

FRIENDS of *Great Salt Lake*

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Great Horned Owl by 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, and advocacy.

www.fogsl.org

EXECUTIVE DIRECTOR'S MESSAGE

An Agreement in Principle and the Value of a Handshake

“To commit to the open space of democracy is to begin to make room for conversations that can move us toward personal diplomacy. By personal diplomacy, I mean a flesh-and-blood encounter with public process that is not an abstraction but grounded in real time and space with people we face in our own hometowns. It’s not altogether pleasant and there is no guarantee as to the outcome. Boos and cheers come in equal measure.”

Terry Tempest Williams - The Open Space of Democracy

On March 21, 2005, Utahns for Better Transportation (UBET), a coalition of individuals and organizations which includes FRIENDS, and the Sierra Club, submitted comments to the federal agencies on the Draft Supplemental Environmental Impact Statement (DSEIS) for the proposed Legacy Parkway. We concluded that the DSEIS failed to consider practicable alternatives that would meet the stated project purpose and need. At the same time we submitted the Citizens Smart Growth Alternative (CSGA) as a viable alternative to building the Legacy Parkway.

Prior to the release of the DSEIS, the Utah Department of Transportation (UDOT) and their consultants worked with UBET, their consultants from Smart Mobility, and the Sierra Club, to analyze the CSGA. The analyses determined that this CSGA alternative would not only meet the purpose and need of relieving congestion on I-15 and provide an alternative route during I-15 reconstruction, but it would also reduce overall environmental impacts, and benefit the long term economic health of the region.

Soon after, at the request of and with full support from Governor Huntsman, UDOT, UBET and the Sierra Club met to discuss whether it would be possible to work toward a negotiated solution and avoid litigation over the parkway. To achieve such a compromise, the parties would have to explore all of the proposed elements of the Shared Solution advocated by UDOT and those

championed by UBET in the CSGA, and determine if any combinations of strategies of these two alternatives could meet the needs and interests of all the parties involved.

With a handshake and a commitment to give it an honest try, key representatives with the authority to negotiate for the parties have been meeting almost weekly for several months. The decision making principle used to guide the development of this alternative and for all future decisions in this process is to make tomorrow better than today.

Holding to strict confidentiality, the parties proceeded to work through the many elements of the two alternatives, moving meticulously and incrementally in a positive direction. With each step, the respective parties needed to confer with their constituencies in preparation for the next round of talks.

In early July, after great persistence, great patience and successful negotiations, the parties created an Agreement in Principle. At the same time as this great success, Senator Hatch had prepared a secret rider that he intended to add to the federal transportation bill. This rider would nullify the very negotiations that had resulted in this agreement. Fortunately, this maneuver did not succeed. However, when Congress returns this fall from summer recess, there is no assurance that Hatch will not attempt to reintroduce the rider again.

Historically, the controversy over the proposed Legacy Parkway has pitted community against community, neighbor against neighbor and people against the Great Salt Lake. The delays and litigation linked to this project reflect the character of a real and robust public process. Instead of attempting a political end run to foreclose on this process, it should be regarded as essential and healthy to the fabric of our country.

We are on the verge of a major breakthrough. A breakthrough which could provide positive impacts for the future of our state, its economy,

its environment and its transportation systems. And one that holds high the value of civil dialogue on difficult issues. If this breakthrough collapses because of political posturing, we should all be disturbed over the loss in our ability to work collectively as a community to solve our problems. 🐼

In saline,

Lynn de Freitas

“Protecting the environment is not like building a highway or painting a building. You can’t do it and walk away from further work. You must stay everlastingly at it, or things begin to slide.”

William D. Ruckelshaus, 1st and 5th EPA Administrator

What You Can Do

Read the August 14, 2005 Opinion
“Give Negotiated Legacy Solution a Chance to Work”
by Robert W. Adler
on our website: www.fogsl.org

Call Governor Jon Huntsman, Jr. at 801-538-1000 or toll free at 800-705-2464
and express your desire to see this process through.

Share your concerns about another attempt by Senator Hatch to promote a
legislative rider that would override the public process.

FRIENDS ORGANIZATIONAL STATEMENT

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, and advocacy.

FRIENDS has a very active Board of Directors and an Advisory Board consisting of professionals in the scientific, political, literary, education, and broadcast communities. Founded in 1994, we have organized and sponsored an array of programs, activities, and materials in pursuit of our mission.

Since 1996, we have sponsored a biennial Great Salt Lake Issues Forum that provides a gathering for policy makers, researchers, planners, industry and other stakeholders who are involved in and concerned about the Great Salt Lake.

The goal of each Forum is to encourage constructive dialogue about the future of the lake's ecosystem and its resources, and to illuminate the complexities involved in research, management and planning for the lake.

In 1997, we hired Bruce Thompson as our Education Director and initiated a major regional education project designed to enhance both the knowledge

about and care for the future of Great Salt Lake. Bruce wrote and produced a live-narrative slideshow program "The Lake Affect: Living Together Along the Shores of Something Great." Over 11,000 people in the five counties surrounding Great Salt Lake have seen the program.

We hope that the video version of The Lake Affect, and Project SLICE, a 4th grade curriculum using Great Salt Lake as a system of study, will achieve a positive, long-lasting impact on the future of the Great Salt Lake and those who dwell upon its shores.

In 2003, FRIENDS awarded the first Doyle W. Stephens research scholarship. Until his death in May 2000, Stephens served as a research hydrologist for the U.S. Geological Survey. He is particularly remembered for his work toward increasing public awareness of the Great Salt Lake Ecosystem.

FRIENDS was awarded the Conservation Achievement Award by the Utah Chapter of the Wildlife Society in 1998. 🐾

On the Cover

Great Horned Owl, Gary Crandall ©2002

I like owls a lot. They're easy to recognize; just about everywhere, and have great expression. Often times, it's simply a matter of taking the time to look around you to see them. To me they're kind of like flight controllers of rodents.

It's my hope that in viewing these images, there will be instilled in us who share this continent with the wild creatures, the need to preserve enough space for all of us to continue to live together.

For more information about Gary Crandall's work, contact him at Dancing Crane Studios, 801-296-9393 or visit www.dancingcrane.com.



GREAT SALT LAKE AT A GLANCE



Base from U.S. Geological Survey digital data, 1:100,000, 1978, 1979, 1980, 1984
 Universal Transverse Mercator projection, zone 12



BRUCE WADDELL

25 YEARS OF SERVICE

Bruce loved the Great Salt Lake...

As the former Utah Field Supervisor for the Fish and Wildlife Service, friend and colleague of Bruce Waddell, it was with mixed emotions I heard of his retirement from the contaminants branch of the Fish and Wildlife Service. Obviously, a career filled with disagreements and arm wrestling with the development community and regulators over what is clean or better yet what is clean enough should end with a peaceful ride off into the sunset, even if it is in a refurbished Mustang or an old repaired tractor.

But I am afraid that “institutional memory” will go with Bruce, not only for what he knows about contaminants entering the ecosystem, but for the agreements forged, the tendency for regulators to improve their protection when long term history is remembered, and for the inevitable desire of groups working together to do a better job of cleaning up our environment.

The one major lesson I learned from Bruce and his coworkers was that it is easier and cheaper to keep our water and land clean at the outset than it is to come in after you have a mess and try to clean it up and return an ecosystem to full or even partial functioning. Regulations, even as hard as they are on developers and administrators, serve to prevent toxic spills, keep effluents cleaner, and make environmental protection less costly in the long run. Environmental protection is so much wiser than environmental restoration.

Bruce and I worked closely on keeping selenium out of Ashley Creek and Stewart Lake near Vernal, moving or limiting the impacts of the Atlas mill tailings near Moab, and trying to get numerical water quality standards for the Great Salt Lake.

These issues are not yet resolved but will continue to press government leaders for eventual solution.

Seldom did a week go by in the office when we would not have a spill of oil or some toxic material, the loss of birds or other wildlife to biocides being used indiscriminately or improperly, or the review of a new permit to release a controlled effluent into a Utah waterway. I was always amazed at the diverse ways contaminants get into our environment.

Bruce loved the Great Salt Lake. He was not only hunter, but a bird lover. He was worried about oil leaking from old wells killing pelicans near Rozelle Point. He or his staff were always working in tributaries to the Great Salt Lake picking up samples of petroleum residues, trace metals, and at one point even some DDT. His knowledge about levels of toxicity



Photo courtesy USFWS

to wildlife were comforting to me as the eventuality of a clean-up, a potential lawsuit, or meeting with industry leaders was always just around the corner. His expertise, professionalism, and credibility will be sorely missed.

The one question I could never answer about Bruce, however, was how someone who knew so much about contaminants and their lethality could eat day old pizza which had set out overnight in a motel room? 🍕

Reed Harris
Recovery Programs Director
Utah Dept. of Natural Resources

Expertise, professionalism and credibility...

Bruce was the first full-time contaminants biologist hired in the Utah Ecological Service Field Office, some 25 years ago. From that time forward, he developed a reputation for providing sound scientific information upon which to make management decisions.

He was instrumental in shifting the focus of the contaminants program in the Utah Field Office from reacting to crises to being more proactive. This allowed the Utah Field Office to evaluate and prepare for upcoming issues by collecting data early enough to effectively influence decisions.

Bruce's efforts working on the Middle Green River Study Team as part of the National Irrigation Water Quality Program, is a perfect example of this. His painstaking efforts to conduct biological studies on the Green River provided the information that revealed significant selenium problems at Stewart Lake and this information has helped to guide cleanup efforts there.

Bruce's biological studies at Ouray National Wildlife Refuge demonstrated selenium contamination and adverse affects on waterfowl reproduction. This ultimately lead to the efforts to cleanup these contaminated wetlands. The work he did in collaboration with other scientists research was essential to identifying high levels of selenium that were being contributed to Ashley Creek by the old Ashley Creek sewage lagoons. The levels of selenium were high enough to pose a significant risk to razorback suckers.

A healthy dose of persistence and the cooperation of many, including the sewage district, the State of Utah, and the U.S. Environmental Protection Agency, was critical to reaching a solution which was the closure of the lagoons and the replacement with a new state-of-the-art sewage treatment facility.

Throughout his career, Bruce had the opportunity to work with the late Dr. Doyle W. Stephens of the U.S. Geological Survey. Together they collaborated on a number of interesting projects to identify and remediate chemical threats to wildlife and the environment.

In recent years, Bruce has focused much of his efforts on one of the great treasures of Utah, the Great Salt Lake. His efforts have helped State and Federal regulators improve the cleanup of a number of sites that affect the Great Salt Lake. Notably among those efforts was the onset of a three year process to determine a numeric standard for selenium in the open waters of Great Salt Lake.

Larry Gamble
Regional Environmental Contaminants Coordinator for the Fish and Wildlife Service's Mountain and Prairie Region.

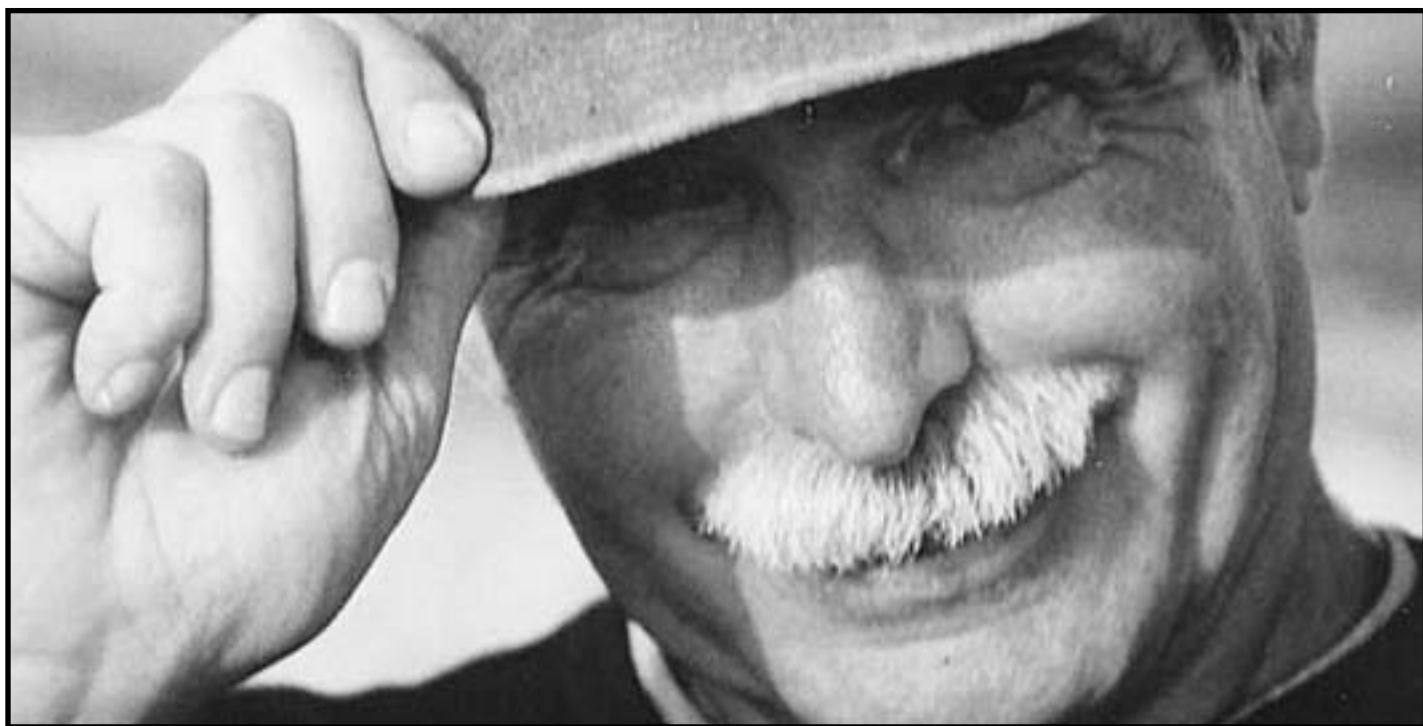
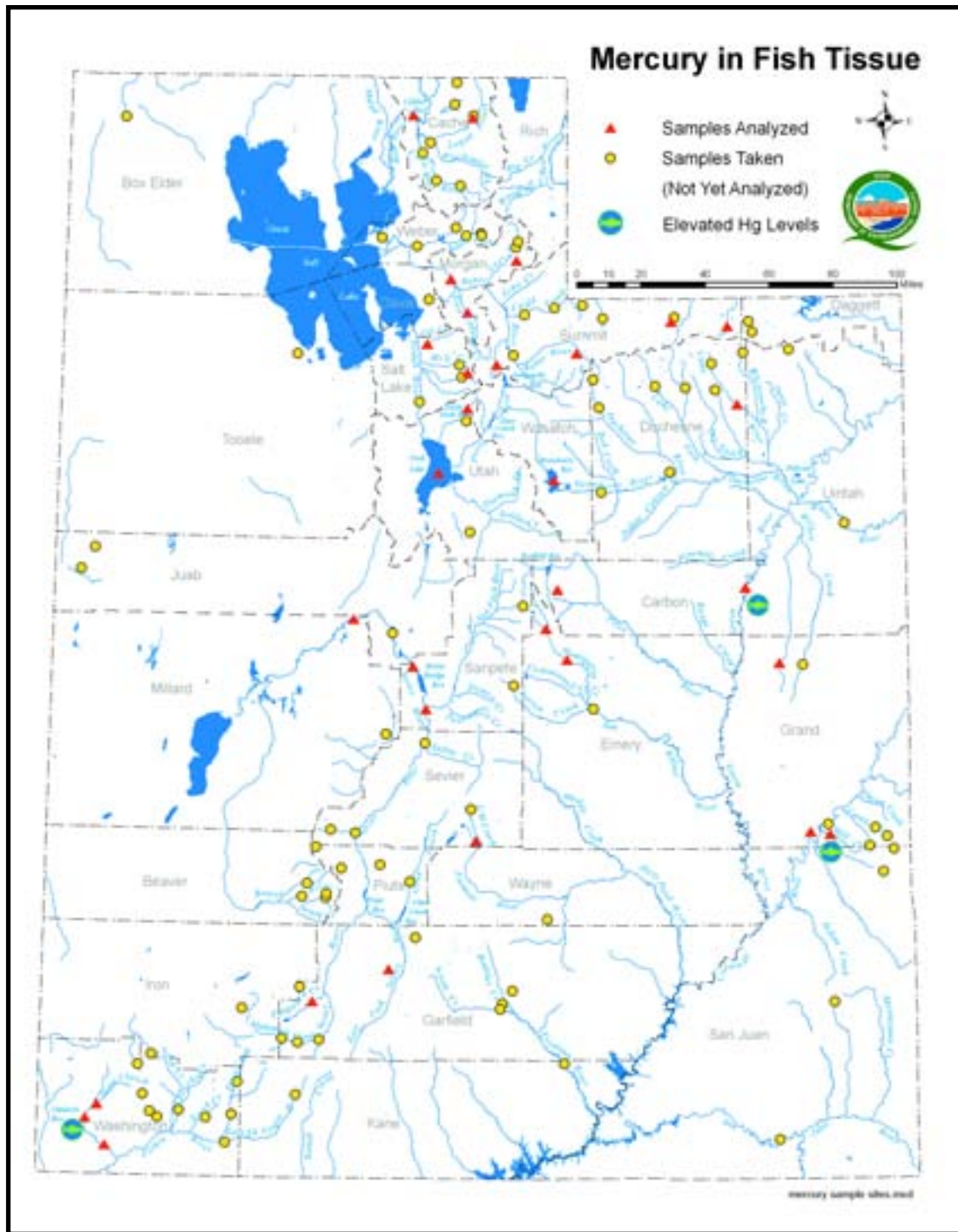


Photo courtesy USFWS

MERCURY IN OUR WATER:

HOW BAD IS IT AND WHAT ARE WE DOING ABOUT IT?



Recent newspaper headlines are alarming: “Toxic Mercury Blows Into Utah From Nevada”; “Mercury a Worry for Duck Hunters”; and “Mercury From Mines: Utah Should Start Looking for Tainted Fish.” Why the interest in mercury? Mercury occurs naturally in soil and in the atmosphere from volcanic emissions. It is one of the most toxic heavy metals and targets the nervous system of living organisms. Even at relatively low doses its effects may include blindness,

motor impairment, cerebral palsy and dementia. At higher doses mercury can cause death. An organic form of the element, methylmercury, is the most toxic. It is formed through a complex process involving air, water and sediment and its concentration is magnified in each stage of the food chain; from water to algae; from algae to invertebrates; from invertebrates to fish; and from fish to humans.

An estimated two-thirds of atmospheric mercury in the U.S. is anthropogenic, or of human origin; most of it coming from coal-fired power plants and commercial and industrial incinerators. Attention recently has been focused on a cluster of gold mines in eastern Nevada, that has been identified as a significant source of mercury in the U.S. In these mining operations, gold is extracted from ore through a cyanide leaching process. In the process mercury is readily volatilized and released into the atmosphere. To enhance the leaching process, ore autoclaves or "roasters" are often employed and additional mercury is volatilized. Mercury may remain in the atmosphere for months until it is deposited onto the ground where it finds its way into our waterways through storm events.

The Nevada mining operations are in the northeast, near Elko. While the levels of mercury emissions have been significantly reduced since 2001, through a voluntary program administered by the Nevada Department of Conservation and Natural Resources, some are concerned that prevailing winds may be carrying airborne mercury to Utah. Recent newspaper articles have questioned what Utah governmental agencies are doing to monitor mercury levels in the state's waters and fish and why Utah is one of only a hand-full of states not to have a mercury health advisory on fish consumption.

The Division of Water Quality (DWQ) has the responsibility to monitor the water quality in our lakes and streams and report if the waters are impaired, i.e., incapable of maintaining their particular beneficial use designations, such as for drinking, recreating, fishing or irrigating. No Utah waters are listed as impaired due to elevated mercury concentrations in the water column. Most all waters are well below the chronic water quality standard for mercury of 0.012 micrograms per liter (ug/l) let alone the acute standard of 2.4 ug/l. Nevertheless, due to bioaccumulation, the concentration of mercury in fish tissue may be magnified a million fold from levels in the water.

While DWQ has many years of data on water chemistry, it has only been recently that we have collected fish tissue data. There are a few reasons for this. First, there has been little evidence that Utah has had high levels of mercury in its water; second, the Utah State Lab, which processes all of our water samples, has been incapable of analyzing fish tissue samples because it lacks the proper lab equipment; and third, the cost of performing fish tissue analyses is relatively expensive.

On occasion, for special studies, DWQ has collected and analyzed limited fish tissue samples. The most significant of these studies has been EPA's recent Environmental Monitoring and Assessment Program (EMAP). This program was developed to measure the status and trends of the nation's waters by establishing reference conditions against which to compare the condition of other waters.

Part of the EMAP protocol is to analyze fish tissue contaminants, including mercury. Annually since 2000, DWQ has collected fish and sent them to EPA's lab in Corvallis, Oregon, to be analyzed. Over that time nearly 300 fish from locations throughout the Utah have been submitted. Results have been returned on 180 of those samples. The results on the remaining samples will be compiled and

provided DWQ in September and December 2005. The locations of the fish tissue monitoring are shown on the noted map of Utah. The map and supporting data, as well as information about other fish advisories can be viewed at the DWQ web site at: http://waterquality.utah.gov/documents/mercury_sample_sites_5-17-05.pdf.

Five of the fish samples thus far analyzed contained mercury levels above EPA's health advisory screening value of 0.3 milligrams of mercury per kilogram of fish tissue (mg/kg). These values ranged from a low of 0.307 mg/kg in the Green River to 0.391mg/kg in Mill Creek, near Moab. At those concentrations, EPA and the FDA advise that women who are pregnant, may become pregnant, are nursing mothers as well as young children to limit their consumption of the fish or to avoid eating the fish altogether. Because the number of fish taken from each site was few, it is statistically not supportable to issue a health advisory, even with exceedances of the screening concentration. Therefore, DWQ, in conjunction with the Utah Division of Wildlife Resources, will be collecting additional fish samples in June and July 2005 from Mill Creek, Green River and Gunlock Reservoir to determine if mercury health advisories are warranted.

What else are we doing to address concerns about mercury?

A Mercury Work Group is being organized by DWQ to allow agencies and organizations to share data, collaborate monitoring activities, develop assessment protocols, inform the public and pool fiscal and other resources to better address the issue of mercury in fish and in water fowl. (See www.fogsl.org for more information).

The Department of Environmental Quality (DEQ) is purchasing new lab equipment for the State Lab. Specialized equipment for analyzing low levels of mercury in fish is part of that purchase. This will allow the State Lab to perform mercury analyses on fish rather than depending on out-of-state labs to do the work.

The DEQ is steering the development of a selenium standard for the Great Salt Lake. In conjunction with fieldwork associated with that effort, it may be prudent to collect and analyze mercury samples.

A monitoring strategy is being established for an on-going assessment of mercury in fish.

Meetings have been held between the directors of air and water programs in Utah, Idaho and Nevada. Mechanisms for information exchange between the states are being established and regional studies on the source, transport and fate of mercury may be considered.

We do not know if these efforts will lead to the issuance of mercury health advisories. However, they will lead to better cooperation between interested parties and a science-based approach for making these decisions.

Walter L. Baker, P.E.,
Director, Utah Division of Water Quality

WATERSHED THINKING

RE-VITALIZATION OF THE JORDAN RIVER WATERSHED COUNCIL



Jordan River by Kathlyn Collins

The Water Resources Planning and Restoration Program of Salt Lake County is excited to announce that we are re-vitalizing the Jordan River Watershed Council. The watershed council was initially created in 1978 as a result of the 208 water quality plan; however, the council became inactive in the late 1990's due to an emphasis on the implementation of restoration plans developed as part of the Jordan River Restoration Project. Recently, the Utah Watershed Coordinators Council has received moneys to fund watershed coordinators in both the Jordan River and Utah Lake Watersheds — the Salt Lake County Planning and Restoration Program has taken on this responsibility for the Jordan River Watershed.

Several issues of pressing concern currently face our watershed and have served to instigate this re-vitalization. Some of these issues include: listing of the Jordan River and Emigration Creek on the State's 303(d) list of impaired water bodies, the subsequent requirement of a Total Maximum Daily Load (TMDL) for both the Jordan River and Emigration Creek, water reuse and in-channel flow reduction, construction of a new wastewater treatment facility, expansion of existing wastewater treatment facilities, the need for comprehensive source water protection plans, riparian health, and long range planning to accommodate population growth / water demand within the watershed. The Jordan River Watershed Council is being re-vitalized to provide stakeholder input and participation in these and many other watershed concerns.

WATERSHED FACTS

The Jordan River Watershed is a closed basin that drains a total of 805 sq. miles.

Approximately 370 sq. miles of the Jordan River Watershed are in the Wasatch, Oquirrh and Traverse mountain ranges.

The Jordan River Watershed is home to over 800,000 residents.

By 2020, the population is expected to reach 1.3 million residents.

Land in the Jordan River Watershed is owned by private individuals (72.3%), federal government (21.1%) and state government (6.5%).

The Jordan River and Emigration Creek are both listed as impaired water bodies under section 303(d) of the Clean Water Act.

Water quality impairments in the Jordan River Watershed include: Dissolved Oxygen, Total Dissolved Solids, Pathogens, Phosphorus, and Zinc.

The primary goals of the Jordan River Watershed Council are to: 1) Establish leadership of sustainable, long-term river and stream stewardship in the Jordan River Watershed, 2) Provide a discussion forum for watershed concerns, 3) Solicit input from stakeholders, 4) Distribute information, and 5) Promote stakeholder involvement in the management of our local watershed. Additionally, in establishing ad hoc stakeholder groups we wish to provide a forum for communication and cooperation between interest groups within the Watershed.

Although the composition of the Jordan River Watershed Council is still being discussed, our working model is to have a core council of regulatory agencies with several advisory councils representing specific stakeholder groups. Interest groups that have been identified for establishment as advisory committees include: parks and recreation, agriculture and irrigation, Publicly-Owned Treatment Works (POTWs) and discharge permit holders, stormwater interests, environmental concerns, headwaters and water supply concerns, community councils, and planning and development. Open discussion between stakeholder groups will not only promote understanding of issues, but will also generate ideas and solutions to effectively address water quality, riparian health, and planning concerns in this watershed.

Due to the intimate relationship between the Jordan River and the Great Salt Lake, we are excited to have members of FRIENDS of Great Salt Lake involved in this process. Please feel free to contact Natalie Rees of the Salt Lake County Water Resources Planning and Restoration Program [(801) 468-3656 or nrees@slco.org] with questions or concerns in regard to the Watershed Council. 🇺🇸

Natalie Rees, Water Resources Specialist,
Salt Lake County Water Resources Planning and
Restoration Program

GREAT SALT LAKE EDUCATION

LAKESIDE LEARNING FIELD TRIPS

We have just concluded a successful spring session of Lakeside Learning Field trips at Antelope Island State Park. With the capable assistance of Sander Lazar, Yae Bryner, and Emory Dinner, FRIENDS educated over 350 students, teachers and parents about the amazing and unique features of the Great Salt Lake Ecosystem.

You'll recall that Sander worked with us nearly 5 years ago as a Barbara L. Tanner Fellow. As assistant to Bruce Thompson, our former Education Director, he became very proficient in conducting these field trips. Yae Bryner, a former kindergarden teacher in the Ogden School District, knows lots about the Lake and welcomed the opportunity to give us a hand. Emory Dinner, who experienced Great Salt Lake for the first time when we took her out in late April to train her to co-facilitate field trips with us, is an Americorps volunteer currently working with USEE (Utah Society for Environmental Education). (See Emory's piece about her first impressions of the Lake).


For many students and some parents (gasp!), this was their first adventure to Great Salt Lake, too! But unlike Emory, they have been neighbors of the Lake for most of their lives.

FRIENDS' place-based approach to environmental education encourages students, parents and teachers to take the opportunity to get to know our big, salty friend. And, through this education, become advocates for its preservation and protection. Our low-cost field trips provide a program with immeasurable benefits to our community and the Lake. It is definitely money well-spent! Please go to our website www.fogsl.org to view a few pictures of our latest adventures.

The beginning of the school year is just around the corner and FRIENDS has three scholarships available for fall semester. We invite fourth grade teachers to apply. For the low cost of \$1 per person, students, teachers, and parents can enjoy a lovely and instructive day at the Lake. (Transportation remains the responsibility of the school.) Multiple classrooms from one school may apply, but space is limited. A downloadable application is available on our website or you can call or email me for an application and further information.

We extend a special thanks to Janice Hinckley, Richard West, Mary McKinley and Bill Hanewinkel for their generous support for this program.

Katie Pearce, Assistant Director
801-712-4594
k.d.pearce@utah.edu



I recently moved from Colorado to Salt Lake City and one of the things on my “to do” list was to visit the Great Salt Lake. Not only have I had the chance to visit, but I was offered the opportunity to assist FRIENDS of Great Salt Lake with their Lakeside Learning Field Trip program this spring.

In preparation for that role, I began asking people about what the Lake was like. Many of their replies focused on its smell and that it was really buggy out there. I started to become a little apprehensive, but realized I need to experience the lake and discover it on my own.

Arriving at the Lake I didn’t notice a smell. When I got out of the car there was an occasional bug or two, so my worries were diminishing rapidly. As Bruce began to review the Lakeside Learning Field Trip information and Project SLICE curriculum, it became apparent why the lake had a smell. He also explained about the different insect species that reside at this unique ecosystem. In just one afternoon of lake education, my stereotypes were nullified and I was now instilled with a passion for this amazing place. I knew I had to share this excitement with others and tell them what they were missing.

I mean where else can you find pickleweed or the astonishingly old banded gneiss!

Teaching the FoGSL field trips was such a pleasure. Each time I went out with the students I learned more and more, and I know they did as well. The students were as impressed as I was with the masses of midge flies. Some students did have “ewww” moments, but once they learned the purpose of the bugs, the oolitic sand and the smell, they understood the web of life in this ecosystem and became more comfortable.

This program is wonderful and I am so thankful that I got a chance to be a part of it. Also, I can proudly say that I no longer belong to the stinky, icky, buggy club and I hope to educate others to realize this treasure as well!

Emory Dinner
Americorps Volunteer for Utah Society for Environmental Education



Lake Fact:

Which two GSL islands are managed by DWR and do not allow public access?

Answer Gunnison Island and Bird or Hat Island

ON ANTELOPE ISLAND

A composite poem created from the words of the 18 fourth grade students and adult participants of the St. Sophia Greek School Lakeside Learning field trip to Great Salt Lake along the Lakeside Trail of Antelope Island on 7 April 2005.

Antelope Island is full of mystery and beauty,
Not yet appreciated by the masses;
Habitat to many, yet visited by few,
Where life is peaceful, playful and plentiful;
A wondrous place,
Offering glimpses into the complexities and simplicities
Of a community thriving harmoniously;
Where we hear the meadowlarks heralding the advent of spring.

Antelope Island is amazing: all the rocks and minerals!
Adventurous: sometimes scary and difficult;
Antelope Island is a good spot to go,
You can play around in it,
And it's full of buffalo poop!
Antelope Island is our magic adventure,
Filled with discovery, music and life.

Yes, Antelope Island is beautiful, so beautiful,
With its mirror view and it's nice breeze;
Spectacular and remarkable,
A history book of peaceful learning;
Make sure you take care of it,
So others can see.

Antelope Island is wonderful,
Because when you see the reflection of the water
It looks like the sky;
And if we fall off the mountain,
We will fall into God's hands.

This is a place where our deep breaths
Refill the tiniest holes in our souls;
More than fun,
Antelope Island is home to wildlife and mountains,
So come and let your soul soar
And be free!





DR. EPHYDRA - WE WELCOME YOUR QUESTIONS VIA EMAIL OR PHONE

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.

Brought to you by the Science Committee to help explain the science surrounding Great Salt Lake. We welcome your questions via email or phone. Contact Amy Marcarelli at amym@cc.usu.edu

Langmuir Circulation

In your visits to Great Salt Lake, have you ever noticed unusual streaks of floating material on the surface of the water? These streaks are called windrows. They are caused by wind action that “stirs” the water in long tubular circles or cells of rotating water; pushing together bubbles, or salt or even brine shrimp cysts on the surface of the water creating this streaked effect.

This phenomenon is called Langmuir Circulation and is named after Irving Langmuir, a Nobel Prize winner in chemistry, who noticed patterns of floating seaweed when crossing the Atlantic in 1938. Being a typical scientist, he conducted experiments to explain the formation of the patterns.

Simply put, when the wind is blowing between 3-13 meters/sec, underneath the surface of the water, tubular cells of rotating water are formed. These cells are parallel to the wind direction, and rotate in opposite directions to one another. This rotation influences the surface of the water by pushing materials like bubbles

or salts, or in Langmuir’s case, seaweed, into these characteristic streaks. Typical depth of these rotating cells is about 4-6 meters. When the wind direction changes, if the conditions are right, the rotating cells can shift to align with the new direction. Temperature and general water turbulence can influence or interfere with the circulation dynamic. The Langmuir circulation can form relatively quickly and last anywhere from several minutes to several hours.

You can do a Google search on Langmuir Circulation and see animated diagrams of this dynamic. It’s really neat.

Although a brine shrimper or an eared grebe might not care exactly how these streaks are formed, they would be very excited to see them as the cells concentrate the brine shrimp cysts into easily harvestable rows. For the rest of us, it’s just another curious phenomenon of our big, salty neighbor. 🦋



Photo by Dayle Record

DISCOVERING OUR LAKE

Great Salt Lake State Park

When you consider water based access to the Great Salt Lake close to the city named for the Lake, what really is there? It would probably be safe to assume that most of you reading this, a newsletter of an organization dedicated to the preservation of the Lake, could probably rattle off a few unknown secret spots. But what about the general public, the members of the Big Salty Stinky Club talked about in our educational DVD?

Aside from the perennial favorite of Antelope Island, the only other place is Great Salt Lake State Park. Needless to say, however, this is not just an option by default of existence.

There is a great deal to see canoeing around the south shore. Located just off I-80 (Saltair exit) this state park has a marina and rare, but easy, access to the Great Salt Lake itself. Few other public access sites offer such quick and easy access to the water. The marina means you don't have to lug a canoe or kayak across the mudflats to get to water nor do you have to worry about overly shallow depths. They dredge it to keep it deep enough for sailboats. Just drive up to the ramp, take the canoe off the car and you are off!

The marina's ease of access offers a great way to get a quick fix of open space and light as well as some fresh air. Easy, I know what you skeptics are thinking, but you must be a member of the aforementioned club... that smell is only along the shore!

For those in need of an afterwork paddle during the summer, this is a great option. Recently, we took out a canoe out and cruised around. Aside from a sailing regatta heading out as we were coming in and some swallows catching the evening meal, we had the area to ourselves.

Along the north tip of the Oquirrh Mountains, we could see the Pleistocene Bonneville shoreline as well as the Provo shoreline, as highlighted by the spring green grasses and ancient white tufa coating. You could also see the famous Black Rock, backlit by the beautiful Stansbury Mountains and Deseret Peak. 🐾

by Patrick Nelson and Alisa Felton,
FoGSL Directors



Off the Bow, by Alisa Felton



Canoeing at South Shore, by P. Nelson



Black Rock, by Alisa Felton

HOW TO REACH US

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**Deadlines: Sept. 16 (Fall), Dec. 16 (Winter), Mar. 16 (Spring), and
June 16 (Summer). Submit articles and images for consideration to
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MAKING A DIFFERENCE

Special Thanks

to the following for special support of our programs

Lakeside Learning

Bill Hanewinkel
Mary McKinley
Richard West
Janice Hinckley

General Fund

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Janice Brittain
Lynn Carroll
Dr. Robert N. Evert
Jock Glidden
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Alisa and Ian Schofield
Jennifer and Randy Speers
Bruce and Kathy Waddell

Doyle Stephens Scholarship

Clara Mason
Don Paul
Barry Quinn

Programs in Need

Please pledge to these programs when you renew your membership.

Doyle Stephens Scholarship Fund

This scholarship supports undergraduate or graduate research examining various aspects of the Great Salt Lake ecosystem. It encourages inquiry and contributes to the protection, preservation and understanding of our Great Salt Lake.

Lakeside Learning Field trips

Low-cost field trips are currently offered to area schools. Our trips to Antelope Island State Park provide fantastic staging for discussions of food webs, bird migration, desert vegetation, and animal adaptations. For many kids, this is their first time at the lake and the field trip is the highlight of the year. What an opportunity to plant the seed for future support for our lake!

Project SLICE

We are looking forward to a successful year in our education department. Plans are underway to complete our SLICE curriculum. The Salt Lake Initiative for Conservation Education meets science core requirements for Utah schools. It is a unique program because it is "place-based" and provides students with the opportunity to make a personal connection between the abstract idea of the "environment" and their own community. That connection is the key to the formation of a community consciousness and to the creation of personal responsibility and connectivity.

General Fund

Our general fund is crucial to the day-to-day functioning of our organization. Your donations help cover our costs for newsletter production and postage, website maintenance, administrative costs and supplies, and countless additional support services. It is the financial foundation of our organization and enables us to meet and exceed our goals.

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Visit www.fogsl.org for a job description.

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Thank you.



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Snowy Egret by Gary Crandall