

FRIENDS of *Great Salt Lake*

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www.fogsl.org

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Briny Reflections
Wayne Wurtsbaugh

The mission of FRIENDS of Great Salt Lake is to preserve and protect the Great Salt Lake ecosystem and to increase public awareness and appreciation of the Lake through education, research, advocacy, and the arts.

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EXECUTIVE DIRECTOR'S MESSAGE

GREAT SALT LAKE'S FUTURE IS OUR FUTURE. WE NEED TO STRIVE FOR ECOSYSTEM STABILITY.

We will pay more for water regardless of what we do, but how much we will pay will depend on our ability to act now. Will we pay a little more now to save Great Salt Lake or a lot more later if we don't?

Nathan Bracken Esq., Smith Hartvigsen

On October 30th, I had the opportunity to present at the 2023 Utah Water Law Conference. The theme of the conference was *Adapting to Today's Challenges*. It was no surprise that Great Salt Lake fit perfectly into this forum since the fate of this ecologically and economically significant ecosystem continues to present a serious challenge for all of us to address. Sharing the stage with Nathan Bracken, Esq., Smith Hartvigsen, we were invited to focus on the topic: *Saving Great Salt Lake: A Look at the Bigger Picture: What is Working? What Isn't? What Are the Possible Solutions?*

Our contribution was part of a Great Salt Lake tryptic. We were sandwiched in between Joel Ferry, Executive Director of the Utah Division of Natural Resources, who focused on *Utah Water Legislation—Recent Changes: Adapting to Today's Challenges: Looking to the Future*, and Brian Steed, GSL Commissioner, who emphasized the *Challenges and Opportunities for Preserving the Great Salt Lake*.

When I think about the theme, *Adapting to Today's Challenges*, it's fair to say that our current attempts to avert a catastrophic collapse of the Great Salt Lake ecosystem aren't working fast enough. Time is clearly of the essence if we hope to meet our moral, ethical, and legal responsibility to preserve and protect this Public Trust resource in perpetuity. But it's also fair to say that planning for the Lake has never been done at this scale. Historically, management of this sovereign land by the Division of Forestry, Fire & State Lands (DFFSL) has been confined to the meander line—an elevation of the Lake at the time of statehood ~4,208' asl. As such, the Lake has traditionally been perceived as an isolated and finite province of reality lying at the bottom of the 36,000 sq. mi. Great Salt Lake Watershed Basin. But, mineral industry withdrawals aside, you can't manage the Lake's elevation from within the confines of the Lake—you have to manage it as a watershed because it's the upstream water practices and population growth that have the largest impacts on inflows to the Lake. It's not an excuse, just a fact!

Thanks to the insights from the February 24, 2016 white paper, *Impacts of Water Development on Great Salt Lake and the Wasatch Front*, by Wayne

Wurtsbaugh et. al, we know that consumptive uses since statehood have reduced the average natural elevation of the Lake by 11', decreased its volume by 48%, increased its salinity, and exposed approximately 50% of the lakebed. And thanks to the initiative of the GSL Strike Team's February 8, 2023 *Great Salt Lake Policy Assessment; A synthesized resource document for the 2023 General Legislative Session*, setting a Lake elevation range goal is the Strike Team's recommended way forward in order to "focus on inflows that both fill and maintain targeted elevation ranges." Amen!

As we grapple with a millennium drought, super charged by climate change, the "collective we" have finally realized that things are no longer the way they used to be. And although the Lake has historically been an afterthought in the bottom of the watershed basin, we simply cannot continue to be myopic about this extremely complex and unique saline ecosystem. The fact of the matter is that Great Salt Lake's future will determine what our future looks like. That's why we need to bring water to the Lake now and secure a funding stream for that to continue.

We've learned from other saline ecosystems within the region and around the world that the desiccation of these systems comes at a price. A price with tremendous costs environmentally and economically that include alarming impacts to human health. In the 2019 report to the Great Salt Lake Advisory Council by ECONorthwest *Potential Costs of a Drying Lake*, an estimated \$1.69 -2.17B annually would be required to address mitigation for dust, related health costs, a lost brine shrimp industry, lost mineral extraction, lost recreation, and lost ski days. Impacts to the populations of millions of migratory birds that rely on Great Salt Lake is unaccounted for in that report, but we know how significant that would be. If we hope to preserve and protect the Lake's benefits and mitigate its negative impacts, we need to find no-regrets solutions that can be implemented now.

Yes, over the last two years an impressive amount of legislation has been generated with nearly \$1B in funding support. For example, the *Great Salt Lake Watershed Enhancement Trust* (H.B. 410) with a \$40M allocation established a unique framework to leverage partnerships to bring water to the Lake, in addition to funding proposals that would improve



wetland habitats and water benefits that contribute to the Lake's hydrology. Other measures like promoting water conservation through secondary water metering, optimizing agricultural practices, exercising water market strategies developed by the Water Banking Act, changing water use behavior and landscaping by our growing population, and increased coordination and engagement between state, local and federal entities are important actions that must be taken by the second most arid state in the nation.

As well, H.B. 491—*Great Salt Lake Commissioner Act/Executive Office Appointment* recognized the importance of “going beyond the meander” of the Lake. As the former Executive Director of the Dept. of Natural Resources, Director of the Janet Quinney Lawson Institute of Land, Water, and Air at USU, and a representative of the GSL Strike Team, Brian Steed is a perfect fit because he knows the people, the politics, and the Lake. As for “below the meander,” H.B. 513—*Great Salt Lake Amendments* provides timely authority for DFFSL to make critical decisions about new leases and royalty agreements for the extraction of rare earth minerals such as lithium, in order to ensure that the biota and chemistry of the Lake isn't negatively impacted by those industries.

Since 2022, Utah State University's Center for Water Efficient Landscaping and the Utah Division of Water Resources (DWRe) have been working collaboratively to implement *Utah Growing Water Smart* and develop a Utah-focused curriculum for workshops, including case studies demonstrating methods for reaching community water efficiency goals. Participation by municipalities and their personnel infrastructure has been outstanding. Awesome! But it's no surprise that some of these efforts are getting better traction with more meaningful results than others. For example, funding for agricultural optimization has been extremely generous, however the return on investment is unclear because it's been difficult to track how much water has been conserved or “saved” or if it's even getting to the Lake? A gap analysis exists when it comes to accounting for the difference between diversion and depletion. Although H.B. 277—*Water Conservation and Augmentation* includes incentives for “saved” water practices, there's a desire for greater transparency of water measurement data to enhance management and distribution to support research and planning. We've got to do a better job with this opportunity.

So what's working with our commitment to “keeping the wheels on the wagon” for Great Salt Lake? And what's not?

On November 15th, DWRe presented a draft Work Plan for the first ever Great Salt Lake Basin Integrated Plan (GSLBIP) to the Natural Resources, Agriculture, and Environment Interim Committee. The goal of the GSLBIP is to “Ensure a resilient water supply for GSL and all water uses, including people and the

environment, throughout the watershed.” This plan is breaking the sound barrier for the Lake by going “beyond the meander” to integrate Great Salt Lake into its watershed. The GSLBIP is an outcome of two factors: H.B. 429—*Great Salt Lake Amendments/Integrated Water Assessment* passed during the 2022 Utah legislative session, and a WaterSMART grant from the U.S. Bureau of Reclamation. Since the objectives of both studies is to improve our understanding about water supply and demand in the GSL Basin, the two were merged to create the GSLBIP.

As stated in the GSLBIP, “An integrated water assessment is a means to understanding problems and challenges and evaluating options that enable informed decisions. The assessment is a planning process that holistically looks at the planning and management of the entire water cycle and considers it as a single and connected system.” As important, the language of H.B. 429 states, “The integrated water assessment shall include a water budget for the Great Salt Lake and the Great Salt Lake's associated wetlands, including water flows needed to maintain different lake levels under different scenarios, taking into consideration water quality, ecological needs, economic benefits, and public health benefits of the Great Salt Lake.”

Implementation of the GSLBIP will require the best data to drive the best policies and a belief in the concept that the plan is worthy of implementation. This can only be achieved through a wide scope of engagement of interests and partners within the watershed basin including our neighbors in Idaho and Wyoming. The good news is that we have them and an impressive gene pool of resources who are committed to seeing this through. The GSLBIP draft Work Plan is now available for public review through January 8, 2024 on our website: fogsll.org or at <https://water.utah.gov/gsl-basin-integrated-plan>. A virtual open house is scheduled 6:00-8:00 pm December 7th <https://youtube.com/live/bj1ZXpZpNl>. It's up to all of us to contribute to this opportunity for the Lake. Completion of the GSLBIP Action Plan is scheduled for November 2026.

As we rethink the importance of planning and managing “beyond the meander,” let's also rethink the foolishness of supporting projects like the Bear River development. Public proclamations of support for the Lake aside, if key State legislators are indeed cutting secret deals to purchase land for dam sites on the Bear, we have much bigger problems than we realize. We simply cannot make progress with our attempts to move forward with protecting the Lake if we're anchored to this type of antiquated boondoggle of the past.

WE GO!

In saline and solidarity,
Lynn



FRIENDS' ORGANIZATIONAL STATEMENT

Founded in 1994, FRIENDS of Great Salt Lake is a membership-based nonprofit 501c3 with the mission to preserve and protect Great Salt Lake ecosystems and increase public awareness and appreciation of the Lake through education, research, advocacy, and the arts. The long-term vision of FRIENDS is to achieve comprehensive watershed-based restoration and protection for the Great Salt Lake ecosystem.

FRIENDS of Great Salt Lake sponsors programs related to our mission statement: Lakeside Learning, the Doyle W. Stephens Scholarship, the Great Salt Lake Issues Forum, and the Alfred Lambourne Prize.

Lakeside Learning Field facilitates 2.5 hour inquiry-based educational field trips for 4th grade students. The trips combine informal environmental education strategies while incorporating science, technology, engineering, art and math (STEAM) to reinforce the Utah Common Core State Science Standards. Lakeside Learning emphasizes learning through participation.

Within the research component of our mission, we sponsor the Doyle W. Stephens Scholarship for undergraduate or graduate research on Great Salt Lake ecosystems. Established in 2002, the scholarship supports students in new or on-going research focused within the Great Salt Lake watershed. Recent project winners span the effects of changing salinity on microbialites to the impacts low water levels in Great Salt Lake have on Utah's air quality.

FRIENDS is actively involved in advocating for Great Salt Lake. Every two years, FRIENDS hosts the Great Salt Lake Issues Forum to provide focused discussions

about the Lake for a variety of stakeholders including policy makers, researchers, and industry leaders. Each Forum engages the community in constructive dialogue regarding the future of Great Salt Lake.

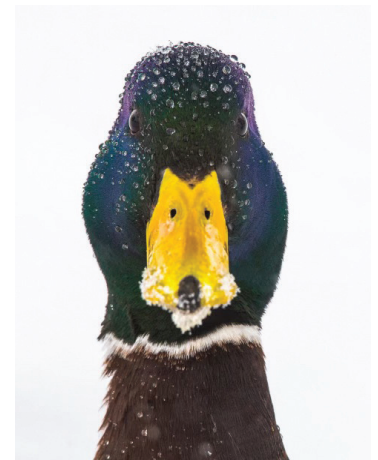
In 2014, FRIENDS established the annual Alfred Lambourne Prize for creative expressions of our Inland Sea in the categories of visual art, literary art, sound, and movement. FRIENDS celebrates the relationship between local artists and one of Utah's most precious natural resources, Great Salt Lake. Through artistic expressions, we enhance our capacity to build awareness about the Lake and our need to preserve and protect it for the future.

FRIENDS maintains a Board of Directors and Advisory Board composed of professionals within the scientific, academic, planning, legal, arts, and education communities.

Staff members include:

Lynn de Freitas,
Executive Director;
Rob Dubuc,
General Counsel;
Holly Simonsen,
Membership &
Programs Director;
Katie Newburn,
Education & Outreach
Director; and Doug
Tolman, Programs
Coordinator.

Photo: *Mallard*,
courtesy of
Gary Crandall



On The Cover:

Briny Reflections, photograph by Wayne Wurtsbaugh
with Robert Smithson's *Spiral Jetty*

© Holt/Smithson Foundation and Dia Art Foundation / VAGA at Artists Rights Society (ARS), NY

I've experienced Great Salt Lake from this calm morning sunrise at Robert Smithson's *Spiral Jetty* with my wife and dog, to having waves crash into my research boat while trying to scratch some data points from the water. It's a capricious lake at the doorstep of millions, and those millions are threatening its very existence. All of us will be needed to save it. From a rancher friend who is worried that he may lose some of the water that the State has provided his family for generations, to an urban planner who was shocked I was cutting down trees on my property to conserve water because she worried that tree removal might raise our city's temperature. Sacrifices will be needed—whether it's one fewer cutting of alfalfa or a bit less grass—if we want to continue viewing beautiful sunrises over a lake with water.





Lost
photograph
by Klaus Bielefeldt
2023 Alfred Lambourne Arts Program Submission

YES VIRGINIA, WETLANDS ARE PART OF GREAT SALT LAKE—IT'S AN ECOSYSTEM

Are wetlands part of Great Salt Lake? A simple question with a complicated answer depending on whom you ask. But from an ecological perspective, the complex matrix of wetlands are part and parcel to the Great Salt Lake system, ranging from playa and mudflats to emergent marsh and open water. These wetlands are the link between uplands, rivers, and the Lake. They provide food and living spaces for innumerable species, particularly migratory birds who need energy to make their long journeys. Protecting these vulnerable habitats is integral to the mission of preserving Great Salt Lake.

Not long after the establishment of the Great Salt Lake Watershed Enhancement Trust, which is co-managed by National Audubon Society's Saline Lakes Program and the Nature Conservancy in Utah, Trust staff with input from the Trust Advisory Council members¹, developed criteria and a process to assess proposed wetland projects for possible funding, up to a total of \$10 million². A funding opportunity was opened for sixty days beginning in mid-July 2023, for projects to "protect and restore wetlands and habitats in the Great Salt Lake's surrounding ecosystem to benefit the hydrology of the Great Salt Lake." This opportunity garnered interest from organizations and practitioners who have been working for years to ensure the long-term viability of the Lake's wetlands.

A group of eight Great Salt Lake experts³ were convened to score the applications against the criteria. These Technical Review Committee members provided vast knowledge from varying Great Salt Lake perspectives—wildlife, hydrology, water quality, watershed planning—and delivered

1 For a list of the Trust Advisory Council members, visit <https://www.gslwatertrust.org/advisory-council>.

2 The Great Salt Lake Watershed Enhancement Act authorizing the Trust provides that at least 25% of the funding should be used to "protect and restore wetlands and habitats in the Great Salt Lake's surrounding ecosystem to benefit the hydrology of the Great Salt Lake." Utah Code Section 65A-16-301(3)(b).

3 For a list of Technical Review Members, visit <https://rb.gy/6qe9h0>

thoughtful comments and opinions for each application over two days of in-person deliberation. As a new staff member of the Trust, I was heartened to see this collection of accomplished professionals using their precious time to dissect these proposals thoroughly. It was a reminder of how lucky we are in Utah to have people with decades of experience working on a system as unique as Great Salt Lake. Thanks to the dedication of state agencies, researchers, and environmental organizations, the Lake has a growing cadre of advocates who understand the esoteric nature of our closed basin and are devoting their careers to its protection and improvement. The committee provided its assessments to the Trust Advisory Council for final funding decisions. In the end, every viable applicant received at least partial funding and will begin work next year to deliver benefits to Great Salt Lake and its wetlands.

The Trust's wetland funding will protect and improve wetlands in a geographically broad region:

- On the Bear River, the US Fish and Wildlife Service will install new advanced metering devices above and below the Bear River Migratory Bird Refuge to accurately measure how much water enters the property and how much makes it to Bear River Bay and Willard Spur after it leaves the Refuge's impoundments. This will give wetland managers more information on how to best use their water and ensure that the Refuge receives its full allocation permitted by its water right.
- Where the Weber River meets Ogden Bay, the Trust's funding will support infrastructure improvement in Ogden Bay Waterfowl Management Area, the public property managed by the state for waterfowl production and public recreation by hunters and bird watchers. This project, led by Ducks Unlimited, will see the resurrection of a wetland habitat that was severely degraded in the floods of the 1980s and ensure the longevity of the dikes that managers use to optimize habitat quality for water birds.
- Managers of the Great Salt Lake Shoreline Preserve in Layton will use Trust funding to improve their water control to create and enhance wetland and open water habitats.
- In Farmington Bay, Ducks Unlimited is contracted for three separate projects that upgrade





Great Salt Lake wetlands, photograph courtesy of Max Malmquist

water control structures that are in desperate need of repair or replacement. These projects will give wetland managers the right tools to enhance wetland habitat as well as move water to the Lake more efficiently.

- The Division of Wildlife Resources will use the Trust's funding to improve habitat in a newly acquired wetland west of SLC Airport. This property was once a private duck club but will now become a new publicly accessible wetland that will provide habitat and create more recreational opportunities.
- Salt Lake City's Public Utilities Department, in conjunction with a large coalition, will acquire wetlands near the South Shore of Great Salt Lake and place them under permanent protection by conservation easement.

Through these projects, more than 13,000 acres of wetlands will be protected and/or enhanced, and the hydrology of the Lake will benefit through the

enhanced water control and measuring they will provide. Managers will be able to distribute water flexibly into the wetlands and the Lake during high flows; invasive species that sap water from the system can be better controlled; and we will have more accurate data on how much water is going where throughout the year.

So yes, let us affirm that these wetlands are part of Great Salt Lake. Not only are they on the spectrum of diverse habitats that the Lake provides for so many species and when healthy, but they contribute to a stable hydrologic regime for the Lake which is critical as it faces historically low levels. As such, the Trust will continue working with our partners for their protection into the foreseeable future.

Adam Wickline, Sr. Project Manager for Great Salt Lake Watershed Enhancement Trust and National Audubon Society's Saline Lakes Program



AND, WE WORK

Stephen Hawking taught us that time has an arrow that points in only one direction—forward. There is no going back, however many trillions of mistakes we might wish to rectify.

Time, its arrow implies, has both a beginning and an end, a notion that discomfits the best-laid dreams of our species.

wrought by movement. As one moment inexorably becomes the next, we try to foresee the future (failing miserably, most of the—you guessed it—time). Philosophers and various other thinkers without lofty titles have realized over and over again that what we live in is the eternal present.
Maybe....



Mud Bath, photograph by Linda Dalton-Walker

The Big Bang set into motion (perhaps in synopated fashion) all the matter in our universe, and the future is one of unimaginably vast, dark, and silent spaces where, eventually, even atoms break down and nothing moves—there is no longer gravity. With no forward motion, time stops.

We live somewhere along the continuum of this movement. We did not see its beginning; we will not see its anticlimactic end.

Time, for us, is neither a friend nor less an enemy. It is how we quantify the material changes

We think of the past and are influenced by it; we anticipate the future and make plans that demand action in the now. In this sense, we very much participate in every dimension of time. We may indeed learn from our collective histories, likewise we may ensure a safer, healthier tomorrow. Or, not.

We, sapiens, are not the only species subject to a universe in constant motion. All animals are, all matter is. Humans may be the only thing aware of the universe's broad, unchangeable, and ultimately life-ending circumstances. Is ignorance, then, really the greatest bliss?

Well, probably not. Ignorance obviates problem solving of every kind. And we humans desperately need problem-solving skills to remain in motion with the universe. That is, to survive for as long as—again you have guessed it—humanly possible. Ignorance is an enemy of survival.

One more lesson from our esteemed Professor Hawking (and a good many other cosmologists): The universe is entropic. Everything moves not only all the time, but all the time toward a more disordered state. To understand entropy, stop doing housework for a while. To avoid having a house that looks like a flea market in a windstorm, we do dishes. Laundry. Vacuum.

We work.

The problem with this work is that time doesn't stop while you do it. Entropy continues along its merry way. You'll be doing it all again in a week, or less. Or, more.

Consider Great Salt Lake.

The Lake is not exempt from time or entropy. Like all matter, it will someday disappear into a void where even possibilities no longer exist. The problem for us in the eternal now is that we do not want to see Great Salt Lake vanish. It's a beautiful silver lining stretched out parallel to Utah's magnificent desert horizon. It's part of the history that we imaginatively dip into, part of the future we dreamily wish for. So, we do our chores and try to keep our house in order, staving off environmental chaos. This is all so very poetic: We rage against the darkness.

With the Lake, our raging takes the form of political, environmental, and management initiatives. Doing the laundry on a bigger stage, with lots more people and underwear. And this work, like its domestic counterpart, will never end. The need to work to preserve the Lake amidst the enormous problems attendant to climate change will remain. And, so far, all evidence shows that we will continue to do it.

Why?

The Lake is part of our story, the only story we know thus far. It's part of our experience, public and private. We've seen it, smelled it, touched it, and tasted it. It is not separate from our world. It now needs attention, and we reach for every tool at our disposable and go to work.

There are, of course, those who say, "Why do housework?" You know who they are. The answer is: This is the healthful environment I wish to live in. It is the view I want before my eyes. It is the pleasant space that invites me to melt into my own home, and to ask others in to share it.

We wish to share with others the incredible views of nature at every turn. We wish to be absorbed into and meditate inside of Nature. To have the multitude of glorious experiences that might be a part of one's life. To that end, we need this Lake, at this time, in this world. We sense that experience and meaning are really the same thing and have been all along: The meaning of the Lake is having encountered it, having known it, having its multiple sensory darts enter us and become part of us.

It is, right now, a lot of work to preserve the Lake. It will continue to be. We know there is the possibility of failure, a knowledge overturned by our will to thwart fate or, better still, to redesign it. Not that we see ourselves as little gods with fickle desires, but rather that we have this ongoing ability to identify a world well worth living in, and well worth keeping.

Despite all our faults, and there are many, we embrace the world we are in.

And, we work.

Will South, artist and art historian
willsouth.org



A CHANGE IN OUR URBAN LANDSCAPE

It is hard not to notice the change taking place as I drive through my hometown of Salt Lake City—once struggling lawns in parkstrips have been converted to beautiful water efficient landscapes. These transformations are incredible in both their variety and benefit—giving biodiversity and life to areas once dominated by a mono-



Example of water-efficient landscaping, photograph courtesy of Rick Maloy

culture of Kentucky Bluegrass. This has also resulted in incredible conservation. Many of these changes have been part of incentive programs offered by Central Utah Water Conservancy District and Utah Water Savers.

Over the last two years, residents of Salt Lake City have replaced nearly 250,000 square feet of lawn, conserving an estimated 5.5million gallons each year. I am often asked if these programs and this drive for water efficient landscaping is a trend

that will stick around or will fade with the wet and dry cycles of our climate. My answer is now always the same: we don't have a choice. We have to be successful in our conservation efforts and in all areas of water use.

I still remember the first time I realized our water supply surrounding Great Salt Lake was not infinite. I grew up in Salt Lake City completely oblivious to water challenges outside of flooding in the 80's. My naiveté toward water lasted a long time until I saw a graph presented by various water users surrounding the Lake—it was a graph of the current supply and the projection into the future for when the Bear River system was going to be needed to meet the demand. It specifically showed a point wherein our system would no longer match our use. This was both fascinating and worrying, but I had no understanding of how I, or anyone else, could change it. It wasn't too many years later that I was presented a similar graph by Jordan Valley Water Conservancy District showing that conservation could delay the Bear River project and even translate into not needing the project altogether. This sparked a fire in me and showed me that water conservation could have a real impact on water supply and ultimately on the ecosystem that we share. For the years following this pivotal moment, I watched as the work myself and other colleagues were doing was indeed moving the needle toward conservation and showing how we were continuing to grow and develop under current supplies, further emphasizing the need for additional water development.

I eventually found myself working for Central Utah Water Conservancy District managing conservation programs. I was charged with stretching supplies and ensuring a resilient system in the face of population growth, long-term drought, and climate change, coupled with Colorado River and Great Salt Lake challenges. Nothing could be more rewarding and difficult than balancing these issues.



With pressure from all angles, we were trying everything to see what worked and what was possible. I was fortunate enough to have supportive leadership to truly develop conservation strategies that could dig deeper and hopefully move the needle even faster. Soon we began developing landscaping programs, with the majority of our municipal water going to our landscapes, I knew that was where we needed to start. After pouring through water use data throughout the Wasatch Front, we quickly realized that 44% of water use was outdoor residential use. This high percentage was largely due to over irrigating. And not just a little.

On average, people were applying more than double the water needed to maintain a healthy lawn. So we began with education and for several years we preached reducing water and gave thousands of rebates for smart controllers, but the results were lackluster. What did work was turf replacement programs.

We were behind the curve compared to California and Nevada, but they had also worked out many of the wrinkles of these programs. Because of our collaboration with other states, we were able to implement programs quickly with immediate participation. We did however have one major problem: we were building new homes and installing excessive grass (particularly in parkstrips) faster than we were removing it. This sparked a new effort in developing water efficient standards for cities. These standards were developed to limit turf grass in new development, specifically in areas like parkstrips or what we



Flip Your Strip marketing, photograph courtesy of Lynn de Freitas

have come to refer to as non-functional turf. We, along with our district and state partners, worked with cities across the State to enact ordinances around these standards and had differing levels of success (adoptions). Some cities, like Heber City, were very engaged and on board with conservation, other cities, less so. Heber City and others like them have supportive staff, leadership, and community who all understand our water situation and want to be a part of the solution. Heber City has even converted their own parkstrip in front of the Public Safety Building on Main Street—sending a clear message to residents and businesses alike that they care and its okay to make a change.

We love to see the changes taking place and everyone getting involved in conservation and prioritizing our environment. We cannot stop our ongoing effort and need to improve. There are still too many cities resistant to sustainable growth and mindsets of lackluster care for our water supplies, but I am confident we are moving in the right direction.

Rick Maloy, Director of Communication,
Central Utah Water Conservancy District



What Does She Say When We Can't Hear Her?

Lady Lake, what lay in your shallow depths?
Mysteries of strange life and wrecks

Secrets kept with high water years
Exposed, uncovered, when drought appears

Bonneville Ancient full of remnants past
Hold lore, stories, and legends fast

What do You say when We don't listen?

I HAVE A PURPOSE!
I HAVE A MISSION!

Do you cry to the sky?
The Mountains?
The Soil?

They have been there, all along, and know your toil

Oolitic sands line your belly and shores
As sailors be wary of tufa corridors

Life giving or taking, one has their belief
You offer what you have for those seeking relief

No words can do justice for your eclectic space
It's obviously You why "This Is the Place"

If anyone takes the time to care
We can understand what you have to share

Quark measuring barges float quiet and still
Scientists gather their data, and notepads fill

Astounding adaption of invertebrates thriving
Feeds millions of birds after flight, reviving

PROTECT ME!
CARE ABOUT ME!
COME TO ME, AND SEE!

The comfort of serenity, uniqueness, and brine
Sunsets hit different on Us as they shine

Lines from Heaven and Earth blurred beyond measure

WE LOVE YOU!
WE HEAR YOU!
YOU ARE OUR TREASURE!

–Chaucie Johnson
2022 Alfred Lambourne Arts Program Submission



GREAT SALT LAKE MAP



■ Great Salt Lake historic average elevation 4,200' (1847-1986).

■ Approximate average elevation Fall, 2022 4,189'.

This map shows the contrast between the historic elevation average of 4,200' (1847-1986) and the current elevation of 4,189' (Fall 2022). It shows that islands, bays, habitat values, navigation and open water have been lost/compromised due to a declining elevation.

Basemap: USGS. Water level shown depicts approx. 4189'. For reference only.



RESTORATION OF THE WILLARD SPUR

WE MIGHT BE A LITTLE CRAZY, BUT WE'RE MAKING A BIG DIFFERENCE

The Willard Spur wetland area is an overlooked gem of the Great Salt Lake ecosystem, a mixture of Federal and State lands squeezed between Willard Bay, Harold Crane Waterfowl Management Area to the South, Bear River Migratory Bird Refuge to the North, and municipal and private properties to the North East. As the Eastern part of Bear River Bay, the Spur is the fresh water arm of the GSL. This unique wetland is mostly in the Great Salt Lake water shed and also encompasses the Bear River water basin to the North and Weber water basin to the South. This combination of multiple water basin and mix of state, federal and private lands is in part of why the Spur is one of Utah's gems. The difficulty of multiple stakeholders has allowed the Spur to, in a way, slip through unnoticed. No dikes or roads crisscross the spur, leaving it vastly untouched by humans. It's pretty much the same now as it was forty-nine years ago, when I was first introduced to it.

How we started working on the Spur

Back in 2017, Wasatch Wigeons association removed an old car chassis from the Willard Spur. To our surprise, what was believed to be an old military jeep, turned out to be a Lincoln Zephyr. This chassis had been out there as a navigation hazard for about twenty five years, causing multiple incidents with boaters.

After removing the Zephyr we took some time to look around and asked what else we could do to improve the area. We quickly realized it was being overtaken by phragmites and tamarisk. After approximately two years of planning and research, we finally acquired permissions from Utah Department of Wildlife Resources (UDWR), Bureau of Reclamation (BOR) and Weber Basin Water Conservancy District (WBWCD), United States Fish and Wildlife Services (USFWS), Willard Bay Gun Club and Willard Gun Club, to conduct mitigation in the Spur area. Having multiple partners (Private, State, Federal) makes things a bit complicated, but we've found ways to make it work.

Why focus on Phragmites and Tamarisk?

Expanding stands of phragmites spread out across wetlands reducing nesting and foraging habitat for

migrating waterfowl and shorebirds. Phragmites also chokes out biological diversity within a native plant community. The thick monotypic stands of phragmites do not promote the appropriate plant and invertebrate communities required by water birds to meet critical life cycle events. Due to the plant's high biomass, phragmites evapotranspiration is higher than most native plant species. Reducing the per-



Willard Spur, photograph courtesy of Troy Burgess

centage of phragmites within a given wetland will help improve water quantity to the GSL. Phragmites also accretes soil and litter at much higher rates than most native plants. Rapid soil accretion, high amounts of litter, and very high density of stems, alters water distributions reducing downstream flow and, in some cases, resulting in loss of wetland habitat further downstream. Slower flows also will result in increased evaporation.

Presence of dense tamarisk degrades habitat and water quality for waterfowl and shorebirds as well as by outcompeting native desired vegetation for forage and nesting. Additionally, tamarisk consumes very large quantities of water per day (up to 200 gal. per mature tree) via evapotranspiration. Tamarisk also alters the pH balance in the soil making it inhabitable to native plants, but suitable for invasive species like phragmites to thrive.

Establishments of phragmites and tamarisk along water ways like the Bear River and Willard Bay Outlet Channel negatively affect the Willard Spur and ultimately GSL by aiding in the distribution of seeds from these invasive plants.



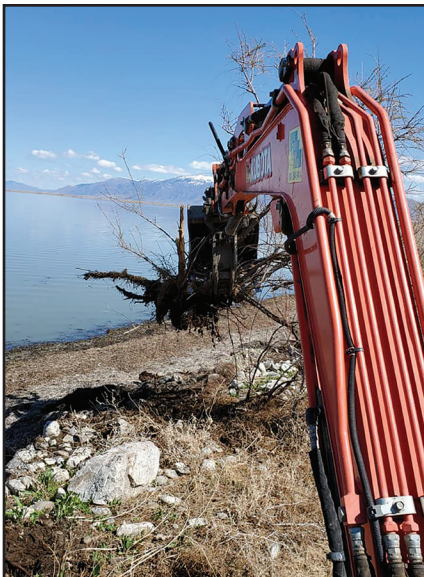
Neither phragmites nor tamarisk provide benefits to local or migrating wildlife and are both very destructive to the local ecological systems. In addition to degrading ecological systems, they can also negatively impact recreational users by limiting opportunities to view and observe wildlife, participate in waterfowl hunting or wildlife photography, and more. Without human intervention these plants species will continue to thrive and expand causing additional acreage loss of our key wetland ecosystem. The wetland benefits even more with the reintroduction of native plant species to promote a balance ecosystem key to the wildlife species that depend on wetlands for at least part of their life cycle.

Our objective:

WWA's primary goal is to restore the Eastern portion of the Willard Spur to its former beauty and ecological productivity, in a multiple phase approach. In order to achieve this we plan on reducing phragmites and tamarisk in our target area to 5% of the ecosystem, before returning it to BOR, USFWS and UDWR. This aggressive goal exceeds the current state and federal goals, allowing the organizations to absorb the target area back into their monitoring program.

Our Method:

WWA utilizes a double mow and treatment method for combating phragmites. This requires mowing all 27 acres [7.5 miles of shoreline (phase 1)] of phragmites on the Spur every April and again every June then treating with herbicide Aug-Sept. The April mowing clears the area after the previous year's treatment allowing the existing seed banks to germinate. The June mowing reduces seed production and maintains access to the area for the late season herbicide treatment. Each phragmites stem can produce upwards of 2,000 seeds annually. The late summer/early fall treatment kills that year's growth. This method is repeated annually until the desired goal is reached.



Tamarisk removal, photograph courtesy of Troy Burgess

We started using this method in April 2021 and are seeing amazing results—especially along the 4.5 mile stretch of shoreline along the frontage road behind the North side of Willard Bay and both sides of the Willard Bay outlet channel.

We utilized heavy equipment to remove the majority of tamarisk (where heavy equipment could access) and followed up with the cut-stump method on new shoots. This method utilizes less herbicide than the other methods. Where heavy equipment could not access the area, we utilized a cut-stump method with additional follow up as needed. We still have a couple more seasons to finish up the tamarisk portion of phase one.

June 10th, 2023 marked a major milestone for phase one, as we planted over 800 bulrush (Hardstem & Alkali) plugs along a 4.3 mile stretch of shoreline. Next year, we plan on planting more than twice that amount in the phase one target area. During next year's planting, we plan on influencing cattail growth in certain areas previously frequented by hunters. This will re-establish old hunting blind areas with new native vegetation.

What's next?

Sometime in 2024 or 2025 WWA will start phase 2 of our Willard Spur project, which is even more aggressive as it is a larger portion of acreage in open wetlands with approximately 40% phragmites. This phase will be almost entirely phragmites removal with little to no re-vegetation being conducted. The effort will leave open water areas and allow native plant species to fill in others. We'll be heavily dependent on availability and rental of specialized equipment to conduct the mowing portions of this project. It will require both reactive and proactive methods of phragmites treatment. The type of proactive method we will be using is referred to as wick whipping: a method of herbicide application that applies the solution directly to the targeted plant, reducing non-targeted species exposure. This will be used where phragmites is starting to engulf growths of desired plant species like cattail and bulrush.

In summary, WWA conducts these types of projects to improve Utah's wetlands and educate the community through hands-on volunteerism. This also takes a small portion of the burden off our state and federal agencies and promotes community involvement.

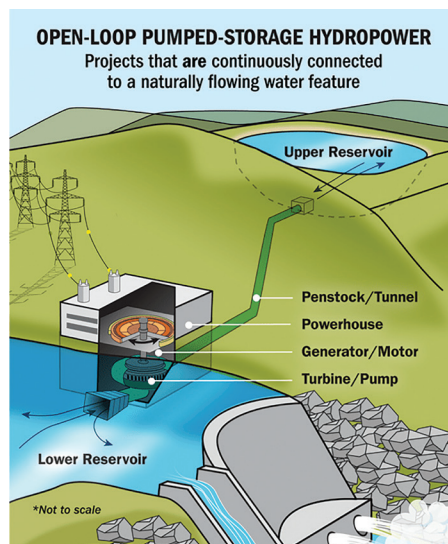
Troy Burgess, President of Wasatch Wigeons
For additional information about WWA check out our website at <https://www.wasatchwigeons.org/>
Questions can be sent to Troy@Wasatchwigeons.org



PUMPED STORAGE IN THE GREAT SALT LAKE BASIN

In response to the challenges of climate change—which are global but also bound to impact our very own Great Salt Lake—Rocky Mountain Power is working in close partnership with communities to expand the amount of clean energy resources serving its customers and to decarbonize our energy supply. Rocky Mountain Power plans to have over 20,000 megawatts of wind and solar energy online by 2032. To support this new clean generation, Rocky Mountain Power envisions that 8,095 megawatts of energy storage resources will need to be online by 2042, including batteries and pumped storage hydroelectric resources—with two pumped hydro projects on the Bear River being evaluated for feasibility.

Hydroelectric pumped storage projects take advantage of differences in elevation between two reservoirs.



Components of Pumped Storage Facilities, National Renewable Energy Laboratory

As shown in the schematic image, an upper reservoir supplies the energy of falling water to power a turbine and generator near a lower reservoir. In off-peak times, water is pumped into the upper reservoir to make ready for peak demand times

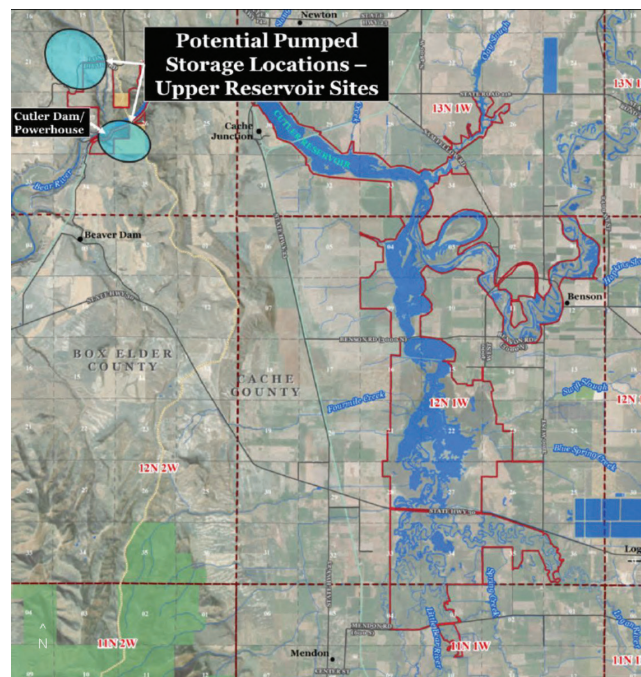
when generation from the project can help integrate variable renewable generation into the electricity grid.

Hydroelectric pumped storage has distinct advantages, including longer plant life and significantly greater energy delivery capability compared to chemical batteries. This makes feasibility studies of these sites an important part of prudent utility planning. Pumped storage hydro is a proven technology that accounts for more than 90% of energy storage in the U.S. today and Rocky Mountain Power's familiarity with the dependability and long life of hydro assets causes us to think pumped storage has an important role to play in our energy transition.

The two preliminary projects being evaluated for feasibility on the Bear River use existing reservoirs associated with hydroelectric projects. One is the Cutler project between Logan and Tremonton (see image) and the other is at the Oneida project near Preston, Idaho. Rocky Mountain Power operates these projects in conjunction with its longstanding operation of the Bear River system, which has provided for irrigation deliveries since 1907. Recent Federal Energy Regulatory Commission licensing processes have resulted in

continuing consultation with a number of interested groups, local landowners, conservation organizations, and resource agencies.

Each of these projects would make use of an existing lower reservoir and add one small upper reservoir that would be connected to a new pump-turbine powerhouse. While new reservoirs do result in evaporation, the reservoir area is relatively small and the net water lost to the Bear River system may be zero after considering direct precipitation on the new reservoirs and the reduction of evapotranspiration from natural vegetation and exposed soil surfaces. The operations



Cutler reservoir, plant location and two possible areas for a new upper reservoir to support the new pumped storage currently being studied for feasibility (Image source: Rocky Mountain Power).

of the existing hydroelectric plants and water deliveries facilitated through these projects would continue. If deemed feasible, these projects will still require approval from the Federal Energy Regulatory Commission and various state agencies through processes that would provide for robust public involvement.

The required economic and environmental studies, together with license amendments from the Federal Energy Regulatory Commission, will take at least 18 months to complete. Rocky Mountain Power has not yet determined whether development at the sites is feasible or may advance, so specific construction schedules have not yet been determined.

If pumped hydro energy storage does come to the Great Salt Lake basin, it will help Rocky Mountain Power meet its timeline for reducing carbon emissions 90% by 2030 and to zero by 2050, helping to reduce the impact of climate change globally and on Great Salt Lake.

Connely Baldwin, Hydrologist with Rocky Mountain Power

GSL ADVISORY COUNCIL: WATER CONSERVATION TOOLBOX

The Great Salt Lake Advisory Council has approved the development of a water conservation tool box to assist municipalities and other local governments with tools to help implement levels of water conservation needed to live with existing water supplies thus preserving existing flows to Great Salt Lake. Great Salt Lake is a vital and unique natural resource facing significant challenges, including shrinking water levels, thus this project will provide tools needed to reverse the expanding upstream development of water resources and preserve existing flows to the Lake.

The Great Salt Lake Advisory Council (GSLAC) in association with some of the large water districts has conducted studies to identify the levels of conservation necessary to live within existing developed water supplies while allowing anticipated population growth to occur. In the August 2020 Conservation Impacts Study conducted by GSLAC and Weber Basin Water Conservancy District the executive summary states:

If Utahns want to achieve the level of conservation required to postpone water development projects beyond 2065, it will require some dramatic changes to current water use habits. Reaching this level of conservation will require active participation and acceptance by homeowners, businesses, municipalities, and legislators. Required actions to achieve this level of conservation include:

- Near 100% conversion of all indoor fixtures to high efficiency (including faucets, showers, toilets, and washing machines).
- 50% reduction in indoor leaks and other indoor water waste.
- Near 100% implementation of secondary water metering.
- Increase in irrigation efficiency to near 100% of best expected.
- Average lot size reduced by 14% to 24%.
- Significant reduction of high-water use turf grasses to other waterwise options, including conversion of existing residential landscapes and limited use of high-water use turf grasses on all new development.

The detailed conservation report quoted above indicates, for one large water district, 31% of existing outside space uses water-wise landscaping. To meet levels of conservation needed, this percentage needs to be increased to over 70%. To facilitate this kind of change, local governments need to implement policies, guidelines, and regulations to encourage and require such change. Converting existing turf grass to water saving landscape could be encouraged and enticements to make such changes could be offered. Also, the following principles could be used in educating the public:

- Enhanced Infiltration: Native plants have deeper root systems that improve soil infiltration and water retention, reducing surface runoff and enhancing ground-water recharge.
- Reduced Runoff Pollution: Turf grass areas often receive chemical inputs, such as fertilizers and pesticides, which can contaminate runoff. Native vegetation generally requires fewer inputs, leading to cleaner

water entering the Lake.

- Biodiversity Support: Native plants support a more diverse array of wildlife, which can contribute to a healthier ecosystem within the Lake and its surroundings.

This proposed toolbox will include possible actions intending to help local government implement water conservation in an orderly, but expeditious fashion. The toolbox may include the following items:

1. Develop model inside water use ordinances and plans intended to achieve 100% conversion to high efficiency or ultra-high efficiency water fixtures including showers, faucets, dishwashers and washing machines including reasonable time frames for the conversion to take place.
2. Develop model outside water use ordinances and plans intended to transition all water irrigation systems to best expected efficiency including conversion of all non-functional turf such as streetscape turf, ornamental turf, primarily decorative turf, or turf that does not serve a human function including recreational purposes or civic or community events.
3. Develop model water rate structures that economically motivate users to avoid high water use and convert to waterwise landscaping.
4. Develop incentives and rebate programs, including financial incentives and rebate programs by the State or others to encourage property owners to remove or reduce turf grass and replace it with water-efficient landscaping.

The proposed toolbox will also provide tools on methods available to encourage the use of items in the toolbox that are identified above.

1. Outline a public awareness and education information program or campaign that could raise awareness among homeowners, businesses, and municipalities about the importance of turf grass conversion and the benefits it brings to the environment and Great Salt Lake.
2. Summarize recommended collaborative efforts and Partnerships between governmental agencies, non-profit organizations, businesses, and community groups that can accelerate turf grass conversion efforts and pool resources for maximum impact.
3. Provide a showcase of successful case studies that demonstrate positive outcomes of water conservation for the environment and Great Salt Lake.

This study should be completed by June 30, 2024. Then, the challenge for those who care about the Lake, will be to get the municipalities and local government to expeditiously implement the tools to continue down the conservation path, thus helping save our precious Lake resources.

Leland Myers, Executive Director, Wasatch Front Water Quality Council. Myers currently serves on the Great Salt Lake Advisory Council.





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Sept. 16 (Fall)

Dec. 16 (Winter)

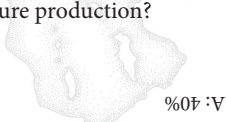
Mar. 16 (Spring)

June 16 (Summer)

Submit articles and
images for consideration
to Lynn de Freitas at
ldfreitas@xmission.com

LAKE FACT:

Q: Great Salt Lake produces
what percentage of the world's
brine shrimp cysts, essential to
aquaculture production?



%04: V

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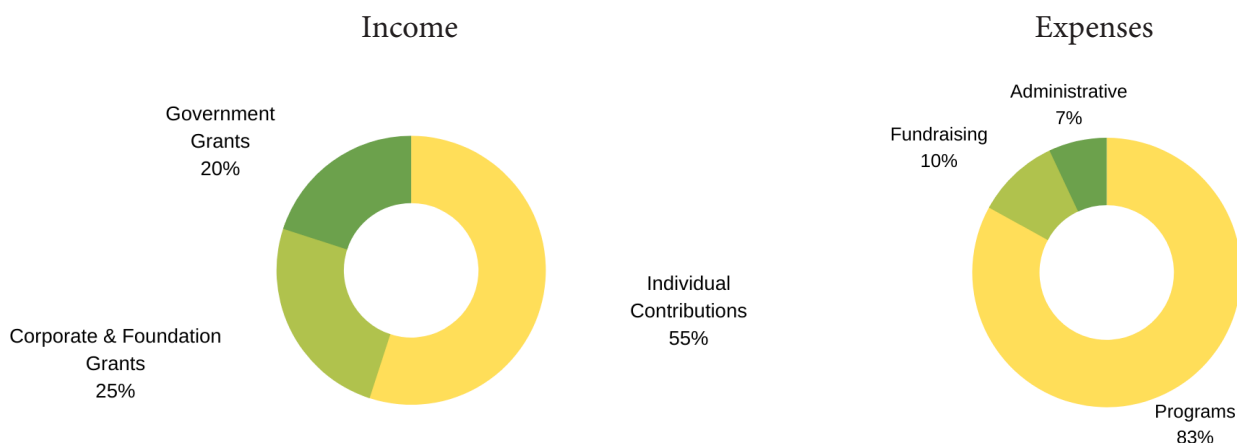
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With an annual operating budget of under \$400,000, FRIENDS of Great Salt Lake spends a majority of funds on Programming (83%), including our Education Programs, The Doyle Stephens Research Program, Advocacy Programs, and the Alfred Lambourne Arts Program. Fundraising costs average 10%, and administrative expenses 7%.

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GREAT SALT LAKE

To Preserve and Protect in Perpetuity
How Are We Doing?



Great Salt Lake Issues Forum
May 8-10, 2024
University Guest House & Conference Center

Photo Courtesy of Gary Crandall

Save the Dates!

Our biennial Great Salt Lake Issues Forum will be held May 8-10 at the University Guest House and Conference Center. The purpose of the forum is to encourage constructive dialogue about the future of the Lake's ecosystem and its resources, and to illuminate the complexities involved in research, management, and planning for the Lake. Please plan to join us.





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Breathing Salts, photograph by Kelly Hannah, 2022 Alfred Lambourne Arts Program Submission