Research, Education, and Outreach via Red Butte Creek

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Red Butte Creek Project

In Spring 2012, an interdisciplinary team of University of Utah graduate students worked on Red Butte Creek as the focus of a sustainability study that emphasized education, research, and outreach on the University of Utah campus.

Goals Accomplished: The students compiled existing data sets, literature, and prior projects within the watershed from multiple stakeholders, including Salt Lake County, the University of Utah, the USFS Red Butte RNA, Utah State University, and Utah AGRC.

Products: The products included a report, presentation and video for faculty, administrators, and the public. Meetings and presentations with stakeholders are leading to improvements in the Campus Master Plan and renewed interest in the sustainability and revitalization of the creek.

Future: The Spring 2013 class is expanding this base, with the goals of creating an engaged community and a website to facilitate distribution of data.

Figure: Red Butte Creek watershed, below the reservoir, as it flows through the University of Utah campus. Inset: SWMM hydrologic model of the area.

Summer Institute

July 15-19, 2013

University of Utah

iUTAH researchers, fellows, undergraduates, and Utah high school students and teachers

Goals: Under the direction of Dr. Louisa Stark, Focus Area researcher input is aiding the development of projects that both translate iUTAH research objectives for high school students and can be incorporated by teachers. Curriculum development, based on the results of the 2013 Summer Institute, will be tied to both national and state science education standards. We expect that undergraduate student participation from other universities will expand their research experiences.

Results: The proposed structure focuses on in-field data collection and data analysis facilitated by iUTAH graduate students and faculty, coupled with background information, highlighting collaboration and emphasizing presentation of results. Currently, potential in-field projects and associated instrumentation are being compiled by the team, with the following highlighted:

Climatic study
- Quantification of land surface temperature variations with thermal radiation gun
- Air temperature measurements for comparison, with microclimate insight

Vegetation study
- Identification of species and interaction with environment and climate
- Determination of impacting factors, including elevation gradient and urbanization

Stream study
- Cross-section measurements to determine flow rates
- Pebble count measurements
- Impacts of stormwater inflow

Data Collection and Instrumentation

Building upon the Red Butte Creek Project results, collaboration with Drs. Brenda Bowen, Dave Bowling, Jim Ehleringer, and Christine Pomeroy has led to increased data collation onto a server repository, with the goal of providing an immediate portal while the iUTAH portal is developed.

- **Goals**: To increase availability of historical data and ongoing projects within the watershed, for the purposes of aiding future research and increasing public awareness and education.
- **Collected data include**:
  - Water quality[1]
  - Macroinvertebrate sampling[1]
  - Parcel ownership
  - Orthoimagery
  - Riparian corridor buffer
  - Utilities and infrastructure
  - Hydrology
  - Weather and climate
  - Vegetation
  - Streamflow and reservoir outflow
  - Pebble count
  - Topography
  - Geomorphology
  - iUTAH projects and field sites
- **Future**: I will be assisting in the implementation of both monitoring equipment in Red Butte Creek, under the management of Dave Eiriksson, and a Pilot Rain Barrel Monitoring Program, under the coordination of Brian Greene. The former facilitates long-term iUTAH research and the latter establishes rainwater harvesting protocols in four Utah high schools to create lesson plans associated with sustainability of water resources.

[1] Courtesy of Salt Lake County, Watershed Planning and Restoration Program

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iUTAH EPSCoR Graduate Research Fellowship Program
http://iUtahEPSCoR.org