restoration: Analysis and Issues Congress.](#) CRS.
- [2011 - Energy's Water Demand: Trends, Vulnerabilities, and Mangement.](#) CRS.
- [2014 - Energy Water Nexus: The Energy Sectors Water Use.](#) CRS.
- [2015 - Principles, Requirements, and Guidelines for Federal Investments in Water Resources.](#) CRS

- [2017 - USA & Mexican Water Sharing: Background and Recent Developments.](#) CRS.
- [2017 - Water Resource Issues in the 115th Congress.](#) CRS.
- [2017 - Drought in USA: Causes and Current Understanding.](#) CRS.
- [2017 - Safe Drinking Water Act: A Summary of the Act and Major Requirements.](#) CRS.
- [2018 - Executive Order for Review of National Monuments.](#) CRS.
- [2018 - Sharing Colorado River Rio Grande Cooperation Conflict Mexico.](#) CRS.
- [2019 - Water Resource Issues in the 116th Congress.](#) CRS.
- [2019 - The Reclamation Fund.](#) CRS.
- [2019 - Salton Sea Management and Restoration Efforts.](#) CRS.
- [2019 - Reclamation Project Authorization and Financing.](#) CRS.
- [2019 - Overview of Management and Restoration Activities in the Salton Sea.](#) CRS.
- [2019 - Reclamation: FY 2020 Appropriations.](#) CRS.
- [2019 - Mexico: Background and USA Relations.](#) CRS.
- [2019 - Overview of Continuing Appropriations FY 2020 \(P.L. 116-59\).](#) CRS.
- [2019 - Federal Reserved Water Rights and Groundwater: Quantity, Quality and Pore Space.](#) CRS.
- [2019 - Drought Contingency Plans Colorado River Basin.](#) CRS.
- [2019 - Indian Water Rights Settlements.](#) CRS.
- [2019 - Management of Colorado River Water Allocations, Drought and the Federal Role.](#) CRS.
- [2020 - Nature-based Infrastructure: NOAA's role.](#) CRS.
- [2020 - Abandoned Mine Reclamation Fund: Reauthorization Issues.](#) CRS.
- [2021 - Water infrastructure for the 21st century: The viability of incorporating natural infrastructure in Bureau of Reclamation water management systems.](#) Congressional Research Services.
- [Management of Colorado River: Water Allocations, Drought and Federal Role.](#) CRS Document.
- [2021 - Water infrastructure for the 21st century: The viability of incorporating natural infrastructure in Bureau of Reclamation water management systems.](#) Congressional Research Services.
- [2021 - Water Resource Issues in the 117th Congress.](#) CRS.

GOVERNMENT ACCOUNTABILITY OFFICE

- [1960 - Audit of the Colorado River Storage Project.](#) GAO.
- [1977 - The Drought of 1977.](#) GAO.
- [1979 - Colorado River Basin Problems.](#) GAO.
- [1983 - Colorado River Flooding in 1983.](#) GAO.
- [1996 - Audit of the Glen Canyon Dam Environmental Impact Statement.](#) GAO.
- [2008 - Water Scarcity in the Colorado River basin.](#) GAO.
- [2010 - Energy Water Nexus: Oil Shale.](#) GAO.

- [2018- Oil and Gas Wells: BLM needs to improve its data and oversight of its potential liabilities.](#) GAO.

LEGAL

- [Scholarly Reviews of Governance on the Colorado River.](#) OTC.
- [2021 - 9th Circuit Opinion: Navajo Nation v Department of Interior](#)

BOOKS

- [1985 - River of Empire: Water, Aridity, and the Growth of the American West.](#) Donald E. Worster
- [2019 - Science be Dammed: How Ignoring Inconvenient Science Drained the Colorado River.](#) Eric Kuhn & John Fleck.
- [2019 - Dams, Deals and a Noble Myth: Saving Grand Canyon.](#) Byron Pearson.
- [2020 - Vision and Place: John Wesley Powell and Reimagining the Colorado River Basin.](#) Robison, McCool & Minckley.

RESOURCES FROM UNIVERSITIES

Colorado River Research Group

- [Resource page: Publications](#)

Center for Climate Adaptation Science and Solutions; University of Arizona at Tucson.

- [Home Page](#)
- [Colorado River Resources](#)

Center for Colorado River Studies: Future of the Colorado River Project; Utah State University at Logan.

- [Home Page](#)
- **01** Fill Mead First: A Technical Assessment; [White Paper](#); [Summary](#). Schmidt.
- **02** Water Resource Modeling of the Colorado River: Present and Future Strategies; [White Paper](#); [Summary](#). Wheeler.
- **03** Strategies for Managing the Colorado River in an Uncertain Future; [White Paper](#); [Summary](#). Wang.
- **04** The Future Hydrology of the Colorado River Basin; [White Paper](#); [Summary](#). Salehabadi.
- **05** Stream flow and Losses of the Colorado River in the Southern Colorado Plateau; [White Paper](#); [Summary](#). Wang.
- **06** Alternative Management Paradigms for the Future of the Colorado and Green Rivers; [White Paper](#); [Summary](#). Wheeler.

- **Interview** with Kevin Wheeler on Science Moab; KZMU Radio: [Predicting the future of the Colorado River](#). MP3; as a [feature](#) in *Moab Sun News*.

Center for Natural Resources and Environmental Policy; University of Montana at Missoula.

- [Water and Tribes Initiative of the Colorado River Basin](#). Center for Natural Resources and Environmental Policy. University of Montana at Missoula.
- News: [This System Cannot Be Sustained](#). HCN interview.

UPPER COLORADO RIVER COMMISSION (UCRC) ([Website of the Commission](#))

- **UCRC Annual Reports:** [2020](#); [2019](#); [2018](#); [2017](#); [2016](#); [2015](#); [2014](#); [2013](#); [2012](#); [2011](#); [2010](#); [2009](#); [2008](#); [2007](#); [2006](#); [2005](#); [2004](#); [1950](#); [1949 Minutes](#).

RECLAMATION'S BASELINE DOCUMENTS

- [Administrative Record of Interim Guidelines](#) (comprehensive, but not complete). OTC.
- [1988 - Upper Basin Hydrologic Determination](#). USBR.
- [2004 - 602a Interim Shortage Guideline Environmental Assessment](#). USBR.
- [2006 - Arizona v California Decree](#). USA Supreme Court.
- [2007 - Interim Guidelines Final EIS](#) (all documents combined by OTC).
- [2007 - Record of Decision](#)
- [2007 - Biological Opinion](#)
- [2007 - Upper Basin Depletion Schedule](#). Note: Total consumption is 5.523 maf by Year 2060.
- [2007 - Upper Basin Hydrologic Determination](#). USBR.
- [2007 - Upper Basin Water Availability from Flaming Gorge Reservoir](#). USBR.
- [2007 - Operation tiers at Powell and Mead for surplus, normal and shortage conditions](#). USBR.
- [2017 - Revised Upper Basin Depletion Schedule](#). Note: Total consumption is 5.962 maf by Year 2070.
- [2019 - Mexico's Binational DCP Agreement](#)
- [2019 - Seven States Agreement Colorado River Drought Contingency Management And Operations](#)
- [2019 - Lower Basin Drought Contingency Plan Agreement](#)
- [2019 - Upper Basin Drought Response Operations At CRSP Reservoirs](#)
- [2019 - Upper Basin Demand Management Agreement CRSP Reservoirs](#)
- [2020 - 7D Review Comments and Report](#) (compiled).
- [2021 - Reclamation's SECURE Water Report to Congress](#).
- [2021 - Colorado River Management Issues and the Federal Role](#). Congressional Research Service.

NATURAL FLOW AT LEE'S FERRY (Compact Point)

- Long-term from Year 01 to Year 1905: 14.17 million acre-feet (maf). [Gangopadhyay et al.](#)
- Short term from Year 1906 to 2019: 14.78 maf. [Natural FLOW Data](#).

TREE RING DATA from Year 0 to 2019

ANNUAL OPERATING PLANS (AOP) (Reclamation website)

Bureau of Reclamation

[1970](#); [1971](#); [1972](#); [1973](#); [1974](#); [1975](#); [1976](#); [1977](#); [1978](#); [1979](#); [1980](#); [1981](#); [1982](#); [1983](#); [1984](#); [1985](#); [1986](#); [1987](#); [1988](#); [1989](#); [1990](#); [1991](#); [1992](#); [1993](#); [1994](#); [1995](#); [1996](#); [1997](#); [1998](#); [1999](#); [2000](#); [2001](#); [2002](#); [2003](#); [2004](#); [2005](#); [2006](#); [2007](#); [2008](#); [2009](#); [2010](#); [2011](#); [2012](#); [2013](#); [2014](#); [2015](#); [2016](#); [2017](#); [2018](#); [2019](#); [2020](#); [2021](#); [2022](#); [2023](#); [2024](#); [2025](#); [2026](#);

AOP: The 30-year averages of unregulated flow into Lake Powell

- **1971 to 2000:** 12.06 million acre-feet (maf) ([2008 AOP](#))
- **1971 to 2000:** 12.04 maf (revised in [2010 AOP](#)). This 30-year average ended in the surplus tier at Lake Mead.
- **1981 to 2010:** 10.83 maf ([2013 AOP](#)). This 30-year average ended in the normal tier at Lake Mead.
- **1991 to 2020:** 9.60 maf ([data](#)). This 30-year average ended in the shortage tier at Lake Mead.
- **2001 to 2030:** 8.7 maf (trendline projection). This 30-year average will present shortages to the Upper Basin.
- **2011 to 2040:** 7.8 maf (trendline projection). Economic stagnation?
- **2021 to 2050:** 7.1 maf (trendline projection). Human and animal migrations?

AOP: The unregulated inflow by year into Lake Powell and by percent of the 30-year average

- **1981 to 2010: Year 2000** - 62%; **2001** - 59%; **2002** - 25%; **2003** - 51%; **2004** - 49%; **2005** - 105%; **2006** - 73%; **2007** - 68%; **2008** - 102%; **2009** - 88%; **2010** - 73%.
- **1991 to 2020: Year 2011** – 139%; **2012** – 45%, **2013** – 47%; **2014** – 96%; **2015** – 94%; **2016** – 89%; **2017** – 110%; **2018** – 43%; **2019** – 120%; **2020** – 54%;

ARCHIVE OF 24-MONTH REPORTS

Note: Reclamation website is [HERE](#)

- [Reports combined from 2003 to 2020](#) (there are gaps)
- January only 24-Month Reports combined: [Flaming Gorge Dam 2006 to 2020](#); [Hoover & Glen Canyon dams 2008 to 2021](#).

24-MONTH REPORTS BY THE YEARS AND MONTHS

- [Reclamation website for 24-Month Reports](#) (not a long term archive)
- [OTC archive of 24-Month Reports](#).

UPPER BASIN CONSUMPTIVE USE AND LOSS REPORTS

[1971-1995](#); [1971-1975](#); [1976-1980](#); [1981-1985](#); [1986-1990](#); [1991-1995](#); [1996-2000](#); [2001-2005](#); [2006 -2010](#); [2011-2015](#); [2016 - 2020](#);

LOWER BASIN CONSUMPTIVE USE REPORTS

- 1964; 1965; 1966; 1967; 1968; 1969; 1970; 1971; 1972; 1973; 1974; 1975; 1976; 1977; 1978; 1979; 1980; 1981; 1982; 1983; 1984; 1985; 1986; 1987; 1988; 1989; 1990; 1991; 1992; 1993; 1994; 1995; 1996; 1997; 1998; 1999; 2000; 2001; 2002; 2003; 2004; 2005; 2006; 2007; 2008; 2009; 2010; 2011; 2012; 2013; 2014; 2015; 2016; 2017; 2018;
- [Annual Summary 2001 to 2016](#); [Annual Summary 1906 to 2005](#); [Reclamation Archive](#)

RESOURCES FROM BUREAU OF RECLAMATION

Colorado River System Simulation (CRSS). The software can be leased and downloaded [HERE](#).

- **CRSS Baseline Data:** [Resources/Data](#). OTC archive; not complete.
- News feature explaining CRSS for scenario planning purposes: [Science Moab speaks with Dr. Kevin Wheeler about the future of the Colorado River](#) in *Moab Sun News* & an [audio interview](#) on *KZMU Radio*.
- **A Open Source Simulator** (via 2007 Microsoft Excel): [CROSS](#). This website (OTC); no fees; no license; the software for this simulator is safe to download.

Reclamation graphics

2012 Basin Study - Climate scenario; via FOIA fulfillment.

2010 to 2060 Projections; Run 21 (or Trace 21).

- [01 - Natural Flow at Lee's Ferry](#); Climate Projections Scenario; Run 21.
- [02 - Powell & Mead; December Elevations](#); Climate Projections Scenario; Run 21.
- [03 - Powell Water Year Release at Lee's Ferry Flow](#); Climate Projections Scenario; Run 21.
- [04 - Lower Basin Shortages](#); Climate Projections Scenario; Run 21.
- [05 - Upper Basin Shortages](#); Climate Projections Scenario; Run 21.

**Reclamation graphics modified to enhance interpretation
2010 to 2060 Projections: Graphics modified by OTC.**

- 2012 Basin Study: Run 21 - Hydropower Curtailments [2010 to 2060 - Mead and Powell Elevations](#).
- 2012 Basin Study: App. G - [Lake Powell Elevation Projection and actual as of 2022](#). jpg.
- 2012 Basin Study: App. G - [Lake Mead Elevation Projections and actual as of 2022](#). jpg.
- 2012 Basin Study: App. G - [Lake Powell & Lake Mead Projections and actual as of 2022](#). Combined pdf.

This page is Part Three (physical and social sciences)

- [Click here](#) for Part One A: By date - News and Opinion
-

Part Four: Preparing Comments for Public Participation During the Reconsultation of Interim Guidelines

JULY 13, 2021

BY JOHN S. WEISHEIT



Beach in Cataract Canyon near Rapid #26

PART FOUR: Solutions, Climate Adaptation, Sustainability and Resilience

- [Click here](#) for Part One A: By date - News and Opinion
 - [Click here](#) for Part One B: By subject - News and Opinion
 - [Click here](#) for Part Two: Narratives - Old and New.
 - [Click here](#) for Part Three: The Physical and Social Sciences
 - [Click here](#) for Part Four: Solutions - Climate Adaptation, Sustainability and Resilience.
-

A RESOLUTION FOR SUSTAINIBILITY

Community in the Colorado River Basin. Robison, McKinney & Vigil; 2021: Idaho Law Review.

Whereas water is life; it is a precious, life-giving resource;

Whereas water is sacred; it is valued for spiritual, cultural, and ecological purposes as well as for sustaining human populations and economies;

Whereas water is foundational to the identities of tribes in the Basin and provides an intrinsic connection to their wellbeing and homelands;

Whereas water in the Colorado River system is essential to urban and rural communities; municipal, agricultural, industrial, recreational, and other uses; and to more than 40 million people in two countries, seven states, and [30] sovereign Indian nations, and;

Whereas natural and cultural resource conservation are connected. Now, therefore, be it resolved that the next framework to govern the Colorado River system should:

- Promote and support the sustainable, resilient use of the River system for people and the rest of nature;
- Ensure the spiritual, cultural, and ecological integrity of the River system while providing water for human use and consumption;
- Equitably allocate water by considering the contemporary diversity of needs, interests, and priorities; historical use patterns; and the realities of drought and climate change;
- Promote and support reliable access to clean water for all residents of the Colorado River system;
- Leave the earth and its water systems better than we found them;
- Honor, respect, and realize the federal government's trust responsibility toward the Basin's tribes in a manner that acknowledges their sovereignty and human right to self-determination;
- Engage in collaboration as the action of first resort to develop policy and solve problems, and;
- Integrate traditional indigenous knowledge with western science to better understand the River system and the consequences of alternative management scenarios.

THE EVENTUALITIES:

There is a day of reckoning—whichever comes first.

- **A Great Aridness:** empty reservoirs in time-scales of decades, as will likely occur between now and 2060.
- **Exceedance of spillway capacities:** Five-month snowmelts greater than 30 million acre-feet, as in 1884, and 50 million as in 1862.

- **The intentional storage of sediment in reservoirs:** total sediment storage capacities greater than 50% will significantly impact the prime objectives of federal legislation, which are: navigation, water storage/regulation and flood control. This impact is happening now at small reservoirs, and will happen in the 22nd century for the larger reservoirs.

"Reclamation ... is a technological stunt that, as the experience of other irrigation societies shows, cannot be indefinitely sustained. As the irrigation system approaches maximum efficiency, as rivers get moved around with more and more thorough, consummate skill, the system begins to grow increasingly vulnerable, subject to a thousand ills that eventually bring about its decline. Despite all efforts to save the system, it breaks down here, then there, then everywhere." Professor Donald E. Worster

Presentations

- [Rapid Progradation of River Deltas Into Lake Powell, March 2002 to March 2004.](#) Dohrenwend.
- [Floods, Tamarisk, Drought: Recent and Future Changes Along the Colorado River.](#) Dohrenwend.
- [Decline and Fall of Lake Powell, March 2002 to March 2005: Impacts of Extended Drought on the Colorado Plateau.](#) Dohrenwend.

RIGHTS OF NATURE

- [Resources for Rights of Nature and Community Organizing.](#) OTC.

AGRICULTURE

- Family Farm Alliance - [Colorado River Basin Water Management: Principles & Recommendations.](#) 2015.
- Regenerative Agriculture by Climate Reality Project: [Home Page](#)

PHILANTHROPY

- *"We recommend transparent reporting of philanthropic spending related to collective action and conservation governance, and argue that foundations should explicitly consider and address legacies of exclusion for marginalised actors and groups."*
 - [2012 - Can philanthropy enable collective action to conserve rivers? Insights from a decade of collaboration in the Colorado River Basin.](#) Gina Gilson and Dustin Garrick; Oxford.

INCLUSIVENESS

- [2020 - Collaborative Governance and Stakeholder Participation in the Colorado River Basin: An Examination of Patterns of Inclusion and Exclusion](#). Surabhi Karambelkar, University of Arizona; Andrea K. Gerlak, Udall Center.
-

PERSPECTIVES FROM FROM THE TRIBES

[Tribal Resources](#). OTC.

2012 - Basin Study Tribal Comments

- [ITCA](#); [Navajo Nation](#); [Pascua Yaqui](#); [Yavapai Apache](#);

2018 - [Tribal Water Study of the Ten-Tribe Partnership](#) (documents combined and starting with the press release). This study is a new feature for the 2012 Basin Study.

2020 - 7D Review Tribal Comments:

- [Tribes of the Colorado River Basin](#); [Collective Tribal Letter](#); [Ak Chin Indian Community](#); [Colorado River Indian Tribes](#); [Fort McDowell Yavapai Nation](#); [Gila River Indian Community](#); [Havasupai Tribe](#); [Quechan Indian Tribe](#); [San Carlos Apache Tribe](#); [Tohono O'odham Nation](#); [Yavapai Apache Nation](#);

2021 - [Conference: Tribal Water Resilience in a Changing Environment](#). University of Arizona.

- [Agenda with presentations: videos and powerpoints](#)
-

VISIONARY DISCUSSIONS & SCHOLARSHIP

- [2021 - Lessons from the Colorado River: Climate, Land, and Drought](#). A 75th Anniversary Lincoln Institute Dialogue.
- [2021 - Green Light for Adaptive Policies on the Colorado River \(with supplementals\)](#). Fleck and Castle.

VISIONARY SCIENCE

- [2009 - Sustainable water deliveries from the Colorado River in a changing climate](#). Barnett and Pierce.
- [2017 - Debates—Hypothesis testing in hydrology: Pursuing certainty versus pursuing uberty](#). Baker.
- [2021 - Underestimating the Challenges of Avoiding a Ghastly Future](#). Bradshaw et al.
- [2021 - Horizon Scan of Emerging Global Biological Conservation Issues](#). Sutherland et al.

VISIONARY LEGISTION

Repurposing federal and state legislation

- [2021 - Water infrastructure for the 21st century: The viability of incorporating natural infrastructure in Bureau of Reclamation water management systems.](#)
Congressional Research Services.

VISIONARY STRATEGIES

Ten Strategies for Climate Resilience on the Colorado River Basin

- [Homepage](#)
 - [Press Release, Program Snapshot & Program Summary](#)
 - [Full Report](#)
 - [Appendix](#)
-

This page is Part Four (solutions, climate adaptation, sustainability and resilience)

- [Click here](#) for Part One A: By date - News and Opinion
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 - [Click here](#) for Part Four: Solutions - Climate Adaptation, Sustainability and Resilience
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-

2022: The Year of Decision?

JANUARY 01, 2022

BY JOHN S. WEISHEIT

New Information Concerning Drought Response Operations Agreement (DROA)

- December 2, 2022 - [Reclamation Makes Operational Adjustments at Lake Powell to Protect Low Level Critical Elevations](#). Press Release.
- Report - [DROA Amendment of December 2, 2022](#). Reclamation.
- December 2, 2022 - [Drought threatens Colorado River with 'complete doomsday scenario,' officials say](#). Joshua Partlow for Washington Post.

NARRATIVE

By end of Year 2022, we may know if management reforms in the Colorado River Basin (CRB) are going to be effective, or not. When water management alternatives were presented in 2005 & 2006 to the Bureau of Reclamation during preparation of the [EIS called Shortage Criteria](#), the seven states promised to prevent shortages by making the reservoir storage system perform more efficiently ([Basin States Alternative of 2006](#)). This promise began to [falter in Year 2013 \(archived\)](#), was [modified in Year 2019](#), and then [failed in Year 2021](#). In Year 2007, this unfortunate outcome was expected and documented by cautionary [scientists](#) and [NGOs](#).

- [2022 - Scientists Have Long Warned Of Colorado River Crisis](#). Ian James for LA Times.

Background Materials

- [2022 - A Colorado River Glossary: Jargon Explained](#). Brett Walton for *Circle of Blue*.
- [2021 - Quenching Thirst in the Colorado River Basin](#). Colorado Water Center.
- [2005 to 2008 - Chronology of events for Shortage Criteria EIS \(2007 Interim Guidelines\)](#)

With total reservoir storage in the CRB [currently at 38%](#) (32% as of July 15, 2022, see table below), a too-close-for-comfort situation has indeed occurred. When the total reservoir system drops below 30 percent, and various hydropower and water contracts begin to default, the water managers will be in a position of defeat. They should feel awful about jumping the guard rails for the law of the river—but they do not. They won't, or can't, turn off their auto-pilot switches for developing new water projects, otherwise known as feeding the boom and bust cycle ([1985 - OpEd by Wallace Stegner](#)).

CURRENT RESERVOIR STORAGE LEVELS (Live Storage)

As of July 15, 2022

- 32% - Total system storage (Upper and Lower Basins)
- 75% - Flaming Gorge (Green River)
- 47% - Blue Mesa (Gunnison River)
- 57% - Navajo (San Juan River)
- 24% - Lake Powell (Upper Colorado River)
- 27% - Lake Mead (Lower Colorado River)

The public laws designed to reclaim the arid lands of the western United States may yet go down as the largest failed social experiment in American history. How we walk away from this situation is yet to be determined, but this much we do know, the limits of nature have been exceeded and all the expectations of the 1928 Boulder Canyon Project Act became serious miscalculations. As it stands today, these communities dependent on good water governance are in a position of vulnerability, rather than sustainability. Change must prevail.

Splitting the basin into lower and upper divisions was the biggest blunder of the negotiations for the Colorado River Compact of 1922 and exceeding the limitations of geography and climate is why. Equity and sound planning will not happen in either division until the limitations of this geography and climate are properly defined for what they are, and are not. This is exactly what John Wesley Powell asked of Congress in his professional narratives submitted between 1875 to 1893. Ignoring geography and climate is why system failure exists in the Colorado River Basin. How this is accomplished is actually quite simple: work with nature and demonstrate some respect for the gifts we did not create.

###

NEWS AND OPINION ABOUT RESPONSES TO CLIMATE DISRUPTION

- [August 15, 2021 - Utah can lead by moving away from fossil fuels, Editorial Board writes.](#) *Salt Lake Tribune.*
- [December 27, 2021 - Editorial Board: Why Utah must take back control from the water buffaloes. Water policy shouldn't be set by people in the business of selling water.](#) *Salt Lake Tribune.*
- [January 28, 2022- Shrinking River and Reservoirs.](#) Allen Best at *BIG PIVOTS.*
- [March 16, 2022 - Rather than draining Lake Powell, Utah should give conservation a try.](#) Felicia Fonseca for *Associated Press.*
- [February 5, 2022 - A third of Americans are already facing above-average warming.](#) Oliver Milman for *The Guardian.*
- [February 23, 2022 - Seven weeks of near-record low snowfall in the Colorado River Basin have water magers worried.](#) Zak Podmore for *Salt Lake Tribune.*
- [March 17, 2022 - Interview with Rural Utah Project and Living Rivers.](#) KZMU Public Radio.

- [March 25, 2022 - Colorado hits a "Hard Pause" on water demand management as it waits for the other states.](#) Chris Outcalt for *The Colorado Sun*.
- [April 21, 2022 - Time to rethink Upper Basin's "bonus water" contributions to Lake Mead.](#) Eric Kuhn for *Inkstain*.
- [May 19, 2022 - Ex-Interior secretary urges revamping Colorado River Pact.](#) Ian James for *LA Times*.
- [May 25, 2022 - A new dimension in the Colorado River Debate.](#) Allen Best for *Big Pivots*.
- [May 4, 2023 - The little known Nevada company making millions off the Western drought.](#) Jake Bittle for *Grist*.

THE FEDERAL PROCESS

DROUGHT RESPONSE OPERATIONS AGREEMENT (DROA)

The Upper Basin DROA is a plan to make a plan at the last minute about emergency dam operations at Glen Canyon Dam, and to prevent the cessation of hydroelectric power generation, and how these operations will change the downstream, aquatic ecology of Grand Canyon National Park.

Comments will be accepted through Thursday, Feb. 17, 2022, and can be submitted by:

Email at: droa@usbr.gov

Or by mail to:

Bureau of Reclamation
c/o Robert Henrie
125 South State Street, Rm 8100
Salt Lake City, Ut 84138

Public Review Documents

- [DROA Website](#)
- [Draft – 2022 Drought Response Operations Plan](#)
- [Attachments A–E](#)
- [Attachment C, Appendix 1](#)

ADDITION INFORMATION ABOUT THE PROPOSED FIX

DROA News and Additional Information (The Fix)

The fix is to increase releases from Flaming Gorge Dam on the Green River and to reduce releases from Glen Canyon Dam. The total amount of water that will stabilize the elevation of Lake Powell is 1 million acre-feet, which essentially buys about two months of modified hydroelectric production at Glen Canyon Dam.

- See Reclamation [press release of May 3, 2022](#)
- **Letter** from Interior to the seven states
- [Final Drought Response Operations Plan](#).
- [Memo and DROA Approval Letter](#). DOI.

The Fix: News in April of 2022

- [Ailing Lake Powell to get short-term fix, but warnings continue.](#) Tony Davis for *Arizona Daily Star*.
- [City assures residents in Page that their water supply is not compromised.](#) Douglas Long for *Lake Powell Chronicle*.
- Opinion: [Were still in the dark as western water framework unravels.](#) David Schaller for *Tucson Sentinel*.
- Opinion: [Lake Powell will get water: It's not enough!](#) Joanna Allhands for *Arizona Republic*.
- [New Plan Lays Out Ways to Protect Lake Powell from Drought.](#) Lexi Peery for *KUER*.
- [Feds, 4 Colorado River states, unveil DROA as 2022 forecast shifts.](#) Allen Best for *Water Education Colorado*.

The Fix: News in May of 2022

- [No solid plan to stabilize reservoirs as water levels plummet.](#) Tony Davis for *Arizona Daily Star*.
- [Droughts continued depletion of Colorado River bodes ill for California.](#) Ian James for *LA Times*.
- [Arizona will have to dig deep for money as water shortage worsens.](#) Brandon Loomis for *AZ Republic*.
- [What will happen if Glen Canyon Dam stops generating power?](#) Zak Podmore for *Salt Lake Tribune*.

PROPOSED NEXT STEPS TO BEGIN ON OCTOBER 1, 2022

News

- [Reclamation Commissioner to testify on extreme drought.](#) Jennifer Yachnin for *EE News*.
- [Major Water Cutbacks Ordered Amid Colorado River Shortages.](#) Ian James for *LA Times*.
- [Big Colorado River Water Cuts Needed Next Year Top USA official.](#) Tony Davis for *Arizona Daily Star*.
- [Testimony of Commissioner Touton for Senate Committee on Energy and Natural Resources.](#)
- [Under federal pressure Colorado River water managers face unprecedented call for conservation.](#) Alex Hager for *KUNC*.
- ['The system is at a tipping point' Feds say unprecedented cuts needed to balance Colorado River water.](#) Zak Podmore for *Salt Lake Tribune*.
- [OpED: Time for realism on Lakes Powell and Mead.](#) Commissioner Segerblom for *Las Vegas Review Journal*.

OTHER DOCUMENTS AND ISSUES FROM RECLAMATION ABOUT LOW RESERVOIR ELEVATIONS

- [24-Month Report of February 2022](#)
- [Reclamation and Upper Colorado River Commission Webinar about DROA](#)
- [2014 - Potential Effects of Long Term Drought on Colorado River Operations at Glen Canyon Dam](#). Grantz, USBR.

Entrainment of Smallmouth Bass through Penstocks at Glen Canyon Dam

- **Environmental Assessment of March 2023**
- [Click here](#) to read the comments written by Taylor McKinnon of Center for Biological Diversity
- [Click here](#) to read the comments written by John Weisheit of Living Rivers & Colorado Riverkeeper.

Dam designs, specifications, velocity currents, vortices, cavitation and water hammering

- News: 12/09/22 - [The power of aridity is bringing a Colorado River dam to its knees](#). Alex Hager for *KUNC*.
- [Presentation that explains cavitation \(implosion\)](#). You Tube video.
- [Presentation of collapse of water vapor \(hammering\)](#). You Tube video.
- [1999 - Glen Canyon Dam multi-level intake structure hydraulic model study](#). Vermeyan. "Type 3 vortices were also observed in the hydraulic model for existing conditions at water surface elevations between 3490 and 3530 ft at a discharge of 4,000 ft³/sec."
- [2011 - Glen Canyon Dam Penstock Withdrawal Characteristics, 2007-2008; USBR](#). "The velocity profiles indicate the upper limit of withdrawal is near elevation 3520 ft. The lower limit of withdrawal was estimated to be about elevation 3430 ft." **Note:** The volume in the water column between these two elevation points (90 feet) is 4 million acre-feet, which is less than half of the annual average flow that must legally pass by the "Compact Point" near Lee's Ferry, AZ, which is 15 river miles below Glen Canyon Dam.
- [2013 - Investigation of waterhammer problems in the penstocks of pumped-storage power plants](#). Dincer.
- The intake for the delivery of stored river water in Lake Powell to Navajo Nation and City of Page, for municipal and industrial use, is set at elevation 3490 feet; annual consumption is approximately 1,550 acre-feet.
- [Photos about the safety issues with the various outlet works at Glen Canyon Dam](#)
- [Penstock specs](#)
- [River Outlet specs](#)
- [Powerplant specs](#)

FROM ACADEMIA

Papers and Presentations

- [2009 - Sustainable water deliveries from the Colorado River in a changing climate](#). Pierce & Barnett.
- [2016 - Competing Objectives in the Colorado River Basin](#). Schmidt.
- [2022 - Rapid Intensification of Emerging Southwest North American Megadrought 2020 - 2021](#). Williams et al.

Stegner Center at the University of Utah

27th Symposium about the 100th Anniversary of the Colorado River Compact

- [All video presentations](#)
- Day 1.1 - [Jason Robison, Tanya Trujillo & Larry MacDonnell](#)
- Day 1.2 - [Anne Castle, Margaret Vick, Biddah Becker & Jason Hauter](#)
- Day 1.3 - [Carlos de la Parra, Osvel Hinojosa-Huerta & Chris Harris](#)
- Day 1.4 - [John Fleck, Connie Woodhouse, Jim Prairie, Bob Adler, Jennifer Pitt, & Nora McDowell](#)
- Day 2.1 - [John Ruple, Daryl Vigil, Roberto Salmón, Carly Jerla, Becky Mitchell, John Entsminger, & Matthew McKinney](#)
- Day 2.2 - [Brad Udall, Tina Shields, Amy Haas, Tom Bushatzke & Kathy Jacobs](#)
- Day 2.3 - [Eric Kuhn, Jay Weiner, Meena Westford, Andy Mueller, Jack Schmidt & Amy McCoy](#)
- Day 2.4 - [John Berggren, Crystal Tulley-Cordova, Anne Castle, Enrique "Henry" Martinez & Heather Tanana; David Palumbo, Acting Commissioner of Bureau of Reclamation](#)

FROM NGOS

Presentations and Comment Letters

- [2021 - A Future On Borrowed Time: Colorado River Shortages & the New Normal of Climate Change](#). Utah Rivers Council.
- DROA comment letter by Save The Colorado.
- DROA comment letter 01 by Living Rivers and Center for Biological Diversity.
- [NEWS - Seven weeks of near-record low snowfall in the Colorado River Basin have water managers worried](#). Zak Podmore for *Salt Lake Tribune*.
- DROA comment letter 02 by Living Rivers, Center for Biological Diversity, WildEarth Guardians, Utah Rivers Council and Great Basin Water Network.

THE LATEST SCIENCE

Reclamation, USGS and University Geographers

- [Colorado River System Mid-term Projections as of June 16, 2022](#). Dr. James Prairie of Reclamation.
- [2022 - Tree Rings Reveal Unmatched 2nd Century Drought in the Colorado River Basin](#). Gangopadhyay et al.

Supporting science

- [2009 - A 1,200-Year perspective of 21st Century drought in southwestern North America](#). Woodhouse et al.



P 557-420-10576 Glen Canyon Unit--C.R.S.P.
NA Unit 2. Looking at the upper end of the trailing edge of 3 of the 15 buckets of the runner. Arrow points to a spot on the crown which had cavitated deeply enough to cause Mr. Claude Tate, the erecting engineer, to have it gouged to 7/8-inch depth and filled with stainless steel electrodes. Contractor: Baldwin-Lima-Hamilton Corp., Contract No. 14-06-D-3506. Invitation No. DS-5234. 2-17-65 F. Finch

1965 Inspection: Photo of cavitation damage to turbine at Glen Canyon Dam

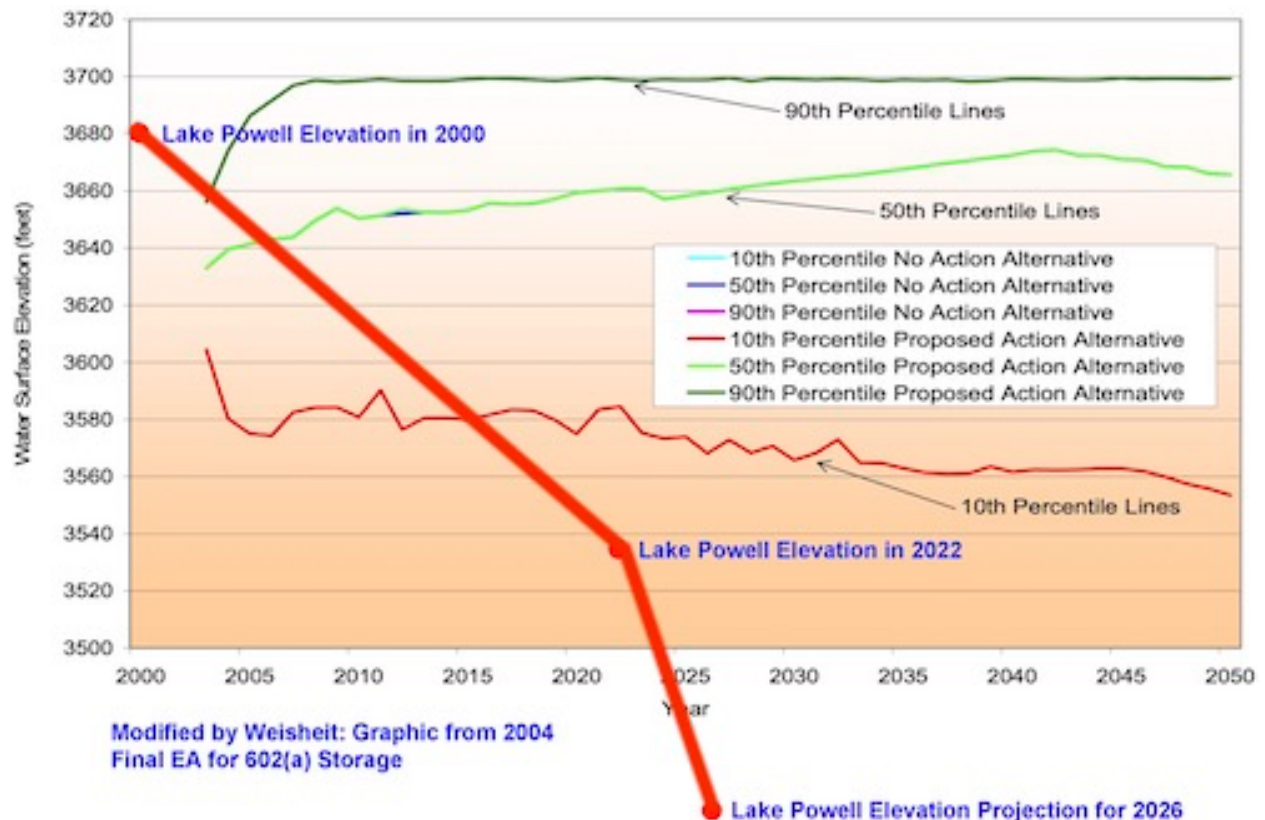
- [Presentation that explains cavitation \(implosion\)](#). You Tube video.
- [Presentation of collapse of water vapor \(hammering\)](#). You Tube video.

During the initial filling of Lake Powell, and while finishing the various components of the hydroelectric powerhouse at the base of Glen Canyon Dam, a turbine was pulled and inspected for damage caused by cavitation (water vapor implosions). In 1964 and 1965 the reservoir elevation was stabilized at the minimum power pool elevation of 3490 feet. The photograph below highlights the damage caused by cavitation to the runners (blades) of the turbine. At low reservoir elevations vortices will appear at the intakes of the water outlet works, which introduces air into the water column flowing through the pipes that spin the generators.

Reclamation announces a public opportunity: prepare prescoping comments to develop new operating criteria for the Colorado River Basin

JUNE 23, 2022

BY JOHN S. WEISHEIT



The thick red line reflects the last 22-years (actual) and then Reclamation's projection to 2050

The Comment Period for Pre-scoping is now closed.

COMMENT LETTERS

- [Reclamation's Official Pre-scoping Website](#)
- [All Comment Letters Combined](#). For search engine uses by On The Colorado.

Note: Save yourself some time and read the [joint letter from the seven states](#). What the states are proposing is another minimalist approach at a time when system collapse is the likely outcome. Their proposal will arrive in 2023 after the formal public scoping

proces is completed and their choices and promises will once again be half-hearted and anything but sustainable. (Read: [The states agreement of 2006 and its many broken promises as of 2022.](#))

Note: The list below also includes comment letters specific to the Drought Response Operations Agreement (DROA) and since July of 2022.

See: [1990 - Agency Recalcitrance and Evasion Regarding Compliance with the National Environmental Policy Act Relating to Glen Canyon Dam Operations: A Documented Need for Congressional Intervention.](#) Lippman.

- [Environmental Protection Agency](#)
- [Gila River Indian Community](#)
- [Hopi Tribe](#)
- [Blue Ribbon Coalition](#)
- [Upper Basin Dialogue](#)
- [Upper Basin Five-Point Plan](#)
- [Southwest Hydrology Hydraulics](#)
- [US Fish and Wildlife Service](#)
- [Living Rivers et al](#)
- [Jack Schmidt, Eric Kuhn and John Fleck](#)
- [Metropolitan Water District of California](#)
- [Senator Kelly](#)
- [Southeastern Colorado Water Conservancy District](#)
- [Glen Canyon Institute et al](#)
- [7 States](#)
- [Arizona Department of Water Resources](#)
- [Jicarilla Apache Nation](#)
- [Southern Nevada Water Authority](#)

There are many more and they will be posted soon.

###

PRESCOPING COMMENT PERIOD

- **Due date:** September 1, 2022 (10 weeks)
- [Recording of the Prescoping Webinar.](#) You Tube.

Submit electronically to: CRB-info@usbr.gov

Questions can be addressed to:

Carly Jerla
Bureau of Reclamation
Senior Water Resources Program Manager
(303) 517-1160
eMail: cjerla@usbr.gov

###

Reclamation's press release is [HERE](#) & [archived here](#)

For Release: June 23, 2022
Peter South <psoeth@usbr.gov>
303.445.3615
eMail: [Peter Soeth](#)
###

NEWS ABOUT PRESCOPING

A MUST READ: June 24, 2022 - By Lexi Peery for *KUER*: [Feds call for public input on how to manage the strained Colorado River](#). A justified public position to improve the management of the Colorado River Basin would include the ask that the seven governor's terminate the employment of water managers who are: (1) skeptical of the value of participation from voters, taxpayers and ratepayers; 2) managers who blame the other states for their water shortage problems. The replacements should be the young people who represent the new families of a compromised nation.

The formative failures of the Colorado River Compact from the seven states include: (1) the negotiated compromise to split this river basin into two divisions was the first big mistake, because it embedded competition rather than cooperation; (2) instituting inflated water allocations was the second big mistake, because it embedded misinformation and exaggerations; (3) not deducting evaporation and seepage losses at the points of diversion was the third big mistake, because it embedded overconsumption; (4) delaying and excluding negotiations with the sovereign tribes and Mexico was the fourth mistake, because it embedded inequity; (5) the inability to self-correct these problems has become demoralizing, because it created misleading distractions and false starts that waste time and resources.

The 2022 Federal Register Notice is archived [HERE](#)

- "The Colorado River Basin provides essential water supplies to approximately 40 million people, nearly 5.5 million acres of agricultural lands, and habitat for ecological resources across the Southwestern United States and Northwestern Mexico. The limited water supplies of the Colorado River are declining and the Colorado River Basin is currently experiencing a prolonged period of drought and record-low runoff conditions resulting in historically low reservoir levels at Lake Powell and Lake Mead. The period from 2000 through 2022 is the driest 23-year period in more than a century and one of the driest periods in the last 1,200 years. Absent a change in hydrologic conditions, water use patterns, or both, Colorado River reservoirs will continue to decline to critically low elevations threatening essential water supplies across nine states in the United States and the Republic of Mexico (Mexico). It is foreseeable that without appropriate responsive actions and under a continuation of recent hydrologic trends, major Colorado River reservoirs could continue to decline to "dead pool" — elevations

at which water cannot be regularly released from a reservoir — in coming years. ... The current unprecedented drought and low-runoff conditions are anticipated to persist and potentially worsen as a result of a number of factors, including increasing temperatures in the Basin, and other effects of climate change."

The 2007 Record of Decision is archived [HERE](#)

- "The Colorado River Basin (Basin) is in the eighth year of drought – the worst eight year period in over a century of continuous recordkeeping. Reservoir elevations have declined over this period and the duration of this ongoing, historic drought is unknown. This is the first long-term drought in the modern history of the Colorado River, although climate experts and scientists suggest droughts of this severity have occurred in the past and are likely to occur in the future. The Colorado River provides water to two nations, and to users within seven western states. With over 27 million people relying on the Colorado River for drinking water in the United States, and over 3.5 million acres of farmland in production in the Basin, the Colorado River is the single most important natural resource in the Southwest."

On The Colorado (OTC, this website)

July, 2021 - our preparations for this federal announcement:

- [Click here](#) for Part One A: By date - News and Opinion
- [Click here](#) for Part One B: By subject - News and Opinion
- [Click here](#) for Part Two: Narratives - Old and New.
- [Click here](#) for Part Three: The Physical and Social Sciences
- [Click here](#) for Part Four: Solutions - Climate Adaptation, Sustainability and Resilience.

Sample Comment Letters archived on OTC

- [Drought Response Operations Agreement comment letter](#): Living Rivers and Center for Biological Diversity.
- [7D Review comment letter](#): Living Rivers and Colorado Riverkeeper.
- [A Colorado River Glossary: Jargon Explained](#). Brett Walton for *Circle of Blue*.

HELPFUL WEBSITES

- **National Academy of Sciences - Webinar: [How Are We, and How Should We Be, Adapting to Climate Change](#)** (**Note:** begins at minute 14:37). This is an analysis of a report called, "[Global Change Research Needs and Opportunities](#)" (archived [HERE](#)). A panel discussion with Kathy Jacobs (moderator). The panelists are Lisa Dilling, Daniel Kammen, Adelle Thomas and Michael Vandenburg.

- **Water and Tribes Initiative:** [Indigenous Women's Leadership Network: Effectively Communicating as a Leader](#). You Tube.

Prescoping Comments are due: September 1, 2022 (10 weeks)

###

Reclamation's press release is [HERE](#) (archived)

For Release: June 23, 2022

eMail: [Peter Soeth](#)

Peter South <psoeth@usbr.gov>

303.445.3615

Reclamation welcomes public input on development of future Colorado River operations during historic drought.

Federal Register notice seeks comment on meaningful participation ideas and operational strategies to consider when updating key reservoir and water management decisions and agreements

WASHINGTON – The Bureau of Reclamation today published a Federal Register notice to assist in its efforts to develop future Colorado River operating provisions. Several decisional documents and agreements that govern the operation of crucial Colorado River facilities, Lake Powell and Lake Mead, and the management of Colorado River water will expire at the end of 2026. The notice seeks specific input on how to foster meaningful participation by all stakeholders in preparation for beginning the National Environmental Policy Act process to develop post-2026 operating approaches for the Colorado River, and operating strategies to address post-2026.

"In my [testimony last week](#), I stressed the need for a quick response and action from across the basin to reduce water use and protect the sustainability of the Colorado River system," said Commissioner Camille Calimlim Touton. "As we focus on these short-term response actions, we also clearly recognize the importance of simultaneously planning for the longer-term to stabilize our reservoirs before we face an even larger crisis."

The publication of this notice is not the start of the NEPA process but is a tool to seek input and encourage brainstorming and input before the formal initiation of the NEPA process. Reclamation is targeting an early 2023 start for the NEPA process to develop post-2026 operating guidelines.

"We want to hear from everyone who has a stake in this basin. We intend to develop our next operating rules in an inclusive, transparent manner, relying on the best available science," said Senior Water Resources Program Manager Carly Jerla. "We're seeking input to foster a meaningful participation of Colorado River partners and

stakeholders and to gather ideas and strategies for the post-2026 operations that should also be considered in the NEPA process."

The notice asks for specific suggestions on the process and the substance of how best to analyze future operations and what those operations should include. It also highlights the changing circumstances in the Colorado River Basin since 2007, including declining hydrology, drought and low-runoff conditions impacted by a warmer, changing climate, inclusivity in Colorado River decision-making and the need for continued operational alignment and partnership with the Republic of Mexico.

Specific documents and agreements that expire at the end of 2026 include the December 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, among other essential management documents, both within the United States as well as international agreements between the United States and Mexico under the 1944 Water Treaty. The Colorado River Basin is experiencing a 22-year drought and low runoff conditions, and reservoirs within the basin are at historic low levels. There are extensive impacts throughout the Colorado River Basin, including water for homes and crops to the generation of electricity that supports everything we do.

While continuing to work with its partners to **mitigate the impacts** of this 22-year drought, Reclamation is focused on the next phase of Colorado River operational decision-making.

To help explain the process and answer questions, Reclamation is hosting two webinars:

WEBINARS FOR THE PUBLIC

- [Recording of the Prescoping Webinar](#). You Tube.

July 12, 2022 @ 10:00 am (Mountain)

[Click here to join the meeting](#)

Or call in (audio only)

+1 719-733-3211

Phone Conference ID: 100 899 510#

July 14, 2022 @ 10:00 am (Mountain)

Join on your computer or mobile app

[Click here to join the meeting](#)

Or call in (audio only)

+1 202-640-1187

Phone Conference ID: 795 497 392#

The public input period ends September 1, 2022.

To learn more about the operations on the Colorado River, please visit <https://www.usbr.gov/ColoradoRiverBasin/>.

About Reclamation: The Bureau of Reclamation is a federal agency under the U.S. Department of the Interior and is the nation's largest wholesale water supplier and second largest producer of hydroelectric power. Our facilities also provide substantial flood control, recreation opportunities, and environmental benefits.

NEWS FROM THE PRESS CORPS

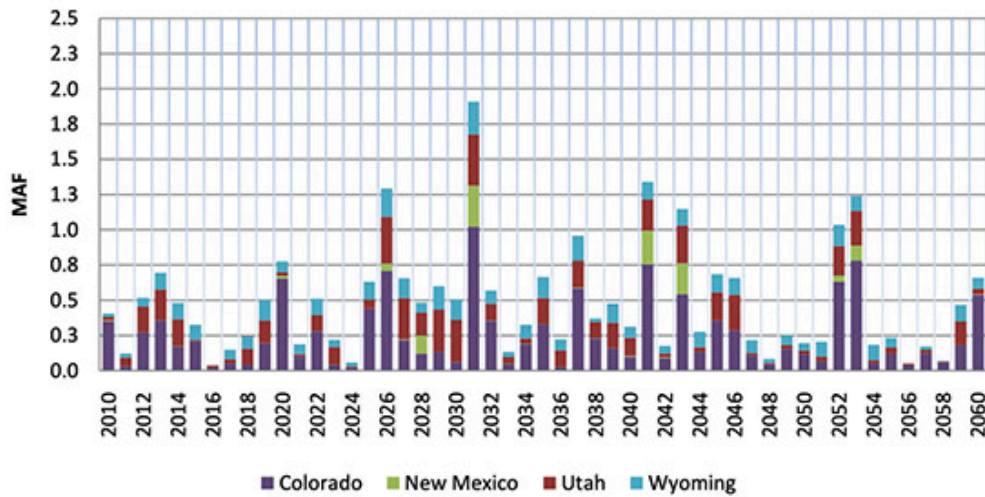
Prescoping for new operational guidelines

- [March 21, 2022 - Century old Colorado River Compact imperfect but immovable.](#) Jennifer Yachnin for *E & E News*.
 - [August 16, 2022 - Colorado River Basin States Fail to Reach Drought Agreement.](#) Tony Briscoe for *LA Times*.
-

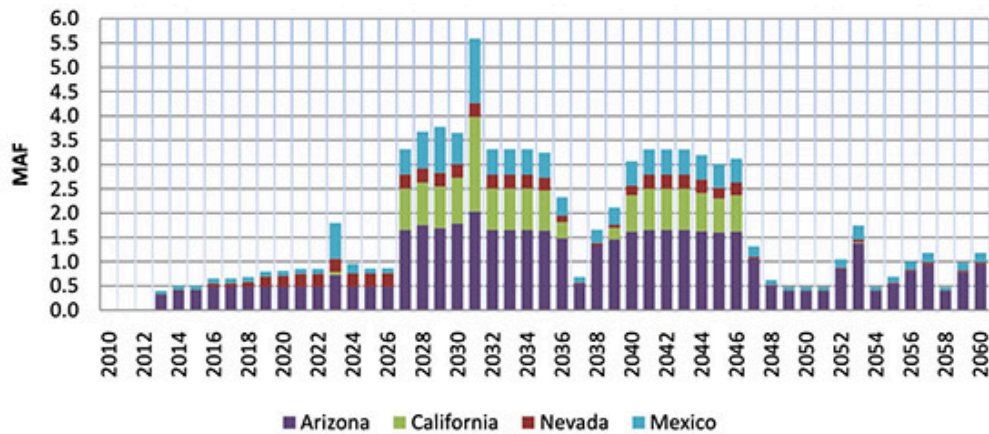
The seven states have surrendered to a no action policy at a critical time in the history of the Reclamation Era

SEPTEMBER 13, 2022
BY JOHN S. WEISHEIT

Upper Basin Shortage Climate Projections Scenario - Run 21



Lower Basin "Shortage" Climate Projections Scenario - Run 21



Shortage scenario of Trace/Run 21 for 2012 Basin Study compiled by the states and feds at flow reduction of -16%

###

"Climate changes, their benefits and damages, and the benefits and damages of the actions that bring them about will fall unequally on the world's people and nations. Because of real or perceived inequities, climate change could well be a divisive rather than a unifying factor in world affairs."

Statement from the National Academy of Sciences in 1983.

###

"If water managers were MDs, they would lose their license to practice medicine."

Overheard in 2022 during oral arguments before a federal judge about the flawed management plans of the Colorado River.

###

"A silent acknowledgement that there is a problem, but a public determination that there isn't...that's the problem."

Overheard in 2019 during a river trip in Grand Canyon National Park.

###

"Very soon now, everybody will understand what its like to live on an Indian reservation."

Overheard on a Zoom Call in 2022 to organize a climate justice movement.

###

"In my opinion, the Colorado River system crashed a very long time ago."

Overheard at a conference about the 100th Anniversary of the Colorado River Compact of 1922.

###

The person who invented dams, also invented dam failure."

Inspirational reading in a waiting room.

NARRATIVE FROM ON THE COLORADO (OTC)

The seven states of the Colorado River Basin have always known a day of reckoning would arrive, especially when all their river augmentation proposals failed in the 1960s and again in the 2000s; and for reasons that all the surrounding river basins understand that these proposals to import water into the Colorado River Basin revealed an insatiable and covetous behavior.

- [Letter from Missouri Department of Natural Resources](#)
- [2023 - Is pumping Mississippi River water west a drought solution or a pipe dream?](#) Brittney J. Miller for *Cedar Rapids Gazette*.
- [The abandoned plan that could have saved America from drought?](#) Michelle Nijhuis for *BuzzFeed*.
- [1964 - Concept Plan for NAWAPA](#). Parsons Company.

Additionally, the price to desalinate seawater for the total deficits in the Colorado River Compact, the Boulder Canyon Project Act, and the Mexican Treaty, as written, would cost USA taxpayers 8 billion dollars per year, and that does not include the construction costs for the pipelines to convey this water to where it is needed, nor the electric generating stations to supply the energy for all the pumping stations this technology demands. In other words, fixing this problem with extraordinary engineering schemes will cost more than the total combined expenses of every single water project now existing in the entire Colorado River Basin. Not to mention it will take 30 to 50 years to complete these construction projects and at a time when all the existing reservoirs are about to empty out.

- February 4, 2023 - [Sonoran officials rebuke desalination company for lack of ethics](#). Emily Bregel for The Arizona Daily Star.
- December 3, 2022 - [Arizona Thinks Desalination Will Offer The Water It Needs. It won't](#). Robert Glennon OpEd for *The Arizona Republic*.
- [Nuclear Nonsense: Why Nuclear Power Is No Answer To Climate Change And The Worlds Post-Kyoto Energy Challenges](#). Sovacool.

Have the seven states finally surrendered? Actually, they don't have any other choice. Since the seven states are totally unprepared and unwilling to create a water use reduction strategy at this critical time in history, this whole matter will likely end in the laps of the federal government with an expectation for a taxpayer bailout, or the judicial branch will receive a petition for some imaginary redress. Whereas, changing the baseline misinformation in the 1922 Colorado River Compact to reflect reality, is definitely the adult thing to do for this river basin community (See: [Sibley's Rivers](#)).

Journals about correcting errors in the 1922 Colorado River Compact

- 2011 - [Contrary Views of the Law of the Colorado River: An Examination of Rivalries Between the Upper and Lower Basins](#). Carlson & Boles.



NEWS

Jack Schimdt, Eric Kuhn and John Fleck

- [How we got into this mess on the Colorado River](#)
- [It is time for the federal government to further reduce Glen Canyon Dam releases](#)

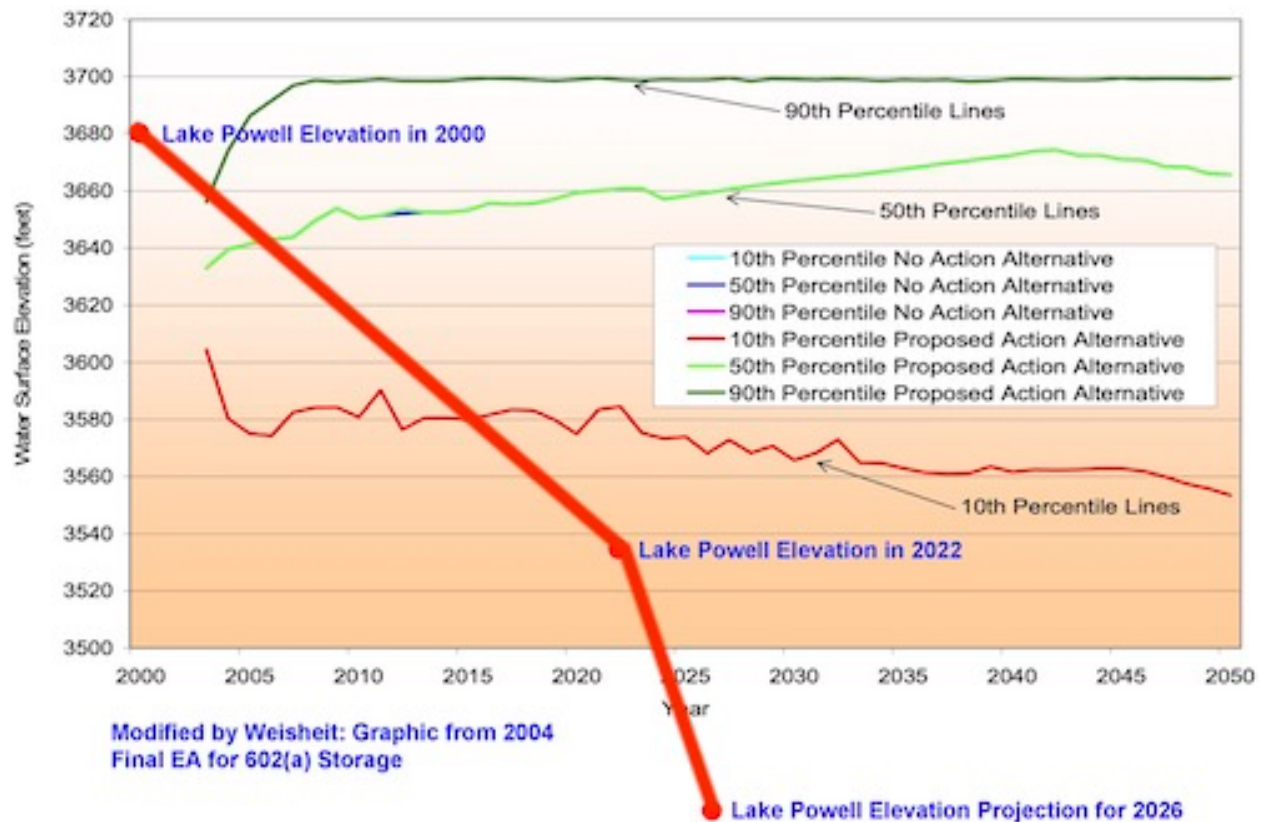
Newspapers

- September 20, 2022 - [Western reservoirs could run dry In 3-Years top official warns](#). Jennifer Yachin for E&E News.
- September 19, 2022 - [The Colorado River is drying up, but basin states have 'no plan' on how to cut water use](#). Rachel Etabrook & Elizabeth Sakas for *Colorado Public Radio*.
- *Colorado Sun* and Brittany Peterson for *Associated Press*.
- September 19, 2022 - [Cutting river usage is first move up to Lower Basin](#). Dennis Webb for *Grand Junction Sentinel*.
- September 12, 2022 - [100-years after the Colorado River Compact, the Southwest is nearing a crisis point. Pressure has intensified on the river as the driest 22-year stretch in the past 1,200 years has gripped the Southwest](#). Chris Outcalt for *The Colorado Sun*.

SCENARIO PLANNING

If you look at the scenario planning graphic above, combined water shortages for the Upper and Lower division states (the 7 states) of the Colorado River Basin (CRB) could be as high as 7.5 million acre-feet (MAF) per year once reservoir storage is structurally exhausted, which this [Reclamation presentation](#) suggests could happen before Year 2026. This totally makes sense, because the surplus from a wet winter has historically been as high as 7.5 MAF per year. Regaining system reliance to normalize the natural variability of the Colorado River is just not possible, once system storage is completely lost.

The current annual average of natural flow of the Colorado River at the Compact Point (Lee's Ferry, Arizona) is presently 14.8 million acre-feet (MAF). When the Compact was negotiated in 1922, the average annual yield was 16.8 MAF ([natural flow data](#)). The built-in water imbalance for the official administrative record is locked in at negative 2 MAF. The average system losses for reservoir and channel evaporation is also 2 MAF per year. The reduction in supply consequent to global warming, and for the last two decades, is also negative 2 MAF, and this heat will increase until the international community produces an effective climate adaptation accord that reduces greenhouse gas emissions. Moreover, human delay tactics to address the new climate reality also helps the CRB deficits to widen.



The water managers can manage the ups and downs of a reservoir system if total system storage is maintained at 60% (the recommendation of [602a Storage Federal Notice](#) & [602a Final EA](#)) but if total system storage is downdrawn to 30% (the present state), then the states have no choice but to accept a maximum shortage call from the basin's watermasters, namely the Secretary of Interior and the Upper Colorado River Commission.

See: [Modified graphic from 2004 Final EA for 602a Storage](#). Modified by Weisheit; the 2026 projection runs off the lower boundary of this Reclamation produced graphic. In other words, what their intentional procrastination achieved, is a storage system at 30%.

The managers did scenario planning when system storage was 65% ([2012 AOP](#)), did nothing and why the present situation is so egregious. Instead of choosing to be proactive about reducing demands in 2012, management choose wishful thinking for wet winters, even though their own scenario planning documents clearly demonstrated that reservoir rebounds are short-lived

See: [Trace 21 graphic for reservoir elevations](#); 2012 Basin Study projections from 2010 to 2060.

I will submit that the managers deserve their self-inflicted conundrum. What this means for the communities that they serve, both urban and rural, is that they should begin to make contingency plans for themselves and fill this leadership vacuum.

- [July 15, 2022 - Scientists Have Long Warned Of Colorado River Crisis](#). Ian James for LA Times.
- [1983 - Changing Climate: Report of the Carbon Dioxide Assessment Committee](#). National Academy of Sciences.

Colorado River Simulation Systems (CRSS)

- [CRSS explained](#). Colorado River Science Wiki. Please bookmark this website. A CRSS simulation of Trace 21 represents the historic hydrology of the Colorado River Basin (CRB) beginning in Year 1927. It is the perfect Trace for scenario planning to demonstrate how multi-decadal aridity will affect water deliveries to the 7 states of the CRB under maximum consumption. The persistent dry cycle from 1930 to 1980 was interrupted by a wet cycle in the 1980s and the 1990s, and then interrupted by severe aridity once again, in the 2000s and the 2010s.

The aridity from 1930 to 1980 did not really impact water deliveries because the system still had surplus water. After the development of the Colorado River Storage Project Act of 1956 and the Colorado River Basin Project Act of 1968, the system's surplus transitioned into a system deficit. Congress was aware that these new projects would negatively impact the water budget of the basin and initiated cautionary legislation in 1970 called Long Range Operating Criteria ([LROC](#)). The latest iteration of LROC planning is 2007 Interim Guidelines, which didn't work because this reservoir stabilization program was based on voluntary cooperation. Cooperation that we now know never existed.

MORE FROM 2012 BASIN STUDY

Please take a look at this graphic from Reclamation and the 7 states. This is a scenario planning graphic from Appendix G of 2012 Basin Study:

- [Modified Graphic from Appendix G](#). jpg file and modified by Weisheit.
- Source of modified graphic: [Technical Report G — System Reliability Analysis and Evaluation of Options and Strategies](#). US Bureau of Reclamation.

I placed six red dots in this [modified graphic](#) that represents the real time elevation of Lake Powell as of January 1, 2022. As you can see, the real time position of this river basin is the 10th percentile bracket (drier than normal); the perceived normal position is represented by the 50th percentile bracket and obviously does not reflect reality.

In this scenario planning exercise Lake Powell is not producing hydropower for the rest of the century and all the runs end in the inactive pool for decades, and some scenarios stay in the dead pool position for decades.

This scenario suggests a possible explanation for the behavior of the seven states to surrender on August 16th, 2022; to submit a response of no action to Reclamation staff and put the onus on them to create the necessary solution. In other words, the states understand that stakeholder-driven solutions are not possible, and solutions that involve water reductions to balance the water budget are just not feasible. Because they permitted infrastructure for new communities with a water supply based on fantasies.

Such stalemates are the legacy of intrastate relationships and why, for instance, the states divided this river basin into two parts (upper and lower) during the final negotiations for the Colorado River Compact in 1922, and also the litigation in the US Supreme Court case from 1952 to the Decree of 1964, and known as Arizona vs California. Both of these actions were just unhelpful to everyone, except the five tribes of the lower Colorado River (See: [Decree of AZ v CA](#)).

At present, the states conveniently claim lack of leadership from the federal government. Though this claim is partially true, most of the angst should be directed to the states and their inability to provide robust leadership and for the last 100-years and will assuredly persist into the future (See: [2022 comment letter of the 7 states](#)). When the reservoirs go empty, and they will, their efficiency programs, their demand management schemes, and their shining new diversion projects, was money directed to bad choices at the worst possible time.

The water managers should have been proactive about balancing the water budget immediately in 1971, especially in the significant drought year of 1977, but the distractions of a wet cycle that emerged in the 1980s and 1990s, is why two decades of time was lost to properly plan and prepare for system shortages. They essentially used a savings account provided by taxpayer revenues and then gambled it away.

THE INSTITUTIONS WHO WERE PAYING ATTENTION

There were institutions (below) that were paying attention and they provided appropriate and justified warnings, and based on existing scenario planning exercises and concerned about possible social disruptions caused by water shortages and water inequities.

- [1979 - Government Accountability Office](#) (GAO)
- [1983 - Scripps Institute](#)
- [1997 - Colorado River Basin Study Final Report](#). Dale Pontius for Western Water Policy Review Advisory Commission.

1979 - Exerpts from GAO

1. GAO recommends that the Congress establish a task force, consisting of the principal State and Federal executive agencies and representatives of water users, to determine the type of organization best suited to meet the basin's needs and protect the rights and interests of all concerned.

2. The U.S. Bureau of Reclamation estimates that the basin will run out of water for future growth in 2020. Others are less optimistic, foreseeing an impending water shortage around 2000.
3. Actually, a solution is needed before [2000]. It takes at least 30 years to plan and construct a water storage or distribution facility. Therefore, the planning and decision-making organization GAO envisions should have been in operation in 1970 if the most pessimistic estimates are valid, or need not be established until 1990 if the optimistic estimates are accurate.
4. Predicting the future supply is even more difficult when considering future demands on the basin's water. Litigation over Indian water rights may involve as much as one-third of the basin's water.

1983 - Exerpts from Scripps

1. CLIMATE CHANGE AND WATER-RESOURCE SYSTEMS: Planning and construction of major water-resource systems have a time constant of 30 to 50 years. In the past, these activities have been based on the explicit assumption of unchanging climate. The probably serious economic and social consequences of a carbon dioxide-induced climatic change within the next 50 to 100 years warrant careful consideration by planners of ways to create more robust and resilient water-resource systems that will, insofar as possible, mitigate these effects.
2. The report by Scripps essentially repeats the recommendations of GAO, including Indian water litigation/settlements.

1997 - Excerpts from Western Water Policy Review Advisory Commission

1. The basin states and Secretary of the Interior should agree on and formalize a cooperative management structure for the basin to address and resolve major water management issues affecting the public interest and which defers to state implementation and management wherever possible.
2. The federal government should undertake a thorough review with the basin states and tribes over the next several years to determine how the various agencies could be reorganized to provide more efficient, cost-effective service in administering their programs without sacrificing the national interest or trust responsibilities. In addition, whenever feasible, federal agencies with water management programs and responsibilities should be organized along watershed or sub-basin boundaries.
3. A centralized and integrated data center for the Colorado River basin should be established to collect and provide a comprehensive, reliable, scientific and economic database that is electronically available to all who need it.
4. The Secretary, basin states and Indian tribes, with input from other interests, should agree on a plan for reservoir operation and surplus and shortage criteria that is equitable to all interests and meets federal statutory obligations and treaty obligations to Mexico.

5. An interstate water bank should be established in the Lower Basin along the lines proposed by Arizona, with maximum flexibility for marketing and banking water, including tribal water.
6. The basin states and local water managers need to develop stronger conservation programs to maximize conservation and reuse potential and more clearly define and regulate reasonable beneficial use. In the lower Colorado River basin, the Bureau of Reclamation and the states, working together, need to more clearly define and regulate reasonable beneficial use.
7. Recovery plans for endangered fish in the Colorado River basin should be consolidated in one multi-species recovery plan and recovery goals more clearly defined. In addition, the three different recovery implementation programs in the basin should be coordinated.
8. The Secretary should establish a policy which allows for more public input into the development of reasonable and prudent alternatives under Section 7 of the Endangered Species Act. The FWS should develop policies that provide water development interests with more clearly defined, realistic mitigation requirements that will provide the maximum possible certainty for existing and planned water development projects.
9. An environmental trust fund should be established with dedicated funding for endangered species recovery, habitat restoration, and environmental enhancement in the basin.
10. A Binational Commission should be established to review and make recommendations on the potential for restoration of the Colorado River delta and the environmental and economic benefits and costs of such restoration.
11. The Secretary should commission a comprehensive study of alternatives to operation of the Yuma Desalting Plant and what should be done with this facility if it is determined not to be in the long-term interest to operate the Plant.
12. Future salinity control programs should emphasize on-farm irrigation management, reuse and conservation, fallowing agreements, and retirement of marginal lands.
13. The federal government should develop a more effective strategy and establish priorities for settling and implementing Indian water rights claims in the basin.
14. The basin states and tribes should agree on a plan for integrating tribal water use, banking, and leasing of tribal water in state and interstate water marketing systems.

2022 - WHAT THE FEDERAL GOVERNMENT SAID IT WOULD DO

- August 16, 2022 - Press Release: [Interior Department Announces Actions to Protect Colorado River System, Sets 2023 Operating Conditions for Lake Powell and Lake Mead](#)

In the Upper Basin, Reclamation will:

- The Department's approach will continue to seek consensus support and will be based on a continued commitment to engage with partners across the Basin states, Tribes and the country of Mexico to ensure all communities that rely on the Colorado River will provide contributions toward the solutions.
- Take administrative actions needed to authorize a reduction of Glen Canyon Dam releases below 7 million acre-feet per year, if needed, to protect critical infrastructure at Glen Canyon Dam.
- Accelerate ongoing maintenance actions and studies to determine and enhance projected reliability of the use of the river outlet works, commonly referred to as the bypass tubes, at Glen Canyon Dam for extended periods.
- Support technical studies to ascertain if physical modifications can be made to Glen Canyon Dam to allow water to be pumped or released from below currently identified critical and dead pool elevations.
- Continue to work with the Basin states, Basin Tribes, stakeholders and partners to be prepared to implement additional substantial releases from Upper Basin Reservoirs to help enhance reservoir elevations at Lake Powell under the Drought Contingency Plan's Drought Response Operations Agreement.
- Invest in system conservation and voluntary agreements.
- Consider other operational actions to establish flexibility in Upper Basin operations at Reclamation facilities.

In the Lower Basin, Reclamation will:

- Take administrative actions needed to further define reservoir operations at Lake Mead, including shortage operations at elevations below 1,025 feet to reduce the risk of Lake Mead declining to critically low elevations.
- Prioritize and prepare for additional administrative initiatives that would ensure maximum efficient and beneficial use of urban and agricultural water, and address evaporation, seepage and other system losses in the Lower Basin.
- Support technical studies to ascertain if physical modifications can be made to Hoover Dam to allow water to be pumped/released from elevations below currently identified dead pool elevations.
- Invest in system conservation and voluntary agreements.
- Consider other operational actions to establish flexibility in Lower Basin operations at Reclamation facilities.

WHAT SHOULD BE DONE

- Admit failure and commit to the necessary changes that must happen and accept that this transition will be difficult and expensive.

Interview: Kai Ryssdal for *The Marketplace* - **Colorado River Conservation Deal Negotiations**. "*Shapiro thinks the basin states could use a mediator. And maybe some group therapy to help them focus on the common threats they all face: looming water and hydroelectricity shortages that would affect millions of people.*"

###

Part One: Citizen and Professional Science in Glen Canyon National Recreation Area

NOVEMBER 01, 2022
BY JOHN S. WEISHEIT

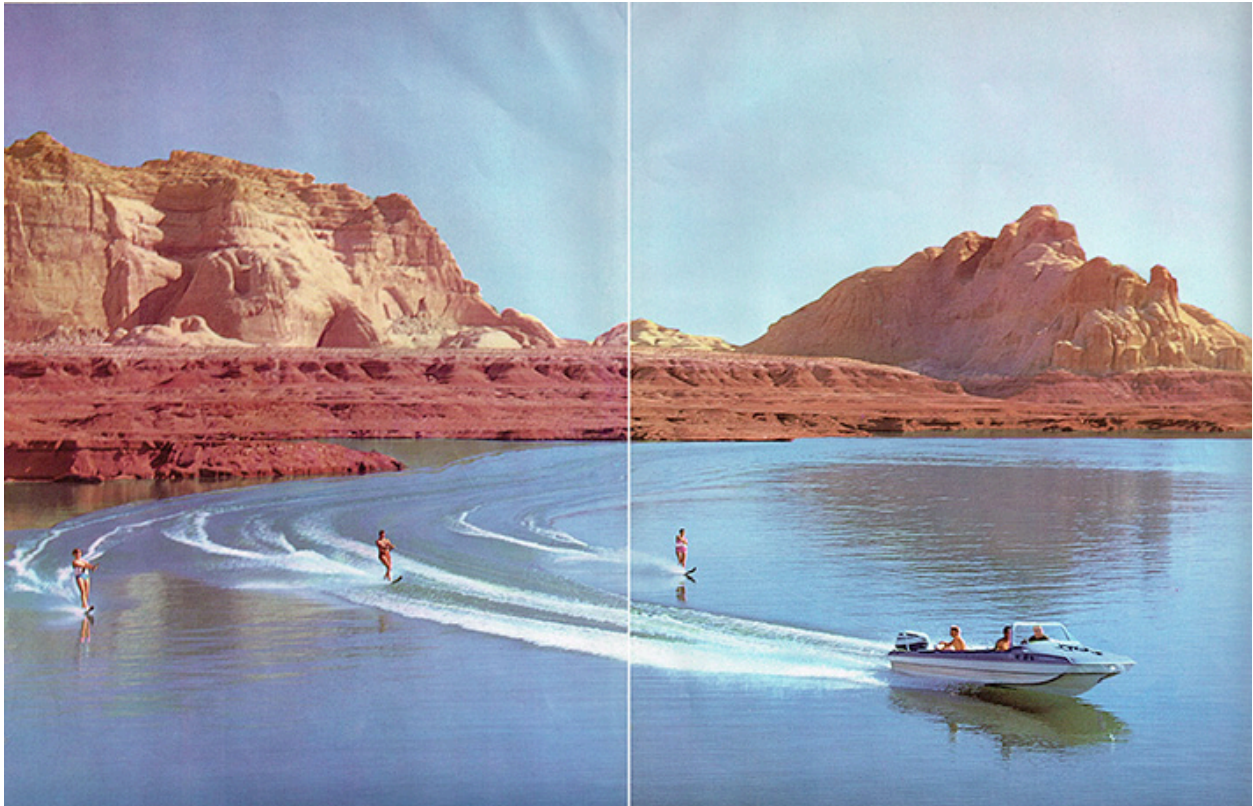


Photo above from [*Lake Powell: Jewel of the Colorado*](#). Floyd Dominy; DOI, 1965.

THIS IS PART ONE OF A THREE PART SERIES

- To visit Part Two - [CLICK HERE](#)
- To visit Part Three - [CLICK HERE](#)

Note: this webpage is designed for a browser called Safari and a modified UNIX operating system developed by Apple Inc.; it is a browser that automatically opens files and provides responsive streaming services. We also recommend high speed internet services to avoid lengthy download times. The target for our imagery is to provide the best possible resolution. The browser called Firefox is also a recommended browser for this website.

PRIMARY RESEARCH DOCUMENTS

- [1971 to 1978 - The Lake Powell Research Project](#). National Science Foundation.
-

PROJECT PROGRAMMING 2002

Progradation of sediment deposits at Lake Powell

- 2002, March 28 - [Concept letter from Professor John C. Dohrenwend](#)
 - 2004, May 2 - [Drought Settles In, Lake Shrinks and West's Worries Grow](#). Kirk Johnson and Dean Murphy for New York Times.
 - 2013 - [Obituary of John C. Dohrenwend](#)
 - Portrait - [The late John C. Dohrenwend](#)
-

STREAM GAGE: above the Dirty Devil River

Colorado River Bridge by US Geological Survey

Measures daily flow volume and river elevation. A river flowing on reservoir sediment (Lake Powell)

- <https://waterdata.usgs.gov/monitoring-location/09328990/#parameterCode=00065&period=P7D>
 - January 1, 1963 - River bed elevation was about 3,450 feet (before the filling of Lake Powell).
 - January 1, 2003 - Reservoir sediment elevation was about 3,620 feet.
 - March 29, 2023 - River elevation at 3,580 feet.
 - **Note:** The weight of reservoir sediment and water does compress the matrix of sand, silt, clay and organic drift (leaf litter). When reservoir water evacuates (evaporation and human consumption), the exposed sediment will begin to dewater, fracture, subside, and will be covered by native and non-native vegetation very quickly. As the river begins to incise into the sediment, there are lateral slump features that launch into the river without warning; these slump blocks become islands of mud, until the velocity currents dissolve them. This remobilized sediment will sink to the bottom when the river reaches the stilled water of Lake Powell (currently uppermost Good Hope Bay). We have witnessed the delta advance into Lake Powell at a rate of 100-feet per day. This natural remobilization of reservoir sediment is happening in every side canyon and river tributary at various magnitudes throughout Glen Canyon National Recreation Area.
 - [2022 - Sedimentary record of annual-decadal timescale reservoir dynamics: Anthropogenic stratigraphy Lake Powell, Utah, USA](#). Johnson.
 - [Returning Rapids Project](#). Dehoff.
 - [2023 - Spring Report](#). Returning Rapids Project; Dehoff.
-

RESERVOIR ELEVATIONS

Bureau of Reclamation

- [24-month report](#)
-

NEWS, ANNOUNCEMENTS AND SPECIAL FEATURES

Moab Sun News

- January 28, 2026 - [After a decade of delays Utah moves forward with North Wash boat ramp improvements.](#)

Salt Lake Tribune

- May 11, 2022 - [Deltas of sediment are pushing into Glen Canyon as Lake Powell disappears: Researchers at the University of Utah and the U.S. Geological Survey are studying how the sediment is impacting the reservoir.](#) Zak Podmore for Salt Lake Tribune.

National Park Service

- February 2023 - [Latest Boat Ramp Conditions](#)

High Country News

- [The 26,000 tons of radioactive waste under Lake Powell.](#) Jonathan Thompson.
- [What does the Nation's commitment to tribal co-stewardship mean for Public Land?](#) By Anna Smith.
- [Lake Powell: What is it good for?](#) By Jonathan Thompson.
- [Glen Canyon revealed.](#) By Craig Childs.

Returning Rapids Project

- February 2023 - [Park Service announces no work will be done at North Wash \(Dirty Devil\) boat ramp.](#) Mike Dehoff.

Utah Guides and Outfitters

- February 2023 - [Letter from Utah Guides and Outfitters to National Park Service about Cataract Canyon take-out.](#) UGO.

Colorado Plateau River Guides

- [The Confluence: Issue #31](#)

Glen Canyon Institute

- [Newsletter of Fall 2024](#)
-

ARCHIVES

- [University of Utah](#)
- [Utah Historical Society](#)
- [Museum of Northern Arizona](#)
- [National Park Service](#)
- [Northern Arizona University](#)

Soon to arrive

- The 1871 photos of Powell Expedition
 - The 1872 photos of Wheeler Expedition
-

THE DIRTY DEVIL RIVER

From the diary of John Wesley Powell at the beginning of Glen Canyon: July 28, 1869...*we discover the mouth of a stream which enters from the right. Into this our little boat is turned. The water is exceedingly muddy and has an unpleasant odor. One of the men in the boat following, seeing what we have done, shouts to Dunn and asks whether it is a trout stream. Dunn replies, much disgusted, that it is "a dirty devil"...*

- [Photo of the mouth of the Dirty Devil in 1939](#). Charles Butler Hunt, USGS.
 - [Aerial photo of the Dirty Devil Confluence in 1945](#). Photographer unknown.
 - [Aerial Photo of the mouth of the Dirty Devil in 1962](#). Bud Rusho, USBR.
 - [Photo at mouth of Dirty Devil in 1921](#). Emery Kolb.
 - [Dirty Devil confluence from airplane; downstream view](#). Unknown photographer.
-

BOAT RAMP CONDITIONS AT DIRTY DEVIL RIVER TAKE-OUT Glen Canyon National Recreation Area (GCNRA)

- [Official web site](#)

Dirty Devil River Primitive Boat Ramp (sometimes called North Wash) and near (opposite shore) the defunct Hite Marina facility (defunct as of 2003).

- [August, 2021 - Drawing of Dirty Devil Boat Ramp](#).
- **Note:** The park service does not give reports on conditions at the Dirty Devil River Primitive Boat Ramp.
- **Note:** the creep of the lateral slumping toward the river is increasing; we think this boat ramp is compromised and will cause serious injuries.
- As of June 19, 2022 the upstream ramp slumped into the river, leaving a 10-foot escarpment of reservoir sediment. The ramp has since been modified a bit downstream, which has some bedrock features for stability. [Video](#). mov.
- As of March 2023, the Colorado River has removed about 40 feet of sediment since 2019 and this rate of removal continues. We expect the ramp to be totally unusable by the summer of 2023, and it is also possible that this sediment removal may encounter bedrock features and create either a bedrock rapid or a bedrock waterfall.

Citizen Monitoring @ Dirty Devil Take-out

- [July 5, 2019 - Group photo at Dirty Devil Take-out](#): The Powell 150th river trip; USGS & Univ. of Wyo. **Note:** Approximately 40 feet of sediment has been excavated by the Colorado River since this photo was captured.

- [June 31, 2022 - Dirty Devil Take-out using roller tubes](#). Photos by J. Weisheit
 - [June 31, 2022 - Part One: Dirty Devil Take-out using roller tubes](#). Movie by J. Weisheit.
 - [June 31, 2022 - Part Two: Dirty Devil Take-out using roller tubes](#). Movie by J. Weisheit.
 - **Photos:** October 6, 2022. John Weisheit.
 - **Movie:** October 6, 2022. John Weisheit.
-

RESERVOIR CONDITIONS NEAR 3520 FEET: Dam and facilities

View or download photo portfolios (these pdf photo compilations are large files)

Courtesy of John Weisheit

March of 2022

- [March 11, 2022 - Glen Canyon Dam and reservoir at 3525 feet](#)
- [March 9 & 10, 2022 - Area near Hite Marina](#)
- [March 10, 2022 - Area near Bullfrog Marina](#)
- [March 11, 2022 - Area near Wahweap Marina](#)
- [March 11, 2022 - Area near State Line Launch Ramp](#)
- [March 11, 2022 - sunken garbage and boat carcass near Stateline Marina](#)
- [March 11, 2022 - Area near Antelope Point Marina](#)

March of 2023

- [March 6, 2023 - Dirty Devil take-out](#). Photo pdf portfolio.
 - [March 6, 2023 - Dirty Devil take-out](#). mov.
 - **Note:** the actual drop from ramp edge to river is seven feet.
 - [March 6, 2023 - Preferred route for boats at Dirty Devil take-out](#). mov.
 - **Note:** this route avoids the steep drop off.
-

THE "MUD RAPIDS" AND THE "DELTA"

At reservoir elevation 3530 feet

- **Current conditions as of October 2022 between Dirty Devil Take-out and Farley Canyon:** There is a knick point one mile above Farley Canyon, and eroding headwardly (the opposite direction of river flow) at a rate of about 25 feet per day. The river incision into the mud and detritus layers of Powell Reservoir creates islands that dewater and then eventually slump and/or slide into the deepening incision.
- The magnitude of these slump features can resemble an Arctic glacier crumbling into the ocean, or consist of large sections (typically 25 feet by 100 feet) that launch themselves sideways into the Colorado River at random moments (can be dangerous).
- When the gains of entrained sediment reach the still waters of Reservoir Powell, the load drops into the deep water column of the reservoir, and presently located

at The Horn, a couple miles above Good Hope Bay. This “delta” feature advances into the reservoir at an average annual rate of about 100 feet per day; especially during a vigorous monsoon season, as occurred in the summer/fall of 2022.

- Movie 01: [Navigating dewatered mud island rapids](#). mov.
- Movie 02: [Cascading, dewatered mud flows](#). mov.
- Movie 03: [Navigating islands, dewatered slump features & dunes](#). mov.

Matching photos from the Nielsen Collection near Farley, White and Trachyte canyons

- **Note:** Locating the exact camera stations was very difficult and sometimes unsafe. The perched sediment here is about 200 feet thick and choked with massive thickets of weeds. The sediment features include deep mud cracks, subsidence, slump fractures and slope failures.
- [Moki Fort at White Canyon View; October 2022](#). jpg.
- [Airstrip above Farley Canyon; Upstream View; October 2022](#). jpg.
- [Airstrip above Farley Canyon; Downstream View; October 2022](#). jpg.
- [Airplane parked at airstrip; October 2022](#). jpg.

NEWS: RESERVOIR FACILITIES AT GLEN CANYON NATIONAL RECREATION AREA (GCNRA)

- January 27, 2022 - [Glen Canyon NRA Updates Plans For Lake Facilities](#). *Lake Powell Chronicle*.
- February 6, 2022 - [Gregory Natural Bridge resurfaces as long-term drought hammers Lake Powell](#). Sean Golightly for *Arizona Daily Star*.
- March 23, 2022 - [Lake Powell's Losing Streak: Will the Odds Ever Change?](#) John Hollenhorst for KSL.
- March 25, 2022 - [Colorado hits a "Hard Pause" on water demand management as it waits for the other states](#). Chris Outcalt for *The Colorado Sun*.

SATELLITE IMAGERY & MAPS

Glen Canyon National Recreation Area (GCNRA)

- Google Maps: [Lake Powell](#)
 - Sentinel Hub: [Lake Powell](#)
 - [01 Glen Canyon National Recreation Area](#)
 - [02 GCNRA](#)
 - [03 GCNRA Foundation and Map](#)
 - [Reservoir elevation fluctuations since 1988](#). Center for Colorado River Studies; USU @ Logan.
 - [2012 - Geologic Map of the Hite Crossing, Dirty Devil River Area; Glen Canyon NRA and Garfield and San Juan Counties](#). UGS.
-

A HISTORY: Citizen and professional science related to significant low reservoir levels at Glen Canyon National Recreation Area (Lake Powell).

Glen Canyon National Recreation Area (GCNRA) includes:

- (1) The lower half of Cataract Canyon below Big Drop Two, which is also the end of Canyonlands National Park (CANY).
- (2) All of Narrow Canyon beginning at the end of Mille Crag Bend, or when you can see the Henry Mountains.
- (3) All of Glen Canyon beginning at the mouth of the Dirty Devil River and ending at the mouth of the Paria River near Lee's Ferry, Arizona.
- (4) The NRA was established by Congress in 1972.

- 1968 - [Glen Canyon National Recreation Area Hearings](#)
- 1970 - [Canyonlands NP & Glen Canyon NRA Hearings](#)
- 1972 - [National Recreation Area Hearings](#)
- 1972 - [Public Law 92-593](#)
- 2005 - [Strategic Plan for NRA and Rainbow Bridge NM.](#)
- 2023 - [Foundation Document](#) (Superintendent's Compendium).

The Filling Criteria for Glen Canyon Reservoir (Lake Powell)

- **July, 1962 - Federal Register Notice.** Stewart Udall, Secretary of Interior.

Publications during the filling criteria for Lake Powell

- [1963 - The outlook for boating and other recreation in GCNRA.](#) Anonymous.
- [1967 - Lake Powell, Waterway to Desert Wonders.](#) National Geographic.
- [Circa 1972 - Meet Lake Powell.](#) NPS.

Geographic Details:

- (1) The northern boundary of Glen Canyon National Recreation Area (GCNRA) begins at elevation 3715 feet on the Colorado River in the middle of Cataract Canyon. This elevation corresponds with the height of the concrete parapets on the crest of Glen Canyon Dam. This elevation occurs at a rapid known as Big Drop 2. The southern boundary of GCNRA occurs below Glen Canyon Dam at the mouth of the Paria River in northern Arizona (Lee's Ferry).
- (2) The NRA boundary on the San Juan River begins after the river meanders called the "Goosenecks" and near Mexican Hat, Utah. The right side of the river is the NRA and the left side of the river is Navajo Nation. Visitation on Navajo lands requires a special use permit.
- (3) When Lake Powell reaches maximum pool elevation at 3700 feet (design specifications), Big Drop 3 is the last natural rapid in Cataract Canyon. The next rapid, which is Rapid #24, was underwater after various snow melts in 1980s.
- (4) Lee's Ferry is also the northern boundary of Grand Canyon National Park and the beginning of Marble Canyon. The Grand Canyon Sub-province begins at the mouth of the Little Colorado River. The lands on the east side (river left and pointed downstream) of the Colorado River (or reservoir), between the mouth of the San Juan River to the mouth of the Little Colorado River, are the lands of the Navajo Nation.

(5) All of this country, including Marble Canyon, is in the Canyonlands Sub-province of the Greater Colorado Plateau (Hunt, 1956).

RESERVOIR MANAGEMENT

After observing 60-years of reservoir management at Lake Powell, we present the following contradictions that have emerged:

(1) The original name was Glen Canyon Reservoir and the **filling criteria** began in March of 1963. The name was formally changed to Lake Powell when Lady Bird Johnson dedicated the facility for the people of the 50 United States in 1966. It required 17-years to finally fill Lake Powell, which occurred in Year 1980. The decades of the 1980s and 1990s were significantly wetter than previous decades, and interrupted by a four-year dry cycle between 1989 and 1992. By 1992 the reservoir capacity had dropped to 50%. This condition occurred again in 2002 and, by March of 2005, the capacity dropped to 35%, which then launched the development of an Environmental Impact Statement called "Shortage Criteria" and finalized as 2007 Interim Guidelines.

(2) A brim full reservoir, as occurred from 1983 to 1988 and from 1995 to 1998, essentially means there was no flood control capacity in the Colorado River Basin, See: **Vandivere et al., 1984 & Floods Reveal Water Policy Chaos**; HCN, 1983. This is a variance to the principles set forth in the **Boulder Canyon Project Act of 1928** (BCPA), which mandated flood control as the primary management priority. It must be understood that if something goes wrong with the structural integrity of Glen Canyon Dam, and it becomes necessary to vacate the reservoir of water as quickly as possible to avoid a catastrophe, that it would take about 12 to 16 months to complete the evacuation process. This means that dam safety is dependent upon perfect performance at all times and under all conditions. Yet, no human endeavor can possibly control the extremes of nature.

Glen Canyon Dam will fail someday and, potentially, 27 million acre-feet of water, sediment and rotting organic materials will burst through Grand Canyon and into Lake Mead and then over the crest of Hoover Dam. The majority of the discharge, beginning with emergency spillway releases at Hoover Dam, will flow into the structural depression known as the Salton Through, rather than the Gulf of California (or both). If dam failure at Glen Canyon Dam occurs, the discharge of the outburst flood will overtop Hoover Dam with a column of water that would be, 70-feet thick (see **Lantham, 1998**). Hoover Dam will either fail too, or suffer damages so severe that that it will become completely inoperable. Incidentally, the water storage capacity of the Salton Trough is 405 million acre-feet (Lake Mead times 14). The overflow point is in Mexico south of Mexicali. The elevation there is 30 feet above sea level.

This clearly indicates that Reclamation does not manage Lake Powell for flood control and dam safety. Rather, the priority operating criteria for Lake Powell is to maximize water storage and hydropower production, which are the secondary and tertiary management priorities of the BCPA. This is why the snowmelt of 1983 became an

emergency situation at Glen Canyon Dam and caused by a reluctance to vacate the reservoir to safely accommodate inflows of 111,500 cfs (Burgi, 1984) and a 4-month snow melt volume of 15 million acre-feet. It is now reasonable to conclude that, had the volume been a five-month snow melt of 30 million acre-feet, as in 1884, Glen Canyon Dam would have been breached by the Colorado River (Swain, 2002).

(3) One of the incidental purposes of Lake Powell is to settle and store entrained sediment and organic detritus. When Lake Powell elevations are low the stored sediment and organic detritus is mobilized by the Colorado River and carried further downstream toward Glen Canyon Dam (Pratson, 2008); this shortens the lifespan of this dam. This includes the stored sediment in the 125 side canyons, many of which are in close proximity of Glen Canyon Dam, such as Wahweap and Antelope canyons. When the sediment load in Lake Powell reaches 50%, the priority objectives of flood control and water storage are compromised (USGS, 1960). Or, when sediment reaches the elevation of the outlet tubes on the front face of Glen Canyon Dam, a dredging program must begin (Schultz, 1961). A reservoir losing storage capacity to sediment fill is the same as depleting the capacity of an aquifer to zero. You end up with nothing.

(4) Erosion by a flowing Colorado River over exposed reservoir sediment mobilizes decaying organic matter and this becomes a water quality issue, especially for the aquatic species of the reservoir, and the aquatic species below Glen Canyon Dam. This would also be true for Hoover Dam and Lake Mead. The decay process of the organics decreases oxygen levels in the water column of the reservoir, and the odors of hydrogen sulfide emissions are most unpleasant, and the emissions of raw methane gas (odorless) from Lakes Powell and Mead does load the atmosphere with a significant greenhouse gas contribution (Dohrenwend, see presentations below). Reservoir-based hydropower is not clean, it is not safe, and it is not sustainable. See: [Hydropower is likely to have no future on the Colorado](#). OTC.

LAKE CAHUILLA: The Colorado River Basin's natural lake since time immemorial
Large Colorado River floods filling the Salton Trough (Salton Sea). An ephemeral and prehistoric natural lake that has a greater volume than Lake Powell by 15 times.

- [1978 - Late Prehistoric Human Ecology of Lake Cahuilla](#). Wilke.
- [1980 - Lake Cahuilla Late Quarternary Lucustrine History of Salton Trough](#). Waters.
- [2014 - Increasing Scales of Social Interaction and the Role of Lake Cahuilla in the Systemic Fragility of the Hohokam System \(A.D. 700-1100\)](#). Merrill
- [2018 - Presentation: Late Holocene Ages at Lake Cahuilla High Stands, Imperial Valley California](#). Rockwell.
- [2018 - Dates of the Two Most Recent Surface Ruptures on the Southern most San Andreas Fault Recalculated by Precise Dating of Lake Cahuilla Dry Periods](#). Rockwell.

End of Part One

- To Visit Part Two - [CLICK HERE](#)
 - To visit Part Three - [CLICK HERE](#)
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Part Two: Citizen and Professional Science in Glen Canyon National Recreation Area

OCTOBER 23, 2022
BY JOHN S. WEISHEIT

Repeat photography at the primitive ramp downstream of the Dirty Devil River

THIS IS PART TWO

- To visit Part One - [CLICK HERE](#)
- To visit Part Three - [CLICK HERE](#)

PRIMARY RESEARCH DOCUMENTS

- [1971 to 1978 - The Lake Powell Research Project](#). National Science Foundation.

GEOLOGY OF GCNRA

- [1871 & 1872 - Diary of Almon Harris Thompson](#). Herbert Gregory, UHQ; 1939.
- [1877 - The Geology of the Henry Mountains](#) by Grove K. Gilbert. **Note: A very important scientific contribution.**
- [2005 - Episodic incision of the Colorado River in Glen Canyon, Utah](#). Garvin et al.
- [2009 - Transport slopes, sediment cover, and bedrock channel incision in the Henry Mountains, Utah](#). Johnson et al.
- [2010 - Geology of Glen Canyon NRA](#). Anderson.
- [2012 -Geologic map of the Hite Crossing lower Dirty Devil River area Glen Canyon National Recreation Area, Garfield and San Juan Counties, Utah](#). UGS.
- [2020 - Methane emissions from muds during low water level stages of Lake Powell, Southern Utah](#). Malenda.
- [2022 - Sedimentary record of annual-decadal timescale reservoir dynamics: Anthropogenic stratigraphy Lake Powell, Utah, USA](#). Johnson.

Hydrology of GCNRA

- [1965 - Stratigraphic sections and records of springs in the Glen Canyon region of Utah and Arizona](#). Cooley.
- [1987 - The Case For Regional Discharge Of Ground Water From The Lower Paleozoic Carbonates Through The Shay Fault Zone, Canyonlands, Utah](#).
- [Diagram of the Shay Fault Zone](#). Huntoon, 1987.
- Photos at Mille Crag Bend by George Simmons, 1956: [Image #1](#) and [Image #2](#).

Additional geologic features: On the Colorado River

- Visit our Geology section [HERE](#)
 - Visit our Sediment section [HERE](#)
 - Visit our Hydrology section [HERE](#)
 - Visit our Flood section [HERE](#)
-

A CHRONOLOGY OF SCIENCE IN GCNRA HUMAN HISTORY ASSETS

- [1931 - Colorado Riverbed Case](#)
- [1959 - Outline History of the Glen Canyon Region: 1776 - 1922.](#)
- [1960 - Historical sites in Glen Canyon: Mouth of San Juan River to Lee's Ferry.](#)
- [1961 - Hoskaninni Papers: Mining in Glen Canyon.](#) Crampton.
- [1963 - Salvage archeology preceding reservoir inundation.](#) Sharrock.
- [1964 - History & Historical Sites of Cataract & Narrow Canyons.](#) Crampton.
- [1964 - History & Historical Sites of Southeast Utah & Northern Arizona.](#) Crampton.
- [1965 - Stratigraphic sections and records of springs in the Glen Canyon region of Utah and Arizona.](#) Cooley.
- [1970 - Anazazi Communities in the Red Rock Plateau, SE Utah.](#) Lipe.
- [1975 - Boating History of Upper Colorado, Green & San Juan.](#) Crampton.
- [1975 - Boating History of the Upper Colorado River.](#) Crampton.
- [1975 - Upper basin river navigation.](#) Crampton.
- [1977 - Archeological Research in Glen Canyon; Vol. 1.](#) Schroedl.
- [1978 - Archeological Evaluation and Site Inventory in Glen Canyon National Recreation Area; Vol 1;](#) Schroedl.
- 2002 - Bumpy Road for Glen Canyon Dam. Bud Rusho; retired Reclamation employee.
- 2019 - Glen Canyon Then and Now (Moqui Canyon). NPS and Northern AZ Museum.
- [2012 - Why Did We Do It That Way? Univ. of Utah and Glen Canyon Project in Retrospect.](#) Lipe.
- [2018 - Salvage Projects at Glen Canyon, Dolores, and Animas-La Plata.](#) Lipe.

VIDEOS

- [William Lipe](#)
- [Donald D. Fowler](#)

PRESENTATIONS

- Phil Pennington Website: [Glen Canyon before reservoir filling.](#) (archived)
-

1921 - US GEOLOGICAL SURVEY & SOUTHERN CALIFORNIA EDISON COMPANY

A reconnaissance for dam sites

- [Description of 1921 USGS Surveys](#). William Chenoweth; Principal Investigator.
- [1921 - Summer of 1921 Report; Green River, UT to Lee's Ferry, AZ](#). Chenoweth, USGS.
- [1921 - River profile of bed gravels and bedrock in Cataract Canyon](#). Sidney Paige; geologist.
- [1921 Camera stations and field note locations in Cataract Canyon](#). Sidney Paige; geologist.
- [1921 - Cataract Canyon map of camera stations, camps, rapids & dam sites](#). Eugene C. LaRue.

MAPS: COLORADO RIVER

Going Upstream; Lee's Ferry To Green River Confluence

- [Plate A - Lee's Ferry](#)
- [Plate B - Wahweap Canyon](#)
- [Plate C - Navajo Creek](#)
- [Plate D - Crossing Of Fathers](#)
- [Plate E - Last Chance](#)
- [Plate F - Rainbow Bridge](#)
- [Plate G - Escalante](#)
- [Plate H - Bullfrog](#)
- [Plate I - Halls Crossing](#)
- [Plate J - Red Canyon](#)
- [Plate K - White Canyon](#)
- [Plate L - Narrow Canyon](#)
- [Plate M - Cataract Canyon](#)

MAPS: SAN JUAN RIVER

Going upstream from Confluence to Chinle Creek

- [Plate N - San Juan River; Piute Creek](#)
- [Plate O - San Juan River; Clay Hills Crossing](#)
- [Plate P - San Juan River; Mexican Hat](#)

PROFILES: COLORADO RIVER

Going Upstream from Lee's Ferry to Green River Confluence

- [Plate Q - Profile of Colorado River; Aztec To Lees Ferry](#)
- [Plate R - Profile of Colorado River; Lake Creek To Oak Creek](#)
- [Plate S - Profile of Colorado River; Dark Canyon To Ticaboo](#)
- [Plate T - Profile of Colorado River; Confluence To Gypsum](#)

PROFILES: SAN JUAN RIVER

Going Upstream from Confluence to Chinle Creek

- [Plate U - Profile of San Juan River; 64 Mile To Confluence](#)
 - [Plate V - Profile of San Juan River; Chinle Creek To 64 Mile](#)
-

1939: CHARLES BUTLER HUNT, RALPH MILLER & BERT LOPER

- [Upper Glen Canyon in Wayne County, Garfield County & Kane County](#)
-

1950 to 1993: KENT FROST

Professional land and river guide

[My Canyonlands: Tthe Adventurous Life of Kent Frost](#)

- **Two film clips are available on YouTube:**
- [Clip #1](#)
- [Clip #2](#)
- **MAPS:** Cataract Canyon; USGS 15 Minute Quads; 1952; baseline data before reservoir inundation.
- [Upper Cataract: Confluence of Green and Colorado Rivers](#); Canyonlands National Park (CANY). jpg.
- [Middle Cataract Canyon; Mile Long Rapids and Big Drops.](#); CANY & GCNRA. jpg.
- [Lower Cataract Canyon](#); GCNRA. jpg.
- **MAPS:** Glen Canyon; USGS 15 Minute Quads; 1952; baseline data before reservoir inundation.
- [01 Hite \(includes Narrow Canyon\)](#). jpg.
- [02 Mancos Mesa](#). jpg.
- [03 Mt. Ellsworth](#). jpg.
- [04 Lake Canyon](#). jpg.
- [05 Rincon](#). jpg.
- [06 Navajo Mountain](#). jpg.
- [07 Cummings Mesa](#). jpg.
- [08 Gunsight Butte](#). jpg.
- [09 Leche-E Rock](#). jpg.
- [10 Lee's Ferry](#). jpg.

San Juan River in San Juan County, Utah

- [01 - Bluff 15 min Quad; 1962](#)
- [02 - Boundary Butte 15 min Quad; 1962](#)
- [03 - Mexican Hat 15 min Quad; 1963](#)
- [04 - Gouldings 15 min Quad; 1963](#)
- [05 - Grand Gulch 15 min Quad; 1963](#)
- [06 - Clay Hills 15 min Quad; 1954.](#)
- [07 - Lake Canyon 15 min Quad; 1952](#)
- [08 - No Mans Land 15 min Quad; 1953](#)
- [09 - Navajo Mountain 15 min Quad; 1952](#)

ARTICLES

- [1971 - Rim Rock Hopping: Utah's Bowdie Canyon](#). Wilderness Camping.
-

GLEN CANYON AND SAN JUAN CANYON RIVER TRIPS - 1950 TO 1962 Photographs, Films and Interviews

Downloadable Zip Files (most files are quite large)

- [Ken Sleight: Remembering Glen Canyon](#). Martha Ham.
 - [Ken Sleight Interview](#). Ryann Savino.
 - Ken Sleight Video Interview: [Rediscovering Glen Canyon's Lost Wonders by Kayak](#). You Tube.
 - [Miscellaneous Notes on Rainbow Bridge Log](#). Tom Martin.
 - [Richard Norgaard - 1962; Cathedral in the Desert](#). tif.
 - [Alice Simpson - 1953 and 1962](#). zip file.
 - [Dick Griffith - 1950](#). zip file.
 - [Ed Gibson](#). zip file.
 - [George Rybka](#). zip file.
 - [Gus Scott - 1952; Hike To Rainbow Bridge](#). zip file.
 - [Gus Scott - 1953; Hike to Lee's Ferry](#). zip file.
 - [Gus Scott - 1954; Hike to Lee's Ferry](#). zip file.
 - [Gus Scott - 1955; Hike to Lee's Ferry](#). zip file.
 - [Gus Scott - Trip Diary; 1955](#). pdf.
 - [Gus Scott - 1958; Hike to Lee's Ferry](#). zip file.
 - [Gus Scott - 1959; Mexican Hat to Kane Creek](#). zip file.
 - [Gus Scott - 2014; Interview](#). zip file.
 - [Harold Monson - 1950](#). zip file.
 - [Hillis/Howie - 1955 to 1957](#). zip file.
 - [Howie - 1955](#). zip file.
 - [Ken Bertossi - 1954](#). zip file.
 - [Leslie Esparza - 1957](#). zip file.
 - [Newby - 1955 to 1958](#). zip file.
 - [Norman Herkenham - 1955](#). zip file.
 - [Paul Speer - 1957](#). zip file.
-

1952 to 1956: GEORGE SIMMONS
USGS employee and several colleagues

USGS MAPS from 1923: baseline data and observations before reservoir inundation

- [Sheet M - Confluence to Dark Canyon](#)
- [Sheet L - Dark Canyon to North Wash](#)
- [Sheet K - White Canyon](#)
- [Sheet J.- Red Canyon](#)
- [Sheet I - Smith Fork](#)
- [Sheet H - Hansen Creek](#)
- [Sheet G - Rincon](#)
- [Sheet F - Music Temple](#)
- [Sheet E - Rock Creek](#)
- [Sheet D - Kane Creek](#)
- [Sheet B - Wahweap Canyon](#)
- [Sheet A - Lee's Ferry](#)

Simmon's Trip Diaries

- [1956 - Cataract Canyon Diary](#)
- [Diary as featured at the website of Canyonlands National Park](#)

1957 to 1965: THE CONSTRUCTION OF GLEN CANYON DAM

Photo Archive: State of Utah

- [Utah Geologic Survey](#)

Photo Archive: Bureau of Reclamation at Denver, Colorado

Courtesy of Tom Martin

- **These are large files**
 - [Portfolio - Album 07](#)
 - [Portfolio - Album 08](#)
 - [Portfolio - Album 09](#)
 - [Portfolio - Album 10](#)
 - [Portfolio - Album 11](#)
 - [Portfolio - Album 12](#)
 - [Portfolio - Album 13](#)
 - [Download the zip file containing all the individual photos.](#) 8.6 gigabytes.
 - **Additional**
 - [Box 126 Glen Canyon Project History.](#) Zip file; 1 gigabyte.
 - Select photos about issues, such as water outlet works. Album 13.
 - [Spreadsheet: Water release data at Glen Canyon Dam for testing river outlet works](#)
-

1962 to 1968 -SIERRA CLUB

David Brower, Richard Norgaard, Phillip Hyde, Daniel Luten, Jr., Barbara Brower. Nancy Eberle, Terry and Renny Russell, and others.

- [1962 - Cathedral in the Desert](#). Norgaard; tiff.
 - [1964 - Labyrinth Canyon @ Mile 34.4](#)
 - [1966 - Correspondance with Morris Udall](#)
 - [1968 - Sedimental Journey](#)
 - [2005 - Return to the lost world of upside down mountains](#). Norgaard.
-

1967 - PROFESSOR LUNA B. LEOPOLD; CATARACT CANYON RIVER TRIP

- [Cataract Canyon Bathymetry: Mile 187 to 205](#).
-

1969 - CENTENNIAL OF JOHN WESLEY POWELL RIVER TRIP

- [Photo Guidebook To Lake Powell](#). Sun Publishing.
 - [1969 - JWP Centennial: Canyonlands, Part One](#). Denver Post Magazine.
 - [1969 - JWP Centennial: Canyonlands, Part Two](#). Denver Post Magazine.
-

1971 to 1974: NATIONAL SCIENCE FOUNDATION

- [Lake Powell Research Project](#)
-

BUREAU OF LAND MANAGEMENT (BLM)

UTAH: Ownership and Natural Resource Maps; Circa 1975 (jpg images)

- [LEGEND: Ownership Maps by BLM](#)

Glen Canyon National Recreation Area (Lake Powell)

- [Cataract Canyon](#)
- [Crossing of the Fathers](#)
- [Monitor Butte](#) (San Juan River Arm)

Utah BLM: Circa 2017

- [Hite Crossing Ownership Map](#)
 - [Hanksville & Hite Crossing](#)
-

End of Part Two

- To Visit Part One - **CLICK HERE**
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Part Three: Citizen and Professional Science in Glen Canyon National Recreation Area

OCTOBER 21, 2022
BY JOHN S. WEISHEIT

THIS IS PART THREE

- To Visit Part One - [CLICK HERE](#)
 - To visit Part Two - [CLICK HERE](#)
-

PRIMARY RESEARCH DOCUMENTS

- [1971 to 1978 - The Lake Powell Research Project](#). National Science Foundation.
-

PROJECT PROGRAMMING: Lake Powell Sedimentation

- 2002, March 28 - [Concept letter from Professor John C. Dohrenwend](#)
- 2013 - [Obituary of John C. Dohrenwend](#)
- Portrait: [The late John C. Dohrenwend](#)

Note: this webpage is designed for a browser called Safari and a modified UNIX operating system developed by Apple Inc., and currently called Ventura; it is a browser that automatically opens files and provides more responsive streaming services. We also recommend high speed internet services to avoid lengthy download times; our imagery is high resolution. The browser called Firefox is the next best browser for this website.

1992 to 2004: Dr. Robert H. Webb (USGS, retired), Dr. Jayne Belnap (USGS, retired), and John Weisheit.

Repeat photography and data when reservoir was nearly full in the 1990s.

- [Cataract Canyon: An Environmental and Human History of the Rivers in Canyonlands](#). University of Utah Press; 2004.

REPEAT PHOTOS (jpg images)

- **Big Drop Two (#22); (Elevation 3715 feet)**
- [Imperial Rapid \(#26\)](#)
- [Upstream view above Waterhole Canyon](#)
- [Clearwater Canyon](#)
- [Bowdie Canyon](#)
- [Rockfall Canyon](#) (circa 1964 @ elevation 3520 feet)
- [Mouth of Dirty Devil River](#) (match of 1889 photo by Franklin Nims)

1994 to 2000 - San Juan River Sedimentation Project by Donald Baars and Gene Stevenson

- [1994 - The San Juan River Silt Story](#)
- [2000 - San Juan River Siltation Rates](#)

1998 to 2000: Glen Canyon Institute; Citizen's Environmental Assessment on the decommissioning of Glen Canyon Dam.

- [Summary: Citizens Environmental Assessment on the decommission of Glen Canyon Dam.](#) Glen Canyon Institute.
- [Amphibians and Reptiles of Glen Canyon: Historical Natural History Summary.](#) Rinderle.
- [Bioinventory of Glen Canyon Prior to Inudation by the Lake Powell Reservoir.](#) Webb.
- [Endangered and Threatened Species in the Lower Colorado River Basin, Delta and Sea of Cortez.](#) Molholland.
- [Lake Powell Preliminary Socioeconomic Impact Analysis.](#) Jonas.
- [Salinity in the Colorado River Basin: Past, Present and Future.](#) Beck.
- [Sediment Hydrology on the Colorado River: The Impacts of Draining Lake Powell.](#) Myers.
- [A Study of the White Canyon Mill Tailings at Hite Utah.](#) Danise.
- [Water Balance of Lake Powell: An Assesment of Groundwater Seepage and Evaporation1999.](#) Myers.

2002 to 2006: Dr. John Dohrenwend (USGS, retired) & John Weisheit (Colorado Riverkeeper)

Original photos; repeat photography and presentations.

Photography, Photo Matches and Presentations

Dirty Devil River mouth; original Hite Marina; sand and gravel operations for highway and bridge construction.

- 1966 - [Aerial photo of the first Hite Marina](#); reservoir elevation 3530; before the snowmelt; photographer unknown. [Same photo with a red dot](#) to mark the location of the modern-day primitive boat ramp.
- 1966 - [Aerial photo of original Hite Marina](#); elevation is 3538 feet; during snowmelt; photographer unknown. [Same photo with a red dot](#) to mark the location of the modern-day primitive boat ramp.
- 1969 - Match 01: [Dirty Devil area near Highway 95.](#) Weisheit; original photo by Tad Nichols.
- 1969 - Match 02: [Dirty Devil area near Highway 95.](#) Weisheit; original photo by Tad Nichols.

- 1999? - [Match of Dirty Devil Arm near Hwy 95 Bridge](#). Weisheit; original photo by American Southwest .net.
- 1969 ? - [Aerial of gravel mining operations for paving Highway 95](#). photographer unknown.
- 1969 ? - [Aerial of bedrock features near Dirty Devil River](#); photographer unknown.
- 1973 ? - [Aerial repeat photo at mouth of Dirty Devil River](#). Dohrenwend.; original photo by P.T. Reily.

Note: The trailer camp in the photos above were occupied by the workers of Highway 95 and for road and bridge construction. You will notice that heavy equipment is gathering and sorting Colorado and Dirty Devil river gravels (Quaternary Period) for road base and for the bridge approaches. A marina was also available for boaters and operated by commercial outfitters, namely John Frank Wright (Mexican Hat Expeditions) and Gaylord Stavely (Canyoneers).

Additional Information about Glen Canyon Photography by Tad Nichols

- Video: [Dawn Kish and the photography of Tad Nichols](#). You Tube.

Reconnaissance

- 2002, March 28 - [The first reconnaissance trip and launching at Hite Marina](#).
- 2005, 1st Quarter? - 01: [Aerial of Dirty Devil Take-out](#). Dohrenwend.
- 2005, 1st Quarter? - 02: [Aerial photo of Dirty Devil Take-out](#). Dohrenwend.
- 2005, 1st Quarter? - [New Rapid above Farley Canyon](#)
- 2005 - [Report on New Rapid above Farley Canyon](#). Weisheit.
- Lower Cataract Canyon - [A pdf portfolio: matching our 2004 photos in 2006](#). Dohrenwend.
- Various features: [river erosion on exposed deposits of reservoir sediment](#). Dohrenwend & Weisheit

Presentations

- [Rapid Progradation of River Deltas Into Lake Powell, March 2002 to March 2004](#). Dohrenwend.
 - [Floods, Tamarisk, Drought: Recent and Future Changes Along the Colorado River](#). Dohrenwend.
 - [Decline and Fall of Lake Powell, March 2002 to March 2005: Impacts of Extended Drought on the Colorado Plateau](#). Dohrenwend.
 - Portrait: [The late John C. Dohrenwend](#)
-

Utah State University: 2005 to 2022

- [2009 - Fluvial Systems Tied Together Through Common Base Level: The Geomorphic Response of the Dirty Devil River, North Wash Creek, and the Colorado River to the Rapid Base Level Drop of Lake Powell](#). Adam Majeski.
-

2017 - Rebecca Solnit

- 2009 - Rebecca's book review of *Dead Pool: Lake Powell, Global Warming, and the Future of Water in the West* by James Lawrence Powell. Rebecca Solnit for London Review of Books.
 - 2017- [Letter from a drowned canyon](#). Rebecca Solnit for California Sunday Magazine.
 - [2017 - Why filling Lake Mead First is a bad idea](#). Sinjin Eberle for American Rivers.
 - [2023 - A river guide's view of Lake Powell's decline and the depths of the Colorado River crisis](#).
-

2017 to present: The Returning Rapids Project; Mike DeHoff (Principal Investigator) and colleagues

- Fiscal sponsor is [Glen Canyon Institute](#).
 - Home: Page: [Returning Rapids Project](#)
 - [October 2021 Trip Report](#)
 - [The History of Lake Powell Written in Sediment](#). USGS.
 - [May, 2023 - Ecological succession in Cataract Canyon](#). Arens.
-

2017 and 2018: Filmmaker Taylor Graham for National Geographic

- [Rediscovering Glen Canyon's Lost Wonders by Kayak](#). You Tube.
-

2021 to present: Glen Canyon Rejuvenation Project; Dr. Dan McCool and colleagues

Aerial Photos: Light Hawk Overflight of September 10, 2021, PDF Portfolios.

- [Dirty Devil River to Castle Butte; Good Hope Bay](#)
- [Castle Butte to Bullfrog Creek Marina](#)
- [Bullfrog to Escalante to San Juan River](#)
- [San Juan River to Canyonlands NP to Moab Airport](#)

Reservoir boating trip; photos and report: 6-day camping trip to Bullfrog Marina, Moki Canyon, Forgotten Canyon, and Lake Canyon.

- Weisheit - [PDF portfolio](#)
 - McCool - [PDF portfolio](#)
 - [Trip Report](#). Weisheit.
-

October 2021 - 100th Anniversary of the Kelly W. Trimble 1921 USGS San Juan Expedition

- [Report: Lowest San Juan River](#). Brandt Hart & Chad Niehaus.
 - [1921 Diary of Hugh D. Miser](#).
 - [1924 - Professional Paper by Hugh D. Miser](#). USGS.
 - [Repeat photograph at Grand Gulch](#).
-

October of 2021 - 100th anniversary of the William R. Chenoweth 1921 USGS Canyonlands Expedition.

- [Description of the 1921 USGS Survey](#). William Chenoweth.

October 2021 - Dirty Devil Boat Ramp to Bullfrog Creek Boat Ramp

By Tom Martin (River Runners for Wilderness) and John Weisheit (Living Rivers & Colorado Riverkeeper).

- Trip dates: September and October of 2021
- By staff and volunteers for the fiscally sponsored projects of Living Rivers: River Runners for Wilderness and Colorado Riverkeeper.
- [CLICK HERE](#) to view this repeat photography presentation via *VIMEO*. Tom Martin.

Note: Stay tuned for more repeat photography

A repeat photography boat trip; October 10 to 14, 2021; reservoir elevation 3545 feet.

Note: PDF Portfolios of general reservoir conditions; file size reduced; still takes awhile to download.

- [October 10, 2021 - Dirty Devil Boat Ramp](#)
- [October 11, 2021 - Dirty Devil Boat Ramp to The Horn](#)
- [October 12, 2021 - Castle Butte Section](#)
- [October 13, 2021 - Good Hope Mesa to Moki Bar](#)
- [October 14, 2021 - Moki Bar to Bullfrog Creek Boat Ramp](#)

The Repeat Photos

Original images before 1964 and the match occurred in 2021 at elevation 3545 feet

Note: Matches to be perfected with new additions in October of 2022

- Dirty Devil Mouth: [Beth Nielsen 195? and Tom Martin, 2021](#)
- Dirty Devil Boat Ramp: [Beth Nielsen 195? and Martin, 2021](#)
- North Wash: [Beth Nielsen 195? and Tom Martin, 2021](#)
- North Wash: [Beaman 1871 & Martin, 2021](#)
- White Canyon: [Marston & Martin, 2021](#)
- White Canyon Fort: [Hallan Neil Marsh & Martin, 2021](#)
- White Canyon Fort: [Marston & Martin 2021](#)
- Dorothy Bar: [Nielsen & Martin, 2021](#)
- Castle Butte from The Horn: [Nielsen & Martin, 2021](#)
- The Horn: [Phil Pennington & Martin, 2021](#)
- Castle Butte: [Nielsen & Martin, 2021](#)
- Ticaboo Canyon: [Gus Scott & Martin, 2021](#)
- Red Canyon: [Hillis Howie & Martin, 2021](#)
- Good Hope Mesa: [Neil Newby & Martin, 2021](#)
- Seven Mile Canyon: [Hillis Howie & Martin, 2021](#)
- Tapestry Wall: [Newby & Martin, 2021](#)
- Tapestry Wall Upstream View: [Marston & Martin, 2021](#)
- Tapestry Wall Downstream View: [Marston & Martin, 2021](#)
- Hansen Creek, Upstream of: [Esparza & Martin, 2021](#)

October of 2022: Aerial Photos at Elevation 3530 feet

All photos by John Weisheit and public domain.

- [Dirty Devil Canyon](#)
- [Dirty Devil Bridge](#)
- [Dirty Devil Boat Ramp](#)
- [Hite Marina Facilities](#)
- [North Wash](#)
- [Farley, White & Trachyte canyons](#)
- [Castle Butte, Red Canyon & Ticaboo Canyon](#)
- [Tapestry Wall](#)
- [Hall's & Bullfrog marinas](#)
- More photos soon!

October of 2022 Matches: Matching photos from the Nielsen Collection near Farley, White and Trachyte canyons. Also 1921 USGS photos between The Horn and Bullfrog Creek.

- **Presentation via Vimeo:** [By Tom Martin; December 2022.](#)
- **Note:** Locating the exact camera stations was very difficult and sometimes unsafe. The perched sediment here is about 200 feet thick and choked with

massive thickets of weeds. The sediment features include deep mud cracks, subsidence, slump fractures and slope failures.

- **Note:** A metal water tank was installed on a ledge just a bit downstream of Moki Fort when the White Canyon Uranium Mill was operational. Fasteners for the water delivery pipes can still be observed.
- [Moki Fort from drainage of White Canyon; October 2022](#). jpg.
- [Airstrip above Farley Canyon mouth; Upstream View; October 2022](#). jpg.
- [Airstrip above Farley Canyon mouth; Downstream View; October 2022](#). jpg.
- [Airplane parked at airstrip; October 2022](#). jpg.

Other Locations and photographers

- Tapestry Wall: [George Rathban, 1958](#)
- More photos soon!
-
-

2023 - Erik Bernhoft and Tom Martin match lower half of Lake Powell

- [Revisit Glen Canyon](#)

Stay tuned for a more detailed narratives that will include landscape and aerial photos.

End of Part Three

- To Visit Part One - [CLICK HERE](#)
 - To visit Part Two - [CLICK HERE](#)
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In the US Supreme Court: Arizona et al. vs Navajo Nation

NOVEMBER 04, 2022
BY JOHN S. WEISHEIT

THIS USA SUPREME COURT CASE WAS DECIDED AGAINST THE NAVAJO NATION ON JUNE 22, 2023

- [5 to 4 in favor of Arizona and intervenors](#) (feds and states), which reverses the decision of the USA Appeals Court.
- [Majority opinion](#). By Brett Kavanaugh.
- [Concurrence to majority opinion](#). By Clarence Thomas.
- [Minority opinion](#). By Neil Gorsuch.
- [2023 - From the ground up: A different look at the Law of the River](#). Margaret Vick at CRUWA Convention.

NEWS: US Supreme Court Decision

- [Biden triumphs over tribe in Colorado River fight](#). E&E.
- [Navajo Nation statement on SCOTUS decision](#). Navajo Nation.
- [Neil Gorsuch speaks up for native americans](#). Gary Beatty for Pagosa Daily Post.
- [Supreme Court rules against Navajo Nation in Colorado River case](#). The Hill.

###

NEWS: From Appeals Court to Supreme Court

- [SCOTUS Grants Review of Water Rights for Native Americans](#). Amy Howe for scotusblog.com.
- [The very bad math behind the Colorado River crisis](#). By Daniel Penner for Grist..
- [Crisis on the Colorado: The Indigenous fight for water rights](#). By Megan O'Toole and Jillian Kestler-D'Amours for Aljazeera.
- [Tribal rights, water rights, states' rights and the Colorado River: What's at stake in SCOTUS case AZ v NN](#). Rita Maquire and Nicole Klobas for American Bar Association.

THE ATTORNEYS

- [A iist of the attorneys](#). txt.

APPEALS COURT

- [2021 - Decision of the Appeals Court by Judge Gould which affirmed the Navajo Complaint](#)
- [2021 - Opinion of the Appeals Court](#)
- [2022 - Appendices 01 Court of Appeals](#)
- [2022 - Appendices 02 Court of Appeals](#)

SUPREME COURT BRIEFS

- [2022.06 - Extension Solicitor General](#)
- [2022.06 - Feds Request Extension Writ of Certiorari](#)
- [2022.06 - Waiver Attorney General AZ](#)
- [2022.06 - Waiver Walker](#)
- [2022.07 - Brief Federal](#)
- [2022.07 - Extension Request Navajo Nation](#)
- [2022.07 - Memo Federal Respondents](#)
- [2022.09 - Brief Navajo Nation](#)
- [2022.09 - Brief Opposition Navajo Nation](#)
- [2022.09 - Brief States Intervenors](#)
- [2022.10 - Brief Feds Reply](#)
- [2022.10 - Brief States Reply to Federal Memo and Navajo Response](#)
- [2022.11 - Question Presented is Granted by SCOTUS](#)
- [2022.12 - Brief Colorado Merits](#)
- [2022.12 - Brief Federal Parties](#)
- [2022.12 - Brief Intervenors](#)
- [2022.12 - Brief State Petitioners](#)
- [2022.12 - Merits Extension Request](#)
- [2023.02 - Brief Merits Navajo Nation](#)
- [2023.02 - Motion Divided Argument Solicitor General](#)

AMICUS BRIEFS

- [2023 - Citizens Equal Rights Foundation](#)
 - [2023 - Coalition of Large Tribes](#)
 - [2023 - Dig Deep Utah Tribal Relief Foundatiion](#)
 - [2023 - Dine Hataalii Association](#)
 - [2023 - Historians](#)
 - [2023 - Indian Organizations](#)
 - [2023 - Law Professors](#)
 - [2023 - Professors McCool, Rosser and Wilkins](#)
 - [2023 - Southern and Mountain Ute Indian Tribes](#)
 - [2023 - Uintah Ouray Ute Tribe](#)
 - [2023 - Western Water Users](#)
-

The 2023 Supplemental Environmental Impact Statement (SEIS) for operations at Glen Canyon Dam and Hoover Dam

NOVEMBER 17, 2022
BY JOHN S. WEISHEIT

Scheduled curtailments for 2023 according to Annual Operating Plan

2007 Interim Guidelines, Minute 323, Lower Basin Drought Contingency Plan, and Binational Water Scarcity Contingency Plan
Total Volumes (kaf)

Lake Mead Elevation (feet msl)	2007 Interim Guidelines Shortages		Minute 323 Delivery Reductions	Total Combined Reductions	DCP Water Savings Contributions			Binational Water Scarcity Contingency Plan Savings	Combined Volumes by Country					Total Combined Volumes
	AZ	NV			Mexico	Lower Basin States + Mexico	AZ		NV	CA	Mexico	AZ Total	NV Total	
1,090 - 1,075	0	0	0	0	192	8	0	41	192	8	0	200	41	241
1,075 - 1,050	320	13	50	383	192	8	0	30	512	21	0	533	80	613
1,050 - 1,045	400	17	70	487	192	8	0	34	592	25	0	617	104	721
1,045 - 1,040	400	17	70	487	240	10	200	76	640	27	200	867	146	1,013
1,040 - 1,035	400	17	70	487	240	10	250	84	640	27	250	917	154	1,071
1,035 - 1,030	400	17	70	487	240	10	300	92	640	27	300	967	162	1,129
1,030 - 1,025	400	17	70	487	240	10	350	101	640	27	350	1,017	171	1,188
< 1,025	480	20	125	625	240	10	350	150	720	30	350	1,100	275	1,375

The Secretary of the Interior will take affirmative actions to implement programs designed to create or conserve 100,000 acre-ft per annum or more of Colorado River System water to contribute to conservation of water supplies in Lake Mead and other Colorado River reservoirs in the lower basin. All actions taken by the United States shall be subject to applicable law, including availability of appropriations.

- [Photo from the 4th Consultation of 2023 Annual Operating Plan](#)
- [2023 - Management of Colorado River: Water Allocations, Drought and the Federal Role](#). CRS update.

SCOPING COMMENT PERIOD HAS CLOSED

However, if you submitted comments on time (December 20, 2022), you may still provide supplemental information and records to Reclamation. Especially after reading the following letters and news about plans from the states that are off target and overdue by 50-years. For example, below are SEIS scoping participants that have submitted supplemental comments.

Two supplemental alternatives from the Seven States and an analysis from non-profit organizations

- January 31, 2023 - [Supplemental Scoping Letter from Six States to model negotiated water reductions](#)
- January 31, 2023 - [Supplemental Scoping Letter from California to model negotiated water reductions](#)
- February 2, 2023 - [Report on Colorado River Discussions](#). Central Arizona Project.
- February 6, 2023 - [Supplemental Comments by Great Basin Water Network, Living Rivers, and Colorado Riverkeeper](#)

Engineering report for proposed hydropower modifications at Glen Canyon Dam

- Opps. The original specifications for Glen Canyon Dam were not designed for severe and sustained drought (aridity). Back to the drawing board to further embed diminishing returns, marginal business practices, and induce stranded assets at a national recreation area.
- February 7, 2023 - [Glen Canyon Dam Low-Head Hydropower Modifications and Alternatives](#). USBR.
- February 8, 2023 - [For first time Glen Canyon Dam alternatives addressed by federal government](#). Greg Haas for KLAS TV.
- March 26, 2023 - [Arizona's Glen Canyon Dam Might Get Pricey Makeover](#). Tony Davis for Arizona Daily Star.

NEWS & VIEWS

Listen:

- January 31, 2023 - [New York Times Podcast](#)
- February 7, 2022 - [Arizona columnist Joanna Allhands For KJZZ Radio](#)

Read:

- January 27, 2023 - [New York Times: As the Colorado River Shrinks, Washington Prepares to Spread the Pain](#). By Christopher Flavelle for *The New York Times*.
- February 1, 2023 - [Utah joins five states in plan to keep feds from making cuts in Colorado River](#). By Felicia Fonseca and Suman Naishadham for *The Associated Press*.
- March 21, 2023 - [OpEd: The Colorado River is running dry but nobody wants to talk about the mud](#). By Dale Maharidge for NY Times.

Observe:

- February 1, 2023 - [Plan is elusive as river shrinks](#). By Ian James for The Los Angeles Times.

- February 1, 2023 - [California Opposes Colorado River Plan](#). By Tony Davis for *Arizona Daily Star*.
- February 1, 2023 - [California releases its own plan for Colorado River cuts](#). By Kathleen Ronayne and Suman Naishadham for *The Associated Press*.
- February 1, 2023 - [Conservation organizations emphasize need to protect environmental priorities in CR Basin](#). Major NGOs.
- February 2, 2023 - [California's Colorado River plan would hit Arizona hard](#). Tony Davis for *The Arizona Daily Star*.
- February 2, 2023 - [State pushes its plan to save water](#). Ian James for *The Los Angeles Times*.
- February 3, 2023 - [Biden administration is caught between California and its neighbors in Colorado River fight](#). By Camille Von Kaenel & Annie Snider for *Politico*.
- February 3, 2023 - [Why is California going it alone in Colorado River talks](#). By Ian James for *The Los Angeles Times*.
- February 4, 2023 - [Law of the River is at the heart of water crisis](#). By Hayley Smith and Ian James for *The Los Angeles Times*.
- February 4, 2023 - [Game of chicken or chess game: Colorado River solution elusive](#). Tony Davis for *Arizona Daily Star*.
- February 5, 2023 - [Key Colorado River reservoirs unlikely to refill in our lifetimes](#). By Rong-Gong Lin II and Ian James for *The Los Angeles Times*.

Solutions will not arrive until the limits of this geography and its climate are respected and embedded into new and different policies for long-term regional planning. The adherents to the Colorado River Compact of 1922 are perpetuating system failure and societal collapse.

Comment Letters

- [Public Webinar Presentation for SEIS Scoping](#). Reclamation.
- [Scoping Summary Document](#). Reclamation.
- [01 - Complete list of all public comments](#). Reclamation.
- [02 - Public input received during scoping period](#). Reclamation.
- [Living Rivers et al.](#) (Clean Copy)
- [Major NGOs](#)
- [Save The Colorado](#)
- [Southern Nevada Water Authority](#)
- [Grand Canyon Trust](#)
- [Wyoming](#)
- [Upper Colorado River Commission](#)
- [New Mexico](#)
- [Colorado](#)
- [Utah](#)
- [Municipalities of Lower Basin](#)
- [California](#)
- [Arizona](#)

FROM THE FEDERAL REGISTER NOTICE: Bureau of Reclamation Proposed SEIS for 2007 Interim Guidelines

Notice of Intent to Prepare a Supplemental Environmental Impact Statement (SEIS) for December 2007 Record of Decision Entitled Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations For Lake Powell and Lake Mead.

Federal Register Notice: <https://www.federalregister.gov/documents/2022/11/17/2022-25004/notice-of-intent-to-prepare-a-supplemental-environmental-impact-statement-for-december-2007-record>

Reclamation requests that the public submit comments concerning the scope of the analysis, potential alternatives, and identification of relevant information, and studies on or before December 20, 2022.

Reclamation anticipates utilizing the work of this SEIS to also inform operating guidelines for the 2025-26 period, which will also undergo NEPA analysis in the near future.

OFFICIAL RECLAMATION WEBPAGE FOR THIS SEIS

- [CLICK HERE](#)

Webinars

- [Public Webinar Presentation for SEIS Scoping](#)
- November 29, 2022 - [Webinar](#)
- December 2, 2022 - [Webinar](#)

NEWS

- December 1, 2022 - [Drought threatens Colorado River with complete 'doomsday scenario' officials say](#). Joshua Partlow for Washington Post.
- December 3, 2022 - [Arizona Thinks Desalination Will Offer The Water It Needs. It won't](#). Robert Glennon OpEd for *The Arizona Republic*.
- December 4, 2022 - [Colorado River Reckoning: Not Enough Water](#). Tony Davis for *The Arizona Daily Star*.
- December 9, 2022 - [The power of aridity is bringing a Colorado River dam to its knees](#). Alex Hager for *KUNC*.

Special Sunday Features by Tony Davis for *Arizona Daily Star* on December 5, 2022

- All 7 Articles combined - [Colorado River Special Series](#). By Tony Davis for *Az Daily Star*.
- [01- USA West's water management system on edge of collapse, expert Says.](#)
- [02 - At Glen Canyon receding waters reveal cathedral and shift debate](#)
- [03 - Lake Powell's record low levels confound tourists businesses Park Service](#)
- [04 - Plunging water levels flip activists goal for Glen Canyon Dam](#)
- [05 - The Colorado River we rely on is likely to get even drier](#)
- [06 - Our water future we will pay more and use much less here's how](#)
- [07 - Feds announce plan for massive cuts in Colorado River deliveries](#)

For more information regarding the proposed SEIS and the virtual meetings, please go to:

<https://www.usbr.gov/ColoradoRiverBasin/SEIS.html>

Questions can be directed to:

Ms. Dedina Williams
Bureau of Reclamation
Lower Colorado Basin Region
(702) 293-8010
email: dfwilliams@usbr.gov

Ms. Marcie Bainson
Bureau of Reclamation
Upper Colorado Basin Region
(801) 524-3604
email: mbainson@usbr.gov

Send written comments and/or questions to Reclamation:

- SEIS Project Manager
- Upper Colorado Basin Region
- 125 South State Street, Suite 8100
- Salt Lake City, Utah 84138
- eMail: CRinterimops@usbr.gov
- The draft supplemental EIS is anticipated to be available for public review in Spring 2023 and the final supplemental EIS is anticipated to be available for with a Record of Decision, as appropriate, in late Summer 2023. This schedule will allow decisions to become effective for 2023-2024 operations.
- The Secretary is directing this action because the existing operating guidelines are insufficient given current hydrology and reservoir conditions and in light of plausible low runoff conditions in the Colorado River Basin over the next four years. Through this Federal Register notice, Reclamation is providing an overview of the purpose and need for the SEIS, as well as its anticipated

approach and timeframe for decisions on revised operating guidelines for Lake Powell and Lake Mead.

WEBINARS FOR THE PUBLIC

Official Reclamation Webpage is [HERE](#)

- **Screenshots of the presentations are archived [HERE](#)**
- Note: Video recording of the presentations are forthcoming

Tuesday, November 29, 2002, 10 a.m. – 12 p.m. MT

Join on your computer, mobile app or room device:

[Click here](#) to join the meeting

Meeting ID: 245 351 605 478

Passcode: VKkNQN

[Download Teams](#) | [Join on the web](#)

Or call in (audio only)

+1 202-640-1187,,456269621#

Phone Conference ID: 456 269 621#

Friday, Dec. 2, 2022, 11 a.m. – 1 p.m. MT

Join on your computer, mobile app or room device:

[Click here](#) to join the meeting

Meeting ID: 271 049 383 108

Passcode: KzjuZQ

[Download Teams](#) | [Join on the web](#)

Or call in (audio only)

+1 202-640-1187,,949017531#

Phone Conference ID: 949 017 531#

BACKGROUND

NOTE: At the end of this federal narrative, On The Colorado (OTC) will provide additional background materials for our readers; essentially a recommended reading list to help you prepare your SEIS comments to the Bureau of Reclamation.

On August 16, 2022, the Department of the Interior announced: “Prolonged drought and low runoff conditions accelerated by climate change have led to historically low water levels in Lakes Powell and Mead. Over the last two decades, Department leaders have engaged with Colorado River Basin partners on various drought response operations. However, given that water levels continue to decline, additional action is needed to protect the System.” Recognizing that the Colorado River Basin is facing unprecedented risks, the development of revised operating guidelines for Lake Powell and Lake Mead represents one of many Departmental efforts underway to respond to the rapidly changing conditions in the Basin in order to better protect the System.

Available at: <https://www.doi.gov/pressreleases/interior-department-announces-actions-protect-colorado-river-system-sets-2023>

In a Federal Register notice published on June 24, 2022 (87 FR 37884), the Bureau of Reclamation noted the dire circumstances facing the Colorado River Basin: “The Colorado River Basin provides essential water supplies to approximately 40 million people, nearly 5.5 million acres of agricultural lands, and habitat for ecological resources across the Southwestern United States and Northwestern Mexico. The limited water supplies of the Colorado River are declining, and the Colorado River Basin is currently experiencing a prolonged period of drought and record-low runoff conditions resulting in historically low reservoir levels at Lake Powell and Lake Mead. The period from 2000 through 2022 is the driest 23-year period in more than a century and one of the driest periods in the last 1,200 years. Absent a change in hydrologic conditions, water use patterns, or both, Colorado River reservoirs will continue to decline to critically low elevations threatening essential water supplies across nine states in the United States and the Republic of Mexico (Mexico). It is foreseeable that without appropriate responsive actions and under a continuation of recent hydrologic trends, major Colorado River reservoirs could continue to decline to ‘dead pool’—elevations at which water cannot be regularly released from a reservoir—in coming years.” The June 24, 2022, Federal Register notice requested public input prior to initiating a scoping process on the proposed development of post-2026 Colorado River Operational Strategies for Lake Powell and Lake Mead Under Historically Low Reservoir Conditions. The SEIS announced in today’s Federal Register notice does not interfere with, supplant, or supersede that separate post-2026 guidelines development process. Rather, this SEIS will inform and complement the development of post-2026 guidelines. Further, the dire hydrologic and climate conditions described in the June 2022 Federal Register notice also inform the need for the SEIS efforts announced in today’s Federal Register notice.

In the June 2022 Federal Register notice, the Department anticipated the potential for the process initiated in this document: “While previous actions, especially the DCP [in 2019], were intended to preserve Reclamation’s ability to undertake post-2026 planning with a stable system and avoid crisis planning, very dry hydrology since the adoption of the DCP has resulted in Lake Powell and Lake Mead nearing critically low elevations. Should the conditions continue or worsen, we recognize that in addition to post-2026 planning under the anticipated NEPA process(es), Reclamation may likely need to also prioritize implementation of near-term actions to stabilize the decline in reservoir storage and prevent system collapse. Reclamation has not yet determined what additional actions or processes may be required to address these near-term operational risks. It is anticipated that near-term response actions and development of post-2026 operations will need to proceed on parallel timelines.” [87 FR 37888 \(June 24, 2022\)](#).

Over the past two years, the Department has undertaken a number of unprecedented actions to respond to the historic drought and low-runoff conditions in the basin that are being exacerbated by higher temperatures and the impacts of climate change. In particular, in both 2021 and 2022, additional releases from upstream reservoirs have been implemented to enhance water elevations at Lake Powell. In 2022, Reclamation implemented modifications to monthly releases from Glen Canyon Dam, and also

reduced downstream annual volume releases by 480,000 acre-feet.

Furthermore, on October 20, 2022, the National Oceanic and Atmospheric Administration's Climate Prediction Center issued its U.S. Winter Outlook for the December 2022-February 2023 period finding: "The greatest chances for drier-than-average conditions are forecast in portions of California, the Southwest, the southern Rockies," and "[w]idespread extreme drought continues to persist across much of the West, the Great Basin, and central-to-southern Great Plains."

Available at <https://www.noaa.gov/news-release/us-winter-outlook-warmer-drier-south-with-ongoing-la-nina>.

The Department currently lacks analyzed alternatives and measures that may be necessary to address such projected conditions. Recognizing the risks facing the Colorado River Basin, the Department has concluded that immediate development of additional operational alternatives and measures for Lake Powell and Lake Mead are necessary to ensure continued "operations that are prudent or necessary for safety of dams, public health and safety, other emergency situations ... 2007 Interim Guidelines at Section 7.D," published at [73 FR 19892 \(April 11, 2008\)](#).

Through this Federal Register notice, Reclamation is initiating efforts to revise operating guidelines for the operation of Glen Canyon and Hoover Dams in 2023 and 2024 operating years in order to address the potential for continued low-runoff conditions in the Colorado River Basin. Reclamation has concluded that the potential impacts of low runoff conditions in the coming winter (2022-23) pose unacceptable risks to routine operations of Glen Canyon and Hoover Dams during the interim period (prior to Jan. 1, 2027) and, accordingly, modified operating guidelines need to be expeditiously developed. Development of modified operating guidelines will also inform potential operations in the 2025 and 2026 operating years; however, due to the critically low current reservoir conditions, and the potential for worsening drought, the Department recognizes that operational strategies for 2023-2024 may need to be further revisited for subsequent operating years. Given the potential risks to infrastructure and public health and safety, the Department will promptly identify and analyze modified operating guidelines to address current and foreseeable hydrologic conditions.

PURPOSE AND NEED

The purpose of the SEIS is to supplement the EIS completed in 2007 for the 2007 Interim Guidelines in order to modify operating guidelines for the operation of Glen Canyon and Hoover Dam to address historic drought and low runoff conditions in the Colorado River Basin. The need for the revised operating guidelines is based on the potential that continued low runoff conditions in the Colorado River Basin could lead Glen Canyon Dam to decline to critically low elevations impacting both water delivery and hydropower operations in 2023 and 2024. In order to ensure that Glen Canyon Dam continues to operate under its intended design, Reclamation may need to modify current operations and reduce Glen Canyon Dam downstream releases, thereby impacting downstream riparian areas and reservoir elevations at Lake Mead.

Accordingly, in order to protect Hoover Dam operations, system integrity, and public health and safety, Reclamation also may need to modify current operations and reduce Hoover Dam downstream releases. Such revised Hoover Dam operations would, among other issues, address Section 7.B.4 of the 2007 Interim Guidelines as well as the commitments set forth in Section V.B.2 of Exhibit 1 to the Lower Basin Drought Contingency Plan Agreement (2019). Both the 2007 Interim Guidelines and the 2019 DCP contemplate the need for additional measures to protect Lake Mead elevations, with the DCP adding the commitment of participating Lower Basin DCP parties to “individual and collective action in the Lower Basin to avoid and protect against the potential for the elevation of Lake Mead to decline to elevations below 1,020 feet.” As noted above, Section 7.D of the 2007 Interim Guidelines contemplates that modified operating provisions may be required if “extraordinary circumstances arise. Such circumstances could include operations that are prudent or necessary for safety of dams, public health and safety, other emergency situations, or other unanticipated or unforeseen activities arising from actual operating experience.” The Department finds that such circumstances exist at this time. Preliminary Proposed Action – Overview Reclamation anticipates proposing modifications for the 2023 and 2024 period, and potentially for subsequent years, to the following sections of the 2007 Interim Guidelines published at [73 FR 19881 \(April 11, 2008\)](#):

Section 2. Determination of Lake Mead Operation During the Interim Period

Reclamation anticipates revising Section 2.D (“Shortage Conditions”), including potential modifications to Sections 2.D.1.b and 2.D.1.c to decrease the quantity of water that shall be apportioned for consumptive use in the Lower Division States (Arizona, California, and Nevada). Any modifications to these sections would be based on current and anticipated reservoir and hydrologic conditions in the Colorado River Basin, including any potential modifications to Glen Canyon Dam operations pursuant to this SEIS.

Section 6. Coordinated Operation of Lake Powell and Lake Mead During the Interim Period

- Reclamation anticipates revising Sections 6.C (“Mid-Elevation Release Tier”) and 6.D (“Lower Elevation Balancing Tier”) to modify and/or reduce the quantity of water released from Glen Canyon Dam. Any modifications to these sections would be based on current and anticipated reservoir and hydrologic conditions in the Colorado River Basin, including any potential modifications to Hoover Dam operations pursuant to this SEIS. Section 7. Implementation of Guidelines Reclamation anticipates revising Section 7.C (“Mid-Year Review”) to allow for potential determinations in a mid-year review that would allow for reduced deliveries from Lake Mead pursuant to Section 2 of the 2007 Interim Guidelines.
- The foregoing potential modifications to the 2007 Interim Guidelines are presented in this Federal Register notice only as a preliminary overview of the Proposed Action. Reclamation will carefully review the 2007 Interim Guidelines and will formally publish a Proposed Action in its forthcoming Draft SEIS, which is anticipated to be published in Spring 2023.

PRELIMINARY ALTERNATIVES

Overview

- For purposes of the NEPA process for the SEIS, Reclamation anticipates three primary alternatives will be considered:

No Action – The No Action Alternative will describe the continued implementation of existing agreements that control operations of Glen Canyon and Hoover Dams. These include the 2007 Interim Guidelines and agreements adopted pursuant to the 2019 Colorado River Drought Contingency Plan Authorization Act (Pub. L. 116-14) (the 2019 Drought Contingency Plan (DCP) Act). Reclamation notes that intensive efforts are underway to facilitate water conservation actions in the Basin under a number of programs, including the recent Congressional prioritization of funding through 2026 for drought mitigation in western states, with priority given to the Colorado River Basin and other basins experiencing comparable levels of long-term drought. Pub. L. 117- 169, at § 50233 (Aug. 16, 2022). The ongoing implementation and effectiveness of these efforts will inform the assessment of existing operations and agreements.

Framework Agreement Alternative – This alternative would be developed as an additional consensus-based set of actions that would build on the existing framework for Colorado River Operations. This Alternative would likely build on commitments and obligations developed by the Basin States, Basin Tribes, and non-governmental organizations that were included in the 2019 DCP. This alternative would facilitate implementation of Section 7.B.2 of the 2007 Interim Guidelines.

Reservoir Operations Modification Alternative – This alternative would be developed by Reclamation as a set of actions and measures adopted pursuant to Secretarial authority under applicable federal law. This alternative would likely be developed based on the Secretary’s authority under federal law to manage Colorado River infrastructure, as necessary, and would consider any inadequacies or limitations of the consensus-based framework considered in the above alternative. This alternative would consider how the Secretary’s authority could complement a consensus-based alternative that may not sufficiently mitigate current and projected risks to the Colorado River System reservoirs.

This Federal Register notice presents the foregoing potential alternatives only as a preliminary overview of the alternatives that will be analyzed in the DEIS. For planning purposes, Reclamation’s analysis will assume that additional releases pursuant to the Drought Response Operating Agreement (DROA) will be administered according to the terms approved in the DCP Act, and that Reclamation will simultaneously pursue system conservation actions in the Upper and Lower Basins. Through the scoping process, Reclamation welcomes public input on how human health and safety considerations can be more expressly integrated into Colorado River operational decision-making, both in this SEIS and other future decision-making processes. Reclamation will carefully review the appropriate range of alternatives for review and will include appropriate alternatives for consideration in its forthcoming Draft SEIS, which is anticipated to be published in Spring 2023.

SUMMARY OF EXPECTED IMPACTS

The SEIS will evaluate reasonably foreseeable impacts from proposed modifications to the 2007 Interim Guidelines. Impacts are not fully known at this time; impact analysis will build upon and utilize information described in the 2007 Final EIS and subsequent relevant analyses. The analysis in the SEIS may consider potential effects on wildlife, threatened and endangered species habitat, recreation, water supplies (agricultural, municipal, environmental), water resources, air quality, cultural resources, hydropower resources, social and economic conditions, and other resources and uses. Reclamation will use an interdisciplinary approach that incorporates the expertise of specialists in the relevant resource fields.

Schedule for the Decision-Making Process Reclamation will provide additional opportunities for public participation consistent with the NEPA process, including an anticipated 45-day comment period on the draft SEIS. The draft SEIS is anticipated to be available for public review in Spring 2023 and the final SEIS is anticipated to be available with a Record of Decision, as appropriate, in late Summer 2023. This schedule will allow decisions to become effective for 2023-24 operations. During this process, the Secretary retains all applicable authority to operate Colorado River facilities to respond to emergency or other unforeseen conditions.

LEAD AND COOPERATING AGENCIES

The Secretary is responsible for the operation of Glen Canyon Dam and Hoover Dam pursuant to applicable federal law. The Secretary is also vested with the responsibility of managing the mainstream waters of the lower Colorado River pursuant to federal law. This responsibility is carried out consistent with the body of compacts, treaties, statutes and other legal documents commonly referred to as “the Law of the River.” Reclamation, as the agency that is designated to act on the Secretary’s behalf with respect to these matters, is the lead federal agency for the purposes of NEPA compliance for the development and implementation of the proposed SEIS interim guidelines.

During the preparation of the 2007 Interim Guidelines, five federal agencies were cooperating agencies for purposes of assisting with environmental analysis and preparation of the Final EIS. These cooperating agencies were the Bureau of Indian Affairs (BIA), the United States Fish and Wildlife Service (FWS), the National Park Service (NPS), Western Area Power Administration (Western), and the United States Section of the International Boundary and Water Commission (USIBWC). Reclamation anticipates inviting these same five agencies to serve as cooperating agencies for the purpose of this SEIS. Reclamation is committed to continue to work with the USIBWC to ensure that efforts under this SEIS are communicated and coordinated with the Republic of Mexico with the goal of continued alignment of operations and responsive actions in both the U.S. and Mexico.

RESPONSIBLE OFFICIAL

Consistent with the process and final determinations reached for the 2007 Interim Guidelines, the Secretary of the Interior is the deciding official for this undertaking.

NATURE OF DECISION TO BE MADE

The Department anticipates the nature of the decision to be made will be revised reservoir operating guidelines, pursuant to appropriate revisions of the Record of Decision for the 2007 Interim Guidelines, for the operation of Glen Canyon and Hoover Dams in 2023 and 2024 operating years, and potentially subsequent years if necessary and appropriate, in order to address the likelihood for continued low-runoff conditions in the Colorado River Basin based on the best available scientific and technical information.

ADDITIONAL INFORMATION

As noted in the June 2022 Federal Register notice, Reclamation anticipates initiating a NEPA process to develop the post-2026 operational strategies through a Federal Register notice of intent to prepare an EIS in early 2023. Nothing in today's Federal Register notice supersedes or displaces Reclamation's efforts in that upcoming process.

This SEIS addressing modified operating guidelines for the period prior to 2026 is necessary to address the unacceptably high risks facing the Colorado River Basin between now and the post-2026 period. Current conditions warrant the flexibility to modify operations before the post-2026 operational strategies are thoroughly identified, analyzed and ultimately adopted. In addressing operations for 2023-24, Reclamation is committed to using the best available information to develop near-term operating guidelines while longer-term approaches are developed. Reclamation anticipates using the work and analysis from this SEIS process to also inform operating guidelines for the 2025-26 period, which will also undergo any additional NEPA analysis as required. Lastly, separate from the development of the SEIS, Reclamation anticipates publishing an informational report in 2023 addressing potential methodologies to support assessments for evaporation, seepage and other system losses in the Colorado River Basin in future years. This information will assist in development of potential interim measures as well as the post-2026 operational strategies.

PUBLIC DISCLOSURES AND COMMENTS

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time.

While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Tommy P. Beaudreau,

Deputy Secretary, Department of the Interior.

###

RECOMENDED READING LIST AND PREPARED BY OTC

- [AZ v CA: Recommended Decree And Dissent](#). US Supreme Court; 1962.
- [General Operating Criteria for Glen Canyon Dam](#). Secretary Udall; 1962.
- [Prescoping Comment Letter](#). ASU Engineering; 2022.
- [DROA Comment Letter](#). Living Rivers and Center for Biological Diversity; 2022.
- [7D Report Comments](#). Living Rivers; 2020.
- **Drought Contingency Planning**: The public was never asked to participate.
- [Tribal Basin Study](#). Ten Tribe Partnership; 2018.
- [Basin Study Comment Letter](#). Living Rivers; 2011.
- [Basin Study Comment Letter](#). Living Rivers and Center for Biological Diversity; 2013.
- [Shortage DEIS](#). Living Rivers and Center for Biological Diversity; 2007.
- [Shortage EIS Scoping Comment Letter](#). Living Rivers; 2005.

QUOTES FROM CALENDAR YEAR 2018

Brent Gardner-Smith for Vail Daily ([Link](#))

• “After experiencing the fourth driest year on record last year, Lake Powell and Mead’s combined storage sits today at 46 percent (33% as of October 1, 2022). That is the lowest level since 1966, when Lake Powell was initially filling and cutting off water supplies down south. To put it in more personal terms, these are the lowest reservoir levels in my lifetime.” — Brenda Burman, commissioner of the U.S. Bureau of Reclamation, on Dec. 13, at the annual meeting of the Colorado River Water Users Association (CRWUA) at Caesars Palace in Las Vegas.

• “If we were to have a repeat of the 2000-to-2005 drought, with current demands and current levels of operations, we would essentially drain Lake Powell. It would go down to nothing.” — Eric Kuhn, former general manager of the Colorado River District, on Sept. 14, at the district’s annual seminar in Grand Junction.

• “It does not look good. It is a real and present danger for us to be facing the hydrology that we have today, and the 24-month outlook for that.” — Peter Nelson, chairman of the Colorado River Board of California, on Dec. 13 at a CRWUA meeting.

• “Today’s level of risk is unacceptable, and the chance for crisis is far too high.” — Burman, on Dec. 13 at a CRWUA meeting.

• “We’ll be in crisis mode if DCP isn’t completed.” — Pat Tyrrell, state engineer for Wyoming and commissioner on the Upper Colorado River Commission, on Dec. 13, at a CRWUA meeting.

“It’s not a drought-contingency plan, it’s a survival plan due to current conditions.”— Bill Hasencamp, manager of Colorado River resources for the Metropolitan Water District of Southern California, on Aug. 22, at the summer meeting of the Colorado Water Congress in Vail.

- “It’s important to understand that we are looking at giving up a very large amount of Colorado River water in central Arizona, nearly half. That’s a painful conversation. And, of course, everyone thinks that their own water use is justified and no one else’s is.” — Kathryn Sorensen, director of City of Phoenix Water Services, on Dec. 13 at a CRWUA meeting.
- “We are teetering on the brink of a shortage today, and we see real risk of rapid declines in reservoir elevations, particularly at Lake Mead in the very near future.” — Burman on Dec. 13 at a CRWUA meeting.
- “If we have the worst-case hydrology, it is possible that our state may need to move to an involuntary (water-curtailment) system. But we want that done through a public process. We want the stakeholders at the table.” — Andy Mueller, general manager of the Colorado River District, on Sept. 14 at a district seminar.
- “To me, the best way of conserving water is not to use it, is not to grow, is not to continue to drain the Colorado River. But realistically looking at it, that is not going to happen.” — Keith Moses, vice chairman of the Colorado River Indian Tribes, on Dec. 13 at a CRWUA meeting.
- “As we get hot and dry, we just have less available water and we see more demand.” — Taryn Finnessey, senior climate change specialist for Colorado on Aug. 24, at a CWC meeting.
- “(The water entities in Arizona) have grasped that concept — that we’re going to be in a drier future with less water.” — Thomas Buschatzke, director of the Arizona Department of Water Resources, on Dec. 13 at a CRWUA meeting.
- “We see this train that’s coming at us at 5 miles an hour, and if it hits us, it’s our own damn fault, because you can just see that reservoir level going down.” — Jim Lochhead, CEO of Denver Water, on Aug. 23 at a CWC meeting.
- “We will act, if needed, to protect this basin.” — Burman, on Dec. 13 at a CRWUA meeting.
- “The law of the river isn’t carved on stone tablets.” — John Entsminger, general manager of the Southern Nevada Water Authority, on Dec. 13 at a CRWUA meeting.
- “Someone’s going to have to use less water.” — Kuhn on Sept. 14 at a Colorado River District seminar.

###

Los Angeles Times: Colorado River in Crisis

JANUARY 27, 2023

BY JOHN S. WEISHEIT



Ian James and John Weisheit along the Colorado River below Moab, Utah in 2022

COLORADO RIVER IN CRISIS

A Six-Part Series by LA Times staff and interviewing the people of the Colorado River Basin with sound and visuals

LA TIMES STAFF

- **Journalists:** Ian James, Sammy Roth, Molly Hennessy-Fiske, Hayley Smith and Rong-Gong Lin II
- **Videography:** Albert Brave Tiger Lee
- **Podcasts:** Denise Guerra, Kasia Broussalian, Gustavo Arellano, David Toledo and Ashlea Brown
- **Photography:** Carolyn Cole, Luis Sinco, Brian van der Brug, and Gina Ferazzi
- **Graphics:** Sean Green
- **Editors:** Monte Morin, John Penner, Isabelle D'Antonio and Dave Bennett
- **Photo editor:** Marc Martin
- **Promotion and engagement:** Javier Panzar and Mary Kate Metivier

- **Design:** Alison Hong, David Lewis and Beto Alvarez
- **Editorial assistants:** Roberto Reyes and Nicolas Perez
- **Engineers:** Mario Diaz, Mark Nieto and Mike Heflin
- **Fellow:** Helen Li
- **Editor:** Kinsee Morlan
- **Producers:** Jazmin Aguilera, Heba Elorbany and Shani Hilton
- **Music** is by Andrew Eapen

VIDEOS

- December 26, 2022 - [Desert suburbia is growing. But the Colorado River, and Arizona's groundwater, cannot keep up.](#) YouTube.
- January 13, 2023 - [The Colorado River is drying up. Climate change and drought have taken a major toll.](#) YouTube.
- January 20, 2023 - [Colorado Riverkeeper says day of reckoning is here: 'This river can't sustain 40 million people'.](#) YouTube.
- January 27, 2023 - [Agriculture under pressure: The Imperial Valley braces for a future with less water.](#) YouTube.
- January 31, 2023 - [Reclaiming the river: Tribes push for change on the Colorado River.](#) YouTube.
- January 31, 2023 - [Reviving the river: A pulse of water revives the dry Colorado River Delta.](#) YouTube.

PODCASTS

- **Part One: A Dying River** - Podcast. YouTube.
- **Part Two: The Source** - Podcast. YouTube.
- **Part Three: The Dam** - Podcast. YouTube.
- **Part Four: The Tribe** - Podcast. YouTube.
- **Part Five: The Valley** - Podcast. YouTube.
- **Part Six: The End** - Podcast. YouTube.

PHOTO JOURNALISM

- January 26, 2023 - [The Colorado River: Where the West quenches its thirst.](#) Luis Sinco for Los Angeles Times.

NARRATIVES

- June 14, 2022 - [Major water cutbacks loom as shrinking Colorado River nears 'moment of reckoning.'](#) Ian James for *The Los Angeles Times*.
- June 20, 2022 - [As water crisis worsens on Colorado River, an urgent call for Western states to 'act now.'](#) Ian James for *The Los Angeles Times*.

- June 23, 2022 - [Where Colorado River no longer meets the sea, a pulse of water brings new life.](#) Ian James for *The Los Angeles Times*..
- July 15, 2022 - [They sounded alarms about a coming Colorado River crisis. But warnings went unheeded.](#) Ian James for *The Los Angeles Times*..
- December 19, 2022 - [Federal Officials Urge Action on Shrinking Colorado River.](#) Ian James for *Los Angeles Times*.
- December 26, 2022 - [In Arizona, Colorado River crisis stokes worry over growth and groundwater depletion.](#) Ian James for *The Los Angeles Times*.
- January 19, 2023 - [These farmers dominate the Colorado River. Cross them at your peril.](#) Sammy Roth for *The Los Angeles Times*.
- January 26, 2023 - [The Colorado River is overused and shrinking. Inside the crisis transforming the Southwest.](#) Ian James & Molly Hennessy-Fisk for *The Los Angeles Times*.
- January 26, 2023 - [The Colorado River: Where the West quenches its thirst.](#) Luis Sinco for *Los Angeles Times*.
- January 26, 2023 - [A river guide's view of Lake Powell's decline and the depths of the Colorado River crisis.](#) Ian James for *The Los Angeles Times*.
- January 26, 2023 - [Inside the water crisis: A journey across the Colorado River Basin.](#) Ian James for *The Los Angeles Times*.
- January 26, 2023 - [The Colorado River is overused and shrinking. Inside the crisis transforming the Southwest.](#) Ian James for *The Los Angeles Times*.
- January 27, 2023 - [In California's Imperial Valley, farmers brace for less Colorado River water.](#) By Ian James for *The Los Angeles Times*..
- January 29, 2023 - [How Las Vegas declared war on thirsty grass and set an example for the desert Southwest.](#) By Molly Hennessy-Fiske and Ian James for *LA Times*.
- January 29, 2023 - [Why desert golf courses and artificial lakes remain untouched by the Colorado River crisis.](#) By Ian James for *The Los Angeles Times*.
- January 31, 2023 - ['A Living Spirit' Native People Push for Changes to Protect the Colorado River.](#) By Ian James for *The Los Angeles Times*.
- February 1, 2023 - [Plan is elusive as river shrinks.](#) By Ian James for *The Los Angeles Times*.
- February 2, 2023 - [California pushes its plan to save water.](#) Ian James for *The Los Angeles Times*.
- February 2, 2023 - [From high above an Atmospheric River a deep dive for data.](#) Ian James for *The Los Angeles Times*.
- February 3, 2023 - [Why is California going it alone in Colorado River talks.](#) By Ian James for *The Los Angeles Times*.
- February 4, 2023 - [Law of the River is at the heart of water crisis.](#) By Hayley Smith and Ian James for *The Los Angeles Times*.
- February 5, 2023 - [Key Colorado River reservoirs unlikely to refill in our lifetimes.](#) By Rong-Gong Lin II and Ian James for *The Los Angeles Times*.
- February 7, 2023 - [Why California is so far apart from other states in Colorado River water cuts plan.](#) Ian James and Sean Greene for *The Los Angeles Times*.

- February 18, 2023 - [Officials study overhauling dam: Lake Powell's low level imperils the ability to generate power, release water & Front Page Edition](#). Ian James for *The Los Angeles Times*.

Opinion

- [California and its neighbors are at an impasse over the Colorado River: Here's a way forward](#). Eric Kuhn for *The Los Angeles Times*.

Additional Information

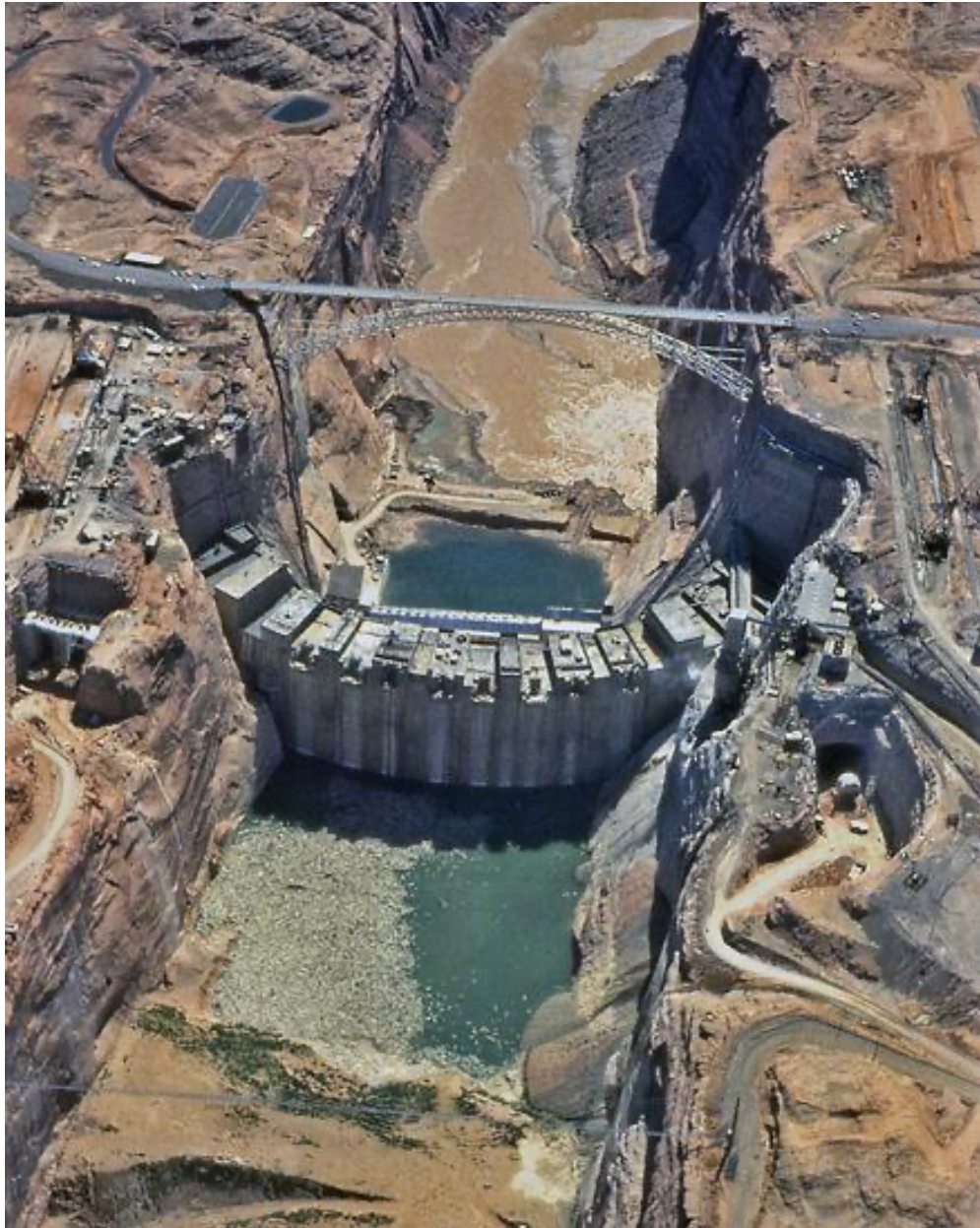
- [The 2023 Supplemental Environmental Impact Statement \(SEIS\) for operations at Glen Canyon Dam and Hoover Dam](#)

###

The photographic history of construction at Glen Canyon Damsite - 1956 to 1966

MARCH 14, 2023

BY JOHN S. WEISHEIT



1962 - Glen Canyon Dam construction site; upstream and downstream coffer dams and the rising superstructure.

PROJECT: Colorado River Storage Project Act (1956); Glen Canyon Dam (GCD) & Glen Canyon Reservoir (now Lake Powell) in northern Arizona; principal agency is Bureau of Reclamation (Reclamation).

The first picture of the dam site, by coincidence, was taken in 1889 by Franklin Nims of the Stanton & Brown Expedition of 1889. This photo was matched in 1992, by Robert H. Webb. [Click here](#) to view this fine example of repeat photography.

Special thanks to Tom Martin at River Runners for Wilderness for taking the time to build this photographic collection from federal archives.

- Commissioner of Reclamation in 1957: Wilbur A. Dexheimer
- Commissioner of Reclamation in 1959: Floyd Dominy ([oral history](#))
- Chief Engineer (on site) for GCD Project: [Lemuel \(Lem\) M. Wylie](#)
- Chief Design Engineer of Concrete Dams: Ernest R. Schultz ([design features](#))
- Public Affairs Officer for GCD Project: W.L. (Bud) Rusho ([oral history](#))
- Contractor: Merritt-Chapman & Scott Corporation, New York City.
- A six-month dispute from the labor force emerged in the second half of 1959.
- The Merritt-Chapman & Scott Corporation suffered bankruptcy and by 1971, operations were dissolved. [Wikipedia](#).
- Oral History: [Commissioner Daniel Beard](#) & repurposing operations at Glen Canyon Dam.

There were nine baseline objectives to complete the construction of Glen Canyon Dam:

- 1. Geology:** Navajo sandstone as bedrock for this facility was the greatest challenge for the design engineers. GC Dam is the first dam by Reclamation to utilize computer programming to calculate the stress load of a cantilevered arch dam. GC Dam is not a gravity dam. To qualify as a gravity dam, the dam's weight must exceed the load and the hydraulic lift potential of a full reservoir.
- 2. Community:** Build a community (Page, Arizona) with utilities (water, power and sewage), provide [housing](#), warehouses and office space for a federal bureaucracy and for contractor and sub-contractor employees.
- 3. Mobility:** Build a [highway bridge](#) to connect the western and eastern rims of a wide and entrenched Glen Canyon. This included the placement of various suspended footbridges, and various suspended mobile cable and pulley assemblies (vertical and horizontal positioning) to lift and lower workers, heavy equipment and materials from the canyon rim to canyon bottom. Build a vented, switchback tunnel system for vehicles to drive from rim to powerhouse station.
- 4. Foundation:** Preparations to [dewater the river](#) and expose the bedrock below the sand and gravel beds ([photos of paleoflood scour](#)).
- 5. Concrete:** Preparations to build forms to accept a matrix of reinforced steel and concrete, and then circulate refrigerated water through pipes to dissipate the heat of setting concrete. This includes the batching of sand, gravel, portland cement and pozzolan (a binder of volcanic origin).

6. **Grouting and rock bolts:** (1) Drill holes into bedrock to install rock bolts to prevent the delamination of Navajo Sandstone. (2) Drill holes through the hardened concrete and/or bedrock to **inject grout** to seal the voids and cracks and prevent seepage and hydraulic lift of the superstructure (two phases of injection: low-pressure & high-pressure). **Note:** The dam does leak and sandstone slabs do exfoliate (**AGU paper**); this will be discussed at a later time.
7. **Electric power and transmission:** Preparations to build a powerhouse of turbines and a network of transmission lines and towers to distribute electrical power. Revenues from power production was the political priority for authorizing the projects of the Colorado River Storage Project Act of 1956, and why Commissioner Floyd Dominy popularized the term: "cash register dam."
8. **Reservoir filling:** Seal (plug) the diversion tunnels with concrete and fill the reservoir, which took 17-years, and more on that subject at a later time. **General Principles to Govern, and Operating Criteria for, Glen Canyon Reservoir (Lake Powell) and Lake Mead During the Lake Powell Filling Period. See also: Reservoir elevation data from 1963 to 2023.**
9. **Public relations:** Control the narrative of the project; build a Visitor Center; and organize a dedication ceremony by **Lady Bird Johnson**.

COST OF LIVING IN 1961

- Minimum hourly wage - \$1.15
- Median annual income - \$5,700
- Average cost of a new car \$4,300
- Median total cost of modest home - \$18,000
- Median cost for a dozen eggs - \$0.57
- Median cost for a gallon of fuel - \$0.31
- Median cost for a pack of cigarettes - \$0.25
- Median cost for a six pack of beer - \$1.71

MODERN ISSUES ABOUT THE ENGINEERING OF GLEN CANYON DAM

- [2023 - Low Head Hydropower Modifications and Alternatives At Glen Canyon Dam](#). Presentation by Engineer Nick Williams for USBR.
- [2023 - Officials study overhauling dam: Lake Powell's low level imperils the ability to generate power, release water & Front Page Edition](#). Ian James for *The Los Angeles Times*.
- [2023 - Re-engineering Glen Canyon Dam](#). By Jonathan P. Thompson.

FACTS ABOUT GLEN CANYON DAM AND RESERVOIR

- Daily average discharge of hydropower turbines: 22,548 acre-feet.
- Daily average reservoir evaporation: 1,452 acre-feet.
- Daily average sediment load into reservoir: 12,164 tons or 101 acre-feet.
- Annual accumulation of turbidity flows (fine-grain sediment) at forebay of Glen Canyon Dam: 2.7 inches

DAM SPECIFICATIONS

Bureau of Reclamation

- [1961 - Design features of Glen Canyon Dam](#). Ernest Schultz; Denver Office of Chief Engineer.
- [1970 - Glen Canyon Dam technical record of design and construction; searchable doc; for reading the horizontal pages](#).
- [Chronology](#); [Intro](#); [Geology](#);
- [Foundation](#); [Dam](#);
- [Spillways](#); [River Outlets](#); [Penstocks](#);
- [Powerplant](#); [Switchyard](#);
- [Visitor Center](#);
- [Construction](#), [Appendix](#).

TRADE MAGAZINES

- [1957 - Glen Canyon Dam: Pre-bid look at site and construction problems](#). McClellan for Western Construction.

PROGRESS REPORTS

- [1957 to 1966 - Photos for Progress Report by Bureau of Reclamation](#)
- [1965 - Photos not used in the Progress Reports](#)

RECLAMATION MAPS

Glen Canyon National Recreation Area

- Topography below the 3,700 feet contour; [download this very large zip file](#).
- 1922 - USGS Dam Survey Maps from confluence with Green River to Lee's Ferry; [download this zip file](#).
- Note: The USGS elevations of 1922 have a deviation near Glen Canyon Dam of +5 feet. The deviation near the Big Drop Rapids of Cataract Canyon is +10 feet.

GEOLOGIC HAZARDS - During and after reservoir filling and dewatering 1963 to 2023: Photos and movies

- Glen Canyon Dam diversion tunnel damages, 1965.
- Glen Canyon Dam spillway tunnel damages, 1983. We now understand that falling water from great heights in enclosed spillway tunnels cannot withstand the structural demands of a one-hundred year flood, which hasn't occurred on the Colorado River since 1862 ([a 43-day atmospheric river event](#)). Embarrassment is why this discussion is intentionally avoided. This website has a narrative about flood control, [HERE](#).
- [Video: mud rapids and mud islands above Farley Canyon](#). mov.
- [Video: methane gas eruptions near Sheep Canyon](#). mp4.
- [Video: roller tubing whitewater rafts near Hite Marina](#). mov.
- Subsidence features at Good Hope Bay.

- Slope failures at Good Hope Bay & bathymetry images.
- [Slope failures above Escalante River Arm](#) (east side; across from Pollywog Bench).
- [Rim rock collapse below full pool elevation; 2022 near Warm Creek.](#)
- Massive rim rock collapse above full pool elevation at Ocean Point; 2004 lower Cataract Canyon.
- Exfoliation features in Lower Cataract Canyon
- Exfoliation at Tapestry Wall.
- [Rapids over Quaternary gravel deposits](#) above Farley Canyon in Spring of 2005.
- [Sediment storage at forebay of Glen Canyon Dam](#); 2017 bathymetry image (enlarged for text boxes). Modified by Weisheit.
- [Comparing 2017 bathymetry image and 1963 image of upstream coffer dam breach.](#) Modified by Weisheit.
- [Comparing vertical and horizontal relief of the forebay at GC Dam.](#) Modified by Weisheit (Note: west and east positions need to be reversed in this graphic).

ADDITIONAL INFORMATION AND REFERENCES

- J. Willard Marriott Library, University of Utah as Salt Lake City.
- [Digital Elevation Model of Glen Canyon Prior to the Flooding of Lake Powell from Historic Topographic Surveys, Utah and Arizona.](#) USGS, Utah Water Science Center.
- [Lake Powell Coring Project.](#) USGS, Utah Water Science Center.
- [Cavitation in Chutes and Spillways.](#) 1990, Reclamation.

THE PHOTOGRAPHERS: Thirteen photographers total

J. L Digby

- **1958 - 29 photos:** Colorado River bridge; mobile cableway towers; concrete batching; diversion tunnels; employee housing; excavate spillway approach; excavate keyways.
- **1959 - 73 photos:** sandstorms; grouting; coffer dams; tunnel adit for service road to rim; concrete batching; excavate keyways; excavate powerhouse building; garage building.
- [All Digby photos combined](#)

J.H. Enright

- **1957 - 21 photos:** batching aggregate, cement & pollazon; excavate diversion tunnels; warehouse construction; lateral adit to left diversion tunnel.
- **1958 - 31 photos:** diesel-powered generators; highway bridge; water storage tank; sewer treatment plant; water treatment plant; mobile 50-ton highline cable

span; excavate spillway approach; construct municipal building and laboratory; river crossing foot bridge; excavate foundation inspection tunnels.

- [All Enright photos combined](#)

Fred S. Finch (qualitative photos)

- **1956 - 31 photos combined:** Highway to Bitter Springs (89 southbound);
- [1957 - 111 photos combined:](#)
- [1958 - 34 photos combined:](#)
- [1960 to 1963 - 46 photos combined:](#)
- [1964 - 95 photos combined:](#)
- [1965 - 103 photos combined:](#)

L. E. Fine

- **1962 - 8 photos:** electric transmission towers
- **1963 - 2 photos:** communication towers & facilities
- [All Fine photos combined](#)

H. Freebury

- **1962 - 3 photos:** transmission towers & lines.
- [All Freebury photos combined](#)

R. C. Gaulke

- **1957 - 2 photos:** highway; small carriage lift at right diversion tunnel portal.
- [All Gaulke photos combined](#)

C. V. Gezelius

- **1959 - 19 photos:** pozzolan mining/processing; portland cement mining/processing.
- **1960 - 1 photo:** pozzolan mining/processing.
- **1961 - 6 photos:** pozzolan mining/processing.
- **1962 - 3 photos:** pozzolan mining/processing.
- [All Gezelius photos combined](#)

Owen Hill

- **1963 - 1 photo:** upper coffer dam breach during **reservoir filling criteria**.
- [Hill photo.](#)

V. E. Larson

- **1962 - 6 photos:** transmission towers; clearcut forested corridor.
- [All Larson photos combined](#)

C. R. Long

- 1961 - 6 photos: aggregate mining; foundation works of dam and powerplant.
- [All Long photos combined](#)

W. L. Rusho - Public relations officer and supervisor for the project photographers.

- **1960 - 4 photos:** test flow at right diversion tunnel; spillway gates; concrete transport buckets.
- **1961 - 1 photo:** aggregate hauling.
- **1962 - 1 photo:** massive bridge component for powerplant.
- [All Rusho photos combined](#)
- Note: Rusho has many photos in various collections.

F. B. Slote

- **1956 - 2 photos:** access road along river corridor; lowering heavy equipment into canyon.
- **1957 - 22 photos:** right diversion tunnel portal; housing for construction workers; highway construction; aggregate processing; bridge; construction of tower for highline cable lift; highscalars on cliff face removing loose rocks; groundwater drill rig; installing rock bolts; air compressor station.
- [All Slote photos combined](#)

A. E. Turner (quantitative photos)

- **1957 - 60 photos combined:** asphalt and concrete mixing plants; diversion tunnels; spillway intakes; Colorado River bridge; highway construction to Bitter Springs Junction (Hwy 89); water and sewage treatment plants; contractor housing; warehouse construction; vehicle tunnel from rim to powerplant; foot bridges; cable lifts for equipment and workers; diesel-powered generators
- **1958 - 140 photos combined:** Spillway approaches; diversion tunnels; vehicle tunnel; laboratory; telephone office; Colorado River bridge; water and sewer treatment plants; concrete batching and mixing; lining tunnels with concrete; vehicle tunnel; rock bolting; keyway excavation; hospital constructions; municipal admin building; residential homes; mucking materials for road base at canyon bottom and coffer dams;
- **1959 - 96 photos combined:** water refrigeration station; concrete and aggregate batching stations; armouring upstream coffer dam; diversion portals, gates and

trashracks; foundation inspection tunnels; concrete lining of diversion tunnels; excavation of power plant machine shop; dedication of Colorado River bridge; administrative buildings; construction of perched concrete batch plant near right abutment; arrival of manufactured steel pipes/tubes; excavation of keyways; fire station and government garage; diversion tunnels and coffer dams completed; excavation of river bed to bedrock; 50-ton truck scale; police building; seismograph station;

- **1960 - 139 photos combined:** a pivotal year; workers strike has concluded; coffer dams will be completed; river diversion tunnels will be operational; Colorado River bridge is completed; excavation of river bed to expose bedrock is underway; excavation of keyways and powerhouse are nearly complete; preparations for massive concrete batching and delivery will be ready; Page is a functional community.
- **1961 - 227 photos combined:** public relations; construction of churches and amenities for Page; sand and aggregate processing and stockpiling at streambed of Wahweap Canyon; concrete placement for dam and power plant begins in earnest (day and night shifts); quality control laboratory for testing concrete integrity; placement of penstock steel tubes; armor downstream diversion tunnel portals with concrete to protect bedrock from erosion; install drain pipes to discharge seepage; placement of river outlet steel tubes; technical instruments and connecting cables installed into concrete blocks with adits for access; upstream coffer dam seepage (sump pumps not required as dam height increases); concrete lining of spillways; spillway radial gates installation; preparations for concrete aprons to control erosion from discharge portals (tailrace).
- **1962 - 216 photos combined:**
- **1963 - 145 photos combined:**
- **1964 - 136 photos combined:**

PHOTOGRAPHY BY SUBJECT

A. E. Turner

- **Foundation:** river bottom & power plant; keyway inspection tunnels.
- **City of Page:** critical infrastructure, offices, warehouses, camps, homes, streets, and services.

REPEAT PHOTOGRAPHY

- Damsite match; 1889 & 1992. Robert H. Webb.
- Penstock portals and concrete batching platform; west side. 2023 and 1963.
- River outlet portals; east side. 2023 and 1963.

###

Water and Tribes Initiative: Conference of June 8th and 9th, 2023

JUNE 20, 2023

BY JOHN S WEISHEIT



The tribal panel share their solutions about water equity in the Colorado River Basin

PROGRAM

Thursday, June 8th

Day 1, Part 1: <https://youtu.be/egKHhNzk3Hk>

- 00:00 - Welcome and Introduction
- 19:13 - Understanding the Challenges (and Opportunities)
- 2:00:40 - Current Negotiations and the NEPA Process
- 2:39 - Charles Wilkinson Tribute

Day 1, Part 2: <https://youtu.be/yzzLTnhgHFM>

- 00:00 - The Evolving Role of Tribes
- 2:30:52 - Insights from the Basin States

Friday, June 9th

Day 2, Part 1: <https://youtu.be/OLXX8vyMf50>

- 00:46 - Thinking About a Sustainable Future
- 2:01:13 - Some Specific Questions to Answer

Day 2, Part 2: <https://youtu.be/Yfyb6dNLsx0>

- 00:00 - Some Specific Questions to Answer (Continued)
- 2:30:26 - Themes, Lessons and Concerns: Can We Turn Crisis into Opportunity?

ADDITIONAL INFORMATION

- [Event Program](#)

NEWS

- [How California agriculture is the problem and solution to Colorado River water crisis](#). Paige Sutherland & Meghna Chakrabarti for WBUR.
- [Expert \(Udall\) says permanent Colorado River reductions still needed](#). By Marianne Goodland for Colorado Politics.
- [Colorado River states need to think bigger](#). By Robert Glennon for The Conversation.
- [Colorado River states are ready to work on a longer term deal to share water](#). By A Martinez for NPR.
- [Clinton's Interior Secretary Bruce Babbitt says Colorado River Compact a raw deal for Wyoming and other states](#). By Mark Heinz for Cowboy State Daily.
- [Ahead of new Colorado River talks governments and tribes weigh in on future](#). By Alex Hager for KUNC.
- [Fixing the flawed Colorado River Compact](#). By Shemin Ge et al for Eos (American Geophysical Union).
- [Tribes push for greater involvement in Colorado River talks](#). By Ian James for The Los Angeles Times.
- [The Grand Canyon and Colorado River are in Crisis](#). By Raymond Zhong for The New York Times.

White River and Wolf Creek Reservoir Storage Project Proposal

SEPTEMBER 11, 2023

BY JOHN WEISHEIT

NEWS ABOUT THE WHITE RIVER IN COLORADO AND UTAH

- [March 7, 2025 - White River is over appropriated.](#) State Engineer for the state of Colorado.
- [May 5, 2024 - River District grants \\$550K more for reservoir project.](#) Heather Sackett for Aspen Times.
- [OpEd; 2024: The BLM's misguided priorities puts Utah's White River at risk.](#) Cody Perry for Salt Lake Tribune.
- [2023 - The Colorado River is dying can its aquatic dinosaurs be saved?](#) Stephanie Mencimer for Mother Jones.
- [2023 - Utah's suicide pact with the fossil fuel industry.](#) Stephanie Mencimer for Mother Jones.
- [2023 - Lake Powell's water levels sink to another record low.](#) Stephanie Mencimer for Mother Jones.
- [2023 - The Colorado provides drinking water to 40 million people do they know what Utah does to it upstream.](#) Stephanie Mencimer for Mother Jones.

NEWS ABOUT THE PROPOSED WOLF CREEK RESERVOIR

- 2023, September - [Confusion persists about Wolf Creek Reservoir in Rio Blanco County.](#) Heather Sackett for Aspen Journalism.
- 2023, September - [As the Colorado River declines some upstream look to use it before they lose it.](#) By Wyatt Myskow for Inside Climate News.
- 2022, December - [Call on the river goes into effect today.](#) By Lucas Turner for Rio Blanco Herald Times.
- 2022, September - [Wolf Creek Reservoir Project to have additional public engagement.](#) Heather Sackett for Aspen Journalism.
- 2022, October - [Wolf Creek Project Secures River District Grant.](#) Heather Sackett for Aspen Journalism.
- 2022, September - [Wolf Creek Reservoir Project to have additional public engagement.](#) By Heather Sackett for Aspen Journalism.
- 2021, January - [Reservoir clears hurdle due to legal settlement.](#) Dennis Webb, Grand Junction Sentinel.
- 2021, January - [Rio Blanco Secures Water Right For Dam and Reservoir Project.](#) Heather Sackett for Aspen Journalism.

- 2020, December - [Judge Dismisses Several Water Uses in White River Reservoir Case](#). Heather Sackett, Aspen Journalism.
- 2020, October - [White River Dam & Reservoir Project Headed for Water Court Trial](#). Heather Sackett, Aspen Journalism.
- [Water Conservancy District in Pre-permitting Phase for Wolf Creek Dam](#). Herald Times.
- [Big Dam Proposal Seeking Supporters](#). Grand Junction Sentinel.
- [Colorado Water Agencies Going Different Ways on White River Dam Project](#). Aspen Journalism.
- [Economic Feasibility of White River Off-Channel Dam Reservoir Questioned](#). Aspen Journalism.

AUGUST 2023: EPLANNING WEBSITE BY BUREAU OF LAND MANAGEMENT EPLANNING

- <https://eplanning.blm.gov/eplanning-ui/project/2021544/510>

BLM contact information:

- Heather Sauls; hsauls@blm.gov, (970) 878-3855
- Brittany Sprout; bsprout@blm.gov; (303) 239-3673
- Pete Doan; pdoan@blm.gov; (970) 878-3813

NEPA Process

- **NEPA Contractors:** Langdon Group; Bryant Kuechle & Kelsea MacIlroy; Galileo Project; peter.rocco@galileoaz.com & Madeline Henderson.
- The arrival of the Notice of Intent and the schedule of events are yet to be determined.
- Public Scoping will have a minimum timeframe of 30-days.
- Comments for the Draft EIS will have a timeframe of 90 days.
- A protest of the Resource Management Plan has a timeframe of 30-days.

BLM DOCUMENT ARCHIVE

- 2016 - [Stipulation with BLM](#)
- 2017 - [Stipulation With Colorado Water Conservation Board](#)
- 2021 - [Stipulation With State Engineers](#)
- 2022 - [Presentation by NW Resource Advisory Council](#)
- 2023 - [Conditional Water Right for Rio Blanco WCD](#)
- 2023 - [Wolf Creek Newsletter by BLM](#)
- 2023 - [Situation Assessment Final](#)

PUBLIC MEETING SCHEDULE

The Bureau of Land Management (BLM) White River Field Office will hold public meetings on the Wolf Creek Reservoir Situation Assessment Report on the right-of-way application from the Rio Blanco Water Conservancy District to construct and operate a reservoir between Meeker and Rangely. The approximately 66,720-acre-foot water reservoir would be known as the Wolf Creek Reservoir with 2,031 surface acres spread across Rio Blanco and Moffat Counties.

- 2023, September - [Wolf Creek Reservoir Situation Assessment Meeting Flyer](#)
September 08, 2023
 - [Situation Assessment Final Report](#)

September 11, 2023

5:30 – 7:30 p.m. MT

Colorado Northwestern Community College, Weiss Colorado Room
500 Kennedy Drive, Rangely, CO 81648

September 12, 2023

5:30 – 7:30 p.m. MT

Fairfield Center Virtual
555 Main Street, Meeker, CO 81641

September 14, 2023

5:30 – 7:30 p.m. MT

Join virtually via Zoom

Register here: <https://ow.ly/wrAa50PrkkA>

###

RIO BLANCO WATER CONSERVANCY DISTRICT

The Rio Blanco Water Conservancy District is a Special District of the State of Colorado, organized for the purpose of conserving and developing land and water resources for the best use of water within the Districts boundaries. The District was organized by a decree of District Court on November 9, 1990.

- [Home page](#)
- [White River Storage Project](#)

WATER RIGHT PROTESTS

- [Administrative records combined by date received](#) (11 records)

NEWS ABOUT THE PROPOSED WOLF CREEK RESERVOIR

- 2023, September - [Confusion persists about Wolf Creek Reservoir in Rio Blanco County](#). Heather Sackett for Aspen Journalism.
- 2023, September - [As the Colorado River declines some upstream look to use it before they lose it](#). By Wyatt Myskow for Inside Climate News.
- 2022, December - [Call on the river goes into effect today](#). By Lucas Turner for Rio Blanco Herald Times.
- 2022, September - [Wolf Creek Reservoir Project to have additional public engagement](#). Heather Sackett for Aspen Journalism.
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- 2022, September - [Wolf Creek Reservoir Project to have additional public engagement](#). By Heather Sackett for Aspen Journalism.
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- [Colorado Water Agencies Going Different Ways on White River Dam Project](#). Aspen Journalism.
- [Economic Feasibility of White River Off-Channel Dam Reservoir Questioned](#). Aspen Journalism.

WHITE RIVER STORAGE PROJECT

The Northwest Colorado Water and Storage Project, also known as "Wolf Creek" has been in water resource planners sights since the 1940s when it was first proposed. Since then it seems every ten years interest in the project is renewed. [Project Website](#).

To date, the RBWCD has completed a Phase 1 White River Storage Feasibility Study which included the review of 23+ potential storage locations. These 23+ sites were whittled down to 3 top prospects, but after on the ground review, one site was determined to be unsuitable and eliminated from the selection process. As before, the Wolf Creek location rose to the top of the list as the best prospect for development and was included in the State Water Plan. In 2014 the RBWCD filed with the State of Colorado two water rights applications for the Wolf Creek site, one for a main-stem dam/reservoir, and the second for an off-channel dam/reservoir.

With the preferred alternatives identified they developed a Scope of Work for a Phase 2 White River Storage Feasibility Study which will focus on the best method to Fill and Drain, create equally detailed plans for both alternative reservoir sites, and determine the maximum size of the chosen option.

With the completion and adoption of the State Water Plan by Governor Hickenlooper and many other entities, they have begun the process of developing a White River Management Plan which, after completion, will be adopted by the US Fish and Wildlife as a Programmatic Biological Opinion (PBO). The White River Management Plan and PBO is a necessary step to the creation of a reservoir within the White River drainage.

TAYLOR DRAW DAM AND RESEVOIR

In 1983 Taylor Draw Dam was constructed, creating Kenney Reservoir. One hundred percent of the dam was funded by the taxpayers of western Rio Blanco County, including the Town of Rangely. [Taylor Dam Website](#)

Taylor Draw Dam was constructed to alleviate flooding caused by ice jams in the White River. Such flooding was a major reoccurring issue for the residents of western Rio Blanco County, to the point that flood waters would back up to the stop lights on Main Street inundating a significant portion of the community and damaging municipal, business and residential structures. The construction of Taylor Draw Dam has effectively resolved the flooding issues in the area. Before the construction of the dam, typical means of eliminating ice jams was the use of dynamite/TNT to blast these large ice sheets apart. At one point, the ice jams were so significant the US Air Force was called in to use armed rockets and sonic booms from the jets to blast jams apart. Neither of these approaches proved to be an effective long-term solution.

In 1991 Taylor Draw dams height was enlarged to accommodate the upcoming construction of a hydroelectric facility. In 1993 a 2-megawatt hydroelectric generator was added. Again, the facility was fully funded by taxpayers residing within the service area of the RBWCD. The generator is capable of variable power output matching the flows of the White River. Seasonally the hydroelectric facility is shut down due to lack of river flows; typically in March, due to ice breakup, and August because of diminishing summer flows. At full power production capacity, the hydroelectric facility provides up to 30% of the energy for Rangely.

When constructed, Kenney Reservoir contained 13,800 acre-feet (AF) of water, had 650 surface acres, and a planned effective life expectancy of 30 years. Presently, Kenney Reservoir has closer to 8,000 AF of water and 335 surface acres, as the reservoir continues to lose around 315 AF of storage each year due to ongoing siltation. Following the construction of the dam over 750 sediment traps within the RBWCD service territory and drainage area of Kenney Reservoir were constructed to extend the life of Kenney Reservoir. These traps are maintained with an ongoing program in cooperation with the BLM and have proved extremely effective--extending the estimated life expectancy a decade beyond the original 30-year estimate. Unfortunately, even with these efforts in place, Kenney reservoir has an estimated effective storage life until

2028. The RBWCD staff is continuously seeking means to remediate the ongoing siltation and regain lost capacity.

The original concept for Kenney Reservoir included the construction of a mainstem reservoir located at Wolf Creek about 20 miles east of Rangely. This dam will function as a means of increasing storage on the White River, allowing for population growth, while also increasing the life expectancy of Kenney Reservoir by reducing sedimentation. Plans for moving forward on this reservoir are in process.

Ultimately Kenney Reservoir is here to stay, at a reduced size, but continuing to protect the residents of the lower White River from flooding and providing diverse recreational opportunities for residents and visitors. Amenities associated with Kenney Reservoir include, but are not limited to; picnic shelters & areas, handicap accessible fishing pier, public restrooms, modern boat ramp, undeveloped boat ramp, campground, primitive camping, 2 swim areas one roped off near the campground and the other at the marina with float docks, numerous floating docks, boat mooring for day use, wildlife viewing area, and primitive lands.

THE ENDANGERED FISH OF THE WHITE RIVER

- Feature: [On the Colorado](#)

STUDIES

- [Colorado River Water Availability Study Draft](#)
- [White River Phase One Brochure](#)
- [White River Storage Project](#)
- [2016 - White River Partnership Meeting](#)

PREVIOUS ENVIRONMENTAL IMPACT STUDY

- [1980 - White River Dam Project DEIS](#). BLM.
- [1982 - White River Dam Project FEIS](#). BLM.
- [1982 - Biological Opinion White River Dam Water Project](#). USFWS.

DESIGNATED CRITICAL HABITAT

Green River and Its Tributaries

- [Federal Register](#)
- Green River from Gates of Lodore (Dinosaur National Monument) to the Colorado River confluence, Colorado and Utah.
- Yampa River in Dinosaur National Monument, Colorado.
- White River from Rio Blanco Lake Dam to the Green River confluence, Colorado and Utah.
- Duchesne River from river mile 2.5 to Green River Confluence, Utah.

COLORADO DROUGHT CONTINGENCY PLANNING

- [February, 2014 - Memo to initiate Drought Contingency Planning](#)
 - [Fact Sheet](#). CRWCD.
 - [October, 2017 - Drought Contingency Planning and Colorado River Risk Study: An Overview and Status Report for the Colorado River District Board of Directors](#). Hydros Consulting.
 - [Contingency Planning](#). Northern Water.
 - [Colorado River Planning Convergence](#). Colorado Water Conservation Board.
-

Final Supplemental EIS for Operations at Glen Canyon Dam

NOVEMBER 06, 2023
BY JOHN S. WEISHEIT

NEW INFORMATION

- May, 2024 - Release - [Release of Final SEIS for long term experimental management plan for operations at Glen Canyon Dam](#). USBR.
- Official Website - [Adaptive Management Program](#)
- July 3, 2024 - [Record of Decision \(ROD\)](#). USBR.
- July 3, 2024 - [Press Release from Reclamation about the ROD](#)

PREFERRED ALTERNATIVE

Reclamation identified the Cool Mix option as the Preferred Alternative in the Final LTEMP SEIS. The actual selection of an alternative for implementation will not occur until the Record of Decision is signed.

PUBLIC INVOLVEMENT

The Final LTEMP SEIS will be published in the Federal Register on Friday, May 31, 2024 (under EPA section). This will initiate a 30-day period before a Record of Decision can be signed.

Please contact the LTEMP SEIS Project Manager at LTEMPSEIS@usbr.gov for more information.

NARRATIVE BY ON THE COLORADO ABOUT THE DYSFUNCTION OF GLEN CANYON DAM

There is no capacity within the Glen Canyon Adaptive Management Program to be proactive about implementing a successful long-term management plan. This program, now approaching an age of 30-years and spending more than \$30,000 a day, has produced what is best described and a gross distortion of Nature.

With each passing decade, the degradation of Lake Powell and of the river corridor behind Glen Canyon Dam, progressively and noticeably decays. This condition is especially noticeable to the people who watched the dam being built, who watched the reservoir fill, and who watched the river corridor of the Grand Canyon abruptly change into a water conveyance system between the two largest reservoirs in the United States.

When you review the literature for the original EIS of 2016 and for the SEIS of 2024, you will notice that the alternatives are essentially the same. The scope just isn't comprehensive, nor imaginative, and it still remains ripe for continuing litigation.

GLEN CANYON DAM LITIGATION

[Click here](#) to read this story by Joe Duhownik for Courthouse News Service

Additional Information

- [Final Glen Canyon Dam SEIS Letter](#)
- [Summary Judgement; Motion and Memo](#)
- [Statement of Facts](#)
- [Expert Witness; James Lawrence Powell](#)

#####

FEBRUARY, 2024 - DRAFT SEIS RELEASED FOR NEW OPERATIONS AT GLEN CANYON DAM

- [CLICK HERE](#) to be directed to the home page for this SEIS by Reclamation.
- [CLICK HERE](#) to review the alternatives that are essentially all the same.

PUBLIC COMMENTS

- [Living Rivers et al](#)
- [Center for Biological Diversity et al](#)

Additional Information:

- Public comments: [Small Mouth Bass Environmental Assessment of March 2023](#)
- A chronology: [Long-term Experimental Management Plan \(LTEMP\) for Glen Canyon Dam Operations](#)

Administrative Record of Living Rivers and allies:

- January 18, 2002 - [Comments on Adaptive Management Working Group and proposed Strategic Plan](#)
- September 25, 2002 - [Requesting expanded public participation for review of Glen Canyon Dam experimental flows](#)
- October 30, 2002 - [Comments on Glen Canyon Dam experimental flows](#)
- August 11, 2003 - [Proposed modification to mechanical removal of non-native fish from the Colorado River in Grand Canyon](#)
- August 13, 2003 - [Concerns regarding Glen Canyon Dam Adaptive Management Program \(AMP\).](#)
- March 3, 2004 - [Letter to AMP calling for SEIS on Glen Canyon Dam](#)

- March 17, 2004 - [Letter of extension for scoping period of temperature control device \(TCD\)](#).
 - April 2, 2004 - [EIS letter for Temperature Control Device to Reclamation](#)
 - August 9, 2004 - [Demanding action to correct failing federal program to recover Grand Canyon native fish](#).
 - November 16, 2004 - [Comments for Supplemental EA for experimental flows in Grand Canyon](#)
 - November 8, 2005 - 60-day Notice
 - February 28, 2007 - [Letter to Secretary Kempthorne about Long-term Experimental Plan \(LTEMP\) EIS](#)
 - February 22, 2008 - [Comments on EA for operations at Glen Canyon Dam 2008-2012](#)
 - January 12, 2012 - Scoping for LTEMP
 - April 2, 2012 - [Letter to Secretary Salazar \(LTEMP\)](#)
 - May 27, 2012 - [Letter to Secretary Salazar \(LTEMP\)](#)
 - May 9, 2016 - [Comments for LTEMP DEIS](#)
 - October 10, 2019 - [Complaint filed in Federal District Court for an SEIS](#)
-

Wyoming Dam Proposal on the Little Snake River at West Fork of Battle Creek

JANUARY 30, 2024
BY JOHN WEISHEIT

Under Construction

SUMMARY

The Natural Resources Conservation Service (NRCS) Wyoming State Office, in coordination with the USDA Forest Service and the U.S. Army Corps of Engineers (USACE), announces its intent to prepare an EIS for the West Fork Battle Creek Watershed Plan in the proximity of Savery-Little Snake River in Wyoming. The proposed Watershed Plan includes construction of a dam and reservoir on the West Fork of Battle Creek to provide for rural agricultural water management. NRCS is requesting comments to identify significant issues, potential alternatives, information, and analyses relevant to the Proposed Action from all interested individuals, Federal and State Agencies, and Tribes.

ADMINISTRATIVE

- **Federal Register:** Environmental Impact Statement for the West Fork Battle Creek Watershed Plan, Carbon County, Wyoming
- **U.S. Forest Service:** Land exchange proposal for suggested West Fork Battle Creek Reservoir
- **U.S. Forest Service:** West Fork Battle Creek watershed plan
- **Wyoming Water Development Office:** Little Snake River Supplemental Storage Level II Phase II Study Report
- **Wyoming Water Development Office:** Project Report Little Snake River Supplemental Storage Level II Phase II Study

NEWS

- October 25, 2022 - [Wyoming girds for fight over Green and Little Snake River water](#). By Angus M. Thuermer, Jr., and Dustin Bleizeffer for WyoFile.
- December 30, 2022 - [Feds set deadline for West Fork Dam comments](#). By Angus M. Thuermer Jr., for WyoFile.
- January 9, 2023 - [Plans for 264-foot dam above Little Snake River spur conflict](#). By Angus M. Thuermer Jr., for WyoFile.
- March 9, 2023 - [96 % of West Fork Dam comments oppose project](#). By Angus M. Thuermer Jr., for WyoFile.

COMMENT LETTERS

- [Living Rivers coalition](#)
 - [Friends of the Yampa](#)
-

Canyonlands National Park seeks public input on river management plan for the Green and Colorado rivers

FEBRUARY 29, 2024

BY JOHN S. WEISHEIT

WEBSITES TO VISIT

- [Home page](#)
- [Resources page](#)
- [Public meetings; time and dates.](#)
- [Story Book](#)

News Release Date: February 28, 2024
Contact: Karen Garthwait, 435-719-2142

Comment period ending at midnight on March 31, 2024.

Moab, Utah – Canyonlands National Park is beginning planning for a comprehensive river management plan for the Green and Colorado rivers. The park is asking for initial input to help shape a plan that will address public and commercial use and resource protection on the rivers.

The comprehensive river management plan will identify management strategies and solutions to address changing visitation patterns and increasing demand for commercial services, impacts on cultural and natural resources, and the implications of climate-induced drought on both visitor use and resource management.

“People who recreate on these rivers know how special they are,” said Acting Superintendent Lena Pace. “We encourage everyone to participate in this important process.”

By incorporating input from civic engagement, the new plan will better develop and evaluate proactive strategies to meet the National Park Service mission while creating equitable access for visitors to experience the beauty and tranquility of the Green and Colorado rivers.

A StoryMap describes the desired conditions of the project, the issues the plan will address, and project goals, and is available for viewing and commenting at <https://parkplanning.nps.gov/CanyonlandsCRMP>.

For those interested in learning more about the project, the park will be holding public meetings:

- Stakeholder Meeting (for Utah Guides & Outfitters and other commercial operators) March 6, 2024, 2 p.m. to 4 p.m. MST; Location: Grand Center, Room 3

- General Public Meeting: March 6, 2024, 5:30 p.m. to 7:30 p.m. MST; Location: Grand Center, Room 3
- Virtual Public Meeting: March 7, 2024, 6 p.m. to 7 p.m. MST
- Virtual Public Meeting: March 13, 2024, 10 a.m. to 11 a.m. MDT

The public comment period begins February 28, 2024, and ends March 28, 2024. This comment period is the initial phase of the plan and future opportunities to provide input will be announced as the plan develops.

People can submit public comments online at the project website <https://parkplanning.nps.gov/>

COMMENT LETTERS

- [Living Rivers, Colorado Riverkeeper and River Runners for Wilderness](#)

RESOURCES

Foundational

- [2013 - Foundation Overview](#)
- [2008 - Administrative History](#). Schmieding.
- [2006 - Press conference by Stewart L. Udall](#). Secretary of Interior from 1961 to 1969.
- [1988 - Statement For Management](#)
- [1986 - Canyonlands History](#). Meils.

Management Plans

- [1994 - Announcement for initiating RMP for Canyonlands NP](#). Jim Braggs, Confluence.
- [1995 - Backcountry Plan Canyonlands Bibliography](#)
- [1988 - Statement For Management](#)
- [1981 - River Management Plan for Canyonlands](#)
- [1978 - General Management Plan](#)
- [1975 - River Management Plan for Canyonlands](#)

Visitor Use

- [2023- Visitor use statistics](#). National Park Service database.

Water Resources

- [2004 - Survey of Springs](#)
- [2002 - Salt Creek Access Review](#)
- [2001 - Modeling Green River Floodplain](#)
- [2001 - Drinking Water Protection Plan](#)
- [1999 - Water Resources](#)
- [1997 - Water Resources for SEUG](#)
- [1984 - Vol. 1: Water Resources](#)

Cultural Resources

- [1996 - Cultural Resources Island District](#)
- [1980 - Cultural Resource Summary East Central Utah Moab District](#). Pierson.

Geology

- [1974 - Geologic Story](#). Lohman.

History

- [Chronology of Canyonlands Region](#)
- [History of Canyonlands National Park and Region](#)
- [1964 - History & Historical Sites of Cataract & Narrow Canyons \(reduced\)](#). Crampton.
- [1964 - History & Historical Sites of Cataract & Narrow Canyons \(optimized\)](#). Crampton.
- [1964 - History SE Utah & No Arizona](#). Crampton.
- [1964 - Historic Sites of Canyonlands District](#). Crampton.
- [1972 - History of Cattle Grazing in Canyonlands](#). NPS.
- [1975 - Boating History of Upper Colorado, Green & San Juan \(reduced\)](#). Crampton.
- [1975 - Boating History of Upper Colorado, Green & San Juan \(optimized\)](#). Crampton.
- [1985 - Four Corners: A National Sacrifice Area?](#)

Fire Management

- [2006 - Fire Plan Appendix](#)
 - [2005 - Fire Plan](#)
-

Our Analysis of 2023 Final Supplemental EIS for dam operations at Hoover and Glen Canyon

MARCH 05, 2024

BY JOHN S. WEISHEIT

RECORD OF DECISION (ROD)

Ho-hum. This ROD would have been a completely different document if not for the generosity of Nature and taxpayers.

- Released on May 9, 2024 and archived [HERE](#)

###

RECLAMATION'S SUPPLEMENTAL EIS TO FORMALLY REVISE 2007 INTERIM GUIDELINES

Operating Glen Canyon Dam and Hoover Dam to mitigate chronic water shortages

- [Home page for the development of the SEIS](#)

FINAL SEIS

Released on Tuesday March 5, 2024

- March 5, 2024 - [Final SEIS Near-Term Colorado River Operations](#). Reclamation.
- [Press Release from Department of Interior](#)

Helpful Information from the process called Post-2026 EIS

- December 22, 2023 - [Table: Lower Basin System Conservation Implementation Agreements](#)
- December 22, 2023 - Upper Basin System Conservation agreements were less than 38,000 acre-feet.
- March 5, 2024 - [Upper Basin States Alternative for EIS; Post-2026 Operations](#)
- March 6, 2024 - [Lower Basin Alternative Presentation for EIS; Post-2026 Operations](#)

DOING THE MATH WITH PENCIL AND PAPER

- Baseline: Since 1991, the take from global warming is 800,000 acre-feet per decade, or 80,000 acre-feet per year.
- Baseline: Since 1999, the take from global warming and human over-consumption is 1.35 million acre-feet (maf) per year.

- Baseline: Total reductions of 1.35 maf will stabilize the system for the decade of the 2020s.
- Baseline: Restoring the reservoirs in the 2020s will require reductions of 2.7 maf.
- Baseline: Total reductions in the decade of the 2030s will be 3.5 maf.
- Baseline: Total reductions in the decade of the 2040s will be 4.3 maf.
- Baseline: Total reductions in the decade of the 2050s will be 5.1 maf.
- Baseline: Total reductions in the decade of the 2060s will be 5.9 maf.
- Did Reclamation simulate this in their modeling? **Yes they did and in 2011.**

REVISED DRAFT SUPPLEMENTAL EIS OFFICIALLY RELEASED (October 25, 2023)

- Comment Period ends on December 11, 2023. The release of Draft EIS occurred on October 25, 2023.
- [Reclamation Press Release](#):
- [Revised Draft SEIS Document](#)

PUBLIC COMMENTS FOR DRAFT SEIS DUE ON DECEMBER 11, 2023

- [Living Rivers](#)
- [Glen Canyon Institute](#)

ORIGINAL DRAFT SUPPLEMENTAL EIS DOCUMENTS RELEASED IN APRIL, 2023

- [All documents and appendices combined](#)

News

- [Blog by Professor Jack Schmidt](#)
- [Ian James for Los Angeles Times](#)

May 22, 2023: Update from Reclamation about the Supplemental EIS

The Department of the Interior today announced that it is temporarily withdrawing the draft Supplemental Environmental Impact Statement published last month so that it can fully analyze the effects of the proposal by the seven states under the National Environmental Policy Act.

Reclamation will then publish an updated draft SEIS for public comment with the consensus-based proposal as an action alternative. Accordingly, the original May 30, 2023, deadline for the submission of comments on the draft SEIS is no longer in effect.

The Department plans to finalize the SEIS process later this year.

For more information: [Press Release](#)

Marcie Bainson
SEIS Team Member
[Send Email](#)

###

States issue formal plans on May 22, 2023

- [Deal is reached to keep Colorado River from going dry for now](#). By Christopher Favelle for New York Times.
- [Seven States Final Plan](#)
- [Lower Basin Final Plan](#)

####

OUR ANALYSIS

How the Colorado River Basin is managed in the next three years by this SEIS process, or how it is managed in the next 3 decades by the pending process to develop new guidelines by 2026, the outcomes will not be significantly different. There is only one goal: how will water reduction programs be equitably distributed to humans without ecosystem or societal collapse?

The intent, since 2007, has **always** been about avoiding water shortages due to human accountability errors that have already disrupted the economy and the environment of our homeland inheritance. The collaborative solutions provided since the initiation of 2007 Guidelines were grossly insufficient and the sixteen years of potential progress hence, was squandered.

The narrative of the SEIS does acknowledge that...

- The hydrology of the Colorado River Basin is impacted by heat, evaporation, dry soils and by sublimation (implied); specifically a 20% reduction in annual streamflow, and that this negative consequence will continue to increase.
- Proposed construction projects for water diversions and water augmentation are speculative.
- The characteristics of groundwater resources are important.
-

The narrative of the SEIS does not acknowledge that...

- Human behaviours have become problematic. For example: denial, recalcitrance, procrastination, insatiableness, gradualism and cupidity.
- Leadership to reduce global greenhouse gas emissions is not a responsibility for water managers.
- The decomposition of organic materials in reservoirs do emit greenhouse gases.
- The negative characteristics of vacated reservoirs will compromise the downstream ecosystems of our national parks and wildlife refuges.
- Dams and powerplants have lifespans; a day of reckoning will confront future generations; the cost will exceed the benefits.

THE ISSUES OF THE UPPER BASIN

- Previous scenario planning documents predict Upper Basin shortages will range between 2 to 3 million acre-feet between now and Year 2060.
- The first priority to consider are the arrival times of approaching deadlines, as mandated by the 1922 Colorado River Compact and the 1944 Mexican Treaty (a "Compact Call").
- The approaching Lower Basin deadline: When will 75 million acre-feet in a ten-year period **fail** to pass the Compact Point, located one mile below the mouth of the Paria River near Lee's Ferry, Arizona? This is a fixed number set in perpetuity; see Article III d of the 1922 Compact.
- The approaching deadline to Mexico: When will half of the annual water treaty allocation to Mexico, which is 750,000 acre-feet per year, **fail** to pass the Compact Point near Lee's Ferry, Arizona? See Article III c of the 1922 Compact. This amount must be adjusted down to 675,000 acre-feet, to honor a present-day shortage agreement with Mexico called Minute 323.
- Water demand reduction programs, such as Demand Management and System Conservation, are not producing significant contributions in the range of the required 2 to 3 million acre-feet.
- The accounting systems to measure water consumption is yet to be perfected.
- Glen Canyon Dam was not engineered for the extremes of the natural hydrology, augmented by climate disruptions from greenhouse gas emissions.

THE ISSUES OF THE LOWER BASIN

- Previous scenario planning documents predict Lower Basin shortages will be 3 to 4 million acre-feet between now and Year 2060.
- Not subtracting the evaporation and transit losses from the fixed allocations that happens between Hoover Dam and Morelos Dam (the "structural deficit") and estimated to range as high as 1.5 million acre-feet

THE ISSUES FOR BOTH BASINS

- Efficiency programs are confined by the limits of Nature. Perpetual growth was never an option; there is no physical law that supports such a concept.
- There is a planning and zoning problem, more than a water resource problem.
- Is this river basin based on a prior appropriation system, or not? If not, then the legal foundations must be changed.
- Sustainability, resilience and equity is achieved by respecting the merits of functioning ecosystems; work with Nature.
- The floodplain is occupied by critical infrastructure, which includes an immense structural depression below sea level called the Salton Through.

NEWS

- [Colorado River deal outlines water cuts to California](#). By Ian James for Los Angeles Times.
- [Deal is reached to keep Colorado River from going dry for now](#). By Christopher Favelle for New York Times.
- [Wet year amid Colorado River drought puts water use cuts in question](#). By Tony Davis for *Arizona Daily Star*.
- [Colorado River talks near deals as California Arizona Nevada agree to conserve water use](#). By Joshua Partlow for *Washington Post*.
- [Three states agree on plan to save Colorado River water](#). By Tony Davis for *Arizona Daily Star*.
- [Water saved through Upper Basin program unlikely to move needle in Lake Powell](#). Heather Sackett for Aspen Journalism.
- [Wet year amid Colorado River drought puts water use cuts in question](#). Tony Davis for *Arizona Daily Star*.
- ['We can't be living in an economy of 40 million people this close to the edge.'](#) By Dan Ross for Capital And Main.
- [The very bad math behind the Colorado River crisis](#). By Daniel Penner for Grist.
- [White House proposes evenly cutting water allotments from Colorado River](#). By Christopher Flavell for NY Times.
- [Crisis on the Colorado: The Indigenous fight for water rights](#). By Megan O'Toole and Jillian Kestler-D'Amours for Aljazeera.
- [Proposed cuts to the Colorado River: What it means for those who rely on it](#). Nika Anschuetz for University of Denver.

THE DOCUMENTS OF THE DRAFT SEIS

April 2023

- [Fact Sheet](#). Biden & Harris Administration.
- [Volume One](#)
- [Appendix A](#)
- [Appendix B](#)
- [Appendix C](#)
- [Appendix D](#)
- [Appendix E](#)
- [All Documents COMBINED](#) (searchable).

ADDITIONAL INFORMATION

- [24-Month Report for April 2023, including minimum and maximum snow melt forecast](#) (documents combined).
 - [24-Month report of October 2023](#).
-

Bears Ears National Monument Resource Management Plan

MARCH 22, 2024

BY JOHN S. WEISHEIT

PROJECT INFORMATION

NEPA Number: DOI-BLM-UT-Y020-2022-0030-RMP-EIS.

Website is here: <https://eplanning.blm.gov/eplanning-ui/project/2020347/510>

Project Name: Bears Ears National Monument Resource Management Plan

Project Type: RMP - Environmental Impact Statement

NEPA Status: In Progress - Public Review and Comment Period

Lead Office: Monticello Field Office

- **Submit comments through the “Participate Now” function** on the BLM National NEPA Register
- **You may also mail input to:** ATTN: Monument Planning, BLM Monticello Field Office, 365 North Main, Monticello, UT 84535.
- If you have question about the planning process for Bears Ears National Monument, please contact: BLM_UT_Monticello_Monuments@blm.gov

DOCUMENT ARCHIVE

- Please download this [ZIP FILE](#) to receive the entire administrative record for this EIS (485 MB).

###

March 18, 2024: The Bureau of Land Management and U.S. Department of Agriculture’s Forest Service have announced five in-person and two virtual public meetings, which will provide forums for the public to learn more about the Bear Ears National Monument Draft Resource Management Plan and Draft Environmental Impact Statement. The BLM and Forest Service will host seven public meetings. During the open houses, the agencies will provide a brief presentation twice (once at 6 p.m. and 7 p.m.). Dates, times, and locations of the meetings are:

- **Virtual Meeting** on Tuesday, **April 16, 2024**, from 3 p.m. to 4:30 p.m. MDT
Register to attend on Zoom. https://swca.zoom.us/webinar/register/WN_fXBNQT2oRiWuHZedfWuoGQ#/registration

[WN_fXBNQT2oRiWuHZedfWuoGQ#/registration](https://swca.zoom.us/webinar/register/WN_fXBNQT2oRiWuHZedfWuoGQ#/registration)

- **Salt Lake City**, UT open house on Thursday, **April 18**, 2024, from 6 p.m. to 8 p.m. MDT

Marriot – University Park, 480 S Wakara Way, Salt Lake City, UT, 84108

- **Blanding, UT** open house on Tuesday, **April 23**, 2024, from 6 p.m. to 8 p.m. MDT
Utah State University Blanding, 576 West 200 South, Blanding, UT, 84511
- **Virtual Meeting** on Thursday, **May 2**, 2024, from 6 p.m. to 7:30 p.m. MDT
Register to attend on Zoom. https://swca.zoom.us/webinar/register/WN_aglL-k52Q3qdWeNtN4RLwA#/registration

[k52Q3qdWeNtN4RLwA#/registration](https://swca.zoom.us/webinar/register/WN_aglL-k52Q3qdWeNtN4RLwA#/registration)

- **Twin Arrows, AZ** open house on Monday, **May 6**, 2024 from 6 p.m. to 8 p.m. MST
Twin Arrows Casino Resort, 22181 Resort Boulevard, Twin Arrows, AZ, 86004
- **Albuquerque, NM** open house on Tuesday, **May 7**, 2024, from 6 p.m. to 8 p.m.

MDT

ABQ Marriott Courtyard, 5151 Journal Center Boulevard., Albuquerque, NM, 87109

- **Monument Valley, UT** open house on Thursday, **May 16**, 2024, from 6 p.m. to 8 p.m. MDT

Monument Valley High School, US State Highway #163, Monument Valley, UT, 84536

March 13, 2024: An interactive map was developed and published to the ePlanning site. Visit the Maps tab to access the BENM Draft RMP/EIS Interactive Map. Please note: The map is experiencing projection issues and the planning area may project incorrectly upon first loading. To fix the issue, toggle the BENM Planning Area Draft layer on and off in the Layers tab. Thank you for your patience while we remedy this issue.

March 8, 2024: The Bureau of Land Management and U.S. Department of Agriculture Forest Service opened the public comment period for the Draft Resource Management Plan and Environmental Impact Statement. The public comment period on the Draft Resource Management Plan, Environmental Impact Statement, related proposed recreational shooting closures, and proposed Areas of Critical Environmental Concern closes on June 11, 2024.

The BLM and USDA Forest Service intend to hold seven open-house style public meetings with opportunities to speak with resource specialists, including two virtual meetings. Logistics of those meetings will be announced on the BLM National NEPA Register at least 15 days in advance.

Interested parties may submit comments through the “Participate Now” function on the BLM National NEPA Register or mail input to ATTN: Monument Planning, BLM Monticello Field Office, 365 North Main, Monticello, UT 84535.

Please visit the Documents tab to access and download the Draft Resource Management Plan/Environmental Impact Statement. For persons unable to download the digital materials on this website, a hard copy of the documents will be available for review at the Monticello Field Office (address below).

Before including an address, phone number, email address, or other personally identifiable information in any comments, be aware that the entire comment — including personal identifying information — may be made publicly available at any time. Requests to withhold personal identifying information from public review can be submitted, but the BLM cannot guarantee that it will be able to do so.

August 30, 2022: The Notice of Intent to prepare a new resource management plan for Bears Ears National Monument published in the Federal Register on August 30, 2022, officially started the planning process.

Two virtual public scoping meetings were held during the public scoping period.

Links to watch on Youtube are available below:

- Sept. 21, 2022 - <https://www.youtube.com/watch?v=PygjS297TuU&t=184s>
- Oct. 5, 2022 - <https://www.youtube.com/watch?v=ruFSYnFszC4>

December 13, 2022: The final public scoping report was uploaded to the documents section of this site. The scoping report summarizes issues identified in the comments submitted during the scoping period which ended on October 31, 2022.

The Bureau of Land Management and U.S. Department of Agriculture Forest Service are working closely with the Bears Ears Commission on stewardship of the monument.

PREVIOUS NEPA

Environmental Assessment & Finding of No Significant Impact

Dam safety concerns at Glen Canyon Dam

APRIL 09, 2024

BY JOHN S. WEISHEIT

The four river outlet tubes at Glen Canyon Dam. NPS photo.

PROPOSAL TO RE-ENGINEER BYPASS FEATURES AT GLEN CANYON DAM

- [Public Presentation: Glen Canyon Dam Low-Head Hydropower Modifications and Alternatives](#). Nick Williams; USBR.
- [News coverage: Officials study overhauling dam: Lake Powell's low levels imperils the ability to generate power, release water](#). By Ian James for the Los Angeles Times.

REPAIRS OFFICIALLY BEGIN FOR RIVER OUTLET WORKS

- [September 4, 2024 - Reclamation Begins Relining Of Glen Canyon Dam River Outlet Works](#). Sean Wolfe for Hydro Review.
- [March 26, 2024 - Technical Decision Memorandum : Establishment of Interim Operating Guidance for Glen Canyon Dam during Low Reservoir Levels at Lake Powell](#). Richard LaFond, USBR

OPERATION OF RIVER OUTLET WORKS ARE CURRENTLY UNSAFE

News of April 2024

- May 6, 2024 - [Damage to Glen Canyon Dam reveals vulnerabilities of the entire Colorado River system](#). By Anastasia Hufham for Salt Lake Tribune.
- May 4, 2024 - [Tunnels may be drilled through Glen Canyon Dam sources say](#). By Tony Davis for Arizona Daily Star.
- April 7, 2024 (Breaking Story) - [Crucial Glen Canyon Dam tubes damaged face uncertain future](#). By Tony Davis for Arizona Daily Star.
- [Glen Canyon Dam's underwater tubes unreliable for water deliveries and low lake levels](#). By Tony Davis for Arizona Daily Star.
- [Possible damage to Glen Canyon Dam tubes could spell trouble for Lake Mead](#). By Alan Halaly for Las Vegas Review Journal.
- [Memo reveals damage to pipes inside Glen Canyon Dam, a threat to Colorado River water supply](#). By Greg Hass for KLAS-TV in Las Vegas.
- [Damage at Glen Canyon Dam raises water risks on the Colorado River](#). By Ian James for The Los Angeles Times.

Other News

- 1997, June 28 - [Power plant at Flaming Gorge Dam churning out electricity again](#). Deseret News.

General Design Specifications

- The design of the river outlets was based on concrete having a compressive strength of 3,000 pounds per square inch at 28 days for structural concrete and 2,500 pounds per square inch at 28 days for mass concrete.
- The river outlets provide for releases for downstream commitments when the powerplant is not in operation and during the period of final closure of the diversion tunnels. The outlets will also be used to maximum capacity during maximum flood releases.
- There are a total of four tubes. Each tube has a total of seven bends: three vertical bends, three horizontal bends and one contour bend. The bends are where cavitation (vapor implosions) problems are more significant.
- [More Information](#)

MEMOS AND REPORTS

Federal Agencies

- Memo of April, 2024 - [Glen Canyon Dam Outlet Tubes Memo](#)
- Meeting of March 6, 2024 - [Arizona Reconsultation Committee](#) and **video**; [marked at 49.40 minutes](#). Specific to river outlets.
- April 4, 2023 - [Long-term Drought and Glen Canyon Dam: Potential effects on water deliveries and hydropower](#). Congressional Research Service.
- [1990 - Cavitation in chutes and spillways](#). USBR.
- 1960 - [Air and hydraulic model studies of left diversion tunnel outlet works for GC Dam, CRSP](#). USBR.

DESIGN SPECIFICATIONS OF GLEN CANYON DAM

- [Fact Sheet](#)
- [1961 - Design features of Glen Canyon Dam](#). Bureau of Reclamation.
- [1970 - Glen Canyon Dam technical record of design and construction](#); [searchable doc](#); [for reading the horizontal pages](#); [Chronology](#); [Intro](#); [Geology](#); [Foundation](#); [Dam](#); [Spillways](#); [River Outlets](#); [Penstocks](#); [Powerplant](#); [Switchyard](#); [Visitor Center](#); [Construction](#), [Appendix](#). Bureau of Reclamation.

SUMMARY OF THE DATA

Penstock tubes to the turbines

- The centerline elevation of the penstock tubes is 3,470 feet
- The minimal reservoir elevation for the safe operation of the turbines is 3,520 feet; 50 feet above the centerline of the penstocks.
- The fish in the reservoir can be sucked into the penstocks and the turbines.

Tubes to the River Outlet Works

- The centerline of the river outlet tubes is 3,374 feet
- The aquatic life of the reservoir can be sucked through the river outlet works.
- The river outlet works can perform normally until the reservoir elevation reaches 3,467 feet; 93 feet above the centerline at the entrance of the river tubes. Thereafter, the velocity of the flow is incrementally reduced, until....
- At reservoir elevation 3,420 feet, it is not safe to operate the river tubes at all. At that point....
- The only flow in the riverbed behind the dam would be the natural leakage/ seepage that flows around the dam, or through bed gravels of the river.
- Since 2002, the leakage/seepage flow rate averages about 208 cubic feet per second.
- That flow rate would be greatly diminished with a reservoir that has exhausted its water storage.
- The remobilization of exposed reservoir sediment would probably dictate closing the river outlet tubes sooner. The sediment would include decomposing organics and hydrogen sulfide, which are extremely odorous and toxic.

MOVIE

- [Opening river outlet tubes for High Flow Experiment in November of 2018](#). NPS; mp4.

REPAIR PROPOSAL 2022

River Outlet Works Pipe Relining at Glen Canyon Power Plant

- [Document: Solicitation 140R4023R0010 Glen Canyon Dam River Outlet Works Pipe Relining](#)
- The Bureau of Reclamation, Upper Colorado Basin, is seeking potential sources to reline the river outlet works pipe at the Glen Canyon Power Plant.
- The Contractor shall provide all the expertise, labor, tools and equipment necessary to reline 4 river outlet tubes at Glen Canyon Power Plant.
- Work is located at Glen Canyon Dam, approximately 2 miles northwest of Page, Arizona, in Coconino County.

Work Details

- Control ponding, seeping, and flowing leakage water in outlet works during relining operations.
- Outlet pipe (4 total) Abrasive blast clean surfaces to remove corrosion and existing linings, create a surface profile, and apply a new lining system on interior surfaces of outlet works pipe from bell mouth transition to hollow jet valve. Including manhole covers interior and exterior surfaces. Approximately 22,600 square feet of surface preparation and lining.
- To include Interior Drain Line 140 square feet and Exterior Coating of Drain line 20 square feet.
- High pressure water jet clean to remove corrosion and existing lining and apply new surface tolerant lining for drain lines on outlet works pipes.
- Furnish and install cathodic protection if any corrosion is observed in the bell mouth of an outlet works pipe.
- Contain, handle, and dispose of hazardous coating materials.
- Allowable window for work is approximately April through October.
- The contract specialist and point of contact for this request for information is Jennifer Handy. Please submit responses and any other inquiries via email to jhandy@usbr.gov.

####

THE LITTLE FLOOD OF 1983

Spillways at Glen Canyon Dam ([see the specifications as written in 1961](#))

- Original volume for a probable maximum snowmelt, from April to July (four to five months), is forecasted to be 29,600,000 acre-feet, and the river flow rate would peak at 380,000 cfs.
- A probable maximum rain event, which is predicted to occur in the fall (hurricane season), would have a peak discharge of 417,000 cfs and a 6-day volume of 2,063,600 acre-feet.
- These proposed engineering specifications are pointless because in a real-time event that occurred 23 years after this spec sheet was written, the spillways at Glen Canyon Dam failed during the snowmelt of 1983 after only one week of emergency operations and at 20 percent of nameplate capacity.
- The four month snow melt was only 15,000,000 acre-feet; peak flow into Lake Powell was only 104,000 cfs.
- The spillway repairs following the snowmelt of 1983 included air injection mechanisms to minimize the cavitation pressures. This modification diminished the total capacity of the spillway discharge by 25 percent.
- Therefore, even if the spillways could avoid failure during a four to five month snowmelt, such a surge of melt water would of course overtop the dam and destroy the powerplant below and erode the foundation bedrock around the dam.
- Will such a scenario unfold? Paleoflood hydrologists have evidence of four snow melts in the last 2,000 years greater than 380,000 acre-feet.
- If it happened in the past, it will happen in the future.

- REFERENCE: [Lessons Learned: Case Study at Glen Canyon Dam Arizona, 1983](#). ASDSO.

Quantitative Paleoflood Hydrology

- [Colorado River](#)
- [Green River](#)
- [San Juan River](#)
- [Dolores River](#)
- [Grand Canyon](#)
- Updated Grand Canyon (publication now under preparation).

ADDITIONAL READING

Science and History

- Scenario: [Structural failure of Glen Canyon Dam](#). Latham, 1998.
 - [Canyon Legacy; Volume 59; Spring 2007](#). Authors include John Keys and John Weisheit.
 - [Scientific information in the decision to dam Glen Canyon](#). National Science Foundation. Priscilla Perkins, 1975.
 - [Glen Canyon Dam is broken](#). The Confluence. John Weisheit, 1996.
-

The industrialization of an original farming community in Emery County, Utah

JULY 14, 2024

BY JOHN S. WEISHEIT

A NARRATIVE

- Arriving soon: A history of speculation and/or project suspensions, that include: ballistic missile testing, three nuclear power plant proposals; one defunct uranium milling plant, a new proposal for a uranium milling project; one defunct oil refinery, followed by two proposals for new oil refineries; proposals to process bitumen and kerogen from the Tavaputs Plateau; a lithium extraction company, a proposed inland port authority; a proposed retirement community, and; procuring water rights to sell and transfer wet water to all these speculative projects for the two affected counties, namely western Grand County and eastern Emery County, and the Green River that flows between these two jurisdictions.

POPULATION STATISTICS

Compare City of Green River and City of Moab

- **Data:** [Population Historic Utah Municipalities and Unincorporated Areas](#)
- 1950: Green River - 583 / 1,274 - Moab
- 1960 - GR - 1,075 / 4,682 - Moab
- 1970 - GR - 1,033 / 4,793 - Moab
- 1980 - GR - 1,048 / 5,333 - Moab
- 1990 - GR - 856 / 3,971 - Moab
- 2000 - GR - 973 / 4,779 - Moab

HISTORY

- [1996 - History of Emery County and Green River](#). Geary.
- [1996 - History of Grand County and Elgin](#). Firmage.
- [Green River History & Culture](#). Epicenter.
- [Wikipedia](#)

COMMUNITY

- [Epicenter](#).
- [John Wesley Powell River Running Museum](#).

THE GREEN RIVER OBSERVER

- [V1 N5 June 2024](#)
- [V1 N7 August 2024](#)
- [V1 N8 September 2024](#)
- [V1 N9 October 2024](#)
- [V1 N10 November 2024](#)
- [V1 N11 December 2024](#)
- [V1 N12 January 2025](#)
- [V2 N1 February 2025](#)
- [V2 N2 March 2025](#)
- [V2 N3 April 2025](#)
- [V2 N4 May 2025](#)
- [V2 N5 June 2025](#)
- [V2 N6 July 2025 \(City Budget and personel\)](#)
- [V2 N7 August 2025](#)
- [V2 N9 October 2025](#)
- [V2 N10&11December 2025](#)

MEETINGS

- March 11, 2026 - [Town Hall Meeting at Senior Center from 5 to 7 PM.](#)

NEWS

- April 17, 2026 - '[Ren's Gone. Now What? In Green River, the death of its mayor still lingers.](#) By Andrew Christiansen for the Times Independent.
- February 26, 2026 - [Rural Utah hopes for a piece of the states nuclear ambitions.](#) By Ethan Rauschkolb For KUER Radio 90.1 FM.
- February 9, 2026 - [Green River City Source Protection Plan.](#)
- December 29, 2024 - [Utah Will Pay Millions For Farmers To Leave Fields Empty And Leave Water For The Colorado River.](#) By David Condos for The Salt Lake Tribune.
- October 28, 2024 - [Green River uranium mill has shown slow progress in Utah.](#) By Anastasia Hufham for Salt Lake Tribune.
- October 11, 2024 - [What's Next For Green River?](#) The Green River Observer.
- November 11, 2024 - [Is This Utah's Nuclear Future?](#) A video about uranium mill operations at White Mesa in San Juan County. By Trevor Christensen and Anastasia Hufman for The Salt Lake Tribune.

CITY OF GREEN RIVER

- [Home page](#)
- [Meeting agendas and minutes](#)

UTAH INLAND PORT AUTHORITY

- [Home page](#)
- The Utah Inland Port Authority approved a project area for the City of Green River at their board meeting held in Price, Utah on June 24th, 2024 - [Meeting Minutes](#).

rPLUS ENERGIES

- [rPlus Energies secures \\$1B for 800-MW solar-plus-storage 'peaker plant'](#). By Emma Penrod for Utility Dive.
- Four hour battery storage
- Pumpback Project (hydropower); the Book Cliffs is the likely target site for the necessary elevation.
- [Website](#)

LITHIUM EXTRACTION

- [Blog post at Canyonlands Watershed Council](#)

THE RAISE GRANT APPLICATION

- [Green River City Commitment Letter](#). Mayor Hatt.
- [Merit Criteria Narrative](#).
- [Project Description](#).
- [Project Readiness](#).
- [Project Budget.xlsx](#).

PUBLIC COMMENTS AND ACTIVISM

- Website: [Stop the Polluting Ports](#)
- [Public Comments about 2024 RAISE Grant Application](#). Sarah Fields of Uranium Watch.

URANIUM MILL DISPOSAL SITE IN GRAND COUNTY NEAR GREEN RIVER CITY

- [Green River Utah Disposal Site](#). Department of Energy, Office of Legacy Management.
- [Is This Utah's Nuclear Future?](#) A video about uranium mill operations at White Mesa in San Juan County. By Trevor Christensen and Anastasia Huffman for The Salt Lake Tribune.

OIL REFINERIES

- [The proposed oil refineries at Green River](#)

Lithium corporations pursue limited water supplies in the Colorado River Basin

JULY 22, 2024

BY JOHN S. WEISHEIT

BLACKSTONE MINERALS (Subsidiary of Anson Resources)
Lithium extraction from the Paradox Formation
Green River City; Emery and Grand Counties, Utah

NEW INFORMATION

Litigation by citizens of Emery County, Living Rivers and Great Basin Water Network

- [Click here](#) to read this story by Anastasia Hufham for the Salt Lake Tribune.
- [Click here](#) to review the plaintiffs complaint.
- [Click here](#) to review the administrative record for this mining project by Blackstone Minerals and Anson Resources.

Utah Division of Water Rights

Utah Division of Water Resources

- New temporary application as of August 18, 2025 - [#92-706](#)
- [Water Right # 92-695](#) - Current water right
- [Water Right # 92-169](#)
- [Water Right # 92-40](#)
- [Water Right # 92-35](#)
- [Water Right # 92-698](#) - Temporary (one-year) application to Appropriate.
- [Water Right # 92-695](#) - Underground Water Well (exisiting)
- [Water Right # 95-434](#) - Admin record for water right transfers from Wayne County to Emery County & [News by Patty Henetz for Salt Lake Tribune](#).

Additional Information - Green River Water Rights

- [Area 92 - A determination of the Lower Green River](#)
 - [Green River water rights sorted by location](#)
 - [40-year water plan](#). Wayne County.
-

Presentation about proposed lithium extraction at City of Green River, Utah

- [December 4, 2024 - Presentation by the coalition of public interest groups and the community of Green River.](#)

New Science

- [2024, August - Best practices for recycling and reinjecting lithium brine.](#) Zelandez.
- [2024, August - Direct Lithium Extraction: A report exploring the various technologies used for direct lithium extraction \(DLE\).](#) International Lithium Association & Rockwel Automation.
- [2024, March - Determining the Product Carbon Footprint of Lithium Products. Guidance for calculating a product carbon footprint \(PCF\) of key lithium intermediates and battery-grade lithium carbonate and hydroxide specialty chemicals produced from brine or rock minerals.](#) International Lithium Association.
- [2024 - Lithium and water hydrosocial impacts across the life cycle of energy storage.](#) Blair, et al.
- [2023 - Environmental impact of Direct Lithium Extraction from brines.](#) Vera et al.

Legislation

- [2024 - Brine Legislation: HB 433.](#) State of Utah.

NEWS AND OPINION

Lithium Extraction and Production in the Paradox Basin of Southeast Utah

- [The Green River Observer Newsletter](#)
- November 9, 2024 - [Judge extends lithium drilling freeze, a major win for the Hualapai Tribe.](#) Shondiin Silversmith for Utah News Dispatch.
- October 9, 2024 - [More lithium projects approved in Utah's Redrock Country: Exploring for the mineral, which is vital in rechargeable batteries uses a lot of water.](#) By Anastasia Hufham for Salt Lake Tribune.
- October 1, 2024 - [BLM approvals put famed southern Utah redrock landscapes in the crosshairs of industrial development.](#) Press release by Southern Utah Wilderness Alliance.
- August 21, 2024 - [Mandrake Resources inks supply agreement and gets free pilot plant.](#) By New Investors.
- July 25, 2024 - [Boiling Point: The Salton Sea lithium rush.](#) By Melody Petersen for LA Times.
- July 18, 2024 - [Lithium critical to the energy transition is coming at the expense of water.](#) By Wyatt Myskow for Inside Climate News.
- July 15, 2024 - [As a Nevada community fights a lithium mine a rare fish and its haven could be an ace in the hole.](#) By Wyatt Myskow for Inside Climate News.

- [June 8, 2024 - Water rights debate on the Green River may stop projec.](#) By Anastasia Hufham for Salt Lake Tribune.
 - May 29, 2024 - [Company says lithium projects as green as possible but environmental groups not convinced.](#) By Kyle Dunphey for Utah News Dispatch.
 - April 2, 2024; OpEd - [More on the Green River lithium plant.](#) By Sarah Fields for Moab Times-Independent.
 - March 29, 2024 - [Why the "white gold" rush won't save the planet.](#) Joshua Frank for Counter Punch.
 - March 26, 2024 - [Lithium company addresses residents after March 8 water surge.](#) By Sophia Fisher for Moab Times-Independent.
 - March 24, 2024 - [Mining Companies Say They Have a Better Way to Get Underground Lithium. but Skepticism Remains.](#) By Wyatt Myskow for Inside Climate News.
 - March 15, 2024 - [As water erupts from lithium exploration site, so do fears over project.](#) By Jennifer Yachin & Hannah Northey for GreenWire.
 - March 13, 2024 - [Lithium well blowout didn't breach the Green River, state says.](#) By SophiaFisher for Moab Times-Independent.
 - March 12 - [A1 Lithium announces water use estimates.](#) Sophia Fisher for Moab Times-Independent.
 - March 9, 2024 - [Skepticism at lithium hearing.](#) The Green River Observer.
 - February 15, 2024 - [Bumpy road for EVs and climate goals.](#) By Russ Mitchell for Los Angeles Times.
 - **February 8, 2024: Special Feature - [In rural Utah, concern over efforts to use Colorado River water to extract lithium.](#)** By Suman Naishadham and Brittany Peterson for The Associated Press.
 - January 26, 2024 - [Howard Center investigation into lithium mines gains national media exposure.](#) Cronkite School at ASU.
 - January 26, 2024 - [Mining Monitor, Moab's Kings Bottom Development and Sun Zia lawsuit.](#) By Jonathan Thompson for The Land Desk.
 - [Lithium Miners want mega amounts of Utah water in the Colorado River Basin.](#) By Leia Larson for Salt Lake Tribune.
 - [Lithium in Paradox: aridity could nip a new Utah mining rush in the bud.](#) Jonathan Thompson for the Land Desk.
 - [Will Green River be home to a new lithium mine to help US go 'green'.](#) Amy Joi O'Donoghue for Deseret News.
-

GREEN RIVER CITY LITHIUM PROJECT BY BLACKSTONE MINERALS **A Subsidiary of Anson Resources (Australia)**

Water Rights for Blackstone Lithium Extraction in Green River City, Utah.

- May 21, 2023 - Letter to State Engineer: [Request for Reconsideration on Approval of Application to Appropriate Water.](#) Clyde, Snow and Sessions on behalf of Protestants. This request was granted. See: [Water Right # 92-695](#)

Underground Injection Control Permits Near Dead Horse Point; Colorado River in Grand County by A1 Lithium. LLC.

- Close of Comments: **June 24, 2024**
- July 24, 2024 - [Public comment letter from Living Rivers & Great Basin Water Network](#)
- Contact (Email): Porter Henze <pkhenze@utah.gov>
- [Public Notice](#)
- [Draft Permit](#)
- [Draft FSSOB](#)
- Public Hearing: None
- Type: Underground Injection Control
- [Visit the archive page](#)

Aquifer Spent Brine Recovery Well (Class 5 Injection Well)

Public comments are due **December 14, 2023**.

Division of Water Quality

PO Box 144870

Salt Lake City, UT 84114-4870

eMail: wqcomments@utah.gov

- [Admin Archive](#).
- [November 14, 2023 Public Notice](#)
- [January 17th, 2023 Public Notice](#)
- [Draft Fact Sheet](#)
- [Draft Permit: Underground Injection Well](#)
- [Attachments: Area of Review](#). DWQ.
- Public comment Letter to DWQ: [Living Rivers and Great Basin Water Network](#).
- Public Comment Letter to DWQ: [Gayna Salinas](#)

NARRATIVES ABOUT LITHIUM EXTRACTION AND PRODUCTION WATER

There are two batches of water rights for the proposed lithium mining facility at Green River City, as follows: The first is a water right to extract brine water from the deepest underlying layer (aquifer) of the Paradox Formation. The target mineral is lithium carbonate (and potentially other minerals such as bromine). After processing (DLE technology and addressed below), the spent brine is returned to the Paradox Formation. It is important to understand that this return flow is received at another mid-level elevation aquifer of the Paradox Formation. This water right is presently considered a "non-consumptive water use."

Note: Utah Division of Water Quality (DWQ) has since determined the waste brine must be returned to the same aquifer. It is important to understand there is insufficient rulemaking for lithium mining in the state of Utah, and why we are challenging this new mining activity in our water-stressed communities.

Note: DWQ has reversed their original decision and based on a determination by the Environmental Protection Agency (EPA). To clarify, EPA does allow injection into a different aquifer. For example, this is happening at the Salinity Control Program in the Paradox Valley, Colorado. This injection project stimulates earthquakes, so we think this decision is spurious.

Mining is a consumptive industry, period. In this case, one aquifer will be depleted and a different aquifer will be expanded. This is a concern to us because it is a forced disruption of a natural process. For example, will these movements in brine layers incite earthquakes? Will the pressures and currents within the aquifers fracture and break well casings?

This is why the injection wells are dependent on a different and more strident regulatory permitting process (now under review and addressed below) from the Utah Department of Water Quality. These return flows by injection, will also carry dangerous chemicals, which is also discussed below.

The second water right is surface water depletion from the Green River. This freshwater withdrawal will be used to "wash" ionized fabrics that attract and bond the lithium carbonates. There are chemicals (basic and acidic) that are used in this washing/ separation process. This contaminated water is what is also returned via injection wells into the Paradox Formation.

This waste water stream is production water and it is a consumptive use. This process imitates the production of yellow cake from uranium ore processing, which was perfected by the Atomic Energy Commission in 1946. Incidentally, Anson Resources has also filed claims for mining uranium ore in the Yellow Cat area east of Arches National Park (Grand County).

Furthermore, there is no conversation about the disposal of sludge that the lithium process will produce. Where does this sludge go? What is the volume? Is the sludge toxic? Is the sludge reinjected into the aquifer, too? Or will it be transferred to a certified waste facility and where might that facility be? The assumption that lithium processing is non-consumptive is inaccurate.

###

The Colorado and Green rivers have nothing left to give. This river basin's transformation from abundance to exhaustion occurred between the Reclamation Act of 1902 and the Shortage Guidelines of 2003.

It is imperative to understand that the cause of this water scarcity problem was a human decision to intentionally exceed the limits of "nature's bounty." This deliberate decision happened before sea level rise (induced by the melting of continental ice) was verified by empirical data, both historic and prehistoric.

Why we have passion for knowledge and wisdom one day, and then vilify it the next day, is why we face a debilitating future of scarcity in regards to ALL our finite natural resources. This includes the need and purposes for extracting rare and precious metals, such the lithium and uranium deposits found in the Colorado River Basin.

For the last 120 years, the advisors to our political leadership have recommended making appropriate changes in our management of natural resources in order to avoid the emergence of political calamities such as World War One and World War Two. The recommendations were always about adopting precautionary planning, and to create sustainable and resilient communities, which also included ecosystem functions, eventually.

We did this, just not thoroughly enough, nor timely enough. Our lack of courage and commitment to finish the job is quite astounding and fearful. Because we are approaching a point of no return.

LITHIUM PRODUCTION AND LITHIUM MARKETS

1. Anson Resources (Australia)

- Home page - <https://www.ansonresources.com>
- Investor Center - <https://www.ansonresources.com/investor-centre/>

Subsidiaries of Anson Resources

- Blackstone Minerals (Las Vegas, NV)
- **A1 Lithium** (Las Vegas, NV)

Chronology of Anson Resources

- 2016 - begins operations in Grand County, Utah (near Dead Horse Point))
- 2021 - begins operations in Green River City, Utah
- 2023 - [Annual Report](#)

Corporate Leadership of Anson Resources

- Listcorp: [Investor Presentation \(archived\)](#)
- Bruce Richardson - Executive Chairman and CEO
- Peter (Greg) Knox - Director (geologist).
- Michael van Uffelan - Director (secretary).

###

2. Mandrake Resources (Australia)

- Operations are in San Juan County, Utah; Lisbon Valley & Dry Valley.
- Home page - <https://www.mandrakeresources.com.au> (archived)
- May 22, 2023 - [Wells secured for re-entry of lithium sampling at Utah lithium Project](#). Mandrake Resources.
- May 16, 2023 - [Lisbon Valley mining land rush continues](#). The Land Desk by Jonathan Thompson.
- May 1, 2023 - [Mandrake Resources stakes almost 90,000 acres at Utah lithium project](#).

###

3. Sunresin (China) and introducing a new technology called Direct Lithium Extraction (DLE)

- [Sunresin's corporate website](#)
- This technology is currently proposed for operations by Anson Resources at Green River City, Utah

###

5. LG Energy Solutions.

Subsidiary of LG Chem (South Korea)

- [Announcement](#)

###

6. American Battery Materials & Xantippe Resources (USA) Lisbon Valley, San Juan County Utah

- [Corporate website](#)
- November 22, 2023 - [Corporate Update](#)

Utah Division of Water Quality
Utah Department of Environmental Quality

Aquifer Spent Brine Recovery Well (Class 5 Injection Well)

Public comments are due **December 14, 2023**.

Division of Water Quality

PO Box 144870

Salt Lake City, UT 84114-4870

eMail: wqcomments@utah.gov

- [November 14, 2023 Public Notice](#)
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- [Draft Fact Sheet](#)
- [Draft Permit: Underground Injection Well](#)
- [Attachments: Area of Review](#). DWQ.
- Public comment Letter to DWQ: [Living Rivers and Great Basin Water Network](#).

- Public Comment Letter to DWQ: [Gayna Salinas](#)
- **What:** DOGM regulated exploratory and brine sample well: Casing is 24" in diameter at top, 7.625" at the bottom. Max depth Approx 10,800`.
- **Location:** Green River City, 1600 S 1015 E Green River, UT 84525.
- **Purpose:** Assay for lithium content and extraction of lithium for onsite sample/ demonstration purposes.
- **Explanatory:** This temporary application is for the purposes of assaying deep ground brine for lithium, mineral content and other constituents to determine the viability of developing mineral extraction. Also to process brine through a small-scale temporary sample demonstration and pilot plant that is located next to the well site (Bosydaba #1) and to demonstrate the suitability of the brine for extraction and lithium production.
- **Disposal:** After extracting lithium from the brine, the unaltered spent brine is returned and disposed of at DEQ disposal facility at Danish Flat Section 8, T20S R24E SLMB.

PUBLIC HEARING INFORMATION

February 21, 2024

Class V Injection Well

DWQ is holding a public hearing to solicit further comments on the Draft Permit.

- The informational website is located [HERE](#).
- Location: Green River City Hall, 460 E Main St, Green River, Utah, 84525
- Date: February 21, 2024
- Time: DWQ Informational session begins at 6:00 pm
- Time: 6:30 pm to 7:30 pm
- Comments will be accepted until February 23, 2024
- eMail: wqcomments@utah.gov
- Contact: Porter Henze at 385-566-7799
- Internet access is not available (unless previously arranged).

Utah Department of Environmental Quality

Division of Water Quality

Second Public Notice of Permit UTU-19-F4-8F9143D

Underground Injection Control Class V Well Permit

Aquifer Spent Brine Recover Well, Category UIC Well 5C-1

Purpose: Blackstone Minerals is conducting lithium and associated brine resource mining operations in Green River, Utah. Brines will be extracted from the Paradox Formation, specifically Clastic Zone 31 using extraction wells. Brines will be processed using a lithium carbonate and lithium hydroxide production plant utilizing direct extraction. The spent brine that is depleted of lithium will be pumped into the injection wells under pressure into the Paradox formation between clastic zone 7 and 19, or about 6,040 to 6,445 feet below ground surface.

###

**Radiation Control Board
Utah Department of Environmental Quality**

**Green River City; Uranium Mill Legacy Site
Department of Energy (DOE)**

- May 1, 2024 - [Letter from citizens](#) about Blackstone Minerals lithium operations in the designated radiation zone of the Uranium Mill Legacy Site at Green River in Emery and Grand Counties.
 - May 31, 2024 - [Response to citizens](#). UDEQ & RCB
-

YES! Canyonlands Watershed Council is a charitable organization.

- PayPal - [HERE](#)
 - Venmo - [HERE](#)
 - Our EIN is: 87-0637713
-

A1 LITHIUM IN GRAND COUNTY, UTAH

A subsidiary of Anson Resources

- Location: Near the Colorado River in the vicinity Dead Horse Point and Big Flat and the Intrepid Potash Facility
- **Note:** This proposed lithium project is presently in limbo.

Utah Division of Water Rights

- Admin record for A1 Lithium: [#01-1233 \(A83900\)](#)

Bureau of Land Management

- A1 Lithium, Inc. [submitted a revised Plan of Operations](#) to conduct Mineral Exploration on its unpatented placer claims located approximately 9 miles west of Moab, Utah (Big Flat) by reentering two abandoned well bores, Sunburst #1 and Mineral Canyon Federal #1-3, to test brine solutions for lithium and bromine.
-

**PUBLIC WEBINAR: DIRECT LITHIUM EXTRACTION (DLE)
Lithium and Environmental Justice in Imperial Valley**

February 15, 2024

11:00 a.m. to 12:30 p.m. (Pacific ST)

Register [HERE](#)

- An exceptional report by EarthWorks will provide more information [HERE](#)
- This report examines a new and emerging technology called Direct Lithium Extraction (DLE).
- REPORT: [Environmental Justice In California's Lithium Valley](#). Earthworks.

OTHER PERMITTING BY THE REGULATORY AGENCIES

Utah Division of Air Quality

- We could not confirm that Anson Resources received an exemption from a air quality permit.

Utah Division of Oil, Gas and Mining

- We could not confirm that a large mining permit is required.
-

ADDITIONAL PUBLIC INFORMATION ABOUT LITHIUM EXTRACTION

Consumptive water use for proposed lithium projects

- Mandrake at Dry Valley: Unknown; potentially 150 groundwater wells?
 - A1 Lithium at Big Flat: 13,764 acre-feet per year (Colorado River)
 - Blackstone at City of Green River: 13,764 acre-feet per year (Green River)
 - Anson Resources at/near Town of Hanksville: Unknown; Fremont River water transfers from Wayne County to Grand County?
-

Direct Lithium Extraction (DLE)

- Note: There is only one DLE operation in the United States and located at Imperial County, California and in the the Salton Through (a structural depression). There is a consumptive use from the Colorado River for this project.
 - REPORT: [Environmental Justice In California's Lithium Valley](#). Earthworks.
-

Technology Reports

- Direct Lithium Extraction (DLE). Beads of resin that attract lithium carbonate; no evaporation ponds. A technology developed in China with proprietary rights.
- Brine in solution (liquid) is naturally delivered to the surface by the pressure of 9,000 feet of overburden. Anson claims this pressure is sustainable for the project's lifetime ([reference](#)), but this statement is a double negative.
- A conceptual exploration target of between 2.1 and 2.56 billion tonnes of brine, grading between 108 and 200 parts per million (ppm) lithium and between 2,000 and 3,000 ppm bromine ([reference](#)).
- For the purpose of providing a constrast to Anson's lithium target, the concentration of the potassium target in the Paradox Formation can be as high as 42,000 parts per million.
- The return on investment for these two resources is nearly equivalent. We think protecting the water resources of the Colorado River Basin is what is truly priceless.

- **Report:** [Environmental Justice In California's Lithium Valley](#). Earthworks.
 - **Report:** [Identifying Potential Hydrologic Impacts of Lithium Extraction in Nevada](#). Saftner, 2023; DRI for TNC.
-

Paradox Project by A1 Lithium; subsidiary of Anson Resources

Located near Dead Horse Park in Grand County and Canyonlands National Park in San Juan County, Utah.

- Website: [Paradox Lithium Project](#)
- Low interest loans from US Department of Energy
- Extraction goal: 10,000 tons per year of lithium carbonate
- [2021 - Exploration Plans](#). Millcreek Mining.

Bureau of Land Management Administrative Record

- [2022 - Draft EA for A1 Lithium](#). BLM.
 - [2022 - EA for A1 Lithium](#). BLM.
 - [2022 - Visual Assessment](#). BLM.
 - [2023 - Updated Mineral Exploration Project](#). BLM.
 - [2023 - Comment Letter to BLM](#). Living Rivers.
 - [2024 - Final EA & FONSI \(Finding of No Significant Impact\)](#). BLM.
-

Paradox Project by Blackstone; subsidiary of Anson Resources

Green River Project: City of Green River in Emery County Utah

- [Minutes of October 25, 2023](#). City Council of Green River.
- [Website of Green River Project; \(archived\)](#)
- News October 2023 - [Anson Confirms Green River Plant Location](#). Esmarie Iannucci for Mining Weekly Australia.

Wayne County Water Transfers to Emery County

- [40-year Plan](#). Wayne County Water Conservancy District.
 - Note: The 40-year plan does not mention lithium extraction. The water conservancy district of Wayne County does not have a public web page about their activities.
-

Presentations

Public

- [November, 2023 - Anson Resources Project](#). Roerink for GBWN.

Agency

- [Bureau of Reclamation](#)
- Note: Reclamation believes an environmental assessment for a federal water contract is required.

Corporate

- [2023 - Paradox Project by A1 Lithium and Anson Resources near Moab Utah](#). A1 Lithium.
-

Utah Division of Oil Gas and Mining Research and Well Logs

- Homepage: <https://oilgas.utah.gov>
 - Data Explorer: <https://dataexplorer.ogm.utah.gov/>
 - APIs in the Long Canyon area: Lithium well [43 019 50096](#); Lithium well [43 019 15925](#); Lithium well [43 019 50095](#); Lithium well [43 019 30357](#); Lithium well [43 019 31319](#); Lithium well [43 019 30810](#);
-

Subcontractors

- Mike Swenson - attorney from Emery County in Orangeville, Utah.
-

Geology

- [1965 - Subsurface Brines Moab Region Utah](#). Special Studies 13; UGS.
 - [1985 - Investigation 202: Paradox Formation Nuclear Waste Repository](#). UGS.
 - [2009 - Hydrogeochemical characterization of Leaking Carbon Dioxide Charged Fault Zones in East Central Utah with Implications for Geologic Carbon Storage](#). Heath & Lachmar et al.
 - [2009 - Reservoir Characteristics of Clastic Cycle Sequences in the Paradox Formation of the Hermosa Group in Utah](#). Trudgill.
 - [2011 - Well Database of Salt Cycles of the Paradox Basin in Utah](#). Massoth.
 - [2011 - Green Energy Project Grand County](#)
 - [2019 - Lithium Recovery From Oil And Gas Produced Water](#)
 - [2022 - Paradox Basin Lithium and Brine Project](#).
-

Green River City Council: Special Meeting of November 13, 2023 (This meeting was not noticed in the public record.)

Areas near City of Moab

- There will be water diversions in Grand County.
- There are well pads and they are small.
- We have drilled near Moab and determined lithium extraction will be successful.
- Note: We could not verify this statement; they may be referring to drill logs from other company operations.
- The lithium reserve may be one to three million metric tons. Currently the price for lithium carbonate is between \$20,000 to 30,000 per ton. The low end is \$7,000 and high end is \$50,000.

- We intend to use this lithium resource in the USA. Most lithium is exported from Argentina and China.

Areas near City of Green River

- We want to work in Green River for railway and interstate transportation and for a work force and to be near a flowing river.
- We hope to discover a viable similar to the Moab location. There are brine layers in the vicinity and we intend to drill some exploratory wells.
- Water diversions are required and we have a lease agreement from Green River Corporation.
- There will be no return flows back to the Green River. They will be injected into the Paradox Formation.
- There are well pads and they are small.
- We are not piping brine from Moab to Green River. BLM won't allow that.
- Footprint will be about 18 acres. There will be a warehouse-like building. It will be in city limits and not in Grand County.
- We are working with the utilities. We are not that far along.
- 300 construction jobs for two years. 50 to 70 employees after that. Don't know what the salaries will be.
- "This is going to happen whether you like it or not. Otherwise you'll have China in your background."
- Point of diversion on our property. We have a change application in process.
- We intend to apply for an air quality permit; we understand we will get an exemption (di minimus)
- Don't have a chemical list quite yet. Hydrochloric acid will be necessary. Don't know how much.

The company and its subsidiaries

- We can apply for government energy subsidies.
 - We have a website with limited information.
 - We have expertise in Boca Raton, Florida.
 - Our lithium meets or exceeds the standards of Tesla, Inc.
 - We intend to provide scholarships to school children in Emery County.
-

Narrative about the Paradox Basin

Sub-surface brines in the Paradox Formation of eastern Utah can carry trace amounts of lithium carbonate (an inorganic compound of lithium, carbon and oxygen) at depths about 9,000 feet. Another desirable trace mineral includes bromine. Deposits here are below sea level, under extreme pressures, and at temperatures higher than a hot tub.

The Paradox Basin region includes the counties of the "four corner states:" Arizona, New Mexico, Colorado and Utah. Grand County, Utah has the most crustal deformation, which is caused by the dissolution of the underlying salt formations, due to hosting the

incised canyons of the Colorado River and its close proximity to the La Sal Mountains, which condenses a significant amount of precipitation from the atmosphere (meteoric water) and dispersed as groundwater and as spring fed surface water.

The Paradox Formation consists of diverse layers of gypsum, anhydrite, and salt, interbedded with shale, sandstone, and limestone. There are geologic traps that contain reserves of petroleum, natural gas, carbon dioxide, and helium.

The Paradox Formation was formed in the Pennsylvania Period near structural depressions along the coast of the ancestral Rocky Mountains and the ancestral Pacific Ocean. Very similar to structural depressions such as the Salton Through and Death Valley in California (Basin and Range Province).

Sea level fluctuations were wildly aggressive during that time period. The basins filled with seawater and then evaporated away in at least 33 individual cycles, or until these basins were completely filled with deposits of sea water evaporates.

And then they were buried at depth by subsequent formations (overburden) during the Mesozoic and Cenozoic Eras, which are now being incised and dessicated by the aggressive erosive power of the Colorado River, which is even piercing through the Paradox Formation in Moab-Spanish Valley, Utah, and Cataract Canyon in Canyonlands National Park. This includes a tributary, the Dolores River, adjacent to the eastern slopes of the La Sal Mountains at Paradox Valley, Colorado.

Drilling pads are required to mechanically install steel well casings into a targeted layer of brine. Anson consultants say that the brine layers they are targeting are already saturated and that freshwater injection is not required. ([Reference](#))

What is different about Anson Resource's proposed and untested technology for mineral extraction in the Paradox Basin, is that evaporation ponds are not necessary to remove the processing liquids. They intend to use beads of resin that attract the lithium ions that this process crystalizes. This technology was developed in China and requires a licensing agreement for users such as Anson Resources.

The processing water is then returned to the subsurface with injection wells, which requires the drilling of more well cases and utilizing high pressure pumps, which also is not a new technology, but requires a 10-year operating permit from the Environmental Protection Agency (EPA).

For instance, the Bureau of Reclamation's operating permit in the western Colorado intercepts brine water that seeps into the Dolores River. Reclamation then injects the captured brine at depths of 16,000 feet (the deepest well casings in the world). This facility is located at Paradox Valley, Colorado, which is the name sake (type locality) for the Paradox Formation.

This practice by Reclamation has been recently modified to smaller injection volumes to avoid the hazards of earthquakes. Another public concern is pressurized brine can

cause fractures in crustal rocks (hydro-fracking) and this leakage under pressure could contaminate nearby layers of fresh groundwater.

###

The serious issues about drilling for rare metals in the Paradox Basin to make car batteries include installing well casings that wobble, warp, buckle and break in geologic formations that resemble toothpaste, rather than durable bedrock.

Also how to avoid accidentally venting hydrogen sulfide gas, natural gas, nitrogen gas, and helium gas into the atmosphere, at the work place, or into the neighborhood.

Not to forget how to avoid mobilizing formation water at depths between 8 and 10 thousand feet that is very stinky and toxic (hydrogen sulfide).

We also think it is important to mention that lithium batteries will not power these operations. What will power and construct the intense extractive operations of Anson Resources is fossil fuels.

Drilling issues near the Green River in Grand County, Utah.

- [Abstract: Office of Scientific and Technical Information](#). DOE.
- [Abstract: Four Corners Geological Society](#)

"The Salt Wash field is located 15 miles southeast of Green River, Utah, in the Paradox fold and fault belt. The field was discovered in 1961 and has produced over 1.3 million bbl of oil and 11.6 billion ft of gas from the Mississippian Leadville Limestone. The average surface elevation is 4,389 ft above sea level, and the depth to the top of the oil production is from 8,500 to 8,914 ft. Salt Wash field is an anticline with over 200 ft of closure on top of the Leadville. The producing zone is in the lower Leadville with intercrystalline and vuggy porosity developed in limestone and crystalline dolomitic limestone. The produced oil is a 50 to 53 API gravity crude with a 40 degrees F pour point. The gas, a mixture of two sources, is predominately nitrogen with some hydrocarbons (>10%) and smaller amounts of carbon dioxide and helium. All of the original wells suffered casing collapse in the overlying Paradox section resulting in their premature abandonment.

Additional undeveloped Leadville reserves may still be present. There may also be undiscovered reserves in the stratigraphically higher Cane Creek shale of the Pennsylvanian Paradox Formation in the Salt Wash field. The field is roughly 12 mi northwest of the Kane Springs unit where Columbia Gas has been completing horizontally drilled wells in the Cane Creek. The State 1-16A in Salt Wash field recovered 600 ft of 52 API gravity crude and no water from a drill-stem test of the Cane Creek. The State 1-16A well in Salt Wash field recovered 600 ft of 52 API gravity crude and no water from a drill-stem test of the Cane Creek. Reverse faulting and recumbent

folding combined with structural closure increases the potential for fracture development in the Cane Creek at Salt Wash field."

END

Oral History Program

JANUARY 28, 2025

BY TOM MARTIN AND JOHN WEISHEIT

Interviews about the modern history of the Grand Canyon and the Colorado Plateau

THE AIRCRAFT COLLISION OF 1956 IN GRAND CANYON NATIONAL PARK

Near the confluence of the Colorado River and the Little Colorado River. This incident is why the Federal Aviation Administration was founded in 1958.

- [2023 - Grand Canyon Midair Collision TWA and United Air Lines, June 30, 1956.](#) Spamer.
 - Read about this tragic incident at [Wikipedia](#).
 - [Visit this site on You Tube for additional history.](#)
-

Note: the files are listed alphabetically by first name.

Don Ranney interview on August 20, 2023. After serving in the U.S. Air Force from 1951 to 1956, Don joined the Civil Aeronautics Authority (CAA) and was a trainee at the Los Angeles Airport control center. on July 1, 1956, the day following the TWA and United airlines collision over the Grand Canyon, the worst accident in U.S. civil aviation history at the time.

- Audio - [Don Ranney on 20 August 2023](#). mp3
- Transcript - not available.
- Release Form - [Don Ranney](#). pdf

Ellen, Douglas and Karen Hudgin and 11 interviews in the spring of 2024. The Hudgin family operated Grand Canyon Airlines. Henry and Palen Hudgin (brothers) located the crash sites of the two missing aircraft.

- Audio - [March 7, 2024](#). mp3.
- Audio - [March 25, 2024](#). mp3.
- Audio - [April 8, 2024](#). mp3.
- Audio - [April 15, 2024](#). mp3.
- Audio - [April 23, 2024](#). mp3.
- Audio - [May 6, 2024](#). mp3.
- Audio - [May 7, 2024](#). mp3.
- Audio - [May 9, 2024](#). mp3.

- Audio - [May 13, 2024](#). mp3
- Audio - [May 14, 2024](#). mp3.
- Audio - [May 20, 2024](#). mp3.
- Transcripts - not available.
- Release Form - [Douglas Hudgin](#). jpg.
- Release Form - [Ellen Hudgin](#). jpg.
- Release Form - [Karen Hudgin](#). jpg.

Ervin, David and Raymond Cook

Ervin Cook, brother of David Cook, and Ervin's nephew Raymond Cook, recall David Cook who perished in the 1956 TWA United Disaster.

- Audio - [Ervin and Raymond Cook on 18 February, 2016](#). mp3.
- Transcript - [Ervin and Raymond Cook](#). pdf.
- Release Form - [Cook Family](#). pdf.

Etta Jang and her children Dana and Deeana recall husband/father James Jang, who perished in the 1956 TWA United Air Disaster.

- Audio - [Etta, Dan and Deeana Jang interview of 29 June, 2016](#). mp3.
- Transcript - [Etta, Dana and Deeana Jang](#). pdf.
- Release Form - [Etta, Dana and Deeana Jang](#). pdf.

Janice McElroy recounts the loss of her mother and father, Mildred R. Crick Hatcher and William W. Hatcher, who perished in the 1956 TWA United Air Disaster. At Janice's request and direction, this transcript has been edited and there is no recording. We greatly appreciate Janice taking the time to do this.

- Audio - not available.
- Transcript - [Janice McElroy Interview of 30 June, 2016](#). pdf.
- Release Form - [Janice McElroy](#). pdf.

Lisa Kaichen recalls her father, Noel Gottesman, who perished in the 1956 TWA United Air Disaster

- Audio - [Lisa Kaichen interview of 30 June, 2016](#). mp3.
- Transcript - [Lisa Kaichen interview](#). pdf.
- Release Form - [Lisa Kaichen](#). pdf.

Paul and Barbara Schnur Interviews of 2014 and 2019

- Audio of 2014 - [Paul and Barbara Schnur interview of 04 August 2014](#). mp3.
- Audio of 2019 - [Paul Schnur interview of 23 February 2019](#). mp3.
- Transcript of 2014 - [Paul and Barbara Schnur transcript of 04 August, 2014](#). pdf.
- Transcript of 2019 - [Paul Schnur transcript of 23 February, 2019](#). pdf.
- Release Form of 2014 - [Paul and Barbara Schnur in 2014](#). pdf.
- Release Form of 2019 - [Paul Schnur in 2019](#). pdf.

Ray Lasby Family

Cathy Natall and Lea Garcia are daughters of Ray Lasby and recall their father who died in the 1956 TWA United air disaster.

- Audio - [Family of Ray Lasby interview on 30 June, 2014](#). mp3.
- Transcript - [Family of Ray Lasby](#). pdf.
- Release Form -

Raymond and Christa Cook

Ray and Christa Cook recall Ray's father David Cook who perished in the 1956 TWA United mid-air collision over Grand Canyon.

- Audio - [Family of Raymond Cook interview on 30 June, 2014](#). mp3.
 - Transcript - [Family of Raymond Cook](#). pdf.
 - Release Form - [Family of Raymond Cook](#). pdf.
-

THE FRIENDSHIP CRUISE

Founded in 1957 by the Canyon Country River Marathon Association and mostly by residents in the cities of Moab and Green River in eastern Utah. In 1964 the US Congress established Canyonlands National Park. This event is held over the Memorial Day weekend when the snowmelt from the Rocky Mountain Province is underway. The high water minimized navigation problems related to shallow water obstructions, such as sandbars, gravel bars, and driftwood snags. Since the advent of the "21st Century Drought," this event has only occurred in the years of 2005 and 2010.

Participants begin the three day/two night event on the Green River at the boat ramp in the City of Green River (State Park campground) and ends on the Colorado River at the City of Moab boat ramp above the Colorado River Bridge. Total length of the trip is 184 miles. The distance going downriver from the the City of Green River to The Confluence with the Colorado River is 120 miles. The distance up the Colorado River from The Confluence to the City of Moab is 64 miles. Typically the boats are hard hull craft that plane at speeds of about 20 to 30 miles per hour and propelled by outboard motors, which can be tilted for more effective operations in shallow sections of the river.

Harry Thompson from City of Green River, Utah

- Audio 01 - [Harry Thompson on 22 July, 2021](#). mp3.
- Audio 02 - [Harry Thompson on 2 August, 2021](#). mp3.
- Release Form - [Harry Thompson](#). pdf.

Pete and Barb Peterson from City of Moab, Utah

- Audio - [Pete and Barb Peterson on 20 July, 2021](#). mp3.
 - Release Form - [Pete and Barb Peterson](#). jpg.
-

THE HISTORIANS

Roderick Frazier Nash

- Audio 01 - [Rod Nash on 22 September, 2024](#). mp3.
 - Audio 02 - [Rod Nash on 08 November, 2024](#). mp3.
 - Audio 03 - [Rod Nash on 17 November, 2024](#). mp3.
 - Audio 04 - [Rod Nash on 06 December, 2024](#). mp3.
 - Audio 05 - [Rod Nash on 16 December, 2024](#). mp3.
 - Master Thesis of 1960 - [The American Wilderness: A history of its preservation](#). pdf.
 - Photo 01 - [Roderick as a young boy in the Grand Canyon](#). jpg.
-

THE SCIENTISTS

Barbara Phillips (Audio Only)

- Audio 01 - [Barbara Phillips on 17 September, 2024](#). mp3.
- Audio 02 - [Barbara Phillips on 13 November, 2024](#). mp3.
- Audio 03 - [BarPbara Phillips on 20 November, 2024](#). mp3.
- Audio 04 - [Barbara Phillips on 04 December, 2024](#). mp3.
- Audio 05 - [Barbara Phillips on 11 December, 2024](#). mp3.

Peter Huntoon (Audio only)

- Audio 01 - [Peter Huntoon on 02 September, 2023](#). mp3.
 - Audio 02 - [Peter Huntoon on 03 September, 2023](#). mp3.
 - Audio 03 - [Peter Huntoon on 28 September, 28 2023](#). mp3.
 - Audio 04 - [Peter Huntoon on 29 September, 2023](#). mp3.
 - Audio 05 - [Peter Huntoon on 30 September, 2023](#). mp3.
 - Audio 06 - [Peter Huntoon on 01 October, 2023](#). mp3.
 - Audio 07 - [Peter Huntoon on 02 October, 2023](#). mp3.
 - Audio 08 - [Peter Huntoon on 03 October, 2023](#). mp3.
 - Audio 09 - [Peter Huntoon on 04 Otober, 2023](#). mp3.
 - Audio 10 - [Peter Huntoon on 13 October 2023](#). mp3.
 - Audio 11 - [Peter Huntoon on 25 October, 2023](#). mp3
 - [Release](#). pdf.
 - [Short Bio](#). jpg.
-

THE RIVER RUNNERS AFTER LAKE MEAD/HOOVER DAM (1934)

Mildred (Millie) Janet Davis-Miller (audio only)

- [Audio 01 on November 1, 2017](#). mp3.
 - [Bio](#)
 - [Release](#)
 - [Narrative](#)
-

THE AGENCIES

National Park Service

Mark Law - Mark Law recounts his law enforcement ranger duties at Glen Canyon National recreation Area and river ranger duties at Grand Canyon National Park in the 1980s.

Audio

- [Part one on May 02, 2016](#). mp3
- [Part two on May 03, 2016](#). mp3
- [Part three on May 03, 2016](#). mp3

Transcripts

- [Part one of May 02, 2016](#). pdf
- [Part two on May 03, 2016](#). pdf
- [Part three on May 03, 2016](#). pdf

Release

- [Mark Law Release](#)
-

THE ACTIVISTS

Jeff Ingram - Jeff recounts working for the Sierra Club keeping dams out of the Grand Canyon in the late 1960s and working on the 1975 Grand Canyon National Park Enlargement Act. This is a three part interview conducted in November and December of 2014.

Audio

- [Jeff Ingram Tape #1](#). mp3.

- [Jeff Ingram Tape #2](#).mp3.
- [Jeff Ingram Tape #3](#). mp3.

Transcripts

- [Jeff Ingram Transcript Part 1](#).pdf.
- [Jeff Ingram Transcript Part 2](#). pdf.
- [Jeff Ingram Transcript Part 3](#). pdf.

Release

- [Jeff Ingram Release, 2014](#). pdf.

THE ELECTED
Nevada

THE HIRED
Arizona
Utah
Colorado

THE UNHIRED
Arizona
Utah

###

MORE interviews are forthcoming

Post-2026 EIS: Scoping for Re-consultation of Interim Guidelines

MARCH 06, 2025

BY JOHN S WEISHEIT



Gale Norton and John Weisheit along the Colorado River in 2004 discussing the potential option to improve critical habitat, water delivery and water quality by decommissioning Glen Canyon Dam.

WEBSITES: Department of Interior

- [Colorado River Post 2026 Operations](#). USBR.
- [Integrated Technical Education Workshops](#). USBR.
- [Federal investments for Colorado River long-term planning](#) (DOI, USDA & EPA that totals 6 billion dollars).
- [Exploration Tool for Post-2026 Operations in the Colorado River Basin](#) (login required; use Google Chrome or Firefox)

ALTERNATIVES FROM THE STATES, MAJOR NGOS, AND ACADEMICS

New information for Post-2026 EIS

- December 11, 2025 - [Water Reuse Report](#). UCLA. (Press Release)
- May 6, 2025 - [Natural Resources Defense Council, et al.](#)
- February 13, 2025 - [Comments by the Lower Basin States on Alternatives Report](#)
- January 17, 2025 - [Post-2026 Alternatives Report](#). Reclamation.
- December 30, 2024 - [Upper Division States Alternative Refinements](#)
- December 22, 2023 - [Table: Lower Basin System Conservation Implementation Agreements](#)
- December 22, 2023 - Upper Basin System Conservation amounts were less than 38,000 acre-feet.
- March 5, 2024 - [Upper Basin States Alternative for EIS; Post-2026 Operations](#)
- March 6, 2024 - [Lower Basin States Alternative Presentation for EIS; Post-2026 Operations](#)
- March 11, 2024 - [Tribal Principles to Reclamation](#). Sovereign Tribes.
- March 29, 2024 - [Cooperative Conservation NEPA Alternative](#). Audabon et al.
- March 29, 2024 - [Managing the Powell / Grand Canyon / Mead Ecosystem after 2026](#). Schmidt, Kuhn and Fleck.
- MOU: [Upper Basin Tribes and Upper Colorado River Commission](#).
- April 29, 2024 - [National Park Service and Fish and Wildlife Alternative](#)

WEBINAR UPDATES

- **October 2024** - [Preliminary modeling of the above alternatives](#). Reclamation.
-

NEW SCIENCE IN 2024

Snowmelt Efficiency since 2020

The evaporation and sublimation "take" of climate change impacts

- 2020: The snowpack was 107%, but runoff into Lake Powell was 61%. A shortage of 46%.
- 2021: The snowpack was 89%, but runoff was 37%. A deficit of 52 %.
- 2022: The snowpack was 90%, but runoff was 63%. A shortfall of 27%
- 2023: The snowpack was 161%, but runoff was 140%. A vanishing of 21%.
- Source: [KSL.com](#)
- [Reservoir drawdown in 2024: Are we on track to recover storage?](#) Schmidt.
- [Closing loopholes in water rights systems to save water: The Colorado River Basin](#). Debaere.

- [Cloud seeding to boost rain, snow hasn't proven effectiveness federal report says](#). By Tony Davis For The Arizona Daily Star.
 - [Report - Cloud Seeding Technology: Assessing Effectiveness and Other Challenges](#). GAO, 2024.
-

Opinion

- [Colorado River negotiations will reach an impasse if Colorado won't face cuts](#). By Tom Buschatzke for The Denver Post.

NEWS From 2024

Series by Alan Best at Big Pivots
October, 2024

- **Introduction:** [Heading for the Colorado River Cliff](#)
- **Part One:** [Colorado River Compact curtailments](#)
- **Part Two:** [Colorado River Compact curtailments](#)
- **Part Three:** [Colorado River Compact curtailments](#)

Additional News

- March 29, 2026 - [As water lifeline evaporates Arizona faces a cultural change over water use](#). By Tony Davis for The Arizona Daily Star.
- [December 01, 2025 - How potential cuts to Colorado River water could affect Utahns](#). Brooke Larson for SL Trib.
- [March 20, 2025 - The March 24-Month study and the myth of a "Compact Call"](#). Eric Kuhn for Inkstain.
- [March 12, 2025 - Feds blasted for not protecting infrastructure at Arizona's Glen Canyon Dam](#). By Tony Davis for AZ Daily Star.
- [March 8, 2025 - Colorado River choices botched by Feds under Biden, letter to Burgum alleges](#). By Greg Haas for Channel 8 News, Las Vegas.
- [March 4, 2025 - 'Water Trains' desalting stations among proposals to boost Arizona's water supplies](#). By Tony Davis for AZ Daily Star.
- [January 30, 2025 - River District warns again about impacts to Western Slope](#). By Heather Sackett for Aspen Journalism.
- [January 22, 2025 - The January 2025 24-month study is a major caution sign for the Colorado River Basin](#). Kuhn, Schmidt and Fleck.
- [December 18, 2024 - Utah wants to shore up its Colorado River share with a water savings account](#). By David Condos for KUER.
- [December 12, 2024 - Colorado has big dreams to use more water from the Colorado River but will planned reservoirs ever be built?](#) By Heather Sackett for Aspen Journalism.

- [December 10, 2024 - "Zero Progress:" Western states at impasse in talks on Colorado River water shortages.](#) By Ian James for The Los Angeles Times.
 - [December 6, 2024 - Colorado River states fear a long legal battle as talks falter over shortage rules.](#) By Brandon Loomis for The Arizona Republic.
 - [November 25, 2024 - Long-unthinkable, a court fight looms over the Colorado River.](#) By Tony Davis for The Arizona Daily Star.
 - November 19, 2024 - [Arizona, California push study of forced cuts on Colorado River.](#) By Shannon Mullane for The Colorado Sun.
 - May 5, 2024 - [Why Colorado River basin states are split on long-term plan to manage its water.](#) By Carter Williams for KSL.
 - March 6, 2024 - [Lower Colorado River Basin states submit competing water conservation plan as deadline looms.](#) Sharon Udasin for The Hill.
-

NOTE:

- The Draft EIS is scheduled to be published at the end of Year 2024. This did not happen.
 - It would not surprise us if the Record of Decision arrives at the last possible moment, which is September of 2026.
 - We think the final decision will not be the right one, as was the case for the Record of Decision signed on December 13, 2007.
-

SCOPING REPORT is provided [HERE](#)

DISCUSSION: Deep Uncertainty

Definition: When parties do not know or cannot agree on future conditions and how to measure these conditions.

We think the future is easy to determine, but the necessary sacrifices to prepare for this future are not achievable, because our society is deeply disconnected from Nature. We find it difficult to accept this truth: Nature as baseline.

- [Reclamation Report.](#) Dr. Rebecca Smith.
- [RAND Report](#)
- [CADSWES Report](#)
- [**CCASS Report](#)

NEWS about Deep Uncertainty

- February 13, 2024 - [With climate change Colorado River officials peer into muddy future](#). Joshua Partlow for Washington Post.

National Academy of Sciences on deep uncertainty

- "There is a broad class of problems that have no "solution" in the sense of an agreed course of action that would be expected to make the problem go away. These problems can also be so important that they should not be avoided or ignored until the fog lifts. We simply must learn to deal more effectively with their twists and turns as they unfold. We require sensible regular progress to anticipate what these developments might be with a balanced diversity of approaches. The payoff is that we will have had the chance to consider alternative courses of action with some degree of calm before we may be forced to choose among them in urgency or have them forced on us when other--perhaps better--options have been lost. Increasing atmospheric CO2 and its climatic consequences constitute such a problem." [Reference, 1983](#).

The naturalist approach

- Presentation: [Let the river speak](#). Dr. Victor R. Baker
- Interview: [Rethinking the fabric of geology](#). Dr. Victor R. Baker.
- [A Reverence for Rivers](#). Leopold.
- [The Invention of Nature and Alexander Von Humboldt](#).

DOING THE MATH WITH PENCIL AND PAPER

- Baseline: Since 1991, the take from global warming is 800,000 acre-feet per decade, or 80,000 acre-feet per year.
- Baseline: Since 1999, the take from global warming and human over-consumption is 1.35 million acre-feet (maf) per year.
- Baseline: Total reductions of 1.35 maf will stabilize the system for the decade of the 2020s.
- Baseline: Restoring the reservoirs in the 2020s will require reductions of 2.7 maf.
- Baseline: Total reductions in the decade of the 2030s will be 3.5 maf.
- Baseline: Total reductions in the decade of the 2040s will be 4.3 maf.
- Baseline: Total reductions in the decade of the 2050s will be 5.1 maf.
- Baseline: Total reductions in the decade of the 2060s will be 5.9 maf.
- Did Reclamation simulate this in their modeling? [Yes they did and in 2011](#).

NEWS

- [With climate change Colorado River officials peer into muddy future.](#) Joshua Partlow for Washington Post.
- [Becky Mitchell shares priorities in ongoing Colorado River negotiations.](#) By Bella Biondini for *Gunnison Country Times*.
- [Two prominent farmers join calls to study Glen Canyon Dam decommissioning.](#) By Tony Davis for *Arizona Daily Star*.
- [Here's what the 7 states say about solving the West's water crisis.](#) Greg Hass for *KLAS News*.
- [As the Colorado River declines some upstream look to use it before they lose it.](#) By Wyatt Myskow for *Inside Climate News*.
- [Colorado River problems, Glen Canyon Dam, desalination and city that could run dry.](#) By Greg Haas for *KLAS News*.
- [As Colorado River shrinks, California farmers urge 'One-Dam Solution'.](#) By Ian James for Los Angeles Times.
- [Colorado River Commission reviews lessons learned from water conservation program.](#) By Heather Sackett for Aspen Journalism.
- [California likely spared Colorado River cuts in 2024, but long-term woes remain.](#) Janet Wilson for The Desert Sun.

COMMENT LETTERS FOR POST-2026 OPERATIONS EIS

- [Living Rivers et al.](#) Proposal to decommission Glen Canyon Dam and called [The One-Dam Solution](#).
- [Craig Morgan and Abatti Farms.](#) Propose decommissioning Glen Canyon Dam.
- [Imperial Irrigation District](#)
- [Lower Basin States.](#) Study bypass at Glen Canyon Dam for low reservoir operations.
- [The Municipal Supply: SNWA, CAP & MWD.](#) Study bypass at Glen Canyon Dam for low reservoir operations.
- [Glen Canyon Institute.](#) Study full bypass of Glen Canyon Dam and for flood control.
- [Jenny E. Ross, JD](#)
- [Upper Basin Dialogue](#)
- [Grand Canyon Trust](#)
- [Save The Colorado](#)
- [Arizona](#)
- [Colorado](#)
- [Colorado River Indian Tribes](#)
- [Gila River Indian Community](#)
- [Hopi Tribe](#)
- [Jicarilla Apache Nation](#)
- [City of Phoenix](#)
- [Quechan Tribe](#)

- [Seven Basin States](#)
- [Salt River Project](#)
- [Upper Colorado River Commission](#)
- [Utah](#)
- [Ute Mountain Tribe](#)
- [Wyoming](#)
- [Yuma County, Arizona](#)
- [New Mexico](#)

SCOPING COMMENTS COMPILED BY BUREAU OF RECLAMATION

- **Click here** to visit this Reclamation website
- [All submissions combined as a searchable document](#)
- [Tribal Submissions combined](#)
- [Individual submissions combined](#)
- [Organizations T to Z](#)
- [Organizations L to S](#)
- [Organizations G to K](#)
- [Organizations A to F](#)
- [Fed, State & Local S to Z](#)
- [Fed, State & Local G to R](#)
- [Fed, State & Local A to F](#)
- [Form letters combined \(4 count\)](#)

###

COMMENTS ARE DUE: Tuesday, August 15, 2023 (60 days)

Send comments to:

eMail address: crbpost2026@usbr.gov

Or, via postal service to:

**Bureau of Reclamation
Attn: Post-2026 (Mail Stop 84- 55000)
P.O. Box 25007, Denver, CO 80225**

[Press Release](#)

###

- To review the Notice of Intent for this scoping process in 2023, [click here](#).
- To compare the Notice of Intent for the scoping process in 2005, [click here](#).
- To review last year's (2022) "prescoping" process, [click here](#).
- To review the website for scoping process of 2023, [click here](#).

- To review Reclamations presentation for public scoping, [click here](#).
- To review the recordings of the three scoping webinars of 2023, [click here](#).
- To review Reclamation's 2012 Handbook for following the NEPA process, [CLICK HERE](#)

ALTERNATIVES

- Please read the citizen alternative called the [One-Dam Solution](#) and written in 2005 by Living Rivers & Colorado Riverkeeper.

WE THINK THIS IS HELPFUL INFORMATION: Opinions by the Federal Appellate Court in the 10th District; July of 2023. NEPA litigation for the Green River Block Water Exchange Contract between Reclamation and the state of Utah; a new depletion contract for water stored in Flaming Gorge Reservoir.

- [Majority Opinion](#)
- [Judge Timothy M. Tymkovich](#)
- [Judge Nancy Louise Moritz](#)
- [Minority Opinion](#) (dissent)
- [Judge Veronica Sophia Rossman](#)
- [Amicus Brief](#)
- Uintah Ouray Ute Tribe

NEWS

- [June 16, 2023 - Fixing the flawed Colorado River Compact](#). By Shemin Ge et al for Eos (American Geophysical Union).
- [June 16, 2023 - Tribes push for greater involvement in Colorado River talks](#). By Ian James for The Los Angeles Times.
- [June 6, 2023 - The Grand Canyon and Colorado River are in Crisis](#). By Raymond Zhong for The New York Times.

NARRATIVE

During the public scoping meetings for the development of *2007 Interim Guidelines*, the water managers in attendance were emphatic; that reductions greater than 20% would be "impossible" to achieve. This is why the seven states did not participate in the voluntary prescriptions of the original *Guidelines*, until reservoir elevations approached the level where intakes at Glen Canyon Dam begin to suck air.

Precautionary planning in the Colorado River Basin was possible in 1970 when Long Range Operating Criteria (LROC) became the first tool to achieve water resource sustainability, and precautionary planning right now is a situation of too little and too late. Because this economic engine is designed for consumptive uses of 16.5 million acre-

feet annually, not 12.5 maf (a reduction of minus 25%). Consequently, the decision-makers have to understand that this ship has already slammed into an iceberg. We will eventually understand that the best solution is to begin conversations about starting over.

Read: [Revelle and Wagoneer, 1983](#)

The proposed reductions from the Lower Basin States, as of this date, is about 12% per year. The ask from Reclamation was a range from 14% to 27%. Additionally, it would appear that the Upper Basin states will not be participating in any reductions at this time. The Upper Basin states are building and enlarging dams at the present time, and other diversion contracts have been proposed. Consequently, the grassroots have intervened by engaging the judicial branch of government.

If you think that curtailing water used to grow alfalfa is a solution, please understand that such a campaign actually means changing the food preferences of everyday consumers. It means asking North Americans to forsake hamburgers and pizzas; milk products such as yogurt, cheese, ice cream and formulas for infants.

At the end of the next decade, reductions of 30% will be necessary; and then 40% in the following decades thereafter. Especially if the municipalities continue to sprawl across the deserts of North America, and fueling that growth by purchasing water from farmers that take the responsibility of feeding the nation very seriously.

Proposed new sources of water, such as constructing desalination facilities, and the electric generating stations that will power them, and the pipelines, and the pump stations, and the transmission wires, will not be operational in the 2030s, nor in the 2040s.

So these are the decades when the system will crash and the assets of 50 to 60 million people become stranded.

If your thinking otherwise, consider that it took parts of four decades to negotiate the Law of the River, and to finish the construction of Hoover Dam, the All American Canal, and the Colorado River Aqueduct.

We can anticipate the depletion of our groundwater supplies as the third and final bad planning decision, and witness the great abandonment of this geography.

Rather than kicking a rusty can in the wrong direction, let's stop this madness and take a completely different pathway.

- **Read our 2022 prescoping comment letter [HERE](#), which concludes that this process must include an emergency action plan because the seven states will fail once again and the system will be lost.**
- **Review the entire prescoping process from last year (2022) [HERE](#)**

COMPARING THE PROCESS OF 2005 WITH THE PROCESS OF 2022

Federal Register Notices of 2023 and from 2005

- [Click here to review the Federal Register Notice of June 16, 2023.](#)
- **Note:** this document above avoids important subjects such as, the changing characteristics of the atmosphere and ocean, floods, evaporation, sublimation, and sedimentation; the looming problems that are always dismissed at every level of future planning.
- [Click here to compare the Federal Register Notice for the current guidelines to avoid water shortages and from Year 2005 \(June 15\).](#)

Scoping Summaries

- [Click here to read the summary of pre-scoping in 2022](#)
- [Click here to read the summary of scoping in 2005](#)

###

TERMINATION DATES OF 2007 INTERIM GUIDELINES

Termination date of 2007 Guidelines

See: [2007 Record of Decision](#).

- "Except as provided in Section 8.B., these Guidelines shall terminate on December 31, 2025 (through preparation of the 2026 Annual Operating Plan)."

Termination dates of "Special Provisions"

1. "The provisions for the delivery and accounting of ICS in Section 3 shall remain in effect through December 31, 2036, unless subsequently modified, for any ICS remaining in an ICS Account on December 31, 2026."
 2. "The provisions for the creation and delivery of Tributary Conservation ICS and Imported ICS in Section 3 shall continue in full force and effect until fifty years from the date of the execution of the ROD."
 3. "The provisions for the creation and delivery of DSS in Section 4 shall continue in full force and effect until fifty years from the date of the execution of the ROD."
-

24-Month Study Reports for Colorado River Operations

MARCH 20, 2025

BY JOHN WEISHEIT

A 24-month report is a document from the Bureau of Reclamation which provides information about the conditions of main reservoirs in the Colorado River basin and projections for the near future. For instance, the report is essential for making a determination about operating criteria for shortage and surplus declarations.

[VISIT THIS WEBPAGE](#) For additional information on dam operations,

[Upper Colorado River Basin Water Resources Division](#)

[Lower Colorado River Basin Water Resources Division](#)

NEWS

- 2021, April - [The 24-Month Report was a shocker, but is it too optimistic?](#) Kuhn.
- 2025, January - [The January 2025 24-month study is a major caution sign for the Colorado River Basin](#). Kuhn, Schmidt and Fleck.
- 2025, March - [The March 24-Month study and the myth of a “Compact Call”](#). Eric Kuhn for Inkstain.

REPORTS

- [Evaluating the Accuracy of Reclamation’s 24-Month Study Lake Powell Projections](#). USU, 2022.
- [Leakage/seepage: around/through; Glen Canyon Dam](#). John Weisheit, 2023.
- [2023 - A survey of the Bureau of Reclamations Decree Accounting Reports in the Lower Colorado River Basin](#). McCoy for ASCE.

MONTHLY RESERVOIR SUMMARY

- [Lake Powell monthly summary website](#)
- [Lake Mead monthly summary website](#)
- Lake Powell monthly summary - [Water Year 2000 to 2013](#)
- Lake Powell monthly summary - [Water Year 2000 to 2017](#)
- Glen Canyon Dam Updates - [2010 to 2016](#). RRFW RiverWire.

ARCHIVE OF 24-MONTH REPORTS

- [Reports combined from 2003 to 2020](#) (there are gaps)

January 24-Month Reports Only

- [Flaming Gorge Dam 2006 to 2020](#) (January only)
- [Hoover & Glen Canyon dams 2002 to 2023](#). ZIP FILE
- [AOPs combined 2000 to 2024. Only data pertinent to Lake Powell and Lake Mead](#). ZIP FILE.

24-MONTH REPORTS BY THE YEARS

- **The missing years:** Reservoir elevations at Lake Powell are located [HERE](#)
- **Upper Basin** historic reservoir operations are located [HERE](#)
- **Lower Basin** historic reservoir operations are located [HERE](#)

2003

- [July](#); [December](#)

2004

- [January](#); [April](#); [July](#); [September](#); [October](#); [November](#); [December](#)

2005 - Begin the development of Shortage Guidelines (Interim Guidelines)

- [January](#); [February](#); [March](#); [May](#)

2006

- [January](#)

2007 - Conclude the development of Interim Guidelines

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2008

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2009

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November \(lc\)](#); [November \(uc\)](#); [December \(uc\)](#); [December \(lc\)](#)

2010 - **Begin the Supply and Demand "Basin Study"** (not a NEPA Process)

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2011 - Begin development of Long-Term Experimental and Management Plan for Glen Canyon Dam

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2012 - End Supply and Demand "Basin Study (not a NEPA process)

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2013

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2014 - Begin the development of Drought Contingency Planning (not a NEPA process)

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2015

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2016

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2017

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2018 - Finish Tribal Water Basin Study & Develop 5-year projected future conditions

- [January](#); [February](#); [March](#); [April](#); [May](#); [June](#); [July](#); [August](#); [September](#); [October](#); [November](#); [December](#)

2019 - Conclude the development of Drought Contingency Planning (not a NEPA process)

- January; February; March; April; May; June; July; August (LB); August (UB); USBR Press Release; September; October; November; December

2020 - 7.D. Review of 2007 Interim Guidelines & Five-year projected future conditions

- January; February; March; April; May; June; July; August; September; October; November; December

2021 - Preparing for new operation guidelines

- January; February; March; April; May; June; July; August; September; September Projections; **October**; November; December; Projected Minimum; Projected Maxium.

2022

- January; February; March; March RiverWire; April; May; June; July; August; September; October; November; December

2023 - Begin reconsultation of 2007 Interim Guidelines

- January; February; March; April (including Max and Min); May; June; July; August (press release); September; October; November; December.

2024

- January Projected Maximum; January Projected Minimum; January Actual; February; March; April; May; June; July; August & includes Max and Min projections; September; October; November; December.

2025

- January (including Min and Max projections); February; March (Eric Kuhn commentary); April; April Maximum; May; June; June Minimum; July; August; August Maximum; August Minimum; September; October; October Minimum; October Maximum; November; December; December Minimum.

2026 - End Reconsultation of 2007 Interim Guidelines

- January; Jan Max; Jan Min; February; Feb. Min.; March; April; April MIN; April MAX; May; June; July; August; September; October; November; December
-

NO WATER AVAILABLE !!

OCTOBER 14, 2025

BY KYLE ROERINK AND JOHN WEISHEIT

THE PUBLICATION

- [No Water Available: Commonsense recommendations to limit Colorado River Conflict](#). By Great Basin Water Network, et al.; 2025.

NEWS

- [Moab Times Independent and Salt Lake Tribune by Andrew Christiansen and Brooke Larson](#)
- [Big Pivots by Allen Best](#)

Independent references in the news

- [Colorado River Insights: Dancing With Deadpool](#). CRRG; 2025.
- [Analysis of Colorado River Basin Storage Suggests Need For Immediate Action](#). Schmidt et al.; 2025
- [The 1922 Compact Is Now The Obvious Elephant In The Negotiating Room](#). Kuhn et al.; 2025.
- [A Bold Plan for Saving the Colorado River](#). Squillace; 2023.

RELEVANT SCIENCE SINCE 1956

Projecting the advance of aridification since the 19th century

- 1956 - Revelle and Suess: [Carbon Dioxide Exchange Between Atmosphere and Ocean and the Question of an Increase of Atmospheric CO₂ during the Past Decades](#).
- 1983 - Revelle and Waggoner: [Effects of a Carbon Dioxide-Induced Climatic Change on Water Supplies in the Western United States](#)
- 2008 - Burnett and Pierce: [When will Lake Merad go dry?](#)
- 2010 - Daniel Cayan et al: [Future dryness in the southwest US and the hydrology of the early 21st Century drought](#).

Groundwater depletion

- [2025 - Groundwater dominates snowmelt runoff and controls streamflow efficiency in the western United States](#). Brooks.
- [2025 -Unprecedented continental drying shrinking freshwater availability and increasing land contributions to sea level rise](#). Chandanpurkar.

THE REFERENCES FOR "NO WATER AVAILABLE"

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- 2. U.S. Fish and Wildlife Service. Species Status Assessment for the Colorado River Pikeminnow (*Ptychocheilus lucius*). Version 1.1. Page 29. April 2022. <https://ecos.fws.gov/ServCat/DownloadFile/219586>
- 3. Bureau of Reclamation, Colorado River Post-2026 Operations, Web Page, Last Visited on January 23, 2025. <https://www.usbr.gov/ColoradoRiverBasin/post2026/index.html>
- 4. Abdelmohsen, Karem, Famiglietti, James S., et al. Declining Freshwater Availability in the Colorado River Basin Threatens Sustainability of Its Critical Groundwater Supplies. Geophysical Research Letters. Volume 52. Issue 10. May 27, 2025. <https://doi.org/10.1029/2025GL115593>
- 5. Supra at 2
- 6. Sackett, Heather. Colorado has big dreams of storing millions of acre-feet of water — but will planned reservoirs ever be built? Aspen Journalism. December 16, 2024. <https://www.aspentimes.com/news/aspen-journalism-colorado-has-big-dreams-of-using-more-water-from-the-colorado-river/>
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- 10. Upper Colorado River Commission. Resolution of the Upper Colorado River Commission: Updated 2016 Upper Division States Depletion Demand Schedule. Passed on June 14, 2022. <http://www.ucrccommission.com/wp-content/uploads/2022/06/UCRC-and-Upper-Division-States-Combined-Resolution-and-Updated-2016-Depletion-Demand-Schedule-June-14-2022-1.pdf>
- 11. See Colorado Constitution Article 16 Section VI and C.R.S. Title 37
- 12. See N.M.A.C. Title 19, Chapter 26, Part 2, Section 12
- 13. See U.C. Title 73, Chapter 3, Section 8
- 14. See W.S. Title 41, Chapter 4, Section 503

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- 17. Upper Colorado River Basin Compact. <https://www.usbr.gov/lc/region/g1000/pdffiles/ucbsnact.pdf>
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-

Paper water rights from Utah counties have been transferred for use in Grand County and Emery County

DECEMBER 08, 2025
BY JOHN WEISHEIT

RECORD KEEPING

Utah State Engineer & the administrative websites for water right numbers in Utah

- [Water right search engine hyperlinked here](#)
- [Search for water right numbers via Google Maps](#)

Legal Reviews

- [2021 - The Importance of Pre-Compact Water Rights in the Climate Change Era of Colorado River Planning](#). Hagen.
- [1989 - Utah Water Rights Transfer Law](#). Davis.
- [1988 - Economic Impacts of Water Law State Law and Water Market Development in the Southwest](#). Colby

Total water transfers by Utah's eastern counties to Emery County and Grand County in annual acre-feet: 115,040

Note: This total does not include the existing and proposed water allocations by Emery County and Grand County.

These are shared Colorado River water rights for Utah and guaranteed by the active water storage available in Flaming Gorge Reservoir.

Utah's Water Resource Data

- [2015 - Water Data Volume 3](#)
- Water consumption in Green River City and Gunnison Valley (Southeast Emery County)
- Water consumption in Moab and Spanish Valley (Southern Grand County)

PROTEST LETTERS OF INTEREST

- [2026 - Central Utah Project protests Fixed Time Application of the White River in Uintah County](#)
- [2023 - Reclamation's protest letter for groundwater application in Duchesne County.](#)
- [2010 - Reclamation's protest for application by City of Green River in Emery County.](#)
- [2025 - Central Utah Project protest for application by San Juan County for use in Grand County.](#)

- [2015 - Reclamation's protest for application by Wilson Arch Water & Sewer District in San Juan County.](#)
- [2013 - Protest letter to Daggett County](#)

Kane County transfer to Emery County

- [91-5230](#) (previously [89-74](#); [89-1285](#); [89-1513](#))
- Annual acre-feet: 29,600 (original amount as of 2010)
- Annual acre-feet: 13,670 (current modified amount)
- Priority date: 1/15/1964
- Point of diversion: Emery County
- Purpose: Nuclear fuel power plant
- Protested? Yes.
- Active withdrawal? No

San Juan County to Emery County and Grand County

- [91-5233](#) (renumbered from [09-462](#))
- Annual acre-feet: 24,000
- Priority date: 04/21/2000
- Original point of diversion: Emery County in 2010
- Purpose: Nuclear fuel power plant
- Repurposed in 2025 for residential development at City of Green River and Cisco in Grand County
- Repurposed point of diversion: Grand County (Colorado River near historic Cisco Pump Station)
- Repurposed for endangered fish at mouth of San Rafael River (2,000 acre feet annual; a fixed time application of ten years)
- Protested? Yes.
- Active withdrawal? No

Wayne County

- [95-434](#)
- Annual acre-feet: 49,370
- Priority 11/29/1960
- Point of Diversion: Grand County
- Purposes: agriculture and lithium extraction
- Protested? Yes
- Active withdrawal? Yes (pivots in Grand County)

Duchesne County

- [41-3716](#)
- Annual Acre feet: 20,000
- Priority date: 08/07/1958
- Point of diversion: Grand County
- Purpose: Potash extraction
- Protested? Yes.
- Active withdrawal? No

Daggett County

- [41-3687](#)
- Annual acre feet: 8,000
- Priority date: 12/04/2006
- Point of diversion: Green River Pump Station in Grand County (Elgin)
- Purpose: Potash extraction
- Protested? Yes.
- Active withdrawal? No

Grand County

- [Admin Record for water Right # 05-3163](#)
- [2026 - Groundwater Recharge Plan](#). GWSSA. (Not yet funded, nor formalized with Division of Water Rights.)
- [2020- Water Conservation Plan for Spanish Valley Grand County Utah](#). GWSSA.
- [B2 Funding Proposal](#). GWSSA. (Not accepted by the Trump Administration.)
- [Green River UMTRA Pipeline Proposal to Thompson, Crescent Junction and Grand County](#). GWSSA.
- Annual acre-feet: 4,000
- Reference: [Protest letter to Daggett County](#)

Emery County

- [City of Green River #92-642](#)
- [Anson Resources # 92-695](#) (Subsidiaries: Blackstone Minerals and A1 Lithium)

NEWS

- September 22, 2024 - [State engineer doubles down on approval of controversial Utah lithium drilling project](#). By Anastasia Hufham of The Salt Lake Tribune.
- November 5, 2025 - [State weighs water right change as developer eyes rebirth of Cisco ghost town](#). By Andrew Christensen For Moab Times-Independent.
- [Local Groups Protest Water Application for Proposed Potash Mine](#)

- [BLM Okays Potash Exploratory Drilling Project Near Labyrinth Canyon](#)
- [BLM Gives Green Light to Hatch Point Potash Exploration](#)

ADDITIONAL INFORMATION

THE ULTIMATE PHASE OF THE CENTRAL UTAH PROJECT

The story of a paper water right looking for wet water projects and the billions that will be spent to chase it.

SUMMARY: The [40-year plan](#) for water right 41-3479 (Flaming Gorge Water Right)

In 1996, the U.S. Bureau of Reclamation (BOR) assigned the majority of approved Utah Water Right [41-3479](#) (A30414d) (Flaming Gorge Water Right) to the Utah Board of Water Resources (Board). This right allowed the storage of 500,000 acre-feet of water in Flaming Gorge Reservoir and was to be used for the Ultimate Phase of the Central Utah Project.

After the decision was made to not build the Ultimate Phase and after discussions with the state of Utah, the BOR transferred the majority of the right (447,500 acre-feet of diversion and 158,800 acre-feet of depletion) to the Board.

See: [Market Assessment of Flaming Gorge Reservoir](#) by Reclamation in 2007; the total storage in Flaming Gorge Reservoir for consumptive use by Wyoming, Colorado & Utah is only 165,000 acre-feet per year.

See also: [Memo from Eric Kuhn to Joint West Slope Risk Study Update](#) (2016). The upper basin states are developing contingency planning documents to preserve hydropower production at Lake Powell. One strategy includes evacuating a prescribed amount of reservoir water from Flaming Gorge Dam.

The Board desired to make this water available to Utah water users within the Colorado River Basin that could put the water to beneficial use. The Board went through a process of receiving applications for this water, approving those applications, then segregating and transferring portions of the right to those applicants. The applicants were given a time-frame for developing the water, and water not developed within that time would revert to the Board.

As part of this allocation process, the Board set aside 73,000 acre-feet of the Flaming Gorge Water Right in anticipation of the future Lake Powell Pipeline (LPP). In 2006, the Utah Legislature passed the Lake Powell Pipeline Development Act ([73-28 UCA](#)) which authorizes and directs the Board of Water Resources to develop the LPP. This project will divert water at Lake Powell, upstream of Glen Canyon Dam, and will deliver it to southwest Utah. The project is needed to supply the water needs of the growing population and provide for economic development.

The Board has filed a Request for Extension of Time to File Proof of Beneficial Use for the unused portion of the Flaming Gorge Water Right as well as for other portions of the right that have reverted, or will revert to the Board and to the Lake Powell Pipeline, including the following water rights:

RIGHT	DIVERSION
--------------	------------------

- 41-3516 - 2,000 af
- 41-3529 - 655 af
- 41-3532 - 200 af
- 49-1654 - 2,400 af
- 89-1595 - 682 af
- 89-1596 - 417 af
- 89-1614 - 930 af
- 89-1616 - 242 af
- 97-2220- 300 af
- 97-2237 - 240 af
- 91-5075 - 2,880 af
- 92-638 - 8,239 af
- 92-656 - 522 af
- 93-3750 - 2,478 af

If the extensions are granted, the Board will request that all segregated rights be consolidated back to Water Right 41-3479. The water represented by these rights will be delivered by the Board, through the LPP, to supply the municipal and industrial water needs of Kane County Water Conservancy District, Washington County Water Conservancy District and Central Iron County Water Conservancy District. Iron County has since dropped out of the Lake Powell Pipeline, claiming the project was financially burdensome.

The Board has also agreed to subordinate their Flaming Gorge Water Rights to the BOR's water right for the Central Utah Project, and to the portions of the Flaming Gorge Water Rights that were transferred to the Uintah and Duchesne County Water Conservancy Districts for use in the Uintah Basin, subject to the districts also subordinating their rights to the BOR's water right for the Central Utah Project.

UTE INDIAN WATER COMPACT

According to Utah law ([Title 73, Chapter 21 Ute Indian Water Compact](#)), and in perpetuity, the Ute Indian Tribe and others can deplete 248,943 acre-feet per annum from a total diversion of 471,035 acre-feet per annum. This water compact is more fully set out in the "Tabulation of Ute Indian Water Rights," which is on file with the Utah State Engineer. The oldest priority date of this appropriation is October 3, 1861; there are other tribal priority rights that are in the 1880s.

See: [Uinta Ouray Ute Nation](#); [Tabulation of Ute Indian Water Rights](#) & [1973 Interior Press Release](#); [Why the projects were never built](#).

LAKE POWELL PIPELINE

This project will require a federal contract for a water release of 86,249 acre-feet per year from Flaming Gorge Dam. Also a NEPA document and a Biological Opinion.

- Water right documents for City of St. George (89-1559): [CLICK HERE](#)
- Water right documents for Washington County Conservancy District (89-1525): [CLICK HERE](#)

EASTERN UTAH WATER DEVELOPMENT PROJECTS

- [2007 - Uinta & Green River Water Development Report](#). CH2MHill.

Green River Pumping Project

This project requires a federal contract for a water release from Flaming Gorge Dam. The diversion is limited to 10,000 acre-feet per year and for a maximum time-period of five years. After the initial five years the project can enter a 40-year contract with Reclamation, which is the maximum time-frame allowed.

- [2010 - FONSI and Biological Assessment of GRPP](#). USBR.
- [Biological Opinion Green River Pumping Project](#). USFWS.
- [Environmental Assessment: Green River Pumping Project. \(archived\)](#). USBR.
- [Biological Assessment for Green River Pumping Project](#). USBR.
- On August 11, 2009 the District segregated 8,500 af (Water Right No. [43-12263](#)) off of Water Right No. [41-2963](#) (A30414) and filed Change Application No. a35811 to move this water to the GRPP.
- Water Right No. [41-3487](#) (A30414db) for 8,400 af
- Water Right No. [41-3523](#) (A30414do) for 43,400 af from the Ultimate Phase water right.

PROPOSED PROJECTS COMPETING FOR WATER IN EASTERN UTAH

Potash development near Crescent Junction

The project requires 20,000 acre-feet per year to be financially viable. This project's groundwater diversion is limited to 5,000 acre-feet and requires a groundwater monitoring program, so as not to infringe on the springs in Arches National Park. The remaining 15,000 acre-feet would come from the Green River. The State Engineer's Order states that it is not necessary to apply for a federal contract for water from Flaming Gorge Reservoir. The letter of concern from Reclamation stated it would be wise and prudent to initiate a federal contract.

- Pinnacle Potash International: 92-674
- [2013 - Order from State Engineer](#)

Tar sands development near PR Springs and Main Canyon

This project requires 360 acre-feet per year and the production water comes from groundwater; if additional water needs are required they would be delivered by trucks using water from the Green River. The state engineer's Order requires the company to apply for a federal contract with Reclamation. An Order from Utah Division of Oil, Gas & Mining requires a groundwater monitoring plan.

- US Oil Sands: 49-2274
- [2015 - UDOGM Order for a Groundwater Monitoring Program](#)
- [2016 - Order of the State Engineer](#)

Green River City Nuclear Power Plant (Blue Castle Holdings)

The point of diversion for water to produce steam would be transferred to Emery county. The holders of the water rights are in San Juan and Kane counties. The diversion is 53,600 acre-feet. Blue Castle Holdings claims a federal contract for a water release from Flaming Gorge Dam is not required. Reclamation issued a letter of concern that a federal contract would be wise and prudent. This water right was litigated and Judge Harmon demoted the Kane County priority date to be inferior to the priority date of the Central Utah Project. The priority date of San Juan County is 2000, which is vulnerable to curtailment should shortages ever be declared. Judge Harmon also required a federal review of the withdrawal by the US Fish and Wildlife Service to protect endangered fish species. This will ensure that a federal contract with Reclamation will indeed be required. A NEPA document and a Biological Opinion will be required.

- Kane County Water Conservancy District: 89-74
- Kane County Water Conservancy District: 89-1285
- San Juan Water Conservancy District: 09-462
- [Judge Harmon's Court Order](#)

Background Information:

- [History of the Central Utah Project: A Federal Perspective.](#)
- [2006 - From Cadillac to Chevy: Environmental Concern Compromise of Central Utah Project Completion Act.](#) Eastman.
- [Website - Office of Central Utah Project Completion Act](#)
- [1965 - Central Utah Project Ultimate Phase Inventory: Inventory of Available Data; \(high resolution\).](#) Reclamation.
- This water right also was set aside for the [Uinta Ouray Ute Nation](#) and the water rights are tabulated in this [document](#). (1973 Interior Press Release)
- [40-year plan](#). Utah Division of Water Resources.

Environmental Impact Statements

- [1973 - Central Utah Project Bonneville Unit](#)
- [1975 - Central Utah Project Jensen Unit](#)
- [1975 - Kaiparowits Power Project](#)
- [1978 - Uintah Unit Central Utah Project](#)

Utah Division of Water Rights

- SEARCH ENGINE for water right queries is [HERE](#) (Utah Division of Water Rights)
- [Utah Water Rights Law Index](#)

OTHER INFORMATION

- [Utah Water Rights \(a complete list\)](#). ([archived here](#)). UDWR.
- [1994 - Utah's Policy Regarding Applications to Appropriate Water from Green River](#). UDWR.
- [2009 - Current status of Utah Water Rights](#). State Engineer Presentation in Moab.

###

The Water Rights of Central Utah Project, including Ultimate Phase

Home Page - Water right records in Utah are online at the website of Utah Division of Water Rights; also known as the office of the State Engineer, a position held by Mr. Kent Jones

Search Engines - There are various ways to search for the administrative records of all water rights in the state of Utah. The search engine for water rights by number is located [here](#).

The hyperlinked web pages below have two tabs. The first (Home Display) is a description of the water right and the second tab (Scanned Documents) is an archive of the administrative record for this water right.

WATER RELEASES FROM FLAMING GORGE DAM or RESERVOIR DIVERSIONS

Ultimate Phase Water Rights, Green River water for Eastern Utah Counties. The exception is Washington County, which is actually in the Lower Basin of the Colorado River.

Lake Powell Pipeline: A proposed pipeline diversion from Lake Powell in Kane County to Washington County.

- 89-1559 - City of Saint George in Washington County
- 89-1525 - Washington County Water Conservancy District

UTAH BOARD OF WATER RESOURCES; GREEN RIVER; EASTERN COUNTIES

- Note: Water Right #41-3479 is the water of the Green River Block Water Right Exchange Contract.
- 41-3479 - UBWR for Daggett County
- 41-3516 - UBWR assigned to Red Cut Water Company in Emery County
- 41-3529 - UBWR for Daggett County
- 41-3532 - UBWR for Daggett County
- 49-1654 - UBWR for Uintah County
- 89-1595 - UBWR for City of Tropic in Garfield County
- 89-1614 - UBWR for Garfield County
- 89-1616 - UBWR for Garfield County
- 91-5075 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County
- 92-638 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County
- 92-656 - Chris Dunham in Grand County
- 93-3750 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County

Eastern Utah Counties

- 41-2963 - BoR in Daggett County
- 45-3489 - BoR in Uintah County (Jensen Unit)
- 41-3471 - BoR in Daggett County
- 41-3479 - UBWR for Daggett County

Segregated from 41-3479 - UBWR

- 41-3487 - Stock companies in Uintah County
- 92-622 - Green River Companies in Grand County
- 92-645 - SITLA in Grand County

Segregated from 92-645 - SITLA in Grand County

- 97-2132 - SITLA in Garfield County
- 92-646 - SITLA in Grand County
- 97-2312 - SITLA in Garfield County
- 49-1609 - Brent and KaLynn Sheffer Family Trust in Uintah County
- 49-1654 - UBWR in Uintah County
- 92-642 - City of Green River in Emery County
- 05-2992 - Wilson Arch Water & Sewer Special Service District in San Juan County
- 41-3516 - Assigned to Red Cut Water Company in Daggett County
- 89-1592 - UBWB for Town of Cannonville in Garfield County
- 89-1583 - Town of Canninville in Garfield County
- 97-2220 - UBWR for Town of Boulder in Garfield County
- 97-2214 - UBWR for Town of Escalante in Garfield County
- 05-3163 - Grand County Water Conservancy District
- 41-3523 - Uintah Water Conservancy District
- 41-3529 - UBWR for Daggett County

Segregated from 41-3529

- 41-3529 - UBWR for Daggett County
- 41-3530 - Duchesne County Water Conservancy District
- 41-3523 - Stock companies in Uintah County

Segregated from 92-638

- 92-638 - UBWR for Gunnison Butte Mutual Irrigation Company in Emery County
- 41-3532 - UBWR for Daggett County

Segregated from 89-1595

- 89-1595 - UBWR for City of Tropic in Garfield County
- 41-3479 - UBWR for Daggett County
- 92-633 - Green River Companies in Grand County
- 97-2214 - UBWR for Town of Escalante in Garfield County
- 97-2280 - Garfield County School District

ON THE COLORADO

Articles about the Lake Powell Pipeline

- January 07, 2019 - [Army Corps of Engineers accepting public comments for Lake Powell Pipeline](#)
- October 22, 2018 - [The Water Rights of Central Utah Project, including Ultimate Phase](#)
- September 18, 2018 - [Green River Block Environmental Assessment for a Federal Water Contract for Eastern Utah Counties](#)
- August 22, 2018- [Lake Powell Pipeline Permitting Process Renewed](#)
- June 28, 2018 - [Proposal to amend the Arizona Strip Resource Management Plan \(RMP\)](#)

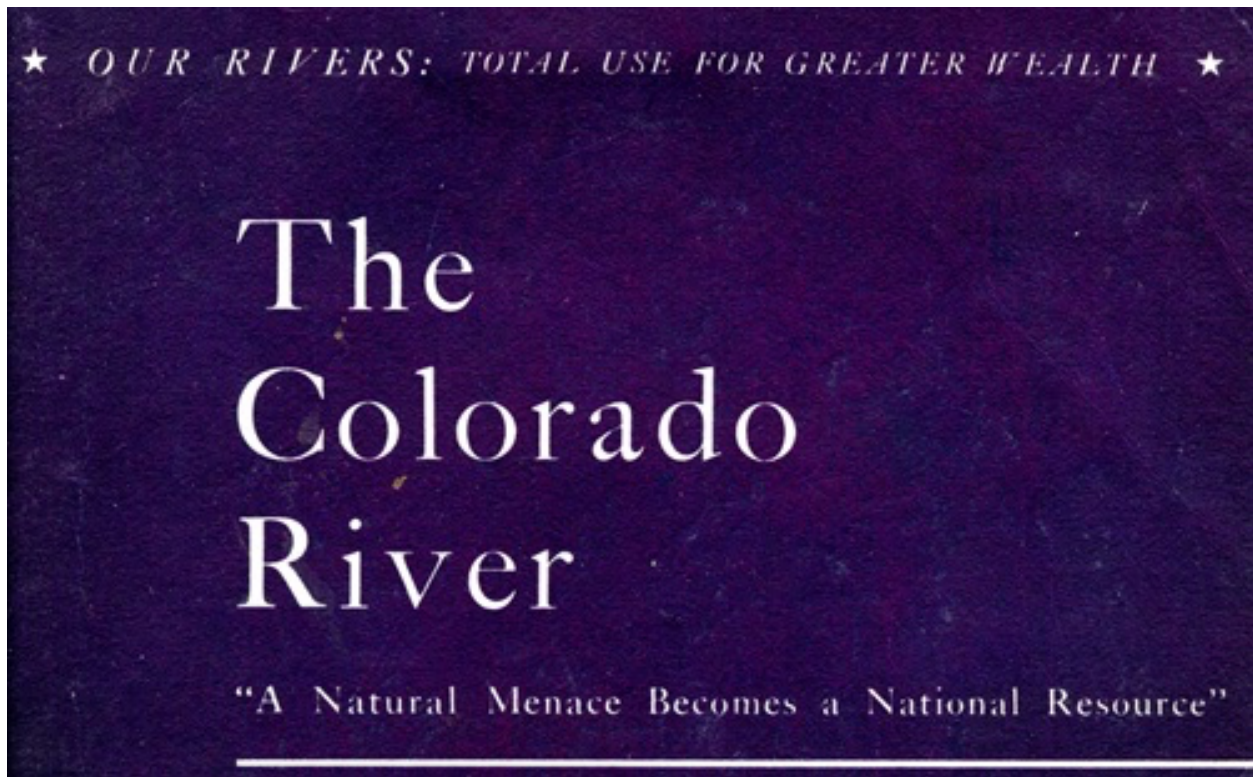
- December 26, 2017 - [Lake Powell Pipeline Approved for Environmental Analysis \(Temporarily Suspended\)](#)
 - March 21, 2011 - [Lake Powell Pipeline Documents](#)
 - June 03, 2010 - [Ultimate Phase Water Rights Stored at Flaming Gorge Reservoir](#)
 - May 06, 2008 - [Announcing: Scoping of environmental issues for the proposed Lake Powell Pipeline Project in Utah and Arizona](#)
-

Lake Mead Will Go Dry

DECEMBER 23, 2025

BY JOHN WEISHEIT

"The Colorado River Basin doesn't have a water scarcity problem, it has a planning and zoning problem." Senator Henry "Scoop" Jackson



The real menace to the Colorado River Basin are the water managers.

Reference: [The Colorado River: A Natural Menace Becomes a National Resource](#).
Dept. of the Interior. 1946.

The following article was originally posted 10 years ago when the federal government was urging the seven states to develop "drought" contingency plans. It became a situation of too little and too late, because water shortages were officially implemented in the Lower Basin on January 1, 2022 and then, Reclamation began to drain the contents of the upper basin reservoirs into Lake Powell, which revealed Glen Canyon Dam as an imperfect holdover reservoir that is embedded with legal and engineering shortcomings.

- [2021 - News by Felicia Fonseca for Associated Press](#)
- [2005 - The One-Dam Solution](#). Living Rivers and Colorado Riverkeeper.

The decline of reservoir storage in the Colorado River Basin of the Pacific southwest is [recognized](#) worldwide.

When Lakes Mead and Powell of the Colorado River are full, they are the largest reservoirs by volume in the USA. However, the total annual volume of the Colorado River does not even show up on the list of the nation's [top 20 rivers](#).

In 2003, human consumption and system evaporation for the Colorado River basin [equaled](#) the river's natural flow. How possibly could the Colorado River reservoirs ever fill again without surplus water? There is only one way: a [100-year snow melt](#) (see this [AGU paper](#)). Until this snow melt arrives, it is not far-fetching to assume the reservoirs will empty during the interim.

When the 100-year snow melt does arrive a national emergency will be declared, because planning and zoning departments have allowed the 100-year floodplain to be occupied with critical infrastructure. Dam managers had [serious spillway issues](#) to deal with during the snow melt of 1983, which was only a 30-year event (statistically).

The 100-year snowmelt is overdue by several decades, and just why is that? Does it really matter if the denial of climate change exists, or not? Is it not already obvious that hydro-societies can't manage the dry and wet cycles they were born into? Especially if the gluttonous mandate is "total use for greater wealth?"

If the reservoirs go empty, who is to blame but the water managers? Look at this [graph](#) again, if you didn't in paragraph three. Note that when Lake Mead was filling in 1935, there was a system surplus of about 8 million acre-feet. If that surplus existed today, would sustained and severe drought have a devastating impact?

If infrastructure was kept out of the floodplain, would a 100-year snow melt have any impact? It could actually be worse, since a 500-year snow melt requires the attention of water managers too.

If a hydro-society intentionally creates an unsustainable situation on the sole basis of generating maximum wealth with public funds, than why should the rest of the world feel sorry for them when it fails?

Secondly, why should the rest of nation provide assistance to get them out of a mess they themselves created? And thirdly, if the nation did give them assistance, do you really think they would use those resources to make the water works of the Colorado River resilient? The answer is no, because their behavior has always been and will always be, "total use for greater wealth." When the coming trainwreck occurs their quote will become, "no use and no prosperity for nobody."

The water managers of the Colorado River basin understand that when Lake Mead (Hoover Dam) runs dry, it also means the surplus in Lake Powell (Glen Canyon Dam) has been exhausted too. The two reservoirs have been **managed as one** since Lake Powell began filling 1963. However in 2007, **the guidelines** for "equalization" were finely tuned to avert water curtailments, the cessation of hydropower, and the looming possibility of exhausting the contents of the reservoirs. By following **specific operating criteria** for the release of water at Glen Canyon Dam, it can take one or two years to accomplish this balancing act. Shortages do not begin until the elevation of Lake Mead reaches 1075 feet on January 1st.

The **guidelines of 2007** are not Draconian. If water shortages are declared by the Secretary of Interior, the maximum amount withheld from the lower basin users amounts to only 5% of the annual average released from Hoover Dam.

This same document allows the upper basin states to increase their consumption to 1 million acre-feet by year 2050 (16.5% of the flow into Lake Powell). Ironically, under this so-called shortage plan there is actually an 11.5% increase in consumption.

What is the plan if it gets worse? We don't know. The Bureau of Reclamation and the seven states of the basin did not go there, other than to say, when Lake Mead gets to elevation 1025 feet, a "reconsultation" process begins.

Think about how unprofessional it is for water managers to reconsult in the middle of a water crisis and not before. Perhaps you are wondering why the publically-funded 2007 guidelines, nor the 2012 Basin Study, did not have a worst-case scenario plan? **CLICK HERE** to read the 70-year public record of agency neglect toward balancing human demand with the natural supply of the Colorado River.

###

Additional Information: When Will Lake Mead Go Dry?

Scripps Institution of Oceanography at the University of California San Diego created quite a stir in the media February 12, 2008 with their **press release**, which stated that there is a 50 percent chance Lake Mead, a key source of water for millions of people in the southwestern United States, will be dry by 2021, if climate changes as expected and future water usage is not curtailed. **Click here** to read the science paper.

The Colorado River water managers immediately discounted the independent work of these scientists. Larry Dozier, deputy general manager of the Central Arizona project had this to say, "[Our] studies evaluated a broad range of potential hydrologic conditions and several alternative operating criteria. Lake Mead did not 'go dry' at any time during the various scenarios. Shortages were manageable." (Arizona Daily Star.)

Terry Fulp, area manager of Hoover Dam operations for the Bureau of Reclamation **said the following**, "There is nothing new about the findings in the Scripps study. Such 'doom and gloom' predictions have been circulating for years now. In my lifetime, I don't expect

to ever see it."

Thomas Piechota, an associate professor at University of Nevada, Las Vegas, **remarked**, "First, an assumption was made that no shortages would be declared on the Colorado River under low reservoir conditions. This is in opposition to the shortage criteria that the basin states recently established in the **Final Environmental Impact Statement**: Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead."

The study by Scripps referenced CROSS, or Colorado River Open Source Simulator, which is available **on this very web site**. With this simulator you can run, if you choose to, your own worst case scenario that DOES take into consideration declared shortages and climate change projections.

Why take anybody's word for it when you can decide the truth for yourself?

References:

- [Central Arizona Project; official press release.](#)
 - [Associated Press by Amanda Lee Myers.](#)
 - [Lake Powell Chronicle by Bob Phillips.](#)
 - [Las Vegas Review Journal by Henry Brean.](#)
 - [When Will Lake Mead Go Dry?](#)
 - [CROSS](#)
-

The Administrative Record of Post-2026 Guidelines

JANUARY 10, 2026

BY JOHN S. WEISHEIT

DRAFT EIS PUBLIC COMMENT LETTERS SUBMITTED TIMELY

- May 1, 2026 - [Lower Basin Proposal](#) (7 pages)
- Upper Basin Proposal (nothing as of May 1, 2026)?

###

TIMELY COMMENTS FROM THE PUBLIC (Due date was March 2, 2026)

- To create new operating guidelines for the Colorado River Basin
- [Comments posted on the official website of US Bureau of Reclamation](#) (Note: comment letters from individuals are missing in this list)

Comments we received or published on the worldwide web

- [Arizona's supplemental documents: a legal history](#) (files combined, searchable & size is 1/2 gig)
- [Arizona GOP Delegation](#)
- [Central Arizona Project](#)
- [Nevada](#)
- [Nevada: Preferred Approach](#)
- [California](#)
- [Castle, Schmidt, Kuhn, Fleck, Sorenson and Tara](#)
- [Center for Biological Diversity](#)
- [Grand Canyon Trust](#)
- [Living Rivers, Colorado Riverkeeper, Great Basin Water Network and River Runners for Wilderness](#)
- [Colorado State](#)
- [Colorado River District](#)
- [Jenny Ross & specific to Salton Depression](#)
- [Utah State](#)
- [Waterkeeper Alliance](#)

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Post-2026 Guidelines for operation of Hoover and Glen Canyon Dams (P26)
Released on Friday January 9, 2026

- [Project website](#)
- [Public Review and Comment Process](#)

Virtual Meetings

- [WEBINAR PRESENTATION](#) (Thursday, January 29, 2026 at 1 – 3 p.m. Mountain)
- [RECORDING](#)
- Registration Link: https://swca.zoom.us/webinar/register/WN_0YXCatFjSFC5Y_SYgcjS5g#/registration
- Tuesday, February 10, 2026 at 5:30 – 7:30 p.m. Mountain time
- Registration Link: https://swca.zoom.us/webinar/register/WN_ompDKGbEQzWwBf_5cKOT1w#/registration

Public comments due on March 2, 2026

The Draft EIS will be published in the Federal Register on January 16, 2026, initiating a 45-day comment period that will end on March 2, 2026. Comments may be submitted via the following methods:

- Email to: crbpost2026@usbr.gov
- Telephone: (602) 609-6739
- Mail to: Bureau of Reclamation, Attn: BCOO-1000, P.O. Box 61470, Boulder City, NV 89006

Reclamation will hold two virtual public meetings to provide information on the Draft EIS:

- Virtual meeting — Thursday, January 29, 2026, at 1:00 – 3:00 p.m. Mountain time
- Virtual meeting — Tuesday, February 10, 2026, at 5:30 – 7:30 p.m. Mountain time

To register for a virtual public meeting, please go to [the project website](#). The virtual public meetings will be available in Spanish.

For further information, contact the project team by email at crbpost2026@usbr.gov or call the project telephone line at (602) 609-6739.

THE ALTERNATIVES:

- **NO Action:** required by NEPA, signifies a return to annual decision-making absent objective criteria, a mode of operation purposefully avoided since the late 1990s.
- **Basic Coordination:** designed to provide an environmental compliance option for a set of operations that Reclamation could implement in Water Year (WY) 2027 if no new agreements among relevant entities in the Basin are developed.
- **Enhanced Coordination:** designed to achieve protection of critical infrastructure and benefit key resources. Developed in close coordination with the National Park Service, the Fish & Wildlife Service, reflects concepts developed with Basin Tribes and principles put forth by hydropower interests (Western Area Power Administration and Colorado River Energy Distributors Association).

- **Maximum Operational Flexibility:** informed by a proposal submitted by a consortium of conservation organizations, includes operational concepts that promote maximum flexibility in water use.
- **Supply-Driven:** includes Lake Powell operations based solely on recent hydrologic conditions.
- Continued Current Strategies Comparative Baseline: not an alternative but represents a continuation of current operations for comparative analysis.

Additional Information

- For additional information about how Decision Making Under Deep Uncertainty (DMDU) was applied in the Post-2026 Draft EIS, refer to Chapter 3, Section 2.6 and Appendix E, “DMDU Overview and Approach”.

NEWS

- [May 4, 2026 - AZ, CA & NV announce plan to save Colorado River water](#). By Tony Davis for the Arizona Daily Star.
- [April 29, 2026 - Glen Canyon Dam Faces Its Existential Moment](#). By Brett Walton For Circle Of Blue.
- [March 29, 2026 - As water lifeline evaporates Arizona faces a cultural change over water use](#). By Tony Davis for The Arizona Daily Star.
- [December 19 2025 - Environmental groups & tribal leader decry Colorado River stalemate](#). By Tony Davis for AZ Daily Star.
- [January 9, 2026 - Feds release plan for Colorado River if States don't strike a deal](#). By Ben Winslow for Fox 13, SL City.
- [January 9, 2026 - With Upper/Lower Basin States still snagged, Feds give them more time to craft Colorado River plan](#). By Jeniffer Solis for Nevada Current.
- [February 6, 2026 - These four states are in denial over a looming water crisis](#). Opinion by Sammy Roth for NY Times.
- [February 14, 2026 - Posturing doesn't fill the taps; open frustration as Colorado River deadline fails to produce 7 state agreement](#). Greg Hass for 8 News Now Las Vegas.

DOCUMENTS

All Documents Combined (2,190 pages and searchable)

[00 - Executive Summary](#) (66 pages)

Volume One - Main Body

[01 - Volume One](#) (Table of Contents)

[02 - Chapter One](#) (Need and Purpose)

[03 - Chapter Two](#) (Description of Alternatives)

[04 - Chapter Three](#) (Affected Environment & Consequences; 210 pages)

[05 - Chapter Four](#) (Consultation and Coordination)

[06 - Chapter Five](#) (Preparers and Partners)

Volume Two - Supporting Appendices

07 - Volume Two

- 08 - Appendix A (CRSS Model Documentation; 78 pages)
- 09 - Appendix B (Modeling Conserved Water)
- 10 - Appendix C (Allocation and Distribution; 250 pages)
- 11 - Appendix D (Sensitivity Analysis)
- 12 - Appendix E (Deep Uncertainty)
- 13 - Appendix F (Hydrologic Uncertainty)
- 14 - Appendix G (Initial Conditions)
- 15 - Appendix H (Demand Schedule and Unused Tribal Water)
- 16 - Appendix I (Upper Basin Demand)
- 17 - Appendix J (602a Storage)
- 18 - Appendix K (Deliveries to Mexico)
- 19 - Appendix L (Upper Basin Depletion Schedules)
- 20 - Appendix M (International Border Area)
- 21 - Appendix N (Lower Basin Depletion Schedules)
- 22 - Appendix O (Lake Powell Infrastructure)

Volume Three - Technical Appendices

23 - Volume Three

- 24 - Technical Appendix 3 (Hydrologic Resources; 116 pages)
- 25 - Technical Appendix 4 (Water Deliveries; 96 pages)
- 26 - Technical Appendix 5 (Geomorphology and Sediment)
- 27 - Technical Appendix 6 (Water Quality)
- 28 - Technical Appendix 7 (Air Quality)
- 29 - Technical Appendix 8 (Biological Resources; 196 pages)
- 30 - Technical Appendix 9 (Vegetation)
- 31 - Technical Appendix 10 (Terrestrial Wildlife)
- 32 - Technical Appendix 11 (Cultural Resources)
- 33 - Technical Appendix 12 (Paleontological Resources)
- 34 - Technical Appendix 13 (Tribal Resources)
- 35 - Technical Appendix 14 (Recreation)
- 36 - Technical Appendix 15 (Dams and Electrical Power)
- 37 - Technical Appendix 16 (Socioeconomics)
- 38 - Technical Appendix 17 (Population and Land Use)
- 39 - Technical Appendix 18 (Indian Trust Assets)
- 40 - Technical Appendix 19 (Visual Resources)

ADDITIONAL INFORMATION

[The administrative record of 2007 Guidelines](#)

[The administrative record of 2012 Basin Study](#)

[A partial administrative record of 2019 to 2022 Drought Contingency Planning](#)

[The administrative record for 2023 Supplemental EIS for Glen Canyon Dam](#)

[The administrative record of 2024 Supplemental Interim Guidelines](#)

US SENATE BILL TO STUDY BYPASS AT GLEN CANYON DAM

[January 29, 2026 - Senate Bill S3743 by Mike Lee, Utah \(R\)](#)

[2023 - Long Term Drought and Glen Canyon Dam: Potential Effects on Water Deliveries and Hydropower.](#) CRS.

[2023 - Presentation: Glen Canyon Low Head Modifications.](#) USBR.

[2006 - Glen Canyon Unit History.](#) Jedediah Rogers.



A Chronology of Press Releases, News, Comment Letters, Reports, Court Proceedings and Special Events from Living Rivers and Partners

JANUARY 26, 2026
BY JOHN S. WEISHEIT

The website content of Living Rivers & Colorado Riverkeeper from Year 2000 to 2026.

Our original name was Glen Canyon Action Network. We are a 501c3 charitable organization. We accept donations **HERE**. Between 2000 and 2005 we operated a downtown office with a retail ice cream shop called The Restoration Creamery, and located in downtown Moab, Utah on the northwest corner of Center and Main streets.

Our webmaster at work on the beaches of the Colorado River above Lake Powell

We now work remotely from our homes and random campsites.

The new home website: <https://www.livingrivers.org>

The legacy website: <http://www.livingrivers2.org>

Year 2000 to 2025 - All Posts Combined (2,100 pages that are searchable)

Year 2026 (to March 2026)

2026.02.11 - [Kane Creek Development Watch and Living Rivers file a lawsuit against Lt. Governor and Echo Canyon Municipality.](#)

2026.03.02 - [Comments for Draft EIS called Post-2026 Guidelines. Dam Operations at Hoover and Glen Canyon.](#)

2026.04.24 - **Poster: Where The Hell Am I?** A fundraiser and film screening event for Living Rivers at Star Hall in Moab, Utah.

2025 - [Year 2025 posts combined](#)

- 2025.02.21 - [Legal intervention defends clean air from fossil fuel industry in Utah's Uinta Basin \(archived here\) here](#)
- 2025.04.18 - [Poster for community event: Love for Living Rivers.](#)
- 2025.07.02 - [Lawsuit takes aim at Kane Creek Development/Echo Canyon Municipality water rights in Grand County, Utah.](#)
- 2025.10.14 - [No Water Available: Commonsense recommendations to limit Colorado River Conflict.](#) By Great Basin Water Network, et al.; 2025.
- 2025.11.13 - [Schedule: Rivers of Change at Star Hall in Moab.](#)

2024 - [Year 2024 posts combined](#)

- 2024.12.10 - [US Supreme Court and Uinta Railway.](#)
- 2024.10.16 - [Gross Dam Expansion Violates Federal Law, Court Says.](#)
- 2024.10.15 - [Living Rivers et al versus Teresa Wilhelmsen, State Engineer.](#)
- 2024.02.07 - Though the appellate court denied our appeal, Reclamation did decide to reconsult the LTEMP EIS. **Court Decision:** Ninth Circuit Order for legal challenge about Glen Canyon Dam and LTEMP EIS of 2016. **News:** In blow to green groups Ninth Circuit upholds federal plan for Colorado River dam. By Alanna Mayham for Courthouse News.

2023 - [Year 2023 posts combined](#)

- 2023.12.11 -
- 2023.11.03 - LTEMP SEIS comment letters by Living Rivers and Center for Biological Diversity: [Living Rivers et al](#); [Center for Biological Diversity et al.](#)
- 2023.08.15 - [Living Rivers et al. Scoping Comments Post-2026 Operations.](#)
- 2023.03.10 - [Environmental Assessment \(EA\) for Smallmouth Bass Flow Options from Glen Canyon Dam.](#)
- 2023.06.18 - [Announcing Scoping Comments for Post-2026 Operations](#)

2022 - [Year 2022 posts combined](#)

- 2022.12.20 - [Scoping Comments Supplemental EIS for 2007 Interim Guidelines.](#)
- 2022.09.01 - [Prescoping 2026 Guidelines](#)
- 2022.02.17 - [Comment Letter \(2 of 2\) for Drought Response Operations Agreement \(DROA\); Upper Basin Division](#)
- 2022.02.05 - [Special to the Guardian: A Third of Americans are already facing above-average warming.](#)
- 2022.01.21 - [Comment Letter \(1 of 2\) Drought Response Operations Agreement \(DROA\); Upper Basin Division](#)

2021 - [Year 2021 posts combined](#)

- 2021.01.11 - [DOCUMENTARY: Live Stream The Unfinished Fight of Seldom Seen Sleight](#). The promo for this feature is [HERE](#).

2020 - [Year 2020 posts combined](#)

- 2020.12.11 - [Proposed Green River Nuclear Reactor dead in the water](#). Uranium Watch, Living Rivers and Heal Utah.
- 2020.12.12 - [Suite of Stories by The Arizona Republic and The Lack of Clean Water for the Hopi and Navajo Nations](#). Featuring Howard Dennis Jr. and Colleen Seletstewa of Second Mesa, Arizona.
- 2020.09.08 - [Public Comments and News on Lake Powell Pipeline DEIS](#).

2019 - [Year 2019 posts combined](#)

- 2019.12.01 - [New Paleoflood Hydrology Research Paper: 700-year record of floods on lower Green River in Stillwater Canyon](#).

2018 - [Year 2018 posts combined](#)

- 2018.10.13 - [The Future of the Colorado River: A Moab Community Symposium](#).
- 2018.11.02 - [Comments for Draft EA for Green River Block Water Rights Contract](#). For information about subsequent litigation, please visit: ["On the Colorado"](#)

2017 - [Year 2017 posts combined](#)

- 2017.04.05 - [Lion's Back Resort Development in Moab City and litigation prevails for citizens](#)

2016 - [Year 2016 posts combined](#)

- 2016.05.09 - [Glen Canyon Dam Long-Term Experimental and Management Plan \(LTEMP\) Draft Environmental Impact Statement \(LTEMP DEIS\)](#)

2015 - [Year 2015 posts combined](#)

- 2015.11.19 - Comments for Moab BLM's Master Leasing Plan: **COMMENTS** by Center for Biological Diversity, Living Rivers and Holiday River Expeditions; **COMMENTS** of Wilderness Society, Southern Utah Wilderness Alliance, Sierra Club and Living Rivers.

2014 - [Year 2014 posts combined](#)

- 2014.06.19 - [Colorado River Researchers Find Signs of Ancient Devastating Floods.](#)

2013 - [Year 2013 posts combined](#)

- 2013.03.01 - [Report: Utah Watershed at Risk! Tar Sands Strip Mining in the USA.](#)
- 2013.01.29 - [Utah Judge Clears Way For Nuclear Power Plant In Central Utah.](#) Includes Court Order; additional Information [HERE](#).
- 2013.03.13 - [2012 Basin Study: Assessing Supply and Demand in the Colorado River Basin to Year 2060.](#)

2012 - [Year 2012 posts combined](#)

- 2012.01.31 - [Scoping Letter for Glen Canyon Dam LTEMP](#)
- 2012.04.02 - [Letter to Secretary Ken Salazar](#)
- 2012.10.9 - [Interview on Democracy Now \(unconventional fuels\)](#)

2011 - [Year 2011 posts combined](#)

- 2011.12.15 - [Colorado River Protection Coalition Intervenes Against Flaming Gorge Pipeline.](#)

2010 - [Year 2010 posts combined](#)

- 2010.05.17 - [Comments for Green River Pumping Project EA](#) (Green River Exchange Contract)
- 2010.08.10 - [My Canyonlands: The Adventurous Life of Kent Frost.](#)

2009 - [Year 2009 posts combined](#)

- 2009.07.22 - [Appeals Court rejects suit against motorized rafts in Grand Canyon.](#)

2008 - [Year 2008 posts combined](#)

- 2008.02.12 - [When Will Lake Mead Go Dry? Scripps.](#) Includes reaction to this science paper by officials from Reclamation and Central Arizona Project.
- 2008.03.17 - [Cloudrock development and its threat to the Glen Canyon Group Aquifer](#)

2007 - Year 2007 posts combined

- 2007.04.30 - [Shortage Criteria DEIS comment letter from Living River & Colorado Riverkeeper & THE REFERENCE MATERIALS](#). Letter includes x & y axis graphics about reservoir conditions to 2060. **Note:** Shortage Criteria EIS will be combined with Surplus Criteria EIS and called 2007 Interim Guidelines.
- 2007.11.15 - [The Launch of the Colorado River Open Source Simulator \(CROSS\) by Living Rivers](#)

2006 - Year 2006 posts combined

- [The Moab Mill Project: A technical Report Towards Reclaiming Uranium Mill Tailings](#).

2005 - Year 2005 posts combined

- 2005.11.8 - [Federal Government Notified of Intent to Sue about endangered fish and Glen Canyon Dam Operations](#).
- 2005.July - [The One-Dam Solution](#); Scoping Letter for Shortage Criteria (2007 Interim Guidelines)
- 2007.4.30 - [Comments for Draft EIS \(2007 Interim Guidelines\)](#)

2004 - Year 2004 posts combined

- 2004.11.16 - [Comments for Supplemental EA for Experimental Flows in Grand Canyon](#).

2003 - Year 2003 posts combined

- 2003.11.09 - [Eco Fighting for Rivers: Living Rivers Keeps David Brower's Legend Alive.pdf](#)

2002 - Year 2002 posts combined in two parts: **January to June & July to December.**

- 2002.01.14 - [Sediment management for Lake Powell Reservoir](#)

2001 - Year 2001 posts combined

- 2001.04.01 - [1% for the Delta: A Journal and Campaign Packet](#).
- 2001.09.02 - [Binational Declaration for the Colorado River Delta](#).

2000 - Year 2000 posts combined

- 2000.01.29 - New group opens Ice Cream Shop (Restoration Creamery) with mission to drain Lake Powell.
- 2000. 02.08 - The Scott Miller Report: Politics is the Only Hurdle To Draining Lake Powell, New Analysis Reveals.
- 2000.03.14 - Glen Canyon Declaration Signed and Features in the news about two peaceful rallies at Glen Canyn Dam.
- 2000.07.11 - Scoping Comments on EIS for Flaming Gorge Dam
- 2000.11.30 - Request for EIS on Proposed Antelope Point Marina Project

REFERENCES AND OTHER ACCOMPLISHMENTS

- The website of Canyonlands Watershed Council beginning in Year 2010 ("Far Country")
 - The website of Uranium Watch, a fiscally sponsored project of Living Rivers.
 - The legacy website of Colorado Plateau River Guides (<https://www.riverguides.org>)
 - The news prints from Year 2000 to 2003 ("Living Rivers Currents")
 - Photos of placards from our 1st Amendment rallies
 - Law of the River - Primary legal documents about managing the Colorado River
 - 2000 thru 2009 - All comment letters from Living Rivers to agencies and hyperlinked
 - 2005 to 2007 - A chronology of events and public documents for the environmental impact statement by US Bureau of Reclamation called Shortage Criteria, and renamed as 2007 Interim Guidelines.
 - 2005 to 2007 - Climate documents used in our comments about Shortage Criteria EIS & 2007 Interim Guidelines FEIS.
 - 2002 to 2006 - Administrative record for the Grand Canyon National Park River Management Plan EIS.
 - 2000 to 2006 - Living Rivers Library
 - 2005 to 2006 - Moab Uranium Mill Project Documents
 - 2005 to 2007 - Climate Data used for 2005 Shortage Criteria & 2007 Interim Guidelines
 - 2010 - Watershed Planning for Grand County, Utah
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