Utah EPSCoR
NSF EPSCoR RII Track 1

*innovative Urban Transitions and Arid-region Hydro-sustainability (iUTAH)*

Annual Report 2016 – 2017

PIs: Michelle Baker, Zachary Aanderud, James Ehleringer, Courtney Flint, Courtenay Strong

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Compiled by: Andreas Leidolf, Assistant Director and Project Administrator

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1. OVERVIEW

The iUTAH Vision

The vision for iUTAH EPSCoR is to lead the nation in scientific, educational, and innovative solutions for water management and sustainability through innovative interdisciplinary research and systems-level knowledge of the interactions among water, demand, and climate and development of a state-of-the-art hydroinformatics program that incorporates large data with interdisciplinary modeling and visualization.

The iUTAH Mission

The mission of iUTAH is to enhance collaborative partnerships to better understand how to sustain Utah’s water resources by (1) developing novel approaches to integrated research and training, and (2) expanding the state’s economic, educational, and research competitiveness. Our efforts over the past five years have focused on:

• Enhancing Utah’s research capacity and competitiveness in the science of interactions between society and the biophysical environment
• Leading research, training and education in coupled human-natural water resource systems
• Recruiting and training a diverse Science, Technology, Engineering, and Mathematics (STEM) workforce and the next generation of researchers
• Informing policy makers and our citizenry on the interactions between climate, land use, innovative management, and water sustainability
• Providing a lasting human and physical infrastructure comprised of a statewide consortium of researchers, educators and private-sector partners as well as a sustainable sensor and cyberinfrastructure (CI) network

Goals of the iUTAH Project

The goals of the Utah Research Infrastructure Improvement (RII) Track 1 are to create sustainable infrastructure improvements to benefit water-related science and technology throughout the state, increase national research and development competitiveness, and expand our workforce of researchers, educators, and practitioners to ensure a vital economy and sustainable future (Table 1). Infrastructure improvements include:
• **Enhanced research capacity of the biophysical, social and engineered water environment.** This is being accomplished by building state-of-the-art water quality- and yield-monitoring networks in three focal watersheds that encompass a range of urbanization and future development. In addition, a Green Infrastructure Research Facility (GIRF) has been constructed, allowing for new research activities, as well as providing an important educational and outreach facility.

• **Building on Utah’s existing strengths in hydrologic modeling and cyber-infrastructure from the CI-WATER and Cyber-infrastructure NSF EPSCoR awards.** iUTAH has pursued multiple interdisciplinary modeling approaches that have created new models; linked currently disparate models, data and computing approaches; and provided greatly enhanced forecasting capabilities for water managers and stakeholders.

• **Building programs to increase participation of underrepresented groups that include women, Hispanics and Native Americans.** A series of diversity training workshops have provided all iUTAH participants with best practices for recruitment and retention of diverse audiences. iUTAH has also aggressively recruited underrepresented groups for all EPSCoR-related activities and hires.

• **Providing educational opportunities for a scientifically literate Utah workforce and citizenry.** iUTAH has a number of programs that target K-12 students and teachers as well as undergraduate students. These programs have provided hands-on activities associated with the instrumented watersheds and GIRF. In addition, iUTAH has partnered with state museums to provide informal science education to thousands of Utah residents.

• **Providing societally relevant science and education regarding current and future water resources.** iUTAH has followed a rigorous external engagement plan that includes state, regional, county and local water management agencies and stakeholders. Our participatory modeling activities have provided first-hand knowledge of our enhanced sensor networks, data flows, and scenarios modeling capabilities. In turn, our research questions and modeling activities have been frequently informed by the needs expressed by our water resource managers and policy makers.
Participating Institutions

As in the previous year, the iUTAH project actively engaged with all eleven post-secondary institutions in the state (Table 2). In addition to the three PhD-granting research universities Utah State University (USU—lead institution), University of Utah (UU), and Brigham Young University (BYU), the roster of participants and collaborators includes eight Primarily Undergraduate Institutions (PUI), with six open-enrollment schools. Of the ten partner institutions, seven were issued a subaward by USU and have a designated Principal Investigator (PI). Both participant and collaborating institutions engaged with iUTAH across a wide and growing spectrum of activities in Year 5.

Key Accomplishments in Year 5

The iUTAH project claims a large number of accomplishments that reflect the maturity of the project and serve as a testament to the continuing high level of engagement and productivity among its 268 active participants. Across all project areas, iUTAH participants published 50 peer-reviewed journal articles in Year 5, representing 50% of the project total to date. An additional 34 manuscripts are submitted, are currently under review, or are awaiting publication. Among these publications are signature Research Focus Area (RFA) products, such as an overview of the Gradients Along Mountain to Urban Transitions (GAMUT) observatory, the urban typology developed by RFA 2, as well as manuscripts documenting innovations and advances in social science survey methodology.

iUTAH participants also submitted 34 grant proposals, with 14 awards totaling over $7M, bringing the project total to almost $30M in new external funding that was catalyzed by the RII Track-1 award. Included in the total are a National Science Foundation (NSF) CAREER Award to RFA 3 Co-lead Sarah Null, as well as a $2.7M NSF Research Traineeship program grant in climate adaptation with seven iUTAH participants as Co-PIs or collaborators that is expected to continue iUTAH’s legacy of interdisciplinary research and STEM workforce development. Several proposals prompted by research funded under iUTAH Research Catalyst Grants (RCG) were submitted by and awarded to PUI faculty.

In Year 5, iUTAH continued its work to help build the next generation STEM workforce for the state of Utah and the Nation by investing in science communication and Broader Impacts training for its research faculty participants; and mentoring a large cohort of undergraduate and graduate students and postdoctoral associates. Over the course of the past year, 104 undergraduate students—50% of them female—were involved in iUTAH programs, with about
half of them mentored at PUIs, the majority through RCGs; 34 of these students completed their degrees, representing almost 50% of the project total to date. The project also trained 52 graduate research assistants (GRA) in Year 5, 56% of them female; ten students completed their degrees, accounting for one third of all GRAs graduated to date. All four postdoctoral hires were retained in Year 5. Dr. Krishna Khatri (UU) was promoted to Research Assistant Professor; Drs. Melissa Haefner (USU) and Rachel Gabor (UU) were appointed to tenure-track faculty positions at Portland State University and The Ohio State University, respectively.

Significant Problems, Opportunities, and Changes

Despite minor changes in the planning or execution of activities to meet project milestones; several significant personnel transitions; and the ongoing challenge of maintaining high levels of participant engagement on a project that is nearing the end of its lifespan; no significant problems that affected the overall scope, direction, or successful implementation of iUTAH projects were encountered in Year 5. Ongoing efforts to secure the sustainability of the statewide collaboration network built by iUTAH over the past five years received a number of setbacks, with legislative and institutional buy-in remaining elusive. As a result, project leadership revised its strategy by pursuing a charge account/recharge facility model to secure the continuity and longevity of core infrastructure. Participants across all RFAs and other project elements were actively engaged in seeking opportunities to strengthen and expand partnerships with nonprofits, local and state agencies, industry, and academic institutions across the state and region. A new partnership established with the American Association for the Advancement of Science (AAAS) may provide novel tools and approaches to archiving the institutional memory and knowledge base and legacy products generated by iUTAH participants.

2. RESEARCH AND EDUCATION PROGRAM

Research Focus Area 1—Biophysical System

Key Accomplishments. Both the water yield and water quality research groups set out to finish work towards achieving their core objectives during Year 5: to fully describe the water cycle by unraveling the processes most important to water balance, and detailing and explaining critical controls on water quality, along mountain-to-urban gradients in the semi-arid west. Key accomplishments in this area include improved understanding of the partitioning of precipitation into soil, ground-, and surface water components; the sources of and controls on
evapotranspiration; groundwater-surface water interactions; and the role of urbanization in controlling water quality. Another major achievement is the submission of an overview manuscript currently under review of the iUTAH core observatory GAMUT, which documents the design and installation of the sensor network, along with important lessons learned over a 5-year period of operation. Completion of this manuscript was timely, as new collaborations with state and municipal agencies are changing the face of GAMUT to be more responsive to stakeholder needs and priorities: for example, in the Logan River watershed, the canal and stormwater component of GAMUT was greatly expanded in response to data needs articulated by the City of Logan, which has agreed to fund installation and maintenance of new sensors in Year 6. At the same time, sensors are being relocated along the Provo River to better reflect priorities of the Utah Division of Water Quality (UDWQ), and new buoy-mounted sensors were added and integrated along the Provo River GAMUT to provide an early warning system for Harmful Algal Blooms (HAB) in Utah Lake (Box 1), into which the Provo River empties.

**Outputs and Outcomes.** RFA 1 researchers produced a number of relevant outputs during Year 5 (Table 3). With the exception of popular press publications, all output metrics exceed targets specified in the Strategic Plan. Of particular note is the submission of ten collaborative proposals, which resulted in $3M in new external funding, as well as the publication of 16 peer-reviewed journal articles, with an additional eight papers currently under review.

**Box 1. UDWQ and iUTAH deploy harmful algae-tracking sensors in Utah Lake**

iUTAH’s Erin Jones, a PhD student at Brigham Young University, and GAMUT technicians Dave Eiriksson and Dylan Dastrup helped deploy new algae-tracking sensors in Utah Lake in August 2016. The buoys, which are monitored by the Utah Lake HAB Network (https://wqdatalive.com/public/669), send data every 60 minutes that are then made available through the UDWQ website. In time, information collected by these sensors will be used in conjunction with a model to forecast potential HAB.

**Future Plans.** Year 6 goals for RFA 1 are focused on finishing work currently ongoing, particularly in the area of land use/climate change models and alternative futures scenario modeling in collaboration with RFA 3. RFA 1 efforts include: quantifying the impacts and potential adaptations to mitigate the effects of climate change on water resources; modeling Salt Lake City water quantity and quality under multiple uncertain change drivers; developing a systems-model approach to assessing riparian zone restoration; creating vulnerability assessments of water supply systems under climate change; modeling of circulation influences on precipitation deficits; and understanding interactions among snowpack, drought, and climate forcing. A critical broader goal is the sustainability of GAMUT. With the discontinuation of NSF EPSCoR funding
imminent, Utah’s research universities are looking for ways to “adopt” the observatory infrastructure in proximity to their respective campuses. Proposals have been submitted to administrators at UU and USU for maintaining iUTAH infrastructure into the foreseeable future.

**Significant Problems, Opportunities, and Changes.** No significant problems were encountered in Year 5, and no substantive changes to RFA 1 objectives, goals, and milestones were made or are anticipated into Year 6. High levels of run-off expected for Spring 2017 provide a novel opportunity to add high-flow measurements to existing GAMUT rating curves. Planning is under way to take full advantage of this opportunity.

Research Focus Area 2—Social and Engineered System

**Key Accomplishments.** Signature achievements in RFA 2 during Year 5 broadly fall into three categories: publication of seminal work products, completion of core activities, and successful integration of RFA 2 research with RFA 3 modeling activities. Year 5 saw the publication of the urban typology developed as an outgrowth of the “Utah’s Water Future” household survey, as well as a series of papers documenting significant advances in survey methodology in a special issue of the *Journal of Rural Social Science*. Core activities that dominated much of RFA 2’s work over the past five years were brought to a successful conclusion, including a series of presentations and town halls in Wasatch Range Metropolitan Area (WRMA) communities targeted for the household survey that received substantial interest from local citizens, municipal officials, and water managers; and the completion of key informant interviews in WRMA communities to assess interactional capacity and water programming, bringing to a close much of the water governance and policy work begun in Year 1. Finally, Year 5 saw the completion of another cross-RFA linkage, with research findings related to urban form and green infrastructure successfully integrated into RFA 3 modeling exercises.

**Outputs and Outcomes.** Researchers in RFA 2 had a productive Year 5, with output metrics significantly exceeding targets set by the Strategic Plan (Table 4). Input from RFA 2 informed ten collaborative proposals, and generated $3.5M in new external funding. With 15 peer-reviewed publications, and almost 40 presentations, dissemination of signature achievements of both the social sciences and engineering groups far outpaced already ambitious goals. Of particular note is the large number of social science datasets that were archived in the Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Hydrologic Information System (HIS) HydroShare platform in Year
5, given that coding, analysis, and curation of these data, particularly where human subjects are involved, is frequently arduous and time-consuming.

**Future Plans.** A major Year 6 goal for all RFA 2 research groups is the documentation of the impacts of RFA 2 research on stakeholder decision-making. This effort is already underway, with 14 of 35 researchers interviewed, and scheduled for completion in Year 6; interviews with up to 30 external partners will further inform this work. Additionally, a synthesis manuscript highlighting new areas of inquiry that are emerging from iUTAH social science research on water and land use is planned. Another goal is the completion of modeling efforts with RFA 3 that simulate impacts of alternative urban growth scenarios on water and ecological outcomes. RFA 2 social scientists will also dedicate time and resources to support incorporation of Household Survey data into the CI Survey Data Viewer and to ensure data integrity and metadata accuracy and completeness. With GIRF construction complete, RFA 2’s built systems group will focus their Year 6 activities on collecting and analyzing data from stormwater simulations, and on developing GIRF into a catalyst and core component of future research activities for iUTAH’s statewide collaboration network.

**Significant Problems, Opportunities, and Changes.** A transition in co-leadership of RFA 2 during Year 5 introduced inevitable delays in the implementation of some research activities, and resulted in the expected minor adjustments to the direction and focus of ongoing research efforts that are the natural consequence of any significant personnel change. Despite this, no significant problems were encountered in Year 5, and no substantive changes to RFA 2 objectives, goals, and milestones were made or are expected for Year 6. Continuing the integration of social and physical science research with water management decision-making is essential to capitalizing on iUTAH’s contributions to securing a sustainable water future for the citizenry and industries of Utah. Assessments conducted in Year 5 suggest that RFA 2’s work has been highly impactful in this regard. Thus, pursuing opportunities for continued and expanded community-university and stakeholder-researcher partnership and collaboration are expected to be major opportunities for RFA 2 during Year 6.

**Research Focus Area 3—Coupled Human-Natural System**

**Key Accomplishments.** A major goal for RFA 3 for many years has been the establishment of meaningful, sustained working relationships with state and municipal agencies in the water management and water policy sectors. This slow and deliberate process has now come to fruition, with RFA 3 researchers regularly asked to participate in a range of planning, strategy, and working group
meetings at the Salt Lake Department of Public Utilities (SLCDPU), the Utah Divisions of Water Resources (UDWRe), and UDWQ; as well as a range of other constituencies, such as the Cache Water District, the Cache Environmental Flows group, the Salt Lake Public Utilities Commission, the Utah Stormwater Advisory Committee, and the consortium of Utah Water Agencies. In Year 5, RFA 3 researchers participated in 31 such meetings, which have become catalysts for the development of stakeholder products and the provision of stakeholder services; the implementation of scenarios modeling workshops; as well as numerous visualization outreach activities in collaboration with the iUTAH Visualization Laboratory. Most importantly, these "slow-burn" activities have succeeded in creating an environment of mutual trust and respect, and a culture of cooperation and collaboration, that includes the sharing and exchange of data, co-development of models, and co-authoring of manuscripts with municipal and state agency scientists and engineers.

**Outputs and Outcomes.** Much as in Year 4, researchers in RFA 3 based primarily at UU and USU produced substantive outputs in Year 5 that significantly outpaced target metrics as laid down in the Strategic Plan (Table 5). With the exception of scenarios modeling workshops and visualization outreach activities, outputs exceeded set targets by factors of 1 to 15. Of particular note are numerous activities centered around stakeholder engagement, products, and services, as well as a large number of presentations—many of them invited talks to diverse stakeholders and constituencies—and publications. RFA 3 researchers also laid the groundwork for the next generation of coupled modeling research, with nine collaborative proposals submitted, and over $6M in new external funding.

**Future Plans.** Core objectives for RFA 3 during Year 6 are focused on completing integration across RFAs by finalizing coupled modeling activities that evaluate change scenarios and adaptation/mitigation strategies; completing work on an optimization model that prioritizes stream barrier removal to improve aquatic habitat; and finishing the coupling of Water Evaluation and Planning models. Another goal is the development of additional stakeholder products, including an interactive online repository of water management controlled vocabulary, as well as agent-based modeling.

**Significant Problems, Opportunities, and Changes.** No significant problems were encountered in Year 5, and no substantive changes to RFA 3 objectives, goals, and milestones were made or are expected in year 6. A number of critical stakeholder relationships that have been carefully built and nurtured over the past two years, including with SLCDPU, UDWRe, and UDWQ, are beginning to bear fruit and pose exciting prospects for ongoing data sharing and exchange,
model co-development, and co-authoring of manuscripts. Strengthening these incipient relationships is both a major challenge and an opportunity for Year 6.

3. PROJECT ELEMENTS

Cyberinfrastructure

Key Accomplishments. CI’s main accomplishment for Year 5 was the arduous but critical process of transitioning the deprecated iUTAH data repository to CUAHSI HIS HydroShare, an online collaboration platform for sharing data, models and code related to hydrologic science. With the iUTAH project nearing its end, and large numbers of participants submitting their datasets for storage, establishment of a sustainable partnership for the long-term archival of iUTAH data was imperative. To date, there are 23 iUTAH-affiliated registered users on HydroShare creating and curating finished datasets. This number is expected to grow significantly as additional datasets are finalized and published during the final year of the project. Another signature achievement of the CI group in Year 5 was the final release of software and publication of a manuscript describing the Survey Data Viewer, a novel visualization of social science data collected by RFA 2. This innovative and exciting work is scheduled for further expansion in Year 6.

Outputs and Outcomes. As in previous years, researchers in CI continued to produce relevant outputs and outcomes that greatly exceeded target metrics set in the Strategic Plan (Table 6). The large number of presentations and peer-reviewed publications attests to the emergence of the iUTAH CI group as a research enterprise in its own right, rather than merely playing a supportive role for other research teams. The substantial web presence maintained by the CI Modeling and Data Federation (MDF), including the parent website, the Time Series Analyst, and the Survey Data Viewer, continued to attract a large audience, with user numbers for Year 5 greatly increased over Year 4 (Table 7).

Future Plans. Building state-of-the-art CI to manage, process, store, analyze, and visualize large, continuous sensor data streams; and developing world-class expertise in hydroinformatics has always been one of the most important objectives of the iUTAH project. As such, it should come as no surprise that the list of planned activities for iUTAH CI as the project nears its end date and transitions out of EPSCoR funding is comprehensive, ambitious, and impressive. Specific CI goals for Year 6 include:

- Ensuring that all source code and software tools developed by iUTAH have current releases and updated documentation on open-source code repositories to enable efficient reuse.
Completing the transition of the iUTAH data repository to HydroShare. This involves ensuring that all iUTAH participants deposit and publish their datasets in HydroShare in compliance with the iUTAH data policy; as well as generalizing iUTAH-specific functionality for automating the process of moving sensor datasets (e.g., GAMUT data) into HydroShare so that it can be made available to other CUAHSI HIS software users.

Release of a working version of the model coupling software developed by iUTAH CI and publication of a manuscript demonstrating its utility via application to iUTAH RFA 3 use cases.

Developing new capability for integrating data derived from laboratory analysis of water quality and other periodic/discontinuous samples with existing data infrastructure for continuous sensor datasets.

Refreshing existing and adding additional storage to the iUTAH virtualization infrastructure to ensure transition to sustainable hardware and support.

Making data from GIRF discoverable, accessible, and citable in the iUTAH MDF through establishment of regular data retrievals, new databases, and associated web services.

Providing support for model coupling and execution on High Performance Computing.

Working with the HydroShare development group to establish a DataONE member node, allowing for discovery of all published HydroShare resources by the scientific community through DataONE.

Conducting experiments to assess the subjectivity of the Quality Assurance/Quality Control process for sensor data currently conducted by iUTAH Watershed Technicians and Trainees.

Completing work on the GAMUT Equipment Management System, which had been de-prioritized in previous years.

Incorporating iUTAH RFA 2 Household Survey data into the Survey Data Viewer, allowing for the sharing and visualization of a signature iUTAH product with a broader constituency across the state of Utah.

Developing additional data visualization stories that provide animations or other illustrations of interesting events and phenomena captured by iUTAH data.

Finalizing, testing, and deploying new Streaming Data Loader and Observations Data Model (ODM) Tools to map streaming GAMUT data to
the new database structure conceived during Year 5 and migrate the current data management platform for GAMUT to newer versions of tools based on CUAHSI ODM Version 2.

- Establishing and implementing corrections for fluorescent Dissolved Organic Matter (fDOM) data to mitigate known interference of extraneous parameters with GAMUT sensors.
- Developing surrogate relationships between streaming sensor data and periodic/discontinuous sample data to increase the utility and attractiveness of iUTAH core infrastructure to relevant constituencies by establishing predictive relationships between continuously sensed variables to parameters that currently require periodic sampling, and that are more relevant to water quality regulation (e.g., deriving estimates of total suspended solids or total phosphorus from in situ measurements of turbidity).

**Significant Problems, Opportunities, and Changes.** A significant problem encountered by iUTAH CI in Year 5 was the loss of a key researcher tasked with completion of the model coupling software. The iUTAH Leadership Team has since approved the hire of a postdoctoral associate in Year 6 to see this milestone to completion, with a suitable candidate having been identified and being recruited. Other than that, no substantive challenges or changes to CI objectives, goals, and milestones are expected during Year 6. Rather, it is anticipated that the productive work CI has performed over the past five years will provide a range of opportunities for additional efforts to further broad, overarching project goals and promote long-term sustainability in Year 6 and beyond.

**Diversity Enhancement**

**Key Accomplishments.** Increasing participation of women and underrepresented minorities in water science and STEM continued to be a major focus for iUTAH EOD and Diversity Enhancement (DE) in Year 5. iUTAH Education, Outreach and Diversity (EOD) staff and DE team members were successful in expanding the signature programs Taking Learning Outdoors (TLO) administered by the Natural History Museum of Utah (NHMU), as well as “Water Runs Through This Book”-related activities with author Nancy Bo Flood, to rural audiences in southern Utah; expanded outreach to latinx/Hispanic audiences through participation in the 2016 Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) National Diversity in STEM Conference in Long Beach, California (Box 2) and the Latinos In Action Conference at UU in
Salt Lake City, Utah; and grew the successful WaterGirls program, significantly increasing the number of female teachers and Middle School girls reached in Year 5. New programs implemented in Year 5 included efforts to bring iUTAH research to Salt Lake City’s most diverse neighborhoods through a new partnership with the Salt Lake City Open Space Lands Program.

Outputs and Outcomes. For the second year in a row, iUTAH met or exceeded its recruitment goals for many signature iUTAH programs, particularly in undergraduate, graduate, and postdoctoral training and mentoring, where participation by women was at or above 50% (Table 8). A more targeted approach to recruitment for the iUTAH Summer Research Experience for Undergraduates (REU) “iFellows” resulted in a 10% increase in the application rate of women. Even in programs where iUTAH has historically struggled to attract women participants, such as the more technically focused Traineeship program, or the cross-campus Hydroinformatics course, female participation held steady in Year 5. NHMU’s TLO events in Moab, St. George, and Cedar City, reached an audience of over 4,000 participants from largely rural communities in southern Utah.

Future Plans. A substantial amount of effort has been devoted over the course of the iUTAH project to develop successful DE programs, many of which have the potential for continuation with new, external sources of funding. A major focus in Year 6 will thus be to promote these programs to interested stakeholders, potential partners, and future funders where possible; and to conduct summative assessment of all DE activities in coordination and collaboration with Project Management and the iUTAH External Evaluator. Another major goal of the DE team for Year 6 will be tracking student participation and demographics and assessing the extent to which the iUTAH project has been successful in recruiting and retaining groups underrepresented in or inattentive to STEM.

Significant Problems, Opportunities, and Changes. Development of a formal best practices handbook was deemed an overly ambitious goal that is not well-matched to the realities and needs of the iUTAH project and its stakeholders. A better approach for possible implementation during Year 6 is a comprehensive
assessment of progress toward a more inclusive STEM culture in the state of Utah, as well the formation of a committee of diversity practitioners in the state to help inform eventual development of a centralized resource, such as a website, portal, or online community, to leverage existing expertise, resources, and best practices and facilitate their broad dissemination among practitioners, primarily those in higher education.

**Workforce Development**

*Key Accomplishments.* Year 5 was a banner year for iUTAH’s Workforce Development (WFD) team, which—in collaboration with Project Management staff (for details, see “Project Management”)—spearheaded two signature events to develop the capacity of iUTAH researchers and educators to compete in a 21st century scientific enterprise; greatly improved the ability of iUTAH to track relevant student outcomes by re-designing and re-administering the iUTAH Student Tracking Survey to all iUTAH student mentors, and by designing and administering an Undergraduate Student Experience Survey to over 200 students; and broadened and diversified the RCG program geared towards building research capacity among PUI faculty and developing and growing strong, sustainable undergraduate research programs at PUIs (Box 3).

*Outputs and Outcomes.* iUTAH continued the work of developing the next generation STEM workforce and building statewide research capacity among its student, faculty, and staff participants by promoting and supporting participation in workshops and conferences at the local, state, regional, national, and international level. In Year 5, over 300 iUTAH participants took part in almost 30 different events presenting oral presentations and posters, advancing their skills in workshops and seminars, developing new collaborations through social networking with colleagues and peers, and re-committing themselves to the ideals of inclusion and engaged scholarship (Table 9). Across all project elements, iUTAH engaged 104 undergraduate and 52 graduate
students in Year 5, with 32 and ten completing their degrees, respectively. All four postdoctoral associates hired in Year 3 were retained into Year 5, and three of them have since been promoted or have accepted faculty positions.

Future Plans. A substantial amount of effort has been devoted over the course of the iUTAH project to develop successful WFD programs, many of which have the potential for continuation with new, external sources of funding. A major focus in Year 6 will thus be to promote these programs to interested stakeholders, potential partners, and future funders where possible; and to conduct summative assessment of all WFD programs in coordination and collaboration with Project Management and the iUTAH External Evaluator. Some of this work, specifically an evaluation of student participation and experience across all iUTAH programs, is already ongoing and is expected to result in a manuscript in Year 6. A final, comprehensive goal for iUTAH WFD is the continued promotion of Broader Impacts work developed and practitioners empowered through the iUTAH project.

Significant Problems, Opportunities, and Changes. No significant problems were encountered in Year 5, and no substantive changes to WFD objectives, goals, and milestones were made or are expected in Year 6. iUTAH’s expanded collaboration with administrations at Utah’s premier research universities is expected to present ongoing opportunities to sustain the STEM pipeline built over the past five years, and to continue professional development and training of higher education faculty to meet the research challenges of the 21st century. iUTAH’s new partnership with AAAS’ Community Engagement Fellowship Program (CEFP) is likely to generate novel approaches and tools to support continued R1-PUI engagement.

External Engagement

Key Accomplishments. With several signature outreach programs of years past winding down in Year 5, iUTAH EOD staff and External Engagement (EE) team members were busy seeking new opportunities to expand and grow incipient programs put in place during Year 4. Building on the initial success of NHMU’s digital interactive exhibit “The Whole GAMUT,” EE was able to secure an agreement with the Monte L. Bean Life Science Museum at BYU to extend this display to the Provo River Watershed in Year 6. The highly successful TLO program was extended to rural communities in southern Utah in Year 5, and integrated with another promising outreach effort centered around the award-winning iUTAH-sponsored book “Water Runs Through This Book” by Nancy Bo Flood (Box 4). Activities involving Flood are expected to greatly increase in Year 6. iUTAH also provided partial support for two full-time coordinators responsible...
for USU Water Quality Extension (UWQE) citizen science and outreach programming, resulting in substantial growth in these programs in Year 5.

**Box 4. iUTAH-sponsored book “Water Runs Through this Book” wins multiple awards.**

Water Runs Through This Book, by Nancy Bo Flood and illustrated by Jan Sonnenmair, was supported by iUTAH EPSCoR as part of its mission to promote and strengthen education by building an inclusive, diverse, water-wise, and STEM-literate workforce for the future. Bo Flood, a well-established author who has written several books from a Navajo perspective, wrote this story, illustrated with photographic images, weaving science and poetry together while guiding readers of all ages to be more thoughtful and aware of water as a valuable resource. The book has garnered much recognition in the literary community. It has been shortlisted for a Green Earth Book Award, is a finalist in the young adult category for Colorado Author’s League 2016 Awards, and winner of the 2015 Sigurd F. Olson Nature Writing Award (SONWA) for young adult literature. The book is also the featured book of Utah Water Week, hosted by the Intermountain Section of the American Water Works Association (AWWA), and will feature prominently in a series of outreach events at libraries across the state in Year 6.

**Outputs and Outcomes.** In Year 5, iUTAH programs engaged almost 30,000 people in the state, including 844 Teachers and almost 15,000 students (Table 10). While this represents a substantial reduction in output compared to Year 4, this is primarily due to the phasing out of successful, high-volume iUTAH programs conducted by The Leonardo. Programs still active in Year 5, on the other hand, experienced significant growth over Year 4, with TLO participation up by 63%, engagement with citizen science/UWQE outreach up by 48%, and visitation of the NHMU digital interactive increased by 82%. Engagement with the general public through the iUTAH website, social media, and the monthly e-Newsletter also increased, with noticeable growth in social media connections and e-Newsletter subscribers (Table 11). Page views of the iUTAH website were slightly down over Year 4, as were press releases, reflecting the fact that some of the outreach programs conducted by iUTAH that drive traffic to the website (and generate news) were already winding down in Year 5.

**Future Plans.** A substantial amount of effort has been devoted over the course of the iUTAH project to develop successful EE programs, many of which have the potential for continuation with new, external sources of funding. A major focus in Year 6 will thus be to promote these programs to interested stakeholders, potential partners, and future funders where possible; and to conduct summative assessment of all EE programs in coordination and collaboration with Project Management and the iUTAH External Evaluator. Another goal will be the development of a new, strong, and impactful program at the recently completed GIRF that connects students with central iUTAH research themes using this new core facility as a living-learning laboratory. iUTAH EOD will also explore options to link this planned initiative with a related, ongoing redesign effort of the Williams Building complex at UU. EE will also oversee the completion and
deposition/archival of the Year 4 SI curriculum. Finally, with much work having gone into the development of the iUTAH website as (1) a valuable resource for a variety of audiences; and (2) a platform to support administration of the iUTAH project and communication and collaboration among its participants, a major focus for securing iUTAH’s legacy in Year 6 will be the transition of the website and its associated resources to a new, sustainable platform, as well as revision, adaption, and augmentation of extant capabilities for collaboration where needed.

**Significant Problems, Opportunities, and Changes.** Significant delays in the completion of GIRF prevented the timely development and implementation in Year 4 of an associated citizen science program. Because site access and other logistical considerations make a citizen science program at GIRF no longer feasible, this milestone will be re-envisioned as an education program targeted toward undergraduate students. Although EE was successful in securing an agreement for the expansion of the digital interactive display “The Whole GAMUT” at NHMU/Red Butte Creek to a second location representing the Middle Provo River, an eventual extension to all three watersheds may not be feasible due to the lack of an apparent partner in the Logan watershed. This plan, articulated in the Year 4 Annual Report, may need to be abandoned.

**Project Management**

**Key Accomplishments.** With the end of the iUTAH project approaching, core activities of Project Management staff focused on assessment and tracking of project outcomes; the strengthening of existing and addition/expansion of new collaborations and partnerships; as well as strategic planning of initiatives aimed at sustaining the statewide collaboration network built by iUTAH. Most of this work was conducted in close cooperation with EOD staff, the iUTAH Leadership Team, and high-level administration at Utah’s R1 universities.

Key accomplishments during Year 5 include development of a new, comprehensive student-tracking template, which was administered to all iUTAH student mentors in March of 2017; achieved a 93% response/compliance rate; and greatly improved the quality and quantity of data available on student participation dating back to Year 1 of the iUTAH project. The resulting central database, managed by the iUTAH Assistant Director/Project Administrator (AD/PA), will inform project-end assessment and reporting, particularly as it relates to critical outcomes. Additionally, iUTAH project leadership and project management staff actively engaged with external consultants to conduct a comprehensive collaboration assessment of the iUTAH project from inception to close. This assessment, currently in draft form, will be presented to project
participants at the Year 5 Annual Symposium and is expected to result in the publication of a manuscript in Year 6. Finally, iUTAH staff, in collaboration with the iUTAH External Evaluator, re-designed the evaluation and assessment plan for the final year(s) of the project to include summative assessment of mentoring programs, particularly as it relates to graduate students and postdoctoral associates, and the experience of PUI faculty in participating in the iUTAH project and collaborating with faculty from R1 universities.

Achievements in the strengthening of existing partnerships include collaborations with the Offices of the Vice Presidents for Research at USU and UU to provide science communications training through the Alan Alda Center for Communicating Science to 128 faculty, postdoctoral associates, and senior graduate students representing all ten institutions of higher education in the state; and to facilitate successful integration of Broader Impacts into research and grant writing activities through an all-day forum and series of workshops conducted by regional and national Broader Impacts practitioners, and attended by a statewide audience of over 130 higher education faculty, students, and staff.

New collaborations developed in Year 5 include a cross-jurisdictional partnership with Alaska EPSCoR to facilitate development of a workshop proposal on team science and community building for NSF EPSCoR; an incipient relationship with the National Board of SACNAS to secure funding and logistical support for the 2017 National Meeting in Salt Lake City, Utah; and a partnership with AAAS to sustain the statewide collaboration network developed over the course of the iUTAH project in the form of a virtual statewide community-university partnership for sustainable integrated socio-environmental systems (Box 5).

Key accomplishments in pursuing sustainability of the statewide collaboration network built by iUTAH include a series of meetings with a diverse array of constituents and stakeholders in Spring of 2017, culminating in a workshop/forum held at UU in concert with the iUTAH Spring All-hands Meeting entitled “What’s

<table>
<thead>
<tr>
<th>Box 5. iUTAH partners with AAAS to promote science community building in UTAH.</th>
</tr>
</thead>
<tbody>
<tr>
<td>In December 2016, the American Association for the Advancement of Science selected iUTAH AD/PA Andreas Leidolf as one of 19 inaugural Community Engagement Fellows. The AAAS Community Engagement Fellows pilot program, aimed at improving collaboration and community building in science, provides orientation and support to professionalize and institutionalize the role of community engagement managers in the scientific community. iUTAH is optimistic that exposure to and advanced training in the novel approaches and tools utilized by this groundbreaking program will further the goal of sustaining and institutionalizing the statewide research and training collaborative iUTAH has built over the past five years in the form of a virtual Statewide Community-University Partnership for Sustainable Integrated Socio-environmental Systems.</td>
</tr>
</tbody>
</table>
next for iUTAH’s statewide partnership? Implications for the future of broader impacts in our state."

**Outputs and Outcomes.** Project Management staff continued to expand iUTAH’s statewide partnership in Year 5 with 28 new partner organizations, including five nonprofits, eight governmental agencies, and 16 academic institutions, bringing the total number of collaborating organizations to a record 108. Not surprisingly, participants also reported the highest ever number of collaborations in Year 5, 63, a 20% increase over Year 4.

iUTAH staff also served in important roles within the larger NSF EPSCoR community, with the iUTAH EOD Coordinator serving another term on the EOD Council, and the AD/PA assuming the role of Project Administrators’ Council Chair-elect. Three iUTAH staff also gave oral and poster presentations or moderated interactive panels at the NSF EPSCoR PD/PA/EOD Winter Meeting in St. Croix, U.S. Virgin Islands, 26-27 January 2017. Staff professional development outside of EPSCoR to build human capacity for research development and administration of large collaborative, cross-institutional projects in Utah continued to be a focus in Year 5. EOD coordinator Ellen Eiriksson participated in a series of workshops at the University of Utah’s Women’s Leadership Summit, as well as in the 5th Annual National Alliance for Broader Impacts Summit. AD/PA Andreas Leidolf, in collaboration with AAAS and other external partners, developed a panel proposal for the Science of Team Science 2017 Conference, which was accepted.

After being honored with the Governor’s Medal for Excellence in Science and Technology in Year 4, iUTAH Project Director Dr. Michelle Baker was selected as the recipient of the Pioneers of Progress Award for Science and Technology by The Days of ’47, Inc. in April of 2017. AD/PA Andreas Leidolf was awarded a AAAS Fellowship to support his participation in the inaugural 2017 CEFP funded by the Alfred P. Sloan Foundation.

**Future Plans.** Broad objectives for iUTAH Project Management staff in Year 6 include ongoing project management, reporting and assessment, close-out, legacy activities, and sustainability initiatives. Specific goals are:

- Encouraging, facilitating, and supporting iUTAH research, CI, and EOD teams in achieving their goals, meeting stated objectives, completing milestones and attaining project metrics
- Representing Utah EPSCoR to NSF EPSCoR through participation in the National Conference and Spring PD/PA Meeting
- Conducting comprehensive assessments of scientific collaborations, student participation, and EOD programs; producing secondary media for
distribution to stakeholders and partners, as well as infographics for iUTAH website

- Performing project-end reporting to NSF
- In coordination with USU administration, overseeing the orderly close-out of the iUTAH award, including, as applicable, supporting auditors in the event of an external or internal audit
- Providing support for the continuity and sustainability of iUTAH project outcomes, including maintaining existing relationships with important stakeholders and partners across the state and nation; knowledge transfer and archiving; and the adaptation and application of project resources to new challenges and tasks (data repository, best practices, iUTAH inreach and outreach web and social media resources)
- Providing support for long-term sustainability of crucial project infrastructure, outcomes, and impacts, including collaborative capacity, community-university partnerships, and R1-PUI collaboration

**Significant Problems, Opportunities, and Changes.** No significant problems were encountered in Year 5, and no substantive changes to the continued conduct and management of the award are expected in Year 6. iUTAH’s collaboration with AAAS CEFP is scheduled to continue through Year 6 and may provide novel opportunities for sustaining a statewide community-university partnership for sustainable integrated socio-environmental systems in the state.

4. SUMMARY OF PROGRESS TO DATE

Progress-to-date relative to project goals, objectives, and milestones specified in the iUTAH Strategic Plan as revised on 23 June 2016 are summarized in tabular/graphic format in Tables 12-14. Table 12 lists Year 5 project milestones by RFA and project element: Of 75 milestones across all RFAs and project elements, 49 (65%) were accomplished, 21 (28%) were partially accomplished, and 5 (7%) were not accomplished. Unaccomplished and partially accomplished milestones were most prominent in RFA 2 and CI, and were primarily due to inevitable time delays associated with changes in co-leadership and key personnel in Year 4. Additionally, iUTAH CI participants are still in the process of completing the movement of the iUTAH data repository to new long-term storage and archival, which is a significant undertaking.

Table 13 provides an overview of the status of “legacy” milestones, i.e., milestones not or only partially accomplished that were held over from previous project years: Of seven milestones held over from Year 3, six (86%) saw
significant progress in Year 5, with two accomplished, and one changing from unaccomplished to “in progress.” Of four Year 4 legacy milestones, two (50%) have since been accomplished, with the other two remaining “in progress” or unaccomplished.

Table 14 summarizes future activities as laid out in the Year 4 Annual Report, as well as a small number of “legacy” activities held over from Year 3, and the extent to which these plans were realized in Year 5: Of 24 specific actions identified for implementation during Year 5, eleven were accomplished (46%), twelve (50%) remain in progress or have been partially accomplished, and one is unaccomplished (4%).

5. SPECIAL CONDITIONS

There are currently no unmet Jurisdiction-Specific Terms and Conditions as specified in the “Utah Programmatic Terms and Conditions.” The most recent report of the iUTAH External Advisory Board is included with this annual report by attachment. Summative evaluation of the iUTAH project by External Evaluator Dr. Jacque Ewing-Taylor is ongoing, as is a comprehensive collaboration assessment by Dr. Alan Porter of SearchTech/Georgia Technological University. A draft report of the collaboration assessment is also included with this report by way of attachment.

6. APPENDIX (TABLES 1-14)
<table>
<thead>
<tr>
<th>Goal</th>
<th>Strategy</th>
<th>Year</th>
</tr>
</thead>
</table>
| Create common research platform required to enhance interdisciplinary excellence in water and urban science | • Create integrated, instrumented watershed observatories across urbanization gradient  
• Create integrated, multi-institutional research teams  
• Engage existing and target new expertise in social sciences with an emphasis on maximizing interdisciplinary collaboration  
• Create an urban green infrastructure facility to test engineering solutions to water quality and quantity issues | 1-2  
1-3  
2-4  
3-5 |
| Promote excellence and innovation in integrated modeling of coupled human-natural systems | • Create a highly integrated cyberinfrastructure data storage and modeling network in Utah providing state-of-the-art data storage and high throughput modeling capabilities | 1-5 |
| Enhance Utah economy and workforce | • Partner with private industry through sensor system design, development, and deployment  
• Partner with private industry and government agencies through student traineeship program | 1-4  
1-5 |
| Grow a STEM-informed citizenry | • Engage women and underrepresented groups in STEM  
• Partner with statewide experts on recruitment and retention of diverse communities | 2-5  
2-5 |
| Integrate research, education, and decision-making | • Build capacity for innovative data visualization, and bring together researchers, educators, and decision-makers together in a participatory modeling environment  
• Enhance STEM pipeline with an emphasis on female, Hispanic, Native American, rural, and first-generation college students | 3-5  
1-5 |
Table 2. List of iUTAH participating institutions of higher education in Utah.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Type</th>
<th>Relationship to iUTAH</th>
<th>Year 1-5 Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brigham Young University</td>
<td>R1</td>
<td>Subaward</td>
<td>Full engagement across research/EOD spectrum</td>
</tr>
<tr>
<td>Dixie State University a</td>
<td>PUI (4-year)</td>
<td>Partner</td>
<td>Utah Water Survey, iFellows, Summer Institute, EOD teams</td>
</tr>
<tr>
<td>Salt Lake Community College a</td>
<td>PUI (2-year)</td>
<td>Subaward</td>
<td>Utah Water Survey, iFellows, Summer Institute, EOD Innovation Awards, EOD teams</td>
</tr>
<tr>
<td>Snow College a</td>
<td>PUI (2-year)</td>
<td>Partner</td>
<td>Utah Water Survey, iFellows</td>
</tr>
<tr>
<td>Southern Utah University</td>
<td>PUI (4-year)</td>
<td>Subaward</td>
<td>RCGs, iFellows, Summer Institute, EOD Innovation Awards, EOD teams, Management Team</td>
</tr>
<tr>
<td>University of Utah</td>
<td>R1</td>
<td>Subaward</td>
<td>Full engagement across research/EOD spectrum</td>
</tr>
<tr>
<td>Utah State University</td>
<td>R1</td>
<td>Main Award</td>
<td>Full engagement across research/EOD spectrum</td>
</tr>
<tr>
<td>Utah State University Eastern—Blanding a</td>
<td>PUI (2-year)</td>
<td>Partner</td>
<td>Native American STEM Mentorship Program, iFellows</td>
</tr>
<tr>
<td>Utah Valley University a</td>
<td>PUI (4-year)</td>
<td>Subaward</td>
<td>RCGs, iFellows, Summer Institute, EOD teams, Management Team</td>
</tr>
<tr>
<td>Weber State University a</td>
<td>PUI (4-year)</td>
<td>Subaward</td>
<td>RCGs, iFellows, Summer Institute, EOD Innovation Awards, EOD teams, Management Team</td>
</tr>
<tr>
<td>Westminster College</td>
<td>PUI (4-year)</td>
<td>Subaward</td>
<td>RCGs, iFellows, EOD teams, Management Team</td>
</tr>
</tbody>
</table>

a Open enrollment school
Table 3. Year 5 target metrics and outputs/outcomes for iUTAH Research Focus Area 1 (Biophysical System).

<table>
<thead>
<tr>
<th>Metric</th>
<th>Year 5 Target</th>
<th>Year 5 Output/Outcome</th>
<th>% of Target Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentations</td>
<td>10-15</td>
<td>19</td>
<td>152%</td>
</tr>
<tr>
<td>Peer-reviewed publications</td>
<td>3-6</td>
<td>16</td>
<td>356%</td>
</tr>
<tr>
<td>Popular press publications</td>
<td>2-5</td>
<td>1</td>
<td>29%</td>
</tr>
<tr>
<td>Collaborative proposals</td>
<td>3-5</td>
<td>10</td>
<td>250%</td>
</tr>
<tr>
<td>Datasets published</td>
<td>5-10</td>
<td>9</td>
<td>120%</td>
</tr>
<tr>
<td>Metric</td>
<td>Year 5 Target</td>
<td>Year 5 Output/Outcome</td>
<td>% of Target Midpoint</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>---------------</td>
<td>-----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Subgroup or planning meetings</td>
<td>3-10</td>
<td>10</td>
<td>154%</td>
</tr>
<tr>
<td>Stakeholder meetings</td>
<td>2-5</td>
<td>22</td>
<td>629%</td>
</tr>
<tr>
<td>Social science data collection protocols and instruments</td>
<td>2-3</td>
<td>5</td>
<td>200%</td>
</tr>
<tr>
<td>Datasets that document social and engineered aspects of the study area</td>
<td>3-5</td>
<td>15</td>
<td>375%</td>
</tr>
<tr>
<td>Synoptic sampling campaign of urban influence on water outcomes</td>
<td>1</td>
<td>8</td>
<td>800%</td>
</tr>
<tr>
<td>Presentations</td>
<td>5-8</td>
<td>39</td>
<td>600%</td>
</tr>
<tr>
<td>Peer-reviewed publications</td>
<td>3-5</td>
<td>15</td>
<td>333%</td>
</tr>
<tr>
<td>Popular press publications</td>
<td>2-3</td>
<td>2</td>
<td>80%</td>
</tr>
<tr>
<td>Collaborative proposals with input from RFA 2</td>
<td>1-2</td>
<td>10</td>
<td>667%</td>
</tr>
<tr>
<td>Team members working with RFA 3 on coupled modeling and participatory engagement</td>
<td>3-5</td>
<td>16</td>
<td>400%</td>
</tr>
</tbody>
</table>
Table 5. Year 5 target metrics and outputs/outcomes for iUTAH Research Focus Area 3 (Coupled Human-Natural System).

<table>
<thead>
<tr>
<th>Metric</th>
<th>Year 5 Target</th>
<th>Year 5 Output/Outcome</th>
<th>% of Target Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative team meetings/workshops</td>
<td>5-8</td>
<td>12</td>
<td>185%</td>
</tr>
<tr>
<td>Model inventory meetings</td>
<td>2-3</td>
<td>0(^a)</td>
<td>N/A</td>
</tr>
<tr>
<td>Interdisciplinary model development workshops</td>
<td>1-2</td>
<td>2</td>
<td>133%</td>
</tr>
<tr>
<td>Stakeholder engagement meetings</td>
<td>1-3</td>
<td>31</td>
<td>1550%</td>
</tr>
<tr>
<td>Stakeholder products</td>
<td>1-3</td>
<td>5</td>
<td>250%</td>
</tr>
<tr>
<td>Model inventory</td>
<td>Annual Update</td>
<td>(_a)</td>
<td>N/A</td>
</tr>
<tr>
<td>Scenarios modeling workshops</td>
<td>2-3</td>
<td>2</td>
<td>80%</td>
</tr>
<tr>
<td>Visualization outreach activities</td>
<td>3-5</td>
<td>3</td>
<td>75%</td>
</tr>
<tr>
<td>Presentations</td>
<td>1-5</td>
<td>26</td>
<td>867%</td>
</tr>
<tr>
<td>Peer-reviewed publications</td>
<td>2-3</td>
<td>11</td>
<td>440%</td>
</tr>
<tr>
<td>Popular press publications</td>
<td>1-2</td>
<td>6</td>
<td>400%</td>
</tr>
<tr>
<td>Collaborative proposals</td>
<td>1-2</td>
<td>9</td>
<td>600%</td>
</tr>
</tbody>
</table>

\(^a\) Model inventory work completed in Year 4.
Table 6. Year 5 target metrics and outputs/outcomes for iUTAH Cyberinfrastructure (CI).

<table>
<thead>
<tr>
<th>Metric</th>
<th>Year 5 Target</th>
<th>Year 5 Output/Outcome</th>
<th>% of Target Midpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>CI staff supported</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Student programmers trained</td>
<td>1-2</td>
<td>2</td>
<td>133%</td>
</tr>
<tr>
<td>Virtual host servers added</td>
<td>1-2</td>
<td>6</td>
<td>400%</td>
</tr>
<tr>
<td>Data storage supporting visualization infrastructure by Year 5</td>
<td>100 TB</td>
<td>100 TB</td>
<td>100%</td>
</tr>
<tr>
<td>Disk capacity of large storage infrastructure in collaboration with CI-WATER</td>
<td>1 PB</td>
<td>1 PB</td>
<td>100%</td>
</tr>
<tr>
<td>Datasets from external partners accessible through iUTAH Modeling and Data Federation (MDF)</td>
<td>5-8</td>
<td>5</td>
<td>77%</td>
</tr>
<tr>
<td>Registered users of the modeling and data federation</td>
<td>50</td>
<td>23(^a)</td>
<td>N/A</td>
</tr>
<tr>
<td>Unique visits to Data Repository website</td>
<td>300-500</td>
<td>N/A(^b)</td>
<td>N/A</td>
</tr>
<tr>
<td>Presentations</td>
<td>3.5</td>
<td>6</td>
<td>150%</td>
</tr>
<tr>
<td>Peer-reviewed publications</td>
<td>2.3</td>
<td>7</td>
<td>280%</td>
</tr>
<tr>
<td>Hydroinformatics course offerings</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Grad students trained in hydroinformatics course</td>
<td>15-20</td>
<td>30</td>
<td>171%</td>
</tr>
<tr>
<td>CI-related proposals</td>
<td>2.5</td>
<td>4</td>
<td>114%</td>
</tr>
<tr>
<td>iUTAH proposals that cite iUTAH MDF in their data management plans</td>
<td>2.3</td>
<td>16</td>
<td>640%</td>
</tr>
</tbody>
</table>

\(^a\) During Year 5, iUTAH transitioned from the deprecated Data Repository at [http://repository.iutahepscor.org](http://repository.iutahepscor.org) to HydroShare ([http://www.hydroshare.org](http://www.hydroshare.org)). As of 30 April 2017, there are 23 registered iUTAH-affiliated users in HydroShare.

\(^b\) Since moving from the iUTAH data repository to HydroShare, individual visits can no longer be tracked, because HydroShare usage metrics are at a system-wide level and not aggregated for the subset of iUTAH-related resources within HydroShare.
Table 7. Use metrics for iUTAH Cyberinfrastructure websites and applications based on Google Analytics for the period 13 April 2016 – 13 April 2017.

<table>
<thead>
<tr>
<th>Website/Application</th>
<th>No. of Unique Sessions</th>
<th>No. of Unique Users</th>
<th>No. of Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>iUTAH Modeling and Data Federation Website</td>
<td>1823</td>
<td>966</td>
<td>43</td>
</tr>
<tr>
<td>iUTAH Time Series Analyst</td>
<td>1659</td>
<td>729</td>
<td>36</td>
</tr>
<tr>
<td>iUTAH Survey Data Viewer</td>
<td>631</td>
<td>402</td>
<td>35</td>
</tr>
</tbody>
</table>
Table 8. Participation by women, under-represented minorities (URM), and students from Primarily Undergraduate Institutions (PUI) in select iUTAH Research and Education, Outreach and Diversity programs in Year 5.

<table>
<thead>
<tr>
<th>Program</th>
<th>Participation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Women</td>
<td>% URM</td>
<td>% PUI</td>
</tr>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Research Assistants</td>
<td>56%</td>
<td>7%</td>
<td>N/A</td>
</tr>
<tr>
<td>Postdoctoral Associates</td>
<td>50%</td>
<td>0%</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Education, Outreach and Diversity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>iFellows</td>
<td>Applied: 48%</td>
<td>Applied: 14%</td>
<td>Applied: 48%</td>
</tr>
<tr>
<td>Applied: 60%</td>
<td></td>
<td>Hired: 27%</td>
<td>Hired: 47%</td>
</tr>
<tr>
<td>Traineeship</td>
<td>17%</td>
<td>0%</td>
<td>N/A</td>
</tr>
<tr>
<td>Summer Institute</td>
<td>60%</td>
<td>11%</td>
<td>N/A</td>
</tr>
<tr>
<td>Taking Learning Outdoors</td>
<td>50%</td>
<td>13%</td>
<td>N/A</td>
</tr>
<tr>
<td>WaterGirls</td>
<td>100%</td>
<td>-a</td>
<td>6%</td>
</tr>
<tr>
<td>Utah Water Watch Citizen Science</td>
<td>52%</td>
<td>-a</td>
<td>N/A</td>
</tr>
<tr>
<td>Latinos in Action iUTAH Booth</td>
<td>54%</td>
<td>91%</td>
<td>37%</td>
</tr>
<tr>
<td>Cross-campus Hydroinformatics Course</td>
<td>20%</td>
<td>-a</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*a Not recorded or information not available*
Table 9. Professional development activities and capacity building among iUTAH participants in Year 5.

<table>
<thead>
<tr>
<th>Event</th>
<th>Type</th>
<th>Location</th>
<th>Date</th>
<th>Students&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Faculty and Staff&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utah Conference on Undergraduate Research</td>
<td>Conference</td>
<td>Salt Lake City, UT</td>
<td>19 February 2016</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>2016 American Association of Geographers Annual Meeting</td>
<td>Conference</td>
<td>San Francisco, CA</td>
<td>29 March-2 April 2016</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt; National Water Quality Monitoring Conference</td>
<td>Conference</td>
<td>Tampa, FL</td>
<td>2-6 May 2016</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Friends of the Great Salt Lake 2016 Great Salt Lake Issues Forum</td>
<td>Conference</td>
<td>Salt Lake City, UT</td>
<td>11-13 May 2016</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Society for Freshwater Science 2017 Annual Meeting</td>
<td>Conference</td>
<td>Raleigh, NC</td>
<td>4-8 June 2016</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>National Nonpoint Source Monitoring Workshop</td>
<td>Conference</td>
<td>Salt Lake City, UT</td>
<td>23-25 August 2016</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10&lt;sup&gt;th&lt;/sup&gt; Annual Salt Lake County Watershed Symposium</td>
<td>Conference</td>
<td>West Valley City, UT</td>
<td>8-11 September 2016</td>
<td>3</td>
<td>18</td>
</tr>
<tr>
<td>2016 Forensic Isotope Ratio Mass Spectrometry Conference</td>
<td>Conference</td>
<td>Auckland, New Zealand&lt;sup&gt;c&lt;/sup&gt;</td>
<td>18-23 September 2016</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
### Table 9. Continued.

<table>
<thead>
<tr>
<th>Event</th>
<th>Type</th>
<th>Location</th>
<th>Date</th>
<th>Students(^a)</th>
<th>Faculty and Staff(^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alan Alda Center for Communicating Science Workshops</td>
<td>Workshop</td>
<td>Logan, UT</td>
<td>3-4 October 2016</td>
<td>3</td>
<td>30</td>
</tr>
<tr>
<td>Alan Alda Center for Communicating Science Plenary</td>
<td>Conference</td>
<td>Logan, UT</td>
<td>5 October 2016</td>
<td>21</td>
<td>49</td>
</tr>
<tr>
<td>2017 Society for the Advancement of Chicanos/Hispanics and Native Americans in Science National Diversity in STEM Conference</td>
<td>Conference</td>
<td>Long Beach, CA</td>
<td>13-15 October 2016</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Society of Research Administrators International Financial Research Administration Workshop</td>
<td>Workshop</td>
<td>San Antonio, TX</td>
<td>22 October 2016</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Society of Research Administrators International Research Law Workshop</td>
<td>Workshop</td>
<td>San Antonio, TX</td>
<td>23 October 2016</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2016 Society of Research Administrators International Annual Conference</td>
<td>Conference</td>
<td>San Antonio, TX</td>
<td>24-26 October 2016</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Soil Science Society of America (SSA) Graduate Student Leadership Conference</td>
<td>Workshop</td>
<td>Phoenix, AZ</td>
<td>5 November 2016</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Table 9. Continued.

<table>
<thead>
<tr>
<th>Event</th>
<th>Type</th>
<th>Location</th>
<th>Date</th>
<th>iUTAH Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 International Annual Meeting of American Society of Agronomy,</td>
<td>Conference</td>
<td>Phoenix, AZ</td>
<td>6-9 November 2016</td>
<td>1</td>
</tr>
<tr>
<td>Crop Science Society of America, SSSA</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2016 American Water Resources Association Annual Conference</td>
<td>Conference</td>
<td>Orlando, FL</td>
<td>13-17 November 2016</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>2016 American Geophysical Union Fall Meeting</td>
<td>Conference</td>
<td>San Francisco, CA</td>
<td>12-16 December 2016</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>NSF EPSCoR PD/PA/EOD Winter Meeting</td>
<td>Conference</td>
<td>St. Croix, USVI</td>
<td>26-27 January 2017</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Frank 2017 Public Interest Communications</td>
<td>Conference</td>
<td>Gainesville, FL</td>
<td>28 February-3 March 2017</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2017 &quot;Reflecting and Expanding on Our Broader Impact” Broader</td>
<td>Conference</td>
<td>Salt Lake City, UT</td>
<td>31 March 2017</td>
<td>21</td>
</tr>
<tr>
<td>Impacts Forum Plenary</td>
<td></td>
<td></td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>2017 “Reflecting and Expanding on Our Broader Impact” Broader</td>
<td>Workshop</td>
<td>Salt Lake City, UT</td>
<td>31 March 2017</td>
<td>12</td>
</tr>
<tr>
<td>Impacts Forum Workshops</td>
<td></td>
<td></td>
<td></td>
<td>41</td>
</tr>
<tr>
<td>Event</td>
<td>Type</td>
<td>Location</td>
<td>Date</td>
<td>Students(^a)</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------------</td>
<td>-----------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>National Conference on Undergraduate Research</td>
<td>Conference</td>
<td>Memphis, TN</td>
<td>6-8 April 2017</td>
<td>2</td>
</tr>
<tr>
<td>National Alliance for Broader Impacts Annual Summit</td>
<td>Conference</td>
<td>Stevenson, WA</td>
<td>26-28 April 2017</td>
<td>0</td>
</tr>
<tr>
<td>Social Media Strategy/Marketing Summit</td>
<td>Conference</td>
<td>Chicago, IL</td>
<td>26-28 April 2017</td>
<td>0</td>
</tr>
<tr>
<td>2017 American Water Resources Association Spring Conference</td>
<td>Conference</td>
<td>Snowbird, UT</td>
<td>30 April-3 May 2017</td>
<td>1</td>
</tr>
<tr>
<td>3(^{rd}) Annual Duck Family Graduate Workshop on Environmental Politics and Governance</td>
<td>Workshop</td>
<td>Seattle, WA</td>
<td>17-19 May 2017</td>
<td>1</td>
</tr>
<tr>
<td>EWRI World Environmental and Water Congress</td>
<td>Conference</td>
<td>Sacramento, CA</td>
<td>21-25 May 2017</td>
<td>1</td>
</tr>
<tr>
<td>Science of Team Science 2017 Conference</td>
<td>Conference</td>
<td>Clearwater Beach, FL</td>
<td>12-14 June 2017</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^a\) includes undergraduate and graduate students  
\(^b\) includes postdoctoral associates and technicians  
\(^c\) support provided with non-federal funds
### Table 10. Participation in iUTAH Education, Outreach and Diversity (EOD) external engagement (EE)/outreach events in Year 5.

<table>
<thead>
<tr>
<th>Program</th>
<th>Conducted by</th>
<th>Funded through</th>
<th>Teachers</th>
<th>Students</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taking Learning Outdoors</td>
<td>Natural History Museum of Utah</td>
<td>EOD/EE</td>
<td>142</td>
<td>3968</td>
<td>13</td>
</tr>
<tr>
<td>Citizen Science</td>
<td>Utah Water Watch</td>
<td>EOD/EE</td>
<td>19</td>
<td>47</td>
<td>248</td>
</tr>
<tr>
<td>Water Runs Through this Book</td>
<td>iUTAH/Nancy Bo Flood</td>
<td>EOD/DE</td>
<td>2</td>
<td>35</td>
<td>1</td>
</tr>
<tr>
<td>iUTAH WaterGirls</td>
<td>Salt Lake Community College</td>
<td>EOD Innovation Awards</td>
<td>9</td>
<td>98</td>
<td>10</td>
</tr>
<tr>
<td>UWQE Outreach Events</td>
<td>USU Water Quality Extension</td>
<td>EOD/EE</td>
<td>134</td>
<td>7460</td>
<td>2056</td>
</tr>
<tr>
<td>“The Whole GAMUT” Digital Interactive</td>
<td>Natural History Museum of Utah</td>
<td>EOD Innovation Awards</td>
<td>529</td>
<td>2149</td>
<td>11023</td>
</tr>
<tr>
<td>Summer Institute</td>
<td>UU Genetic Science Learning Center</td>
<td>EOD/WFD</td>
<td>9</td>
<td>18</td>
<td>N/A</td>
</tr>
<tr>
<td>iFellows</td>
<td>iUTAH</td>
<td>Participant Support</td>
<td>N/A</td>
<td>18</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td></td>
<td>844</td>
<td>13793</td>
<td>13351</td>
</tr>
</tbody>
</table>

DE = Diversity Enhancement; WFD = Workforce Development.
### Table 11. iUTAH engagement with stakeholders and the public through electronic, online, and social media resources in Year 5.

<table>
<thead>
<tr>
<th>Milestone and Metric</th>
<th>Output/Outcome</th>
<th>% Change over Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revise and augment iUTAH website</td>
<td>4,503 page views/month</td>
<td>-18%</td>
</tr>
<tr>
<td>Expand and diversify social media following</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Facebook</td>
<td>249 new page likes</td>
<td>13%</td>
</tr>
<tr>
<td>• Twitter</td>
<td>171 new followers</td>
<td>36%</td>
</tr>
<tr>
<td>• LinkedIn</td>
<td>112 new connections</td>
<td>29%</td>
</tr>
<tr>
<td>Produce and expand bi-monthly newsletter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Newsletters circulated</td>
<td>12</td>
<td>20%</td>
</tr>
<tr>
<td>• Total subscribers (through 2 May 2016)</td>
<td>345</td>
<td>7%</td>
</tr>
<tr>
<td>• Readership engagement of newsletter:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open rate (email opened by subscribers)</td>
<td>32%&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Click rate (email reader opened one or more stories)</td>
<td>11%&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Evaluate and refine communication tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Press releases published in popular press</td>
<td>20</td>
<td>-50%</td>
</tr>
</tbody>
</table>

<sup>a</sup> Industry average is 16.5%.
<sup>b</sup> Industry average is 2.1%.
Table 12. Traffic Light Analysis (TLA) of Year 5 (1 August 2016 – 31 July 2017) iUTAH milestones as indicated in Strategic Plan or revised in Years 1-5.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Management</strong></td>
<td>Weekly EPScRoR staff meetings</td>
<td><img src="https://via.placeholder.com/15" alt="Yellow Circle" /></td>
<td>25 out of 48 scheduled weekly meetings held (52%).</td>
</tr>
<tr>
<td></td>
<td>Biweekly Leadership Team meetings</td>
<td><img src="https://via.placeholder.com/15" alt="Green Circle" /></td>
<td>Meetings held regularly, but on an as needed basis; 18 meetings held over 24 two-week periods (75%); irregular business conducted via e-mail.</td>
</tr>
<tr>
<td></td>
<td>Biannual all-hands meetings</td>
<td><img src="https://via.placeholder.com/15" alt="Green Circle" /></td>
<td>Fall All-hands meeting: 4 November 2016, Provo, Utah. Spring All-hands meeting: 31 March 2017, University of Utah, Salt Lake City, Utah.</td>
</tr>
<tr>
<td></td>
<td>Annual External Advisory Board and External Assessment meeting</td>
<td><img src="https://via.placeholder.com/15" alt="Green Circle" /></td>
<td>Draft collaboration assessment by SearchTech in collaboration with Project Director and Assistant Director is complete and scheduled for presentation at Annual Symposium.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="https://via.placeholder.com/15" alt="Green Circle" /></td>
<td>External assessment plan revised in collaboration between External Evaluator and Assistant Director at Annual NSF EPScR Winter Meeting; implementation is ongoing.</td>
</tr>
<tr>
<td></td>
<td>Annual Symposium held</td>
<td><img src="https://via.placeholder.com/15" alt="Green Circle" /></td>
<td>2017 iUTAH Annual Symposium and Summer All-hands Meeting is scheduled for 13-14 July 2017, Utah State University, Logan, Utah.</td>
</tr>
<tr>
<td></td>
<td>Oversee all data and modeling repository activities</td>
<td><img src="https://via.placeholder.com/15" alt="Yellow Circle" /></td>
<td>Planning meeting scheduled for 17 May 2017.</td>
</tr>
</tbody>
</table>
**Table 12.** Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revise activities based on previous assessment; summative assessment of project management activities</td>
<td>☺</td>
<td>Summative assessment of project management activities will take place during Year 6.</td>
</tr>
<tr>
<td></td>
<td>Write final report</td>
<td>☺</td>
<td>Final report will be submitted at the end of a Year 6 no-cost extension.</td>
</tr>
</tbody>
</table>

**Research**

Research Focus Area (RFA) 1

*Water Balance*

- Archive all data sets | ☺ | Data archival for GAMUT is almost complete, with Tier 1 data at 90%, 80% and 50% for the Red Butte Creek, Logan, and Provo watersheds, respectively; and Tier 2 data at 90%, 90% and 50%, respectively. |
- Validate rating curves | ☺ | All rating curves have been validated, with 10 datasets covering all aquatic GAMUT stations across all three watersheds. Limited high flow measurements may be added during the 2017 runoff to take advantage of record snowpack. |
- Continue data collection | ☺ | Data collection is ongoing and scheduled to continue through Year 6 and beyond. |
<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Publish finalized water yield models for all</td>
<td></td>
<td>RFA 1 water yield work has resulted in 10 publications in Year 5, with 2 additional manuscripts under review. Work related to water balance in northern Utah is likely to continue, with 2 external proposals funded and several others under review.</td>
</tr>
<tr>
<td></td>
<td>watersheds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Create data repository</td>
<td></td>
<td>116 datasets stored for long-term archival and discoverable on CUAHSI HIS HydroShare.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Continue data collection</td>
<td></td>
<td>Data collection is ongoing and scheduled to continue through Year 6 and beyond.</td>
</tr>
<tr>
<td></td>
<td>Stream datasets</td>
<td></td>
<td>92 GAMUT datasets have been published and made accessible on HydroShare; 23 additional records relating water quality to: algae and cyanobacteria (6), nitrogen (4), and phosphorus (2).</td>
</tr>
<tr>
<td></td>
<td>Create data repository</td>
<td></td>
<td>116 datasets stored for long-term archival and discoverable on HydroShare.</td>
</tr>
<tr>
<td></td>
<td>Publish finalized water quality models for all</td>
<td></td>
<td>RFA 1 water quality work has resulted in 6 publications in Year 5, with 5 manuscripts under review. Additional work is likely with several new proposals funded or under review.</td>
</tr>
</tbody>
</table>
### Table 12. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Climate and Land Use Change</strong></td>
<td>Collaborate with RFA 3 to publish final coupled land-use, climate change models</td>
<td></td>
<td>Ongoing work by Brooks and collaborators (RFA 1), Bowen and collaborators (RFA 1), Null and collaborators (RFA 3) and Strong and collaborators (RFA 3) is expected to be completed in Year 6, and includes quantification of the interaction of climate and landscape on water resources, as well as modeling of other climate change impacts and adaptations; modeling Salt Lake City water quantity and quality under multiple uncertain change drivers; and developing a systems-model approach to assessing riparian zone restoration.</td>
</tr>
<tr>
<td></td>
<td>Collaborate with RFA 3 to publish scenarios models for 5, 10, and 15 year futures</td>
<td></td>
<td>In addition to extant accomplishments by researchers at UU and USU, including a vulnerability assessment of water supply systems under climate change; modeling of circulation influences on precipitation deficits; and snowpack drought and climate forcing; there is ongoing work in climate modeling and alternative future scenarios at both USU (Wang) and UU (Strong and Khatri) that will be finalized in Year 6.</td>
</tr>
<tr>
<td><strong>RFA 2</strong></td>
<td><strong>Water and Land Use</strong></td>
<td></td>
<td><strong>Document impacts of RFA 2 research on stakeholder decisions</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Identify new research questions and data needs to address emergent scientific and policy goals</strong></td>
<td></td>
<td><strong>Assessment of RFA 2 impacts is underway, with 14 out of 35 researchers interviewed; completion of this activity and interviews with up to 30 stakeholders and external partners is scheduled for Year 6.</strong></td>
</tr>
</tbody>
</table>

New and evolving questions have prompted additional data needs and catalyzed numerous new research projects, grant proposal submissions and awards; a synthesis manuscript highlight new areas of inquiry emerging from iUTAH research is scheduled for completion during Year 6.
<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban Form</strong></td>
<td>Receive first major collaborative grant</td>
<td>🟢</td>
<td>4 proposals awarded totaling over $3.3M in new external funding.</td>
</tr>
<tr>
<td></td>
<td>Document impact of improved knowledge on stakeholder decisions about urban design, growth, management, and water sustainability</td>
<td>🟢</td>
<td>Assessment of RFA 2 impacts is underway, with 14 out of 35 researchers interviewed; completion of this activity and interviews with up to 30 stakeholders and external partners is scheduled for Year 6.</td>
</tr>
<tr>
<td><strong>Built Systems</strong></td>
<td>Receive first major collaborative grant</td>
<td>🟢</td>
<td>4 proposals awarded totaling over $3.3M in new external funding.</td>
</tr>
<tr>
<td></td>
<td>Document impact of green infrastructure (GI) research on stakeholder decisions about GI planning and implementation</td>
<td>🟢</td>
<td>Assessment of RFA 2 impacts is underway, with 14 out of 35 researchers interviewed; completion of this activity and interviews with up to 30 stakeholders and external partners is scheduled for Year 6.</td>
</tr>
<tr>
<td></td>
<td>Establish 1 new GI research site in extended network</td>
<td>🟢</td>
<td>New GI research sites established across extended network. Examples include work by Dupont (USU), as well as iUTAH’s partial funding of a green roof demonstration project at USU.</td>
</tr>
<tr>
<td></td>
<td>Receive first major collaborative grant</td>
<td>🟢</td>
<td>4 proposals awarded totaling over $3.3M in new external funding.</td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLAa</td>
<td>Explanation</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------</td>
<td>------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RFA 3</td>
<td></td>
<td></td>
<td><strong>Interdisciplinary Modeling</strong></td>
</tr>
<tr>
<td></td>
<td>Dissemination of results and model products</td>
<td></td>
<td>RFA 3 results and model products disseminated widely and to diverse audiences via 3 popular press articles, 12 invited talks and guest lectures, 14 contributed talks, and 31 stakeholder engagement meetings.</td>
</tr>
<tr>
<td></td>
<td>Publish model coupling methods and results</td>
<td></td>
<td>RFA 3 results published via 11 peer-reviewed journal articles.</td>
</tr>
<tr>
<td>Coupling Research</td>
<td>Publication and dissemination of results</td>
<td></td>
<td>Work on coupling Water Evaluation and Planning models and an associated manuscript is ongoing and scheduled for completion in Year 6.</td>
</tr>
<tr>
<td></td>
<td>Evaluate scenarios of change and adaptation/mitigation strategies</td>
<td></td>
<td>With successful coupling of models by Strong (UU) and Null (USU) achieved, final calibration and publication are scheduled for Year 6.</td>
</tr>
<tr>
<td>Scenarios Modeling and Visualization</td>
<td>Publication and dissemination of results</td>
<td></td>
<td>4 presentations on scenarios modeling and visualization given at national and regional conferences in Year 5; 1 related manuscript accepted, with an additional submission; 1 manuscript in preparation.</td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLAa</td>
<td>Explanation</td>
</tr>
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</tr>
<tr>
<td></td>
<td>Introduce stakeholders to live web-based visualizations through classroom use and presentation to state agencies</td>
<td></td>
<td>Natural History Museum of Utah (NHMU) interactive approved for expansion (localized to the Middle Provo River GAMUT watershed) to BYU Bean Museum.</td>
</tr>
<tr>
<td></td>
<td>Assess usage of web-based visualizations through web analytics</td>
<td></td>
<td>Interactive web-based visualizations of urban typology, urban growth scenarios, and parcel-scale water use have been presented to and formed the basis of subsequent course assignments for UU students in GIS for Urban Planning (graduate) and Urban Ecology (undergrad) courses.</td>
</tr>
<tr>
<td></td>
<td>NHMU interactive display evaluated formally in a user-interaction formative evaluation; evaluation results are helping guide revision of the display.</td>
<td></td>
<td>Interactive visualization of RFA 2 urban typology has been delayed by ESRI licensing issues that are expected to be resolved by the end of Year 5.</td>
</tr>
<tr>
<td>Cyberinfrastructure (CI)</td>
<td>2-3 new proposals for CI-related research developed</td>
<td></td>
<td>4 proposals pending totaling $4.5M in new external funding.</td>
</tr>
<tr>
<td></td>
<td>All iUTAH Modeling and Data Federation source code and software tools have current releases and documentation on open source code repositories</td>
<td></td>
<td>Software development is ongoing, with commits performed daily. Additional software releases, as well as maintenance and updating of associated documentation contained within software repositories are scheduled for Year 6.</td>
</tr>
</tbody>
</table>
Table 12. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5 presentations describing iUTAH CI advances and contributions given at national conferences/meetings</td>
<td>6 CI-focused presentations at national and international conferences given in Year 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3 publications about iUTAH CI work/products published in peer reviewed journals</td>
<td>3 CI-focused peer-reviewed journal articles submitted, with an additional 3 manuscripts submitted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop a new and sustainable partnership with a longterm data repository for transitioning published iUTAH datasets.</td>
<td>Functionality is extant, but significant work is needed to ensure that iUTAH participants deposit and publish all datasets in HydroShare in compliance with the iUTAH data policy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finish and create a final release of the model coupling software under development and demonstrations using iUTAH RFA3 coupled modeling use cases.</td>
<td>With the researcher responsible for this milestone no longer with iUTAH, another researcher able to complete this task has been identified and is being recruited; expected deliverables include release of a working version of the software, and a manuscript demonstrating its utility via application to iUTAH RFA 3 use cases.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLA</td>
<td>Explanation</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Prepare documentation and a final software release for our innovative tools for visualizing social science survey datasets.</td>
<td>![Green]</td>
<td>The software is complete and a manuscript describing it has been published.</td>
</tr>
<tr>
<td></td>
<td>Develop new capability for integrating data derived from laboratory analysis of water quality and other samples with the iUTAH CI for continuous sensor datasets</td>
<td>![Yellow]</td>
<td>Implementation of this activity is imminent, with software development still in the initial stage. Completed work includes organizing sample-based water quality data in a database with full metadata descriptions; code development is ongoing.</td>
</tr>
<tr>
<td></td>
<td>Refresh existing and add additional storage to the iUTAH virtualization infrastructure</td>
<td>![Red]</td>
<td>To ensure transition to sustainable hardware and support, activities in Year 6 will focus on exploring options for storage of hardware and hosting.</td>
</tr>
<tr>
<td></td>
<td>Support for model coupling and execution on High Performance Computing (HPC) is made available</td>
<td>![Yellow]</td>
<td>With the researcher responsible for this milestone no longer with iUTAH, another researcher able to complete this task has been identified and is being recruited.</td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLA</td>
<td>Explanation</td>
</tr>
<tr>
<td>-------------------</td>
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</tr>
<tr>
<td>Education, Outreach and Diversity</td>
<td>Diversity Enhancement (DE)</td>
<td>Conduct diversity training workshop for new iUTAH participants</td>
<td>Diversity trainings held during all-hands meetings and iFellow cohort sessions; final diversity training will take place during 2017 iFellows program.</td>
</tr>
<tr>
<td></td>
<td>Implement recruitment and retention programs for target populations</td>
<td>Recruitment strategies and practices have been adjusted to reflect formative assessment and informal feedback received from a statewide constituency; recruitment materials were updated to reflect images of diverse participants, and to encourage higher-quality applicants to EOD programs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up to 25% women and underrepresented minorities (URMs) in all iUTAH opportunities</td>
<td>iFellow applicants: 48% women, 8.6 % URM; iUTAH Traineeship: 23% Women, 8% URM; GRAs: 41% women, 7% URM; postdoctoral associates: 50% women, 0% URM.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Design up to 2 museum programs for target populations</td>
<td>Taking Learning Outdoors (TLO) expanded to connect with Moab-area schools (rural southern Utah).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Train near-peer mentors</td>
<td>Near-peer mentor training conducted during 2017 iFellows program.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 12. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revise activities based on previous assessment; summative assessment of DET activities</td>
<td><img src="#" alt="Green" /></td>
<td>Assessment of DE activities is underway on multiple fronts but will likely not be complete until well into Year 6, with many successful programs ongoing and not scheduled for completion until the end of Year 5.</td>
</tr>
<tr>
<td>Workforce Development (WFD)</td>
<td>Recruit and hire undergraduate iFellows; up to 14 iFellows, 50% PUI, 25% URM or women</td>
<td><img src="#" alt="Green" /></td>
<td>58 applicants, 48% women, 14% URM, 48% PUI; 15 hires, 60% women, 27% URM, 47% PUI.</td>
</tr>
<tr>
<td></td>
<td>Train near-peer mentors</td>
<td><img src="#" alt="Green" /></td>
<td>Near-peer mentor training conducted during 2017 iFellows program.</td>
</tr>
<tr>
<td></td>
<td>Recruit and hire up to 15 graduate research assistants</td>
<td><img src="#" alt="Green" /></td>
<td>10 new graduate students hired.</td>
</tr>
<tr>
<td></td>
<td>Create K12 curriculum materials from Year 4 Summer Institute (SI)</td>
<td><img src="#" alt="Green" /></td>
<td>Work on Year 4 SI curriculum is ongoing.</td>
</tr>
<tr>
<td></td>
<td>Deposit curriculum materials from SIs</td>
<td><img src="#" alt="Green" /></td>
<td>Updated curricula are posted to Genetic Science Learning Center website as they become available; development of Year 4 SI is ongoing.</td>
</tr>
<tr>
<td></td>
<td>Develop at least 1 cross campus graduate training course</td>
<td><img src="#" alt="Green" /></td>
<td>30 graduate students trained in cross-campus Hydroinformatics course at UU, USU, and BYU.</td>
</tr>
</tbody>
</table>
Table 12. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recruit and fund PUI faculty</td>
<td>Research Catalyst Grants (RCGs)</td>
<td>![circle]</td>
<td>4 PUI faculty at 4 PUIs (WSU, UVU, Westminster College, SUU) recruited and funded for 3 traditional research awards, 1 time-release award, and 1 professional development award.</td>
</tr>
<tr>
<td>Review and fund 5 RCGs</td>
<td></td>
<td>![circle]</td>
<td>5 RCG funded (3 traditional research grants, 1 time-release grant, 1 professional development grant).</td>
</tr>
<tr>
<td>Recruit and hire postdoctoral scholars</td>
<td></td>
<td>![circle]</td>
<td>All 4 postdoctoral associates retained from Year 4; Krishna Khatri (UU) promoted to Research Assistant Professor; Rachel Gabor appointed tenure-track faculty at The Ohio State University starting Fall 2017; Melissa Haefner (USU) appointed tenure-track faculty at Portland State University.</td>
</tr>
<tr>
<td>Recruit and hire up to 10 UG Trainees</td>
<td></td>
<td>![circle]</td>
<td>4 Trainees retained at UU and USU; 8 additional Trainees hired at UU, BYU, and USU.</td>
</tr>
<tr>
<td>Survey participants to assess iUTAH collaborations</td>
<td></td>
<td>![circle]</td>
<td>iUTAH Undergraduate Student Survey conducted in Spring 2017 by Brunson (USU) and Yeo (UU) in collaboration with EOD Staff and Project Leadership.</td>
</tr>
<tr>
<td>Conduct year-end iUTAH Symposium</td>
<td></td>
<td>![circle]</td>
<td>2017 iUTAH Annual Symposium and Summer All-hands Meeting is scheduled for 13-14 July 2017, Utah State University, Logan, Utah.</td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLA</td>
<td>Explanation</td>
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<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Revise activities based on previous assessment; summative assessment of WFD activities</td>
<td>🟢</td>
<td>Year 5 programs revised based on assessment of previous assessment. Assessment of WFD activities is underway on multiple fronts but will likely not be complete until well into Year 6, with many successful programs (e.g., research catalyst grants, iFellows REU, SI curriculum development) ongoing and not scheduled for completion until the end of Year 5.</td>
</tr>
<tr>
<td>External Engagement (EE)</td>
<td>Recruit and engage K-12 cohorts for museum programs: 200 students; 30 teachers</td>
<td>🟢</td>
<td>TLO (NHMU): 17 teachers, 2500 students; &quot;Leo On Wheels&quot; Water Carts (The Leonardo): 6 teachers, 630 students; Green Roof Agriculture Exhibit and Outreach at the Frehner Museum (SUU): 60 teachers, 1740 students.</td>
</tr>
<tr>
<td></td>
<td>Conduct Utah Water Watch (UWW) K-12 programs at iUTAH facilities</td>
<td>🟢</td>
<td>USU Water Quality Extension/iUTAH outreach signs operational in all three iUTAH watersheds.</td>
</tr>
<tr>
<td></td>
<td>Summative assessment of K-12 activities</td>
<td>🟢</td>
<td>Assessment of EE activities is underway on multiple fronts but will likely not be complete until well into Year 6, with many successful programs ongoing and not scheduled for completion until the end of Year 5.</td>
</tr>
<tr>
<td></td>
<td>Recruit and engage public audiences for museum programs</td>
<td>🟢</td>
<td>TLO conducted in Moab area.</td>
</tr>
</tbody>
</table>
### Table 12. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>TLAa</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduct citizen science programs at iUTAH facilities</td>
<td>UWW Harmful Algal Bloom (HAB) training program conducted in Year 5. This program will enhance the ability to detect HABs in Utah Lake with the help of the expanded GAMUT network there.</td>
<td>☢</td>
<td></td>
</tr>
<tr>
<td>Summative assessment of public engagement activities</td>
<td>Assessment of EE activities is underway on multiple fronts but will likely not be complete until well into Year 6, with many successful programs ongoing and not scheduled for completion until the end of Year 5.</td>
<td>☢</td>
<td></td>
</tr>
<tr>
<td>Revise and augment iUTAH Website; up to 1,000 unique visitors per month</td>
<td>Continued revision and augmentation of iUTAH website during Year 5, with new focus on successes, outcomes, and impacts; 1301 visitors per month (7% increase over Year 4).</td>
<td>️</td>
<td></td>
</tr>
<tr>
<td>Expand and diversify social media following; up to 100 new followers</td>
<td>Social media following growing by 1-5 interactions per week; Facebook: 249 new page likes (11% increase over Year 4); Twitter: 171 new followers (46% increase); LinkedIn: 41 new connections/followers (37% increase).</td>
<td>☢</td>
<td></td>
</tr>
<tr>
<td>Produce and expand audience for bi-monthly newsletter</td>
<td>Monthly e-Newsletter sent to 345 total subscribers (13% increase); 11% click rate on 1+ articles (industry standard 2.4%).</td>
<td>☢</td>
<td></td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>TLA</td>
<td>Explanation</td>
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</tr>
<tr>
<td></td>
<td>Evaluate and refine inter-term communication tools</td>
<td>![Red]</td>
<td>0.75 FTE Communications Specialist hired in Year 4 will be retained at 50% effort in Year 6.</td>
</tr>
<tr>
<td></td>
<td>All iUTAH participants utilize Drupal for reporting activities</td>
<td>![Green]</td>
<td>Participants added as they join the project; 306 registered users of ER-Core (Drupal), with 34% showing activity during Year 5.</td>
</tr>
<tr>
<td></td>
<td>Revise activities based on previous assessment; formative assessment of EE activities</td>
<td>![Yellow]</td>
<td>Continuous assessment conducted during monthly EE calls.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Assessment of EE activities is underway on multiple fronts but will likely not be complete until well into Year 6, with many successful programs ongoing and not scheduled for completion until the end of Year 5.</td>
</tr>
</tbody>
</table>

*a Green = milestone accomplished or on track to being accomplished by the end of Year 5; yellow = milestone not yet accomplished, ongoing work that may or may not be completed by the end of Year 5; red = milestone not addressed, in conceptualization or planning stage, or may need to be revised.*
Table 13. Traffic Light Analysis (TLA) of Year 3 and 4 “legacy” iUTAH milestones.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
<th>Year 3 TLA</th>
<th>Year 4 TLA</th>
<th>Year 5 TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFA 1—Water Quality</td>
<td>Finalize water quality transport models</td>
<td>N/A</td>
<td>Yellow</td>
<td>Green</td>
<td>Rather than producing a single model of water yield, we have focused on studying the most important water balance processes along mountain-to-urban gradients; including partitioning of precipitation into soil, ground, and surface water components; water sources and controls on evapotranspiration; and groundwater-surface water interactions. This work has resulted in 10 publications in Year 5, with 2 additional manuscripts under review. Work related to water balance in northern Utah is likely to continue, with 2 external proposals funded and several others under review.</td>
</tr>
<tr>
<td>RFA 1—Climate Change and Land Use</td>
<td>Publish datasets</td>
<td>N/A</td>
<td>Yellow</td>
<td>Green</td>
<td>Rather than producing a single water quality model, research in this area has focused on the roles of atmospheric deposition, groundwater/surface water exchange, and urbanization as focal points controlling water quality. This work has resulted in 6 publications in Year 5, with 5 manuscripts under review. Additional work is likely with several new proposals funded or under review.</td>
</tr>
<tr>
<td>Project Component</td>
<td>Milestone</td>
<td>Year 3 TLA</td>
<td>Year 4 TLA</td>
<td>Year 5 TLA</td>
<td>Explanation</td>
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</tr>
<tr>
<td></td>
<td>Incorporate urban form research results into RFA 3 coupled modeling</td>
<td></td>
<td></td>
<td></td>
<td>RFA 2 results on urban form incorporated into RFA 3 coupled systems modeling exercise (Buchert, UU, and Rosenberg, USU).</td>
</tr>
<tr>
<td></td>
<td>RFA 2—Built Systems</td>
<td></td>
<td></td>
<td></td>
<td>With GIRF construction completed only recently, data are not expected to come online and be available for analysis until Year 6; Cyberinfrastructure (CI) support for and integration of GIRF data streams is ongoing.</td>
</tr>
<tr>
<td>Cyberinfrastructure</td>
<td>Analyze data from Green Infrastructure Research Facility (GIRF) experiment</td>
<td></td>
<td></td>
<td></td>
<td>With the researcher responsible for this milestone no longer with iUTAH, another researcher able to complete this task has been identified and is being recruited; expected deliverables include release of a working version of the software, and a manuscript demonstrating its utility via application to iUTAH RFA 3 use cases.</td>
</tr>
<tr>
<td></td>
<td>Initial release of collaborative model sharing tool</td>
<td></td>
<td></td>
<td></td>
<td>CI support for and integration of GIRF data streams is ongoing, and is expected to eventually include establishing regular data retrievals, establishing new databases, and web services to support these data.</td>
</tr>
<tr>
<td></td>
<td>Databases and software to support GIRF data deployed</td>
<td></td>
<td></td>
<td></td>
<td>With the researcher responsible for this milestone no longer with iUTAH, another researcher able to complete this task has been identified and is being recruited.</td>
</tr>
<tr>
<td></td>
<td>Support for model coupling and execution on High Performance Computing (HPC) is made available</td>
<td>N/A</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Table 13. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Milestone</th>
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<th>Year 4 TLA</th>
<th>Year 5 TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education, Outreach, and Diversity</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Diversity Enhancement</td>
<td>Update best practices handbook</td>
<td><img src="green.png" alt="Green" /></td>
<td><img src="yellow.png" alt="Yellow" /></td>
<td><img src="yellow.png" alt="Yellow" /></td>
<td>This activity is scheduled to be replaced by a comprehensive assessment of progress toward a more inclusive STEM culture in the state of Utah over the iUTAH project period.</td>
</tr>
<tr>
<td>External Engagement</td>
<td>Develop citizen science program at GIRF</td>
<td><img src="red.png" alt="Red" /></td>
<td><img src="red.png" alt="Red" /></td>
<td><img src="red.png" alt="Red" /></td>
<td>With GIRF construction only recently completed, and the implementation of a citizen science program not feasible given site access and logistics, we nevertheless expect to build successful external engagement and/or workforce development programs at this core facility in Year 6.</td>
</tr>
<tr>
<td></td>
<td>Conduct citizen science program at GIRF</td>
<td><img src="n/a.png" alt="N/A" /></td>
<td><img src="red.png" alt="Red" /></td>
<td><img src="red.png" alt="Red" /></td>
<td></td>
</tr>
</tbody>
</table>

*Green = milestone accomplished or on track to being accomplished; yellow = milestone not yet accomplished, ongoing work that may or may not be completed by target date; red = milestone not addressed, in conceptualization or planning stage, or may need to be revised.*
Table 14. Traffic Light Analysis (TLA) of the implementation of “legacy” planned activities from Year 4 Annual Report and Year 4 planned activities during Year 5.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Planned Activity</th>
<th>Year 3 TLA</th>
<th>Year 4 TLA</th>
<th>Year 5 TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>Completion of signature research products</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>RFA 1 has an overview paper of iUTAH’s core facility GAMUT under review; RFA 2 published its urban typology paper; other synthesis paper efforts are ongoing and expected to be completed in Year 6.</td>
</tr>
<tr>
<td></td>
<td>Maintenance and expansion of critical stakeholder</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>All RFAs have put considerable effort into strengthening stakeholder relationships: RFA 1, led by researchers at BYU, has greatly expanded its collaboration with the Utah Division of Water Quality; RFA 2 has built important relationships with water managers and policy makers at the municipal and state level; RFA 3 is sharing data and models and collaborating on manuscripts with the Salt Lake Department of Public Utilities and the Utah Divisions of Water Quality and Water Resources. Cementing these relationships for the future will be an ongoing effort for Year 6 and beyond.</td>
</tr>
<tr>
<td></td>
<td>relationships</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RFA 1</td>
<td>Continued data collection by GAMUT</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>All sensors are online and streaming data; funding for continued operation of GAMUT at UU has been secured, and similar efforts are underway at USU and BYU.</td>
</tr>
<tr>
<td></td>
<td>Publication and archival of datasets</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>116 datasets archived and published.</td>
</tr>
</tbody>
</table>
Table 14. Continued.

<table>
<thead>
<tr>
<th>Project Component</th>
<th>Planned Activity</th>
<th>Year 3 TLA</th>
<th>Year 4 TLA</th>
<th>Year 5 TLA</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Continued water yield and water quality research across all watersheds</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td>Several new external grants related to water yield/quality research funded and submitted; 23 manuscripts published or under review; additional manuscripts are anticipated with nine (9) RFA 1 graduate students expected to finish their degrees during Year 6.</td>
</tr>
<tr>
<td>Completion and publication of land-use and climate change scenarios modeling work for 5, 10, and 15 year futures</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td>Substantive progress made during Year 6; ongoing work at UU and USU is scheduled for completion in Year 6.</td>
</tr>
<tr>
<td>RFA 2</td>
<td>Expansion of the Utah Water Survey</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>Expansion is being considered after transition of this successful program from Jackson-Smith (USU) to Yeo (UU).</td>
</tr>
<tr>
<td></td>
<td>Data collection at Green Infrastructure Research Facility (GIRF)</td>
<td>N/A</td>
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<td>Data collection on pre-existing bioswales continued, and data collection in new pods is scheduled to commence Spring/early summer of 2017; Cyberinfrastructure (CI) support in place.</td>
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<td>Documentation of impacts of research results on stakeholder knowledge and decision making</td>
<td>N/A</td>
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<td>Effort is ongoing, with 14 researchers interviewed to date; additional interviews, including with up to 30 stakeholders, are scheduled for Year 6.</td>
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<td>Year 3 TLA</td>
<td>Year 4 TLA</td>
<td>Year 5 TLA</td>
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<td>RFA 3</td>
<td>Exploration of additional stakeholder engagement opportunities through iUTAH green infrastructure research</td>
<td>N/A</td>
<td>N/A</td>
<td>![Green]</td>
<td>iUTAH provided partial support and expertise for a green roof demonstration project at USU, including interpretive signs.</td>
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<td>Continued publication and dissemination of results, modeling software, and model products</td>
<td>N/A</td>
<td>N/A</td>
<td>![Green]</td>
<td>Numerous publications, presentations, and stakeholder engagement meetings in Year 5.</td>
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<td>Evaluation of change scenarios and adaptation/mitigation strategies</td>
<td>N/A</td>
<td>N/A</td>
<td>![Yellow]</td>
<td>Ongoing work that awaits finalization and calibration in Year 6.</td>
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<td>Assessment of stakeholder relationships by evaluating the use and impact of web-based tools and visualizations, and stakeholder products</td>
<td>N/A</td>
<td>N/A</td>
<td>![Green]</td>
<td>Assessment of Natural History Museum of Utah (NHMU) digital interactive is being used to revise the exhibit and expand the display to a second watershed.</td>
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<td>Cyberinfrastructure</td>
<td>Identify and develop new capabilities and data services to support coupled and integrated modeling activities</td>
<td>![Yellow]</td>
<td>![Yellow]</td>
<td>![Yellow]</td>
<td>Work is scheduled for completion in Year 6, once a new researcher has been recruited; a suitable candidate has been identified.</td>
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<td>Establishment of a sustainable partnership with a long-term data repository</td>
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<td>iUTAH data repository successfully migrated to HydroShare.</td>
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<td>Update the iUTAH Data Policy and Modeling and Data Federation databases to meet the unique needs of modeling and simulation work</td>
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<td>Revisions to the iUTAH Data Policy to accommodate modeling and simulation work effective in Year 5.</td>
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<td>Release of all iUTAH-produced software on open source repositories</td>
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<td>All iUTAH software available on GitHub; model coupling software scheduled for completion in Year 6.</td>
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<td><strong>Education, Outreach and Diversity</strong></td>
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<td>Completion of recruitment and retention handbook</td>
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<td>This milestone is under revision for Year 6.</td>
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| Workforce Development     | Improvement of iFellow recruitment strategy; faculty engagement and professional development; and linkage with stakeholder interests and objectives | N/A        | N/A        | N/A        | Intense recruiting effort enlisting faculty and staff at institutions across the state resulted in increased success/acceptance rate of PUI students over Year 4.
|                           |                                                                                   |            |            |            | Mentor training conducted during 2017 iFellows program.                                                                                     |
|                           |                                                                                   |            |            |            | Faculty mentors encouraged to emphasize and facilitate stakeholder linkages.                                                              |
| External Engagement       | Expansion of NHMU digital interactive to all 3 iUTAH watersheds                   | N/A        | N/A        | N/A        | Revision of Red Butte Creek exhibit (NHMU) is ongoing; expansion to Provo River (Bean Museum) has been approved and funded; Logan River expansion is currently lacking a viable partner/venue. |
|                           | Expansion of outreach program with author Nancy Bo Flood using the iUTAH-commissioned book “Water Runs Through This Book” | N/A        | N/A        | N/A        | Outreach program greatly expanded during Year 5, including participation in NHMU's Taking Learning Outdoors in southern Utah, new library partnerships/programs, a teacher workshop at The Leonardo, and programing associated with Utah Water Week 2017, where “Water Runs Through This Book” will be the featured book. |
### Table 14. Continued.

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<th>Project Component</th>
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<th>Year 3 TLA(^a)</th>
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<td>Continue Citizen Science programs and general water education activities in partnership with Utah Water Watch and Utah Water Quality Extension.</td>
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<td>N/A</td>
<td>Funding for a green roof demonstration project at USU, including interpretative signage, has been committed.</td>
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\(^a\) Green = milestone accomplished or on track to being accomplished; yellow = milestone not yet accomplished, ongoing work that may or may be completed by target date; red = milestone not addressed, in conceptualization or planning stage, or may need to be revised.
**Accomplishments**

* What are the major goals of the project?

In accordance with the instructions provided in the NSF EPSCoR Research Infrastructure Improvement Annual Reporting Guidelines document, the Annual Project Report has been submitted as a pdf-format attachment and includes the content specified in the Guidelines.
Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Nothing to add.

Supporting Files

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<td>Narrative of annual report,</td>
<td>Michelle Baker</td>
<td>05/10/2017</td>
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Products

Books

Book Chapters

Inventions

Journals or Juried Conference Papers

Armstrong, A., and D. Jackson-Smith (). Connections and collaborations of local water management organizations in Utah. *Society and Natural Resources*. Status = SUBMITTED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes


Flint, C., A.S. Jones, and J.S. Horsburgh (). Data management dimensions of social water science. *Journal of the American Water Resources Association*. Status = SUBMITTED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Flint, C. (). Vantage Points and Mountain Methods. *Mountain Research and Development*. Status = UNDER_REVIEW; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Goharian, E., S. Burian, T. Bardsley, and C. Strong (2016). Incorporating potential severity into vulnerability assessment of water supply systems under climate change conditions. *Journal of Water Resources Planning and Management*. Status = PUBLISHED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes; DOI: 10.1061/(ASCE)WR.1943-5452.0000579, 04015051


Haeffner, M., D. Jackson-Smith, M. Buchert, and J. Risley (). ‘Blue space’ access and interactions: Socio-economic status, race, and access in Northern Utah. *Landscape and Urban Planning*. Status = SUBMITTED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Khatri, K., C. Strong, A. Kochanski, S. Burian, C. Miller, and C. Hasenyager (). Water Resources Criticality Due to Future Climate Change and Population Growth: Case of River Basins in Utah, USA. *Journal of Water Resources Planning and Management.* . Status = SUBMITTED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Li, S., and B. Yang (). Quantifying forest fragmentation patterns and processes during rapid urbanization.. *Landscape Ecology.* . Status = UNDER_REVIEW; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes

Melcher, A.A., and J.S. Horsburgh (). An urban observatory for quantifying phosphorus and suspended solids loads in combined natural and stormwater conveyances. *Environmental Monitoring and Assessment*.  Status = SUBMITTED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Null, S. (). Specializing rivers by water use. *Environmental Research Letters*.  Status = UNDER_REVIEW; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Stoker, P., S. Hinners, D. Jackson-Smith, M. Buchert, and Z. Levine. (). Neighborhood effects on parcel level water use. *Landscape and Urban Design*. Status = SUBMITTED; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes

Stoker, P. (). Land Cover, Urban Form, and Water Use in Salt Lake City. *Land Use Policy*. Status = UNDER_REVIEW; Acknowledgment of Federal Support = Yes; Peer Reviewed = Yes


Yang, B., and S. Li (). Design with Nature: Ian McHarg’s ecological wisdom as actionable and practical knowledge. *Landscape and Urban Planning*. Status = AWAITING_PUBLICATION; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes


Licenses

Other Conference Presentations / Papers

Other Products

Other Publications


Patents

Technologies or Techniques

Thesis/Dissertations

Websites

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Full details of individuals who have worked on the project:

**Michelle A Baker**  
Email: michelle.baker@usu.edu  
*Most Senior Project Role:* PD/PI  
*Nearest Person Month Worked:* 6  
*Contribution to the Project:* Principal investigator/Project Director  
*Funding Support:* Utah State University, Utah Science Technology Research initiative  
*International Collaboration:* No  
*International Travel:* No

**Zachary T Aanderud**  
Email: zachary_aanderud@byu.edu  
*Most Senior Project Role:* Co PD/PI  
*Nearest Person Month Worked:* 2  
*Contribution to the Project:* Co-leader of research focus area 1
Funding Support: Brigham Young University
International Collaboration: No
International Travel: No

James R Ehleringer
Email: jim.ehleringer@utah.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Lead PI of University of Utah sub award. Infrastructure team lead.

Funding Support: University of Utah
International Collaboration: No
International Travel: No

Courtney G Flint
Email: courtney.flint@usu.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Co-lead of research focus area 2.

Funding Support: Utah State University
International Collaboration: No
International Travel: No

Courtenay Strong
Email: court.strong@utah.edu
Most Senior Project Role: Co PD/PI
Nearest Person Month Worked: 2

Contribution to the Project: Co-lead of research focus area 3.

Funding Support: University of Utah
International Collaboration: No
International Travel: No

Bonnie Bain
Email: bain@dixie.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at DSU participating in research at iUTAH

Funding Support: DSU
International Collaboration: No
International Travel: No
Rick Balling
Email: balling@byu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at BYU participating in research at iUTAH
Funding Support: BYU
International Collaboration: No
International Travel: No

Scott Bates
Email: scott.bates@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at USU participating in EOD programming at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Daniel Bedford
Email: dbedford@weber.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at WSU participating in research at iUTAH
Funding Support: WSU
International Collaboration: No
International Travel: No

Frank Black
Email: fblack@westminstercollege.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at Westminster College participating in research at iUTAH
Funding Support: Westminster College
International Collaboration: No
International Travel: No

Gabriel Bowen
Email: gabe.bowen@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

Brenda Bowen
Email: brenda.bowen@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

Dave Bowling
Email: david.bowling@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RFA1 co-lead

Funding Support: UU

International Collaboration: No
International Travel: No

William Brazelton
Email: william.brazelton@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

Jeff Broadbent
Email: jeff.broadbent@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at USU participating in research at iUTAH
Paul Brooks
Email: paul.brooks@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: iBUGI co-lead and RFA1

Mark Brunson
Email: mark.brunson@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: EOD Director and RFA3

Martin Buchert
Email: martin.buchert@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 6
Contribution to the Project: Faculty at UU participating in research at iUTAH

Michael Bunds
Email: michael.bunds@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RFA1
Steve Burian  
Email: burian@eng.utah.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at UU participating in research at iUTAH  
Funding Support: UU  
International Collaboration: No  
International Travel: No

Eddy Cadet  
Email: cadeted@uvu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: RCG award  
Funding Support: UVU  
International Collaboration: No  
International Travel: No

Greg Carling  
Email: greg.carling@byu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 2  
Contribution to the Project: Faculty at BYU participating in research at iUTAH  
Funding Support: BYU  
International Collaboration: No  
International Travel: No

Jen Ciaccio  
Email: ciaccio@dixie.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at Dixie participating in research at iUTAH  
Funding Support: Dixie  
International Collaboration: No  
International Travel: No

Christy Clay  
Email: cclay@westminstercollege.edu  
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at Westminster College participating in research at iUTAH
Funding Support: Westminster College
International Collaboration: No
International Travel: No

Guy Denton
Email: Guy.Denton@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Ryan Dupont
Email: ryan.dupont@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Eric Edwards
Email: eric.charles.edwards@gmail.com
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RFA2
Funding Support: USU
International Collaboration: No
International Travel: No

Boyd Edwards
Email: boyd.edwards@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at USU participating in research at iUTAH
Steve Emerman
Email: stevenE@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RFA1

Carla Endres
Email: carla.endres@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at USU participating in research at iUTAH

Joanna Endter-Wada
Email: joanna.endter-wada@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at USU participating in research at iUTAH

Reid Ewing
Email: ewing@arch.utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at UU participating in research at iUTAH
Richard Gill  
Email: rgill@byu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at BYU participating in research at iUTAH  
Funding Support: BYU  
International Collaboration: No  
International Travel: No

Fred Govedich  
Email: govedich@suu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 2  
Contribution to the Project: RCG award  
Funding Support: SUU  
International Collaboration: No  
International Travel: No

Jacqueline Grant  
Email: jacqualinegrant@suu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at SUU participating in research at iUTAH  
Funding Support: SUU  
International Collaboration: No  
International Travel: No

Rebecca Hale  
Email: halereb3@isu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at Idaho State University participating in research at iUTAH  
Funding Support: Idaho State University  
International Collaboration: No  
International Travel: No

Steven Hall  
Email: steven.j.hall@utah.edu  
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: UU PosDoc by iUTAH

Funding Support: iUTAH

International Collaboration: No
International Travel: No

Neil Hansen
Email: neil_hansen@byu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at BYU participating in research at iUTAH

Funding Support: BYU

International Collaboration: No
International Travel: No

Bridget Hilbig
Email: bridgethilbig@weber.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RCG Awardee

Funding Support: WSU

International Collaboration: No
International Travel: No

Sarah Hinners
Email: sarah.hinners@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

Daniel Homs
Email: hornsda@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UVU participating in research at iUTAH
Jeff Horsburgh  
Email: jeff.horsburgh@usu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 2  
Contribution to the Project: USU Faculty

Peter Howe  
Email: peter.howe@usu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at USU participating in research at iUTAH

Hilary Hungerford  
Email: hilary.hungerford@uvu.edu  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 2  
Contribution to the Project: Faculty at UVU participating in research at iUTAH

Laura Hunter  
Email: lhunter@uen.org  
Most Senior Project Role: Faculty  
Nearest Person Month Worked: 1  
Contribution to the Project: Faculty at UEN participating in research at iUTAH
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**Contribution to the Project:** Faculty at USU participating in research at iUTAH

**Funding Support:** USU

**International Collaboration:** No
**International Travel:** No

---

Shalini Kesar
**Email:** kesar@suu.edu
**Most Senior Project Role:** Faculty
**Nearest Person Month Worked:** 1

**Contribution to the Project:** Faculty at SUU participating in research at iUTAH

**Funding Support:** SUU

**International Collaboration:** No
**International Travel:** No

---

Shujuan Li
**Email:** shujuan.li@usu.edu
**Most Senior Project Role:** Faculty
**Nearest Person Month Worked:** 1

**Contribution to the Project:** Faculty at USU participating in research at iUTAH

**Funding Support:** USU

**International Collaboration:** No
**International Travel:** No

---

Carlos Licon
**Email:** carlos.licon@usu.edu
**Most Senior Project Role:** Faculty
**Nearest Person Month Worked:** 1

**Contribution to the Project:** Faculty at USU participating in research at iUTAH

**Funding Support:** USU

**International Collaboration:** No
**International Travel:** No

---

Molly Malone
**Email:** molly.malone@utah.edu
**Most Senior Project Role:** Faculty
**Nearest Person Month Worked:** 1

**Contribution to the Project:** Faculty at UU participating in research at iUTAH
David Matty
Email: dmatty@weber.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at Weber St. participating in research at iUTAH
Funding Support: Weber St.
International Collaboration: No
International Travel: No

Nancy Mesner
Email: nancy.mesner@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Becky Monhardt
Email: rebecca.monhardt@loras.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at Loras College participating in research at iUTAH
Funding Support: Loras College
International Collaboration: No
International Travel: No

Christopher Monson
Email: christophermonson1@suu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RCG award
Funding Support: SUU
International Collaboration: No
International Travel: No
Jeffrey Moore
Email: jeff.moore@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RCG award
Funding Support: UU
International Collaboration: No
International Travel: No

Lucas Moyer-Horner
Email: lucas.m.horner@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: co-lead iFellows
Funding Support: UU
International Collaboration: No
International Travel: No

Bethany Neilson
Email: bethany.neilson@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2

Contribution to the Project: Faculty at USU Water Lab participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Sarah Null
Email: sarah.null@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2

Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Bill O'Neill
Email: oneillb@dixie.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at Dixie participating in research at iUTAH

Funding Support: Dixie

International Collaboration: No
International Travel: No

---

Eric Pardyjak
Email: pardyjak@gmail.com
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

---

Christine Pomeroy
Email: christine.pomeroy@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2

Contribution to the Project: Faculty at UU participating in research at iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

---

Mitchell Power
Email: mitchell.power@geog.utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RCG award

Funding Support: UU

International Collaboration: No
International Travel: No

---

David Rosenberg
Email: david.rosenberg@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2

Contribution to the Project: Faculty at USU participating in research at iUTAH
Jennifer Shah  
Email: jennifer.shah@envst.utah.edu  
**Most Senior Project Role:** Faculty  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Faculty at UU participating in research at iUTAH  

Alexander Simon  
Email: alex.simon@uvu.edu  
**Most Senior Project Role:** Faculty  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** RCG award  

McKenzie Skiles  
Email: mckenzie.skiles@uvu.edu  
**Most Senior Project Role:** Faculty  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** RCG Awardee  

Sam St. Clair  
Email: stclair@byu.edu  
**Most Senior Project Role:** Faculty  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** Faculty at BYU participating in research at iUTAH
Louisa Stark
Email: louisa.stark@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at UU participating in research at iUTAH. Director of iUTAH's Summer Institute
Funding Support: UU
International Collaboration: No
International Travel: No

Philip Stoker
Email: philip.a.stoker@gmail.com
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at University of Arizona participating in research at iUTAH
Funding Support: UU
International Collaboration: No
International Travel: No

Rob Stoll
Email: rstoll@eng.utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at UU participating in research at iUTAH
Funding Support: UU
International Collaboration: No
International Travel: No

David Tarboton
Email: david.tarboton@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Nathan Toke
Email: nathan.toke@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: Faculty at UU participating in research at iUTAH
Funding Support: UU
International Collaboration: No
International Travel: No
Nearest Person Month Worked: 1

Contribution to the Project: RCG award

Funding Support: UVU

International Collaboration: No
International Travel: No

Carla Trentelman
Email: carlatrentelman@weber.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at Weber St. participating in research at iUTAH

Funding Support: Weber St.

International Collaboration: No
International Travel: No

Anne Wairepo
Email: annew@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at UVU participating in research at iUTAH

Funding Support: UVU

International Collaboration: No
International Travel: No

Simon Wang
Email: simon.wang@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RFA1 and RFA3

Funding Support: USU

International Collaboration: No
International Travel: No

Weihong Wang
Email: weihong.wang@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RCG Awardee
Kim Weaver
Email: weaver@suu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RCG award
Funding Support: SUU
International Collaboration: No
International Travel: No

Matthew Weeg
Email: matthewweeg@suu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RCG award
Funding Support: SUU
International Collaboration: No
International Travel: No

Bo Yang
Email: bo.yang@usu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 2
Contribution to the Project: Faculty at USU participating in research at iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Sara Yeo
Email: sara.yeo@utah.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1
Contribution to the Project: RFA2
Funding Support: UU
International Collaboration: No
International Travel: No
Alessandro Zanazzi
Email: alessandro.zanazzi@uvu.edu
Most Senior Project Role: Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RCG Awardee
Funding Support: UVU
International Collaboration: No
International Travel: No

Renee Faatz
Email: renee.faatz@snow.edu
Most Senior Project Role: Community College Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at Snow College participating in research at iUTAH
Funding Support: Snow College
International Collaboration: No
International Travel: No

Maura Hahnenberger
Email: mhahnenb@bruinmail.slcc.edu
Most Senior Project Role: Community College Faculty
Nearest Person Month Worked: 1

Contribution to the Project: External Engagement/Outreach, EOD innovation award
Funding Support: SLCC
International Collaboration: No
International Travel: No

Marian Howe-Taylor
Email: marian.howe-taylor@slcc.edu
Most Senior Project Role: Community College Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at SLCC participating in research at iUTAH
Funding Support: SLCC
International Collaboration: No
International Travel: No

Mary Jane Keleher
Email: maryjane.keleher@slcc.edu
Most Senior Project Role: Community College Faculty
Nearest Person Month Worked: 1

Contribution to the Project: Faculty at SLCC participating in research at iUTAH

Funding Support: SLCC

International Collaboration: No
International Travel: No

Daniel Poole
Email: daniel.poole@slcc.edu
Most Senior Project Role: Community College Faculty
Nearest Person Month Worked: 1

Contribution to the Project: RFA2

Funding Support: SLCC

International Collaboration: No
International Travel: No

Suzanne Arthur
Email: suzita27@hotmail.com
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant

Funding Support: Horizonte ITC

International Collaboration: No
International Travel: No

Joel Arvizo
Email: joel.arvizo@slcschools.org
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1

Contribution to the Project: EOD Innovation Awardee and K-12 Teacher working with iUTAH

Funding Support: Rose Park Elementary

International Collaboration: No
International Travel: No

Brittany Bohne
Email: bohne.brittany@gmail.com
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant
Funding Support: Granite Connection High School
International Collaboration: No
International Travel: No

Nate Carling
Email: ncarling@alpinedistrict.org
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Westlake High School
International Collaboration: No
International Travel: No

Brian Felsch
Email: brian.felsch@gmail.com
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Wasatch High School
International Collaboration: No
International Travel: No

Lora Gibbons
Email: lgibbons@mountainheightsacademy.org
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Mountain Heights Academy
International Collaboration: No
International Travel: No

Kristina Kaly
Email: kristina.kaly@slcschools.org
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: External Engagement/Outreach, EOD innovation award
Funding Support: Rose Park Elementary
International Collaboration: No
International Travel: No
Crystal King
Email: mnking2000@comcast.net
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: West High School
International Collaboration: No
International Travel: No

Katherine McEntee
Email: katie.mcentee@utah.edu
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Bryant Middle School
International Collaboration: No
International Travel: No

Leslie Mouton
Email: leslie.mouton78@gmail.com
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Mount Jordan Middle School
International Collaboration: No
International Travel: No

Ken Obrien
Email: Ken.Obrien@slcschools.org
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1
Contribution to the Project: External Engagement/Outreach, EOD innovation award
Funding Support: Rose Park Elementary
International Collaboration: No
International Travel: No

Natalie Shiozawa
Email: psychonat@gmail.com
Most Senior Project Role: K-12 Teacher
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant

Funding Support: Horizonte ITC

International Collaboration: No
International Travel: No

Rachel Gabor
Email: rachel.gabor@utah.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 12

Contribution to the Project: RFA1 and RFA2

Funding Support: iUTAH

International Collaboration: No
International Travel: No

Melissa Haeffner
Email: melissahaeffner@gmail.com
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 12

Contribution to the Project: RFA2

Funding Support: iUTAH

International Collaboration: No
International Travel: No

Krishna Khatri
Email: krishna.khatri@gmail.com
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 12

Contribution to the Project: RFA3

Funding Support: iUTAH

International Collaboration: No
International Travel: No

Erik Oerter
Email: erik.oerter@berkeley.edu
Most Senior Project Role: Postdoctoral (scholar, fellow or other postdoctoral position)
Nearest Person Month Worked: 2

Contribution to the Project: RFA1
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Adrienne Andrews
Email: adrienneandrews@weber.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Diversity specialist at Weber St
Funding Support: Weber St.

Ellen Bailey
Email: ellen.bailey@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 6
Contribution to the Project: USU Water Quality Extension
Funding Support: USU

Nancy Bo Flood
Email: wflood@hotmail.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 2
Contribution to the Project: Navajo Nation representative, diversity specialist
Funding Support: Navajo Nation

Kerry Bringhurst
Email: kerry.bringhurst@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: External Engagement/Outreach, EOD innovation award
Funding Support: UPR
Pabitra Dash
Email: pabitra.dash@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Programmer at USU Water Lab participating in research at iUTAH

Funding Support: USU
International Collaboration: No
International Travel: No

Marcy DeMillion
Email: marcy_demillion@nps.gov
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Education specialist with the National Park Service

Funding Support: US NPS
International Collaboration: No
International Travel: No

Sue Dintelman
Email: sue@pleiades-software.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Pleiades Software, Inc. - private enterprise representative

Funding Support: Pleiades Software, Inc.
International Collaboration: No
International Travel: No

Erika DuRoss
Email: EDuRoss@theleonardo.org
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Education specialist from The Leonardo

Funding Support: The Leonardo
International Collaboration: No
International Travel: No

Ellen Eiriksson
Email: ellen.eiriksson@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 12
Contribution to the Project: iUTAH EOD coordinator
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Sare Gardner
Email: saregardner@gmail.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: iUTAH Staff Assistant
Funding Support: USU
International Collaboration: No
International Travel: No

Tamara Goetz
Email: tgoetz@utah.gov
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: State EPSCoR Committee Member from GOED
Funding Support: Utah GOED
International Collaboration: No
International Travel: No

Jeannine Huenemann
Email: jeannine.huenemann@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 9
Contribution to the Project: Communications Specialist
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Terra Huff
Email: terra.huff@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 6
Contribution to the Project: Financial Officer of IUTAH at USU
Chris Keleher
Email: ChristopherKeleher@utah.gov
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Member of iUTAH management team

Funding Support: State of Utah
International Collaboration: No
International Travel: No

Julie Kiefer
Email: exploreutahscience@gmail.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Member of EUS

Funding Support: EUS
International Collaboration: No
International Travel: No

Andreas Leidolf
Email: andreas.leidolf@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 12
Contribution to the Project: Assistant Director/Project Administrator

Funding Support: iUTAH
International Collaboration: No
International Travel: No

Anna McEntire
Email: anna.mcentire@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 2
Contribution to the Project: USU

Funding Support: USU
International Collaboration: No
International Travel: No
Rebecca Menlove
Email: bmenlove@nhmu.utah.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 2
Contribution to the Project: NHMU, educational specialist
Funding Support: NHMU
International Collaboration: No
International Travel: No

Mary-Ann Muffoletto
Email: maryann.muffoletto@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Communications Specialist working with iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Adelbert Nelson
Email: mansel.nelson@nau.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Diversity specialist of Northern Arizona U
Funding Support: Northern Arizona U
International Collaboration: No
International Travel: No

Jackie Pendleton
Email: outreach@thelivingplanet.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: EOD supplement from The Living Plant Aquarium
Funding Support: The Living Plant Aquarium
International Collaboration: No
International Travel: No

Kevin Rhodes
Email: krhodes@campbellsci.com
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: Workforce Development Team Member

Funding Support: Campbell Scientific LLC

International Collaboration: No
International Travel: No

Eli Robinson
Email: eli.robinson@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: USU Water Quality Extension

Funding Support: USU

International Collaboration: No
International Travel: No

Carol Rosenthal
Email: carol.rosenthal@usu.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Staff Assistant

Funding Support: USU

International Collaboration: No
International Travel: No

Madlyn Runburg
Email: mrunburg@nhmu.utah.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: NHMU, educational specialist

Funding Support: NHMU

International Collaboration: No
International Travel: No

Jessica Seppi
Email: jseppi@nhmu.utah.edu
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1

Contribution to the Project: NHMU, educational specialist
Katie Smith
Email: ksmith@theleonardo.org
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: Education specialist from The Leonardo

Sarah Young
Email: sarah.young@schools.utah.gov
Most Senior Project Role: Other Professional
Nearest Person Month Worked: 1
Contribution to the Project: State of Utah

Jessica Anderson
Email: janderson@uen.org
Most Senior Project Role: Technician
Nearest Person Month Worked: 4
Contribution to the Project: Technician from UEN

Jobie Carlisle
Email: jobie@usu.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 2
Contribution to the Project: Technician at USU
Chris Cox
Email: chrisrycx@gmail.com
Most Senior Project Role: Technician
Nearest Person Month Worked: 12
Contribution to the Project: Technician at USU
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Dylan Dastrup
Email: dylandastrup@comcast.net
Most Senior Project Role: Technician
Nearest Person Month Worked: 12
Contribution to the Project: BYU Technician sponsored by iUTAH
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Dave Eiriksson
Email: dave.eiriksson@utah.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 12
Contribution to the Project: UU technician sponsored by iUTAH
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Amber Jones
Email: amber.jones@usu.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 9
Contribution to the Project: USU Water Lab Tech sponsored by iUTAH
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Rusty Keele
Email: rkeele@uen.org
Most Senior Project Role: Technician
Nearest Person Month Worked: 1

Contribution to the Project: Technician from UEN

Funding Support: UEN

International Collaboration: No
International Travel: No

Matt Lorimer
Email: matt.lorimer@usu.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 1

Contribution to the Project: CI, systems administrator

Funding Support: USU

International Collaboration: No
International Travel: No

Justin Reed
Email: jreed@uen.org
Most Senior Project Role: Technician
Nearest Person Month Worked: 1

Contribution to the Project: Technician at UEN working with iUTAH

Funding Support: UEN

International Collaboration: No
International Travel: No

Stephanie Reeder
Email: stephanie.reeder@usu.edu
Most Senior Project Role: Technician
Nearest Person Month Worked: 1

Contribution to the Project: Technician-Programmer at USU Water Lab

Funding Support: USU

International Collaboration: No
International Travel: No

Matt Miller
Email: mamiller@usgs.gov
Most Senior Project Role: Staff Scientist (doctoral level)
Nearest Person Month Worked: 1

Contribution to the Project: USGS official, water data and advise provider
Funding Support: USGS
International Collaboration: No
International Travel: No

Adel Abdallah
Email: amabdallah@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student sponsored by iUTAH

Funding Support: USU
International Collaboration: No
International Travel: No

Makenzi Beltram
Email: makenzibeltran@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student participating in iUTAH research

Funding Support: USU
International Collaboration: No
International Travel: No

Dave Betts
Email: davebetts@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student sponsored by iUTAH

Funding Support: USU
International Collaboration: No
International Travel: No

Caleb Buahin
Email: caleb.buahin@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Water Lab graduate student sponsored by iUTAH

Funding Support: USU
International Collaboration: No
International Travel: No
Clint Carney
Email: clint.carney@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Taya Carothers
Email: taya.carothers@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU graduate student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Hannah Checketts
Email: hannahnchecketts@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: BYU graduate student participating in iUTAH research.
Funding Support: BYU
International Collaboration: No
International Travel: No

Taylor Dean
Email: taylor.dean@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Kyle Eager
Email: kyle.eagar@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student sponsored by iUTAH

Funding Support: USU

International Collaboration: No
International Travel: No

Rosa Fernandez
Email: amelina20@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student participating in iUTAH research

Funding Support: USU

International Collaboration: No
International Travel: No

Muyang Ge
Email: muyang.ge@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student sponsored by iUTAH

Funding Support: USU

International Collaboration: No
International Travel: No

Andrew Gelderloos
Email: argelderloos@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: UU graduate student sponsored by iUTAH

Funding Support: UU

International Collaboration: No
International Travel: No

Colin Hale
Email: halecolin1@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: BYU Graduate Student sponsored by iUTAH
<table>
<thead>
<tr>
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<th>Email</th>
<th>Most Senior Project Role</th>
<th>Nearest Person Month Worked</th>
<th>Contribution to the Project</th>
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<th>International Collaboration</th>
<th>International Travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carly Hansen</td>
<td><a href="mailto:carlyahansen@gmail.com">carlyahansen@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>Volunteer on iUTAH WaterGirls program, an iUTAH EOD Innovation Award-sponsored project.</td>
<td>BYU</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Yusuf Jameel</td>
<td><a href="mailto:yusuf8ysf@gmail.com">yusuf8ysf@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>UU graduate student participating in iUTAH research</td>
<td>UU</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Ryan James</td>
<td><a href="mailto:ryjamesj@gmail.com">ryjamesj@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>USU graduate student sponsored by iUTAH</td>
<td>USU</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Erin Jones</td>
<td><a href="mailto:erinfjones3@gmail.com">erinfjones3@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>BYU graduate student sponsored by iUTAH</td>
<td>BYU</td>
<td>No</td>
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</tr>
</tbody>
</table>
Julia Kelso
Email: julia.kelso@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Maggie Kraft
Email: maggi.kraft@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Julie Leri
Email: julie.leri@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: UU Graduate Student participating in iUTAH research
Funding Support: UU
International Collaboration: No
International Travel: No

Enjie Li
Email: enjie.li@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 3

Contribution to the Project: USU graduate student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Jordan Maxwell
Meaghan McKasy
Email: meaghan.mckasy@utah.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: UU Graduate Student participating in iUTAH research
Funding Support: UU
International Collaboration: No
International Travel: No

Anthony Melcher
Email: tmelcher@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU graduate student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Bryce Mihalevich
Email: bryce.mihal@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU graduate student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Matthew Miksch
Email: miksch@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Brett Miller
Email: brett.alan.miller@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Mallory Millington
Email: malmillington@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: UU graduate student participating in iUTAH research
Funding Support: UU
International Collaboration: No
International Travel: No

Nathaniel Mouzon
Email: nmouzon@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU Graduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Brianne Nielsen
Email: brnnnielsen@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student participating in iUTAH research
Funding Support: USU
<table>
<thead>
<tr>
<th>Name</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth Ogata</td>
<td><a href="mailto:bethogata@gmail.com">bethogata@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>Graduate researcher working on iUTAH</td>
<td>USU Presidential Doctoral Research Fellowship</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Mary Oliver</td>
<td><a href="mailto:OliverLeeMary@gmail.com">OliverLeeMary@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>USU graduate student participating in iUTAH research</td>
<td>USU</td>
<td>No</td>
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<tr>
<td>Brian Packer</td>
<td><a href="mailto:bnoelpacker@gmail.com">bnoelpacker@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>BYU graduate student participating in iUTAH research.</td>
<td>BYU</td>
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<tr>
<td>Kshitij Parajuli</td>
<td><a href="mailto:kshparajuli@gmail.com">kshparajuli@gmail.com</a></td>
<td>Graduate Student (research assistant)</td>
<td>6</td>
<td>USU graduate student sponsored by iUTAH</td>
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<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Alexei Perelet  
Email: a.perelet@utah.edu  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  

**Contribution to the Project:** UU graduate student participating in iUTAH research  

**Funding Support:** UU  
**International Collaboration:** No  
**International Travel:** No

Liana Prudencio  
Email: lianap566@gmail.com  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  

**Contribution to the Project:** USU Graduate Student participating in iUTAH research  

**Funding Support:** USU  
**International Collaboration:** No  
**International Travel:** No

Matt Randall  
Email: mattrandall3@gmail.com  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  

**Contribution to the Project:** BYU graduate student participating in iUTAH research.  

**Funding Support:** BYU  
**International Collaboration:** No  
**International Travel:** No

Jared Richens  
Email: richensj@gmail.com  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6  

**Contribution to the Project:** USU Graduate Student participating in iUTAH research  

**Funding Support:** USU  
**International Collaboration:** No  
**International Travel:** No

Kerri Russel  
Email: kerriarussell@gmail.com  
**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6
Contribution to the Project: BYU graduate student participating in iUTAH research
Funding Support: BYU

International Collaboration: No
International Travel: No

Victoria Russell
Email: victoriarussell@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 1

Contribution to the Project: Volunteer on iUTAH WaterGirls program, an iUTAH EOD Innovation Awards-sponsored project.
Funding Support: UU

International Collaboration: No
International Travel: No

Pratibha Sapkota
Email: pratibha.sapkota@utah.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: UU graduate student participating in iUTAH research
Funding Support: UU

International Collaboration: No
International Travel: No

Kimi Smith
Email: kimi.smith@utah.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: UU graduate student sponsored by iUTAH
Funding Support: UU

International Collaboration: No
International Travel: No

Bryn St. Clair
Email: brynstclair@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: BYU Graduate Student participating in iUTAH research
Pratiti Tagore
Email: pratiti.tagore@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: UU graduate student participating in iUTAH research

Blake Thomas
Email: blakhthomas@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student participating in iUTAH research

Crystal Tulley-Cordova
Email: tulleycordova@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: UU graduate student participating in iUTAH research

Adrian Uzunian
Email: auzunian@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU graduate student participating in iUTAH research
Hailey Wall
Email: wall0635@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Chelsea Welker
Email: chelseawelker@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: UU Graduate Student participating in iUTAH research
Funding Support: UU
International Collaboration: No
International Travel: No

Trixie Wolf Rife
Email: trixwolf55@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU graduate student sponsored by iUTAH
Funding Support: USU
International Collaboration: No
International Travel: No

Humaira Yusuf
Email: humaira.nabeela.bd@gmail.com
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6
Contribution to the Project: USU Graduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Sofiya Yuvshanova
Email: sofiya.yuvshanova@aggiemail.usu.edu
Most Senior Project Role: Graduate Student (research assistant)
Nearest Person Month Worked: 6

Contribution to the Project: USU graduate student participating in iUTAH research

Funding Support: USU

International Collaboration: No
International Travel: No

Mario Harper
Email: mario.harper@usu.edu
Most Senior Project Role: Non-Student Research Assistant
Nearest Person Month Worked: 3

Contribution to the Project: Programmer at USU Water Lab participating in research at iUTAH

Funding Support: USU

International Collaboration: No
International Travel: No

Jeremy Andreini
Email: jeremy.andreini@hotmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG undergrad

Funding Support: UVU

International Collaboration: No
International Travel: No

Cade Andrus
Email: nesquik24@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: USU Undergraduate Student participating in iUTAH research

Funding Support: USU

International Collaboration: No
International Travel: No

Amanda Araujo
Email: amanda.araujo5214@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: BYU Undergraduate Student participating in iUTAH research
Francisco Arrieta
Email: francisco.arrieta@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: Undergrad student participating in iUTAH research

Matthew Barnett
Email: matthew.barnett@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research

Chelsee Barrett
Email: u0883945@umail.utah.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant

Ben Barton
Email: benbarton12@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: Undergrad student participating in iUTAH research
Andrew Bentz
Email: abentz27@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3
Contribution to the Project: iUTAH Trainee
Funding Support: BYU
International Collaboration: No
International Travel: No

Brittany Betzer
Email: brittanybetzer@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: WSU Undergraduate Student participating in iUTAH research
Funding Support: WSU
International Collaboration: No
International Travel: No

Nathan Blue
Email: nathanblue@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: WSU Undergraduate Student participating in iUTAH research
Funding Support: WSU
International Collaboration: No
International Travel: No

Lucas Bohne
Email: lucas.bohne@utah.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: UU Undergraduate Student participating in iUTAH research
Funding Support: UU
International Collaboration: No
International Travel: No

Brett Boyer
Email: boyer.brett@yahoo.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Trainee

Funding Support: UU

International Collaboration: No
International Travel: No

Dane Brophy
Email: dane.brophy@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Trainee

Funding Support: USU

International Collaboration: No
International Travel: No

Austin Brown
Email: austin.brown@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: USU

International Collaboration: No
International Travel: No

Amberlee Burrows
Email: amberleeburrows@yahoo.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: USU

International Collaboration: No
International Travel: No

Margaret Call
Email: amber.margaret.call@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Trainee
Juan Caraballo  
 **Email:** juan.caraballo17@gmail.com  
 **Most Senior Project Role:** Undergraduate Student  
 **Nearest Person Month Worked:** 2  
 **Contribution to the Project:** USU Water Lab undergraduate student sponsored by iUTAH  
 **Funding Support:** USU  

Reid Clark  
 **Email:** reidclark@mail.weber.edu  
 **Most Senior Project Role:** Undergraduate Student  
 **Nearest Person Month Worked:** 2  
 **Contribution to the Project:** WSU Undergraduate Student participating in iUTAH research  
 **Funding Support:** WSU  

Mariah Clayson  
 **Email:** mariah.clayson@gmail.com  
 **Most Senior Project Role:** Undergraduate Student  
 **Nearest Person Month Worked:** 1  
 **Contribution to the Project:** RCG Undergraduate Student at SUU  
 **Funding Support:** SUU  

Scott Collins  
 **Email:** fmg333@gmail.com  
 **Most Senior Project Role:** Undergraduate Student  
 **Nearest Person Month Worked:** 3  
 **Contribution to the Project:** iUTAH Trainee  
 **Funding Support:** BYU
Crystal Curtis  
**Email:** crystalhacking@mail.weber.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** WSU Undergraduate Student participating in iUTAH research  
**Funding Support:** WSU  
**International Collaboration:** No  
**International Travel:** No

Amanda Daines  
**Email:** amandadaines@mail.weber.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** SI Participant  
**Funding Support:** WSU  
**International Collaboration:** No  
**International Travel:** No

Kent Dean  
**Email:** deaner12.td@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** Undergrad student participating in iUTAH research  
**Funding Support:** USU  
**International Collaboration:** No  
**International Travel:** No

Christian Diaz  
**Email:** czd0726@westminstercollege.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** RCG Undergraduate Student at Westminster College  
**Funding Support:** Westminster College  
**International Collaboration:** No  
**International Travel:** No

Margaret England  
**Email:** menglandjohns@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: WSU
International Collaboration: No
International Travel: No

Arthur Evensen
Email: evensen.arthur@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at UVU
Funding Support: UVU
International Collaboration: No
International Travel: No

Kyle Fordham
Email: kyle.fordham@uvu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at UVU
Funding Support: UVU
International Collaboration: No
International Travel: No

Alexis Frias
Email: alexisfrias@weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: WSU
International Collaboration: No
International Travel: No

Kenneth Fryar-Ludwig
Email: fryar.ludwig@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Drew Gabel
Email: andrew@gabelhaven.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Trainee

Funding Support: BYU

Coleman Gerdes
Email: colemangerdes@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: USU

Jake Gottschalk
Email: jake.gottschalk17@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: USU Undergraduate Student participating in iUTAH research

Funding Support: USU

Natasha Griffin
Email: natasha.a.griffin@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3

Contribution to the Project: iUTAH Trainee

Funding Support: BYU
Esther Harkness
Email: esharkness@hotmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at SUU
Funding Support: SUU
International Collaboration: No
International Travel: No

Alexander Hatanaka
Email: alexhatanaka22@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: DSU
International Collaboration: No
International Travel: No

Areg Haytayan
Email: areg.haytayan@usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 4
Contribution to the Project: iUTAH office assistant
Funding Support: iUTAH
International Collaboration: No
International Travel: No

Makenna Hill
Email: makennahill@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: WSU Undergraduate Student participating in iUTAH research
Funding Support: WSU
International Collaboration: No
International Travel: No

Tyler Hole
Email: tylerhole@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: WSU Undergraduate Student participating in iUTAH research

Funding Support: WSU

International Collaboration: No
International Travel: No

Rebekha Holt
Email: rebekahholt@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG Undergraduate Student at WSU

Funding Support: WSU

International Collaboration: No
International Travel: No

Dustin Joe
Email: djoe1776@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: UVU

International Collaboration: No
International Travel: No

Christianna Johnson
Email: christiannajohnson18@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: UU

International Collaboration: No
International Travel: No

Shelley Jones
Email: shelstar17@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research
Marissa Keck
Email: for1school1projects@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: UVU Undergraduate Student participating in iUTAH research

Kenneth Larsen
Email: klarsen217@hotmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant

John Lillquist
Email: johnlillquist@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3
Contribution to the Project: iUTAH Trainee

Belinda Madsen
Email: belindacmadsen@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: Volunteer on iUTAH WaterGirls program, an iUTAH EOD Innovation Awards-sponsored project.
Zach Malcarne  
**Email:** zachary.malcarne@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 2  
**Contribution to the Project:** USU Undergraduate Student participating in iUTAH research  
**Funding Support:** USU  
**International Collaboration:** No  
**International Travel:** No

Alexandria Martin  
**Email:** arm1205@westminstercollege.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** RCG Undergraduate Student at Westminster College  
**Funding Support:** Westminster College  
**International Collaboration:** No  
**International Travel:** No

Charles Mascher  
**Email:** charles.mascher@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** iUTAH Trainee  
**Funding Support:** USU  
**International Collaboration:** No  
**International Travel:** No

Stella Massachi  
**Email:** smassachi1212@gmail.com  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1  
**Contribution to the Project:** SI Participant  
**Funding Support:** SLCC  
**International Collaboration:** No  
**International Travel:** No

Gideon Maughan
Email: gideon.maughan@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Michelle Meunrath
Email: michellesolorzano@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: WSU Undergraduate Student participating in iUTAH research
Funding Support: WSU
International Collaboration: No
International Travel: No

Jessica Morgan
Email: jess.morgan@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Alan Ochoa
Email: a.ocho@live.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Zack Oldroyd
Email: zack.oldroyd@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU

International Collaboration: No
International Travel: No

Vinicius Pacheco
Email: 10548630@my.uvu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG Undergraduate Student at UVU
Funding Support: UVU

International Collaboration: No
International Travel: No

Tyler Payne
Email: tylerpayne1@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG Undergraduate Student at WSU
Funding Support: WSU

International Collaboration: No
International Travel: No

Hannah Peterson
Email: Hannah.peterson65@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG undergrad
Funding Support: UVU

International Collaboration: No
International Travel: No

Jacob Preston
Email: prestonjdb@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: Undergrad student participating in iUTAH research
Funding Support: SUU
Henintsoa Rakotoarisaona
Email: hentsrak@yahoo.fr
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG undergrad
Funding Support: UVU

Maurier Ramirez
Email: mauriel.ramirez@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: Undergrad student at USU Water Lab participating in research at iUTAH
Funding Support: USU

Nayla Rhein
Email: nayla.rhein@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: Undergrad student participating in iUTAH research
Funding Support: SUU

Ben Rider
Email: riderbenjamin@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3
Contribution to the Project: iUTAH Trainee
Funding Support: USU
Sarah Ross
Email: sarah.ross1192@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Jake Rudd
Email: jacob.rudd@aggiemail.usu.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Andrea Salcedo
Email: andreasalcedo@weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: WSU
International Collaboration: No
International Travel: No

Jeremy Saldivar
Email: venturesomemoose@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at UVU
Funding Support: UVU
International Collaboration: No
International Travel: No

Abigail Scott
Email: afs0309@westminstercollege.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at Westminster College

Funding Support: Westminster College

International Collaboration: No
International Travel: No

Sydney Searle
Email: sydneysearle@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG Undergraduate Student at WSU

Funding Support: WSU

International Collaboration: No
International Travel: No

Mercede Shaw
Email: mercedepearl22@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: UU Undergraduate Student participating in iUTAH research

Funding Support: UU

International Collaboration: No
International Travel: No

Natalie Shepherd
Email: natalieshep23@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2

Contribution to the Project: Undergrad student participating in iUTAH research

Funding Support: BYU

International Collaboration: No
International Travel: No

Maverik Shumway
Email: maveriknshumway@hotmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1

Contribution to the Project: RCG Undergraduate Student at SUU

Funding Support: SUU
William Soule
Email: williamsoule@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: WSU

Rebekah Stout
Email: rebekahstout1@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: WSU Undergraduate Student participating in iUTAH research
Funding Support: WSU

Hyrum Tennant
Email: hyrumtennant@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 3
Contribution to the Project: iUTAH Trainee
Funding Support: USU

Anne Thomas
Email: aet_artist@sbcglobal.net
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: BYU Undergraduate Student participating in iUTAH research
Funding Support: BYU
Mariah Todd
Email: 10773545@my.uvu.edu
**Most Senior Project Role:** Undergraduate Student
**Nearest Person Month Worked:** 2

**Contribution to the Project:** UVU Undergraduate Student participating in iUTAH research

**Funding Support:** UVU

**International Collaboration:** No
**International Travel:** No

Madelene Trentman
Email: mpt0907@westminstercollege.edu
**Most Senior Project Role:** Undergraduate Student
**Nearest Person Month Worked:** 1

**Contribution to the Project:** RCG Undergraduate Student at Westminster College

**Funding Support:** Westminster College

**International Collaboration:** No
**International Travel:** No

Jack Trice
Email: jack.trice96@gmail.com
**Most Senior Project Role:** Undergraduate Student
**Nearest Person Month Worked:** 2

**Contribution to the Project:** Undergrad student participating in iUTAH research

**Funding Support:** USU

**International Collaboration:** No
**International Travel:** No

Bethany Unger
Email: bethanyquinnunger@gmail.com
**Most Senior Project Role:** Undergraduate Student
**Nearest Person Month Worked:** 2

**Contribution to the Project:** Undergrad student participating in iUTAH research

**Funding Support:** USU

**International Collaboration:** No
**International Travel:** No

Alex Uribe
Email: aturibe90@gmail.com
**Most Senior Project Role:** Undergraduate Student
**Nearest Person Month Worked:** 1
Jack Wells
Email: wells11.89@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at UVU
Funding Support: UVU
International Collaboration: No
International Travel: No

Darianne Willey
Email: dariannewilley@gmail.com
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: USU Undergraduate Student participating in iUTAH research
Funding Support: USU
International Collaboration: No
International Travel: No

Ellen Wofford
Email: ellenwofford@mail.weber.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 1
Contribution to the Project: RCG Undergraduate Student at WSU
Funding Support: WSU
International Collaboration: No
International Travel: No

Margaret Wolf
Email: maw0912@westminstercollege.edu
Most Senior Project Role: Undergraduate Student
Nearest Person Month Worked: 2
Contribution to the Project: Westminster College Undergraduate Student participating in iUTAH research
Funding Support: Westminster College
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<td>Ian Wright</td>
<td><a href="mailto:ianwright1@mail.weber.edu">ianwright1@mail.weber.edu</a></td>
<td>Undergraduate Student</td>
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<td>WSU Undergraduate Student participating in iUTAH research</td>
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<td>Elizabeth Wynn</td>
<td><a href="mailto:ewynn610@gmail.com">ewynn610@gmail.com</a></td>
<td>Undergraduate Student</td>
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<td>Benjamin Zeller</td>
<td><a href="mailto:zeller.benjamin.j@gmail.com">zeller.benjamin.j@gmail.com</a></td>
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<td>iUTAH Trainee</td>
<td>USU</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Shannon Baker</td>
<td><a href="mailto:bakersh@carbonschools.org">bakersh@carbonschools.org</a></td>
<td>High School Student</td>
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<td>SI Participant</td>
<td>Carbon High School</td>
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Christian Belnap
Email: nicolebelnap@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Altamont High School
International Collaboration: No
International Travel: No

Jose Galang
Email: jfgalang2018@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Juan Diego High School
International Collaboration: No
International Travel: No

Andrew Gibbons
Email: a12t12g12@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Stansbury High School
International Collaboration: No
International Travel: No

Jaik Hakkarinen
Email: jaik2000@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Brighton High School
International Collaboration: No
International Travel: No

Dallin Larsen
Email: dallinlarsen10@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1
Contribution to the Project: SI Participant
Funding Support: Jordan High School
International Collaboration: No
International Travel: No

Mitzy Ocampo
Email: mitzy.m.ocampo@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant
Funding Support: West High School
International Collaboration: No
International Travel: No

Zoe Staley
Email: zoestaley@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant
Funding Support: Ogden High School
International Collaboration: No
International Travel: No

Nicole Tmecherur
Email: ntmecherur9445@gmail.com
Most Senior Project Role: High School Student
Nearest Person Month Worked: 1

Contribution to the Project: SI Participant
Funding Support: Ogden High School
International Collaboration: No
International Travel: No

Jacqueline Ewing-Taylor
Email: jacque@unr.edu
Most Senior Project Role: Consultant
Nearest Person Month Worked: 2

Contribution to the Project: U Nevada Reno
Funding Support: U Nevada Reno
Jon Garner
Email: jon.garner@searchtech.com
Most Senior Project Role: Consultant
Nearest Person Month Worked: 1
Contribution to the Project: Consultant at SearchTech working with iUTAH
Funding Support: SearchTech

Alan Porter
Email: alan.porter@isye.gatech.edu
Most Senior Project Role: Consultant
Nearest Person Month Worked: 2
Contribution to the Project: External Assessment Team
Funding Support: Georgia Tech

Joydino Beyale
Email: joydinobeyale@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: USU Eastern Blanding

Heather Bottelberghe
Email: heather.bottelberghe@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: SLCC
Katelyn Boyer  
Email: katelyn.boyer@aggiemail.usu.edu  
**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** iFellow  
**Funding Support:** USU  

International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  

Darcie Christensen  
Email: darc.c@aggiemail.usu.edu  
**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** iFellow  
**Funding Support:** USU  

International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  

Georgie Corkery  
Email: georgie.corkery@utah.edu  
**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant  
**Nearest Person Month Worked:** 3  
**Contribution to the Project:** iFellow  
**Funding Support:** UU  

International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:
Cynthia Elliott  
Email: cindeazy@gmail.com  
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant  
Nearest Person Month Worked: 3  
Contribution to the Project: iFellow  
Funding Support: WSU  
International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  

Andrew Hackett  
Email: andrewhackett@mail.weber.edu  
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant  
Nearest Person Month Worked: 3  
Contribution to the Project: iFellow  
Funding Support: WSU  
International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  

Greta Hamilton  
Email: hamilt4@gmail.com  
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant  
Nearest Person Month Worked: 3  
Contribution to the Project: iFellow  
Funding Support: SLCC  
International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  

Stacy Henderson  
Email: shendersonutah@gmail.com  
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant  
Nearest Person Month Worked: 3  
Contribution to the Project: iFellow  
Funding Support: SLCC  
International Collaboration: No  
International Travel: No  
Year of schooling completed:  
Home Institution:  
Government fiscal year(s) was this REU participant supported:  
Rebecca Lee
Email: beccalee323@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: BYU

Gabriela Martinez
Email: gmarti50@bruinmail.slcc.edu
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: SLCC

Mitch Steele
Email: mcsteele8@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: USU
Shanae Tate
Email: r.shanae.tate@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: BYU
International Collaboration: No
International Travel: No
Year of schooling completed:
Home Institution:

Government fiscal year(s) was this REU participant supported:

Luis Vidal
Email: luisguillermo.vidal@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: UU
International Collaboration: No
International Travel: No
Year of schooling completed:
Home Institution:

Government fiscal year(s) was this REU participant supported:

Lily Wetterlin
Email: lily.wetterlin13@gmail.com
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: UU
International Collaboration: No
International Travel: No
Year of schooling completed:
Home Institution:

Government fiscal year(s) was this REU participant supported:

Adam Whalen
Email: adam.whalen@utah.edu
Most Senior Project Role: Research Experience for Undergraduates (REU) Participant
Nearest Person Month Worked: 3
Contribution to the Project: iFellow
Funding Support: USU
International Collaboration: No
International Travel: No
Year of schooling completed: 
Home Institution: 
Government fiscal year(s) was this REU participant supported:

**Sandra Young**
Email: s.k.y@aggiemail.usu.edu
**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant
**Nearest Person Month Worked:** 3

**Contribution to the Project:** iFellow

Funding Support: USU
International Collaboration: No
International Travel: No
Year of schooling completed: 
Home Institution: 
Government fiscal year(s) was this REU participant supported:

### What other organizations have been involved as partners?

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<th>Name</th>
<th>Type of Partner Organization</th>
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<td>Utah Water Research Laboratory (UWRL)</td>
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**Full details of organizations that have been involved as partners:**

**American Association for the Advancement of Science**

- **Organization Type:** Other Nonprofits
- **Organization Location:** Washington, D.C.
- **Partner's Contribution to the Project:**
  - Financial support
  - In-Kind Support
  - Facilities
  - Collaborative Research
- **More Detail on Partner and Contribution:** iUTAH Project Office Staff are participating in a AAAS-funded project to advance the body of knowledge on and formalize the role of the science community manager/science engagement professional.

**American Water Works Association**

- **Organization Type:** Other Nonprofits
- **Organization Location:** Denver, CO
- **Partner's Contribution to the Project:**
  - Collaborative Research
- **More Detail on Partner and Contribution:** iUTAH EOD Staff are partnering with the Intermountain Section of AWA on organizing outreach events associated with Utah Water Week.

**Arizona State University**

- **Organization Type:** Academic Institution
- **Organization Location:** Tempe, Arizona
- **Partner's Contribution to the Project:**
  - Collaborative Research
- **More Detail on Partner and Contribution:** Researchers from ASU are partnering with iUTAH on a series of projects that investigate urban water use across the west, and the nature of collaboration between public utilities and university...
Arkansas EPSCoR

Organization Type: State or Local Government
Organization Location: Arkansas

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH Project Office Staff are collaborating with Arkansas EPSCoR staff on representation, networking, and professional development for the EPSCoR Project Administrators' community.

Arkansas Science and Technology Authority

Organization Type: State or Local Government
Organization Location: Little Rock, Arkansas

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Along with iUTAH and Utah State University, the Arkansas Science and Technology Authority participates in a consortium that developed and maintains the EPSCoR reporting module ER-Core, using the open source content management platform Drupal.

Bear River Watershed Council

Organization Type: Other Nonprofits
Organization Location: Providence, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: The Bear River Watershed Council, located in Providence, Utah, is a non-profit organization working to protect Northern Utah's watersheds. It is the recipient of a 2014 iUTAH EOD Innovation Award, with ongoing engagement with the iUTAH project through the organization's disbandment in 2016.

Brigham Young University

Organization Type: Academic Institution
Organization Location: Provo, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: BYU is one of Utah's three major research universities located in Provo, Utah. BYU faculty and students actively engaged with iUTAH represent five academic departments (Biology, Civil and Environmental Engineering, Geography, Geology, and Plant and Wildlife Sciences) and work within and across all three iUTAH Research Focus Areas.

Campbell Scientific, Inc.
<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Organization Type</th>
<th>Organization Location</th>
<th>Partner's Contribution to the Project:</th>
<th>More Detail on Partner and Contribution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campbell Scientific</td>
<td>Industrial or Commercial Firms</td>
<td>Logan, Utah</td>
<td>Collaborative Research</td>
<td>Staff of Campbell Scientific, a scientific instrumentation company headquartered in Logan, Utah, serve on iUTAH education, outreach and diversity teams.</td>
</tr>
<tr>
<td>Canyon Concepts LLC</td>
<td>Industrial or Commercial Firms</td>
<td>Tucson, Arizona</td>
<td>Collaborative Research</td>
<td>Staff of Canyon Concepts, LLC, a consulting firm focused on establishing collaborative relationships located in Tucson Arizona, serve on iUTAH education, outreach and diversity teams.</td>
</tr>
<tr>
<td>Central Utah Water Conservancy District</td>
<td>State or Local Government</td>
<td>Orem, Utah</td>
<td>Collaborative Research</td>
<td>The CUWCD, headquartered in Orem, Utah, has been an active collaborator in the design and upkeep of the iUTAH GAMUT observation network, providing help with site selection, logistical support and access to facilities and electrical power.</td>
</tr>
<tr>
<td>Christina River Basin Critical Zone Observatory</td>
<td>Other Nonprofits</td>
<td>Delaware, Pennsylvania and Maryland</td>
<td>Collaborative Research</td>
<td>Christina River Basin CZO is an NSF-funded environmental observatory partnered with the University of Delaware located in Newark, Delaware. iUTAH is collaborating with personnel from Christina River CZO in the development of functionality for the Python-based software stack used to manage the streaming datasets from the GAMUT network.</td>
</tr>
<tr>
<td>Cirrus Ecological Solutions LC</td>
<td>Industrial or Commercial Firms</td>
<td>Logan, Utah</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: iUTAH researchers are collaborating with Cirrus, an environmental consulting firm located in Logan, Utah, on understanding and quantifying the impact of dissolved organic carbon (DOC) on dissolved oxygen impairment to the Lower Jordan River, and on understanding the loading of DOC and other pollutants to the Jordan River in support of the development and revision of the Jordan River total maximum daily loads document.

City of Logan

Organization Type: State or Local Government
Organization Location: Logan, Utah

Partner's Contribution to the Project: Facilities, Collaborative Research, Personnel Exchanges

More Detail on Partner and Contribution: UTAH is partnering with the City of Logan to share datasets, plan for current and potential future monitoring sites and data collection activities, and obtain legal access to monitoring sites within Logan City. This relationship is currently being expanded to include data collection using smart metering devices in residential households. iUTAH researchers are also collaborating with Logan City Public Works to evaluate performance of stormwater collection and treatment systems, to measure flow and monitor water quality from canal/stormwater discharges to the Logan River, and to evaluate the implementation and long-term performance of alternative stormwater management systems.

Climate Adaptation Science

Organization Type: Academic Institution
Organization Location: Logan, UT

Partner's Contribution to the Project: In-Kind Support, Collaborative Research

More Detail on Partner and Contribution: The Climate Adaptation Science program at Utah State University prepares graduate researchers for careers integrating science with management and policy while advancing climate adaptation science in the Interior West. The program’s faculty include several iUTAH scientists who are helping to develop and deliver its innovative interdisciplinary training activities.

Consortium of Universities for the Advancement of Hydrologic

Organization Type: Academic Institution
Organization Location: National

Partner's Contribution to the Project: Facilities, Collaborative Research, Personnel Exchanges

More Detail on Partner and Contribution: iUTAH is using and extending cyberinfrastructure software and tools originally developed as part of the CUAHSI Hydrologic Information System for managing data from the GAMUT network. All of iUTAH's software development activities are shared via open-source code repositories, with plans in place to
integrate these developments into the software stack supported by the NSF-Supported CUAHSI Water Data Center, a community serving data center for the hydrologic science community. In addition, several iUTAH participants also serve as faculty representatives to CUAHSI.

**Delaware EPSCoR**

**Organization Type:** Academic Institution  
**Organization Location:** Delaware

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** iUTAH EOD Staff are partnering annually with Delaware EPSCoR to plan and implement a cross-jurisdictional EPSCoR booth at the SACNAS National Conference to increase representation of underrepresented minorities in STEM.

**Dixie State University (DSU)**

**Organization Type:** Academic Institution  
**Organization Location:** Southern Utah

**Partner's Contribution to the Project:**  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** Dixie State University is a four-year regional university located in St. George in southern Utah. It primarily serves residents of Utah, southern Nevada, and southern California and, as an open-enrollment school, has a large population of non-traditional students. Faculty at DSU serve on iUTAH education, outreach and diversity teams.

**Dixie State University Office of Sponsored Programs**

**Organization Type:** Academic Institution  
**Organization Location:** St. George, UT

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** Dixie State University is a four-year regional university located in St. George in southern Utah. It primarily serves residents of Utah, southern Nevada, and southern California and, as an open-enrollment school, has a large population of non-traditional students. iUTAH Project Office Staff are collaborating with Sponsored Programs Office Staff at DSU to advance research and educational opportunities for DSU faculty and staff.

**Envision Utah**

**Organization Type:** Other Nonprofits  
**Organization Location:** Utah

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** Envision Utah engages people to create and sustain communities that are
beautiful, prosperous, healthy and neighborly for current and future residents. iUTAH personnel served on the technical team that developed the water portions of the comprehensive "Your Utah, Your Future" survey, and assisted with interpretation of survey data.

### Explore Utah Science

**Organization Type:** Other Nonprofits  
**Organization Location:** Utah  

**Partner's Contribution to the Project:** Collaborative Research  

**More Detail on Partner and Contribution:** EUS produces original reporting and multimedia broadcasting of Utah-centric science news and information. It is the recipient of a 2014 EOD Innovation Award.

### Four Corners School of Outdoor Education

**Organization Type:** Academic Institution  
**Organization Location:** Monticello, Utah  

**Partner's Contribution to the Project:** Collaborative Research  

**More Detail on Partner and Contribution:** Four Corners School of Outdoor Education is a non-profit organization located in Monticello, Utah, that provides lifelong learning experiences about the Colorado Plateau bioregion for people of all ages and backgrounds through education, service, adventure, and conservation programs. Four Corners School has partnered with iUTAH diversity enhancement by providing diversity training activities for iUTAH participants.

### Garth and Jerri Frehner Museum of Natural History

**Organization Type:** Other Nonprofits  
**Organization Location:** Cedar City, Utah  

**Partner's Contribution to the Project:** In-Kind Support  
Facilities  
Collaborative Research  
Personnel Exchanges  

**More Detail on Partner and Contribution:** The Garth and Jerri Frehner Museum of Natural History is a museum located on the campus of Southern Utah University in Cedar City, Utah. Museum staff serve on iUTAH education, outreach and diversity teams and have been recipients of iUTAH Research Catalyst Grants and EOD Innovation Awards (2014, 2015).

### Global Change and Sustainability Center

**Organization Type:** Academic Institution  
**Organization Location:** Salt Lake City, Utah  

**Partner's Contribution to the Project:** Collaborative Research  

**More Detail on Partner and Contribution:** The GCSC, located at The University of Utah in Salt Lake City, serves as a
Hillyard, Anderson, and Olson PC  
**Organization Type:** Industrial or Commercial Firms  
**Organization Location:** Logan Utah  
**Partner's Contribution to the Project:**  
Collaborative Research  
**More Detail on Partner and Contribution:** Hillyard, Anderson and Olsen PC is a law firm located in Logan, Utah. Principals from the firm serve on iUTAH education, outreach and diversity teams.

HydroShare  
**Organization Type:** Academic Institution  
**Organization Location:** National  
**Partner's Contribution to the Project:**  
Collaborative Research  
**More Detail on Partner and Contribution:** HydroShare is a collaborative online partnership to promote sharing of and better access to data and models in the hydrologic sciences. iUTAH is looking towards HydroShare as a potential partners in the long-term curation and archival of iUTAH datasets. HydroShare is a new and emerging hydrologic information system and collaborative data sharing environment that may be a viable repository for long term deposition of iUTAH datasets.

International Neuroinformatics Coordinating Facility (INCF)  
**Organization Type:** Other Nonprofits  
**Organization Location:** Stockholm, Sweden  
**Partner's Contribution to the Project:**  
Collaborative Research  
**More Detail on Partner and Contribution:** iUTAH Project Office Staff are collaborating with program managers at INCF on a AAAS-funded project to advance the body of knowledge on and formalize the role of the science community manager/science engagement professional.

Jordan High School  
**Organization Type:** School or School Systems  
**Organization Location:** Sandy, Utah  
**Partner's Contribution to the Project:**  
Collaborative Research  
**More Detail on Partner and Contribution:** Jordan High School is a public high school located in Sandy Utah. It is the recipient of a 2014 EOD Innovation Award.
<table>
<thead>
<tr>
<th>Organization Type</th>
<th>Organization Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan River Commission</td>
<td>Salt Lake City, UT</td>
</tr>
<tr>
<td>Jordan Valley Water Conservancy (JVWCD)</td>
<td>West Jordan, UT</td>
</tr>
<tr>
<td>Judge Memorial High school (Judge)</td>
<td>Salt Lake City, Utah</td>
</tr>
<tr>
<td>Logan Northwest Field Irrigation Company</td>
<td>Logan, Utah</td>
</tr>
<tr>
<td>Logan, Hyde Park and Smithfield Canal Company</td>
<td>Logan, Utah</td>
</tr>
</tbody>
</table>

**Partner's Contribution to the Project:**
- Facilities
- Collaborative Research

**More Detail on Partner and Contribution:**
- **Jordan River Commission:** is a governmental entity serving as a resource to local communities, and provides planning, restoration, and responsible development along the river corridor.
- **JVWCD:** is primarily a wholesaler of water to cities and improvement districts within Salt Lake County, and is a political subdivision of the State of Utah and one of the largest water districts in the state.
- **Judge Memorial:** is a diverse, co-educational, college preparatory school centrally located in Salt Lake City, Utah. [http://www.judgememorial.com/](http://www.judgememorial.com/)
- **Logan Northwest Field Irrigation Company:** iUTAH is partnering with the Logan, Hyde Park and Smithfield Canal Company to study the canal water system within the Logan City and Cache County.
Collaborative Research

More Detail on Partner and Contribution: Canal company in Cache Valley

Loras College

Organization Type: Academic Institution  
Organization Location: Dubuque, Iowa

Partner's Contribution to the Project:  
Collaborative Research

More Detail on Partner and Contribution: Loras College is a private Catholic liberal arts college located in Dubuque, Iowa. Faculty from Loras College served on iUTAH education, outreach and diversity teams.

Loveland Living Planet Aquarium

Organization Type: Other Nonprofits  
Organization Location: Draper, Utah

Partner's Contribution to the Project:  
Collaborative Research

More Detail on Partner and Contribution: Staff of the Loveland Living Planet Aquarium, an important iUTAH stakeholder located in Draper, Utah, serve on iUTAH education, outreach and diversity teams. It is also the recipient of a 2014 EOD Innovation Award.

Natural History Museum of Utah

Organization Type: Other Nonprofits  
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:  
Facilities  
Collaborative Research

More Detail on Partner and Contribution: NHMU, located on the University of Utah campus in Salt Lake City, is an active participant and partner of iUTAH. In addition to NHMU staff serving on the iUTAH management and education, outreach and diversity teams, NHMU coordinates the Taking Learning Outdoors Program. The iUTAH Visualization Lab (iVL) is currently developing innovative programming and interactive exhibits for NHMU in collaboration with their staff. NHMU is also the recipient of a 2015 EOD Innovation Award.

Nevada EPSCoR

Organization Type: State or Local Government  
Organization Location: Las Vegas, NV

Partner's Contribution to the Project:  
Collaborative Research

More Detail on Partner and Contribution: iUTAH Project Office Staff are collaborating with Nevada EPSCoR staff at the Nevada System of Higher Education on representation, networking, and professional development for the EPSCoR
Nevada System of Higher Education

Organization Type: State or Local Government
Organization Location: Reno, Nevada

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Along with iUTAH and Utah State University, the Nevada System of Higher Education Sponsored Programs Office and EPSCoR participates in a consortium that developed and maintains the EPSCoR reporting module ER-Core, using the open source content management platform Drupal.

New Hampshire EPSCoR

Organization Type: Academic Institution
Organization Location: New Hampshire

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH EOD Staff are partnering annually with New Hampshire EPSCoR to plan and implement a cross-jurisdictional EPSCoR booth at the SACNAS National Conference to increase representation of underrepresented minorities in STEM.

New Mexico EPSCoR

Organization Type: Academic Institution
Organization Location: New Mexico

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH Project Office Staff are collaborating with New Mexico EPSCoR staff at the University of New Mexico on representation, networking, and professional development for the EPSCoR Project Administrators' community.

North Dakota EPSCoR

Organization Type: Academic Institution
Organization Location: Fargo, ND

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH Project Office Staff are collaborating with North Dakota EPSCoR staff at North Dakota State University on representation, networking, and professional development for the EPSCoR Project Administrators' community.

North Dakota State University
Organization Type: Academic Institution  
Organization Location: Fargo, ND

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Along with iUTAH and Utah State University, NDSU takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

North Logan Library

Organization Type: State or Local Government
Organization Location: North Logan, UT

Partner's Contribution to the Project: 
In-Kind Support
Facilities
Collaborative Research

More Detail on Partner and Contribution: iUTAH EOD Staff are partnering with the North Logan Library on outreach events involving the iUTAH-funded book “Water Runs Through This Book” by Nancy Bo Flood.

Pleiades Software, Inc

Organization Type: Industrial or Commercial Firms
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Staff of Pleiades Software, Inc., a private software development company located in Salt Lake City, serve on iUTAH education, outreach and diversity teams.

Politecnio di Milano

Organization Type: Academic Institution
Organization Location: Italy

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Polimi is the largest technical university on Italy, located in Milan. iUTAH is partnering with Polimi on coupled modeling research conducted in Research Focus Area 3.

Portland State University

Organization Type: Academic Institution
Organization Location: Portland, Oregon

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Researchers from Portland State University are partnering with iUTAH on a series of projects that investigate urban water use across the west, and the nature of collaboration between public utilities and university researchers.

Providence Blacksmith Fork Irrigation Co.

Organization Type: Industrial or Commercial Firms
Organization Location: Providence, Utah

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH is partnering with the Providence Blacksmith Fork Irrigation Company to study the canal water system within the City of Logan and Cache County.

Purdue University

Organization Type: Academic Institution
Organization Location: West Lafayette, IN

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Purdue University is a partner in HydroShare, iUTAH’s long-term data repository.

Rose Park Elementary

Organization Type: School or School Systems
Organization Location: Salt Lake City, Utah

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Rose Park Elementary is a public school in Salt Lake City, Utah, serving a diverse urban population with a large percentage of underrepresented minority students. It is also the recipient of a 2015 EOD Innovation Award that engaged students in water quality monitoring of the Jordan River.

SACNAS

Organization Type: Other Nonprofits
Organization Location: Santa Cruz, CA

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH Leadership and EOD Staff are collaborating with the Board of SACNAS to identify potential partners and sponsors for the 2017 SACNAS National Conference in Salt Lake City, Utah.
STEM Evaluation Associates

**Organization Type:** Other Nonprofits  
**Organization Location:** Western US

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** STEM Evaluation Associates provides both formative and summative assessment of iUTAH activities on an ongoing basis.

Salt Lake City Department of Public Utilities

**Organization Type:** State or Local Government  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Facilities  
Collaborative Research

**More Detail on Partner and Contribution:** The Salt Lake City DPU is the oldest retail water provider in the west. iUTAH is partnering with SLCDPU for permitting of its GAMUT stations. SLCDPU is also an important stakeholder for GAMUT data products and iUTAH coupled modeling efforts.

Salt Lake Community College

**Organization Type:** Academic Institution  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** Faculty from SLCC serve on iUTAH education, outreach and diversity teams and participate in iUTAH research projects. It is also the recipient of a 2015 EOD Innovation Award.

Salt Lake County

**Organization Type:** State or Local Government  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** iUTAH is partnering with Salt Lake County for permitting of its GAMUT stations. Salt Lake County is also an important stakeholder for GAMUT data products.

Seven Canyons Trust

**Organization Type:** Other Nonprofits  
**Organization Location:** Salt Lake City, UT
Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Seven Canyons Trust is working to daylight and rehabilitate the seven canyon creeks, restoring the health and beauty to the hydrology of the Salt Lake Valley.

Snow College

Organization Type: Academic Institution
Organization Location: Ephraim, Utah

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Snow College is a two-year state college located in Ephraim, Utah. It serves a six-county area in Utah, and has a student body that aims to transfer to four-year institutions or enter the workforce after earning an associate degree. A Snow College undergraduate participated in the 2015 iUTAH iFellows program.

South Dakota State University

Organization Type: Academic Institution
Organization Location: Brookings, South Dakota

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: Along with iUTAH and Utah State University, SDSU takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

Southern Utah University

Organization Type: Academic Institution
Organization Location: Cedar city, Utah

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: SUU is a small primarily undergraduate institution located in Cedar City, Utah. Faculty and staff from SUU are active participants in iUTAH research and EOD activities and serve on iUTAH management and education, outreach and diversity teams.

Southern Utah University Sponsored Projects Office (SPARC)

Organization Type: Academic Institution
Organization Location: Cedar City, UT

Partner's Contribution to the Project: Collaborative Research

More Detail on Partner and Contribution: SUU is a small primarily undergraduate institution located in Cedar City, Utah. iUTAH Project Office Staff are collaborating with SPARC Office Staff at SUU to advance research and educational
opportunities for SUU faculty and staff.

<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Organization Type</th>
<th>Organization Location</th>
<th>Partner's Contribution to the Project</th>
<th>More Detail on Partner and Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanksgiving Point Institute</td>
<td>Other Nonprofits</td>
<td>Lehi, Utah</td>
<td>Collaborative Research</td>
<td>Staff of the Thanksgiving Point Institute, a non-profit museum and experiential learning facility located in Lehi, Utah, serve on iUTAH education, outreach and diversity teams. It is also the recipient of a 2013 EOD Innovation Award.</td>
</tr>
<tr>
<td>The Leonardo</td>
<td>Other Nonprofits</td>
<td>Salt Lake City, Utah</td>
<td>Collaborative Research</td>
<td>In 2014, iUTAH partnered with Salt Lake City's downtown science museum, The Leonardo, to develop an interactive water exhibit and supplemental K-12 curriculum through an EOD Innovation Award. In 2015, this partnership was renewed through a second award to develop water programming for The Leonardo's mobile science outreach program &quot;Leo on Wheels.&quot; As an important iUTAH stakeholder, staff of The Leonardo also serve on iUTAH education, outreach and diversity teams. The Leo has also received iUTAH funding to support hispanic students visiting the museum to view their Water-themed photo exhibit.</td>
</tr>
<tr>
<td>Tracy Aviary</td>
<td>Other Nonprofits</td>
<td>Salt Lake City, Utah</td>
<td>Collaborative Research</td>
<td>Researchers in iUTAH's iVL are collaborating with Tracy Aviary to inform discussions on restoring Jordan River riparian habitat.</td>
</tr>
<tr>
<td>Triangle Coalition for STEM Education (Triangle)</td>
<td>Other Nonprofits</td>
<td>Washington D.C.</td>
<td>Collaborative Research</td>
<td>The Triangle Coalition for STEM Education is a non-profit organization located in Washington, D.C. It administers the Albert Einstein Distinguished Educator Fellowship Program. Utah educator Rebecca Sansom participated on iUTAH education, outreach and diversity teams while serving as an Albert Einstein Distinguished Educator Fellow.</td>
</tr>
</tbody>
</table>
Tufts University

**Organization Type:** Academic Institution  
**Organization Location:** Massachusetts

**Partner's Contribution to the Project:**  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** Tufts University is a partner in HydroShare.

USDA Natural Resources Conservation Service

**Organization Type:** Other Organizations (foreign or domestic)  
**Organization Location:** National

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** Staff of the USDA's Natural Resources Conservation Service participated in iUTAH stakeholder meetings to finalize the design for the GAMUT network.

United States Geological Survey

**Organization Type:** Other Organizations (foreign or domestic)  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** iUTAH's GAMUT observation network ties in with existing USGS gauging stations. USGS staff use GAMUT data in their research and serve on advisory committees for graduate students supported by iUTAH.

United States National Park Service

**Organization Type:** Other Organizations (foreign or domestic)  
**Organization Location:** National

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** Staff of the National Park Service serve on iUTAH education, outreach and diversity teams.

University of Alaska Anchorage

**Organization Type:** Academic Institution  
**Organization Location:** Anchorage, Alaska

**Partner's Contribution to the Project:**
Collaborative Research

**More Detail on Partner and Contribution:** Along with iUTAH and Utah State University, the University of Alaska takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

<table>
<thead>
<tr>
<th>University of Hawaii</th>
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</thead>
<tbody>
<tr>
<td><strong>Organization Type:</strong> Academic Institution</td>
</tr>
<tr>
<td><strong>Organization Location:</strong> Hawaii</td>
</tr>
<tr>
<td><strong>Partner's Contribution to the Project:</strong> Collaborative Research</td>
</tr>
<tr>
<td><strong>More Detail on Partner and Contribution:</strong> Along with iUTAH and Utah State University, the University of Hawaii takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.</td>
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<tr>
<th>University of Idaho</th>
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</thead>
<tbody>
<tr>
<td><strong>Organization Type:</strong> Academic Institution</td>
</tr>
<tr>
<td><strong>Organization Location:</strong> Moscow, Idaho</td>
</tr>
<tr>
<td><strong>Partner's Contribution to the Project:</strong> Collaborative Research</td>
</tr>
<tr>
<td><strong>More Detail on Partner and Contribution:</strong> iUTAH researchers are collaborating with colleagues at the University of Idaho on an assessment of news coverage of water issues. Collaborations include methods development as well as comparative analysis of water news coverage in Idaho, Washington and Utah.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>University of Kansas</th>
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</thead>
<tbody>
<tr>
<td><strong>Organization Type:</strong> Academic Institution</td>
</tr>
<tr>
<td><strong>Organization Location:</strong> Lawrence, KS</td>
</tr>
<tr>
<td><strong>Partner's Contribution to the Project:</strong> Collaborative Research</td>
</tr>
<tr>
<td><strong>More Detail on Partner and Contribution:</strong> iUTAH Project Office Staff are collaborating with Kansas EPSCoR staff at the University of Kansas on representation, networking, and professional development for the EPSCoR Project Administrators' community.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>University of Life Sciences &amp; Natural Resources (BOKU)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization Type:</strong> Academic Institution</td>
</tr>
<tr>
<td><strong>Organization Location:</strong> Vienna, Austria</td>
</tr>
<tr>
<td><strong>Partner's Contribution to the Project:</strong> Collaborative Research</td>
</tr>
<tr>
<td><strong>More Detail on Partner and Contribution:</strong> iUTAH researchers are collaborating with colleagues at BOKU on empirical assessments of human-nature-relationships and their role in landscape and natural resource governance. iUTAH-based</td>
</tr>
</tbody>
</table>
research is included as an empirical case in this ongoing collaboration involving scholarly article publication and conference presentations.

University of Missouri
Organization Type: Academic Institution
Organization Location: Columbia, Missouri
Partner's Contribution to the Project: Collaborative Research
More Detail on Partner and Contribution: Along with iUTAH and Utah State University, the University of Missouri takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

University of New Hampshire
Organization Type: Academic Institution
Organization Location: New Hampshire
Partner's Contribution to the Project: Collaborative Research
More Detail on Partner and Contribution: Along with iUTAH and Utah State University, the University of New Hampshire takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

University of New Mexico
Organization Type: Academic Institution
Organization Location: Albuquerque, New Mexico
Partner's Contribution to the Project: Collaborative Research
More Detail on Partner and Contribution: Along with iUTAH and Utah State University, the University of New Mexico takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

University of North Carolina Chapel Hill
Organization Type: Academic Institution
Organization Location: North Carolina
Partner's Contribution to the Project: Collaborative Research
More Detail on Partner and Contribution: The University of North Carolina at Chapel Hill is a partner in HydroShare.

University of Rhode Island
Organization Type: Academic Institution
Organization Location: Kingston, Rhode Island

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Along with iUTAH and Utah State University, The University of Rhode Island takes part in a consortium that developed and maintains the EPSCoR reporting module ER-Core using the open source content management platform Drupal.

University of Texas at Austin
Organization Type: Academic Institution
Organization Location: Texas

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: The University of Texas at Austin is a partner in HydroShare.

University of Utah
Organization Type: Academic Institution
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: As the largest research institution in the state, The University of Utah, located in Salt Lake City, is an essential part of iUTAH research, education, outreach and diversity efforts. Faculty and students involved with iUTAH come from seven academic departments (Atmospheric Sciences, Biology, City and Metropolitan Planning, Civil and Environmental Engineering, Communication, Geology, and Mechanical Engineering), as well as from the the Environmental Fluid Dynamics Laboratory, the Genetic Science Learning Center, the Global Change and Sustainability Center, and the Natural History Museum of Utah. iUTAH also maintains a satellite project office at the Intermountain Network Scientific Computation Center (INSCC) on the University of Utah campus. The iUTAH Education, Outreach and Diversity coordinator is based out of this office.

University of Utah Office of the VPR
Organization Type: Academic Institution
Organization Location: Salt Lake City, UT

Partner's Contribution to the Project:
Financial support
In-Kind Support
Facilities
Collaborative Research
Personnel Exchanges

More Detail on Partner and Contribution: As the largest research institution in the state, The University of Utah, located in Salt Lake City, is an essential part of iUTAH research, education, outreach and diversity efforts. iUTAH Project Office Staff are collaborating with the Office of the VPR at UU in advancing science communication and broader impacts in the state.
University of Virginia

**Organization Type:** Academic Institution  
**Organization Location:** Charlottesville, Virginia

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** The University of Virginia is a partner in HydroShare. It is also a participating institution in a collaboratively taught, cross-campus graduate course in Hydroinformatics that is spear-headed by iUTAH participants.

University of Washington

**Organization Type:** Academic Institution  
**Organization Location:** Seattle, WA

**Partner's Contribution to the Project:**  
Collaborative Research

**More Detail on Partner and Contribution:** iUTAH Project Office Staff are collaborating with administrators at the University of Washington on a AAAS-funded project to advance the body of knowledge on and formalize the role of the science community manager/science engagement professional.

University of Wyoming

**Organization Type:** Academic Institution  
**Organization Location:** Laramie, Wyoming

**Partner's Contribution to the Project:**  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** The University of Wyoming is a participating institution in a collaboratively taught, cross-campus graduate course in Hydroinformatics that is spear-headed by iUTAH participants.

Utah Automated Geographic Resource Center

**Organization Type:** State or Local Government  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Facilities  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** The UAGRC provides geospatial data that are incorporated into data viewer applications designed by the iUTAH Modeling and Data Federation. In turn, iUTAH is working towards distributing some of its geospatial datasets to a broader audience through UAGRC.
Utah Department of Environmental Quality

Organization Type: State or Local Government
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: UTAH researchers are collaborating with DEQ's Division of Water Quality on understanding and quantifying the impact of dissolved organic carbon (DOC) on dissolved oxygen impairment to the Lower Jordan River, and on understanding the loading of DOC and other pollutants to the Jordan River in support of the development and revision of the Jordan River total maximum daily loads document. Researchers in RFA3 are involved in participatory modeling exercises with DEQ's Division of Water Quality.

Utah Department of Natural Resources

Organization Type: State or Local Government
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Staff of the Utah DNR serve on iUTAH management and education, outreach and diversity teams. Researchers in iUTAH's iVL are collaborating with UDNR's Division of Wildlife Resources and Partners in Flight program to inform discussions on restoring Jordan River riparian habitat. Researchers in iUTAH's RFA3 are recalibrating and updating existing UDWRe hydrologic models with iUTAH land-use models.

Utah Education Network

Organization Type: Academic Institution
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research
Personnel Exchanges

More Detail on Partner and Contribution: iUTAH's partnership with UEN dates back to the inception of the project. In addition to UEN staff serving on the iUTAH communications team and maintaining the iUTAH website iutahepscor.org, UEN also lends its expertise to the production of educational and promotional videos for iUTAH.

Utah Governor's Office of Economic Development

Organization Type: State or Local Government
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Staff of the Utah GOED serve on iUTAH management and education, outreach and diversity teams.

Utah Partners in Flight
**PIL** is a cooperative effort involving partnerships among public and private agencies and institutions in each state to address the growing concerns about declines in the populations of many land bird species.

**Utah Public Radio**

**Organization Type:** Other Nonprofits  
**Organization Location:** Logan, UT

**Partner's Contribution to the Project:**  
In-Kind Support  
Collaborative Research

**More Detail on Partner and Contribution:** UPR is the recipient of a 2015 iUTAH EOD Innovation Award, which supports production of The Source, a monthly one-hour radio program focused on Utah's water resources.

**Utah Science, Technology, and Research Initiative**

**Organization Type:** State or Local Government  
**Organization Location:** Salt Lake City, Utah

**Partner's Contribution to the Project:**  
Financial support  
In-Kind Support  
Facilities

**More Detail on Partner and Contribution:** USTAR is a state organization that aims to increase innovation, entrepreneurship, and investment throughout the state. USTAR provides part of the required matching funds for the iUTAH grant, as well as office space for the iUTAH Project Office.

**Utah State Board of Education**

**Organization Type:** State or Local Government  
**Organization Location:** Salt Lake City, UT

**Partner's Contribution to the Project:**  
Collaborative Research  
Personnel Exchanges

**More Detail on Partner and Contribution:** USBE staff serve on iUTAH education, outreach and diversity teams and participate in the State EPSCoR Committee.

**Utah State Office of Education**

**Organization Type:** State or Local Government
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: USOE staff serve on iUTAH education, outreach and diversity teams and participate in the State EPSCoR Committee.

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Utah State University - Eastern

Organization Type: Academic Institution
Organization Location: Blanding, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Faculty from Utah State University Eastern's Blanding campus are actively involved with iUTAH's efforts to promote and sustain a diverse STEM workforce in the state. iUTAH is also an active participant in USU Eastern's Native American Mentorship Program.

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Utah State University Office of the VPR

Organization Type: Academic Institution
Organization Location: Logan, UT

Partner's Contribution to the Project:
Financial support
In-Kind Support
Collaborative Research
Personnel Exchanges

More Detail on Partner and Contribution: iUTAH Project Office Staff are collaborating with the Office of the VPR at UU in advancing science communication in the state.

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Utah State University Uinta Basin Campus

Organization Type: Academic Institution
Organization Location: Vernal, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Faculty from the Utah State University Uintah Basin Campus, located in Roosevelt and Vernal, Utah, serve on iUTAH education, outreach and diversity teams.

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Utah State University Water Quality Extension

Organization Type: Academic Institution
Organization Location: Logan, Utah

Partner's Contribution to the Project:
Financial support
More Detail on Partner and Contribution: USU Water Quality Extension works to help people understand the link between water quality, land use, and everyday activities. It is the recipient of a 2014 EOD Innovation Award. In addition, Utah Water Watch, which is administered by USU Water Quality Extension, conducts citizen science monitoring throughout the state of Utah.

Utah Stormwater Advisory Committee (USWAC)

Organization Type: State or Local Government
Organization Location: Utah

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH is partnering with Utah SWAC to identify information needs of local stormwater managers and the challenges faced in meeting state and federal regulations.

Utah System of Higher Education

Organization Type: State or Local Government
Organization Location: Salt Lake City, Utah

Partner’s Contribution to the Project:
In-Kind Support

More Detail on Partner and Contribution: USHE staff serve on iUTAH education, outreach and diversity teams and participate in the State EPSCoR Committee.

Utah Valley University

Organization Type: Academic Institution
Organization Location: Orem, Utah

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Utah Valley University is a large, primarily undergraduate institution located in Orem, Utah. Faculty from Utah Valley University are active participants in iUTAH research and EOD activities and serve on iUTAH management and education, outreach and diversity teams.

Utah Water Research Laboratory (UWRL)

Organization Type: Academic Institution
Organization Location: Logan, Utah

Partner’s Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: UWRL is a stand-alone facility at Utah State University that works with the academic, government, and private sectors to address technical and societal aspects of water-related issues. UWRL faculty and staff are actively engaged in numerous iUTAH research and EOD activities.
<table>
<thead>
<tr>
<th>Organization Name</th>
<th>Organization Type</th>
<th>Organization Location</th>
<th>Partner's Contribution to the Project:</th>
<th>More Detail on Partner and Contribution</th>
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<tbody>
<tr>
<td>Utah Water Watch</td>
<td>Academic Institution</td>
<td>Logan, Utah</td>
<td>In-Kind Support</td>
<td>UWW is a water quality education and data collection program that seeks to increase awareness about the importance of water quality and promote stewardship of Utah’s aquatic resources. Staff serves on the iUTAH education, outreach/diversity teams, and received an iUTAH EOD Innovation Award (2012, 2013).</td>
</tr>
<tr>
<td>Wasatch Dendroclimatology Research Group (WaDR)</td>
<td>Academic Institution</td>
<td>Logan, UT</td>
<td>In-Kind Support</td>
<td>WaDR combines the expertise from interrelated fields (dendrochronology, geography, geology, tree physiology, climatology, and anthropology) and multiple institutions to examine the climate record of the past ~2000 years for No. Utah.</td>
</tr>
<tr>
<td>Washington State University (WaSU)</td>
<td>Academic Institution</td>
<td>Pullman, Washington</td>
<td>Collaborative Research</td>
<td>iUTAH researchers are collaborating with colleagues at Washington State University on an assessment of news coverage of water issues. Collaborations include methods development as well as comparative analysis of water news coverage in Idaho, Washington and Utah.</td>
</tr>
<tr>
<td>Weber County Library</td>
<td>State or Local Government</td>
<td>Ogden, UT</td>
<td>In-Kind Support, Facilities, Collaborative Research</td>
<td>iUTAH EOD Staff are partnering with the Weber County Library on outreach events involving the iUTAH-funded book &quot;Water Runs Through This Book&quot; by Nancy Bo Flood.</td>
</tr>
</tbody>
</table>
Organization Type: Academic Institution
Organization Location: Ogden, Utah

Partner's Contribution to the Project:
In-Kind Support
Collaborative Research

More Detail on Partner and Contribution: Weber State University is a large, primarily undergraduate institution located in Ogden, Utah. Faculty and staff from Weber State are active participants in iUTAH research and EOD activities and serve on iUTAH management and education, outreach and diversity teams.

Weber State University Energy and Sustainability Office

Organization Type: Academic Institution
Organization Location: Ogden, UT

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: iUTAH researchers are partnering with the Energy and Sustainability Office at WSU to address sustainability issues on campus.

Western Water Assessment (WWA)

Organization Type: Other Nonprofits
Organization Location: Colorado, Western US

Partner's Contribution to the Project:
Personnel Exchanges

More Detail on Partner and Contribution: WWA is a university-government research partnership on the issues of climate change and water sustainability. The Utah Liaison for WWA regularly meets with resource managers and other stakeholders to better understand their needs for climate information and to connect them to the research and resources of WWA and its partners. In addition to sharing this expert knowledge base with iUTAH, WWA has helped to initiate and sustain relationships between iUTAH participants and key stakeholder agencies such as Salt Lake City Public Utilities.

Westminster College

Organization Type: Academic Institution
Organization Location: Salt Lake City, Utah

Partner's Contribution to the Project:
Collaborative Research

More Detail on Partner and Contribution: Westminster College is a private, primarily undergraduate institution located in Salt Lake City, Utah. Faculty from Westminster College are active participants in iUTAH research and EOD activities and serve on iUTAH management and education, outreach and diversity teams.

What other collaborators or contacts have been involved?
Nothing to report
Impacts
What is the impact on the development of the principal discipline(s) of the project?
Nothing to add.

What is the impact on other disciplines?
Nothing to add.

What is the impact on the development of human resources?
Nothing to add.

What is the impact on physical resources that form infrastructure?
Nothing to add.

What is the impact on institutional resources that form infrastructure?
Nothing to add.

What is the impact on information resources that form infrastructure?
Nothing to add.

What is the impact on technology transfer?
Nothing to add.

What is the impact on society beyond science and technology?
Nothing to add.

Changes/Problems
Changes in approach and reason for change
Nothing to add.

Actual or Anticipated problems or delays and actions or plans to resolve them
Nothing to add.

Changes that have a significant impact on expenditures
Nothing to add.

Significant changes in use or care of human subjects
Nothing to add.

Significant changes in use or care of vertebrate animals
Nothing to add.
Significant changes in use or care of biohazards

Nothing to add.

Special Requirements

Responses to any special reporting requirements specified in the award terms and conditions, as well as any award specific reporting requirements.

Nothing to add.

Supporting Files

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<th>Filename</th>
<th>Description</th>
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<tr>
<td>iUTAH EAB Report July 2016.pdf</td>
<td>EAB report</td>
<td>Michelle Baker</td>
<td>05/10/2017</td>
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<tr>
<td>iUTAH Collaboration Assessment Report DRAFT.pdf</td>
<td>Draft collaboration assessment</td>
<td>Michelle Baker</td>
<td>05/10/2017</td>
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