

Hidden Passage

the journal of glen canyon institute

Issue XXII, Fall 2016



Glen Canyon Institute

President

Richard Ingebretsen

Board of Trustees

Scott Christensen

Ed Dobson

David Wegner

Wade Graham

Tyler Coles

Lea Rudee

Mike Sargetakis

Executive Director

Eric Balken

Special Projects Coordinator

Michael Kellett

Office Manager

Keir Lee-Barber

Advisory Committee

Dan Beard

Roy Webb

Katie Lee

Bruce Mouro

Tom Myers

Carla Scheidlinger

Bill Wolverton

429 East 100 South
Salt Lake City, Utah 84111
tel (801) 363-4450
fax (801) 363-4451
info@glencanyon.org
www.glencanyon.org

Hidden Passage
Issue XXII Fall 2016

Editor

Wade Graham
wade@grahamstudio.net

printed on 100% recycled paper

Cover: A rare glimpse of a hail-filled flash flood in Iceberg Canyon, an area that used to be submerged under Lake Powell. Photo by Nick Woolley.

Reflecting on 20 Years of Glen Canyon Institute

by Rich Ingebretsen



It was on January 21, 1963, that a little known event occurred that would change the environmental world forever. It was a normal day of construction at the dam site in Glen Canyon. The weather was cold and ice was everywhere. For several days, crews had been chipping ice away from the right bypass tunnel that had been channeling the Colorado River around the now 200-foot-high dam. Quietly, and with no fanfare to alert potential protestors, the project manager ordered the closing of the tunnel. In doing so the Colorado River, which had flowed freely for millions of years in Glen Canyon, would for the first time be stopped by a man-made object. God help us all, the reservoir called Lake Powell was born.

At this time, Glen Canyon seemed lost. In the spring of 1968, a scout trip from Salt Lake City visited what was left of Glen Canyon and hiked up Bridge Canyon to see Rainbow Bridge. I was in that scout troop. We hiked up the deep narrow canyons that led to Rainbow Bridge. All the way we were accompanied by waterfalls, slides, huge rocks, warm pools. My scoutmaster stopped us at one point and said, "You better remember this now, because next year it will all be underwater." I asked him why they were flooding it. He didn't know.

Then, as a young adult I boated over the same canyon, remembering what I had seen, and my heart ached. Year after year, compulsively, I rafted the Colorado through what remained of Cataract Canyon, wondering why a glorious river system was destroyed. By the early 1990s, I had read, studied, and absorbed enough that I began to understand the politics that led to the dam. I founded Glen Canyon Institute to pass on what I had learned and, beyond that, to undo a tragic mistake, to begin the process of getting Glen Canyon back.

Now, on the 20th anniversary of the founding of the Institute, these canyons are coming back! Who would have thought that climate change and over use of the river, would have lowered the flows of river water bringing back priceless Bridge Canyon to view. There is real hope. Governments manage and make decisions in crisis. We are in one now. Critical decisions are being made. In January of 1963, when the dam choked the life out of the river, there wasn't a strong voice to protect it. But there is one now. We are that voice, and we need to be heard. This is our chance to make an incredible and historic difference. Let us be loud, let us be strong, and let us be clear — we want Glen Canyon back.

Richard Ingebretsen
President, Glen Canyon Institute

New Study Refutes Claims that Glen Canyon Dam Hydropower Is Essential

by Michael Kellett and Eric Balken



Photo by Mike Sargetakis.

A new study commissioned by Glen Canyon Institute concludes that, if Glen Canyon Dam (GCD) stopped generating hydropower, it would have a negligible impact on the western power grid, would raise electric rates by an average of just 8 cents per month for residential customers of hydropower, and could save tens of millions of dollars each year in taxpayer subsidies and water lost to reservoir system inefficiencies.

Among the findings:

- The average annual value of Glen Canyon Dam's electric energy represents less than one half of one percent of the sales value from electric generation in the western grid, and that the grid could readily absorb the loss of hydropower from the dam
- The total impacts would be an increase of \$16.31 million in electricity costs for consumers of Glen Canyon Dam power, but because they would be spread among 3.2 million customers, the individual impacts would be small in the vast majority of cases
- Average yearly cost increases would be \$.08 per month for residential customers, \$.59 per month for commercial customers and \$6.16 per month for industrial customers of Glen Canyon Dam electricity
- A discontinuation of Glen Canyon Dam operations could

have offsetting benefits of approximately \$74.8 million annually, including savings of \$34.9 million in management costs and potential earnings of as much as \$39.8 million annually due to increased hydropower at Hoover Dam and conservation of water that would have seeped into the banks of Lake Powell

The study was done to examine the contention by water and power managers that the loss of hydropower generation at Glen Canyon Dam would have catastrophic impacts on customers that currently get some of their electricity from the dam. This would have implications for Glen Canyon Institute's Fill Mead First plan, which would change the operation of GCD, allowing water to fill Lake Mead reservoir downstream before impounding it in Lake Powell.

These concerns are increasingly important, with the Colorado River Basin continuing its 16th year of a historic water deficit. Lakes Powell and Mead have dipped to their lowest combined storage since Lake Powell began filling in the 1960s. The Lower Basin states (Arizona, California, and Nevada) have entered unprecedented negotiations to brace themselves for a "shortage" declaration at Lake Mead. In the Upper Basin (Colorado, New Mexico, Utah, and Wyoming), states are focused on maintaining Lake Powell, based on worries that there will not be enough water available to meet legal obligations and to continue GCD hydropower generation.

Establishing an accurate understanding of the economic impacts of a potential loss of electric generation at GCD is critical. Water managers and policy makers are now making far-reaching decisions on the management of the Colorado River, including how to allocate water between Lake Powell and Lake Mead. They — and the citizens of the region — need the best possible information on which to base these decisions.

The Glen Canyon Dam Hydropower Studies

In an effort to clarify these issues, Glen Canyon Institute commissioned a detailed analysis of the economic impacts to ratepayers in the region, and the broader public, if Glen Canyon Dam (GCD) were to cease generating hydroelectric power. The study was conducted by Dr. Thomas Power, principal at Power Consulting, Inc. and a research professor and professor emeritus in The University of Montana Department of Economics, and was reviewed by an independent panel of distinguished economists: David Marcus, Gail Blattenberger, and Spencer Phillips. The study included three phases:

- Phase I: the economic value of current production of the electricity at GCD as well as the impact that not generating electricity at GCD would have on the electric grid and on the regional economy
- Phase II: the impact of the loss of GCD electric generation on the people who directly or indirectly contract through the CRSP and Western Area Power Administration (WAPA) to receive their electricity
- Addendum to Phase II: the financial costs and offsetting benefits if GCD were no longer able to generate hydropower

Phase I

Glen Canyon Dam is the largest single electricity producer in the Colorado River Storage Project (CRSP), a system of hydroelectric power plants in the Upper Colorado basin, functioning as both a base load electric generating facility and a peaking facility. Electricity produced in the CRSP is marketed by WAPA to publicly owned electric utilities, Native American tribes, Federal agencies, and electric generating cooperatives at cost-based, not market prices. Should GCD go offline, any price increase for these customers would be the difference between their contracts with WAPA and market rate prices.

This analysis concludes that the amount and value of electric energy generated at GCD is significant. However, it represents only a small fraction of regional electric production, can be

easily replaced if lost, and has been declining for two decades. Specifically:

- The average annual value of the GCD electric energy is \$153.3 million. This value is less than one half of one percent of the \$31 billion in sales value from electric generation in the Western Electricity Coordinating Council (WECC), which includes GCD power.
- The peak electric generating capacity of GCD has marginal economic value, less than \$47.8 million per year. In the contemporary market, the actual value is much lower, due to the existence of excess capacity reserves in the region.
- The base load electricity produced at GCD could be easily replaced by currently operating generators. WECC estimates of excess reserve margins through 2024 total more than 56 times the effective electric capacity of GCD.
- Since 1996, GCD electric generation has been reduced by about a third, and total capacity has been reduced by more than half, primarily because of low reservoir elevations at Lake Powell. Any impacts due to the termination of GCD production must be weighed against the significant electric capacity that has already been lost, with no negative effects on the grid.

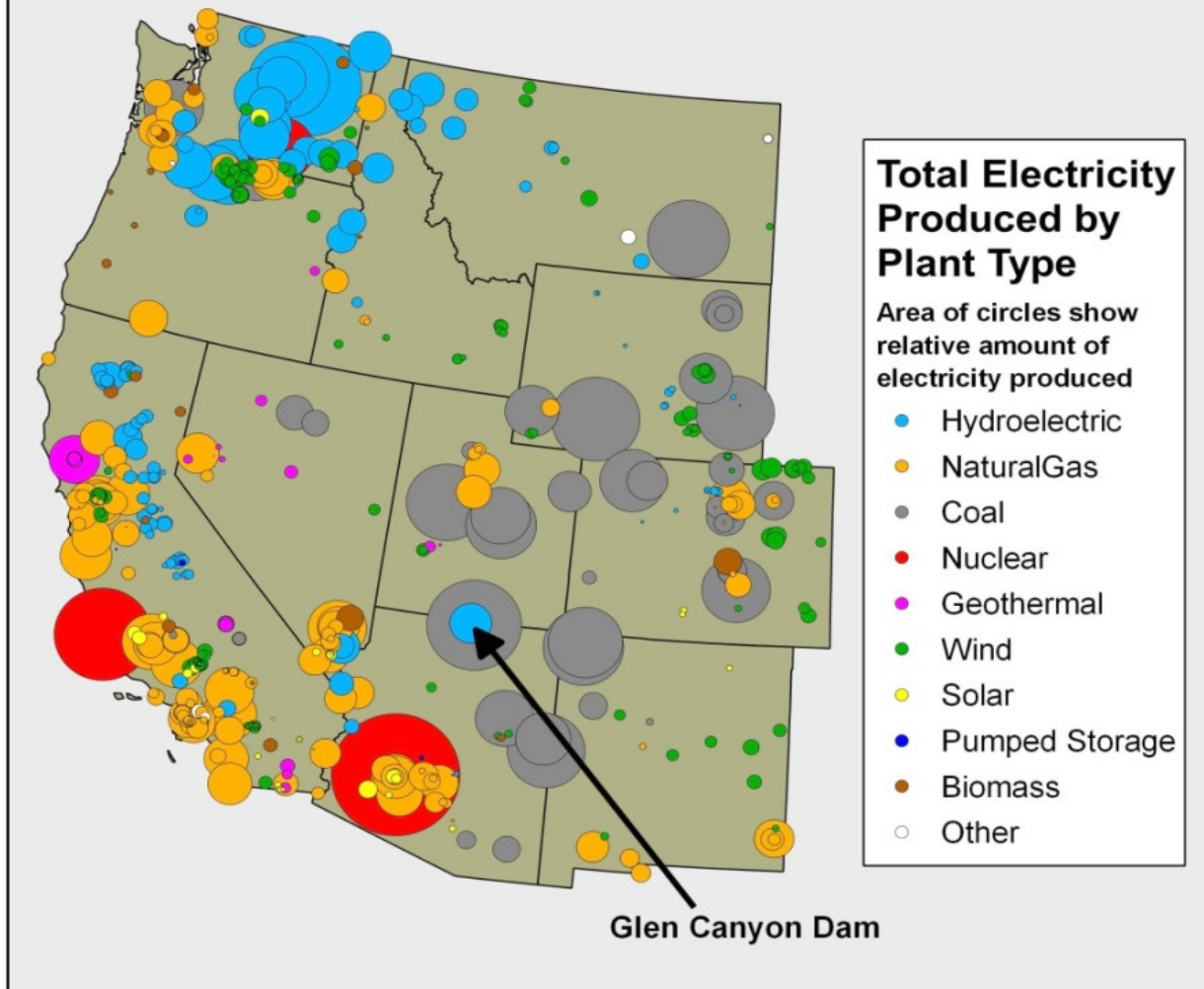
Phase II

This phase examines the potential increased cost of electricity on the ~3.2 million customers that receive some of their electricity from GCD at a below-market price. It assesses the average amount of GCD electricity that each of these groups consume, looks at the customers that are affected the most, and determines what the electricity is being used for.

The analysis concludes that the total economic value lost from GCD going offline would be significant, but the increase in electric costs would be widely spread over 3.2 million end-user customers. As a result, average electricity cost increases per year would be \$0.96 for residential customers, \$7.04 for commercial customers, and \$75.77 for industrial customers. Less than one half of one percent of residential customers would experience cost increases of more than a \$1 a month.

A small subset of customers receive all of their electricity from the CRSP — mostly governments or government-owned or run enterprises. The largest electricity cost increase would be borne by the Navajo Tribal Utility Authority, approximately \$1.3 million annually. However, this cost increase would not directly passed onto individual households. They are, instead, borne entirely by the non-utility contractor.

Power Generating Facilities in the Western United States



Power plants in the Pacific Contiguous and Mountain census regions. Area of circles show relative electricity generated in 2013. Data from U.S. Department of Energy, The Energy Information Administration (EIA), EIA-923 Monthly Generation and Fuel Consumption Time Series File, 2013 December.

Addendum

The proposed Fill Mead First plan would lower Lake Powell, increasing the volume and pool elevation of Lake Mead and resulting in increased generating capability at Hoover Dam. The Addendum to Phase II estimates the economic impacts and potential cost savings of implementing the Fill Mead First proposal. This includes the scenario of a depleted Lake Powell, if Colorado River flows continue to decrease. The analysis is broken into three potential phases of elevation at Lake Powell: minimum power pool, dead pool, and natural river elevation.

A water balance model was constructed for the two reservoirs based on historical inflow and release data, estimates of monthly evaporative loss, and reasonable flow rates through the Grand Canyon. The study identifies two types of potential cost savings associated with the FMF scenarios: 1) current costs associated with operating Glen Canyon Dam, and 2) costs associated with the loss of potential earnings.

Current costs associated with operating Glen Canyon Dam include:

- Operations and maintenance for the Glen Canyon Dam, which are shared between Western Area Power Administration and the Bureau of Reclamation
- Compliance with the requirements of the U.S. Fish and Wildlife Service and Endangered Species Act
- Funding of the Glen Canyon Dam Adaptive Management Program, which studies the effects of dam operations on the Grand Canyon and recommends changes

Costs associated with the loss of potential earnings include:

- Hoover Dam hydropower revenue lost due to the low water levels at Lake Mead
- Value of water lost to Lake Powell seepage into the reservoir banks

Results are displayed in the following table:

Total Annual Costs and Potential Savings Associated with Glen Canyon Dam Operations

Costs Associated with Operating Glen Canyon Dam

Cost Category	Cost/year
Dam operation	\$22,585,265
Compliance with USFWS and ESA	\$1,900,000
GC Dam Adaptive Management Program	\$10,472,367
Total Annual Cost	\$34,957,632

Costs Associated with Loss of Potential Earnings

Potential Earnings Loss Category	Loss/year
Foregone Hoover Dam hydropower	\$11,787,080
Water lost to Lake Powell seepage	\$28,057,286
Total Annual Loss	\$39,844,366
Total Potential Single-Year Savings	\$74,801,998

This study estimated that the implementation of the Fill Mead First proposal could result in total single-year cost savings of \$74.8 million. This represents a savings that far outweighs the \$16.31 million dollar increase in regional electrical costs, and is equivalent to 49 percent of the total \$153.3 million average annual value of electric power generated at GCD.

Conclusion

This study debunks another major rationale for the argument that we need to maintain the status quo at Glen Canyon Dam and Lake Powell to ensure the integrity of the Colorado River system. This analysis shows that even if Lake Powell were completely drained, the loss of hydropower would have a minimal impact on the vast majority of consumers of this power. For the small number of consumers who would experience a hardship, such as for Native American tribes, there are viable strategies for offsetting any rate increase.

2016 Colorado River Rendezvous — Celebrating 20 years of GCI

— EB



The group of GCI supporters braves high winds floating down Upper Glen Canyon. Photo by Eric Balken.

Normally when you're rigging gear at the Hite boat ramp in southern Utah, it means you've just finished a Cataract Canyon trip on the Colorado River. It also means you've witnessed the end of the river's natural current and the beginning of Lake Powell's backwater. For decades, getting to Hite required paddling or motoring across 30 miles of the reservoir's flatwater – a somber finish to one of the greatest river trips in the West.

But on Earth Day weekend 2016, a group of 50 river enthusiasts gathered at Hite to put on the river to float the new, free-flowing section of upper Glen Canyon to Farley Canyon in a celebration of Glen Canyon Institute's 20th anniversary. After braving 40 mile-an-hour winds on the river, the group pulled into Farley Canyon takeout for food, libations, and live music from The Steel Belts.

Hailing from Washington State to Washington D.C., river activists and GCI members from across the country came to take part in the River Rendezvous and celebrate 20 years of the fight for Glen Canyon. Gary Wockner, executive director of Save the Colorado, spoke to the audience about the need to protect the river in the face of ongoing water deficit and climate change. He commended GCI for sticking to its guns for two decades when so many considered its goal to be impossi-

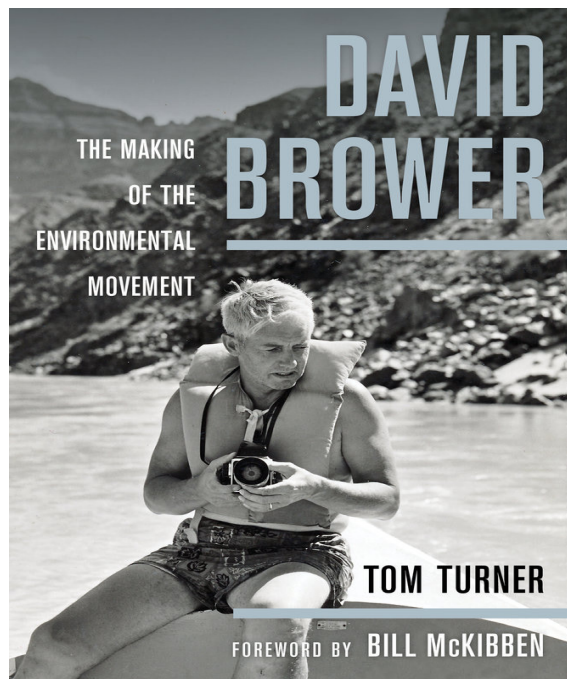
ble, reminding everyone that this movement is more important now than ever.

GCI founder and President Rich Ingebretsen recalled the early days of GCI, paying homage to the people who were instrumental in the organization's beginnings. He spoke of activists like Katie Lee, David Brower, and Martin Litton, whose passion for the Colorado River elevated the issue into the national spotlight. He spoke about the scientists and scholars like Roy Webb, Dave Wegner, Ed Dobson, and Wade Graham who volunteered themselves to the cause, helping build a scientific foundation to the movement and lending credibility to a fight that seemed radical at the time.

As the sun set and blue grass music drifted into the evening air, the eclectic cohort of Glen Canyon supporters came together around a campfire to share stories and talk about their own experiences in the Canyon Country. For many longtime members, it was a chance to see familiar faces, while many others made new friendships. For all 75 people who rallied to the party it was a chance to build camaraderie in the fight for the Colorado River, and come together as we continue to work towards the mission of restoring a free-flowing Colorado River through Glen and Grand Canyons.

Review of *David Brower: The Making of the Environmental Movement* by Tom Turner

By Dave Wegner



The conservation movement in the United States and globally owes a debt of deep gratitude to the irascible, often difficult, and always inspiring David Brower. Tom Turner's recent addition to the corpus of David Brower history, *David Brower: The Making of the Environmental Movement*, captures in a comprehensive way the elements that shaped David Brower and the battle he led to get the public to care about preserving America's most special places. There is much that the present generation can learn from the path forged by Brower and his generation of environmental activists.

I first met David Brower in the fall of 1986 at the Herbst Theatre in San Francisco, at the premiere of a film on the Colorado River, to which Martin Litton had invited me. Looking back, I realize that this was the moment when both David and Martin took me under their considerable guidance. From then on, David and I would talk at least monthly, and at least twice a year I would visit him and his wife, Ann, at 40 Stevenson Avenue in the Berkeley hills, where we would sit down and talk about emerging water and environmental issues and the challenges of engaging the public.

Tom Turner has captured the essence of David Brower, and in the process educated us on how the conservation movement pivoted to the future with his vision and enthusiasm. While many of us felt the stinging Brower criticisms of "We are not doing enough" or "You need to...", many of us kept returning to the house in the Berkeley hills for inspiration and an occa-

sional kick in the pants.

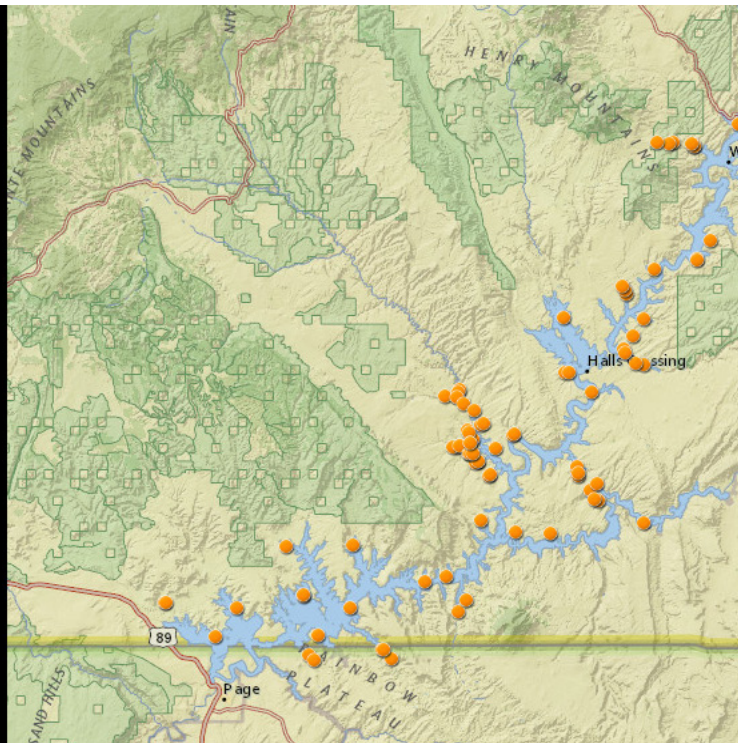
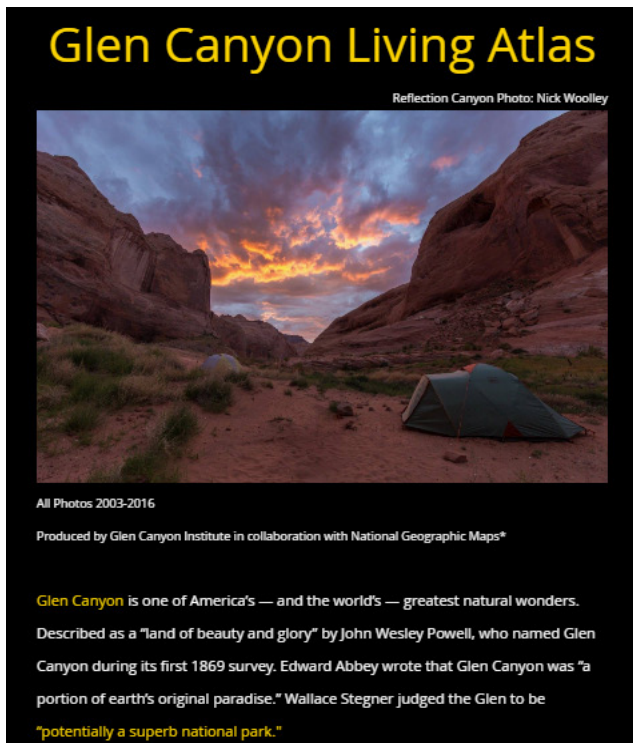
As David Brower aged and became less mobile he appeared to become more indulgent of talking about the past, and as a result I found my education about the conservation movement expanded exponentially. Tom Turner's book captures this shift in the Brower persona as he realized that age was catching up; in many senses I think it made him even more impatient. What no previous book has captured is the critically important role that Ann Brower played in the evolution and sustaining of David as the force he became. I saw Ann influence the way David approached issues and how complimentary and important her vision was to the public and private Brower persona.

A couple of short stories to illustrate the important role that Brower played for me: In 1996, as I was leaving the leadership position with the Bureau of Reclamation's Glen Canyon Environmental Studies program, Brower called me up and said: "The next part of your education is starting and we need to talk." I flew to Berkeley and spent a couple of days being "Brower-educated" on the history of the environmental movement in the West and the untold stories of Brower and Floyd Dominy's volatile relationship around Colorado River issues—fascinating and only partially captured by John McPhee in his epochal 1971 book *Conversations With the Archdruid*. Another example of David's intensity came on one of my visits to San Francisco when he and I had lunch at Sinbad's restaurant along the waterfront. Sinbad's welcomed David and I and for the next four hours we sipped adult beverages, had lunch, occasionally watched the ships navigate under the Bay Bridge, but most importantly charted how the environmental movement would need to change in order to loosen the grip that the Hydraulic Society has on the Colorado River. I ran out of paper to write "To Do's" on, and thankfully the waiter, anticipating how this might go, provided me additional paper to capture the conversation.

The point of these stories is that David Brower was a complicated person. You never knew which David Brower might greet you at the door. Tom Turner has captured the mercurial and invigorating nature of the man. I have had the privilege of knowing David and Ann Brower, daughter Barbara and son Kenneth, and fully see the embodiment of their parents in what they are doing today. Visionary people are often driven by a unique suite of personal and life challenges. Tom Turner has painted a masterpiece of words that capture David Brower, and along the way provides a path to understanding how America and the world today are far better off for David and Ann Brower having walked amongst us. We can all learn a great deal by reading this book.

GCI Launches the Glen Canyon Living Atlas

By Keir Lee-Barber



www.glencanyon.org/livingatlas

GCI is proud to present the Glen Canyon Living Atlas, a virtual tour of emerging and restoring areas within Glen Canyon. The world famous landscapes and returning natural wonders of the Glen are now on display through a stunning series of geo-referenced photographs spanning numerous slot canyons, miles of restoring river habitat, and once-forgotten landmarks.

With cooperation from National Geographic Maps, the Living Atlas is a compilation of documentation and photographs from 2003 – 2016, highlighting the stunning transformation taking place in Glen Canyon as it emerges from Lake Powell. While the reservoir continues to recede from years of water shortage, a miraculous restoration is slowly taking place in the canyons.

GCI has created the Living Atlas to be an evolving story map, documenting and showcasing this restoration over the years to come. Complete with several hiking trails through restored canyons, GCI members and the public are encouraged to get out and visit Glen Canyon. Observe, document, and submit your own photographs of restoring canyons to maps@glencanyon.org.

Today “America’s Lost National Park” has a second chance and the Living Atlas is sharing its story; together we can ensure that the wonders within Glen Canyon are never lost again. Head to www.glencanyon.org to experience it yourself!

Photography Spotlight: Nick Woolley



Nick Woolley is the photographer for the front and rear cover of this issue of Hidden Passage. Nick is the creator of Glen Canyon Rising, a social media entity dedicated to documenting and showcasing the ongoing restoration of Glen Canyon. He is passionate about showing people how quickly the canyons can recover and feels that it is a key to eventually restoring all of Glen Canyon. Nick is also the founder of the popular backpacking-centric outdoors website Backcountry Post. He lives in Salt Lake City with his wife and dogs where he works in marketing, web design and photography.

Reflecting on 20 Years of Fighting for Glen Canyon with GCI founder Rich Ingebretsen

— EB & KL-B



Photo by Michael Brown

What is your background, and what in it pointed you towards conservation in Glen Canyon and the Colorado River?

Rich: I saw Glen Canyon when I was a scout, and Lake Powell had actually started to form, but it was just a little puddle by any standard. It was around 1966, and we went to Wahweap. Page Arizona didn't exist — it had just a few buildings, but it wasn't a city like you know; there was just a bunch of churches they had built for the workers, and we had camped on one of the church's lawns. We went down with our scoutmaster the next day to Wahweap, but it was a precarious launch. The cliffs were very high, and the first thing at the launch they pointed to a notch up in the wall, it was way up high, and they said one day the water will go through that notch.

That was the first time I realized that this was all going underwater and I remember having the feeling that "This isn't good." We saw the dam, and it bothered me. We went up to Forbidden Canyon and got out, and then began the long trek up to Rainbow Bridge. They warned us, they said it was the second canyon on the left. They said "don't miss it or you'll get lost in the desert" and that scared us, because we weren't going to get lost.

So we counted the canyons as we went up and it was full of pools and flowing water and it was really neat - little frogs and tadpoles everywhere. As we were hiking up I asked one of the

other Scout Masters "why are they flooding this?" and he said "they're building a dam downstream" and that was his answer. And I thought that was a non-answer - like he didn't answer.

We hiked on to Rainbow Bridge, and it was spectacular of course. As soon as we came down we slid in the water, and I remember thinking this is sad this is going underwater. It was about 10 or maybe 11 years later when I went back in high school. We boated up that canyon. I was on the right side of the boat and I remember looking down, remembering what I had seen and - it hurt, it hurt my heart. It was just a sickening pain that left me frustrated and angry. Along about that same time one of my buddies invited me to go see a one-act play on John Muir and his battle to save Hetch Hetchy. I went and saw that one man play, and that was pivotal in my life.

How Glen Canyon Institute actually started: I had been thinking about how to handle all of my thoughts and feelings about it, and I was now becoming active environmentally. I was on a river trip with a TV reporter in 1995. His name was Rod Decker and he worked for channel 2 in Salt Lake City. We had floated the river, and he asked me. I said you know I want to drain Lake Powell - and he said "make case for it" and I didn't really have much of a case to make. He said "Well, you're going to have to have an organization; and you'll have to have a case for it". And it was on that river trip that I thought I need to start that organization.

I made a list of goals for the institute, things like start a library, hold an annual convention, teach high school kids, education was a big part of what I wanted to do, and near the end of it was to go after lake Powell. It was that fall that I decided that I would have an annual meeting, so I invited David Brower and Floyd Dominy to debate. I got in touch with a guy named Christ Franklin, who said "he'd love to come and talk but he wants to debate someone". I asked who would he'd like to debate, and he said "he wants to debate Floyd Dominy." It had been 18 years since they had met, since their interactions written about in John McPhee's *Encounters with the Archdruid*, and it would be the first time they had gotten back together.

So I tracked down Floyd Dominy. I called the Bureau of Reclamation's information number and said "Hello Bureau of Rec., I'd like to get an old commissioner's number, I don't know if you even know him or have his number, but his name is Floyd Dominy. They said 'Oh his number is right here'" they had it right at the front desk. I called him and he said he'd come out but he wanted a first class ticket. So he came out and that October we had the first meeting of Glen Canyon Institute. We had a debate on TV on Rod Decker's show on Sunday Night. Lions in the winter they were.

But lions they were and they debated on public TV, and it was interesting to hear them, after all these years they still dis-

agreed. I'd go to dinner with them and they'd argue then they'd cry with each other then they would hold each other. It was an interesting relationship, just like out of the book *Encounters with the Archdruid*.

As it were I had a book called *The life and Times of David Brower* and in that book there was a picture of him with a video camera filming in Glen Canyon, and I wanted to see that film. So I called him up and he said "I don't know where it is - I don't know who has it." Well I did find it, the Sierra Club had given it to a guy making a movie about water in the West, and he had it and sent it to me.

I thought for our next meeting we'll show these "Lost Films of David Brower". So the next October, I invited everybody that I could think of that I knew had floated Glen Canyon that was famous - that had written books or whatever, and I invited them to Salt Lake to meet. I called up a buddy of mine who the year before had asked me to join an organization that he had started called the Utah Rivers Council. He wanted me to be on their board because of what I had done the year before.

So I was on the founding board of the the Utah Rivers Council, and I called up Zack Frankel. I said, "I don't know how to do this but I would like to have a press conference about a meeting I'm holding at the Alta Club with the group of people who have run Glen Canyon." I wanted to invite environmentalists and I wanted to invite Bureau people to talk about draining Lake Powell and see if there's a reason we can do it.

He wrote a press release and it said something to the effect of "The Glen Canyon Institute is holding a meeting to drain Lake Powell." What was interesting about that was big things had just happened in the world. Al Gore was vice president, and he was going around preaching environmentalism and talking about taking out Glen Canyon Dam. Interestingly enough Bruce Babbitt was taking out dams - with sledgehammers. President Clinton had just declared Grand Staircase Escalante Southern Utah's newest national monument, getting everybody all bothered, and the Sierra Club had become really bold for the probably only time in their whole life, passing an amendment resolution that said we will support no logging on national lands. That was a big deal for the Sierra Club.

All these things were going on, and the press was kind of scared about this, like maybe it could happen. Before our meeting, I picked David Brower up at the airport and I said, "the press is going to be at this meeting and we're going to talk about draining Lake Powell", and he replied "I've been meaning to take care of that."

We went to the Alta Club. The press was there, the Bureau was there, environmentalists were there, the explorers were there, and we all informally discussed how we could drain Lake Powell - and the bureau gave us numbers.

After that meeting we drove over to Kingsbury Hall to show what I had promoted, as the only member of the Glen Canyon Institute, "The Lost Films of David Brower - Films of Glen Canyon". We put flyers up, put it on the radio, and the place was packed. It was filled to the brim with 1,800 people who came to hear David Brower. They gave him a 5 minute standing ovation. Then we showed the video of Glen Canyon and these explorers who had been down there talked about it.

When that meeting was over, Dave went back to California. That was on a Tuesday. A week from the following Saturday the Board of Directors met and David Brower gave them, as I recall it, a \$250,000 endowment that he had gotten and then proposed that the Sierra Club support the draining of Lake Powell. Dave Foreman seconded it and I believe they voted on it as a unanimous decision. Carl Pope said "I don't think we should tell anybody about this until we decide how to handle it."

That night I get a call from Dave Brower and he said "they voted to drain it and Carl pope said I shouldn't tell anyone. But I couldn't see any good reason for that so I've called the Washington post the San Francisco examiner", and he went on and on, all these big papers he had called.

I said "David, did you call the Utah Chapter of the Sierra Club?" and he goes "Nah, I didn't call them" and so I did. When I called up and told the director of the Utah chapter there was just silence on the phone - and that started a battle between the local chapter and the national chapter that didn't end for a long time.

That was in February. In March of 1996, we met in Salt Lake and decided to form a board of directors. Then we met in April in Phoenix Arizona, on the campus of Arizona State University. David Brower was there along with Dave Wegner and as many bright minds as I could get in the room. That's where we started our scientific studies, that was 20 years ago.

I didn't think we'd be here in 20 years, everybody said "It's not sustainable." But, I'll tell you what happened, good people took over. Jerry Ledbetter came to the next fall meeting, and we had Dan Beard come and speak to us. Jerry was just a member, who wasn't a member of our board, but she said that she would like to run the organization. She moved the office to Flagstaff and took over running the Glen Canyon Institute. One of the smartest things that ever happened; and it went on from there.

I will tell you something, for the record, at the beginning I was nervous about my reputation. I had just graduated from medical school and finished my training and I wondered how that would be met. But what I learned was, when you stand up for what you believe in, for a good cause - you are not doing a bad thing.

I learned that it was a good cause and I've never looked back. The other thing I learned was that there was a lot of resentment

for Lake Powell and this was an organization that needed to be there, and it continues to need to be there. We were told that we couldn't last because we couldn't sustain the long haul, but with the support of our members we've more than shown that we can, 20 years later.

Two years into it, it we were in David Brower's backyard and David Brower proposed the question, "where do you think we are going to be in 20 years?" and I thought wow that's a crazy question, and we went around to the board and everybody thought where we would be. It's interesting to look back, now 20 years, we're a lot different than what people thought we would be. We thought we would still be here, we'd still be biting, but one thing that we didn't predict - none of us predicted - was that the reservoirs would be so low. That changed the ballgame. It changed from a pie in the sky, Don Quixote tilting at windmill dream, to one that is coming into reality.

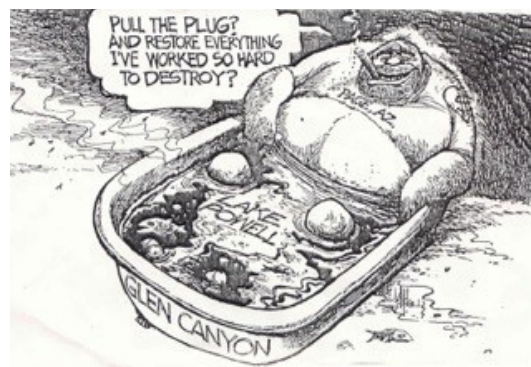
We didn't anticipate that the reservoirs would be low so that one of the more logical solutions would be to drain Lake Powell. But David Brower did anticipate it. At our first meeting, and he said what we should go after is keeping Lake Mead full and just using Lake Powell as a backup. And we said "we can't do that" and he said "why?" and we said "because there is absolutely no majesty, there is no rally cry - around it, to rally to say we need to keep Lake Powell for a backup." We really needed something to rally around. Jack Schmidt was at the meeting and he said we should go after Flaming Gorge. He said "that's one you could get," he said, "see you really could drain that one, and it would restore more river." And we said there is just no momentum behind that, nobody cares. And later on he agreed. Glen Canyon was it and we had to fight for it.

One thing that I don't tell many people is that the spring before the "Lost Films of David Brower" meeting, I met with a friend of mine, the photographer James Kay, who had put out a map of the Glen Canyon. He had sketched a level which would restore a lot of river, and a lot of canyons, but you could keep Lake Powell.

He thought, but again, you couldn't rally around the idea of "lower the level of Glen Canyon," you can't rally "lets study the draining of Lake Powell," If you want to get the public involved you really have to say "let's get rid of it, let's drain Lake Powell." That's what they want to hear. So that's where we started, but in reality we're back to what Dave Brower said, "Let's fill Mead and and use Lake Powell as a backup." Which now is making a lot of sense, and in fact may very well happen.

Talk about the role Katie Lee and Martin Litton played in the early days.

Rich: Katie Lee and Martin Litton were the emotional hearts. I mean they're iconic: David Brower, Katie Lee and Martin Litton were the three icons of the movement. Martin Litton



Political Cartoon from the early days of GCI by Pat Bagley/Salt Lake Tribune.

was a visual icon, this was a guy with flowing white hair and a beard and a deep voice; who's just exactly what you wanted as a spokesman for your cause. Because, I mean, he just looked the part, he was Hollywood casted; and the way he spoke and everything he said was articulate.

Katie Lee was so disgustingly, outgoingly crude, arrogant, and majestic. Everything in one word that you could come up with. She kind of got the crazies behind us, and I don't mean it in a bad way, but she got the rabble rousers behind us - the ones that really wanted to do something. David Brower was the visionary in the group, and although he was pragmatic, he was the visionary and said we can just go do this and he'd kind of get us going.

Each one sort of filled a role, Katie bringing in the more radicals, Martin being the true visual icon, and David Brower giving us this marvelous vision of how to run the Glen Canyon Institute, and it couldn't have started with out of anyone of them. David Brower certainly is the one who gave us instantaneous fame - without any question.

What would you think are some of the most important or memorable milestones, obviously we've talked about the beginning and the lost films, and the debate; what's happened since then?

Well I'll tell you, some of the bigger iconic times were when Dan Beard came and spoke, who had been commissioner of the Bureau of Reclamation - that was a big one - three years into it. And then the next year Woody Harrelson came and spoke, and he attracted quite a crowd, filling up the lower level of Kingsbury Hall. That same year we had James Taylor give a concert for us at the Delta Center downtown. That was a big moment.

From a practical standpoint hiring our first executive director was a big deal. Pam Hyde came over to us from American Rivers, and she gave us instant credibility because she had worked closely with the Bureau of Reclamation. She was respected, when they saw her name it gave us credibility.

If you had to name just one thing that changed our movement it was when Cathedral in the Desert came out in 2005. Because in 2000 Lake Powell was full, and 5 years later it was only a third full, just that quickly it drained. To be in what I think was the first boat in Cathedral in the Desert when it came out, that river being low and exposing the Cathedral in the Desert was probably the most iconic moment because Glen Canyon had been legendary and everybody wanted to see it. The Washington Post, the New York Times, ABC News Nightline all went down and filmed a show in Cathedral in the Desert. On national evening TV we had one half hour show devoted to restoring Glen Canyon, and they really didn't put any opposition to it.

The downside of this was that we publicized Cathedral in the Desert so much that one of our big donors wanted me to take him in; and we went up there and we had to walk across 12 houseboats to even get close to it, there were hundreds of people in here. I felt bad – like what did I do?

Talk About the Creation of the David Brower Award

We talked to David Brower about giving an award in his honor and he thought it was a great idea. Giving the David Brower Award has been a good thing for us because the winners of that have been icons. George Miller, for example, a US congressman, Terry Tempest Williams, Martin Litton, Katie Lee. They were all winners. But then we decided to give it to Yvon Chouinard, of all people. He ran to us and said absolutely. To think we were able to give this legend of man, who has changed the world the David Brower Award. We've given it to some great people – some amazing people actually. But for Yvon Chouinard to come and support GCI was a big deal.

So what do you think GCI's done right – or what do you think we've done effectively?

There is no question that there are two or three things which Glen Canyon Institute has done effectively. Number one is we have proven that you can dream of something and make it happen over time; that if you just dream of something like Don Quixote – although I don't even consider that this way anymore, but if you dream it you can make it happen. I know that's sappy and people just say it, but we really showed that even going after such a big reservoir, like Lake Powell, that it may actually happen now.

The other thing that we did that was very successful is that we inspired a lot of other groups, not only to go after other dams, but to go after their own causes. A lot of people through the years have called us and said "we're going to use your model, because if you're doing this then we can." Another thing it did was show people in the environmental world, who were out there while people thought they were crazy, is you can actually make a scientific argument for your belief, and



Rich exploring the floor of Cathedral in the desert in 2004.

if you go after it slowly, tactfully, and scientifically, you can prove your point.

Another one was six or seven years ago we called a group of people together at the Alta club - yet again and said "where do we go now? It's after 2005, the movement has completely changed, there is now discussion of 'wow there is not enough water what are we going to do?'" We had some very bright minds down there; and that is where got the idea for Fill Mead First.

We had originally talked about going down and moving the counting point, that is where they count, Lee's Ferry down to Lake Mead, that was David Brower's idea. But we thought that obstacle would be too overwhelming, and instead what we should do is just have it count as being delivered and just keep Lake Mead full.

The idea of storing Upper Basin water in the Lower Basin scares them to death. But if they can get over that fear, they'll do it, which – by the way, is why that dam is there, that dam is there because the Upper Basin fears the Lower Basin. Too bad, but they do fear them and they put that dam there to stop them. If you can store Upper basin water in the Lower Basin, it obviates the need for Glen Canyon Dam, and that's what we're doing by the Fill Mead First. The Fill Mead First is just a catch name, for 'Don't be afraid of the Lower Basin.' because that's what it's all about.

Shortages on the Colorado River – A Balancing Act on the High Wire of Water Politics and Climate Change

— DW

On May 20, 2016 the elevation of Lake Mead slipped below 1,075 feet above sea level for the second time in two years. Around the reservoir basin a little bit more of the bathtub ring and shoreline is exposed, a few more tires, batteries, lawn chairs, fishing gear and car parts emerge from their watery grave to greet the sun and heat of the Nevada day.

1,075 feet. To most people it is just a number, but to western water managers, tribes, folks in Mexico and conservation types it means a lot more. It will mean even more if the number stays there or is lower on New Year's Eve 2017 or 2018. If that is the case, the revelry on the nearby Las Vegas strip or in Los Angeles, Phoenix or San Diego will be tempered by the knowledge that, by agreement, a level lower than 1,075 on January 1, will require the Lower Basin states to start cutting back their diversions from the Colorado River.

It is important to the three Lower Basin states (California, Arizona and Nevada) to keep the elevation of Lake Mead higher, allowing them to maintain control over their water destiny. The alternative is to give the deck of Colorado River playing cards back to the Federal government to cut, shuffle and deal as it sees fit. Fear of this stimulated the three Lower Basin states to meet and work on an agreement separate to the basin-wide 2007 Shortage Agreement to collectively find ways to keep the elevation of Lake Mead higher.

To push back the first tiered shortage call at 1,075 feet, California, Nevada and Arizona have been quietly working together and with the Department of the Interior to craft a new set of self-imposed water conservation efforts to keep more water in Lake Mead. Under the most recent Bureau of Reclamation projections (their 24 Month Study projection), Lake Mead likely will not fall below elevation 1,075 on January 1, 2017, but based on current projections there is over a 50% chance it could happen by January 1, 2018.

2007 Shortage Criteria The Criteria were built around shortage actions, primarily pointed at Arizona, Nevada and Mexico, when elevations in Lake Mead reached elevation 1,075, 1,050, and 1,025. Below 1,025 feet a new set of criteria would need to be negotiated.

2014 Memorandum of Understanding Enacted between Lower Basin States, Bureau of Reclamation and the Central Arizona Project pledging “best efforts” to conserve an additional 40,000 acre feet of water in Lake Mead.

2014 Colorado River System Conservation Program Municipal water providers in the Lower Basin states and Colorado agreed to fund new water conservation pilot projects to keep more water in the system.

Since 2002 the Colorado River Basin has been drawing more water out of the 60+ reservoirs that make up the plumbing system (demand) than it has been putting back in (supply).

Now even under average conditions of snowpack and runoff, there is a structural deficit at Hoover Dam of over 1.2 million acre feet of water due to combined impacts of evaporation + Lower Basin deliveries + deliveries to Mexico. This equates to at least a 12-foot drop in elevation every year — no matter what. Historically the Lower Basin and Lake Mead lived off of surplus deliveries from Lake Powell — not anymore. With the proposed additional water developments in the Upper Basin of pipelines, power plants, trans-basin diversions, more dams and energy development, the structural deficits of 1.2 maf will get worse, not better.

In the Upper Basin the drop in water levels is not as severe, yet. While Lake Mead hovers around 37% full, Lake Powell is fluctuating around 50%. Changes in snowpack dynamics, earlier runoffs, soil moisture deficits, and increased water development, have all added to increase the impact of 16 years of drought. Climate change or not, even the best case scenario will lead to reduced seasonal runoff totals and lower releases from Glen Canyon Dam. As a result, the structural deficit at Hoover Dam will also be found at Glen Canyon Dam.

With the threat of a Federal takeover of Colorado River management, the Lower Basin states began to meet to discuss ways to augment the amount the water levels in Lake Mead. This would have been unheard of even 5 years ago. The result of these negotiations are that the three lower basin states have conceptually agreed to make additional cuts in addition to those previously agreed to in 2007. The draft negotiations, are just that, draft, but some “Concepts of an Agreement” have been floating around for review.

- Bureau of Reclamation: Agrees to augment supply by 100,000 acre feet annually through efficiency measures (lining canals, reopening the Yuma Desalination Plant).

- Arizona: Total annual allocation 2.8 million acre feet. Under the 2007 Agreement, Arizona takes a 320,000 acre-foot reduction of its 1.4 maf Central Arizona Project allocation (approximately 11%). The new draft shortage cuts would further reduce Arizona's total Colorado River allocation by 512,000 acre-feet if Lake Mead drops below elevation 1,075 feet —approximately 142,000 acre-feet more than the previously agreed upon cuts of 320,000 acre-feet under the 2007 Shortage Criteria. Additional cuts would follow further drops in the level of Lake Mead, affecting agricultural and municipal water districts. The maximum reduction would be 720,000 acre feet.

- Nevada: Total annual allocation of 300,000 acre-feet. Under the 2007 Agreement, would be cut back by 13,000 acre feet. Under the new draft shortage agreements, additional cuts of up to 21,000 acre-feet occur if Lake Mead falls below 1,075 feet, with a maximum reduction of 30,000 acre-feet if it dips below 1,025 feet. Nevada and the Southern Nevada Water District

have been implementing conservation efforts for years and often return 50% of its pumped allocation back to the river as treated return flow water. This gives them the right to actually pump more than 300,000 acre feet from Lake Mead annually.

- California: Total annual allocation 4.4 million-acre-feet; senior priority to water due the agreements forged with Arizona in 1968. California has volunteered to cut its Colorado River allocation by 200,000 acre-feet if the reservoir drops to elevation 1,045 and up to 350,000 acre-feet if it drops below 1,030 feet. This agreement will impact the amount of conservation water available to the Metropolitan Water District.

The bottom line is that for the next few years as the Colorado River system continues to ratchet down in total water storage, the Lower Basin states and the Republic of Mexico will be impacted first, then the combined impact will be transferred to all seven Colorado River basin states. Collaboration, thinking outside the box, and embracing the change in operations to move water from Lake Powell to Lake Mead must be considered. Short term and unsustainable adaptations have already been implemented, including increased groundwater pumping, fallowing, increased use of water markets within the states (but not between states), and increased real estate actions of foreign investors (Saudi Arabia, United Arab Emirates, China, India) purchasing agricultural lands with senior water rights.

The Glen Canyon Institute Fill Mead First proposal provides a simple and cost effective way to increase the level of water in Lake Mead:

- Reduced evaporation from Lake Powell with that extra water captured in Lake Mead.
- Increased elevation of Lake Mead thereby avoiding the triggers to enact shortage reductions (and as a side benefit letting the states keep control of river management).
- Improved water flows through the Grand Canyon — better for the environment.
- Improved electrical production at Hoover Dam.
- Improved recreation opportunities at Lake Mead.
- Will not violate the Colorado River Compact.

There would be challenges with implementing the Fill Mead First proposal. Initially it would require negotiating ways for the Upper Basin states to get credit for moving their water to the Lower Basin. The second would be how to give the Upper Basin states credit for hydroelectricity generated at Hoover Dam in order to keep the Upper Basin Fund revenue positive. Tough, yes. Impossible, no. It is encouraging that California, with the most senior rights and the most political muscle, could step up and do things for the benefit of the basin, seeking a path forward. What is needed is water leadership and basin understanding of the type that negotiated the 1922 Colorado River Compact. This time the negotiations must include not only the seven basin states but also the tribes, Mexico and the environmental community. We can resolve the water challenge in a manner that benefits and protects all citizens and environments of the Colorado River basin.

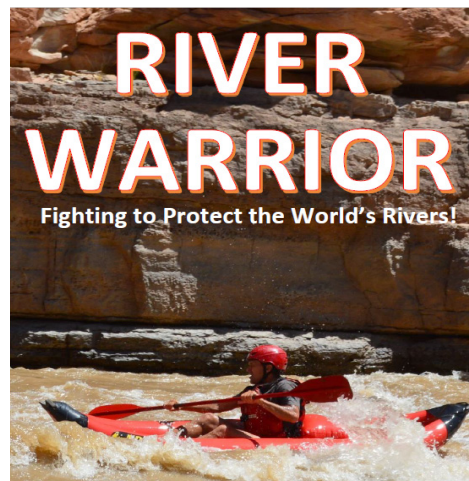
River Warrior: a New Book from Gary Wockner

— WG

Freshly published, this collection of writings by Gary Wockner, roaming river defender and co-founder and director of Save the Colorado (a close ally of Glen Canyon Institute) is a clarion call for the defense of the planet's rivers, and an inspiration on how to weave river advocacy into our daily lives and the lives of our communities.

The pieces vary in form, originally published as magazine articles, newspaper columns, or online essays, some accompanied with wonderful photos, and in geographical ambit. The first section, "Saving The World's Rivers," chronicles grave threats to the Mekong in Thailand, the Marañon in Peru, the Temash in Belize, to industrial pollution and sea level rise in Cartagena, Colombia. The second section highlights the Colorado River, closely reporting issues from the proposed Green River pipeline in Wyoming to the long-awaited reunion of the river and the Sea of Cortez in Mexico that was achieved two years ago, with Glen Canyon at the center of his narratives. Wockner's essays and dispatches from the front lines are

indispensable documents for understanding how the campaign to restore the river has moved and changed over the past decade.





429 East 100 South
Salt Lake City, UT 84111

ADDRESS SERVICE REQUESTED

"if Glen Canyon Dam (GCD) stopped generating hydropower, it would have a negligible impact on the western power grid, would raise electric rates by an average of just 8 cents per month for residential customers of hydro-power, and could save tens of millions of dollars each year in taxpayer subsidies and water lost to reservoir system inefficiencies."

— Dr. Thomas Power

