



FRIENDS of *Great Salt Lake*

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801/583-5593

Volume 8 Number 1

Fall 2001



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.

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Fall 2001 Calendar of Events

September 25	Tuesday	General Meeting 7 PM - Sue Thiros and Kidd Waddell The Great Salt Lake Basins National Water Quality Assessment (NAWQA) Study
October 4	Thursday	Board Meeting 7 PM
October 13	Saturday	FRIENDS Lake Seminar Series: Dr. Donald R. Currey presents "Anthropogenic versus geomorphologic landmarks around the lake" (see page 7)
October 23	Tuesday	General Membership Meeting/Elections and Farewell to Our Barbara L. Tanner Fellow: Sander Lazar 7PM
November 1	Thursday	Board Meeting 7 PM
November 27	Tuesday	General Meeting 7 PM - Dr. Bryan Brown, Ornithologist, will be presenting (see page 13)
December 6	Thursday	Board Meeting 7 PM
December		No General Meeting

Watch the local papers for announcements of speakers and topics at our General Meetings, or call our hot-line at 801/583-5593, and press 1 for monthly activities. NOTE: General Meetings are held at the Sugarhouse Garden Center, located in the northeast corner of Sugarhouse Park, 2100 South 1300 East in Salt Lake City. Board Meetings are held at the Salt Lake County Complex on State Street and 2100 South in Salt Lake City. Room S3009

Special Thanks

to the JEPS Foundation for their generous donation to help us continue our work with *The Lake Affect* program.

Cover: *Bird Refuge, Brigham City* photograph by Bruce Proctor



President's Message: Decision Denies Plaintiffs' Requests But Questions Accuracy of EIS Facts and Analysis

"Some plaintiffs seek a broader vision from the decision makers and, indeed, a broader overlook of the whole geographic area may have been wise. Without vision, the people perish."

— District Court Judge Bruce S. Jenkins
in his written decision on the Legacy Highway,
August 11, 2001

Utahns for Better Transportation (UBeT), Mayor Rocky Anderson, and the Sierra Club presented their oral arguments against the proposed Legacy Highway in the federal district court on July 26th and 27th. Judge Bruce S. Jenkins was presiding.

As plaintiffs, we asked the Court to vacate the Records of Decision that the Army Corps of Engineers and Federal Highway Administration had issued to allow wetlands to be filled and the highway to be constructed. We also asked the Court to remand the Environmental Impact Statement because the NEPA (National Environmental Policy Act) process was flawed and incomplete.

We argued that the agencies had failed to look at all the alternatives. They failed to consider the D&RG railroad alignment which would have impacted fewer wetlands. And they failed to consider a robust transit alternative as the initial step in addressing the transportation needs of Davis County. We argued that the agencies didn't take a hard enough look at all environmental consequences of the proposed actions and chose not to respond adequately to critical public comments made during the process. The model that they used to determine wetland value and damage and the modeling used for future traffic needs and behaviors demonstrated the agencies' failure to use the best available scientific information in their decision to endorse Legacy.

"We live in a dynamic world. Change is endemic. Some of the information used in the decision-making process has aged significantly even though

reasonably accurate at the time of the information-gathering process which resulted in the final EIS. The proposal process has extended over the last five years. Some of the information currently is just plain wrong given the change of circumstances brought about by the passage of time—such as the figures on mass transit. Other information doesn't add up, such as the EIS estimates on carbon monoxide. As to the carbon monoxide estimates, the mathematics by definition needs to be consistent." — Judge Bruce S. Jenkins

Despite appearing sympathetic to our arguments, Judge Jenkins ruled against us on all counts. We will appeal his decision at the 10th Circuit Court of Appeals in Denver. We will also file a motion to stay any construction on the highway until a decision on our appeal is made.

More highlights of the decision are on the UBeT website: www.utahnsforbettertransportation.org.

Your participation and support, financially and intellectually has made our legal campaign possible so far. Please assure others who think that Legacy is a "done deal" that there is still another hurdle it must clear. Our job is to make that hurdle as high as possible. I think we will succeed.

Yours in saline,

Lynn de Freitas

Lake Fact:

Only 1% of the state's total land area is wetlands. What percent of Utah's wetlands can be found in and along the shores of Great Salt Lake?

FRIENDS of Great Salt Lake

FRIENDS of Great Salt Lake was founded in 1994 with a guiding mission to preserve and protect the Great Salt Lake Ecosystem and to increase public awareness and appreciation of the lake through education, research, and advocacy.

Led by a highly active Board of Directors and an Advisory Board consisting of professionals in the scientific, political, literary, and broadcast communities, FRIENDS holds monthly meetings that feature guest speakers and presentations focusing on subjects and issues related to the Great Salt Lake. The organization received special recognition for its efforts in 1998, when it was awarded the Conservation Achievement Award by the Utah Chapter of the Wildlife Society.

FRIENDS has organized and sponsored an array of materials, events, and activities in pursuit of its mission. The quarterly newsletter includes information on important meetings and activities, articles pertaining to lake ecology, issues updates, maps, data tables, photographs, and future events notices.

We also sponsor a biennial Great Salt Lake Issues Forum, which provides a gathering for local citizens who

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

In 1997, FRIENDS hired its first 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. With that goal, a live-narrative slideshow program, entitled *The Lake Affect: Living together along the shores of something Great*, was born. Audiences have included Envision Utah, the Utah Department of Natural Resources, and the Salt Lake Olympic Committee's Environmental Advisory Committee, along with numerous school and civic groups.

In an effort to reach even more citizens with its message about Great Salt Lake, FRIENDS has produced a video version of *The Lake Affect*. With this video and the Project SLICE fourth grade Great Salt Lake curriculum, we hope to achieve a positive, long-lasting impact on the future of Great Salt Lake, and those who dwell upon its shores. 🐾

Land and Water Fund of the Rockies

The Land and Water Fund of the Rockies (LAW Fund) is a non-profit law and policy center that uses law, economics, and policy analysis to protect land and water resources, protect essential habitats for plants and animals, and assure that energy demands are met in environmentally sound and sustainable ways.

The Director of the Utah Office, Joro Walker, has been one of the attorneys working on the Legacy highway lawsuit. The LAW Fund may also be working with

FRIENDS in the future. As we all know, there are always new threats to the Great Salt Lake Ecosystem, such as water development proposals on the Bear River.

For further information about the work of the LAW Fund, please visit www.lawfund.org or contact Joro Walker, 1473 South 1100 East, Suite F, Salt Lake City, Utah 84105, 801/487-9911, utah@lawfund.org.

One Year in Perspective

By Sander Lazar



PHOTO BY L. DE FREITAS

The Barbara Tanner Fellowship, which has enabled me to work full-time with FRIENDS of Great Salt Lake, lasts for one year, and that one year ends on October 4, 2001. The new fellow, James Seaman, has already started his year with the U of U pro-bono program.

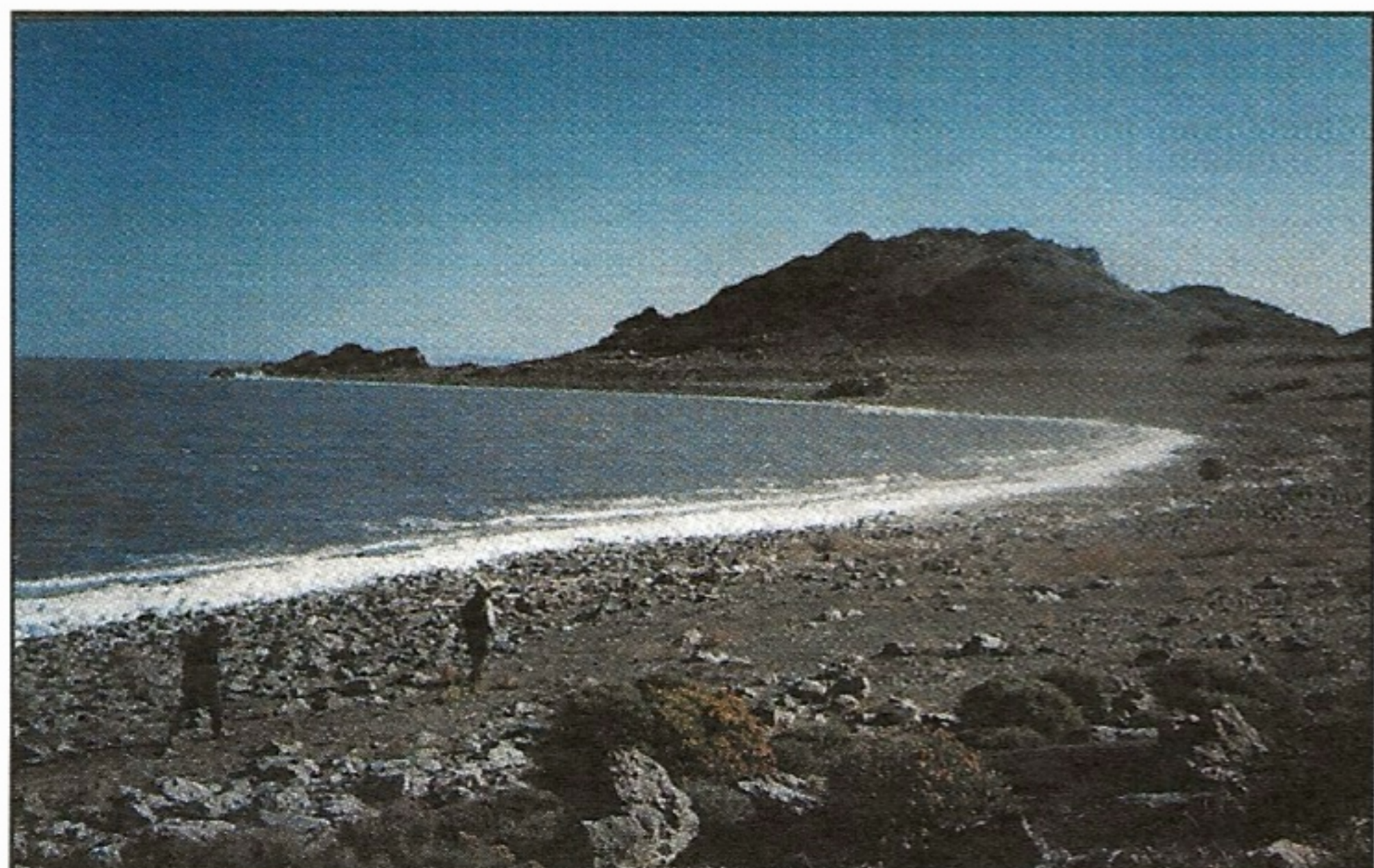
I'll be leaving with great memories and the knowledge that I precipitated the fruition of some long-term FRIENDS goals, particularly development of the SLICE program. My duties were highly varied, and changed from month to month. The challenges placed before me were very often completely novel, and this kept me on my toes.

A large portion of my duties was taking on certain SLICE responsibilities that enabled Bruce Thompson, our Education Director, to further focus on major FRIENDS goals. Presenting *The Lake Affect* slide show took me all over the region, from Logan to Draper, Tooele to Park City. I presented to nearly 2,000 Utahns, mostly school children. I conducted twenty Lakeside Learning field trips, and now the woman who operates the entrance gate at Antelope Island and I are on a first-name basis (oh yeah).

I started the year with expanding the Speakers Network. This is a network of people whose jobs bring them in close contact with the Great Salt Lake. The list is currently available to SLICE teachers, for them to invite the speakers to their fourth grade classes. I brought the list of speakers from fifteen to fifty-four.

In addition, I did a great deal of book research on Great Salt Lake birds to put together an informational handout for the general public. I've also compiled information about Great Salt Lake odors so that FRIENDS has a ready response for those inquiring about the odor's source. I also had the privilege to arrange the recording of Whittier Elementary fourth graders singing the 'Great Salt Lake Bird Song' for the video, and helped with other various video tasks. This, and all the hundreds of smaller tasks that randomly rise to the surface filled my time.

It's been an honor to work with everyone at FRIENDS. The depth of caring and expertise that I encountered in my work was inspirational. Thank you all for the companionship and for all you do for the lake. Keep up the great work! 🐦



A visit to Gunnison Island to count pelicans, May 2001.



Pelicans on Gunnison Island

PHOTOS BY L. DE FREITAS

Deepening of the Great Salt Lake Breach

By Bill Leeflang

Purpose of project was to increase flows between the north and south arms of the Great Salt Lake, specifically by increasing the bi-direction flow beneath the existing 300 foot long Union Pacific (UP) railroad bridge located near Lakeside Utah, in the earthen railroad causeway (heavy north brines flow to the south beneath the light south brines flowing to the north).

•
Benefit of the project was to improve the ecological balance of the lake.

•
The elevation of the lake bottom beneath the breach bridge (prior to construction) varied from elevation 4195 to above the lake level of 4201 (National Geodetic Vertical Datum 1929).

•
The design bottom elevation of the breach is elevation 4193.

•
Approach channel 220 feet wide were excavated on both the north and south of the bridge to tie the causeway breach into lake bottom areas greater than elevation 4193.

•
UP had a lot of concerns about their bridge, specifically stability and structural integrity due to additional excavation and potential damage to the bridge during the construction process. As such, the outside bays were not excavated, and 2 foot buffers zones around each pier group was established where no excavation was allowed.

•
Contractor: Cross Associated Diving and Marine (Orem, Utah).

•
Construction costs: \$825,000.

•
Construction time: September 13 to December 23, 2000.

•
Excavation equipment included barges, dragline, Gradall, track-mounted backhoes, cranes, 10 wheel dump trucks.

•
Construction sequence: north approach channel followed by south approach channel, and completed with excavation beneath bridge.

•
Preconstruction flow measurements at the breach in September, 2000 by the USGS

•
North to South flow 176 cfs

•
South to North flow 850 cfs

•
Post construction flow measurements at the breach in January, 2000 by the USGS

•
North to South flow - 420 cfs (240% increase)

•
South to North flow - 1400 cfs (60% increase)

Bill Leeflang is a geotechnical engineer with the Division of Water Resources. He supervised the recent work on the Union Pacific causeway which was intended to deepen the breach in the causeway. He made the following points in his presentation at one of our meetings last spring.

Introducing the “Great Salt Lake Field Seminar Series”

By Heidi Hoven and Amy Coombs

The FRIENDS Research Committee is pleased to announce the kick off of the Great Salt Lake Field Seminar Series. Each seminar will feature the work of a scientist that is currently conducting research at the lake. The featured scientists will lead a guided field trip to their field site(s) to demonstrate their methods and discuss their findings. Members will have the opportunity to learn about lake related research and discuss its applications towards environmental issues. The scientific community and FRIENDS members will be able to network, investigate research methodology across disciplines, and explore the known and unknowns of lake-based systems.

Some of the scientific disciplines we will investigate include:

geoclimatology
anthropology
ornithology
botany
wetland ecology
geology
limnology
geography
social science
mathematical modeling

We will launch the series on Saturday, October 13th with a field trip lead by Dr. Donald R. Currey from the University of Utah, Department of Geography. Dr. Currey specializes in the geomorphology and Quaternary stratigraphy of mountain and lacustrine desert environments. By tracing the development of ancient lakes, he is able to deduce patterns in climate change. We will visit sites around the lake to compare and contrast landmarks formed by human activity with those shaped by natural forces and discuss the implications of those landmarks.

To register for a field seminar, please call 583-5593 and leave your name and phone number. We will call to confirm your reservation and give further information about a meeting location. The program will run from approximately 8:30 a.m. to 12:00 noon and registration is based on a first come first served basis. To maintain an intimate learning environment, space is limited to ten people. A van will be provided and a fee of \$10 will be due on the morning of the outing (\$15 non-members).

In the future, we hope to develop a dialogue in the form of an annual workshop or conference that will serve as an interdisciplinary approach to environmental issues. The field seminar series will serve as a springboard from which the community can incorporate scientific information into policy. We look forward to your participation in this new and exciting program. 🐾

For more information, contact Heidi at 322-3407 or send email to hhoven@swca.com

Calendar:

October 13 Great Salt Lake Field Seminar Series: Dr. Donald R. Currey presents “Anthropogenic versus geomorphologic landmarks around the lake”

February TBA (see info. in Winter 2002 newsletter)

April 7 Great Salt Lake Field Seminar Series: Dr. Tyrone Harrison presents “Teaching the scientific method: students demonstrate their lake related research” (see info. in Spring 2002 newsletter)

June 29 Great Salt Lake Field Seminar Series: Dr. David Naftz presents “Long-term trends in climatology as determined by sediment cores” (see info. in Summer 2002 newsletter)

Reconstructing Historical Changes in the Environmental Health of A Watershed By Using Sediment Cores from Great Salt Lake, Salt Lake Valley, Utah

By David L. Naftz, Doyle W. Stephens, Edward Callender, and Peter VanMetre

Long-Term Trends in Water Quality Can Be Determined by Using Sediment Cores

The Great Salt Lake Basins study area of the National Water-Quality Assessment (NAWQA) program, which began in 1997, is increasing the scientific understanding of factors that affect surface-water quality within Salt Lake Valley. One way to improve the understanding of these factors is to look at historical trends in existing water-quality data. Unfortunately, short record lengths, inconsistent analytical methods, numerous measurements at less-than-detection levels, and questionable accuracy limit the usefulness of historical monitoring data for most trace inorganic and organic contaminants detected in streams, rivers, and lakes in the study area.

Collection and analysis of sediment cores from lakes and reservoirs may provide a record of long-term water-quality trends. Measurable concentrations of most trace elements and selected organic compounds are often associated with fine sediments in the water column. The sediments are continuously deposited in the bottom of lakes and reservoirs. Like reading the pages of a history book, analyzing the chemical composition of each sediment layer is a way to reconstruct historical changes in the quality of water entering Great Salt Lake. One objective of this aspect of the NAWQA project was to use sediment cores to reconstruct historical changes in the quality of surface water entering Great Salt Lake at Farmington Bay.

The U.S. Geological Survey (USGS) collected sediment cores from Farmington Bay during April 1998 by using specialized coring equipment in a boat (fig. 1). The core was then subsampled in discrete horizontal slices and analyzed for selected inorganic chemical constituents including aluminum (Al), calcium (Ca), iron (Fe), potassium (K), magnesium (Mg), sodium (Na), phosphorus (P), silicon (Si), titanium (Ti), barium (Ba), cadmium (Cd), cobalt (Co), chromium (Cr), copper (Cu), lithium (Li), manganese (Mn), arsenic (As), nickel (Ni), lead (Pb), scandium (Sc), strontium (Sr), vanadium (V), zinc (Zn), total carbon (C), organic carbon (OC), and nitrogen (N).

Farmington Bay receives drainage from within the Jordan River Basin. The Jordan River originates as outflow from Utah Lake and flows north about 66 kilometers (km) before it empties into Farmington Bay. The Jordan River has a drainage area of 9,040 square kilometers (km²) prior to entering Farmington Bay. The Jordan River receives runoff from most of Salt Lake Valley, which is highly developed. The population of Salt Lake County, within Salt Lake Valley, has increased from 213,700 people in 1940 to more than 840,000 people in 1999 (Utah Population Estimates Committee, 1999). Population growth increases urban development and the number of potential sources of water contamination. Historical sources of contamination to the Jordan River include irrigation return flows, wastewater-treatment plants, storm runoff from urban areas, and discharge from industrial and mining facilities.

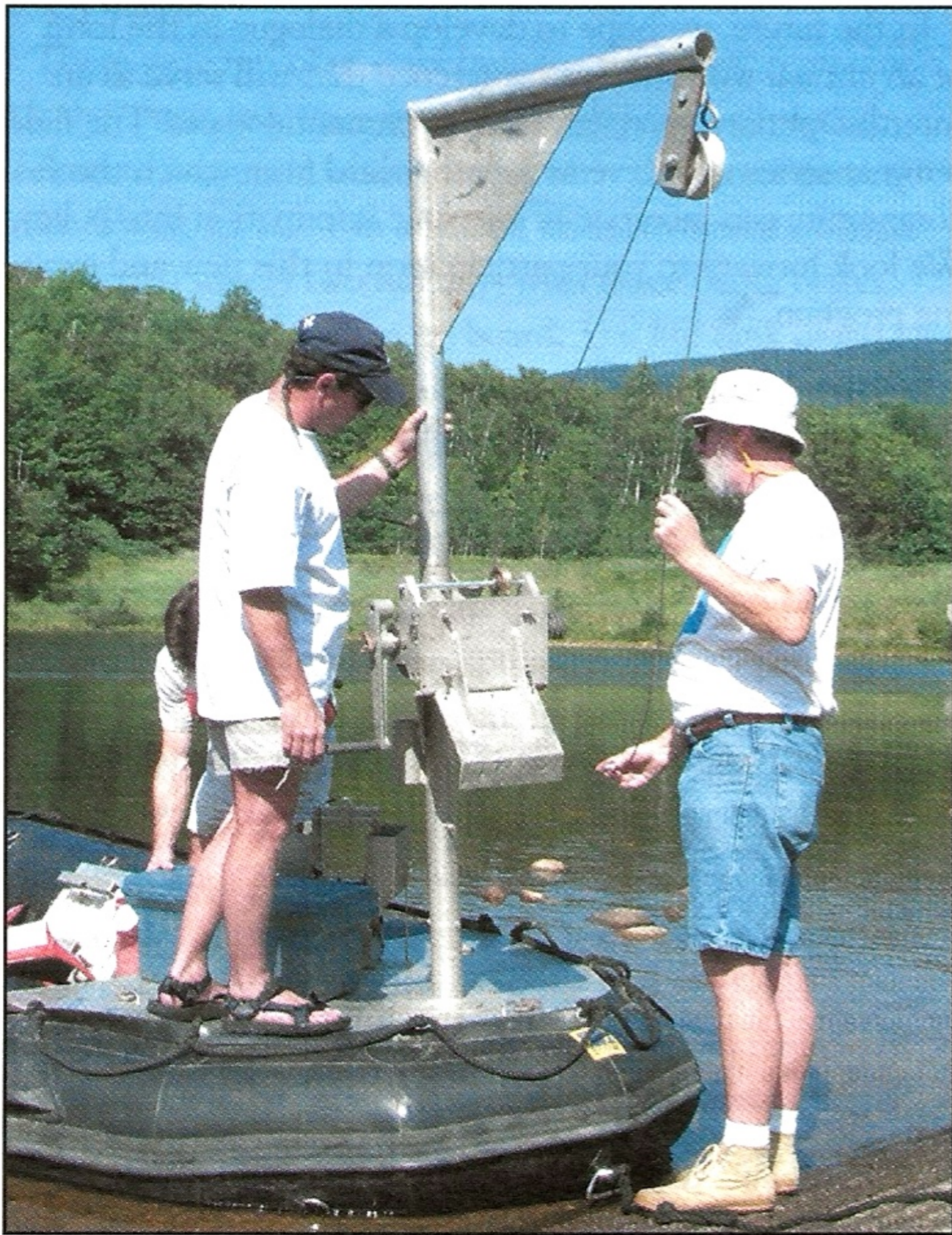


PHOTO COURTESY OF CHRIS BRAUN, U.S. GEOLOGICAL SURVEY, AUSTIN TEXAS.

Figure 1. Equipment used to collect lake and reservoir sediment cores.

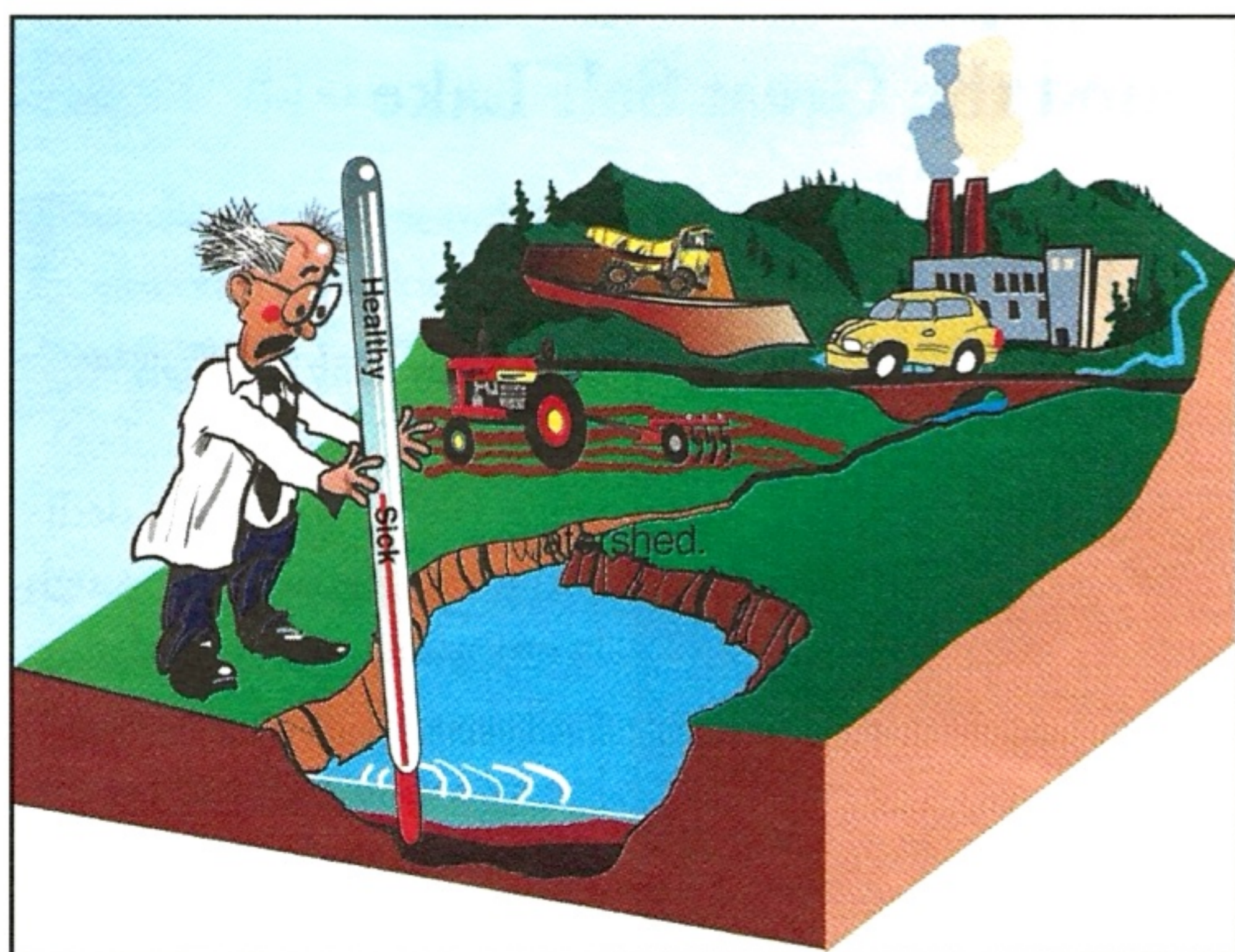


Figure 2. Pattern-recognition modeling can be used like a thermometer to measure the environmental health of a watershed.

Statistical Tools Are Useful in Determining Historical Changes in the Environmental Health of a Watershed

The environmental health of a watershed depends on numerous chemical constituents, not on the concentration of any one single element. Trace amounts of selected chemical constituents, such as Cr and V, can be derived from both natural and artificial sources (for example, rock weathering and dumping of hazardous waste). Unfortunately, there is no single probe that can directly measure the environmental health of a watershed. Instead, the concentrations of multiple chemical constituents are measured, and this large multivariate data set is used to reconstruct historical changes in the environmental health of a watershed.

A statistical procedure called pattern-recognition modeling can be used to monitor the environmental health of a watershed (fig. 2). Pattern-recognition analytical techniques enhance the interpretation of multivariate databases such as the one generated from the sediment cores collected and analyzed in the NAWQA program. Ideally, pattern-recognition modeling uses statistical and graphical techniques to separate the natural and human-caused processes that control observed variations in the chemistry of the lake or reservoir sediment samples. Once the different chemical fingerprints have been identified for the natural and human-caused sources, pattern-recognition analytical techniques can be used to reconstruct and monitor historical changes in the environmental health of the selected watershed.

Shallow Lake Sediment Samples Exhibit Elevated Levels of Human-Caused Contamination

The vertical profile of a suite of chemical constituents determined by pattern-recognition modeling and associated with human-caused contamination was used to compare historical changes in the relative environmental health of water entering Farmington Bay (fig. 3). To correlate historic changes in land use to changes in the sediment-core chemistry, an attempt was made to age-date each sediment sample by measuring the concentration of cesium-137 (Cs-137) and lead-210 (Pb-210), both radioactive isotopes. Increased concentrations of Cs-137 in the atmosphere (eventually deposited on the land surface) were caused by above-ground nuclear testing. Measurable concentrations of Cs-137 first appeared in the atmosphere during 1952 and peaked during 1963-64. Lead-210 is a naturally occurring radioactive isotope that is useful for dating sediments from 100 to 200 years old.

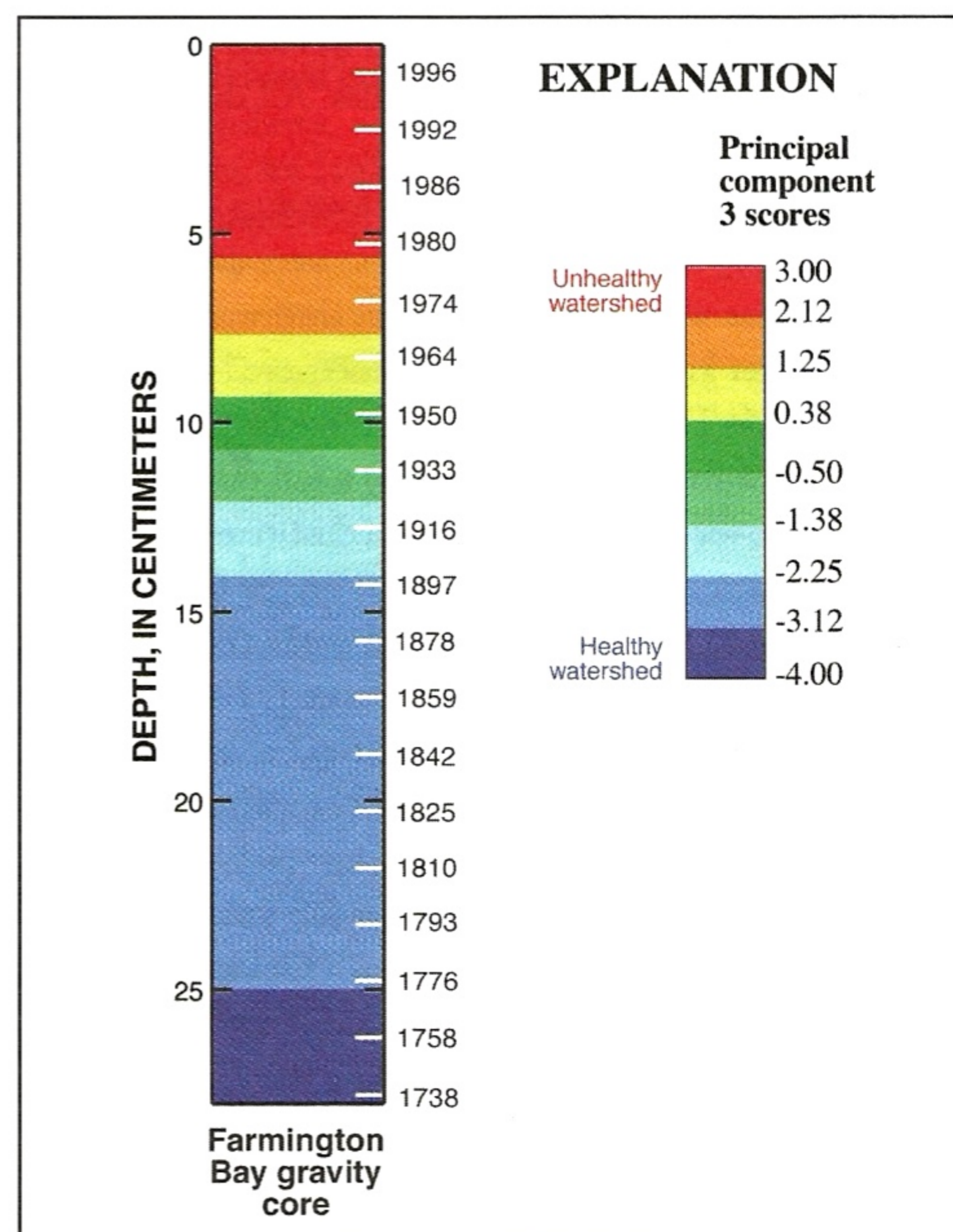


Figure 3. Vertical distribution of a suite of chemical constituents associated with human-caused contamination in gravity-core data collected from Farmington Bay, Utah. Top of core corresponds to 1998.

continues p. 12

Floating in Purple

And Other Adventures Around the Great Salt Lake

By Elise Lazar

It all started with a nighttime presentation by Bruce Thompson and sidekick Sander Lazar at Red Butte Garden. They spoke about the Great Salt Lake (GSL) and left me so psyched that I knew I wanted to be one of those privileged and rare individuals who actually has traveled the circumference of that vast body of water, size of the state of Delaware, and source of the beloved (not) brine shrimp and its close partner, the even more beloved (not, not) brine flies. All this...and so much more.

There were ten of us – six humans, four dogs, representing the entire spectrum from those who were adventure seekers to those who didn't know what they were getting into. We either knew in advance or discovered that what you needed was 1) two full days with three being better, 2) good tires with a spare on board, 3) a full tank of gas, 4) an appetite for new experience and dust (cuz you eat it), 5) an appreciation for solitude (we saw maybe 6 people in 2 1/2 days), and 6) Kevin Landis as your guide (not optional).

We started out on Saturday, September 1, 2001. Taking I-15 to Corinne we stopped at "Shortstop," a 7/11 wannabe. Despite the outdoor planters spilling over with petunias, there was no doubt that we were in prime pick-up truck country. Back on the road, we took the left fork where the sign lists, "Thiokol," "Rocket Museum," "Golden Spike Museum," and "Walmart." We arrived at Promontory Point State Park... just as they were beginning the reenactment of the ceremony of the driving of the Golden Spike. There were two steam engines on tracks in a face off, replicas of the originals – the Jupiter and the 119. Ten actors, complete with top hats and full authentic garb, were earnest in their portrayal of this historic moment, when the East met the West in train history. Two of the actors had actually been doing this (every Saturday and Holidays, 11:00 and



1:00 from May through Columbus Day in October) since 1969. Now that's dedication. It was dear, thoroughly enjoyable and remarkably well done (I even got goose bumps when that final spike was driven and the "bells tolled throughout Philadelphia"). We left – our caravan

of 2 cars, 1 pick-up truck and 1 SUV – heading west on an old Union Pacific railroad bed. To our left and running somewhat parallel to our road, was what looked like a long "mole tunnel," a dirt-mounded trail that had actually been the railroad bed of the lay track. Neither side had been told where the meeting juncture was to be and so both kept on going. When they met, they actually threw rocks at one another. The story goes that after they passed each other they continued to dig for another 200 miles. It was hot – in the 90's – and the land was parched. The roads – a little bit of gravel over a lot of dirt – billowed with such extensive dust clouds that it looked like smoke from a fire. We were blinded by it as we drove, and had to keep a safe distance from each other for visibility. As we drove, we could see the Newfoundland Mountain Range, west across the GSL, alleged to be the last mountain range to be mapped in the U.S. Stopping on the right we tasted pickleweed, crispy in texture, salty in taste – one of the few plants, along with salt and grass, that not only survives but seemed to be abundant. Most everything else was dull yellow, drought weary, even the cheat grass. A bit further on we arrived at Monument Point Lone Rock. One singular rock, jutting up majestically from the sparking salt flats. It was eerie. Salt sculptures – other worldly – gave a moonscape effect. We walked on the salt brine. An experience that was somewhere between disconcerting and fun. It had a texture that was uneven and varied from hard and crusty to softer and crunchy. Sometimes you'd sink in ever so slightly. What was really weird was the water – it was the

color of cranberry juice caused by halophytic bacteria. And the next day we got to float in it in an area of the GSL that was 27% saline. Purple water, healthy bacteria, and ease of floating...life does not get much better.

Seriously.

During the first day we stopped at a ghost town, Kelton, a once flourishing metropolis of 200 residents on the train route. Headstones at a cemetery (Baby Henry died after one day). The town began its slow death in 1905 when the train route was redirected.

We then left the luxury of gravel road and gingerly bumped our way up, steeper and steeper 'til the grade dictated that we walk. The trek was worth it. There, at the top, was a visual breath-taker – a serene expanse of salt flats and lake that seemed to go on forever. The area is called "Alta's Peak" so named because someone had lovingly welded this name onto a metal plaque and had secured it, facing the water, only to be discovered by happenstance or pointed out by a great guide like Kevin. Ineffably beautiful. It was getting close to dusk and as we headed to the shore area to tent down, we saw a spectacular display of colors in the west and an iridescent band of silver and pink in the east – the lake under the influence of the sunset. Kevin had one last surprise for us. He had selected this particular weekend to lead this tour because of the full moon. It was dazzling...so bright it seemed to reverberate.

So large that even my thumb, an inch away from my eye, could not cover it. It came with a fan of light spreading out on the lake...jumping sparkles responding to the movement of the water. Coyotes howling during the night. All this in one day. The remainder of the time was just as spectacular. Hogup Cave and petroglyphs, the experience of learning about the brine shrimp and walking on the casings and through the calf-high cloud of the brine flies (they do NOT bite), the pump station of the West Desert (an ingenious system to control flooding through miles of channels leading to an evaporation basin), birds overhead in arrow-head formation, an encounter with a rattlesnake. And there were interesting juxtapositions: a gentle prong horn elk within the barbed wire confines of the Hill Airforce Testing Range, a training area for dropping bombs...large boulders, embedded with ribbons of bright gem-like stones, seen on the way to a cave with a large (possibly owl's) nest, all within close range to (diabolical) Magcorp. And then it was over. Driving on fumes, we prayed our way to the service station in Tooele and regretfully returned back to reality. After a hip-hip hooray to Kevin, I silently thanked myself for trusting my instincts in wanting this experience. The Great Salt Lake is a "trip," distinctly set apart from the rest of Utah. Both in size and the beauty of its terrain, it is incredibly great. 🇺🇸

Elise Lazar is a struggling writer and serious bon vivant...



PHOTO BY L. DE FREITAS

Bruce, Abby, Lindsey and Todd filming for *The Lake Affect* video at Layton Wetlands Preserve.

The 28-cm sediment core collected from Farmington Bay contains sediment deposited during the past 260 years (fig. 3). On the basis of the vertical profile of a suite of chemical constituents associated with human-caused contamination, deposition of contaminated sediments began to occur sometime in the early to mid-1900s (fig. 3) and has become progressively greater in recently deposited sediments. The most highly contaminated sediments were deposited from 1979-98 (fig. 3). Beginning in the early 1900s and continuing back to about 1730 (the bottom of the core), uncontaminated sediments were deposited in Farmington Bay. These trends are most likely correlated with the history of development in Salt Lake Valley.

Farmington Bay Sediment Core Indicates Increasing Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)

Polycyclic aromatic hydrocarbons (PAHs) are a class of organic compounds that are combustion products from sources such as automobiles, airplanes, and fires. Some PAHs, such as acridene, can be toxic at elevated concentrations (Nagpal, 2000). Total PAHs in sediment cores from Farmington Bay consistently increase from near 0 micrograms per kilogram (mg/kg) in sediments deposited before 1940 to more than 2,000 mg/kg in selected sediment layers deposited after the early to mid- 1980s (fig. 4)

A positive correlation exists between population growth in Salt Lake County and the PAH concentrations measured in the lake sediments from Farmington Bay (fig. 4). This

correlation indicates that the most likely sources of PAHs in lake sediments deposited since 1940 are probably derived from human-induced combustion products.

USGS Plans Additional Data Collection and Research Activities on Great Salt Lake

Collection and chemical analysis of water and bottom samples from other areas of Great Salt Lake are planned for the upcoming fiscal year (October 2001 through September 2002). New analytical methods for the determination of trace metals in highly saline waters have been developed by the National Water Quality Laboratory of the USGS and will be used to analyze these samples. Stay tuned for future USGS reports on the water- and bottom-sediment quality of the Great Salt Lake. 🐼

References

Nagpal, N.K., 2000, Ambient water quality criteria for polycyclic aromatic hydrocarbons (PAHs), Overview report: accessed July 27, 2000, at URL

<http://www.bcparks.gov.bc.ca/wat/wq/Bcguidelines/pahs.html>

Utah Population Estimates Committee, 1999, Yearly population of Salt Lake County, 1940-1999: accessed August 8, 2000, at <http://www.governor.state.ut.us/dea/qget/1.htm>

Information on the NAWQA Program can be obtained from:

Great Salt Lake Basins NAWQA Chief
U.S. Geological Survey
2329 W. Orton Circle
Salt Lake City, UT 84119-2047
<http://ut.water.usgs.gov>

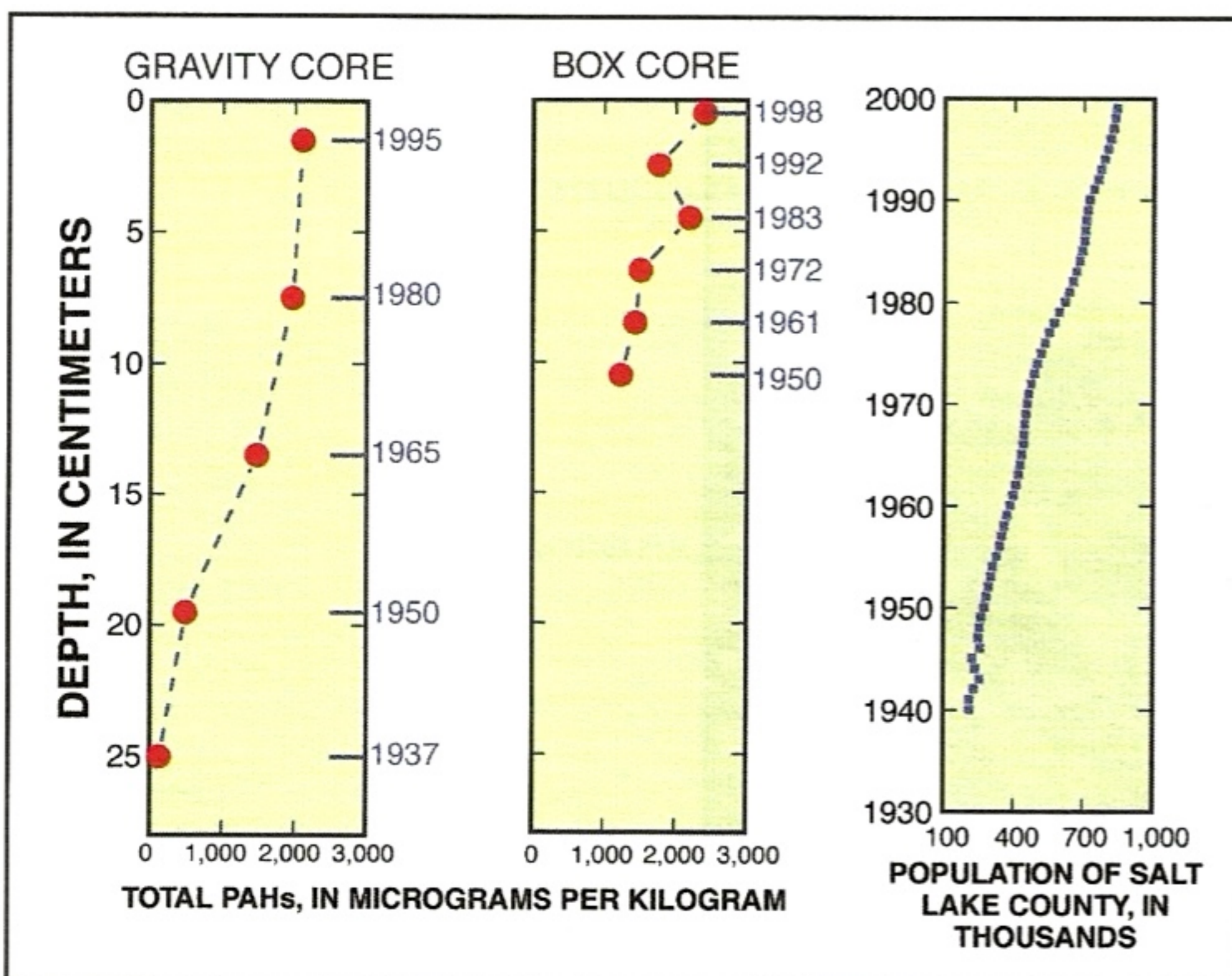


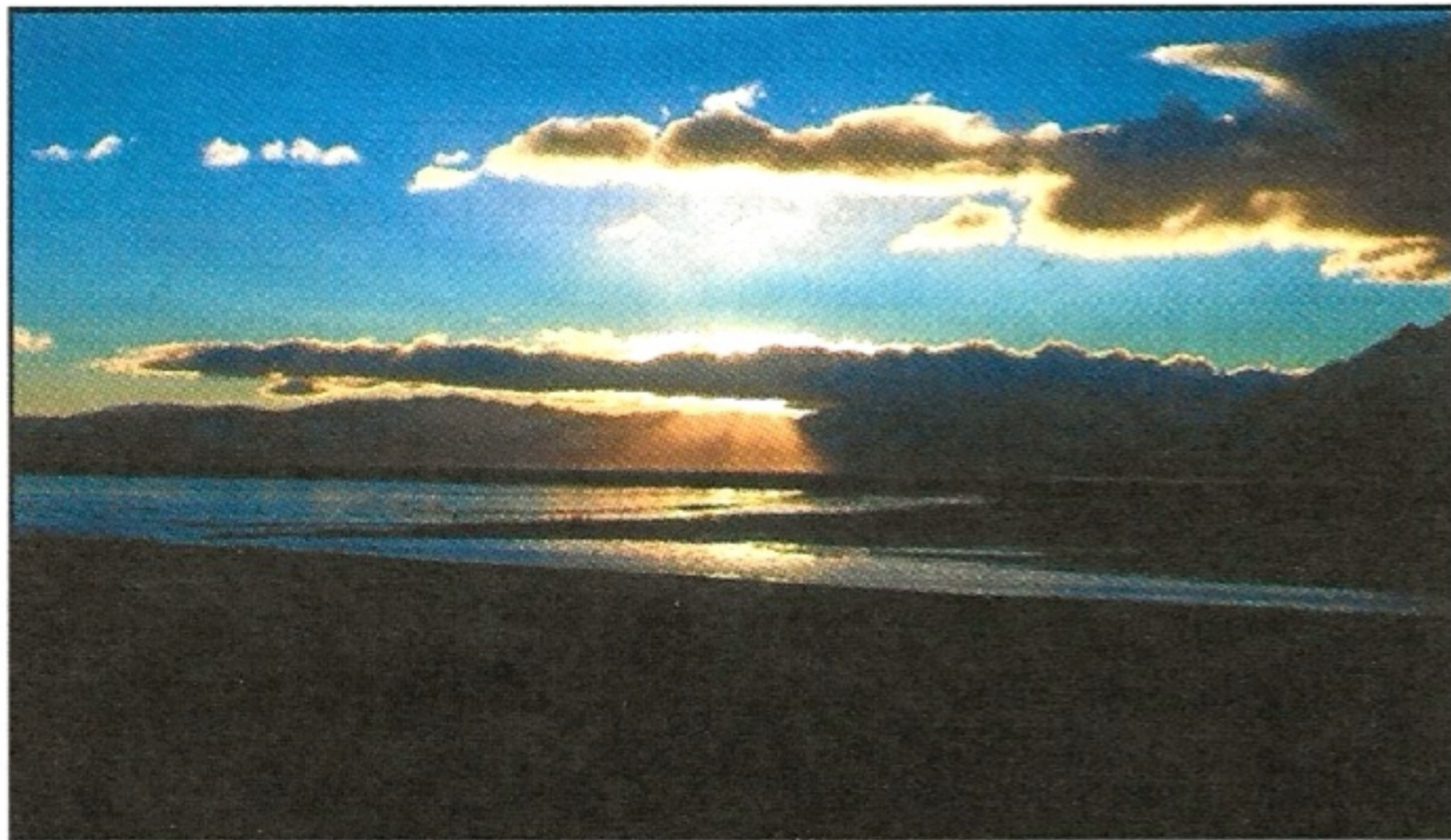
Figure 4. Vertical distribution of total polycyclic aromatic hydrocarbons (PAHs) concentration in gravity- and box-core data.

Wildlife Monitoring Issues Associated with Construction of the Legacy Parkway

By Dr. Bryan Brown

A number of wildlife mitigation, monitoring, and regulatory compliance activities were set into motion when the U.S. Army Corps of Engineers approved the permit to construct the Legacy Parkway. These activities range from surveys of the status and abundance of nesting and wintering raptors to searches for all bird nests in areas to be cleared for or severely disturbed by construction. A suite of environmental laws, regulatory agency concerns, and gaps in existing scientific knowledge have provided the impetus for this work. Much of this information will permit a long-term evaluation of the influence of Parkway and adjacent development on sensitive wildlife resources along the southeast shore of Great Salt Lake.

Dr. Bryan Brown is a senior scientist with SWCA, Inc. Environmental Consultants. He is the wildlife biologist for environmental compliance on the Legacy Parkway Design-Build project. 🐦



Sunset over Great Salt Lake



Tracks into Great Salt Lake

PHOTOS BY HEIDI HOVEN

Happy Trails, Anna

For almost two years, Anna Weller has worked as our layout editor for this newsletter. How lucky we have been to have stumbled upon such an extraordinary talent!

Many of you probably recognize Anna from *The Catalyst* magazine where she has shared her keen perspectives about people, places and things in the world around us.

Talented not only in her ability to visually improve upon the merits of this newsletter, but also with her camera and her pen. She has contributed many photographic glimpses of Great Salt Lake to the pages of this publication, and as the writer of the two part series on the history of this organization, she helped us all reminisce about how it all came about.

We'll miss her humor, wit, patience, and loving care.

We wish her well with her next endeavors. And hope that if, and when, she returns to this community, she might consider making a cameo appearance as "guest layout editor" for the newsletter.

Thanks so much, Anna.



PHOTO BY ANNA WELLER

Analyzin' an archeological curiosity, Bare Bum Beach, Great Salt Lake.

HOW TO REACH US

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SUBMITTING MATERIAL FOR PUBLICATION

1. **What to submit:** original articles (historical, geological, geographical, biographical, political, fiction, poetry, etc.) or art work (sketches, photographs, etc.) which pertain to Great Salt Lake.
2. **Submitting material:** Mail or deliver to 1117 E. 600 S. Salt Lake City, UT 84102. Or e-mail to: ldefreitas@earthlink.net
3. **Please call 801/583-5593** to confirm receipt of e-mail or with any other questions, suggestions, comments, or ideas.
4. **Deadlines:** The deadlines for submittals are Sept. 16 (Fall), Dec. 16 (Winter), Mar. 16 (Spring), and June 16 (Summer).

FRIENDS of Great Salt Lake wants to thank the following businesses for their generous support: **Xmission.com** for donation of services to support us on the World Wide Web and **Tooele Transcript Bulletin** for supporting our printing needs.

Thanks to photoalley.com for the
Nikon coolpix 950 digital camera

Doyle W. Stephens Research Assistance Scholarship

FRIENDS of Great Salt Lake has established a fund in memory of Doyle W. Stephens, one of the finest scientists dedicated to understanding Great Salt Lake and its systems. Income from the fund, administered by the FOGSL research committee, will be awarded to supplement undergraduate and graduate level research projects that are investigating Great Salt Lake systems. We need your help building the fund. Please send your check to payable to FRIENDS of Great Salt Lake indicating that it is a contribution for the Doyle W. Stephens research assistance scholarship. When developed, guidelines for the scholarship will be posted on our website and appear in subsequent newsletters. Thank you!

Membership Notice: Time to Renew

Have you noticed, and wondered, why you haven't received a FRIENDS membership renewal letter? In our effort to save paper, we are asking you, our dear members, to keep track of when it's time to renew your membership by checking the label on your newsletter. On your label, below your name, there will be listed the membership due date. Also, labels will be printed to mention that your due date has arrived. Thank you for your attention to this and your great support!

If you have a question about your membership, please call Lynn at 801-583-5593. **Big Thanks!**

Lake Fact Answer:

75%

Thank You to Our New and Renewed Members for Your Support

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Angela Dean
Henry Hyo-chang Lee
Margery Mauck
Alan Millard
Craig Miller
Mike Molenaar
Katrina Moser
Molly Rhodenbaugh
Dr. Joan I. Roberts
Betty Rozum

RENEWED

John Aldrich
Lester Aoki
Margaret Batson
Roger Borgenicht
Yae Bryner
Yael Calhoun
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Yes! I want to join **FRIENDS of Great Salt Lake**

Enclosed is a check or money order for my annual membership fee in the amount of: (check one)

- \$10 Student "Brine Fly"
- \$10 Senior "American White Pelican"
(62 years of age or older)
- \$20 Regular "Pickleweed"
- \$30 Family "Wilson's Phalarope"

Contributing Memberships:

- \$31-50 "Brine Shrimp"
- \$51-100 "Eared Grebe"
- \$101-250 "Antelope"
- \$251-499 "American Bald Eagle"
- \$500 Sustaining "Ecosystem Protector"

Name: _____

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Yes! I would like to volunteer for FRIENDS : _____

Remember, all membership donations are tax deductible.

Please consider making a donation to the following education efforts:

The Lake Affect: Living Together Along the Shores of Something Great
2001-2002 season of the acclaimed slide-based program about Great Salt Lake.

Project SLICE - our 4th grade curriculum on Great Salt Lake, includes Speakers Network, Teacher Training Institute, Lakeside Learning Field Trip, and 10 units of study.

Be a Field Trip Sponsor

We are still looking for class sponsors for the Lakeside Learning Field Trips. Each trip cost is \$400.

For more information on these programs, contact Bruce Thompson at 801/467-3240

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