The Salt Lake Tribune
(http://www.sltrib.com)

Examination of Salt Lake City's Red Butte Creek is part of $20 million water project

By Brian Maffly The Salt Lake Tribune
Published: July 21, 2015 08:18AM
Updated: July 21, 2015 08:04AM

Science • Universities and colleges are collaborating on watershed study.

(Francisco Kjolseth | The Salt Lake Tribune) Melissa Haeffner, left, Rachel Gabor ar Matthew Johnson gather water samples in Miller Park in an effort to understand the Butte Creek watershed like never before. Researchers gathered to study all aspects the creek and its surrounding watershed in a collaborative, four-day venture. The st of 40 sites along the river began at 1100 East and will end at the source at the top o Red Butte Canyon.

Salt Lake City's Red Butte Creek this week is swarming with researchers gathering hundreds of water and soil samples, surveying plants and gauging stream flows.

It's part of a University of Utah-led quest to understand virtually every aspect of a watershed that stretches from the East Liberty neighborhood several miles into the Wasatch Mountains.

"The previous surveys just focused on the creeks and getting a baseline," said Paul Brooks, a U. professor of hydrology and biochemistry supervising the research. "We are bringing all those teams together to get one snapshot of everything we can that has to do with water — from decisions people make in their houses, the trees they grow, xeriscaping, runoff from roads and streets, old chemical spills — and tie it with what's going on in the mountains, which are the ultimate source of our water."

The Red Butte study has its roots in a larger research effort known as iUTAH, a clever acronym for innovative Urban Transitions and Aridregion Hydro-sustainability, and bills itself as "science for Utah's water future."

The project is funded with a $20 million grant from the National Science Foundation. Utah State University, Brigham Young University, Westminster College and Utah Valley University are also participating.

This summer, research teams will conduct a similar "synoptic" survey on the larger Logan River in Cache County. Researchers will use findings from Red Butte and Logan to structure an intensive look at the much larger Provo River, which connects Utah Lake with the faraway Uinta Mountains.

iUTAH pulls together scientists from geologist Samantha Weintraub to sociologist Melissa Haeffner. They were among the researchers gathered along the creek Monday where it dives beneath a parking lot at 1500 East.

At that spot, the creek is "losing" water to the ground. Other sampling locations mark places where the creek "gains" water.

Weintraub pulled soil samples and dropped them into quart-sized Ziploc bags.

In the lab, the dirt will be bathed in saline solution to draw out nitrogen so researchers can gauge the soil's nutrients. The hope is to determine the source of contaminants, such as microbial actions, air pollution or wastewater from sewer leaks.

"We want to know the connection between the soils and the stream," said Weintraub, a U. postdoctoral research fellow.

The scientists started at 1100 East on Monday and will work their way upstream this week, sampling along an 8-mile stretch to the creek's headwaters in the closed Red Butte Canyon Research Natural Area.

In all, they will sample 40 locations as the stream courses through Salt Lake City's East Bench, the U. campus, Fort Douglas and into the forested canyon above the university. Another 40 wells, seeps, springs and other moist spots around the Red Butte watershed will be sampled.

The canyon has been closed to public access for decades, offering researchers a slice of mountain terrain that is largely unmolested by human activity.

"If you want to predict the resilience of a watershed, it helps to start with a site that has the least amount of disturbance," Brooks said. "To collect a baseline level of data, Red Butte Creek is wonderful."

The creek study could provide insight for regional water management, he said. "Red Butte Creek typifies questions for water sustainability faced by the entire West."

Teams are also surveying vegetation in 50-meter swaths straddling the creek and assessing the stream's tiny creatures, including microbes and insects.

Human residents will also be surveyed with questionnaires to gather data on water use.

The project maintains five monitoring stations that run 24/7, gathering flow and water chemistry data that is posted on the web in real time. This week's survey will take in more detailed chemistry data with the help of U. postdoctoral student Rachel Gabor.

Gabor noted that past data shows the chemistry of stormwater runoff is not matching the water in the stream — probably because so much water reaches the stream through the ground.

"When people hear 'chemistry,' they are thinking water quality," Brooks said. "But it is more than that.

"Chemistry tells us how long the water has been in the ground, how much is rain versus snow," he said. "If we know how much and how old the water is, we can calculate the storage."

bmaffly@sltrib.com
