



the Watershed Watch

Newsletter of the Jordan River Watershed Council

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Mission: The Jordan River Watershed Council is dedicated to the ecological and economic sustainability of the Salt Lake Countywide Watershed through the promotion of stakeholder involvement.

In This Issue

Impacts of Construction and Development on Water Quality
page 2

What's up with the Jordan River?
Division of Water Quality Update
page 3

Tips & Techniques for Water Conservation in the Bathroom
page 3

2009 Salt Lake Countywide Watershed Symposium Recap!
page 4

Coming Soon

Stream Function Index Report
Includes 16 City-Specific Reports

Jordan River Photo Exhibition
October 16, 2009– January 9, 2010
Details on page 2

Questions? Comments?

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Digital copies available online
We welcome submissions!



Bugs in the Bubbles

Using Aquatic Macroinvertebrates to Evaluate Water Quality

Ben Holcomb, Biological Assessment Program Coordinator, Utah Division of Water Quality

I often receive a blank look or slow nod when describing my job to people I meet. For some reason, collecting and analyzing aquatic macroinvertebrates (a.k.a. bugs) does not immediately come to mind as a method for evaluating water quality. Actually, it's just one of the many tools scientists at the Division of Water Quality use to assess water quality throughout the State, and it's a particularly effective one. Every moment respiration occurs in a bug is akin to taking a water sample, and, unlike fish and other more mobile animals, aquatic bugs cannot move away from polluted waters. Most of these organisms have an annual life cycle, but some larger species can spend up to five years as larvae living under water. By taking one sample of a macroinvertebrate community, biologists are potentially compiling at least a year's worth of water quality data. Among the different species there is a wide range of tolerance to pollutants; some are very sensitive and cannot survive changes in their environment, while generalists can adapt more easily. Through aquatic bug monitoring, changes in the bug community can determine if pollutants are widespread in the waterbody, as well as what those pollutants might be.

The relation of bugs to water is best described by basic ecology: understanding the relation of organisms in their environment. Like all species, aquatic macroinvertebrates are specialists within specific environments. For example, some mayflies specialize by living under flat rocks in swift water. Their sleek, low-profiled body design and sticky digits allow them to maneuver confidently in the

fastest riffles. Additionally, these mayflies require cool, well-oxygenated water. Through time, individuals who successfully exploit and out-compete others will pass traits to their offspring, creating unique species intricately tied to the environment and the overall community. Now, let's assume a small but abrupt change occurs to the immediate environment of the mayfly, such as a drop in dissolved oxygen. This event would eliminate the mayfly community for a generation and leave generalist species that tolerate higher environmental variation. If this problem persists, the waterbody loses that mayfly species and every species linked to its life history. When changes occur to the environment at a pace for which bugs cannot readily adapt, they become locally extinct. Basically, the evolutionary clock is reset because it becomes a new environment.

(continued on page 4)



©Tom Murray



©Utah DEQ

(Top) Brushlegged mayfly larva, one of the more than 700 species found in North America; (Bottom) One of the bigger macroinvertebrates, commonly known as a hellgrammite.

What's in Your Runoff?

Impacts of Construction & Development on Water Quality

Watershed Planning & Restoration Program Staff, Salt Lake County

Have you ever marveled at the sheer volume of water washing down the street during a rainstorm? Impervious surfaces like concrete, asphalt, and rooftops (even compacted gravel) increase stormwater runoff by preventing water from soaking into the ground. As native soils and undeveloped landscapes continue to be replaced with impervious surfaces, we see greater volumes of runoff and ultimately more pollution in our streams. Pollutants on roadways, in gutters, or on sidewalks—gasoline, engine oils, fertilizers, sediments, etc.—usually end up in streams via the storm drain system because storm drains lead directly to the nearest waterbody, such as a river or stream, without treatment.

When new construction occurs, this problem can reach epidemic proportions as soils are overturned, and, with each rainstorm or wind event, soil and sediment can wash or blow into streets and eventually into streams. There are some tested pollution reduction strategies used at construction sites that can help. Sediment fences (thin landscaping fabric suspended on stakes buried at the bottom with soil) and hay bales are two examples of temporary structures that can be used to slow runoff and minimize the amount of sediment washed offsite. In areas where development has already taken place, permanent constructed solutions can

reduce runoff and capture pollutants before they enter storm drains and waterways. Rain gardens, constructed wetlands, bioswales, rainwater harvesting, pervious concrete, green roofs, and shoreline revegetation are just a few examples. These water pollution prevention solutions, known as **Best Management Practices (BMPs)**, are already in use in developed areas around the country. Many municipalities now require BMPs as part of any new development.

Construction and development are inevitable, but polluting waterways and degrading ecosystems don't have to be! ☐



©Montana NRCS

Example of a bioswale, a vegetated channel that conveys stormwater runoff while slowing down the flow. This allows sediments and pollutants to drop out, and water to infiltrate back into the soil.



©Colorado DOT

Excess sediment, shown here flushing into a stream, can have many negative impacts on plant and wildlife health: clogged fish gills, smothered food sources, reduced sunlight for photosynthesis and reduced dissolved oxygen, to name a few.

Reawakened Beauty: Tillman Crane's Jordan River Photographs Exhibition Captures Splendor and Mystery of an Urban River

October 16, 2009 - January 9, 2010 at the Salt Lake Art Center

In places, the Jordan River has been left seemingly natural; in other places, there is evidence of civil engineering, re-routing, and pollution. Noted photographer and writer Tillman Crane has produced thirty high-quality palladium prints—a black & white format known for its soft, warm tones—that reveal the many different aspects of the river.

This exhibition has been co-organized by the Salt Lake Art Center and the Center for Documentary Arts. Details at www.slartcenter.org

What's up with the Jordan River?

Update from the Utah Division of Water Quality

Hilary Arens, Jordan River Basin TMDL Coordinator, Utah Division of Water Quality

So, what is up with the Jordan River? That's a question I get quite often at the Division of Water Quality. Currently, the State of Utah is studying what's causing high temperatures, high total dissolved solids concentrations, and low dissolved oxygen levels (all conditions that contribute to degraded water quality) in the river and what can be done to improve the situation. This **Total Maximum Daily Load (TMDL)** study will work if it is a collaborative process, one that all interested people in the Jordan watershed can and should be a part of! A TMDL is a regulatory term in the U.S. Clean Water Act describing the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. TMDLs have been used extensively by the U.S.

EPA and state environmental agencies in implementing the Clean Water Act.

In April 2009, state and federal water quality policy makers, scientists, and private citizens knowledgeable about the Jordan River met at the **Linkage Symposium**, an all day workshop designed to help better understand what is causing low dissolved oxygen levels in the river. Suffice it to say this is a complicated question. Generally speaking, there are three major factors that affect dissolved oxygen concentrations in the Jordan River: physical processes such as re-aeration, biological processes such as bacterial decomposition, and chemical reactions such as the conversion of ammonia in the water to nitrate. Everyone agreed that these are the major factors involved, but understanding how important they are in relation to one another is a much harder and more important question.



Jordan River at 13000 South

For example, how much influence does the growth of free floating algae have on dissolved oxygen versus decomposition in the river bottom sediments? These are the types of questions we are addressing this summer through continued sampling and experimentation to help determine which processes are the most significant for the Jordan River.

For more information on the Linkage Symposium and to learn for yourself what's up with the Jordan, go to www.waterquality.utah.gov/TMDL/Jordan_TMDL.htm. ☐

Water Conservation at Home: What You Can Do

Tips & Techniques for Saving Water in the Bathroom

Watershed Planning & Restoration Program Staff, Salt Lake County

Bathrooms are the biggest culprits for excessive water use inside the home. According to the U.S. EPA, about 41% of our indoor water use goes toward flushing the toilet and 33% goes to bathing. Most bathtubs hold somewhere between 80 and 200 gallons of water, and while soaking in a tub is a relaxing way to get clean, that's a lot of water! Showers, on the other hand, use much less water. The average showerhead delivers 2.5 gallons per minute, and at that rate it would take 32 minutes to fill up an 80-gallon bathtub. Use a low-flow showerhead that delivers 1.5 gallons per minute and your shower would have to be almost one hour! When I first tried my new low-flow device, installed at my wife's request, I must admit I was skeptical. We bought an oversized "sunflower" style showerhead with a

pressure-reducing inlet. Water falls out of it with the consistency of a warm summer thunderstorm, and I now have a hard time showering in hotel showers that pummel my back with tiny droplets. For those who prefer a more traditional shower spray, there are a variety of products on the market that provide good pressure *and* water savings. If you are really serious about conserving water, consider turning the water off while you are lathering up, shaving, etc. Just think...if you can limit the time that the water is actually running to say 5 minutes, with a low-flow device you would use only 7.5 gallons of water!

My conclusions about low-flow showerheads, timing your showers and skipping the bath: totally worth it. The cost of my showerhead was comparable with many other stylish heads commercially available. I have not suffered any maladies since beginning my



Low-flow showerheads come in all shapes and sizes. Some deliver a gentle "rain", others deliver a more traditional pressurized spray. All deliver significant water savings that can cut water use in the shower by more than 30%.

new showering routine and my water usage per shower is down to 3.2 gallons. Of course, for many of us showering is
(continued on page 4)

BUGS

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When scientists observe these changes or compare communities with similar but non-polluted waterbodies, it signals that there are pollutants affecting the aquatic life use of the waterbody. The aquatic life use is a class protected by the Clean Water Act, and upheld by the U.S. Environmental Protection Agency and the State of Utah, which relates to the level of water quality a stream is expected to meet in providing habitat for the fish and insects living there. The waterbody then goes through a series of analyses that detect and measure pollutants and identifies actions to reduce the amount and effect of pollutants to restore the existing "use". Aquatic bugs are sampled throughout the process to identify when the beneficial uses are met, thus the aquatic life support is restored.

So, the next time you are hiking next to a stream, take a look under the rocks and see what life is under there. The more you find, the more likely the stream is unpolluted and thus at the height of evolutionary progress. ☐

WATER CONSERVATION TIPS

(continued from page 3)

just not an option, like with my two kids. For them, we'll run a bath about 4" deep and with a 3-gallon gel pillow in the tub (they call it "the drum") we save that volume in water each time they bathe.

Using these water saving tips, each of us can save thousands of gallons of this precious resource each year. Compounded over a population of 1.2 million, that could be a huge amount of water *not* going down the drain!

Next time...water saving faucet aerators and toilet systems. ☐

NOTE: The Watershed Planning & Restoration Program was formerly known as the Water Resources Planning & Restoration Program.

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3rd Annual Watershed Symposium

"Engage, Connect, Protect" was the theme of this year's Salt Lake Countywide Watershed Symposium, held on August 26th & 27th, and we definitely accomplished that goal! There were approximately 200 participants each day of the Symposium, representing water quality professionals, academics, environmental advocates, industry and the interested public. Seventeen feature presentations, three field trips, one workshop and one panel discussion covered a broad scope of topics, fostering conversations about watershed/water quality issues in Salt Lake County. Of all the amazing sessions, it was evident that the Mayor's Panel Discussion was the highlight and the most discussed event of the Symposium. Overall, there was a clear consensus that people would like to see the Symposium continue to grow. We received many positive comments, both written and verbal. Thank you to everyone who participated. With your continuing support, we hope to make the Salt Lake Countywide Watershed Symposium an annual event!

For session abstracts, powerpoint presentations, photos, and more information about the Symposium, go to www.waterresources.slco.org.



3rd Annual • 2009 Salt Lake Countywide
Watershed Symposium
ENGAGE • CONNECT • PROTECT

Join the conversation about water quality and the current state of our watershed. Topics include: Jordan River management, habitat restoration, water conservation strategies, collaborative problem solving, funding opportunities, wastewater treatment technologies, climate change, environmental education, and much more!

MAYORS PANEL DISCUSSION with MAYOR PETER CORBOON

August 26 & 27
Utah Cultural Celebration Center
835 West 3100 South, West Valley City

Free for everyone!
Pre-registration by August 14 required
Free lunch for the first 150 to register!

Contact Lynn Berni
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SCHEDULE of PRESENTATIONS & FIELD TRIPS ONLINE
waterresources.slco.org

Bringing together water quality experts, policy makers, environmental advocates, and the general public. Save the Date!

The Mayors Panel Discussion (below) was the highlight and most discussed event of the Symposium.