



State of Utah

SPENCER J. COX  
Governor

DEIDRE HENDERSON  
Lieutenant Governor

Department of  
Environmental Quality

Kimberly D. Shelley  
Executive Director

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

**Water Quality Board**  
Steven K. Earley, Chair  
James Webb, Vice Chair  
Carly Castle  
Brandon Gordon  
Michela Harris  
Joseph Havasi  
Trevor Heaton  
Michael D. Luers  
Kimberly D. Shelley  
John K. Mackey  
Executive Secretary

**Utah Water Quality Board Meeting  
MASOB  
195 North 1950 West  
Board Room 1015 & Via [Zoom](#)  
Salt Lake City, UT 84116**

*December 14, 2022  
Board Meeting Begins at 8:30 am*

**AGENDA**

**Water Quality Board Meeting – Roll Call**

**A. Minutes:**

Approval of Minutes for October 26, 2022 Water Quality Board Meeting..... Steven Earley

**B. Executive Secretary’s Report** ..... John Mackey

**C. Other**

1. Sudweeks Award ..... John Mackey

**D. Rulemaking**

1. Request to Adopt Rule: Jordan River Watershed E.coli Total Maximum Daily Load .....Sandy Wingert

**E. Funding:**

1. Southern Utah Reuse ARPA Grant Program – Authorizations  
Request for Authorizations ..... Andrew Pompeo & Ken Hoffman

**F. Public Comment Period**

**G. Meeting Adjournment**

**Next Meeting  
January 26, 2023 at 8:30 am**

**DEQ Board Room 1015 & Via [Zoom](#)  
195 North 1950 West  
Salt Lake City, UT 84116**

Revised 12/7/2022  
DWQ-2022-031236

In compliance with the American Disabilities Act, individuals with special needs (including auxiliary communicative aids and services) should contact Larene Wyss, Office of Human resources, at (801) 536-4281, TDD (801) 536-4284, or by email at [lwys@utah.gov](mailto:lwys@utah.gov) at least five working days prior to the scheduled meeting.

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**MINUTES**

**UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY  
UTAH WATER QUALITY BOARD  
MASOB  
and  
Via Zoom**

October 26, 2022  
8:30 am Meeting

**UTAH WATER QUALITY BOARD MEMBERS PRESENT**

Carly Castle	Joe Havasi
Steve Earley	Mike Luers
Brandon Gordon	James Webb
Michela Harris	

Excused    Trevor Heaton  
                  Kim Shelley

**DIVISION OF WATER QUALITY STAFF MEMBERS PRESENT**

Jennifer Berjikian	Tiffany Larrieu
Paul Burnett	Glen Lischeske
Emily Cantón	John Mackey
Eric Castrejon	Justine Marshall
Skyler Davies	George Meados
Judy Etherington	Alan Ochoa
Jodi Gardberg	Dave Pierson
Dan Griffin	Andrew Pompeo
Clanci Hawks	Jen Robinson
Porter Henze	Danny Ryan
Ken Hoffman	Lonnie Shull
Ben Holcomb	Jeff Studenka
Jessica Huber	Beth Wondimu
David Jamison	Leanna Littler-Woolf
Brenda Johnson	

**OTHERS PRESENT**

Soren Simonson	Jordan River Commission
Aimee Horman	Jordan River Commission
Haley Sousa	AG's Office
Marian Rice	Salt Lake City

Melissa Reynolds	Holland & Hart
Lyndsay Peterson	North Logan City
Alan Luce	North Logan City
Zac Root	North Logan City
Lance Anderson	North Logan City
Alex Buxton	Zions Bank
Barbara Bruno	Springdale City
Rick Wixom	Springdale City
Rob Totten	Springdale City
Dustyn Shaffer	Sunrise Engineering
Jeff Hall	Lewiston City
Gary Vance	J-U-B Engineering
Den Kirkland	Delta City
Robert Worley	Sunrise Engineering
Jeffren Pei	Hanksville
Lisa Wells	Hanksville
Daniel Holly	Jones & DeMille Engineering
Ray Spencer	Long Valley SID
James Saunders	Jones & DeMille Engineering
Marcus Simons	J-U-B Engineering

**Mr. Earley called the Meeting to order at 8:30 AM.**

#### **ROLL CALL**

**Mr. Earley took roll call for the members of the Board and audience.**

#### **APPROVAL OF MINUTES**

**Motion: Mr. Gordon moved to approve the minutes of the September 28, 2022 Board meeting.**

**Mr. Luers seconded the motion. The motion passed with a majority vote with Ms. Harris, Mr. Earley, Mr. Heaton and Mr. Webb recusing themselves due to their absence at the September 28<sup>th</sup> meeting.**

#### **EXECUTIVE SECRETARY REPORT**

Mr. Mackey addressed the Board regarding the following.

##### *Water Quality Division*

- Staff Introductions
  - Porter Henze, Individual Permitting Section
  - Jessica Huber, Administrative Services Section
  - Justine Marshall, Compliance & Enforcement Section
- Staff Farewells
  - Brenda Johnson, Administrative Services Section

##### *Region*

- Wasatch Front Water Quality Council
  - Wet Wipes Campaign
- Utah Lake Summit

- Great Salt Lake Summit
- Southern Utah Reuse Funding

*Water Quality Board*

- 2023 Meeting [Schedule](#)
- Board Member Second Term Expiring
  - Michael Luers – March 1, 2023
  - Steven Earley, Chair – March 1, 2023
- Board Member Resignation
- Brandon Gordon – December 31, 2022
- Calvin K. Sudweeks Award Board Member Volunteers
  - Michela Harris
  - Michael Luers
  - James Webb

**FUNDING**

**Financial Report:** Ms. Cantón updated the Water Quality Board on the Loan Funds and Hardship Grant Funds as indicated in the [packet](#).

**Project Funding Process Discussion**

**Springdale Project Funding Request:** Mr. Hoffman presented the Board with the Town of Springdale request for funding in the amount of \$4.2 million for a wastewater project.

**Motion:** **Mr. Webb moved to approve the staff recommendation of no funding at this time.**

**Mr. Havasi seconded the motion. The motion passed unanimously.**

**Central Valley – Additional Project Funding Request:** Mr. Davies presented the Board with a request for any amount of additional funding that the Board is able to provide. CVWRF continues to consider all funding options and will find ways to finance the projects, however, CVWRF recognizes the benefit of Water Quality Board Funds.

**Motion:** **Ms. Harris moved to approve the staff recommendation of no additional funding at this time.**

**Mr. Webb seconded the motion. The motion passed unanimously.**

**Delta City – Project Funding Request:** Mr. Meados presented the Board with a request for funding in addition to the hardship grant in the amount of \$200,000 and a short-term loan in the amount of \$200,000 at an interest rate of 0% over 5 years that the Board authorized August 24, 2022.

**Motion:** **Mr. Webb moved to approve the staff recommendation of no additional funding at this time, but if Delta cannot secure funding with CIB or USDA-RD they are encouraged to reapply.**

**Mr. Havasi seconded the motion. The motion passed unanimously.**

**Hanksville – Project Funding Request:** Mr. Meados presented the Board with a request to authorize funding in the amount of \$1,694,600 as principal forgiveness and \$350,000 as loan at an interest rate of 0% repayable over 30 years due probable construction costs and high financial burden on the community for their sewer master plan.

**Motion:** Mr. Luers moved to approve the staff recommendation the Water Quality Board authorize funding in the amount of \$1,694,600 as principal forgiveness and \$350,000 as loan at an interest rate of 0% repayable over 30 years to Hanksville under the following special conditions:

1. Hanksville must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. As part of the facility planning, Hanksville must complete a Water Conservation and Management Plan.
3. Hanksville must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

Mr. Webb seconded the motion. The motion passed unanimously.

**Long Valley Sewer Improvement District (SID) – Project Funding Request:** Mr. Pompeo presented the Board with a request for a loan in the amount of \$1,274,200 for upgrades to increase the resiliency and automation of their system.

**Motion:** Mr. Webb moved that the Water Quality Board authorize funding in the amount of \$1,470,000 at an interest rate of 1.5% repayable over 20 years Long Valley under the following special conditions:

1. Long Valley must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. Long Valley must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.
3. As part of the facility planning, must complete a Water Conservation and Management Plan.

Ms. Harris seconded the motion. The motion passed unanimously.

**North Logan – Project Funding Request:** Mr. Lischeske presented the Board with a request for funding in the amount of \$3,500,000 as loan at an interest rate of 2.0% repayable over 30 years to North Logan to fund Phases IV and V for replacing an existing main gravity trunk line.

**Motion:** Mr. Luers moved that the Water Quality Board authorize funding in the amount of \$3,500,000 as loan at an interest rate of 2.0% repayable over 30 years to North Logan to fund Phases IV and V under the following special conditions:

1. North Logan must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. As part of the facility planning, North Logan must complete a Water Conservation and Management Plan.
3. North Logan must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

Mr. Havasi seconded the motion. The motion passed unanimously.

**Lewiston City – Additional Project Funding Request:** Mr. Hoffman presented the Board with additional funding request in the amount of \$1,000,000 as principal forgiveness and \$400,000 loan at an interest rate of 0% repayable over 20 years to replace aging infrastructure, eliminate capacity limitations, improve

wastewater treatment performance and enhance the overall system maintainability, flexibility, reliability, and customer service.

**Motion:** Ms. Harris moved that the Water Quality Board authorize funding in the amount of \$1,000,000 as principal forgiveness and \$400,000 loan at an interest rate of 0% repayable over 20 years to Lewiston under the following special conditions:

1. The authorization of this funding package will unauthorize the undisbursed balances of Hardship Grant Agreement #C069 which is approximately \$460,00 in hardship grant funds.
2. Lewiston must pursue and retain remaining funding necessary to fully implement the project.
3. Lewiston must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
4. As part of the facility planning, Lewiston must complete a Water Conservation and Management Plan.
5. Lewiston must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

Mr. Havasi seconded the motion. The motion passed unanimously.

#### **OTHER**

**FY24 Hourly Rate Fee Changes for "Other Permits":** Ms. Cantón presented the Board with information regarding an estimated impact of the fee change for "Other Permits".

#### **PUBLIC COMMENTS**

There were no public comments.

#### **MEETING ADJOURNMENT**

**Motion:** Mr. Webb moved to adjourn the meeting.

Mr. Havasi seconded the motion. The motion passed unanimously.

To view the full recording of the Water Quality Board meeting.  
<https://deq.utah.gov/boards/utah-water-quality-board-meetings>

**Next Meeting – November 7, 2022**  
**Finance Committee Meeting**  
**Meeting begins at 1:00 pm**

**In-Person**  
**MASOB**  
**195 North 1950 West**  
**Great Salt Lake West Room 3134**  
**Salt Lake City, UT 84116**

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October 26, 2022  
Water Quality Board  
**Minutes**

**Via Zoom**

<https://us02web.zoom.us/j/7074990271>

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Steven Earley, Chair  
Utah Water Quality Board

DWQ-2022-031237



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**MEMORANDUM**

**TO:** Water Quality Board

**THROUGH:** John Mackey, P.E., Director, Division of Water Quality

**FROM:** Sandy Wingert, Watershed Protection Section

**DATE:** December 14, 2022

**SUBJECT:** Jordan River Watershed *E. coli* Total Maximum Daily Load (TMDL): Request for formal adoption of TMDL into Rule R317-1-7

The Water Quality Board previously authorized initiation of rulemaking to adopt the Jordan River Watershed *E.coli* Total Maximum Daily Load Study (TMDL) on August 24, 2022. The proposed rule was published in the Utah State Bulletin on September 15, 2022, with a 30-day public comment period from September 15 through October 15, 2022. The Division of Water Quality (DWQ) responded to public comments and incorporated them into the TMDL as Chapter 9 in the main report. DWQ recommends the Water Quality Board adopt the TMDL and proceed with incorporating by reference in rule the Jordan River Watershed *E. coli* TMDL as Subsection Utah Administrative Code (UAC) R317-1-7.67. To access the TMDL, please click [here](#) for the main report and [here](#) for the appendices.

Since the cost of implementation is below \$10 million, legislative involvement is not needed for approval. Presented in this memo are the TMDL executive summary, timeline to finalize the TMDL, the proposed rule change for UAC R317-1-7, and DWQ's response to public comments.

**Summary**

Section 303(d) of the Clean Water Act (CWA) requires states to develop TMDLs for waters that do not meet water quality standards. The TMDL process establishes allowable loadings of pollutants or other quantifiable parameters for a waterbody. This TMDL addresses the *Escherichia coli* (*E. coli*) impairments in fourteen assessment units (AUs) within the Jordan River watershed. These waterbodies have been classified as impaired in the 2006 through 2022 Integrated Reports (Figure



1). Six out of the seven east-side major tributaries, two of the three west-side tributaries, and several sections of the main stem Jordan River are addressed within this study.

These AUs were deemed a high priority for TMDL development due to the high recreational use; culinary use; ongoing TMDL studies and watershed planning; waterborne pathogen pollutants; and a combination of both point and nonpoint sources of pollution. The study was designed to assess and restore the drinking water and recreational beneficial uses of these waters as defined by UAC R317-2-6 and the CWA.

The Jordan River Watershed *E. coli* TMDL uses a concentration-based approach, with allowable levels of bacteria (*E. coli*) set as a concentration expressed in bacteria counts (No./100 mL of water). The goal is that all discharges to surface waters (point and nonpoint source) meet the water quality criteria, so standards are met throughout the waterbody. This approach is a shift from previously completed *E. coli* TMDLs that were based upon necessary load reductions to meet instream water quality standards. Several states have had success with this concentration-based approach. The DWQ believes this approach has several benefits for the impaired AUs in the Jordan River watershed. A concentration limit is easier for stakeholders to understand and implement compared to a load-based limit. This approach is also equitable for all Utah Pollutant Discharge Elimination System (UPDES) permittees within the impaired AUs, as all are held to the same limit and permit requirements related to best management practice (BMP) implementation regardless of area of responsibility.

Monthly sampling results of over fifty monitoring locations collected by both Salt Lake County and DWQ staff between 2007 to 2021 established the temporal and spatial extent of the *E. coli* impairment. Most of the perennial streams within the valley floor often exceeded the numeric criteria during the warmer months (late summer). This study found that the *E. coli* concentrations must be reduced between 24 – 88% to meet water quality standards during the recreation season throughout the watershed.

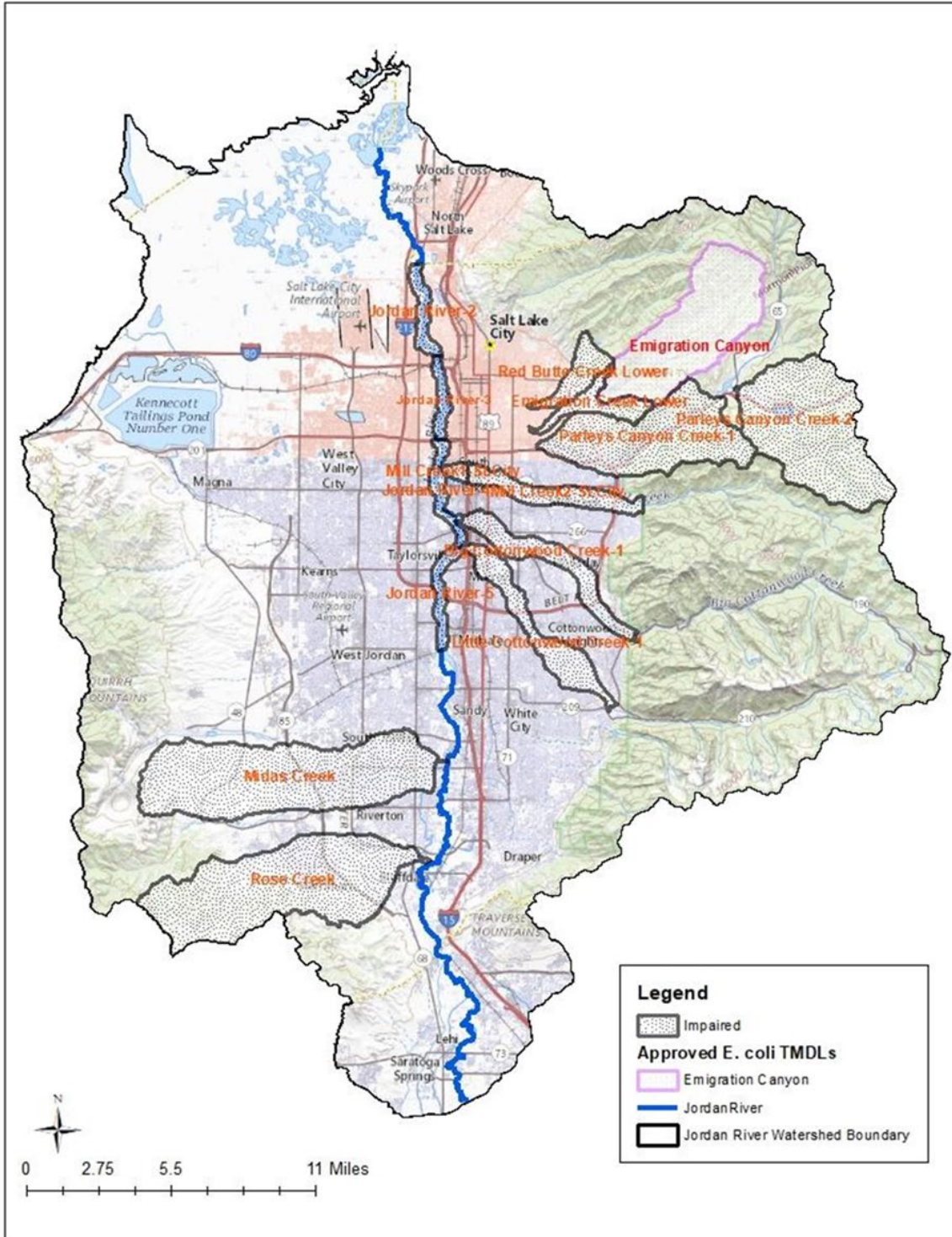


Figure 1. Location of the Jordan River watershed *E. coli* impaired assessment units.

### **Timeline to TMDL completion**

August 24, 2022:	Water Quality Board preliminary approval of TMDL / Petition to initiate rulemaking
September 15 - October 15, 2022:	30-day Division of Administrative Rule Public Notice
December 14, 2022:	Petition Water Quality Board for formal adoption of TMDL into R317-1-7
December 15, 2022:	Submit TMDL to EPA for approval

### **Proposed Rule Change**

Below are the proposed changes to UAC R317-1-7 called out in **bold underline**.

#### **R317-1-7. TMDLs.**

The following TMDLs are approved by the Board and hereby incorporated by reference into these rules:

- 7.1 Middle Bear River -- February 23, 2010
- 7.2 Chalk Creek -- December 23, 1997
- 7.3 Otter Creek -- December 23, 1997
- 7.4 Little Bear River -- May 23, 2000
- 7.5 Mantua Reservoir -- May 23, 2000
- 7.6 East Canyon Creek -- September 14, 2010
- 7.7 East Canyon Reservoir -- September 14, 2010
- 7.8 Kents Lake -- September 1, 2000
- 7.9 LaBaron Reservoir -- September 1, 2000
- 7.10 Minersville Reservoir -- September 1, 2000
- 7.11 Puffer Lake -- September 1, 2000

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Water Quality Board

Jordan River Watershed *E. coli* Total Maximum Daily Load (TMDL)

Request For Formal Adoption Of TMDL Into Rule R317-1-7

- 7.12 Scofield Reservoir -- September 1, 2000
- 7.13 Onion Creek (near Moab) -- July 25, 2002
- 7.14 Cottonwood Wash -- September 9, 2002
- 7.15 Deer Creek Reservoir -- September 9, 2002
- 7.16 Hyrum Reservoir -- September 9, 2002
- 7.17 Little Cottonwood Creek -- September 9, 2002
- 7.18 Lower Bear River -- September 9, 2002
- 7.19 Malad River -- September 9, 2002
- 7.20 Mill Creek (near Moab) -- September 9, 2002
- 7.21 Spring Creek -- September 9, 2002
- 7.22 Forsyth Reservoir -- September 27, 2002
- 7.23 Johnson Valley Reservoir -- September 27, 2002
- 7.24 Lower Fremont River -- September 27, 2002
- 7.25 Mill Meadow Reservoir -- September 27, 2002
- 7.26 UM Creek -- September 27, 2002
- 7.27 Upper Fremont River -- September 27, 2002
- 7.28 Deep Creek -- October 9, 2002
- 7.29 Uinta River -- October 9, 2002
- 7.30 Pineview Reservoir -- December 9, 2002
- 7.31 Browne Lake -- February 19, 2003
- 7.32 San Pitch River -- November 18, 2003
- 7.33 Newton Creek -- June 24, 2004
- 7.34 Panguitch Lake -- June 24, 2004
- 7.35 West Colorado -- August 4, 2004
- 7.36 Silver Creek -- August 4, 2004

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Water Quality Board

Jordan River Watershed *E. coli* Total Maximum Daily Load (TMDL)

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- 7.37 Upper Sevier River -- August 4, 2004
- 7.38 Lower and Middle Sevier River -- August 17, 2004
- 7.39 Lower Colorado River -- September 20, 2004
- 7.40 Upper Bear River -- August 4, 2006
- 7.41 Echo Creek -- August 4, 2006
- 7.42 Soldier Creek -- August 4, 2006
- 7.43 East Fork Sevier River -- August 4, 2006
- 7.44 Koosharem Reservoir -- August 4, 2006
- 7.45 Lower Box Creek Reservoir -- August 4, 2006
- 7.46 Otter Creek Reservoir -- August 4, 2006
- 7.47 Thistle Creek -- July 9, 2007
- 7.48 Strawberry Reservoir -- July 9, 2007
- 7.49 Matt Warner Reservoir -- July 9, 2007
- 7.50 Calder Reservoir -- July 9, 2007
- 7.51 Lower Duchesne River -- July 9, 2007
- 7.52 Lake Fork River -- July 9, 2007
- 7.53 Brough Reservoir -- August 22, 2008
- 7.54 Steinaker Reservoir -- August 22, 2008
- 7.55 Red Fleet Reservoir -- August 22, 2008
- 7.56 Newcastle Reservoir -- August 22, 2008
- 7.57 Cutler Reservoir -- February 23, 2010
- 7.58 Pariette Draw -- September 28, 2010
- 7.59 Emigration Creek -- September 1, 2011
- 7.60 Jordan River -- June 27, 2012
- 7.61 Colorado River -- December 5, 2013

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Water Quality Board

Jordan River Watershed *E. coli* Total Maximum Daily Load (TMDL)

Request For Formal Adoption Of TMDL Into Rule R317-1-7

- 7.62 Echo Reservoir -- March 26, 2014
- 7.63 Rockport Reservoir -- March 26, 2014
- 7.64 Nine Mile Creek -- October 27, 2016
- 7.65 North Fork Virgin River -- May 23, 2018
- 7.66 Fremont River - October 28, 2020
- 7.67 Spring Creek (Heber) - December 15, 2021
- 7.68 Jordan River Watershed - December 15, 2022**

**TMDL Public Comment and DWQ Response**

Organization	Report	Page Number	Comment	Response
Salt Lake City Public Utilities	Main Report	All	Editorial	DWQ made editorial changes per recommendations throughout the main report.
Salt Lake City Public Utilities	Main Report	Page 17, Table 4	Is this for the Brighton Loop? The new Town of Brighton would have jurisdiction for this area.	Brighton Loop is in Big Cottonwood-2 (BCC-2) Assessment Unit, which extends from the canyon mouth upstream to the headwaters. While this upper AU is listed on the 2022 303 (d) List for elevated levels of <i>E. coli</i> , it is not addressed in this TMDL report. The lower Big Cottonwood Assessment Unit-1 (BCC-1) is addressed in this TMDL (see Appendix A) and extends from the confluence of the Jordan River upstream to the drinking water plant at the canyon mouth. DWQ will address the BCC-2 <i>E.coli</i> impairment when additional data including, Microbial Source Tracking data, are available. Stakeholder input, including the town of Brighton, will be crucial in the BCC-2 TMDL analysis. No change was made in response to this comment.

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Water Quality Board

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Salt Lake City Public Utilities	Main Report	31	What about the Jordan Basin facility in Bluffdale?	The Jordan Basin Wastewater Treatment Facility discharges into Jordan River-6 Assessment Unit (JR-6), which is currently not impaired for <i>E. coli</i> . This AU is upstream of the <i>E. coli</i> impaired assessment units (JR-1 through JR-5) addressed in this TMDL. The Jordan Basin Wastewater Treatment Facility was not included as a point source discharge in the TMDL. No change was made in response to this comment.
Salt Lake City Public Utilities	Main Report	33	Is this supposed to be Salt Lake Valley or Jordan Valley Municipalities UTS00000?	DWQ made the correction on page 33 in response to this comment.
Salt Lake City Public Utilities	Main Report	37 Figure 7	What year is this map?	The permit data illustrated in Figure 7 were downloaded on March 1, 2022 as stated in the preceding paragraph. DWQ included this date to the heading of Figure 7 on page 37.
Salt Lake City Public Utilities	Main Report	39	What are the 5 sites?	The 5 satellite systems for South Valley Water Reclamation Facility are: 1) South Valley Sewer District, 2) West Jordan City, 3) Sandy Suburban Improvement District, 4) Midvalley Improvement District, and 5) Midvale City. The 7 satellite systems for Central Valley Water Reclamation Facility are: 1) Mt. Olympus, 2) Granger-Hunter, 3) Cottonwood, 4) Kearns, 5) Taylorsville-Bennion, 6) Murray, and 7) South Salt Lake. DWQ included these systems on page 39 in response to this comment.
Salt Lake City Public Utilities	Main Report	44	Is this correct? I thought the trail was longer and continuous lake to lake.	The Jordan River trail is a 45-mile trail from Utah Lake to Great Salt Lake as stated on the Jordan River Commission website. No change was made in response to this comment.

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Water Quality Board

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Request For Formal Adoption Of TMDL Into Rule R317-1-7

Salt Lake City Public Utilities	Main Report	52	There has been a recent update to the Blueprint [Jordan River].	The update to the Jordan River Blueprint was not finalized at the time of publication of this TMDL. No change was made in response to this comment.
Salt Lake City Public Utilities	Main Report	70	This plan is an IWM plan and not a 9-element watershed plan. We also have our 1999 Watershed Plan and update, but those are per the SDWA and thus do not fall under the CWA 9-elements.	Thank you for pointing this out. DWQ made the correction on page 70 in response to this comment.
Salt Lake City Public Utilities	Main Report	70	Year?	The Emigration Canyon Watershed Plan will be completed in 2023. DWQ made the correction on page 70 in response to this comment.
Salt Lake City Public Utilities	Main Report	70	Is this the Salt Lake County Watershed Council or the new JRWC that will be housed under the JRC per the watershed council legislation?	The State Watershed Councils are in the process of being formed and will include one for the Jordan River. The Jordan River Watershed Council that was overseen by Salt Lake County has not been active in recent years but it has not been officially dissolved either. No change was made in response to this comment.
Salt Lake City Public Utilities	Main Report	71	How about working with the UACD?	Under the Outreach and Education section, DWQ identifies the Salt Lake Conservation District, a local branch of UACD, as a partner in future work. DWQ made the correction on page 71 in response to this comment.
Bluffdale City	Main Report	61	I like the idea of placing decoy wildlife, however I could see these getting stolen or vandalized very quickly.	These suggested BMPs should be deployed in strategic locations to prevent vandalism or theft. No change was made in response to this comment.
Bluffdale City	Main Report	64	2nd paragraph - What is the logic behind how <i>E. Coli</i> contaminants make it into the streets? And can you really sweep up <i>E. Coli</i> ? It's hard to envision more street sweeping	Bacteria ( <i>E. coli</i> ) can attach to the sediment, so street sweeping acts as a preventative measure in two (2) ways: 1. removing sediment from the streets and storm drain system that have bound with <i>E. coli</i> , thus



			as a highly effective BMP to control <i>E. Coli</i> . Besides, wouldn't this be considered more of a remedial measure rather than preventative/source control?	removing the amount of <i>E. coli</i> that reaches the stream; and 2. removing the amount of fine sediment that reaches the stream that <i>E. coli</i> can attach to. No change was made in response to this comment.
Bluffdale City	Main Report	64	3rd paragraph - What would a "high-priority" annual visual discharge observation look like for a site with <i>E. Coli</i> concerns? Since <i>E. Coli</i> contamination is not visible, any visual cues would only point to investigation of other usual contaminants of concern (oils, sediment, chemical etc). The semi-annual inspection procedure in the current permit is also not written in a way that is helpful for examination of a site listed high-priority only because of <i>E. Coli</i> . It focuses more on the other contaminants.	The concept is the same as other "high priority" facilities identified as part of the Pollution Prevention and Good Housekeeping Minimum Control Measure. Permittees must assess Permittee-owned or operated facilities, operations, and stormwater controls for common pollutants (including <i>E. coli</i> ) that may originate from these facilities and how to prevent them from entering the storm drain system. <i>E. coli</i> can attach to sediment and pathogens ( <i>E. coli</i> ) live longer when levels of organic carbon and fine sediment particles in stream sediment is higher. So, conducting annual visual observation for turbidity, organic matter, etc. would make a difference by ensuring that there is not significant sediment or organic matter discharging offsite. MS4s will have an opportunity to comment on any proposed permit condition when the permit is modified in early 2023. No change was made in response to this comment.
Bluffdale City	Main Report	64	4th paragraph down - Targeting mowing/trimming, planting, and inspection/cleaning of storm drains as potential <i>E. Coli</i> "generating" activities seems like a stretch. I can't think of what specifics could be added to these SOPs to address <i>E. Coli</i> . Would we add instructions in our SOP to go around and pick up all poop off the lawn before you start	The idea is for MS4s to take a look at SOPs and determine if there is anything that can be added as a stand-alone SOP or as an update to an existing SOP in regard to reducing <i>E. coli</i> . In regard to mowing/trimming, grass clippings and other organic matter (leaves) are the bi-product and ensuring that the organic matter does not get into the storm drain or directly into waterbodies is a way to reduce <i>E.</i>

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Jordan River Watershed *E. coli* Total Maximum Daily Load (TMDL)

Request For Formal Adoption Of TMDL Into Rule R317-1-7

			<p>mowing/trimming? And for conveyances/storm drains, any decant from the cleaning already requires proper disposal by its current SOP (and the permit) anyway.</p>	<p><i>coli</i> in streams. Pathogens (<i>E. coli</i>) live longer when levels of organic carbon and fine sediment particles in stream sediment is higher. Additionally, although there are existing requirements in the MS4 permit for specific SOPs, MS4s must regularly evaluate their SOPs to ensure SOPs are adequate. The requirement is meant to draw attention to those SOPs that could benefit from review. MS4s will be provided an opportunity to comment on specific permit requirements when the MS4 permits are modified in early 2023. No change was made in response to this comment.</p>
Bluffdale City	Appendix H. Rose Creek AU TMDL	194	<p>Regarding the last paragraph about permittees being required to show they are in compliance with <i>E. coli</i> reduction requirements - I am concerned about the possibility that even full implementation of identified BMPs may not bring the required 83% reduction in <i>E. Coli</i> required for this watershed, considering the unknown proportions of contamination that natural wildlife (in areas beyond our control such as in canals and wetlands, both of which are many in our City) may be contributing. What will be the consequences of not meeting this metric despite our efforts?</p>	<p>The 83% reduction stated on page 181 serves only as a magnitude reference point for the Rose Creek AU. It is not a TMDL requirement or MS4 permit limit. The TMDL requirement is that all waterbodies meet the <i>E. coli</i> Water Quality Standards. By implementing the best management practices identified in the TMDL and adhering to the amended MS4 permit, a reduction in <i>E. coli</i> will occur. No change was made in response to this comment.</p>
Bluffdale City	Appendix H. Rose Creek AU TMDL	197	<p>4th paragraph down - "No further implementation" for natural wildlife brings some sense of relief, but it is concerning to wonder how much of the <i>E. Coli</i> loading that we are charged to reduce may be coming from this 76% of land that is natural and beyond our control, seeing that much of</p>	<p>The wildlife contribution is unknown for Rose Creek AU. As part of the TMDL implementation plan, DWQ will work with land managers to reduce animal sources on a voluntary basis using both state and federal nonpoint source grants. Increased monitoring including targeted site selection and Microbial Source Tracking will help address the relative</p>

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			it lies uphill and would runoff to our MS4?	contribution per source. Urban implementation efforts should focus on stormwater sources within the designated MS4 boundary. Addressing both nonpoint and point sources of <i>E. coli</i> contamination will reduce concentrations in Rose Creek. No change was made in response to this comment.
Bluffdale City	Appendix H. Rose Creek AU TMDL	188	Since microbial source tracking was not performed for this watershed, it is difficult to know what sources to target. Will the burden of source tracking now be on the MS4's within this watershed?	Microbial Source Tracking (MST) will not be required as part of MS4 Permit requirements. If Bluffdale City would like to collect MST samples, Nonpoint Source Grant funding is available. Please contact Sandy Wingert for more information. No change was made in response to this comment.
Salt Lake County	Main Report	26	According to data collected by Salt Lake County in the MST final report (Green, 2020), the most significant contributor to <i>E. coli</i> concentrations in Salt Lake County is Avian through waterfowl. This information should be added to non-point sources in 4.7.2.	Wildlife sources are described in the Nonpoint Source Section 5.2.4 on page 46. No changes were made in response to this comment.
Salt Lake County	Main Report	39	Salt Lake County has many more reported Sanitary Sewer overflows than this report indicates.	DWQ made the correction on page 39 in response to this comment.
Salt Lake County	Main Report	66	Will high priority sites based on <i>E. coli</i> generation potential require the same inspection frequency and site specific SWPPP documentation as other existing high priority sites?	The "high priority" sites based on <i>E. coli</i> generation will be required to meet the same requirements as other "high priority" facilities per the Pollution Prevention and Good Housekeeping for Municipal Operations Minimum Control Measure. MS4s will have an opportunity to comment on permit specifics when the permit is modified in early 2023. No changes were made in response to this comment.

<p>Salt Lake County</p>	<p>Main Report</p>	<p>1</p>	<p>Salt Lake County believes a wider stakeholder group including private canal/irrigation companies should be engaged to implement this TMDL as much of the water in the impaired watersheds enters those watersheds through canal inflows (cross basin diversions and transport) rather than inflows from the watersheds themselves. BMP installation in impaired watersheds will do very little to change the nature of a problem that originates outside of its boundaries.</p>	<p>Targeted stakeholder groups, including canal and irrigation companies, will be involved once project work has been identified. They are crucial to implementation of BMPs and reducing <i>E. coli</i> concentrations in impaired streams. No changes were made in response to this comment.</p>
<p>University of Utah</p>	<p>Main Report</p>	<p>59</p>	<p>I very much appreciate that BMPs in this section are written to encourage the provision of restrooms to unsheltered populations and people recreating. Perhaps it should be noted that restroom facilities should be open year-round in high use areas and some areas lack such services. I am concerned, as well, that inclusion of language promoting greater enforcement of illegal camping will only bolster the sweeps of unsheltered camps, which have significant detrimental effects on unsheltered populations and only solidify the state of being unsheltered and ultimately just leads people to move elsewhere (often still along waterways). Rather, I suggest the inclusion of providing greater services to alleviate homelessness in general. Recent surveys conducted by the University of Utah provide evidence that unsheltered populations generally, but not always, take care of their surroundings. Without strong evidence that <i>e coli</i> is coming directly from</p>	<p>As part of the TMDL implementation plan, State Nonpoint Source funds could be secured to address the unhoused community and their water quality impacts. This project work would be directed by stakeholders such as the Jordan River Commission and Salt Lake County Health Department. No changes were made in response to this comment.</p>

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			unsheltered populations, the language in this report could add to the unfounded concern of 'poop and needle' proliferation near waterways from unsheltered populations.	
University of Utah	Appendix I. Jordan River-5 AU TMDL	199	My comment really applies to all units of the Jordan River and the inability to distinguish different humans sources of e coli (i.e., e coli vs. recreation / unsheltered populations) using microbial source tracking markers. The Jordan River has chronic inputs of effluent, likely with high levels of e coli that swamp inputs from users of the Jordan River Parkway. I recommend UDWQ sample effluent from multiple WRFs and obtain effluent discharge data to model loads of e coli from effluent and compare that to loads observed in the river.	Microbial Source Tracking analysis was used to determine plausible sources of <i>E. coli</i> contamination in the Jordan River watershed. It does not distinguish between human sources, however local knowledge of the impaired reaches provides insight into more specific sources. Wastewater treatment facilities monitor their effluent for <i>E. coli</i> which is required by their UPDES discharge permit. Their permit limit is less than <i>E. coli</i> water quality standards. Since this TMDL uses a concentration-based approach and not a load based one, comparing loads is not appropriate. No changes were made in response to this comment.
University of Utah	Main Report	99999999	My third comment is a suggestion that future studies try to distinguish sources of e coli within stormwater, given loads tend to be quite high after flushing events. Since avian sources are ubiquitous, I wonder if fecal matter from birds nesting on buildings is flushed from roofs via storm sewers. I also recommend a collaboration with the Department of Health to identify unmapped, defunct septic systems in Salt Lake City (especially by Red Butte Creek) to identify if leakage to groundwater and subsequent recharge to surface waters may be a source of e coli.	The amended MS4 permits will not require additional monitoring above and beyond the current permit. Project implementation efforts in impaired streams would target localized sources including waterfowl and failing septic tanks. Salt Lake County Health Department is currently working on digitizing onsite septic systems which could provide further insight into necessary BMPs to address the TMDL endpoints. No changes were made in response to this comment.

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Environmental Protection Agency	Main Report	9, Figure 1	Missing “i”	DWQ made the correction on page 9 in response to this comment.
Environmental Protection Agency	Main Report	14	Consider changing the word standard to criteria in the paragraph after Table 2.	DWQ made the correction on page 14 in response to this comment.
Environmental Protection Agency	Main Report	19, Figure 3	In the legend, the title above Emigration Canyon is a little confusing. Makes it seem like all symbology underneath are approved <i>E. coli</i> TMDLs. Consider making the title of the purple symbology “Approved <i>E. coli</i> TMDLs” instead of “Emigration Canyon”.	DWQ made the correction on page 19 in response to this comment.
Environmental Protection Agency	Main Report	Page 23 – First paragraph in section 4.6	add units (MPN) after 206,.....”the more stringent criterion of 206 MPN/100 mL”	DWQ made the correction on page 23 in response to this comment.
Environmental Protection Agency	Main Report	36, Figure 6	Map legend is difficult to read at 100% and when zoomed in. This occurs in other map legends throughout the document.	DWQ made the correction on page 36 in response to this comment.



State of Utah

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Governor

DEIDRE HENDERSON  
Lieutenant Governor

Department of  
Environmental Quality

Kimberly D. Shelley  
Executive Director

DIVISION OF WATER QUALITY  
John K. Mackey, P.E.  
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John K. Mackey  
Executive Secretary

**MEMORANDUM**

**TO:** Utah Water Quality Board

**THROUGH:** John K. Mackey, PE

**FROM:** Engineering Section

**DATE:** December 14, 2022

**SUBJECT:** Water Quality Board Meeting – Southern Utah Reuse ARPA Grant Allocation

**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 board meeting, 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 on their answers to those questions. The Water Quality Board Finance Committee met on November 7, 2022 to discuss the projects and funding. The Committee asked Division staff to prioritize projects and requested applicants be available virtually during the December 14, 2022 meeting to respond to questions. No motions were made during the Finance Committee meeting as funding decisions will be made at the December 14, 2022 board meeting.

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Southern Utah Reuse Grant – American Rescue Plan Act (ARPA)

**PROJECTS FOR WATER QUALITY BOARD CONSIDERATION**

The Division received twelve funding applications during the competitive grant program project solicitation. The applications for projects totaled \$89 million with \$59 million in requested funds. Four applications are for planning projects and eight applications are for construction projects. Division staff prioritized the applications by Priority Levels (1-3).

Division staff identified three construction projects for Priority Level 1 and three planning projects for Priority Level 2. Priority 1 and 2 projects were identified based on their score and a funding request of less than 15% of available ARPA funds. The total needed funding for projects in Priority Levels 1 and 2 is \$3.7 million. The total needed funding for projects in Priority Level 3 is \$55.7 million. If the Board were to fully fund all of the Priority 1 and 2 projects, \$11.3 million would be left for projects of Priority Level 3.

Table 1 below shows a summary of funding requests ranked in order of highest to lowest score. In accordance with the competitive grant program, Division staff has provided the Financial Burden rating for each community and a score for the project. Projects are assigned a reference number based on Priority Levels and increasing funding amounts. Projects were separated into Priority Levels 1, 2, and 3.

**Table 1 - Summary of Funding Requests: Construction Projects**

Priority	Ref # / App #	Project	Needed Funding	Local Contribution	Total Project Cost	Financial Burden	Score
1	1a/ 7	Fairview	\$1,168,000	\$1,168,000 <sup>a</sup> / \$2,076,500 <sup>b</sup>	\$3,244,500	MEDIUM	70
1	1b/ 8	Ash Creek SSD	\$1,688,200	\$725,000	\$2,413,200	LOW	67
1	1c/ 5	CICWCD	\$500,000	\$1,000,000	\$1,500,00	LOW	63
3	3a/12	WCWCD (Toquer Reservoir)	\$25,725,000	\$10,971,000	\$36,570,000	LOW	70
3	3b/ 6	Sherwood Shores	\$595,000	\$255,000	\$850,000	No sewer	60
3	3c/ 9	Cedar City IPR	\$7,000,000	\$3,000,000	\$10,000,000	LOW	55
3	3d/ 10	St. George	\$10,000,000	\$7,000,000	17,000,000	LOW	50
3	3e/ 11	WCWCD (Dry Wash Reservoir)	\$12,250,000	\$5,250,000	\$17,500,000	LOW	50

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



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**Table 2- Summary of Funding Requests: Planning Projects**

Priority	Ref # / App #	Project	Needed Funding	Local Contribution	Total Project Cost	Financial Burden	Score
2	2a/ 3	Kanab	\$125,000	\$20,000	\$140,000	MEDIUM	20
2	2b/ 1	Moroni	\$90,000	\$0	\$90,000	LOW	20
2	2c/ 2	Mt. Pleasant	\$125,000	\$0	\$125,000	MEDIUM	20
3	3f/ 4	Torrey Town	\$150,000	\$0	\$150,000	No sewer	20

### **PROJECT SUMMARY AND STAFF COMMENTS**

A brief summary of each project is listed in the Project Summary and Staff Comments Section. In addition, the project application for each project is included in Attachment 1. The following questions were asked of applicants for additional information:

1. What is the scope of work of your project? Please be specific.
2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.
3. Please provide a detailed cost breakdown of your project.
4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.
5. Please provide a construction timetable including design, bidding, and construction of each major component.

Attachment 2 includes the Addendum to the Application, which is described in the Background Section. Projects in Attachments 2 and 3 are presented in order of the application numbers from Tables 1 and 2. A map showing the three big reservoir projects in the St. George area is shown in Figure 1 prior to the Priority Level 3 projects.

### **PROJECT SUMMARY - STAFF RECOMMENDATIONS**

Division staff recommends the Board discuss the Priority Level 1 and 2 projects first and either make motions or table the projects for further discussion. Division staff believes this approach will aid the Board in having sufficient meeting time to discuss the challenging funding scenarios with Priority Level 3 projects. To aid the Board in making motions for the authorization of funds Division staff have included draft motions including Special Conditions.

## **PRIORITY LEVEL 1 PROJECT SUMMARIES**

### **Project 1.a. Fairview City: Priority Level 1.**

Fairview City applied for \$1,168,000 in funding for construction of \$3,244,500 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<sup>0</sup>F. 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 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 reuse pipeline alignment, 300,000-gallon concrete water storage tank, and 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 used for reuse will continue to be discharged to the San Pitch River.

The reuse project will alleviate the water burden on the local secondary provider to irrigate 18 acres of cemetery lawn. 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 then. 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 that irrigates 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.

#### *Division Staff Comments:*

Staff supports this project in a rural community. The project already has significant grant funds allocated to it, however the community still faces affordability concerns. Phase 1 of the project is currently out for bid with bid proposals due December 6, 2022.

*Recommendation:*

If the Board would like to make a motion to fund this project, staff recommends the following motion: The Board authorize funding in the amount of \$1,168,000 as ARPA grant funding to Fairview City under the following special conditions:

1. Fairview must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. Fairview must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

**Project 1.b. Ash Creek Special Service District: Priority Level 1**

Ash Creek Special Services District (the District) requested \$1,688,200 in funding to construct wastewater reuse facilities in conjunction with their planned new WWTP. 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 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 because 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 in the two communities and 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.

*Division Staff Comments:*

Staff supports the project and believe it is an important new treatment plant with reuse capabilities for a growing community in Southern Utah. The project includes the purchase and installation of filtration and disinfection equipment along with the building to house and protect the equipment. The project is currently in the design phase.

*Recommendation:*

If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$1,688,200 as ARPA grant funding to the District under the following special conditions:

1. The District must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The District must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

**Project 1.c. CICWCD: Priority Level 1**

The Central Iron County Water Conservancy District (CICWCD) 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 WWTP, 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 that are 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.

*Division 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. Design will commence in February 2023 and bidding will take place in May 2023.

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*Recommendation:*

If the Board would like to make a motion to fund this project, staff recommends the following motion: the Board authorize funding in the amount of \$500,000 as ARPA grant funding to CICWCD under the following special conditions:

1. CICWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. CICWCD must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

## **PRIORITY LEVEL 2 PROJECT SUMMARIES**

### **Project 2.a. Kanab City: Priority Level 2**

The Kane 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.

*Division Staff Comments:*

Staff supports responsible planning efforts.

*Recommendation:*

If the Board would like to make a motion to fund this project, staff recommends the following motion: The Board authorize funding in the amount of \$125,000 as ARPA grant funding to KCWCD under the following special conditions:

1. KCWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The Division must approve the engineering agreement and plan of study before the advance will be executed.
3. As part of the facility planning, KCWCD must complete a Water Conservation and Management Plan.

### **Project 2.b. Moroni ; Priority Level 2**

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 is located in Sanpete County and has a population of 1,606 people. Ten percent of the wastewater entering the Moroni City WWTP 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.

#### *Division Staff Comments:*

Staff supports responsible planning efforts.

#### *Recommendation:*

If the Board would like to make a motion to fund this project, staff recommends the following motion: the Board authorize funding in the amount of \$90,000 as ARPA grant funding to Moroni under the following special conditions:

1. Moroni City must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The Division must approve the engineering agreement and plan of study before the advance will be executed.
3. As part of the facility planning, the City must complete a Water Conservation and Management Plan.

**Project 2.c. Mount Pleasant: Priority Level 2**

Mount Pleasant City applied for \$125,000 in funding to develop an engineering study that evaluates constructed wetlands and simpler options for wastewater treatment and reuse. Mount Pleasant City is in Sanpete County and 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.

*Division Staff Comments:*

Staff supports responsible planning efforts.

*Recommendation:*

If the Board would like to make a motion to fund this project, staff recommends the following motion: the Board authorize funding in the amount of \$125,000 as ARPA grant funding to Mt. Pleasant under the following special conditions:

1. Mt. Pleasant City must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The Division must approve the engineering agreement and plan of study before the advance will be executed.
3. As part of the facility planning, the City must complete a Water Conservation and Management Plan.

**PRIORITY LEVEL 3 PROJECT SUMMARIES**

FIGURE 1: SOUTHWEST RESERVOIR PROJECTS MAP



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**Project 3.a. WCWCD Toquer Reservoir: Priority Level 3**

The Washington County Water Conservation District (WCWCD) is applying on behalf of the cities of Toquerville and La Verkin. The cost of the reservoir project is \$36,570,000 and the WCWCD 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. A timetable of the project can be seen below:

<b><u>Design</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	January 2023
Phase II Final Dam Construction	January 2024
<b><u>Bidding</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	February 2023
Phase II Final Dam Construction	February 2024
<b><u>Construction</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	February 2024
Phase II Final Dam Construction	August 2025
<b><u>Project Close Out</u></b>	<b><u>October 2025</u></b>

*Division Staff Comments:*

Staff supports the project and is an important new storage option for a growing community in Southern Utah. A map of all three of the Southwest Utah area reservoir projects can be seen in Figure 1 at the start of Priority Level 3 Project Summary.

*Recommendation:*

If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$0-\$15,000,000 as ARPA grant funding to WCWCD under the following special conditions:

1. WCWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).



2. WCWCD must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA’s Fiscal Sustainability Plan guidance.

**Project 3.b. Sherwood Shores: Priority Level 3**

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 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 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.

*Division 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. Design will commence in the second quarter of 2023 and bidding will commence in the third quarter of 2023.

*Recommendation:*

If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$0-\$595,000 as ARPA grant funding to the Sherwood Shores Subdivision Body Politic under the following special conditions:

1. The Sherwood Shores Subdivision Body Politic must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The Sherwood Shores Subdivision Body Politic must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA’s Fiscal Sustainability Plan guidance.

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**Project 3.b. Cedar City IPR: Priority Level 3**

Cedar City proposes to conduct an Indirect Potable Reuse (IPR) 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. A timetable for the project is shown below:

Item	Begin Date	End Date
Design phase	July 1, 2023	December 31, 2023
Bidding phase	January 1, 2023	February 28, 2023
Construction phases	March 1, 2024	December 31, 2024
Pipeline materials acquisition and construction	March 1, 2024	October 31, 2024
Pump materials acquisition and construction	March 1, 2024	December 31, 2024

*Division Staff Comments:*

Staff has previously met with Cedar City 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 as an indirect potable reuse project without substantial additional nitrogen treatment or other contaminants of emerging concerns. In the Cedar City Return Effluent Reuse Feasibility Study 2018 (Carollo 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. However, the Division is actively looking for a community to be the State leader in an IPR project.

**UPDATE**

In clarification to staff concerns from the Finance Committee meeting and response to the follow up questions. Cedar City has clarified the bulk of this project is for the construction of a reuse trunk line, culinary line, and pump station from the wastewater treatment plant to town. Based on

this information \$4,276,800 of culinary line is ineligible. Staff is more encouraged by the construction of a reuse trunk line and pump station. Staff supports funding of up to \$5,026,800 of the project. Cedar City continues to want to pursue IPR, however if this is not a feasible option they will use the trunk line to facilitate land application of treated effluent. Since this was a newly identified component of the project staff were not able to recalculate the score for the project but believes this could potentially add 5 points.

*Recommendation:*

If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$0-\$5,026,800 as ARPA grant funding to Cedar City for the construction of a reuse trunk line and pump station under the following special conditions:

1. Cedar City must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. Cedar City must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

**Project 3.d. St. George Graveyard Wash Reservoir: Priority Level 3**

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 Reuse Standards. All new development within the City 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.

*Division Staff Comments:*

Staff supports the project and believes it is an important new storage option for a growing community in Southern Utah. Engineering design will be finished in July 2023 and the project will go out to bid in September 2023. A map of all three of the Southwest Utah area reservoir projects can be seen in Figure 1 at the start of Priority Level 3 Project Summary.

*Recommendation:*

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If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$0-\$10,000,000 as ARPA grant funding to St. George under the following special conditions:

1. St George must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. St George must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA’s Fiscal Sustainability Plan guidance.

### **Project 3.e. WCWCD Dry Wash Reservoir: Priority Level 3**

The Washington County Water Conservation District (WCWCD) 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. A timetable of the project is shown below:

<b><u>Design</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	March 2023
Phase II Final Dam Construction	March 2024
<b><u>Bidding</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	April 2023
Phase II Final Dam Construction	April 2024
<b><u>Construction</u></b>	<b><u>Completion</u></b>
Phase I Cut-off trench	May 2024
Phase II Final Dam Construction	July 2025
<b><u>Project Close Out</u></b>	<b><u>November 2025</u></b>

#### *Division Staff Comments:*

Staff supports the project and believes it is an important new storage option for a growing community in Southern Utah. A map of all three of the Southwest Utah area reservoir projects can be seen in Figure 1 at the start of Priority Level 3 Project Summary.

*Recommendation:*

If the Board would like to make a motion to fund this project staff recommends the following motion: the Board authorize funding in the amount of \$0-\$15,000,000 as ARPA grant funding to WCWCD under the following special conditions:

1. WCWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. WCWCD must develop, commit to adopt, and implement a capital asset management plan that is consistent with EPA's Fiscal Sustainability Plan guidance.

**Project 3.f. Torrey Town: Priority Level 3**

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 implement 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.

*Division Staff Comments:*

Staff supports responsible planning efforts.

*Recommendation:*

The Board authorize funding in the amount of \$75,000 as ARPA grant funding to Torrey under the following special conditions:

1. Torrey Town must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The Division must approve the engineering agreement and plan of study before the advance will be executed.
3. As part of the facility planning, the Town must complete a Water Conservation and Management Plan.

DWQ-2022-031373

**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 11 acre/ft. annually. If treated wastewater could be used in place of potable water for cooling purposes, this would preserve this water within the aquifer 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

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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.	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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



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	<p>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.</p> <p>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.</p>
3. How will your project mitigate drought impacts on local agriculture?	<p>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.</p>
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.	<p>Like many communities in Utah, Mt. Pleasant struggles with potable quality (culinary) 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.</p> <p>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.</p> <p>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.</p>
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	<p>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</p>

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	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?	<p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>

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	<p>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.</p> <p>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.</p>
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

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### 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

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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

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	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

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**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.

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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



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**5. Cedar Valley (CICWCD)**

Timestamp	10/17/2022 16:50:55
Contact Name	Curtis Nielson
1. Please describe your reuse project.	<p>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 playa 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).</p> <p>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).</p> <p>The primary focus of this project is to more efficiently use the water that is currently being consumed by freetights 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)</p> <p>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 (i.e., 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.</p> <p>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.</p> <p>For links and attached images please visit  <a href="https://docs.google.com/document/d/18VS46Mw29rNjclDWO6b6BBTPdi5nAf6I/edit">https://docs.google.com/document/d/18VS46Mw29rNjclDWO6b6BBTPdi5nAf6I/edit</a></p>

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2. How will your project mitigate drought impacts on a rural community?	<p>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.</p> <p>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.</p> <p>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.</p> <p>The method for this project was steamed from a previous successful project in 2020. Wherein the District was able to construct an 8-foot dyke at Quichipa Lake to separate differing water qualities and other water works to supply previously wasted water to a nearby irrigator as a result the producer can idle their well and help stabilize the groundwater.</p>
3. How will your project mitigate drought impacts on local agriculture?	<p>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.</p>
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.	<p>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.</p>
5. Will the project help mitigate a water quality issue or a public health hazard? Please describe.	<p>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 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</p>

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	<p>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 than what is at the surface or being discharged from the WTP.</p> <p>By storing the winter water and using the water through more efficient irrigation practice of Center Pivots there will likely be a greater savings than 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]</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>The following link provides water quality sample results from water discharged from the WTP and Enoch City wells within the area.  <a href="https://drive.google.com/file/d/1Lq-eNiz_JPoiLfTcBifA0TZQMLnhbj_3/view?usp=sharing">https://drive.google.com/file/d/1Lq-eNiz_JPoiLfTcBifA0TZQMLnhbj_3/view?usp=sharing</a></p>
<p>6. a. What is the estimated cost of the project?</p>	<p>\$1,500,000</p>
<p>6. b. How much local funds will be brought to the project?</p>	<p>\$1,000,000</p>
<p>6. c. Does the project currently have any grant funds awarded to it by another funding agency?</p>	<p>0</p>
<p>6. d. How will the remainder of the project be funded if only partial grant funds are obligated</p>	<p>From in kind contributions and through budget monies</p>

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or if bids come in over the estimate?	
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?	<p>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)</p> <p>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 following 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.”</p> <p>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.</p>
8. a. What is the population the project will serve?	52400
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

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**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.

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**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 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.
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.

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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

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**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.	<a href="https://dwre-utahdnr.opendata.arcgis.com/pages/municipal-and-industrial-data">https://dwre-utahdnr.opendata.arcgis.com/pages/municipal-and-industrial-data</a> 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



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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

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**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

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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.	<p><b>Project Purpose</b></p> <p>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.</p> <p>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.</p> <p><b>Project Description</b></p> <p>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.</p> <p>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 contrasts 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.</p> <p>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&amp;G Engineering in 2004.</p> <p>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.</p> <p><b>Permitting</b></p>

	<p>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.</p> <p>Preliminary Reports and Cost Estimates                  The Graveyard Wash Reservoir Geotechnical Feasibility Study was conducted by Alpha/RB&amp;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.</p> <p>It is expected that updated construction costs of the project, based on current construction environment, will be approximately \$17M.</p>
<p>2. How will your project mitigate drought impacts on a rural community?</p>	<p>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.</p>
<p>3. How will your project mitigate drought impacts on local agriculture?</p>	<p>The Graveyard Wash Reservoir is situated 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.</p>
<p>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.</p>	<p>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.</p>

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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.	<p><b>Project Background</b> 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.</p> <p>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.</p> <p><b>Project Description</b> 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.</p>
2. How will your project mitigate drought impacts on a rural community?	<p>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</p>

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	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,



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	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

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**12. WCWCD Toquer Reservoir Application**

Timestamp	10/17/2022 17:08:39
Contact Name	Emily Kagan
1. Please describe your reuse project.	<p><b>Project Background</b> 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.</p> <p><b>Project Description</b> 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.</p>
2. How will your project mitigate drought impacts on a rural community?	<p>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</p>

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	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.	<p>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.</p> <p>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.</p>
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.

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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

## **ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

### **ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

#### **1. Moroni**

*No Response*

#### **2. Mt. Pleasant**

*No Response*

#### **3. Kanab**

*No Response*

#### **4. Torrey**

1. What is the scope of work of your project? Please be specific.

This is a feasibility study to determine the requirements, issue, and cost for a Torrey Town sewer system that will allow Torrey to return water into the Fremont drainage system. The first phase of the project will be the building of a system that will allow the commercial entities within the Torrey Water district along Highway 24 to convert to a sewer treatment system.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

About 80% of residents use drinking water for irrigation. Based on the storage requirements for outdoor use, and assuming a 150-day irrigation season, we're looking at roughly 21 million gallons (or 64-acre feet) of drinking water that could be saved annually, if all irrigation water came from reused wastewater. This accounts for roughly half of the local potable water usage (ignoring fire suppression amounts).

3. Please provide a detailed cost breakdown of your project.

The feasibility study will determine the scope of construction, cost of installation of the system, potential site location, and issues, such as construction on BLM and Forest Service land, that must be addressed.

4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

This is a feasibility study request for \$75,000 that does not require matching from Torrey Town.

5. Please provide a construction timetable including design, bidding, and construction of each major component.

Because this is a feasibility study there will be no construction. The purpose of the study is for Torrey Town to understand the scope, cost, and complexity of constructing a system.

**ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

**5. Cedar Valley (CICWCD)**

1. What is the scope of work of your project? Please be specific.

The project includes the construction of a pond located neighboring the WTP using heavy equipment some of which will be donated in kind from Iron County and the other local Governments. Natural material will be pushed to create a berm approximately 15 feet high on approximately 320 acres of property. Waste water effluent will be placed into the pond and held until irrigators are prepared to utilize it in their pivots. A pipeline and booster station will be constructed to pump water to the existing pivots to be utilized. This will allow for the idling of existing groundwater wells in areas that have been experiencing groundwater level water decline. The project will be phased to incorporate existing center pivots with the ability to expand as flows increase from the WTP over time.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

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. It is estimated that the water savings will be approximately 3,600 acre-feet that will not be withdrawn from the aquifer. This accounts for approximately 11% of the total safe yield for the Cedar Valley Aquifer

3. Please provide a detailed cost breakdown of your project.

Engineering - \$75,000  
Pond Construction - \$250,000  
Booster Construction - \$200,000  
Pipeline Construction - \$475,000

4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

It is anticipated that \$500,000 will be awarded for construction of the project from DEQ. The remaining will be through in kind/local contributions from local government agencies (CICWCD, Cedar City, Enoch City, Iron County).

5. Please provide a construction timetable including design, bidding, and construction of each major component.

The project will commence design in February of 2023 and design will be completed in April of 2023. Bidding will take place in May of 2023 and Construction will commence in June of 2023. It is anticipated that construction will be completed August 2023.

## **ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

### **6. Sherwood Shores**

1. The Sherwood Shores Water Reuse Project includes the installation of a Busse Membrane Bio-Reactor (MBR) waste processing system with associated electrical and plumbing, and the design and construction of sanitary sewer lines to collect and reuse household effluent from approximately 350 existing and future residences in the Sherwood Shores Subdivision.

2. It is anticipated that annually approximately 63,875,000 gallons (~196-acre feet) of potable water will be fully treated and available for reuse or direct agricultural application. This represents more than 80% of the local potable water usage for the subdivision.

3. The estimated cost of the reuse project includes: Busse MBR system --\$560k Civil engineering for sanitary sewer line design --\$20k Excavation and installation of approximately 2 miles of C900 PVC --\$225k Electrical service and premise wiring --\$15k Acquisition of 0.11 acres of land for the siting of the system --\$20k Bonding and miscellaneous expenses --\$10k

4. The local contribution of funds for this project will be generated through the formation of a Special Service District comprising the Sherwood Shores Subdivision and the issuance of project bonds. This will provide means for the continued operation and maintenance of the system and also raise necessary matching funds. These funds are not currently available and are dependent upon the success of this grant application.

5. The construction timetable for the design, bidding and construction of the sanitary sewer line system is as follows:

Engineering and Design – Q2 2023

Bidding – Q3 2023

Construction – Q4 2023 through Q3 2024

### **7. Fairview**

1. Scope: To provide the city with a reusable source of secondary water, while meeting new phosphorus discharge limits as set by the EPA and water quality. This project involves the construction of a small pump station to pump effluent from the treatment plant, a regulating tank (300,000 gallons), 14,000 of 8” transmission line, 550 of 6” transmission line and 2,900 feet of 10” transmission line and a connection for land application of reuse water. The project has 3 total phases

-Phase 1: constructs the tank, pumps and pipeline that form the core of the system with distribution via an irrigation system onto the city owned Cemetery grounds along with a fill hydrant for contractors needing non-potable water and wildland fire crews. Phase 1 is designed to be fully functional on its own if the other phases never materialize for any reason. This phase is currently out for bid advertisement with bid proposals due Dec 6th 2022.

-Phase 2: further expands the distribution pipeline to other city owned public space such as baseball fields currently using potable water sources. The project also includes optimizing the existing

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## **ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

sprinkling system network at the cemetery. The cemetery currently has a combined total of 18 acres of lawn.

-Phase 3: This final phase further expands the distribution system to include pressurized irrigation to residences that only have secondary water through flood irrigation systems. This phase is expected to be a joint project including the local flood irrigation company. - Phases 2 and 3 are dependent upon treated effluent supplies and funding assistance.

2. Phase 1 is expected to have minimal direct savings on potable water sources. Current demand from contractors and fire departments averages 120,000 gallons annually. Impact to non-potable irrigation water is much greater. The cemetery currently has a demand of 15.5 million gallons annually. Current treated Effluent can supply 12 million gallons of that demand during times of biological uptake. The 12 million gallons of non-potable water saved will be available to the population with pressurized irrigation. Through comparison of winter potable water demand and summer potable water demand it is estimated that 24 million gallons of water are used to offset irrigation water demands by the potable water system. By reducing the demand of the cemetery by 12 million gallons, that water will be available to residencies and indirectly save 12 million of the 24 million gallons of potable water use. Fairview has reduced its annual potable water needs from 88 million annually in 2017 to 72 million gallons in 2021. 12 million gallons would represent an additional 16.6% savings to the 2021 numbers and a combined 32% over 5 years.

-Phase 2 is expected to have a direct savings of 2.2 million gallons annually, directly, as the ballfields only have access to potable water.

-Phase 3 has not been calculated.

### 3. Cost Breakdown:

Phase 1 – See attached document.

Phase 2- Current Estimate of \$450K for pipeline extension to ballfields and \$250K for sprinkling system optimization at the cemetery.

Phase 3 – Not calculated

4. Funding for Phase 1 consists of a \$1,168,000, 0.5%, 30-year Bond and a \$2,076,500 grant through CIB. Sewer rates were increased July 1, 2021 by 5% to a total of \$55 monthly to generate the estimated \$40K annual bond payment. This is a cost of 1.52% of the city's current DEQ MAGI (Determines Financially Distressed Communities). Local contributions are currently 36% of total project cost. Leaving \$194,670 remaining of eligible ARPA funding (30% local funding, 6% ARPA) assuming bids returned on budget.

-Phases 2 and 3 have not been funded.

5. Phase 1 – Final bid acceptance Dec 6th . Project start Feb 1 2023 and will be substantially complete by June 28th and final completion by July 28th . Because of the long lead times the city has pre-ordered some of the required equipment.



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**ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

Phase 2 – Dependent upon funding. Minimal engineering and easements required.

Phase 3 – Not yet conceptualized.

Fairview City would appreciate consideration of funds towards Phase 1 or Phase 2. While not currently fully planned Phase 2 could still meet the October 1, 2024 and December 31, 2026 deadlines.

Engineer's Cost Estimate for Sewer Re-use System Fairview City, UT Engineer's Cost Estimate Project #: UT-0150-1801 2/1/2021					
UNIT PRICE SCHEDULE - BASE BID				ENGINEER'S ESTIMATE	
Item #	Description	Unit	Quantity	Unit Price	Amount
<b>TRANSMISSION SYSTEM</b>					
1	Mobilization (5%)	LS	1	5%	\$107,000
2	Traffic Control	LS	1	\$30,000	\$30,000
3	Dewatering	LS	1	\$100,000	\$100,000
4	Pumps & Motors	EA	2	\$52,500	\$105,000
5	Generator	EA	1	\$52,500	\$52,500
6	10" C900 PVC Pressurized Irrigation Pipe (Transmission)	LF	11,500	\$60.00	\$690,000
9	Pipe Zone Import	CY	2,962	\$32.00	\$94,777
10	Trench Zone Import	CY	1,704	\$36.00	\$61,333
11	Excavation - Haul off/dispose	CY	4,665	\$10.00	\$46,655
12	Air Release Stations	EA	6	\$2,500	\$15,000
13	Blow-off/Drains	EA	3	\$2,500	\$7,500
14	Pressure Reducing Valve Vault	EA	2	\$20,000	\$40,000
15	Natural Ground Repair	SF	46,000	\$1.00	\$46,000
16	Stream Crossings	EA	1	\$40,000	\$40,000
17	0.3 MG Water Storage Tank (6,090')	EA	1	\$350,000	\$350,000
18	Update Existing SCADA at WWTP	LS	1	\$56,700	\$56,700
19	New Lift Station at WWTP	LS	1	\$220,000	\$220,000
20	Band Screen	LS	1	\$176,000	\$176,000
21	Fire Hydrant	EA	1	\$6,000	\$6,000
				Construction Subtotal	\$2,244,464.54
<b>Contingency</b>				20%	\$449,000.00
<b>Engineering (5% of Construction Only)</b>				5%	\$112,000.00
<b>Legal &amp; Bonding (5% of Construction Only)</b>				5%	\$112,000.00
<b>Construction Management (5% of Construction Only)</b>				5%	\$112,000.00
<b>Total</b>					<b>\$3,029,465</b>
<b>NOTES:</b>					
1	This cost opinion was developed based on a concept of a sewer re-use conveyance system.				
2	The anticipated sewer re-use flow into the system is 0.3 MG.				
3	The sewer re-use pressurized irrigation line size is 10".				
4	The pipeline is assumed to be constructed within the public right of way.				
5	The 10" sewer re-use pressurized irrigation line will have a minimum pipe cover of 2'.				
6	This cost opinion based on a 3' wide x 2.5' deep pipe zone.				
7	This cost opinion based on a trapezoidal trench zone with a top width of 5' and a depth of 1'.				
8	This cost opinion does not include property acquisition costs.				

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### 8. Ash Creek SSD

1. *What is the scope of work of your project? Please be specific.*

Project Description

The Confluence Park Water Reclamation Facility (CPWRF) Project includes construction of a new greenfield water reclamation facility and associated offsite utilities to develop a functioning plant. The initial design flow for the CPWRF is 1.5 MGD with a future buildout flow of 3.5 MGD. The proposed biological treatment process includes advanced biological treatment using unique features of aerated granular sludge (AGS) granules via the AquaNereda® process. Offsite utilities portion of the Project includes providing water, natural gas, and rerouting sewer trunk lines to the new plant.

Major Components of the Project. The CPWRF has the following major components:

CPWRF Site

- Headworks facility,
- Influent pump station,
- Aerated granular sludge basins,
- Electrical facilities room,
- Blower facilities room,
- Dewatering facilities room,
- Truck loading bay,
- Aerated solids holding basin
- Post equalization tank,
- Filtration and disinfection building,
- Level correction and sludge buffer tanks,
- Administration building,
- Maintenance shops, and
- Civil site improvements.

This application request is specifically for the filtration and disinfection building which will take the water from secondary effluent classification to Type I Reuse classification. In subsequent years this project will undertake the construction of pump and transmission pipeline facilities which will enable delivery and storage of effluent for usage in the systems of Toquerville and La Verkin.

2. *How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.*

The Toquerville Secondary Water System uses roughly 670 ac-ft per year. The La Verkin secondary irrigation system uses 1675 ac-ft per year. Currently there is roughly 500,000 gallons per day which will flow into the Confluence Park Water Reclamation Facility. The equates to over 470 acre-ft per year with each year bringing new connections and increasing the potential reuse quantity. The Toquerville Secondary Water System utilizes water that

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is culinary grade water from the Toquerville Springs which could be directly offset by utilizing reuse water for outdoor irrigation. Similarly, the La Verkin pressurized irrigation system utilizes Virgin River water diverted from the Virgin River by the Washington County Water Conservancy District. By offsetting this usage with reuse water, the water diverted could be stored in Quail Lake for further water treatment and distribution in the St. George area or diverted to the Sand Hollow reservoir to aid in aquifer storage and recovery in the Sand Hollow Well Field.

3. Please provide a detailed cost breakdown of your project.

Table D-7 Opinion of Probable Cost					
<b>Confluence Park WRF Filtration and UV Disinfection Building Preliminary Engineering Report</b>		Date:	11/21/2021		
		Prepared by:	JB		
No.	Item	Quantity	Units	Unit Cost	Cost
<b>1</b>	<b>Earthwork</b>				
1.1	Excavation	750	CY	\$ 12	\$ 9,000
1.2	Foundation Material	250	CY	\$ 40	\$ 10,000
1.3	Backfill	500	CY	\$ 16	\$ 8,000
<b>2</b>	<b>Concrete</b>				
2.1	Foundation and Channel Walls	70	CY	\$ 1,300	\$ 91,000
2.2	Slabs	0	CY	\$ 1,000	\$ -
<b>3</b>	<b>Masonry</b>				
3.1	H-R Masonry	4000	SF	\$ 35	\$ 140,000
<b>4</b>	<b>Metals</b>				
4.1	Steel Joists	250	LB	\$ 8	\$ 2,000
4.2	Steel Decking	2500	SF	\$ 15	\$ 37,500
4.3	Misc Steel	1	LS	\$ 60	\$ 60
4.4	Aluminum Grating	500	SF	\$ 40	\$ 20,000
4.5	Trench Drain	100	LS	\$ 50	\$ 5,000
<b>5</b>	<b>Roofing and Insulation</b>				
5.1	Roof Insulation	3500	SF	\$ 4	\$ 14,000
5.2	Membrane Roof	3500	SF	\$ 8	\$ 28,000
<b>6</b>	<b>Painting and Coating</b>				
6.1	Painting and Coating	1	LS	\$ 50,000	\$ 50,000
<b>7</b>	<b>Plumbing</b>				
7.1	General Plumbing	5080	SF	\$ 2	\$ 10,160
7.2	Plumbing appliances	1	LS	\$ 6,900	\$ 6,900
<b>8</b>	<b>Architectural Furnishings</b>				
8.1	Doors	1	LS	\$ 15,000	\$ 15,000
8.2	Windows	1	LS	\$ 2,000	\$ 2,000
8.5	Woods and Plastic	1	LS	\$ 5,000	\$ 5,000
<b>9</b>	<b>Mechanical Equipment</b>				
9.1	Filter Equipment	1	EA	\$ 600,000	\$ 600,000
9.2	UV Equipment	1	EA	\$ 325,000	\$ 325,000
9.3	UW Equipment	1	EA	\$ 50,000	\$ 50,000
9.4	Sampler	1	LS	\$ 5,000	\$ 5,000
9.5	Piping	1	LS	\$ 10,000	\$ 10,000
9.6	Valves/Gates	1	LS	\$ 50,000	\$ 50,000
9.7	Mechanical Equipment Installation	1	LS	\$ 75,000	\$ 75,000
<b>10</b>	<b>HVAC</b>				
10.1	HVAC Equipment and Installation	1	LS	\$ 100,000	\$ 150,000
<b>11</b>	<b>Electrical and Instrumentation</b>				
11.1	Electrical and Instrumentation	17	%		\$ 292,000
	<b>Subtotal</b>				<b>\$ 2,011,000</b>
	Contingency	20	%		\$ 402,200
	<b>Total</b>				<b>\$ 2,413,200</b>

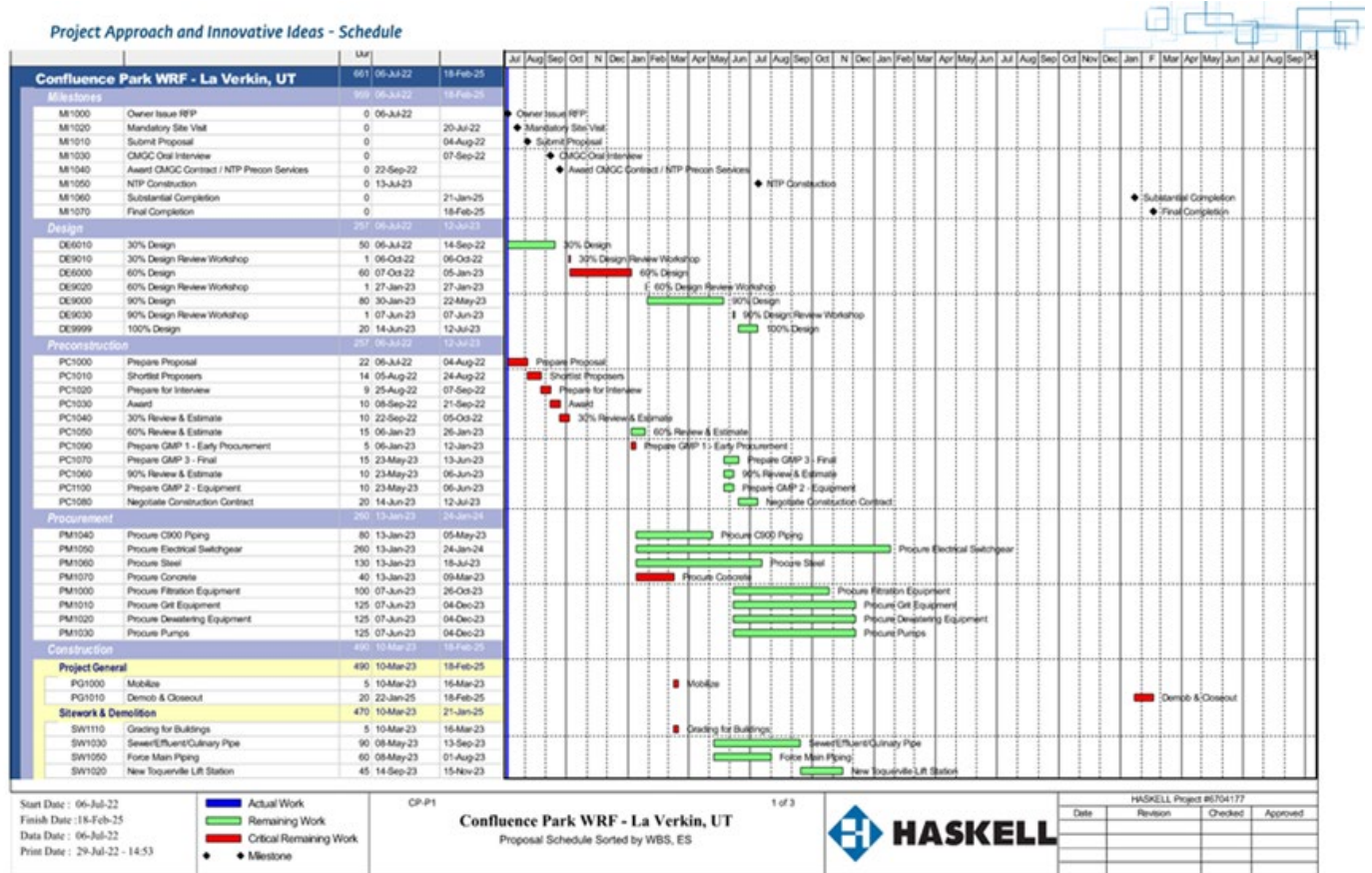
This opinion of probable construction is based on experience with past projects of similar construction. It is understood that the Bowen Collins & Associates has no control over economical factors or unknown conditions that may have a significant impact on actual project costs. Bowen Collins & Associates does not guarantee its cost estimates and accepts no liability for problems created by the difference in actual costs and this opinion of probable construction cost.

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4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

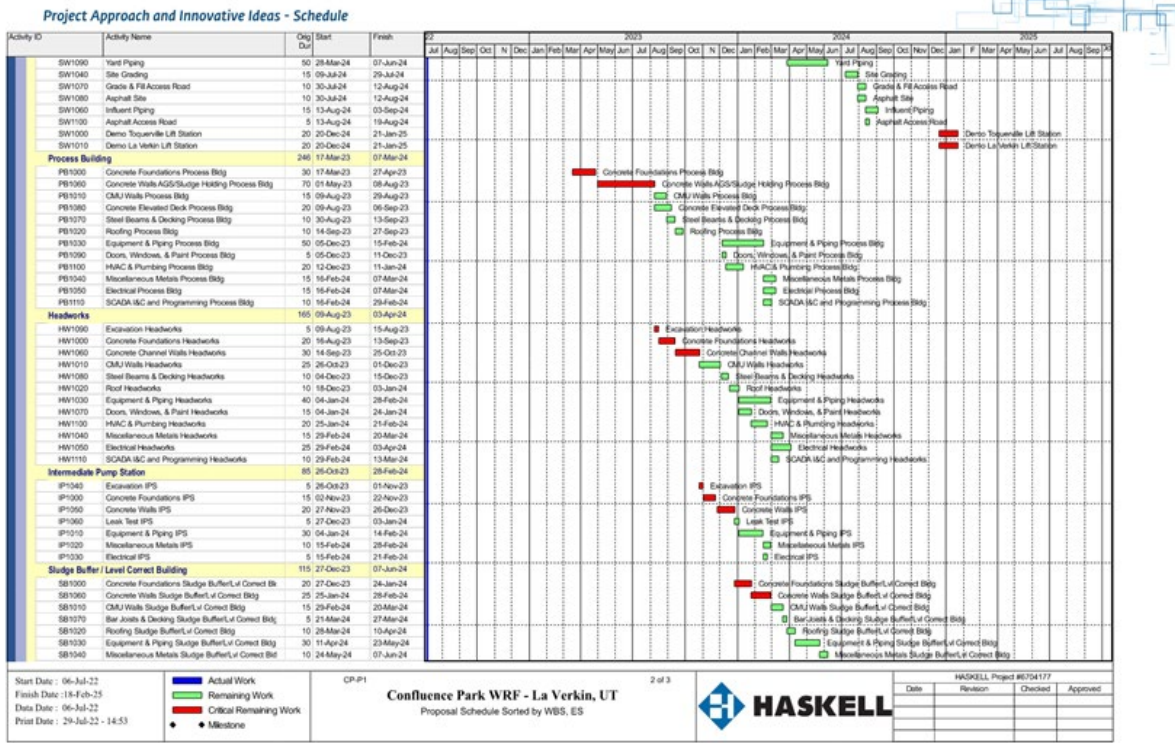
Ash Creek Special Service District has recently completed bonding for \$20 million dollars for the Confluence Park Water Reclamation Facility. Additionally, the District currently has restricted cash reserves of \$10 Million (impact fee money) and unrestricted cash reserves of \$10 million dollars. It is anticipated that the construction cost of the CPWRF will be between \$30 -\$34 Million dollars. All funds are in place and the Ash Creek Special Service District recently adjusted user rates to accommodate all future debt service obligations as a result of this project as well as fully funding their depreciation fund for ongoing repair and replacement costs.

5. Please provide a construction timetable including design, bidding, and construction of each major component.

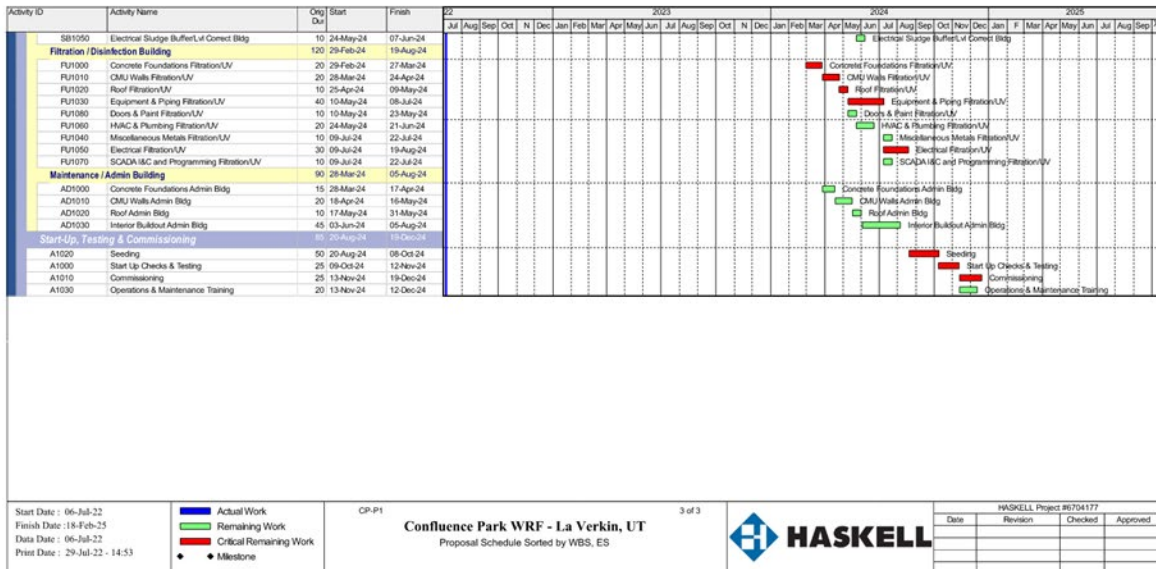




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Project Approach and Innovative Ideas - Schedule



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### 9. Cedar City IPR

1. What is the scope of work of your project? Please be specific.

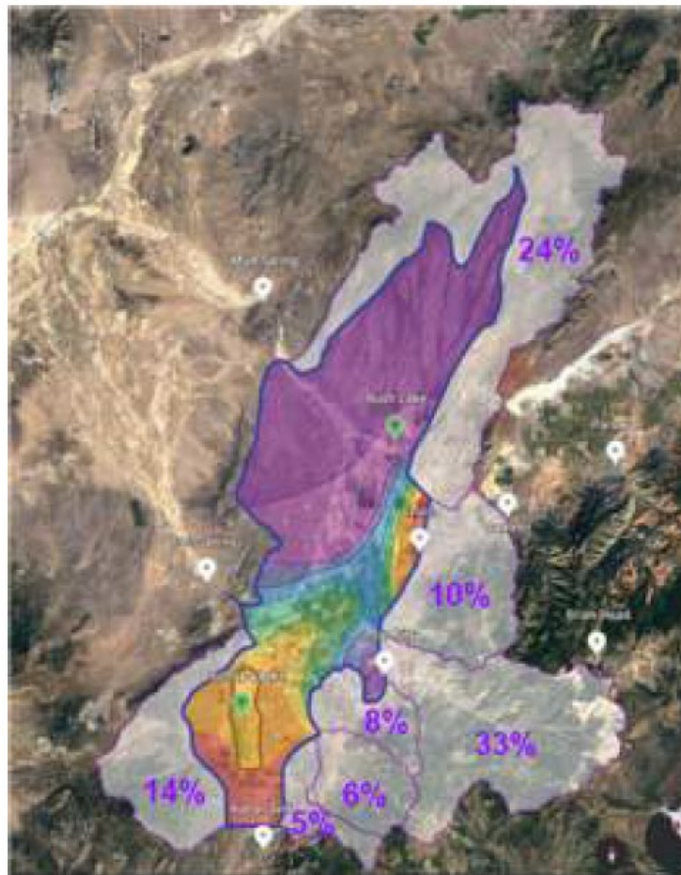
The scope of work for the proposed project includes the following items:

- Two 18-inch diameter Pipelines: Cedar City is proposing to construct two (2) 18-inch diameter pipelines, each approximately 9 miles in length, from the Cedar City Regional Wastewater Treatment Facility (CCRWTF) running south to an area near the Cedar City Regional Airport. One of the pipelines will be used to convey treated wastewater effluent. The second pipeline will be used to convey culinary grade drinking water from a future underground well field. Refer to the attached exhibit which shows the proposed location of these pipelines.

- Pipeline #1 – Backbone of treated wastewater conveyance: One of the 18-inch pipelines is intended to serve as a “backbone” for a conveyance system that will transport treated wastewater to areas where the water can be more beneficially used. The CCRWTF discharges approximately 3,300 ac-ft annually. This backbone will provide the initial structure for a system to move the treated wastewater to areas where the water can either be recharged or used for irrigation on existing cultivated land. Pipes coming off the backbone in the future could be used to feed treated wastewater to one or more of the following recharge areas: recharge in the Enoch Graben area, recharge in the North Spring area near Minersville Highway, recharge at the old Cedar City wastewater treatment plant, recharge pits at the Cedar City airport, and recharge at the Quichapa Lake area where Cedar City currently has a culinary well field. Providing the backbone for the system is a key step in the process of being able to utilize the treated wastewater to its maximum efficiency in the future.

- Pipeline #2 – Phase 1 of a trunk line to convey culinary grade water: The second 18- inch pipeline is intended to serve as Phase 1 for a conveyance system that will transport culinary grade drinking water to Cedar City. Long range plans for the watershed located to the north of the CCRWTF include the establishment of a culinary well field. Initial water quality tests have shown that the groundwater in the area is suitable for drinking water use. In addition, the watershed in this area covers 24% of the total drainage basin. (*Refer to Figure 1*) There is significant capacity for establishment of a sustainable well field in this area. Cedar City is looking at diversifying the locations of its culinary wells, and this area has been identified as a key location in this diversification strategy.

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**Figure 1: Cedar Valley Drainage Basin.  
Drainage Area Percentages.**

- Pumping system to convey treated wastewater: Since the CCRWTF is located at the low end of the valley, the treated wastewater effluent will need to be pumped back to Cedar City. The pump will need to be sized to convey wastewater effluent for the current condition, as well as accommodating for the addition of pumps in the future as population growth will increase the wastewater flow. It is anticipated that the pumping system will need to convey approximately 2,045 gpm at 250' TDH under current conditions with a motor size of approximately 200-HP.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

This project will not result in less water being pumped out of the ground. However, this project will allow for the development of a reliable drinking water source for the future and increase the potable water supply to the Cedar City culinary water system. The Cedar City Valley aquifer is currently being managed by the Utah Division of Water Rights (DWR)

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under a Groundwater Management Plan. If the water table continues to decline in the aquifer, then the DWR will begin to curtail the use of underground water rights according to the priority date of the water right. Cedar City has adequate water rights currently to satisfy the demands of its population. However, in the future, the cuts will have a significant negative impact on Cedar City's water rights portfolio. Cedar City is working towards diversifying its well fields in order to preserve the aquifer in key areas where significant aquifer declines are being seen – specifically in the Quichapa Lake area and the Enoch area. Diversification of well sources will take pressure off the areas of the steepest declines. By decreasing pumping in these areas, there is hope that the aquifer will begin to recover and the timeline for water rights cuts can be extended or possibly removed. The approved Groundwater Management Plan states that: "A reduction in the rate of groundwater level decline over time will be used as an indicator of approaching equilibrium of depletion versus safe yield. If during any phase of the plan it is determined by the State Engineer that safe yield has been reached, future reductions in depletion will not be implemented." Based on this information in the Groundwater Management Plan, any work done to bring the aquifer into balance and meet safe yield could have tremendous benefits for the entire valley.

This proposed project is a significant step in the right direction to work towards balancing of withdrawals from the aquifer and restoring balance to the water table. In addition to diversification of well fields within the basin, this project will also provide opportunities for treated wastewater effluent to be moved to locations where the wastewater can be strategically used to help stop the decline in the water table. Currently, the treated wastewater effluent from the CCRWTF is flood irrigated on a land application site covering approximately 420 acres near the plant. At this site, there is significant loss due to inefficiencies in the conveyance system and evaporation. Calculations show that 39.7% of the effluent is lost due to evaporation. In addition, the water table is very high in the area around the plant, so any water that does infiltrate is not making much of a difference in the overall health of the aquifer. Utilizing the wastewater effluent for recharge in strategic locations can have a very positive effect on Cedar Valley aquifer. The CCRWTF currently discharges approximately 3,300 ac-ft of effluent. Depending on future agreements related to the management of the land application site, the volume of effluent used for recharge or irrigation could range from approximately 1,800 ac-ft to 3,300 ac-ft. It is anticipated that the effluent will either be used for recharge into the aquifer or delivered for irrigation use. If the effluent is delivered for irrigation use, it is anticipated that the irrigator would be required to idle their wells in order to provide a direct benefit to the aquifer by preventing groundwater withdrawals.



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3. Please provide a detailed cost breakdown of your project.

Cedar City Corporation

11/22/2022

ARPA Re-use Grant Application - Revised Cost Estimate

Item	Description	Unit	Estimated Quantity	Estimated Unit Price	Amount
1	Mobilization	LS	1	\$ 40,000.00	\$ 40,000.00
2	Construction surveying and staking	LS	1	\$ 15,000.00	\$ 15,000.00
3	18-inch HDPE DR-17 waterlines (2 pipelines)	LF	95,040	\$ 90.00	\$ 8,553,600.00
4	18-inch butterfly valves	Each	20	\$ 8,000.00	\$ 160,000.00
5	18-inch butterfly tee	Each	5	\$ 3,000.00	\$ 15,000.00
6	Pavement crossings	Each	5	\$ 5,000.00	\$ 25,000.00
7	Pump station for WWTP effluent (2045 gpm, 250 TDH, 200-HP) including piping and connections for future capacity	LS	1	\$ 750,000.00	\$ 750,000.00
Total construction amount =					\$ 9,558,600.00
Engineering (6%) =					\$ 573,516.00
<b>Total Cost Estimate =</b>					<b>\$ 10,132,116.00</b>

4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

It is anticipated that funding for this project will include a mix of grant funding and local contributions. Local funding from Cedar City will be dependent on the City's established budgetary process that is approved by the City Council. The local contribution funds are not currently budgeted. The funds will need to be budgeted based on the availability of user fee revenue and impact fee revenue. Bonding for the local contribution portion may also be an option, if approved by the City Council.

5. Please provide a construction timetable including design, bidding, and construction of each major component.

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<b>Item</b>	<b>Begin Date</b>	<b>End Date</b>
Design phase	July 1, 2023	December 31, 2023
Bidding phase	January 1, 2023	February 28, 2023
Construction phases	March 1, 2024	December 31, 2024
Pipeline materials acquisition and construction	March 1, 2024	October 31, 2024
Pump materials acquisition and construction	March 1, 2024	December 31, 2024

**10. St. George Graveyard Wash Reservoir**

1. What is the scope of work of your project? Be specific.

**Project Purpose**

The proposed Graveyard Wash Reservoir is a reuse/irrigation reservoir that was identified as Stage II of the 2004 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 is required to install a secondary irrigation delivery system and use secondary irrigation for all outside irrigation. In addition, because the City of St. George treats wastewater from the municipalities of Santa Clara and Ivins, and due to the location of the proposed reservoir, the reservoir can provide Type I reuse water to portions of Ivins and Santa Clara. The Graveyard Wash Project is an integral part of a planned overall regional reuse system. The Graveyard Wash Reservoir, along with a future Dry Wash Reservoir, proposed near Ivins, and the future Warner Valley Reservoir, proposed between Washington and Hurricane, are all integral to the expansion and optimization of a regional wastewater reuse system.

**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 2,100 acre-feet. An earthen dam will be constructed across Graveyard Wash, just northwest of the City of Santa Clara Public Works Storage Yard. The dam will be approximately

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1,750 feet long and have a crest elevation of 2,900 feet above mean sea level. The dam will be constructed of a thin, impervious clay core, bonded by either sand and gravel or rockfill, and requires approximately 586,000 cubic yards of fill. The dam will also have a spillway designed to accommodate a 100-year storm event. Basalt rock will be used to reduce visual contrasts with the environment, and riprap will 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 will be removed. Clay material and riprap for the dam will 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 will be some limited recreational activities on and around the reservoir. A trail will 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.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

The purpose of this reservoir is to provide storage of Type I re-use water that is produced at the St. George Regional Water Reclamation Facility (SGRWRF), especially during the winter months, when demand for the water is low. 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 existing reuse/ secondary irrigation system annual yield from approximately 4,250 acre-ft per year (afy) to approximately 7,200 afy. This increased annual yield of approximately 2,950 afy 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 surrounding communities, thus offsetting the equivalent quantity of culinary water that would have been necessary to provide outdoor irrigation in the future.

3. Please provide a detailed cost breakdown of your project.

### **Cost Estimate and Funding Sources**

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

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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.

Recent updates to the cost estimates show the project exceeding \$24M, as shown below.

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT PRICE Dollars & Cents	ITEM PRICE Dollars & Cents
1	Mobilization & Demobilization @ 6%	1	L.S.	\$1,034,862.00	\$1,034,862.00
2	Foundation Preparation	1	L.S.	\$1,200,000.00	\$1,200,000.00
3	Earthfill, Zone I - Clay	111,600	C.Y.	\$25.00	\$2,790,000.00
4	Zone II - Sand Filter	29,300	C.Y.	\$100.00	\$2,930,000.00
5	Zone III - Gravel Drain	21,800	C.Y.	\$100.00	\$2,180,000.00
6	Zone IV - Basalt Rock	194,200	C.Y.	\$15.00	\$2,913,000.00
7	Earthfill, Zone V - Silty Sand	357,670	C.Y.	\$10.00	\$3,576,700.00
8	Zone VI - Sandy Gravel Bedding	11,650	C.Y.	\$40.00	\$466,000.00
9	Zone VII - Riprap	23,300	C.Y.	\$40.00	\$932,000.00
10	Appurtenant Structures & Outlet Pipe	1	L.S.	\$260,000.00	\$260,000.00
TOTAL OF BID SCHEDULE					\$18,282,562.00
20% CONTINGENCY					\$3,656,512.40
15% ENGINEERING, LEGAL, FISCAL					\$2,742,384.30
<b>TOTAL ESTIMATED PROJECT COST</b>					<b>\$24,681,458.70</b>

In December 2021, the City of St. George contracted with Alpha Engineering/ RB&G Engineering for the design and construction management of the Graveyard Wash Reservoir. The total design and construction management fee is \$2,287,007.

4. Please provide details on where all funds will come from, particularly local contributions, and inf these funds are available now or will need to be generated or bonded for.

With a total project cost estimated between \$21M and \$24.7M, the City of St. George is requesting a grant of \$10M from the Southern Utah Reuse ARPA Grant. The additional \$11M-\$14.7M will be funded by the City of St. George through a combination of fund reserves that have been generated by user rates and through a contribution from the Washington County Water Conservancy District (WCWCD). The Graveyard Wash Project is an integral part of an overall regional reuse system. The Graveyard Wash Reservoir, along with a future Dry Wash Reservoir, proposed near Ivins, and the future Warner Valley Reservoir, proposed between Washington and Hurricane, are all integral to the expansion and optimization of a regional wastewater reuse system. The WCWCD is committed to assist in the funding of the Graveyard Wash Reservoir. With a grant of \$10M from the Southern Utah Reuse ARPA Grant, It is not anticipated that bonds will be issued for this project.

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5. Please provide a contraction timetable including design, binding, and construction of each major component.

#### Design and Construction Timeline

Final design of the project is currently underway. Additional soils boring and investigations will be performed during the month of December 2022. It is anticipated that the final design will be completed, and the project will be ready to bid September 2023. Construction of the reservoir is expected to last 18 months, with an anticipated completion date of March 2025. The following is a summary of the project design and construction timeline.

Final Design: January 2022 – July 2023

Final Subsurface Investigation Dec 2022-Jan 2023

Prepare Bid Package: May 2023-August 2023

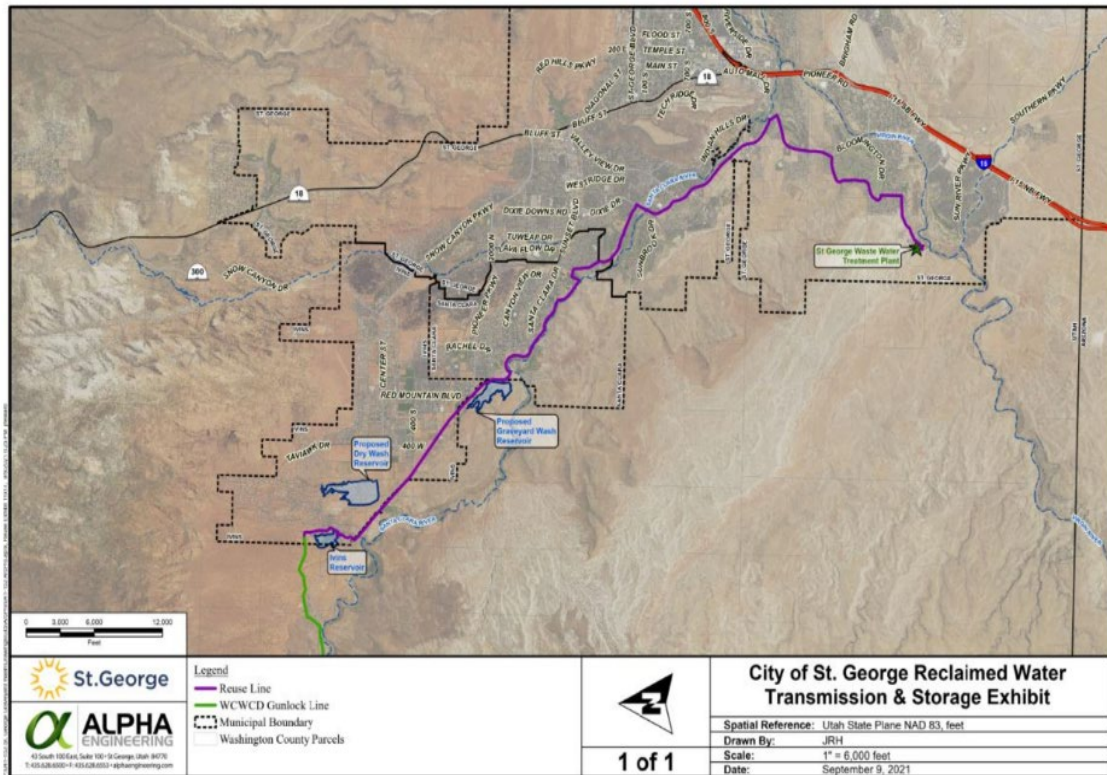
Project Bid: September 2023

Award of Bid: October 2023

Construction: October 2023 – March 2025

The following exhibits provide some illustration of the Graveyard Wash Reservoir Project and the City of St. George reuse transmission system.

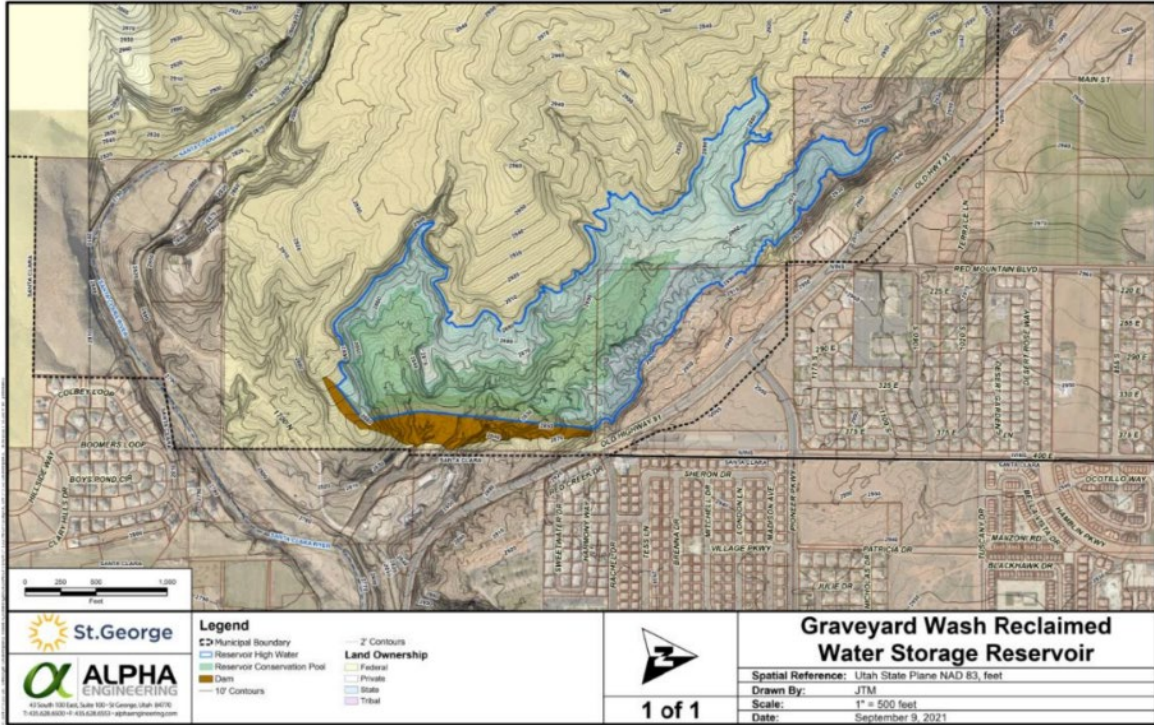
Exhibit B- Reuse Transmission and Storage Exhibit





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**Exhibit A- Graveyard Wash Reservoir**



**Exhibit C- Graveyard Wash Reservoir Site from East**





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**Exhibit D- Graveyard Wash Reservoir from West**



**Exhibit E- Graveyard Wash Reservoir**



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### **11. WCWCD Dry Wash Reservoir**

1. What is the scope of work of your project? Please be specific.

Storage is a critical component of Washington County's regional reuse system. Due to a lack of storage, the St. George Reuse Facility (SGRF) can only be operated when demand exists. By constructing additional storage, the SGRF will be able to operate and produce reuse water year-round. This will dramatically increase the amount of reuse water that can be produced and used in the county. Reuse water will supplement irrigation systems and allow the other sources of water to be used to meet potable water demand.

The Dry Wash Reservoir (Reservoir) will store Type I treated effluent from the SGRF through an existing piping system during off peak and non-use periods. The Reservoir has an estimated volume of approximately 1,600 acre-feet (AF) and will be created with the construction of an earthen dam structure approximately 62 feet in height. The surface area will be approximately 65 acres when full. The environmental documents for the Reservoir have been approved, and it is anticipated construction will commence in the spring of 2023.

In addition to the Reservoir, the City of St. George is constructing additional storage facilities which will almost double the available reuse water. Reuse water will be stored when outdoor irrigation demands are lower in the spring and fall, and during no demand in winter. The Reservoir would begin filling at the end of December and would be full by March. The Reservoir would begin to draw down in April and reach its conservation pool in July. Water would be removed as needed from the Reservoir between April and December. The operation plan for the Reservoir is to supply reuse water during the months it is needed and store water during the winter and spring. The SGRF currently has a 10.5 million gallon per day (MGD) capacity to treat wastewater from the communities of Ivins, Santa Clara, St. George, and Washington. This reuse water can be used in the existing secondary water systems in St. George, Santa Clara, and Ivins. Certain areas of St. George have begun to use reuse water for residential and commercial irrigation. Other areas have secondary systems installed but remain dry due to the lack of storage. Greater availability of reuse water for irrigation will allow other sources of water to be used to for potable water systems.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

The construction of the Dry Wash Reservoir will initially provide for approximately 1,500 AF of potable water savings. This savings will be realized immediately with the reduction in potable water demand currently being used for outdoor irrigation.

3. Please provide a detailed cost breakdown of your project.

Please see the attached Exhibit A for a breakdown of the total cost of the Dry Wash Reservoir. The estimate includes a larger contingency as the geotechnical investigations are not completed.



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4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

It is hoped that this project can be funded entirely by grants. If additional capital is required, the WCWCD will secure additional financing through impact fees, water user rates, and property tax revenues.

5. Please provide a construction timetable including design, bidding, and construction of each major component.

<u>Design</u>	<u>Completion</u>
Phase I Cut-off trench	March 2023
Phase II Final Dam Construction	March 2024
<u>Bidding</u>	<u>Completion</u>
Phase I Cut-off trench	April 2023
Phase II Final Dam Construction	April 2024
<u>Construction</u>	<u>Completion</u>
Phase I Cut-off trench	May 2024
Phase II Final Dam Construction	July 2025
<u>Project Close Out</u>	<u>November 2025</u>

**EXHIBIT A**  
**Dry Wash Reservoir**  
**Engineer's Preliminary Opinion of Probable Cost (11-14-2022)**  
 High Water Elevation at 3044

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNITS	UNIT PRICE Dollars & Cents	ITEM PRICE Dollars & Cents
1	Mobilization & Demobilization @ 6%	1	L.S.	\$628,800.00	\$628,800.00
2	Foundation Preparation	1	L.S.	\$2,500,000.00	\$2,500,000.00
3	Left Abutment Blanketing	1	L.S.	\$800,000.00	\$800,000.00
4	Earthfill, Zone I - Clay	52,000	C.Y.	\$15.00	\$780,000.00
5	Earthfill, Zone II - Sand Filter	17,000	C.Y.	\$75.00	\$1,275,000.00
6	Earthfill, Zone III - Gravel Drain	11,000	C.Y.	\$75.00	\$825,000.00
7	Earthfill, Zone IV - Basalt Rock	66,200	C.Y.	\$35.00	\$2,317,000.00
8	Earthfill, Zone V - Silty Sand	71,000	C.Y.	\$15.00	\$1,065,000.00
9	Earthfill, Zone VI - Sandy Gravel Bedding	4,600	C.Y.	\$30.00	\$138,000.00
10	Zone VII - Riprap	9,000	C.Y.	\$40.00	\$360,000.00
11	SCADA	1	L.S.	\$100,000.00	\$100,000.00
12	Appurtenant Structures & Outlet Pipe	1	L.S.	\$320,000.00	\$320,000.00
TOTAL OF BID SCHEDULE					\$11,108,800.00
20% CONTINGENCY					\$2,221,760.00
PROPERTY ACQUISITION					\$2,275,000.00
15% ENGINEERING, LEGAL, FISCAL					\$1,666,320.00
<b>TOTAL ESTIMATED PROJECT COST</b>					<b>\$17,271,880.00</b>

## **ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

### **12. WCWCD Toquer Reservoir**

1. What is the scope of work of your project? Please be specific.

The Toquer Reservoir (Reservoir) will increase potable supply reliability by conserving high quality potable water for human consumption and substituting lower quality water for secondary irrigation. The Reservoir involves the construction of a 3,600-acre foot (AF) capacity reservoir near the small, rural city of Toquerville, Utah. The Reservoir will store Type I treated effluent from the Ash Creek Special Service District (ACSSD) Confluence Park Wastewater Treatment Facility (CPWTF) during off peak and non-use periods. The Reservoir will allow for the year-round production of reuse water by providing storage for reuse when demand is lower in the spring, fall, and winter. As a result, available reuse water from the CPWTF will double.

The Reservoir will be created with the construction of an earthen dam structure approximately 100 feet in height and have a surface area of 115 acres when full. The environmental documents for the Reservoir have been approved, and it is anticipated construction will commence in the spring of 2023.

The Reservoir will store treated Type I reuse water from the CPWTF, as well as surface water resources from the Ash Creek drainage.

The CPWTF will treat wastewater from the communities of Toquerville and La Verkin and have an initial capacity of 1.5 million gallons per day (MGD). This water will be used in the existing Toquerville Secondary Water System (TSWS) and the La Verkin Secondary Water System (LSWS). Initially, surface water from the Ash Creek drainage will be used to supplement reuse water supplies to offset potable water being used for irrigation and agriculture. As the communities grow, additional treatment capacity will be expanded at the CPWTF, and additional reuse will be stored in the Reservoir.

Currently, the TSWS system uses culinary quality water from the Toquerville Springs. The stored reuse water in the Reservoir will supply an alternative source of secondary water to the TSWS and through exchange allow water from Toquerville Springs to be delivered as potable municipal water in Toquerville, La Verkin, and Hurricane. The Toquerville Springs water can immediately be converted to potable water with no additional treatment except for chlorination.

2. How much potable water is being saved by your project? Please calculate the reuse quantity and percentage of local potable water usage that will be saved.

The addition of the Toquer Reservoir will initially provide for 1,700 AF per year of potable water savings.

This savings will be realized immediately with the exchange of the Toquerville Spring water to potable water. Of this amount, the reuse quantity will be approximately 150 to 200 AF per year (0.5 MGD current wastewater flow average stored when demand for irrigation

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water is low). The reuse quantity will increase as growth occurs and the CPWTF reaches treatment capacity.

3. Please provide a detailed cost breakdown of your project.

Please see the attached Exhibit A for a breakdown of the total cost of the Toquer Reservoir. In addition to these costs, the WCWCD is expending approximately \$40,000,000 in additional funding to provide for conveyance systems to and from the reservoir.

4. Please provide details on where all funds will come from, particularly local contributions, and if these funds are available now or will need to be generated or bonded for.

WCWCD is seeking grant funding to help offset capital costs of this project. The additional capital for this project will be secured through bonds, impact fees, water user rates, and property tax revenues.

5. Please provide a construction timetable including design, bidding, and construction of each major component.

Design is under review right now, and an estimate of the bidding and construction schedule are as follows:

<u>Design</u>	<u>Completion</u>
Phase I Cut-off trench	January 2023
Phase II Final Dam Construction	January 2024

<u>Bidding</u>	<u>Completion</u>
Phase I Cut-off trench	February 2023
Phase II Final Dam Construction	February 2024

<u>Construction</u>	<u>Completion</u>
Phase I Cut-off trench	February 2024
Phase II Final Dam Construction	August 2025

<u>Project Close Out</u>	<u>October 2025</u>
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**ATTACHMENT 2- ADDENDUM TO PROJECT APPLICATIONS**

**EXHIBIT A**  
**TOQUER RESERVOIR at ANDERSON JUNCTION**  
**OPINION OF PROBABLE COST UPDATED (11-14-2022)**

NO.	BID ITEM	QUANTITY	UNIT	UNIT COST	TOTAL COST
<b>FOUNDATION CONTRACT</b>					
1	MOBILIZATION / DEMOBILIZATION (~5%)	1	LUMP SUM	\$256,000	\$256,000
2	POLLUTION CONTROL & SWPPP (~2%)	1	LUMP SUM	\$102,000	\$102,000
3	SURVEYING	1	LUMP SUM	\$50,000	\$50,000
4	CLEARING - RESERVOIR BASIN	115	ACRE	\$2,500	\$287,500
5	STRIPPING - DAM FOOTPRINT	10	ACRE	\$2,500	\$25,000
6	EXCAVATION - DAM FOOTPRINT (unclass)	71,340	CU. YD.	\$8	\$570,720
7	EXCAVATION - CUTOFF TRENCH (unclass)	77,467	CU. YD.	\$15	\$1,162,005
8	EXCAVATION - SLOT TRENCH	1,541	LIN. FT.	\$100	\$154,100
9	EXCAVATION - DIKE KEYWAY	5,855	CU. YD.	\$8	\$46,840
10	EXCAVATION - SPILLWAY	14,727	CU. YD.	\$15	\$220,905
11	FOUNDATION PREPARATION - CUTOFF	17,000	SQ. YD.	\$12	\$204,000
12	FOUNDATION PREPARATION - U/S	17,000	SQ. YD.	\$13	\$221,000
13	CONCRETE - SLOT TRENCH	3,400	CU. YD.	\$500	\$1,700,000
14	DENTAL CONCRETE	800	CU.YD.	\$600	\$480,000
<b>SUBTOTAL</b>					<b>\$5,480,070</b>
<b>EMBANKMENT CONTRACT</b>					
1	MOBILIZATION / DEMOBILIZATION (~5%)	1	LUMP SUM	\$679,000	\$679,000
2	POLLUTION CONTROL & SWPPP (~2%)	1	LUMP SUM	\$272,000	\$272,000
3	SURVEYING	1	LUMP SUM	\$50,000	\$50,000
4	EARTHFILL - ZONE I CLAY	149,150	CU. YD.	\$14	\$2,088,100
5	FILTER - ZONE II	30,700	CU.YD.	\$75	\$2,302,500
6	DRAIN - ZONE III	23,400	CU. YD.	\$75	\$1,755,000
7	ROCKFILL - ZONE IV, IVA & IVB	550,000	CU.YD.	\$13	\$6,875,000
8	OUTLET WORKS APPURTENANT STRUCTURES	425	LIN. FT.	\$800	\$340,000
9	SPILLWAY WEIR	90	LIN. FT.	\$200	\$18,000
10	TOE DRAIN PIPE	1,200	LIN. FT.	\$70	\$84,000
11	INSTRUMENTATION	1	LUMP SUM	\$80,000	\$80,000
<b>SUBTOTAL</b>					<b>\$14,523,600</b>
<b>RESERVOIR LINER</b>					
1	LINER	557,380	SQ. YD.	\$15	\$8,360,700
2	1-FT COVER	185,793	CU. YD.	\$15	\$2,786,900
3	RIPRAP	139,345	CU. YD.	\$15	\$2,090,175
<b>SUBTOTAL</b>					<b>\$13,237,775</b>

Subtotal Construction Cost	\$33,241,445
10% Contingency	\$3,324,145
15% Engineering, Legal, Fiscal	\$4,986,217
<b>Total Project Cost</b>	<b>\$41,551,806</b>