State of Utah

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Department of
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DIVISION OF WATER QUALITY
John K. Mackey, P.E.
Director

MEMORANDUM

TO: Utah Water Quality Board

THROUGH: John K. Mackey, PE

FROM: Engineering Section

DATE: November 7, 2022

SUBJECT: Finance Committee Meeting – Southern Utah Reuse ARPA Grant

BACKGROUND

In the 2022 Legislative session, 15 million dollars of American Rescue Plan Act (ARPA) grant funds were allocated for "*wastewater reuse projects in Southern Utah with priority for projects that mitigate the impacts of drought on rural communities and the agricultural sector*." During the June 22, 2022 the Water Quality Board (Board) provided feedback to staff on solicitation of the competitive grant program for these funds. The Board determined that proposed reuse projects located in the Central, San Juan, Southeastern, and Southwest Health Districts will be considered eligible locations for funding, excluding projects located in the Great Salt Lake watershed.

Applications for project funding were accepted through the Division of Water Quality's (Division) grant program website from September 27, to October 17, 2022. The applicants answered a series of eight questions about their projects. The applicants' projects were scored based off their answers to these questions. The projects will be presented by the applicants to the Water Quality Board on December 14, 2022. The Finance Committee will meet to discuss the projects, funding, and request for applicants to appear during the December meeting. No motions are planned for the Finance Committee meeting as funding decisions will be made at the December meeting.

PROJECTS FOR WATER QUALITY BOARD CONSIDERATION

Staff received twelve funding applications during the competitive grant program project solicitation. The applied projects total $89 million with $59 million in requested funds. Four applications were for planning projects and eight applications are for construction projects. Table 1 below shows a summary of Funding Requests. In accordance with the competitive grant program, staff has provided the Financial Burden Indicator rating for each community and a score for the project. Projects are presented and provided a reference number based on increasing funding amounts.

Table 1 - Summary of Funding Requests

Ref #	Project	Needed Funding	Local Contribution	Total Project Cost	Financial Burden	Score
1	Moroni	$90,000	$0	$90,000	LOW	20
2	Mt. Pleasant	$125,000	$0	$125,000	MEDIUM	20
3	Kanab	$145,000	$20,000	$120,000	MEDIUM	20
4	Torrey Town	$150,000	$0	$150,000	No sewer	20
5	Cedar Valley	$500,000	$1,000,000	$1,500,00	LOW	63
6	Sherwood Shores	$595,000	$255,000	$850,000	No sewer	60
7	Fairview	$1,123,500[a]	$2,076,500[b]	$3,200,000	MEDIUM	70
8	Ash Creek SSD	$1,688,200	$725,000	$2,413,200	LOW	67
9	Cedar City	$7,000,000	$3,000,000	$10,000,000	LOW	55
10	St. George	$10,000,000	$7,000,000	17,000,000	LOW	50
11	WCWCD (Dry Wash Reservoir)	$12,250,000	$5,250,000	$17,500,000	LOW	50
12	WCWCD (Toquer Reservoir)	$25,725,000	$10,971,000	$36,570,000	LOW	70

a. Approved loan by CIB.; b. Approved grant by CIB.

As there are not sufficient funds to provide funding for all the projects requested, it is necessary to bring the requests to the Finance Committee for review.

PROJECT SUMMARY AND STAFF COMMENTS

Staff has a brief summary of each project in the Project Summary and Staff Comments Section. In addition to the brief summaries of project the project application is included in Attachment 1.

1. Moroni

Moroni City applied for $90,000 in funding to develop a feasibility study to explore the concept of reusing treated wastewater for industrial, agricultural, and secondary applications for the City and the turkey processing plant. Moroni City located in Sanpete County has a population of 1,606 people. Ten percent of the wastewater entering the Moroni City Wastewater Treatment Plant comes from the population. Most of the City's wastewater flow is from a turkey processing plant. The City is the owner of the wastewater treatment plant, but through an agreement, the turkey processing plant provides the operation and maintenance. Reusing the effluent from the wastewater treatment plant would allow surface and underground sources to stretch further. Currently, the turkey processing plant uses approximately 70,000 gallons of potable water weekly for their year-round cooling operations.

Staff Comments:

Staff supports responsible planning efforts.

2. Mount Pleasant

Mount Pleasant City applied for $125,000 in funding to develop an engineering study that evaluates constructed wetlands and potentially simpler options for wastewater treatment and reuse. Mount Pleasant City in Sanpete County has a population of 3,620 people. Their wastewater system consists of a sewage lagoon. With ongoing drought conditions, there is renewed interest in reclaiming water from the lagoon to provide more water for population growth and irrigation. This project would help the City in their goal to preserve water while growing its economy.

Staff Comments:

Staff supports responsible planning efforts.

3. Kanab City

The Kanab County Water Conservancy District (KCWCD) applied for $125,000 in funding for preparation of a feasibility study. KCWCD will bring a local contribution of $20,000 for the $145,000 study. The proposed project is a feasibility study to explore the concept of reusing treated wastewater from the Kanab and Duck Creek areas of Kane County for agricultural purposes. The study will cover the Kanab service area and Duck Creek service area. In the Kanab service area, the study will explore the viability of routing discharge water from the wastewater treatment plant to the Jackson Flat Reservoir for recreational and agricultural reuse with other water stored in the reservoir. In the Duck Creek service area, the study will explore the concept of injecting treated wastewater back into the aquifer to support recharge and, with the direct connection between the

Duck Creek Sinks and Lower Asay Spring having been studied and documented, to support recreational and agricultural use in the upper Sevier River drainage.

In addition, the proposed study project includes water rights and ownership, treatment requirements, right-of-way requirements, transmission requirements, anti-degradation policies affecting recharge, funding, and permitting. It will provide opinions of probable capital costs as well as ongoing operation and maintenance cost and evaluate the benefit/cost ratios of various alternatives. Ultimately, if the proposed project demonstrates feasibility, Kane County Water Conservancy District may seek future funding to implement the reuse projects.

Staff Comments:

Staff supports responsible planning efforts.

4. Torrey Town

Torrey Town applied for $150,000 in funds for a $150,000 sewer study. Since application, Torrey has re-estimated the cost of the sewer study at approximately $75,000. The project proposal is to do a sewer study for Torrey Town and the surrounding unincorporated area. Torrey is the nearest town to Capitol Reef National Park. There are many hotels, restaurants, gas stations, etc. that are on individual onsite wastewater systems. If past and present examples of National Park communities (Moab, Springdale, Bryce Canyon City) continue through the future, Torrey will continue to grow and individual onsite systems will no longer make sense for that community. This sewer study will help local officials make plans for the future to be proactive rather than reactive and be ready to pull the metaphorical trigger on installing a sewer system.

Depending on the study results, there is potential to use treated wastewater for irrigation purposes either for municipal, or agricultural purposes. The treated effluent could provide secondary irrigation to the residents and businesses, thus eliminating the need to use culinary water on lawns, etc.

Staff Comments:

Staff supports responsible planning efforts.

5. Cedar Valley

The Cedar Valley is applying for $500,000 in project funding for a Type II effluent storage reservoir and Type II distribution system piping. The total cost of the project is estimated to be $1,500,000 and $1,000,000 is already allocated. Cedar Valley is suffering from a low ground water table. To reduce their dependence on the aquifer, Cedar Valley's engineer has drafted plans for a land application project. The project involves building a storage pond next to the wastewater treatment plant, where the current land application area is located. The wastewater currently meets Type II Reuse standards. The treated effluent will be pumped to existing farmland to the east where approximately 810 acres of land already has center pivots installed and in use. There is an

additional 715 acres of land to the south which is currently irrigated with center pivots. The remainder will be funded from in kind contributions and budget funds.

Staff Comments:

Staff supports the project, in particular if the provided Type II use will replace potable water usage. The Board could consider requirements to demonstrate contracts for water rights which will no longer be utilized as a result of the project.

6. Sherwood Shores

Sherwood Shores Subdivision applied for $595,000 in funding for construction of a collection system and membrane bioreactor treatment facility. Sherwood Shores is located in the center of Gunnison Bend Reservoir. Currently, the community does not have a sewer system or body politic. The proposed project is to install a membrane bioreactor along with collection systems to treat wastewater from the Sherwood Shores Subdivision which consists of 125 onsite systems with the potential for 400 additional onsite systems. The installation of the membrane bioreactor will serve a population between 1,000 -1,500 persons.

This project would replace the onsite potable irrigation system at both of the boat dock common areas. The irrigation systems at these common areas typically use 21,000 - 40,000 gallons each of potable water per month based on historical metered billing. This project will also help prevent future contamination concerns because there currently are approximately 125 onsite systems and there is the potential to have 500 total onsite systems. The installation of the proposed membrane bioreactor would remove the possibility of having 500 onsite systems which in turn would remove the possibility of leaching from individual onsite systems.

Sherwood Shores is located near Delta. Therefore, the City of Delta was used to determine the MAGI ($44,200) and Financial Need Indicator (2.33) for Sherwood Shores. Currently, only preliminary quotes have been obtained for the installation of the membrane bioreactors.

Staff Comments:

Staff supports the project and it will be a challenging undertaking for the project to require existing homes to construct private laterals (which are CWSRF ineligible) and pay a monthly sewer bill to a body politic.

7. Fairview City

Fairview City applied for $1,168,000 in funding for construction of a $3,200,000 reuse infrastructure. Fairview has received authorization from the Permanent Community Impact Board (CIB) to construct the project with $1,168,000 loan funds and $2,076,500 in grant funds. It should be noted that any portion of the project not funded by ARPA grant funds, based on PCIB funding policy, will continue to be funded at the authorized proportional rate of 36% loan to 64% grant. This results in every $200,000 in grant funding equating to a reduction of user rates of around $0.34 per eru per month or 0.01% of MAGI.

The reuse effluent will be piped to a tank above the city owned cemetery while ambient temperatures are above 40^0F. This location provides for use at the cemetery as well as future build out to other locations in town. The initial phase builds the tank, pipeline and pumping structures. Future phases will expand the distribution side of the system and provide an opportunity for third party flood irrigation companies to convert to pressurized systems. This project consists of a new sewer effluent lift station at the existing wastewater treatment plant (WWTP), 10" PVC C900 sewer re-use pipeline alignment, 300,000 gallon concrete water storage tank, 6" PVC C900 pressurized irrigation pipe from the water storage tank to the cemetery.

This project is necessary to reduce the current average 3.5 mg/L phosphorus levels in the sewer effluent to the TBPEL Reuse average annual discharge concentration required by the variance before it is discharged to the San Pitch River. The City will use the effluent as Type I reuse irrigation water on City-owned lands primarily at the cemetery and in the future other City owned properties. Any water that is not land-applied will continue to be discharged to the San Pitch River.

The reuse project will alleviate the water burden needed to irrigate 18 acres of cemetery lawn on the local secondary provider. The water not used at the cemetery can then be used by other shareholders of the secondary provider. Even during times of drought, certain demographics of the public demand that the cemetery stay green at all costs. Therefore, the application at the cemetery has a higher probability of impact vs. a location that may be capable of cutting back water consumption. Considering an average of 1/4 acre of lawn per household the cemetery is the equivalent burden of 72 homes. The local secondary provider used to irrigate the cemetery has a high mix of agricultural and domestic outdoor users. The water the reuse will replace will then be available to agricultural applications. The design also provides excess reuse water to be available to agricultural producers within the distribution area of the first phase near the cemetery.

Staff Comments:

Staff supports the project in a rural community. The project already has significant grant funds allocated to it, however the community still faces affordability concerns.

8. Ash Creek Special Service District

Ash Creek Special Services District (the District) needs $1,288,200 in funding to construct wastewater reuse facilities in conjunction with their planned new wastewater treatment plant. The estimated total cost of the project is $2,413,200 and the District has a local contribution amount of $725,000. As one of the largest wastewater treatment agencies in southern Utah, the District serves the communities of Hurricane, La Verkin, Toquerville, and Apple Valley. Each of these communities have historical agricultural backgrounds with a multitude of small agricultural operations that include forage crop production, fruit orchards, and livestock grazing. In conjunction with the Washington County Water Conservancy District, the Ash Creek Special Service District is working to provide reuse alternatives first in Toquerville and La Verkin, but ultimately in all of the cities it serves in order to preserve the best quality water sources for culinary use and to preserve the existing agricultural operations. Reuse water from the treatment plant will ultimately be conveyed via pump station and pipelines to the Toquerville Reservoir during the winter, non-irrigation season, to help build a surplus for drought impacted years.

The Confluence Park Wastewater Treatment Reuse Facility will provide 1.5 million gallons per day of reuse capacity for the communities of Toquerville and La Verkin. This project will take treated effluent from the soon to be constructed treatment plant and feed it through the required disinfection and filtration processes to provide Type I reuse water for the two communities. The project will include the purchase and installation of filtration and disinfection equipment along with the building to house and protect the equipment.

The cities of Toquerville and La Verkin each have secondary pressurized irrigation systems. La Verkin's system is fed through the Virgin River diversion that also feeds Quail Creek Reservoir. Toquerville's system is fed from the Toquerville Springs which is a potable quality spring. Both of these resources have the potential to aid in the mitigation of drought impacts in that they are either culinary grade or potentially culinary grade resources being used in outdoor watering applications. By producing reuse quality effluent from the Confluence Park Treatment Plant and working with the communities to distribute the reuse water into their distribution systems the existing sources of irrigation water (Virgin Diversion water and Toquerville Springs water) can be preserved for crucial potable uses not only in the two communities but in the downstream municipalities of Hurricane, Washington, St. George, Santa Clara and Ivins. Reuse water from the treatment plant will ultimately be conveyed via pump station and pipelines to the Toquerville Reservoir during the winter, non-irrigation season, to help build a surplus for drought impacted years.

Staff Comments:

Staff supports the project and is an important new treatment plant with reuse capabilities for a growing community in Southern Utah.

9. Cedar City IPR

Cedar City proposes to conduct an Indirect Potable Reuse project. The total cost of the project is estimated to be $10,000,000. The balance of funding not provided through a Board award for the project will be through available city money, or from bonding. Cedar City and the Cedar Valley are suffering from low water table conditions. Specifically, the water table is very low on the east side of the valley where the land is more arable. To mitigate this, Cedar City plans to pump treated effluent from their treatment plant to recharge basins near the Cedar City Airport. Cedar City plans one water line to carry water 8 miles from the treatment plant to the recharge basins. Another water line will be installed to carry groundwater from underneath the current land application site next to the wastewater treatment facility to the drinking water treatment facility to supplement the drinking water supply. They hope to recharge the aquifer using treated effluent from the treatment facility. Cedar City has not included any more upgrades to their facility in this scenario. The project has not been bid, yet, and Cedar City has not hired an engineer.

Staff Comments:

Staff has previously met with Cedar City staff in relation to this project. At this time a feasibility report has not been reviewed by the Division for concept approval or a permit application submitted. The Division is concerned the project may not be feasible without substantial additional nitrogen treatment or other contaminates of emerging concerns. In the Cedar City Return Effluent Reuse Feasibility Study 2018 (Carrollo Engineers) the least expensive alternative with IPR was approximately $78 million. At this time no IPR project has been completed in the State of Utah and will face substantial regulatory review with permitting from Divisions of Water Resources, Water Rights, Drinking Water, and Water Quality. Staff is concerned these regulatory reviews might not be able to be completed within the ARPA timeframe. All this said, the Division is actively looking for a community to be the State leader in an IPR project.

10. St. George: Graveyard Wash Reservoir

The City of St. George (the City) needs $10,000,000 in funding to construct a treated effluent storage reservoir for wastewater reuse. The estimated total cost of the project is $17,000,000. The City proposed to bring matching funds in the amount of $7,000,000 derived from user rates. The City plans to build a storage reservoir of treated effluent from the St. George Regional Water Reclamation Facility. This treated effluent will be used to supply the cities of St. George, Santa Clara, and Ivins with secondary irrigation water. The storage reservoir, called Graveyard Wash Reservoir, will be located just west of Santa Clara. The dam would be built near where the current Santa Clara Public Works building is, where Graveyard Wash meets the Santa Clara River. The proposed reservoir would have a storage capacity of 2,030 acre-feet and would expand the annual yield of the entire reuse system by 4,000 acre-feet. The treated effluent that will be stored already meets Type I Standards. All new development within the City of St. George is required to install a secondary irrigation system, which will be supplied with treated effluent from the Graveyard Wash Reservoir. Existing secondary irrigation lines will also be supplied with treated effluent from Graveyard Wash Reservoir. Currently, 50% of the annual culinary water supply is used for outside irrigation. The project is in the final design phase of the project but has not yet been bid.

Staff Comments:

Staff supports the project and is an important new storage option for a growing community in Southern Utah.

11. Washington County Water Conservation District: Dry Wash Reservoir

The Washington County Water Conservation District (the District) is applying on behalf of St. George, Ivins, and Santa Clara. The estimated total cost of the project is $17,500,000. The balance of funding not provided through a Board award will be through impact fees, water user rates, and property tax revenues. The proposed project is to construct a reservoir west of Ivins to store Type I Treated Effluent from St. George Regional Water Reclamation Facility. The dam will be built just north of Old Highway 91 in Dry Wash. The Dry Wash Reservoir will allow for more storage of treated effluent which will be piped into the secondary irrigation system and sent to St. George, Ivins, and Santa Clara. These cities are currently experiencing a lot of growth, and currently all new development in St. George is required to hook up to a secondary irrigation line. Dry Wash Reservoir is in the design review phase and has not yet been bid.

Staff Comments:

Staff supports the project and is an important new storage option for a growing community in Southern Utah.

12. Washington County Water Conservation District: Toquer Reservoir

The Washington County Water Conservation District (the District) is applying on behalf of the cities of Toquerville and La Verkin. The cost of the reservoir project is $36,570,000 and the District will fund the balance of funds not provided through a Board award through impact fees, user rates, and property tax revenues. The proposed project is to build a reservoir north of Toquerville, just south of I-15. The reservoir will be built to store Type I Treated Effluent which will be pumped from Ash Creek SSD to the reservoir. The water stored in the reservoir will be available for the Toquerville Secondary Water System and for La Verkin's secondary water system. This will provide water for residential irrigation as well as agricultural uses. This treated effluent will replace the Virgin River as La Verkin's primary source of secondary irrigation water. Previously, La Verkin's secondary irrigation lines were fouled by sediment from the Virgin River, which caused reductions in water pressure, extra maintenance, and required extra water to flush the system. The treated effluent will contain significantly less sediment and dissolved solids, which will put less wear and tear on Toquerville and La Verkin's secondary irrigation systems. Portions of the project have been bid, but the Toquer Reservoir is still in the design review phase.

Staff Comments:

Staff supports the project and is an important new storage option for a growing community in Southern Utah.

Staff Recommendations

Staff is supportive of all the projects and believes all projects are Clean Water State Revolving Fund eligible. Staff is not bringing funding recommendations for the Board as part of this memorandum. Staff recommends a representative of each project be invited to appear during the December 2022 Board meeting. Staff suggests assigning time limits to each project with planning projects given 5 minutes to present and construction projects should be given 10 minutes. This would be a 100 minutes of Board meeting. Staff recommends all projects be presented prior to any funding motions.

Finally, staff requests the Board closely consider any special conditions they may want as part of Grant Agreements and time limitations to demonstrate significant progress on projects. It is important to keep in mind all funds must be obligated by December 31, 2024 and spent by December 31, 2026. If a project is not designed and permitted by July 1, 2024 staff believes it may not be difficult to have spent funds by December 31, 2026.

ATTACHMENT 1- PROJECT APPLICATIONS

1. Moroni Application

Timestamp	10/17/2022 22:35:42
Contact Name	Paul Bailey, Moroni City Mayor
1. Please describe your reuse project.	Moroni City, located in Sanpete County has a population of approximately 1,606. Based on past census records and projected growth rates Moroni City will see an estimated annual growth rate of 2%. It is a rural city that relies on agriculture, education, light industry, coal mining, and turkey processing to support its economy. It currently uses a mechanical treatment plant to process wastewater not only from the city residents but also from the turkey processing plant. The city is the owner of the treatment plant. However, by agreement, the turkey processing plant provides the operation and maintenance. The city contributes approximately 10% of the wastewater through their collection system and the processing plant makes up the other approximate 90%. The proposed project is a feasibility study to explore the concept of reusing treated wastewater for industrial, agricultural and secondary applications for the city and also the processing plant.
2. How will your project mitigate drought impacts on a rural community?	Moroni City continuously battles the impacts of the ongoing drought. According to the US Drought Monitor, Sanpete County is currently in the extreme and exceptional drought intensity levels. Reusing the effluent from the wastewater treatment plant would cause surface and underground sources to stretch further and would help alleviate some of the pressure on the already stressed surface flow and underground water sources. Because the city already has a functioning treatment plant, it makes sense to consider reuse options. Even though this will not likely solve all of the impacts from the ongoing drought, it is a "low hanging fruit" that the city could use one measure to counter the impacts from drought.
3. How will your project mitigate drought impacts on local agriculture?	Moroni City is surrounded by agricultural land that contributes to its economy and culture. Local farms have been badly stressed by the drought conditions, with some farmers having to cut back on the acres they farm and/or the livestock they raise. Any reuse water than can be made available for agriculture will provide some relief from drought effects to the agriculture community.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	The processing plant currently uses an average of approximately 70,000 gallons of potable water weekly, year-round for cooling purposes in their operations. This equates to around 11acre/ft. annually. If treated wastewater could be used in place of potable water for cooling purposes, this would preserve this water within the aquafer for other uses.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	Yes, this study will consider treating wastewater to a higher quality so that it could be used in a broad range of applications and in turn would pose less health and hazard risk to the public and environment.
6. a. What is the estimated cost of the project?	$90,000
6. b. How much local funds will be brought to the project?	$0
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No

6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	If only a portion of the project is funded through this opportunity. The city would consider modifying the scope of the study or pursue funds through other sources to complete the full scope of the study.
6. e. Has your project been bid?	No
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	Water is the lifeblood of any community. On this premise, making this valuable resource stretch further will enrich the community in many ways. Job growth and economic development will be sustained and possibly expanded by having more water available for industrial and agricultural uses. Recreational opportunities within the community will be preserved and enhanced if more water is available for secondary use. The city pumps underground wells for much of the secondary water uses including parks and open space. If agriculture users had the option to reuse the wastewater effluent, the city could then use irrigation water that has historically been delivered to agricultural area by diverting it into the secondary system. Thus, reducing pumping costs and making more funds available for community development type projects.
8. a. What is the population the project will serve?	This project has the potential to benefit a population of over 1,650
8. b. What zip codes will this project serve?	84647
8. c. What is your average monthly user fee for wastewater service?	$35.00

2. Mt. Pleasant Application

Timestamp	10/17/2022 9:41:49
Contact Name	Monte Bona, Director, Mt. Pleasant City Community Development and Renewal Agency/Mormon Pioneer National Heritage Area (Mt. Pleasant City CDRA/MPNHA)
1. Please describe your reuse project.	Mt. Pleasant City, located in Sanpete County, has a population of approximately 3,620 and is growing at 1.5-3.6% per year, according to the city's 2021-2031 General Plan. It is a rural city that relies on agriculture, education, light industry, coal mining, turkey processing, recreation, and tourism to support its economy. It currently uses a multi-cell lagoon to handle wastewater. There is no known discharge from the lagoon, and water from the lagoon evaporates and is not reclaimed. In 2012, a scoping study was performed under the auspices of Utah State University to evaluate the potential for a constructed wetland for wastewater treatment and reuse in Mt. Pleasant. The study also suggested a design for such a wetland. It concluded that a constructed wetland could provide treated water to irrigate around 45 acres of turfgrass, based on 2011 wastewater volumes. Since then, Mt. Pleasant has grown and continued to rely on its sewage lagoon. With ongoing drought conditions, there is renewed interest in reclaiming water from the lagoon to provide more water for population growth and irrigation, and to reduce pressure on culinary water use for irrigation. The city's General Plan calls for taking steps to conserve water and for exploring the creation of a wetlands facility for wastewater treatment and reuse. After interviewing experts at the local, state and federal levels, we have concluded that reclaiming water from the lagoon is a potentially important means of supplementing stretched water supplies. Experts have also advised that an updated and broader engineering study needs to be conducted to evaluate and cost out several options for reclaiming and reusing water. We seek funding to undertake such an engineering study so that Mt Pleasant may have the information needed to decide what approach to take to reclaiming and reusing its wastewater. The study would identify options for wastewater management and reuse such as replacing one or more sewage lagoon cells with constructed wetlands and/or installing filtration and pumping systems. The study would also consider options for use of the reclaimed water. These could include directly supplementing the city's irrigation water supply or separately meeting irrigation needs of the city or nearby farms, which could conserve groundwater. Either option could reduce use of culinary water for irrigation by substituting reclaimed water. In comparing design and reuse options, the study would consider, among other things, water reclamation potential, other potential benefits (such as wildlife habitat), impact on culinary water use, capital and maintenance costs, financing options, personnel requirements, and regulatory requirements including water reuse and water pollution control rules.

2. How will your project mitigate drought impacts on a rural community?	Mt. Pleasant is a rural community whose growth has been negatively impacted by limited water supplies, particularly during the recent years of exceptional and extreme drought. With the recent success of a newly drilled well, the city has been able to issue more building permits, but the ongoing pressure of limited water supplies, continuing drought, and increasing population makes clear the need to consider other water sources, including reuse of wastewater, to provide for the current population and allow for growth. In its General Plan, Mt. Pleasant identifies water availability as one of its most pressing challenges. The plan reports that the city's culinary and irrigation water systems were inadequate for its 2020 population, especially under drought conditions, and that expected population growth of 1.5-3.6% per year would worsen the situation. The plan details the steps the city is taking to address the issue, including its receipt of grants to improve the secondary (irrigation) water system and to increase the supply of culinary water by digging new wells and treating the well water. The plan notes that the city is also looking to create an additional water storage facility, promote water conservation by its businesses and residents, and save water in community facilities, including through water-wise landscaping. Finally, to clean and reclaim wastewater, the plan reports that the city plans to explore options for wastewater treatment and constructed wetlands. We have since learned from experts that a wastewater treatment facility is an expensive option for a city of Mt. Pleasant's size and that constructed wetlands or other more passive means of treating and reclaiming wastewater would likely prove more cost-effective.
3. How will your project mitigate drought impacts on local agriculture?	Mt. Pleasant is surrounded by agricultural land that contributes to its economy and culture. Local farms have been badly stressed by the drought conditions, with some farmers having to cut back on the acres they farm and/or the livestock they raise. While wastewater reclamation is unlikely to provide much water for farming, the USU study concluded that reclaiming 2012 wastewater levels could irrigate around 45 acres. Higher wastewater levels and potentially more efficient reclamation designs could increase that amount.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Like many communities in Utah, Mt. Pleasant struggles with potable quality (culinary0 water being used for irrigation purposes. The city regularly admonishes residents not to use culinary water for irrigation purposes with some, but not complete, success. During a recent year of exceptional drought, the city was in danger of running out of culinary water and had to severely restrict the use of irrigation water. Any use of culinary water for irrigation purposes was a major problem during that time. The city has plans in place for metering irrigation water, but in meantime the pressure on culinary water continues. A wastewater reclamation project made possible by the proposed study could help ease pressure on culinary water supplies by making more irrigation water available for watering residential and city property. In 2020 Mt. Pleasant's culinary water use was 118 gallons per capita per day (gpcd). Secondary irrigation system use was 167 gpcd, so total water use was 285 gpcd. The city's goal is to reduce water use to 259 gpcd by 2030, a decrease of 1 percent per year. (Source: Mount Pleasant City Water Conservation Plan 2021, prepared by Sunrise Engineering, July 2021.) This proposed project, together with other steps the city is taking, could contribute to meeting that goal.

5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	Mt. Pleasant continues to deliver culinary water that meets state and federal standards. We are not aware of any evidence of a water-related public health hazard. However, an engineering study for wastewater reuse would have the side benefit of considering how to maintain water and groundwater quality as it evaluates how to reclaim and reuse wastewater in the future.
6. a. What is the estimated cost of the project?	($125,000) Based on our experience with recent engineering studies for water-related projects, we believe that an engineering study that evaluates constructed wetlands and potentially simpler options for wastewater treatment and reuse would cost around $125,000.
6. b. How much local funds will be brought to the project?	We do not have current plans to use local funds for the project, but we could revisit that situation as needed. Mt. Pleasant has a modest tax base.
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No.
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	Mt. Pleasant City CDRA/MPNHA has been successful in obtaining grants from private foundations for building and improving facilities such as the ConToy Arena and the city industrial park that attract and support investment, recreation and tourism in and around Mt. Pleasant. If necessary, we would pursue other sources of funding to make up for any shortfall in grant funding.
6. e. Has your project been bid?	No.
6. f. Has your project started construction?	No.
6. g. Has your project completed construction?	No.
7. How will the project enrich the community?	This project has the potential to enrich Mt. Pleasant beyond providing more water for irrigation, which is important in itself for the reasons described above. In a nutshell, the project could help the city achieve a vital goal: growing its economy in a sustainable manner that preserves the city's rural character. Mt. Pleasant has a proud history as the early "hub" of Sanpete County. It was the home of many of the county's first businesses and educational institutions. Like many small rural jurisdictions, however, Mt. Pleasant faces some steep challenges, including growing its economy so that its young people have job opportunities and so that the city has a tax base that can fund the services its residents need, including water and road repair. According to its General Plan, Mt. Pleasant's average household income is around $56,000 per year and its poverty rate is over 22%. Its economy is changing as employment in coal mines and turkey processing plants decline due to changes in automation and other factors. At the same time, the city is seeing an increase in commuters to and from Utah County, as people seek relatively low land and housing prices and clean air. The city's plan identifies the combination of scarce water and population growth as particularly challenging, and describes the steps the city is taking (described above) to secure needed water supplies through new wells, conservation, and potentially wastewater reclamation. To address the need for more economic growth and jobs, the city's plan calls for realizing and expanding the planned utilization of the city industrial park and Main Street commercial area as well as promoting recreation and tourism. Mt. Pleasant City CDRA/MPNHA has worked towards Mt. Pleasant's goal of

	economic growth by building and promoting the city industrial park and nearby ConToy Arena, which hosts equestrian and other events that attract local, regional and state participants and spectators. The industrial park is attracting more tenants and the arena more users as it adds facilities (e.g., trails) for equestrian and other outdoor activities. However, this success, along with population growth, means an increased demand for water. Reclaiming water from the city's sewage lagoon can make an important contribution to supporting Mt. Pleasant's growth. As discussed previously, it could reduce the use of culinary water for irrigation and provide more irrigation water for city, residential and/or agricultural use. It could also enhance some of the city's existing investments in growth. For example, the city's sewage lagoon is adjacent to the ConToy Arena. A wastewater reclamation system that improved the arena's setting could be a win-win (more water-more business) for the city. We do not want to prejudge the eventual design of a wastewater reclamation system or the use of reclaimed wastewater, but the potential for enhancing the arena's ability to grow the city's economy is one example of how the project could enrich our community.
8. a. What is the population the project will serve?	Approximately 3,620 people
8. b. What zip codes will this project serve?	84647 (Mt Pleasant) and 84629 and 84662 (neighboring cities of Fairview and Spring City, which would likely benefit from the economic growth the project would help promote)
8. c. What is your average monthly user fee for wastewater service?	$17 monthly for residences

3. Kanab Application

Timestamp	10/14/2022 17:16:30
Contact Name	Mike Noel
1. Please describe your reuse project.	The proposed project is a feasibility study to explore the concept of reusing treated wastewater from the Kanab and Duck Creek areas of Kane County for agricultural purposes. In the Kanab area, the study will explore the viability of routing discharge water from the wastewater treatment plant to the Jackson Flat Reservoir for recreational and agricultural reuse with other water stored in the reservoir. In the Duck Creek area, the study will explore the concept of injecting treated wastewater back into the aquifer to support recharge and, with the direct connection between the Duck Creek Sinks and Lower Asay Spring having been studied and documented, to support recreational and agricultural use in the upper Sevier River drainage. The study will consider various factors/constraints including water rights and ownership, treatment requirements, right-of-way requirements, transmission requirements, anti-degradation policies affecting recharge, funding, permitting, etc. It will provide opinions of probable capital costs as well as ongoing operation and maintenance cost and evaluate the benefit/cost ratios of various alternatives. Ultimately, if the proposed project demonstrates feasibility, Kane County Water Conservancy District may seek future funding to implement the reuse projects.
2. How will your project mitigate drought impacts on a rural community?	The proposed project will evaluate the feasibility of capturing treated wastewater in the rural Kanab and Duck Creek areas of Kane County and making the water available for recreational and agricultural reuse through transmission to an existing reservoir or injecting the water into groundwater storage. Reusing treated wastewater in the Kanab and Duck Creek areas will relieve some of the impact from the ongoing and future drought conditions in southwestern Utah by augmenting the limited water supply in those areas and mitigating resource loss through stream discharge and lagoon evaporation. Specifically, treated wastewater routed to Jackson Flat Reservoir will be immediately available for agricultural use, partially replacing other sources that may be diminished due to drought.
3. How will your project mitigate drought impacts on local agriculture?	The proposed project will study the feasibility of implementing wastewater reuse projects in the Kanab and Duck Creek areas of Kane County for recharge and agricultural purposes. In Kanab, the Jackson Flat Reservoir provides water storage for the local agricultural community including the Kanab Irrigation Company. Stored water also supports recreational opportunities in the area. In the Duck Creek area, surface water seeps into the ground and enters the local groundwater strata, some of which enters basalt conveyances. At least one study has documented that portions of flows from the Duck Creek Sinks reappear in the Lower Asay Spring, which is the headwaters of the Sevier River; thus groundwater recharge in the Duck Creek area has a documented effect on irrigation water availability in the Sevier River valley. As a feasibility study, the proposed project will identify the benefits and costs of implementing future reuse projects in these two locations. Any reuse of water resources stretches the resource and mitigates the effect of drought. For both the Kanab and Duck Creek concepts, captured wastewater effluent could be directly applied to local agriculture.
4. How will the project replace a current use of potable quality water? Please provide data on the	The feasibility study will evaluate the benefits and cost of implementing wastewater reuse strategies in the Kanab and Duck Creek areas of Kane County as described previously. Other variables held equal, utilizing reuse water for agricultural purposes as proposed will theoretically and directly or indirectly

historical potable quality water use the reuse project will replace.	reduce the burden on potable-quality groundwater resources both in the Kanab area and in the Duck Creek area, where community potable water wells are located. This will be achieved both by reducing the amount of potable-quality water pumped which is then used as irrigation water on residential yards in Kanab as well as by reducing the demand on aquifers in both the Kanab and Duck Creek areas. Considering growth in Kane County and the impact that growth will have on potable water resources, reusing treated wastewater will reduce or delay the need to develop additional potable water sources including drilling wells. Actual data for this is difficult to produce at this stage, but will be gathered and compiled as part of the feasibility study. Regardless, reducing aquifer demand in the Kanab Creek and Johnson Canyon drainages near Kanab and in the upper Sevier River drainage through wastewater reuse strategies supports potable water preservation.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	Kane County Water Conservancy District is in the final stages of construction of the Duck Creek Wastewater, Phase 1 Project, a project funded by the Utah Department of Environmental Quality and initiated by a history of concerns over failing septic tanks and their effect on surface and groundwater quality in the Duck Creek area of Cedar Mountain, Kane County, Utah. The Phase 1 project implemented a wastewater collection and treatment system in the most critical commercial areas around Duck Creek Meadow, replacing septic tanks in that most critical area with gravity collection and treatment. The project did not include an expansion of the existing Forest Service treatment lagoons now serving that system, and preliminary studies suggest that the existing lagoons will be at full capacity after the Phase 1 project is completed. The proposed feasibility study will identify the effect of reuse on lagoon capacity which is expected to indicate that, if a reuse strategy were implemented, additional capacity is available in the lagoons for additional septic tanks to be connected to the system without requiring a corresponding lagoon expansion. Having additional lagoon capacity will mitigate the existing water quality issues and public health hazards by making it easier to eliminate additional septic tanks and tie those users into the new gravity collection and treatment system.
6. a. What is the estimated cost of the project?	$145,000
6. b. How much local funds will be brought to the project?	$20,000
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	If only a portion of the study is funded through this grant opportunity, the conservancy district would consider the option of either scaling back the scope of the work or finding supplemental funds either within the budget of the district or through other funding sources.
6. e. Has your project been bid?	Not Applicable
6. f. Has your project started construction?	Not Applicable
6. g. Has your project completed construction?	Not Applicable
7. How will the project enrich the community?	The proposed study will evaluate the feasibility of reusing treated wastewater for recreational and agricultural purposes as explained previously. If proven feasible and implemented, reuse of treated wastewater from Kanab and Duck

	Creek will enrich the community through improved fishing and boating opportunities, through economic development that comes with recreational opportunities and water-supported (water-required) community growth, through preserving the farming culture, through perpetuation of the greenbelt and riparian viewsheds and their positive environmental contributions, and through agricultural economic opportunities.
8. a. What is the population the project will serve?	Kanab-5,100 and Duck Creek (upper Sevier River drainage) 2,000+
8. b. What zip codes will this project serve?	84741, 84762, 84759, 84735
8. c. What is your average monthly user fee for wastewater service?	Kanab>>>$15.45/ERC/month and Duck Creek>>>$96/month

4. Torrey Application

Timestamp	10/17/2022 17:36:07
Contact Name	Eric Larsen
1. Please describe your reuse project.	The project proposal is to do a sewer study for Torrey Town and the surrounding unincorporated area. Torrey is the nearest town to Capitol Reef National Park. There are many hotels, restaurants, gas stations, etc. that are on individual onsite wastewater systems. If past and present examples of national park communities (Moab, Springdale, Bryce Canyon City) continue through the future, Torrey will continue to grow, and individual onsite system will no longer make sense for that community. This sewer study will help local officials make plans for the future to be proactive rather than reactive and be ready to pull the metaphorical trigger on installing a sewer system.
2. How will your project mitigate drought impacts on a rural community?	Depending on the study results, there is potential to use treated wastewater for irrigation purposes--either for municipal, or agricultural purposes. I am unfamiliar with the specifics of the system, but I believe Santaquin City's secondary irrigation comes directly from their sewer treatment facility. A similar system could be used in this case. If my understanding of Santaquin City's system is incorrect, the treated wastewater could at least be discharged into the Fremont River to be used for irrigation.
3. How will your project mitigate drought impacts on local agriculture?	The treated effluent of the future sewer system could be used for agricultural purposes--either directly piped from a treatment plant, or via the Fremont River.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	The impact to potable water is likely to be minimal. The treated effluent could provide secondary irrigation to the residents and businesses, thus eliminating the need to use culinary water on lawns, etc. However, there is already irrigation available to most, if not all of the community.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	Central Utah Public Health Department is very concerned about the current onsite wastewater systems along Highway 24 near and through Torrey. If any of the current systems fail, there isn't much land available for replacement systems. Alternative systems with treatment will likely be required for some of the current facilities.
6. a. What is the estimated cost of the project?	$150,000
6. b. How much local funds will be brought to the project?	To be determined. Local officials still need to weigh in.
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	Not at this time.
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	CIB funds, and other water quality grants will be pursued.
6. e. Has your project been bid?	No.
6. f. Has your project started construction?	No.

6. g. Has your project completed construction?	No.
7. How will the project enrich the community?	A municipal sewer will allow for better planned growth that will attract tourists and improve the economics of the area and County.
8. a. What is the population the project will serve?	Torrey Town and the unincorporated area of "central" Wayne County
8. b. What zip codes will this project serve?	84775
8. c. What is your average monthly user fee for wastewater service?	N/A

5. Cedar Valley

Timestamp	10/17/2022 16:50:55
Contact Name	Curtis Nielson
1. Please describe your reuse project.	Water Quality is a vital part of the future in Cedar Valley and relies heavily on groundwater for production. Sustaining groundwater and water quality has been a goal within CICWCD to sustain lifestyle within Cedar Valley. Cedar Valley is a closed basin which means the water that enters does not exit. All return flows are confined to the basin and eventually seep into the groundwater or evaporate at the dry lake plya of Quichapa. The Cedar Valley aquifer has been experiencing groundwater declines for several decades. The proposed project will allow groundwater wells in an agricultural area to be idled which will help stabilize and balance the groundwater levels by reducing the withdrawals. The irrigated production lands would offset groundwater with treated Wastewater from the Treatment Plant (WTP). The WTP discharges over 3,300 acre-feet (AF) of effluent each year. The current application of the effluent flood irrigates approximately 420 acres of concentrated pasture composed mainly of creeping foxtail, with another 1,000 acres or more benefitting from the tail water with less concentrated yield. At least 39.7% of the effluent is lost to evaporation under the current application, with little-to-no measurable percolation of effluent water into the aquifer (further detail on calculations for evapotranspiration rates are described later; see Discharge Area Exhibit). Currently the water from the WTP is treated to a “Type-2” standard and is clean and usable for agricultural purposes, (Water Quality Exhibit). The primary focus of this project is to more efficiently use the water that is currently being consumed by freatifights and lost to evaporation by creating storage for the winter water as well as applying the water to more productive crops and irrigation practices (Center Pivots). The project will move the water east of the WTP to established farming operations. Farming near the WTP was considered and has been attempted in the past. There is open space near the WTP and the water table is mounding because of the discharge area. However, due to poor soil conditions (Alkaline), and low elevation surrounding the WTP farming production is poor. Thus this project will deliver water to existing agricultural production fields with better growing conditions and allow them to idle their groundwater wells and ultimately save groundwater. The project will be completed in phases. The first two phases will utilize existing center pivots to utilize the WTP water while the third phase will relocate other operations within the area as WTP discharge increases annually. (Phase I Exhibit, Phase II Exhibit, and Phase III Exhibit) An additional benefit to the basin is the fact that the area where the effluent water will be delivered and wells will be idled happens to be in a location where water levels have declined the most and where geologic hazards (ie, earth fissures, subsidence) have formed from the groundwater mining. Most noticeably are the earth fissures which have already condemned a new subdivision in 2009. See exhibit below, an excerpt from Utah Geological Survey Special Study 150 Investigation of Land Subsidence and Earth Fissures in Cedar Valley, Iron County, Utah. Another challenge the Cedar Valley is facing is the implementation of the Division of Water Rights, Groundwater Management Plan (GMP) in January 2021. This GMP will begin restricting the use of groundwater rights through a series of cutbacks beginning in 2035. The cutbacks are regulated by priority with junior rights being cut first until sustainable withdrawals are reached in the basin. The State reports there is 21,000 AF of renewable “safe yield” water and 50,000 AF of water rights. Over time the Plan will reduce 30,000 AF of water rights. The municipalities within Cedar Valley will lose over 11,000 AF (75% of their water rights portfolio) and the remaining 20,000 AF is estimated as a loss to our Agricultural Producers. For links and attached images please visit https://docs.google.com/document/d/18VS46Mw29rNjclDWO6b6BBTPdi5nAf6I/edit

2. How will your project mitigate drought impacts on a rural community?	The existing WTP produces treated effluent that is to a standard that can be used for irrigation purposes. Though this water is not approved for potable water use, it is available for irrigation purposes. The practice of using effluent water for irrigation purposes has been used across the state of Utah and in this instance will be implemented to idle agricultural wells within an area that has experienced severe groundwater decline. The project includes constructing a holding pond where the effluent would be stored during the irrigation off-season and help regulate the flows as water exits the WTP. The holding pond will be constructed by berming 15-foot barriers around approximately 300 acres with isolation bays in the interior of the pond to be used to isolate the water holding it in deeper ponds to reduce evaporation losses. The pond will have the capability to store nearly 4,000 acre-feet of water at buildout. Geology in the area shows an existing, natural clay layer that extends approximately 15 feet below the surface. This will create a natural barrier to store water. The location of the proposed reservoir is to serve two purposes. The first is the ability to store water during winter months that will be utilized during the irrigation season; second is it will serve as a retention area to ensure water quality remains good before it is conveyed for agricultural purposes. A pipeline will be constructed to convey the water to existing nearby pivots. The pipeline will be sized to provide enough pressure and flow to local irrigators with the intent they will idle their wells and utilize the effluent. By idling their wells, irrigators will reduce groundwater mining (see Groundwater Level Decline Exhibit; Idle Wells Exhibit) within the area as well as utilize water that typically goes to waste. The method for this project was steamed from a previous successful project in 2020. Wherein the District was able to construct a 8-foot dyke at Quichipa Lake to separate differing water qualities and other water works to supply previously waisted water to a nearby irrigator as a result the producer can idle their well and help stabilize the groundwater.
3. How will your project mitigate drought impacts on local agriculture?	Beneficiaries include water users within the Cedar Valley that rely on groundwater to provide water for agriculture irrigation and drinking water purposes. In the area of the proposed project there has been significant groundwater level declines due to drought and over pumping. As we are able to pump less water and maintain productive crop yields, it will relieve demand on power and less wear and tear on pumping equipment and, most importantly, preserve groundwater levels. Additionally, the implications of the groundwater management plan and the State Engineer's Office may be relieved as best aquifer management practices are implemented with promising results. This could push back the implementation dates and depth of groundwater right cuts as outlined in the Adaptive Management Plan of the GMP. The project will benefit local farmers, Enoch City, and Cedar City as each of these entities have wells that withdraw in this area.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Currently there are surrounding farms that use potable drinking water to irrigate with. This project will utilize 3,300 acre-feet from the WTP to be irrigated with meanwhile saving the pristine groundwater for drinking water purposes.
5. Will the project help mitigate a water quality issue or	The current application of effluent at the discharge site uses flood irrigation techniques. When properly applied, flood irrigation can be over 90% efficient when ignoring short-term losses (runoff and percolation that are lost to the user but are not long-term losses to the overall water system).[1] However, current evapotranspiration (ET) data indicate significant losses at the

a public health hazard? Please describe.	application site. Evapotranspiration[2] of a 4,703.77-acre area at the discharge site and extending northward (downhill) indicated only 1,989.18 AF of ET in excess of the baseline ET on a non-irrigated 574.4-acre area immediately south of the discharge site.[3] The 39.7% loss is a minimum, which does not account for rainwater accumulation in ravines or for groundwater sources of ET in the survey area. Further, the loss is likely entirely due to evaporation, as groundwater conditions at the application site[4] do not indicate aquifer percolation. There are 12 monitoring wells surrounding the section of property which the WTP discharges to. The well logs reveal a confining clay layer that extends approximately 15 feet below the surface. Additionally, the water quality in the wells below 100' is different and of a higher quality then what is at the surface or being discharged from the WTP. By storing the winter water and using the water through more efficient irrigation practice of Center Pivots there will likely be a greater savings then the estimated 39.7%. The District has been successful in helping convert over 2000 acres of center pivots to Low Elevation Precision Application (LEPA) irrigation practices. This process applies water directly to the furrow and evaporation losses are minimized since the canopy is not wetted. These systems can be very efficient (e.g., 95- 98%) since evaporation losses are minimal although initial capital costs are higher than standard systems. [5] As such, the replacement of pumped groundwater on agricultural farm production areas with efficient irrigation practices (Center Pivots) could conserve as much as 100% because the groundwater would not be pumped and it would be replaced with water that has been lost to Evaporation and Transpiration. A low end estimate of water savings would then be 39.7% and a High end would be equal to the amount of water which is not pumped and remains in the groundwater system. There is approximately 810 acres with existing center pivots approximately 3-miles from the WTP. With efficient practices and irrigating 2.5 acre-feet per acre we could save 2,025 acre-feet per year. This would likely consume the amount of water that is currently lost to evaporation or over irrigated at the existing discharge site. There is an additional 715 acres under pivots 2-miles further south as well as productive land in the area which could produce crops if irrigation were applied. This area could consume the full amount of effluent discharged or if the current practice of sub-irrigating pasture lands continues the excess or amount lost to evaporation could be applied to higher production crops and more efficient irrigation practices. Water within the Enoch Graben area is considered pristine. It is less than 500 ppm TDS and has sources located that provide water to the municipalities of Cedar City and Enoch City. All of the wells in this general area meet drinking water standards. The water exiting the WTP is a Type II water that can be used for irrigation purposes. The following link provides water quality sample results from water discharged from the WTP and Enoch City wells within the area. https://drive.google.com/file/d/1Lq-eNiz_JPoiLfTcBifA0TZQMlnhbj_3/view?usp=sharing
6. a. What is the estimated cost of the project?	$1,500,000
6. b. How much local funds will be brought to the project?	$1,000,000
6. c. Does the project currently have any grant funds awarded to it by	0

another funding agency?	
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	From in kind contributions and through budget monies
6. e. Has your project been bid?	No
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	Cedar City, Enoch City, and CICWCD currently have excess water rights. As such the full use of the WTP discharge flow can be fully consumptive because there are excess rights on the books for the three entities. For example, in 2021, Cedar City, Enoch City and CICWCD diverted 9,021 AF and collectively own 17,211 AF of depletion water rights, there is an excess of 8,190 AF of water rights not being used by the municipalities. Where the discharge from the WTP is only 3,300 AF per year we are well within the consumptive use of the rights owned by the municipalities. (See full list of rights Cedar City, Enoch City, CICWCD) The water savings comes from the water rights owned by the agricultural producers. One concern for them is if their water rights will be protected if they are using water from the WTP instead of their existing rights. The State Engineer can protect a right under a non-use application or as stated in Utah Code "73-1-4(2)(e)(ii) a water right if its place of use is contracted under an approved state agreement or federal conservation fallowing program;" and "73-1-4(2)(e)(v) a water right to store water in a surface reservoir or an aquifer, in accordance with Title 73, Chapter 3b, Groundwater Recharge and Recovery Act, if the water is stored for present or future beneficial use;" It is our opinion that the State Engineer would be willing to approve and protect the agricultural right under either of these criteria as this proposal meets "storing water in an aquifer," and "Groundwater Recharge and Recover." The goal is to idle existing wells used to irrigate 845 acres and offset with water from WTP. By idling the wells we anticipate that there will be a 100% savings of groundwater withdrawal by producers using WTP water. Additionally, we hope to mitigate the effects of the Groundwater Management Plan by implementing this project.
8. a. What is the population the	52400

project will serve?	
8. b. What zip codes will this project serve?	84721, 84720
8. c. What is your average monthly user fee for wastewater service?	$23.00

6. Sherwood Shores

Timestamp	10/17/2022 17:59:25
Contact Name	Adam Richins
1. Please describe your reuse project.	The Sherwood Shores Subdivision created in the 1960's and located on a peninsula at the Gunnison Bend Reservoir has over 500 platted lots. Currently, there are approximately 125 onsite (septic) systems with the potential of 400 additional future systems. This proposed reuse project will provide a large underground wastewater system (sewer) for collecting and treating the effluent. The treated water will be used for irrigation onsite and application on adjacent agricultural lands.
2. How will your project mitigate drought impacts on a rural community?	The otherwise unusable wastewater effluent would replace the onsite potable irrigation system at the subdivision common areas.
3. How will your project mitigate drought impacts on local agriculture?	The treated wastewater from current and future household use will be applied as irrigation on adjacent agricultural lands.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	The otherwise unusable wastewater effluent would replace the onsite potable irrigation system at both of the boat dock common areas. These common areas each typically use 21,000 to 40,000 gallons of potable water per month based on historical metered billing.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	This project will proactively prevent future concern with contamination of the water body as higher levels of discharge occur along with the development of the hundreds of remaining lots.
6. a. What is the estimated cost of the project?	$850,000 (Preliminary estimates)
6. b. How much local funds will be brought to the project?	Local funds can be obtained to cover 30 percent of the project.
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	The property owners will be assessed on a per lot basis (Creation of a Special Service District)
6. e. Has your project been bid?	No, only preliminary quotes have been obtained.
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	Enable the development of higher value recreational properties which provide enjoyment and a larger tax base.
8. a. What is the population the project will serve?	Approximately 1,000 to 1,500 persons
8. b. What zip codes will this project serve?	84624

8. c. What is your average monthly user fee for wastewater service?	N/A--Currently none available.

7. Fairview Application

Timestamp	10/11/2022 11:17:43
Contact Name	Justin Jackson
1. Please describe your reuse project.	Our reuse effluent will be piped to a tank above our city owned cemetery while ambient temperatures are above 40F. This location provides for use at the cemetery as well as future build out to other locations in town. The initial phase builds the tank, pipeline and pumping structures. Future phases will expand the distribution side of the system and provide an opportunity for third party flood irrigation companies to convert to pressurized systems.
2. How will your project mitigate drought impacts on a rural community?	Our reuse project will alleviate the water burden needed to irrigate our 18 acres of cemetery lawn on the local secondary provider. The water not used at the cemetery can then be used by all of the share holders of the secondary provider. Even during times of drought, certain demographics of the public demand that the cemetery stay green at all costs. Therefore the application at the cemetery has a higher probability of impact vs. a location that may be capable of cutting back water consumption. Considering an average of 1/4 acre of lawn per household the cemetery is the equivalent burden of 72 homes.
3. How will your project mitigate drought impacts on local agriculture?	The local secondary provider used to irrigate the cemetery has a high mix of agricultural and domestic outdoor users. The water our effluent reuse will replace is also available to agricultural applications. Our design also provides excess reuse water to be available to agricultural producers within the distribution area of the first phase. Some low level discussions are also being investigated as to how reuse water can be used for high yield, automated fodder production systems.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Historically, Fairview has sold between 150K gal. - 300K gal. of potable water, per year, to contractors and wild land fire crews. This number is growing and also susceptible to surges during drought years due to fire suppression. Our design incorporates a purple fire hydrant attached to the reuse distribution system that will allow the non-potable sales access to reuse water saving our potable water for actual drinking applications.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	Our average phosphorous concentration of the treated sewage effluent is 2.8mg/L. This water is currently discharged to waters of the state. According to the recent EPA TBPEL rule anything over 1mg/L discharged to waters of the state constitutes a water quality issue and a public health hazard as a result the algae blooms associated with phosphorous. Our reuse project is specifically designed to lower our average phosphorous concentration below 1mg/L while discharging to waters of the state, complying with the EPA rule and mitigating water quality issues down stream of our discharge.
6. a. What is the estimated cost of the project?	3.2 Million
6. b. How much local funds will be brought to the project?	CIB has approved a loan amount of 1,168,000
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	CIB has granted 2,076,500
6. d. How will the remainder of the project be funded if only partial grant	Through additional bond/loan requests.

funds are obligated or if bids come in over the estimate?	
6. e. Has your project been bid?	Not as of the date of this application
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	This project turns a perceived negative into a positive. The sewer treatment plant must comply with the state and EPA TBPEL requirements. Several options exist to comply. Most of those options have an increasing cost demand year over year, are subject to market cost changes, while providing no additional benefit back to the public. The reuse of effluent on high priority locations utilizes the beneficial nature of high nutrient water in a way that eases existing burdens on secondary water providers, provides a solution to the never ending public complaint of a brown cemetery, provides an alternative option to the use of potable water for non-potable applications and has a minimal operation and maintenance costs once installed. Cemeteries are the one location that all peoples have, or will have equal interests in, can never be rezoned, or developed and growing rapidly. This project enriches the community on so many levels in an equal and non-biased manner.
8. a. What is the population the project will serve?	Current estimate of 2000 locals, but we bury people from all over the state.
8. b. What zip codes will this project serve?	84629
8. c. What is your average monthly user fee for wastewater service?	$55.00

8. Ash Creek SSD Application

Timestamp	10/17/2022 11:35:23
Contact Name	Michael Chandler
1. Please describe your reuse project.	The Confluence Park Wastewater Treatment Reuse Facility will provide 1.5 Million Gallons per day of reuse capacity for the communities of Toquerville and La Verkin. This project will take treated effluent from the treatment plant and feed it through the required disinfection and filtration processes in order to provide type I reuse water for the two communities. The project will include the purchase and installation of filtration and disinfection equipment along with the building to house and protect the equipment. Detailed plans and cost estimates for the building and equipment are available upon request.
2. How will your project mitigate drought impacts on a rural community?	The cities of Toquerville and La Verkin each have secondary pressurized irrigation systems. La Verkin's system is fed through the Virgin River diversion that also feeds Quail Creek Reservoir. Toquerville's system is fed from the Toquerville Springs which is a potable quality spring. Both of these resources have the potential to aid in the mitigation of drought impacts in that they are either culinary grade or potentially culinary grade resources being used in outdoor watering applications. By producing reuse quality effluent from the Confluence Park Treatment Plant and working with the communities to distribute the reuse water into their distribution systems the existing sources of irrigation water (Virgin Diversion water and Toquerville Springs water) can be preserved for crucial potable uses not only in the two communities but in the downstream municipalities of Hurricane, Washington, St. George, Santa Clara and Ivins. Reuse water from the treatment plant will ultimately be conveyed via pump station and pipelines to the Toquerville Reservoir during the winter, non-irrigation season, to help build a surplus for drought impacted years.
3. How will your project mitigate drought impacts on local agriculture?	As one of the largest wastewater treatment agencies in southern Utah, Ash Creek Special Service District serves the communities of Hurricane, La Verkin, Toquerville, and Apple Valley. Each of these communities have historical agricultural backgrounds with a multitude of small agricultural operations that include forage crop production, fruit orchards, and livestock grazing. In conjunction with the Washington County Water Conservancy District the Ash Creek Special Service District is working to provide reuse alternatives first in Toquerville and La Verkin, but ultimately in all of the cities it serves in order to preserve the best quality water sources for culinary use and to preserve the existing agricultural operations. Reuse water from the treatment plant will ultimately be conveyed via pump station and pipelines to the Toquerville Reservoir during the winter, non-irrigation season, to help build a surplus for drought impacted years.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	https://dwre-utahdnr.opendata.arcgis.com/pages/municipal-and-industrial-data Data from current usage tables suggests that recent metering data shows that La Verkin would replace roughly 1650 acre-feet of outdoor usage and Toquerville would replace approximately 678 acre-feet of potable water with reuse water.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	There are no known water quality issues or public health hazards that will be mitigated by the project.
6. a. What is the estimated cost of the project?	$2,413,200

6. b. How much local funds will be brought to the project?	$725,000
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	NO
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	The District has the capability to bond for any remaining amount.
6. e. Has your project been bid?	No
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	The Confluence Park Treatment facility will provide reuse quality water to the communities of La Verkin and Toquerville. In addition the plant will provide supplementary water to the Confluence Park. This is a regional park owned and operated by the County with over 350 acres of riparian corridor and raptor habitat along the confluence of the Virgin River, Ash Creek and La Verkin Creek.
8. a. What is the population the project will serve?	6072
8. b. What zip codes will this project serve?	84745 and 84774
8. c. What is your average monthly user fee for wastewater service?	$35.00

9. Cedar City

Timestamp	10/17/2022 16:08:31
Contact Name	Jonathan Stathis
1. Please describe your reuse project.	Wastewater effluent recharge from the Cedar City Regional Wastewater Treatment Facility.
2. How will your project mitigate drought impacts on a rural community?	This project will help to mitigate drought impacts in the Cedar City community by providing for wastewater effluent to be recharged into the aquifer. Both municipal and agricultural users depend on the groundwater in the basin. Due to the drought conditions, the Cedar Valley aquifer is continuing to see declines in the water table. This impacts all water users in the basin. Currently, the wastewater effluent is land applied near the treatment plant. The groundwater table is very high in this area and there are other areas of the valley that would greatly benefit from recharge. It is proposed that the effluent be pumped up to the recharge basins near the Cedar City Airport. This location would provide more beneficial recharge to the aquifer and help to slow the groundwater declines in the Cedar Valley.
3. How will your project mitigate drought impacts on local agriculture?	This project will help to mitigate drought impacts on local agriculture by recharging the valley aquifer. Agriculture uses approximately 75% of the underground water in the basin. Agricultural users are seeing impacts on pumping levels and power costs as the water table continues to decline. By increasing the recharge to the area, this will help to alleviate the effects of drought on local agriculture.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	As part of this project, it is planned to install two waterlines for a distance of approximately 8 miles from the Wastewater Treatment Facility to the Cedar City Airport. Pump stations will also be needed to lift the water from the treatment plant. One waterline would be used to convey wastewater effluent to the recharge areas. The second waterline would be used to convey culinary grade groundwater from the treatment plant area to the City's drinking water system. This second waterline would be able to replace water that is currently pumped from areas that are seeing significant declines in the water table. This would allow approximately 1,500 gallons per minute of potable water from declining areas to be replaced with groundwater pumped from the treatment plant area that has built up over years of discharging on the land application site near the treatment facility.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	No
6. a. What is the estimated cost of the project?	$10,000,000
6. b. How much local funds will be brought to the project?	Local funds would be provided according to the required match.
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	Funding will be provided through available cash on hand, if there is enough available. Otherwise, the funding would come from bonding and be paid back with user rates.

6. e. Has your project been bid?	No
6. f. Has your project started construction?	No
6. g. Has your project completed construction?	No
7. How will the project enrich the community?	The State of Utah Division of Water Rights has implemented a Groundwater Management Plan for the Cedar Valley aquifer. This plan will significantly reduce the ability of Cedar City to be able to supply water in the future as the plan is implemented through priority cuts to water rights. Any projects that can be done to minimize the decline in the aquifer may allow the Division of Water Rights to delay or halt cuts that might occur. This will allow Cedar City to continue providing culinary and secondary water to its customers. In turn, this will allow the residents in the area to continue to enjoy the quality of life that is available in Cedar City.
8. a. What is the population the project will serve?	37206
8. b. What zip codes will this project serve?	84720 and 84721
8. c. What is your average monthly user fee for wastewater service?	$23.00 per month

10. St. George Application

Timestamp	9/28/2022 10:15:13
Contact Name	Scott Taylor
1. Please describe your reuse project.	Project Purpose The proposed Graveyard Wash Reservoir is a reuse/irrigation reservoir that was identified as Stage II of the St. George Water Reuse Project. The St. George Water Reuse Project currently provides secondary irrigation quality water to many users throughout the City. These users include, but are not limited to, golf courses, parks, schools, cemeteries, and some limited residential users. It is anticipated that the residential uses will increase significantly, as new development within the City will be required to install a secondary irrigation delivery system. The purpose of this reservoir is to provide storage of re-use water that is produced at the St. George Regional Water Reclamation Facility (SGRWRF), especially during the winter months. This impounded reuse water will then be used during the peak summer months to augment the reuse/ pressurized irrigation system. The Graveyard Wash Reservoir will increase the reuse system annual yield to approximately 7,200 acre-ft per year (afy). This increased annual yield will provide a more efficient secondary irrigation system and allow the system to expand and provide outside landscape irrigation to new residential and non-residential development within the City of St. George and the surrounding communities of Santa Clara and Ivins. Project Description The Graveyard Wash reservoir site is located directly northwest of the City of Santa Clara and is accessible from State Route 8/ Old Highway 91. This location was identified because of its geographic location, elevation, and geology. The reservoir site consists of approximately 71 acres of inundated area and has a storage capacity of approximately 2,030 acre-feet. An earthen dam would be constructed across Graveyard Wash, just northwest of the City of Santa Clara Public Works Storage Yard. The dam would be approximately 1,750 feet long and have a crest elevation of 2,900 feet above mean sea level. The dam would be constructed of a thin, impervious clay core, bonded by either sand and gravel or rockfill and require approximately 586,000 cubic yards of fill. The dam would also have a spillway designed to accommodate a 100-year storm event. Basalt rock would be used to reduce visual contracts with the environments, and riprap would be randomly placed across the dam face to protect it from erosion and provide irregularity for blending with the environment. In preparation for the dam foundations, overburden soil and the weathered portion of underlying bedrock would be removed. Clay material and riprap for the dam would come from the reservoir site and other off-site sources. Borrow sources were identified in a geotechnical feasibility study that was prepared by Alpha/RB&G Engineering in 2004. It is anticipated that there would be some limited recreational activities on and around the reservoir. A trail would be constructed around some of the reservoir and across the dam to provide nearby communities access to trails and other recreation on BLM-administered lands to the south and west of the reservoir. Permitting

	An environmental assessment (EA) was conducted for this reservoir site as part of the overall St. George Reuse Project. The project EA was submitted to BLM in August 2004. A Finding of No Significant Impact (FONSI) and Decision Record was issued in December of 2004. Subsequently, a Right-of-Way Grant was used to the City of St. George for the Graveyard Wash in December 2004 and is identified as UTU-79706. It is anticipated that encroachment permits, and conditional use permits will be required from Washington County. In addition, it is anticipated that permitting will be required in compliance with Section 404 of the Clean Water Act, as well as construction storm water permits. Preliminary Reports and Cost Estimates The Graveyard Wash Reservoir Geotechnical Feasibility Study was conducted by Alpha/RB&G Engineering in January 2004. The purpose of the study was to perform sufficient surface and subsurface investigations as the reservoir site to determine the feasibility of construction of the dam and reservoir, perform sufficient field and laboratory investigations to identify borrow sources of the dam embankment, evaluate dam type options, and provide preliminary costs of the project. The cost of the Graveyard Wash Reservoir project was estimated to be between $7.2M and $8.1M in 2004. In 2015, these cost estimates were updated and adjusted to 2015 construction costs. At that time, the cost estimates for the project were between $10.1M and $11.2M. It is expected that updated construction costs of the project, based on current construction environment, will be approximately $17M.
2. How will your project mitigate drought impacts on a rural community?	Currently, the City of Santa Clara and Ivins both have a fairly limited secondary irrigation system. As new development occurs in those communities, they will be more reliant on secondary irrigation water to offset their culinary water demand. While the existing sewer treatment plant, and reuse plant, are owned and operated by the City of St. George, they also serve the communities of Santa Clara and Ivins through contractual service agreements. Both Santa Clara and Ivins will have access to reuse water that is stored in the Graveyard Wash Reservoir for their secondary irrigation demands.
3. How will your project mitigate drought impacts on local agriculture?	The Graveyard Wash Reservoir is situation on the Santa Clara River System. The Santa Clara River system provides agricultural irrigation water to the Ivins Irrigation Company, the New Santa Clara Canal Company, the St. George Clara Fields Canal Company, and the Seep Ditch Irrigation Company. A pipeline currently exists that connects the existing reuse plant to Gunlock Reservoir, some 12 miles away. The Graveyard Wash is located between Gunlock Reservoir and the reuse plant. The reuse water that is impounded during the winter months can be used as a supplemental source of water to the various irrigation companies within the Santa Clara River System. The allocations of Santa Clara River water is routinely cut during drought conditions. In fact, full allocations of the Santa Clara River are only realized about 3 out of every 10 years.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Within the City of St. George, all new development is now required to install a secondary irrigation delivery system, which will be supplied with reuse water. Approximately 50% of the annual water use per household is water that is used for outside irrigation. With construction of the Graveyard Wash Reservoir expanding the overall annual yield of the reuse system by more than 4,000 acre-feet, the equivalent amount of culinary water would be available to support growth that is currently being experienced in the area.

5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	No. The project will only increase the annual yield of the reuse system by providing winter storage for an expanding system and increased demand for secondary irrigation water.
6. a. What is the estimated cost of the project?	$17,000,000
6. b. How much local funds will be brought to the project?	$7,000,000
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	No.
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	The remainder of the project will be funded through user rates.
6. e. Has your project been bid?	No
6. f. Has your project started construction?	No. We are in the final design phase of the project
6. g. Has your project completed construction?	No.
7. How will the project enrich the community?	The project will enrich the community by expanding the amount of secondary irrigation water that is available and by offsetting the culinary water demand by an equivalent amount. The City of St. George and surrounding communities are experiencing rapid growth. At the same time, we have nearly exhausted all of our sources of culinary water. With a local economy that is very dependent on growth, it is critical to develop additional source of water to sustain the increased growth rate. With the City's new policy of requiring all new development to install a secondary irrigation system, expansion of the reuse system is vital to be able to provide reuse water to the secondary irrigation system, thus reducing demand on our culinary water sources, and stretching those sources to provide for future growth.
8. a. What is the population the project will serve?	Approx. 115,000
8. b. What zip codes will this project serve?	84770, 87490, 84765, 84738
8. c. What is your average monthly user fee for wastewater service?	$20.15

11. WCWCD Dry Wash Reservoir Application

Timestamp	10/17/2022 17:13:14
Contact Name	Emily Kagan
1. Please describe your reuse project.	Project Background To extend Washington County's limited water resources, the Washington County Water Conservancy District has collaborated with local county and city governments to develop a regional wastewater reuse system that will serve the county's major population centers, as well as rural communities. The system will initially be capable of delivering up to 16,000-acre-feet of reuse water throughout the region, with an anticipated future capacity of up to 40,000-acre-feet by 2070, assuming completion of current district projects and continued growth in Washington County. The reuse water will be used for outdoor irrigation and agricultural use to mitigate impacts of drought today and in the future. Ultimately, this larger project aims to preserve the county's higher quality water for potable uses. Currently, the St. George Regional Water Reclamation Facility (SGRWRF) treats wastewater from St. George City, Washington City, Ivins City, and Santa Clara City. The St. George Reuse Facility (SGRF) provides tertiary treatment to the effluent from the SGRWRF, treating the water to Type 1 effluent standards (per Utah Administrative Code R-317). Treated water is pumped into a 24-inch transmission line that can take water north and east for several users. The SGRF can produce 7.0 million gallons a day (MGD) of reuse water but could produce up to 10.5 MGD. During periods of low demand, water from Gunlock Reservoir is adequate to meet irrigation needs. When demands are high in the irrigation season, the reuse facility operates to supplement the irrigators. Due to a lack of storage, the reuse facility can only be operated when the demand exists. Project Description The proposed Dry Wash Reservoir site is situated in a natural drainage basin about 4 miles northwest of St. George, Utah in the city of Ivins. Water will be delivered to the reservoir through a new pipeline from the St. George City treatment plant. The project will provide storage for excess reuse water in times of low demand, creating a more reliable source for agricultural, residential, and municipal uses during peak demand. Dry Wash Reservoir will be constructed with a storage capacity up to 4,550 acre-feet and will be composed of a multi-zoned, earth-rockfill embankment with an internal filter and drainage system.
2. How will your project mitigate drought impacts on a rural community?	Washington County is one of the fastest growing counties in the United States. Water supplies in the Washington County area are limited to the Virgin River drainage basin and are a combination of groundwater and surface water sources. In conjunction with new conservation programs, operational improvements, and structural upgrades, the Washington County Water Conservancy District (WCWCD) is spearheading a regional wastewater reuse system to meet future needs under drought conditions. Reuse, secondary, and culinary water are currently used in these four cities to irrigate large turf areas including golf courses, parks, cemeteries, and schools, and for agricultural uses such as crop irrigation, fruit trees and stock watering. However, certain areas of St. George, Ivins, and Santa Clara have begun to use reuse water for residential and commercial irrigation, and

	it is anticipated that a large percentage of new water demands from residential and commercial users will be met by reuse. The construction of the Dry Wash reservoir will create storage for reuse water during periods of reduced outdoor irrigation. Currently, during the winter months when outdoor irrigation and agricultural water demand is low, the City of St George sends their treated wastewater back to the Virgin River since there is no storage available. During the summer months when water use is high, all reuse water from the plant is delivered to users for outdoor watering needs. However, with an ability to store reuse water in Dry Wash reservoir, a greater amount of reuse water will be available each year to meet demands for outdoor irrigation and agriculture. With more reuse water available for outdoor watering, quality potable water will be freed up for culinary use.
3. How will your project mitigate drought impacts on local agriculture?	Several canal companies on the Santa Clara system (Santa Clara Canal Company, New Clara Canal Company, Ivins Irrigation Company) are subject to water use restrictions on average eight out of ten years. The availability of additional reuse water will help decrease these shortages and provide a more reliable supply.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Though some reuse water is applied, culinary water is the primary source of irrigation for much of the large turf areas, and for residential and commercial irrigation. Outdoor irrigation with culinary water currently amounts to nearly 70% of residential water use. With increased reuse storage, it is anticipated that a large percentage of water demands from residential and commercial users can be met by reuse. When demand is low, treated wastewater can be retained to better offset high demand during the summer months, allowing more quality drinking water to be available for culinary use.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	no
6. a. What is the estimated cost of the project?	Approximately $17,500,000.
6. b. How much local funds will be brought to the project?	The district will fund the remaining project balance with impact fees, water user rates and property tax revenues.
6. c. Does the project currently have any grant funds awarded to it by another funding agency?	no
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	The district will fund remaining project balance with impact fees, water user rates and property tax revenues.
6. e. Has your project been bid?	Dry Wash Reservoir is still in the design review phase and has not yet been bid.
6. f. Has your project started construction?	no
6. g. Has your project completed construction?	no
7. How will the project enrich the community?	This project will serve the cities of St. George, Ivins, and Santa Clara, as well as their visitors, and by exchange will benefit all the District's wholesale customers. It is part of a larger collaborative effort to offset and

	mitigate drought impacts by providing a resilient water supply. Furthermore, the district is also working with Ivins City to provide a recreational component to the reservoir that will benefit local communities and visitors.
8. a. What is the population the project will serve?	Saint George, UT – population 99,958 Santa Clara, UT – population 7,863 Ivins, UT – population 9,532 Washington, UT – population 29,839
8. b. What zip codes will this project serve?	84770, 84790, 84765, 84738, 84780
8. c. What is your average monthly user fee for wastewater service?	$26.84 in Ivins, $23.40 in Santa Clara, $20.15 in Saint George and Washington

12. WCWCD Toquer Reservoir Application

Timestamp	10/17/2022 17:08:39
Contact Name	Emily Kagan
1. Please describe your reuse project.	Project Background To extend Washington County's limited water resources, the Washington County Water Conservancy District has collaborated with local county and city governments to develop a regional wastewater reuse system that will serve the county's major population centers, as well as rural communities. The system will initially be capable of delivering up to 16,000-acre-feet of reuse water throughout the region, with an anticipated future capacity of up to 40,000-acre-feet by 2070, assuming completion of current district projects and continued growth in Washington County. The Ash Creek Project is part of this proposed water system that will supply an alternate source of secondary irrigation water to the Toquerville Secondary Water System (TSWS) and through exchange allow water from Toquerville Springs, the current TSWS supply source, to be delivered as potable municipal water in Toquerville, La Verkin and Hurricane. The reuse water will be used for outdoor irrigation and agricultural use to mitigate impacts of drought today and in the future. Ultimately, this larger project aims to preserve the county's higher quality water for potable uses. Project Description As part of the Ash Creek Project, the Washington County Water Conservancy District (WCWCD) will construct a new reservoir, Toquer Reservoir, to store treated water from the Ash Creek Special Services District (ACSSD) new wastewater treatment facility. Toquer Reservoir, located on the north end of Toquerville, will be created by the construction of an earth and rockfill dam having a central clay core transitioning to basalt rock fill and a drain system. The reservoir would store about 3,600 acre-feet with a maximum dam height of about 100 feet and a surface area of approximately 115 acres. The spillway would consist of a concrete weir and splash pad and an 1,9721-foot excavated overflow channel (1,602 feet on BLM and 370 feet on private land) leading to Anderson Wash. The project will add an estimated 1,582 acre-feet of reliable supply to Washington County by the year 2025.
2. How will your project mitigate drought impacts on a rural community?	Toquer Reservoir will provide storage of reuse water that will help mitigate impacts of drought on the local rural communities by securing more reliable water sources. Toquerville Springs is currently the sole source of drinking water for the cities of Toquerville and La Verkin, and the source of secondary irrigation water for Toquerville, La Verkin, and Hurricane. With persistent drought conditions, Toquerville Springs regularly experiences significant reductions in available water. This project will help mitigate drought impacts predominantly in the cities of La Verkin and Toquerville by providing a new water supply for agriculture and irrigation that will free up quality potable water for culinary use. Toquer Reservoir will store reuse water from the Ash Creek Special Services District (ACSSD) wastewater treatment plant will be used to fulfill the rural community’s agricultural and residential irrigation needs, consequently conserving high quality potable water from Toquerville Springs for human consumption. Furthermore, the reservoir will provide a recreational site for locals and visitors. An increase of recreational opportunity in these rural areas may provide a small boost to

	the local economy, which could help offset any economic impacts of drought.
3. How will your project mitigate drought impacts on local agriculture?	In combination with seasonal runoff collected and diverted, reuse water stored in Toquer Reservoir will be available for agricultural needs in Toquerville, La Verkin, and Hurricane. Though Toquerville uses quality potable water from Toquerville Springs, La Verkin and Hurricane irrigate with secondary water from the Virgin River. Even with regular flows, there are reoccurring issues of high sediment loads clogging irrigation systems. These high sediment loads cause decreased water pressure, require more maintenance, and require additional water to flush the system clear. Making reuse water available for irrigation will provide a more reliable and usable water source for agriculture, improving water pressure and significantly reducing the need for maintenance and flushing. Furthermore, the storage of reuse water in Toquer Reservoir will provide a more reliable source of water for agriculture in times of drought when river and stream flows diminish.
4. How will the project replace a current use of potable quality water? Please provide data on the historical potable quality water use the reuse project will replace.	Toquerville Springs is a water source in Washington County, UT with water rights dating back to the 1860s. The springs produce approximately 4,000 gallons of high-quality culinary water per minute. All water rights are owned today by the cities of Toquerville, Hurricane and La Verkin and the Washington County Water Conservancy District (district). Toquerville Springs currently provides drinking water to the cities of Toquerville and La Verkin, but it also fulfills water rights and agricultural demand. Over the past 5 years, approximately 1,700 acre-feet of quality potable water have been diverted annually from Toquerville Springs for irrigation. Storing reuse water in Toquer Reservoir, along with surface water collected from Ash Creek and its tributaries, will create a reliable source of water for agriculture and residential irrigation. In doing so, a significant portion of Toquerville Spring water will free up, increasing the availability of quality drinking water. This reuse water will also be available to La Verkin and Hurricane, who currently source the Virgin River for secondary irrigation needs. Last year, La Verkin sourced approximately 1,900 acre-feet of water from the Virgin River for irrigation, and Hurricane sourced 1,300 acre-feet. Providing an alternative source of reuse water to these cities will also allow the Virgin River to retain higher volumes, which can be captured, treated, and distributed by WCWCD's culinary water distribution system.
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	This project will help mitigate a water quality issue that impacts agricultural users in Hurricane and La Verkin. Hurricane and La Verkin irrigation systems are often disturbed by high sediment load in the Virgin River. These high sediment loads reduce water pressure, command extra maintenance, and require the use of additional water to flush the systems. This project will supplement water diverted from the Virgin River for secondary use with treated wastewater, reducing or eliminating the water quality issue altogether.
6. a. What is the estimated cost of the project?	$36,570,000 (reservoir only)
6. b. How much local funds will be brought to the project?	The district will fund the remaining project balance with impact fees, water user rates and property tax revenues.

6. c. Does the project currently have any grant funds awarded to it by another funding agency?	no
6. d. How will the remainder of the project be funded if only partial grant funds are obligated or if bids come in over the estimate?	The district will fund remaining project balance with impact fees, water user rates and property tax revenues.
6. e. Has your project been bid?	Portions of the project have been bid (such as aspects of the conveyance infrastructure), but Toquer Reservoir is still in the design review phase and has not yet been bid.
6. f. Has your project started construction?	no
6. g. Has your project completed construction?	no
7. How will the project enrich the community?	This project will serve the cities of Toquerville, La Verkin, and Hurricane, as well as their visitors. It is part of a larger collaborative effort to offset and mitigate drought impacts by providing a resilient water supply, and by exchange will benefit all the District's wholesale customers. Furthermore, the district is also working with Toquerville City to provide a recreational component to the reservoir that will benefit local communities and visitors.
8. a. What is the population the project will serve?	Toquerville, UT – population 1,870 La Verkin, UT – population 4,354 Hurricane, UT – population 20,036
8. b. What zip codes will this project serve?	84774, 84745, 94737
8. c. What is your average monthly user fee for wastewater service?	$35 per month per residential customer