



# FRIENDS of *Great Salt Lake*

P.O. Box 2655, Salt Lake City, UT 84110-2655

[www.fogsl.org](http://www.fogsl.org)

Volume 26 Number 2

801-583-5593

Spring 2018



*It's Friday!*

PELIcam on Gunnison Island

courtesy of Utah Division of Wildlife Resources and Great Salt Lake Institute

---

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.

[www.fogsl.org](http://www.fogsl.org)

# EXECUTIVE DIRECTOR'S MESSAGE

THE BEAT GOES ON—AND SO MUST WE WITH CONTINUING VIGILANCE TO PROTECT GREAT SALT LAKE

*"Here's another fine mess you've gotten me into. "  
Oliver Hardy to Stan Laurel (Laurel & Hardy)*

On February 16, 2018, just short of a year into the process, Promontory Point Resources LLC (PPR) withdrew its application for a Class V Permit, which was at that time under review by the Division of Waste Management and Radiation Control. In its letter to Scott Anderson, the Division Director, PPR requested that his staff discontinue review of the application "until further notice." Although the train has stopped short of the station, it's highly unlikely that it won't eventually show up. I hope I'm wrong about this, but my skepticism leads me to believe that this economic boondoggle will rear its ugly head once again. The money has already been thrown at it and the politics that support it will continue.

That being said, a lot has happened with this convoluted saga both before and after PPR's request to withdraw its application. I hope to shed additional light on the deeper corners of this conversation and to help you maintain your footing on the issue.

There are many reasons why this proposal is a gamble for both Box Elder County and the people of Utah. As an economic asset, it's rife with empty promises and predictable missteps. **And it's an extremely risky proposition. Perhaps the only thing about it that can be said with any certainty is that it is a clear and present danger to Great Salt Lake.**

Because it's located next to this hemispherically significant ecosystem that's critical to millions of migratory birds, a global brine shrimp fishery, and mineral extraction operations that rely on the purity of their products, it jeopardizes a known economic generator of \$1.32B annually to the people of Utah. That figure includes \$375M in total labor income, and 7,700 jobs that are created from the Lake's ecosystem services. **This project jeopardizes an irreplaceable resource by constructing a repository for toxic waste and contamination that all Utahns will have to live with for centuries to come.**

You will recall that under its existing Class I Permit that was acquired with the purchase of the 2,000 acres of property in 2016, PPR, which is the only privately owned landfill in the state, has already sunk at least \$16.25M of taxpayers' money into the incomplete construction of a landfill facility at the SW tip of Promontory Peninsula.

The money was approved for construction of a Class I landfill in December 2016 by the Utah Private Activity Bond Authority (PAB) part of the Governor's Office of Economic Development. The bonding was issued by Box Elder County. It's important to note that the PAB rejected PPR's initial request for bonding authority for a Class V facility in its October 2016 meeting, which is curious because at that

time PPR had not, in fact, submitted its application for a Class V Permit to the Division. As a result of the rejection, PPR modified and resubmitted its request to the PAB on December 6, 2016 for Class I bonding. The PAB approved the request in a 5-4 vote for an allocation of \$16.25M to be issued through tax-exempt bonds. PPR is obligated to begin paying interest on those bonds in June 2018—which is, like, tomorrow!

It's no wonder that PPR wanted to test the waters with its request for funding a Class V Permit from the PAB because it already had the legislative momentum to support that goal. On March 2016, a joint resolution (HJR 020) sponsored by Sen. Pete C. Knudson (Brigham City), and Rep. Lee B. Perry (Perry, UT) was approved to provide legislative endorsement for a Class V operation. "It would have a favorable economic impact on Box Elder County in the form of new permanent jobs and host fees." A year later, in an article by Leia Larsen at the Standard Examiner, it appeared that Rep. Perry expressed remorse about his impulsiveness to grease the skids on this idea. He said the measure was presented to him as an urgent matter, tied to an immediate economic opportunity. The article states that confusion about what type of waste would be accepted, where waste would come from, and the depth of local support for—or opposition to—the project were essentially unheeded. Perry also said he wasn't aware that the company would pursue coal ash, incinerator ash, contaminated soil, and industrial waste. It's unfortunate that Rep. Perry did not take more time to become informed about this "opportunity" before jumping on the band wagon to endorse it. Alas!

On January 4, 2017, Brett Snelgrove, on behalf of Allos Environmental, the parent company of Promontory Point Resources, LLC, and a representative from TetraTech, the company overseeing the design of the landfill, made a presentation to the GSL Advisory Council about the Class I permitted facility. They talked about the design, economic viability, environmental controls, transportation of in-state waste to the site via the overland county road, and a modification of a permit that was on the verge of approval by the Division of Waste Management and Radiation Control—a reference that remained unclear at that time.

In addition to the \$16.25M mentioned above, \$20M in private equity capital had also been committed to the project. Among the project costs that must be considered before the facility can begin to operate, i.e. receive waste, is a Division-approved bonding source to cover mitigation costs for clean up of any contamination incidents and/or if closure of the facility is left in the hands of the state. The Executive Director of the Department of Environmental Quality would be the designated trustee for this account. **What's concerning here is that the amount of money in the fund—only**



**about \$2M—would be woefully inadequate in the event that any of these scenarios occurred. And they may well occur—existing science supports a compelling argument that impacts to Great Salt Lake are both probable and dangerous.**

PPR hoped to break ground on the Class I landfill by the end of February 2017 but it wasn't until May when that happened. Since the presentation raised many questions from a packed room of attendees, the GSL Advisory Council (with one abstention from its Box Elder representative) unanimously agreed to send a letter to the Division expressing numerous concerns it had about the facility and its proximity to the Lake.

Remember that among the many challenges with this business venture for PPR and its Class I Permit is that it can only take waste under contracts approved by the Division from local governments within the state. Currently, that market is already sewn up by 10 existing facilities within the state that have a collective life storage capacity of 363 years. And although PPR's Class I Permit is up for renewal in 2021, that isn't where the economic payback is going to come from for these private business partners.

The real moneymaker seems to be in a Class V Permit on the assumption that it would give PPR some room to move in the marketplace. A Class V Permit would ramp up PPR as a commercial facility. It wouldn't be limited in its scope of waste markets by having to secure Division-approved contracts. And it could take out of state waste like hazardous coal ash from California.

However, to facilitate this PPR says it would need a railroad spur on to the site from the UPRR causeway that crosses the Lake. **This is a terrible idea and clearly untenable since it would entail the transport of potentially hazardous waste across the entire Lake, likely spreading contamination.** Additionally, this prospect is overshadowed by the fact that there are already 10 Class V landfill facilities with a combined life storage capacity of more than 2,000 years in operation in Utah. You might think this would have raised question about PPR's economic viability in the Utah marketplace. Nevertheless, in March 2017, PPR applied for a Class V Permit with the Division of Waste Management and Radiation Control.

When filing its application, PPR was required to include a Needs Assessment Report. In July 2017, an independent third party review of the report identified numerous data gaps that had to be addressed before evaluation of the application could proceed. A Needs Assessment Report Addendum was filed on December 20th. **This time the third party review found that “it does not demonstrate the need for additional Class V landfill capacity in Utah, does not provide a robust market analysis, and has some remaining data gaps and therefore does not establish the need for the facility.”** Back to the drawing board.

On January 9, 2018, a notice went out from the Division inviting public comment on a request from PPR for the installation and relocation of three down gradient monitoring wells. After review by PPR and its engineering and water consultants, it was noted that some of the wells proposed in the Class I Permit Modification (May 2016) were greater than 500 feet from the waste boundary. Down gradient monitoring wells are important for early detection of potential contamination pathways from the landfill into the surrounding water and landscape to avoid impacts. Why the initial location of the three down gradient monitoring wells were so off the mark is puzzling.

On February 14, 2018, the deadline for public comment, Western Resource Advocates submitted a letter to the Division on behalf of FRIENDS and Sierra Club expressing concerns about the subjectivity in the location of the monitoring wells and emphasized the need for better hydro-geologic data pertaining to the landfill and in order to protect groundwater from contamination. The letter included public comments that were submitted by the Great Salt Lake Advisory Council, Compass Minerals, and the Great Salt Lake Institute at Westminster College. All of the comments stressed concerns about the lack of groundwater data and the potential of groundwater flows from upland areas on Promontory Point to documented, proximal lakebed spring systems into this unique and significant ecosystem. Two days later, PPR withdrew its Class V Permit application “until further notice.”

So what does the square root of this information tell us? It tells us that “Any miscalculation in design or engineering features that results in leaching, leaking, or catastrophic discharge of waste into Great Salt Lake will be highly consequential to the ecology and economic value of GSL. The history of coal ash disposal sites is replete with case studies of intentional, unintentional, and accidental discharge into surrounding terrestrial and aquatic systems causing acute and prolonged harm to aquatic organisms, populations, habitats and ecosystems.”\*

Because the risks far outweigh the benefits for Utah's economy and the long-term integrity of the Great Salt Lake Ecosystem, if PPR changes its mind and reapplies for the Class V Permit, it should be denied.

In saline,

Lynn

\* From the whitepaper *Risks to Biota and the Ecosystem of Great Salt Lake from the PPR with Particular Emphasis on Potential Harm to the Brine Shrimp (Artemia franciscana) Population*, February 2018, written by Brad Marden, Parliament Fisheries, LLC on behalf of the Great Salt Lake Brine Shrimp Cooperative, Inc.





# 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; Holly Simonsen, Membership & Programs Director; and Sarah Radcliff, Education & Outreach Director.



*Black Rock Summer* 2015 Kirk Henrichsen-  
Submitted for the 2015 Alfred Lambourne Prize  
See more at [kirkhenrichsen2015.fineartstudioonline.com](http://kirkhenrichsen2015.fineartstudioonline.com)

## On the Cover

PELICams on Gunnison Island are teaching humans about the secret lives of the American White Pelicans while at their secluded breeding grounds in the north arm of Great Salt Lake. Students, biologists, managers and other bird nerds will use the images to better understand how pelicans will deal with our changing environment. Climate change, weather, water diversion, land bridges and disturbance will all be observed through the eyes of pelicans. For more info visit [GSLPELproject.org](http://GSLPELproject.org) or @PELproject on Facebook and Instagram. Photo credit: Utah Division of Wildlife Resources and Great Salt Lake Institute at Westminster College.





Johanna Kirk  
*Rolling Water*  
Photograph  
Submitted for the 2014 Alfred Lambourne Prize

---

# NEW TECHNOLOGIES PROVIDE UPDATED ELEVATION ESTIMATES FOR GREAT SALT LAKE

---

The 7th annual Maps on the Hill event, supported by the Utah Geographic Information Council (UGIC) and Automated Geographic Reference Center (AGRC) was held on January 30th at the Utah State Capitol during the 2018 Legislative Session. The event was an opportunity to share maps, mapping tools, and mapping projects with elected officials and the general public. This year's theme of, "GIS for Better Decisions," highlighted how Geographic Information System (GIS) aims to improve our understanding of the world.

In our pursuit to increase public understanding about the relationship between water in the lake and lake elevation, FRIENDS took this opportunity to develop and show a map at this event. Gen Green, Spatial Analysis and FRIENDS of Great Salt Lake Board Director, integrated lake elevation data collected between 2006 and 2016 into a map entitled, *How Much Water Do We Really Have in Great Salt Lake?*

Using both GIS (Geographic Information System) and LiDAR (Light Detection and Ranging), Green was able to create a bathymetric (underwater topographical) map to update Great Salt Lake's surface area and volume.

GIS is designed to capture, manage, and store spatial or geographical data. GIS hydrological models provide a unique spatial element that other hydrological models lack. As water always flows down a slope, and in Great Salt Lake's case into a terminal basin, GIS offers a clearer indication of boundaries, because it accounts for both terrain and soil type, which can influence infiltration and evapotranspiration rates, which in turn influences surface flow.

Coupled with LiDAR, a vastly superior mapping method, which measures the distance to a target by illuminating that target with a pulsed laser light, and then measuring the reflected pulses with a sensor, Gen Green was able to create a map that shows a much more accurate account of Great Salt Lake's elevation and volume.

The results are not surprising. By supplementing the estimated nearshore values where access was limited for bathymetric data collection in 2006, with LiDAR values collected when the lake was near its recent historic low (4191.6'), the volume of water is less than previously calculated. At the lake's mean January 2018 elevation of 4213.51', the volume in the north part of the Great Salt Lake is 2.85 million acre-feet (MAF). For reference, Lake Powell contained 13.7 MAF<sup>2</sup> in January, 2018 and Lake Mead contained 14-10 MAF<sup>3</sup> at the same time.

For additional details on this project reach out to Gen Green via [mail@fogsl.org](mailto:mail@fogsl.org) or come see a full presentation at the 2018 Great Salt Lake Issues Forum.

Gen Green develops spatially-based solutions for the wide range of conservation challenges that arise when people and nature interact. She serves as a Director on the FRIENDS board. Her understanding of environmental systems and experience with spatial analysis techniques allow researchers to interpret their data and visualize these interactions. She believes that we have to find new models to balance the competing priorities for resources while also conserving the critical ecosystem services upon which all life depends.

## References:

- 1 [https://waterdata.usgs.gov/ut/nwis/uv?site\\_no=10010100](https://waterdata.usgs.gov/ut/nwis/uv?site_no=10010100)
- 2 <https://www.usbr.gov/uc/water/crsp/cs/gcd.html>
- 3 <https://www.nps.gov/lake/learn/nature/storage-capacity-of-lake-mead.htm>, <http://mead.uslakes.info/level.asp>

Data Sources: Bathymetry data, Baskin, Robert L., 2006, Calculation of area and volume for the North Part of Great Salt Lake, Utah, U.S. Geological Survey Open-File Report OFR-2006-1359. LiDAR, AGRC, raster. [utah.gov](http://utah.gov) accessed 1/12/2018

More about Maps on the Hill: <https://gis.utah.gov/maps-on-the-hill-2018/>

.





# HOW MUCH WATER DO WE REALLY HAVE IN THE GREAT SALT LAKE?

## 2006 Bathymetry



2006 bathymetry elevations started at 4200'. Nearshore areas in purple were estimated due to inaccessibility during project. Elevation in PURPLE were replaced with more accurate LiDAR values.

## 2016 LiDAR



LiDAR (Light detection & ranging) elevation gathered 2016. LiDAR provides +/- 10 cm accuracy in this area -except where covered with water. Elevations in BLUE show where the ground was covered by water during data collection. These were replaced with more accurate bathymetry values (<4191.5') to create an updated elevation model for the calculating area and volume.

This shows the flexibility of GIS at combining data types. Calculations are subject to additional review and are preliminary.

Bathymetry data: Baskin, Robert L., 2006, Calculation of area and volume for the North Part of Great Salt Lake, Utah, U.S. Geological Survey Open-File Report OFR-2006-1359. LiDAR: AGRC, raster.utah.gov accessed 1/12/2018

Updated area and volume amounts for North part of Great Salt Lake.

Water-surface elevation (feet)	2006 Area (acres) <sup>1,2</sup>	2006 Volume (acre-feet) <sup>1,2</sup>	Updated Area (acres) <sup>1</sup>	Updated Volume (acre-feet) <sup>1</sup>
4,200.0	320,817	4,609,994	321,040	4,596,295
4,199.0	298,825	4,296,853	301,308	4,285,310
4,198.0	273,693	4,005,156	281,687	3,993,303
4,197.0	263,383	3,737,091	266,281	3,720,529
4,196.0	253,587	3,477,961	255,019	3,459,614
4,195.0	244,053	3,228,407	242,560	3,210,441
4,194.0	234,285	2,989,150	232,423	2,973,258
4,193.5	230,726	2,873,209	227,780	2,858,529
4,193.0	227,187	2,758,407	222,843	2,745,579
4,192.0	220,371	2,535,233	214,252	2,527,860
4,191.0	213,842	2,317,979	211,074	2,315,505
4,190.0	206,345	2,107,595	205,784	2,106,466
4,189.0	197,370	1,905,341	197,100	1,904,573
4,188.0	188,583	1,712,002	188,379	1,711,468

\* Elevation referenced to NAVD88

Approximate current elevation Jan., 2018

## Updated elevation map



## WHY recalculate?

Two major changes since 2006 – National Geodetic Survey introduced new vertical accuracy standards for measuring elevations, and the recent availability of landscape scale high quality LiDAR data.

It's difficult to allocate limited water, GIS helps provide information about how much there is.

Gen Green

*How Much Water Do We Really Have in Great Salt Lake Bathymetric Map*

Presented at 2018 Utah Legislative Session “Maps on the Hill”



# AUDUBON GILLMOR SANCTUARY: FROM A VISION TO REALITY

Like so many things in life that become large and vibrant National Audubon Society's Gillmor Sanctuary had a small rather inconspicuous beginning. Following are a few milestones along the path that took the Sanctuary from a vision to a reality.

In May 1991, Wayne Martinson was approached to explore whether Audubon would be the recipient of a donation of a 107 acre parcel in the Brown's island area on the south shore of Great Salt Lake (GSL). Frank Dunstan, long time Director of National Audubon Sanctuaries, flew from headquarters in Connecticut to evaluate the property. He was well acquainted with wildlife areas throughout the country.



Detail of Mudflats, Courtesy of Ella Sorensen

Frank and Peter Berle, then President of National Audubon, visited Great Salt Lake wetlands both on the ground and in a flight over the lake demonstrating to them the extraordinary wealth of natural resources found at GSL. When title was taken to the 107 acres in December 1992, Audubon began its journey of actively becoming involved in land-based conservation at Great Salt Lake.

The Utah Reclamation Mitigation and Conservation Commission (Mitigation Commission), an independent Federal agency established by the Central Utah Project Completion Act of 1992, is responsible for planning, funding, and implementing projects that benefit fish, wildlife, and recreation in order to offset impacts caused by the Central Utah Project, and other Federal water reclamation projects in Utah.

In 1994, the Mitigation Commission funded a study

by Audubon to evaluate the feasibility of establishing a large wetland complex in a prehistoric river delta near the shoreline -of GSL in northwestern Salt Lake County. The study evaluated water availability, birds, vegetation, soil, and land contours. The conclusion of the study was that the area was suitable and highly desirable for a restoration project. The topography of a major but dry river delta including shifting channels,

distributaries, playas, and upland islands was relatively intact and a water delivery system could be devised with minor land alteration.

Perhaps the greatest momentum for the project came during the feasibility study. Florence Gillmor, the largest landowner, loved nature and birds. She was captivated by the vision of

her land becoming the heart and catalyst for a large Great Salt Lake bird sanctuary. In 1995/1996, Florence donated 1319 acres of land to Audubon. She named it the Edward L. and Charles F. Gillmor Sanctuary after her father and his brother who early in the last century lambed, sheared, and docked their sheep in the area as part of a large sheeping operation that extended throughout northern Utah.

In 1996 land and water acquisition by the Mitigation Commission and Audubon through purchases, easements, donations, and agreements began with assistance from The Nature Conservancy to create the South Shore Preserve on about 3600 acres of the original study area. The South Shore Preserve includes property owned by Audubon (Gillmor Sanctuary) and the Mitigation Commission.

*(continued on p. 10)*







South Shore Preserve Map  
Courtesy of Ella Sorensen



In 1997, the Mitigation Commission permanently acquired 750 shares of the North Point Canal Corporation, an equivalent of about 3000 acre feet of water per year.

By 2007, with sufficient land and water secured, the infrastructure for a water delivery system was designed and constructed. Funding was provided by the Natural Resource Conservation Service, Mitigation Commission, Florence Gillmor and Jennifer Speers. The wetlands were divided into ten water management units ranging in size from 14 to 330 acres. Canals, 14 berms, and 13 water control structures were incorporated with minimal disturbance to the natural land features.

On July 8, 2009, many partners, government agencies, city and county leaders, property owners, and conservation advocates gathered to watch and celebrate the flowing of Jordan River water back into its ancient waterways for the first time in thousands of years. It was a grand culmination of 18 years of effort. It was also an exciting beginning: land and water once again reunited, unsheathing the silent and furtive processes that nature employs turning Gillmor Sanctuary back into a vibrant productive habitat for birds as it once was long ago when a river ran through it.

Land acquisition continues today. In total, 15 often complex land transactions have been successfully completed bringing 2797 acres of land under Audubon management.

The overall management goal of the Sanctuary is to provide the natural diversity of wetland habitat to support the ecological requirements for all species of shorebirds that occur on Great Salt Lake. While priority species are monitored and long-term trends evaluated, it is expected that the management focus on the diversity of shorebird habitats will provide the habitat essential to sustain healthy populations not just of the priority species, but all shorebird species. The majority of naturally occurring wetlands of the Sanctuary are seasonal, shallow, saline, and ephemeral. Because the relict river channels are hydrologically connected to Great Salt Lake, salt is added to the soils when fluctuating Great Salt Lake waters periodically submerge the lower elevations and salty water works its way inland for several miles following the old abandoned water courses. Restoration of the Sanctuary follows the natural historical

hydrograph and focuses on shallow ephemeral saline wetlands for shorebirds in the old river channels.

Management of wetlands adjacent to Great Salt Lake has historically focused primarily on waterfowl in permanent fresh water impoundments. Existing literature on managing wetlands for shorebirds clearly illustrates a deficit of knowledge and most articles stress the need for a careful experimental approach. Added to the complexity of managing the shallowly flooded saline wetlands of the Sanctuary is the lack of knowledge of the critical role that salt plays in development of diverse wetlands.

The Sanctuary is managed through a science-based approach that is adaptive and cutting edge, promoting through field experimentation an understanding of creating and maintaining a healthy and diverse mosaic of saline and brackish water habitats that are consistent with the dynamic and changing nature of the Great Salt Lake ecosystem.

The roughly 1200 acres of saline mudflats present in the bottoms of old lake shorelines and river channels of the Sanctuary provide a unique opportunity to provide shorebird foraging habitat of varying water depths through enhancement for both spring and fall migrations. The presence of many miles of shorelines and small islands adjacent to or within the wetlands provide ideal nesting habitat for species such as American Avocet, Black-necked Stilt, Willet and Snowy Plover.

Each year as winter draws to a close, we eagerly wait to see what species of shorebirds spring will bring to the Sanctuary and watch closely for lessons to be learned from them to improve management of these special wetlands of Great Salt Lake. Every season brings wonder and awe of the raw beauty of the wetland and uplands of the Sanctuary. Every visit brings new discovery. The ambush spiders awaiting their prey nestled deep inside the sego lily; the flash of a sage lizard's tail and traces of its tracks on the sand dune; countless evidence of rodents that no doubt feed the many birds of prey well, all divulge the diverse wildlife that is found there.

By Ella Sorensen and Heidi Hoven  
Great Salt Lake Audubon





# GREAT SALT LAKE BIRD FESTIVAL MAY 17-21, 2018

In celebration of 100th anniversary of the signing of the Migratory Bird Treaty Act (MBTA), a pivotal piece of legislation that continues to save countless birds' lives—2018 has been declared Year of the Bird. It's a perfect time to celebrate and learn more at the 20th Great Salt Lake Bird Festival, held May 17-21 in partnership with Davis County.

Great Salt Lake Bird Festival began as an effort to spotlight birds in the greater Great Salt Lake ecosystem and provide education about the habitat of the Pacific Flyway, a major north-south flyway for migratory birds which extends from Alaska to Patagonia, of which Great Salt Lake is a primary stopping point. The Festival has expanded each year, and now includes guided field trips and birding areas within most Utah counties and even into Wyoming.

This year's festival features 51 unique field trips and 14 workshops which include options for all experience levels—including children. Local and national experts offer birding trips via vehicle, boat, and even horseback.

Take a lunch cruise on Great Salt Lake, ride a horse over the east ridge of Antelope Island, or illuminate your flashlight during the nocturnal "Owl Prowl." Guests will enjoy a full five days of guided tours and spot a wide variety of birds including nesting osprey and other raptors, burrowing owls, long-billed curlew and other shorebirds.

This year, Great Salt Lake Bird Festival is honored to feature George Archibald, co-founder of the International Crane Foundation, as the keynote speaker. His free workshop, "Crane Behavior and Vocalizations" is scheduled for Friday, May 18th at 3:30 PM. Archibald is a true conservation ambassador who uses his unique brand of crane diplomacy to work in sensitive places. He leverages the charisma of cranes to unite people from diverse cultures and countries to work together to preserve the landscapes necessary for

the survival of both cranes and people. He will also lead 2 field trips, one at Swaner Eco-Preserve and one on Antelope Island:

- Swaner EcoCenter George Archibald, Ella Sorensen, Heidi Hoven, Vivian Schneggenburger. Come visit high altitude wet meadows, marshes, riparian areas and uplands here in search of Sandhill Cranes with Keynote Speaker

George Archibald Sandhill Cranes have successfully nested and reared their young in the Preserve in years past and are typically very visible during the spring. Surrounded by a scenic backdrop of the Wasatch Mountains, walk along trails normally closed to the public. These high altitude wetlands and adjacent uplands are home to more than 70 species of birds, including Mountain Bluebirds, Yellow-headed and Red-winged Blackbirds, swallows, various raptors and Yellow Warblers. Meet

in front of the Swaner EcoCenter at 1258 Center Dr. Park City. Visit [www.swanerecocenter.org](http://www.swanerecocenter.org) for more site information. Limit 15. Own Vehicles. Cost \$30.

- Antelope Island: Causeway & Garr Ranch George Archibald, Mike Hearell, Taylor Abbott, Jolene Rose Bird a popular migrant stopover at Fielding Garr Ranch on Antelope Island. Birds crossing the west desert drop into the Ranch's grove of giant cottonwood trees as the first green spot they see. The area offers several springs and trees with plenty of insects. This trip provides a rare early morning opportunity to visit this area before it opens to the public. Possible species: migrating warblers, vireos, flycatchers; also owls, falcons, hawks, woodpeckers, and Virginia Rail. Meet at the Davis County Legacy Events Center 151 S. 1100 W. Farmington UT. Limit 52. Bus. Cost \$50.

See the complete schedule, along with detailed summaries of field trips, workshops, and associated fees on the website. Registration is open at [www.GreatSaltLakeBirdFest.com](http://www.GreatSaltLakeBirdFest.com)





# HARVESTING THE SYRACUSE SALT FLATS IN THE LATE 50's

A product of the 50's my brother and I were quite literally of the Stone Age. We built with rocks. We hit rocks with slats ripped from the bottom of tomato crates. We flung them with flippers and slingshots at birds and old out-buildings; often at each other. We had no TV at first, but then an old tube-type, black and white emerged. We were at first inquisitive. But for us, it could not hold our attention compared to outdoor exploration.

We were just barely a year apart. We were both presented with new bikes in 1956. His was red. Mine was blue. That began the pattern. We were often presented with the same gift on birthdays; his always red and mine blue. On those two bicycles we explored every inch of rural Syracuse located on the western shores of the Great Salt Lake in north Davis County.

In that day, the roadways in Syracuse were little wider than car-width. We rode down the middle of the road mostly. But when challenged by an automobile, we were forced into the rutted, sometimes dangerous shoulders.

In the late 50's we began our Cub Scout careers. Our leader, Nora Payne, lived right at the edge of what we knew as the "Salt Flats". In the late 50's those flats provided a pristine canvas for the explosion of boyhood imagination. Mrs. Payne lit the fuse.

We camped on those flats. We learned to cook in foil over small fires we'd ignited with flint and steel. The creation of insect and bird egg collections was a common practice in the day. My brother's butterfly collection was priceless.

Mrs. Payne led us to Howard Slough to collect swallow eggs that we gathered as we dangled from ropes over the clay cliffs of large drainages. In the day, most boys had a bow with arrows. Mrs. Payne would brood over us as we held archery competitions to see whose bow shot the farthest, something one could never do at home. We played night games in the blackness that was Syracuse at the time. We listen to ghost stories only recorded in oral history.

What I remember most about those flats, however, was the private exploration of miles and miles of open land by two brothers on two bicycles, one red and one blue. We'd heard stories from the past about the Mormon Meteor on the other side of the Lake. For two boys on two bikes, the Syracuse salt flats became our speedway. We raced each other incessantly. When bored with speed, the rare sagebrush became a buffalo that we would lancet from atop of our red and blue trusty mounts.

I close my eyes today and can still see the imprint of my brother's red bike on the surface salt of those flats as we weaved without obstruction or care on that shoreline. Finally realizing that we'd probably overstayed our allowance, we'd rush for home. Mom would be demanding an accounting!

My brother became my best friend on those flats. Those days' explorations are priceless to me. Some say nothing grows on those barren, salt encrusted flats. My brother and I prove them wrong! On two bikes; one red, the other blue, we proved them wrong! Salt has always been a preservative. And so, it remains.

Michael Gailey, Mayor Syracuse City



*Freemont Island GSL, oil painting, Kirk Henrichsen*



# 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.

## What is the PELI Project?

Board Members Ashley Kijowski and Janice Gardner have been contributing to the PELI Project and had the opportunity to visit Great Salt Lake's Gunnison Island. The Island is home to one of North America's largest breeding colonies of American White Pelicans and the focus of the Project. For more info visit [GSLPELIproject.org](http://GSLPELIproject.org) or @PELIproject on Facebook and Instagram.

The PELI Project was launched in 2017 to support ongoing research conducted by the Utah Division of Wildlife Resources (UDWR) into one of Utah's most iconic species: the American White Pelican (*Pelecanus erythrorhynchos*). The PELI Project was initiated by Jaimi Butler at Westminster College's Great Salt Lake Institute, UDWR's Great Salt Lake Ecosystem Program. Partner groups include Tracy Aviary, MesoWest at the University of Utah, and Great Salt Lake Audubon. The Project studies the effects of water diversion and climate change and on the Pelicans' migration patterns, breeding behavior, and survival rates. The PELI Project also seeks ways to engage the public and foster an appreciation for Great Salt Lake.



*Remotely-triggered cameras on Gunnison Island collect images of rarely-observed Pelican activity and document the occurrence of predators on the Island. Coyotes were documented on the Island several times in 2017. © UDWR and Great Salt Lake Institute at Westminster College*

The PELI Project focuses on Gunnison Island, located in Great Salt Lake's North Arm, which protects one of the largest breeding colonies of American White Pelicans. In the spring, up to 20,000 Pelicans or approximately 20 percent of the entire population, migrate from coastal Mexico and California to Gunnison Island to breed.<sup>1,2</sup> Gunnison Island is remote and requires Pelicans to commute a minimum round trip distance of 60 miles to reach the nearest food source, freshwater fish such as carp (*Cyprinus carpio*).



*The northern shores of Gunnison Island, looking to the northeast. The purple waters are the result of photosynthetic sulfur bacteria that are plentiful in the North Arm's highly saline waters. © Janice Gardner*

The Pelican's energetic expenditure is a tradeoff for safety; Gunnison Island is surrounded by briny waters that secure it from predators such as coyote (*Canis latrans*) and state regulation limits human disturbance within 1 mile of the Island.

In recent years, receding waters in Great Salt Lake have exposed a land bridge to Gunnison Island. As predators are gaining access to the Island during portions of the year, there is concern for how the Pelican breeding colony on Gunnison Island can be preserved.





## Remote Cameras and the PELIcam

Over a dozen remote-triggering cameras have been mobilized on Gunnison Island that collect images of rarely-observed Pelican behavior, breeding activity, and the occurrence of predators. In 2017, coyotes were observed in several images, confirming predators have access to Gunnison Island during portions of the year. The cameras also documented humans trespassing on the Island. Westminster students are cataloging over 130,000 images and setting up opportunities for citizen scientists to help analyze the data.



*UDWR's John Neill collects data from a remotely-triggered camera situated on Gunnison Island. © Janice Gardner*

The PELIcam looks over the Gunnison Island's Lambourne Bay provides a snapshot of conditions on the Island every 5 minutes. PELIcam also provides weather and air (i.e., dust) information to MESOWest at the University of Utah. The public can view the most recent image at: [www.gslpelicam.org](http://www.gslpelicam.org)

## PELItrack

UDWR has fitted a number of American White Pelicans with solar-powered GPS transmitters. The transmitters allow real-time monitoring of Pelican movement, providing information on migration and other management issues, such as avoidance of pelican-airplane collisions at airports. At the time of press, several research Pelicans ("Loretta", "Uma", and "Yogi") were en route north.



*UDWR's PeliTrack webmap provides viewers with real-time locations of American White Pelicans and documents the path between their winter and summer ranges. The movements of the research Pelicans can be viewed at: [https://wildlife.utah.gov/pelican\\_webmap/](https://wildlife.utah.gov/pelican_webmap/)*

## Wing-Tags

UDWR tracks American White Pelican population dynamics, including post-fledging survival rates, by wing-tagging nestling Pelicans at Gunnison Island. Re-sights of the wing-tagged Pelicans are critical to complete the study. The PELI Project is engaging the public to submit observations of wing-tagged Pelicans. Observations may be emailed to: [johnneill@utah.gov](mailto:johnneill@utah.gov) (Please obtain any or all of the following information: Date, location, tag code, tag color, code color, and a photo.)

Janice Gardner joined the board of FRIENDS in January 2017 based on her interest in birds and conservation. She is passionate about supporting the health of the Great Salt Lake, as it is one of North America's greatest migratory bird stopovers and breeding sites. Janice is a scientist and project manager for an environmental consultant; providing environmental planning for energy developments around the U.S.

## References:

- 1 Parrish, J. R., F. P. Howe, R. E. Norvell. 2002. Utah Partners in Flight Avian Conservation Strategy Version 2.0. Utah Partners in Flight Program, Utah Division of Wildlife Resources, Utah. UDWR Publication Number 02-27.
- 2 Behle, W.H. 1958. The bird life of Great Salt Lake. University of Utah Press, Salt Lake City, UT.



# DISCOVERING OUR LAKE

---

## GREAT SALT LAKE INSTITUTE CELEBRATES A DECADE

Snap. Ten years have passed. In that time, Great Salt Lake has lost two feet in elevation. The biomass of brine shrimp equal to that of 18 million people has coursed through our lake. Hundreds of species of birds have stopped over 100 million times to rest, refuel and create more birds. The microbial foundation of the lake has changed the colors of the lake more times that we can count.

And in this past decade, it seems our understudied, unique salty ecosystem is finally receiving the research attention it deserves though the efforts of our passionate lake community. We hope Great Salt Lake Institute (GSLI) has been a part of this turn-around.

GSLI began as an experiment. As we at Westminster College began doing research on Great Salt Lake, people from around the world got excited about scholarly efforts focused on this iconic ecosystem. Could we create an academic entity for scholarly investigations of the lake? How could an organization in a college setting be complementary to other efforts? How could we facilitate large research projects and tap into funding sources only available to academia? How would we reach out to the broader community?

Our guiding principals were three-fold: 1) be synergistic, 2) be non-biased 3) involve students. We shy away from advocacy, since FRIENDS of Great Salt Lake does that well. But if we can lend our expertise when others are silenced by politics we enthusiastically use reputable research to facilitate discussion with the lake's many stakeholders.

How do you like us now? Our experiment is turning 10 years old this spring! In the past decade, GSLI has:

- Sparked research efforts on duck hunters, brine shrimp, biofuels, pelicans, microorganisms, art, spiders, microbialites, salt, dance, astrobiology, and poetry.
- Engaged more than 200 students and 24 faculty members in lake research
- Employed more than 50 students in campus jobs

- Brought in over \$2 million in grants for our programming
- Collaborated with over 30 Community Partners
- Supported more than 200 publications and presentations
- We have been involved with over 50 large community events
- Provided supplies and curriculum to 100s of high school teachers

We knew we would perpetually have salt on our hands and mud on our boots, but we found that GSLI is much more than lake research. GSLI has taught us the value of mentoring and relationships. GSLI has taught us to have open arms for collaborations because the lake needs all of us to work towards a balance of humans and nature, and there is more work to be done than just one person or organization can do. When we encounter different world views, we can facilitate discussion, connect ideas and help build a passionate and informed GSL community.

While Great Salt Lake rose and fell and served 10 years of pelican babies born on Gunnison, many other things have transpired. Almost a million more humans live along its shores. There are plans to divert water from the lake, to create a huge inland port, to build a prison on the shores, and the possible development of a Class V landfill operation. We want to help educate people and gather research efforts to stand up for this critical ecosystem.

GSLI is humbled to contribute to the robust and active Great Salt Lake community with our students and our research connections. We see a future that is made better by all of us working together with inquisitive minds and creativity. We are looking forward to the next 10 years with the trillions of more brine shrimp, millions more birds, thousands more pelican babies and hundreds of our students. We remain steadfast in the mission of GSLI: to connect people to Great Salt Lake through research and education.

Jaimi Butler  
Great Salt Lake Institute





Great Salt Lake Institute at Westminster College  
 Students Conducting Research in the Field and Lab  
 Courtesy of Jaimi Butler and GSLI





**HOW TO REACH US**  
FRIENDS of Great Salt Lake  
150 South 600 East Suite 2B  
Salt Lake City, UT 84102  
801-583-5593  
website: [www.fogsl.org](http://www.fogsl.org)

**BOARD OF DIRECTORS**  
President: Katie Pearce  
Treasurer: Cindy Lund  
Secretary: Janice Gardner

**DIRECTORS**  
Melissa Barbanell  
Kristen Bonner  
Mara Elana Burstein  
Rob Dubuc  
Gen Green  
Chris Jackson-Jordan  
Ashley Kijowski  
Hikmet Sidney Loe  
Joel Moore  
Rose Smith  
Melissa Stamp

**STAFF**  
Executive Director:  
Lynn de Freitas  
[ldfreitas@xmission.com](mailto:ldfreitas@xmission.com)  
Membership & Programs Director:  
Holly Simonsen  
[snowyegret@fogsl.org](mailto:snowyegret@fogsl.org)  
Education & Outreach Director:  
Sarah Radcliff  
[pelican@fogsl.org](mailto:pelican@fogsl.org)

**ADVISORY BOARD**  
Robert Adler  
Genevieve Atwood  
Jim Carter  
Luke Garrott  
Steve Simms  
Ella Sorensen  
Terry Tempest Williams  
Wayne Wurtsbaugh

**Submission Deadlines:**  
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](mailto:ldfreitas@xmission.com)  
or call 801-583-5593

## THANKS FOR MAKING A DIFFERENCE

New FRIENDS and Old

new members, renewing members, donors

December 15, 2017–Present

Jeffrey Adams	Dennis Glass & Sue Corth	Rachel Otto & Craig Scholnick
Debbie Amundsen	Dick & Deloris Gilbert	Don & Kayleen Paul
Steve Anderson	Greg & Caitlin Gochmour	Joan Peterson
Genevieve Atwood	Peter & Inge-Lise Goss	Jamie Pleune
Gregg Auwaerter	Sylvia & William Gray	Bryant Pratt
James Bach	Donna Green	David & Shari Quinney
Mark Baer	Sharen Hauri & Trevor Ortman	James & Karla Rafferty
Joel Ban	Ron Hansen	Laurie Rich & Leonard Coulson
Christine Barker	Bill Heesch & Judy Gunderson	David Richardson
Margaret Batson	John & Jean Henkels	Christine Riggie
Daniel Bedford	Deon Hilger	Helen Rollins
Rob Bero	Chris Hoagstrom	John Schirack
Tom & Lydia Berggren	Connie Holbrook	Alisa & Ian Schofield
Beth Blattenberger	Ben & Fabiola Holcomb	Cid Seidelman
Gail Blattenberger	Heidi Hoven	Catherine Smith
Sarah & Michael Blomgren	Elliot Hulet	Clark Smith
Sherman & Miriam Bloom	Chris Jackson-Jordan	Homer & Patricia Smith
Henry Boland	Frank Jarvis	Rose Smith
Kristen Bonner	Carolyn Jenkins	Ella Sorensen
Roger Borgenicht & Kate Lambert	Paul Jewell	Leo Sotiriou
Janice Brittain	Evan Johnson	Dave Stanley & Nan McEntire
Soren Brothers	Jane Johnson	Joan Steed
Tim Brown & Angela Dean	Kathleen Kaufman	Alan & Moi Stockland
Mark & Cheryl Brunson	Linda Ketelaar	Sean & Melissa Stromberg
Yaeko Bryner	Dave & Rebecca Livermore	Larry Swanson
Lynn & Bradley Carroll	Cindy & Tom Lund	Jean Tabin
Hugh Cawthorne	Scott Maddox	Scott & Betsy Thornton
Edward & Carleen Clark	Terry Martin	Stephen Trimble & Joanne Slotnik
Owen Kent Covey	Wayne Martinson & Deb Sawyer	Edith Trimmer
Valarie Davis	Terry Massoth & Lyle Wilson	David & Shauna Turner
Tom & Candace Dee	Joyce Maughan	Sarah & Alex Uhle
Jeff Denbleyker	Ted & Carolyn McGrath	Wally Vlasic
Chris & Dave Dewey	Geoff McQuilkin	William & Donna Vogel
Justin & Jean Dolling	Sanford Meek & Lynn Koshland	Marcia Walke
Matthew Domek	George & Nancy Melling	Richard West
Gary Donaldson & Kody Wallace	John Middleton & Marjorie Chan	Trudy & Dex Whitehead
Rob Dubuc	Richard Middleton	Lynn & Mary Beth Whittaker
Franci Eisenberg	Joyce Mitchell & Charles Stuth	Lori Wike
Edna & Jim Ehleringer	Joe & Sheri Morzinski	Janet Williams
Joy Emory & Patrick Watson	Sally & Bob Neill	John & Jean Witmer
Joanna Endter-Wada	Riley & Kaye Nelson	Jeff Wolfe & Azure Webster
Gary & Paula Evershed	Brian & Allison Nicholson	Wayne Wurtsbaugh & Linda L'Ai
Susan Fleming	Dave Nimkin	Edward & Marelynn Zipser
Will Floor & Janet Owens	Ann & John O'Connell	
Alan & Jacqueline Fogel	Robert Okazaki	
Sarah George & Rick Ford	Bim Oliver	
Joseph & Constance Gates	Fred & Linda Oswald	

## Foundations, Corporations, & Nonprofit Support

Autoliv, Ballard Miller Foundation,

The David Kelby Johnson Memorial Foundation, Cargill Salt, Compass Minerals,  
Great Salt Lake Audubon, The Nature Conservancy in Utah, Utah County ZAP

## Save the Dates:

May 9, 10, 11 Great Salt Lake Issues Forum  
September 7 Alfred Lambouere Prize Gallery Opening and Reception  
September 15 International Coastal Cleanup



**Lake Fact:**  
Question: What percentage  
of volume and area of all  
lakes on Earth are repre-  
sented by saline lakes?  
  
Answer: 44% of the volume  
and 23% of the area.



# MAKING A DIFFERENCE

How We Do Our Work—Thanks to You

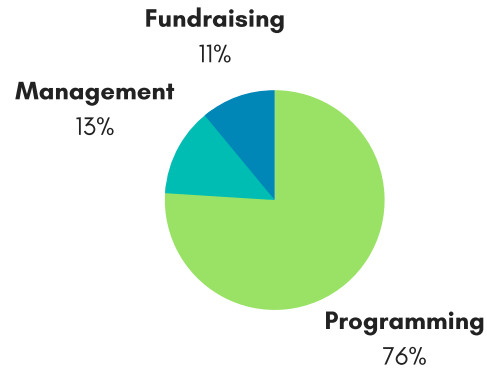
---

## Our Funding

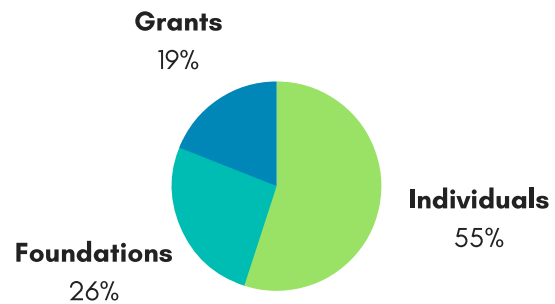
As a 501(c)(3) nonprofit, FRIENDS of Great Salt Lake relies upon the generosity of our members, individual donations, foundations, and grants. Individual memberships and donations provide the bulk of our funding at approximately 55% of our annual revenue. Foundation donations and grants make up the rest,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

## Expenses



## Funding Sources



Pelican on Gunnison Island Triggers PELICam Photograph  
Courtesy of Utah Division of Wildlife Resources and  
Great Salt Lake Institute at Westminster College





FRIENDS of  
Great Salt Lake  
PO Box 2655  
Salt Lake City  
UT, 84110  
[www.fogsl.org](http://www.fogsl.org)

Presorted First Class  
US Postage Paid  
Salt Lake City, UT  
Permit # 4910

## PLEASE SUPPORT FRIENDS of GREAT SALT LAKE

Yes! I want to purchase a membership to  
FRIENDS of *Great Salt Lake*

\$30 Individual ☐

\$20 Senior ☐

I would also like to make additional donations to:

Send payment to:  
FRIENDS of Great Salt Lake  
PO Box 2655  
Salt Lake City, UT 84110

General Fund	<input type="text"/>
Education	<input type="text"/>
Research	<input type="text"/>
Advocacy	<input type="text"/>
Arts	<input type="text"/>
Total Donation	<input type="text"/>

Name:

Address:

City/State/Zip:

E-Mail:

Total Membership Fees and Donations \$

☐ I do NOT wish to receive a paper newsletter  
(Our newsletter is available for download at [www.fogsl.org](http://www.fogsl.org))

Remember, all membership fees and donations are tax-deductible to the extent allowed by law.



*The End PELIcam on Gunnison Island*  
courtesy of Utah Division of Wildlife Resources  
and Great Salt Lake Institute