

Hidden Passage

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At What Price Cheap Hydro Power?

by David Wegner

In 1956, when the Colorado River Storage Project Act was enacted by the Eisenhower Administration, the primary purpose of the dams was to provide for protection of the Upper Basin's Colorado River water supply. Power was a secondary purpose for the dams and was not to interfere with the meeting of the water delivery requirements of the Colorado River Compact.

Fast forward to 2014, with the Southwest firmly in the grip of a historic drought, both the reservoirs Powell and Mead are declining in volume and as a result, the amount of water available to generate electricity. Emerging and historical data suggest the Southwest drought could get worse before it gets better. Adding the voices to those demanding more water be taken from an already-devastated ecosystem to protect water users from disruption to their business models, electric power interests are demanding—and getting—special treatment. Claims have been made that once water levels at Lake Powell dip below the "minimum power pool" level of 3,490 feet energy bills across the upper basin will skyrocket. One article from Channel Five News in Colorado even claimed the price of electricity would go up 400-500%. Additionally, comments have been made that reduced power generation at Glen Canyon dam would cut funding to manage endangered fish species on the Colorado like the Razorback Sucker, Colorado Pikeminnow and the Humpback Chub.

One cannot help but notice the perverse logic in keeping Lake Powell full to fund fish recovery programs. The building of Glen Canyon Dam is the reason these fish are endangered in the first place and why the beaches in the Grand Canyon and the archeological and tribal resources these beaches protect are being lost to erosion.

Already, water managers are releasing water from Flaming Gorge, Navajo, and Blue Mesa Reservoirs upstream to keep Lake Powell from dipping below its minimum power pool. From a hydrologic standpoint, this is a bad idea because Lake Powell sees more water loss to evaporation and seepage then any of those reservoirs.

Power generated at Glen Canyon Dam is marketed wholesale by the Western Area Power Authority to approximately 174 power utilities and providers in the Southwest. However, the power produced at Glen Canyon is one of several sources of power for these providers—essentially one component of their energy portfolio. Like all energy commodities, if supply is limited, the costs will be averaged out over the entire user base and are highly unlikely to cause significant price surges to anyone. Glen Canyon power is just not that big of piece of the energy pie in the Southwest. Glen Canyon currently generates above 800 MW, with a capacity to produce about 1300 MW. It is a lot of power, but only around 1% of the entire western grid and around 3% of WAPA's marketable resource. Many experts believe the impact to individual ratepayers would be nowhere near what has been claimed.

The cost the power companies pay WAPA and ultimately the US Treasury is based on several different factors: the cost of the operation and maintenance of the CRSP dams, coverage of costs that irrigators cannot pay for their federal water supply, and payment back to Treasury for the initial cost of construction of the Upper Basin federal dams. Glen Canyon Dam is the biggest dam of the Upper Basin's Colorado River Storage Project and was designed to subsidize all of the smaller dams and federal irrigation water users—a massive "cash register dam" underwriting projects that could never have been justified on their own financial merits—and it provides lower cost power to the western electrical grid. To state that the power costs to the individual consumer are going to jump 400 to 500 % is simply fear mongering. We are in uncharted territory regarding our region's water and power needs, and now is the time for wise people and leaders to step forward and work on solutions that will address our long term needs—not just those of water and power users, but of the entire nation in safeguarding its natural treasures.

Cover: Nielsen homestead from ledge near Fort Moqui, 1954. Photo courtesy of Leslie Nielsen.

Remembering Hite

by Leslie Nielsen



From left: Leslie, Art, and Gaylene Nielsen, 1959. All photos courtesy of Leslie Nielsen.

As a native of the Pacific Northwest, how do I explain my strong emotional tie to Glen Canyon based on only a few visits before I was six years old? I begin by describing my grandparents' home at Hite where they lived from 1949 to 1964. Beth and Ruben Nielsen owned six fertile acres of paradise recognized as a garden of eden by all of the itinerant river runners, archeologists and prospectors who were their friends. They lived in tent cabins along the Colorado River absent most modern conveniences. Even so, they loved Hite more than any other place on earth and they shared that deep appreciation with their whole family.

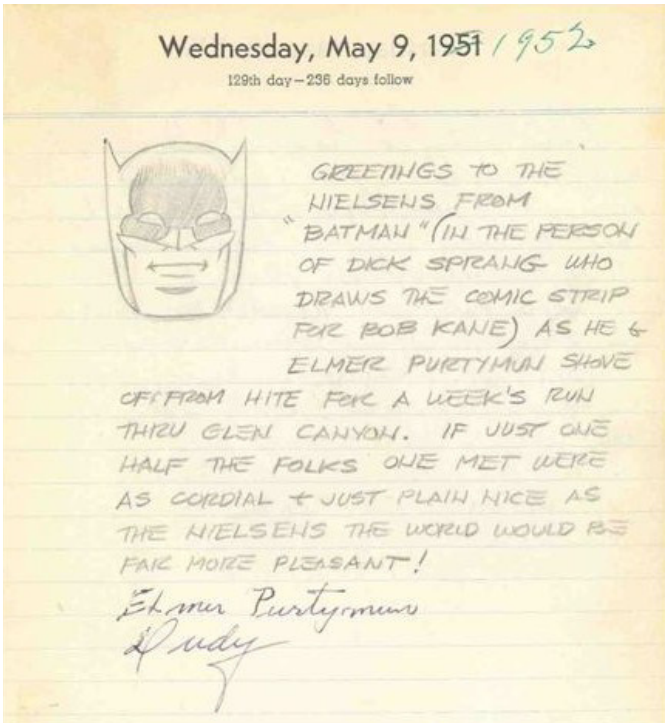
I have only a few memories of those visits to Hite between 1959 and 1963. I recall spending the night in the backseat of our Chevy, taking a bath in a reservoir in Trachyte Canyon, and playing in an rusty old jalopy which may be the one barely visible on page 17 of Tad Nichols' book, *Glen Canyon: Images of a Lost World*. Over the last few years, I have enjoyed studying my grandmother's diaries, her 1,300 slides, and a guestbook she aptly titled *River Rats and Rock Hounds*, signed by many who enjoyed that unforgettable Nielsen hospitality.

As an expert welder and mechanic, Ruben often ran the Hite ferry, worked at the Happy Jack uranium mine, and helped neighbors and stranded travelers with vehicle repairs or traversing a washed-out road. Beth played the organ for the Hite branch of the Church of Jesus Christ of Latter-Day Saints and occasionally submitted stories as the White Canyon correspondent for The Green River Journal. They grew a remarkable variety of fruits and vegetables, including some typically grown in more southern climates, such as figs, pomegranates, Chinese jujube, and watermelon. My grandparents loved exploring all over southeastern Utah. Through their photographs and our family picnics during those early visits they exposed me to the unimaginable beauty of Glen Canyon. They photographed balanced rocks, petroglyphs, petrified wood, flowers in bloom, lizards, foxes, rainbows and sunsets over the "silvery Colorado," sunrises at Copper Point and creeks at flood stage.

In the early 1950's, my father and his sister Wanda both spent a summer or two working at the uranium mill in White Canyon. Wanda paid the 50 cents each way to ride the ferry to work, while my father swam across the river when possible to save money. Wanda first met her husband-to-be at the ferry landing. An entry in the 1951 ferry register in my father's handwriting shows he rode the ferry with his then-girlfriend Grace Irwin, of Provo. Another entry a few years later shows he was honeymooning with my mother Cherene as documented in her handwriting. On that trip my father lost his wedding ring in the North Wash while he and Ruben were collecting driftwood to lash together and float home. The entire Nielsen clan enjoyed swimming and fishing in the river, picnics and roasting weenies on the sand bar, and exploring side canyons while visiting Beth and Ruben at Hite.

My grandparents never expressed any bitterness over the Glen Canyon Dam project that would force them from their beloved home. The Bureau of Reclamation paid them $11,450 for their land, which they believed was a fair price. They used the money to purchase a four-unit motel and home in Glendale, Utah, where they lived for most of the rest of their lives.

In November 2004, after having been away for more than 40 years and soon after both of my grandparents had passed away, I went back to Glen Canyon. I made this trip with author Tom McCourt and National Park Service Ranger Brett Timm hoping to see the tops of the distinctive row of Lombardy poplars or other evidence of my grandparents' existence at Hite. We hiked in from Farley Canyon to the ledge above the White Canyon Wash and were simultaneously thrilled and aghast to see the pile of rocks that was once the prehistoric structure known as Fort Moqui. I went back twice by boat in April 2005 when the reservoir was at record low levels. Even then, those precious six acres were still covered by about 60 feet of water and a deep layer of silt.


Wednesday, May 9, 1951 / 952

129th day – 236 days follow

GREETINGS TO THE NIELSENS FROM "BATMAN" (IN THE PERSON OF DICK SPRANG WHO DRAWS THE COMIC STRIP FOR BOB KANE) AS HE & ELMER PURTYMUN SHOVE OFF FROM HITE FOR A WEEK'S RUN THRU GLEN CANYON. IF JUST ONE HALF THE FOLKS ONE MET WERE AS CORDIAL & JUST PLAIN NICE AS THE NIELSENS THE WORLD WOULD BE FAR MORE PLEASANT!

Elmer Purtymun

Rudy

A note left for the Nielsens by Dick Sprang, illustrator of the Batman comics.



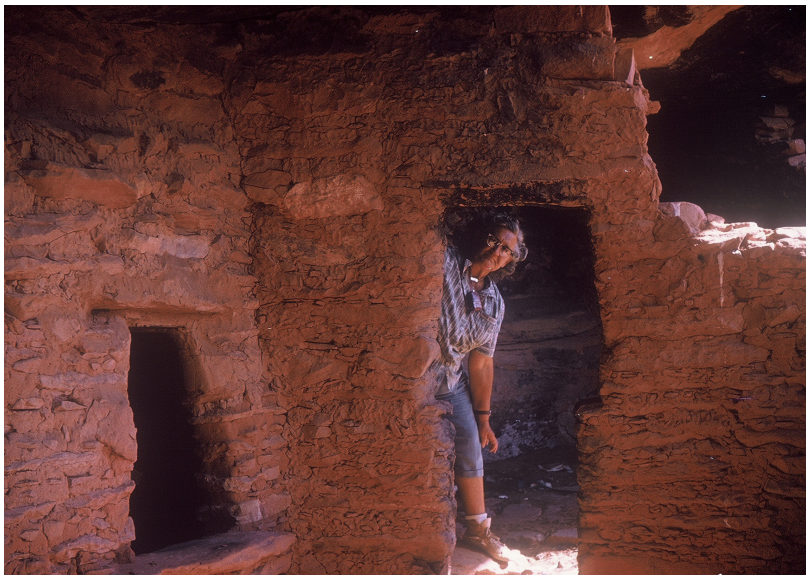
The "silvery Colorado" through Glen Canyon

Sometimes I dream of traveling back in time before the reservoir flooded that sacred ground. I pick blackberries, search for artifacts with my brother Art and sister Gaylene, and join Granny Beth to pick up the mail when the plane lands at the White Canyon airstrip. Back to reality, I cherish the time I spent interviewing my father and aunts and the friendships I made while researching life there. My treasure collection now includes a few of my grandmother's diaries and slides on loan from my aunts, Cass Hite's chair salvaged from his cabin, the hand-crank phone used to summon the ferry, and a dozen slabs of Moenkopi sandstone my grandparents gathered from Trachyte Canyon and, in 1996, generously gave me for my Las Vegas landscape.

My grandparents' graves in Glendale are marked with a granite headstone carved with a scene of the Colorado River and red rock canyon wall above Hite. It is a testament to the love felt by Beth and Ruben for their Hite home and the significance our family places on our collective memories of scenic Glen Canyon.



Ruben Nielsen at Hite, looking west up Trachyte Canyon



Beth Nielsen

—Leslie Nielsen is an attorney who lives in Las Vegas. She's has been a member since 2005.

Sediment in the Colorado River: Choking the Grand Canyon

by David Wegner

The closure of Glen Canyon Dam in 1963 initiated a series of major changes in the Colorado River, both upstream and downstream of the dam. The design of Glen Canyon Dam releases water through the eight penstocks located 80 meters above the reservoir floor thereby trapping essentially all sediments that enter the reservoir. The trapping of the sediments began immediately when the gates of the dam were closed in 1963 and as a result the source of the majority of sediment for the Grand Canyon was choked off.

Input of sediment to the reservoir is dominated by the Colorado and the San Juan Rivers which supply approximately 95 percent of the water and 90 percent of the sediment. Those sediments originate in a variety of locations spread throughout the 238,000 square mile watershed with the majority of it coming from the highly erodible lands of the Colorado Plateau. The sediment deltas in the reservoirs have been growing rapidly beyond the mouths of both rivers with maximum accumulation rates occurring during the reservoir filling period, from 1963 through 1986. Glen Canyon Dam was designed to contain a maximum of 27 million acre feet of water at full pool, approximately twice the annual flow from the Upper Colorado River basin. Measurements of the reservoir basin in the mid-1990s by the Bureau of Reclamation revealed that approximately 1 million acre feet of water storage had already been lost due to trapped sediments. Additional surveys by Reclamation and the National Park Service indicate that sediment surges from the San Juan River and Navajo Canyon resulted in more sediment being pushed into the underwater portions of Glen Canyon.

A bit of history is important here to understand the Glen Canyon sediment story. One of the reasons that Glen Canyon Dam was constructed was to reduce the sedimentation in Lake Mead. When Hoover Dam was completed in 1935, the amount of sediment accumulating in the new reservoir over a 13 year period was approximately 1.4 million acre feet with over 80 percent of it entering Lake Mead from upstream of Lees Ferry, Arizona. Prior to the closure of Glen Canyon Dam the average monthly total amount of suspended sediment passing the Lees Ferry, AZ gaging station was 2.5 million tons.

Implications for Lake Powell and Grand Canyon

In Lake Powell the dynamics of sediment distribution provide an interesting story. Sediment comes into the reservoir via the incoming rivers as high-density turbidity currents with liquefied sediment flow that move the coarse-grained sediments into the reservoir. The sources of the sediment are from the upstream watershed including alluvium from nearby canyons, erosional material from side canyons and dunes, and talus slopes that intersect the river and stream network. The majority of the sediment moves not as a constant input source but instead occurs largely through episodic events.

Aggradation of sediments accumulating in Lake Powell occurs in a series of steps with the suspended fine sediments (the silts and the clays) oozing downstream while the coarse sands dropping out further upstream, in the process diminishing the slope of the river, resulting in the formation of deltas. When reservoir levels fluctuate up and down (in response to seasonal water storage and release) they act like a giant toilet plunger, continuously remobilizing the deposited sediments and moving them closer to the dam and the penstocks.

In 1995 the Bureau of Reclamation estimated that the time required to completely fill the reservoir, based on the 1986 sediment estimates, would be approximately 700 years with the generator penstocks being impacted within 300 to 500 years. What this estimate fails to take into consideration is that during the period of study which conforms to the filling period of Lake Powell, the runoff years have been normal to below normal years with only two years (1983-84) being above normal.

Future Options for the Reservoir and Grand Canyon

Water and sediment supply to Lake Powell are coupled between regional climate and hydrology. This coupling is important because the majority of sediment is mobilized and moved through episodic events--events that are more likely to occur in future climate change scenarios being projected by the majority of climate scientists and the Bureau of Reclamation. These changes in the timing and intensity of rainfall and runoff events will impact the movement and distribution of basin sedimentation. High intensity runoff events will result in more sediment surges into the reservoir and redistribution within the basin.

The second shift that will likely occur is that, as reservoir levels are reduced the deposited sediments will be exposed, resulting in the potential movement of these unconsolidated sediments into the reservoir. Based on data collected during the drought, a redistribution of sediments has occurred along the reservoir perimeter and a movement of sediment to the face of the dam. The remobilization of these previously deposited sediments will add even more sediment to the existing inflow of sediments to the lake.

Do the Periodic High Flows from Glen Canyon Dam Help?

With the dam trapping over 90 percent of the sediment that used to maintain the beaches in the Grand Canyon, the reality is that the beaches in the Grand Canyon are in a short-term (geologically) downward slide, both in terms of size, shape, composition, and longevity, especially in the Marble Canyon reach. You cannot cut out a large percentage of the source material and maintain a sustainable sediment supply for the beaches. Until the sediment once again flows through or over the dam, the beaches in the Grand Canyon will continue to suffer.

What the scheduled high flow releases from Glen Canyon Dam do provide is a periodic redistribution of the sediment from the bottom of the Colorado River channel back up to the 40,000 cfs level in the river corridor. The problem is that once those sediments are redistributed from the channel to the banks, they are immediately attacked by a return to hydropower-driven, fluctuating flows. These rapidly changing flows are detrimental to the newly formed beaches for a couple of reasons: (1) the flows are typically clear water flows that have a lot of energy to erode the new sand deposits; (2) the speed of change in the flows causes the water to go up and down quickly; and (3) the shape of the water releases does not mimic a normal river flow. The result is that instead of protecting and stabilizing the new beaches, the return to normal hydropower-defined operating patterns from the dam act like putting a hot knife into a stick of butter—the sand sloughs off quickly and right back into the river.



Sediment banks in Cataract Canyon, deposited by high reservoir levels. Photo Mary Gavan, GCI member, Sedona , AZ.

We learned how the beaches would react after the 1996 managed high flow release from the dam. The three managed high releases since then have helped to refine the science of how the sediment will move and deposit but the results are already known. The beaches will erode quickly if we return to normal operations. The only way to prolong the beaches is by going to a stable flow regime and to take better advantage when additional sediment is supplied by the Paria or Little Colorado Rivers. Managing sediment now is largely driven around protecting what you have and taking advantage of any that you get.

Fifty Years of Sediment Trapping

Glen Canyon Dam has had a large impact on the Grand Canyon through the modification of both flows and sediment supply. The manifestation of these impacts is the loss of beaches, changing river dynamics downstream, and a loss of aquatic habitats. In the reservoir basin sediment is accumulating, first in the deltas where the rivers hit the reservoir and then further down the reservoir as that sediment is mobilized, reworked and transported as the reservoir levels fluctuate and the deltas collapse. Today sediment inflow from the Colorado, San Juan, Navajo, Dirty Devil and other smaller tributaries is building up.

2013 marks Glen Canyon Dam's 50th year. Fifty years of impacts to Glen Canyon and the Grand Canyon. Fifty years of trapping sediments in the reservoir. Those fifty years have been marked primarily by average runoff conditions with less than five years of higher than average flows. What we know is that a troubling combination of events is occurring in the Colorado River Basin. A warming climate means we are seeing shorter winters, less snow and a faster runoff pattern in the spring. We are seeing a loss of trees in the upper portions of the watershed due to drought and an influx of invasive insects and diseases that are killing off the trees and shrubs that historically held the snow and let the runoff come down slower. Lastly, we are seeing a landscape where the potential for erosion is increasing as we cut up the watershed with more roads, loss of cover vegetation and more development of both subdivisions and energy. The bottom line is there is quite likely going to be a significant shift in the volumes of sediment that are headed towards Lake Powell.

Eventually the river will reclaim Glen Canyon Dam and the Grand Canyon. It will take a few years and we will likely lose the majority of the beaches and near shore sediment deposits in the Grand Canyon during the interim. Besides putting an occasional high flow release Band-Aid on the problem, the only real solution is to get more sediment below the dam, re-operate the dam to protect the sediment supply, and return to a more normal flow regime.



Photo Mary Gavan, GCI member, Sedona , AZ.

Proposed Plan Would Open Glen Canyon National Recreation Area to Destructive Off-road Motorized Recreation

by Michael Kellett

Glen Canyon National Recreation Area encompasses more than 1.2 million acres in southeast Utah and northern Arizona. GCNRA is perhaps best known as the location of Lake Powell reservoir. However, most of the area is roadless backcountry with pristine ecosystems, priceless archaeological and historic sites, and world-class opportunities for wildland recreation. About half of GCNRA is recommended by the National Park Service (NPS) for designation under the Wilderness Act. This is a unique place of national and global importance.

After the completion of Glen Canyon Dam in 1963, some visitors began driving motor vehicles off-road to access the new Lake Powell reservoir. When GCNRA was established in 1972, the NPS decided to permit conventional four-wheel-drive motor vehicles on GCNRA roads only, and banned off-road vehicles (ORVs) because of public safety, noise, and environmental concerns. However, the NPS tacitly allowed visitors to continue the illegal use of ORVs to gain access to a number of roadless portions of the NRA.

In 1981, the NPS abandoned its prohibition of ORVs, officially allowing off-road access to several areas, such as the Lone Rock Beach "play area" and 12 other sites. In 2005, conservationists successfully challenged these ORV policies in federal court, which found that they violated several environmental protection laws. In 2008, Utah became one of a few states to authorize so-called "street legal ATVs." Under this questionable new definition, ORVs could potentially be allowed on unpaved, backcountry roads under the 1979 GCNRA General Management Plan (GMP).

In early 2014, the National Park Service responded to the conservationist court decision by issuing its draft GCNRA Plan/DEIS. The purpose is to evaluate and update GCNRA ORV management policies and practices. The Plan/DEIS describes five alternatives for managing off-road use and on-road use of ORVs — including off-highway vehicles (OHV) and "street-legal" all-terrain vehicles (ATV) — and assesses the impacts of the various alternatives.

The draft Plan/EIS was open to public comments until September 4, 2014. The National Park Service will be reviewing the public comments and considering possible changes to be accommodated in a final ORV Plan/EIS. The final Plan/EIS is likely to be issued in late 2014 or early 2015.

A Flawed ORV Plan

The National Park Service has a long record of ensuring strong protection for our parks. Unfortunately, the agency has fallen far short of this standard in its GCNRA ORV Plan/DEIS. The "preferred alternative" in the Plan/DEIS, "Alternative E: Mixed Use," would not only legitimize much of the illegal ORV use to date, but it would also expand ORV access to additional areas of GCNRA. Glen Canyon Institute and other citizen organizations have expressed strong opposition to this "preferred alternative." The major issues of concern include the following.:

• **There is no need for ORV access in GCNRA.** The primary objective for Glen Canyon NRA, as stated in the 1979 GMP, is "to manage the recreation area so that it provides maximal recreational enjoyment to the American public and their guests." The public and their guests already have access to GCNRA using conventional motor vehicles, including those with four wheel drive, via more than 400 miles of roads. The vast majority of GCNRA visitors and their guests are not interested in using ORVs, and do not want their recreational activities degraded or disturbed by this noisy, polluting, and dangerous activity. In fact, the Plan/DEIS admits that there is "limited interest in and use of Glen Canyon for off-road use." Moreover, ORV users already have access to thousands of miles of roads and trails on millions of acres of public lands surrounding GCNRA that are administered by the Bureau of Land Management.

• **ORV use is not consistent with GCNRA's legal mandate.** The National Park Service claims that it is required by the 1979 GCNRA GMP to accommodate ORVs. In fact, the 1972 Glen Canyon National Recreation Area Act, which established the NRA, does not mandate, or even mention ORVs. The GMP restricts ORVs to "existing roads" and does not allow off-road motorized use. The current ORV routes in GCNRA were not originally planned by the National Park Service, but created by unauthorized, opportunistic ORV users. The Plan/DEIS retroactively validates and expands this unlawful ORV use.

• **The National Park Service admits that Alternative E, the preferred alternative in the ORV Plan/DEIS would be harmful to GCNRA.** The ORV Plan/DEIS documents numerous potential negative impacts. These impacts include damage to geology and soils, vegetation, wildlife and wildlife habitat, endangered species, quiet and solitude, other recreational uses, cultural resources, public health and safety, paleontological resources, and wilderness values.

• **Due to its likely negative impacts, the preferred Alternative E is contrary to several federal laws and regulations.** This alternative is inconsistent with the mandate of the 1916 National Park Service Organic Act, to leave "the natural and historic objects and the wild life" in our national parks "unimpaired for the enjoyment of future gen-

erations." It contradicts the agency's 2006 Management Policies, which specify that, "when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant." It conflicts with the Glen Canyon National Recreation Area Act, which requires the NPS "to preserve scenic, scientific, and historic features contributing to public enjoyment of the area." It is contrary to the National Historic Preservation Act (NHPA), by failing to "take the steps necessary to identify historic properties within the area of potential effects." It contravenes the 1972 Executive Order No. 11644, which directs that, "The respective agency head shall, whenever he determines that the use of off-road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, immediately close such areas or trails to the type of off-road vehicle causing such effects…."

• **Allowing ORVs in GCNRA is inconsistent with the policies and practices of other Utah National Park System units.** This includes Arches, Bryce Canyon, Canyonlands, Capitol Reef, and Zion national parks, as well as Golden Spike National Historic Site and Cedar Breaks, Dinosaur, Hovenweep, Natural Bridges, Rainbow Bridge, and Timpanogos Cave national monuments. Moreover, ORV use in GCNRA threatens to degrade the wilderness values of adjoining national parks, such as Canyonlands and Capitol Reef or to enable unauthorized ORV access to those parks.

• **The ORV Plan/DEIS does not address the impacts of climate change, reduced flow of the Colorado River, and the decline of Lake Powell.** Lake Powell reservoir has been shrinking over the last decade due to reduced water supply and increasing demand, and hydrological projections indicate that it will probably never fill again. As Lake Powell continues to decline, it is revealing tens of thousands of acres of previously flooded backcountry. Some areas have been exposed for years, and they are beginning to recover their ecological integrity. Most of these lands are very difficult to reach with Powell receding, which has given them some de facto protection. However, with increasing ORV use, there is a growing likelihood of unauthorized access, collateral damage, and vandalism. These remote areas will also be harder for NPS staff to police and ensure the protection of natural, cultural, and recreational values from illegal use. The 1972 GCNRA Act and 1979 GMP did not anticipate or respond to these challenges and the ORV Plan/DEIS fails to rectify this deficiency.

• **The ORV Plan/DEIS does not consider a full range of reasonable alternatives.** This is required by the National Environmental Policy Act (NEPA) and National Park Service Director's Order 12. The Plan/DEIS does not include any alternative that would completely prohibit ORV use. The so-called "Alternative B: No Off-road Use" alternative would still allow noisy, polluting, unsafe "street legal ATVs" on roads. No other Utah national park area allows ORVs or "street legal ATVs" on roads. This is a serious flaw in the Plan/DEIS that needs to be remedied through a new alternative that bans all ORVs, including "street legal ATVs," consistent with other Utah National Park System units.

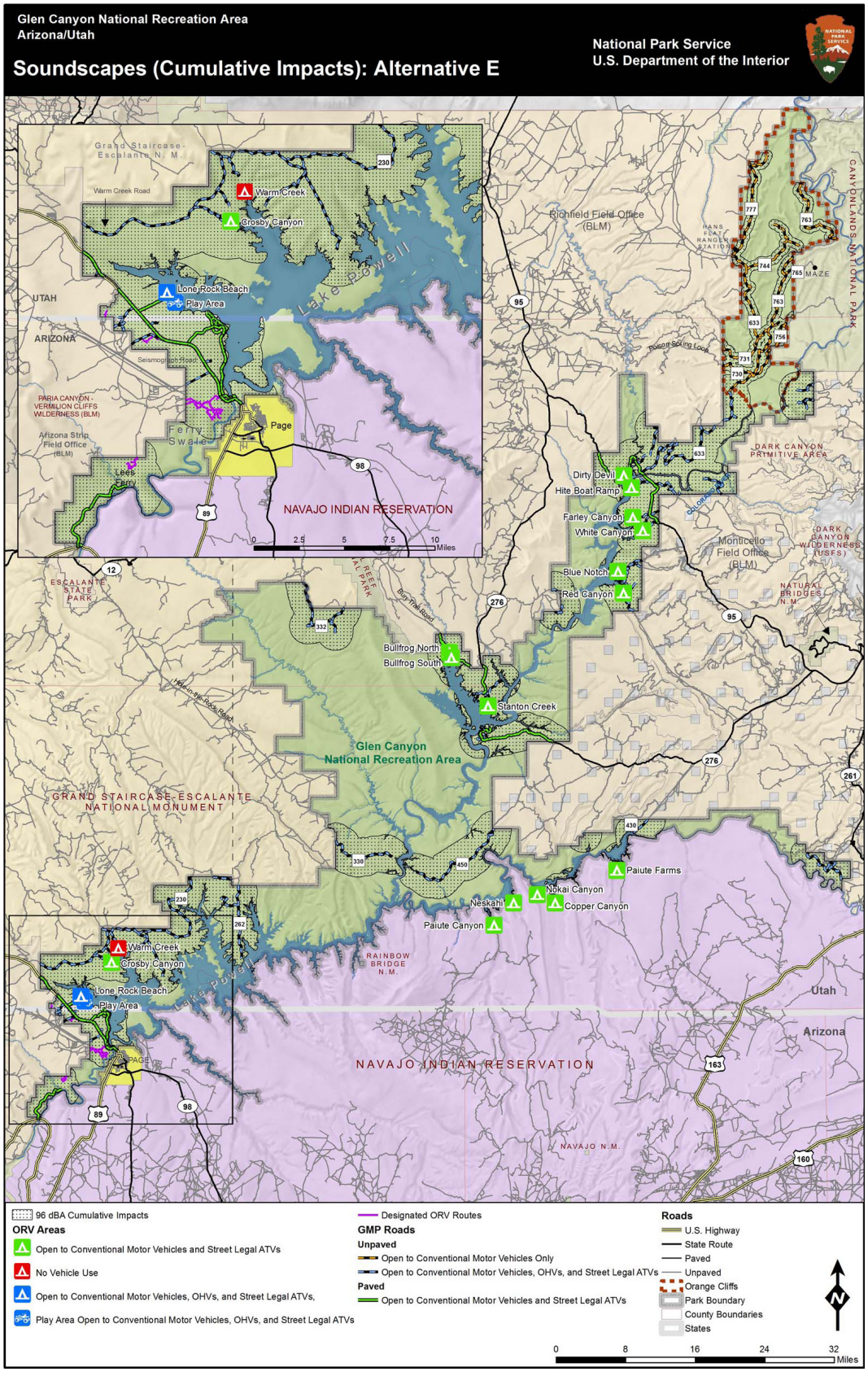
Conclusion

Glen Canyon Institute submitted comments raising the concerns discussed above. We urged the National Park Service to issue a revised ORV Plan/DEIS that addresses these important issues. We recommended that a new no-ORV alternative be developed, adopted as the "preferred alternative," and implemented as the new ORV plan for GCNRA.

The GCNRA ORV planning process has underscored the fact that the 1979 GCNRA General Management Plan is obsolete. The GMP did not anticipate the rapid growth in ORV use since 1979, and thus gives the subject only cursory consideration. The ORV Plan/DEIS is a stopgap attempt to deal with this deficiency. The GMP also does not foresee many other vital concerns of today, such as climate change, reduced Colorado River flows, the depletion of Lake Powell, the recovery of tens of thousands of acres of formerly flooded parklands, and the need to manage visitor use of these restored wildlands.

GMPs for National Park System units are supposed to be updated periodically, to address emerging issues and needs. The National Park Service should review and update the GMP, in light of the many critical challenges that have become apparent in the last 35 years. It is highly likely that such a thorough assessment would show that ORV use in the GCNRA is unnecessary, environmentally unacceptable, and contrary to legal and regulatory mandates. In the meantime, a revised ORV Plan/DEIS that prohibits ORV use in GCNRA would ensure the protection of GCNRA and enjoy overwhelming public support.

For the latest information on the Glen Canyon NRA ORV Plan/DEIS visit the National Park Service planning website at http://parkplanning.nps.gov/document.cfm?documentID=59427


Glen Canyon National Recreation Area
Arizona/Utah
Soundscapes (Cumulative Impacts): Alternative E
National Park Service
U.S. Department of the Interior
Grand Staircase-Escalante N.M.
Warm Creek Road
Warm Creek
Crosby Canyon
Lone Rock Beach
Play Area
Lake Powell
UTAH
ARIZONA
Seismograph Road
PARIA CANYON - VERMILION CLIFFS WILDERNESS (BLM)
Arizona Strip Field Office (BLM)
Ferry Swale
Page
Lees Ferry
NAVAJO INDIAN RESERVATION
0 2.5 5 7.5 10 Miles
Richfield Field Office (BLM)
HANS FLAT RANGER STATION
MAZE
CANYONLANDS NATIONAL PARK
Poison Spring Loop
DARK CANYON PRIMITIVE AREA
Dirty Devil
Hite Boat Ramp
Farley Canyon
White Canyon
Monticello Field Office (BLM)
DARK CANYON WILDERNESS (USFS)
Blue Notch
Red Canyon
NATURAL BRIDGES N.M.
ESCALANTE STATE PARK
Burr Trail Road
Bullfrog North
Bullfrog South
Stanton Creek
Halls Crossing Road
Glen Canyon National Recreation Area
GRAND STAIRCASE-ESCALANTE NATIONAL MONUMENT
Paiute Farms
Nokai Canyon
Copper Canyon
Neskahi
Paiute Canyon
RAINBOW BRIDGE N.M.
Utah
Arizona
NAVAJO INDIAN RESERVATION
NAVAJO N.M.
96 dBA Cumulative Impacts
ORV Areas
Open to Conventional Motor Vehicles and Street Legal ATVs
No Vehicle Use
Open to Conventional Motor Vehicles, OHVs, and Street Legal ATVs,
Play Area Open to Conventional Motor Vehicles, OHVs, and Street Legal ATVs
Designated ORV Routes
GMP Roads
Unpaved
Open to Conventional Motor Vehicles Only
Open to Conventional Motor Vehicles, OHVs, and Street Legal ATVs
Paved
Open to Conventional Motor Vehicles and Street Legal ATVs
Roads
U.S. Highway
State Route
Paved
Unpaved
Orange Cliffs
Park Boundary
County Boundaries
States
0 8 16 24 32 Miles

Fracking Stretches Water Supplies and Political Tensions Across the Colorado River Basin

by Gary Wockner

Fracking! The word shows up in the media almost constantly, especially in Colorado, Utah, New Mexico, and California. Last year, a benzene leak at a fracked natural gas plant polluted Parachute Creek in Western Colorado just a few miles upstream of the Colorado River and highlighted the threat to the water supplies for 35 million people from Denver to Los Angeles. And this year fracking is continuing to escalate across the basin.

In Colorado, Wyoming, New Mexico, Utah and Southern California, a huge boom in natural gas and oil exploration and drilling—all using the extremely dangerous and controversial extraction method of hydrolic fracturing—is taking place that is increasingly imperiling water resources. Fracking has these impacts on water resources:

1. Fracking uses enormous amounts of water.

2. Fracking uses cancer-causing chemicals.

3. "Spills and releases" of drilling and fracking fluids on the ground are commonplace during the drilling and fracking stage of each well.

4. Unless wells are drilled and fracked properly, chemicals can leak into surrounding groundwater. Even when wells are drilled and fracked to the highest standards, there's no guarantee that cement casings around wells can't break and leak over time.

5. After the drilling and fracking process, there's no guarantee that fluids injected into the well can't migrate up into groundwater through geological fissures and cracks.

6. Millions of gallons of waste products from each fracked well are so badly poisoned with cancer-causing chemicals that most of the water is never purified and returned to rivers and streams, and instead is usually injected into even deeper aquifers and wells where government regulatory agencies hope it stays forever.

More than a hundred thousand active oil and gas wells in the Colorado River basin already exist, and approximately a hundred thousand new wells—all to be fracked—are proposed. Billions of gallons of toxic water and waste products have already been injected into deep disposal wells across the Colorado River basin every year, and billions more are proposed. Cancer-causing fracking chemicals are sometimes stored in tanks and open pits on the surface right beside rivers, including the Colorado River.

Here's a quick summary of drilling and fracking activity in the Colorado River basin:

Wyoming: Wyoming has thousands of oil and gas wells in and around the Colorado River headwaters of the Green River and is planning for thousands more.

Colorado: Colorado currently has more than 50,000 active oil and gas wells, and is planning for up to 100,000—although many of those are on the Front Range, Colorado River water is piped under and across the Continental Divide to serve those wells, as well as to serve the thousands of wells in the Western part of the state in the Colorado River basin.

Utah: All of the same drilling and fracking chaos in Colorado and Wyoming has also occurred in Utah which has been on a "fracking frenzy," with plans for thousands more wells, many in the Colorado River basin, and some near and right beside the Colorado River on vast swaths of publicly owned land.

New Mexico: New Mexico has more than 50,000 oil and gas wells and is drilling about 1,500 new wells per year, most of them fracked and the majority of which are in the Colorado River basin in northwest New Mexico.

California: California's current and future fracking potential is huge with more than 50,000 active oil and gas wells (mostly oil) and potential for "major shale oil plays" in the Monterey Shale adding up to 28,000 new wells.

All of this fracking has created dramatic political tensions in the river basin. In Colorado, five cities have banned fracking, and at the time of this writing, two statewide ballot initiatives are proposed that would further restrict fracking. The industry has spent millions and millions of dollars on TV, radio, door-to-door, and online advertising to try to stem the anti-fracking sentiment, so far to no avail. In California, two legislative efforts have attempted to put statewide moratoriums on fracking, and Governor Brown has been increasingly under attack by anti-fracking activists. In New Mexico and Utah, fracking is equally contentious though the conservative politics kept a lid on proposed changes in public policy. Unfortunately, at the federal level, President Obama still sees natural gas as a "bridge fuel," even though many scientific studies have increasingly undermined gas' role in fighting climate change

The Colorado River is a very thin lifeline stretching nearly 1,500 miles from Wyoming to the Gulf of California uniting the entire Southwest U.S.—city, farmer and fracker alike—

with one single strand of flowing water. Everything that happens on the landscape across seven states and northern Mexico—including fracking—eventually flows into the Colorado River, and every drop of the Colorado River eventually flows into a city faucet or a farm.

For these and other reasons, activists are increasingly addressing the threat of fracking and we should all expect the tension on our water supplies and politics to escalate in the future. The good news in places like Colorado and California is that the public is increasingly meeting the challenge and invigorated local democracies have fought and banned fracking and are continue to fight at higher levels.

"Fracking" is in the news constantly—get used to it, and get ready for even more fights!

California Update: Undermining Groundwater Protection

Even as the California legislature voted nearly unanimously to put a $14 billion (including interest) water bond on the November, 2014 ballot, with money earmarked for cleaning up groundwater pollution, it came on the back of rejecting a fracking moratorium on May 29, and in September, 2013 sending a bill to Gov. Brown to be signed that opponents said would "green light" virtually unregulated fracking in the state.

In October, the Center for Biological Diversity revealed documents it obtained showing that almost 3 billion gallons of oil industry wastewater were illegally dumped into Central California aquifers that supply drinking water and irrigation water for farms. The Center said the wastewater entered the aquifers through at least nine injection disposal wells used by the oil industry to dispose of waste contaminated with fracking (hydraulic fracturing) fluids and other pollutants. The Central Valley Regional Water Quality Board found high levels of arsenic, thallium and nitrates, contaminants sometimes found in oil industry wastewater, in water-supply wells near these waste-disposal operations.

An ongoing analysis of reports filed with the California Secretary of State shows that the oil industry collectively spent over $63 million lobbying California policymakers between January 1, 2009 and June 30, 2014, making the oil business the biggest lobbyist in Sacramento.

—WG

SNWA Rushes to Complete Third Straw

by Mike Sargetakis

Lake Mead's water delivery works for Las Vegas currently consist of two intakes situated at 1,000 feet elevation. However, the 1st intake is vulnerable once the reservoir drops below 1,050 feet, as its orientation does not allow it to take in water once the level drops below the top of the intake.

On publication, Lake Mead's elevation was 1,081 feet above sea level. In August 2014, Mead dropped to its lowest level since it began filling in 1937. Soon after, the Bureau of Reclamation announced it would ramp up water releases from Lake Powell by 10 percent to raise the level of the downstream reservoir. Even with extra deliveries, the future looks bleak for Mead, as withdrawals by water users in the lower Colorado River Basin exceed available supplies by roughly a million acre-feet. Low basin runoff compounds this deficit. According to the Bureau of Reclamation, Lake Mead is projected to decline even more during the 2015 water year. Current projections show the first chance of reduced water deliveries in the Lower Basin could take place as early as 2016.

The Southern Nevada Water Authority (SNWA) is feeling significant pressure to finish its "3rd Straw" intake project from the run-of-the-river elevation of 860 feet above sea level. This project is slated to be completed by the summer of 2015, but has hit several snags since its inception in 2011. Tough working conditions, an ever-expanding budget, and the death of a worker in the tunnel on June 11, 2012 have plagued the project.

Once completed, the 3rd straw will connect to the existing 2nd intake. As of November 2013, SNWA shut down water delivery through the existing 2nd intake to allow construction to continue on the new intake, leaving SNWA to depend on the highest and most vulnerable intake for 90 percent of Las Vegas' water for the following five months. Contractors working on the project have had difficulties dealing with the extremely hard rock, causing most of the delays to the project. The recent timeline extension does not give contractors any more money to complete the intake, but gives them an additional year, pushing the finish date to summer 2015.

This summer, California began tapping into its banked reserves in Lake Mead, drawing up to an additional 200,000 acre-feet of water, adding significant pressure to SNWA to have the pipeline finished before reservoir levels drop to either the shortage trigger of 1,075 feet or the 1st intake elevation of 1,050 feet.

The 3rd intake was initially budgeted in 2009 at $447 million, but current estimates to completion are just over $817 million. This huge burden on taxpayers and ratepayers in the SNWA service area could have been avoided if water managers consolidated reservoir storage, keeping more water in Mead and less in Powell, as GCI has advocated in its no-cost, completely reversible Fill Mead First proposal.

Glen Canyon Institute on the River: the San Juan and Cataract Canyon on the Colorado

In June—right after peak runoff—Glen Canyon Institute teamed up with Holiday River Expeditions on a benefit trip down the San Juan River. On this expedition was GCI Board Trustee and author Wade Graham, and his family, and a number of GCI supporters, including longtime member Leslie Nielsen, whose memoir of her grandparents homestead at Hite in Glen Canyon appears in this issue. The group floated 58 miles on the river as it cut into the Monument Upwarp formation, winding through the Goosenecks, ending at Clay Hills, above its confluence with the Colorado River. Along with lively discussion about the social, political, and geologic history of the region, the group witnessed first-hand the transformation of the lower canyon as Lake Powell has receded, exposing some rapids but leaving a sediment-plugged landscape behind.



Government Rapid. Photo by Wade Graham

In August, GCI again led an historic trip down the Colorado River through Cataract Canyon with the help of Holiday. The trip featured two knowledgeable water experts and story tellers, Dan Beard, the former Commissioner of the Bureau of Reclamation, and Dave Wegner, GCI board trustee and recently retired Senior water staff from the U.S. House of Representatives. Along with GCI members, fellow adventurers, and excellent river support from Holiday River Expeditions, the group rowed, paddle boarded, swam, and duckied their way downstream from Moab, Utah, through Cataract Canyon, and on to the take-out below the Hite Bridge. They were happy to report that with the dropping elevation of Lake Powell multiple new and old rapids are re-emerging from the sediments as erosion reclaims the river canyon. The Institute is planning a return river trip to the Colorado, Green, or San Juan rivers in 2015. Plan ahead to join us then!



Cataract Trip. Photo by Mary Gavan

Glen Canyon Institute Outreach

by Eric Balken

Over the past year, GCI has embarked on a public outreach campaign communicating with more citizens, students, and policy makers than ever before in our 18 year history. As drought in the Colorado River Basin continues to gain widespread attention, we have ramped up our efforts to educate the public and advocate for water policy that can restore Glen Canyon and adapt to the new normal of Colorado River flows. To do this, we have diversified our outreach approach simultaneously targeting grassroots and "grasstops" organizing.

A great example of this new approach is our GCI trips program. With Lake Powell's water level dropping to its lowest level since 2006 this year, GCI has made several trips into Cathedral in the Desert and Davis Gulch, as well as trips down the San Juan and Cataract Canyon. We have hosted media and GCI members on these trips and have documented the area's recovery and provided members with a direct experience of the recovery in Glen Canyon. On the "grasstops" end, we embarked on a trip down Cataract Canyon with policy leaders, conservation organizers, and citizens. This was a rare chance for these different groups to discuss the sound water management solutions GCI has developed, and collaborate on new initiatives.

Our staff and board have penned multiple articles published in local and national news outlets, as well as making a number of presentations across the west to policy makers, students, and the public. Our work has been published in news outlets like *High Country News*, *Los Angeles Magazine*, *The Los Angeles Times*, *The Salt Lake Tribune*, and *Deseret News*. We've been featured on multiple TV news outlets in Utah, Nevada, and California.

We have made presentations to government groups such as the Utah State Water Development Commission in opposition to a proposed Colorado River diversion, the Lake Powell Pipeline. We've successfully inserted our organization into processes impacting Glen Canyon by submitting comments to agencies and attending important regional stakeholder meetings for both the Glen Canyon ORV Master Plan and Utah Representative Bishop's Land Initiative. In addition we are participating in the Glen Canyon Dam Adaptive Management Working Group meetings, keeping an eye on the important internal discussions regarding the operations of Glen Canyon Dam. GCI also attended the Colorado River Water Users Conference and requested presentation time for next year's conference.

Our outreach table has been at important regional gatherings like the Salt Lake Farmer's Market, the Live Green Festival, and the Zion Canyon Music Festival. This has allowed us to expand our membership and educate hundreds about our work. Our staff gave lectures at the Zion Canyon lecture series in Springdale, the Sierra Club's Colorado River Days event series in Flagstaff, KDNK Community Radio, and to Patagonia headquarters in Ventura. We participated in a series of Zion Canyon Community Center's "Act Wild" events, speaking to hundreds of citizens from Southern Utah. We gave talks at several REI's in San Diego and Las Vegas, and participated in a panel discussion at the Museum of Northern Arizona's Future of the Colorado River forum.

This year's elevated outreach efforts have lead to a lot of news exposure for GCI and our mission. This has been our most successful year in expanding our outreach and spreading our message to Fill Mead First across the West.



Beth Nielsen with Elizabeth Sprang at Cass Hite's cabin.

"[W]here is the democratic, Jeffersonian, agrarian society the West hoped to become and once approximated? Every one of them, to establish and keep control of the waters of life, became an oligarchy. That is what the West is now, an elite of landowners and water experts at the top, an army of migrant aliens, most of them illegals, on the bottom. The West cannot carry what it has lifted....

For in creating the modern West we have gone a long way towards ruining this magnificent and fragile habitat. And as Marcus Aurelius said a long time ago, what is bad for the beehive cannot be good for the bee."

—Wallace Stegner.

glen canyon institute

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