FRIENDS of *Great Salt Lake*

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A Day at the Marsh
Gary Crandall

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.

Executive Director's Message

Adjacent Land Use Matters for Great Salt Lake

"UNLESS someone like you cares a whole awful lot, nothing is going to get better. It's not."
- The Lorax

The lay of the land-

Less than 20 miles from Gunnison Island, a protected sanctuary for the third largest breeding population of American White Pelicans in North America. In the same neighborhood as Robert Smithson's Spiral Jetty that was designated Utah's Official State Work of Land Art in March 2017. Slightly more than 10 miles from the Bear River Migratory Bird Refuge - Utah's first national wildlife refuge established in 1928. And as the gull flies, about 25 miles southeast from the Golden Spike National Historic Monument, a popular tourist attraction that celebrates the completion of the transcontinental railroad in 1869.

Where our story continues-

In the Spring 2003 newsletter, I wrote about an ill-conceived proposal that promised to generate economic livelihood for Box Elder County by constructing the nation's 4th largest landfill on the western flank of the southern tip of the Promontory Peninsula. The Promontory Peninsula is a misunderstood but impressive landscape that's emblematic of the classic Basin and Range geomorphology. The extension of its magnificent reach of mountains and scrubby productive upland habitats creates a visually notable portion of the distinctive northern shoreline of Great Salt Lake. Its uplands possesses a prodigious array of raptors including American Bald Eagles, Burrowing Owls-a species that is included on the Utah Sensitive Species List, Long-billed Curlews, mule deer, waterfowl that take refuge on its eastern shoreline in Bear River Bay, and a passel of other critters that call this place home.

15 years ago, a Class I permit was being pursued by the applicant Promontory, LLC. Several other proposals for landfill sites in Box Elder County were also being considered but only this one rose to the top. The rationale for the landfill was based on projected expanding waste disposal needs of the rapidly growing population in northern Utah. A Class I permit means that contracts to accept waste can only be made with local governments and municipalities within Utah of wastes generated within those boundaries, along with approval by the Executive Secretary/Executive Director of the Department of Environmental Quality (DEQ). The waste stream that can be accepted consists of municipal, commercial, industrial, construction/demolition waste and special wastes and small quantity generator hazardous waste such as low level infectious waste, heavy metals, solvents, a variety of organic compounds like PCB's that are conditional under certain regulatory codes within the Division of Waste Management and Radiation Control (the Division) in DEQ.

The Box Elder County Planning Commission held a series of public hearings on the Promontory, LLC landfill. Objections and concerns were expressed about the obvious externalities that come with this type of land use. Many people including adjacent property owners within 1000' of the proposed site, local citizens, conservation interests including FRIENDS, the Bear River Migratory Bird Refuge, and a family owned Great Salt Lake mineral extraction operation in Gunnison Bay that produces mineral supplements for human consumption spoke to these issues. Among those concerns were fugitive trash that inevitably finds its way across the landscape, the relationship between air, land, and water contamination from wastes that can impact wildlife and the ecology of Great Salt Lake, and the need for yet another facility given available waste markets. And in general why did Box Elder County choose to promote this type of land use as an economic generator? Following a public commenting period through the Division, a Class I permit was issued in March 2004.

The writing on the wall-

In 2009, there was an ownership change. In 2011, the Class I permit was renewed. In 2014/15 another new ownership defaulted on its contract and so the permit reverted back to the prior owner. In 2016, Promontory Point Resources, LLC (the company) purchased the 2,000 acres and the Class I permit that came with it which is due to expire in 2021. Throughout this period of what could be construed as Utah's very own version of a classic Marx Brothers movie, no ground on Promontory Peninsula was disturbed. The likely reason for this is because the market for in-state waste is already secured by 10 existing Utah landfill facilities that have a combined life storage capacity of 363 years. Included in this lot is the Box Elder County landfill that has its own Class I permit with existing capacity and room to expand if need be. Clearly, as a business venture and an economic generator for Box Elder County, this prospect seemed to be going nowhere until May 2017, when earthmovers began carving up the landscape.

So what changed?

In March 2017, two things happened. On March 10th during the 2017 General Session of the Utah State Legislature, (H.J.R.020) Joint Resolution Approving Class V Landfill for Promontory Point Resources, LLC sponsored by Rep. Lee B. Perry (Perry, UT) and Sen. Peter C. Knudson (Brigham City) became effective. And on March 17th the company submitted its application to the Division for a Class V permit. A Class V permit would allow the company to receive the same types of wastes as a Class I but from out of state, and with the addition of "special wastes as enumerated in the operation plan as defined in Utah Administrative Code, R 315-315. Initial disposal rates would be approximately 200,000 tons per year and approximately 750 tons per day. Depending on the waste sources, the volumes would increase annually. The resolution "gives approval for the construction and operation of a Class V commercial nonhazardous solid waste landfill" for the company because "[it] would have favorable economic impact on Box Elder County in the form of new permanent jobs and host fees". Note the "nonhazardous" category that is certainly debatable. Although H.J.R. 020 grants provisional approval of a Class V permit by the legislature, it is still contingent upon approval of the operational plan by Box Elder County, the Director of the Division, and requires the governor's signature. What's important to note here is that Utah already has 10 Class V permitted landfills with a collective waste storage capacity of more than 2,036 - yrs. Once again this begs the question of whether taking more out of state waste is really the best way for Box Elder County to explore economic opportunities? And if so, then why does it need it to be adjacent to Great Salt Lake which is already recognized as an economic generator to the tune of $1.3B annually to Utah's GDP?

Taking advantage of regulatory loopholes-

The company is in the process of carving out an unsightly blot on the landscape under a Class I permit but it has no intention of operating as a Class I facility because it's not commercially viable. It's able to do this because the construction requirements for Class I and Class V facilities are identical. And it's taking advantage of an unfortunate loophole in the existing regulatory requirements that allows the construction of landfill facilities to begin even before contracts with waste providers have been secured. And even before a robust market analysis has been conducted to determine whether additional capacity for nonhazardous solid waste is even needed. It just can't begin storing any wastes. This loophole allowed the company to get a jump start on the construction under the assumption that it would get its Class V permit in short order. Given that its already spent close to $16 million of state grant money in construction, the company probably felt getting the permit was a safe bet. The real money is in accepting out-of-state waste that nobody else wants – California Hazardous (Cal-Haz) waste, and coal ash (or in the regulatory jargon: coal combustion residual). This is especially true given the location's ready access to a main east-west rail line. Apparently, there's big money to be made storing the really nasty stuff.

Adding insult to injury, the company has begun the work without securing bonding arrangements to ensure that the state has funds to reckon with the landscape if the owners decide to walk. If wastes have been received, the state would have to relocate them. If not, the state would treat the site much like an abandoned building without reclamation of the land. Either way, taxpayers would be left holding the bag.

A "Needs Assessment Report" for the Class V permit was submitted by the company along with its application to the Division. A review for data validation and analysis by a third party to "fulfill the requirements of Section 19-6-108, subsections (10) and (11), of the Utah Solid and Hazardous Waste Act was completed on July 10, 2017. The findings are extremely troubling. " Overall the analysis does not fully comply with the requirements of the Act as it is missing content to meet all statutory requirements, does not provide a robust market analysis and therefore does not establish the need for the facility, and has several important data and information gaps." Among those gaps, the report fails to provide potential environmental impacts.

So where does all this take us?

The application is on hold until the Division receives the completed Needs Assessment Report. Meanwhile, the Division has received comments from the Utah Geological Survey, Division of Wildlife Resources, Division of Forestry, Fire and State Lands, GSL industries, and the Great Salt Lake Advisory Council identifying specific concerns about the project. You can read them at www.fogsl.org. If the Division determines that a Class V permit has merit and meets specific evaluative criteria a draft will go out for public comment. There is no question that FRIENDS will be there to challenge a land use that has negative and long-term impacts on Great Salt Lake. We hope you'll be there with us.

In saline,
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.

As the flagship program of our organization, the Lakeside Learning Field Trips are 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; Holly Simonsen, Membership & Programs Director; Sarah Radcliff, Education & Outreach Director.

Girl, the Spiral Jetty and the Great Salt Lake by Susan Kirby, submitted for the 2015 Alfred Lambourne Prize

On the Cover

"*A Day At The Marsh*" is an example of what occurs along the Great Salt Lake where fresh water enters into the lake to create rich wetland habitat. Millions of birds take advantage of these habitats throughout the year. I'm never disappointed by what I'm able to observe at any time of the year along the lake. Great Salt Lake is an amazing treasure that hopefully will continue to have the needed protection for these wetlands to ensure that both birds and people can enjoy this beauty not only for now but future generations.

Gary Crandall
Gray Crane Studios/ Gary Crandall Photography
www.graycranestudios.com

Creative Expression Inspired By Our Inland Sea

Elizabeth Bunker
Salt Flats
Acrylic, inks on canvas and panel
48 x 48
Submitted for the 2017 Alfred Lambourne Prize

We Get Our Hands Dirty:
FRIENDS participate in International Coastal Cleanup

Each autumn, the Ocean Conservancy hosts an International Coastal Cleanup Day which brings together millions of volunteers from all over the world. We band together to remove litter from coastlines, collecting everything from cigarette butts and drinking straws to hazardous material and electronic waste. The effort inspires volunteers from as far away as Gilli Trawangan, Indonesia along with thousands of seaside cleanups on both coasts of the United States. FRIENDS of Great Salt Lake is honored to participate and clean up the shoreline around our Inland Sea.

This year, thanks to a generous financial sponsorship from Autoliv and an in-kind dumpster donation from BudgetDumpster, FRIENDS of Great Salt Lake and our partners removed 1,854 lbs. of trash and debris from the sensitive ecosystem surrounding Lee Creek. Over 100 volunteers walked the shoreline carrying heavy-duty garbage bags and trash pokers. We removed everything from industrial waste to fast food containers. Volunteers even formed a human chain to extract a large piece of carpet, half buried under the mudflat.

Trash and debris continue to be a problem along the shores of Great Salt Lake. FRIENDS strives to educate the general public about our hemispherically critical resource and change the local perceptions of Great Salt Lake as an appropriate dumping ground. The Lee Creek area (305 acres), managed by Great Salt Lake Audubon, is home to thousands of shorebirds, most notably avocets, stilts, and snowy plovers.

As companions in consciousness, Autoliv, the world's largest automotive safety supplier and the largest employer in Utah's Weber County, espouses stringent environmental protection policies, including efforts to reduce emissions. They diligently monitor energy consumption, chemical impacts, water consumption, use of packaging material, and environmental training of personnel. Locally led by Patricia Edgington, Quality Systems Management Representative and Stephanie King, Customer Quality Manager, Autoliv invited FRIENDS of Great Salt Lake to participate in their annual Earth Day fair. From the efforts of this outreach, a sustainable partnership was born. In addition to a generous financial contribution to support our cleanup efforts, Autoliv also brought several volunteers to assist in the labor.

Moreover, national corporation, BudgetDumpster, donates dumpster rentals to non-profits and community organizations across the Unites States to clean up waterways, cities, and parks. BudgetDumpster accepted FRIENDS' proposal and donated a roll off dumpster for our event. This allowed FRIENDS to execute a safer and more effective cleanup, as we did not have to transport waste along the frontage road.

Thank you to our additional supporting partners of International Coastal Cleanup: The Nature Conservancy, Great Salt Lake Audubon, The Division of Forestry Fire and State Lands, and Compass Minerals.

If you missed this year's clean up, don't worry—the next International Coastal Cleanup will be in September of 2018. We'll provide the trash bags, if you fill them up. This is just one way we continue to preserve and protect Great Salt Lake.

Holly Simonsen
FRIENDS of Great Salt Lake Membership and
Programs Director

Image courtesy of Andrea Nelson, The Nature Convservancy in Utah.

If Only a Crystal Ball Could Tell Us –

Developing a Tool to Increase Our Understanding About Water Supply, Great Salt Lake Elevation, Salinity and Ecosystem Services

The State of Utah gets lots of questions about the future of Great Salt Lake (GSL). We wish we had a crystal ball that could help us answer them.

Will we need to turn on the pumps this year?
How low will the lake get this summer?
How will climate change affect the lake?
How much more water would get to GSL if all of the agricultural lands in the watershed were converted to municipal and industrial use?

Absent the crystal orb, the Department of Natural Resources (DNR) is developing an arguably better tool to see what the future holds for GSL. In 2015, with the support of the Great Salt Lake Advisory Council and the State Legislature, the State began developing an integrated water resources management model for the GSL watershed. This Great Salt Lake Integrated Model (GSLIM), our unique predictive model, will allow State agencies to better understand how changes in future water supply in the GSL watershed can influence the lake's water levels and salinity and the resources supported by these lake features. This will help resource managers become better stewards of the system.

To kick-off the process, the Division of Forestry, Fire and State Lands (FFSL) began working with CH2M to establish a Technical Committee to guide and oversee the 2-year process. The GSLIM Technical Committee was composed of members of the GSL Advisory Council, Utah Division of Forestry, Fire and State Lands, Utah Division of Water Resources, Utah Division of Wildlife Resources, Utah Division of Water Quality and Department of Technology Services. The committee conducted public meetings to solicit input from GSL stakeholders and the public on what factors they wanted to see included in the model. They continued to meet throughout the project with two primary goals: 1) provide oversight, input and guidance on model development and 2) develop supporting organizational infrastructure that will serve as a foundation for continuing model maintenance.

For years, we have wanted to understand how critical factors in the GSL watershed, such as increasing water demands due to population growth, climate change, development of new water supply projects and water conservation efforts will impact lake levels and salinity. We're enthusiastic about a tool that will help us compare the benefits and impacts of a range of watershed-based scenarios. GSLIM will help DNR characterize and evaluate linkages between the GSL watershed and the resources we are mandated to sustain.

The ecological and economic resources of GSL are directly related to water levels and salinity which are directly related to inflows to and withdrawals from the lake. The purpose of GSLIM project is to provide the State and stakeholders with a tool that:

1. Describes how changes in GSL and its watershed could impact the lake's water levels and salinity,
2. Evaluates the potential impacts to and changes in the lake's resources,
3. Serve as a foundation for addressing future management challenges, and
4. Serve as public outreach tool to communicate lake responses to changes in water management or availability.

Asking questions about GSL is the easy part. Finding concrete answers to this uniquely complex resource is the hard part. We're excited to have a tool that helps us answer the hard questions and become more informed stewards of GSL. We expect GSLIM to be an evolving tool that can be updated and built upon as new watershed data becomes available. We also expect to provide stakeholders with a user-friendly version of GSLIM so they may independently evaluate impacts to GSL. But we aren't there yet. Currently, CH2M is putting the final touches on GSLIM before it's passed off to the Division of Water Resources (DWRe). From there DWRe (and DNR in general) need to get acquainted with using the predictive tool. As this important step is occurring, we will be running baseline scenarios that demonstrate the model's abilities and working on the roll-out of an online public version. In the meantime, we'll keep an eye out for that crystal ball.

Laura Vernon is the Sovereign Lands Planner in the Division of Forestry, Fire and State Lands in the Department of Natural Resources.

Subdivision by Charles Uibel

Three Views of the Breach

In early December 2016, the Union Pacific Railroad, working with the Department of Natural Resources, created a new breach in the 22-mile stretch of the Lucin Cutoff - commonly referred to as the railroad causeway. This new breach is designed to provide a fix for the closing of two culverts some years ago. The closing had exacerbated the disproportionate water levels between the south and north arms of Great Salt Lake. Typically, there is some head differential between the south and north arms of the lake because the causeway bisects the lake and has very few openings. Although there is some degree of permeability through the rock-fill that constitutes the causeway's structure, it prevents the free flow of most of the water coming into the south arm of the lake (from the Jordan, Weber/Ogden, and Bear Rivers) from flowing into the north arm.

With the culverts closed and with extremely low lake levels in both arms of the lake, a head difference of 3.2' grew between them. The lake elevation in the north arm was sinking below the 1963 record low of 4,191.35', while the deep brine layer that comes from salts in the north arm was no longer contributing to the south arm's ecology. The new breach was to facilitate mixing between the two arms of the lake once again.

My interest in the breach has certainly been driven by these practical considerations: the lake is a dynamic body of water that is vital to our sustained health, to myriad ecosystems with diverse flora and fauna, and to the state's economy. Paired with the practical, though, is my fascination with the materiality of the lake and the ways its various elements impact our perception of place. The lake is unendingly beautiful: its physical characteristics informing amazing colorations, both subtle and bold, and surface patterns that mesmerize.

December 7, 2016

- Water level at breach: 4189.38 (measurement taken on 12/8/16)*

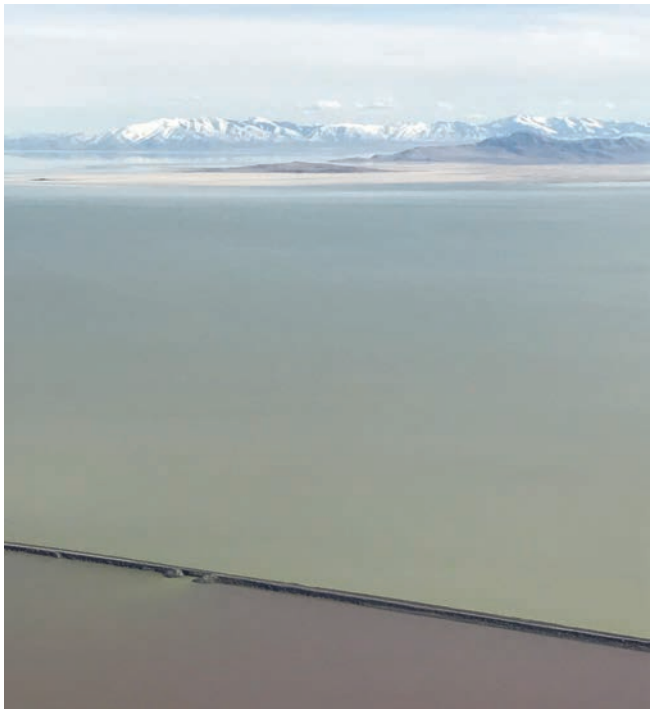
It was with aesthetics in mind that I flew over the lake to see first-hand what was taking place at the breach site. The initial view of the breach was startling – water rushing through the breach, fanning out in endless ripples of water. This image indicates the rush of water from south to north, and also provides visual confirmation on the low water level in the north via the salt accumulations bordering the causeway. Depending on the direction of our approach, the fanning water was more visible, and dramatic, than other times.

After circling the breach several times, we headed north to see if there were visible markers of the lake's new water flow. About five miles northeast of the breach, I noticed the slight surface disturbance on the lake was becoming more pronounced. This image was taken approximately seven miles north, northeast of the breach: the water was a riot of pattern. The ensuing photographs could be mistaken for watercolor on coarsely rendered paper. Clearly the force of water flowing south to north was creating this extraordinary pattern through the saltier water.

March 8, 2017

- Water level at breach: 4192.67 (measurement taken on 3/2/17)*

The second trip provided visual confirmation that the breach was accomplishing at least one of its intended goals: the water appeared to be more level between the north and south arms of the lake. The two arms still maintained their distinctive coloration: the north arm's halophiles (bacteria) still color the water hues from red to pink to mauve, while the phytoplankton in the south arm lend its blue and blue-green coloration. Flying northeast from the breach, the water was calm, with no evidence of the incredible surface patterns found in the December trip.



November 19, 2017

- Water level at breach: 4192.75 (measurement taken on 11/1/17)*

The views during the third trip did not disappoint; in fact, the most dramatic view of the breach was to be found almost a year after the breach was created. It was a very clear and calm day, which allowed us to fly at a lower elevation. It was only when we descended that we realized we were not seeing a mirage, but birds: thousands of birds surrounding the breach opening on the north side. We weren't exactly sure which birds they were but likely gulls, perhaps waterfowl, and eared grebes, which come to Great Salt Lake in the millions to fatten up on brine shrimp and migrate south around this very time of year. The distinct coloration is still evident, and slightly rising level of the north arm of the lake certainly let's us know that water is still flowing (albeit not at the initial rates) from south to north. I look forward to future trips around the lake: as with any experience in nature, each time provides an individualistic view of our great, still salty, lake.

Hikmet Sidney Loe is an author, art historian, teaches art history at Westminster College in Salt Lake City and is a director on the FRIENDS Board.

*Data obtained from USGS: USGS 10010026 GSL BREACH 6 MILES E OF LAKESIDE, UT; N TO S FLOW, https://waterdata.usgs.gov/nwis/measurements/?site_no=10010026

A Water Provider's View of Water Conservation

Jordan Valley Water Conservancy District

Utah is the fastest growing state in the nation , and by 2065, experts predict that more than 5.5 million people will call Utah home—with most of that growth happening along the Wasatch Front. As a regional water provider, Jordan Valley Water Conservancy District must plan 50 years in advance to meet future water needs using a resource that is both finite and limited. We ultimately have two options: 1) get more people to use less water or 2) develop water from increasingly distant sources.

In addressing water needs, we always start with conservation. We promote the wise use of current water supplies and have already seen the delay of several large water development projects thanks to conservation efforts. But while conservation does much to defer costly water projects, it comes with its own challenges.

More than 60 percent of Utah's drinking water is used outdoors , making inefficient landscaping practices a great place to save the water, but waterwise landscaping has a bad reputation here. A 2014 focus group conducted in Salt Lake revealed that Utahns associate water-efficient landscaping with being ugly, hot, barren, and "no fun at all." And according to research conducted for our service area , 68 percent of our residents think they are already efficient water users. Thus, our challenge is to convince Utahns to embrace landscaping they think they dislike in order to conserve water they think they're already conserving—all to prevent looming environmental and water supply problems. It isn't an easy task.

As a district, we have taken a strong approach to water conservation and have found that effective programs are based on the following strategies: education, incentives, and regulations. While we do not have jurisdiction and authority to mandate conservation or waterwise landscapes, we use education, persuasion, and incentives to promote the wise use of water within our service area.

We currently offer grant funding to our wholesale member agencies for the implementation of meaningful water conservation programs in their respective service areas and in addition, we offer the following programs to our end users:

1. Community Education and Outreach:
Water efficiency is usually not a homeowner's leading motive when designing a landscape, which is why convincing Utahns to install water-efficient designs can be a hard sell. Understanding homeowner motivations led to the creation of Localscapes®, a new approach to landscaping for Utah. Localscapes strikes a balance between the landscape preferences of Utahns and intelligent use of water. Whether homeowners are motivated by water conservation or not, Localscapes provide a myriad of benefits including simplified irrigation, easier maintenance, and greater curb appeal—water savings are just a bonus.

Localscapes is making a difference in our communities by teaching homeowners the best way to landscape in Utah for beautiful water efficiency

To encourage the adoption of Localscapes principles, we teach several community classes and provide a Localscapes rewards program. Program participants agree to complete a landscaping project within a year and in return receive a free landscape plan review as well as cash rewards for completed projects. Localscapes are estimated to use one-third the water of a typical Utah yard. To learn more about Localscapes or to view partnership opportunities visit localscapes.com.

2. Landscape Leadership Grants:
To overcome negative perceptions of water-efficient landscaping, we offer grants to businesses, institutions, builders, developers, and HOAs with highly visible landscaping projects. Grant requirements ensure that finished projects provide high-quality examples of water-efficient landscapes throughout the community.

3. Conservation Garden Park:
Conservation Garden Park is Utah's premier water conservation demonstration garden and models the best use of water in Utah landscapes. Each year thousands of Utahns visit the Garden for community classes, school tours, events, or

to view educational exhibits that cover important topics like design, irrigation, planting, and landscape maintenance.

4. Landscape Consultations:
Free landscape consultations offer personalized guidance to homeowners wanting to improve the water efficiency of their sprinklers and yard. During a consultation, technicians analyze each irrigation zone, address homeowner concerns, and provide education including landscape and watering recommendations. Experts estimate that as much as 50 percent of outdoor water waste is from overwatering caused by inefficiencies in irrigation methods and systems.

5. Switch2Drip:
Switch2Drip offers cash rebates to homeowners who switch existing spray zones to drip irrigation. By converting existing spray sprinklers to drip irrigation, an average homeowner will save 4,000 gallons of water per 250 square feet converted.

6. Flip Your Strip:
Park strips are an easy place to begin a transition to a more Utah-friendly yard. Through our Flip Your Strip program, Jordan Valley Water provides classes, sample designs, and rebates. Converted park strips can save 5,000 to 8,000 gallons of water every year.

7. Toilet Replacements:
Toilets use more water than any other indoor fixture, accounting for nearly 25 percent of an average home's indoor water consumption. Older toilets use even more water, causing them to be the leading source of wasted water in many homes. We offer rebates to customers in participating areas who replace old toilets with qualified high-efficiency toilets.

Planning for Utah's water future is a complicated and difficult task, but as Utah's population continues to grow, our focus on and investment in conservation will continue to expand. Water conservation is a vital first step to ensure that Utah's water supply will be able to support our own children and grandchildren. Jordan Valley Water Conservancy District is committed to water conservation efforts in the state and is working to improve and increase our programs and effectiveness.

Bart A. Forsyth, P.E. is the Assistant General Manager, Jordan Valley Water Conservancy District
Richard Bay is the General Manager/CEO

[1]U.S. census, 2016
[2]Utah Department of Water Resources
[3]Dan Jones & Associates. "Jordan Valley Water Focus Group Report". August 2014.
[4]Dan Jones & Associates. "Conservation Garden Park: Survey Report". February 2015.

The Conservation Garden Park is Utah's premier destination for water conserving landscaping principles in Utah

What Great Salt Lake Taught Me

I remember my very first field trip to Antelope Island State Park. It was in September of 2014. I had spent months learning the curriculum and hiring a fantastic support staff. I had done everything I could possibly do to prepare, and yet, I was absolutely terrified. Terrified of 4th graders, terrified that they would hate me and the Lake and that the teachers would never want to come back and that we wouldn't find any brine shrimp and or see any bison and that they would all just go home stinky and dirty, having not learned anything. None of these things happened. The brine shrimp were plentiful and the bison seemed to stage themselves within perfect viewing distance of the school bus. I hiked down to the beach with about 100 students in tow, once we reached the shoreline I heard a collective chorus of "wow" and "this is so cool" and "can we really get in the water?"

I was hooked. As I watched these students explore the beach and come running up to me with questions and cups full of brine shrimp, I began to understand the value of Great Salt Lake education. These same students will one day become biologists, community leaders, and politicians. They will be in charge of protecting our state's natural resources and Great Salt Lake will automatically be a part of the imporant future conversations and decisions that it is so often left out of today.

If just one student out of the thousands I have taught over the years remembers a field trip out to Antelope Island and reflects on how magical it felt to drive across the causeway amongts millions of migratory birds and the tingle of the salt on their feet as they dip their toes into the briny waters. If just one students looks back on the experience and remembers that life flourishes here and that Great Salt Lake is worth fighting for. Then it will have all been worth it.

The Great Salt Lake landscape has carved out a place in my soul. I knew next to nothing about this Lake when I was offered the Education and Outreach Director position with FRIENDS of Great Salt Lake back in 2014. Over the past 4 years, I have to come know every corner of this ecosystem. The gnats that eat you alive every spring, the salty ocean smell that exists just off the shoreline, and the distinct high pitched call of the avocets as they fly overhead. This Lake has given me so much. It has reconnected me to nature and cultivated my love for teaching enviornmental education. Most importantly, it has provided me the opportunity to work with an amazing group of people.

I don't know how to begin to say goodbye.

But now it is time for a new adventure and for someone else to discover their love for Great Salt Lake, to share it with the community and with thousands of 4th graders.

I must express my sincerest gratitude to Lynn de Freitas and the FRIENDS of Great Salt Lake Board of Directors. Thank you for taking a chance on me, and for allowing me the space to try new things, and to fail, and to try again. Thank you for trusting me with the Lakeside Learning Program.

And to Holly Simonsen, thank you for being the absolute best friend and colleague that I could ever ask for.

To my fellow Great Salt Lake educators throughout the years; Morgan Anderson, Kristin Smith, Holly Newell, Lexi Kaili, Willy Nevins and Sarah Radcliff. I hope you all learned as much from me as I did from you. FRIENDS would not be what it is today without your efforts and dedication.

And to Great Salt Lake. Thank you for teaching me that certain places can map our lives. You have changed mine and I promise to visit in the spring when the birds return.

You're in good hands.

Janessa Edwards
Outgoing Education and Outreach Director for FRIENDS of Great Salt Lake

Wandering the Great Salt Lake shoreline in the shadow of Antelope Island. Photo taken by Lexi Kaili.

Great Salt Lake At A Glance

Courtesy U.S. Geological Survey

E • phy' • dra, a noun; a genus of two species of brine flies that live on the bottom of the Great Salt Lake as larvae and pupae, and along the shores of the Lake as adults.

Saving Water through Secondary Water Metering

Introduction:

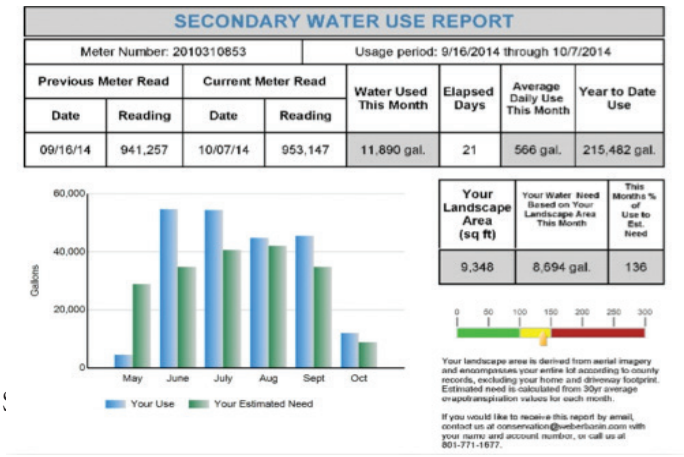
In Northern Utah and primarily within the boundaries of Weber Basin Water Conservancy District's (District) Wasatch Front service area is one of the country's largest contiguous urban pressure irrigation regions. In this area, secondary water is defined as piped, non-potable pressurized water delivered to individual property owners for irrigation of lawns and gardens. Secondary watering systems were originally conceptualized and installed by the U.S. Bureau of Reclamation (USBR) as a cost efficient way of providing irrigation water without the cost of treating water to potable standards. Because adequate technology did not exist at the time, meters were not installed on these connections. The number of secondary connections has increased with population and there are now approximately 102,000 secondary connections within Davis and Weber counties. The users currently pay for their secondary water annually by direct billing or on utility bills.

1" Sensus iPERL Secondary Water Meter
(Photo courtesy of Standard-Examiner)

Secondary Metering:

In the past decade, technology advanced to offer flow-through meters, which can accommodate the challenges of residential secondary metering by allowing debris to pass through and by fully draining during the non-irrigation season to prevent freezing and breakage. Since 2009, the District has installed approximately 4,800 meters between existing and new secondary connections. The meters are equipped with endpoints that allow hourly data to be collected using a drive-by reader or a fixed network Advanced Metering Infrastructure (AMI) system that allows continuous data collection.

The District provides customers with a monthly usage statement detailing their secondary water consumption for the preceding month and compares it to an estimated water need. The estimated water need is customer specific and is based on historical climatic data and the irrigable area of their lot. Individual lot irrigable areas are quantified by digitizing the existing lawn and landscaping of each parcel from aerial photography.



SECONDARY WATER USE REPORT

Meter Number: 2010310853 — Usage period: 9/16/2014 through 10/7/2014

Previous Meter Read		Current Meter Read		Water Used This Month	Elapsed Days	Average Daily Use This Month	Year to Date Use
Date	Reading	Date	Reading				
09/16/14	941,257	10/07/14	953,147	11,890 gal.	21	566 gal.	215,482 gal.

Your Landscape Area (sq ft)	Your Water Need Based on Your Landscape Area This Month	This Months % of Use to Est. Need
9,348	8,694 gal.	136

Sample Monthly Secondary Use Statement

Water Savings:

In order to quantify water savings, the amount of water used at a secondary connection before a meter is installed must be known. While the exact amount used at a particular residence before meter installation is impossible to know, the District uses secondary water trunk line meters that service large areas to determine average use for un-metered secondary users. Using meter data for the water sources to the Uintah Bench area and then subtracting non-secondary uses and allowing for 5% leakage and evaporation losses within the distribution system, the total secondary water use by un-metered connections is calculated. Chart 1 outlines secondary water use in the District's Uintah Bench secondary service area that provides secondary water to 4,990 secondary connections in Ogden, Washington Terrace, and South Ogden. The red line shows the average un-metered secondary use by year while the blue line shows the actual metered secondary use per connection by year. (Note that an acre-foot is approximately 326,000 gallons or enough water to cover a football field about one foot deep.)

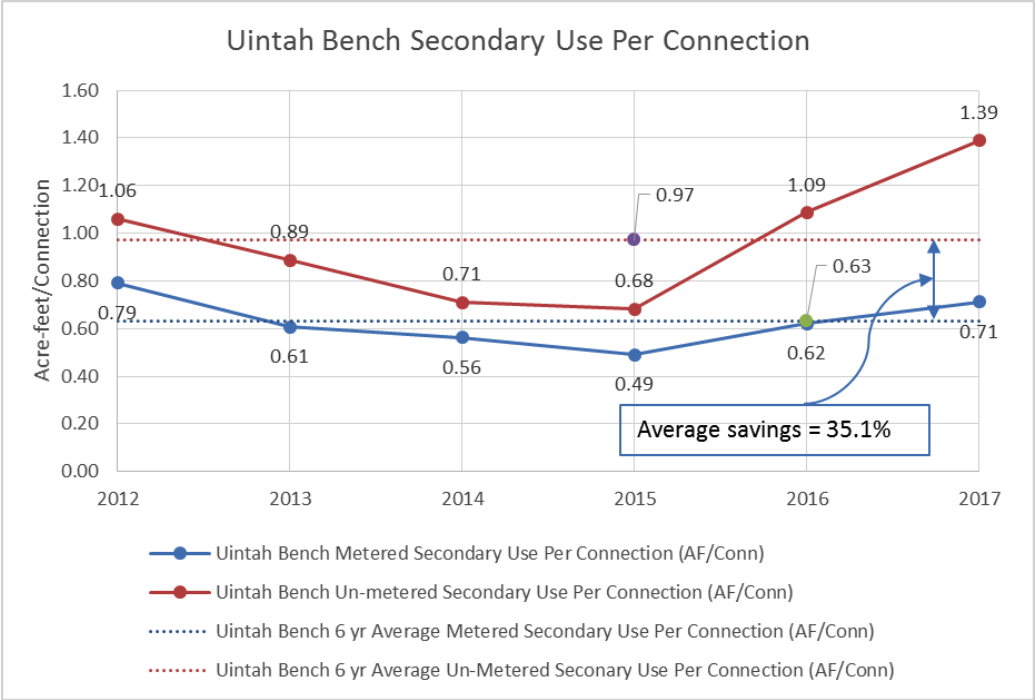


Chart 1

Outdoor water use varies year to year due to variables such as rainfall, temperature and evapotranspiration. Chart 1 shows that on average un-metered secondary connections used 0.97 acre-feet of water per year per connection while those with a meter used 0.63 acre-feet illustrating a savings of 35% over the 6 year period. Of particular note is the difference of use between 2015 and 2017. The irrigation season of 2015 was relatively wet while 2016 and 2017 were hot and dry. From 2015 to 2017, un-metered secondary users increased their use by 104% (from 0.68 acre-feet per connection to 1.39 acre-feet per connection) while metered secondary users increased by only 45% (from 0.49 acre-feet per connection to 0.71 acre-feet per connection). For 2017 the savings between metered and un-metered users was 49%.

Conclusion:

The District has documented significant water savings due to its secondary metering efforts and views conservation among un-metered secondary water users as one of its greatest opportunities for water resource development. Despite the high costs of retrofitting existing secondary connections with a meter, the District plans to continue installing meters until all of the District's 18,000+ existing retail connections are metered.

The District also plans to make secondary water use data collected by the District's new AMI system available to customers on their computer or smart phone to allow users to access their secondary water use near instantaneously. The District feels like this will empower the user to become a better steward of their secondary water use because they will be able to monitor their use more accurately and almost real-time. It is important to note that within the District boundaries there are at least a dozen secondary water providers with an additional 86,000 secondary connections which are largely unmetered. These companies have shown interest in metering their connections, but the high cost associated with retrofitting meters is difficult to fit into their smaller budgets. Several of these secondary water providers however are requiring meters to be installed on new connections which is a great first step.

Darren Hess is the Assistant General Manager for the Weber Basin Water Conservancy District.

Color Animal Rocks the Lake

Perfect! by Finn Fedor

For the last six years, *Color Animal* has been writing and performing music in Salt Lake City, playing in bars like the Garage on Beck, local festivals like Craft Lake City, record stores, parties, and even for a roomful of political party donors who I'm pretty sure would have preferred a light jazz combo over our garage rock foursome. During our time together, Utah's landscape, including the Great Salt Lake, has been an important inspiration to our songwriting and a consistent backdrop to our partnership as bandmates and friends.

I grew up on the sprawling plains of Lincoln, Nebraska. I was an indoor kid, playing guitar and Nintendo in the basement during oppressively hot and humid summers and cold and blowing winters. Aside from biking to a nearby park and playing in a drainage creek, the natural environment played little part in my life growing up.

When I moved to Utah in 2003, making a connection with the surrounding landscape was unavoidable. Most obviously, our fair city is named after the Great Salt Lake, and its history has carved, marked, and formed our valley into what it is today. The ready access to open spaces that surround us drives a community of nature lovers unlike anything I had grown up with. The members of *Color Animal* love hiking to the lakes of the Uintas Mountains, exploring the mysterious land formations of the San Rafael Swell, and discovering pictographs and petroglyphs created by people who came before us.

The Great Salt Lake has subconsciously become an important touchpoint for our music. Our first album included a song called *"Buffalo Point"* its lyrics all about a hike my family took on Antelope Island where we encountered a pronghorn with a broken antler whose stillness, for a brief moment, had tricked us into believing it was some kind of elaborate hunting decoy.

In 2016, we were drawn to the Great Salt Lake for two major moments connected to our third album, "Why Don't We Have Fun?" In February, we conducted a photo shoot on Antelope Island with Chris, Ryan, and Finn Fedor, a family of photographers (mother, father, and 7-year old son) and friends of the band. We hired them as a group and enjoyed how each photographer brought different experiences and perspectives to their work. In fact, when we went back through all the film, his shots ended up being the most candid ones, catching us as we were walking around or setting up for his parents' more staged photos. What a little bugger! His shots ended up being some of my favorites! We hadn't intended it, but the shoot took place in the thick of a smoggy inversion, placing us in an otherworldly landscape where the Lake and sky blended into a horizonless expanse of grey. The photographs were included in the liner notes

for the album, and the lyrics were laid out in the shape of the island.

We returned to the Lake later that spring with filmmaker John Lee to film the music video for *"Heal Me"*, which was submitted for consideration for the 2017 Alfred Lambourne Prize. We selected the area surrounding Spiral Jetty for its rugged and stark landscape that is uniquely Utahn. Personally, a visit to the Spiral Jetty is every bit as much about exploring the surrounding area as it is encountering Robert Smithson's earthwork. The Jetty is the feature that draws us out, but the memories I take home are hiking up the mesa to the east, wandering the ruins to the south, and watching pelicans fly by. For this reason, Spiral Jetty itself never appears in the video but serves as an off-screen inspiration for the video we produced.

We were honored to be part of the Alfred Lambourne Prize celebration and reception this year. It was rejuvenating to gather in a room with other creators for whom the Great Salt Lake has become a touchstone in their work and to see how this body of water that has shaped our landscape for eons also permeates our music, literary art, and visual art. I am thankful that FRIENDS of Great Salt Lake made that moment possible, building and appreciating a creative community only possible in this place we call home, and that there is promise to continue to foster that community into the future.

Andrew Shaw is the frontman for *Color Animal.*
Bandmates - Felicia Baca (bass), Tyler Ford (drums), Seth Howe (guitar), and Andrew Shaw (guitar and vocals).
Skeeter is the dog.

Image courtesy of Chris, Ryan, and Finn Fedor

FRIENDS of Great Salt Lake

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Submission Deadlines:
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Submit articles and images for consideration to Lynn de Freitas, ldefreitas@xmission.com, or call 801-583-5593

Lake Fact:
How many Eared Grebes use Great Salt Lake?

Answer : Over 5 million birds!

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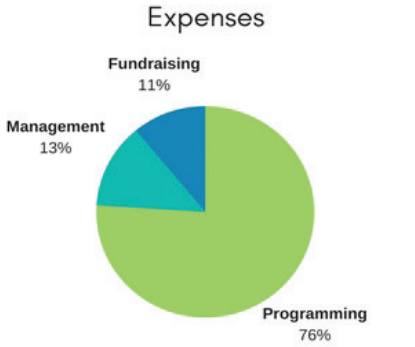
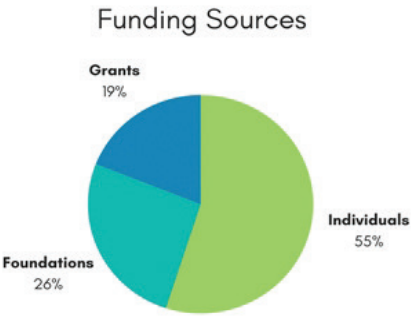
As a 501(c)(3) nonprofit, FRIENDS of Great Salt Lake relies upon the generosity of our members, individual donations, foundations, and grants. Individual memberships and donations provide the bulk of our funding at approximately 55% of our annual revenue. Foundation donations and grants make up the rest, at approximately 26% and 19%, respectively.

With an annual operating budget of $152,000, FRIENDS of Great Salt Lake spends a majority of funds on Programming (76%), including our Education Program Lakeside Learning Fieldtrips, The Doyle Stephens Scholarship Program, and the Alfred Lambourne Arts Prize. Management and administration costs average 13%, and general fundraising at 11%.





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