

A photograph of a river with rapids and a kayaker. The kayaker is in the middle of the rapids, wearing a red helmet and a black jacket. The water is turbulent and white with foam. The river is surrounded by trees and a bridge in the background. The sky is blue with some clouds.

Utah Nonpoint Source Pollution Management Program Fiscal Year 2022 Annual Report

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UTAH DEPARTMENT *of*
ENVIRONMENTAL QUALITY
**WATER
QUALITY**

Table of Contents

| | |
|--------------------------------------------------|----|
| Table of Contents | 1 |
| Introduction and Program Overview | 3 |
| Grant Management and Program Administration | 4 |
| 319 Grants | 4 |
| State Nonpoint Source Grants | 6 |
| Staffing and Support | 9 |
| FY 2022 Accomplishments and Milestones | 9 |
| Accomplishments | 10 |
| Milestones | 11 |
| Project Highlights | 17 |
| Local Watershed Coordinators | 17 |
| Agricultural Voluntary Incentive Program (AgVIP) | 17 |
| Southeastern Colorado River | 18 |
| Project Implementation | 18 |
| Monitoring | 21 |
| Bear River Watershed | 24 |
| Project Implementation | 24 |
| Monitoring | 25 |
| I&E Efforts | 25 |
| Other highlights | 25 |
| Jordan River | 27 |
| Overall Accomplishments | 27 |
| Monitoring | 28 |
| Other Efforts | 29 |

| | |
|------------------------------------------------------------|-----------|
| Provo River/Utah Lake | 30 |
| Projects implementation | 30 |
| AgVIP | 33 |
| Monitoring | 33 |
| I&E Efforts | 33 |
| Other highlights | 34 |
| Upper Sevier River | 41 |
| Fremont River, San Pitch, Middle Sevier River, Otter Creek | 45 |
| I&E Efforts | 45 |
| Weber River | 46 |
| Project Implementation | 46 |
| Monitoring | 48 |
| Trainings | 48 |
| Conferences | 49 |
| Utah State University Water Quality Extension | 50 |
| Utah Water Watch Public Science Water Quality Monitoring | 50 |
| Youth Outreach and Teacher Training | 52 |
| Statewide Water Quality Outreach Campaigns | 53 |
| Mud Creek Restoration | 56 |
| Lower Weber River Restoration Project | 60 |
| Acknowledgements | 61 |

Introduction and Program Overview

This report meets the requirements of Section 319(m)(1) of the federal Clean Water Act of 1987. The Utah Department of Environmental Quality (DEQ), Division of Water Quality (UDWQ) prepares this report annually to inform the public, the U.S. Congress, and the U.S. Environmental Protection Agency (EPA) on the state's progress in nonpoint source water pollution management. While this report should not be considered a complete account of all nonpoint source activities, it describes the most important features of Utah's program.

The purpose of the Utah Nonpoint Source Pollution Management Program (NPS Program) is to support the environmental protection goals of the state as described in Utah Administrative Code (UAC) R317-2, in part to:

1. Eliminate pollution which creates hazards to public health.
2. Protect, maintain, and improve the quality of the Waters of the State for public water supplies, species protection and propagation, and other designated uses.
3. Provide for the prevention, abatement, and control of new or existing sources of polluted runoff.

The NPS Program seeks to achieve these goals by working with numerous local, state, and federal agencies and private parties pursuant to the Nonpoint Source Management Plan.

Nonpoint source pollution refers to the contamination of water with pollutants that are generated from a wide range of diffuse sources across a landscape. Individually, small sources of pollution such as fertilizer running off an agricultural field, or sediment mobilized by road runoff do not cause problems, but the accumulation of pollution from multiple sources, particularly at the watershed scale, leads to water quality degradation that can significantly affect streams, lakes, and reservoirs. Nonpoint source pollutants can include sediment, nutrients, pathogens (bacteria and viruses), toxic chemicals, pesticides, oil, grease, salts, and heavy metals. The most common pollutants in Utah are nutrients, pathogens, metals, sediment, and salts. These pollutants alter the chemical, physical, and biological integrity of the water and can impair their designated beneficial uses (e.g., drinking water, recreation, aquatic life, and/or agriculture), but in many cases the presence of nonpoint source pollution reflects broader watershed degradation. Some common sources of nonpoint source pollution include agricultural activities, runoff from paved surfaces, mining and timber operations, recreational activities, onsite septic systems, construction, stream/riparian habitat degradation, and natural sources.

Unlike traditional sources of pollution, such as stormwater or wastewater effluent emanating from the end of a pipe, which are regulated through a permitting system, nonpoint source pollution is not regulated by the State of Utah. It is managed through education, outreach, and incentives. The UDWQ assesses all waters in the state through its Integrated Report program, and waters that do not meet designated water quality standards for a beneficial use are placed on a list of impaired waters also known as the 303(d) list. Most waters on this list in Utah are impaired due to nonpoint source pollution.

Grant Management and Program Administration

319 Grants

The EPA provides funding to the states to manage nonpoint sources through the 319 program. The EPA awarded UDWQ \$1,547,000 in federal Section 319(h) funds in Federal Fiscal Year 2022. UDWQ typically subawards Section 319(h) funds to project sponsors at the local and state level to help address priority water quality concerns caused by nonpoint sources of pollution. Subrecipients typically include local governments, conservation districts, watershed groups, and individual cooperators. In FY2022, these funds were allocated to four specific projects:

- \$498,443 was used for program related staffing and support within UDWQ's Watershed Protection Section (see Staffing and Support).
- \$500,000 was used to support the local watershed coordinators and the Agricultural Voluntary Incentive Program (AgVIP) through a subaward agreement with the Utah Department of Agriculture and Food (UDAF). This agreement supports six UDAF staff - five local watershed coordinators who live and work in high priority watersheds throughout the state, and the statewide AgVIP coordinator.
- \$77,004 was used to support the Utah State University Water Quality Extension program, which includes several outreach and education initiatives (described below) and the Utah Water Watch, a statewide citizen science initiative.
- \$471,553 was subgranted to the Piute Conservation District to implement water quality improvement projects in the Otter Creek watershed (HUC: 16030002).

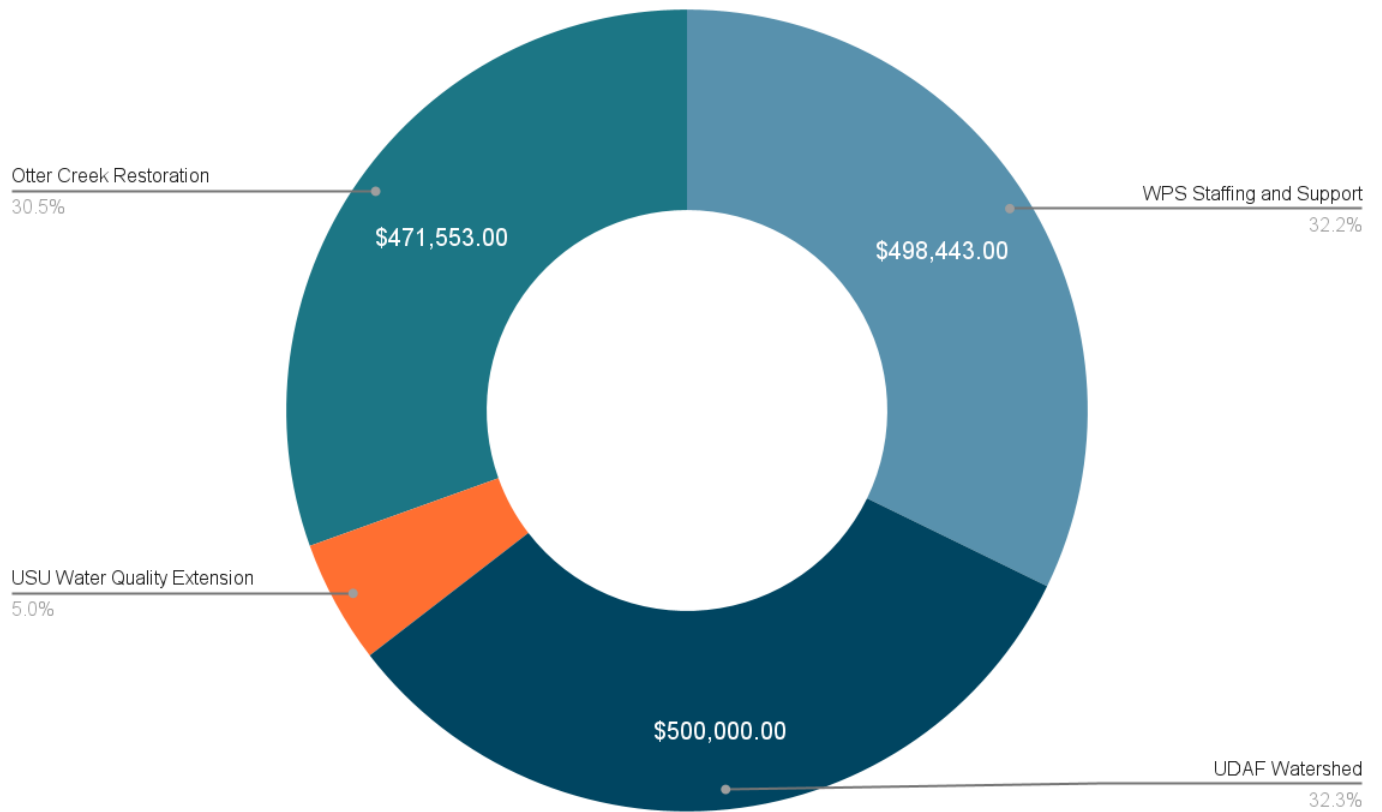


Figure 1: Federal FY2022 Section 319(h) funding allocations.

Table 1: Federal 319(h) Funding Project Allocations Open agreements

| Federal Fiscal Year | Grant Award | Expenditures in FY2022 | Total Expenditures | Percent Expended |
|---------------------|-----------------------|------------------------|-----------------------|------------------|
| FY 2018 | \$970,494.00 | \$285,378.57 | \$997,384.57 | 103% |
| FY 2019 | \$959,059.00 | \$416,679.25 | \$951,681.25 | 99% |
| FY 2020 | \$879,703.00 | \$123,898.69 | \$673,676.69 | 77% |
| FY 2021 | \$1,047,000.00 | \$46,315.37 | \$46,315.37 | 4% |
| FY 2022 | \$1,048,557.00 | \$0.00 | \$0.00 | 0% |
| Total | \$4,904,813.00 | \$872,271.88 | \$2,669,057.88 | 54% |

State Nonpoint Source Grants

The Utah Water Quality board allocates \$1 million in hardship grant funding annually to the Utah NPS Program to support nonpoint source projects and activities. This state funding, generated by recycled interest from Clean Water State Revolving Loan Fund (SRF), is used to supplement the federal 319(h) grants, and is often used to satisfy the 40% nonfederal match requirement of the 319 program. The UDWQ received a total of 59 applications for Nonpoint Source and 319(h) funding in March-April 2022. Forty-five of the projects were approved to receive funding from both the Nonpoint Source Program and 319(h) funding. Funded projects range from on-the-ground implementation of watershed best management practices (BMPs), to wastewater improvements of animal feeding operations, to a rich assemblage of information and education initiatives.

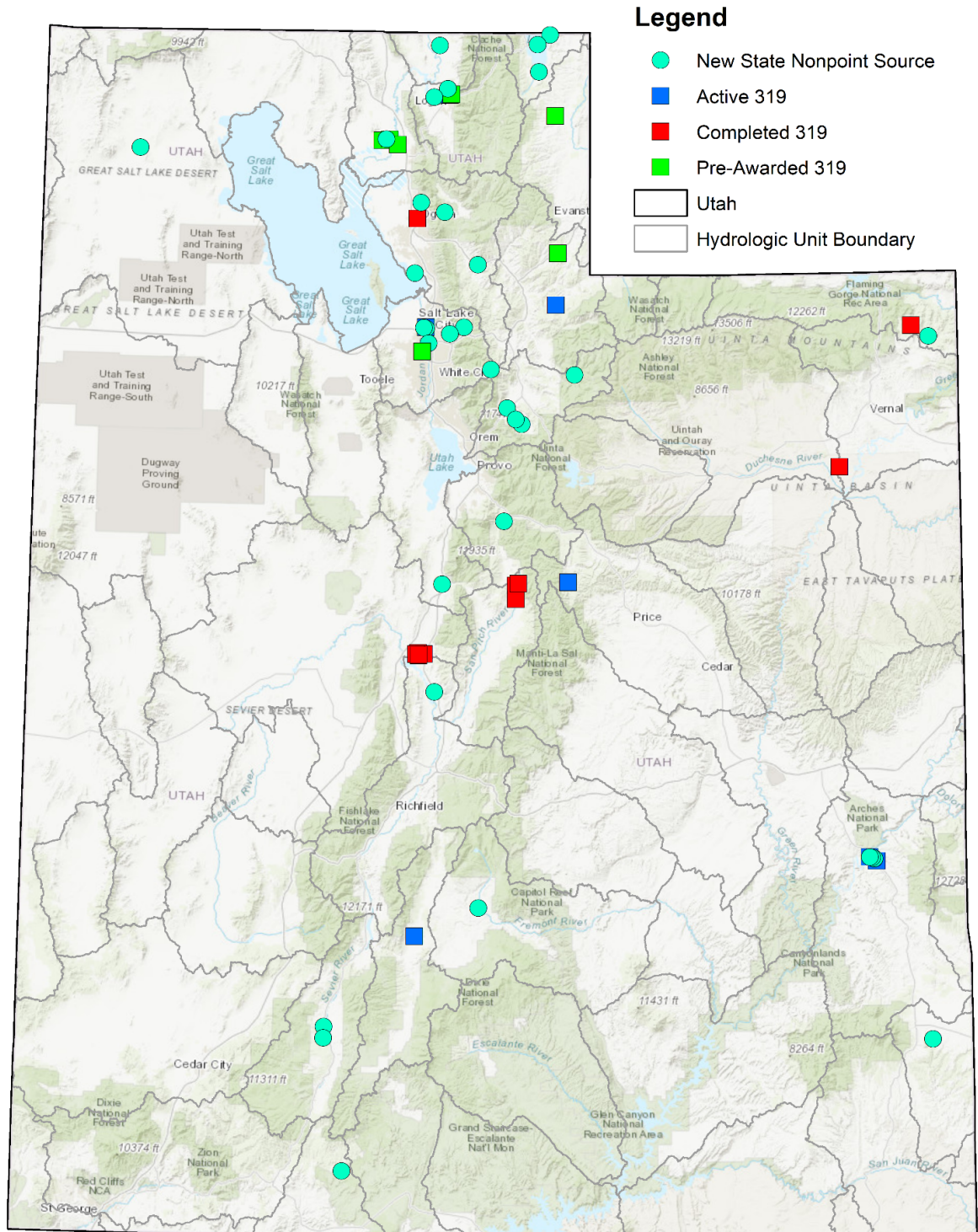
Project highlights include:

- Large scale riparian vegetation and stream bank restoration on Mill and Pack Creek near Moab to reduce water temperatures.

- Implementation of the small farm water quality project in cooperation with Utah State University Extension, promoting improved animal waste management on small farms.
- The development of watershed plans on the lower Weber River/northern Davis County and Ogden River.
- Large scale demonstration of surge irrigation and automated valve systems to reduce agricultural field runoff along the lower Bear River.
- Support for the Utah WaterWatch Program in partnership with Utah State University Water Quality Extension.
- Implementation of a large-scale process-based restoration initiative in Echo Creek, located in northern Utah.

Table 3: Funding allocations for State Fiscal Year 2023 nonpoint source projects, and pre-award authorizations for 319 projects for Federal Fiscal Year 2023.

| Category | Total Recommended 319 Allocation | Total Recommended NPS Allocation | No. of Projects Proposed | No. of Projects Funded with 319 | No. of Projects Funded with NPS |
|--------------------------------------------|----------------------------------|----------------------------------|--------------------------|---------------------------------|---------------------------------|
| BMP Implementation (AFO Waste Management) | \$0.00 | \$146,152.00 | 7 | 0 | 5 |
| BMP Implementation (Onsite Wastewater) | \$0.00 | \$98,000.00 | 2 | 0 | 2 |
| BMP Implementation (Watershed Improvement) | \$456,404.00 | \$448,730.60 | 28 | 5 | 13 |
| Technical Assistance | \$500,000.00 | \$87,000.00 | 4 | 1 | 3 |
| EPA 9-Element Watershed Plan Development | \$0.00 | \$75,000.00 | 2 | 0 | 2 |
| Equipment Purchase | \$0.00 | \$40,000.00 | 2 | 0 | 2 |
| Information and Education | \$90,596.00 | \$46,152.00 | 8 | 1 | 7 |
| Monitoring | \$0.00 | \$58,965.40 | 5 | 0 | 4 |
| Other | \$0.00 | \$0.00 | 1 | 0 | 0 |
| Grand Total | \$1,047,000.00 | \$1,000,000.00 | 59 | 7 | 38 |



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Figure 2: All active, and completed 319 projects, plus new state Nonpoint Source projects awarded for FY-2023, and 319 projects approved and in the preapproval process.

Table 4: Funds leveraged with 319 funding. These funds are estimated match provided by applicants of approved projects in 2022.

| Source | Amount |
|---------------------------------------|-----------------------|
| State Nonpoint Source | \$1,000,000.00 |
| Private | \$340,132.45 |
| Utah Watershed Restoration Initiative | \$171,500.00 |
| Agricultural Water Optimization | \$1,048,362.34 |
| Other Nonfederal | \$370,028.40 |
| NRCS | \$2,915,847.40 |
| Other Federal | \$157,400.00 |
| In-Kind | \$1,632,650.26 |
| Total | \$7,635,920.85 |

Staffing and Support

UDWQ employed nine employees, fully or partially, with funding from the Section 319 Performance Partnership Grant (PPG) in FY 2022. Section 319 PPG funding was utilized to fund 4.75 of the nine full-time employees (FTE) utilized for these positions.

FY 2022 Accomplishments and Milestones

FY 2022 was a year of transition for the Utah NPS Program. This included hiring a new nonpoint source program coordinator and two local watershed coordinators who implement the 319 grant for the Utah Department of Agriculture and Food. The change in staffing represented an opportunity to evaluate aspects of the NPS Program that were functioning well, and others that had potential for improvement.

Accomplishments

- We evaluated the 319 and nonpoint source funding application process and improved upon it with the development of an online form to collect application information. The form and data structure of the application allowed us to easily evaluate the applications and analyze the data we collected from applicants.
- We accepted nonpoint source grant applications from March 7-April 22, 2022, and reviewed 59 projects.
- We coordinated closely with the EPA to develop a state-specific approach for the Utah Nonpoint Source Clean Water Needs Survey. As of the drafting of this report, we have conducted outreach to all major watershed groups, coordinators, and partners throughout the state and identified 69 critical nonpoint source water quality project needs. The survey results will be submitted to the EPA in February, 2023.
- Utah closed out the FY 2019 and 2020 Section 319 grants and entered all required information into the Grants Reporting and Tracking System (GRTS).
- The Utah NPS program coordinated with several active watershed groups across the state providing information on how the UDWQ can support the efforts of those groups.
- The Utah NPS program was active in the development of a new high frequency database. This database will host all of our data logger data used for project monitoring and assessment.
- The Utah NPS program was active in reviewing the final Heber Valley and Pot Creek watershed-based plans.
- The Utah NPS program reviewed over 300 projects funded by the American Rescue Plan Act (ARPA) for agricultural water optimization. The Agricultural Water Optimization program was administered through the Utah Department of Agriculture and Food.
- The UDWQ collaborated with EPA and Ogden City Staff to host an event celebrating the 50th Anniversary of the Clean Water Act by hosting KC Becker, EPA Region 8 Administrator; Radhika Fox, Assistant Administrator for EPA's Office of Water; and Kim Shelley, Executive Director of the Utah Department of Environmental Quality on September 19, 2022. This event included Agency and NGO partners as well as the press.



Milestones

Table 5: Tracking metrics of milestones in Utah’s nonpoint source management plan over the past four years.

| Milestone | 2019 | 2020 | 2021 | 2022 |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective 1: Environmental Protection: | | | | |
| Number of TMDLs completed | 0 | 1 | 1: Spring Creek <i>E.coli</i> TMDL | 1: Jordan River Watershed-wide <i>E. coli</i> . |
| Number of TMDLs initiated | 1. Jordan River Phase 2 for DO 2. Spring Creek TMDL for <i>E.coli</i> | 1. Jordan River watershed-wide for <i>E.coli</i> | | 0 1: Grand County E.coli TMDL |
| Number of 9-Element Watershed-Based plans completed | 0 | 0 | 0 | 0 1. Pot Creek Watershed Plan 2. Heber Valley (Spring Creek) 3. Emigration Creek |
| Number of 9-Element Watershed-Based plans initiated | 1. Otter Creek 2. Heber Valley (Spring Creek) | 1. Emigration Creek 2. Pot Creek | | 0 1. Lower Weber River 2. Ogden River |
| Number of projects dedicated to the protection of threatened waterbodies identified in Utah’s 303(d) list | None of the projects funded in 2019 were focused on the protection of threatened waterbodies. All proposals were located in a watershed that was previously listed on the 303(d) list of impaired waterbodies. | The Spanish Fork River Project was dedicated to the protection of the Lower Spanish Fork River. This project will focus on improved irrigation practices as well as stream bank improvement practices. \$100,000 was dedicated to this project. | All project proposals funded were located in a watershed that was previously listed on the 303(d) list of impaired waterbodies. | The Utah NPS Program funded one project on an animal feeding operation near Yuba Reservoir in 2022. The dairy is immediately adjacent to the reservoir and excess runoff flows directly in the reservoir. The project will reduce wet weather runoff. |

| Milestone | 2019 | 2020 | 2021 | 2022 |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of projects focused on groundwater protection throughout the state | <p>\$62,000 was dedicated to the development of an onsite waste water demo site in Southern Utah, similar to the one that currently exists at Utah State University in Cache Valley.</p> <p>\$35,000 was awarded to DWQ to assist landowners with septic systems that are failing to improve their systems. The purpose of this is a hardship grant for those that otherwise could not afford it.</p> | <p>\$35,000 was awarded to DWQ to assist landowners with septic systems that are failing. This is a hardship grant for those that otherwise could not afford it.</p> <p>\$8,000 was awarded to the South Eastern Health Department to help develop an onsite wastewater digital database.</p> | <p>\$45,894 was awarded to DWQ to assist landowners with septic systems that are failing. This is an NPS hardship grant for those that otherwise could not afford to fix it themselves due to financial hardships.</p> <p>\$19,000 was awarded to the Southeastern Health Department to help develop Phase II of an onsite wastewater digital database.</p> | <p>The NPS Program funded two projects focused on onsite wastewater management (e.g. failing septic systems). We funded a pilot project in the Emigration Creek watershed (Jordan River Watershed), for \$38,000.</p> <p>Another \$60,000 was allocated to a hardship grant program that provides resources to property owners who may not have the capacity to afford septic system repairs.</p> |

Objective 2: Improve Program Efficiency and Effectiveness Through Reporting and Evaluation

| | | | | |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Total Number of Stream Miles Restored | <p>4.49 miles of stream restoration was implemented in FY 2019. This includes projects implemented using 319, state NPS, and NRCS EQIP funding.</p> <p>3.8 miles of fencing was installed to better control grazing in both the uplands and riparian areas.</p> <p>78.44 acres of riparian planting was completed in 2019</p> | <p>9.07 miles of streambank was restored in FY 2020, Much of the restoration work took place in the San Pitch and Upper Sevier Watersheds. This includes projects implemented using state NPS, 319, and NRCS EQIP funding.</p> <p>Two animal feeding operations were addressed using FY 2020 NPS Funding.</p> <p>105 acres of riparian Improvement was implemented in FY 2020.</p> | <p>9.59 miles of streambank were restored in FY 2021. Much of this restoration work took place in the San Pitch and Upper Sevier River Watersheds.</p> <p>2.5 miles of riparian fencing was installed to better control grazing.</p> <p>6.1 miles of pipeline was installed to help install systems that will distribute cattle better across the landscape, thus reducing pressure on the riparian areas.</p> <p>167 beaver dam analog structures were installed.</p> | <p>1.48 Miles of Streambank</p> <p>1.47 miles of riparian fence</p> <p>800 feet of pipeline</p> <p>2 fish passage projects</p> <p>50 beaver dam analogs</p> |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Milestone | 2019 | 2020 | 2021 | 2022 |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Total estimated load reductions reduced in project areas (includes reductions from annual and final reports) | Nitrogen: 3,971.2 lbs/year Sediment: 1,319.8 tons/year Phosphorous: 1,156.5 lbs/year | Nitrogen: 4,772 lbs/year Sediment: 1,567.51 tons/year Phosphorous: 852.24 lbs/year | Nitrogen: 4,288.2 lbs/year Sediment: 985.9 tons/year Phosphorous: 1,027 lbs/year | Nitrogen: 12,603 lbs/year Sediment: 6802.4 tons/year Phosphorus: 4,969 lbs/year |
| Number of final project reports submitted (see Table 10) | 5 | 5 | 2 | 8 |
| 319 Grants closed during the fiscal year | FY 2015 | FY 2016 | FY 2017 | FY2019 |
| Amount of unexpended funds in each open 319 grant (see Table 1) | FY 2015: \$20,722 FY 2016: \$278,074 FY 2017: \$223,888 FY 2018: \$816,409 FY 2019: \$959,059 | FY 2017: \$107,941 FY 2018: \$418,007 FY 2019: \$512,571 FY 2020: \$879,703 | FY 2018: \$258,487 FY 2019: \$424,056 FY 2020: \$329,925 FY 2021: \$1,047,000 | FY2018: -\$26,890.57 FY2019: \$7377.75 FY2020: \$206,026.31 FY2021: \$1,003,384.63 FY2022: \$1,048,557 |
| Number of success stories showing the environmental benefits of completed NPS projects submitted to EPA for approval | Main Creek- temperature delisting. | Spring Creek near Hyrum, Utah. Significant reductions in phosphorous and ammonium. | 1. East Canyon Reservoir (temperature, dissolved oxygen) 2. East Canyon Creek (macroinvertebrates) | In progress |

| Milestone | 2019 | 2020 | 2021 | 2022 |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective 3: Improve Public Participation and Understanding of NPS Issues | | | | |
| Number of participants involved in the statewide volunteer monitoring program | In 2019, Utah Water Watch had 109 individuals participate in water quality monitoring. | In 2020, Utah Water Watch had 121 individuals participate in water quality monitoring. | In 2021, Utah Water Watch had 53 individuals participate in water quality monitoring. | In 2022, Utah Water Watch had 44 individuals participate in water quality monitoring. |
| Number of I&E projects implemented with Section 319 and state NPS funding | <p>6 Projects</p> <ol style="list-style-type: none"> 1. Development of onsite wastewater demo site 2. 2018 Water Week 3. Provo River Watershed Education Days 4. Envirothon 5. Producer's website and small hobby farm education <p>-Volunteer Monitoring Program</p> | <p>8 Projects</p> <ol style="list-style-type: none"> 1. Wasatch Front Urban Ranger Program 2. Envirothon 3. Producer website and small farm education 4. Provo River Watershed Council Watershed education 5. Catalyst for Change. 6. Upper Sevier I&E 7. Volunteer Monitoring Program 8. Stormwater Prevention BMP Workshop. | <p>4 Projects</p> <ol style="list-style-type: none"> 1. Southeast Human Waste Initiative 2. AWWA Water Week 3. Producer Website 4. Utah Water Watch | <p>8 Projects</p> <ol style="list-style-type: none"> 1. Utah Chapter of the American Fisheries Society Sponsorship 2. Utah Envirothon 2023 3. Producer's Website 4. Upper Sevier I&E 5. Provo River Watershed Outreach and Education 6. Utah State University Extension I&E 7. NPS Outreach Fund 8. Coldwater Creek Outreach Event |
| Updates made to the state NPS program website | The NPS Program website is updated by Utah State University Extension as new information becomes available. | <p>In FY 2020, the DWQ website was updated with a project story map highlighting the large-scale projects implemented around the state as well as success stories highlighting projects that have resulted in delistings or significant pollutant reductions.</p> <p>https://deq.utah.gov/water-quality/nonpoint-source-projects-and-success-stories</p> | In FY 2021, only slight changes were made to the DEQ NPS website. Water Quality Task Force minutes were uploaded, grant recipients were announced, and the correct application materials were uploaded. | UDWQ staff updated the Utah Nonpoint Source Program website to include the FY2021 Annual report, plus provided links to the projects selected for funding on a story map. We also included links to the Utah Nonpoint Source Clean Water Needs Survey, and an application for the Utah Lake Preservation Fund through ARPA. |

| Milestone | 2019 | 2020 | 2021 | 2022 |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective 4: Improve Data Collection and Management | | | | |
| Track updates made to enhance NPS monitoring in the Division of Water Quality's annual monitoring strategy | There were no changes made to the FY 2019 statewide SAPs. A SAP was developed for Matt Warner Reservoir that will be implemented in FY 2020. Matt Warner Reservoir and Pelican Lake received the majority of funding in FY 2019. As a result, DWQ deployed water quality buoys with sensors that collect pH, temperature, dissolved oxygen, turbidity, and chlorophyll a data. | Only small changes were made to existing SAPs in FY 2020. The frequency in which samples would be collected was changed in the Main Creek, and North Fork, Virgin River Watersheds. SAPs were developed for the Lower Spanish Fork River and Big Bend Restoration Projects. | Only small changes were made to existing SAPs in FY 2021. SAPs were included for Otter Creek and Mud Creek. The Strawberry Reservoir tributaries were removed from the existing SAP due to a delisting in the reservoir. | There were no changes made to the statewide SAP. |
| Number of SAPs developed | No changes were made to the SAPs that were developed in 2019. One SAP was developed for Matt Warner Reservoir. All SAPs were effectively implemented in FY 2019. | SAPs were developed for the Lower Spanish Fork River Project and the Big Bend Project on the Jordan River. | SAPs were developed for Otter Creek and Mud Creek. | UDWQ staff worked collaboratively with the Utah Division of Wildlife Resources to develop a SAP to monitor project effectiveness and better understand flow regimes to Matt Warner Reservoir in the Uintah Basin. |
| Track status and updates of AWQMS database | Completed | Completed | Completed | Completed |
| Report on water quality data uploaded to the EPA's WQX database | All DWQ data is uploaded to AQWMS and the Water Quality Exchange on a regular basis. It is reported on in the Integrated Report. | All DWQ data is uploaded to AQWMS and the Water Quality Exchange on a regular basis. It is reported on in the Integrated Report. | All DWQ data is uploaded to AQWMS and the Water Quality Exchange on a regular basis. It is reported on in the Integrated Report. | All DWQ data is uploaded to AQWMS and the Water Quality Exchange on a regular basis. It is reported on in the Integrated Report. |

| Milestone | 2019 | 2020 | 2021 | 2022 |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective 5: Improve Coordination of Governmental and Private Sectors | | | | |
| Hold Annual NPS management program coordination meetings | Held February 28, 2019 | Held March 4, 2020 | Held February 23, 2021 | We did not hold an Annual NPS meeting in 2022 due to staff turnover. |
| Conduct annual consistency reviews with state and federal agencies | The federal consistency review tour was held October 17th, 2019. The tour was held in the Raft River Mountain Range area. A summary of the tour is found within this report. | No tours were held in FY 2020 due to the COVID-19 travel restrictions. | An EPA Region 8 NPS tour was held from August 30 to September 1, 2021. The federal consistency review tour was not held in FY 2021 due to COVID-19 restrictions. | No consistency reviews tours were completed in 2022 due to new staff and delayed timeframe with the 319/grant application process. We did host KC Becker, the Region 8 Administrator, and Radhika Fox the Assistant Administrator for EPAs office of water on September 19, 2022 in the City of Ogden to celebrate the 50th anniversary of the Clean Water Act. |
| Number of Water Quality Task Force meetings held during the fiscal year | Three Water Quality Task Force Meetings were held on: September 11, 2018, December 6, 2018, and June 27, 2019, | Three Water Quality Task Force meetings were held on September 10, 2019, December 5, 2019, and June 3, 2020, | Three Water Quality Task Force meetings were held: December 9, 2020, June 24, 2021, and September 9, 2021. | One meeting with task force members was held to review project applications in April 2022. |
| Amount of funding used to leverage 319 funding throughout the state | \$6,397,551 | \$6,184,892 | \$8,312,532 | \$7,635,921 |

Project Highlights

Local Watershed Coordinators

The Utah NPS program has developed a series of rolling 319(h) subaward agreements with the Utah Department of Agriculture and Food (UDAF) to hire and maintain Local Watershed Coordinators in critical watersheds across the state, and an Agricultural Voluntary Incentive Program Coordinator.

Agricultural Voluntary Incentive Program (AgVIP)

The AgVIP program was established in 2020 as a cooperative effort between the Utah Division of Water Quality and the Utah Department of Agriculture and Food to reduce nutrient runoff from fields through the development of Comprehensive Nutrient Management Plans, and a per-acre incentive for implementing best practices to reduce field runoff. Although initially administered by the Utah Division of Water Quality, the program was moved to the Utah Department of Agriculture and Food in 2022.

Program Highlights

- Hosted 4 AgVIP outreach events, 2 of which were in conjunction with Soil Health mini workshops
- Events were hosted in Lewiston, Panguitch, Vernal and Payson, UT
- Worked with DairyWest to share AgVIP information to all Utah Dairy Producers
- AgVIP now has contracts or applications in 20 of 29 counties in Utah
- 1 CNMP planner certification group training was held
- 5 individual CNMP planner certifications trainings were held
- 8 UDAF planners or watershed coordinators are now CNMP certified

Table 6: The Total amount of acres enrolled in the AgVIP program by year. *Note the 2022 projects were still in contract development at the writing of this report.

| Year | Number of Contracts | Acres enrolled | Funding Amount |
|-------|---------------------|----------------|----------------|
| 2020 | 29 | 19,312 | \$727,232 |
| 2021 | 66 | 37,323 | \$1,409,628 |
| 2022* | 33 | 33,798 | \$874,244 |

Southeastern Colorado River

Report provided by Arne Hultquist

This Watershed Coordinator Position is funded through a cooperative state nonpoint source agreement between the Utah Division of Water Quality and the Southeast Utah Health Department. This year's efforts built upon the accomplishments of 2021 and we continued to move towards increasing the quality of water in Grand and San Juan Counties. The watershed group in Grand County is the Moab Area Watershed Partnership (MAWP) and it has been a continuing force in resource conservation and water quality improvement. The partnership reviewed, revised and completed several sections of the Watershed Management Plan that had not been completed in 2021. A new section was developed to address the Pack Creek Fire, which has added a new set of resource concerns and watershed management opportunities for the MAWP. The amount of change in the MAWP watersheds in the last five years is surprising and those changes are reflected in the current version of the Moab Area Watershed Management Plan.

Project Implementation

Grand County

As of July 1, 2022 one project was completed in the last fiscal year and there are nine active projects in Grand County. Most of those are within the MAWP watersheds and some are County wide. They are listed in Table 1 with statistics on progress, loading, and costs.

Last year in Grand County, the MAWP supported requests for funding from the Nonpoint Source Program for four projects. Three of the four projects received full funding. Those projects have not been started as of July 1, 2022 because the contracts for those projects begin on that date. The projects titles are:

- Southeast Utah Watershed Coordinator: This project is ongoing funding for the watershed coordinator's position. There has been some discussion about moving the position from a contract with Southeast Utah Health Department (SEUHD) to the Utah Department of Agriculture or other entity.
- Microbial Source Tracking in Impaired Waterbodies of Grand County, UT: This has been a highly-sought-after project for the MAWP. The results will allow the Grand Conservation District (GCD) and the SEUHD to target stream segments for Best Management Practices (BMPs) that mitigate E. coli contamination.
- Mill Creek Watershed Improvement Project Phase VI: This project will support the continuation of BLM's restoration activities in Mill Creek Canyon, an Area of Critical

Environmental Concern. Efforts have been ongoing there for over five years with significant improvements in riparian health in areas previously treated.

- Mill and Pack Creek Active Revegetation Phase III: This project continues habitat restoration efforts on private and City of Moab lands. Again, efforts there have also been ongoing for over five years with significant improvements in riparian health in areas previously treated.

One project was completed last year. Two projects listed below were completed late last fiscal year and not all the details, including load reduction estimations, were reported in the 2021 Southeastern Colorado River Local Watershed Coordinators report. Therefore they are included in this report. The three completed projects reported here are:

- BLM Mill Creek Watershed Restoration Phase IV: The BLM completed this project in April 2022 and the final report was completed in June 2022. The entire final report has been submitted and is available on the MAWP website. The major efforts for this project were numerous gully treatments to prevent increased erosion, control of invasive species, subsequent revegetation and prevention of social trailing. The details on loading reductions and costs are in Table 7.
- BLM Mill Creek Watershed Restoration Phase V: The major efforts for the BLM project was numerous gully treatments to prevent further erosion and prevent social trailing. Details are on the MAWP website and in Table 7.
- Rim to Rim Mill and Pack Creek Active Revegetation Phase I: The Rim to Rim Mill and Pack Creek Active Revegetation Phase I has numerous partners and financial support including Watershed Restoration Initiative (WRI) funding. The NPS funded portion of the project revegetated areas that the WRI funding cleared of invasive riparian species.



Figure 3: An example of a bank layback on Pack Creek completed in 2022.

There are six ongoing projects in Grand County. Details on projects that are ongoing are listed in Table 7. The ongoing projects in Grand County are:

- Southeastern Utah Health Department On-site Wastewater Treatment Digitization Phase II: The SEUHD On-Site Wastewater Digitization project is essentially complete. The SEUHD has entered all existing permitted septic tanks into the application and is using it as needed. They will spend the grant out paying for the ArcGIS license.

- Southeastern Utah Health Department Human Waste Initiative Phases I and II: The SEUHD Human Waste Initiative staffing challenges. Recent meetings with them indicate they develop a subaward of the Phase I duties to Grand County, which currently has a program that their objectives will fit. Additional effort would be performed by County personnel and SEUHD would pay them for their efforts with the grant. In those same discussions, the SEUHD indicated that they are still working with the City of Moab to find a location for the SCAT machine that the grant was intended to fund.
- BLM Moab District Dog Waste Initiative: The two projects Pack Creek Restoration Phase I and the BLM Moab District Dog Waste Initiative are combined under one 319 grant. The contract is now in place and the BLM has installed all the dog waste stations included in this project. They have not finished spending their portion of the grant and are using the remainder of the grant to purchase dog waste bags annually.
- Pack Creek Restoration Phase I: This project was on hold while the Stream Alteration Permit was being obtained. After that, there were discussions with the NRCS about re-engineering the project to handle recent flood water increases due to the Pack Creek Fire. Those decisions have been made and the sponsor has been waiting until the monsoon season is over to begin installation of drop structures. The contractor has already begun “laying back” several of the banks and two stream crossings have been built.
- Rim to Rim Mill and Pack Creek Active Revegetation Phase II: The Rim to Rim Mill and Pack Creek Active Revegetation Phase II has also been reducing fire hazards, preparing stream sections for planting and revegetated several areas in partnership with the Division of Forestry, Fire and State Lands.

San Juan County

In San Juan County efforts continue for the implementation of the Montezuma Creek Watershed Management Plan. The plan was updated last year to reflect the need for groundwater infrastructure. There are two active projects in San Juan County, they are:

- Pinyon/Juniper Removal Project Effectiveness monitoring project: The Project Effectiveness monitoring in the Montezuma Creek watershed did receive some funding the past few years and this coming year to continue the groundwater study project. The groundwater water study project is tied to Pinyon/Juniper removal projects on the benches of Montezuma Creek. The project is currently monitoring/servicing the 9 piezometers, 8 temperature loggers and 10 soil moisture probe sites according to the project Sampling Analysis Plan. It is anticipated that the BLM will begin the P/J removal project in fall 2022. If so, the project monitoring will need to be continued for another two or three years to determine the effectiveness.

- Water Infrastructure Improvements for the Nation Act (WIIN), San Juan Watershed Restoration and Habitat Improvement Project: The Water infrastructure project will add about 10 wells to the San Juan Watershed in Utah. Most of the wells will be on State Institutional Trust Lands Agency property and a few others on private or BLM holdings. The Utah Department of Agriculture and Food is the project sponsor and their Grazing Improvement Program as well as producers are supplying monetary match to the Federal grant. That match will purchase solar panels and other water delivery infrastructure for the wells.

Last year there were several discussions on possible projects in San Juan County but none of them have made it through the planning phase at this time. The West Coyote Creek Restoration Project is still being considered and the sponsor of the project, the BLM is working out the particulars. There is a chance it could be conducted without NPS grant money and the entire project would be funded with Watershed Restoration Initiative and BLM funds. There are also two spring development projects being considered. One is on private land and the other is on BLM.

The Grand Conservation District (GCD), San Juan Conservation District, the City of Moab, Grand County and the MAWP appreciate the projects and are looking forward to submitting several projects in the coming years.

Monitoring

There are three Sampling Analysis Plans (SAP) that are currently administered by the Southeast Utah Watershed Coordinator. They are:

- Spanish Valley Sampling Analysis Plan consists of seven sites on Mill and Pack Creek that are sampled at least ten times per year for field readings. On the monthly runs between May and October E. coli and flows are also taken. Historically there were pressure transducers at six locations but that effort has been dropped. The entire plan is on the MAWP Website under the Plan tab. This SAP is updated at the November MAWP meeting every year.
- Castle Valley Sampling Analysis Plan consists of five sites on Castle Creek that are sampled at least ten times per year for field readings. Similar to Spanish Valley, on the monthly runs between May and October, E. coli and flows are also taken. There are currently two pressure transducers in Castle Creek that are downloaded twice per year. Flows are always taken at those sites during the monthly runs. The entire plan is on the MAWP Website under the Plan tab. This SAP is updated every year at the November MAWP meeting.

- UDWQ Waterborne Pathogen Monitoring (in Grand County). Although there are several sites in Southeast Utah that are included in the UDWQ Waterborne Pathogen Sampling Analysis Plan, the SEUWC is only sampling four of them during the months of May through October. The sites are sampled during monitoring runs in Spanish and Castle Valley for efficiency. See UDWQ’s website for further details.

The Southeast Utah Watershed Coordinator is also assisting the UGS in monitoring Southeast Utah. One project is the Montezuma Creek Pinyon/Juniper Removal Project Effectiveness Monitoring Project. The project has ten soil moisture probes, nine piezometers and six temperature probes that routinely need servicing and sampling. The Utah Geological Survey (UGS) also has a sampling analysis plan for six monitoring wells in Castle Valley. They are sampled twice per year.

As part of the USGS National Groundwater Monitoring Network, the UGS also samples about nine groundwater sites annually in Southeast Utah that the Southeast Utah Watershed Coordinator assists with. Grand County has recently expressed an interest in becoming a data provider to the National Groundwater Monitoring Network. The Southeast Utah Watershed Coordinator has been coordinating this effort and the County received a grant to become a data provider last spring. Coordination is ongoing and this effort has been heavily encouraged by the MAWP.

Table 7: Project accomplishments in the Southeast Colorado River Basin.

| Project Title | YR Funded | Funding Amount (<i>list all funding used</i>) | Pollutant of Concern | BMPs | % Complete | Load Reduction per year |
|------------------------------------------------------|-----------|-----------------------------------------------------------------------------|----------------------|------------------------------------------|------------|------------------------------------------------------------------------------|
| Rim to Rim Revegetation Project Phase I | 2018 | \$39,046.95 NPS \$34,742.50 Contract work and in kind match | Habitat restoration | Riparian Herbaceous Cover, 390 | 100% | 29.1 lbs. N 11.2 lbs. P 58.3 lbs. BOD 15.8 tons Sediment Load |
| BLM Mill Creek Phase IV Restoration Project | 2019 | \$31,500 NPS \$22,229 BLM contract service, in-kind labor and volunteers | Habitat restoration | Riparian Herbaceous Cover, 390, 314, 645 | 100% | 45 lbs. N 17 lbs. P 90 lbs. BOD 33 tons Sediment Load |
| BLM Mill Creek Phase V Restoration Project | 2020 | \$33,075 NPS \$185,767.32 Utah WRI, Volunteers and BLM match | Habitat restoration | Riparian Herbaceous Cover, 390, 314, 645 | 30% | 12,237 lbs. N 4,711 lbs. P 24,474 lbs. BOD 6,651 tons Sediment Load |
| Southeastern Utah Health Department Phase II On-Site | 2020 | \$19,000 NPS \$13,000 SEUHD | E. coli TDS | This project does not install any BMP’s | 95% | Not Applicable |

| | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------|----------------------------------------------|----------------------------------------------------|-----|----------------|
| WWT Digitization Project | | | | | | |
| Southeast Utah Health Department Human Waste Initiative Phase I | 2020 | \$75,000 NPS \$30,000 SEUHD \$15,000 Volunteers \$5000 Travel Council | E. coli | This project does not install any NRCS BMP's | 5% | Not Applicable |
| Southeast Utah Health Department Human Waste Initiative Phase II | 2021 | \$65,000 NPS \$50,000 UT Office of Recreation \$30,000 SEUHD \$15,000 Other | E. coli | This project does not install any NRCS BMP's | 0% | Not Applicable |
| BLM Mill Creek Phase Dog Waste Initiative Project | 2021 | 11,503 319 \$23,270 BLM | E. coli | Installation and maintenance of dog waste stations | 95% | Not Applicable |
| Pack Creek Phase I Restoration | 2021 | \$102,576 319 \$28,459 Land Owner \$76,982 Utah WRI \$26,924 NRCS | Habitat restoration TDS | Riparian Herbaceous Cover, 390, 314, 645 | 0% | In progress |
| Rim to Rim Mill and Pack Creek Revegetation Phase II | 2021 | \$29,996.25 NPS \$42,500 WRI \$7,000 Moab City \$8,000 Land Owners | Habitat restoration TDS | Riparian Herbaceous Cover, 390, 314, 645 | 0% | In progress |
| Microbial Source Tracking in Impaired Waterbodies of Grand County, UT | 2022 | \$15,812 NPS | E. coli | This project does not install any NRCS BMP's | 0% | Not Applicable |
| Mill Creek Watershed Improvement Project Phase VI | 2022 | \$62,873.54 NPS \$10,000 BLM in kind match \$100,000 WRI Match | Habitat restoration | Riparian Herbaceous Cover, 390, 314, 645 | 0% | In progress |
| Mill and Pack Creek Active Revegetation Phase III | 2022 | \$37,976.46 NPS \$87,500 Cash and in kind match | Habitat restoration | Riparian Herbaceous Cover, 390, 314 | 0% | In progress |
| Montezuma Creek P/J Treatment Effectiveness Monitoring | 2019 | \$15,000 NPS annually | Groundwater available for habitat | This project does not install any BMP's | 50% | Not Applicable |
| Water Infrastructure Improvements for the Nation Act (WIIN), San Juan Watershed Restoration and Habitat Improvement Project | 2022 | \$630,000 319 \$420,000 State of Utah and land owner cash and in kind match | Groundwater available for habitat protection | Watering Facility and well, 614, 642 | 50% | Not Applicable |

Bear River Watershed

Report provided by Nick Reithel, Bear River Watershed Coordinator

Project Implementation

The following projects are either in progress or were completed during FY22:

- JH Streambank Stabilization: pending project will stabilize river banks along the Logan River by excavating the bank crown and adding supportive vegetation and material to reinforce the toe area. By stabilizing the banks, erosion will be lessened which will decrease sediment loading.
- North Eden Fence: pending project will attach cattle exclusion fencing to prevent access to Bear Lake; an interstate regulated body of water. Removing cattle access will prevent excess pathogens, nutrients, and sediment. Bear Lake is designated as a recreational body of water. Cover crops will also be utilized to promote effective soil health which leads to positive water quality improvements.
- North Cache Soil Health Implementation and Monitoring Plan: ongoing project to promote and assess water quality affecting soil health efforts in the northern half of Cache County. Soil health measures include no-till planting and cover crop planting. Soil sensors, rain gauges, and soil tests are utilized in the assessment of project success.
- AFO Water Quality Improvement: pending project will improve the waste distribution and storage capabilities of a dairy operation. Work will be done in conjunction with the Natural Resource Conservation Service (NRCS). Operation is near the Bear River.
- H. Dairy Pond: pending project will improve the waste distribution and storage capabilities of a dairy operation. Work will be done in conjunction with the Natural Resource Conservation Service (NRCS). Operation is near the Bear River.
- JD Pond & Runoff Control: pending project will improve the waste distribution and storage capabilities of a dairy operation. Work will be done in conjunction with the Natural Resource Conservation Service (NRCS). Operation is near the Cub and Bear rivers.
- Kent Baker Riparian Project: project involved the installation of several Beaver Dam Analog (BDA) and Post Assisted Log (PAL) structures along an ephemeral stream. The construction of these structures will improve watershed health by reintegrating the stream with a wider floodplain and slowing rates of erosion.
- Zone 1 Soil Health Equipment for Water Quality and Savings: project will involve the purchase of two no-till drills for the promotion of soil health which benefits water quality. The equipment will be used in Cache and Box Elder Counties.
- Russon Irrigation/Soil Health-Completed project work included the installation of automated flood valve systems, riparian vegetation, and fencing. The fencing

excludes cattle, the vegetation improves riparian functioning, and the valves promote a more even irrigation that lessens nutrients from reaching the adjacent stream (Salt Creek).

- Mitigating High Soil Phosphorus Levels with Cover Crops: ongoing statewide project that promotes effective water quality improvements through the utilization of cover crops. Seed is reimbursed by willing partners.
- Lower Bear River Water Quality: pending comprehensive project that includes 2 components-one for cattle exclusion fencing along the Lower Bear River and one for the installation of automated flood irrigation systems. The area receiving fencing is near the Bear River Wildlife Refuge. Automated flood irrigation systems lessen excess nutrients by reducing excessive irrigation which can push nutrients into nearby bodies of water via seepage into tile drains or excess tailwater. Cover crops will also be incorporated into this project.

Monitoring

The Bear River Watershed Coordinator is currently monitoring the Logan River watershed for nutrients.

I&E Efforts

The Bear River Watershed Coordinator participated in two separate farm day events in Box Elder County in May to promote soil health and its benefits for water quality. Approximately 300-400 elementary students attended each event.

Other highlights

The Bear River Watershed Coordinator obtained training in developing Comprehensive Nutrient Management Plans (CNMP) and has started helping three local producers complete CNMP's. I also assisted with the submission of water optimization applications.

The 2022 Fiscal Year was Nick's first year as a Watershed Coordinator. In that time, he began to forge the critical relationships with stakeholders necessary to implement watershed projects. Nonpoint Source grant projects completed during this shorter reporting window involved the installation of 50 BDA's, 20 automatic valve systems, 30 feet of vegetative buffer, and 47 acres of land leveling. Approximately 800 students were given instruction about water quality. More actions relevant to NPS projects have been completed following this reporting date range and will be reported in the FY23 report.

Table 8: Nonpoint Source Projects In-progress and completed in the Bear River Basin.

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|------------------------------------------------------------|--------------|----------------------------------|-----------------------|----------------------------------------------------------------------------|------------|----------------------------------------------------------------------|
| JH Streambank Stabilization | 2023 | NPS: \$17,820 | Sediment | -Streambank Stabilization (290 ft) -vegetation planting | 0% | Anticipated P-107.3 lb/yr N-279.5 lb/yr Sediment-151.4 t/yr |
| North Eden Fence | 2023 | NPS: \$47,441 | TP, Sediment, E. Coli | -Fencing (10,560 ft) -Cover Crop | 0% | Anticipated P-50.8 lb/yr N-170.2 lb/yr Sediment-37.6 t/yr |
| North Cache Soil Health Implementation and Monitoring Plan | 2019 | NPS: \$35,000 | TP, nitrogen | -Cover Crop -No-till planting | 40% | Anticipated P-20.1 lb/yr N-68 lb/yr Sediment-15.5 t/yr |
| AFO Water Quality Improvement | 2021 | NPS: \$10,000 NRCS: \$385,029 | TP, E. coli, nitrogen | -waste pond, lining | 0% | Anticipated P-641.7 lb/yr N-5,744.6 lb/yr |
| H. Dairy Pond | 2023 | NPS: \$10,000 NRCS: \$369,425 | TP | -waste pond -waste conveyance | 50% | Anticipated P-3,942.3 lb/yr N-18,109.6 lb/yr |
| JD Pond & Runoff Control | 2023 | NPS: \$10,000 NRCS: \$521,297 | TP | -waste pond -waste conveyance -rain gutters -heavy use protection | 10% | Anticipated P-464 lb/yr N-2,131.3 lb/yr |
| Kent Baker Riparian Project | 2023 | NPS: \$5,500 NRCS: \$16,644 | Sediment, TP | -50 BDA's installed | 100% | P-3.9 lb/yr N-16.9 lb/yr Sediment-1.7 t/yr |

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|------------------------------------------------------------|--------------|----------------------------------------|---------------------------------|---------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------|
| Zone 1 Soil Health Equipment for Water Quality and Savings | 2023 | NPS: \$20,000 | TP, Nitrogen | -soil health promotion | 0% | N/A |
| Russon Irrigation/Soil Health | 2020 | NPS: \$28,370 Water Opt: \$109,155 | TP, sediment | -vegetative buffer (30 feet) -auto. valves (20 units) -land leveling (47 acres) | 100% | P-9.5 lb/yr N-39.2 lb/yr Sediment-0.8 t/yr |
| Mitigating High Soil Phosphorus Levels With Cover Crops | 2022 | NPS: \$27,500 | TP, nitrogen | -cover crop | 30% | Anticipated P-4.2 lb/yr N-48.3 lb/yr Sediment- 1.3t/yr |
| Lower Bear River Water Quality Improvement | 2023 | 319: \$316,905 Water Opt: \$998,362 | TP, nitrogen, E. Coli, sediment | -auto. valve systems -piped ditches -cover crop -fencing | 0% | Anticipated P-928.5 lb/yr N-6,086.7 lb/yr Sediment-23.3 t/yr |

Jordan River

Report provided by Sam Taylor and Hannah Murphy with the Salt Lake County Watersheds Department

Overall Accomplishments

Riparian Restoration on the Jordan River near 4500 South

Salt Lake County's Jordan River Channel Improvement Project at Brighton North Point Diversion aimed to improve the channel's navigability, reestablish active floodplains and improve the surrounding landscape. The internally completed design introduced two large cross vanes to convey flow to the center of the channel and easily transport sediment, while decreasing near bank stress. The first step in carrying out this complex project was to remove the large feature originally known as the Brighton North Point Diversion structure.

In February 2022, awarded contractor, Lyndon Jones Construction began demolishing and removing the corrugated sheet piles that formed the low head dam across the channel.

Once removed, the first cross vane was constructed with header rocks and vane arms anchored into the banks. The project worked downstream, creating a subsequent riffle and pool feature before completion of the second cross vane. Cross vanes allow for a more gradual decrease in slope along the length of the channel, and provide a loss of energy during high flow events.

As most of the in-stream work finished, development of newly constructed banks began. Following the planting plan, sub-contractor, Arrow Landscape Construction dressed the site in upland and riparian seed mixes as well as more than 4,000 container pots, trees and shrubs of various sizes. The project was completed in August of 2022. Ongoing weed maintenance continues with Nonpoint Source funding for this project. A photo-monitoring station was installed October 2022 as well to monitor revegetation efforts along the project's banks.



Figure 4: Restoration of the Jordan River at the location of the former Brighton Northpoint Canal

Monitoring

Stream Stability Analysis (Ongoing): Salt Lake County has begun analyzing the stability of our waterways as a follow up to our 2016 analysis. We are using the Rosgen Level III analysis in tandem with Phankuch methodology. This will allow us to focus priority restoration in the most compromised areas when the data is combined with our water quality analysis. Priority for future project applications for funding will be given to impaired waterways targeting the uppermost reaches where stability and water quality data indicate issues.

Macroinvertebrate Sample analysis (2022): 50 perennial sample sites are selected across the Jordan River Watershed and sampled according to the targeted macroinvertebrate riffle sampling protocol outlined by Aquatic Biology Associate (ABA)s. Sample collection was completed in the summer of 2022 and all the samples have been mailed to ABA for precessings. The return of this data gives a multi-year view of health and stressors to the ecosystem of streams at given locations. It is extremely helpful in looking at long-term trends of the waterways and changes in water quality moving downstream.

Data Collection (Ongoing): Salt Lake County continues to collaborate with UDWQ on monthly E. coli and field parameter data collection. In coordination with UDWQ, Salt Lake County samples 56 sites monthly to review E. coli as well as pH, turbidity, dissolved oxygen, temperature, and conductivity. This is an ongoing effort and some sites have been sampled monthly for over 10 years.

Project Monitoring: Surveying takes place at many of our previous instream restoration projects including JRMT4 (Jordan River Nature Center and 4500S). These surveys aim to determine effectiveness of sediment transport and aggradation/degradation within the project area.

Other Efforts

Education and Outreach (Ongoing): The County continues the outreach campaign to educate the public on watershed issues in the Jordan River Watershed. This is done with an interactive and fun booth. Events include but not limited to: Salt Lake Countywide Watershed Symposium, various public fairs and events, and the Hogle Zoo Water Quality Fair.

Watershed Watch Newsletter (Ongoing): An informational newsletter that is distributed throughout the Jordan River Watershed. Published twice annually, in Spring and Fall. SLCo distributed the Spring 2022 issue and planning for the Fall 2022 issue has begun.

Watershed Symposium: A Symposium to bring together watershed professionals, students, advocates, and the interested public. The annual was held last week November 16th and 17th, 2022 with the event's highest attendance to date.

Planning/coordinating 2023 projects: Working with Salt Lake County Parks on 3 possible restoration projects along the Jordan River. Potential project is near 3300S to determine cause of trail falling into the creek and provide a natural solution to fix the river corridor.



Figure 5: Native riparian species revegetation on the banks of the Jordan River at the location of the former Brighton Northpoint Canal

Planning/coordinating 2023 projects: Working with Salt Lake County Parks in a project similar to the one listed above but the cause of trail issues caused by the creek is different. Project is near 3900S along the Jordan River. Potential plan is to create a reinforced floodplain using primarily natural materials. Project also aims to remove weeds surrounding the area and add natural vegetation to any disturbed areas in addition to the created floodplain.

Planning/coordinating 2023 projects: Working with Salt Lake County Parks and hopefully project implementation will begin in January 2023. Section of Jordan River trail is falling into the river near 4700S (Arrowhead Park) along the west side of the trail. SLCo Watershed plans to use conifer revetments to reinforce the failing channel wall and then introduce natural vegetation to strengthen the stream corridor and reduce sediment from entering the channel.

Collaboration: Salt Lake County continues to collaborate with stakeholders and partners. This includes but not limited to:

- Utah Watershed Restoration Initiative
- Utah Water Quality Task Force
- Jordan River Commission TAC
- USFS
- Salt Lake City Public Utilities
- Salt Lake City Open Space
- University of Utah

Provo River/Utah Lake

Report provided by Katie Slebodnik, Provo River/Utah Lake Watershed Coordinator

Projects implementation

There were a total of 19 projects (7 of which had NRCS contracts) that were either in progress or were completed during FY22. Six projects were completed with total project costs = \$204,620 and 13 projects were in progress with total estimated project costs = \$2,795,405. Seven NRCS applications were submitted, planned and ranked in addition to these 19 projects. The projects were as follows:

Spanish Fork/Utah Lake:

- Lakeshore Drain Restoration: This project installed three hardened livestock watering points to decrease bank sloughing, nutrient loading and bacteria loading,

and removed invasive Tamarisk and Russian Olive trees along an agricultural ditch that drains directly into Utah Lake in the Lower Spanish Fork River watershed. Livestock crossings and invasive species removal has been completed. Burning and disposal of invasive species remains and is set to be completed in FY23.

- Nebo Creek Wildfire Restoration: This project along Nebo Creek was in response to 2018 wildfire damage that caused significant sediment erosion. It installed various streambank and shoreline protection practices to reduce erosion and sediment loading in Nebo Creek. Fencing and obstruction removal remain and are set to be completed in FY23.
- Utah Lake Dairy Manure Management: This project is at a dairy operation along Utah Lake which is installing an additional 35 million gallons of manure storage facilities and an accompanying synthetic liner. This will allow the producer to spread waste over a larger set of fields to reduce nutrient loading in soils and surface runoff. It is set to be completed in FY24.

Middle Provo:

- Spring Creek Fencing (AH): This project installed 2,500 ft of cross fencing in the Spring Creek watershed to facilitate rotational cattle grazing and reduce E. coli inputs from to surface waters and was completed in FY22.
- Heber Valley Watershed Plan: This project allowed the Wasatch Conservation District to hire an environmental consulting firm to design an EPA 9-step watershed plan for the Spring Creek (Heber) watershed. This area is undergoing intense development pressure and an E. coli TMDL has been finalized for the area. This plan will help identify local concerns and allow the Conservation District to access section 319 funds in the future. A draft of the plan has been completed and will be finalized in FY23.
- PRWC FY19, FY20, FY22: All of these grants will continue funding outreach and education projects in the Provo River watershed, including events such as: river cleanups, watershed education events, educational materials, social media messaging, interpretive signs and workshops. The FY19 grant was completed in FY22. Remaining grants will continue through FY24.



Figure 6: Stream bank bio stabilization on Little Hobble Creek, a tributary to Main Creek near Wallsburg, Utah

- Little Hobble Creek Restoration (RO): This project along Little Hobble Creek was completed in FY22 and installed 353 ft of streambank and shoreline protection, 1,420 ft of fencing, 0.25 ac of riparian vegetation and a project tour to reduce sediment and nutrient loading and temperature.
- Spring Creek Land Leveling & Fencing (AH): This project will include 10 ac of irrigation land leveling and pasture planting to improve flood irrigation practices and reduce irrigation return flows to surface water. It will also include 700 ft of cross fencing and promote improved livestock grazing to reduce manure inputs to surface waters in the Spring Creek watershed. It is set to be completed in FY24.
- Spring Creek Land Leveling (EC): This project will include 10 ac of irrigation land leveling and pasture planting to improve flood irrigation practices and reduce irrigation return flows and manure loading in the Spring Creek watershed. It is set to be completed in FY24.
- Wasatch Mtn State Park Corral Restoration: This project will restore horse corrals which are currently located in a stream channel. This will be accomplished by moving corrals out of the channel with 200 ft of fencing, planting a riparian vegetative buffer between the corrals and channel, installing an alternative water supply for the horses with a livestock pipeline and troughs, removing excess floodplain debris and installing a beaver deceiver, both of which cause flooding in corrals and increases manure inputs to surface waters. This project is set to be complete in FY24.
- Main Creek Restoration (MD): This project has installed 7 ac of pasture planting, 0.9 ac of obstruction removal and 100 ft of streambank and shoreline protection with a stream crossing along Main Creek to decrease sediment and nutrient inputs. Fencing remains and is set to be completed in FY24.
- Main Creek Restoration (PP): This project has installed a stream crossing and 1.4 ac of obstruction removal (rocks along floodplain) so that a functioning riparian zone can be established. It has also installed a sprinkler system with irrigation water management. Riparian herbaceous cover, high tunnel and windbreak establishment practices remain and are set to be completed in FY24.
- Main Creek Restoration (GC): This project along Main Creek is installing a livestock crossing to limit livestock access and reduce sediment and nutrient loading. This project is scheduled to be completed in FY24.
- Main Creek RCPP Project (LW): This project is piping a system of irrigation ditches (which return water to Main Creek) and installing associated structures for water control to eliminate livestock from ditches and reduce sediment and manure inputs to Main Creek. It is set to be completed in FY24.
- Main Creek Restoration (DD): This project was completed in FY22 and installed 300 ft of streambank and shoreline protection, 0.4 ac of riparian forest buffer and 5.7 ac of obstruction removal along Main Creek to reduce sediment and nutrient loading into Main Creek.

- Snake Creek Restoration (GG): This project was completed in FY22 and installed 189 ft of streambank and shoreline protection, a stream crossing and 0.5 ac of riparian vegetation. It restored a degraded portion of the channel and restricted livestock access to reduce sediment, nutrient and bacteria loading into Snake Creek.

Upper Provo:

- Upper Provo River Restoration (SS): This project was completed in FY22 and installed 450 ft of bank sloping, 80 ft of rip rap, 1 J-hook, and a variety of riparian vegetation plantings to reduce erosion and stabilize the banks of the Provo River.

AgVIP

To support local producers interested in improving their nutrient management practices, I wrote three Comprehensive Nutrient Management Plans and assisted with one additional plan for producers in Utah, Sanpete and Millard counties through the AgVIP program. I assisted with plans in Sanpete and Millard counties due to a lack of signups within my watershed.

Monitoring

During FY22 Katie managed three monitoring runs in the Main Creek, Lower Spanish Fork River and Provo Headwater Lakes watersheds. These runs included collecting field parameters, filtered and unfiltered nutrients, water chemistry, E. coli, and filtered metals to establish baseline data and/or monitor project success over time. The Main Creek SAP will be updated in FY23 and merged into a larger Heber Valley SAP. Upon recommendation from DWQ, the Lower Spanish Fork River and Provo River Headwater Lakes monitoring runs were retired at the end of FY22 due to project completion and/or changing monitoring needs. Photo points were taken on projects completed in FY22 to monitor their success. During FY22 Katie was involved in training to perform the BLM's multiple indicator monitoring (MIM) of stream channels and streamside vegetation on Mud Creek in June 2022.

I&E Efforts

During FY22 Katie took a lead role in the following information and education efforts:

- UVU Job Shadowing: This opportunity was provided by a partnership between NRCS and UVU's Utah Lake Summer Program for undergraduate students. Katie

spoke about local water quality and monitoring efforts at a field trip, sat on a job panel and led a variety of hands-on job shadowing experiences for students interested in environmental careers.

- Farm field days (spring & fall): Katie presented at USU Extension’s farm field days experience and spoke to second graders from Utah County schools about soil and its importance in agriculture.
- HVWP stakeholder engagement meetings/tours: Katie assisted with the organization of and presented at: a stakeholder dinner, agency meeting and two advisory committee meetings to identify local resource concerns during the development of the Heber Valley Watershed Plan.
- Construction stormwater management workshop: This event took place in September 2021 and was co-hosted by the Provo River Watershed Council (PRWC) and USU Extension. This was a culminating activity for ~30 attendees including builders and agency staff in the Heber Valley who may have completed the online portion of the course through USU Extension and discussed construction site BMPs relating to stormwater and their connection to local water quality issues.
- Lakes appreciation month celebration: This event took place in July 2021 and was co-hosted by USU Water Quality Extension and Recycle Utah. The event included training for citizen water quality monitoring efforts and a trash clean up which removed over 60 lbs of trash from the Rock Cliff area of Jordanelle State Park.
- Interpretive watershed signage: This project is in the planning phase of working with local state parks to give them mini-grants to design and install interpretive signs related to watershed science and water quality issues.
- PRWC social media management: Katie manages the PRWC’s Facebook account and posts relevant educational content quarterly. She also helped keep the PRWC website updated regularly.

The Provo/Utah Lake Watershed Coordinator also played a supporting role for several other projects sponsored by the PRWC and other partners including a river cleanup along the lower Provo River with Fish For Garbage and USU Water Quality Extension’s state-wide “Pack it out” river cleanup event. She also assisted the Alpine and Timp-Nebo Conservation Districts with the development of a vermicompost program in local elementary schools, a “Grill Your District” outreach event and their annual conservation tree sale.

Other highlights

This year Katie completed several professional development goals. She expanded her knowledge of NRCS business and conservation planning tools, completed the NRCS Level I Conservation Planner certification and completed the majority of the requirements for the NRCS Level II and III Conservation Planner certifications. She attended the UACD

conference virtually in November 2021 and attended the Utah Water Users and USU Spring Runoff Conferences in March 2022. She also attended the DWQ Water Quality training in August 2021 and the UDAF CNMP training in September 2021. She provided input during the development of the PL-566 Utah County Watershed Plan, sat on the WRI central region ranking committee and provided a variety of technical assistance to landowners and agency partners.

Table 9: Nonpoint Source Projects In-progress and completed in the Provo River - Utah Lake Basin.

| Project Title | Funding Year | Location | Funding Amount | Pollutant of Concern | BMPs | % Complete | Total Project Est. Load Reduction |
|--------------------------------------------------|--------------|------------------------|---------------------------------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------------------|
| Lakeshore Drain Restoration #N2020 | 2020 | 40.140599, -111.749309 | NPS: \$35,000 Mit & Rec Com: \$1,000 FFSL: \$1,500 NRCS: \$1,000 | TP, E. coli, sediment | -3 x livestock watering gaps -2 ac invasive species removal | 90% | P-7.5 lb/yr N-24.2 lb/yr BOD-36.3 lb/yr Sediment-5.7 t/yr |
| Nebo Creek Wildfire Restoration (KM) #N2019 NRCS | 2020 | 39.881963, -111.556461 | NPS: \$53,000 NRCS: \$120,076 In-kind: \$5,000 | Sediment | -8 x cross vanes -130 ft rip rap -320 ft bank laybacks -4 x J-hooks -6 x head gates -180 ft ADS pipe -250 ft conifer revetment -1900 ft fence -2.7 ac obstruction removal -230 ac herbaceous weed treatment -17.2 ac pasture/hay planting | 95% | P-56.0 lb/yr N-178.7 lb/yr BOD-272.4 lb/yr Sediment-42.6 t/yr |
| Utah Lake Dairy Manure Management NRCS | 2021 | 40.093520, -111.959168 | NRCS: \$450,000 In-kind: \$1,550,000 | E. coli, eutrophication, HABs, TDS, TP | -2 x waste storage facilities (37 million gallons total) -2 x synthetic pond liners -1 x CNMP | 10% | P-16,921.3 lb/yr N-35,028 lb/yr BOD-656.2 lb/yr Sediment-102.5 t/y |

| Project Title | Funding Year | Location | Funding Amount | Pollutant of Concern | BMPs | % Complete | Total Project Est. Load Reduction |
|-------------------------------------|--------------|------------------------|------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------------------------------------------------|
| Spring Creek Fencing (AH) #N2033 | 2020 | 40.519245, -111.436337 | NPS: \$5,000 In-kind: \$3,076 | E. coli, TP | -2,500 ft fence | 100% | P-10.1 lb/yr N-29.4 lb/yr BOD-50.8lb/yr Sediment-7.9 t/yr |
| Heber Valley Watershed Plan #N2031 | 2020 | 40.500274, -111.413554 | NPS: \$40,000 Utah Conservation Commission: \$5,000 | E. coli, temperature, DO, TP | - 1 x EPA 9-step watershed plan | 85% | N/A |
| PRWC Information & Education #N1928 | 2019 | 40.539534, -111.439777 | NPS: \$10,000 PRWC: \$19,500 CUWCD, JVWCD: \$2,750 | E. coli, Al, Zn, Cd, temp, DO, pH, TP | -Social media and website education -Provo river day -OE bioassessment -Provo River clean up -Spetic smart week -Core curriculum development | 100% | N/A |
| PRWC Information & Education #N2034 | 2020 | 40.539534, -111.439777 | NPS: \$10,000 CUWCD: \$14,000 PRWC In-kind: \$8,170 Wasatch County: \$800 | E. coli, Al, Zn, Cd, temp, DO, pH, TP | -Provo River clean up -USU Stormwater workshop/webinars -Watershed interpretive signs -Educational materials -Interactive story map | 20% | N/A |
| PRWC Information & Education #N2223 | 2022 | 40.539534, -111.439777 | NPS: \$10,000 PRWC In-kind: \$28,970 | E. coli, Al, Zn, Cd, temp, DO, pH, TP | -Provo River clean up -NPS workshops -Educational materials | 0% | N/A |

| Project Title | Funding Year | Location | Funding Amount | Pollutant of Concern | BMPs | % Complete | Total Project Est. Load Reduction |
|--------------------------------------------------|--------------|------------------------|------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------------|
| Little Hobbie Creek Restoration (RO) #N2222 NRCS | 2022 | 40.372302, -111.422692 | NPS: \$21,935 NRCS: \$9,557 DWR: \$255 In-kind: \$2,234 | TP, sediment, E. coli | -353 ft streambank and shoreline protection -0.25 ac riparian herbaceous cover -1,420 ft fencing -1 x project tour | 100% | P-6.6 lb/yr N-19.3 lb/yr BOD-32.3 lb/yr Sediment-5.0 t/yr |
| Spring Creek Land Leveling & Fencing (AH) #N2216 | 2022 | 40.519245, -111.436337 | NPS: \$56,110 In-kind: \$20,000 | E. coli, sediment, TP, TN. | -10 ac laser leveling -670 ft cross fence -3 x livestock gates -10 ac pasture/hay planting | 0% | P- 2.1 lb/yr N- 0.7lb/yr BOD-0.0 lb/yr Sediment-0.0 t/yr |
| Spring Creek Land Leveling (EC) #N2219 | 2022 | 40.535801, -111.434258 | NPS: \$50,022 In-kind: \$20,000 | E. coli, sediment, TP, TN. | -10 ac laser leveling -10 ac pasture/hay planting | 0% | P- 0.2 lb/yr N- 3.5lb/yr BOD-0.0 lb/yr Sediment-0.0 t/yr |
| Wasatch Mtn State Park Corral Restoration #N2217 | 2022 | 40.481644, -111.487133 | NPS: \$24,080 In-kind: \$10,000 UDWR: \$500 | E. coli, sediment, TP, TN. | -200 ft fencing -3 x troughs -825 ft livestock pipeline -0.1 ac riparian herbaceous cover -0.75 ac debris removal -1 beaver deceiver | 0% | P- 18.0 lb/yr N- 11.9 lb/yr BOD- 18.0 lb/yr Sediment- 2.8 t/yr |
| Main Creek Restoration (MD) PRWC NRCS | 2021 | 40.375578, -111.412402 | PRWC: \$25,000 NRCS: \$50,961 | TP, sediment | -7 ac pasture & hay planting -1,815 ft fencing -0.9 ac obstruction removal -100 ft streambank and shoreline protection -1 x stream crossing | 70% | P-59.2 lb/yr N-161.2 lb/yr BOD-297.4 lb/yr Sediment-46.5 t/yr |

| Project Title | Funding Year | Location | Funding Amount | Pollutant of Concern | BMPs | % Complete | Total Project Est. Load Reduction |
|------------------------------------------------|--------------|---------------------------|------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------------------------|
| Main Creek Restoration (PP) #N2128 NRCS | 2019 | 40.376157, -111.413571 | NPS: \$15,000 NRCS: \$60,098 In-kind: \$1,872 | TP, sediment | - 1.4 ac obstruction removal -1 x stream crossing -0.3 ac riparian herbaceous cover -4.4 ac sprinkler system -1,500 sq ft high tunnel -1,595 ft fence -2,050 windbreak establishment -4.4 ac irrigation water management | 70% | P-58.0 lb/yr N-157.2 lb/yr BOD-291.7 lb/yr Sediment-45.6 t/yr |
| Main Creek Restoration (GC) #N2212 | 2021 | 40.374751, -111.410702 | NPS: \$3,750 In-kind: \$1,000 | TP | -1 x livestock water crossing | 0% | P-6.9 lb/yr N-22.8 lb/yr BOD-33.7 lb/yr Sediment-5.3 t/yr |
| Main Creek RCPP Project (LW) #N2213 NRCS | 2021 | 40.396446, -111.446388 | NPS: \$32,000 NRCS: \$81,496 In-kind: \$10,000 | TP, sediment, E. coli | -4 x structures for water control -174 in headgates -980 ft irrigation pipeline | 0% | P-1.0 lb/yr N-2.9 lb/yr BOD-5.1 lb/yr Sediment-0.8 t/yr |
| Main Creek Restoration (DD) #N2128 NRCS | 2019 | 40.370610, -111.404484 | NRCS: \$24,332 NPS: \$45,000 In-kind: \$594 | TP, sediment | -5.7 ac obstruction removal -300 ft streambank and shoreline protection -0.4 ac riparian forest buffer | 100% | P-10.4 lb/yr N-33.3 lb/yr BOD-50.8 lb/yr Sediment-7.9 t/yr |

| Project Title | Funding Year | Location | Funding Amount | Pollutant of Concern | BMPs | % Complete | Total Project Est. Load Reduction |
|-------------------------------------------|--------------|------------------------|----------------------------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------|------------|-------------------------------------------------------------------|
| Snake Creek Restoration (GG) #N2032 | 2020 | 40.514989, -111.483583 | NPS: \$20,000 In-kind: \$2,000 | TP, E. coli, sediment, arsenic | -Fencing -0.50 ac Riparian plantings -189 ft streambank and shoreline protection -1 x stream crossing | 100% | P-3.1 lb/yr N-9.9 lb/yr BOD-15.1 lb/yr Sediment-2.4 t/yr |
| Upper Provo River Restoration (SS) #N2115 | 2021 | 40.581361, -111.227250 | NPS: \$6,400 NRCS: \$29,987 In-kind: \$2,000 | TP, temperature | -450 ft bank sloping -1 x J-hook -80 ft rip rap -Riparian vegetation | 100% | P-3.0 lb/yr N-8.9 lb/yr BOD-15.1 lb/yr Sediment-2.4 t/yr |

Upper Sevier River

Report provided by Wally Dodds, Upper Sevier River Watershed Coordinator

The table below provides an accounting of all project implementation activities completed within the Upper Sevier River watershed during FY2022.

Table 10: Nonpoint Source Projects in-progress and completed in the Upper Sevier River Basin.

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|-------------------|--------------|-----------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Ryan Houston | 2022-23 | \$450,000.00 | Phosphorus, Sediment | This project has been funded, and all contracts have been signed. The NRCS Engineer is just starting the planning process so there is no further information on this project. | | |
| Andrew Somerville | 2022-23 | \$ 17,759.00 \$ 89,962.00 ----- \$ 5,797.00 \$ 18,820.00 \$ 4,711.00 \$ 18,413.00 | Phosphorus, Sediment | Irrigation reservoir 1.0 Pond sealing or lining, Geomembrane or geosynthetic clay liner 6,200 SqFt Structure for water control 2.0 Irrigation pipeline 1,200 ft Pumping plant 1.0 Sprinkler system 7.0 acres | 25% complete. Contract and Implementation plans have been signed. Contractor is working on a pond liner and pipe. Work will be complete fall 2022/ Winter 2023 | 4.7 tons/yr Sediment 6.5 lbs/yr phosphorus. |

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|---------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| Milo Ence | 2022-23 | \$ 53,320.00 \$ 96,720.00 ----- \$ 4,831.00 \$ 1,249.00 \$ 11,101.00 \$ 5,329.00 \$ 9,699.00 \$ 14,819.00 \$ 42,803.00 \$ 2,466.00 \$ 7,839.00 \$ 9,780.00 \$ 165,740.00 \$ 24,370.00 | Phosphorous, Sediment | Irrigation reservoir 1.0 Pond sealing or lining, Geomembrane or geosynthetic clay liner 72,000 SqFt Structure for water control 2.0 Irrigation pipeline 60.0 ft Irrigation pipeline 1,200 ft Irrigation pipeline 1,400 ft Pumping plant 1.0 Sprinkler system 13.0 acres Sprinkler system 63.5 acres Fence 1,340 ft Fence 4,620 ft Stream crossing 1.0 Streambank and shoreline protection 1,202 ft Streambank and shoreline protection 610 ft | 40% complete. | 42.7 tons/yr sediment 47.2 lbs/yr phosphorous |
| Deardon | 2022-23 | \$ 10,177.00 | | Irrigation and land leveling 11.2 Acres | | |
| WQI Match | 2022 | \$ 79,000.00 | Phosphorous, Sediment | This project will match all NWQI projects planned on the Upper Sevier River to try and reduce cost of restoration work to producers. | Funds will be used to match new projects. | Load reductions are calculated for each project. |
| Dale V. Ray | 2020 | \$ 162,390.00 | Phosphorous, Sediment | Install 1,400' of stream bank stabilization. Slope 2,000' stream bank. Fence 2,350' of streambank. | 60% complete. 404 permits are complete and work is in progress. | 15.7 tons/yr. Sediment 12.2 lbs./year phosphorous. |
| Doug Tebbs | 2020 | \$ 244,653.00 | Phosphorous, Sediment | Install 2,790 feet of cross fencing in an established pasture for controlled intense grazing. Install 2,150' of toe wood and j-hooks. Plant willows on all sloped banks that don't get Toe Wood. This project will | 60% complete. Plans are complete, grazing plan is written and contracts are signed. 404 permits are | 14.75 tons/yr sediment 36.5 lbs/yr phosphorous |

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|-------------------|--------------|----------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| | | | | also include a prescribed grazing plan that the producer will get paid for following. | complete and work is in progress. | |
| J. Daniel Perkins | 2020 | \$ 177,170.00 | Phosphorous, Sediment | Install 491' of structural shoreline protection. Install 163' of toe wood. Slope 975' of bank. All banks not getting Toe Wood will be planted with willows. | 25% complete. Finishing up the 404 application for this contiguous stretch of river including 4 producers. Plans are complete and contracts signed. | Sediment 12.5 tons/yr. Phosphorous 24.5 lb./yr. |
| Wayne Smith | 2020 | \$ 257,987.00 | Phosphorous, Sediment | Install 1,780' irrigation pipeline. 1,930' of irrigation and shoreline protection using j-hooks and sloping 2,300 feet of bank. 2,800' fence will be installed with an access control for cattle. | 25% complete. All contracts have been signed and pipe installed. 404 permits are written and designs are complete and signed. project implementation will start fall of 2022. | 32.5 tons/yr Sediment 46.7 lbs/yr phosphorous |
| Bob Williams | 2019 | \$ 232,298.00 | Phosphorous, Sediment | Install 8 j-hooks. For a total of 368 cubic yards. Install 1,560 feet of Toe Wood. 2,000 ft of bank sloping. All sloped banks without Toe Wood will require willow planting. We are also installing 1,680 feet of 12-inch underground pip pipe and 530 feet of 12-inch gated pipe. | 50% complete. Plans are complete 404 permits are written. This project has a large pipe component. The cost of pipe has increased substantially Which continues to delay project implementation. Pipe is finally ordered and being installed fall 2022. | 16.5 tons/yr sediment 22.5 lbs/yr phosphorous |
| Justin Partridge | 2019 | \$ 256,514.00 | Phosphorous, Sediment | Install 8 j-hooks for a total of 368 cu/yds of rock. Install 2,000' of Toe Wood. Slope | 50% complete. Plans have been written 404 is in place. Contract | 37.5 tons/yr. sediment. 63.75 lbs/yr phosphorous |

| Project Title | Funding Year | Funding Amount | Pollutant of Concern | BMPs | % Complete | Load Reduction |
|---------------------------------------------------|--------------|----------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| | | | | 2,250' of banks. All sloped banks without Toe Wood will require willow planting. | signed. Work will start as soon as pipe is complete on Partridge and Williams projects. Fall of 2022. | |
| Paul Partridge | 2019 | \$ 318,816.00 | Phosphorous, Sediment | This project includes the installation of 14 J-hooks for a total of 368 cubic yards of rock. Installation of 2,130' of Toe Wood. Bank sloping 2,500'. All sloped banks without toe wood will be planted with willows. Install 2,830' of 12" underground pip pipe. Install 720' 12-inch gated pipe. | 25% complete. All plans are complete, contracts signed, and 404 permits submitted. Pipe is being installed now and will be done by year end | 51.5 tons/yr. Sediment. 60.24 lbs/yr phosphorous. |
| John Orton riparian restoration and pipe project. | 2018 | \$ 105,000.00 | Phosphorous, Sediment | 1 structure for water control.800' shoreline protection (conifer revetment).880'irrigation pipeline. 1030' shoreline protection (rock barbs) 2070' Fence. | 100% completed The instaledl his riparian fencing. All riparian work is now complete. | Sediment 31.9 tons/year. Phosphorous 84.3 lb./yr. |

Fremont River, San Pitch, Middle Sevier River, Otter Creek

Report provided by BreeAnn Bloomfield, Middle Sevier/San Pitch Watershed Coordinator

This position was recently filled and BreeAnn has not participated in any current projects or monitoring. Although her time with UDAF has been short, she has been involved in training, attending Conservation District meetings, and attending the Utah Association of Conservation Districts Convention, learning the area and land owners. The primary focus of her initial work was to develop a workplan for FY 2023. In the fiscal year 2023 with top priorities including the implementation of projects with various funding in the San Pitch, Otter Creek, and Fremont watersheds, conducting E. coli monitoring, and participating in training activities to become a certified NRCS planner.

I&E Efforts

Willow Planting: This project took efforts of a few parties, Snow College Natural Resource Professor Chad Dewey and class, Contractor Kyle Turpin, and Land Owner Blake Madsen. Chad Dewey reached out and asked if we could do a workshop to focus on the importance of willows in a riparian restoration area. We worked with the Contractors to get willows to transplant to the property. There were nineteen students that helped transplant the willows. It was a successful workshop as the students were very involved.



Figure 7: Volunteer native riparian species planting on Otter Creek.

Weber River

Report provided by Emily Bishop, Weber River Watershed Coordinator

Project Implementation

Summit County

- 319: The contract was extended from August 31, 2022 to June 30, 2023 in order to finish spending the remaining funds and to reconcile a misunderstanding with indirect funds. With the extra time, we were able to release 5 more beavers onto the Haynes Ranch on August 23rd. Additionally, the East Canyon Creek Committee website is joining the Swaner Eco-Center website. Emily compiled the content we wanted to take with us for the website move.
- N2008: Stephens Farm Restoration (Completed October 2022). The riparian buffer between the Weber River and Stephens Farm has declined over time due to open grazing in this buffer, leading to erosion and sedimentation. Fencing approximately 1600 linear feet occurred in summer 2020 to protect water quality by the river, and also from a natural spring previously impacted by cattle. Native trees from local seed stocks were planted with a current success rate of 90%. A hardened cattle access with gates was installed in summer 2022. 2022 BMPs: planted 15 trees, 325' barb wire fence, closure of old cattle access point, installation of new permanent cattle access point.
- N2016: Grass Valley Stock Tanks (completed September 2022). Previously, the producer installed one solar pump and developed one spring. NRCS funds were used for Phase 1 of the project. Emily visited the site on August 11th to check on the final phase of installation. Water troughs were wildlife friendly with ramps installed.



Figure 6: Beaver Dam Analogs on Fish Creek installed in 2020 passing high water during spring runoff.

Landowner is interested in implementing Phase 3 with a new NPS grant to keep cattle out of the creek on a different section of his ranch. 2022 BMPs: two water troughs and 2,900' of piping.

- N2116 - Richins Easement. The goal is to put a conservation easement at Richins Ranch.
- N2117 - Summit Conservation District Seasonal Monitoring. Doug worked until August 3rd, 2022. He joined the Weber River Watershed Coordinator for the July monitoring run to show the sites, protocol, and data sheets. He also pointed out where temp loggers were located for retrieval in October. So far, money has not been spent out of this grant as Doug has been getting paid from the 319 grant. We will need to look into extending this grant if we want to keep Doug on for the upcoming summers.
- N2221 - Protection of Weber River Riparian Area. The goal is to put a conservation easement at Sargent Ranch.
- Assisted Tom Boyer with this Water Optimization application.



Morgan County:

- Management of 3 continuing AgVIP plans
- N1804 - Morgan Ranching Feedlot. Final site visit completed in October. He installed concrete on a large mucky section of the feedlot that utilized a pipe to spread waste onto a filter strip. Additionally, concrete buffers were installed to prevent runoff from entering the adjacent slough. Another pipe moved this waste to an additional filter strip. Money remaining: \$7,100.
- N2314 - Morgan County Fencing Project. The goal is to replace the decade-old buck and rail fence currently tasked with keeping cattle out of the riparian corridor near I-84 across from the Morgan County Fairgrounds. In addition, a water tank is set to be installed, along with barbed wire fencing to split the current area into two to facilitate rotational grazing. The agreement became effective July 1, 2022 so no work has been completed yet.
- Morgan Grill Your District. Emily made a brief presentation on her role in the watershed and all of the opportunities we can offer producers to try to get more involvement in the many large-scale projects we have active right now.

- N2006 - East Canyon Creek Restoration. An extension was granted from June 2022 to June 2023 due to supply chain issues.

Davis County:

- N2229 - Howard Slough. This project is in partnership with the NRCS. The goal is to fence off the slough, increase bank stabilization via willow plantings and coconut fiber. An ISM grant was also utilized for Russian Olive removal. Russian olives were removed before I started.
- N2327 - Davis County Nine Element Watershed Plan and N2318 - Ogden River Watershed Plan. N2327 (Davis CD) and N2318 (Weber River Partnership) are pooling money to make a large-scale Watershed Plan for Davis County and the Ogden River Basin. This first year is being used to focus on planning. I served on the contractor selection committee and I also worked to get producer involvement with the contractors to ensure that multiple perspectives were being included while writing up the plan.

Weber County:

- Management of 2 continuing AgVIP plans
- East Canyon Creek Watershed Committee. I am serving as the chair of this committee. I put together a meeting for October 26, 2022. The meeting was very productive and the group spent time discussing some very difficult but important topics. I am going to try to get people that are a little more knowledgeable in water rights to speak at the next meeting.

Monitoring

The Weber River Watershed Coordinator conducted monitoring for Chalk Creek from July-September 2022. Currently, 11 sites get total nutrient and chemical analysis, and 4 of the 11 sites get E. coli samples. Data was uploaded to the DWQ portal at the end of the monitoring season. A meeting with Christine led to the decision to add E. coli samples at the remaining 7 sites for next summer.

Trainings

- Pollinator program - Jul 22, 2022

- SHPO - Sep 13, 2022
- STEPL - Nov 3, 2022
- HEL Determination - Nov 14, 2022

Conferences

- UACD - Nov 1-2, 2022

Utah State University Water Quality Extension

2022 Annual Report Prepared by Hope Braithwaite, Assistant Professor for Watershed Quality and Lauren Housekeeper, Program Assistant

Utah State University's Water Quality Extension program (USU WQE) aims to reduce the impacts of nonpoint source pollution by increasing the public's awareness of water quality issues and motivating changes in behavior that will be protective of water quality. Our efforts for 2023 fall into these three areas:

- Utah Water Watch (UWW), which trains people to monitor lakes, reservoirs, and rivers across the state. The program increases volunteers' understanding of water quality concepts and encourages stewardship efforts;
- Youth outreach through hands-on activities, curriculum development, and training and support for teachers who utilize our lessons; and
- Three statewide water quality outreach campaigns addressing water quality best practices on small acreage farms, proper human waste disposal on Utah's public lands, and cleaning up trash that would otherwise end up in our waterways.

Utah Water Watch Public Science Water Quality Monitoring



offered one in-person training in southern Utah.

This year, we recruited and trained 44 new Utah Water Watch Tier 1 volunteers and supported continuing volunteers (Figure 1). These volunteers engaged others (family members, students, community groups, and others) in monitoring for a total of 1,249 participants. Volunteers collected water quality data at 83 sites with 362 monitoring events (Figure 2). Historically, the number of volunteers and sites was reported based on our internal records, primarily from

Utah Water Watch is our statewide public science water quality monitoring program. In 2022, we provided three real-time virtual UWW trainings and had a recording that participants could view at their preferred timeline and pace. We also

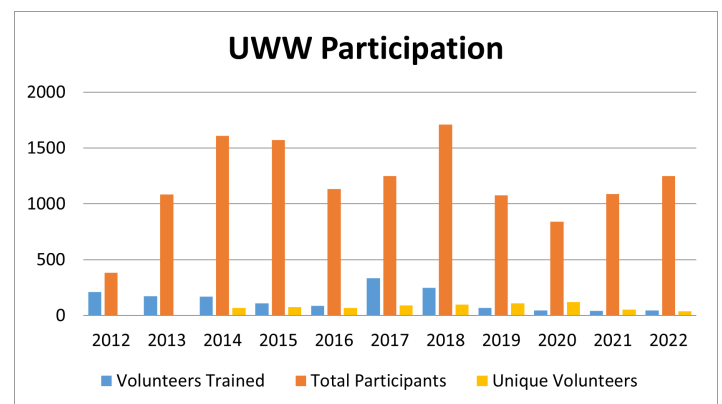


Figure 1. Number of volunteers trained, number of participating unique volunteers, and total participation each year since the program's inception in 2012.

spreadsheets manually updated by USU WQE staff. After an internal review of our spreadsheets and finding issues with the spreadsheets being outdated in terms of the volunteers currently monitoring and sites being monitored, we transitioned in 2021 to reporting all these numbers using data downloaded from the CitSci database. Downloaded data are more systematic, accurate, and conservative since there could be volunteers monitoring and not uploading their data. Therefore, numbers for 2021 and 2022 may appear lower than previous years because of this change in methodology.

We continue to work closely with the Utah Division of Water Quality (UDWQ) Harmful Algal Bloom (HAB) and E. coli monitoring programs to train volunteers and help expand our ability to locate and track harmful algal blooms and protect recreators. This was the second year of the Utah HAB Squad, a group of volunteers that focus specifically on monitoring Utah's waters for the presence or absence of harmful algal blooms. These volunteers monitored frequently (weekly or every other week) for HABs at priority waterbodies across the state. Utah Water Watch and HAB Squad volunteers observed harmful algal blooms at two sites and promptly reported to UWW and the Utah Division of Water Quality. In both cases, Health Watches were issued based on volunteer monitoring and spurred monitoring by the UDWQ which resulted in Warning Advisories issued by local health departments. Volunteer monitoring and coordination between volunteers, USU WQE, UDWQ, and local health departments helps protect recreators, pets, and livestock from harmful algal blooms.

Utah Water Watch volunteers expanded the reach and capabilities of monitoring efforts statewide. Volunteer driving and monitoring time in 2022 is valued at >\$22,204 (7,060 miles at \$0.50/mile and 623.5 hours at the 2022 volunteer hourly rate of \$29.95

<https://independentsector.org/resource/value-of-volunteer-time>). Water quality data collected by volunteers were entered into our publicly available online database <https://citsci.org/> and shared with monitoring partners.

We communicated with volunteers through emails, a newsletter, and social media (Facebook and Instagram). We also plan to host a UWW Volunteer Celebration in early

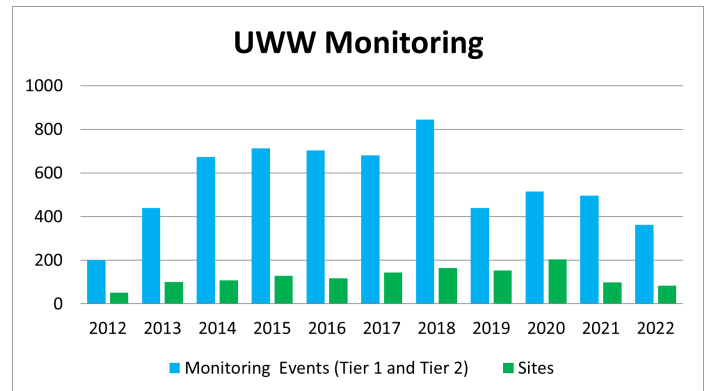


Figure 2. Number of monitoring events and sites each year entered in the database. Includes all data submitted by November 20, 2022.



December. The celebration gives volunteers a chance to connect with our staff and each other and feel appreciated for all their monitoring efforts.

Youth Outreach and Teacher Training



In 2022 we were able to do more in person educational events than the past couple of years when the COVID-19 pandemic was more severe. In collaboration with the Bear River Land Conservancy and the City of Logan, we brought back the Bear River Celebration and Free Fishing Day. This is a free community event full of hands-on educational activities for youth and their families to learn about water quality, wildlife, plants, recreation, and fishing in the Bear River Watershed. We provided water quality education at

STEM fairs, conservation fairs, the Utah Envirothon, and other similar events throughout the state. We also partnered with the USU Botanical Center and The Nature Conservancy in Utah to provide the Wings and Water Wetlands Education Program, which brought 1,405 third and fourth grade students to explore wetlands along the Great Salt Lake. In total, over 3,037 individuals participated in at least one of these events or activities.

In 2022 we put Stream Side Science educator workshops on hold while we update the curricula to align with the recently implemented Utah Science with Engineering Education (SEEd) Standards. Educators were encouraged to attend Utah Water Watch trainings and monitor with their students. Of note, three high school teachers at American Academy of Innovation have created and are implementing an entire course about the Jordan River Watershed this fall, including UWW monitoring and adoption and adaptation of our resources. You can learn more here

<https://aaiutah.org/school-life/aai-intensive>. We also trained nature center and museum directors and staff on water quality testing during the summer Northern Utah Nature Centers meeting. Stokes Nature Center, Swaner EcoCenter, the Natural History Museum of Utah, Wasatch Mountain Institute, and other organizations use our resources for their water quality related field trips, camps, and other educational activities.

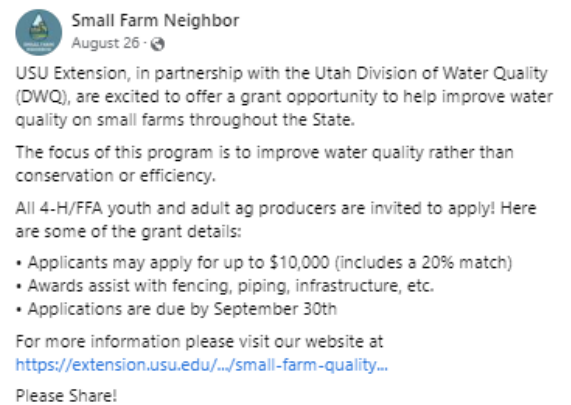


Statewide Water Quality Outreach Campaigns



Pack It Out Utah: Pack it Out Utah is our statewide trails and waterways clean up. We partner with local governments, nonprofits, organizations, and volunteers across Utah to pick up litter and reduce the amount of trash entering our waterways. Picking up trash helps keep our lands, communities, and water sources clean. In 2022, we had over 280 people remove and properly dispose of over 6,980 pounds of garbage. We also use these clean up events as an opportunity to further educate participants about nonpoint source pollution including practices they can do in their communities that are protective of water quality (pick up pet waste, sparingly and appropriately apply fertilizer when needed, properly dispose of oil and household chemicals, etc.).

Small Farm Neighbor: Using the results from our 2019 survey of small farm owners and operators, we created a content-rich website and social media campaign encouraging small acreage owners to use practices protective of water quality called Don't Share Utah. In 2021, we overhauled the name, logo, graphics, and main messaging strategy of Don't Share to the more welcoming and positive Small Farm Neighbor based on feedback we received from partners. Feedback indicated that using the phrase "don't share" felt negative and could be perceived as pushy. In addition, it was suggested that use of the words "good neighbor" versus "bad neighbor" in the website messaging felt judgmental. Partners suggested using positive messaging and focusing more on how small farmers and gardeners can provide community value. Small Farm Neighbor aims to help support and inform small farmers and neighborhood gardeners in keeping Utah's waters healthy and clean. Our social media approach to be one of both content creation and curation. A portion of our content is original and directs viewers to our website or other resources, while the other portion includes shared content from other agriculture and garden-focused groups, including financing opportunities, tips, webinars, and other resources our audience would find helpful in addition to water

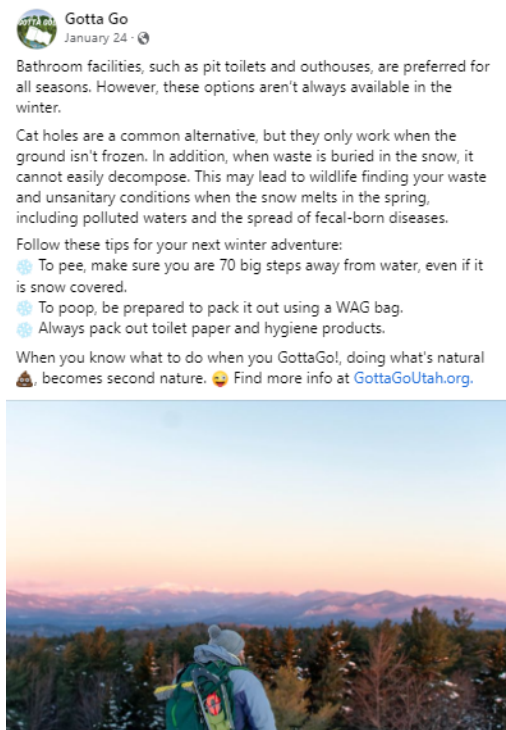


quality best practices. In 2022, we planned to increase our social media presence and outreach to partners to create more campaign awareness and opportunities. However, due to staffing changes and shortages, we did not have the bandwidth to maintain our previous social media outreach efforts. With less staff hours to dedicate to our programs, social media became a lower priority resulting in lower engagement overall. This is also the case for the Gotta Go campaign (also explained in that section below).

From November 1, 2021 to October 21, 2022, we have received 3,396 webpage views. The top two ways we receive website traffic are through referrals and direct links or searches. Our top five most viewed web pages are the home page, soil maps, water laws, protect your well, and fuel storage. Around 73% of website traffic has been referred from outside sources such as other websites and traffic sources. On social media, our Facebook page has 174 page likes and 187 followers, 93 posts, and has reached approximately 19,124 people since it began in 2020. Our Instagram account has 136 followers and 46 posts. Instagram does not have a way to measure the number of people reached past 90 days. In general, social media reach and engagement are higher when running ads and/or boosted posts. We have found that sending invites to like our Facebook page to people who engage with our content has successfully gained page likes.

- Website: <https://www.SmallFarmNeighbor.org>
- Facebook: <https://www.facebook.com/SmallFarmNeighbor>
- Instagram: <https://www.instagram.com/SmallFarmNeighbor>

Gotta Go: In 2019, we conducted structured interviews with federal and state land managers across Utah and found that concerns about managing human waste associated with recreation were widespread across public lands. This issue has only been exacerbated with more people recreating during the COVID-19 pandemic. In 2020, we responded by developing and launching a website and social media campaign focused on protecting public lands from impacts of human waste due to recreational activities and teaching proper outdoor bathroom etiquette. The campaign uses humorous memes, informational posts, and targeted messaging to teach people how to “go” when nature calls in the great outdoors. Throughout 2021, we updated and maintained an accurate, content-rich website and social media presence. We also focused on gaining new partnerships to increase collaborative efforts on human waste management across the state. Gotta Go has been



well received and promoted throughout Utah by many recreational groups, agencies, partners, and the general public (via social media). Due to this, we were presented the 2021 Utah Outdoor Summit Stewardship Award from the Utah Office of Outdoor Recreation for our efforts and collaboration with partners that make this campaign effective. In 2022, we planned to increase our social media presence, increase outreach to partners, and expand our website content. However, due to staffing changes and shortages, we did not have the bandwidth to maintain our previous level of outreach efforts. With less staff hours, we had to allocate hours and staff members carefully, leaving less time for expanding these efforts. We continued to promote these resources at events and educational opportunities and posted content as often as possible given personnel limitations.

As of October 2022, we have received 13,272 website views since the start of the campaign. The top two ways we receive website traffic are through direct links and searches and social media. Referral traffic to our site is sent from notable sources such as Visit Utah, Outside Online, BLM.gov, USU Extension, and the Utah Department of Environmental Quality with these sites being the top 5 referral sources. Our top viewed page is the home page receiving around 60% of the website traffic. On average, website visitors spend 2.5 minutes per webpage and view 1.4 pages per session, which generally indicates higher interest in the content and willingness to read and learn about the topic. Traffic to the website generally spikes when we share social media content, run social media advertisements, and/or boost posts. Around 27% of website traffic has been referred from social media, indicating that social media is a good tool for driving traffic to the website contingent on continual posting and outreach. On social media, our Facebook page has 245 page likes, 80 posts, and has reached approximately 55,960 people. Our Instagram account has 336 followers and 74 posts. Instagram does not have a way to measure the number of people reached past 90 days. In general, post reach and engagement are higher when running ads and/or boosted posts. We have found that sending invites to like our Facebook page to people who engage with our content has successfully gained page likes.



- Website: <https://www.GottaGoUtah.org>
- Facebook: <https://www.facebook.com/GottaGoUtah>
- Instagram: <https://www.instagram.com/GottaGoUtah>

Mud Creek Restoration

Annual report prepared by Jordan Nielson, Trout Unlimited

Goal #1

- Objective 1: Survey and design a stream channel for Mud Creek, Fish Creek and Winter Quarters Creek that has proper stream morphology for the valley type on the Jensen and District properties.
 - Task 1: Select and contract a consultant that specializes in stream restoration design and has appropriate engineering credentials. A request for bid was posted in early October 2021. We received proposals from River Restoration.org and SWCA. River Restoration.org was selected based on general project approach and lower overall cost.
 - Task 2: Conduct a pre-project survey of Mud Creek and Winter Quarters Creek and adjacent areas. River Restoration.org conducted survey work between December 2021 and June 2022 to prepare design alternatives for restoration on Mud Creek and Winter Quarters Creek.
 - Task 3: Complete stream restoration design and receive approvals from all project partners at the 30%, 60%, 90%, and 100% design levels. RiverRestoration.org provided 60% design for permitting and 90% design to begin construction on the project in August. We received 100% stamped design plans when we finished the fall construction because there were several field adjustments that we anticipated prior to breaking ground. Design documents can be provided separately.
- Objective 2: Using approved design reconstruct streambanks to stabilize against erosive flows and/or hoof traffic.
 - Task1: Using approved designs obtain appropriate permits for construction work. A Utah Stream Alteration permit was issued in early August 2022. We worked with Utah Division of Water rights to do a temporary transfer of water rights from Carbon Water Conservancy District for all Beaver Dam Analogs and completed all the state requirements. An Army Corp of Engineers Nationwide 27 permit was issued in September. We adjusted design specs on bends where we intended to create oxbow wetlands to keep the channel open and not reduce the amount of streambank on Mud Creek throughout the project site.
 - Task 2: Select and retain a contractor to construct approved designs with appropriate equipment. At the request of Utah Watershed Restoration Initiative Coordinator, we contracted the UDWR heavy equipment crew to run all equipment on the project. They were on site from August 1, 2022 through the first week of October 2022.
 - Task 3: Implement project design. There is still some construction work to be completed. However, we are 90% complete with all work requiring heavy

equipment. The remainder of the construction work will be completed in Spring 2023.

- Objective 3: Revegetate Mud Creek and Winter Quarters Creek with appropriate native vegetation.
 - Task 1: Select and contract a consultant to create a planting plan for the project area. Goodfellers, LLC, and Canyon Country Youth Corp were selected to implement a planting plan created by River Restoration.org. They worked from October 1 through October 21, 2022.
 - Task 2: Purchase plants and seed outlined in the planting plan. A riparian seed mix was developed by River Restoration.org and approved by USFWS and UDWR. Seed was purchased from Granite Seed. Willows were harvested locally, trimmed, and planted as willow poles.
 - Task 3: Organize and implement planting days using a combination of professional and volunteer help. We advertised volunteer days for planting seed and willow poles for four weeks during October 2022. No volunteers showed up for planting work due to the distance and the cold weather. However, the Goodfellers and CCYC crews were adequate to get planting work completed.

Goal #2

- Objective 1: Exclude erosive foot and hoof traffic from the reconstructed banks of Mud and Winter Quarters Creeks with riparian fencing.
 - Task 1: Select and retain a contractor to design and construct and fence based on property boundaries and need on the project site. Earl's Fence Company was contracted by Carbon Water Conservancy District to fence the riparian corridor and the road around the adjacent pastures after the funding was awarded through EPA and before we could get a fencing project on the ground. We are working with them in partnership now and will divert the funds to the increased cost of restoration work.
 - Task 2: Construct the fence with appropriate water gaps and entrance gates for farm implements and foot traffic. Earl's Fence Company built a buck rail fence around the



Figure 5 Oblique Imagery showing the construction of the new riparian exclusion fence along Mud Creek.

entire property that meets design specifications for keeping cattle in the pasture and out of the riparian area.

- Objective 2: Create a grazing plan and pasture rotation for the Jensen cattle herd that reduces impacts on stream banks and non-point sources of pollution. All work related to panning for better grazing on the Jensen property will take place in the Spring of 2023.

Goal #3

- Objective 1: Monitor reductions in non-point source pollutants using the Sampling and Analysis plan developed by TU and UDWQ.
 - Task 1: Implement the Sampling and Analysis Plan and report results. Sampling is conducted by UDWQ. The following Table 11 represents their results from sampling on June 28, 2022.

Table 11. Monitoring methods and status as of November 2022 Annual Report to Division of Water Quality

| Method | Purpose | Location | Frequency | Responsible Entity | Status as of Nov 2022 |
|-------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|
| Backpack Electrofishing | Assess fish population usage and recruitment of restored areas | 100-meter section within Winter Quarters Creek, 200-meter section within Mud Creek | Every year, August - September period, for the year prior to construction and for three years post construction | Trout Unlimited, UDWR | |
| Photo Point Surveys | Visually assess progress in regrowth of riparian vegetation | 1 point every 100 meters throughout the project Area | Annually for five years beginning with the year before construction | Trout Unlimited, UDWR | |
| Temperature Loggers | Assess water temperature to compare to the 3A cold water fishery beneficial use standard, and to determine suitability | 2 points in Winter Quarters Creek, 4 points within Mud Creek | Annually for five years beginning with the year before construction | Trout Unlimited | |

| Method | Purpose | Location | Frequency | Responsible Entity | Status as of Nov 2022 |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------|
| | for salmonid populations | | | | |
| Digital elevation modeling | Assess landform change across time in relation to stream restoration work | Entire project area | Before and after construction | Trout Unlimited | |
| Rapid Stream and Riparian Assessment | Assess habitat | Entire project area | Annually | Wild Utah Project | |
| Multiple Indicator Monitoring (MIM) | Assess changes in multiple riparian health indicators impacted by changes in grazing practices | 1 -Mud Ck 1-Winter Quarters Ck | Once in 2021. Repeat 3 years after project implementation | DWQ | Data lost from tablet. No 2022 pre-construction results. |
| Macroinvertebrate Sampling | Calculate O/E scores annually to determine macroinvertebrate response to project implementation | 1-Mud Creek 1-Winter Quarters Ck | Annually for 5 years beginning in 2021 | UDWQ | Samples collected at both locations summer 2022. |
| Water grab samples, field parameters, and flow | Assess water quality changes. Compare results to applicable water quality standards. Flow used to calculate pollutant loading. | 2-Winter Quarters Ck 2-Mud Creek 1-Fish Creek | Monthly from April-November as accessible beginning in Spring 2021 prior to construction. Likely to continue for 3 years minimum | UDWQ | Samples collected at all locations April-November 2022. Sample collection will resume as planned in April 2023. |

Lower Weber River Restoration Project

Final Report Submitted by Phil Suiter, Ogden City

Ogden City hired Redoubt Restoration as the contractor to perform construction for the Weber River Kayak Park Project. Redoubt was issued the Notice to Proceed on 5/17/21 and was substantially complete with the project on 12/3/21, and finished the outstanding punch list items by 6/1/22. Between the last report and final completion of the project, we spent the remaining \$94,466 of our total \$149,466 NPS-319 funds. The following paragraph is a summary of the work performed during this period:

Redoubt performed about 3000 CY of excavation and grading in the main east channel and middle island, 2,076 CY of filter fabric and erosion control blanket was installed along the east and west banks. 1,313 TN of boulders were installed along the east river bank, 1,965 TN of boulders installed along middle island, fish passage, west bank, and in-channel scour protection boulders at the toe of each of the 3 whitewater features. 161 TN of Slabstone steps, 434 TN of boulders, and 55 CY of concrete was installed for the staircase and ramps on the west bank for public access to the river.

The boulders and erosion fabric were installed to reinforce the banks, stabilize the river channel, and minimize erosion. The clean boulder embankments and boulder scour protection will also help with water quality during flood events. An established fish passage will allow the endangered blue head sucker fish and other fish species to easily bypass the whitewater features and move along the Weber River with ease to help preserve habitat. As much of the existing willows, trees, and vegetation were preserved as possible in the island and banks to help secure the riparian habitat until our new vegetation takes root and matures. On the east and west banks, top soil, upland seed mix, and containerized plants were installed to help establish and grow a healthier riparian habitat. Slabstone Step staircases on the north and south end of the project, and the access ramp, were installed to help direct and confine the public to specific river access points, which will help reduce foot traffic damage to the vegetation and keep the banks from future erosion.



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