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## Preview of Award 1208732 - Annual Project Report

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### Cover

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Submitting Official (if other than PD\PI):	Michelle A Baker Principal Investigator
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Signature of Submitting Official (signature shall be submitted in accordance with agency specific instructions)	Michelle A Baker

## Accomplishments

### \* What are the major goals of the project?

The overarching goals of the Utah RII EPSCoR project were developed in light of our vision and mission:

**Vision:** The vision for iUTAH EPSCoR is to lead the nation in scientific, educational, and innovative solutions for water management and sustainability by conducting interdisciplinary research of the interactions among water, people, and ecosystems; and by developing a state-of-the-art hydroinformatics program that incorporates large data with interdisciplinary modeling and visualization.

**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.

**Overarching Goals:** The overarching goals of the Utah 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. Broad goals are presented below, and more specific goals, activities and timelines are provided in Table 1 in the supplemental documents.

*1. Enhanced research capacity of the biophysical, social and engineered water environment. This will be accomplished by facilitating cross-campus and interdisciplinary research activities and by building and supporting state-of-the-art multi-user research facilities.*

Research Focus Area 1 (RFA1) – Biophysical System Goals: Improve Utah's capacity to monitor and understand the ecologic/climatic/hydrologic (hereafter ecohydrologic) system of the Wasatch Range Metropolitan Area (WRMA). This will be achieved by improving watershed-scale measurement capacities via a networked environmental observatory, the Gradients along Mountain to Urban Transitions (GAMUT) Observatory. This instrumentation will support interdisciplinary teams and research projects aimed at gaining a better understanding of the biophysical processes that influence Utah's water resources.

Research Focus Area 2 (RFA2) – Social and Engineered System Goals: Improve the capacity of Utah's science community to gather and analyze social and engineering system data on coupled water systems. This will be accomplished by interdisciplinary research projects aimed at understanding the interactions between urban form, environmental change, built water infrastructure, and decision-making in terms of water use. A Green Infrastructure Research Facility (GIRF) will serve as a hub of research, education, and outreach activities related to how the built environment influences water quantity and quality outcomes.

Research Focus Area 3 (RFA3) – Coupled Human-Natural System Goals: Improve Utah's capacity to describe the water system as a whole by defining and including the linkages between biophysical and social dynamics; and by modeling the impact of alternative infrastructure designs and policy options on water use behaviors, the water cycle, water quality, and interconnected social and environmental systems. These goals will be achieved by synthesizing results from RFAs 1 and 2, and augmenting them with additional coupled data collection and coupled modeling. Researchers in this focus area will facilitate interactions with stakeholders and use visualization tools to enhance communication, relevance, and understanding of the complexity of local water issues.

*2. Build on Utah's existing strengths in hydrologic modeling and cyber-infrastructure from the CI-WATER and Cyberinfrastructure (CI) NSF EPSCoR awards. This will be accomplished by developing a hydroinformatics facility, the iUTAH Modeling and Data Federation (MDF); and by supporting interdisciplinary modeling approaches, linking currently disparate models, and developing and supporting data visualization tools.*

The iUTAH CI team will develop hardware and software tools that increase capacity for data collection, organization, management, sharing, and synthesis to higher-level products; and increase capacity for integration of data with models.

*3. Build programs to increase participation of underrepresented groups that include women, Hispanics and Native Americans. Training activities and sponsoring programs developed by the Diversity Enhancement (DE) team will accomplish this.*

The goal of DE is to increase the individual, disciplinary, institutional, and geographic diversity of the STEM (Science, Technology, Engineering, and Mathematics) enterprise in Utah to address water sustainability issues facing Utah and the Mountain West.

*4. Provide educational opportunities for a scientifically literate Utah workforce and citizenry. This will be accomplished using a portfolio of activities developed by the Workforce Development (WFD) team.*

The goal of WFD is the enhancement of the STEM workforce in Utah by developing programs for a diverse range of learners that inspire students to choose STEM careers by promoting the retention of students in STEM degrees and enhancing the success of faculty in STEM disciplines. A strong STEM workforce is critical to building and sustaining research capacity and economic growth.

*5. Provide societally relevant science and education regarding current and future water resources. iUTAH has a rigorous external engagement plan in place that will include state, regional, county, and local water management agencies and stakeholders. Our participatory modeling activities will provide first-hand knowledge of our enhanced sensor networks, data flows, and scenarios modeling capabilities. In turn, our research questions and modeling activities will be directly informed by the needs expressed by our water resource managers and other stakeholders.*

The iUTAH External Engagement (EE) team will design and implement programs to enhance the development of a diverse, well-prepared STEM workforce and a more scientifically literate public in the state of Utah. iUTAH will use data and results from the RFAs to engage the public in discussions about water sustainability issues throughout the western United States.

**\* What was accomplished under these goals (you must provide information for at least one of the 4 categories below)?**

Major Activities:

*1. Research*

If Year 3 of the iUTAH project was a year of transition and transformation, Year 4 was characterized by a major pivot. With iUTAH's research programs matured; physical research infrastructure—observational, experimental, analytical—installed, operational, and fully integrated with human and cyberinfrastructure into a socio-environmental observatory (Fig. 1); Year 4 saw major advances in directing this infrastructure towards critically important research questions, resulting in substantially increased outputs across teams. Year 4 was also aspirational, as it became clear that the promise of Utah EPSCoR as a catalyst for transforming the research culture of our state has been realized. This has prompted us to seek ways to institutionalize the collaborative, interdisciplinary research capacity we have built.

With increased integration of research infrastructure comes increased integration of researchers. As each RFA continues monthly/biweekly conference calls to present data and results; interpret findings; update status; and build collaboration; the boundaries between research teams continue to erode, as researchers join calls of other RFAs. In Year 4, iUTAH researchers, staff, and EOD teams conducted over 800 hours of teleconference meetings on GoToMeeting and Zoom that were attended by 1050 participants.

RFA1: Keeping with the increasing integration of research across teams and watersheds, RFA1 conducted multiple synoptic sampling efforts to provide high-resolution spatial data complementing GAMUT's high-resolution temporal

data. Data collected by RFA1 filled critical gaps in RFA3's large-scale water balance work, as well as land-use and climate-change scenarios modeling. GAMUT focused on quality assurance/quality control (QA/QC). With significant input from research teams, watershed technicians developed protocols for prioritizing and performing QA/QC on raw GAMUT data that have resulted in tremendous progress in reducing backlog and completion approaching 100% for "Tier 1" (difficult to QA/QC, high demand) data. High-quality rating curves have been finalized for all GAMUT sites. The iUTAH Traineeship Program, instituted in Year 3, greatly contributed to these accomplishments. Year 4 saw the continued expansion of GAMUT into urban water systems, with installation of 4 aquatic stations, 8 storm drain sensors, and 16 mobile sensors that can be quickly deployed in response to shifting research needs and priorities across watersheds. Last, RFA1 saw a substantial increase in outputs, far exceeding its target metrics (Table 2).

RFA2: The engineered system group made great progress in Year 4, with the Biogeochemistry of Urban Green Infrastructure analytical facility fully installed, and GIRF completely rebuilt with greatly enhanced experimental and observational capabilities. Year 4 saw an expansion in the green infrastructure (GI) component of iUTAH's integrated socio-environmental observatory. The social science team embarked on novel, integrative research with RFA1, including *E. coli* contamination in urban watersheds, water quality exchanges across urban landscapes, and predicted vs. actual vs. perceived flood risk. Much of the social science group's remaining work involved engaging with government stakeholders at all levels: presenting relevant data from the Utah's Water Future household survey to municipalities and regional water organizations; briefing the Governor's Water Task Force, as well as staff at the Utah Divisions of Water Quality (UDWQ) and Water Resources (UDWR); and continued engagement with public utilities in Salt Lake City and Logan. A signature Year 3 program, the Utah Water Survey (UWS), was expanded statewide and integrated with Education, Outreach, and Diversity (EOD) programs, including the iFellows Summer Research Experience for Undergraduates (REU) and the Research Catalyst Grant (RCG) program. Promising new research, including interviews on water issues targeting audiences from "key informants" to the general public, was instituted. Last, RFA2 saw a substantial increase in outputs, far exceeding its target metrics (Table 3).

RFA3: Year 4 work in RFA3 focused on updating the Year 1 model inventory, using iSAW (Fig. 2A) as a guidepost to identify immediately feasible model couplings (Fig. 2B), establishing the coupled modeling agenda for the remainder of the project. Researchers made substantive progress in interdisciplinary model development, enhancing on interdisciplinary team building conducted in Year 3. This included the continuation of substantive work at the nexus of RFA2-RFA3, using urban typology to inform alternative urban infrastructure scenarios modeling with updated Stormwater Management Models (SWMM) and Soil and Water Assessment Tools. These accomplishments, along with RFA3's greatly enhanced capacity for innovative data visualization to support research and facilitate understanding, continue to aid in stakeholder engagement, and have resulted in an increase in outputs that exceeded target metrics (Table 4).

## 2. CI

In Year 4, CI continued data management support by maintaining the CloudShare collaborative file sharing system, MDF website, and other systems. CI also increased and improved virtualization server capacity and storage infrastructure, including separation into production and research clusters, which greatly increased efficiency. CI's importance for and support of iUTAH research is exemplified by the 10 research proposals that have referenced CI in their data management plans. The Data Policy Committee formed in Year 3, in collaboration with Project Management, invested time and effort into participant training, resulting in greatly increased data policy compliance. Plans have been submitted for every iUTAH-supported data collection effort, with 80% approved. Increased data publication, discovery, and access through iUTAH's MDF, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI) Hydrologic Information System (HIS) WaterOneFlow, and the CUAHSI Water Data Center, was another major CI accomplishment. CI research in Year 4 focused on continued development and improvement of software to manage sensor data streams and enable model coupling. This has resulted in a substantial increase in outputs far exceeding target metrics (Table 5).

### 3. EOD

DE: Major Year 4 DE activities included team expansion and diversification; project-wide engagement with participants through a cross-institutional diversity conference focused on Utah's changing demographics and associated challenges and opportunities, as well as increased diversity training across all EOD activities; and increased focus on outreach activities to under-represented minorities (URM) through new and existing programs and products.

WFD: Based on input from formative assessment, and in coordination with Project Management, WFD greatly increased the reach of our activities by engaging with new partners statewide in a sustained and meaningful way. Recruitment materials were updated to reflect the growing diversity of our state, and to improve the geographical, ethnic, gender, and socio-economic diversity, as well as overall quality, of applicants to WFD programs. This has increased the diversity of both our applicant pool and successful cohorts across all WFD programs.

EE: Our EE team continued its signature programs through existing partnerships with Utah State University (USU) Water Quality Extension's (WQE) Streamside Science and Natural History Museum of Utah's (NHMU) Taking Learning Outdoors (TLO) programs. We expanded our museum programming with new partners and programs. The iUTAH Communications team also improved and expanded the iUTAH website and branding, and generated numerous new outreach materials. This was greatly facilitated by hiring a 0.75 FTE Communications Specialist through a national search. iUTAH continued its presence at conferences attended by key audiences at the state, regional, and national level.

Specific Objectives: Year 4 specific objectives closely tracked project milestones from the most current revision of the iUTAH Strategic Plan (Table 6). Additionally, "legacy" milestones not or only partially met from previous project years also informed Year 4 activities (Table 7). Table 8 shows the extent to which future activities highlighted in the Year 2 Annual Report were addressed in Year 4. The implementation of changes proposed in Years 2 and 3, along with future

activities discussed in the Year 3 Annual Report, are reflected in the revised milestones for Years 3 and 4, and are not discussed separately.

### 1. Research

RFA1: Year 4 RFA1 research objectives centered on continuation and expansion of data collection efforts across all 3 watersheds and beyond. A major focus of this year's activities was making data from iUTAH's core facility, GAMUT, available, useable, and useful to iUTAH and external researchers. This involved a major push for completion of high-quality rating curves for all GAMUT stations; a serious effort to reduce the backlog of GAMUT data QA/QC; and the publication of GAMUT datasets.

With respect to research outputs, RFA1 set out to continue work on water balance and water quality transport models during Year 4. As part of the larger iUTAH effort, this research team devoted much time to integrative activities with RFAs 2 and 3, including using RFA2 research outputs to inform RFA1 data collection (e.g., *E. coli* contamination vs. urban typology) and facilitating the integration of GAMUT data into land-use and climate-change scenarios modeling.

With many of RFA1's research efforts maturing in Year 4, an added major objective was to significantly increase research outputs, as measured by the number of publications in peer-reviewed journals, as well as presentations to scientific and lay audiences.

RFA2: RFA2 major objectives for Year 4 centered on successfully incorporating RFA2 research results into water system planning efforts by demonstrating the value of iUTAH's work to stakeholders. Continued collaboration with RFA3, such as the simulation of impacts of alternative urban growth scenarios on biophysical outcomes, and incorporation of GI considerations into coupled modeling exercises; as well as initiation of a stronger RFA1/RFA2 linkage by allowing advances in RFA2's understanding of the urban environment, both from a sociological and engineering perspective, to inform RFA1 data collection efforts; were another major emphasis of the social science and engineering research groups of RFA2 in Year 4.

With many of RFA2's research efforts maturing in Year 4, an added major objective was to significantly increase research outputs, as measured by the number of publications in peer-reviewed journals, as well as presentations to scientific and lay audiences.

RFA3: With GAMUT fully operational in Year 3, one of the major objectives for RFA3 was the incorporation of GAMUT's rich data stream into model couplings. Feasible couplings were identified through an updated model inventory, another major objective for this project year, replacing the outdated model inventory conducted in Year 1. As envisioned in the iUTAH Strategic Plan, data collection took on a decidedly more participatory bent, as did the sharing of iUTAH research results through stakeholder-targeted products and tools. Stakeholder engagement in general was a specific objective of RFA3 for Year 4, as was the application of a fully staffed and operational iUTAH Visualization Laboratory (iVL) towards the generation of apps and web applications responsive to stakeholder needs.

Despite the time lag inherent in the nature of RFA3's research effort, team

members also strived to significantly increase research outputs in the form of presentations and publications.

## 2. CI

Beyond its vital and necessary “housekeeping” tasks of maintaining and expanding iUTAH CI to support and integrate research across RFAs, iUTAH’s CI team set itself an added objective to continue innovation in the emerging discipline of hydroinformatics during Year 4. This included further refinements to software to manage high-volume data streams of geographically dispersed sensor networks, as well as significant advances in the development of software to facilitate model coupling and execution in a High-Performance Computing (HPC) environment.

In support of GAMUT, and its substantially increased utility to researchers across iUTAH and beyond, CI was tasked with a major push for data publication; data discovery and faceted browsing; data access by a broad audience through widespread publication; and innovative data visualization to support and enhance understanding and accessibility of iUTAH research for stakeholders and the public at large.

## 3. EOD

DE: Diversity initiatives during Year 4 focused on increasing participation of diverse audiences inside and outside of iUTAH; incorporating feedback received during formative assessment to reevaluate and refine its recruitment and retention practices across EOD programs; culminating in the publication of a best practices handbook. DE was also charged with continuing project-wide diversity training through workshops, small group near-peer mentor trainings, and a project-wide diversity conference.

WFD: With all of iUTAH’s signature EOD programs being well established and highly successful, Year 4 objectives for the WFD team were comparatively modest: to continue and—where feasible—expand these programs, revise SOPs based on formative assessment and other feedback received; and, where possible, increase URM participation across all EOD programs. These programs included iUTAH’s REU (iFellows); iUTAH Summer Institute (SI) including development and publication of associated K-12 curriculum materials; cross-campus course offerings by iUTAH faculty; recruitment and funding of research by faculty at Primarily Undergraduate Institutions (PUI) via RCGs; as well as recruitment and/or retention of trainees, graduate research assistants (GRA), and postdoctoral associates.

EE: iUTAH’s EE team faced a tall order in Year 4. First, to continue existing and funding new programs for K-12 cohorts, recruiting and engaging K-12 students and teachers into these programs, and expanding K-12 programs to GIRF; continuing the Citizen Science program with UWW; and expanding and diversifying iUTAH’s outreach through continued presence at conferences attended by target audiences. iUTAH EE also wanted to greatly increase its capacity to connect with a broad range of audiences and the general public by revising its branding and messaging, completely redesigning the iUTAH website, and substantially enhancing its web presence across the board, utilizing a range of social media platforms. To accomplish these numerous objectives, and to aid with ongoing evaluation of communication strategies based on internal (web site stats, social media following) and external

(formative assessment) feedback, the EE team also set itself a goal of expanding and diversifying its membership during Year 4.

Significant Results: *1. Research*

RFA1: In Year 4, RFA1 saw significant accomplishments in collaborative modeling at the WRMA scale: work by Brooks and collaborators in Colorado indicates a transition between precipitation- and temperature-dominated control on water yield (Fig. 3), while Strong and students have used groundwater data provided by RFA1 to fill important gaps for water balance work begun in Year 1 (Fig. 4). With GAMUT fully built-out and expanded into urban water systems, much of RFA1's work focused on reaping the fruits of previous years' labors. This resulted in >10 presentations and 8 peer-reviewed publications. Two successful grant proposals totaling over \$500,000 in new funding will support new research endeavors through the end of iUTAH and beyond.

RFA2: In Year 4, RFA2's social science group continued collaborations with RFA3 begun in Year 3. After extensive discussions about connecting urban typology to the Model Coupling System (MCS), it has become clear that a simplified urban typology will initially be needed for land-use change scenarios modeling. New collaborations with RFA1 enabled the application of urban typology to, e.g., the analysis of *E. coli* contamination in urban areas; links between objective biophysical flood risk, self-reported flood experiences, and concerns about flooding; and an analysis of water quality changes across urban landscapes (Fig. 5). Results of the household survey "Utah's Water Future" are beginning to inform policy discussions at all levels of water governance, including the Governor's Water Task Force, state agencies, as well as municipalities and regional water organizations across the state. In the engineering group, Youcan Feng completed an updated urban landscape SWMM for Red Butte Creek using Green Roof monitoring data (Fig. 6). RFA2 researchers conducted 13 stakeholder meetings; gave 37 presentations, including 9 at undergraduate research conferences; and published 6 peer-reviewed papers, with another 15 submitted.

RFA3: Year 4 saw the continuation of RFA3's coupled modeling workshop series with 2 workshops: December 2015 at USU and February 2016 at the University of Utah (UU, Fig. 7). Significant results in the area of coupled modeling include Khatri's meta-model linking climate change, land use/urban form, population change, and hydrology; Strong and Scalzitti's work using WRMA observational data to validate iUTAH regional climate modeling (Fig. 8); Castronova's configuration of GAMUT as a data model in MCS; and Strong and Smith's presentation of a novel stochastic climate simulation framework (Fig. 9). Another focus of Year 4 activities was to broadly and deeply engage with stakeholders across the board. This effort included 8 stakeholder meetings with the Wasatch Front Regional Council, UDWR and UDWQ, Salt Lake City Department of Public Safety/U.S. Department of Homeland Security, Salt Lake City Department of Public Utilities, and Tracy Aviary; and production of 4 stakeholder products (Table 9). RFA3 researchers also gave 9 presentations, published 2 peer-reviewed papers, with an additional 3 papers in press, conditionally accepted, or submitted; and received in excess of \$5.75 million in additional funding through 5 grants.

*2. CI*

Project-wide support by CI during Year 4 saw the completion of discovery and access to external and iUTAH datasets through MDF and CUAHSI HIS; as well as substantial growth in the number of datasets submitted for publication (119, including 27 metadata records). Not surprisingly, we are beginning to see use of our data by a large and geographically diverse audience (Table 10). In coordination with iUTAH Project Management, CI also increased efforts to track and enforce compliance with the iUTAH Research Data Policy, with 66 data collection plans submitted to date, of which 52 (79%) have been approved. CI researchers were able to secure new funding in excess of \$750,000 via 2 grants; published 4 peer-reviewed papers, with 1 additional manuscript in revision; and gave 5 presentations.

### 3. EOD

DE: In Year 4, iUTAH held a project-wide diversity conference that was attended by 72 participants and received an overwhelmingly positive response. A concerted effort by iUTAH EOD and Project Management greatly increased the geographic and institutional diversity of our network, applicants, and successful cohorts for signature programs. iUTAH now has significant and sustained engagement with every post-secondary institution in the state (Table 11). Targets for participation by women were met and/or exceeded for all WFD and EE programs (Table 12). At the same time, participation by URMs is increasing. This is due to a renewed and greatly expanded effort to reach out to Native and Latino communities, including collaboration with 14 EPSCoR jurisdictions to recruit students at the 2015 Society for the Advancement of Chicanos and Native Americans in Science Conference; participation in the USU Eastern Blanding STEM exploration mentorship for Native American students; and extensive outreach to Native American communities in rural southern Utah, and Latino and refugee communities in urban Salt Lake City, with author Nancy Bo Flood and her iUTAH-financed book "Water Runs Through This Book."

WFD: Year 4 saw continuation and growth of all signature WFD programs, including a successful iFellows REU in 2015, with 25% of participants subsequently presenting their research at undergraduate research or professional conferences, and several manuscripts co-authored with faculty and/or near-peer mentors in preparation. Recruitment for the 2016 program had a greater number and diversity of applicants, with 37% women, 15% URM, and 48% PUI applicants and a successful cohort made up of 71% women, 18% URM, and 41% PUI. WFD's retention efforts continue to build out iUTAH's STEM pipeline: 2015 iFellow Natasha Griffin was retained as an iUTAH Trainee; Joydino Beyale, a participant in the STEM exploration mentorship for Native American students, was recruited as a 2016 iFellow; all 4 postdoctoral associates were retained through Year 4 and beyond, and are making great strides in contributing to the vision, direction, and implementation of iUTAH's research agenda through the final years of the project; and several iUTAH Trainees brought on in Year 3 as part of a re-envisioning of the internship program were retained in Year 4 and have been invaluable in advancing critical QA/QC and rating curves work in GAMUT.

EE: In Year 4, iUTAH continued its outreach to a large and diverse audience both via in-house programs and by leveraging existing partnerships with museums, the Utah Education Network (UEN), and USU WQE (Table 13). iUTAH's museum programming saw a significant increase both in the number of

programs and their geographic reach during Year 4. NHMU's TLO, previously held in the WRMA, targeted rural audiences in southern Utah this year, while The Leonardo's "Leo on Wheels" Water Carts program, a mobile version of the ongoing iUTAH-funded "Water: Nature's Driving Force" exhibit, is poised to reach a statewide audience. The Green Roof Agriculture Exhibit and Outreach at the Garth and Jerri Frehner Museum of Natural History (GJFMNH) at Southern Utah University (SUU) is another program targeted to southern Utah. The new digital interactive "The Whole GAMUT," a collaboration between iUTAH EOD, RFA3's iVL, and NHMU, is reaching urban audiences in the Greater Salt Lake Area. Outreach activities involving author Nancy Bo Flood are aimed at underserved communities in both rural and urban areas. Despite significant changes in staff, UWQE continued its successful iUTAH-supported citizen science effort, conducting 13 programs that involved 4,915 individuals. As in previous years, iUTAH continued engaging with stakeholders and the public through sponsorship and participation in a large number of STEM- and water-themed conferences (Table 14); as well as through a redesigned and greatly expanded web and social media presence (Table 15).

Key outcomes or  
Other achievements:

In Year 4, iUTAH made significant progress in meeting both current-year and "legacy" milestones. Of the 79 milestones across project management, research, and EOD teams, 73 (92%) were accomplished or are on track to being accomplished by the end of Year 4; a further 5 (7%) were partially accomplished or are ongoing, and only 1 was not accomplished (Table 6). At the same time, of the 28 "legacy" milestones carried forward from years 2 and 3, 21 were completed this year, with one additional milestone moving from "red" (not accomplished) to "yellow" (ongoing, Table 7). That, in and of itself, is a key outcome for our project this year.

#### *1. Enhancement of Research Capacity*

iUTAH continues to strongly enhance research collaborations across our state as evidenced by co-authored publications and research proposals both within and between institutions. Prior to the EPSCoR track 1 award, there were few cross-disciplinary publications within institutions, and even fewer cross-institutional publications.

iUTAH researchers have submitted 137 research proposals since project inception that leverage iUTAH infrastructure and collaborations. Of these, 55 have been awarded, including proposals funded by the US Geological Survey, local non-profits, the NSF, and state agencies. Total funds requested by these awards exceed \$18M.

iUTAH research products have advanced knowledge both within and across disciplines as evidenced by 512 presentations (121 in Year 4) and 134 publications (30 in Year 4).

iUTAH GRAs Philip Stoker and Morey Burnham each accepted faculty appointments at the University of Arizona, and Idaho State University, respectively. We anticipate that these new faculty members will continue their collaborations with iUTAH researchers in the near term as they embark on their academic careers. Former GRA Michael Bunnell, was hired as the Urban Forestry Program Specialist at the Utah Division of Forestry, Fire and State Lands.

Former iUTAH postdoctoral associates Steven Hall and Rebecca Hale both

continued their productive collaboration with our research teams through Year 4, resulting in a number of publications led or co-authored by them. Several former iUTAH GRAs, including Brian Bailey, Youcan Feng, and Alison Chan, are continuing their careers as postdoctoral associates or with private industry. 2013 iFellow Sean Bedingfield received a 2016 NSF Graduate Research Fellowship Program Award to support his graduate studies in biomedical engineering at Vanderbilt University.

## *2. Enhancing Utah's STEM Workforce*

Renewed efforts at outreach to PUIs across the state brought us great success in Year 4. iUTAH now actively engages with every post-secondary institution in the state of Utah through one or more of its research and training programs (Table 11). Collectively, iUTAH and its many partners continue to build Utah's STEM workforce of tomorrow as these students "travel" the iUTAH STEM Pipeline. Out of a cohort of 20 iFellows in Year 3, 6 have continued their involvement with iUTAH: 1 as a Trainee (Natasha Griffin—GAMUT), and 5 through independent research with iUTAH faculty (Viviane Baji, Matthew Barnett, Jesse Fieri, Jordan Risley, Darianne Willey). Simone Jackson, a Year 3 iUTAH Trainee, is continuing her iUTAH involvement with the Stable Isotope Ratio Facility for Environmental Research, one of iUTAH's analytical facilities. Joydino Beyale, a participant in the 2015 STEM exploration mentorship for Native American students, was just accepted into the 2016 iFellows program.

## *3. EOD Outcomes and Broader Impacts*

iUTAH EOD's redoubled efforts to reach and recruit a diverse population more closely aligned with Utah's changing demographics to its signature programs is beginning to bear fruit: Participation of women and URM's increased dramatically across the board (Table 12), with female participation consistently at or above 50% and as high as 71%, and URM participation, with some exceptions, approaching 20% in many programs, and as high as 100% in areas and programs targeted to the URM population. Several of such targeted programs, having been initiated in Year 3, were found to be effective and tremendously successful, resulting in their continuation in Year 4. Some of them, such as WaterGirls and the Native American Mentorship Program, are on track to becoming signature programs. Several iUTAH undergraduate researchers presented at the Utah Conference on Undergraduate Research (UCUR) and the National Conference on Undergraduate Research (NCUR), the 24th National NSF EPSCoR Conference, as well as professional meetings, including the International Symposium on Society and Resource Management (ISSRM), the Society for Freshwater Science Annual Meeting, and the National NSF EPSCoR Conference (Table 16).

2013 iFellow Brienne Palmer was named the USU S. J. and Jessie E. Quinney College of Natural Resources Scholar of the Year, as well as Outstanding Senior in the Department of Wildland Resources; she was also chosen by her peers to receive the Jardine Juniper Award given to the student who has had the greatest impact on the college through involvement with student organizations. The episode "Recreation: It's Contentious, It's Litigious, It's Fun!" by Utah Public Radio's *The Source*, which was funded through an iUTAH EOD Innovation Award in 2015, has won the Associated Press Television and Radio Association Award for Excellence in Broadcast Journalism in the category "Best

Investigative Reporting.” The Source is a monthly 60-minute radio program sharing stories about water in Utah as it relates to research, the environment, recreation, and the economy. The iUTAH-commissioned book “Water Runs Through This Book” by noted author Nancy Bo Flood and photographer Jan Sonnenmair, which discusses water and diverse perspectives surrounding it for young adults, was 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 for young adult literature.

iUTAH Project Director and Principal Investigator Dr. Michelle Baker was among 10 individuals awarded the 2015 Governor's Medal for Excellence in Science and Technology for her leadership of iUTAH EPSCoR. Weber State University (WSU) subaward PI Dr. Daniel Bedford was appointed director of the WSU Honors Program, in large part due to his past involvement with the iUTAH project.

### **\* What opportunities for training and professional development has the project provided?**

This award continues to support the professional development of all iUTAH participants, including faculty, staff, postdoctoral associates, graduate students, and undergraduate students at research universities and PUIs; teachers and students at the secondary level; and citizens and stakeholders. As in Year 3, Year 4 activities centered on (1) strengthening and refining research skills by mentoring students at all levels; and (2) engaging teachers and students in research-based educational activities focused on STEM, with particular attention to URMs and women. An added emphasis during Year 4 was a clearly articulated and fully implemented commitment by project leadership to the continued professional development of iUTAH project management staff, including the Assistant Director and Project Administrator, the EOD Coordinator, and the Communications Specialist, who attended numerous conferences and workshops on such diverse topics as NSF's Broader Impact criterion, the Science of Team Science, research administration, and student mentoring (Table 16). Finally, during Year 4, iUTAH laid the foundation for advanced training in the effective communication of scientific research to diverse audiences by forging a new partnership with the USU Office of Research and Graduate Studies and the UU Office of the Vice President for Research, that will bring the Alan Alda Center for Communicating Science to Utah to engage nearly 100 faculty, postdoctoral associates, and senior graduate students through small-group workshops, as well as a substantially larger audience through interactive plenaries open to their respective campus communities and publics-at-large. As in Year 3, other sources of professional growth and development included the rigorous peer-review process involved in the publication, communication, and presentation of research findings; writing and review of proposals; development of web sites and applications; building of databases and data sharing capacity; and the establishment and maintenance of cross-institutional and multi-disciplinary collaborations.

#### *1. Research*

In Year 4, iUTAH made a substantive commitment to providing extensive financial support for its participants to attend conferences and other professional development opportunities. This included supporting conference attendance by (1) undergraduate students to present their research (5 students); (2) faculty to gain important skills in mentoring (1 faculty) and collaboration (2 faculty/postdoctoral associates); and (3) iUTAH participants across the board to interact with important stakeholders (10 participants, Table 16).

RFA1: Postdoctoral associate Dr. Erik Oerter has been retained and will continue work with iUTAH under the mentorship of Dr. Gabriel Bowen at UU. Additionally, 13 graduate students contributed to RFA1 research in Year 4, including 8 Ph.D. and 5 Master's students. RFA1 also engaged undergraduates through iUTAH EOD programs: 5 undergraduate iFellows, 2 of them women, were hosted in 2015; an additional 6 students will be mentored in 2016. RFA1 faculty and graduate students developed 3 new modules for the 2015 SI in the Middle Provo River watershed after having previously developed 1 module for the 2014 SI.

RFA1 continued to employ 3 M.S.-level research technicians to oversee the installation and daily operations of

GAMUT. Additionally, 6 undergraduate student GAMUT technicians—2 per watershed—hired in Year 3 under the iUTAH Traineeship program were retained in Year 4. These students have been instrumental in the completion of high-quality rating curves for all GAMUT sites across all 3 watersheds, as well as the substantial reduction in QA/QC backlog of GAMUT sensor data.

Several RFA1 alumni were successful in taking the next step in their STEM career: Dr. Brian Bailey accepted a postdoctoral fellowship with the United States Department of Agriculture, while Alison Chan took a position with Los Alamos National Laboratory.

RFA2: Postdoctoral associate Dr. Melissa Haeffner has been retained and continues to work under the mentorship of Dr. Douglas Jackson-Smith at USU. In Year 4, RFA2 also supported 4 doctoral students and 2 Master's students. In addition, a large cohort of 16 undergraduate students has been actively engaged in RFA2 research through the expansion of UWS ("iPad Project"). RFA2 faculty and graduate students mentored 11 undergraduate iFellows in 2015, and have committed to mentor 9 new iFellows in 2016. With encouragement from RFA2 faculty and financial support from iUTAH, 4 2015 iUTAH iFellows presented their research at NCUR and/or ISSRM.

Both cross-campus and cross-institutional team-taught courses continued to be a hallmark of RFA2 in Year 4: Drs. Davis Rosenberg (USU) and Steven Burian (UU) pooled resources to "team-teach" two different courses, CEE 6490 (Integrated River Basin Watershed Planning and Management, 8 students) and CVEEN 7920 (Water Resources Planning, 10 students), at their respective institutions, allowing them to access a wider range of guest speakers, lecture topics, teaching materials, and geographic coverage. A new cross-campus course on GI was taught for the first time by Drs. Sarah Hinners (UU) and Ryan Dupont (USU) during Year 4. RFA2 faculty also developed a GIRF-themed module for the 2016 SI, after having previously provided 2 modules to the 2014 SI and 1 module to the 2015 SI.

Two former RFA2 Ph.D. students accepted faculty appointments in Year 4: Dr. Philip Stoker at the University of Arizona, and Dr. Morey Burnham at Idaho State University.

RFA3: Postdoctoral associate Dr. Krishna Khatri has been retained and promoted to research assistant professor. He continues his work under the mentorship of Dr. Courtenay Strong (UU). During Year 4, RFA3 also mentored 7 doctoral students and 3 Master's students, as well as 4 undergraduate students participating in the 2015 iFellows program; an additional 3 undergraduate students will be hosted for the 2016 program. Former graduate student Leah Meeks accepted a position with the Bureau of Reclamation, furthering her involvement with water issues in the Western U.S.

## 2. CI

CI supported 4 professional staff as programmers/analysts, data managers, or system administrators in Year 4, as well as 7 undergraduate student computer programmers to work with professional programmers and analysts in the development of software and hardware CI that supports MDF. These positions continue to provide opportunities for students to engage in cutting edge CI-related research, develop their programming skills while being mentored by professionals, and gain valuable experience and expertise. CI continues to work with GAMUT technicians and personnel from all RFAs in developing data management best practices and techniques. Year 4 saw an expansion to RFA2 (social science data) and RFA3 (MDF support for models). Tangible outputs that continue to advance the professional development of our participants include new protocols for GAMUT QA/QC prioritization and processes, and are reflected in the iUTAH Data Policy, which has been revised to better address the needs of social scientists (completed) and modelers (ongoing).

iUTAH and CI-WATER collaborators Drs. Jeffery Horsburgh (USU) and Steven Burian (UU) once again teamed with Dr. Dan Ames at Brigham Young University to offer a collaborative course in Hydroinformatics for graduate students during Fall Semester 2015. The course, which uses an innovative multi-institution, team-teaching approach that provides new content and opportunities for interaction among students, was jointly taught and

administered using the UEN Interactive Video Conferencing system, combining synchronous video lectures with asynchronous student discussions, assignments, and grading using a new Learning Management System called Instructure Canvas. Enrollment for the course was 28 students (21% female).

**\* How have the results been disseminated to communities of interest?**

In Year 4, iUTAH continued to engage with diverse audiences throughout the state, broadening the reach and impact of iUTAH concepts and research, and increasing interest in and engagement with STEM from K-20 and beyond.

*K-12 Students and Teachers*

iUTAH TLO, a long-term teacher training program designed to influence K-12 educational practice by helping teachers develop a better understanding of science, its processes, and applications, was brought to southern Utah for the first time in Year 4. The program connected 17 local teachers and faculty members at SUU and 2500 students with NHMU educators to promote a better understanding of the natural world by providing authentic learning experiences through outdoor exploration in their community. Additionally, the program assisted participating teachers with the development and implementation of lesson plans that use outdoor and water-related science as a context for learning.

Another cohort of middle and high school teachers, in addition to high school and undergraduate students, will engage with iUTAH research in the upcoming 2016 SI. This year's effort targets participants from the Greater Salt Lake City area, and will focus on research conducted by RFA2's engineering group and GIRF. In addition to engaging students and teachers in iUTAH research, participants will once again be encouraged to share their results and experience during the 2016 iUTAH Annual Symposium.

iUTAH WaterGirls, a program first funded in Year 3 under an EOD Innovation Award, was also continued in Year 4. This field experience engages middle school girls and 5-8 college-level mentors to assess the health of streams and watersheds in their communities. The year 4 program has been expanded to include an 8-week after school session at an under-served Middle School in Salt Lake City, in addition to the weekend program developed last year. Students benefit from near-peer mentoring and are encouraged to find creative ways of communicating their findings to audiences of their choosing.

In addition to the continuation of these successful K-12 programs initiated in previous years, a new Year 4 program that has proven highly successful deserves special mention: supported by EOD, author Nancy Bo Flood and photographer Jan Sonnenmair, who produced the iUTAH-commissioned book "Water Runs Through This Book," are conducting outreach to Native American communities in southern Utah, including at the Indian Wells School (Navajo Nation); and minority neighborhoods, including Hispanic and refugee communities, in Salt Lake City. iUTAH also provided funding for the creation of a companion guide for teachers, which includes games, writing activities, and discussion topics for students, and aligns with Next Generation Science Standards.

*Community and Stakeholder Engagement*

Community and stakeholder engagement continued to be a focus of iUTAH activities in Year 4. Continuing iUTAH's involvement with Science Unwrapped, an event organized by USU's College of Science to share science with Cache Valley families, iUTAH Project Director and Principal Investigator Dr. Michelle Baker was a featured speaker on the topic of "Water and People: Friends or Foes." The exhibit "Water: Nature's Driving Force" at The Leonardo museum, which challenges people of all backgrounds to explore one of nature's most fundamental resources, has continued through Year 4 far past its originally scheduled 6-week run, and was expanded to include a traveling exhibit using "Leo on Wheels Water Carts." A new digital interactive developed by NHMU staff under an iUTAH EOD Innovation Award in collaboration with GAMUT and iVL now allows for direct engagement of urban audiences in the WRMA with iUTAH core infrastructure (Fig. 10). Additional museum programming at GJFMNH, focusing on a demonstration green roof agriculture exhibit funded through an iUTAH RCG, continues to

expand the geographic reach of iUTAH key themes to the southern part of the state.

Stakeholder engagement in Year 4 took the form of briefings by iUTAH scientists to the Salt Lake City Department of Public Safety and the U.S. Department of Homeland Security, as well as senior staff at UDWR and UDWQ; participatory modeling exercises of land-use and climate change scenarios involving various state and municipal agencies; and follow-up activities to iUTAH social science research with municipalities and regional water agencies across our 3 watersheds.

#### *iUTAH Communications*

With so many of iUTAH's research efforts maturing in Year 4, iUTAH Project Management made a strategic decision to completely revamp the way in which we reach out to and communicate with our stakeholders. In the first quarter of Year 4, the Communications team completely revised the iUTAH website by creating new, custom, value-added content targeted to specific audiences. At the same time, we added communications expertise to facilitate connecting this new content with targeted communities of interest. After a competitive, national search, we hired Jeannine Huenemann as a 0.75 FTE Communications Specialist. Jeannine now leads a team that, after having been increased by 2 members in Year 4, has taken on a substantially expanded portfolio of activities and responsibilities. With these additional staffing resources, outputs include near-daily updates of the iUTAH website in the form of news highlights, opportunities, and successes; a consistent engagement with a growing number of stakeholders through social media, particularly Twitter; increased visibility of iUTAH programs and successes through new audience- and program-specific materials; an increased flow of press releases that tell the stories of our successes and are disseminated through regional, state, and national media; as well as a re-engagement with our participants in a sustained and meaningful way through a new, dynamic e-Newsletter that links directly to new content on the iUTAH website each month. The most recent accomplishment of our Communications team, a new, interactive "Successes" page on the iUTAH website, will allow stakeholders and the general public to see and interact with iUTAH successes via infographics as well as traditional text-based formats, and is scheduled for completion by the end of Year 4.

#### *iUTAH Modeling and Data Federation*

With the substantial progress in data publication, discovery, and access made by MDF in Year 4, a substantive aspect of the dissemination of iUTAH results is beginning to occur through various MDF websites (Table 10). Over the past year, the main MDF website has been visited by 853 unique users from 65 different countries. More importantly, the iUTAH Data Repository, which holds all published datasets, has been accessed 150 times by 72 users from 9 countries since tracking of activity began a little over a month ago. iUTAH's newest MDF site, the Survey Data Viewer, which allows for the innovative visualization of social science survey data, has been accessed 27 times in a little over a month's time.

#### *Traditional Academic Outlets*

In Year 4, iUTAH researchers submitted 62 manuscripts for publication in scientific, peer-reviewed journals, of which 43 are published or in press. In addition, our participants gave 121 oral or poster presentations at international, national, regional, and state scientific conferences. Much of this activity involved students, with 47 presentations by undergraduate and 28 presentations by graduate students (Table 16).

#### **\* What do you plan to do during the next reporting period to accomplish the goals?**

##### *1. Research*

With Year 5 being the last year of iUTAH, and our research infrastructure in place and producing results, goals for Year 5 will focus on completion of signature research products that will be the legacy of iUTAH's research efforts. Research teams will place increased emphasis on further development and maintenance of critical stakeholder relationships that can be sustained beyond the life of the iUTAH project.

RFA1: Central Year 5 goals for the iUTAH ecohydrology group include continued data collection by our core infrastructure GAMUT; publication and archival of datasets; continuing its water balance and water quality research across all watersheds; and finishing and publishing land-use and climate change scenarios modeling work for 5, 10, and 15 year futures in close collaboration with RFA3.

RFA2: Most of RFA2's major research efforts are either complete or nearing completion. Researchers will continue to build out UWS by increasing its geographic and temporal coverage across the state. With GIRF reconstruction finally completed in Year 4, we expect to collect and analyze a wealth of experimental data from this facility in the coming year and beyond. RFA2 researchers will also direct considerable effort to documenting the impacts of their research activities and results on stakeholder knowledge and decision making, with planning for currently underway. RFA2's substantial GI research should provide ample opportunities for additional stakeholder engagement activities in Year 5.

RFA3: After having made substantial progress on their goals and milestones in Year 4, RFA3 researchers are well-positioned to conclude many of their activities in Year 5, including continued publication and dissemination of results, modeling software, and model products. With a large number of coupled and integrated models expected to be fully operational in Year 5, RFA3 researchers will also be able to direct efforts towards evaluating scenarios of change and adaptation/mitigation strategies. Another goal will be to assess stakeholder relationships by evaluating the use and impact of web-based tools and visualizations, and stakeholder products.

## 2. CI

With the iUTAH project coming to a close and data publication expected to peak at the end of Year 5, a major objective for CI will be the establishment of a sustainable partnership with a long term data repository for transitioning published iUTAH datasets. Ongoing support for researchers across RFAs in Year 5 will include updating the iUTAH Data Policy and MDF databases to meet the unique needs of modeling and simulation work. Finalizing and releasing all MDF, coupled modeling, and innovative visualization software tools on open source repositories, as well as providing needed documentation for, and demonstrating utility to, potential users will be another emphasis for CI researchers.

## 3. EOD

In Year 5, iUTAH EOD will continue to develop and diversify membership across all teams, and to engage with partners and stakeholders new and old who have a vested interest in the continuation of pertinent, successful EOD programs. Our team members will work to develop ways to maintain and grow connections made over the course of the iUTAH project to sustain faculty support, STEM workforce development, and outreach to an informed and engaged citizenry, while continuing to promote the inclusiveness and diversity of the STEM enterprise in Utah.

DE: DE will continue to develop relationships with groups statewide, to increase participation of diverse audiences in iUTAH opportunities, and to support the inclusion of diverse groups in Utah's STEM pipeline. DE expects to complete a handbook of recruitment and retention practices in early Year 5 or sooner. In addition to constituting a lasting legacy of DE beyond the life of the project, this product will inform recruitment efforts for ongoing EOD programs.

WFD: WFD team members plan to make further improvements to the iFellows REU program, soon to be in its fifth year, by expanding on diverse recruitment strategies, faculty engagement, research experiences, and professional development and mentoring opportunities. Other changes under discussion for the last year of this signature program are opening the program to PUI students only; increasing outreach to faculty across the state to enlist their help in advertising and recruitment; reaching out to potential faculty mentors earlier in the year; and incorporating a stronger linkage with stakeholder interests and objectives.

EE: The EE team will continue to engage broadly with diverse audiences across Utah in Year 5. This will occur primarily through the continuation of a diverse array of highly successful museum programs, including TLO (scheduled to be held in San Juan County in the southern part of the state), The Leonardo's "Water: Nature's Driving Force" exhibit and "Leo on Wheels" Water Carts, the NHMU digital interactive "The Whole GAMUT, which will be expanded to all 3 iUTAH watersheds in Year 5, as well as the Green Roof Agriculture and Outreach activities at GJFMNH in southern Utah. EE also hopes to expand the highly promising new outreach program with author Nancy Bo Flood using her iUTAH-commissioned book "Water Runs Through This Book," and continue Citizen Science programs and general water education activities in partnership with UWW and UWQE.

### Supporting Files

Filename	Description	Uploaded By	Uploaded On
Supporting_Files_1_Figures.pdf	Figures to accompany report.	Michelle Baker	05/02/2016
Supporting_Files_2_Tables.pdf	Tables to accompany report.	Michelle Baker	05/02/2016

## Products

### Books

### Book Chapters

### Inventions

### Journals or Juried Conference Papers

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- Smith, K., C. Strong, and F. Rassoul-Agha (). A new method for generating stochastic simulations of air temperature and precipitation. *Journal of Applied Meteorology and Climatology*. . Status = SUBMITTED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes
- Smith, K., C. Strong, and S.-Y. Wang (2015). Connectivity between historical Great Basin precipitation and Pacific Ocean variability: A CMIP5 model evaluation. *Journal of Climate*. 28 6096. Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1175/JCLI-D-14-00488.1
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- Stoker, P., S. Hanners, 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
- Stout, D.T., T.C. Walsh, and S.J. Burian (2015). Ecosystem services from rainwater harvesting in India. *Urban Water Journal*. . Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1080/1573062X.2015.1049280
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; Peer Reviewed = Yes

Yang, B., M.-H. Li, and C.-S. Huang (2015). Ian McHarg's Ecological Planning in The Woodlands, Texas: Lessons Learned after Four Decades. *Landscape Research*. 40 (7), . Status = PUBLISHED; Acknowledgment of Federal Support = Yes ; Peer Reviewed = Yes ; DOI: 10.1080/01426397.2014.987223

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## Licenses

## Other Conference Presentations / Papers

## Other Products

## Other Publications

## Patents

## Technologies or Techniques

## Thesis/Dissertations

## Websites

## Participants/Organizations

### What individuals have worked on the project?

Name	Most Senior Project Role	Nearest Person Month Worked
Baker, Michelle	PD/PI	6
Aanderud, Zachary	Co PD/PI	2
Ehleringer, James	Co PD/PI	2
Jackson-Smith, Douglas	Co PD/PI	2
Strong, Courtenay	Co PD/PI	2
Alessandro, Zanazzi	Faculty	1
Balling, Rick	Faculty	1
Bates, Scott	Faculty	1
Bedford, Daniel	Faculty	1
Black, Frank	Faculty	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Bowen, Gabriel	Faculty	1
Bowen, Brenda	Faculty	1
Bowling, Dave	Faculty	2
Broadbent, Jeff	Faculty	1
Brooks, Paul	Faculty	2
Brunson, Mark	Faculty	2
Buchert, Martin	Faculty	3
Bunds, Michael	Faculty	1
Burian, Steve	Faculty	1
Cadet, Eddy	Faculty	1
Carling, Greg	Faculty	2
Castronova, Tony	Faculty	6
Ciaccio, Jen	Faculty	1
Clay, Christy	Faculty	1
Denton, Guy	Faculty	1
DeSart, Jay	Faculty	1
Dupont, Ryan	Faculty	1
Edwards, Eric	Faculty	2
Edwards, Boyd	Faculty	1
Emerman, Steve	Faculty	1
Endres, Carla	Faculty	0
Endter-Wada, Joanna	Faculty	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Ewing, Reid	Faculty	1
Flint, Courtney	Faculty	2
Ganning, Joanna	Faculty	2
Geffeney, Shana	Faculty	1
Gill, Richard	Faculty	2
Gordillo, Luis	Faculty	0
Govedich, Fred	Faculty	1
Grant, Jacqueline	Faculty	1
Hinners, Sarah	Faculty	2
Homs, Daniel	Faculty	0
Horsburgh, Jeff	Faculty	3
Howe, Peter	Faculty	0
Hungerford, Hilary	Faculty	1
Hunter, Laura	Faculty	0
Huntly, Nancy	Faculty	1
Jensen, Ryan	Faculty	1
Jin, Jiming	Faculty	1
Johnson, Gary	Faculty	1
Jones, Norm	Faculty	1
Jones, Scott	Faculty	2
Kesar, Shalini	Faculty	1
Li, Shujuan	Faculty	2

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Licon, Carlos	Faculty	1
Mace, Britt	Faculty	1
Malone, Molly	Faculty	1
Matty, David	Faculty	0
McDowell, William	Faculty	0
Mesner, Nancy	Faculty	1
Michener, William	Faculty	0
Monhardt, Becky	Faculty	1
Monson, Christopher	Faculty	1
Moore, Jeffrey	Faculty	1
Moyer-Horner, Lucas	Faculty	1
Neilson, Bethany	Faculty	1
Null, Sarah	Faculty	2
O'Neill, Bill	Faculty	1
Pardyjak, Eric	Faculty	1
Pomeroy, Christine	Faculty	2
Power, Mitchell	Faculty	1
Rosenberg, David	Faculty	2
Simon, Alexander	Faculty	1
St. Clair, Sam	Faculty	2
Stark, Louisa	Faculty	1
Stoll, Rob	Faculty	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Tarboton, David	Faculty	0
Toke, Nathan	Faculty	1
Trentelman, Carla	Faculty	1
Van Alstyne, Andrew	Faculty	1
Wairepo, Anne	Faculty	0
Wang, Simon	Faculty	1
Weaver, Kim	Faculty	1
Weeg, Matthew	Faculty	1
Yang, Bo	Faculty	2
Yeo, Sara	Faculty	1
Hahnenberger, Maura	Community College Faculty	1
Howe-Taylor, Marian	Community College Faculty	0
Keleher, Mary Jane	Community College Faculty	1
Poole, Daniel	Community College Faculty	1
Kaly, Kristina	K-12 Teacher	1
O'Brien, Ken	K-12 Teacher	1
Gabor, Rachel	Postdoctoral (scholar, fellow or other postdoctoral position)	12
Haefner, Melissa	Postdoctoral (scholar, fellow or other postdoctoral position)	2
Hall, Steven	Postdoctoral (scholar, fellow or other postdoctoral position)	12
Khatri, Krishna	Postdoctoral (scholar, fellow or other postdoctoral position)	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Oerter, Erik	Postdoctoral (scholar, fellow or other postdoctoral position)	1
Weintraub, Samantha	Postdoctoral (scholar, fellow or other postdoctoral position)	12
Andrews, Adrienne	Other Professional	1
Bailey, Ellen	Other Professional	1
Bardsley, Tim	Other Professional	1
Bo Flood, Nancy	Other Professional	1
Bringhurst, Kerry	Other Professional	1
Dash, Pabitra	Other Professional	1
DeMillion, Marcy	Other Professional	1
Dintelman, Sue	Other Professional	0
DuRoss, Erika	Other Professional	1
Eiriksson, Ellen	Other Professional	12
Goetz, Tamara	Other Professional	1
Hildebrand, Terri	Other Professional	1
Huenemann, Jeannine	Other Professional	7
Huff, Terra	Other Professional	6
Keleher, Chris	Other Professional	0
Kiefer, Julie	Other Professional	1
Leidolf, Andreas	Other Professional	12
Lewis, Caitlyn	Other Professional	9
Manuelito-Kerkvliet, Cassandra	Other Professional	0

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
McEntire, Anna	Other Professional	1
Menlove, Rebecca	Other Professional	1
Muffoletto, Mary-Ann	Other Professional	0
Nelson, Adelbert	Other Professional	0
Olsen, Herm	Other Professional	0
Pemberton, Jennifer	Other Professional	1
Pendleton, Jackie	Other Professional	1
Ramsey, Robert	Other Professional	1
Rhodes, Kevin	Other Professional	1
Robinson, Eli	Other Professional	1
Runburg, Madlyn	Other Professional	2
Seppi, Jessica	Other Professional	2
Smith, Katie	Other Professional	1
Van Houten, Judy	Other Professional	0
Wang, Weihong	Other Professional	1
Young, Sarah	Other Professional	0
Anderson, Jessica	Technician	2
Cannon, Molly	Technician	1
Carlisle, Jobie	Technician	1
Cox, Chris	Technician	12
Dastrup, Dylan	Technician	12
Eiriksson, Dave	Technician	12

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Greene, Brian	Technician	6
Jones, Amber	Technician	12
Keele, Rusty	Technician	1
Lorimer, Matt	Technician	1
Reeder, Stephanie	Technician	3
Grove, Morgan	Staff Scientist (doctoral level)	0
Miller, Matt	Staff Scientist (doctoral level)	0
Bailey, Brian	Graduate Student (research assistant)	6
Barnes, Michelle	Graduate Student (research assistant)	4
Betts, Dave	Graduate Student (research assistant)	6
Buahin, Caleb	Graduate Student (research assistant)	6
Bunnell, Michael	Graduate Student (research assistant)	6
Carothers, Taya	Graduate Student (research assistant)	6
Chan, Allison	Graduate Student (research assistant)	6
Checketts, Hannah	Graduate Student (research assistant)	6
Feng, Youcan	Graduate Student (research assistant)	6
Gelderloos, Andrew	Graduate Student (research assistant)	6
Gomez-Navarro, Carolina	Graduate Student (research assistant)	6
Goodsell, Tim	Graduate Student (research assistant)	6
Hansen, Carly	Graduate Student (research assistant)	1
Jameel, Yusuf	Graduate Student (research assistant)	6
James, Ryan	Graduate Student (research assistant)	6

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Jones, Erin	Graduate Student (research assistant)	6
Kelso, Julia	Graduate Student (research assistant)	6
Kraft, Maggie	Graduate Student (research assistant)	6
Leonardo, Miguel	Graduate Student (research assistant)	6
Li, Enjie	Graduate Student (research assistant)	6
Magnusson, Tylan	Graduate Student (research assistant)	1
Maxwell, Jordan	Graduate Student (research assistant)	6
Melcher, Anthony	Graduate Student (research assistant)	6
Mihalevich, Bryce	Graduate Student (research assistant)	6
Miller, Brett	Graduate Student (research assistant)	6
Millington, Mallory	Graduate Student (research assistant)	6
Nielsen, Brianne	Graduate Student (research assistant)	6
Ogata, Elizabeth	Graduate Student (research assistant)	6
Oliver, Mary	Graduate Student (research assistant)	6
Packer, Brian	Graduate Student (research assistant)	6
Parajuli, Kshitij	Graduate Student (research assistant)	6
Perelet, Alexei	Graduate Student (research assistant)	6
Randall, Matt	Graduate Student (research assistant)	6
Russel, Kerri	Graduate Student (research assistant)	6
Russell, Victoria	Graduate Student (research assistant)	1
Sapkota, Pratibha	Graduate Student (research assistant)	6
Scalzitti, Jason	Graduate Student (research assistant)	6

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Smith, Kimi	Graduate Student (research assistant)	6
Stoker, Philip	Graduate Student (research assistant)	6
Stout, Trinity	Graduate Student (research assistant)	6
Tagore, Pratiti	Graduate Student (research assistant)	6
Tulley-Cordova, Crystal	Graduate Student (research assistant)	6
Uzunian, Adrian	Graduate Student (research assistant)	6
Walston, Joshua	Graduate Student (research assistant)	4
Wheelwright, Matthew	Graduate Student (research assistant)	6
Wolf Rife, Trixie	Graduate Student (research assistant)	6
Yuvshanova, Sofiya	Graduate Student (research assistant)	6
Harper, Mario	Non-Student Research Assistant	1
Abeln, Michael	Undergraduate Student	1
Adams, Patrick	Undergraduate Student	1
Alsterberg, Caroline	Undergraduate Student	1
Anderson, Dee	Undergraduate Student	1
Andreini, Jeremy	Undergraduate Student	1
Arrieta, Francisco	Undergraduate Student	1
Barton, Ben	Undergraduate Student	1
Belyue, Jonathan	Undergraduate Student	3
Benally, Myralynne	Undergraduate Student	1
Boyer, Brett	Undergraduate Student	3
Brabazon, Jared	Undergraduate Student	3

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Bradford, Anthony	Undergraduate Student	1
Brewer, Beverly	Undergraduate Student	1
Brophy, Dane	Undergraduate Student	3
Brown, Alex	Undergraduate Student	3
Brown, Austin	Undergraduate Student	1
Buchholz, Jesse	Undergraduate Student	1
Burrows, Amberlee	Undergraduate Student	1
Butterfield, Nicholas	Undergraduate Student	3
Cannon, Quinton	Undergraduate Student	3
Caraballo, Juan	Undergraduate Student	3
Carlson, Andrew	Undergraduate Student	3
Carter, Logan	Undergraduate Student	1
Casper, Taylor	Undergraduate Student	1
Christiansen, Neal	Undergraduate Student	3
Christopher, Allison	Undergraduate Student	1
Collins, Scott	Undergraduate Student	3
Cornell, Cassandra	Undergraduate Student	1
Crnich, Jacob	Undergraduate Student	1
Dangerfield, Jared	Undergraduate Student	1
Dean, Kent	Undergraduate Student	3
Elliott, Cynthia	Undergraduate Student	1
Fox, Christopher	Undergraduate Student	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Gallagher, Michael	Undergraduate Student	3
Gardiner, Coral	Undergraduate Student	2
Gerdes, Coleman	Undergraduate Student	1
Gerth, Borgney	Undergraduate Student	1
Gherasim, Janelle	Undergraduate Student	3
Gray, Skyler	Undergraduate Student	1
Gypp, Austin	Undergraduate Student	1
Hale, Trevor	Undergraduate Student	1
Hallows, Carl	Undergraduate Student	2
Haytayan, Areg	Undergraduate Student	6
Hodgson, Kaaren	Undergraduate Student	1
Holmes, Sara	Undergraduate Student	1
Humes, Alissa	Undergraduate Student	2
Indegard, Matz	Undergraduate Student	2
Jackson, Simone	Undergraduate Student	3
Jackson, Joshua	Undergraduate Student	3
Joe, Dustin	Undergraduate Student	2
Johnson, Christianna	Undergraduate Student	1
Johnson, Ryan	Undergraduate Student	1
Jones, Shelley	Undergraduate Student	1
Kesler, Ian	Undergraduate Student	1
King, Anthony	Undergraduate Student	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
King, Paisley	Undergraduate Student	1
Koelher, Aubriel	Undergraduate Student	2
Latham, Jonathan	Undergraduate Student	1
Laurella, Reva	Undergraduate Student	3
Lisonbee, Gabriel	Undergraduate Student	1
Long, Donald	Undergraduate Student	2
Lougy, Melissa	Undergraduate Student	1
Lyons, Leann	Undergraduate Student	1
Madsen, Belinda	Undergraduate Student	1
Mansfield, Christopher	Undergraduate Student	1
Martin, Mackenzie	Undergraduate Student	3
Mascher, Charles	Undergraduate Student	3
Matos, Mario	Undergraduate Student	3
Matt, Josh	Undergraduate Student	3
McLain, Devan	Undergraduate Student	2
Mendenhall, Blaise	Undergraduate Student	1
Miller, Lohra	Undergraduate Student	2
Mitchell, Sara	Undergraduate Student	3
Murdock, Thomas	Undergraduate Student	3
Murdock, Jessica	Undergraduate Student	3
Nichols, Jarrett	Undergraduate Student	3
Nistler, Jenny	Undergraduate Student	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Oliverson, Colby	Undergraduate Student	3
Patton, James	Undergraduate Student	3
Peterson, Hannah	Undergraduate Student	3
Peterson, Karlee	Undergraduate Student	1
Pettersson, Brandon	Undergraduate Student	1
Preston, Jacob	Undergraduate Student	2
Rakotoarisaona, Henintsoa	Undergraduate Student	1
Ramirez, Maurier	Undergraduate Student	3
Rhein, Nayla	Undergraduate Student	2
Rider, Ben	Undergraduate Student	3
Roberson, Karen	Undergraduate Student	1
Schmidt, Joshua	Undergraduate Student	1
Schuessler, Marjorieta	Undergraduate Student	1
Schuessler, Robert	Undergraduate Student	1
Shepherd, Natalie	Undergraduate Student	1
Sills, Kyle	Undergraduate Student	1
Smith, Jordan	Undergraduate Student	3
Smith, Denver	Undergraduate Student	3
Sorensen, Jake	Undergraduate Student	3
Stephens, Rhys	Undergraduate Student	1
Stewart, Jason	Undergraduate Student	2
Suiter, Philip	Undergraduate Student	3

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Sutterfield, Davis	Undergraduate Student	3
Taylor, Bryce	Undergraduate Student	3
Taylor, Chad	Undergraduate Student	2
Tennant, Hyrum	Undergraduate Student	3
Trice, Jack	Undergraduate Student	1
Tulley, Skyler	Undergraduate Student	3
Unger, Bethany	Undergraduate Student	1
Valora, Tori	Undergraduate Student	1
Visser, Philip	Undergraduate Student	1
Wall, Hailey	Undergraduate Student	3
Wallace, Hailey	Undergraduate Student	2
Weber, Andrew	Undergraduate Student	2
Welker, Chelsea	Undergraduate Student	1
Woltz, Christina	Undergraduate Student	3
Wynn, Elizabeth	Undergraduate Student	3
Yefimov, Logan	Undergraduate Student	2
Yu, Dennis	Undergraduate Student	1
Ewing-Taylor, Jacqueline	Consultant	2
McInnis, Heather	Consultant	1
Milutinovich, Mark	Consultant	0
Porter, Alan	Consultant	0
Rivera, Samuel	Consultant	1

<b>Name</b>	<b>Most Senior Project Role</b>	<b>Nearest Person Month Worked</b>
Ahn, Kyle	Research Experience for Undergraduates (REU) Participant	3
Araujo, Amanda	Research Experience for Undergraduates (REU) Participant	3
Baji, Viviane	Research Experience for Undergraduates (REU) Participant	3
Barnett, Matthew	Research Experience for Undergraduates (REU) Participant	3
Fleri, Jesse	Research Experience for Undergraduates (REU) Participant	3
Gathro, Josh	Research Experience for Undergraduates (REU) Participant	3
Griffin, Natasha	Research Experience for Undergraduates (REU) Participant	3
Hill, Sawyer	Research Experience for Undergraduates (REU) Participant	3
Ipson, Joseph	Research Experience for Undergraduates (REU) Participant	3
Johnson, Matthew	Research Experience for Undergraduates (REU) Participant	3
King, Heather	Research Experience for Undergraduates (REU) Participant	3
Oldroyd, Zack	Research Experience for Undergraduates (REU) Participant	3
Risley, Jordan	Research Experience for Undergraduates (REU) Participant	3
Tanner, Elizabeth	Research Experience for Undergraduates (REU) Participant	3
Valle, Philip	Research Experience for Undergraduates (REU) Participant	3

Name	Most Senior Project Role	Nearest Person Month Worked
Vawdrey, Jamie	Research Experience for Undergraduates (REU) Participant	3
Willey, Darianne	Research Experience for Undergraduates (REU) Participant	3
Williams, Shannon	Research Experience for Undergraduates (REU) Participant	3
Wolf, Margaret	Research Experience for Undergraduates (REU) Participant	3

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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:** Responsible for overall project leadership.**Funding Support:** Utah State University; Utah Science, Technology, and Research Initiative**International Collaboration:** No**International Travel:** No

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**Zachary T Aanderud**

Email: zachary\_aanderud@byu.edu

**Most Senior Project Role:** Co PD/PI**Nearest Person Month Worked:** 2**Contribution to the Project:** Leadership team, co-lead of RFA1.**Funding Support:** Brigham Young University**International Collaboration:** No**International Travel:** No

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**James R Ehleringer**

Email: jim.ehleringer@utah.edu

**Most Senior Project Role:** Co PD/PI**Nearest Person Month Worked:** 2**Contribution to the Project:** Project leadership focusing on facilities and postdoctoral mentoring.**Funding Support:** University of Utah**International Collaboration:** No

**International Travel:** No

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**Douglas Jackson-Smith**

**Email:** doug.jackson-smith@usu.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Leadership team, co-lead of RFA 2.

**Funding Support:** Utah State University

**International Collaboration:** No

**International Travel:** No

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**Courtenay Strong**

**Email:** court.strong@utah.edu

**Most Senior Project Role:** Co PD/PI

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Leadership team, co-lead of RFA3

**Funding Support:** University of Utah

**International Collaboration:** No

**International Travel:** No

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**Zanazzi Alessandro**

**Email:** alessandro.zanazzi@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

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**Rick Balling**

**Email:** balling@byu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RFA2

**Funding Support:** BYU

**International Collaboration:** No

**International Travel:** No

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**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 research 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:** 1**Contribution to the Project:** Faculty at Weber St. participating in research at iUTAH**Funding Support:** Weber St.**International Collaboration:** No**International Travel:** No**Frank Black****Email:** fblack@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**Gabriel Bowen****Email:** gabe.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**Brenda Bowen****Email:** brenda.bowen@utah.edu**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Professional at iUTAH

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**Dave Bowling**

**Email:** david.bowling@utah.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 2

**Contribution to the Project:** RFA1 co-lead

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**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

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**Funding Support:** USU and USTAR

**International Collaboration:** No

**International Travel:** No

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**Martin Buchert**

**Email:** martin.buchert@utah.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 3

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

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**Michael Bunds**

**Email:** michael.bunds@uvu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RFA1

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**International Travel:** No

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**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

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**Tony Castronova**

**Email:** tony.castronova@usu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 6

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**Guy Denton****Email:** Guy.Denton@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**Jay DeSart****Email:** jdesart@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**Ryan Dupont****Email:** ryan.dupont@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**Eric Edwards****Email:** eric.charles.edwards@gmail.com**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 2**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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Steve Emerman**

**Email:** stevenE@uvu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RFA1

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Carla Endres**

**Email:** carla.endres@usu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Joanna Endter-Wada**

**Email:** joanna.endter-wada@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

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**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

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**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**Courtney Flint**

**Email:** Courtney.Flint@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:** iUTAH

**International Collaboration:** No

**International Travel:** No

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**Joanna Ganning**

**Email:** joanna.ganning@utah.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 2

**Contribution to the Project:** RFA2 and RFA3

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**Shana Geffaney**

**Email:** shana.geffaney@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

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**Richard Gill**

**Email:** rgill@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

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**International Travel:** No

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**Luis Gordillo**

**Email:** luis.gordillo@snow.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** Snow College

**International Collaboration:** No

**International Travel:** No

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**Fred Govedich**

**Email:** govedich@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

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**Jacqueline Grant**

**Email:** jacquelinegrant@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

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**Sarah Hanners**

**Email:** sarah.hanners@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

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**Daniel Homs****Email:** hornsda@uvu.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** Faculty at UVU participating in research at iUTAH**Funding Support:** UVU**International Collaboration:** No**International Travel:** No**Jeff Horsburgh****Email:** jeff.horsburgh@usu.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 3**Contribution to the Project:** USU Faculty**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Peter Howe****Email:** peter.howe@usu.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** Faculty at USU participating in research at iUTAH**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Hilary Hungerford****Email:** hilary.hungerford@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**Laura Hunter****Email:** lhunter@uen.org**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** UEN

**International Collaboration:** No

**International Travel:** No

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**Nancy Huntly**

**Email:** nancy.huntly@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

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**Ryan Jensen**

**Email:** ryan.jensen@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

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**Jiming Jin**

**Email:** jiming.jin@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

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**Gary Johnson**

**Email:** garyjohnson@weber.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RFA2

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**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Norm Jones**

**Email:** njones@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

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**Scott Jones**

**Email:** scott.jones@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

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**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

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**Shujuan Li**

**Email:** shujuan.li@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

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**International Travel:** No

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**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

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**Britt Mace**

**Email:** mace@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

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**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

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**David Matty**

**Email:** dmatty@weber.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**William McDowell****Email:** bill.mcdowell@unh.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** External Advisory Board**Funding Support:** UNH**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**William Michener****Email:** wmichene@unm.edu**Most Senior Project Role:** Faculty**Nearest Person Month Worked:** 0**Contribution to the Project:** External Advisory Board**Funding Support:** UNM**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

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**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

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**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

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**Bethany Neilson**

**Email:** bethany.neilson@usu.edu

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**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

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**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

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**International Travel:** No

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**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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Alexander Simon**

**Email:** alex.simon@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

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**Sam St. Clair**

**Email:** stclair@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

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**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

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**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:** 0**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:** 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**Andrew Van Alstyne****Email:** andrewvanalstyne@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

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**Anne Wairepo**

**Email:** [annew@uvu.edu](mailto:annew@uvu.edu)

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Simon Wang**

**Email:** [simon.wang@usu.edu](mailto: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

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**Kim Weaver**

**Email:** [weaver@suu.edu](mailto: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

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**Matthew Weeg**

**Email:** [matthewweeg@suu.edu](mailto:matthewweeg@suu.edu)

**Most Senior Project Role:** Faculty

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RCG award

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**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**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

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**Marian Howe-Taylor**

**Email:** marian.howe-taylor@slcc.edu

**Most Senior Project Role:** Community College Faculty

**Nearest Person Month Worked:** 0

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

**Funding Support:** SLCC

**International Collaboration:** No

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**International Travel:** No

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**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

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**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

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**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

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**Ken O'Brien**

**Email:** Ken.O'Brien@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

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**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:** 2**Contribution to the Project:** RFA2**Funding Support:** iUTAH**International Collaboration:** No**International Travel:** No**Steven Hall****Email:** steven.j.hall@utah.edu**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)**Nearest Person Month Worked:** 12**Contribution to the Project:** UU PosDoc by iUTAH**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:** 1**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:** 1

**Contribution to the Project:** RFA1

**Funding Support:** iUTAH

**International Collaboration:** No

**International Travel:** No

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**Samantha Weintraub**

**Email:** samantha.weintraub@utah.edu

**Most Senior Project Role:** Postdoctoral (scholar, fellow or other postdoctoral position)

**Nearest Person Month Worked:** 12

**Contribution to the Project:** UU postdoc participating in iUTAH research

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**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.

**International Collaboration:** No

**International Travel:** No

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**Ellen Bailey**

**Email:** ellen.bailey@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

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**Tim Bardsley**

**Email:** wwa.bardsley@gmail.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Western Water Assessment team

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**Funding Support:** Western Water Assessment

**International Collaboration:** No

**International Travel:** No

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**Nancy Bo Flood**

**Email:** wflood@hotmail.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Navajo Nation representative, diversity specialist

**Funding Support:** Navajo Nation

**International Collaboration:** No

**International Travel:** No

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**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

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**International Travel:** No

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**Sue Dintelman**

**Email:** sue@pleiades-software.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

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

**Funding Support:** Pleiades Software, Inc.

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**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

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**Terri Hildebrand****Email:** hildebrand@suu.edu**Most Senior Project Role:** Other Professional**Nearest Person Month Worked:** 1**Contribution to the Project:** iUTAH grant recipient from SUU**Funding Support:** SUU**International Collaboration:** No**International Travel:** No**Jeannine Huenemann****Email:** jeannine.huenemann@usu.edu**Most Senior Project Role:** Other Professional**Nearest Person Month Worked:** 7**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**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Chris Keleher****Email:** ChristopherKeleher@utah.gov**Most Senior Project Role:** Other Professional**Nearest Person Month Worked:** 0**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

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**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

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**Caitlyn Lewis**

**Email:** caitlyn.lewis@usu.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 9

**Contribution to the Project:** Outreach Assistant

**Funding Support:** iUTAH

**International Collaboration:** No

**International Travel:** No

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**Cassandra Manuelito-Kerkvliet**

**Email:** manuelitokerkvliet@hotmail.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** External Advisory Board

**Funding Support:** CMK Consultancy part of the EAB

**International Collaboration:** No

**International Travel:** No

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**Anna McEntire**

**Email:** anna.mcentire@usu.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** USU

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**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Rebecca Menlove**

**Email:** bmenlove@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

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**Mary-Ann Muffoletto**

**Email:** maryann.muffoletto@usu.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Communications Specialist working with iUTAH

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Adelbert Nelson**

**Email:** mansel.nelson@nau.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Diversity specialist of Northern Arizona U

**Funding Support:** Northern Arizona U

**International Collaboration:** No

**International Travel:** No

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**Herm Olsen**

**Email:** herm@hao-law.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Lawyer with Logan law firm

**Funding Support:** Hillyard, Anderson and Olsen PC

**International Collaboration:** No

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**International Travel:** No

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**Jennifer Pemberton**

**Email:** jennifercpemberton@gmail.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** External Engagement/Outreach, EOD innovation award

**Funding Support:** UPR

**International Collaboration:** No

**International Travel:** No

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**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

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**Robert Ramsey**

**Email:** bob.ramsey@crsengineers.com

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Consultant at Canyon Concepts LLC

**Funding Support:** Canyon Concepts LLC

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**Madlyn Runburg****Email:** mrunburg@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

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**Jessica Seppi****Email:** jseppi@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

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

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**Judy Van Houten****Email:** Judith.Vanhouten@uvm.edu**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** Member of External Advisory Board

**Funding Support:** UVM

**International Collaboration:** No

**International Travel:** No

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**Weihong Wang**

**Email:** weihong.wang@uvu.edu

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 1

**Contribution to the Project:** UVU recipient of RCG grants

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Sarah Young**

**Email:** sarah.young@schools.utah.gov

**Most Senior Project Role:** Other Professional

**Nearest Person Month Worked:** 0

**Contribution to the Project:** State of Utah

**Funding Support:** State of Utah

**International Collaboration:** No

**International Travel:** No

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**Jessica Anderson**

**Email:** janderson@uen.org

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 2

**Contribution to the Project:** Technician from UEN

**Funding Support:** UEN

**International Collaboration:** No

**International Travel:** No

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**Molly Cannon**

**Email:** molly.cannon@usu.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** USU tech sponsored by iUTAH

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**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Jobie Carlisle**

**Email:** jobie@usu.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Technician at USU

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**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

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**International Travel:** No

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**Brian Greene**

**Email:** brian.greene@usu.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 6

**Contribution to the Project:** USU Technician sponsored by iUTAH

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Amber Jones**

**Email:** amber.jones@usu.edu

**Most Senior Project Role:** Technician

**Nearest Person Month Worked:** 12

**Contribution to the Project:** USU Water Lab Tech sponsored by iUTAH

**Funding Support:** iUTAH

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**Stephanie Reeder****Email:** stephanie.reeder@usu.edu**Most Senior Project Role:** Technician**Nearest Person Month Worked:** 3**Contribution to the Project:** Technician-Programmer at USU Water Lab**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Morgan Grove****Email:** mgrove@fs.fed.us**Most Senior Project Role:** Staff Scientist (doctoral level)**Nearest Person Month Worked:** 0**Contribution to the Project:** External Advisory Board**Funding Support:** USFS**International Collaboration:** No**International Travel:** No**Matt Miller****Email:** mamiller@usgs.gov**Most Senior Project Role:** Staff Scientist (doctoral level)**Nearest Person Month Worked:** 0**Contribution to the Project:** USGS official, water data and advise provider**Funding Support:** USGS**International Collaboration:** No**International Travel:** No**Brian Bailey****Email:** bri.bailey@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**Michelle Barnes****Email:** mlbarnes33@gmail.com**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 4

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**Michael Bunnell**

**Email:** michaelcbunnell@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

**Funding Support:** BYU

**International Collaboration:** No

**International Travel:** No

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**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

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**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Allison Chan**

**Email:** amchan118@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

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**Hannah Checketts**

**Email:** hannahchecketts@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

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**Youcan Feng**

**Email:** youcan.feng@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

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**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

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**International Travel:** No

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**Carolina Gomez-Navarro**

**Email:** cgomeznavarro@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

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**Tim Goodsell**

**Email:** timothy.goodsell@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 supervised by Greg Carling

**Funding Support:** BYU

**International Collaboration:** No

**International Travel:** No

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**Carly Hansen**

**Email:** carlyahansen@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 Award-sponsored project.

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**Yusuf Jameel**

**Email:** yusuf8ysf@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

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**Ryan James****Email:** ryjamesj@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**Erin Jones****Email:** erinfjones3@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**Funding Support:** BYU**International Collaboration:** No**International Travel:** No**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**Miguel Leonardo****Email:** miguel.leonardo@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

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**Enjie Li**

**Email:** enjie.li@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

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**Tylan Magnusson**

**Email:** ty.magnusson@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 1

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

**Funding Support:** BYU

**International Collaboration:** No

**International Travel:** No

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**Jordan Maxwell**

**Email:** jdmax29@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

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**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

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**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

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**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

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**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

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**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

**International Collaboration:** No

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**International Travel:** No

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**Elizabeth Ogata**

**Email:** bethogata@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 6

**Contribution to the Project:** Graduate researcher working on iUTAH

**Funding Support:** USU Presidential Doctoral Research Fellowship

**International Collaboration:** No

**International Travel:** No

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**Mary Oliver**

**Email:** OliverLeeMary@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

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**Brian Packer**

**Email:** bnoelpacker@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

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**Kshitij Parajuli**

**Email:** kshparajuli@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

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**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**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**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

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**Jason Scalzitti**

**Email:** jason.scalzitti@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

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**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

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**Philip Stoker**

**Email:** philip.a.stoker@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

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**Trinity Stout**

**Email:** trinity.stout@aggiemail.usu.edu

**Most Senior Project Role:** Graduate Student (research assistant)  
**Nearest Person Month Worked:** 6

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**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

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**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

**Funding Support:** UU

**International Collaboration:** No

**International Travel:** No

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**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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Joshua Walston**

**Email:** joshwalston@gmail.com

**Most Senior Project Role:** Graduate Student (research assistant)

**Nearest Person Month Worked:** 4

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

**Funding Support:** USU

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

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**Matthew Wheelwright**

**Email:** u0990864@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

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**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

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**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

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**Mario Harper**

**Email:** mario.harper@usu.edu

**Most Senior Project Role:** Non-Student Research Assistant

**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

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**Michael Abeln**

**Email:** michaelabeln@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Patrick Adams**

**Email:** patrickjnadams@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:** USU

**International Collaboration:** No

**International Travel:** No

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**Caroline Alsterberg**

**Email:** alsterberg.c@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:** SLCC

**International Collaboration:** No

**International Travel:** No

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**Dee Anderson**

**Email:** 10581302@uvlink.uvu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Jeremy Andreini**

**Email:** jeremy.andreini@hotmail.com

**Most Senior Project Role:** Undergraduate Student

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**Nearest Person Month Worked:** 1

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Francisco Arrieta**

**Email:** francisco.arrieta@aggiemail.usu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Ben Barton**

**Email:** benbarton12@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:** BYU

**International Collaboration:** No

**International Travel:** No

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**Jonathan Belyue**

**Email:** jrbelyue@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

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**Myralynne Benally**

**Email:** myralynnebenally@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

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**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**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

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**Jared Brabazon**

**Email:** jbrabazon13@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

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**Anthony Bradford**

**Email:** tcb182@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

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**Beverly Brewer**

**Email:** beverlybrewer@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

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**International Travel:** No

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**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

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**Alex Brown**

**Email:** alex.brown7711@aggiemail.usu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Austin Brown**

**Email:** austin.brown@aggiemail.usu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Jesse Buchholz**

**Email:** jesserbuchholz@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:** UVU

**International Collaboration:** No

**International Travel:** No

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**Amberlee Burrows****Email:** amberleeburrows@yahoo.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Undergrad student participating in iUTAH research**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Nicholas Butterfield****Email:** nicholas.butterfield@yahoo.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** RCG undergrad**Funding Support:** UVU**International Collaboration:** No**International Travel:** No**Quinton Cannon****Email:** elquintino@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** Undergrad student participating in iUTAH research**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Juan Caraballo****Email:** juan.caraballo17@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** USU Water Lab undergraduate student sponsored by iUTAH**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Andrew Carlson****Email:** ascarlson85@hotmail.com**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

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**Logan Carter**

**Email:** logan.carter@suusuccess.org

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

**Contribution to the Project:** RCG undergrad

**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

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**Taylor Casper**

**Email:** taylorcasper@hotmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Neal Christiansen**

**Email:** alexblack30152@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Allison Christopher**

**Email:** callison1@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

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**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**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

**International Collaboration:** No

**International Travel:** No

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**Cassandra Cornell**

**Email:** cassandracornell@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Jacob Crnich**

**Email:** jacobcrnich@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Jared Dangerfield**

**Email:** jared.dangerfield22@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:** USU

**International Collaboration:** No

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**International Travel:** No

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**Kent Dean**

**Email:** deaner12.td@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Cynthia Elliott**

**Email:** cynthiaelliott@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Christopher Fox**

**Email:** christopherfox@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Michael Gallagher**

**Email:** gallaghermikey@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Coral Gardiner****Email:** 21coral.reef@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** RCG undergrad**Funding Support:** SUU**International Collaboration:** No**International Travel:** No**Coleman Gerdes****Email:** colemanagerdes@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:** USU**International Collaboration:** No**International Travel:** No**Borgney Gerth****Email:** borgny\_gerth@hotmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Undergrad student participating in iUTAH research**Funding Support:** SLCC**International Collaboration:** No**International Travel:** No**Janelle Gherasim****Email:** j.elise.gherasim@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** RCG undergrad**Funding Support:** UVU**International Collaboration:** No**International Travel:** No**Skyler Gray****Email:** uflm801@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:** UU

**International Collaboration:** No

**International Travel:** No

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**Austin Gypp**

**Email:** austingypp@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Trevor Hale**

**Email:** trevorhale@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Carl Hallows**

**Email:** carlghallows@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:** SUU

**International Collaboration:** No

**International Travel:** No

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**Areg Haytayan**

**Email:** areg.haytayan@usu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 6

**Contribution to the Project:** iUTAH office assistant

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**Funding Support:** iUTAH

**International Collaboration:** No

**International Travel:** No

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**Kaaren Hodgson**

**Email:** kaarenhodgson@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:** USU

**International Collaboration:** No

**International Travel:** No

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**Sara Holmes**

**Email:** saraholmes.0@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:** USU

**International Collaboration:** No

**International Travel:** No

---

**Alissa Humes**

**Email:** alissa.humes1997@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

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**Matz Indegard**

**Email:** matzindegard@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:** SUU

**International Collaboration:** No

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**International Travel:** No

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**Simone Jackson**

**Email:** kavoka18@gmail.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

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**Joshua Jackson**

**Email:** joshuawilliamjackson1@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** UVU

**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

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**Christianna Johnson**

**Email:** christiannajohnson18@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:** UU

**International Collaboration:** No

**International Travel:** No

---

**Ryan Johnson****Email:** ryan.z.johnson@outlook.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Undergrad student participating in iUTAH research**Funding Support:** USU**International Collaboration:** No**International Travel:** No**Shelley Jones****Email:** shelstar17@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:** USU**International Collaboration:** No**International Travel:** No**Ian Kesler****Email:** ianmkesler@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** RCG undergrad**Funding Support:** SUU**International Collaboration:** No**International Travel:** No**Anthony King****Email:** anthonyking1@mail.weber.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** RCG undergrad**Funding Support:** Weber St.**International Collaboration:** No**International Travel:** No**Paisley King****Email:** paisleyk.442@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:** UVU

**International Collaboration:** No

**International Travel:** No

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**Aubriel Koelher**

**Email:** aubko101@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:** SUU

**International Collaboration:** No

**International Travel:** No

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**Jonathan Latham**

**Email:** 10449826@uvlink.uvu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Reva Laurella**

**Email:** revalaurella@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Gabriel Lisonbee**

**Email:** gabriellisonbee@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

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**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Donald Long**

**Email:** Donaldo82@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

**Contribution to the Project:** RCG undergrad

**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

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**Melissa Lougy**

**Email:** melissarumsey@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Leann Lyons**

**Email:** leannlyons@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**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.

**Funding Support:** SLCC

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

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**Christopher Mansfield**

**Email:** crm0119@westminstercollege.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 1

**Contribution to the Project:** RCG undergrad

**Funding Support:** Westminster College

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

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**Mackenzie Martin**

**Email:** mackenziemartin@sandiego.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3

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

**Funding Support:** UU

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

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**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

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**Mario Matos**

**Email:** mario.matos@usu.edu  
**Most Senior Project Role:** Undergraduate Student  
**Nearest Person Month Worked:** 3

**Contribution to the Project:** Undergrad student at USU Water Lab participating in research at iUTAH

**Funding Support:** USU

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

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**Josh Matt****Email:** joshuampc@aol.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** RCG undergrad**Funding Support:** SUU**International Collaboration:** No**International Travel:** No**Devan McLain****Email:** devan.mclain@uvu.edu**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**Blaise Mendenhall****Email:** blaisemendenhall@mail.weber.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** Undergrad student participating in iUTAH research**Funding Support:** Weber St.**International Collaboration:** No**International Travel:** No**Lohra Miller****Email:** lohramickelle@hotmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 2**Contribution to the Project:** RCG undergrad**Funding Support:** SUU**International Collaboration:** No**International Travel:** No**Sara Mitchell****Email:** sara.mitchell@utah.edu**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

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**Thomas Murdock**

**Email:** tarzan.mail.jungle@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Jessica Murdock**

**Email:** jessicamurdock@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Jarrett Nichols**

**Email:** jarrett.nichols@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Jenny Nistler**

**Email:** jennynistler@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

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**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Colby Oliverson**

**Email:** colbyoliverson@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**James Patton**

**Email:** j.patton@aggiemail.usu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** USU undergraduate student sponsored by iUTAH

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Hannah Peterson**

**Email:** Hannah.peterson65@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

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**Karlee Peterson**

**Email:** karleepeterson@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** USU

**International Collaboration:** No

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**International Travel:** No

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**Brandon Pettersson**

**Email:** brandonpettersson@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Jacob Preston**

**Email:** prestonjdb@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:** SUU

**International Collaboration:** No

**International Travel:** No

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**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

**International Collaboration:** No

**International Travel:** No

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**Maurier Ramirez**

**Email:** mauriel.ramirez@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** Undergrad student at USU Water Lab participating in research at iUTAH

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Nayla Rhein****Email:** nayla.rhein@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:** SUU**International Collaboration:** No**International Travel:** No**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**International Collaboration:** No**International Travel:** No**Karen Roberson****Email:** karenroberson@mail.weber.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** RCG undergrad**Funding Support:** Weber St.**International Collaboration:** No**International Travel:** No**Joshua Schmidt****Email:** jns1007@westminstercollege.edu**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 1**Contribution to the Project:** RCG undergrad**Funding Support:** Westminster College**International Collaboration:** No**International Travel:** No**Marjorieta Schuessler****Email:** mschuessler@mail.weber.edu**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**Robert Schuessler**

**Email:** robertschuessler@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

---

**Natalie Shepherd**

**Email:** natalieshep23@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:** BYU

**International Collaboration:** No

**International Travel:** No

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**Kyle Sills**

**Email:** bartmaan@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

---

**Jordan Smith**

**Email:** jordanwaynesmith@byu.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** iUTAH Trainee

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**Funding Support:** BYU

**International Collaboration:** No

**International Travel:** No

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**Denver Smith**

**Email:** denverpsmith@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Jake Sorensen**

**Email:** jakevsorensen@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

---

**Rhys Stephens**

**Email:** rrstephens93@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:** USU

**International Collaboration:** No

**International Travel:** No

---

**Jason Stewart**

**Email:** jstew1465@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:** SUU

**International Collaboration:** No

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**International Travel:** No

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**Philip Suiter**

**Email:** philip.suiter@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

---

**Davis Sutterfield**

**Email:** davers1211@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** UVU

**International Collaboration:** No

**International Travel:** No

---

**Bryce Taylor**

**Email:** brytay.nbd100@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

**Contribution to the Project:** RCG undergrad

**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

---

**Chad Taylor**

**Email:** chadsface@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:** SUU

**International Collaboration:** No

**International Travel:** No

---

**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**International Collaboration:** No**International Travel:** No**Jack Trice****Email:** jack.trice96@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:** USU**International Collaboration:** No**International Travel:** No**Skyler Tulley****Email:** skytulley06@gmail.com**Most Senior Project Role:** Undergraduate Student**Nearest Person Month Worked:** 3**Contribution to the Project:** RCG undergrad**Funding Support:** UVU**International Collaboration:** No**International Travel:** No**Bethany Unger****Email:** bethanyquinnunger@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:** USU**International Collaboration:** No**International Travel:** No**Tori Valora****Email:** tori.valora@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:** USU

**International Collaboration:** No

**International Travel:** No

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**Philip Visser**

**Email:** visserphilip@yahoo.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Hailey Wall**

**Email:** wall0635@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

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**Hailey Wallace**

**Email:** haileymarrie@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:** SUU

**International Collaboration:** No

**International Travel:** No

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**Andrew Weber**

**Email:** webergba@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 2

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

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**Funding Support:** SUU

**International Collaboration:** No

**International Travel:** No

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**Chelsea Welker**

**Email:** chelseawelker@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:** UU

**International Collaboration:** No

**International Travel:** No

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**Christina Woltz**

**Email:** tina.woltz@utah.edu

**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

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**Elizabeth Wynn**

**Email:** ewynn610@gmail.com

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 3

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

**Funding Support:** USU

**International Collaboration:** No

**International Travel:** No

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**Logan Yefimov**

**Email:** Logan@yefimov.onmicrosoft.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

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**International Travel:** No

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**Dennis Yu**

**Email:** dennisyu@mail.weber.edu

**Most Senior Project Role:** Undergraduate Student

**Nearest Person Month Worked:** 1

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

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

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**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

**International Collaboration:** No

**International Travel:** No

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**Heather McInnis**

**Email:** hmcinnis@aaas.org

**Most Senior Project Role:** Consultant

**Nearest Person Month Worked:** 1

**Contribution to the Project:** Program Director with AAAS Resarch Competitiveness Program

**Funding Support:** AAAS

**International Collaboration:** No

**International Travel:** No

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**Mark Milutinovich**

**Email:** mmilutin@aaas.org

**Most Senior Project Role:** Consultant

**Nearest Person Month Worked:** 0

**Contribution to the Project:** AAAS

**Funding Support:** AAAS

**International Collaboration:** No

**International Travel:** No

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**Alan Porter****Email:** alan.porter@isye.gatech.edu**Most Senior Project Role:** Consultant**Nearest Person Month Worked:** 0**Contribution to the Project:** External Assessment Team**Funding Support:** Georgia Tech**International Collaboration:** No**International Travel:** No**Samuel Rivera****Email:** samuel.rivera@aggiemail.usu.edu**Most Senior Project Role:** Consultant**Nearest Person Month Worked:** 1**Contribution to the Project:** Consultant working with iUTAH**Funding Support:** iUTAH**International Collaboration:** No**International Travel:** No**Kyle Ahn****Email:** ahn32191@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:****Amanda Araujo****Email:** amanda.araujo5214@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:**

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**Viviane Baji****Email:** Vbaji93@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**International Collaboration:** No**International Travel:** No**Year of schooling completed:****Home Institution:****Government fiscal year(s) was this REU participant supported:**

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**Matthew Barnett****Email:** matthew.barnett@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:**

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**Jesse Fleri****Email:** jessefleri@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**International Collaboration:** No**International Travel:** No**Year of schooling completed:****Home Institution:****Government fiscal year(s) was this REU participant supported:**

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**Josh Gathro****Email:** jdgreply@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

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

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

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**Natasha Griffin**

**Email:** natasha.a.griffin@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:**

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**Sawyer Hill**

**Email:** sgh0303@westminstercollege.edu

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked:** 3

**Contribution to the Project:** iFellow

**Funding Support:** Westminster College

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

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

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**Joseph Ipson**

**Email:** ahrkelion@gmail.com

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked:** 3

**Contribution to the Project:** iFellow

**Funding Support:** Snow College

**International Collaboration:** No

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

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**Matthew Johnson**

**Email:** mashtomato79@gmail.com

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked:** 3

**Contribution to the Project:** iFellow

**Funding Support:** Weber St.

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

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

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**Heather King**

**Email:** heather.king@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:**

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**Zack Oldroyd**

**Email:** zack.oldroyd@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:**

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**Jordan Risley****Email:** jordan.risley@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:**

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**Elizabeth Tanner****Email:** etanne19@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**International Collaboration:** No**International Travel:** No**Year of schooling completed:****Home Institution:****Government fiscal year(s) was this REU participant supported:**

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**Philip Valle****Email:** phillipvalle@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:** Weber St.**International Collaboration:** No**International Travel:** No**Year of schooling completed:****Home Institution:****Government fiscal year(s) was this REU participant supported:**

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**Jamie Vawdrey****Email:** jamie.vawdrey@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:**

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**Darriane Willey**

**Email:** [darrianewilley@gmail.com](mailto:darrianewilley@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

**International Collaboration:** No

**International Travel:** No

**Year of schooling completed:**

**Home Institution:**

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

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**Shannon Williams**

**Email:** [shannon.williams027@gmail.com](mailto:shannon.williams027@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:**

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**Margaret Wolf**

**Email:** [maw0912@westminstercollege.edu](mailto:maw0912@westminstercollege.edu)

**Most Senior Project Role:** Research Experience for Undergraduates (REU) Participant

**Nearest Person Month Worked:** 3

**Contribution to the Project:** iFellow

**Funding Support:** Westminster College

**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?**

<b>Name</b>	<b>Type of Partner Organization</b>	<b>Location</b>
Arizona State University	Academic Institution	Tempe, Arizona
Arkansas Science and Technology Authority	State or Local Government	Little Rock, Arkansas
Consortium of Universities for the Advancement of Hydrologic	Academic Institution	National
Dixie State University (DSU)	Academic Institution	Southern Utah
Envision Utah	Other Nonprofits	Utah
Explore Utah Science	Other Nonprofits	Utah
Four Corners School	Academic Institution	Monticello, Utah
Garth and Jerri Frehner Museum of Natural History	Other Nonprofits	Cedar City, Utah
Global Change and Sustainability Center	Academic Institution	Salt Lake City, Utah
Hillyard, Anderson, and Olson PC	Industrial or Commercial Firms	Logan Utah
HydroShare	Academic Institution	National
Jordan High School	School or School Systems	Sandy, Utah
Bear River Watershed Council	Other Nonprofits	Providence, Utah
Judge Memorial High school (Judge)	Academic Institution	Salt Lake City, Utah
Logan Northwest Field Irrigation Company	Industrial or Commercial Firms	Logan, Utah
Logan, Hyde Park and Smithfield Canal Company	Industrial or Commercial Firms	Logan, Utah
Loras College	Academic Institution	Dubuque, Iowa
Loveland Living Planet Aquarium	Other Nonprofits	Draper, Utah

<b>Name</b>	<b>Type of Partner Organization</b>	<b>Location</b>
National Park Service	Other Organizations (foreign or domestic)	National
Natural History Museum of Utah	Other Nonprofits	Salt Lake City, Utah
Nevada System of Higher Education	State or Local Government	Reno, Nevada
Pleiades Software, Inc	Industrial or Commercial Firms	Salt Lake City, Utah
Politecnio di Milano	Academic Institution	Italy
Brigham Young University	Academic Institution	Provo, Utah
Portland State University	Academic Institution	Portland, Oregon
Providence Blacksmith Fork Irrigation Co.	Industrial or Commercial Firms	Providence, Utah
Rose Park Elementary	School or School Systems	Salt Lake City, Utah
STEM Evaluation Associates	Other Nonprofits	Western US
Salt Lake Community College	Academic Institution	Salt Lake City, Utah
Salt Lake County	State or Local Government	Salt Lake City, Utah
Salt Lake Department of Public Utilities	State or Local Government	Salt Lake City, Utah
Snow College	Academic Institution	Ephraim, Utah
South Dakota State University	Academic Institution	Brookings, South Dakota
Southern Utah University	Academic Institution	Cedar city, Utah
Campbell Scientific, Inc.	Industrial or Commercial Firms	Logan, Utah
Thanksgiving Point Institute	Other Nonprofits	Lehi, Utah
The Leonardo	Other Nonprofits	Salt Lake City, Utah
Tracy Aviary	Other Nonprofits	Salt Lake City, Utah
Triangle Coalition for STEM Education (Triangle)	Other Nonprofits	Washington D.C.
Tufts University	Academic Institution	Massachusetts

<b>Name</b>	<b>Type of Partner Organization</b>	<b>Location</b>
USDA Natural Resources Conservation Service	Other Organizations (foreign or domestic)	National
United States Bureau of Reclamation (BLM)	Other Organizations (foreign or domestic)	Salt Lake City, Utah
United States Geological Survey	Other Organizations (foreign or domestic)	Salt Lake City, Utah
University of Alaska Anchorage	Academic Institution	Anchorage, Alaska
University of Hawaii	Academic Institution	Hawaii
Canyon Concepts LLC	Industrial or Commercial Firms	Tucson, Arizona
University of Idaho	Academic Institution	Moscow, Idaho
University of Life Sciences & Natural Resources (BOKU)	Academic Institution	Vienna, Austria
University of Missouri	Academic Institution	Columbia, Missouri
University of New Hampshire	Academic Institution	New Hampshire
University of New Mexico	Academic Institution	Albuquerque, New Mexico
University of North Carolina Chapel Hill	Academic Institution	North Carolina
University of Rhode Island	Academic Institution	Kingston, Rhode Island
University of Texas at Austin	Academic Institution	Texas
University of Utah	Academic Institution	Salt Lake City, Utah
University of Virginia	Academic Institution	Charlottesville, Virginia
Central Utah Water Conservancy District	State or Local Government	Orem, Utah
University of Wyoming	Academic Institution	Laramie, Wyoming
Utah Automated Geographic Resource Center	State or Local Government	Salt Lake City, Utah
Utah Department of Environmental Quality	State or Local Government	Salt Lake City, Utah
Utah Department of Natural Resources	State or Local Government	Salt Lake City, Utah

Name	Type of Partner Organization	Location
Utah Education Network	Academic Institution	Salt Lake City, Utah
Utah Governor's Office of Economic Development	State or Local Government	Salt Lake City, Utah
Utah Public Radio	Other Nonprofits	Logan, UTah
Utah Science, Technology, and Research Initiative	State or Local Government	Salt Lake City, Utah
Utah State Office of Education	State or Local Government	Salt Lake City, Utah
Utah State University - Eastern	Academic Institution	Blanding, Utah
Christina River Basin Critical Zone Observatory	Other Nonprofits	Delaware, Pennsylvania and Maryland
Utah State University Uinta Basin Campus	Academic Institution	Vernal, Utah
Utah State University Water Quality Extension	Academic Institution	Logan, Utah
Utah Stormwater Advisory Committee (USWAC)	State or Local Government	Utah
Utah System of Higher Education	State or Local Government	Salt Lake City, Utah
Utah Valley University	Academic Institution	Orem, Utah
Utah Water Research Laboratory (UWRL)	Academic Institution	Logan, Utah
Utah Water Watch	Academic Institution	Logan, Utah
Washington State University (WaSU)	Academic Institution	Pullman, Washington
Weber State University	Academic Institution	Ogden, Utah
Western Water Assessment (WWA)	Other Nonprofits	Colorado, Western US
Cirrus Ecological Solutions LC	Industrial or Commercial Firms	Logan, Utah
Westminster College	Academic Institution	Salt Lake City, Utah
City of Logan	State or Local Government	Logan, Utah

**Full details of organizations that have been involved as partners:**

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**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 researchers.

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**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.

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**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.

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**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.**

**Organization Type:** Industrial or Commercial Firms

**Organization Location:** Logan, Utah

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

Collaborative Research

Personnel Exchanges

**More Detail on Partner and Contribution:** Staff of Campbell Scientific, a scientific instrumentation company headquartered in Logan, Utah, serve on iUTAH education, outreach and diversity teams.

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**Canyon Concepts LLC**

**Organization Type:** Industrial or Commercial Firms

**Organization Location:** Tucson, Arizona

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

Collaborative Research

**More Detail on Partner and Contribution:** 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.

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**Central Utah Water Conservancy District**

**Organization Type:** State or Local Government

**Organization Location:** Orem, Utah

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

Collaborative Research

**More Detail on Partner and Contribution:** 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.

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**Christina River Basin Critical Zone Observatory**

**Organization Type:** Other Nonprofits

**Organization Location:** Delaware, Pennsylvania and Maryland

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

Collaborative Research

Personnel Exchanges

**More Detail on Partner and Contribution:** 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.

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## **Cirrus Ecological Solutions LC**

**Organization Type:** Industrial or Commercial Firms

**Organization Location:** Logan, Utah

**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.

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## **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.

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## **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.

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## **Dixie State University (DSU)**

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**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.

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### 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.

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### 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.

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### Four Corners School

**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.

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### **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:** he 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).

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### **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 hub to coordinate, promote and accelerate interdisciplinary research and training on issues related to the environment and sustainability, from local to global scales. It is the recipient of a 2015 EOD Innovation Award.

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### **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.

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### **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

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viable repository for long term deposition of iUTAH datasets.

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### **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.

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### **Judge Memorial High school (Judge)**

**Organization Type:** Academic Institution

**Organization Location:** Salt Lake City, Utah

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

Collaborative Research

**More Detail on Partner and Contribution:** Judge Memorial is a diverse, co-educational, college preparatory school centrally located in Salt Lake City, Utah <http://www.judgememorial.com/>

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### **Logan Northwest Field Irrigation Company**

**Organization Type:** Industrial or Commercial Firms

**Organization Location:** Logan, Utah

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

Collaborative Research

**More Detail on Partner and Contribution:** 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.

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### **Logan, Hyde Park and Smithfield Canal Company**

**Organization Type:** Industrial or Commercial Firms

**Organization Location:** Logan, Utah

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

Collaborative Research

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

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### **Loras College**

**Organization Type:** Academic Institution

**Organization Location:** Dubuque, Iowa

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**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.

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**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.

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**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.

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**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.

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**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.

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#### **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.

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#### **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.

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#### **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.

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#### **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.

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**What other collaborators or contacts have been involved?**

Nothing to report

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**Impacts****What is the impact on the development of the principal discipline(s) of the project?**

In Year 4, iUTAH research had important impacts on several disciplines related to water science. Contributions in hydrology will enhance this community's ability to understand hydrologic processes in snow-dominated environments. This includes modeling work that shows a strong influence of climate warming on mountain water balance via changes in the energy balance rather than precipitation changes; as well as development of a new sensor to measure soil infiltration at low cost. iUTAH's engineered water systems group has published several new papers on stormwater remediation via GI; and secured recent external grant awards to continue this work via 2 EPA-funded projects, one focused on aquifer recharge, and one scaling GI outcomes to watershed models. Our modeling group in RFA3 recently published an application to couple hydrologic models using the OpenMI platform that has been read 61 times in ResearchGate and already has 2 citations.

In general, ascribing disciplinary impact to iUTAH is challenging because our research is inherently interdisciplinary. It is primarily the capacity to engage in this type of research that represents the most significant aspect of our project's impact, as evidenced by significantly increased productivity over Year 3 in terms of multi-authored outputs like presentations and publications; and the continued submission and awarding of large, collaborative research proposals.

The broader impacts of iUTAH on other disciplines span aquatic ecology, atmospheric science, biogeochemistry, urban ecology, economics, sociology, engineering, urban planning, and water policy. To that end, we have built close-working relationships with colleagues within and outside of iUTAH. In Year 4, we expanded our collaboration network to include groundwater resources, state-level water planners, and municipal partners who are working together to link Utah's water use data with social science data and water quality/quantity outcomes. We expect the fruits of this work to be fully realized in Year 5 and beyond.

**What is the impact on other disciplines?**

Nothing to report.

**What is the impact on the development of human resources?**

The iUTAH project continues to have a direct, substantive impact on the development of human resources at the undergraduate student, graduate student, technician, postdoc, faculty, and staff levels. In Year 4, we trained 42 GRAs, 19 of them female, across 3 campuses. Through our ever-expanding network of training programs, whether primarily executed by iUTAH (iFellows), our participating faculty (UWS), or through one of our many partners (RCGs, SI), we were able to reach 142 undergraduate students from a range of institutional, geographic, and demographic backgrounds. For example, iUTAH's involvement in the USU Eastern-Blanding STEM exploration mentorship has helped expose 20 Native American students to life at a major research university in a supportive and nurturing way, creating a lasting impact and potentially improving their access to or retention in STEM careers. Undergraduate students were involved in activities spanning the entire spectrum of iUTAH programs, from research (UWS, iFellows, RCGs, SI) to professional training (iUTAH Traineeships) and education and outreach (WaterGirls, SI). Assisted in no small part by the unique research environment we have cultivated in our state, and the opportunities this affords, we were able to retain all of the postdoctoral associates recruited in Year 3 for at least another year. One of them, Dr. Krishna Khatri, was just promoted to research assistant professor at UU, Utah's premier research university. A number of our former GRAs were able to take the next step in their STEM careers, with at least 5 having accepted full-time employment with industry, federal agencies, or in academic appointments, and several others moving on to their first postdoctoral positions.

Engagement with the iUTAH project through opportunities for innovative research; collaborative teaching; and

mentoring of students, postdoctoral associates, and junior faculty; also contributed to the professional development of our research faculty, as reflected in several awards and honors. USU professor Dr. David Rosenberg received the Outstanding Service Award—Academic Sector from the Utah Chapter of the American Water Resources Association; Dr. David Bowling received a Guest Professorship at the Leopold-Franzens-University in Innsbruck and Vienna, Austria; CI Co-Lead Dr. Jeff Horsburgh was named 2015-2016 Outstanding Researcher by USU's Department of Civil and Environmental Engineering; WSU professor and subaward-PI Dr. Daniel Bedford was appointed as Director of the University Honors Program; and iUTAH Project Director and PI Dr. Michelle Baker was honored with the 2015 Governor's Medal for Excellence in Science and Technology.

iUTAH's commitment to the professional development of its administrative staff is another major impact, greatly contributing to our state's capacity for administering large, collaborative and cross-institutional research and training programs now and in the future. iUTAH Project Management staff greatly advanced their skill sets in research administration, team science, mentoring, and broader impacts through participation in a large number of regional and national conferences and workshops.

iUTAH's Citizen Science and Museum programs continue to reach a tremendous audience made up of teachers, young people, and members of the general public. In Year 4 alone, efforts funded by iUTAH, all or in part, engaged almost 130,000 people.

### **What is the impact on physical resources that form infrastructure?**

iUTAH's core infrastructure, the GAMUT observatory, continues to be 100% operational, and saw a substantial expansion into urban water systems during Year 4. A second weighing lysimeter to expand green roof research at SUU was funded in Year 4 under iUTAH's RCG program. In addition to allowing for measurement of evapotranspiration in urban areas along a latitudinal gradient, this instrumentation has also been a crucial catalyst for education and outreach activities funded by iUTAH EOD Innovation Awards, further strengthening our museum partnership with GJFMNH. Another example of a lasting product built by iUTAH physical infrastructure is the NHMU Digital Interactive co-created by researchers in RFA1/GAMUT, RFA3, and iVL, as well as educators from NHMU. This "kiosque"-style display will continue to undergo modifications in response to visitor feedback and is expected to become a permanent part of the Great Salt Lake ecosystem exhibit at NHMU.

All three of iUTAH's analytical facilities (SIRFER, BUGI, and the Aquatic Biochemistry Lab) are operational; have greatly expanded analytical capabilities across institutions; and are open to all researchers regardless of their affiliation. Initial results from research conducted at GIRF are beginning to inform planning at the institution level: for example, UU just committed to a \$1M investment in the renovation of one of its campus structures that will incorporate and expand on GIRF ideas. iUTAH CI has developed into a powerhouse of cutting-edge hydroinformatics research in particular, and "big data" work in general, and is increasingly being looked towards to guide efforts at, e.g., USU, to train faculty for life in a "big data" world.

### **What is the impact on institutional resources that form infrastructure?**

iUTAH continues to strengthen and improve the institutional resources of all participating institutions, which, for the first time in Year 4, include all 10 institutions of higher education in the state of Utah. From inception through Year 4, iUTAH participants have submitted 137 proposals that collectively generated in excess of \$18M in new funding for these institutions. iUTAH continues to strengthen and expand our network of external partners (up from 62 in Year 3 to 72 in Year 4), allowing all of our participating institutions to leverage these additional resources and expertise in the pursuit of their mission and goals. Our facilities, including GAMUT, BUGI, and iVL, will continue to provide important place-based infrastructure for research, education, and stakeholder engagement for the future. To that end, initial commitments of institutional support for many of these facilities has either been secured or is being actively pursued by iUTAH.

Because of its unique positioning as a statewide, interdisciplinary and cross-institutional research and training program with and advanced project management infrastructure, iUTAH has established itself as a trusted partner in the conduct and administration of complex, collaborative, team science-based research. For example, the iUTAH Project Office has been approached by USU's Office of the Vice President for Research and Dean of the

School of Graduate Studies to aid in the implementation a new institutional policy that expands USU's safety policy to field research; with the ultimate goal of generating a set of standard operating procedures, resources, and a process for monitoring compliance.

### **What is the impact on information resources that form infrastructure?**

The iUTAH CI team has become a critical component that integrates all iUTAH research activities by serving as a clearinghouse for the planning of data collection efforts; monitoring and administration of data compliance; as well as discovery, access, and long-term archival of all iUTAH data products. Because many of the data products generated by iUTAH are novel, this has proven to be a source of substantial innovation, the impact of which will likely be felt within the area of hydroinformatics and beyond for years to come. For that same reason, it is likely that CI researchers will be involved, in a substantive way, in charting potential trajectories for ensuring the permanence of iUTAH data resources beyond the end of the project, continuing the cycle of innovation.

### **What is the impact on technology transfer?**

Lasting impacts in RFA1 include the substantial contributions of GAMUT technicians to advances in managing and performing QA/QC of datastreams from large, geographically dispersed sensor networks. Through leveraged funds, Dr. Scott Jones and associates of USU have developed a new heat pulse sensor to measure soil water infiltration. This new product has received attention in both print and broadcast media as it could help water managers better track snowmelt processes at a fraction of the cost of current monitoring. RFA2's social science team has developed a number of novel survey methodologies that began to find their way into the peer-reviewed literature in Year 4. As these methods are encountered by a wider audience, they are likely to be adopted and adapted for a wider range of uses by other researchers in the field. CI continues to develop, modify, and adapt to a greater range of potential uses, software packages made available to the public in Year 3. This includes the web-based graphical user interface that was developed for the iUTAH GAMUT sensor data management database; a software program for managing and performing quality control of streaming sensor data; tools from the CUAHSI Hydrologic Information System (databases, web services, etc.) that have been refined and expanded for managing the streaming sensor data from GAMUT; and an extension to the existing CUAHSI HIS Observations Data Model (ODM) to assist RFA1 researchers in managing the sensor and data collection infrastructure across GAMUT. Work to adapt iUTAH databases to a wider range of data products, including sample-based observations from RFA1, as well as RFA2's engineering group, is ongoing; and will likely contribute further to these ongoing software refinements.

### **What is the impact on society beyond science and technology?**

There can be no doubt that a project that has engaged almost 130,000 people over the course of single year—on levels ranging from a fleeting, passive contact on the order of minutes using an informational display in one of our 3 experimental watersheds, to intensive interaction through a rigorous 12-week summer REU, and everything inbetween—will have a lasting impact on the population of our state, and will make a significant contribution to building Utah's next generation STEM workforce; a research culture that exemplifies the highest ideals of engaged scholarship; and an informed and engaged citizenry whose attitudes and behaviors will ultimately decide the future course of economic and ecological development of the Intermountain West. iUTAH believes that creation of an inclusive environment for STEM participants at all levels of knowledge and desired engagement is the best guarantor of that future. Working actively to open up opportunities to underrepresented groups, including women, Native Americans, and Hispanics, has been a hallmark of iUTAH Year 4 activities, and is beginning to show results. Participation of women now routinely approaches or exceeds 50% across iUTAH research, training, and education programs; and URM participation is significantly increased over previous years, approaching 20% in many programs.

With so much to offer potential partners in industry and government, particularly at the state and municipal level, it is no surprise that Year 4 was also characterized by the establishment of substantive, two-way working relationships with state agency staff and administrators, professionals, and elected office holders. The sharing of relevant results from RFA2's social science research with municipalities across the state has resulted in new

agreements to share data so we may all develop a better understanding of water use behavior that can inform future policy. Efforts in stormwater monitoring that were expanded in Year 3 have proven beneficial not only to iUTAH researchers, but to municipalities as well. This has raised the profile of iUTAH research and should allow our work to directly influence water management decisions in the future.

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## Changes/Problems

### Changes in approach and reason for change

#### 1. Research

RFA1: The initial goal of building single models to fully represent water yield and water quality across iUTAH watersheds was first abandoned in Year 3 and is reflected in the August 21, 2015 revision of Year 3 milestones in the iUTAH Strategic Plan. However, since this was neither discussed explicitly in the Year 3 Annual Report, nor logically followed through by adjusting subsequent Year 4 and 5 milestones in the revised Strategic Plan, we address this change here now, and will submit revised Strategic Plan milestones to NSF for approval. Many of RFA1's research objectives center around controls of water balance and water quality as related to biophysical processes, as well the human dimensions that impact both water quantity and quality. In terms of water quantity, the term "water balance" better reflects RFA1 research than "water yield," since yield (implying surface water runoff) is only one aspect of the water balance studied by RFA1 researchers. The slab model produced by Smith and Strong predicts water yield, and the greatest uncertainty in the water balance is evapotranspiration, which is being studied empirically by Jones, Pardyjak, Stoll, and their students. These results will inform subsequent modeling activities by the RFA3 team. The RFA1 milestone related to water quality was changed in the August 2015 Strategic Plan from modeling to empirical work: "collect surface water chemistry." This been done in spades (through routine sampling and synoptic sampling) and manuscripts are in preparation that analyze hydrochemical results in the context of the iSAW model.

RFA2: After extensive discussions among RFA2 researchers and in consultation with RFA3, a decision was made to pursue incorporation of the urban typology into coupled systems modeling activities in a stepped-down fashion by (1) using a simplified version of the typology as a first step in land-use change modeling; and (2) expanding on this effort in a manner that reflects the full complexity of the urban typology framework once the initial prototype model is up and running. Year 4 also saw a significant change in the engineering group of RFA2: in response to the needs of researchers, GIRF was completely rebuilt with greatly enhanced experimental and observational capacities. The new facility has an increased capacity for mixing and distribution of synthetic stormwater, monitoring drainage, and measuring soil/atmosphere exchanges.

#### 2. CI

Pursuit of a DataOne member node was officially abandoned by iUTAH CI in Year 4. Alternative options for long-term archival of iUTAH data will be explored in Year 5. Because CI lacks the capacity for assigning digital object identifiers (DOIs), discussion of assigning DOIs to iUTAH data products will be postponed until a decision on long-term archival has been made. Nevertheless, both iUTAH and external datasets are fully discoverable, accessible, and citable through MDF.

#### 3. EOD

DE: The 2015 iUTAH Diversity Conference was a cross-institutional event engaging iUTAH team members and stakeholders. The event featured a keynote presentation by Dr. Pamela Perlich from UU, and Angela Enno from USU. The conference did not focus exclusively on Hispanic Americans, rather, it addressed Utah's changing demographics and diversity in general, of which Hispanic Americans play a large role. Attendee response to this meeting was overwhelmingly positive.

WFD: Rather than recruit new GRAs, to assure the timely completion of iUTAH research objectives across RFAs, a decision was made to continue funding of productive GRAs already working with iUTAH. Thus, the number of

new GRAs hired in Year 4 is quite small and falls well short of the goal set in the Strategic Plan. For similar reasons, we retained all post-docs hired in Year 3. Another change affected administration of one of WFD's signature programs, RCGs. Here, iUTAH Project Management assumed an expanded role in Year 4, whereas the program had previously worked much more autonomously. This was done to leverage iUTAH Project Office resources more effectively in support of the RCG program to increase compliance with iUTAH data, safety, and responsible conduct of research policies; improve subaward monitoring; and facilitate student tracking. The iUTAH Traineeship program, which began as a small pilot to supplement iUTAH internship initiatives in Year 3, was found to be highly successful. As a result, a decision was made in Year 4 to permanently replace the internship program with the Traineeship Program. Many of the first cohort of trainees hired in Year 3 were retained in Year 4, which greatly contributed to the substantial progress made in GAMUT's QA/QC and ratings curves work.

## **Actual or Anticipated problems or delays and actions or plans to resolve them**

### *1. Project Management*

With a number of specific requirements imposed on Project Management by the iUTAH awards Programmatic Terms and Conditions, including Year 4 NSF Reverse Site Visit (RSV) and the American Association for the Advancement of Science (AAAS) Research Competitiveness Program (RCP) Site Visit, this was a busy year for the Project Office. As a result, regular staff meetings were held at a lower frequency than envisioned in the Year 4 milestones. Instead, much of the business normally conducted during these meetings was carried out via e-mail.

### *2. Research*

RFA3: RFA3's role in integrating RFA1 and RFA2 research may be redundant to some extent, in that much of this integration has been occurring, and continues to occur, organically through ongoing collaborations. However, there is a realization that additional integrative activities need to originate with RFA3, which is a fact pointed out both in the RSV Report and the draft AAAS report. Ultimately, this is a question of resources. Thus, conversations are ongoing on how to redistribute iUTAH's finite resources to facilitate greater integrative capacity within RFA3. The completion of coupled modeling software, another RFA3 signature product, is behind schedule. This is not to say that there is not tremendous progress: the software already includes a graphical user interface for composing coupled models, as well as specifications for the interfaces that model components must implement to participate in coupled model compositions (largely based on the OpenMI standard). We are now exploring how this system can potentially interact with HPC systems and other systems that enable remote execution of models (e.g., a potential partnership with the HydroShare project) to bring greater computational capabilities to the model coupling work. Here, conversations are also occurring about how to direct additional resources to Tony Castronova's research group to facilitate timely completion.

### *3. CI*

Full incorporation of modeling data products in the form of inputs, outputs, and simulations has not yet been accomplished. Doing so will require adapting iUTAH Data Policy and MDF database support to the unique requirements associated with these data products. This will be a topic of discussion by the Data Policy Committee in late Year 4/early Year 5.

### *4. EOD*

DE: A handbook of best practices for recruitment and retention has not been completed. Discussions are ongoing about redirecting resources to this effort in Year 5.

WFD: Despite strong and sustained engagement with 5 of Utah's PUIs over the first 3 years of the iUTAH project, PUI engagement at the end of Year 3 was incomplete: an existing relationship with Dixie State University (DSU) dating back to Year 1 had not been maintained, and attempts at partnering with Snow College never yielded any lasting success. Early in Year 4, iUTAH Assistant Director and Project Administrator Andreas Leidolf and EOD Coordinator Ellen Eiriksson visited with old and new partners across the state over a 3-day period in October 2015, strengthening existing relationships and forging new ones. This effort has resulted in a re-engagement of

DSU, as well as a new and growing partnership with Snow College (iPad Survey) that is expected to be maintained through the end of the iUTAH project and beyond.

EE: Given the late completion of GIRF almost 2 years behind schedule in the third quarter of Year 4, it is no longer feasible to design a new Citizen Science program for GIRF in the time that remains in the iUTAH project. This milestone will thus be abandoned.

#### **Changes that have a significant impact on expenditures**

Nothing to report.

#### **Significant changes in use or care of human subjects**

Nothing to report.

#### **Significant changes in use or care of vertebrate animals**

Nothing to report.

#### **Significant changes in use or care of biohazards**

Nothing to report.

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## **Special Requirements**

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

The award terms and conditions of the Utah EPSCoR Track-1 award specify two Special Requirements for Year 4: an RSV at NSF headquarters, and a site visit by AAAS RCP.

Pursuant to an invitation by the NSF EPSCoR Office, 10 senior members from iUTAH's project management, research, and EOD teams visited with NSF EPSCoR staff and an international panel of experts for a comprehensive review and assessment of all project activities and elements. The RSV was conducted on September 10, 2015, at NSF headquarters in Arlington, Virginia. A panel report was submitted to iUTAH via the NSF EPSCoR Program Officer on October 23, 2015. iUTAH's comprehensive response to the report was submitted on November 23, 2015. A follow-up request for clarification and additional information was received from NSF on December 18, 2015. An addendum to iUTAH's response addressing this follow-up request was submitted to NSF on January 22, 2015. iUTAH's response to the panel report as expressed in these two documents was deemed acceptable by NSF on February 4, 2016, thus concluding the RSV process.

In November of 2015, iUTAH began planning its Year 4 AAAS RCP Site Visit in close coordination with the AAAS facilitator, Dr. Heather McInnis. A panel of three experts, all of whom had participated in the Year 2 AAAS RCP Site Visit, and thus were familiar with the iUTAH project, visited with iUTAH leadership, researchers, EOD staff, PUI faculty, student cohorts, as well as the Executive Committee of the State EPSCoR Committee, from March 6-8 at the UU campus in Salt Lake City, Utah. In addition to a summative evaluation of iUTAH project activities and elements, including an assessment of iUTAH's likely legacy, the panel focused on a forward-looking assessment of productive areas of future research emphasis and promising strategies for the institutionalization of the enhanced statewide research and training capacity facilitated by EPSCoR and built by iUTAH. A comprehensive panel report is expected by the end of April or early May of 2016.

### **Supporting Files**

<b>Filename</b>	<b>Description</b>	<b>Uploaded By</b>	<b>Uploaded On</b>
iUTAH_RSV_Report_Year_4_Cover_Letter.pdf	Cover letter from	Michelle	04/29/2016

Filename	Description	Uploaded By	Uploaded On
	NSF EPSCoR accompanying the Year 4 RSV panel report.	Baker	
iUTAH_RSV_Report_Year_4.pdf	Year 4 RSV panel report to iUTAH EPSCoR.	Michelle Baker	04/29/2016
iUTAH_RSV_Report_Year_4_Response.pdf	iUTAH response to Year 4 RSV panel report.	Michelle Baker	04/29/2016
iUTAH_RSV_Report_Year_4_Response_Followup.pdf	NSF EPSCoR follow-up to iUTAH response to the Year 4 RSV panel report.	Michelle Baker	04/29/2016
iUTAH_RSV_Report_Year_4_Response_Addendum.pdf	iUTAH addendum to the response to the Year 4 RSV panel report.	Michelle Baker	04/29/2016
iUTAH_RSV_Report_Year_4_Response_Acceptance.pdf	Acceptance letter from NSF EPSCoR of iUTAH's response to the Year 4 RSV panel report.	Michelle Baker	04/29/2016