



**ENVIRONMENTAL
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UTAH NONPOINT SOURCE POLLUTION MANAGEMENT PROGRAM



Fish Creek Restoration Site, Chalk Creek Watershed, Summit County

**FISCAL YEAR 2017
ANNUAL REPORT**

January 2018

**Prepared by:
The Utah Department of Environmental Quality
In cooperation with the Water Quality Task Force**

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Cover Photo: Fish Creek Restoration Project. Implemented with Section 319 and State NPS funds

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1. Introduction and Program Overview

This report fulfills the requirements of Section 319(m)(1) of the federal Clean Water Act of 1987. The Utah Department of Environmental Quality's Division of Water Quality annually prepares this report to inform the public, the U.S. Congress and the U.S. Environmental Protection Agency (EPA) on the state's progress in the area of nonpoint source water pollution abatement. Although 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 mission of the Utah Nonpoint Source Pollution Management Program is to support the environmental protection goals of the state as described in Utah Administrative Code R317-2, in part to: 1) eliminate pollution which creates hazards to the public health; 2) to protect, maintain, and improve the quality of the waters of the state for public water supplies, species protection and propagation and for other designated uses; and 3) to provide for the prevention, abatement and control of new or existing sources of polluted runoff. The Utah NPS Management Program works to achieve these goals by working in concert with numerous local, state and federal agencies and private parties pursuant to the Utah NPS Pollution Management Plan.

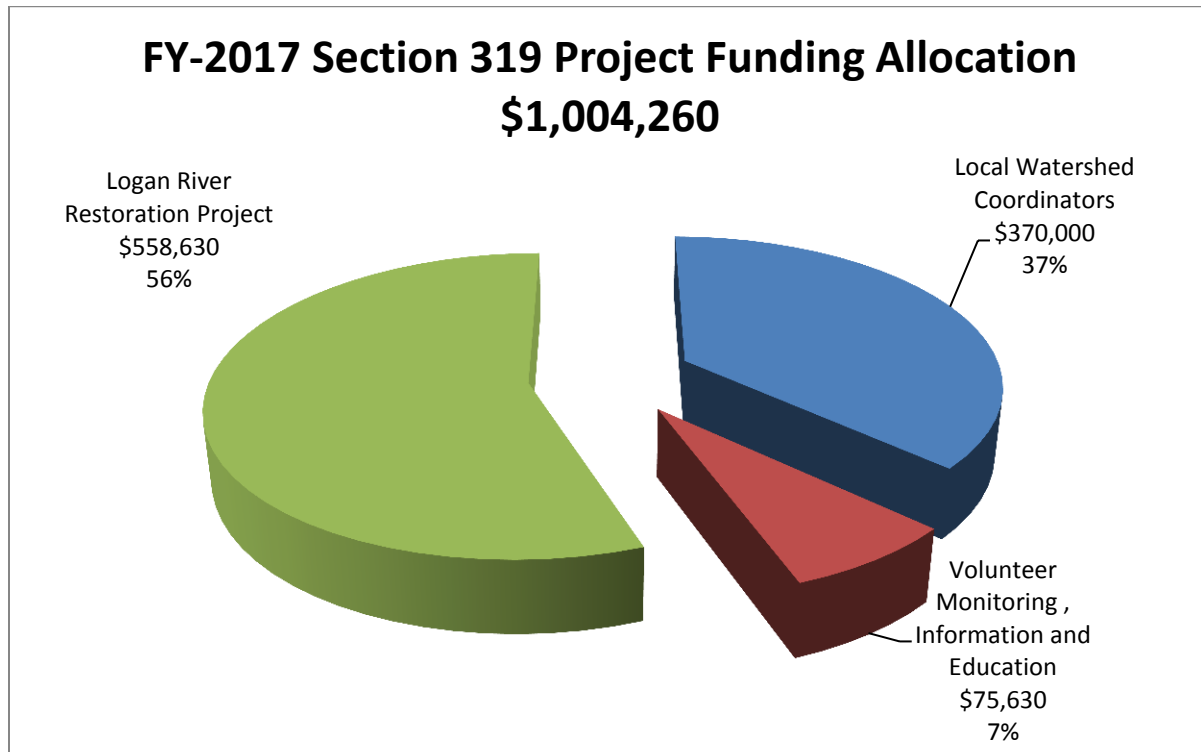
Nonpoint source pollution refers to diffuse pollutants that when added together from an entire watershed can significantly impact water quality in streams, lakes and reservoirs. Nonpoint source (NPS) pollution is diffuse, coming from land runoff, percolation, precipitation or atmospheric deposition. Precipitation washes pollutants from the air and land and into our streams, lakes, reservoirs and groundwater. Such pollutants can include sediment, nutrients, pathogens (bacteria and viruses), toxic chemicals, pesticides, oil, grease, salts and heavy metals. In Utah, our most common problems 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. Most waterbodies are listed on the State's 303(d) List of Impaired Waters because of nonpoint source pollution. Some of the common sources of NPS 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.

2. Grant Management and Program Administration

In Fiscal Year 2017 (FY-17) the Utah NPS program received \$1,477,000 in Federal Section 319(h) funds. Of these funds, \$472,740 was used for program related staffing and support, while the remaining \$1,004,260 was dedicated to 3 project grants. This was a 3% overall increase from the previous year

Section 319(h) funds are distributed to project sponsors at the local and state level to help address water quality issues contributing to nonpoint source pollution. Recipients of these funds can include local governments, watershed groups and individual cooperators. The projects selected for funding in FY-17 include the statewide volunteer monitoring program, support of local watershed coordinators, and on-the-ground implementation projects in the Logan River Watershed (See figure 1).

Figure 1



In addition to the FY-17 Section 319 funds, Utah continues to manage five other federal 319 grant awards which have been partially or completely expended. Table 1 summarizes grant awards by year and the approximate percentage that has been expended in each grant. The FY-2012 and 2013 grants have been spent out, and will be officially closed out by the end of the 2017 calendar year.

Table 1

Section 319(h) Nonpoint Source Funding Project Allocations				
Federal Fiscal Year	Grant Award	Expenditures in FY-2017	Total Expenditures	Percent Expended
FY-12	\$830,800	\$62,018	\$830,800	100%
FY-13	\$861,621	\$31,613	\$861,621	100%
FY-14	\$893,621	\$186,492	\$715,437	80%
FY-15	\$879,521	\$293,199	\$777,080	88%
FY-16	\$987,458	\$426,004	\$426,004	43%
FY-17	\$1,004,260	\$0	\$0	0%
Total	\$5,457,281	\$999,326	\$3,610,942	66%

2.1. Staffing and Support

In FY-17 the Division of Water Quality devoted 5.30 FTEs to the NPS Pollution Management Program that are funded 60% with 319 funds and 40% state revenue. Table 2 shows the positions and FTEs funded by the Division of Water Quality using Section 319 funds.

Table 2

PERSONNEL (# FTE's)	SALARY	Benefits	FTE	TOTAL EXPENSES	STATE (40%)	EPA 319 (60%)
Program Coordinator	\$64,498	\$39,153	1	\$103,651	\$41,460	\$62,191
Environmental Scientist	\$69,029	\$40,798	0.85	\$93,328	\$37,331	\$55,997
Environmental Scientist	\$65,960	\$25,175	1.00	\$91,135	\$36,454	\$54,681
Environmental Scientist	\$64,498	\$41,152	0.20	\$21,130	\$8,452	\$12,678
Environmental Scientist	\$70,950	\$32,701	0.25	\$25,913	\$10,365	\$15,548
Environmental Scientist	\$63,162	\$49,270	0.40	\$44,973	\$17,989	\$26,984
Environmental Scientist	\$61,680	\$38,581	0.40	\$40,104	\$16,042	\$24,063
Watershed Section Manager	\$79,193	\$44,338	0.60	\$74,119	\$29,647	\$44,471
Administrative Services Manager	\$56,773	\$32,350	0.25	\$22,281	\$8,912	\$13,368
Assistant Division Director	\$89,380	\$45,327	0.25	\$33,677	\$13,471	\$20,206
Division Director	\$120,979	\$52,515	0.10	\$17,349	\$6,940	\$10,410
TOTAL 5.30 FTEs	\$806,103	\$441,330	5.30	\$567,659	\$227,064	\$340,596
SUPPORT						
Travel				\$17,000	\$6,800	\$10,200
Current Expenses				\$132,000	\$52,800	\$79,200
Indirect Costs				\$71,241	\$28,496	\$42,745
Total Support				\$220,240	\$88,096	\$132,145
Total Staffing and Support				\$787,901	\$315,160	\$472,740

2.2. FY-17 Accomplishments and Milestones

FY-17 Accomplishments

- Utah closed out the FY-11 Section 319 Grant, and all information has been entered into the Grants Reporting and Tracking System (GRTS)
- Water Quality Task Force meetings were held on July 20th, 2016, October 20th 2016, January 19th, 2017 April 11, 2017, and June 29th, 2017.
- The annual agency coordination meeting was held on March 7th, 2017. This meeting allowed partner agencies the opportunity to give a 15 minute presentation highlighting the NPS pollution issues their agencies are currently addressing.
- The Utah Watershed Coordinating Council (UWCC) met 3 times during FY-17.
- One success story was submitted to EPA for the Chalk Creek Watershed. This has been accepted and approved by EPA as a WQ-10 success story due to the water being delisted for biological impairments.
- A Federal Consistency Review was conducted with the Division of Water Quality and the Forest Service in the Dixie National Forest on October 3rd-4th, 2017.
- The Utah Division of Water Quality and the Environmental Protection Agency participated in a project evaluation tour in the Fremont River, Otter Creek, and Upper Sevier Watersheds, and toured the impacts of the Brian Head Fire on September 5th-7th, 2017.
- The Utah Division of Water Quality and the Natural Resource Conservation Service worked together to identify three 12 Digit HUCs in the Upper Sevier and Chalk Creek Watersheds in which the National Water Quality Initiative funding will be spent.
- The State NPS MOU has been signed by all participating agencies.
- The NPS Program Coordinator, DWQ Assessment Section, and the DWQ Monitoring Section worked together to develop a statewide NPS monitoring plan that will help determine project effectiveness and facilitate the collection of data required for delisting waterbodies and generating success stories.

Annual Milestones

To help the State of Utah gauge the success of the Statewide Nonpoint Source Management Program the State has developed annual milestones. These milestones are based on the five objectives of the Statewide NPS Management Program identified in the Management Plan. These objectives and milestones are as follows:

Objective 1: Environmental Protection

Annual Milestones

- Number of TMDLs completed.
- Number of TMDLs initiated during the state fiscal year.
- Number of nine element watershed based plans developed.
- Number of nine element watershed based plans initiated during the state fiscal year.
- Number of projects dedicated to the protection of threatened waterbodies identified in Utah's 303(d) list.
- Number of projects focused on groundwater protection throughout the state.

Objective 2: Improve Program Efficiency and Effectiveness through Reporting and Evaluation.

Annual Milestones

- Total number of stream miles restored (since 2013)
- Total estimated load reductions (P,N,TSS) in project areas (since 2013)
- Number of final project reports submitted (since 2013)

- Number of 319 grants currently open during the fiscal year
- Amount of unexpended funds in each open 319 grant
- Number of success stories submitted to EPA for approval showing the environmental benefits of completed NPS projects

Objective 3: Improve Public Participation and Understanding of NPS Issues.

Annual Milestones

- Number of participants involved in the Statewide Volunteer Monitoring Program
- Number of Information and Education projects implemented with Section 319 and State NPS Funding
- Updates made to the State NPS Program Website

Objective 4: Improve Data Collection and Management

Annual Milestones

- Track updates made to enhance NPS monitoring in the Division of Water Quality's annual monitoring strategy
- Number of Sampling Analysis Plans developed
- Track status and updates of Utah's AWQMS database
- Report on water quality data uploaded to the EPA WQX database

Objective 5: Improve Coordination of Governmental and Private Sectors

Annual Milestones

- Hold annual NPS Management Program coordination meetings
- Conduct annual consistency reviews with state and federal agencies
- Number of Water Quality Task Force meetings held during the fiscal year
- Amount of funding used to leverage 319 funding throughout the state. This funding can include program funding from UDAF, UDEQ, UDWR, USDA, and other state, federal, and local agencies

For a complete report of how these annual milestones were met in FY-17, refer to Table H in the appendices.

2.3. Summary of Active Utah 319(h) Grants During FY-17

For an entire summary of active Utah 319(h) projects see Tables A, B, & C in the appendices.

2.4. Watershed Based Plans/ TMDLs

Section 303(d) of the federal Clean Water Act (CWA) requires states to develop and submit for approval a list of impaired waters every two years. This is referred to as the 303(d) list. The most recent version of the 303(d) list approved by EPA for the State of Utah was issued in 2016. Waterbodies listed as impaired require additional study to determine the sources of impairment, and if appropriate, have a Total Maximum Daily Load (TMDL) determination made for the pollutant of concern. Currently the State of Utah is implementing 64 TMDLs. Additionally, a comprehensive tracking tool for TMDLs and waterbody assessments has been provided by EPA that will assist in accurately reporting the status of completed TMDLs. The Division of Water Quality has also prioritized the waterbodies listed on the 303(d) list of impaired waterbodies to determine where efforts should be focused to develop TMDLs and implement watershed plans. For a list of all TMDLs and watershed plans the State of Utah is currently implementing see Tables D and E in the Appendices.

2.5. Project Proposals Approved for Funding During FY- 17 Solicitation Process

Due to the high demand for 319(h) funds the State of Utah has required that entities applying for funding submit pre-proposals to the State for review. Fifty seven NPS pre-proposals totaling over \$4.6 million were accepted from the first of April to the middle of June for the 2017 fiscal year. These pre-proposals were reviewed by the Utah Division of Water Quality using a project selection ranking criterion developed by the Water Quality Task Force. Once the proposals were ranked they were reviewed by a subcommittee of the Water Quality Task Force, and the final grant awards were determined. Of the proposals received, 3 projects were selected for funding with Section 319 funds. The Logan River Watershed received the majority of project funds available, since the Bear River watershed was the targeted basin in FY-17. Local watershed coordinators and an information and education (I&E) grant to USU Extension, including the volunteer monitoring program, were also funded (Table 3). The projects that were not selected for funding with Section 319 funds were then considered for funding with State NPS funding.

Table 3

2017 Project Implementation Plans (PIPs) for CWA Section 319 Funding

<u>Proposal Title</u>		<u>Allocation</u>
1.	USU Volunteer Monitoring and I&E	\$ 75,630
2.	Local Watershed Coordinators	\$ 370,000
3.	Logan River Restoration Project	\$ 558,630
Total		\$ 1,004,260

3. NPS Program Strategic Approach

To be eligible for funding, NPS projects must be located on a waterbody, or be tributary to a waterbody, identified on the 303(d) list of impaired waterbodies. A current watershed plan should also be in place which covers all nine elements required in an EPA approved watershed based plan. Using a targeted basin approach allows watershed planners time to develop watershed plans between funding cycles. To help facilitate the development of watershed plans and identify sources of pollutant loading, the Utah Division of Water Quality conducts annual intensive monitoring runs two years before funding is scheduled to be received by the targeted basin.

3.1. Targeted Basin Approach

The State of Utah uses a targeted basin approach to reduce nonpoint source pollution. FY-17 represents the 8th year of implementing the targeted basin approach (see Table 4). This approach allows the state to focus implementation efforts on a specific watershed and will promote effective implementation of TMDLs and watershed plans.

The Bear River Basin obtained the majority of the 319 funds allocated for BMP implementation. Projects located in the targeted basin also receive additional points in the ranking process, increasing their likelihood of being funded.

Table 4

Basin Priority Funding Schedule											
Watershed	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
(1) Jordan/ Utah lake											
(2) Colorado River											
(3) Sevier, Cedar-Beaver											
(4) Bear River											
(5) Weber River											
(6) Uinta Basin											

3.2. Utah State NPS Funding

The Utah Division of Water Quality uses funds generated from interest earnings on loans awarded by the Utah Water Quality Board to address NPS issues. Individuals, businesses, private entities, associations, and government agencies are eligible to receive these grants. Much like Section 319(h) funds, all project proposals received are ranked and prioritized. The highest priority projects are those that address a critical water quality need, human health concerns, and would not be economically feasible without the grant. In FY-17, 36 projects were funded using State Nonpoint Source grants, totaling \$990,000. In addition to these projects an additional \$10,000 was reserved for on-site septic system projects that may arise during the year. For a complete summary of FY-17 funded projects see Table F in the appendices.

3.3. Program Match Status

The 319(h) federal money received by the State requires a 40% non-federal match for both the staffing and support funds used by DEQ and the dollars allocated for projects. Most of the match for projects is provided at the local level by project sponsors and cooperating landowners. The DWQ provides State NPS funds as match to selected 319 projects to provide an additional incentive to implement BMPs.

There are several state and local programs which have been very helpful in generating match for the 319 projects. The Division of Wildlife Resources manages several grant programs, which include Habitat Council funds, Blue Ribbon Fishery program, and Watershed Restoration Initiative funding. These funds are dedicated to the improvement of wildlife habitat on public and private lands, while improving water quality. Table 5 shows the match associated with the projects where FY-2017 State NPS and Section 319 grants were used. Of the NPS grants that were funded, \$6,038,195 in match will be generated from other programs, or landowner match. This equates to almost a 3:1 ratio of NPS grant to partner funding.

The Utah Conservation Commission manages the Agriculture Resource Development Loan Program (ARDL), which in recent years has been expanded to include water quality improvement projects on farms and ranches. The Grazing Improvement Program (GIP) at the Utah Department of Agriculture and Food also provides state revenue to improve management of upland and riparian areas throughout the state. All of the programs mentioned above have provided match for 319 funds in jointly funded projects. These state programs are tremendous assets to the improvement of water quality in this state.

The Department of Environmental Quality provides state revenue to match the staffing and support 319(h) funds that are part of the Performance Partnership Grant (PPG). The Utah Association of

Conservation Districts also tracks match accruals through projects managed by the local Conservation Districts, where applicable, via an annual contract.

Table 5

Funding Source	Match Amount
NRCS	\$1,597,056
Cooperator Match	\$1,225,490
Utah Department of Natural Resources	\$559,370
U.S. Fish and Wildlife Service	\$15,000
Universities	\$50,420
UDAF	\$40,232
Local Government	\$900,509
BLM	\$20,000
Other	\$1,630,118
Total	\$6,038,195

3.4. Integrating Watersheds and NPS Funding (Basin wide summary)

Watershed coordinators have proven to be very effective at helping implement water quality projects on the ground. Local watershed coordinators develop relationships with landowners and educate them on the benefits of installing Best Management Practices (BMPs). They also oversee all project planning, design, project implementation, and reporting. They help organize and facilitate meetings for local watershed groups involved in watershed planning and in the project solicitation and selection process.

Southeastern Colorado River Watershed- Arne Hultquist

The San Juan Conservation District initiated a partnership that has almost completed a watershed management plan for a very large portion of San Juan County. The group has elucidated several resource concerns and is relatively close to finalizing several projects in the area. The other watershed group in this area is the Moab Area Watershed Partnership (MAWP) and has been a continuing force in resource conservation and water quality improvement.

The San Juan watershed did not receive funding for new projects this year. The MAWP received funding for two projects. One project is the Southeastern Utah Health Department's green infrastructure project which will replace its aging landscape irrigation with storm water catchments and a pollinator garden. The other project funded this year is the Matheson Wetland/Mill Creek Restoration Project. This is a large and expensive project with several partners. Unfortunately, funding from some of the partners has not been granted and the project sponsors are looking for other funding sources that will be necessary to complete this project. Grand Conservation District and San Juan Conservation District appreciate the funding and are looking forward to submitting applications for several very good projects next year.

The only project completed this year was the Castle Creek vegetation restoration project which also completes the larger Castle Valley project implementation plan. The final report for the Castle Valley projected implementation plan has been submitted to DWQ for approval. Although only one project was completed there has been significant progress with several of the other open projects. With the exception of the two projects funded this year, most of the projects that are currently open should be closed out during the next fiscal year.

Provo River/ Utah Lake

The Provo River/Utah Lake watershed coordinator position was filled at the end of FY-2017. This coordinator will assist with implementation work that is currently taking place in the Wallsburg Watershed. There are also several grants that were awarded for projects on the Spanish Fork River that the watershed coordinator will be working on in FY-2018.

In addition to the project implementation work that the watershed coordinator will be doing, he will also be heavily involved in monitoring that is taking place on Utah Lake. Due to the harmful algal blooms that have occurred on Utah Lake over the past couple of years, there is a need to determine the cyanotoxin levels in the lake, and identify the possible sources of nutrients into the lake that are contributing to these issues.

Weber River Watershed-Andy Pappas

The Upper Weber Watershed Coordinator was able to complete several projects in FY-2017 that had been in the planning phase for the past few years. He was also able to identify additional projects that will help improve water quality throughout the watershed in the coming years.

Upper Weber Watershed:

South Fork 1

This project is located in the middle of the South Fork of Chalk Creek. It is a 12,000 acre ranch that is currently over grazed. The landowner was actively engaged while the CRMP was being developed. This project is not a one year project that will fix everything. We are planning to implement projects for multiple years to address all the resource concerns. Currently they do not have any cross fencing or water developed, so the cows congregate in the riparian areas. This project will be to install the first major cross fence, and add water to the north side of the ranch. In the future they will add several more cross fences and additional water developments. In the development of this project it was decided that riparian fencing was not an option at this time due to the lack of water on the ranch, but they are going to implement short duration high intensity grazing. A grazing management plan is also being developed that will encompass their entire operation. This will help them better manage their operation without injuring the land.

South Fork 2

The purpose of this project is to exclude cattle from the South Fork of Chalk Creek by making water available on the rangeland that is present. This is going to be accomplished by doing spring development and pumping that water to water tanks located in the rangeland areas. With the help of the Grazing Improvement Program (GIP) they are looking to install five different systems across the ranch. The landowner has already built the cross fencing and riparian fence to keep the cows where they need to be. They are starting with two grazing systems, and will increase the use of grazing systems in future years. GIP will be helping with the remaining systems in the near future.

Morgan Feedlot

The objective of this Animal Feeding Operation (AFO) project is to improve and protect water quality resource concerns by implementing a holistic nutrient management plan on a feedlot. Instead of using traditional nutrient management solutions like pouring concrete and concentrating waste, Morgan Ranching Company will completely re-grade the feed lot so that it slopes away from the slough and any excess runoff will enter a 150' wide filter strip that will be planted with grasses and forbs. These plants

will take up many of the nutrients and filter any run off water before it enters into a near-by slough. In-corrall composting will also be implemented to break down manure and make nutrients more available for plant uptake when the manure is land applied to crop fields surrounding the feedlot in the spring. Cattle that are currently grazing on the other side of the slough will be fenced off, allowing the riparian area to heal itself. Water will be piped out of the slough, into the middle of the pasture, to allow the cattle adequate access to clean drinking water. The area under the corn silage pit and surrounding the commodities shed will be paved and all runoff will be channeled down an alley way that will then enter an existing filter strip on the north side of the feed lot. This will prevent any silage or commodities leachate from possibly entering into the slough. Implementing this AFO project will greatly reduce the potential of nutrients getting into the slough.

Upper Weber Range

The project will develop watering facilities away from Beaver Creek to allow livestock to graze without having to return to the creek for water. This project will be in cooperation with the NRCS' EQIP funding. This project is currently funded by NRCS and State NPS grants. This project is located in an area of concern identified in the Rockport Reservoir TMDL, and will result in water quality benefits, and will aid in enhancing habitat for big game species.

This project will drill into a strategically located area proposed by NRCS's geologist. They will then install a solar pump that will pump the water into storage tanks. This water will then be distributed to various troughs located throughout the landowner's property. These new watering facilities will allow livestock to obtain water in locations away from the creek, thus minimizing the effects livestock will have on Beaver Creek, but will also maximize the usage of forage located outside of the riparian area.

Chalk Creek 1

This project will stabilize approximately 250 linear feet of eroding stream bank using bioengineering techniques, as well as implement instream structures where needed. The proposed structural practices include cross vanes or J-hooks to address erosional issues that are present in the project site. Root wad structures will also be used to diffuse the shear stress on the streambank. Areas with low shear stress will be shaped to create a bankfull bench and planted using locally harvested willow stakes.

Milton River Project

This project entails the stabilization of approximately 700 linear feet of eroding stream bank using bioengineering techniques as well as instream structures. The proposed structural practices include using J-hooks to address erosional issues. Areas with low shear stress will be shaped to create a bankfull bench and planted using locally harvested willow and cottonwood stakes. They are also building a diversion structure to catch flood irrigation water and keep it in the field. This will help with irrigation efficiency and help improve streambank stability.

Huff Creek

The Huff Creek project is located near the headwaters of the creek. The landowner is currently running 1,400 pair of beef cows. Due to over grazing, the streambanks are very unstable and have little to no woody species. This project will be partnered with Trout Unlimited, UDWR and GIP to install 4 miles of riparian fence, a 7 mile cross fence, and a 5 mile long water trough system. With offsite watering being developed, and riparian fencing being installed, this project should result in a vast improvement in riparian health. A good population of beavers is also present upstream, with aspen located the right

distance away. Beaver dam analogue structures will be installed in hopes that the beavers will move down into the lower reaches of the river. This project is part of the Huff Creek CRMP.

Morgan Pivot Project

This project is located along the banks of the Weber River just downstream of the community of Morgan. The property is currently owned by the Division of Wildlife Resources to provide deer a migration corridor. They currently lease the crop ground to Morgan Ranching. Morgan Ranching converted 72 acres of flood irrigation to sprinkler irrigation to improve the quality and quantity of crops they produce. Prior to this project being implemented, the irrigation return flows would runoff directly into the Weber River. This area was identified in the 2014 Weber River Watershed Plan as a very highly threatened and very high priority ecological system deserving increased attention.

The partners that made this project possible were the NRCS, Division of Water Quality, Division of Wildlife Resources, Morgan Ranching, and the Morgan Conservation District. The NRCS provided \$61,893.00 and engineering for the pivot irrigation system. The Division of Water Quality provided \$5,000 in cost share. The Division of Wildlife Resources allowed Morgan Ranching to implement irrigation improvements on their property, and provided \$14,500.00 in funding as well. Morgan Ranching handled all the billing and scheduling of the projects. They also leveled the field with their equipment as well as provided matching funds of \$31,000.00 to the project. The Morgan Conservation District did the planning of the projects and the paperwork needed for the permits. In total the project cost \$112,392.00, plus work donated from Morgan Ranching for equipment and time.

East Canyon Watershed

East Canyon Creek

Erosion of streambanks and lack of a healthy, robust riparian corridor are principle concerns for landowners and water quality personnel that work to improve East Canyon Creek. Streambank erosion and the lack of shading from the riparian corridor contribute to the detrimental nutrient cycling and high summer time temperatures in East Canyon Creek and East Canyon Reservoir. These inputs keep these water bodies from meeting the minimum standards required to maintain their beneficial uses. Since East Canyon Creek travels primarily through privately owned land, partnership and landowner participation is essential. Interest in addressing active erosion and improving the riparian habitat of East Canyon Creek was the impetus for the landowner contacting the local watershed coordinator. We wish to build upon this partnership through involving the Utah Division of Water Quality's Non-Point Source Program.

This project entails the stabilization and restoration of approximately 750 linear feet of stream bank and establishment of the associated riparian corridor using bioengineering techniques as well as limited structural practices.

Mormon Flats

This project was identified by Trout Unlimited and Utah State Parks. State Parks currently owns the property. They were having issues with streambank erosion from trespassing cows that were getting through the fence. The erosion issues were addressed by installing 5 beaver dam analog structures, as well as 2,300 feet of riparian fencing. Buck and rail fence was used because it is a historical site where no ground disturbance was allowed. It was also more aesthetically pleasing.

Watershed Committee Development

The watershed coordinator continues to work closely with the East Canyon Watershed Committee as the committee secretary. The coordinator announces and reminds participants of the meetings, organizes the meetings and agendas, takes meeting minutes and disseminates this information to the committee. The coordinator attends all committee meetings and is the acting chair of the education and outreach committee. This committee just completed the development of an outreach and education campaign focused on increasing awareness about the low flow issues in East Canyon Creek. They will be adding a flow gauge to the website so anyone can see how low the flows get in the creek. It also explains what different levels are critical for fish and water quality. The coordinator also acts as the website administrator and frequently develops new content for the website and keeps current events and information up to date.

The coordinator has also been heavily involved in the formation of the Weber River Partnership. This group seeks to act in the capacity of a watershed committee working to increase the coordination and effectiveness of groups working in the larger Weber Watershed.

Monitoring

New photo monitoring points were established on completed project sites to monitor the physical and biological changes these sites will undergo. This critical visual indicator is intended to augment the chemical data collected by the UDWQ and create a more robust narrative of current and previous projects funded in the watershed.

Five data sonde monitoring devices were deployed at strategic locations throughout the East Canyon watershed as part of the annual monitoring plan for the watershed.

The coordinator continues to assist with a temperature monitoring program as a collaborative effort with a local junior high school science class. This is an annual project and seeks to track and disseminate information about temperature differences between upstream tributaries and the main stem of Chalk Creek, which appears to experience temperatures that are detrimental to aquatic organisms. Temperature monitoring equipment was deployed in June and will continuously monitor throughout the summer and fall of each year. Students analyzed this temperature data from the previous summer and created outreach posters explaining their interpretation of the data and recommendations. These posters will be posted at strategic points in the local community to further inform local residents about temperature issues within the larger Chalk Creek drainage.

The Coordinator has developed a Sampling and Analysis Plan (SAP) for the Chalk Creek watershed, and worked with the UDWQ TMDL coordinator to develop a SAP for the East Canyon watershed.

Technical Assistance

Technical assistance was provided in a variety of situations to landowners, partner agencies, and local workgroups. Some notable situations where technical assistance was provided include:

- 1) Counseling the operation managers for the two ski resorts in the East Canyon watershed. Erosion control issues and best management practices were discussed and future projects were outlined in these discussions.
- 2) Partnering with the Natural Resource Conservation Service (NRCS) and providing technical assistance on a frequent basis. This includes 1 riparian and 1 forestry conservation plan. Each was funded during the summer of 2017. This represents \$345,000 of additional funds brought into the watershed to improve the water quality and riparian areas of the watershed.

Watershed Planning

A grant for \$14,000 was received to organize a Coordinated Resource Management (CRM) group in the Huff Creek watershed. This watershed was identified as a high priority watershed in the Echo/Rockport TMDL because of its high contributions of sediment to the larger Chalk Creek drainage. The coordinator has worked to organize CRM meetings, develop presentations, gather relevant available as well as field data, and write the document. This planning process has raised awareness with the landowners of watershed scale issues as well as provided a foundation of partnership, collaboration, and planning within the watershed.

Education and Outreach

In April 2017 the coordinator managed a booth at the Recycle Utah Water Fair. This event allowed the coordinator to provide the watershed model for use, as well as present an erosion model that educated 800 school children about sedimentation and the importance of riparian buffers.

The coordinator presented to the North Summit Jr High Science class, teaching 4, 7- 8th grade classes about riparian buffers and their role in improving water quality and overall aquatic ecology and introduced the water temperature monitoring effort to the students.

The coordinator assists volunteers involved in the Utah Water Watch program by meeting with landowners, creating monitoring sites, and working with volunteers to connect their data to the context of the watershed. He has also presented to the Summit County Council regarding the role and benefits of having a watershed coordinator in the area and the services that the position provides, as well as presenting a water quality report to the council.

Middle and Lower Bear River Watershed

The Bear River Watershed Coordinator position was vacant from June until December, but project work continues to progress along the Logan River. The Logan River was the targeted basin in FY-2017, and the Logan River Task Force, in cooperation with the Blacksmith Fork Conservation District, continue to oversee the project work that is currently being implemented.

In preparation for receiving the targeted basin funding, the previous local watershed coordinator helped oversee the development of the Logan River Watershed plan. This plan has been completed, and submitted to EPA for approval.

The new coordinator will oversee the completion of the 4 projects identified on the Logan River, conduct project effectiveness monitoring, work on identifying and obtaining funding for additional projects in the targeted area, and submit final reports to DWQ on the accomplishments of these projects.

San Pitch Watershed- John Saunders

The San Pitch Watershed Coordinator continues to implement NPS projects on the San Pitch River, as part of the targeted basin effort that was started there in 2016. These projects are in different stages of completion, but the implementation work is proceeding as scheduled. The following is a summary of the projects that the coordinator is currently working on:

Michael Larson – Pasture

This is a standalone 319 funded project. The landowner is making some pasture improvements by performing reseeding, watering facilities, fencing, troughs, and well improvements. This project is still in the planning stage. The landowner wants to wait until after this next year to see if he can get EQIP funding to help with the watering and cross fencing. If he is not awarded EQIP he will begin implementing the project with 319 funds. The total 319 funds contracted with this project is \$23,180.00.

Bench LLC – Stream Restoration – Phase 1 & 2

This project began in September 2015 and has multiple phases. Extreme bank erosion was occurring with steep banks. The stream bank stabilization was completed by using bioengineering. This included conifer revetments, and willow planting from cuttings. Excavators were used from outside of the river channel to slope back stream banks and place juniper trees in the toe of the banks. Excess material was transported to an upland site on the property using dump trucks. Rock barbs were also placed to help take pressure off the stream banks and to enhance aquatic habitat. The banks were shaped to a 6:1 slope above the high water mark.

Phase 1 is 100% complete. This project was funded using NRCS EQIP Strategic Funding and a FY 15 State NPS grant (\$45,000). Total length of stream bank protection for phase 1 was approximately 4,410 feet.

Phase 2 is in the beginning stages of contracting and planning. This project is funded by NRCS EQIP. This phase will be implemented in March 2018 before the stream alteration deadline. The total length of streambank that will be restored is approximately 3,250 feet

Irons – Stream Restoration

This project is a standalone 319 funded project totaling \$6,500. The riparian work was completed a few years ago, but this phase will include installing rock structures, bank shaping, and vegetation planting to prevent further erosion. This project will also fix an access point to insure that livestock do not enter the riparian areas. This project is in the beginning stages of planning. Implementation is scheduled to start the summer 2018.

Beardall/Kelson – Stream Restoration

This cooperator's main goal is to clean up the dead fall and garbage on his property on the San Pitch River, and prevent further erosion, while creating better habitat for wildlife. On the property there is an enormous amount of Russian olive trees. The project is funded with 319 and Invasive Species Mitigation (ISM) grants. The ISM funds will be used for approximately 14 acres of Russian olive removal. The 319 will be used to implement approximately 600 feet of streambank stabilization, which have steep banks. Everything is ready for implementation on this project except for the engineering and stream alteration permit. CWE Engineering will be doing the design and the stream alteration permit has been submitted. This project is scheduled to start late August or the beginning of September 2017.

Parry – Irrigation and Stream Restoration

This cooperator implemented a NPS/319 project in FY 14, and installed an irrigation system the following year with EQIP. This irrigation project was part of the Frandsen McArthur Ditch. He installed a pivot and pods to reduce return flows to the San Pitch River. This year Parry has started work on the

rest of his streambank with EQIP, and was awarded \$19,800 in NPS funds last year. The current project is 60% completed. The project includes implementing bioengineering practices, bank shaping, rock barbs, willow planting, riparian fencing and Russian olive treatment.

In FY14 the stream restoration project was for \$46, 633. \$44,516.20 was used to stabilize about 500 feet of streambank. The EQIP irrigation project was \$67, 971, which is 100% completed. About 25 acres were enhanced by installing pivot and pods. About 3,470 feet of pipeline installed as well.

Coates – Irrigation and Stream Restoration

This operation has been using flood irrigation from the Frandsen McArthur Ditch Company and has recently improved their system by installing a pivot on a moderate slope. The irrigation system phase of the project, consisting of 31 acres and 2620 feet of pipeline, has been completed using State NPS funds totaling \$31,300.00. Coates was also awarded EQIP funds to restore his streambank, this allowed us to move his 319 funds to another location in the watershed to improve water quality. Everything is finished and ready to be installed except for the engineering design. The coordinator is working closely with NRCS engineers to finish the design for the project. This project is scheduled to be implemented in the fall of 2017. The total linear feet of streambank that will be restored is approximately 7,500 feet.

Olsen – Irrigation and Stream Restoration

This project is on schedule, and consists of a combination of EQIP and State NPS funds to install irrigation and streambank improvements. This property has been flood irrigated using water from the Frandsen McArthur Ditch. Phase 1 consisted of irrigation improvements. The landowner has installed two pivots to reduce return flows to the San Pitch River on approximately 46 acres with 1,070 feet of irrigation pipeline. Phase 2 consists of stabilization of the streambank. This project is planned to be implemented in the fall of 2017. The project will include completely fencing the riparian corridor to keep livestock out of the riparian area, and a total of 1,590 feet of streambank will be stabilized. The only thing needed for the project work to continue is the engineering design. The coordinator is working closely with NRCS engineers to finish design for project.

Castleberry – Irrigation and Stream Restoration

This landowner is in the first phase of the project, which consists of installing a wheel line to reduce irrigation return flows. This property is also on the Frandsen McArthur Ditch line. Phase 1 was a standalone State NPS project, totaling \$45,000. This project was completed in October of 2016. This project included 45 acres of irrigation improvements, and 3,840 feet of pipeline. EQIP funds were awarded to the cooperator to restore the streambank as well. This riparian work was started on June 30, 2017, and will improve of 1,240 feet of streambank.

Sorenson – Stream Restoration

This is a State NPS project. This project is currently being held up by landownership issues, but is still on schedule to be completed during the contract period. The total funds for this project are \$42,597.00. The permits are ready and need to be sent in. A contract is also ready to be signed and submitted to the Local Conservation District. The NRCS is doing engineering work for both Castleberry and Sorenson, and they may be implemented at the same time.

Sweat – Stream Restoration

This project is located a few miles above Mt. Pleasant. This project consists of both State NPS funding, totaling \$80,100.00, and 319 funding, totaling \$29,100.00. This project will consist of mostly bioengineering practices, such as revetments and bank shaping. Implementation was planned to start in the fall of 2016, but fell behind in planning. This project now has everything ready for implementation, except for the engineering and stream alteration permit. CWE Engineering will be developing the design. The stream alteration permit will be sent to the Division of Water Rights as soon as the owner signs it. The project is scheduled to start late fall 2017. Total length of streambank stabilized will be approximately 2,300 feet.

Carter – Feedlot and Stream Restoration

This feedlot is right next to the San Pitch River and is contributing nutrients into the river, especially during storm events. He also has severe erosion issues on his river property, with undercut and vertical banks. This project includes moving the feedlot to a new location out of the riparian area. The old feedlot will be converted to a hay barn. The Streambank project will include stabilizing roughly 4,000 feet of streambank. Funding for this project is a combination of State NPS and 319 totaling \$116,046. Everything is ready for implementation on this project except for engineering and stream alteration permit. CWE will be doing the engineering and the stream alteration permit will be sent in soon.

Turpin – Stream Restoration

This project is located downstream from the Turpin/Cook project that was implemented in the fall 2015, and is funded by EQIP. Implementation began the first of June 2016 and was completed in November 2016. The project included bioengineering revetments, bank shaping, and the installation of rock barbs. This project is 100% completed. Nearly 5,500 feet of streambank was restored.

Cheney – Stream Restoration

This project is split into two phases. The first phase is an EQIP funded project on the lower end of the property on the San Pitch River. Phase 1 was started and completed in February 2017. This project included the installation of rock riprap, bioengineering revetments, and bank shaping to prevent further erosion.

Phase 2 is scheduled to be implemented in the fall 2017 on the upper end of the property using an NPS grant totaling \$58,746. Everything is ready for implementation on this project except for the engineering and streambank alteration permit. CWE is doing the engineering and the stream alteration permit will be submitted soon. The total length of streambank that will be stabilized for both phases is nearly 7,300 feet.

Nuttall – Stream Restoration

This is a NRCS EQIP funded project located in Milburn. This project involves installing streambank protection practices such as bank shaping, bioengineering revetments, and rock barbs. This project is 75% complete, and will restore approximately 4,400 feet of streambank.

Upper Sevier Watershed- Wally Dodds

The Upper Sevier Watershed Coordinator oversees a very large area of the state consisting of project implementation work from the Fremont River to the North Fork of the Virgin River. While the local watershed coordinator does not have any open 319 contracts currently, he has been very busy implementing projects for the National Water Quality Initiative (NWQI) program along the Upper Sevier River. He has also overseen the completion of two State Nonpoint Source projects.

In addition to the project implementation work, the Local Watershed Coordinator has also helped ramp up the monitoring that is taking place in the Upper Sevier River. Over the years, millions of dollars have been spent on the Upper Sevier River to help improve water quality. However, little monitoring has been done to help document the impacts these projects are having on the water quality throughout the watershed. Hopefully this newly acquired data will be able to help DWQ have a better feel for where water quality has improved, and where additional work is needed. The coordinator has also been involved in *E.coli* monitoring in the North Fork of the Virgin River for much of the year.

The coordinator has also been involved in educational field days in both the Panguitch area and the Fremont area. At these events hundreds of high school aged kids were able to learn about the natural resources around them. They also had an opportunity to go out on a stream restoration site and help

plant willows. These events have proven to be very effective, and the local community has begun looking forward to them.

3.5. NPS Water Quality Task Force

The mission of the Utah Water Quality Task Force is to facilitate coordinated and holistic management of Utah's watersheds for the protection and restoration of Utah's surface and ground waters.

The Utah Nonpoint Source (NPS) Program is administered by the Division of Water Quality (DWQ) of the Utah Department of Environmental Quality (DEQ) through the coordination and assistance of the Utah Water Quality Task Force, and its established ad hoc committees. The responsibility of the Utah Water Quality Task Force is to advise the DEQ in the holistic management of Utah's watersheds, with a focus on reduction of nonpoint source pollution. DEQ is responsible for the chairmanship of the Water Quality Task Force.

Specific functions of the Utah Water Quality Task Force include:

- Serve as a coordinating body for the review and direction of federal, state and local NPS management programs to assure that these programs are implemented consistent with the Utah Nonpoint Source Management Plan (approved by EPA in 2013 and as amended or revised);
- Promote and foster better alignment of relevant programs to assure efficient and effective watershed management efforts that improve water quality, in addition to other benefits;
- Provide a forum for the exchange of information on activities which reduce nonpoint source pollution;
- Provide a forum for discussing and implementing project monitoring (before and after)
- Provide a common storage area for all data collected
- Provide a forum for discussion and recommended resolutions to program conflicts;
- Work with partner agencies to coordinate the prioritization of watersheds for nonpoint source activities. Prioritization criteria should include local involvement (e.g. locally led watershed committees), effective use of partnerships, and evidence of leveraged sources of funding;
- Establish and implement a process for field inspections of nonpoint source mitigation activities on public and private lands to ensure that best management practices are installed and functioning as designed to protect water quality; and
- Serve as a coordinating body for outreach and education to increase public awareness regarding nonpoint source pollution management.

Specific Products of the Utah Water Quality Task Force include:

- The Annual Utah Nonpoint Source Program Report. This report is required by EPA, but is not restricted to 319 funded efforts. The report is prepared by DEQ in coordination with UDAF. The task force will assist in providing content, advice and review. The report will highlight the planning efforts, projects, and successes statewide that are possible with the broad coalition of partners encompassed in the Water Quality Task Force.
- Presentation of the Annual Utah Nonpoint Source Program Report each year to the Utah Water Quality Board and the Utah Conservation Commission.
- Organize a NPS Conference periodically to share information, highlight successes, and improve networking throughout the state and region.
- Provide annual water quality awards to individuals and organizations whose actions or products have protected water quality and exemplified good stewardship of our waters.

- Maintain an institutional repository (e.g. a web site) that includes originals or links to documents, reports, and minutes.

Membership:

The Task Force includes representation of those entities with programs that could potentially cause or mitigate nonpoint source water pollution. As new NPS program components are developed and implemented, additional entities will be invited to participate. Current invited members include:

Local Governments
 U.S. Army Corps of Engineers, Planning Division
 U.S. Department of Interior Bureau of Land Management
 U.S. Department of Interior Bureau of Reclamation
 U.S. Department of Interior National Park Service
 U.S. Department of Agriculture Forest Service
 U.S. Department of Agriculture Natural Resources Conservation Service
 U.S. Environmental Protection Agency
 U.S. Fish and Wildlife Service
 U.S. Geological Survey
 Utah Association of Conservation Districts
 Utah Department of Agriculture and Food
 Utah Department of Environmental Quality
 Utah Department of Natural Resources
 Utah Department of Transportation
 Utah Farm Bureau
 Utah State University Cooperative Extension
 School and Institutional Trust Lands Administration
 League of Cities and Towns

3.6. Grants Reporting and Tracking System

The Section 319(h) Grant Reporting and Tracking System (GRTS) is a national database developed by EPA to track projects and activities funded with CWA Section 319(h) funds. The primary purpose of the database is to track project progress, accomplishments, funding information and environmental results using several nationally mandated information items that are reported to Congress annually by EPA. Information extracted from this system forms part of the justification to Congress for funding the Section 319 Program. EPA Region VIII uses GRTS to enable the States to electronically fulfill reporting requirements using the Project Evaluation Form and other attachment features in GRTS such as final reports, GIS maps or other project publications.

4. Water Quality Information

4.1. Sampling and Assessment Activities

In 2010 the State of Utah began utilizing the targeted basin funding approach. There were several reasons that the Utah DWQ decided to utilize this approach, one of them being to improve the monitoring of NPS projects being implemented in the state, and to concentrate the number of projects into a targeted area to make it easier to identify the benefits of the projects implemented.

As part of this strategy the DWQ monitoring section agreed to do an intensive monitoring run within the selected watersheds where the majority of the funding would be spent, two years prior to the implementation of the projects identified in the grant work plan. Additional monitoring will also occur

two years after the projects have been monitored. This data can be used to help determine project effectiveness, as well as help to update the watershed plan in that drainage.

Over the past several years DWQ has realized that, while the intensive monitoring schedule has been useful, it is necessary to collect data more frequently. Instead of monitoring individual projects, Sampling Analysis Plans (SAPs) are developed for the targeted areas where projects are being implemented. This monitoring includes chemical, physical, and biological monitoring. The frequency of this monitoring is determined by the protocol of each assessment type being done. Chemical samples are usually collected monthly at various sites throughout the watershed, and samples are collected at a minimum of 5 years after the project is completed. This has been very helpful during implementation to help identify additional pollution sources in the watershed, and identify additional projects that are funded with State NPS funding.

In addition to the more detailed monitoring plan, the Division of Water Quality has developed a Statewide NPS monitoring SAP. This SAP highlights what sites and parameters will be collected throughout the state to document project effectiveness in areas where large amounts of NPS funding has been spent. This document also identifies the costs associated with collecting and processing the samples being collected. This can insure that the costs associated with this monitoring will be covered. When needed, additional funding will be requested from the PPG to supplement this monitoring.

The Statewide SAP was developed in a cooperative effort between the Monitoring Section, Assessment Section, and Watershed Protection Section. By working together, each section was able to verify that the samples collected meet all of their programmatic needs. For example, when trying to delist a waterbody from the 303(d) list of impaired waterbodies, certain locations and frequencies of data collection needed to take place. The Assessment Section was able to identify additional monitoring locations within those assessment units to realize this objective. This process will occur annually, and a finalized SAP will be completed by the end of June each year, in coordination with the grant awards

In most cases the monitoring is conducted by local watershed coordinators. The Division of Water Quality has used State NPS funding to purchase the needed equipment to collect the field data, and continues to offer training as necessary to both the local watershed coordinators and our partners to verify that they can proficiently collect the needed data. The local watershed coordinators also partner with volunteers from the Utah Water Watch for safety reasons when doing their field work.

4.2 Assessment/ Integrated Report

In FY-2017 the 2016 Integrated Report was approved by EPA, and the 2018 Integrated Report was initiated. The DWQ Assessment section has done a very good job of getting the Integrated Report schedule back on track.

4.3 Volunteer Monitoring

Ellen Bailey (USU Water Quality Extension Educator) Ellen Bailey (USU Water Quality Extension Educator)

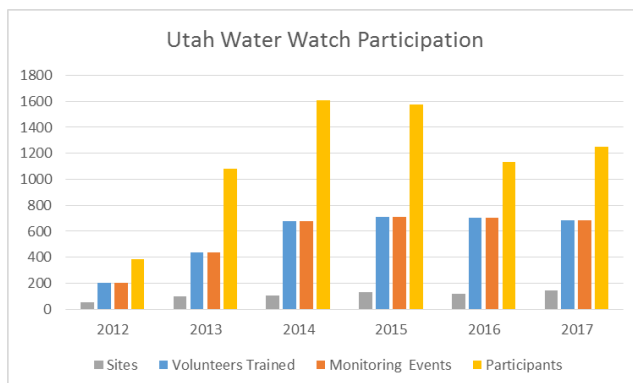


New volunteers at a Tier 2 training in Provo. Two volunteers advanced from Tier 1.

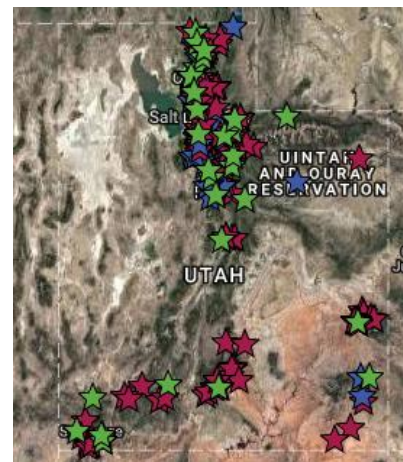
The Utah Water Watch program (UWW) had a successful year maintaining a strong Tier 1 monitoring core, increasing lake and harmful algal bloom monitoring, and strengthening the Tier 2 monitoring network.

We conducted a total of 34 training workshops this year. Half of these were for our educational level Tier 1 monitoring program, in which volunteers learn about water quality and healthy watersheds, are trained on simple methods and are assigned a site to monitor monthly from spring through autumn. Another seven trainings targeted Tier 2 volunteers, training them on more advanced monitoring techniques. Additionally, we hosted 10 harmful algal bloom ID workshops and provided microscopes at three locations across the state (one county health department office and two county extension offices.)

In 2017, 1,249 volunteers participated in data collection. While many sites are monitored by a single person, other volunteers bring their family, friends, classes or clubs along to participate in data collection. This year, volunteers monitored 143 unique sites.



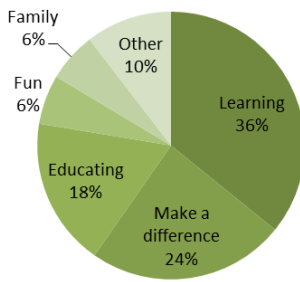
Graph showing participation, number of sites and monitoring events from 2012-2017. Participants and sites increased from 2016.



Map showing UWW sites. Green - Tier 2 projects and sites. Red - active stream sites. Blue - active lake, pond or reservoir sites.

One of objectives of UWW is to assist the state's watershed coordinators with monitoring as needed. As our Tier 2 volunteer network increases, we have been able to connect more volunteers with statewide monitoring needs. This year, one coordinator Dax Reid has been assisted by a Tier 2 volunteer on monitoring for his Wallsburg area project. We have also connected Tier 2 volunteers with watershed coordinators in the Southeast Colorado River, Weber River, Sevier River and Cedar/Beaver and will help these projects with their monitoring needs in the future.

Motivations for participation in UWW



Results from 2017 survey to evaluate volunteer motivation for Utah Water Watch and citizen science.

survey focused on motivations for participation in citizen science and specifically Utah Water Watch. Our UWW volunteers are motivated by a variety of factors but learning and making a difference are key motivators. As one UWW volunteer wrote: “I feel more connected with our local watershed. I also have more tools for understanding watersheds in general.”

In support of our volunteers and to encourage engagement with other volunteers and agency partners, we had 2 volunteer gatherings this year in St. George and in Salt Lake City. Information is shared with volunteers, partners and the public through a number of different sources. We distributed 4 Newsletters to about 500 subscribers and have a growing social media following of 400 Facebook, 79 Instagram and 500 Twitter followers.

In addition to the watershed coordinators, volunteers helped the US Forest Service monitor a project on the Northern Slope of the Uintas on the Blacks Fork River. We plan to assist in other Forest Service projects next year, and have reached out to other partners who will likely use our Tier 2 volunteers in the near future. Volunteers have also helped collect monthly *E. coli* (bacterial) samples at 11 reservoirs throughout Utah, collected macroinvertebrates and photo points on the Weber River, and substrate cross section data on the Jordan River in anticipation for project starts this fall.

In 2017, we conducted a survey of current and past UWW participants in coordination with Idaho’s IDAH20 monitoring program. The



The first volunteer and partner gathering this year held in St. George to reach our dedicated southern Utah volunteers.

4.4 The Ambient Water Quality Monitoring System (AWQMS) Database

The Ambient Water Quality Data Management System (AWQMS) will be upgraded to version 6.0 before the end of 2017. This database update includes the ability to store and manage continuous/time-series water quality data, ability to sync with EPA's Water Quality Portal via web services to retrieve results for external organizations (i.e., STORET and USGS), updates to display of maps, enhancements to several analysis tool functions, updates to search criteria and implementation of web feature services (WFS) for monitoring locations that complies with the Open Geospatial Consortium standards.

The UDWQ data review, data validation and verification process has continued to be streamlined during the year. The river and stream data collected during the 2016 water year has been imported and is currently available online. The data collected during the 2017 water year is undergoing quality control checks and is planned to be imported after validation has been completed. *E. coli* data collected by UDWQ and their partners will be available in AWQMS early 2018.

Plans for the upcoming year include quality assurance reviews for imported data and streamlining the import process to continue to provide quality data to our data users. Efficiency improvements will include centralization of monitoring locations data to ensure data integrity and to provide web tools to manage and request new sites programmatically.

4.5 Ground Water Protection

Ground water protection remains a priority in the State of Utah. In the past, various projects were funded using 319(h) funds to help analyze ground water around the state. Recently the State has noticed an increase in nutrients in various ground water sources. This monitoring will help assess the problem, and identify the sources of the contaminants. The Utah Division of Water Quality and the Division of Drinking Water will continue to fund monitoring and information and education programs around the state to identify groundwater issues, and educate the public on what they can do to protect groundwater in the State.

Over the years, several grants have been given to Utah State University to help educate septic owners on how they can properly maintain their septic systems to reduce pollutants from entering into groundwater. Technical service providers that commonly install and maintain those systems are also being trained on how to properly install and pump these systems.

5 Outreach Activities

Utah State University Extension- Nancy Mesner (USU Water Quality Extension Specialist)

Outreach Activities

In 2017, USU Water Quality Extension provided outreach and education activities to a wide variety of audiences throughout Utah. Our program continues to focus on citizen monitoring and teacher education, but also provides support and works closely with statewide partners. Our goal is to increase awareness of the importance of our water bodies and watersheds and to protect Utah's water from nonpoint source pollution.

Youth Outreach and Teacher Education

This year, Water Quality Extension supported a number of youth and educator programs. The number of 4th grade water fairs around the state is increasing. Our presence was requested at seven fairs this year where a total of 5,452 students participated in 10-20 minute hands-on activities about surface water pollution and macroinvertebrates. In addition to the water fairs, we helped organize this year's Natural Resources

Field Days in Logan Canyon where we reached an additional 2,000 4th graders with 50 minute presentations about macroinvertebrates and keeping Utah's waters clean and healthy. We receive positive feedback from the teachers at these events. As one teacher put it: "It seems it's a rare occasion when kids can get outside to learn, hands

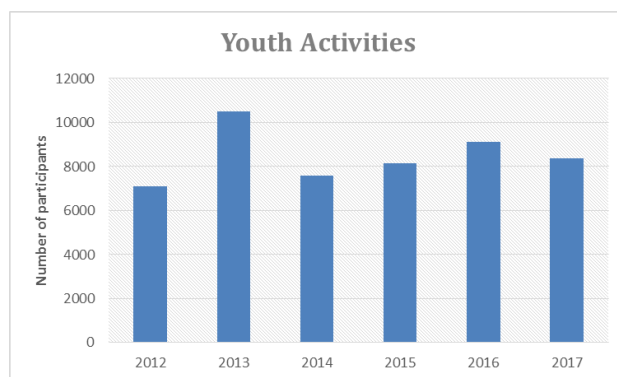


Figure showing ongoing participation in youth education.



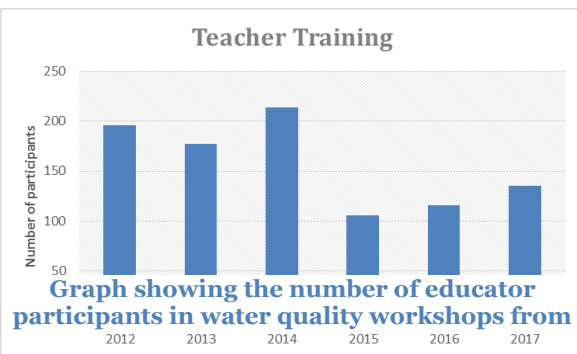
Fourth grade students explore the Logan River looking for macroinvertebrates at the 2017 Natural Resources Field Day.

on. Thank you for providing this experience for us!” USU’s Gear Up STEM Camp (water quality and engineering focus) marked its 2nd year and our program helped with water quality testing activities.

Partnering again with the City of Logan and the Division of Wildlife Resources, we hosted the 16th Annual Bear River Celebration, with 455 people in attendance. The booths at this celebration centered on the Bear River Watershed and provided educational activities geared towards kids.

Educators are able to connect with far more kids than we are able to with our small staff and availability. We assist teachers by providing them with water education, high quality lesson plans, supplies and other resources. This year, we assisted with 11 teacher trainings, often in partnership with other teacher education workshops. 135 teachers in six counties attended the workshops this year.

With new “3D” Science Standards adopted this year for grades 6-8, we are beginning to convert some of our lesson plans into the format used for this student focused approach. We have finished and tested two lessons for the new 6th grade standards and will make these available to teachers early in 2018.



Based on our ongoing teacher surveys, we estimate that formal and informal educators trained in 2017 will reach over 12,000 students. Since 2011, we estimate that teacher training has expanded our outreach by over 50,000.

This past year we also provided additional educational materials and repaired or replaced well-used groundwater models, surface water models and water testing kit supplies at several USU Extension offices. These kits are available for 4H staff to use with clubs and for teachers to checkout as needed.

Support for Utah Watershed Coordinators

We are dedicated to providing ongoing assistance to the watershed coordinators and water quality partners. This year we continue to be active participants of the Utah Clean Water Partnership, and continue to maintain and add to the Utah Clean Water Partnership website (www.utahcleanwater.org). In order to improve delivery of our water quality information and materials we reorganized the USU Water Quality Extension website to encompass more topics and helpful resources (<http://extension.usu.edu/waterquality>).

Additional website support included updates to the Bear River Watershed Information System (www.bearriverinfo.org). We have updated and continue to support Swaner EcoCenter’s monitoring station and touch screen display (see <http://swaner.web.usu.edu>).



CMaP (Community Mapping) workshop with educators in St. George. Teachers are learning water quality monitoring techniques in the Virgin River.

As requested by the Division of Water Quality, we provided several presentations about Tier 2 monitoring at UWCC meetings and highlighted ways to engage volunteers for monitoring needs. Projects and volunteer networks are growing in each of the watersheds and we are working actively in all watersheds to connect volunteers with watershed coordinators who need more long-term data in the UWW database.

Finally, we are working with the outreach subcommittee of the Utah Water Quality Task Force to organize and implement a statewide water quality PR campaign, highlighting a few key issues across the state and raising awareness of watershed improvements. This effort will “roll out” in 2018.



**Tier 2 training on the San Pitch River
with Watershed Coordinator John
Saunders.**

State/Local Agency Contributions

1) Utah Department of Natural Resources- Tyler Thompson

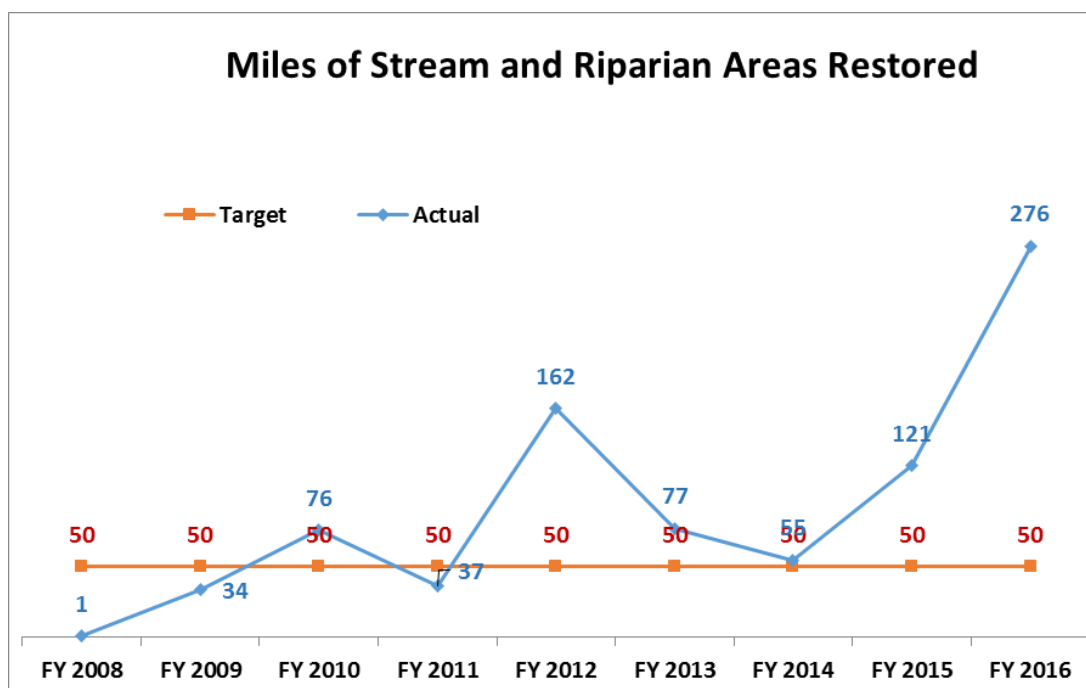
The Watershed Program in the Department of Natural Resources focuses on protecting and enhancing core values for our present and future quality of life including watershed health and biological diversity (structure and function), water quality and yield, and opportunities for sustainable use.

This is accomplished through the Utah Watershed Restoration Initiative (WRI), a diverse partnership of state and federal agencies working together with non-governmental organizations, industry, private landowners, and locally elected officials, coordinated by the Utah Department of Natural Resources. Locally led teams identify conservation issues and focus areas using existing plans to address needs at the landscape (watershed) level. Program partners then propose projects to address these needs and receive input from other partners. Projects are reviewed and ranked by the regional teams using a standardized scoring system and then are funded from a variety of sources and contributors.

In fiscal year 2017, the WRI partnership (86 partners participating) completed 147 projects restoring 138,000 acres of uplands and 154 miles of stream and riparian areas. Just over 37,000 acres of the total acres restored represent fire rehabilitation seeding following an active 2016 summer fire season. Many of these projects are designed with the goal of improving water quality and quantity. For a full list of WRI projects completed go to: <https://wri.utah.gov/wri/project/search.html?status=Completed> Through the partnership effort, general funding (\$1.95 million) to the Watershed Program from the Legislature was successfully leveraged at over 22 to 1 in on-the-ground projects.

The long-term results from this effort will be reduced acres burned by wildfires and resulting fire suppression costs, reduced soil loss from erosion, reduced sedimentation and storage loss in reservoirs, improved water quality and yield, improved wildlife populations, reduced risk of additional federal listing of species under the Endangered Species Act, improved agricultural production, and resistance to invasive plant species.

Table 6



2) Utah Department of Agriculture and Food- RJ Spencer

The Utah Department of Agriculture and Food regularly collaborates with state and federal partners to assist agricultural producers to maintain viable and productive agricultural lands and to protect Utah's natural resources. A strong partnership provides technical and financial resource options to Utah's agriculture producer while promoting agricultural sustainability. A watershed approach is used to work cooperatively with private land owners to prepare conservation plans that will solve resource problems. Funding options are available from multiple state and federal programs.

Utah Conservation Commission (UCC)

The UCC is authorized under Title 4, Chapter 18 of the Utah Code. The act's Purpose Declaration states that "The Legislature finds and declares that the soil and water resources of this state constitute one of its basic assets and that the preservation of these resources requires planning and programs to ensure the development and utilization of these resources and to protect them from the adverse effects of wind and water erosion, sediment, and sediment related pollutants." With this in mind, the Legislature created in 1937 this unique state government entity and it has been active continually since, evolving to meet new environmental and social conditions. Today this 15 person board strives to protect the natural resources within the state. The UCC utilized UDAF resources in the ARDL program to provide CD's with funding for important conservation projects. This year 5 projects across Utah were partially funded; four of these were water quality projects, improving the water quality and quantity throughout the state.

Utah Agriculture Certificate of Environmental Stewardship (ACES)

The ACES assesses storage, handling and application of fertilizer, pesticides, fuels, and hazardous wastes. It also evaluates grazing management, soil erosion, cropping and irrigation systems, storage and application of manure, and other agricultural practices that may have an impact on our natural resources. Currently there are no facilities covered under the ACES program. One operation has requested an evaluation and is planning on working toward certification.

Utah Grazing Improvement Program (UGIP)

The Utah Grazing Improvement Program is a broad-based program focused on rangeland resource health. Its mission is to "improve the productivity, health and sustainability of our rangelands and watersheds." A keystone benefit is the reduction of NPS water pollution and the protection and improvement of water quality and habitat components.

A staff of Grazing Coordinators, located in six regions throughout the state, offers the livestock industry sound information and assistance regarding grazing issues. A main focus of the program is to invest in and help facilitate improved resource management. Grants are provided for projects that will enhance grazing management and rangeland resource health.

Agriculture Resource Development Loan Program (ARDL)

Projects eligible for Agriculture Resource Development Loans (ARDL) loans include animal waste management, water usage management (irrigation systems), rangeland improvement, on farm energy projects, wind erosion control, disaster mitigation and cleanup, water conveyance projects for both private individuals and canal companies, and providing crop storage facilities and other farm structures outlined in the ARDL Policy. These projects all have a direct impact on protecting our natural resources, preventing or reducing pollution both to water and air and in sustaining the economic viability in rural communities.

The Loan section has a second program, Rural Rehabilitation Loans. Its purpose is to finance land acquisitions for beginning farmers and ranchers when conventional lending is not available. The

program may also help farmers and ranchers with troubled debt that can be restructured through refinance of long term debt, with well secured, low cost financing.

The loan section also underwrites loans for the State Revolving Fund (SRF) under the Division of Water Quality financing projects that eliminate or reduce nonpoint source water pollution on privately owned lands. That program was recently expanded to include grants as well as loans. We also underwrite loans for the replacement of Petroleum Storage Tanks for the Department of Environmental Quality. This program is designed to assist owners and operators in rural Utah by upgrading, replacing, or closing existing underground tanks to comply with Federal regulations and to protect the environment.

Colorado River Basin Salinity Control Program

The State of Utah currently receives approximately \$1.5 million yearly from the Colorado River Basin States Salinity Control Forum to reduce salt that enters the Colorado River, which has increased significantly from the initial \$350,000 received in 1997.

The irrigation projects installed through the salinity program are an economic benefit to agriculture in eastern Utah. The new irrigation systems increase watering efficiency, decrease water loss through seepage, and improve crop production and uniformity

Agriculture Sustainability Task Force

To better understand and address the role that agriculture plays in promoting Utah's security, economy, society, culture, and well-being, a Utah Agriculture Sustainability Task Force gathered and analyzed data and information to make recommendations to promote the sustainability of all types of agriculture. Eight major issues emerged:

1. Food Security
2. Invasive Species
3. Grazing Management
4. Immigration
5. Urban Agriculture
6. Agriculture Promotion and Profitability
7. Next Generation Farms
8. Irrigation Infrastructure

In order to address these issues, the Task Force developed a list of proposed actions which can be found at <http://ag.utah.gov/conservation-environmental.html> that state, local and federal governments and the private sector can implement. Agricultural sustainability and protection of natural resources go hand-in-hand.

Resource Assessments

Utah's local Conservation Districts are working in each County to prepare a county-wide Resource Assessment to identify local resource concerns. In preparation for that effort, each county has prepared a list of priority resource concerns identified by the local work group, and has submitted those to UDAF. Subsequently, UDAF has prepared a Statewide Resource Assessment which identifies all County priorities. The Resource Assessments will be one tool used to fund priority projects.

Information and Education

UDAF is willing to provide assistance to Utah agricultural groups, and fairly represent agricultural interests at the many committee meetings staff are involved with. Some of those committees include:

Utah Conservation Commission
Utah Association of Conservation Districts
Local Conservation Districts
Utah Water Quality Task Force

Utah Nutrient Core Team
Utah Animal Feed Operation Committee
Local Watershed Committees

UDAF works closely with Utah Legislators to make sure that agriculture is fairly considered in any legislation that is considered. We also maintain an up-to-date website (www.ag.utah.gov) that provides information to agriculture producers and the public.

3) Forestry, Fire and State Lands- Bill Zanotti

Timber Harvest:

Forestry, Fire and State Lands (FFSL) monitors timber harvesting on private and state lands within the State of Utah for the Department of Environmental Quality, Division of Water Quality. The overall goal of this monitoring evaluates the application of Utah's Forest Water Quality Guidelines (FWQG) that is in Utah's State Non-Point Pollution Prevention Plan. Protocols for conducting FWQG's monitoring have been developed for use by FFSL's service foresters.

During the SFY-2017, the following monitoring activities were completed:

- Processed 8 notifications to conduct timber harvesting activities
- Conducted 3 post-harvest inspections
- Conducted 2 pre/in progress inspections of timber harvesting activities

Forest Stewardship Plans:

Forestry, Fire and State Lands (FFSL) develop forest stewardship plans for private forested landowners and state agencies. The purpose for these plans is to encourage the long-term stewardship of important state and private forest landscapes, by assisting landowners to more actively manage their forest and related resources. Well managed forest landscapes create a flow of public benefits such as air and water quality protection; while reducing and preventing soil erosion.

Currently there are 101 active forest stewardship plans covering 330,859 acres. Plans typical covers a 10-year period before being updated.

During the SFY-2017:

- 14 plans were written covering 61,221 acres
- 7 plans covering 36,330 acres were randomly selected for monitoring to verify implementation

4) Utah Geologic Survey- Diane Menuz

The Utah Geological Survey (UGS) provides timely scientific information about Utah's geologic environment, resources, and hazards. The Groundwater Program, one of five programs at the UGS, conducts detailed studies on groundwater and wetland resources. Two Groundwater Program studies during the past year relate to nonpoint source issues: wetland assessments and monitoring baseline water quality in Tintic Valley.

The Groundwater Program conducts field surveys to evaluate the condition and function of wetlands on the landscape. The Groundwater Program conducted a probabilistic survey of wetlands in the Weber watershed in 2014 and in the Jordan/Utah Lake watershed in 2015-2016 using a rapid assessment

protocol. Survey data included water quality samples brought back to the Utah Public Health Laboratory for analysis and observations of potential indicators of water quality stress, including turbidity and nuisance algae. A functional checklist evaluating potential ability and opportunity to improve water quality was added to the protocol in the summer of 2016. The final report for the Weber study is available online (<http://geology.utah.gov/resources/wetlands/wetlands-publications/#tab-id-2>) and the final report for the Jordan/Utah Lake study will be available in 2018. In 2017, the Groundwater Program refined and tested the field protocol with multiple teams of observers and across multiple times of the year. The results of this work will be used to validate the protocol and improve its ability to accurately capture wetland health information. The Groundwater Program also surveyed springs and streams on U.S. Forest Service land in the Utah Lake watershed in 2016 and 2017 to document Water Rights points of diversion. Surveyors on this project recorded the presence of filamentous algae and the presence of alterations that could impact water quality, including unnatural bare soil, livestock trails, and ATV tracks.

The Groundwater Program began monitoring baseline water quality in the Death Creek and adjacent drainages of Tintic Valley in March, 2017, and installed flow, groundwater-level, and soil-moisture monitoring sites during September and October 2017. The data will be used to assess the hydrologic effects of pinyon-juniper treatments, which are expected to increase groundwater recharge, resulting in increases in spring discharge and baseflow. However, a short-term decrease in water quality could be caused by higher runoff before the herbaceous vegetation becomes established. Eight monitoring wells have been drilled and sampled for chemistry, and water levels are being actively logged. Soil moisture is being monitored at eight sites to monitor percolation, which could lead to groundwater recharge. Flow rates and chemistry are being monitored from two springs and along a one-mile stretch of the perennial Death Creek. Two new flumes along this creek are continuously monitoring flow rates and turbidity. Stable isotopes in precipitation are being monitored to characterize the seasonality of recharge. Baseline monitoring will continue for three years prior to pinyon-junipers being cut. This will then be followed by at least two additional years of post-treatment monitoring.

5) Utah Division of Wildlife Resources- Don Wiley

Stream Restoration Training

The Utah Division of Wildlife Resources (UDWR) invested about \$30,000 in Blue Ribbon Fisheries Advisory Council and Habitat Council funds to send a biologist from each region to stream restoration and wetland delineation training during fiscal year 2017. Given the degradation of many instream and riparian habitats throughout Utah, the need for extensive stream restoration is apparent. Currently, the UDWR restoration biologists are working to address this need by implementing projects on streams and associated watersheds throughout Utah. With proper training, more balanced staffing, and an exchange of information among trained UDWR personnel, the number of stream restoration projects undertaken annually throughout Utah can be maintained.

Statewide Coordination

The UDWR Stream Team, made up of 15 stream restoration professionals in both the UDWR Aquatics and Habitat sections, met 2 times during FY 2017 to (1) track progress of ongoing stream restoration efforts, (2) plan and prioritize upcoming FY 2018 project implementation, (3) ensure that actions were scheduled to dovetail with existing partner efforts (e.g., the Utah Department of Environmental Quality (UDEQ) Targeted Watershed schedule), and (4) discuss partnership expansion with other entities responsible for stream restoration and water quality actions statewide (e.g., Natural Resources Conservation Service [NRCS], Utah Department of Agriculture and Food [UDAF], and UDEQ).

Northern Region

Fish Creek in the South Fork of Chalk Creek

In August of 2016, an American Conservation Experience (ACE) crew was hired to install sediment filters. The crew cut down junipers, limbed the trunks, hauled limbs and trunks, and installed them into dry washes to hold back sediment during intense rain events and runoff. The crew worked for 10 days and installed over 100 structures in several washes and along the roadside where runoff starts to erode.

East Canyon Creek above Weber River confluence

During the spring of 2017, stream banks were stabilized at three different locations using three to four inch posts. The posts were seven feet long and helped divert some of the streamflow from eroding the outside bank. Geo-textile fabric was also placed and willows were planted to reduce erosion.

Thurston Ranch

We planted more willow and cottonwood cuttings in an area we previously implemented a bank stabilization project in FY16.

Dewitt Pipeline Protection and Channel Reconstruction

A pipeline adjacent to the Logan River was in danger of becoming exposed at high water. Current options for repair involve bank armoring with rip-rap. Discussions with Logan City officials led to a more fish-friendly design incorporating a channel reconstruction to include 'softer' (vegetative) bank armor as well as a high water overflow channel to alleviate shear stress on the newly reconstructed bank. The UDWR heavy equipment crew constructed a flood overflow channel on the Logan River to alleviate shear stress on the bank adjacent to a 24" water pipeline serving Logan City. Streambanks were sloped and armored with willows and rocks and constructed the overflow channel that would be accessed at 0.8 foot stage increase. The inside bank (river right) was also recontoured with a modified bankful bench to allow additional flood plain access.

East Canyon Creek - Mormon Flat - Beaver Dam Analogs

East Canyon Creek has experienced dramatic alterations over time. During the 1900's much of the stream was heavily grazed and treated with herbicides to remove willows that impacted ecological

function. In addition, historical mining also impacted water quality by releasing large amounts of phosphorus through fine sedimentation. As the area developed, additional phosphorus-laden fine sediment has been released into the watershed along with significant changes in the hydrograph associated with development. Ultimately the sediments are stored in East Canyon Reservoir. The East Canyon Creek and Reservoir TMDL reference East Canyon Creek as impaired for dissolved oxygen. Many factors contribute to this impairment and they include large scale historical riparian vegetation removal, uncharacteristically low flows during the summer, and extensive habitat and channel degradation. During FY17, six beaver dam analogs (BDA) were installed on East Canyon Creek and improved two existing BDA's on Large Spring. A riparian fence was also installed to protect the spring and creek from trespass cattle.

Restoring Water, Trout, Sage Grouse and Riparian Areas on Working Lands Using Beaver in Box Elder County - A Demonstration Project (Stage 2)

Local extirpation of beaver from Grouse Creek and its associated tributaries has led to a severe lack of stability of the stream channel. Moderate downcutting separating the stream from its floodplain has occurred in substantial lengths of this reach. We plan to re-introduce beaver to increase local aggradation of the streambed allowing floodplain connectivity throughout the reach which totals roughly 40 river miles. Aggradation and damming raises the level of the water table to increase mesic areas providing forbs, grasses and insects critical for sage-grouse brood survival. Beaver dam analogs (BDAs) were installed as an interim treatment until beavers can become re-established. During FY17, 21 BDAs were constructed along 1.5 miles of Pine Creek; 47 BDAs along 1.5 miles of Kimball Creek; and 46 BDAs along 2.5 miles of Cotton Creek. BDAs were clustered into complexes to meet specific restoration objectives that were appropriate to the site-specific geomorphic and riparian conditions. Several postless BDAs were constructed in this project to determine their benefits as well as compare their effectiveness vs. those utilizing posts in their construction. Several different BDA types were used depending on the outcome desired in the specific area.

Weber River Ranch Center Pivot

The diversion that supplied water for flood irrigation for the cropland portion of the Weber River Ranch Wildlife Management Area was been deemed 'illegal'. The diversion is a channel-spanning structure that precludes fish movement upstream and entrains fish moving downstream and needed to be removed. During FY17 the existing irrigation diversion was removed and a pressurized system was purchased and installed to enable the entire cropland portion of the WMA to be adequately irrigated with existing water rights.

Weber River Section 4 Passage Mitigation

A low head diversion dam on the Weber River was removed and replaced with a modification of irrigation practices from flood irrigation to a center pivot (see Weber River Ranch Center Pivot project above). The irrigation diversion dam was removed in February of 2017. The dam was partially composed of rock and waste concrete. The waste concrete was recycled.

Northeastern Region

Meadow Creek Stream Restoration

In the Fall of 2013, severe flash flooding occurred in Meadow Creek. This stream holds a population of North Tavaputs Colorado River Cutthroat Trout (CRCT) and is a conservation population for this species. The creek was heavily damaged and several areas were impacted with head cutting, stream bank erosion and channel alteration. During FY17, approximately eight large (10ft high, average 50ft long) vertical eroding banks were sloped to allow vegetation to re-establish in an effort to reduce massive sediment loads to downstream sources. Streambanks were re-vegetated with willows and other native trees, forbs, and shrubs. Rock riffles were installed in various areas to promote stream channel stability. Wildlife/livestock exclosures were installed in several areas of the riparian corridor. Habitat structures designed to support overhead habitat and fish cover were also installed in locations to

prevent baseflow discharge from eroding banks, meanwhile supporting the soils to allow vegetation to better establish.

Central Region

Main Creek Restoration Phase IV

Main Creek is the largest tributary of the 45,000 acre Wallsburg Watershed. Main Creek and its tributaries are home to a unique assemblage of aquatic species, including Bonneville Cutthroat Trout, Southern leatherside chub, and Columbia spotted frog. Deer Creek Reservoir, located downstream, does not meet its fisheries beneficial use due to low dissolved oxygen concentrations and elevated suspended solids. Main Creek is one of the four major monitored inputs to Deer Creek Reservoir and accounts for about 17% of the phosphorous load into Deer Creek Reservoir. The Main Creek basin is highly fragmented with diversion structures, impassable culverts, and numerous seasonally dewatered reaches. Several stream restoration techniques were implemented to restore the natural function of the stream. The Division of Water Quality has established multiple locations within the watershed to monitor water quality.

Spanish Fork River Channel and Bank Habitat Improvements

Russian olive, tamarisk, perennial pepperweed, scotch thistle, and phragmites were controlled from the north side of the one mile reach of the Spanish Fork River that flows through the Spanish Fork Sports complex. All vegetation was removed and chipped by Spanish Fork City. Stumps were treated with Garlon or Tordon as per standard operating procedures for woody invasives removal. This is the first phase of improving the water quality in the Spanish Fork River. Future phases will include more aggressive approaches like stream bank re-alignment, instream habitat structures, and sloping of stream banks.

Southeastern Region

Lower San Rafael River and Riparian Corridor Habitat Improvement: Phase 1a

The ecological condition of the lower San Rafael River has been severely degraded over time through a combination of impacts including altered flow regimes and non-native vegetation encroachment. Currently, the river is not functioning to provide sufficient habitat to support sustainable populations of native fish species. Riparian habitat has also been degraded. Much of the riparian corridor is occupied by thick stands of tamarisk and native vegetation recruitment is low, particularly for cottonwood trees. During the phase of the project, installations of beaver-dam analog structures were used as a restoration tool. Beaver-dam analogs consist of willow branches weaved in between wooden posts hammered into the streambed. Beaver-dam analogs should help beaver maintain additional dams, but even if beaver do not use the structures, the structures alone can provide similar benefits as natural beaver dams. Overtime, TDS loading in the San Rafael River should decline due to increased river-floodplain connectivity and retention of water and sediments in beaver ponds, oxbows, and floodplain depressions.

Southern Region

Antimony (Pine Creek) Chaining

Approximately 776 acres were 2-way chained with an Ely chain. Seed was applied prior to the first pass of chaining. A few small islands of pinyon and juniper remained untreated throughout the unit, creating a mosaic pattern of treated and untreated vegetation. An additional 365 acres of a previously burned treatment (Phase 4) were one way chained with an Ely chain. Before chaining begins on this treatment unit the area was aerial seeded with a mix of native and non-native shrubs, grasses and forbs important for improving mule deer and elk winter range, and stabilization of soils. This project should reduce sedimentation through erosion into the East Fork of the Sevier River.

Escalante River Watershed Riparian Invasive Species

The transformation of the Escalante River bottomland is related to arroyo cut/fill cycles. Arroyo cutting, filling and associated changes in a streams channel, floodplain, vegetation and water table, as has happened along the Escalante River since settlement, can be summarized as follows: 1) Initial conditions prior to 1909 with a small, shallow channel flowing through a broad, largely grassy flood plain; 2) arroyo cutting, initiated by the flood of 1909, which deepened the channel and dropped the water table beneath the floodplain; 3) widening of the channel in response to a series of floods in the following decades, including the large flood of 1932. Toward the end of this period (approximately the 1950s), woody riparian vegetation, primarily cottonwoods, began establishing on higher portions of channel bars; 4) channel narrowing, as large numbers of cottonwoods establish on portions of the former wide, active channel. Since the 1980's the establishment of Russian olive has accelerated these changes. The importance of these long-term, cyclic events in the context of the invasion of Russian olive along the Escalante River relates to the fact that the invasion of Russian olive is tied to the process of channel narrowing and valley filling, by flood plain construction. Over time channelization of the main stem Escalante River and tributaries as well as sporadic major flooding events have resulted in significant scour of aquatic food base and adverse effects on native fish populations. In the headwaters unstable channel morphology in certain stream reaches has made them less resilient during disturbances. Through removal of Russian olive and tamarisk the natural (historical) riparian processes become more naturally functioning, sustainable and resilient to change.

Water Quality and Fisheries Improvement on the Upper Sevier River near Hatch, UT – Year 6

The project will help improve the degraded state of much of the upper Sevier River, which can be characterized by elevated sediment loads, negative changes in water chemistry, near extirpation of woody riparian vegetation, and an overall lack of cover and suitable habitat for coldwater fishes and other species throughout the system. The upper Sevier River is on Utah's 303(d) list of impaired waters for the cold water aquatic life use due to excess total phosphorus. Additionally, the project builds upon the substantial amount of similar past stream improvement work that has already been completed on the upper Sevier River and Asay Creek by improving new, additional sections of stream that connect with the past work.

The strategies for achieving project goals are centered on improving function and health of the stream channel and stream corridor. The major restoration techniques that were used on the project include: (1) Large woody debris and rock structure installation - Private contractors would haul large tree and rock material to the project area and operate the necessary heavy equipment (e.g., excavator and front-end loader) to install large woody debris and rock structures in the stream and along banks. The structures would be intended to add cover for fish, help address problems associated with elevated rates of streambank erosion (e.g., recruitment of fine sediment or high total phosphorous loads), and protect cattle crossing structures to manage livestock grazing. (2) Streambank shaping and sloping - All bare, vertical, eroding banks would be shaped and sloped back to at least a 2:1 slope in a manner intended to promote re-connection of the river with the floodplain and help address streambank erosion problems. The stream channel slope, pattern, and location would not be changed. Work would only occur on existing stream banks. The stream would be narrowed and deepened in some locations, but the cross-sectional area of the channel would be maintained. (3) Riparian seeding and planting - All disturbed ground and areas lacking adequate riparian vegetation would be seeded with a native grass mixture and the Utah Conservation Corps (UCC) would be hired to plant willow cuttings and bare root riparian trees and shrubs (e.g., water birch, cottonwood, red-osier dogwood, chokecherry, elderberry and golden current) to add cover and address streambank erosion problems. (4) Livestock management - The stream corridor encompassing the project area would be fenced as necessary to manage livestock grazing, which should also help to protect large woody debris structures, riparian vegetation, and streambanks over the long-term. Livestock grazing would not occur within riparian areas for five years. Thereafter, livestock grazing within riparian areas would occur at an intensity, duration, timing, and

season such that woody riparian vegetation is not degraded or lost due to grazing by livestock (e.g., short duration, high intensity grazing during spring).

The project has the potential to significantly improve water quality. The project would likely help reduce phosphorous and sediment loads in the Upper Sevier River, as well as address habitat alteration issues, all of which were listed concerns in the Upper Sevier River TMDL. The project would reestablish a dense and diverse corridor of riparian vegetation, helping to reduce phosphorous and sediment inputs from streambank erosion and creating an important buffer zone for filtration of nonpoint source pollutants from overland flow. Furthermore, the livestock grazing strategy (rest for at least 5 years, followed by limited spring grazing) proposed by the project would help to increase litter cover and water infiltration. The project would also improve habitat for multiple species by increasing habitat heterogeneity at multiple scales. The project promotes reconnecting the stream with the floodplain and increasing the presence and diversity of native riparian vegetation. As a result, water infiltration should increase during periods of overland flow and high discharge, which would lead to elevated soil moisture, ground water recharge, and generally more consistent flows later into the season.

Southern Region Riparian Restoration

Beavers have been removed from many drainages and watersheds where they have historically occurred. Beavers contribute important benefits to watersheds such as recharging and raising ground water tables, improving riparian vegetation, expanding wetlands, slowing flood waters, reducing erosion, improving water quality, providing habitat for aquatic species and other wildlife, and providing more biodiversity to the landscape. During FY18, beavers were relocated to Deer Creek (Dutton), Baker Spring (Wayne County), Shingle Creek (Beaver), North Creek (Beaver), Chokcherry (Millard), and Bear Creek (Millard).

Federal Agency Contributions

The original MOU between the Department of Environmental Quality, the Forest Service, and the Bureau of Land Management was executed in 1992. This MOU was updated, reviewed, and signed by all parties in FY-2017. The following entities are a part of the newly revised MOU: Forest Service, Bureau of Land Management, National Park Service, Utah Department of Agriculture and Food, Division of Forestry, Fire and State Lands, Utah Division of Wildlife Resources, and DEQ – Division of Water Quality. The MOU is to be reviewed and updated as needed every 5 years.

1) Natural Resources Conservation Service- Norm Evenstad

NRCS employees work in partnership with land users to conserve natural resource on private lands. These employees are distributed among 26 field offices and 2 area offices that cover the state of Utah. The individual field offices are managed by District Conservationists who may cover multiple offices. NRCS employees along with Utah Department of Agriculture and Food employees report progress on activities in the USDA-NRCS performance results system, which is the basis for the following information.

Financial and technical assistance was provided to land owners, sponsors & managers in Utah during FY-2017 through the various USDA-NRCS programs. Two Comprehensive Nutrient Management Plans (CNMPs) were written and one applied during FY2017.

Non-Point Source/Water Quality related practices: The results shown in table G in the appendices shows all the conservation practices planned and applied during fiscal year 2017. A number of the practices listed have direct & indirect water quality benefits, that as a whole, can show overall positive benefits for surface and ground water quality.

NRCS Water Quality Initiative (NWQI) 2017

The NRCS National Water Quality Initiative (WQI) establishes priority watersheds nationwide to help farmers, ranchers and forest landowners improve water quality and aquatic habitats in impaired streams. NRCS offers producers an opportunity to implement conservation and management practices through a systems approach to control and trap nutrient and manure runoff. Qualified producers can receive assistance for installing conservation practices such as cover crops and filter strips.

For FY2017, NRCS and the Utah Division of Water Quality recommended projects in the Hillsdale watershed located on the Upper Sevier River in Sevier County and in the Chalk Creek watershed located in Summit County.

Partners sometimes offer financial assistance in addition to NRCS programs. Practices planned with WQI assistance may include: Waste Storage Facility, Pond Sealing/Lining, Solid/Liquid Waste Separation Facility, Waste Transfer, Pumping Plant, Fence, Irrigation System, Sprinkler, Pumping Plant, Structure for Water Control, Irrigation Pipeline, Forage and Biomass Planting, Obstruction Removal, Nutrient Management, Irrigation Water Management, and Riparian Herbaceous Cover.

NRCS will continue to coordinate with local and state agencies, conservation districts, non-governmental organizations and others to implement this initiative. This strategic approach will leverage funds and provide streamlined assistance to help individual agricultural producers take needed actions to reduce the flow of sediment, nutrients and other runoff into impaired waterways.

2) Bureau of Land Management (BLM)- Kerry Schwartz

The Utah BLM is in its twelfth year of cooperative implementation of the statewide Utah Watershed Restoration Initiative through its participation in the Utah Partners for Conservation and Development. This is a multi-agency Federal, State, and private partnership treating lands for watershed improvement and long-term habitat restoration. Funds are contributed by partners, including non-governmental organizations and wildlife groups. Projects are submitted and prioritized by regional teams prior to submittal for final approval and funding by the statewide oversight team. BLM funds primarily come through the Wildlife, Fuels, and Healthy Lands Initiative programs. Moab BLM continues to participate in the agreement with the Dolores River Restoration Partnership, which has multiple NGOs, private, BLM, and other federal partners focusing efforts on the Dolores River.

Under the HLI/WRI program, over 57,000 upland acres, 2,848 acres of aquatic-riparian areas, and 130 stream miles were treated including BLM Utah managed lands in 2017 through this program. Treatments include riparian restoration, tamarisk and Russian olive removal, sagebrush restoration (Dixie-harrow and seeding), removal of juniper through bullhog and hand thinning methods, wildlife and rangeland seeding, cheatgrass treatment and reseeding degraded rangelands, and other similar projects. The Utah Division of Wildlife Resources website has interactive maps and project descriptions: <https://wri.utah.gov/wri/>

The Table I in the appendices shows a tally of the projects completed during FY 2017. These are interagency funded projects and funding for most projects is based on the state fiscal year so some of these were actually started in the fall of 2016. More information can be found by searching the database utilizing the project number and various report features.

Grand Staircase Escalante National Monument (GSENM)

Since 2014, GSENM has received funding from BLMs Salinity Program to reduce salt loading to the Colorado River and tributaries originating on BLM lands. In support of this program GSENM is in process of rehabilitating sediment retention structures that were established in the 1950's and 1960's on the landscape below saline soils. Renovations typically include dam/spillway repair, headcut stabilization, sediment removal and upland stockpiling/stabilization, and removal of non-native & invasive vegetation. In 2017, work was completed on 15 structures. This work included removal of nearly 7,600 tons of salt from the retention structures and drainage system. Additionally, an estimated 220 tons of salt was collected in 2017 from structures cleaned in previous years.



Buckskin Impoundment after excavation (2017)



Five-mile Impoundment after excavation (2017)

Canyon Country District/ Moab and Monticello Field Offices

The Canyon Country District Office conducted extensive monitoring efforts and implemented several projects in FY17 to address and better understand non-point sources of pollution such as increased salinity and sediment loading. Many of these projects rely heavily on well-established and productive partnerships with the Moab Area Watershed Partnership (MAWP), the Dolores River Restoration Partnership (DRRP) and the La Sal Sustainability Collaboration (LSSC).

Monitoring

BLM staff helped develop and conduct an extensive monitoring program for the La Sal Sustainability Collaboration. This group is focused on improving grazing strategies for a single rancher who manages multiple grazing allotments on BLM and USFS lands. Extensive monitoring work included water quality monitoring, riparian and upland vegetation transects and Multiple Indicator Monitoring studies. BLM worked with a variety of state, federal and non-profit partners to accomplish this monitoring work.

BLM participated in the cooperative program with UDWQ, collecting water chemistry samples throughout the District. Sample site selection was coordinated with UDWQ staff and a detailed Sampling Analysis Plan (SAP) was completed for work in 2017.

Mill Creek Watershed Improvement Project

The Mill Creek Watershed Improvement Project is ongoing with additional funding from the Utah Division of Water Quality (supported by the Moab Area Watershed Partnership) and the Utah Watershed Restoration Initiative. This project involved removal of invasive Russian Olive trees along one mile of stream this year. Ravenna Grass removal is ongoing along 12 miles of stream on BLM lands. These efforts along with other watershed improvement work such as closing and re-seeding and re-planting disturbed areas and duplicate hiking trails are helping to reduce sediment loading and improve water quality conditions in Mill Creek.



American Conservation Experience (ACE) crews working on Russian Olive removal

BLM has funded a USGS stream gauge on Mill Creek below a large irrigation diversion structure over the years to ensure minimum stream flows as required by the BLM right of way. This continues to be a successful effort to improve stream temperature conditions as identified in the 2002 TMDL.

Dolores River Restoration

Restoration work along the Dolores River is ongoing with the support of the Dolores River Restoration Partnership (DRRP) and the Utah Watershed Restoration Initiative (WRI). This year, several volunteer groups and youth crews closed and rehabilitated over 15 unauthorized trails at Roberts Bottom, protecting 30 acres of riparian resources.



Canyon Country Youth Corps working at Roberts Bottom on the Dolores River

Saline Soils Studies

The Canyon Country District contains over 400,000 acres of moderately saline soils, mainly derived from the Mancos Shale Formation. In order to better understand the range of impacts from different permitted activities on saline soils, the BLM has been constructing grazing exclosures and conducting baseline data collection efforts adjacent to existing long-term range study sites. We continue to collaborate with USGS researcher Mike Duniway, to collect and analyze soils and vegetation data from both inside and outside these exclosures. The overall goal of this project is to quantify impacts from grazing actions on moderately saline soils including increased erosion rates, decreased vegetation cover, decreased nutrient cycling and increased salinity loading to the Upper Colorado River Basin.

Vernal Office Arid Land Study



Emergence of drilled seeded winter wheat cover crop three weeks after planting

The purpose of this study is to provide BLM land managers detailed reclamation guidelines that will provide successful and sustainable strategies to reclaim disturbed lands in arid environments.

Objectives:

- Minimize weed establishment, mostly cheat grass and halogeton by appropriate cover crop selection and timing of planting.
- Restore lands impacted by soil salinity.
- Select appropriate revegetation species and determine the best planting methods to ensure the establishment of desirable species that will inhibit the spread of invasive weeds.

Background:

A study was established in August 2014 that evaluated different carbon amendments, and barley cover crop for reclamation success. Specifically treatments consisted of the following amendments: Control-no carbon; Wood chips; Activated carbon; Biochar; and Compost. After two years of monitoring it has been determined that the carbon amendments had no effect on inhibiting the growth cheat grass and halogeton. Activated carbon, wood chips, and biochar facilitate their growth.

The greatest factors limiting the successful restoration and revegetation of well pads by desirable native species were lack of soil water, soil salinity and sodicity, shallow soils, and soil compaction.

Cover Crop Study 2017

April 19, 2017 a cover crop study was initiated specifically comparing drilled versus broadcast seeding.

Treatments:

- Control (bare soil)
- Broadcast seeded spring barley
- Drill seeded spring barley
- Green house native plant establishment studies using seeds collected from the native population in the study area.



Arid Land Main Street Study Site

Questions that will be addressed through this study include:

- Which is the best seeding method; drill seeding or broadcast seeding?
- Best native seed mix?
- What are the best cover crops and when should they be planted?
- What is the best soil preparation?

3) U.S. National Park Service- Rebecca Weissinger

The National Park Service is a significant land manager of 2.1 million acres in Utah, or about 3.9% of the state, and hosts 12 million visitors per year. National Park System units have a dual Congressional mandate to preserve natural and cultural resources and to provide for their enjoyment by the public in such a manner that will leave them unimpaired for future generations. There are 13 National Park System units in Utah. On-going water quality monitoring, in cooperation with the State of Utah, occurs at seven of these National Park units. In addition to routine water quality monitoring, sampling for pesticides, wastewater indicators, pharmaceuticals, and personal care products also occurred at three national park units in Utah in cooperation with the Environmental Protection Agency and U.S. Geological Survey.

The National Park Service continued treating non-native tamarisk trees and herbaceous non-native invasive plants at priority sites in the riparian corridors of the Colorado and Green Rivers in

Canyonlands National Park. The primary benefits of this project include creating better visitor experiences, reducing fire risk in river campsites, preserving biodiversity by decreasing risk of fire spreading into native tree stands, and the gradual replacement of beetle-impacted tamarisk stands with native vegetation. Indirect benefits include overall reduced erosion of bank sediments into the river as fire frequency and fire size is reduced.

Capitol Reef National Park continued to cooperate with the Utah Division of Water Quality in their *E. coli* monitoring program. Four sites in the park, and several sites upstream, were monitored.

Glen Canyon National Recreation Area continued an extensive quagga mussel containment effort focused on educating boaters to clean, drain, and dry their equipment after exposure to Lake Powell, which is infested with quagga mussels. The program is a cooperative effort with Utah and Arizona. The NPS made nearly 200,000 direct boater contacts and used many other outreach and regulatory control approaches. The effort has been highly successful; out of hundreds of thousands of vessel launches on Lake Powell in 2017, less than 3 vessels have been identified that did not follow the laws and prescribed procedures.

A cooperative effort with Utah Division of Water Quality to resolve *E. coli* contamination in the North Fork Virgin River upstream from Zion National Park continued in 2017. Several agencies and landowners were involved seeking a solution to high levels of *E. coli* carried into the stream by irrigation return flows.

Federal Consistency Review and NPS Project Tours for FY-17

During FY-17, DEQ continued to use a combination of approaches to work collaboratively with federal land management agencies and others to promote federal consistency with the State NPS Pollution Management Program. As part of this program, tours of projects implemented by federal agencies are organized every year. The following is a summary of a tour that took place in the Dixie National Forest and surrounding area.

Utah Federal Consistency Review

Location:

Dixie National Forest and Surrounding Areas
October 3rd-4th, 2017

Participants:

Jim Bowcutt (UDEQ), Bill Zanotti (UFFSL), Nic Braithwait (DWR), Brooke Shakespeare (USFS), Dan Fletcher (BLM), Richard Hepworth (UDWR)

Day One- October 3rd

Lower Beaver Creek Project

While various nonpoint source pollution reduction projects have historically taken place on the Beaver River, most of that work was focused on improving the riparian zone on private property above Minersville Reservoir. In 2013 the BLM and the Division of Wildlife Resources teamed up to focus on a 2-mile reach of river below the Dam. This project consisted of a mix of BLM and private properties.

One of the major issues that were encountered on this site was the vast amount of invasive species present throughout the 2-mile reach. Russian olive trees and tamarisk were the dominant plant species that were found throughout the reach, and they were impeding many of the native species from growing. This was also causing the stream bank to become incised due to the lack of understory present in the riparian area.

To fix the problem the Russian olive and tamarisk trees were cut down and burned, or hauled off. Some of the Russian olive trees were actually used to help stabilize the stream banks in the section of the river that had large cut banks. While the Irrigation Company that owns much of the property where the project work was implemented on were not enthusiastic about leaving the woody debris used in stabilization work in the system. Luckily, none of the vegetation used in the project has moved down stream into their diversion structures.

Since 2013, the riparian corridor has responded very well to the treatments. Sediment is no longer being mobilized like it was before, and point bars are actually developing where the sediment is building up in the restored sections. Natural vegetation is coming in well, and the Conservation Corp. will continue to treat the area, spraying any Russian olive trees that begin to grow over the next couple of years. Adjacent landowners upstream of the project are now beginning to show interest in implementing similar projects on their property due to the success of the project, and the fishery has greatly improved since 2013.



Restoration Site on Beaver Creek

Day 2- October 4th

Red Creek Reservoir

In 2017 one of the largest forest fires in the state took place in the Dixie National Forest. This forest fire started at the Brian Head Resort area and continued to move north, until over 70,000 acres were burned. Red Creek Reservoir was directly impacted by this fire. Due to the high amounts of ash and increased pH in the water column, 100% of the fish in the reservoir died off. The water quality deteriorated to a point that even the crayfish in the reservoir were unable to survive. Large storm events also washed large amount of woody debris down from the burn areas, causing concern for the landowners that were using the reservoir to store irrigation water for their crops.

Since the fire, the water level in the reservoir has dropped drastically, which actually will help with the clean-up of the woody debris. The woody debris is currently beached along the edges of the reservoir. The Division of Wildlife Resources plans on raking up that woody debris, and burning it, so that when the reservoir rises again the woody debris will not risk plugging up the irrigation structures on the dam. It may take up to 3 more years before fish can be planted in the reservoir again. During that time, efforts will be made in the upper ends of the watershed to reduce possible erosion sources, and improve water quality.

In the upper end of the Red Creek Drainage, fire remediation efforts are well under way. To remediate the fire, the Forest Service has contracted to have 6,000 acres mulched with straw, and 16,000 acres reseeded. They have had sterile triticale seed broadcast throughout the burn scar to help get some kind of ground cover developed and reduce erosion while the natural vegetation comes in. During the summer months, large amounts of precipitation have allowed the aspen trees to rebound, and the understory to regrow. Unfortunately, many of the grazing permittees have been allowed to bring their cattle back into their allotments, and the cattle are grazing heavily on the new aspen shoots that are coming up.



Woody debris around Red Creek Reservoir



Mulched and reseeded area near Red Creek Reservoir

There are also several areas in the Red Creek drainage where the road runs through the riparian area. In the coming years, the Forest Service would like to reroute these roads, and install culverts to reduce the amount of sedimentation coming from those areas. Since Red Creek is currently listed on the 303(d) list of impaired waterbodies, these projects may be good candidates for State NPS funding.



Road Located in Riparian Corridor

Panguitch Lake Pipeline

In 2017 the water quality in Panguitch Lake was also impacted from the Brian Head Fire. As a result fish kills were observed throughout the year, though not to the point where the entire reservoir was lost. The DWR pointed out that even before the fire, the reservoir has had algal blooms take place nearly every year. It was recommended that the next time a bloom takes place, that DWQ needs to be contacted, and the bloom needs to be tested.

The source of the nutrients coming into the reservoir is believed to be largely due to the amount of septic systems that currently exist, and the amount that continue to be installed. It can be very tricky to reduce nutrient enrichment due to septic systems without building a waste water treatment facility, and this can be a very costly endeavor.

The Division of Wildlife Resources is looking at installing an irrigation diversion that will draw water from the bottom of the reservoir instead of drawing from the top of the dam, as it currently exists. This will help draw nutrient rich bottom water out and facilitate better mixing in the lake, improving the temperature, and oxygen levels for the fish. The DWR is currently in the process of developing a design

for this project. Once designs and a cost estimate are developed, they will meet with DEQ to discuss possible funding options.



Panguitch Lake, Near the Diversion Structure

Clear Creek Drainage

The Clear Creek Drainage is made up of mostly private property, but was greatly impacted by the Brian Head fire. The Forest Service is unable to perform treatments on private property, but mulched and reseeded directly above the private property on Forest Service's land. In an attempt to reduce the amount of sediment entering into the private ponds at the bottom of the canyon, the landowners cut down several of the burnt pine trees to serve as a sediment catchment device. The Forest Service also helped improve the road between the private and public land by putting down road base.



Private Property in the Clear Creek Drainage



Forest Service Property in the Clear Creek Drainage

End of report

2017 EPA Project Tour

September 5th-7th, 2017

Location:

Jordan River / Spanish Fork River / Fremont / Upper Sevier

Participants:

Gary Kleeman (Environmental Protection Agency), Jim Bowcutt, Carl Adams, Amy Dickey, Sandy Wingert, Scott Daly (Utah Division of Water Quality), Daniel Gunnell, Jay Olsen, Wally Dodds, Tyce Palmer (Utah Department of Agriculture and Food), Clint Wyrick (U.S. Fish and Wildlife Service) Chris Butler (US Forest Service) Nic Braithwaite (Utah Division of Wildlife Resources)

Day 1 September 5th

Jordan River

5100 South Restoration Project

The reach of the Jordan River from 5100 South to 4800 South is located in the Murry/Taylorsville area, and is the site where the Jordan River and Little Cottonwood Creek meet.

In 2014 this site was selected to receive a Section 319 grant for \$319,096 to stabilize eroding stream banks, and to help re-establish vegetation along a 31 acre area that is frequently used by the community for recreational purposes.

Currently two phases of this project has been completed. This includes sloping and revegetating 1,500 feet of the Jordan River's streambank. The vegetation is coming along nicely, and the banks are holding well, especially considering the high flows that were experienced in this stretch of the Jordan River in the spring of 2017. The section of the River where Little Cottonwood Creek enters into the system is not only holding up well, but it is also doing a good job of allowing sediment to settle out in the back eddies at the confluence. Informational signage and posts that the public can use to take photo points have also been installed adding to the information and education component of the project.

Phase three of this project is scheduled to take place in the fall of 2017. It is anticipated that the entire 319 grant will not be expended. The left over funding will then be moved downstream to help fund a project located near 1700 South on the Jordan River. The Division of Water Quality has already awarded NPS grants to help with this project, and it is anticipated that the 1700 South Project will yield similarly good results.



5100 South Jordan River Restoration Project

Spanish Fork River/Utah Lake

Two projects were funded along the Spanish Fork River using FY-2018 State NPS grants. These projects are the first of many that have been identified in the recently completed Spanish Fork Watershed Plan/CRMP. These projects consist of improvements that will be made to the entire property including irrigation improvements, pasture improvements, riparian fencing, and erosion control. One project was visited. This project was largely funded by the NRCS, but \$18,000 in State NPS funding was awarded to help with the riparian improvements. This property owner plans on installing a fence to keep livestock out of the riparian corridor, as well as removing invasive Russian olive trees. He also plans on doing some stream bank stabilization work in an area where the river had been pushed into one side of the river as a result of an upstream bridge, and berming the river on one side.

Construction work will begin in the fall of 2017, and should be completed within the next two years. These projects will hopefully be used as demonstration projects that can be used to help additional landowners in the watershed become motivated to implement similar practices on their property.



Berm and Russian olive trees along the Spanish Fork River

Day 2

Fremont River Restoration Project

NPS work has been taking place on the Fremont River since Utah began receiving 319 funding. Recently a success story was submitted to EPA highlighting the successes that had been achieved in the Fremont River Watershed. This includes the delisting of the Fremont River for phosphorus, and improving macroinvertebrate populations in certain reaches.

A grant was awarded to the local Conservation District to conduct additional streambank work on the Fremont River using FY-2015 Section 319 funding. Two projects were implemented with this grant, and have both been completed. One of these projects was visited on this tour.

The project that was visited consisted of 1,300 linear feet of river that was restored. The restoration was a joint effort between UDAF, the U.S. Fish and Wildlife Service, and the Division of Water Quality. Along this reach fencing was installed to limit livestock access, the banks were sloped, and coconut fiber was installed in the bank to help increase stability while the vegetation established. The grass seeding that was done appears to have been very effective, and willows that were planted by the local high school, as part of their Natural Resource Field Days, are coming along nicely. Additional willow plantings are planned for this fall.



Restoration Work on the Fremont River

Otter Creek Restoration

In 2010 the Division of Wildlife Resources, in cooperation with the U.S. Fish and Wildlife Service, began the first phase of a riparian restoration project on Otter Creek, below Greenwich. Since 2010 they have completed two phases of restoration activities covering over 1 mile of Otter Creek. Since the completion of the second phase partners have seen an influx of wildlife into the restoration site. This includes beavers, which may prove to be a valuable part in restoring Otter Creek in the future. Radio collared Sage Grouse have also shown that they prefer the restored stretch of river over the overgrazed sections of river located directly above and below the property.

A watershed plan is currently being developed for the Otter Creek watershed. Once this plan is complete it is anticipated that many agencies will be interested in implementing work in the Otter Creek Watershed.



Restored Section of Otter Creek



Beaver Dam on Otter Creek Restoration Project

Upper Sevier Section 319 Projects

The Division of Wildlife Resources was awarded \$249,700 in FY-2016 Section 319 funds. As part of this project, three project sites were identified on the Main Stem of the Sevier River near Hatch, Utah. During the time the tour was conducted, one project had been completed, and two others were slated to occur over the next two years. The project sites that will be implemented in the next two years were heavily over grazed by trespass cattle. These cattle have created tall cut banks, and deposited manure in and adjacent to the river. The projects will work with the private landowners to fix fence that has been under maintained, and slope the banks back to help improve water quality and overall riparian health. At the site that was visited just below Hatch, nearly 3,000 feet of bank had been treated, and various shrubs and grasses were planted. It appeared as though the vegetation was coming along well for being planted in the spring of the year.



Proposed Project Site



Completed Project Near Hatch, Utah

Upper Sevier NWQI Project

One of the biggest water quality issues in the Upper Sevier watershed is the use of flood irrigation and conveyance of return flows that can impact water quality and quantity. In an attempt to address both, the local watershed coordinator helped a private landowner that was flood irrigating 47 acres from an open canal. After working with the Division of Water Rights the Coordinator was able to get the point of diversion switched to instream directly below the fields that were being irrigated. They installed a pump with a screen, and connected that to a wheel line on the fields thereby greatly reducing the return flows, and improving the efficiency of the irrigation system. In addition to the irrigation system approximately 1,000 feet of eroding stream bank will also be fixed.



Pump with Screen

Day 3

Brian Head Fire Remediation

In the summer of 2017, a homeowner that was burning weeds near his cabin in Brian Head started a fire that burnt approximately 70,000 acres. This was the largest fire that the State of Utah experienced in 2017. In an attempt to remediate this fire the US Forest Service has been using funding from the BAER program to spread straw across the burn area, and reseed using sterile triticale. During the tour the group visited Yankee Meadows where the straw was being applied. According to the Forest Service contact, the treatments are coming along very nicely, and the understory is already beginning to rebound. The Aspen stands are already chest high, and the seedlings have been successful as a result of some of the late summer monsoons that they have been experiencing. Some of the areas will not be treated this year due to a lack in resources, but they should be treated early next year.



Yankee Meadow Burn Area

Figure 1 Project Location Map

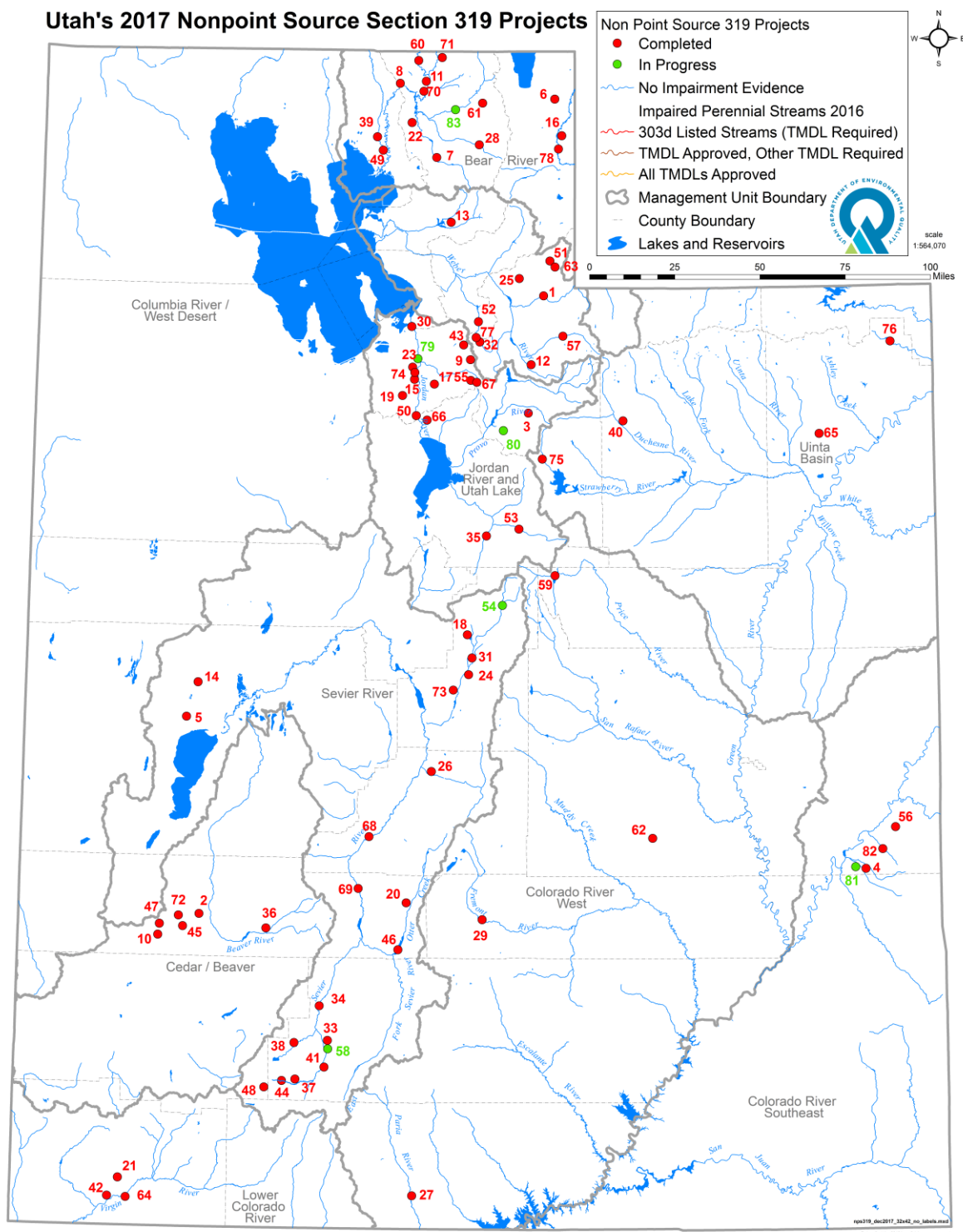


TABLE A- COMPLETED AND ACTIVE 319 PROJECTS (SEE FIGURE 1)

Map_ID	STATUS	PROJECT_NAME	Map_ID	STATUS	PROJECT_NAME
1	Completed	Chalk Creek	43	Completed	Emmigration Creek Water Quality Study
2	Completed	Milford Baseline GW and Aquifer Mapping	44	Completed	Groundwater (Mammoth Creek)
3	Completed	Wasatch County GW Study and Aquifer Mapping	45	Completed	Mitigation of NPS Chemicals - Milford Groundwater
4	Completed	Spanish Valley Baseline GW Mapping	46	Completed	Otter Creek Reservoir TMDL
5	Completed	South Sevier Desert GW Recharge Area Mapping	47	Completed	Milford Microbial Contamination GW Study
6	Completed	Bear River Watershed Outreach Information/Education	48	Completed	Cedar Mountain GW Assessment
7	Completed	Little Bear River Animal Waste System	49	Completed	Bear River Information / Education
8	Completed	Bear River TMDL Development	50	Completed	Jordan River WQ/TMDL Assessment
9	Completed	Millcreek Canyon Watershed Phase II	51	Completed	Rees Creek Demonstration
10	Completed	Milford Baseline GW Contaminant Inventory	52	Completed	East Canyon Instream Flow
11	Completed	Bear River Groundwater Contaminant Inventory	53	Completed	Soldier Creek Spanish Fork
12	Completed	Kamas Valley Groundwater	54	In Progress	San Pitch Watershed Implementation, re-opened
13	Completed	Ogden Valley GW Recharge Area Mapping	55	Completed	Little Cottonwood ImplementationTMDL
14	Completed	Millard County Groundwater	56	Completed	Onion Creek Impementation TMDL
15	Completed	Jordan River Wetland	57	Completed	Upper Weber River Tech. Assist. & Information and Educ.
16	Completed	Bear River (Rich County)	58	In Progress	Upper Sevier River TMDL Implementation, re-opened
17	Completed	SL County Lawn Fertilizer/Pesticides Impacts on GW	59	Completed	Scofield Reservoir TMDL Implementation
18	Completed	Sanpete / Moroni Groundwater	60	Completed	Middle Bear River
19	Completed	Salt Lake Valley Drink. Water Source Protect.	61	Completed	Spawn Creek Bank Restoration
20	Completed	Otter Creek	62	Completed	Colorado River West
21	Completed	Washington County Septic Tank Effects on GW	63	Completed	Rees Creek Phase II
22	Completed	Cache Valley GW/Aquifer Assessment & Classification	64	Completed	Virgin River TMDL Implementation
23	Completed	Jordan River Parkway Millcreek Riparian	65	Completed	Oil/Gas Erosion Control
24	Completed	Sanpete Valley WQ Assessment and GW Mapping	66	Completed	Jordan Watershed Council
25	Completed	Echo Creek Demonstration	67	Completed	Alta Fen Rehab
26	Completed	Stuart Johnson Salina Canyon	68	Completed	Middle Sevier River Watershed TMDL Implementation
27	Completed	Paria River Restoration Demonstration	69	Completed	Sevier River @Marysvalle Animal Waste Demonstr
28	Completed	Hardware Ranch Demonstration	70	Completed	Bear River Amalga
29	Completed	Fremont River Demonstration	71	Completed	Cub River
30	Completed	Peace Trees Information/Education (Salt Lake City)	72	Completed	Milford (Private Wells)
31	Completed	San Pitch River Information/Education	73	Completed	Sanpete Valley GW Recharge Area Mapping
32	Completed	East Canyon Creek	74	Completed	Jordan River Ecosystem Restoration
33	Completed	Upper Sevier Rangeland Improvement Demonstration	75	Completed	Upper Strawberry River Riparian Management
34	Completed	USU Panguitch - Sevier River	76	Completed	Matt Warner Reservoir/ Pot Creek Riparian Management
35	Completed	Thistle Creek	77	Completed	East Canyon Stream Restoration
36	Completed	Beaver River	78	Completed	Upper Bear River Riparian Restoration, BLRC
37	Completed	Mammoth Creek	79	In Progress	Jordan River Restoration
38	Completed	Panguitch Creek	80	In Progress	Wallsburg Watershed Restoration, re-opened
39	Completed	Lower Bear River Malad	81	In Progress	Spanish Valley Watershed Implementation
40	Completed	Duchesne River	82	Completed	Castle Creek Restoration
41	Completed	Upper Sevier River Information / Education	83	In Progress	Logan River Restoration
42	Completed	Virgin River Information / Education			

TABLE B- 319 FINAL PROJECT REPORTS SUBMITTED IN FY-17

Project Title	Total Award	319	Date Received
FY-11 East Canyon Stream Restoration Phase IV	\$380,421		12/28/2016
FY-12 USU Volunteer Monitoring and I&E	\$102,500		12/08/2016
FY-12 Utah Watershed Coordinating Council	\$10,000		12/12/2016
FY-13 Local Watershed Coordinators	\$340,000		12/12/2016

TABLE C- SUMMARY OF ACTIVE UTAH 319(H) GRANTS FY-17

Project Title	Total NPS Award	Grant Status			
USU Volunteer Monitoring and I&E FY-11	\$102,500	Project Approved	Complete	Final	Report
Utah Watershed Coordinating council FY-11	\$10,000	Project Approved	Complete	Final	Report
East Canyon Restoration FY-11	\$380,421	Project Approved	Complete	Final	Report
TMDL Local Watershed Coordinators FY-11	\$340,000	Project Approved	Complete	Final	Report
Utah Watershed Coordinating council FY-12	\$10,000	Project Approved	Complete	Final	Report
USU Volunteer Monitoring and I&E FY-12	\$102,500	Project Approved	Complete	Final	Report
East Canyon Restoration FY-12	\$283,070	Project Approved	Complete	Final	Report
Upper Weber TMDL Implementation FY-12	\$95,230	Project Approved	Complete	Final	Report
TMDL Local Watershed Coordinators FY-12	\$340,000	Project Approved	Complete	Final	Report
USU Volunteer Monitoring and I&E FY-13	\$97,000	Project Awaiting Approval	Complete	Final	Report
Strawberry River Restoration FY-13	\$358,044	Project Awaiting Approval	Complete	Final	Report
Duchesne River Restoration FY-13	\$66,577	Project Awaiting Approval	Complete	Final	Report
TMDL Local Watershed Coordinators FY-13	\$340,000	Project Report	Complete	Awaiting	Final
USU Volunteer Monitoring Program FY-14	\$84,525	Project Report	Complete	Awaiting	Final
Local Watershed Coordinators FY-14	\$340,000	Project Report	Complete	Awaiting	Final
Wallsburg Watershed Restoration Project FY-14	\$150,000	Project Submitted	Complete	Final	Report
Jordan River Restoration Project FY-14	\$319,096	Ongoing			
USU Volunteer Monitoring Program FY-15	\$83,250	Ongoing			
Local Watershed Coordinators FY-15	\$340,000	Project Report	Complete	Awaiting	Final
Strawberry River Restoration FY-15	\$75,000	Project Submitted	Complete	Final	Report
Spanish Valley Watershed Implementation FY-15	\$118,686	Ongoing			
North Fork Virgin River Irrigation Project FY-15	\$85,133	Ongoing			
Castle Creek Restoration FY-15	\$12,530	Project Submitted	Complete	Final	Report
Fremont River Restoration FY-15	\$66,200	Project Report	Complete	Awaiting	Final
Wallsburg Restoration project FY-15	\$98,722	Ongoing			
USU Volunteer Monitoring Program FY-16	\$72,595	Ongoing			
Local Watershed Coordinators FY-16	\$370,000	Ongoing			
Upper Sevier Restoration Project FY-16	\$249,700	Ongoing			
San Pitch Watershed Restoration Project FY-16	\$295,163	Ongoing			
USU Volunteer Monitoring Program FY-17	\$75,630	Ongoing			
Local Watershed Coordinators FY-2017	\$370,000	Ongoing			
Logan River Restoration Project	\$558,630	Ongoing			

TABLE D- APPROVED TMDLS

Water Body	Date Approved
Chalk Creek	12/23/1997
Otter Creek	12/23/1997
Little Bear River	5/23/2000
Mantua Reservoir	5/23/2000
East Canyon Creek	9/1/2000
East Canyon Reservoir	9/14/2010
Kents Lake	9/1/2000
LaBaron Reservoir	9/1/2000
Minersville Reservoir	9/1/2000
Puffer Lake	9/1/2000
Scofield Reservoir	9/1/2000
Onion Creek (near Moab)	7/25/2002
Cottonwood Wash	9/9/2002
Deer Creek Reservoir	9/9/2002
Hyrum Reservoir	9/9/2002
Little Cottonwood Creek	9/9/2002
Lower Bear River	9/9/2002
Malad River	9/9/2002
Mill Creek (near Moab)	9/9/2002
Spring Creek	9/9/2002
Forsyth Reservoir	9/27/2002
Johnson Valley Reservoir	9/27/2002
Lower Fremont River	9/27/2002
Mill Meadow Reservoir	9/27/2002
UM Creek	9/27/2002
Upper Fremont River	9/27/2002
Deep Creek	10/9/2002
Uinta River	10/9/2002
Pineview Reservoir	12/9/2002
Browne Lake	2/19/2003
San Pitch River	11/18/2003
Newton Creek	6/24/2004
Panguitch Lake	6/24/2004
West Colorado	8/4/2004
Silver Creek	8/4/2004
Upper Sevier River	8/4/2004

Lower and Middle Sevier River	9/17/2004
Lower Colorado River	9/20/2004
Upper Bear River	8/4/2006
Echo Creek	8/4/2006
Soldier Creek	8/4/2006
East Fork Sevier River	8/4/2006
Koosharem Reservoir	8/4/2006
Lower Box Creek Reservoir	8/4/2006
Otter Creek Reservoir	8/4/2006
Thistle Creek	7/9/2007
Strawberry Reservoir	7/9/2007
Matt Warner Reservoir	7/9/2007
Calder Reservoir	7/9/2007
Lower Duchesne River	7/9/2007
Lake Fork River	7/9/2007
Brough Reservoir	8/22/2008
Steinaker Reservoir	8/22/2008
Red Fleet Reservoir	8/22/2008
Newcastle Reservoir	8/22/2008
Cutler Reservoir	2/23/2010
Middle Bear River	2/23/2010
Pariette Draw	9/28/2010
Emigration Creek	7/18/2012
Jordan River Phase I	6/05/2013
Echo Reservoir	9/16/2014
Colorado River	6/17/2014
Rockport Reservoir	9/16/2014
Nine Mile Creek	3/2/2017

TABLE E- WATERSHED PLANS

Watershed	Date Approved
Middle and Lower Sevier	October-10
San Pitch	January-06
Upper Sevier	June-04
Virgin River	February-06
Paria River	2006
Escalante River	2006
Salt Lake Countywide Water Quality Stewardship Plan	2009
Wallsburg CRMP	10/01/2012

Duchesne River	7/31/2014
Strawberry River Watershed	12/18/2014
Spanish Valley Watershed Plan	Submitted to EPA for Approval
Upper Bear River Watershed Plan	Submitted to EPA for Approval
San Pitch Watershed Plan (revision)	6/2/2017
Weber River	Initiated
Price River	Submitted to EPA for Approval
South Fork of Chalk Creek	Submitted to EPA for Approval
Spanish Fork River	Submitted to DWQ for approval
Upper Sevier River (revision)	Initiated
Huntington Creek	Initiated
Maple Creek	Submitted to EPA for approval
Montezuma Creek	Initiated
Logan River	Submitted to EPA for Approval
Otter Creek	Initiated
Pelican Lake	Submitted to DWQ for approval

TABLE F- STATE NPS FUNDS ALLOCATED IN 2017

Project Title	Watershed	Project Type	Amount Awarded
Local Watershed Coordinators	Statewide	Technical Assistance	\$30,000.00
Utah Watershed Coordinating Council	Statewide	Watershed Group Support	\$10,000.00
Little Mountain Cattle Co. Feedlot Relocation	Lower Bear River	AFO/CAFO	\$40,000.00
2016-2017 Water Week Library Program	Statewide	I & E	\$4,000.00
Watershed Education in the Provo River Watershed	Utah Lake	I & E	\$10,000.00
Producer Website	Statewide	I&E	\$10,000.00
South East Colorado Technical Assistance	South East Colorado	Technical Assistance	\$35,000.00
Homgren Brother's Fencing	Middle Bear River	Stream Bank	\$34,250.00
Engaging Youth Livestock Producers in Manure Management	Statewide	I&E	\$8,276.00
Thurston Ranch Riparian Fence	Weber	Stream Bank	\$8,855.00
Stuart Nature Park	Middle Bear River	Stream Bank	\$80,000.00
Jordan River Ecosystem Restoration at 1700 South	Jordan River	Streambank	\$71,530.00
Terry Welch Stream Restoration	Upper Sevier	Stream Bank	\$28,700.00
Cameron Parry Stream Bank	San Pitch	Stream Bank	\$19,800.00
Thanksgiving Point ECO Challenge	Utah lake/Jordan River	I&E	\$5,000.00
Pamela Bingham Stream Bank	Middle Sevier	Stream Bank	\$19,740.00
Chris Allen Cover Crop	Middle Bear River	Cover Crop	\$13,590.00
Otter Creek Restoration Project	Middle Sevier	Stream Bank	\$60,000.00
Norm Weston Stream Bank	Upper Bear River	Stream Bank	\$23,606.00
E.coli Source I.D and Pet Waste I&E	Jordan River	Research/I&E	\$60,000.00
Fremont project	Middle Sevier	Streambank	\$22,000.00

Peart Land and Livestock Spring Restoration	Upper Bear River	Stream Bank	\$12,140.00
Duchesne River Areal Survey	Uinta Basin	Project Planning	\$28,200.00
Otter Creek Watershed Plan Development	Middle Sevier	Watershed Planning	\$40,000.00
New MST Protocols in the Bear and Jordan River	Bear/ Jordan River	Research	\$26,307.00
Onsite Set-aside	Statewide	Septic	\$10,000.00
Ron Boyer Stream Bank Project	Weber	Stream Bank	\$36,250.00
Stephens and Pace Ranch Conservation Easement	Weber	Conservation Easement	\$10,000.00
Charles Rex Streambank Stabilization	Upper Bear River	Stream Bank	\$33,000.00
Jason Morgan Irrigation Project	Weber	Irrigation	\$5,000.00
Envirothon	Statewide	I&E	\$5,000.00
Pelican Lake Drainage Watershed Plan	Uinta Basin	Watershed Planning	\$40,000.00
Helper City Project	Colorado River	Stream Bank	\$25,000.00
Steve Redd	South East Colorado	AFO/CAFO	\$127,537.00
Water Quality Monitoring of Juniper Treatment Programs	Raft River/GSL	Research	\$7,219.00
Total			\$1,000,000

TABLE G- SUMMARY CONSERVATION PRACTICES- NRCS FISCAL YEAR 2017

Summary Conservation Practices - FY2017	Planned	Applied	Planned Count	Applied Count
Adding food-producing trees and shrubs to existing plantings (E612133X1) (ac)	0		2	
Advanced I/W/M--Soil moisture is monitored, recorded, and used in decision making (E449114Z1) (ac)	58		4	
Advanced I/W/M--Weather is monitored, recorded and used in decision making (E449114Z2) (ac)	644		9	
Agricultural Energy Management Plan - Written (128) (no)	3	4	3	4
Brush Management (314) (ac)	24,372	23,120	349	307
Brush management for improved structure and composition (E314133Z) (ac)	518		9	
Brush management that maintains or enhances wildlife or fish habitat (E314134Z) (ac)	361		5	
Channel Bed Stabilization (584) (ft)	300	6,082	1	4
Clearing and Snagging (326) (ft)	3,918		3	
Comprehensive Nutrient Management Plan - Written (102) (no)	2	1	2	1
Conservation Cover (327) (ac)	268	1,948	24	31
Conservation cover to provide food habitat for pollinators and beneficial insects (E327136Z1) (ac)	1		2	
Conservation Crop Rotation (328) (ac)	84	153	2	1
Cover Crop (340) (ac)	3,507	6,040	131	205
Cover crop to reduce wind erosion (E340102Z) (ac)	28		2	
Critical Area Planting (342) (ac)	21	6	11	5
Diversion (362) (ft)	923		2	
Establish pollinator and/or beneficial insect habitat continuity (space) (E512139Z2) (ac)	0		1	
FARMSTEAD ENERGY IMPROVEMENT (374) (no)		1		1
Fence (382) (ft)	437,027	231,973	172	119
Filter Strip (393) (ac)	2	2	2	6
Firebreak (394) (ft)		31,124		5
Forage and Biomass Planting (512) (ac)	345	202	28	21
Forage Harvest Management (511) (ac)	0		2	
Forest Management Plan - Written (106) (no)	3		3	
Forest Stand Improvement (666) (ac)	107	199	9	6
Fuel Break (383) (ac)	4		2	
Grassed Waterway (412) (ac)	9		1	
Grazing management for improving quantity and quality of cover and shelter for wildlife (E528137Z1) (ac)	10,044		30	
Grazing management for improving quantity and quality of food for wildlife (E528136Z1) (ac)	11,103		10	
Harvest hay in a manner that allows wildlife to flush and escape (ANM10) (ac)		183		25
Harvest of crops (hay or small grains) using measures that allow desired species to flush or escape (E511137Z1) (ac)	1,107		62	
Harvesting crops using a stripper header (ANM16) (ac)				
Heavy Use Area Protection (561) (sq ft)	59,003	4,830	14	4
Hedgerow Planting (422) (ft)	702	180	2	1
Herbaceous weed control (inadequate structure and comp) for desired plant communities/habitats (E315133Z) (ac)	362		13	
Herbaceous weed control (plant pest pressures) for desired plant communities/habitats (E315134Z) (ac)	548		38	
Herbaceous weed control for desired plant communities/habitats consistent with the ecological site (E315132Z) (ac)	1,289		30	

Summary Conservation Practices - FY2017	Planned	Applied	Planned Count	Applied Count
Herbaceous Weed Treatment (315) (ac)	14,097	5,552	123	71
High Tunnel System (325) (sq ft)	95,347	61,083	48	25
Improved grazing management for plant productivity/health through monitoring (E528132Z3) (ac)	68,996		105	
Improved grazing management for soil compaction on rangeland through monitoring activities (E528107Z2) (ac)	26,739		12	
Improved grazing management that reduces undesirable plant pest pressure through monitoring (E528134Z) (ac)	44,378		20	
Incorporating "wildlife friendly" fencing for connectivity of wildlife food resources (E382136Z) (ft)	6,348		3	
Incorporating wildlife refuge areas in contingency plans for wildlife food (E528136Z2) (ac)	45,974		50	
Install variable frequency drive(s) on pump(s) (E374144Z1) (no)	1		1	
Integrated Pest Management (IPM) (595) (ac)	278	720	45	71
Irrigation Ditch Lining (428) (ft)	30,806	20,794	28	16
Irrigation Land Leveling (464) (ac)	585	345	40	18
Irrigation Pipeline (430) (ft)	316,802	329,711	363	345
Irrigation Reservoir (436) (ac-ft)	23	29	9	12
Irrigation System, Microirrigation (441) (ac)	127	16	23	7
Irrigation System, Surface and Subsurface (443) (ac)	247	139	19	10
Irrigation Water Management (449) (ac)	2,142	4,913	144	304
Irrigation Water Management Plan - Written (118) (no)		4		4
Leave standing grain crops unharvested to benefit wildlife food sources (E328136Z) (ac)	4,260		125	
Lighting System Improvement (670) (no)	34	3	4	3
Livestock Pipeline (516) (ft)	338,053	256,197	118	80
Manage livestock access to streams/ditches/other waterbodies to reduce nutrients in surface water (E472118Z) (ft)	6,000		4	
Monitor key grazing areas to improve grazing management (PLT02) (ac)		490		30
Mulching (484) (ac)	1	25	3	7
Native grasses or legumes in forage base to improve plant community structure and composition (E512133Z1) (ac)	21		11	
Nutrient Management (590) (ac)	538	2,290	29	113
Obstruction Removal (500) (ac)	1	43	7	2
On-Farm Secondary Containment Facility (319) (no)		1		1
Open Channel (582) (ft)	124	2,253	1	1
Pond (378) (no)	1	1	1	1
Pond Sealing or Lining, Bentonite Sealant (521C) (no)		1		1
Pond Sealing or Lining, Compacted Clay Treatment (521D) (no)	3	4	3	4
Pond Sealing or Lining, Flexible Membrane (521A) (no)	4		4	
Precision Land Forming (462) (ac)	39		7	
Prescribed Grazing (528) (ac)	42,591	92,624	108	338
Prescribed grazing that improves or maintains riparian and watershed function-erosion (E528105Z) (ac)	72,241		225	
Pumping Plant (533) (no)	114	66	109	65
Range Planting (550) (ac)	20,750	17,225	148	128
Range planting for improving forage, browse, or cover for wildlife (E550136Z) (ac)	785		9	

Summary Conservation Practices - FY2017	Planned	Applied	Planned Count	Applied Count
Range planting for increasing/maintaining organic matter (E550106Z) (ac)	50		1	
Reduce ozone precursor emissions related to pesticides by utilizing IPM PAMS techniques (E595129Z) (ac)	527		36	
Reduce risk of pesticides in surface water by utilizing precision pesticide application techniques (E595116X) (ac)	15,301		553	
Reduce risks of nutrient losses to surface water by utilizing precision ag technologies (E590118X) (ac)	538		8	
Residue and Tillage Management, No-Till (329) (ac)	592	1,025	41	38
Residue and Tillage Management, Reduced Till (345) (ac)		548		11
Riparian Forest Buffer (391) (ac)	10	1	9	4
Riparian Herbaceous Cover (390) (ac)	0	1	1	1
Roof Runoff Structure (558) (no)	9		9	
Roofs and Covers (367) (no)	1		1	
Rotation of supplement and feeding areas (WQL03) (ac)		1,392		31
Seasonal High Tunnel System for Crops (798) (sq ft)		10,635		7
Spring Development (574) (no)	8	2	8	2
Sprinkler System (442) (ac)	5,831	5,338	334	328
Stockpiling cool season forage to improve plant productivity and health (E5281322Z) (ac)	50		3	
Stream Crossing (578) (no)	11	3	11	3
Stream Habitat Improvement and Management (395) (ac)	6	3	2	3
Streambank and Shoreline Protection (580) (ft)	12,893	10,599	71	58
Structure for Water Control (587) (no)	215	1,387	208	150
Structures for Wildlife (649) (no)	31	13	29	9
Terrace (600) (ft)	94,100	36,704	11	11
Trails and Walkways (575) (ft)	475	20	1	1
Tree/Shrub Establishment (612) (ac)	1	20	2	4
Tree/shrub planting for wildlife cover (E612137Z) (ac)	1		8	
Tree/shrub planting for wildlife food (E612136Z) (ac)	5		8	
Upland Wildlife Habitat Management (645) (ac)	72,568	5,243	115	20
Use of multi-species cover crops to improve soil health and increase soil organic matter (E3401062Z) (ac)	107		19	
Waste Recycling (633) (ac)		59		1
Waste Separation Facility (632) (no)	3	1	3	1
Waste Storage Facility (313) (no)	8		8	
Waste Transfer (634) (no)	16		16	
Water Well (642) (no)	15	108	15	9
Watering Facility (614) (no)	189	2,998	186	112
Windbreak/Shelterbelt Establishment (380) (ft)	1,290	5,469	4	10
Woody Residue Treatment (384) (ac)	8,589	7,061	106	39

TABLE H- MILESTONES OF THE UTAH STATEWIDE NPS PROGRAM

Milestone	2013	2014	2015	2016	2017
Objective 1: Environmental Protection:					
Number of TMDLs Completed	2	2	1	0	1
Number of TMDLs Initiated	Huntington Creek-Selenium Pelican Lake-pH Nine Mile Creek-Temperature	Huntington Creek-selenium Parley's Creek- E.coli Lower Bear River- TP Red Creek Reservoir-TP	Nine Mile Creek-Temperature Silver Creek-TDS Utah Lake-Phosphorus Jordan River-Ecoli, Arsenic, Cadmium	Fremont River-E.coli	North fork Virgin River-E.coli
Number of 9 Element Watershed Based Plans Developed	Strawberry River Duchesne River	Spanish Valley North Fork of Virgin	Price River Upper Bear River North Fork of Chalk Creek Weber River	Mantua/Maple Creek	Logan River Lower Weber River San Pitch
Number of 9 Element Watershed Based Plans Initiated	Price River North Fork of the Virgin River Otter Creek Upper Sevier San Pitch Middle Green/Desolation Canyon Weber River Watershed Plan Upper Weber Watershed Plan	Price River Upper Sevier San Pitch Middle Green/Desolation Canyon Weber River North Fork of Chalk Creek Spanish Fork River Pinto Creek	Huntington Creek Maple Creek Montezuma Creek	Logan River Otter Creek Pelican Lake	NA
Number of projects dedicated to the protection of threatened waterbodies identified in Utah's 303(d) list	0	The Cart Creek Watershed project funded using State NPS funding.	Tie Fork road Stream Crossing funded using State NPS funding.	One NPS Project was dedicated to watershed protection. This is the Montezuma Creek Watershed Plan Development.	No project selected for funding in FY-2017 were focused on protecting unlisted waterbodies.
Number of projects focused on groundwater protection throughout the state	One Septic I&E Program, One Groundwater outreach program.\$78,041 total in State NPS Funding	One Septic I&E Program, One Groundwater outreach program \$41,142. Bothwell ground water has continued to be implemented. \$14,358 for septic enhancements.	Aside from two grants focusing on septic system maintenance, no funding was spent on groundwater protection using FY-15 funding.	The Division of Water Quality set aside \$12,538 in State NPS funding to help private landowners with maintenance of their septic systems.	-\$10,000 was set aside for septic improvements around the state. -\$7,219 was awarded to UGS to determine the impacts to groundwater in areas where pinion/juniper treatments are taking place.
Objective 2: Improve Program Efficiency and Effectiveness through Reporting and Evaluation.					
Total Number of Stream Miles Restored	0.77 miles of in-stream restoration implemented 5.35 miles of protective riparian fencing implemented	0.71 miles of in-stream restoration 2.01 miles of riparian fencing	2.2 miles of stream restoration implemented in FY-2015 5.8 miles of riparian fencing implemented in FY-2015	1.61 miles of Stream restoration implemented in FY-2016 2,206 Feet of riparian fencing installed in FY-2016	1.71 miles of Stream restoration implemented in FY-2017 2.07 linear feet of riparian fencing installed in FY-2017 1 animal feeding operation
Total Estimated Load Reductions Reduced in Project Areas (includes reductions from annual and final reports)	Nitrogen- 10,161 lbs/year Phosphorus- 3,878 lbs/year Sediment- 2,500 tons/year	Phosphorus- 8,899 lbs/year Sediment- 8,942 tons/year E.coli- 3,100 lbs/year Nitrogen-20,385 lbs/year	Nitrogen- 7,766 lbs/year Sediment- 903 tons/year Phosphorus-4,286 lbs/year TDS-2,359 tons/year	Nitrogen- 6,168 lbs/year Sediment- 691tons/year Phosphorus- 1,976 lbs/year	Nitrogen-564.89 lbs/year Sediment- 322.6 tons/year Phosphorus- 214.7 lbs/year
Number of Final Project Reports Submitted	10 (See Table B)	9 (See Table B)	13 (See Table B)	8 (See Table B)	4 (See table B)
Number of 319 Grants Open During the Fiscal Year	28 (See Table C)	19 (See Table C)	17 (See Table C)	12 (See Table C)	12(See Table C)
Amount of Unexpended Funds in Each Open 319	FY-08- \$90,405 FY-09- \$252,811	FY-09- \$206,697 FY-10- \$148,287	FY-11- \$62,994 FY-12- \$190,509	FY-11- \$8,180 FY-12- \$62,018	FY-14- \$178,184 FY-15- \$102,441

Grant	FY-10- \$188,479 FY-11- \$341,358 FY-12- \$667,452 FY-13- \$861,621 (See Table1)	FY-11- \$76,155 FY-12- \$295,598 FY-13- \$724,575 FY-14- \$893,621	FY-13- \$167,993 FY-14- \$558,943 FY-15- \$879,521	FY-13- \$31,613 FY-14- \$364,696 FY-15- \$395,640 FY-16- \$987,458	FY-16- \$561,454 FY-17- \$1,004,260 (See Table1)
Number of Success Stories Showing the environmental Benefits of Completed NPS Projects Submitted to EPA for Approval	2- Cub River and East Canyon Creek	1 - Fremont River	3 -Main Creek Spring Creek Strawberry River	2-Fremont River (WQ10) Strawberry Reservoir	1-Chalk Creek Watershed (WQ-10)
Objective 3: Improve Public Participation and Understanding of NPS Issues					
Number of Participants Involved in the Statewide Volunteer Monitoring Program	196	448	980	1048	1249
Number of I&E Projects Implemented with Section 319 and State NPS Funding	3 projects -AFO Outreach (NPS) -Septic I&E Outreach (NPS) -Volunteer monitoring program (319)	6 projects -AFO Outreach (NPS) -Septic I&E Outreach (NPS) -Volunteer monitoring program (319) -Mercury Take Back (NPS) -Strawberry Valley I&E (NPS) -Rain Water Exhibit (NPS)	7 projects -Cedar Beaver I&E (319) Volunteer Monitoring Program (319) AFO outreach (NPS) Envirothon (NPS) Riparian Grazing Workshop (NPS) Onsite BMP Manual (NPS) Water Week AWWA (NPS)	7 Projects -Fair Child Challenge (NPS) -Mill Creek Monitoring Signage (NPS) -Nutrient Producer Website (NPS) -Envirothon (NPS) -Water Week 2016 AWWA (NPS) -Sevier River I&E (NPS) -Provo Watershed Festival (NPS) -Volunteer Monitoring Program (319)	8 Projects -Water Week Library Program (NPS) -Watershed Education in the Provo River Watershed (NPS) -Producer's Website (NPS) -Engaging Youth in Manure Management (NPS) -Thanksgiving Point ECO Challenge. (NPS) -Pet Waste I&E in Jordan River (NPS) -Envirothon (NPS) -Utah Water Watch (319)
Updates Made to the State NPS Program Website	The website was updated to include additional information for grant applicants including Final reporting guidance, and grant applications. In 2014 USU Waterquality extension will begin development of a much improved website.	We have begun working with USU Extension to create a website focused solely on NPS pollution. This will include an interactive map showing where projects have taken place in the state as well as movies highlighting the NPS projects that have been implemented throughout the state.	Utah State University has made good headway on the new NPS Program website. This website will be completed by the end of the calendar year. The website can be found at: http://www.utahcleanwater.org/	The NPS Program Website has now been completed, and Utah State University continues to maintain it as new information becomes available.	The NPS Program Website has now been completed, and Utah State University continues to maintain it as new information becomes available.
Objective 4: Improve Data Collection and Management					
Track Updates Made to Enhance NPS Monitoring in the Division of Water Quality's Annual Monitoring Strategy	Additional monitoring equipment was purchased for the Local Watershed Coordinators to assist with NPS project monitoring. Trainings were also offered on the development of SAPs.	The equipment that was purchased in 2013 has been distributed to the local watershed coordinators, and a training was conducted during the summer of 2014 showing the local watershed coordinators how to use this equipment.	Watershed Coordinators are now collecting data monthly to demonstrate the effectiveness of the best management practices that are being implemented. Monitoring locations were selected for the Bear River Watershed in cooperation with the local work group, and pre-implementation data has been collected since the summer of 2015. The local watershed coordinator is also working with Tetratech to develop a SAP in the Upper Sevier Watershed.	The Division of Water Quality is in the process of developing a statewide SAP for the monitoring of NPS projects. This statewide SAP will summarize all of the monitoring that will need to take place throughout the State of Utah, Who will be responsible for the collection of that data, and how often it will be collected. This will also include the installation of long term continuous monitoring stations. In locations where local watershed coordinators or partners are unavailable to collect the data the DWQ Monitoring staff will collect data. The first statewide SAP should be completed and ready to	A Statewide SAP has been developed in cooperation with the DWQ Monitoring and assessment sections. Sites were added to help determine if the waterbody can be removed from the 303(d) list of impaired waterbodies, as well as determine the pollutant load reductions obtained through project implementation. This will be a living document that will be revisited every year.

				implement by the end of the State fiscal year.	
Number of SAPs Developed	8	2 Many of the SAPs needed throughout the basins were developed last year. It is anticipated that several more will be developed next year.	During FY-2015 the local watershed coordinators dedicated the majority of their time to implementing the 10 existing SAPs. In talking with the local watershed coordinators, it is anticipated that 2-3 more SAPs will be developed in 2016.	During FY-2016 a SAP was developed for the San Pitch and Maple Creek Watershed. SAPs are currently being developed for the South Fork of Chalk Creek, The Upper Sevier River, and Logan River.	SAPs were developed or updated for the Logan River, Chalk Creek, the Upper Sevier, the San Pitch, the Strawberry River, the Spanish Valley, Main Creek, and the North Fork of the Virgin River
Track Status and updates of AWQMS database	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report
Report on Water Quality Data Uploaded to the EPA WQX Database	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report	See Section 4.4 of this report
Objective 5: Improve Coordination of Governmental and Private Sectors					
Hold Annual NPS Management Program Coordination Meetings	Held February 26, 2013	Held February 26 th , 2014	Held March 3 rd , 2015	Held on March 2 nd , 2016	Held on March 7 th , 2017.
Conduct Annual Consistency Reviews with State and Federal Agencies	Conducted August 13 th and 14 th , 2013.	Conducted October 7 th and 8 th , 2014	Conducted August 12 th , 2015	Conducted October 5 th -6 th , 2016	Conducted on October 3 rd -4 th , 2017
Number of Water Quality Task Force Meetings Held During the Fiscal Year	Three meetings were held. October 10 th 2012, February 14 th , 2013, and May 22 nd 2013	Three meetings were held. August 7 th , 2013, November 19 th , 2013, and May 19 th , 2014.	Four meetings were held. August 25 th , 2014, December 4 th , 2014, and February 12 th , 2015, June 17 th , 2015.	Three meetings were held. October 7 th , 2015, January 7 th , 2016, and April 6 th , 2016.	Five meetings were held on July 20 th , 2016, October 20 th 2016, January 19 th , 2017 April 11, 2017, and June 29 th , 2017
Amount of Funding Used to Leverage 319 Funding Throughout the State	\$1,970,887 (See Table G)	\$4,571,096 (See Table G)	\$3,901,572 (See Table G)	\$5,631,010 (See Table 5)	\$6,038,195 (See Table 5)

TABLE I- FY-17 BLM WRI PROJECTS

2017 Utah WRI/HLI Accomplishments				
Project Id	Title	Terrestrial Acres	Aquatic/ Riparian Acres	Stream Miles
3913	Box Elder SGMA Aerial Infrared Lek Searches	0	0	0
3915	Hicks Creek Fire Rehabilitation	1,455.59	0	0
3673	South Bookcliffs Phase 4 (Sagers)	359.95	0	0
3714	Three Corners Guzzlers	0	0	0
3753	Bender Mountain PJ Removal/Lop & Scatter	2,653.80	0	0
3593	Carbon County Water Storage Tank Troughs	0	0	0
3670	Utah Lake Shoreline Restoration: Year 8	8,214.74	0	0
3515	Shiner Basin	2,030.76	0	6.91
3655	Blawn Mountain Vegetation Enhancement Phase I	764.45	2.24	0.13
3741	Bulldog Bench-First Point Handthin	1,961.53	0	5.18
3822	Blue Mountain Chain Harrow and Seeding 2016	456.24	0	0
3696	Burnt Timber bullhog phase II	441.84	0	0.2
3742	Fish Park Gunnison Sage-grouse Habitat Improvement	492.77	0	0
3430	Sears Creek habitat enhancement	0	5.64	0.4
3281	Coal Hollow, Kane County - Phase II	1,105.52	0	5.12
2965	Range Creek Fuels Reduction and Vegetation Restoration Project- Phase I	146.04	0	2.4
2997	Monument Ridge Slashing	1,019.70	0	1.21
3364	Little Davenport Slashing	0	0	0
3398	Upper Long Hollow (Narrows)	658.91	0	3.85
3226	Adobe Mesa Sagebrush/Mule Deer Winter Range Improvement	305.64	0	0.63
3705	Cottonwood Meadow Riparian Exclosure and Head Cut Stabilization	0	0	0
3347	Rich County Grazing Management Fence Rebuild Phase 2	0	0	0
3686	Hamlin Valley Habitat Restoration Project - Sagebrush Restoration Year 2	3,507.76	0	0
3379	Upper Long Hollow	3,214.55	0	0
3563	Duncan Creek - Final Phase	2,235.80	0	1.28
3568	Moon Ridge Chaining maintenance	692.27	0	0
3185	Devil Canyon III Archaeology	0	0	3.69
3544	South Beaver Buckskin Valley Phase II	1,038.05	0	0
3570	Escalante River Watershed Riparian Invasive Species Removal - Phase 9	0	2,054.02	65.92
3527	Browns Park WMA Headquarters Ponds phase 2	0	0	0
2956	FY15 Southeast Utah Riparian Restoration- Phase 2	0	471.78	5.35
3883	Cottonwood Springs Bullhog II	859.73	0	0
3600	Yellowjacket (Harris Mountain)	1,498.41	0	0
3000	Blanding East Fuel Reduction and Vegetative Restoration - Phase I	638.39	0	4.92

3467	Parker Springs Riparian Habitat Improvement	0	0	0
3591	Southern Region Riparian Tree and Shrub Planting - FY17	0	106.82	8.86
3635	Government Creek GRSB Habitat Improvement	8,552.57	0	0
3614	Wah Wah Summit Wildlife Guzzler	0	0	0
3677	Brown's Park WMA Maintenance FY17	0	0	0
3912	Elk Ridge Cabin Fuels Reduction	9.24	0	0
3732	Horse Hollow Vegetation Enhancement Project - Utah Prairie Dog	900.34	0	1.24
3862	North Moore Fire Rehabilitation	1,415.98	0	0
3758	Monument Ridge Bullhog Implementation Phase I & II	1,010.90	0	0
3708	Upper Long Hollow (Narrows) Vegetation Treatment - Phase 2	1,066.13	0	0
3730	Riparian Habitat Restoration on the Lower Dolores River	0	207.41	1.99
3713	FFO Furner Valley Bullhog Phase 2	899.76	0	0.47
3845	Tavaputs Plateau Archaeology	0	0	0
3874	Antelope Island Fire Rehabilitation	5,309.88	0	10.11
3893	West Government Creek Fire Rehabilitation	2,659.23	0	0
TOTALS		57,576	2,848	130