BOARD OF TRUSTEES PUBLIC MEETING

Meeting date:	December 6, 2023
Time:	6 p.m.
Location:	533 E. Waterworks Dr., St. George, UT 84770
Participants:	Board members including Ed Bowler, Chris Hart, Kress Staheli, Michele Randell, Kevin Tervort, and Adam Bowler. Victor Iverson was not present. District staff included Zach Renstrom, general manager; Mindy Mees, secretary; Brie Thompson, and Brock Belnap; associate general managers; Kay Barnum; accounting manager; Jacob Sullivan; treasurer, and Morgan Drake; attorney. Other meeting attendees are noted on the attached sign-in sheet.

Public hearing regarding the intent to amend the 2023 budget

Chair Ed Bowler opened the public hearing.

Treasurer Jacob Sullivan addressed the Board and explained that district is seeking to amend the 2023 budget. Mr. Sullivan said that in 2023, the district's overall expenses will come in under budget. However, three funds are either over budget or will be over budget by the end of the fiscal year. The three funds are fund 20, regional water fund; fund 23, unincorporated county fund; and fund 65, capital projects fund. However, the district's impact fee qualifying capital projects fund is significantly under budget. Therefore, the district is proposing to reduce that fund by the amount necessary to increase the other funds, thereby resulting in a net change of zero to the total overall budget.

The district is proposing to amend the budget of the following funds:

Fund 20 – Regional Water Fund: increase by $2.2 million to cover the estimated depreciation for the year for the assets in this fund.

Fund 23 - Unincorporated County Fund: increase by $3 million to cover the depreciation.

Fund 65 – Capital Project Fund: increase by $14 million to cover water rights purchases.

In addition, the proposed amendments correct about $775,000 of expenditures that were budgeted to the wrong facility. The amended budget also corrects some coding errors.

Chair Bowler asked if there were any public comments.

No Public comments.

Adam Bowler made a motion to close the public hearing, the motion was seconded by Michele Randall, and all voted aye.

<u>Consider a resolution amending the 2023 budget</u>

Michele Randall made a motion to approve the resolution amending the 2023 budget, the motion was seconded by Adam Bowler. And a roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

<u>Public hearing regarding the intent to adopt the 2024 budget</u>

Chair Ed Bowler opened the public hearing.

Treasurer Jacob Sullivan explained that the district's proposed final budget for 2024 includes an increase of $678,793 from the proposed initial budget previously presented to the Board. The total 2024 proposed budget is just short of $150 million, which is about $50 million less than 2023.

Mr. Sullivan summarized the proposed changes between the initial and final budget as follows:

Payroll & Benefits: includes an additional $40,918 for new hires and cost of living increases.

Operations and Maintenance: includes an additional $446,775 for consultants, insurance, repairs, utilities, and technical studies.

Project Development: includes an additional $508,000 for additional engineering costs for new projects, equipment, and inspectors.

Regional Water Fund: includes a reduction of $316,900 for repairs, utilities, and equipment to eliminate duplicate expenses.

Chair Bowler asked if there were any public comments.

No public comment.

Kevin Tervort made a motion to close the public hearing, the motion was seconded by Michele Randall, and all voted aye.

Consider a resolution adopting the 2024 budget

Adam Bowler made a motion to approve the resolution adopting the 2024 budget, the motion was seconded by Kevin Tervort. And a roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

Consider a resolution allocating any excess fund balance in the general fund to the capital projects fund

Chris Hart made a motion to allocate the excess fund balance in the general fund to the capital project fund, the motion was seconded by Kevin Tervort, and a roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

Consider a resolution authorizing grant application for Reclamation's large-scale water recycling program

Attorney Morgan Drake explained that the district has submitted a grant application for the Regional Reuse System under the Bureau of Reclamation's Large-Scale Water Recycling Program. Reclamation offered funding for recycling projects in two phases. Phase one was planning, and phase two is construction. The district applied under the planning phase and received $1.4 million. This application is for construction. The District is applying for $20.5 million, and the funds will need to be used within three years. Reclamation is awarding 2 to 10 projects. The District has received confirmation from Reclamation that its Regional Reuse System feasibility study, a component of the grant application, meets internal review standards. This resolution will allow the District to enter into a funding agreement if awarded.

Michele Randall made a motion to approve the resolution authorizing the grant application for Reclamation's large-scale water recycling program, the motion was seconded by Chris Hart, and a roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

Consider a resolution authorizing grant application for Reclamation's small storage program

Attorney Morgan Drake explained this resolution is to authorize the district to submit a grant application for Chief Toquer Reservoir under Reclamation's Small Storage Program. The district's first application was submitted last year. The district asked for $11.7 million and received $4.7 million. The district is now submitting a second application to ask for the remaining $7 million. Reclamation has $26 million available and is anticipating 2 to 6 awards.

Chris Hart made a motion to approve the resolution authorizing the grant application for Reclamation's small storage program, the motion was seconded by Kevin Tervort, and a roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

Consider approval of P-Card for new employees George Elliott & Colton Heiner

General Manager Zach Renstrom explained that the district has two new employees that will need a purchasing card (P-Card). The district's policy requires Board Approval for the issuance of p-cards to employees. Mr. Renstrom recommended that the Board approve p-cards for the two new employees, George Elliott and Colton Heiner.

Adam Bowler made a motion to approve P-cards for district employees George Elliott and Colton Heiner, the motion was seconded by Chris Hart, and all voted aye.

Consider approval of construction bid award for Quail Creek to Cottam Pipeline

Project Manager Randy Johnson explained the district had nine contractors submit bids for the Quail Creek to Cottam Pipeline project. The low bid was submitted by Feller Enterprises for $3,045,514.57. The high bid was almost ten million. Mr. Johnson explained that Feller Enterprises has a strategy to use the excavated material from the trench on other projects and accounted for that in their bid, which made the bid lower. Mr. Johnson recommended that the Board award the bid to Feller Enterprises.

Michele Randall made a motion to approve the construction bid award on the Quail Creek to Cottom pipeline to Feller Enterprises, the motion was seconded by Chris Hart, and all voted aye.

Consider approving the 2024 meeting schedule

The Board reviewed the proposed 2024 board meeting schedule. After a discussion of potential scheduling conflicts, the Board determined that in 2024, board meetings will be held the first Monday of the month, except for January 1 because of the holiday, when the board meeting will instead be held on Wednesday, January 17, 2024.

Kress Staheli made a motion to approve the annual Board of Trustees 2024 schedule as amended, the motion was seconded by Kevin Tervort, and all voted aye.

Manager's update

Mr. Renstrom reported that all reservoirs are at record levels for this time of year. While the area has received very little precipitation recently, there are still several months of the year to go.

Mr. Renstrom reported that a record number of proposed legislative bills affecting water will be introduced during the 2024 legislative session. Some of the proposed laws could have a profound effect upon how cities operate, implement large policy changes, and otherwise impact how the state deals with water.

Mr. Renstrom said that he visited with the new House Speaker Mike Schultz, who said that he is impressed with the water conservation efforts in Southern Utah. Multiple members of the legislature have reviewed the district's 20-year plan and have commented that other communities in the state would benefit from their own 20-year plans.

Request for closed session for the following:

Chair Bowler noted that two-thirds of the district's board members are present, and stated that the purpose of the closed session is to discuss the purchase of real property and to discuss general manager performance. The closed session is at the WCWCD office building 533 E Waterworks Drive, St. George, Utah on December 6th.

Adam Bowler made a motion to adjourn public meeting to a closed session to discuss purchase of real property and discuss personnel, the motion was seconded by Chris Hart. A roll call vote was taken as follows:

Kress Staheli	***Yes***
Michele Randall	***Yes***
Chris Hart	***Yes***
Adam Bowler	***Yes***
Ed Bowler	***Yes***
Kevin Tervort	***Yes***

a. ***To discuss the purchase of real property***
b. ***To discuss general manager performance review***

Michele Randall made a motion to adjourn the closed meeting and return to public meeting, the motion was seconded by Adam Bowler, and all voted aye.

Chris Hart made a motion for the purchase of real property that was discussed in the closed session, the motion was seconded by Adam Bowler, and all voted aye.

<u>Consider approval of November 1, 2023, board meeting minutes</u>

Chris Hart made a motion to approve the November 1, 2023, board meeting minutes, the motion was seconded by Kress Staheli, and all voted aye.

The meeting was adjourned upon motion.

Mindy Mees
_____
Secretary

WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

2023 Proposed Budget Amendments

December 6, 2023

Overview

Three funds are over budget or will be over budget by the end of the year:

1. Fund 20: Regional Water Fund
2. Fund 23: Unincorporated County Fund
3. Fund 65: Capital Projects Fund (Non-Impact)

Because of excess budget in Fund 60: Capital Projects, the proposed budget amendments have a net change of $0 on the District's budget as a whole.

Fund Summary

Fiscal Year 2023 Proposed Budget Amendments

	20	23	60	65
Budgeted Expenditures	13,236,539	2,750,210	136,029,005	22,209,426
10/31/23 Year-to-Date Expenditures	(9,554,461)	(218,208)	(17,206,168)	(29,230,477)
Estimated 2023 Depreciation	(2,200,000)	(4,000,000)		
Available Budget for Remainder of 2023	**1,482,078**	**(1,467,998)**	**118,822,837**	**(7,021,051)**
Percentage Expended Year-to-Date	88.80%	153.38%	12.65%	131.61%
Proposed Amendments	2,200,000	3,000,000	(19,500,000)	14,300,000
Available Amended Budget for Remainder of 2023	**3,682,078**	**1,532,002**	**99,322,837**	**7,278,949**

Increase/(Decrease) in Budgeted Expenditures

Fiscal Year 2023 Proposed Budget Amendments

	20	23	60	65	Total
Fund 20 Depreciation	2,200,000				**2,200,000**
Fund 23 Depreciation		3,000,000			**3,000,000**
Fund 23 Facility Correction		-			**-**
Warner Valley Reservoir Correction			(300,000)	300,000	**-**
Water Rights Purchases				14,000,000	**14,000,000**
Net Change in Expenditures to Zero			(19,200,000)		**(19,200,000)**
Total	**2,200,000**	**3,000,000**	**(19,500,000)**	**14,300,000**	**-**

Fund Summary

Fiscal Year 2023 Proposed Budget Amendments

	20	23	60	65
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WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

Questions?

Fiscal Year 2023
Amended Budget

November 27, 2023

WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

Washington County Water Conservancy District

2023 Budget

	2023 as of 10/31/23	2023 Final Budget	2023 Amended Budget
Fund 10 General Fund			
Total Revenue	**4,521,348**	**15,239,650**	**15,239,650**
Current Year Property Tax	1,832,446	13,300,000	13,300,000
Fees In Lieu of Taxes	694,063	500,000	500,000
Prior Year Property Tax	376,385	500,000	500,000
Septic Administration Fee	1,404	500	500
Interest Income	1,082,878	206,000	206,000
Other Income	430,682	350,150	350,150
Credit Card Service Fees	51,181	3,000	3,000
St. George RDA - Property Taxes	52,310	350,000	350,000
SITLA Water Reservation Fee	-	30,000	30,000
Total Expenses	**3,952,120**	**15,239,650**	**15,239,650**
Administration	2,533,925	4,290,700	4,290,700
Board of Trustees	7,460	13,000	13,000
Accounting	357,805	489,600	489,600
Communications	92,544	241,500	241,500
Human Resources	129,114	230,800	230,800
Information Systems	440,118	445,880	445,880
Legal	175,638	284,100	284,100
General Administrative Support	215,516	386,900	386,900
Total Contributions & Transfers	-	8,857,170	8,857,170
Fund 15 Conservation Fund			
Total Revenues	**887,597**	**3,899,007**	**3,899,007**
Total Expenses	**2,669,008**	**3,899,007**	**3,899,007**
Administration	54,257	83,100	83,100
Communications	228,982	602,200	602,200
Operations	45,515	77,700	77,700
Water Conservation	2,317,208	3,067,972	3,067,972
Red Hills Desert Garden	15,243	50,235	50,235
Tonaquint Garden	7,803	17,800	17,800
Fund 20 Regional Water Fund			
Total Revenues	**12,697,919**	**12,267,539**	**14,467,539**
Water Sales Revenue	10,172,296	9,618,000	9,618,000
Other Revenue	2,525,623	2,649,539	4,849,539
Total Expenses	**9,354,959**	**12,267,539**	**14,467,539**
Information Systems	-	217,740	217,740
Operations	3,512,089	4,065,875	4,065,875
Water Treatment Plant	1,106,034	1,365,000	1,365,000
Project Expense	4,736,836	6,618,924	8,818,924

Washington County Water Conservancy District

2023 Budget

	2023 as of 10/31/23	2023 Final Budget	2023 Amended Budget
Fund 23 Unincorporated County Fund			
Total Revenues	**250,902**	**2,009,245**	**5,009,245**
Water Sales Revenue	169,415	215,000	215,000
Other Revenue	81,487	1,794,245	4,794,245
Total Expenses	**218,208**	**2,009,245**	**5,009,245**
Information Systems	-	36,290	36,290
Operations	-	784,805	784,805
Project Expenses	218,208	1,188,150	4,188,150
Fund 30 Secondary Water Fund			
Total Revenues	**791,261**	**847,000**	**847,000**
Total Expenses	**304,821**	**847,000**	**847,000**
Information Systems	-	7,258	7,258
Operations	-	184,660	184,660
Project Expenses	304,821	185,100	185,100
Transfer to Regional Water Fund 20	-	469,982	469,982
Fund 31 Toquerville Secondary Water System (TSWS) Fund			
Total Revenues	**28,590**	**241,846**	**241,846**
Total Expenses	**100,139**	**241,846**	**241,846**
Information Systems	-	14,516	14,516
Operations	-	92,330	92,330
Toquerville Secondary Sys	100,139	135,000	135,000
Fund 50 Hydro Power Fund			
Total Revenues	**642,672**	**423,053**	**423,053**
Hurricane Hydro (Pah Tempe)	148,623	120,000	120,000
Quail Creek Hydro (Wayne Wilson)	494,049	303,053	303,053
Total Expenses	**49,148**	**423,053**	**423,053**
Information Systems	-	14,516	14,516
Operations	-	92,330	92,330
Hurricane Hydro Plant	38,803	132,103	132,103
Quail Creek Hydro Plant	10,346	184,104	184,104
Fund 60 Capital Projects Fund			
Total Revenues	**26,478,866**	**136,029,005**	**116,529,005**
Impact Fee Revenue	22,712,536	15,000,000	15,000,000
Other Revenue	3,766,330	121,029,005	101,529,005
Total Expenses	**17,206,168**	**136,029,005**	**116,529,005**
Lake Powell Pipeline	569,530	2,538,300	2,538,300
Project Expenses	16,636,638	132,740,615	113,240,615
Contributions & Transfers	-	750,090	750,090

Washington County Water Conservancy District

2023 Budget

	2023 as of 10/31/23	2023 Final Budget	2023 Amended Budget
Fund 65 Capital Projects (Non-Impact Fee Qualifying) Fund			
Total Revenues	**3,173,648**	**22,709,426**	**37,009,426**
Total Expenses	**28,806,492**	**22,709,426**	**37,009,426**
Project Development	692,594	1,545,300	1,545,300
Project Expenses	28,113,898	21,164,126	35,464,126
Fund 70 Debt Service Fund			
Total Revenues	**4,309,623**	**3,780,090**	**3,780,090**
Water Charges Revenue	1,361,954	1,615,000	1,615,000
Other Revenue	2,947,669	2,165,090	2,165,090
Total Expenses	**1,031,600**	**3,780,090**	**3,780,090**
2004 Series Bonds	107,880	107,880	107,880
2011A Revenue Bonds RDA 10 MGD Tank	82,845	110,460	110,460
2015 Bonds	172,625	1,320,250	1,320,250
2017 Bonds Refunded 2007 Portion	668,250	2,241,500	2,241,500
Fund 90 Virgin River Recovery Program Fund			
Total Revenues	**388,914**	**3,046,237**	**3,046,237**
WCWCD	-	1,896,000	1,896,000
TNC Grant	70,000	-	-
Interest Income	5,790	1,000	1,000
Utah Dept of Natural Resources	-	535,000	535,000
US Fish and Wildlife Service	313,124	-	-
Contribution from Fund Balance	-	614,237	614,237
Total Expenses	**608,326**	**3,046,237**	**3,046,237**
Virgin River Recovery Program	497,892	2,999,737	2,999,737
Red Hills Desert Garden	77,949	16,500	16,500
Quail Creek System Pump Back	10,955	30,000	30,000
Washington Diversion Dam	12,790	-	-
Wash Diversion Dam Fish Screen	8,740	-	-
Total All Funds			
Total Revenues	**54,171,339**	**200,492,098**	**200,492,098**
Total Expenses	**64,300,989**	**200,492,098**	**200,492,098**
Difference	**(10,129,650)**	**-**	**-**

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT
A RESOLUTION AMENDING THE 2023 BUDGET

WHEREAS, the Board of Trustees has received, reviewed, and considered amending the 2023 budget; and

WHEREAS, the Board of Trustees has conducted a public hearing considering the amendment of the 2023 budget on December 6, 2023; and

WHEREAS, the Board of Trustees has given all interested persons in attendance an opportunity to be heard on the expenditures or any item in the budget funds to be amended; and

WHEREAS, the Board of Trustees has determined that the amended to the 2023 budget attached hereto is appropriate and necessary for the District operations in 2023;

NOW THEREFORE, be it resolved that the 2023 budget attached hereto is hereby amended in regarding to the 2023 calendar year.

AMEDNED, by the Board of Trustees of the Washington County Water Conservancy District.

DATED this 6th day of December, 2023.

WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT:

Ed Bowler, Chairman of the Board

ATTEST:

Mindy Mees, Secretary

VOTING:

Ed Bowler	Yea X	No ___
Adam Bowler	Yea X	No ___
Chris Hart	Yea X	No ___
Victor Iverson	Yea ___	No ___
Michele Randall	Yea X	No ___
Kress Staheli	Yea X	No ___
Kevin Tervort	Yea X	No ___

WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

2024 Final Budget

December 6, 2023

Overview

Overall expenditures increased by $678,793 from the tentative to final budget.

This is less than 1% of the total budgeted expenditures of $149,843,465.

The 2024 budget is nearly $50 million (25%) less than the 2023 budget.

Payroll & Benefits

Fund	Tentative	Final	Change
Fund 10: General Fund	3,331,675	3,336,786	5,111
Fund 15: Conservation Fund	976,789	944,020	(32,769)
Fund 20: Regional Water Fund	3,129,587	3,195,792	66,205
Fund 60: Capital Projects (Impact)	496,493	452,338	(44,155)
Fund 65: Capital Projects (Non-Impact)	1,058,453	1,102,631	44,178
Fund 90: Virgin River Recovery Program	139,399	141,747	2,348
Total Change from Tentative to Final			**40,918**

Operations & Maintenance

Fund	Tentative	Final	Change
Fund 10: General Fund	1,070,000	1,315,000	245,000
Fund 20: Regional Water Fund	1,880,000	1,980,000	100,000
Fund 23: Unincorporated County	1,600	105,000	103,400
Fund 30: Secondary Water	2,200	3,700	1,500
Fund 31: Toquerville Secondary Water	83,225	80,100	(3,125)
Total Change from Tentative to Final			**446,775**

Project Development

Fund	Tentative	Final	Change
Fund 60: Capital Projects (Impact)	-	100,000	100,000
Fund 65: Capital Projects (Non-Impact)	377,000	785,000	408,000
Total Change from Tentative to Final			**508,000**

Fund 20: Regional Water Fund

Expenditure Type	Tentative	Final	Change
Repair & Replacement	620,000	502,000	(118,000)
Utilities	410,000	401,100	(8,900)
Equipment & Hardware	330,000	140,000	(190,000)
Total Change from Tentative to Final			**(316,900)**

Total Changes by Fund

Fund	Tentative	Final	Change
Fund 10: General Fund	4,401,675	4,651,786	250,111
Fund 15: Conservation Fund	976,789	944,020	(32,769)
Fund 20: Regional Water Fund	6,369,587	6,218,892	(150,695)
Fund 23: Unincorporated County	1,600	105,000	103,400
Fund 30: Secondary Water	2,200	3,700	1,500
Fund 31: Toquerville Secondary Water	83,225	80,100	(3,125)
Fund 60: Capital Projects (Impact)	496,493	552,338	55,845
Fund 65: Capital Projects (Non-Impact)	1,435,453	1,887,631	452,178
Fund 90: Virgin River Recovery Program	139,399	141,747	2,348
Total Change from Tentative to Final			**678,793**

WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

Questions?

Fiscal Year 2024
Final Budget

November 27, 2023

WASHINGTON COUNTY
WATER
CONSERVANCY
DISTRICT

Washington County Water Conservancy District

2024 Final Budget

83.33% of the year used	2022 Actual	YTD Actuals thru 10/31/23	2024 Final Budget
Fund 10 General Fund			
Total Revenue	**16,388,405**	**4,521,348**	**16,160,500**
Current Year Property Tax	13,826,764	1,832,446	13,800,000
Fees In Lieu of Taxes	898,214	694,063	500,000
Prior Year Property Tax	439,041	376,385	500,000
Septic Administration Fee	850	1,404	500
Interest Income	710,729	1,082,878	700,000
Other Income	258,199	430,682	500,000
Credit Card Service Fees		51,181	30,000
St. George RDA - Property Taxes	173,191	52,310	100,000
SITLA Water Reservation Fee	81,418	-	30,000
Contribution from Fund Balance	-	-	-
Total Expenses	**11,256,328**	**3,952,120**	**16,160,500**
Administration	3,064,849	2,533,925	4,202,455
Board of Trustees	12,031	7,460	14,000
Accounting	336,492	357,805	576,858
Communications	100,370	92,544	275,374
Human Resources	145,374	129,114	259,309
Information Systems	244,898	440,118	571,362
Legal	211,895	175,638	534,629
General Administrative Support	28,018	215,516	571,742
Total Contributions & Transfers	7,112,402	-	9,154,770
Fund 15 Conservation Fund			
Total Revenues	**1,072,662**	**887,597**	**5,325,710**
Total Expenses	**1,073,383**	**2,669,008**	**5,325,710**
Administration	60,688	54,257	85,198
Communications	227,927	228,982	814,559
Operations	54,755	45,515	78,208
Water Conservation	688,647	2,317,208	4,280,545
Red Hills Desert Garden	33,509	15,243	43,750
Garden at Tonaquint Park	7,856	7,803	23,450
Fund 20 Regional Water Fund			
Total Revenues	**21,061,071**	**12,697,919**	**13,898,256**
Water Sales Revenue	13,382,853	10,172,296	10,220,000
Other Revenue	7,678,218	2,525,623	3,678,256
Total Expenses	**6,915,565**	**9,522,849**	**13,898,256**
Information Systems	210,484	-	285,681
Operations	1,455,872	3,512,089	4,561,434
Water Treatment Plant	599,995	1,106,034	2,257,800
Project Expense	4,649,214	4,904,725	6,793,342
Total Contributions & Transfers			

Washington County Water Conservancy District

2024 Final Budget

83.33% of the year used	2022 Actual	YTD Actuals thru 10/31/23	2024 Final Budget
Fund 23 Unincorporated County Fund			
Total Revenues	**8,400,853**	**250,902**	**1,515,843**
Water Sales Revenue	192,865	169,415	195,000
Other Revenue	8,207,988	81,487	1,320,843
Total Expenses	**827,412**	**218,208**	**1,515,843**
Information Systems	60,138	-	47,613
Operations	548,333	-	670,179
Project Expenses	218,940	218,208	798,050
Fund 30 Secondary Water Fund			
Total Revenues	**1,062,474**	**791,261**	**1,413,794**
Total Expenses	**221,563**	**305,584**	**1,413,794**
Information Systems	-	-	9,523
Operations	91,389	-	228,072
Project Expenses	130,174	305,584	1,176,200
Transfer to Capital Projects Fund 60	-	-	-
Fund 31 Toquerville Secondary Water System (TSWS) Fund			
Total Revenues	**182,575**	**28,590**	**272,306**
Total Expenses	**183,052**	**100,139**	**272,306**
Information Systems	15,035	-	19,045
Operations	91,389	-	114,036
Toquerville Secondary Sys	67,857	100,139	139,225
TSWS Pump Station	8,772	-	-
Fund 50 Hydro Power Fund			
Total Revenues	**600,709**	**642,672**	**558,617**
Hurricane Hydro (Pah Tempe)	156,952	148,623	150,000
Quail Creek Hydro (Wayne Wilson)	443,756	494,049	408,617
Total Expenses	**179,288**	**-**	**558,617**
Information Systems	15,035	-	19,045
Operations	91,389	-	228,072
Hurricane Hydro Plant	22,301	38,803	55,000
Quail Creek Hydro Plant	50,563	10,346	256,500
Fund 60 Capital Projects Fund			
Total Revenues	**29,327,699**	**26,478,866**	**55,713,588**
Impact Fee Revenue	27,783,674	22,712,536	15,000,000
Other Revenue	1,544,025	3,766,330	40,713,588
Total Expenses	**21,457,070**	**17,206,199**	**55,713,588**
Communications	69,998	-	-
Information Systems	30,069	-	-
Lake Powell Pipeline	1,289,468	569,530	2,623,088
Project Expenses	20,067,535	16,636,669	53,090,500
Contributions & Transfers	-	-	-

Washington County Water Conservancy District

2024 Final Budget

83.33% of the year used	2022 Actual	YTD Actuals thru 10/31/23	2024 Final Budget
Fund 65 Capital Projects (Non-Impact Fee Qualifying) Fund			
Total Revenues	**6,479,070**	**3,173,648**	**48,080,804**
Total Expenses	**2,473,297**	**1,839,180**	**48,080,804**
Information Systems	30,069	-	-
Operations	91,389	-	-
Project Development	710,712	692,594	2,698,131
Project Expenses	1,641,127	1,146,586	45,382,673
Fund 70 Debt Service Fund			
Total Revenues	**3,656,503**	**4,309,623**	**3,781,210**
Water Charges Revenue	1,756,364	1,361,954	1,690,000
Other Revenue	1,900,139	2,947,669	2,091,210
Total Expenses	**831,551**	**1,031,600**	**3,781,210**
2004 Series Bonds	15,105	107,880	108,000
2011A Revenue Bonds RDA 10 MGD Tank	66,714	82,845	110,460
2012A Water Treatment Plant Bonds	(543,888)	-	-
2015 Bonds	238,655	172,625	1,316,500
2017 Bonds Refunded 2007 Portion	1,054,965	668,250	2,246,250
Fund 90 Virgin River Recovery Program Fund			
Total Revenues	**2,785,531**	**529,714**	**3,122,837**
WCWCD	1,464,195	-	1,500,000
TNC Grant	200,000	70,000	70,000
Interest Income	3,194	5,790	6,000
Other Income	-	140,800	350,000
Utah Dept of Natural Resources	1,118,142	-	830,000
US Fish and Wildlife Service	-	313,124	259,000
Contribution from Fund Balance	-	-	107,837
Total Expenses	**2,617,920**	**608,326**	**3,122,837**
Virgin River Recovery Program	2,552,434	497,892	3,033,337
Red Hills Desert Garden	17,231	77,949	15,500
Quail Creek System Pump Back	34,249	10,955	55,000
Gunlock to Santa Clara Pipeline	10,273	-	10,000
Washington Diversion Dam	3,503	12,790	4,000
Wash Diversion Dam Fish Screen	229	8,740	5,000
Total All Funds			
Total Revenues	**91,017,552**	**54,312,139**	**149,843,465**
Total Expenses	**48,036,429**	**37,453,214**	**149,843,465**
Difference	**42,981,123**	**16,858,925**	**0**

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT
A RESOLUTION ADOPTING THE 2024 TENTATIVE BUDGET
AS THE FINAL BUDGET FOR 2024

WHEREAS, the Board of Trustees has received, reviewed, and considered and tentatively adopted the tentative budget for the 2024 calendar year; and

WHEREAS, the Board of Trustees has conducted a public hearing considering the adoption of the 2024 tentative budget as the final budget for 2024 on December 6, 2023; and

WHEREAS, the Board of Trustees has given all interested persons in attendance an opportunity to be heard on the estimates of revenues and expenditures or any item in the tentative budget of any fund; and

WHEREAS, the Board of Trustees has determined that the 2024 tentative budget attached hereto is appropriate and necessary for the District operations in 2024;

NOW THEREFORE, be it resolved that the 2024 tentative budget attached hereto is hereby adopted as the final budget for the 2024 calendar year.

ADOPTED, by the Board of Trustees of the Washington County Water Conservancy District.

DATED this 6th day of December, 2023.

WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT:

Ed Bowler, Chairman of the Board

ATTEST:

Mindy Mees, Secretary

VOTING:

Ed Bowler	Yea X	No ___
Adam Bowler	Yea X	No ___
Chris Hart	Yea X	No ___
Victor Iverson	Yea ___	No ___
Michele Randall	Yea X	No ___
Kress Staheli	Yea X	No ___
Kevin Tervort	Yea X	No ___

A RESOLUTION OF THE WASHINGTON COUNTY WATER CONSERVANCY DISTRICT BOARD OF TRUSTEES ALLOCATING ANY EXCESS FUND BALANCES IN THE GENERAL FUND TO THE CAPITAL PROJECTS FUND

WHEREAS, it appears from the operations of the general fund of fiscal year 2023, that there will be a general fund balance at year end;

WHEREAS, the Board desires to maintain a reserve balance for capital projects;

THEREFORE, the general fund is hereby adjusted by transferring excess unexpended funds from the general fund to the capital project fund for fiscal year 2023.

ADOPTED by the Board of Trustees this 6th day of December, 2023.

WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT:

Ed Bowler, Chairman of the Board

ATTEST:

Mindy Mees, Secretary

VOTING:

Ed Bowler	Yea X	No ___
Adam Bowler	Yea X	No ___
Chris Hart	Yea X	No ___
Victor Iverson	Yea ___	No ___
Kress Staheli	Yea X	No ___
Michele Randall	Yea X	No ___
Kevin Tervort	Yea X	No ___

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT
BOARD OF TRUSTEES
A RESOLUTION AUTHORIZING SUBMISSION FOR FEDERAL FUNDS UNDER RECLAMATION'S LARGE-SCALE WATER RECYCLING PROJECTS

WHEREAS, a primary purpose and goal of the Washington County Water Conservancy District (District) is to efficiently manage and conserve the use of available water resources of the county;

WHEREAS, the District is planning and designing the Regional Reuse System to help maximize local reliable water supplies;

WHEREAS, Federal assistance is available through the U.S. Bureau of Reclamation's (Reclamation) Large-Scale Water Recycling Projects; and

WHEREAS, the District has submitted an application to Reclamation to be considered for funding for the planning, design, and construction of the Regional Reuse System.

NOW THEREFORE, the Board of Trustees of the Washington County Water Conservancy District hereby resolves that:

A. The General Manager is authorized to enter into an agreement with the U.S. Bureau of Reclamation;
B. The District will commit to the financial and legal obligations associated with receipt of a financial assistance award;
C. The Regional Reuse System application has been reviewed and is approved; and
D. The District will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

DATED this 6th day of December, 2023.

WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT:

Ed Bowler, Chairman of the Board

ATTEST:

Mindy Mees, Secretary

VOTING:

Ed Bowler	Yea X	No ___
Adam Bowler	Yea X	No ___
Chris Hart	Yea X	No ___
Victor Iverson	Yea ___	No ___
Michele Randall	Yea X	No ___
Kress Staheli	Yea X	No ___
Kevin Tervort	Yea X	No ___

WASHINGTON COUNTY REGIONAL REUSE SYSTEM
TECHNICAL PROPOSAL: PLANNING, DESIGN, AND CONSTRUCTION

November 21, 2023

Washington County Water Conservancy District
533 E. Waterworks Dr., St. George, UT 84770

Morgan Drake, Project Manager
533 E. Waterworks Dr., St. George, UT 84770
morgan@wcwcd.org
435-673-3617

Prepared by:
Stantec/Bowen Collins & Associates

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Appendices

Appendix A: Budget Details and Narrative Tables
Appendix B. Environmental and Cultural Resource Considerations
Appendix C: Letters of Support
Appendix D: Letters of Funding Commitment

Acronyms / Abbreviations

Ash Creek SSD	Ash Creek Special Service District
AWT	advanced water treatment
CPWRF	Confluence Park Water Reclamation Facility
ERC	Equivalent Residential Connection
LPP	Lake Powell Pipeline
MGD	million gallons per day
NEPA	National Environmental Policy Act
NOFO	Notice of Funding Opportunity
Reclamation	U.S. Bureau of Reclamation
RWSA	Regional Water Supply Agreement
SGRF	St. George Reuse Facility
TSWS	Toquerville Secondary Water System
district	Washington County Water Conservancy District

Technical Proposal and Evaluation Criteria

Executive Summary

November 21, 2023
Washington County Regional Reuse System
Washington County Water Conservancy District
St. George, Washington County, Utah

The Washington County Water Conservancy District, in partnership with the City of St. George and the Ash Creek Special Service District, proposes a Regional Reuse System in Washington County, Utah to help maximize local reliable water supplies that are under increasing pressure from climate change and economic growth. A potable and secondary irrigation (non-potable) reuse source will be integrated into the county's water supply portfolio to help meet water demands. The Regional Reuse System will ultimately include multiple water treatment facilities, pipelines, and storage reservoirs. Depending on climate and growth scenario, the system will yield approximately 34,000 acre-feet to 40,000 acre-feet of new supply by 2070. Additional details can be found in the Washington County Regional Reuse System Feasibility Study.

The Washington County Water Conservancy District is applying for funding under Notice of Funding Opportunity No. R23AS00433 for Regional Reuse System activities that can be completed by the project completion date of November 21, 2026. These activities include project planning, 30% design, 100% design, and construction stages.

The estimate completion date for activities proposed in this application is November 2026, for a total length of 35 months (assuming completion of U.S. Bureau of Reclamation's feasibility study review findings of January 2024).

The Regional Reuse System would not involve a Federal facility, but will involve obtaining rights-of-way on Federally-managed land.

Project Location

The Regional Reuse System is located in the Virgin River Basin within Washington County in the southwest corner of Utah. The Regional Reuse System will provide municipal and industrial reuse water to portions of the Washington County Water Conservancy District (district) service area. The district service area (Figure 1) encompasses all of Washington County, Utah, but the district does not currently provide water to all communities within the county. In 2006 (and later updated in 2019), the district adopted the Regional Water Supply Agreement (RWSA) with the following municipalities:

- St. George City
- Washington City
- Hurricane City
- Santa Clara City
- Ivins City
- La Verkin City
- Toquerville City

The district acquires, constructs, and operates its water system to meet anticipated municipal demand, while the individual cities maintain their existing water infrastructure systems and fully utilize their respective municipal supplies. Reuse water supply will be delivered to RWSA municipalities within the district service area (Figure 1).

Project Description

The district is a political subdivision of the State of Utah. The district is charged with conserving, developing, managing, and stabilizing water supplies within Washington County in an ongoing effort to provide a safe, sustainable water supply for current and future generations. The district has the powers conferred to local districts by Utah Code Annotated § 17B-1-102 et seq. and to water conservancy districts by Utah Code Annotated § 17B-2a-1001 et seq.

The district proposes in this application to complete planning, design, and construction activities for a Regional Reuse System. The ultimate goal is to integrate a potable and secondary irrigation reuse source into Washington County's water supply portfolio to help meet water demand for the area's expanding economy and growing population. The district submitted a large-scale reuse feasibility study meeting the requirements of WTR 11-10 and WTR TRMR-128 for the Regional Reuse System to the U.S. Bureau of Reclamation (Reclamation) for review and approval on November 7, 2023.

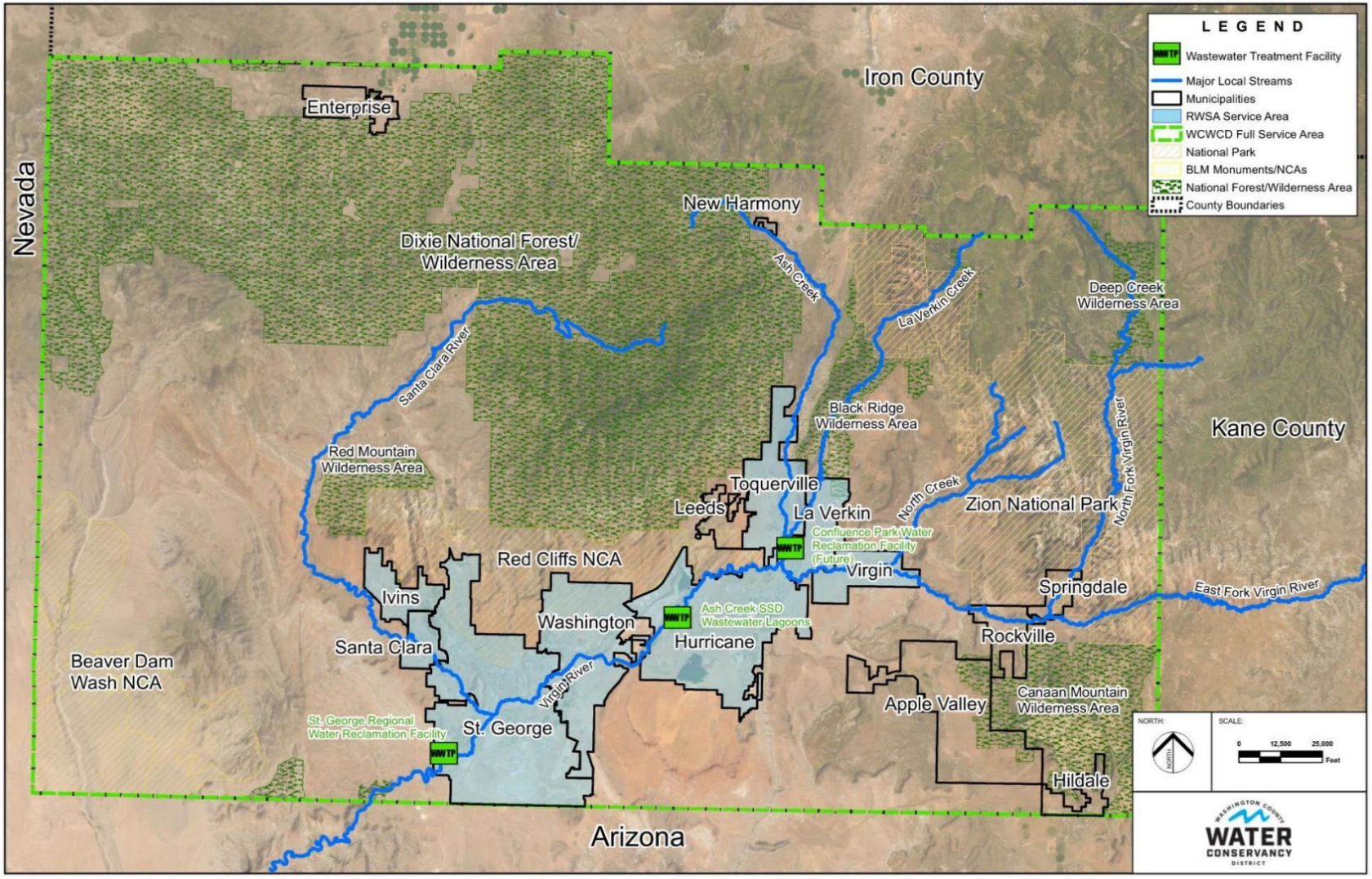


Figure 1. Washington County Water Conservancy District Service Area

REGIONAL REUSE SYSTEM DESCRIPTION

There are two primary wastewater treatment entities in Washington County: the City of St. George and Ash Creek Special Service District (Ash Creek SSD). The City of St. George owns and operates a sewer collection and mechanical treatment system that serves St. George, Washington, Santa Clara, and Ivins. St. George operates the existing St. George Reuse Facility (SGRF), which currently produces up to 7 million gallons per day (MGD) of Type I reuse water (non-potable per Utah Administrative Code R-317) for secondary municipal irrigation. Ash Creek SSD owns and operates a sewer collection and lagoon treatment system that serves Hurricane City, La Verkin City, and Toquerville City, but currently does not treat wastewater effluent to Type I reuse standards. The district is a major wholesale provider of potable water. These three Project Sponsors have evaluated the current reuse system, potential customers, and constraints such as treatment and storage capacity. Together, they have partnered to implement the following reuse strategies and construct a Regional Reuse System.

- **Agricultural Supply Exchange:** Type I (non-potable) reuse water could be delivered to agricultural users and the replaced existing, good quality agricultural water supply could then be sent to existing reservoirs via existing pipelines for potable use.
- **Secondary Irrigation Reuse/Direct Delivery:** Expansion of Type I treatment capacity in Washington County will help meet growing secondary irrigation demands.
- **Secondary Irrigation Reuse/Surface Water Augmentation:** Expansion of Type I reuse storage during periods of low secondary irrigation demand (i.e., winter) will enable later deliveries when the demand exists, and the replaced existing, good quality irrigation water supply could then be sent to existing reservoirs via existing pipelines for potable use.
- **Indirect Potable Reuse/Surface Water Augmentation:** Type I reuse water could be treated in an advanced water treatment (AWT) facility to potable standards and placed in existing surface water reservoirs that supply drinking water treatment plants to meet growing potable water demands, especially during times of drought when outdoor use of Type I water would be restricted. Proposed conveyance infrastructure would facilitate indirect or direct potable reuse operations throughout the service area, and direct potable reuse may be considered in future design evaluations for the Regional Reuse System.
- **Indirect Potable Reuse/Groundwater Augmentation:** Similar to surface water augmentation, water treated in an AWT facility to potable standards could augment aquifer supply via storage in the existing Sand Hollow Reservoir, which is operated as a recharge basin.

Improved operational flexibility is achieved by enabling reuse water delivery to any desired mix of potable and secondary irrigation users. Exchanges of agricultural water supply will be the preferred use of Type I effluent as conveyance costs associated with agricultural exchanges have lower costs than advanced water treatment. But in periods when the exchange is limited (e.g.,

winter months), reuse water could be sent to secondary irrigation demands or new secondary reservoirs or could be further treated in an AWT facility for potable use.

Based on projected future local water supply availability and wastewater flow, up to 22 MGD of total flow is expected to be available at St. George's wastewater facility for reuse through 2070. The existing SGRF is expandable to 14 MGD and is proposed in this study. Following this upgrade, an additional 8 MGD Type I expansion of reuse at St. George is proposed.

A 7 MGD AWT facility is selected for the Regional Reuse System as an efficient balance between the potable reuse and secondary irrigation use strategies. The 7 MGD AWT facility matches the planned capacity of Ash Creek SSD lagoon treatment and Type I reuse upgrades, where the AWT facility is proposed to be co-located. Additional refinements of the AWT facility sizing for potable reuse will be made during pilot testing and detailed design, and when exchange contracts and quantities between the Project Sponsors and agricultural canal companies are finalized.

A schematic of the Regional Reuse System and general project operations is shown in Figure 2. Regional Reuse System components are described in Table 1 and are organized by component type and which entity will maintain primary ownership or control after construction. The locations of the potential components are shown in Figure 3. The construction and operating, maintenance, and replacement costs of the Regional Reuse System are shown in Table 2. Detailed cost estimate quantities and unit prices are in Appendix H of the Regional Reuse System Feasibility Study. The total construction cost of the Regional Reuse System is $914,279,000.

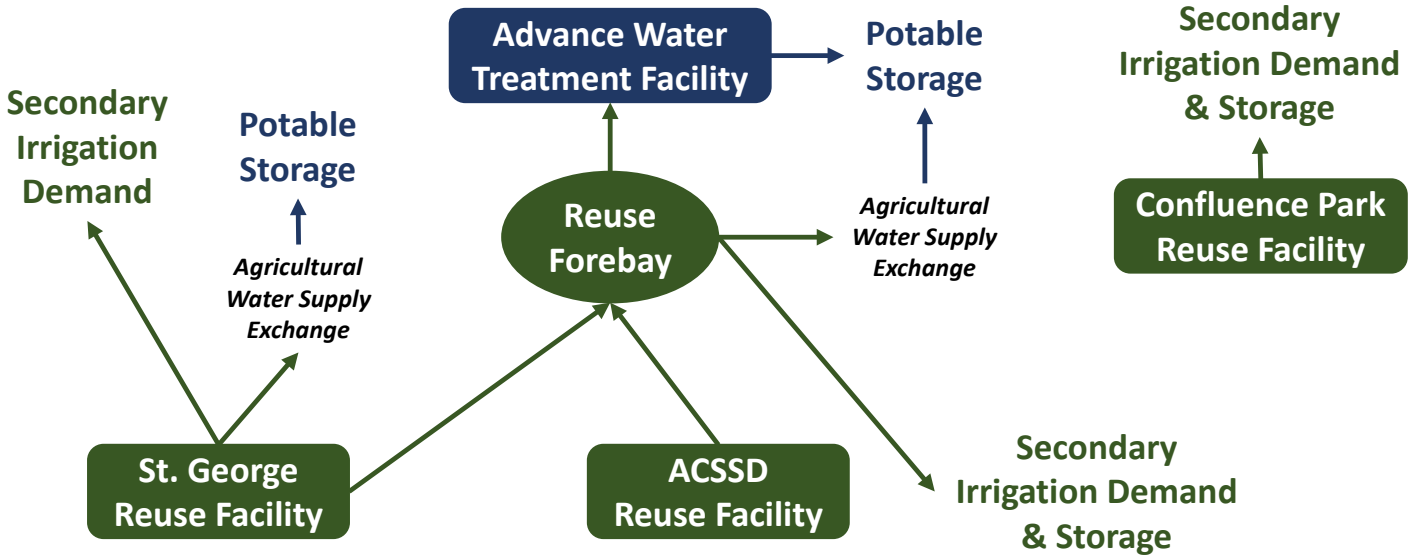


Figure 2. Washington County Regional Reuse System Schematic

Table 1. Reuse Components Proposed for the Washington County Regional Reuse System

Component Type	Component	Description	Owner
Treatment	SGRF Upgrade	Upgrade SGRF Type I technology to allow 14 MGD of capacity	St. George
	SGRF Expansion	Expand SGRF Type I facility capacity an additional 8 MGD (22 MGD total)	St. George
	SGRF Onsite Reuse Pond	Construct 100 acre-foot pond for treatment operational flexibility	St. George
	Ash Creek SSD Type I Reuse Facility	Construct Type I treatment components on future wastewater treatment plant for 7 MGD of capacity	Ash Creek SSD
	Advanced Water Treatment Facility	Treat SGRF and Ash Creek SSD Type I water for potable reuse for 7 MGD of capacity	Ash Creek SSD
	Potable Reuse Demonstration Facility	Construct 200 gallons per minute demonstration facility of advanced water treatment and brine management processes	Ash Creek SSD
Conveyance	Reuse Forebay	Construct 150 acre-foot centralized Type I reuse storage reservoir	District
	SGRF to Reuse Forebay Pipeline	Convey reuse water to forebay, ~27 miles	District
	Reuse Forebay to Warner Valley Reservoir Pipeline	Convey Type I reuse water to Warner Valley Reservoir, ~4 miles	District
	Warner Valley Outlet Pipeline	Convey Type I reuse water from Warner Valley into RWSA Service Area, ~10 miles	District
	Reuse Forebay to Quail Creek Ag Exchange Pipeline	Convey Type I reuse water to Hurricane/La Verkin area for agricultural supply exchange, ~10 miles	District
	AWT to Quail Creek Pipeline	Convey potable reuse water to Quail Creek/Sand Hollow reservoirs, ~1 mile	District
	CPWRF to TSWS Pipeline	Convey Type I reuse water to TSWS pond, ~4 miles	District
	Fort Pearce Pond and Desilting Basins	Construct desilting facility and 250 acre-foot distribution storage reservoir	District
Storage	Dry Wash Reservoir	1,500 acre-foot secondary irrigation reservoir	District
	Warner Valley Reservoir	Up to 55,000 acre-feet of secondary irrigation reuse water storage	District

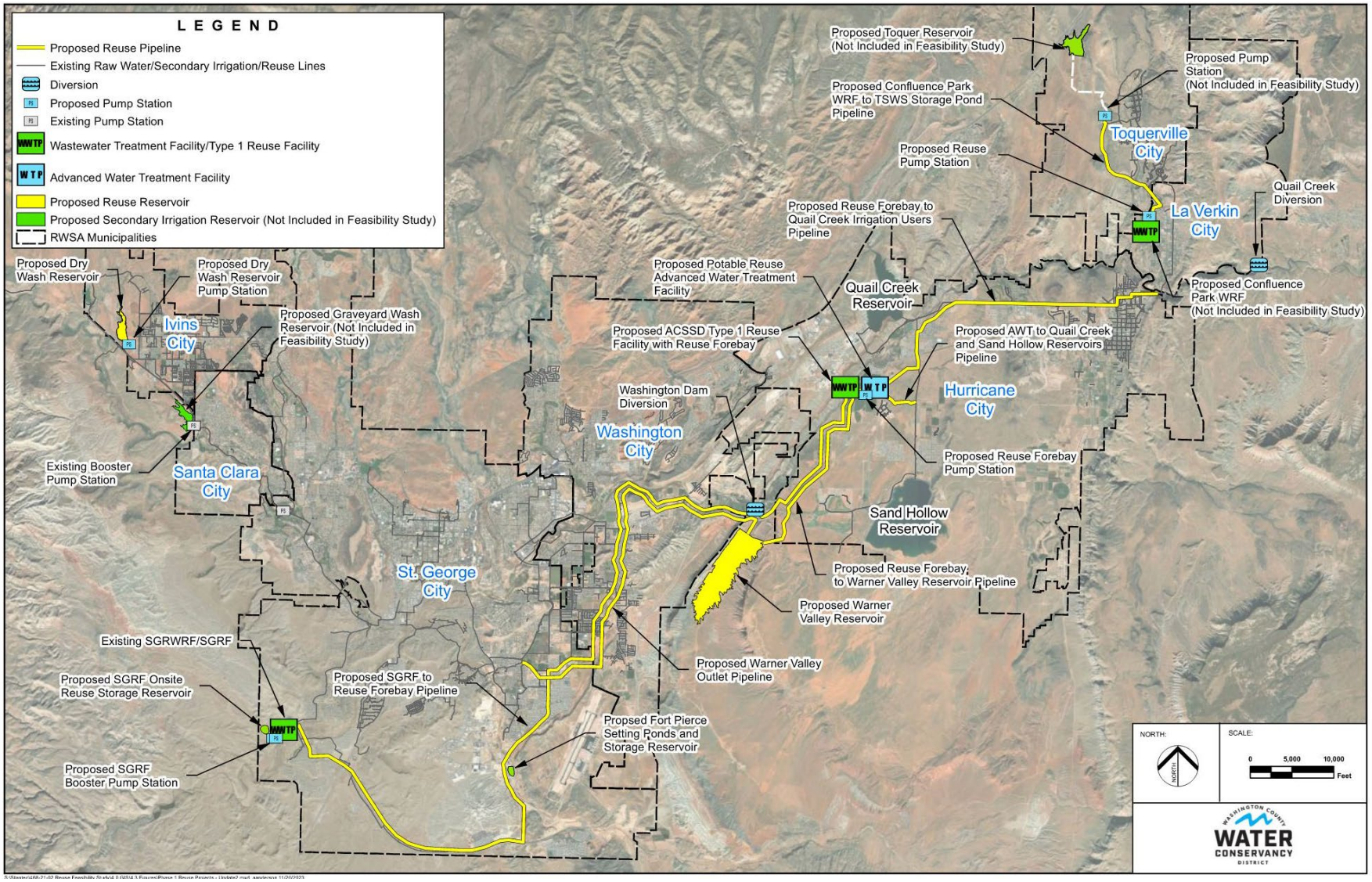


Figure 3. Location of Potential Reuse Components in the Washington County Regional Reuse System

Table 2. Washington County Regional Reuse System Construction Cost Estimate

Component Type	Component	Construction Costs (PV)	Annual Operating and Maintenance Costs	Replacement Costs (50-Year Period, PV)
Treatment	SGRF Upgrade	$7,258,000	$196,000	$3,820,000
	SGRF Expansion	$14,829,000	$118,000	$4,002,000
	SGRF Onsite Reuse Pond	$5,768,000	$14,000	$61,000
	Ash Creek SSD Type I Reuse Facility	$20,758,000	$75,000	$3,517,000
	Advanced Water Treatment Facility	$281,589,000	$6,970,000	$24,830,000
	Potable Reuse Demonstration Facility	$20,392,000	---[a]	---
	Subtotal	*$350,594,000*	*$7,373,000*	*$36,230,000*
Conveyance	Reuse Forebay	$4,534,000	$10,000	---
	SGRF to Reuse Forebay Pipeline	$80,278,000	$884,000	$606,000
	Reuse Forebay to Warner Valley Reservoir Pipeline	$29,367,000	$163,000	$61,000
	Warner Valley Outlet Pipeline	$85,769,000	$65,000	$243,000
	Reuse Forebay to Quail Creek Ag Exchange Pipeline	$28,232,000	$387,000	$2,462,000
	AWT to Quail Creek Pipeline	$2,079,000	$110,000	$61,000
	CPWRF to TSWS Pipeline	$11,325,000	$265,000	$2,365,000
	Fort Pearce Pond and Desilting Basins	$5,163,000	$20,000	---
	Subtotal	*$246,747,000*	*$1,904,000*	*$5,798,000*
Storage	Dry Wash Reservoir	$21,862,000	$70,000	$1,734,000
	Warner Valley Reservoir	$295,076,000	$634,000	$2,426,000
	Subtotal	*$316,938,000*	*$704,000*	*$4,160,000*
	Total	**$914,279,000**	**$9,981,000**	**$46,188,000**

Note:
[a] Demonstration facility operation costs would occur for 1 to 2 years and are included in project design costs.

PROJECT APPROACH

The Regional Reuse System comprises multiple phases of treatment, conveyance, and storage projects. The district is applying for funding under Notice of Funding Opportunity (NOFO) No. R23AS00433 for Regional Reuse System activities that can be completed by the project completion date of November 21, 2026. These activities include project planning, 30% design, 100% design, and construction stages, as shown in Table 3.

Table 3. Proposed Funding Stages for Washington County Regional Reuse System Components

Component Type	Component	Funding Stage			
		Planning	30% Design	100% Design	Construc-tion
Treatment	SGRF Upgrade (14 MGD)	[a]	✓	✓	✓
	SGRF Expansion (8 MGD)	✓	✓	✓	
	SGRF Onsite Reuse Pond	[a]	✓	✓	✓
	Ash Creek SSD Type I Reuse Components	✓	✓		
	Demonstration AWT Facility	✓	✓	✓	✓
	Advanced Water Treatment Facility	[a]			
Conveyance	Reuse Forebay	✓	✓	✓	
	SGRF to Reuse Forebay Pipeline	[a]	✓	✓	
	Warner Valley Outlet Pipeline	✓			
	Reuse Forebay to Quail Creek Ag Exchange Pipeline	✓	✓	✓	
	CPWRF to TSWS Pipeline	[a]	✓	✓	✓
	Fort Pearce Pond and Desilting Basins	✓	✓	✓	✓
Storage	Dry Wash Reservoir				✓

Notes:
[a] Funding for planning activities were applied for and received under Notice of Funding Opportunity No. R23AS00076.

The approach proposed in this application is to complete the following activities.

Planning Studies

Planning studies will include activities to refine or complete feasibility-level designs and cost estimates in preparation for 30% design. These activities include the following:

- **Design Data Investigations** – Site-specific design data investigations include topographic surveys, geotechnical evaluations, and the development of facility planning reports. Topographic surveys will establish property and/or needed easement boundaries, refine facility layouts and pipeline alignments, and evaluate site civil conditions. Survey information will be used to refine pipeline profiles or hydraulic profiles for storage or treatment facilities. Geotechnical site evaluations will include investigated borings and soil assessments along proposed pipeline alignments and below treatment or storage facilities to refine pipeline excavation and bedding quantities, and site foundation design. The State of Utah Department of Environmental Quality requires a facility planning report for any new water or wastewater treatment infrastructure. This report will provide a summary of objectives, design criteria and conditions, alternative development and costs, a recommended preferred alternative, and a discussion of how this alternative will meet State requirements.

- **Design Report** – Each reuse component design report includes preliminary outline drawings of major features with the purpose of depicting layouts, process diagrams, and supporting cost estimates with unit prices, pay items, quantities, allowances, and assumptions. This report will be part of Reclamation's Design and Cost Estimating Review prior to releasing funds for the 30% design stage of each reuse component.

- **Environmental Compliance/Permitting** – Environmental compliance will be initiated, and may include National Environmental Policy Act (NEPA), Section 404 permits, Section 7 consultation, Section 106 consultation, and water quality permits. The extent and duration of environmental compliance and permitting will depend on the type and number of alternatives, and potential impacts. The needs analysis and alternatives formulation will be informed by the approved Regional Reuse System Feasibility Study. After notification of award, the district will work with Reclamation to develop work plans and schedules to complete environmental compliance activities for the proposed reuse components. Early and regular engagement with Reclamation and other agencies will achieve common understanding and agreement on several key issues such as impacts analytical methods and significance criteria.

- **Baseline Environmental and Cultural Resources Studies** – The district will determine the applicability of available information and identify data gaps. Through this review, existing project data may be validated or found to be invalid, inaccurate, incomplete, or outdated. This approach will identify the data needs for the highest priority resource issues. The district will coordinate with Reclamation and other agencies in reviewing existing project-specific data. It is anticipated that biological and cultural desktop and field surveys will be identified as a high priority data gap. Costs to complete these

surveys for the proposed reuse components are included in this application. Costs to fill data gaps for other resource areas are implicit in costs proposed in this application to complete NEPA compliance.

30% Design

Project development under this stage will include activities to reach 30% design. These activities include the following:

- Complete additional site-specific design data investigations, including comprehensive geotechnical and utility investigations.
- Prepare construction drawings, specifications, and costs at a 30% level. Drawings, specifications, and design calculations will be submitted as required for a construction permit.
- Prepare a Basis of Design Report that identifies technical design criteria, design codes, and includes the site-specific design drawings. This report will be part of Reclamation's Design and Cost Estimating Review prior to releasing funds for the 100% design stage of each reuse component.

100% Design

Project development under this stage will include activities to reach 100% final design. These activities include the following:

- Prepare construction drawings and specifications at a 100% level necessary for bidding by general contractors. Drawings, specifications, and design calculations will be submitted as required for a construction permit.
- Prepare a Basis of Design Report that identifies technical design criteria, design codes, and includes the site-specific design drawings. This report will be part of Reclamation's Design and Cost Estimating Review prior to releasing funds for the construction stage of each reuse component.

Construction

Project development under this stage will include activities to construct identified reuse components. These activities include the following:

- Obtain bids from and select a qualified contractor.
- Construct identified reuse components.
- Complete testing and startup activities.

Responses to Evaluation Criteria

EVALUATION CRITERION 1—WATER SUPPLY

Subcriterion No. 1a—Stretching Water Supplies

1) How many acre-feet of water are expected to be made available each year upon completion of the Project? What percentage of the present and/or future annual demand will the Project's reclaimed water be expected to provide upon Project completion?

The Regional Reuse System will initially provide approximately 5,000 acre-feet of new water supply starting in 2026. Depending on climate and growth scenario, the system will yield approximately 34,000 acre-feet to 40,000 acre-feet of new supply by 2070, and average between 26,165 to 28,373 acre-feet per year over the next 50 years (see Figure 4 and Figure 5). By 2070, the Regional Reuse System will meet between 21.1% and 24.3% of total annual demand (see Figure 6 and Figure 7).

2) Will the Project reduce, postpone, or eliminate the development of new or expanded non-recycled water supplies?

The Regional Reuse System will lessen the quantity and urgency of imported water projects, such as the Lake Powell Pipeline (LPP). The LPP is a planned 140-mile-pipeline to import water from the Colorado River to Washington County. Future hydrology on the Colorado River and agreements with the Basin states are uncertain, and while the LPP remains a component of the district's long-term water resources plan, it is recognized that the project's timing and scope may have to change. At this time, developing the few remaining local projects, including reuse, offers a more reliable supply for the district. Without the Regional Reuse System being implemented in the next 10-15 years, the county would be at risk of perpetual shortages (see Figure 6 and Figure 7), and the district would need to accelerate plans for the LPP.

3) Will the Project alleviate pressure on existing water supplies and/or facilities?

The Regional Reuse System will postpone pressure on existing agricultural water supplies. Agriculture has about 44,000 acre-feet of depletion water rights in the county (corresponding to 14,000 acres of agricultural land), but only 38,890 acre-feet are considered reliable (i.e., 1900 or earlier priority date).[1] Climate changes analysis by the district indicates that only water rights with a priority date of 1890 or earlier will be reliable, reducing the agricultural supply to approximately 16,000 acre-feet (corresponding to 3,400 acres). There is a State and local desire to maintain a healthy agricultural economy and culture.[2] If the Regional Reuse System is not built, there will be added pressure to convert more agricultural supplies sooner and not give the county adequate time to avoid or mitigate the negative environmental and socioeconomic consequences.

[1] Olds, J.D. 2021. Evaluation of the Potential Conversion of Irrigation Water to Municipal Use in the Virgin River Basin, Washington County, Utah. September 2021.
[2] Utah Division of Water Resources. 2021. Utah State Water Plan. December 2021.

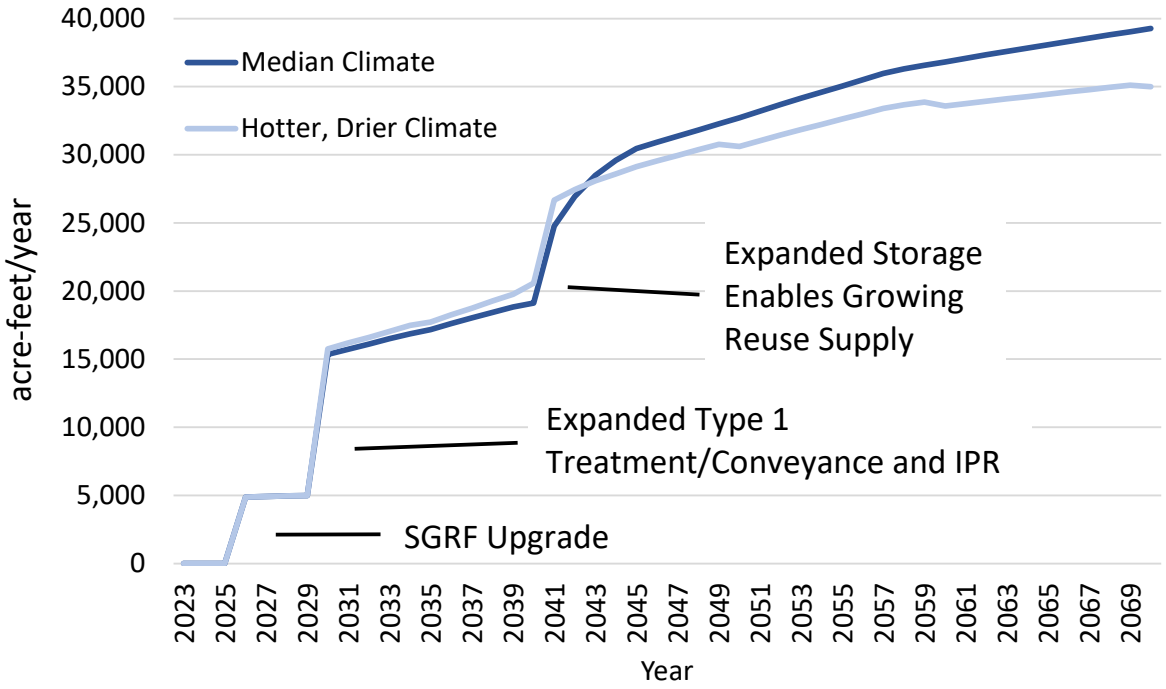


Figure 4. Additional Reuse Supply and Facility Timing in RWSA Service Area (High Growth Scenario)

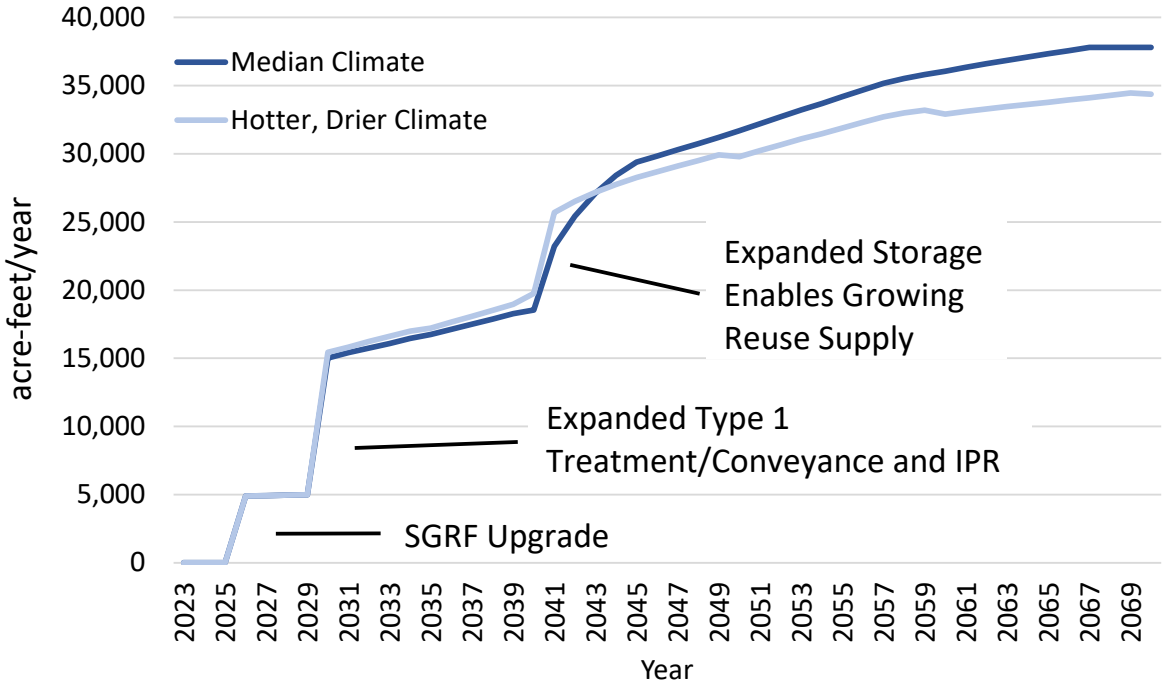


Figure 5. Additional Reuse Supply and Facility Timing in RWSA Service Area (Baseline Growth Scenario)

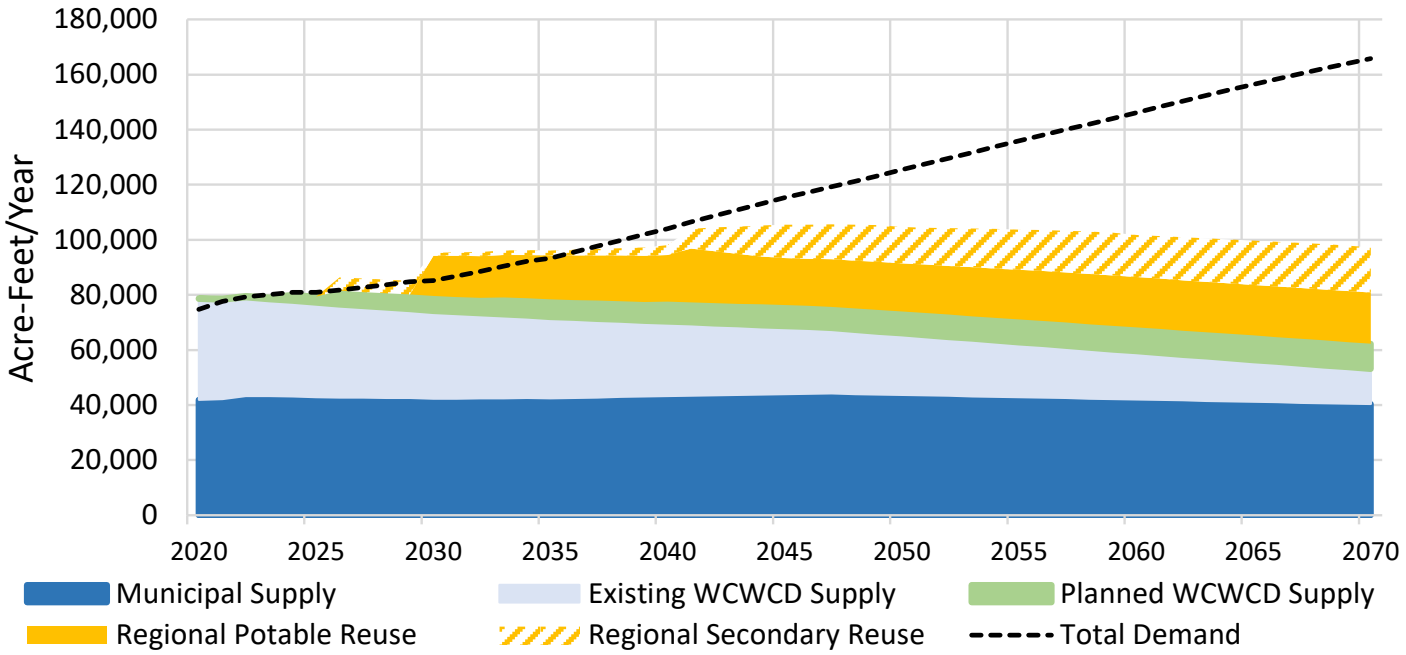


Figure 6. Total Supply and Demand with Regional Reuse System under a Hotter, Drier Climate and High Population Growth Scenario

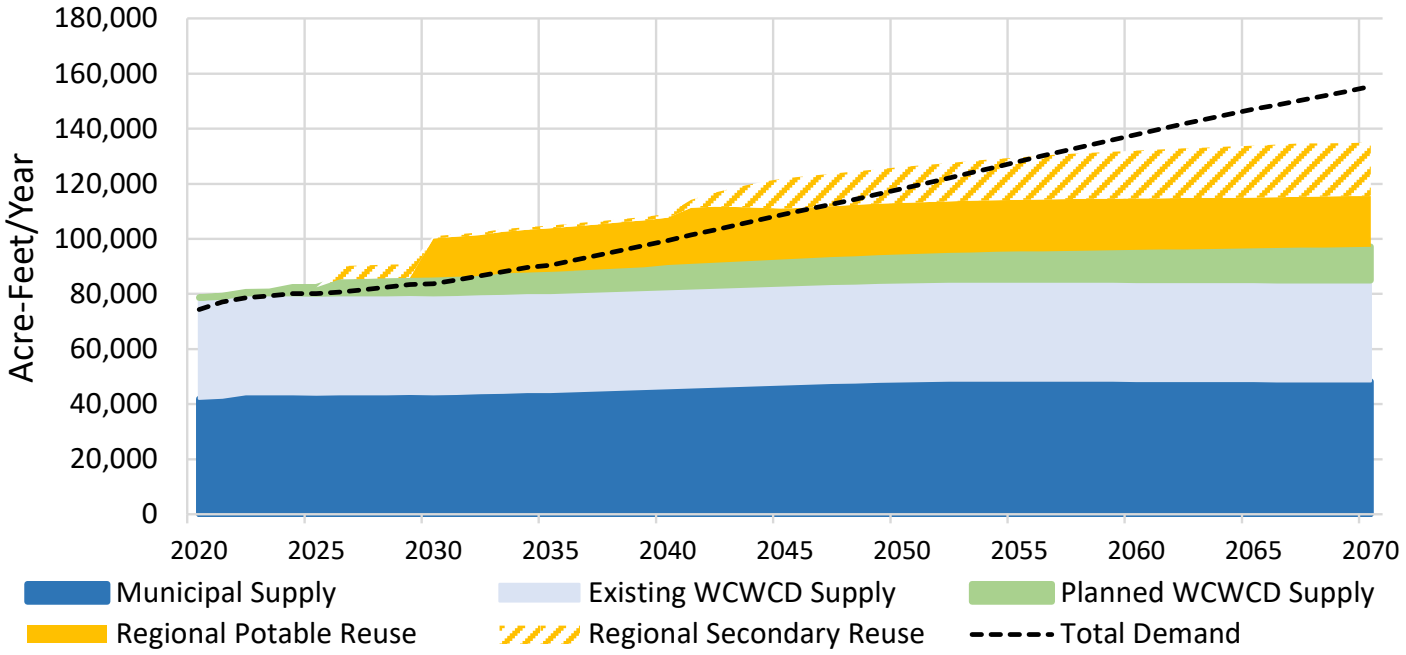


Figure 7. Total Supply and Demand with Regional Reuse System under a Median Climate and Baseline Population Growth Scenario

4) What performance measures will be used to quantify actual benefits upon completion of the Project?

The following performance measures will be used to quantify Regional Reuse System benefits. These measures will be used to evaluate both quantitative and qualitative benefits described under Criterion 3 below.

- Increased reliable supply volume (potable and secondary irrigation).
- Avoided revenue and economic losses during drought periods.
- Changes in water elevations at Sand Hollow Reservoir and Quail Creek Reservoir.

Subcriterion No. 1b—Contributions to Water Supply Sustainability

1) Will the Project make water available to address a specific concern or range of concerns?

The project will address a range of concerns, summarized as follows:

Lessen Near-Term Water Shortages

Existing water supplies are under extreme stress due to climate change and economic growth. Under a hotter, drier climate and high growth scenario, the county will start experiencing permanent annual shortages of greater than 5,000 acre-feet by 2030 (~2040 under a median climate and baseline growth scenario). Shortages will grow to over 100,000 acre-feet per year by 2070 (i.e., 60% of demand would not be met) if no additional supplies are developed. These shortages occur even considering the county's aggressive conservation goals. The Regional Reuse System would alleviate near-term shortages, pushing off needs for additional water supply projects until approximately 2045 to 2055, depending on the scenario (see Figure 6 and Figure 7).

Meet Statutory Source Sizing Standard

To ensure that water providers can meet water demands, the State of Utah requires utilities to establish a source sizing standard to determine the volume of water that needs to be available to users (Utah Code Annotated § 19-4-114). The source sizing standard is typically evaluated in terms of source capacity needed per "Equivalent Residential Connection" (ERC). The district has a conservation goal to reduce water use per ERC to 0.59 acre-feet/year (approximately 24%) by the year 2070. Communities have adopted ordinances for new development that achieves the new source sizing standard. The Regional Reuse System will help the district comply with the source sizing standard by meeting between 20% to 24% of total annual demand, as described in Question No. 1 under Subcriterion No. 1a.

Improves Operational Dependability, Flexibility, and Diversity

The Regional Reuse System provides system flexibility by constructing reuse infrastructure on both the west and east sides of the metro area and integrates the supply into both the potable and secondary irrigation systems. The Regional Reuse System can be implemented fairly quickly and is designed to be modular, lending flexibility to future planning and expansions. Reuse of both

local surface water and groundwater would diversify the supply portfolio and thereby alleviate pressure during a localized emergency outage or acute drought in the watershed.

Protect Drought Resiliency

Without the Regional Reuse System, the district will need to rely more heavily upon banked groundwater reserves below Sand Hollow Reservoir to meet potable demands. This emergency reserve supply (currently about 160,000 acre-feet) is intended to meet demands during short-term, acute drought periods. Relying on these reserves for multiple years under non-drought emergency conditions weakens the region's drought resiliency.

Reduce Groundwater Depletion

The Virgin River Basin (Utah Division of Water Rights Area 81) is currently closed for additional groundwater appropriation, but to date a Groundwater Management Plan has not been required to repair or prevent Virgin River Basin overdraft. Groundwater and natural springs are the predominate potable water supply for many Washington County communities. Studies have shown, however, that the average natural recharge to the local aquifer is likely much less than the total water rights allocated for the basin.[3] The Regional Reuse System will support a more sustainable use of local groundwater resources. Without the project to support future demands, these groundwater supplies could be used more heavily and may necessitate a Groundwater Management Plan to manage potential future overdraft.

Reduce Competition for Water Supplies

The Virgin River Basin is the only source of water supply for most of Washington County and is reaching its full developmental capacity. The Regional Reuse System will lessen the competition for and speed of converting existing agricultural supply to municipal use, as described in Question No. 3 under Subcriterion No. 1a.

Mitigate Natural Disasters

The majority of the district's surface water supply originates from the upper Virgin River watershed in and near Zion National Park, whereas the county's groundwater supplies occur further downstream in the watershed. Both the surface water and groundwater supplies are subject to localized wildfire, flooding, and other infrastructure risks. Infrastructure to reuse either supply would diversify the supply portfolio and thereby alleviate pressure during an emergency outage in the watershed.

Augments Water-Based Recreation

Sand Hollow State Park in Washington County has consistently been the most visited park in Utah for several years, with Quail Creek State Park being in or near the top ten.[4] Storing and managing potable reuse water supply in these reservoirs will increase water levels that would otherwise be further depleted under climate change and demand growth. Maintaining the quality

[3] Marston, T.M., and Heilweil, V.M., 2012, Numerical simulation of groundwater movement and managed aquifer recharge from Sand Hollow Reservoir, Hurricane Bench area, Washington County, Utah: U.S. Geological Survey Scientific Investigations Report 2012–5236, 34 p.
[4] See https://stateparks.utah.gove/resources/park-visitation-data/.

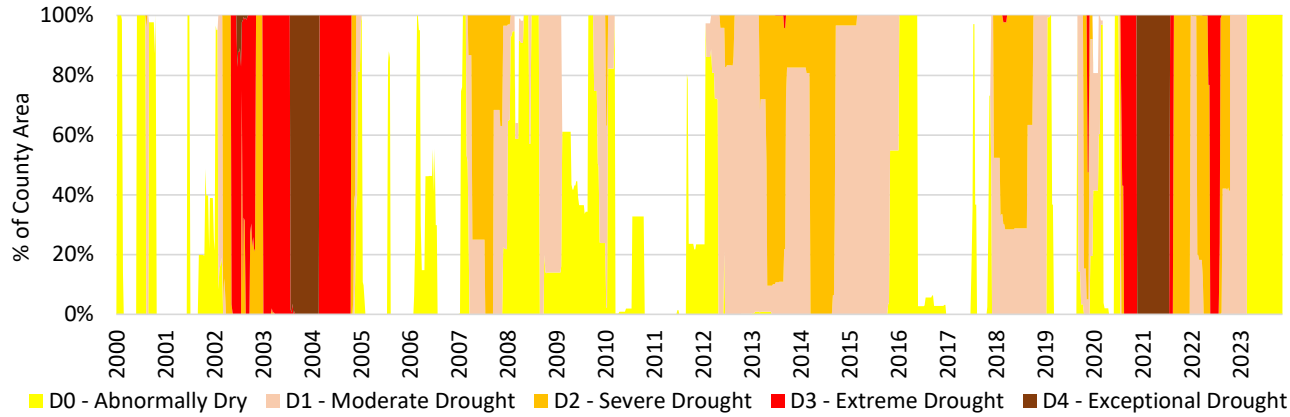
and quantity of these recreational sites in Washington County helps relieve pressure on surrounding congested recreational areas, such as Zion National Park.

2) *Will the project help create additional flexibility to address drought? Will water made available by this Project continue to be available during periods of drought? To what extent is the water made available by this Project more drought resistant than alternative water supply options?*

Washington County, Utah, has been in some form of drought 80% of the time over the last 22 years (Figure 8). Between July 2020 and August 2021, the county was in extreme or exceptional drought for 56 consecutive weeks. Utah's Governor has issued an Executive Order declaring a state of emergency due to drought in two of the past three years.

The Regional Reuse System will create additional flexibility to address drought, as follows:

- Water reuse facilities will enhance and diversify the county's water supply portfolio by creating a drought resilient water supply. When drought contingency plans are enacted during dry periods, emphasis will be given to maintaining indoor residential use, thereby preserving the raw water supply (i.e., sewered return flows) for reuse facilities. For this reason, reuse supply is typically considered a "drought-proof" supply. Future climate change impacts beyond 2050, however, could slightly decrease reuse supplies as even local indoor potable supplies would experience shortage (see Figure 4 and Figure 5).
- As discussed in Question No. 1 under Subcriterion No. 1b, without the Regional Reuse System the district will rely more heavily upon banked groundwater reserves below Sand Hollow Reservoir to meet potable demands. Relying on these reserves for multiple years under non-drought emergency conditions weakens the region's drought resiliency.
- Reusing indoor water use supplied by local Virgin River Basin sources will be more drought resistant than importing Colorado River water or other out-of-basin supplies where the district has less senior water rights and less operational control. Upper Basin allocations from the Colorado River could be curtailed during dry periods in future years, as evaluated in the 2012 Colorado River Basin Study (Reclamation 2012) and subsequent analyses.



Data Source: U.S. Drought Monitor, 2022

Figure 8. Percent of Washington County in Drought over Last Twenty-two Years

EVALUATION CRITERION 2—ENVIRONMENT AND WATER QUALITY

1) Will the Project improve the quality of surface water or groundwater?

Currently wastewater effluent disposal from Washington County treatment facilities consists of holding ponds and land application (Ash Creek SSD) or river discharge with seasonal and partial flow reuse for irrigation (SGRF). The treatment processes considered for the Regional Reuse System include filtration and advanced water treatment that will remove various contaminants that would otherwise be discharged to the local watershed. Specifically, the Regional Reuse System may improve water quality as follows:

- The advanced water treatment process will remove salts, nutrients, and contaminants of emerging concern (e.g., PFAS) that otherwise would enter waterways via wastewater effluent.
- Directly reusing Type I (non-potable) water via landscape irrigation will reduce salts and nutrient loading to the Virgin River.
- The reuse system will improve pump-back operations to help manage Virgin River temperatures (see Question No. 3 under Criterion No. 2).
- Water quality of potable reuse water stored in Sand Hollow Reservoir, and subsequently recharged to the underlying aquifer, will exceed water quality of river supplies stored and recharged from the reservoir.

2) Will the Project improve effluent quality beyond levels necessary to meet State or Federal discharge requirements?

The treatment processes for the Regional Reuse System will exceed current State or Federal wastewater discharge requirements. Resulting water quality is near drinking water standard and designed to not impair the quality to groundwater or surface water. For potable reuse applications, State or Federal standards are not yet fully developed to address water quality

or treatment process requirements. However, the treatment processes under consideration for the project will produce water quality that meets or exceeds any known standards.

3) Will the Project improve flow conditions in a natural stream channel?

Under low flow or high temperature conditions in the Virgin River, the district is able to pump water from Sand Hollow Reservoir upstream to the Hurricane Hydropower Plant for releases to the river. This pump-back operation is coordinated under the Virgin River Program for the benefit of Federally-listed fish. Storing potable reuse water supply in the reservoir would increase flexibility in meeting pump-back targets and would improve flow conditions in approximately 15 miles of designated critical habitat in the Virgin River.

4) Will the Project restore or enhance habitat for non-listed species?

Sand Hollow and Quail Creek reservoirs provide large areas of important habitat for waterfowl, migratory birds, bats, and other non-listed wildlife species in a desert region. Both reservoirs also support game fish populations. Storing and managing potable reuse water supply in these reservoirs will increase water levels that would otherwise be further depleted under climate change and demand growth. Maintaining higher water levels will continue to enhance habitat for these species.

5) Will the Project provide water or habitat for federally listed threatened or endangered species?

The Regional Reuse System will improve designated critical habitat for the Virgin River chub (*Gila seminuda*) and woundfin (*Plagopterus argentissimus*). See the response to Question No. 3 under Criterion No. 2 for discussion of improved streamflows.

6) Will the project reduce impacts on environmental resources from water projects owned or operated by Federal and State agencies, including through measurable reductions in water diversions from imperiled ecosystems.

The Regional Reuse System will lessen the quantity and urgency of future imported water projects, such as the LPP. Environmental impacts on the Colorado River system from LPP would be minor.[5] A change in LPP scope and timing due to the Regional Reuse System would further reduce future impacts.

EVALUATION CRITERION 3—ECONOMIC BENEFITS

Subcriterion No. 3a—Cost Effectiveness

1) Cost per acre-foot of water produced by the Project.

a) The total estimated construction costs, by year, for the Project.

[5] U.S. Bureau of Reclamation. 2020. Lake Powell Pipeline Draft Environmental Impact Statement. June 2020.

The total construction cost of the Regional Reuse System is $914,279,000 in 2022 dollars. The estimated construction costs by year are summarized in Table 4. Per Reclamation's Directives and Standards FAC 09-01, construction costs in Table 4 include field costs, non-contract costs (e.g., design, permitting, construction management), and escalation to the mid-point of construction.

Table 4. Estimated Construction Costs by Year

Calendar Year	Construction Cost (present value, Q4 2022 dollars)
2024	$9,706,667
2025	$42,314,167
2026	$19,747,167
2027	$26,759,333
2028	$193,532,167
2029	$212,007,500
2030	$-
2031	$-
2032	$-
2033	$-
2034	$-
2035	$-
2036	$-
2037	$98,358,667
2038	$151,032,167
2039	$160,821,167
2040	$-

b) The total estimated or actual costs to plan and design the Project.

The planning, permitting, and design (through 100% design) for the complete Regional Reuse System is $61,248,155. These costs are included in non-contract costs, which are included in the construction costs in Table 4.

a) The estimated expected average annual operation and maintenance costs for the life of the Project.

The annual operation and maintenance costs are in Table 5. The average costs for all growth and climate scenarios over the next 50 years is approximately $5.1 million.

Table 5. Estimated Annual Operating and Maintenance Costs

Year	Annual Operation and Maintenance Costs				
	Baseline Growth		High Growth		Average
	Median Climate	Hotter, Drier Climate	Median Climate	Hotter, Drier Climate	
2023	$0	$0	$0	$0	$0
2024	$0	$0	$0	$0	$0
2025	$0	$0	$0	$0	$0
2026	$545,000	$545,000	$545,000	$545,000	$545,000
2027	$545,000	$545,000	$545,000	$545,000	$545,000
2028	$565,000	$565,000	$565,000	$565,000	$565,000
2029	$565,000	$565,000	$565,000	$565,000	$565,000
2030	$3,993,728	$4,224,494	$4,069,255	$4,278,170	$4,141,412
2031	$4,054,235	$4,265,324	$4,123,858	$4,357,681	$4,200,274
2032	$4,090,742	$4,345,084	$4,193,684	$4,416,165	$4,261,419
2033	$4,128,485	$4,397,288	$4,238,240	$4,475,934	$4,309,987
2034	$4,186,490	$4,441,134	$4,277,463	$4,548,026	$4,363,278
2035	$4,223,709	$4,476,090	$4,321,461	$4,575,012	$4,399,068
2036	$4,271,280	$4,547,853	$4,404,537	$4,669,943	$4,473,403
2037	$4,324,035	$4,605,256	$4,479,612	$4,750,002	$4,539,726
2038	$4,391,299	$4,682,955	$4,536,513	$4,854,698	$4,616,366
2039	$4,463,765	$4,749,928	$4,611,146	$4,924,259	$4,687,275
2040	$5,345,090	$5,767,700	$5,495,395	$5,870,210	$5,619,599
2041	$5,051,559	$5,514,438	$5,217,240	$5,695,543	$5,369,695
2042	$5,024,916	$5,525,972	$5,196,684	$5,714,346	$5,365,480
2043	$5,008,728	$5,542,171	$5,191,398	$5,711,227	$5,363,381
2044	$4,998,777	$5,552,145	$5,206,551	$5,712,993	$5,367,617
2045	$4,969,584	$5,541,885	$5,202,136	$5,704,615	$5,354,555
2046	$5,039,075	$5,598,397	$5,244,963	$5,744,884	$5,406,830
2047	$5,092,927	$5,662,929	$5,279,604	$5,764,571	$5,450,008
2048	$5,168,479	$5,707,248	$5,315,916	$5,820,512	$5,503,039
2049	$5,205,265	$5,746,148	$5,361,399	$5,873,134	$5,546,487
2050	$5,244,725	$5,826,358	$5,401,563	$5,950,226	$5,605,718

Table 5. Estimated Annual Operating and Maintenance Costs (continued)

2051	$5,288,911	$5,852,392	$5,444,555	$5,969,553	$5,638,853
2052	$5,323,648	$5,895,760	$5,471,280	$5,992,767	$5,670,864
2053	$5,358,283	$5,944,034	$5,516,519	$6,018,463	$5,709,325
2054	$5,395,267	$5,965,558	$5,595,403	$6,075,319	$5,757,887
2055	$5,430,684	$5,978,795	$5,651,636	$6,118,415	$5,794,882
2056	$5,469,370	$6,009,030	$5,704,034	$6,153,707	$5,834,035
2057	$5,513,547	$6,052,080	$5,758,502	$6,194,791	$5,879,730
2058	$5,564,501	$6,095,818	$5,805,845	$6,232,352	$5,924,629
2059	$5,639,847	$6,134,983	$5,863,529	$6,264,588	$5,975,737
2060	$5,682,463	$6,193,283	$5,892,131	$6,261,235	$6,007,278
2061	$5,730,746	$6,214,236	$5,933,446	$6,275,072	$6,038,375
2062	$5,786,066	$6,224,643	$6,027,841	$6,281,254	$6,079,951
2063	$5,836,984	$6,231,725	$6,070,844	$6,294,856	$6,108,602
2064	$5,865,122	$6,249,432	$6,126,996	$6,302,488	$6,136,009
2065	$5,897,477	$6,257,661	$6,146,110	$6,309,442	$6,152,672
2066	$5,925,460	$6,262,057	$6,193,003	$6,316,418	$6,174,234
2067	$5,998,595	$6,273,886	$6,242,747	$6,323,439	$6,209,667
2068	$5,998,595	$6,282,905	$6,276,805	$6,333,783	$6,223,022
2069	$5,998,595	$6,290,166	$6,312,576	$6,337,926	$6,234,815
2070	$5,998,595	$6,234,301	$6,331,262	$6,269,660	$6,208,455
2071	$6,074,783	$6,284,531	$6,399,411	$6,324,849	$6,270,894
2072	$6,105,903	$6,290,428	$6,441,820	$6,328,561	$6,291,678
2073	$6,137,023	$6,296,324	$6,484,229	$6,332,273	$6,312,462

b) The year the Project has or is expected to begin to deliver reclaimed water.

The project is anticipated to begin delivering reclaimed water by 2026.

c) The Projected life (in years) that the Project is expected to last.

It is assumed that the proposed reuse system will be a component of the district's water supply with a useful life of 50-years. To meet demand beyond the 50-year planning horizon, it is assumed that the Regional Reuse System will be expanded, improved, and/or replaced.

d) All estimated replacement costs by year.

Assuming a 50-year useful life, the total replacement costs are estimated to be approximately $46,187,000 (see Table 6).

Table 6. Estimated Replacement Costs

Year	Present Worth Costs (Q4 2022)	Description of Replacement Requirement
5	$424,500	pipeline, pump station, storage components
10	---	---
15	$424,500	pipeline, pump station, storage components
20	$22,032,300	treatment plant, pipeline, pump station, storage components
25	$424,500	pipeline, pump station, storage components
30	---	---
35	$424,500	pipeline, pump station, storage components
40	$22,032,300	treatment plant, pipeline, pump station, storage components
45	$424,500	pipeline, pump station, storage components
50	---	---

e) The maximum volume of water (in acre-feet) that is expected to be produced annually upon completion of the Project.

The Regional Reuse System will initially provide approximately 5,000 acre-feet of new water supply starting in 2026. Depending on climate and growth scenario, the system will yield approximately 34,000 acre-feet to 40,000 acre-feet of new supply by 2070, and average between 26,165 to 28,373 acre-feet per year over the next 50 years

2) Comparison of non-reclaimed water alternatives.

a) A description of the conditions that exist in the area and projections of the future with, and without, the Project.

Baseline conditions represent the state of RWSA service area water supply and demand without implementation of the proposed reuse project. In addition to the existing municipal and district water supply projects, baseline conditions in the RWSA service include the following planned non-reuse projects:

- Ash Creek Pipeline/Toquer Reservoir
- Sullivan Well Field
- Cove Reservoir
- Diamond Valley Well
- Ence Wells Expansion
- Agricultural Conversion

Current and projected water demands, shown in Figure 6 and Figure 7, incorporate Washington County water conservation plans. The district has a robust water conservation program,[6] and its

[6] Washington County Water Conservancy District. Water Conservation Plan, October 2021 Update.

contracts require its municipal customers to implement similar plans. Washington County's largest municipalities have the most restrictive conservation ordinances for new construction in Utah. The district has a conservation goal to reduce water use approximately 24% by the year 2070, which aims to reduce the county's 2070 total water use by approximately 55,000 acre-feet/year.

Under baseline conditions described above, without the implementation of the Region Reuse System, substantial supply deficits are projected to occur as early as 2030, depending on climate scenarios (see response to Question No. 1 under Subcriterion No. 1b).

b) Provide the cost per acre-foot of other water supply alternatives that could be implemented by the non-Federal Project sponsor in lieu of the Project.

Cost per acre-foot for the proposed Regional Reuse System and alternative water supply projects are listed in Table 7.

c) If available, provide the cost per acre-foot of one water supply project with similar characteristics to the Project.

No local project has similar characteristics as the Regional Reuse System in terms of infrastructure or yield. See the response to Question No. 2b under Subcriterion No. 3a above for comparison to other water supply alternatives.

d) Discussion of the degree to which the Project is cost-effective.

As shown in Table 7, the LPP is the most cost effective water supply project, but as discussed in this application, the LPP would import Colorado River water that is subject to an increasing risk of curtailment due to climate change. The State of Utah and the district continue to evaluate LPP under climate change, however the Regional Reuse System is not subject to curtailment risk and is considered a resilient, effective local supply, especially in the short term. Compared to other potential local supply alternatives (Ash Creek Project, La Verkin Hot Springs), the Regional Reuse System is more cost effective. Although up front construction costs are more for the Regional Reuse System compared to other local alternatives, its water supply yield is substantially higher.

The threat of substantial and long-term water supply shortages in the near term for Washington County is continuously increasing during unprecedented drought and growth. This is evident across Southwestern communities that find themselves with less certain water supplies and even perilously close to running out (e.g., Las Vegas, New Mexico). The district must implement all planned local supply projects, in addition to aggressive conservation measures, to meet projected demand in both the near and long term. The district cannot wait until current volatile construction markets settle to lower construction costs. The district continues to consider the Regional Reuse System to be beneficial (see the next section) and cost effective as opposed to acute shortages and resulting emergency costs.

Table 7. Cost Efficiency of Water Supply Alternatives

Alternative			Capital Costs ($, PV)	Operation, Maintenance, and Replacement/ Rehabilitation Costs ($, PV)[1]	Annualized Costs ($/year)[1]	Average Water Yield (acre-feet/year)[2]	Cost per Acre-Foot ($, annual)
Regional Reuse System	Baseline Growth	Median Climate	$914,279,000	$163,283,000	$37,993,000	27,573	$1,378
		Hot, Drier Climate		$172,487,000	$38,317,000	26,165	$1,464
	High Growth	Median Climate		$167,385,000	$38,137,000	28,373	$1,344
		Hot, Drier Climate		$174,973,000	$38,405,000	26,802	$1,433
Lake Powell Pipeline[3]			$1,896,173,000	$287,600,000	$76,996,000	83,756	$919
Ash Creek Project[4]			$93,663,000	$10,150,823	$3,660,000	1,553	$2,357
La Verkin Hot Springs Reverse Osmosis[5]			$153,065,000	$243,254,711	$13,973,000	7,259	$1,925

Notes:

[1] 50 years and 2.50% discount rate.

[2] The Regional Reuse System will provide between approximately 34,000 acre-feet and 40,000 acre-feet of new supply by 2070, depending on climate and growth scenario, and will average approximately 26,000 to 28,000 acre-feet over the next 50 years.

[3] Costs from the 2020 LPP Draft Environmental Impact Statement, indexed to 2022 price level using U.S. Bureau of Reclamation Construction Cost Trends and the U.S. Energy Information Administration electricity data browser. Escalation was added for comparison purposes, assuming 2028 for mid-point of construction in the absence of the Regional Reuse System.

[4] Costs from amended October 2022 Washington County Small Surface Water Storage Project Feasibility Study.

[5] Costs from 2010 WCWCD Conceptual Water Treatment Study, indexed to 2022 price level using U.S. Bureau of Reclamation Construction Cost Trends, U.S. Bureau of Labor Statistics CPI Inflation Calculator, and the U.S. Energy Information Administration electricity data browser.

Subcriterion No. 3b—Economic Analysis and Project Benefits

1) Summarize the economic analysis performed for the Project including information on the Project's estimated benefits and costs. Describe the methodologies used for the analysis that has been conducted.

a) Quantified and monetized Project costs, including expected capital costs and operations and maintenance costs.

Regional Reuse System construction, operations, maintenance, and replacement costs for the climate change and growth scenarios are quantified in Table 2 and Table 7.

b) Quantified and monetized Project benefits.

Studies completed in several states have estimated water reliability benefits and the benefits of avoiding water supply shortages.[7] These studies typically have quantified a willingness-to-pay or willingness-to-accept value using survey data to estimate how residential and commercial/industrial water users would react to different magnitudes of shortages and various event probabilities. Previous economic analyses completed in 2020 by Reclamation's Technical Service Center economists for Washington County[8] used these studies to demonstrate that an increase in water supply of approximately 86,000 acre-feet per year would provide a reliability benefit to Washington County of between approximately $216 million and $2,364 million (present value (PV) over 100 years). This range was based on a range of reliability value per household and assumed household growth projections.

In the 2020 Reclamation analysis, household benefits from avoiding a shortage, or increasing water supply reliability, were estimated to range from about $89 to $360 per household per year, with a best estimate of $300 per household per year (2019 dollars). For this Regional Reuse System analysis, the 2019 dollar values were adjusted to December 2022 dollars using the U.S. Bureau of Labor Statistics Consumer Price Index inflation calculator, resulting in a willingness-to-pay value range of $103 (low), $346 (best), and $416 (high) per household. December 2022 was used to be consistent with the Regional Reuse System cost estimate price level.

Commercial water supply benefits are attributable to avoiding revenue losses that could occur during periods of low reliability. Consistent with the 2020 Reclamation analysis, the high estimate of household willingness-to-pay ($416) is multiplied by the number of future commercial businesses to calculate a lower bound estimate of commercial benefits. A high bound estimate of commercial benefits is calculated by multiplying the number of future commercial businesses by five times the high household willingness-to-pay estimate ($416 x 5).

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[7] U.S. Bureau of Reclamation. 2020. Lake Powell Pipeline Draft Environmental Impact Statement, Appendix C-23. June 2020.
[8] U.S. Bureau of Reclamation. 2020. Lake Powell Pipeline Draft Environmental Impact Statement, Appendix C-23. June 2020.

Water supply reliability benefits for the Regional Reuse System were estimated by applying the willingness-to-pay value to household and commercial establishment growth projections, as follows.

- The period of analysis extends 50 years, from 2023 as Year 0 to 2073 as Year 50. The benefits of the Regional Reuse System begin to accrue in Year 3 (2026).
- Household and commercial establishment growth projections were calculated using baseline and high population growth scenarios from the 2017/18 Gardner Institute studies.[9]
- The household and commercial establishment projections were multiplied by the willingness-to-pay values over the period of analysis and discounted back to a present value (2.50 discount rate).
- The present value water supply reliability benefits were prorated by the average reuse system yields to total district service area future water demands for each scenario. The willingness-to-pay values are interpreted as a benefit of maintaining future water supply reliability, but this reliability will be achieved through a variety of future water supplies for the service area, with each future supply contributing toward the benefit. Reuse supply was compared to the entire district service area demand instead of just the RWSA service area demand in this calculation to be consistent with this interpretation. This is a conservative assumption that results in less benefits than if yields were ratioed to the smaller RWSA service area demand.

Regional Reuse System benefits for the climate change and growth scenarios are quantified in Table 8. The median climate scenarios under the Regional Reuse System have higher benefits due to higher reuse water yields. Shortages to indoor water demands are higher under future drier, hotter conditions and produce slightly less reuse source water.

[9] Kem C. Gardner Policy Institute. 2018. Washington County Long-Term Projection Scenarios. Technical Memorandum, January 30, 2018.

Table 8. Water Supply Reliability Benefits of the Regional Reuse System

Benefits of Regional Reuse System Reliable Yield *- Baseline Population Growth ($, PV)*				**Benefits of Regional Reuse System Reliable Yield** *- High Population Growth ($, PV)*			
Total Water Supply Reliability Benefit ($, PV)		**Median Climate**	**Hotter, Drier Climate**	**Total Water Supply Reliability Benefit ($, PV)**		**Median Climate**	**Hotter, Drier Climate**
		Percent of Deficit Met by Reuse				*Percent of Deficit Met by Reuse*	
		77.4%	*69.0%*			*76.4%*	*65.6%*
Households				**Households**			
Low	$366,523,000	$283,867,000	$253,036,000	Low	$387,920,000	$296,353,000	$254,339,000
Best	$1,235,494,000	$956,872,000	$852,946,000	Best	$1,307,622,000	$998,962,000	$857,340,000
High	$1,482,599,000	$1,148,251,000	$1,023,539,000	High	$1,569,154,000	$1,198,761,000	$1,028,812,000
Commercial Establishments				**Commercial Establishments**			
Low	$127,460,000	$98,716,000	$87,994,000	Low	$134,341,000	$102,630,000	$88,080,000
Best	$637,300,000	$493,579,000	$439,972,000	Best	$671,705,000	$513,151,000	$440,402,000
High	$637,300,000	$493,579,000	$439,972,000	High	$671,705,000	$513,151,000	$440,402,000
Total Benefit				**Total Benefit**			
Low		$382,583,000	$341,030,000	Low		$398,983,000	$342,419,000
Best		$1,450,451,000	$1,292,918,000	Best		$1,512,113,000	$1,297,742,000
High		$1,641,830,000	$1,463,511,000	High		$1,711,912,000	$1,469,214,000

c) A comparison of the Project's quantified and monetized benefits and costs.

A comparison of the Regional Reuse System's monetized benefits and costs are in Table 9.

Table 9. Benefits and Costs of the Regional Reuse System

Benefit/Costs	Baseline Population Growth		High Population Growth	
	Median Climate	Hotter, Drier Climate	Median Climate	Hotter, Drier Climate
Total Project Benefit[1] (Water Supply Reliability Benefit, Best Value)	$1,450,451,000	$1,292,918,000	$1,512,113,000	$1,297,742,000
Total Project Cost[1]	$1,077,562,000	$1,086,766,000	$1,081,664,000	$1,089,252,000
Benefit/Cost Ratio	1.35	1.19	1.40	1.19

Notes:
[1] Present value; 50-year analysis period

2) Describe any economic benefits of the Project that are difficult to quantify and/or monetize. Provide a qualitative discussion of the economic impact of these benefits.

In addition to water supply value, there are societal and environmental benefits of the Regional Reuse System. These difficult-to-quantify benefits include the following:

- **Reduce Virgin River Basin Environmental Pressure:** The Regional Reuse System will reduce or delay development of remaining limited surface and groundwater supplies in the Virgin River Basin. These remaining supplies provide multiple environmental benefits to the system, including supporting designated critical habitat for several endangered and threatened fish and riparian birds.

- **Benefit to Disadvantaged or Underserved Communities**: The Regional Reuse System will deliver a higher quality potable water supply (via exchange and reverse osmosis) to low-income and minority communities. There are 94 census blockgroups in Washington county, most of which are or will be served by the district.[10] Twelve blockgroups have more than 10% of families below the poverty level. Five blockgroups have more than 20% of families below the poverty level. Sixteen blockgroups have minority populations of more than 20%. Five blockgroups have Native American populations of more than 5%. See the response to Question No. 2 under Criterion No. 4 for additional discussion of benefits to disadvantaged communities.

- **Protect Local Agriculture**: The Regional Reuse System will lessen competition for existing agricultural water supplies. Reusing treated wastewater instead of drying agricultural lands minimizes the loss of local green space, ensures the quantity and

[10] U.S. Census, 2020 American Community Survey, www.data.census.gov

timing of agricultural return flows loss, maintains locally grown foods, and protects the agricultural economy, custom, and culture. See response to Question No. 3 under Subcriterion No. 1a.

- **Postpone Imported Water Supply Projects**: Implementing reuse in Washington County will lessen the urgency of imported water projects, such as Colorado River water via the LPP. See response to Question No. 2 under Subcriterion No. 1a.

- **Reduce Groundwater Depletion**: The Regional Reuse System will support a more sustainable use of local groundwater resources. Without reuse to help meet future demands, groundwater supplies could be used more heavily and may necessitate a Groundwater Management Plan to manage potential future overdraft. See response to Question No. 1 under Subcriterion No. 1b.

- **Support Regional Recreation**: Storing and managing reuse water supply in local reservoirs will support the quality and quantity of recreational sites in Washington County and relieve pressure on surrounding congested recreational areas, such as Zion National Park. See response to Question No. 1 under Subcriterion No. 1b.

- **Support District Virgin River Program Operations**: Storing and managing reuse water supply in local reservoirs will increase water levels and support the district's river pump-back operations. Pump-back operations are currently used to help manage temperatures in approximately 15 miles of designated critical habitat in the Virgin River. See response to Question No. 3 under Subcriterion No. 2.

- **Reduce Nutrient Loading:** Directly reusing treated wastewater will reduce point-source nutrient loading to the Virgin River via wastewater treatment facilities.

EVALUATION CRITERION 4—PRESIDENTIAL AND DEPARTMENT OF THE INTERIOR PRIORITIES

1) Describe in detail how the proposed project supports a priority: Climate Change.

Water supply in the Virgin River Basin is driven by precipitation and streamflow conditions. Reclamation completed a statistical analysis of climate change impacts on the Virgin River using climate projections from the 2012 Colorado River Basin Supply and Demand Study.[11] The Reclamation analysis produced a range of climate scenarios, based on streamflow percentiles, for water supply planning in the Virgin River Basin. Under a changing climate, Virgin River streamflow is projected to decrease under hotter, drier conditions, which will decrease instream flows and reliable yields of local water supply projects.

[11] U.S. Bureau of Reclamation. 2014. Virgin River Climate Change Analysis: Statistical Analysis of Streamflow Projections. March 26, 2014.

Existing water supplies (potable and secondary irrigation) are expected to decrease up to 40% (Figure 9) due to climate change impacts on Virgin River streamflow and groundwater recharge. Regional planning processes have identified a diverse portfolio of future practices and projects, including reuse, which can meet future needs under limited local water supplies threatened by climate change. Reusing local supplies will mostly mitigate decreasing existing water supply due to climate change (Figure 9).

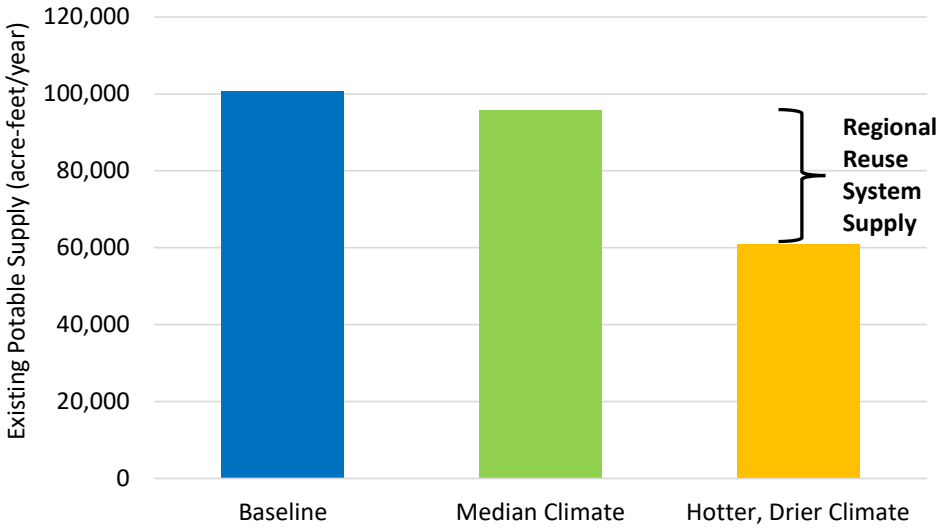


Figure 9. Existing Reliable Potable Supply for Washington County under Climate Change by 2070

2) Describe in detail how the proposed project supports a priority: Disadvantaged or Underserved Communities.

Per the White House Council on Environmental Quality's interactive Climate and Economic Justice Screening Tool, several disadvantaged communities will be served by the Regional Reuse Plan (see Table 10). These communities or tracts represent 38% of Washington County's population. The Regional Reuse System will help protect disadvantaged and underserved communities from drought and climate change impacts, and provide economic opportunities.

3) Describe in detail how the proposed project supports a priority: Tribal Benefits.

The 2001 Settlement Agreement[12] between the Shivwits Band of Paiutes, the district, and other parties gives the Band the right in perpetuity to 2,000 acre-feet per year of reuse water supply from the existing SGRF. The Regional Reuse System will expand reuse treatment, storage, and conveyance capacity in the western portion of the county, increase flexibility and resiliency in the overall reuse system in Washington County, and will help the district and St. George continue to fulfill its contractual obligations to deliver water annually to the Band.

[12] Shivwits Band of the Paiute Indian Tribe of Utah. 2001. Water Rights Settlement Agreement. January 18, 2001.

Table 10. Disadvantaged Communities Per Climate and Economic Justice Screening Tool

Tract	City/Town	Exceeded Burden/Socioeconomic Thresholds
49053270700	St. George	low income, expected building loss rate, projected wildfire risk, wastewater discharge
49053271300	St. George	poverty, high school education, projected wildfire risk, diesel particulate matter exposure
49053271400	St. George	low income, projected wildfire risk, lack of indoor plumbing, wastewater discharge, high school education
49053271000	La Verkin	low income, expected building loss rate, projected wildfire risk, formerly used defense sites, high school education
49053270901	Hurricane	low income, expected building loss rate, abandoned mine land
49053270100	Toquerville/Virgin	low income, expected building loss rate, expected population loss rate, projected wildfire risk, abandoned mine land, high school education
49053270300	Unincorporated County Area	partially disadvantaged due to overlap with Shivwits Band of Paiutes Reservation
49053270400	Ivins	partially disadvantaged due to overlap with Shivwits Band of Paiutes Reservation
49053270500	Santa Clara	partially disadvantaged due to overlap with Shivwits Band of Paiutes Reservation

EVALUATION CRITERION 5—RECLAMATION'S OBLIGATIONS AND WATERSHED PERSPECTIVE

Subcriterion No. 5a—Reclamation's Legal and Contractual Water Supply Obligations

Explain how the Project relates to Reclamation's mission and/or serves a Federal interest.

The advanced water treatment process will remove salts that otherwise would enter waterways via wastewater effluent. Salt removal directly benefits Federal interests on the Colorado River by helping to meet U.S. water quality treaty obligations with Mexico. The Regional Reuse System will also indirectly benefit a Federal interest by coordinating with a potential Colorado River Salinity Control Program project. Treatment of the La Verkin Hot Springs in Washington County to remove salts has been studied previously by Reclamation for the Colorado River Basin Salinity Control Program.[13] Due to uncertainty with the existing Paradox Valley Unit capacity and operations, Reclamation may evaluate new salinity control projects, and has recently

[13] U.S. Bureau of Reclamation. 1981. La Verkin Springs Unit: Concluding Report. December 1981.

expressed interest in the La Verkin Hot Springs.[14] If the district partners with Reclamation to move the La Verkin Hot Springs project forward, the district would coordinate the project's operations and infrastructure with the Regional Reuse System, including potential sharing of brine management infrastructure proposed for the reuse system advance water treatment facility.

Subcriterion No. 5b—Watershed Perspective

1) Does the Project implement, advance, or relate to a multi-state or international plan, such as a drought contingency plan in a river basin that crosses multi-state or multi-national boundaries?

The Upper Division States and the Upper Colorado River Commission have developed a multi-state 5-Point Plan to help improve the Colorado River system.[15] One component of the plan is to implement a Demand Management Program. For its part in the 5-Point Plan, Utah has begun investigating multiple facets of demand management, including engaging stakeholders, and increasing agricultural irrigation optimization studies and projects. Agricultural water supply exchange is proposed as part of the Regional Reuse System, and these operations will be part of the discussion related to demand management potential in Washington County.

2) Does the Project implement or relate to a regional or state water plan or an integrated resource management plan?

The Regional Reuse System will implement needed actions identified in State of Utah water plans. In 2013, Utah's Governor asked the Utah Division of Water Resources and water conservancy districts to develop a statewide "road map" for Utah's municipal water needs. The first Utah Statewide Water Infrastructure Plan quantified the state's future water demands and outlined specific conservation, rehabilitation, and new infrastructure needs. Multiple projects were explicitly identified as needed actions in the Virgin River Basin, including additional reuse. This requirement for additional water reuse investment in the Virgin River Basin was reiterated in the 2020 Statewide Water Infrastructure Plan[16] and the state's 2021 Water Resources Plan.[17]

In July of 2023, the district released it's 20-Year Plan,[18] which outlines integrated water supply objectives at a regional level. The 20-Year Plan introduces new water conservation targets, optimization of existing local supplies, and development of additional reuse capacity.

3) Does the Project help meet the water supply needs of a large geographic area, region, or watershed?

The Regional Reuse System will serve the seven largest communities in Washington County, Utah, encompassing 139,615 acres or 218 square miles (see Figure 1). As the district expands its

[14] Colorado River Basin Salinity Control Advisory Council. 2022. October 25, 2022 Minutes of Meeting.
[15] See http://www.ucrcommission.com/.
[16] Utah Division of Water Resources (Prepare60). 2020. Statewide Water Infrastructure Plan, 2nd Edition.
[17] Utah Division of Water Resources. 2021. Utah State Water Plan. December 2021.
[18] Washington County Water Conservancy District. 2023. 20-Year Plan: To Secure New Water Supplies for Washington County Utah. July 2023.

services to most of Washington County, the reuse system could serve approximately 2,400 square miles in the upper and middle Virgin River watershed.

4) Does the Project promote collaborative partnerships with multiple stakeholders representing diverse interests?

As previously described, implementing the Regional Reuse System will require a collaborative partnership between the district and the main wastewater service providers in Washington County, Ash Creek SSD and City of St. George. Partnerships between the district/municipalities and agricultural users will also be required to implement the agricultural exchanges proposed under the Regional Reuse System. The district has formed partnerships with Washington County municipalities as part of its RWSA, and operates its water system in coordination with these cities. In 2022 and 2023, the district held workgroup meetings with the RWSA municipal partners to discuss the county's reuse plan. Discussions with the county's agricultural canal companies is ongoing. The district's "ability to execute this plan, and to successfully obtain the new water supplies [from reuse], is contingent upon…all partners working together…[for] a unified approach and a holistic view of water supplies needed to serve the county as a whole."[19]

5) Does the Project include public outreach and opportunities for the public to learn about the project?

Public outreach has been performed for the Regional Reuse System over the past two decades. Dry Wash Reservoir underwent NEPA analysis in 2004. A public information workshop and public comment period were held. It is anticipated other features of the Regional Reuse System will undergo further NEPA public processes. The district has also used the 20-Year Plan and its description of reuse in public outreach efforts. The State of Utah currently does not have public outreach guidance regarding potable reuse. It is anticipated that public outreach requirements will be similar to surrounding state guidance documents, and include a public information repository and public mailings and/or meetings prior to project start-up.

[19] Washington County Water Conservancy District. 2023. 20-Year Plan: To Secure New Water Supplies for Washington County Utah. July 2023.

Project Budget

Clearly identify all project costs, including those that will be contributed as non-Federal cost share by the applicant, third-party in-kind contributions, and those that will be covered using the funding requested from Reclamation, and any requested pre-award costs.

The Regional Reuse System budget proposal for planning activities is summarized in Table 11 and Table 12. Details of the budget narrative, along with cost estimate back-up and a letter certifying labor rates, are in the Budget Detail and Narrative Tables (Appendix A).

Table 11. Summary of Non-Federal and Federal Funding Sources

Funding Sources	Amount
Non-Federal Entities	
1. Washington County Water Conservancy District	$55,504,268
2. City of St. George	$5,658,741
3. Ash Creek Special Service District	$455,914
Non-Federal Subtotal	**$61,618,923**
Requested Reclamation Funding	**$20,539,640**

Table 12. Total Project Cost Table

Source	Amount
Costs to be reimbursed with the requested Federal funding	$20,539,640
Costs to be paid by the applicant	$61,618,923
Value of third-party contributions	$0
Total Project Cost	**$82,158,563**

Permits, Letters, and Statements

Environmental and Cultural Compliance

Answer the questions from Section H.1. Environmental and Cultural Resource Considerations.

Environmental and cultural resource considerations are discussed in Appendix B.

Required Permits or Approvals

State in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Requirements and status for Regional Reuse System permits are listed in Table 13. All completed permits are available for review by Reclamation.

Table 13. Summary of Permitting Requirements for the Regional Reuse System

Jurisdiction	Permit	Purpose	Status
Bureau of Land Management	Right-of-Way Grant	Right-of-way	To be completed
Bureau of Land Management	Section 106 Consultation	Cultural resources impacts	To be completed
US Army Corps of Engineers	404 Permit(s)	Jurisdictional waters impacts	To be completed
US Fish and Wildlife Service	Section 7 Consultation	Threatened and endangered species	To be completed
Utah Division of Water Rights	Stream Alteration Permit	Alteration of natural streams	To be completed
Utah Division of Water Quality	401 Certification	Water quality impacts	To be completed
Washington County	Conditional Use Permit	Right-of-way	Contractors will acquire

Overlap or Duplication of Effort Statement

State if the proposal submitted for consideration under this program does or does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source—whether it be Federal or non-Federal.

On October 17, 2022, the district submitted an application for funding under the Southern Utah Reuse American Rescue Plan Act Grant program. The program is a competitive grant program for wastewater reuse projects in Southern Utah. The Utah Department of Environmental Quality Water Quality Board is administering the funding. The district submitted for the Dry Wash

Reservoir. Funding was announced on December 14, 2022 and the district was awarded $2,369,800. The funding for Dry Wash Reservoir will be used for construction, as planning and design have been completed for the reservoirs.

On February 27, 2023, the district submitted an application for Reclamation's Large-Scale Water Recycling Program under NOFO No. R23AS00076. Funding was announced on September 27, 2023 and the district was awarded $1,352,638. The funding will be used for planning and environmental compliance of several Regional Reuse System components. The budget used to calculate this award is not included in this current application.

Conflict of Interest Disclosure Statement

Per the Financial Assistance Interior Regulation (FAIR), 2 CFR §1402.112, applicants must state in their application if any actual or potential conflict of interest exists at the time of submission.

No actual or potential conflict of interest exists at this time.

Uniform Audit Reporting Statement

Applicants must state if their organization was or was not required to submit a single audit report for the most recently closed fiscal year.

The district was not required to a submit a single audit report for the most recently closed fiscal year.

Letters of Support

Include letters from interested stakeholders supporting the proposed project.

Letters of support for the Regional Reuse System are in Appendix C. Letter are provided for the following:

- Senator Mitt Romney
- Senator Michael Lee
- Members of Utah Congressional House Delegation
- Washington County Commissioners
- RWSA Municipal Partners

Official Resolutions

Include an official resolution adopted by the applicant's board of directors or governing body to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award.

The official resolution of the district board for the Regional Reuse System will be submitted to Reclamation within 30 days of this application submittal.

Letter of Funding Commitment

If a project is selected for award under this funding opportunity and cost share funding is anticipated to be provided by a source other than the applicant, the third-party cost share must be supported with letters of commitment prior to award.

The Letters of Funding Commitment from the City of St. George and Ash Creek SSD are in Appendix D.

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT
BOARD OF TRUSTEES
A RESOLUTION AUTHORIZING SUBMISSION FOR FEDERAL FUNDS UNDER RECLAMATION'S SMALL STORAGE PROGRAM

WHEREAS, a primary purpose and goal of the Washington County Water Conservancy District (District) is to efficiently manage and conserve the use of available water resources of the county;

WHEREAS, the District is constructing the Ash Creek Project to help maximize local reliable water supplies;

WHEREAS, Federal assistance is available through the U.S. Bureau of Reclamation's (Reclamation) Small Surface and Groundwater Storage Program (Small Storage Program) to enhance water storage opportunities;

WHEREAS, the District was awarded $4,742,929 in Federal funding for the Ash Creek Project under the Small Storage Program; and

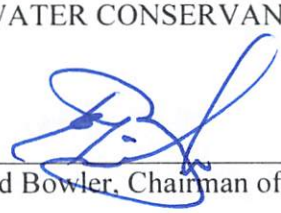
WHEREAS, the District is submitting an application to Reclamation to be considered for additional Small Storage Program funding for the construction of the Ash Creek Project.

NOW THEREFORE, the Board of Trustees of the Washington County Water Conservancy District hereby resolves that:

A. The General Manager is authorized to enter into an agreement with the U.S. Bureau of Reclamation;
B. The District will commit to the financial and legal obligations associated with receipt of a financial assistance award;
C. The Small Storage Program application has been reviewed and is approved;
D. The District will work with Reclamation to meet established deadlines for entering into a grant or cooperative agreement.

DATED this 6th day of December, 2023.

WASHINGTON COUNTY
WATER CONSERVANCY DISTRICT:



Ed Bowler, Chairman of the Board

ATTEST:

Mindy Mees, Secretary

VOTING:

Ed Bowler	Yea X	No ___
Adam Bowler	Yea X	No ___
Chris Hart	Yea X	No ___
Victor Iverson	Yea ___	No ___
Michele Randall	Yea X	No ___
Kress Staheli	Yea X	No ___
Kevin Tervort	Yea X	No ___

WASHINGTON COUNTY SMALL SURFACE WATER STORAGE PROJECT: ASH CREEK PROJECT

November 30, 2023

Washington County Water Conservancy District
533 E. Waterworks Dr., St. George, UT 84770

Morgan Drake, Project Manager
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morgan@wcwcd.org
435-673-3617

Prepared by:
Stantec/Bowen Collins & Associates

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Appendices

Acronyms / Abbreviations

Ash Creek SSD	Ash Creek Special Service District
BLM	U.S. Bureau of Land Management
cfs	cubic feet per second
CEJST	Climate and Economic Justice Screening Tool
district	Washington County Water Conservancy District
EA	Environmental Assessment
EIS	Environmental Impact Statement
ERC	Equivalent Residential Connection
LPP	Lake Powell Pipeline
M&I	municipal and industrial
MGD	million gallons per day
MOA	Memorandum of Agreement
OM&R	operations, maintenance, and replacement
POD	Plan of Development
PV	present value
Reclamation	U.S. Bureau of Reclamation
RO	reverse osmosis
ROW	right-of-way
RWSA	Regional Water Supply Agreement
SHPO	State Historic Preservation Office
SITLA	School and Institutional Trust Lands Administration
SWIP	Statewide Water Infrastructure Plan
TSWS	Toquerville Secondary Water System
UCA	Utah Code Annotated
WTP	willingness-to-pay

Technical Proposal: Executive Summary

Washington County Small Surface Water Storage Project: Ash Creek Project
November 30, 2023
Washington County Water Conservancy District
St. George, Washington County, Utah

The Ash Creek Project is a "shovel ready" project that will develop water resources within the Ash Creek watershed to help maximize local reliable water supplies and increase recreational opportunities. The project consists of new pipelines from the outlet of the existing Ash Creek Reservoir and from various tributaries to the new off-stream Toquer Reservoir located on the north end of Toquerville. At full capacity (3,725 feet above mean sea level), the surface area of the proposed Toquer Reservoir will be 115 acres and hold 3,638 acre-feet of water. The Ash Creek Project is part of a proposed water system that will supply up to 1,793 acre-feet per year of an alternate source of secondary irrigation water to the Toquerville Secondary Water System and through exchange allow water from Toquerville Springs to be delivered as potable municipal water in Toquerville, La Verkin, and Hurricane. Environmental permitting and final design is complete, and reservoir construction has commenced.

Environmental compliance has been reviewed by the U.S. Bureau of Reclamation as part of funding awarded under Notice of Funding Opportunity No. R23AS00019. Additional funds awarded under the U.S. Bureau of Reclamation's Small Storage Program specifically will be used for Toquer Reservoir construction, which is anticipated to be complete by the end of 2025.

The Ash Creek Project does not involve a Federal facility, but did involve obtaining rights-of-way on Federally-managed land.

Technical Proposal: Technical Project Description

The proposed Ash Creek Project will develop water resources within the Ash Creek watershed for use in the Washington County Water Conservancy District (district) service area. The following sections describe the general district service area, the Ash Creek watershed, and the proposed Ash Creek Project facilities and operations.

Project Location

PROJECT SERVICE AREA

The Ash Creek Project is located in the Virgin River Basin within Washington County in the southwest corner of Utah. Specifically, the Ash Creek Project area is defined as Sections 07, 08, 18, and 19, Township 39 South, Range 12 West; Sections 25, 26 and 35, Township 39 South, Range 13 West; and Sections 14, 15, 22, 27, 28 and 34, Township 40 South, Range 13 West.

The Ash Creek Project will provide potable water to portions of the Washington County Water Conservancy District (district) service area. The district service area (Figure 1) encompasses all of Washington County, Utah, but the district does not currently provide water to all communities within the county. In 2006 (and later updated in 2019), the district adopted the Regional Water Supply Agreement (RWSA) with the following municipalities:

- St. George City
- Washington City
- Hurricane City
- Santa Clara City
- Ivins City
- La Verkin City
- Toquerville City

The district acquires, constructs, and operates its water system to meet anticipated municipal demand, while the individual cities maintain their existing water infrastructure systems and fully utilize their respective municipal supplies. In addition to these infrastructure systems, the district has a robust water conservation program[1], and its contracts require its municipal customers to implement similar plans. The district was the first in Utah to adopt the state's aggressive water conservation goal for the county[2]. Washington County's largest municipalities have the most restrictive ordinances for new construction in Utah. Through conservation, the district aims to reduce the county's 2070 potable water use by approximately 32,500 acre-feet/year.

[1] Washington County Water Conservancy District. 2021. Water Conservation Plan. Updated October 2021.
[2] Utah Division of Water Resources. 2019. Utah's Regional M&I Water Conservation Goals. November 2019.

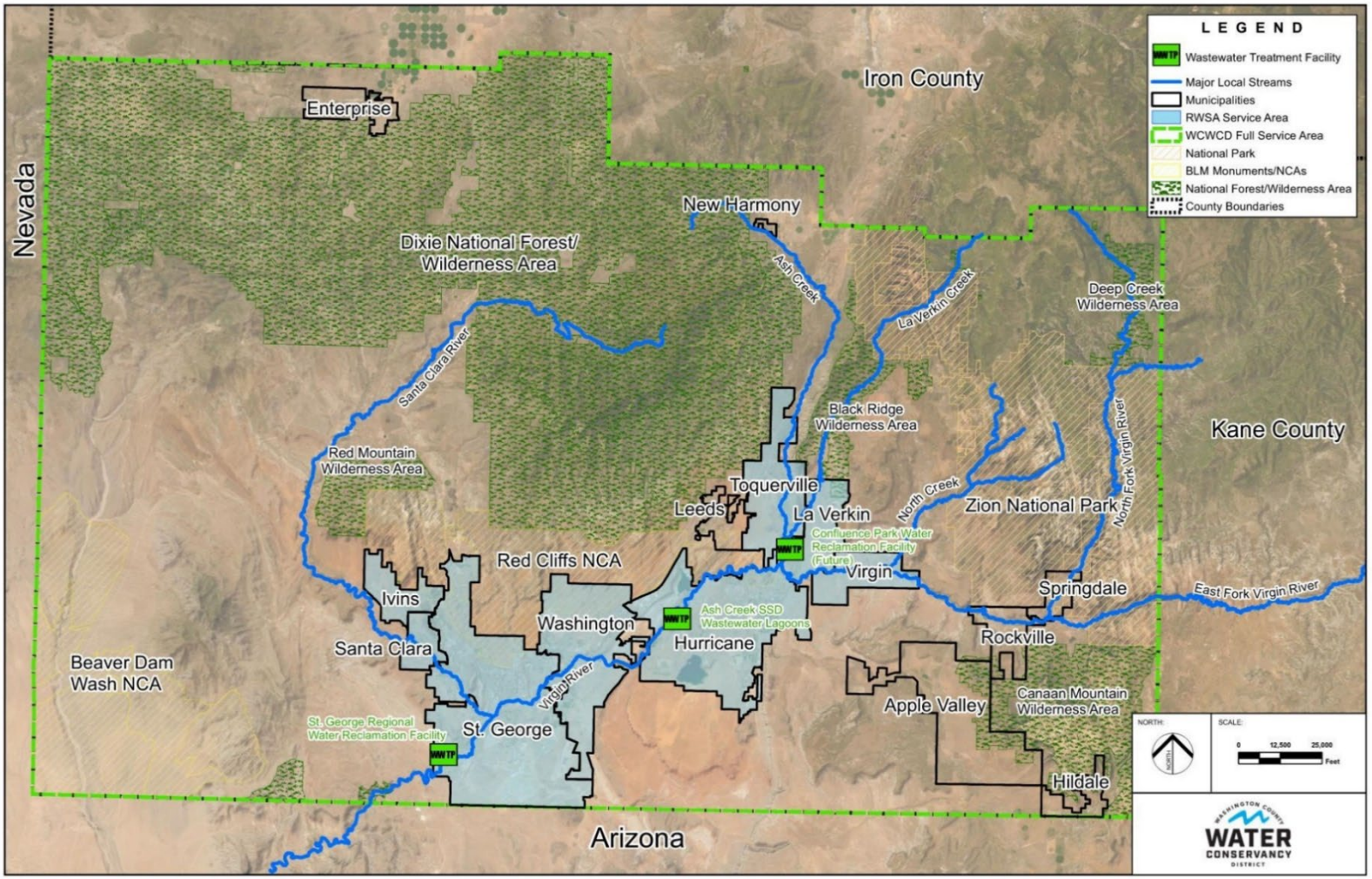


Figure 1. Washington County Water Conservancy District Service Area

ASH CREEK WATERSHED

The Ash Creek Project would involve the Ash Creek drainage and the Anderson Junction area in Washington County, Utah (Figure 2). The elevation ranges from 4,660 feet at the existing Ash Creek Reservoir to 3,437 feet at the proposed Toquer Reservoir. The climate is semi-arid with low precipitation, low humidity, and extreme temperature variations.

North Ash Creek, defined as the stream reach upstream of the existing Ash Creek Reservoir, is supported by streamflows from the Pine Valley and Harmony Mountains. It flows southeast until it reaches the existing Ash Creek Reservoir. Downstream of the existing Ash Creek Dam, the interrupted channel is renamed Ash Creek. It continues generally south-southwest until the valley opens up at Anderson Junction just north of Toquerville. Once it reaches Anderson Junction, the Ash Creek channel slightly changes course and turns south until it joins the generally west-flowing Virgin River near the City of La Verkin.

The reach between Ash Creek Reservoir and Toquerville Springs is referred to as middle Ash Creek. This reach is seasonally intermittent, flowing in some years for a brief period during spring, and most years not at all. Past the Toquerville Springs and Ash Creek Springs, Ash Creek is perennial to its confluence with the Virgin River. This reach is referred to as lower Ash Creek.

A number of small tributaries flow in an easterly direction off the eastern flank of the Pine Valley Mountains and into Ash Creek below the Ash Creek Reservoir, including Leap Creek, South Ash Creek, and Wet Sandy Creek (Figure 2). Each of these streams currently has a diversion dam. Leap Creek is partially piped and Wet Sandy Creek was recently piped to Anderson Junction. South Ash Creek flows through an open ditch system that provides agricultural water in Pintura. Loss of water in the streams due to the alluvial stream bed material has been identified in past studies. These streams rarely contribute to surface flow downstream of Toquerville except during high runoff. During rare high flow events, the water from these creeks flows into Ash Creek and eventually ends up in the Virgin River.

Toquerville Springs, located in the city of Toquerville, flows at an average rate of 10 cubic feet per second (cfs), producing potable water of a very high quality. No treatment is required to use this water for drinking water, other than the addition of chlorine in order to comply with State of Utah standards. The cities of Toquerville, LaVerkin, and Hurricane currently use this spring water for potable purposes. However, a large portion of the water is also used in the Toquerville Secondary Water System (TSWS) for secondary irrigation purposes.

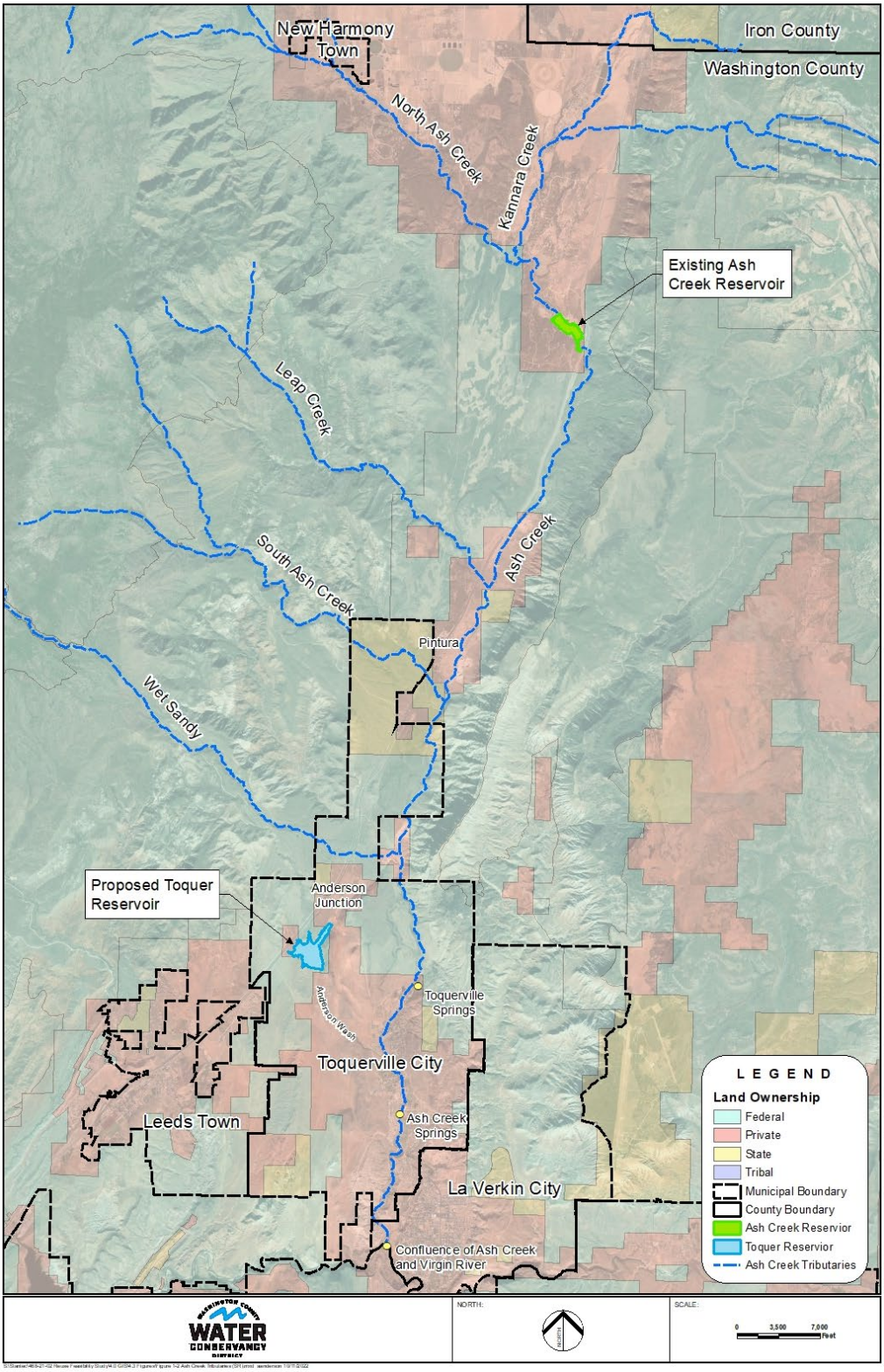


Figure 2. Ash Creek Watershed

Under a changing climate, Virgin River streamflow is projected to decrease under hotter, drier conditions[3], which will decrease reliable yields of local water supply projects. Figure 3 shows monthly Virgin River at Virgin, Utah streamflow under baseline historical conditions (1950-1999), recent historical conditions (2000-2020), a median future climate (50th percentile), and a hotter, drier future climate (10th percentile). Note that current streamflow is already trending between the projected median and hotter, drier climate conditions, especially in the critical summer months. Similar decreases in streamflow and resulting water supply are expected in the Ash Creek watershed.

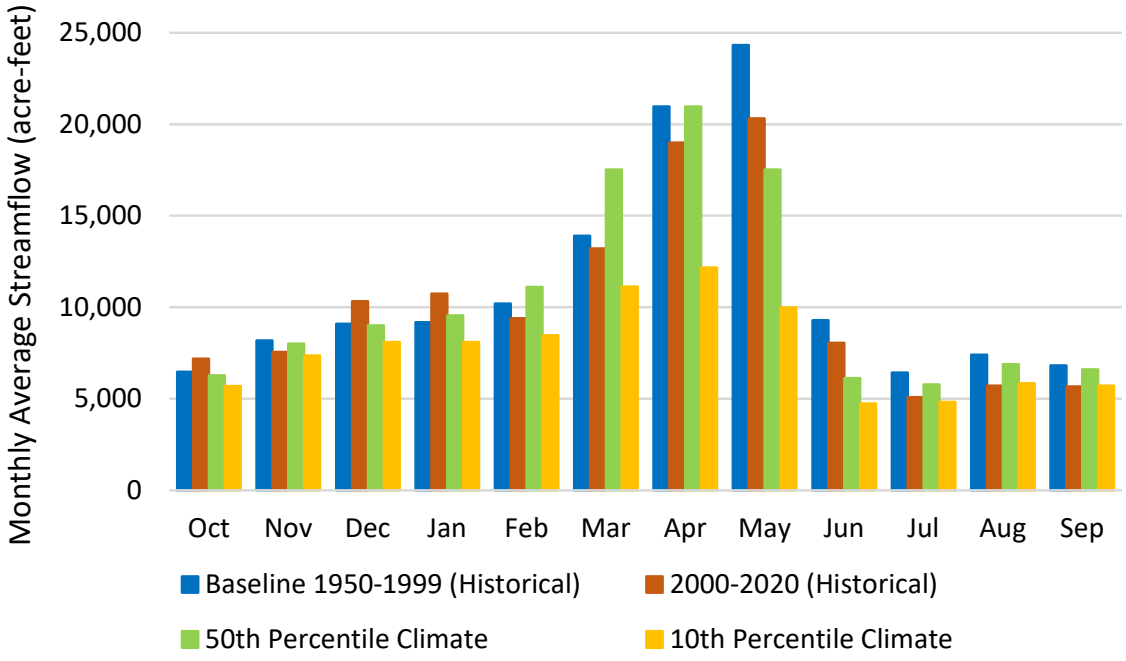


Figure 3. Projected Climate Change Impacts on Monthly Streamflow at Virgin River at Virgin, Utah Gage

[3] U.S. Bureau of Reclamation. 2014. Virgin River Climate Change Analysis: Statistical Analysis of Streamflow Projections. Katrina Grantz, March 26, 2014.

Project Schedule

The construction schedule for Toquer Reservoir and surrounding facilities is show in Figure 4. Project pipelines, although described herein, are not part of the proposed budget and are not included in this schedule.

Year	2023				2024				2025			
Quarter	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**
Dam Foundation Construction												
Dam/Liner Construction												
Recreation Area												

Figure 4. Ash Creek Project Implementation Schedule

Project Description

The Ash Creek Project includes a reservoir, various pipelines, and associated facilities on private and state lands, and lands administered by the Bureau of Land Management (BLM), St. George Field Office (Table 1 and Figure 5). The following sections describe the specific features and activities proposed under this application. Additional details on activity schedules, hours, and costs are described in the Project Budget Detail and Narrative section below.

Table 1. Temporary and Permanent Right-of-Way for Ash Creek Project

Land Owner/Administrator	Temporary Construction ROW (acres)	Permanent ROW (acres)
Bureau of Land Management	182.7	203.9
Utah School and Institutional Trust Lands Administration	11.3	29.7
Private	72.9	96.4
Total	**266.9**	**330.0**

TOQUER RESERVOIR

Toquer Reservoir will be constructed at Anderson Junction, impounded by an earth and rock fill dam (Figure 6) with a spillway into the existing ephemeral Anderson Junction Wash. At full capacity (3,725 feet above mean sea level), the surface area of the reservoir will be approximately115 acres and hold 3,638 acre-feet of water. The dam will have a central clay core transitioning to basalt rock fill, and will have a maximum dam height of about 100 feet. The spillway will consist of a concrete weir and splash pad and a 1,972-foot excavated overflow channel leading to Anderson Wash. An existing lift station for the Ash Creek Special Service District (Ash Creek SSD) is located within the proposed footprint of the reservoir and will be

relocated north of the reservoir high water elevation on a 40-foot by 50-foot area of already disturbed land owned by the district.

A 372-acre temporary construction area and a 185-acre permanent area will be required for construction and operation of the reservoir, earthen dam, and spillway. Three construction staging areas will be situated within the reservoir high water footprint. Borrow areas for construction materials will be within the reservoir site, except for specialized materials (clay for the dam core and rip rap for the dam surface) which would be obtained off-site from the district property near Toquerville (Figure 5) and an existing pit on district property located at Bench Lake, Hurricane, Utah. Access to the Toquerville borrow area would require new roads with 50 feet of temporary construction and permanent right-of-way (ROW). The length from UT-17 to the borrow area is 5,220 linear feet.

RECREATION AREA

The Toquer Reservoir Recreation Area will be approximately 13 acres adjacent to the reservoir and is located within the municipal boundary of Toquerville City, Washington County, Utah. The recreation area will include the following features (Figure 7):

- Entrance Station—Visitor information will be provided and fees will be collected
- Boat Ramp—A paved boat ramp and access for non-motorized watercraft
- Parking—A paved parking for single vehicles and vehicles with trailers
- Camping—Tent and recreation vehicle sites and a campground host site
- Group Site—An accessible covered pavilion with paved parking
- Day Use Area—Picnic tables, barbeque pits, flush toilets, and interpretive kiosk(s)
- Trail—An unpaved, 10-foot-wide trail for non-motorized use around the reservoir

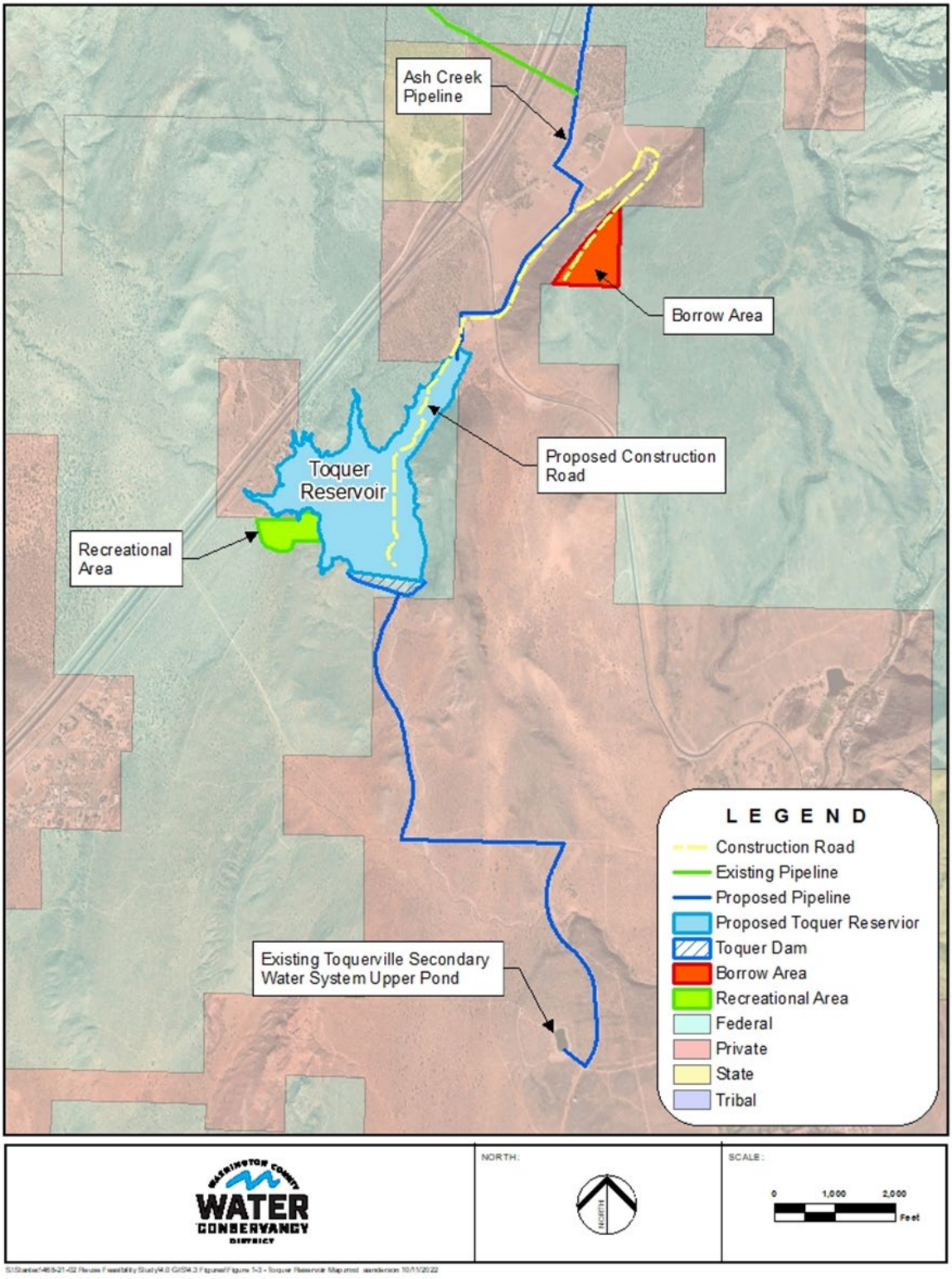
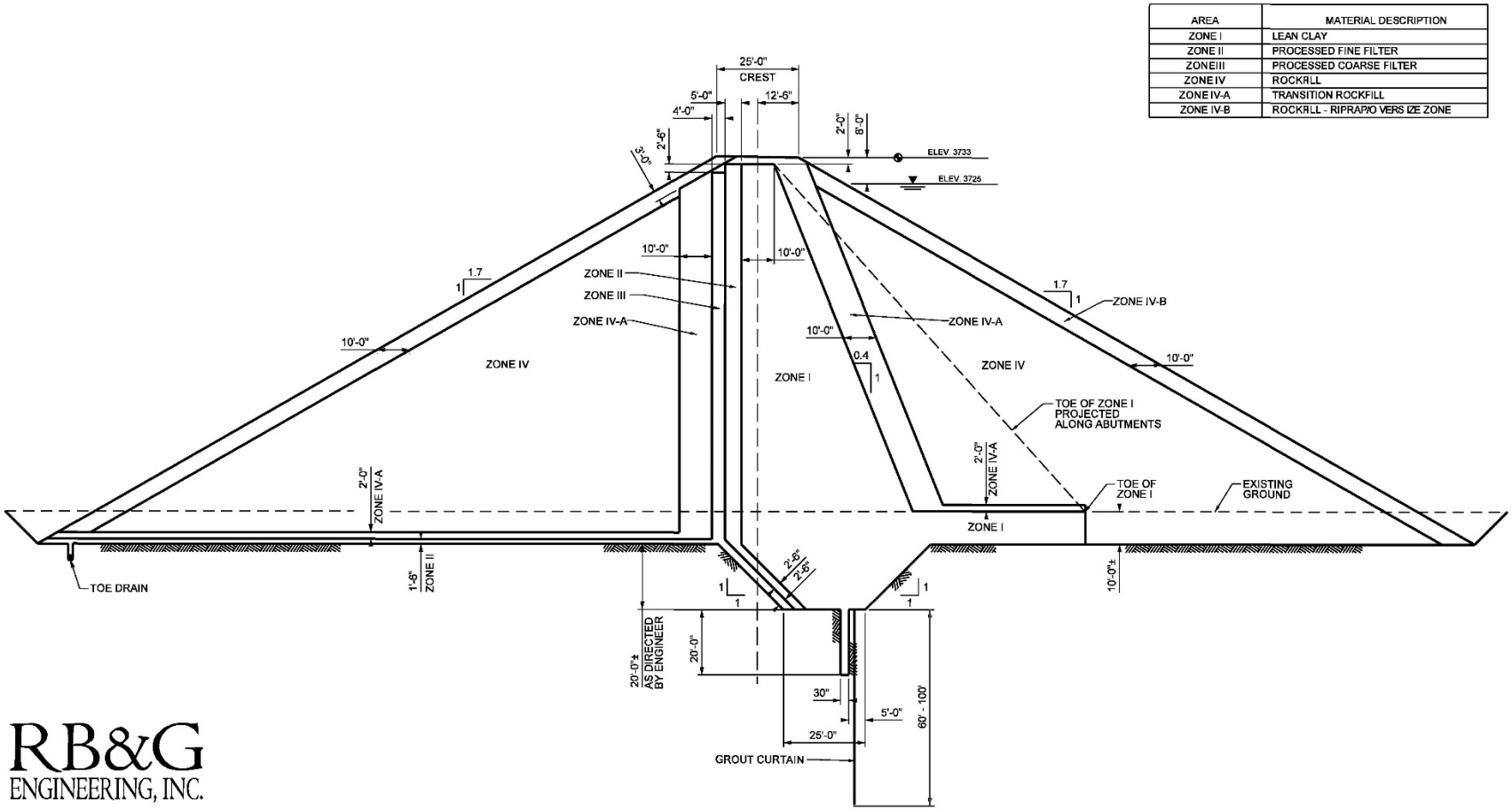


Figure 5. Primary Ash Creek Project Components



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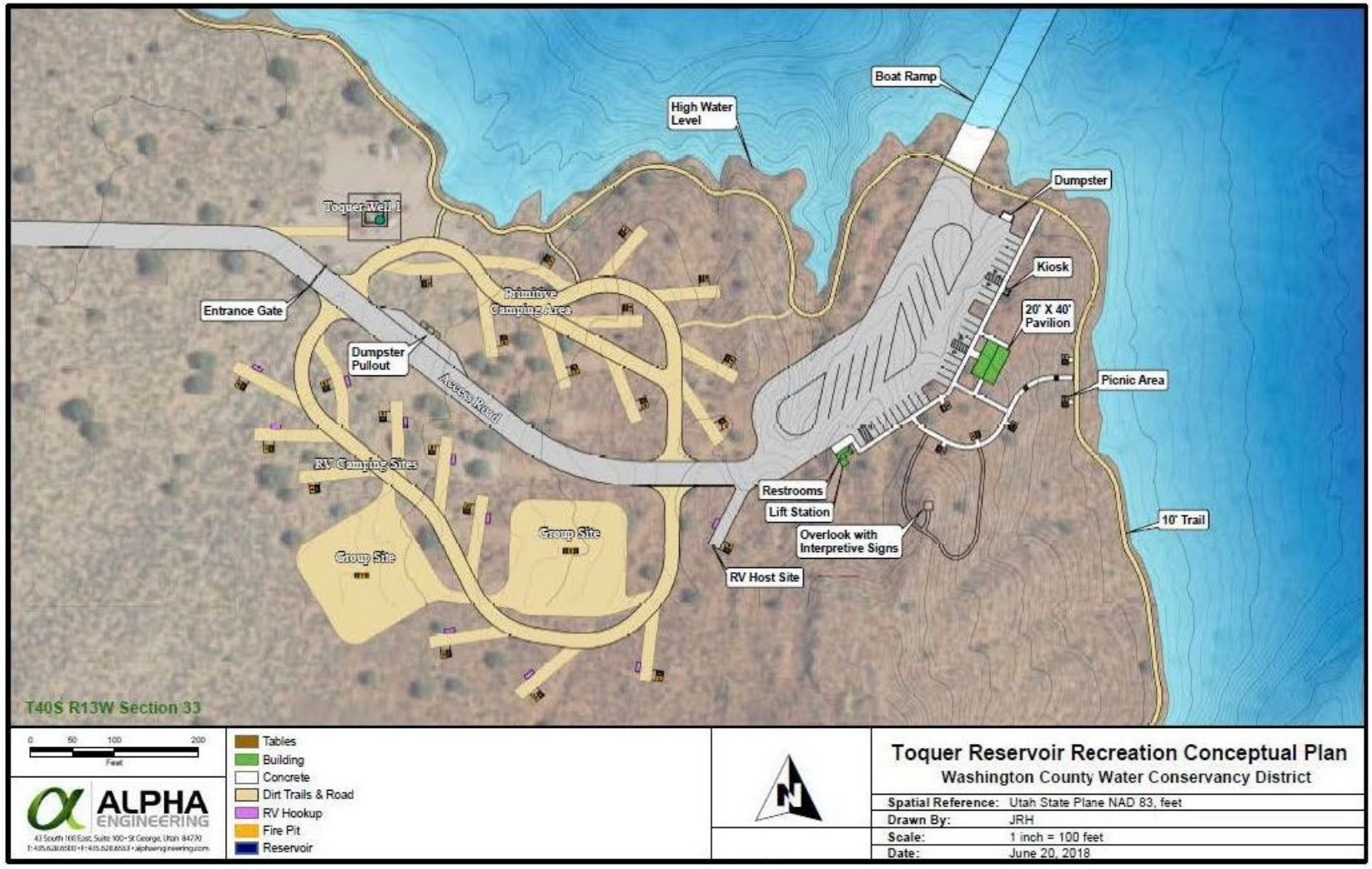
ENGINEERING, INC.

Figure 6. Toquer Reservoir Embankment Section



From BLM 2019

Figure 7. Toquer Reservoir Recreation Area

PIPELINES AND RELATED STRUCTURES

The Ash Creek Project will construct new pipelines to convey Ash Creek water supply and additional water from drainages to the east of Pine Valley Mountain, including Leap Creek, South Ash Creek, and Wet Sandy Creek, to the proposed Toquer Reservoir. Although these project components are not included as part of this application, these features are briefly described for context. The pipelines will consist of six segments totaling 18.8 miles, as follows:

- The Ash Creek Pipeline will start at the current outflow of the Ash Creek Reservoir and will extend to the proposed Toquer Reservoir for 10.87 miles.
- The Leap Creek Pipeline will tie into an existing pipeline that is owned by the district and convey this water 2.12 miles to a new Pintura regulating pond. This pipeline segment will replace an existing ditch conveyance feature. The existing diversion structure on Leap Creek will be used with no additional construction required.
- The South Ash Creek Pipeline will collect water from a replacement concrete diversion structure and convey it 1.32 miles to a new Pintura regulating pond. This pipeline segment will replace an existing ditch conveyance feature. The water supply will then be split to deliver to existing water right holders in the town of Pintura and to Toquer Reservoir.
- The fourth pipeline segment will be 0.55 miles long and connect the new Pintura regulating pond to the Ash Creek Pipeline.
- The fifth pipeline segment will mostly run parallel to the fourth segment for 1.77 miles and will connect the new Pintura regulating pond to the existing Pintura irrigation system.
- The sixth pipeline segment will connect the proposed Toquer Reservoir to the existing TSWS for 2.17 miles (Figure 5).

ASH CREEK PROJECT OPERATIONS AND MAINTENANCE

The Ash Creek Project will supply municipal and industrial (M&I) secondary irrigation water to the TSWS and through exchange allow Toquerville Springs water, the current TSWS supply source, to be delivered as reliable potable municipal water (Figure 8). Toquerville Springs, located in the city of Toquerville, flows at an average rate of 10 cfs, producing potable water of a very high quality. The cities of Toquerville, LaVerkin, and Hurricane currently use some of this spring water for potable purposes. However, a large portion of the water is used in the TSWS for M&I secondary irrigation purposes. Water delivered into the TSWS secondary irrigation system via the proposed Toquer Reservoir would allow more spring water to be shifted to potable use in Toquerville, La Verkin, and Hurricane.

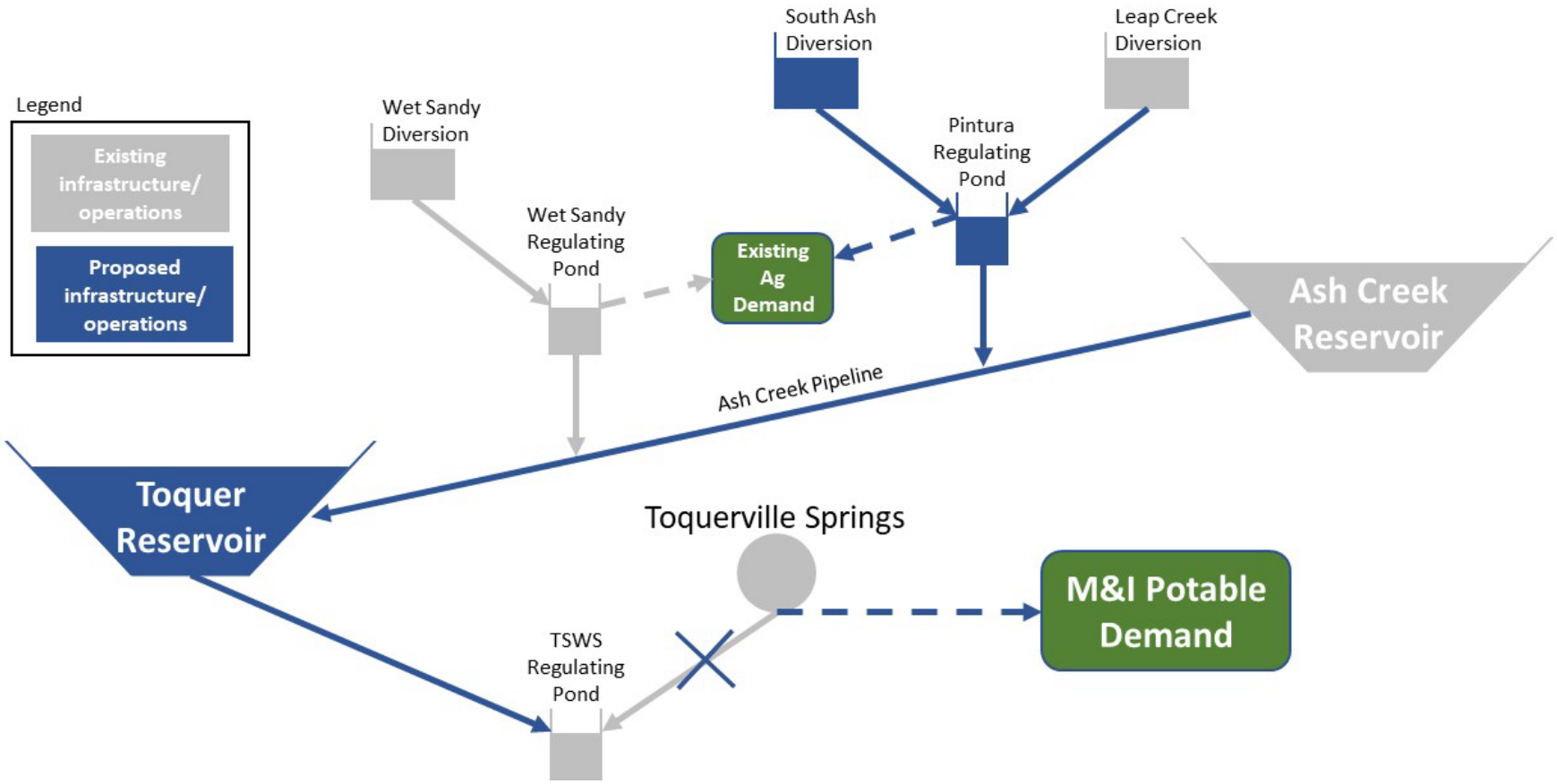


Figure 8. Schematic of Ash Creek Project Operations

The sources of water for Toquer Reservoir will be surface flows from Ash Creek that are impounded in the Ash Creek Reservoir and from the tributary streams of Leap Creek, South Ash Creek, and Wet Sandy Creek. Some of this tributary water will be delivered as pressurized irrigation to the respective agricultural users at Pintura and Anderson Junction per current water rights. The water saved by replacing older agricultural infrastructure with new pipelines under this project will be sent to the proposed Toquer Reservoir for use by the district.

Water levels in Toquer Reservoir and the Pintura regulating pond will largely be controlled at the diversions on Leap Creek, South Ash Creek, and Wet Sandy Creek, with spills from the reservoir and pond expected to be infrequent and minimal. During conditions of extreme fire or flooding danger, operations may be suspended or limited in certain areas.

Routine maintenance for the Ash Creek Project will generally include the following:

- The reservoir dam will require regular inspection.
- The South Ash Creek diversion dam sluice gate will be flushed periodically.
- The pipeline valves will be inspected at least annually to ensure proper function.
- The pipelines will be cleaned annually with a poly pig.
- A grader will be used to grade the access roadway, as necessary.

The Toquer Reservoir Recreation Area will be jointly operated on a year-round basis by the district and Toquerville City. Fees will be charged for day use and camping. Reservations for camping and use of the group site will be required and made through Toquerville City. Private vendors will operate retail vending machines, watercraft rentals, and other goods in the recreation area. Authorized boating and other recreational water use will be limited to non-motorized watercraft and other recreational devices.

ASH CREEK PROJECT YIELD

The Ash Creek Project yield was calculated using a monthly time-step spreadsheet mass balance analysis using historical hydrology from 1965 to 2010. Gaged streamflow from Ash Creek tributaries were used to meet historical agricultural water right diversions and determine agricultural efficiencies associated with the proposed project. These savings, along with gaged Ash Creek streamflow, were routed to the proposed Toquer Reservoir, which was simulated to determine storage, seepage, evaporation, TSWS yield, and downstream releases.

Reliable yield for Toquer Reservoir was defined as the annual yield that could be produced 90% of the time. Like other district water supplies, the Ash Creek Project reliable yield is set higher than the firm yield, and the project works in conjunction with emergency groundwater storage and other drought contingency measures to provide for infrequent supply gaps. The historical or baseline analysis found the reliable yield of the project to be 1,025 acre-feet per year. When the district decided to add a liner to the proposed Toquer Reservoir, the annual average Toquer

Reservoir seepage (714 acre-feet/year) from the analysis was added to the reliable yield, for a revised reliable yield of 1,739 acre-feet/year.

As previously described, Virgin River streamflow is projected to decrease under median and hotter, drier climate conditions[4]. Previous Toquer Reservoir yield analyses did not directly simulate these climate change scenarios. The Ash Creek Project mass balance analysis was revised to directly account for both the reservoir liner and climate change impacts on streamflow inputs. The results of this analysis are show in Table 2 and Figure 9.

Table 2. Simulated Ash Creek Project Reliable Yields Under Climate Change

Climate Scenario	Annual Stream Inflows as Percent of Baseline	Simulated Ash Creek Reliable Yield (acre-feet/year)	Reduction in Reliable Yield
Baseline	---	1,793	---
Median (50th Percentile)	97%	1,748	97%
Hotter, Drier (10th Percentile)	72%	1,373	77%

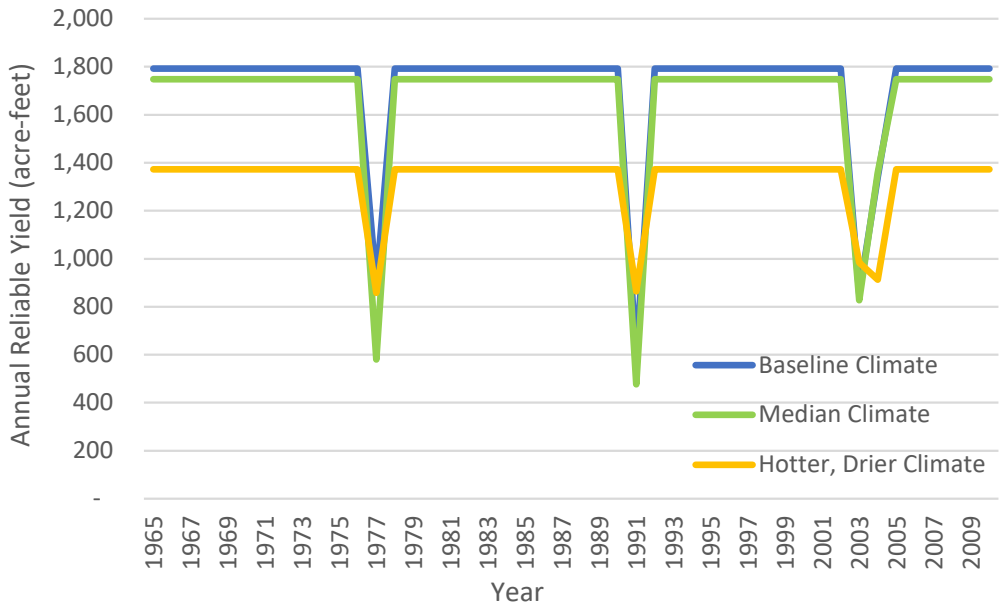


Figure 9. Simulated Ash Creek Reliable Yield Under Climate Change

[4] U.S. Bureau of Reclamation. 2014. Virgin River Climate Change Analysis: Statistical Analysis of Streamflow Projections. Katrina Grantz, March 26, 2014.

Technical Proposal: Evaluation Criteria

Evaluation Criterion 1—Water Supply Reliability

SUBCRITERION NO. 1A—ENHANCED WATER SUPPLIES

1) *How much additional storage capacity does the project add to the system (relative to current system capacity)? How many additional acre-feet of water are expected to be made available, on average, each year upon completion of the project? What percentage of the service area's overall water supply will the project's water provide upon project completion? Use the total average project water production over the anticipated life of the project.*

The Ash Creek Project will add 3,638-acre-feet of additional storage capacity to the 108,933 acre-feet of existing district storage capacity. The project will provide a reliable water supply between 1,373 acre-feet per year under a hotter, drier climate and 1,793 acre-feet per year under baseline climate conditions. The reliable yield under a median climate scenario is 1,748 acre-feet per year. Assuming the climate changes from a median climate to a hotter, drier climate over the next 50 years, then the average annual project yield over a 100 year project life would be 1,461 acre-feet, meeting 7.1%, on average, of the Hurricane, La Verkin, and Toquerville area potable demand through exchange with Toquerville Springs (Figure 10).

In the context of the district's entire system and service area (i.e., most of Washington County), the Ash Creek Project yield would be approximately 3%, on average, of Virgin River Basin potable supply over the next 50 years (Figure 11). Various municipalities served by the district have nearly maximized their local water supplies, including Hurricane, La Verkin, and Toquerville, and the district will develop new sources of reliable water. Water supplies in the Washington County area are currently limited to the Virgin River drainage basin (groundwater and surface water), which is reaching its full developmental capacity. The Ash Creek Project will be a small portion of the county's overall water supply portfolio, but represents approximately 50%, on average, of limited new Virgin River Basin potable supply that the district will develop to help meet growing demand (Figure 12).

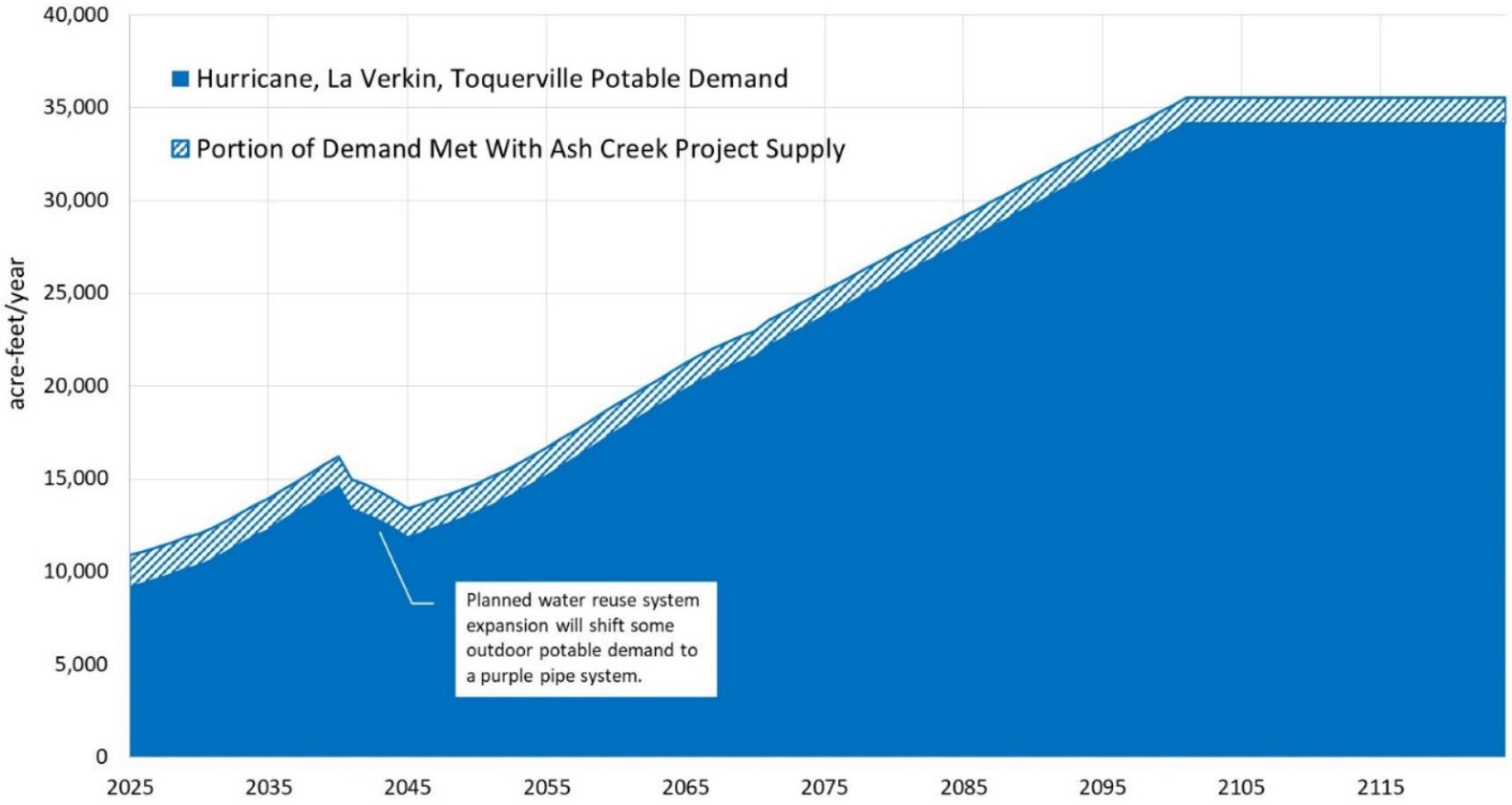


Figure 10. Portion of Hurricane, La Verkin, and Toquerville Demand Met With Ash Creek Project Reliable Yield under a Changing Climate

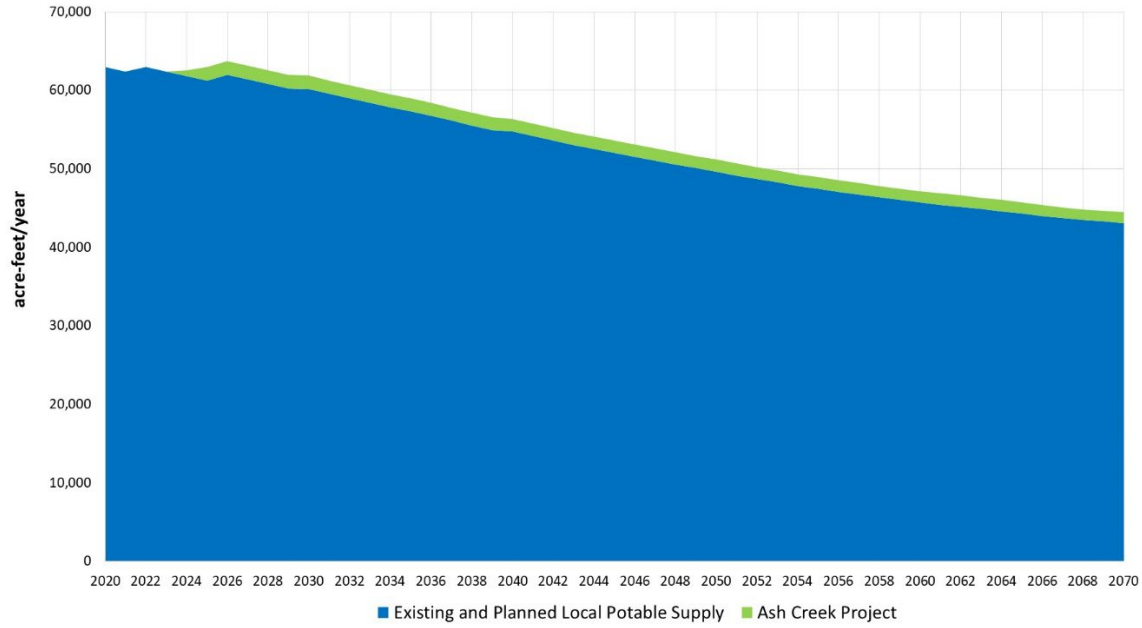


Figure 11. Ash Creek Project Water Supply Compared to Total Virgin River Basin Potable Supply under a Changing Climate

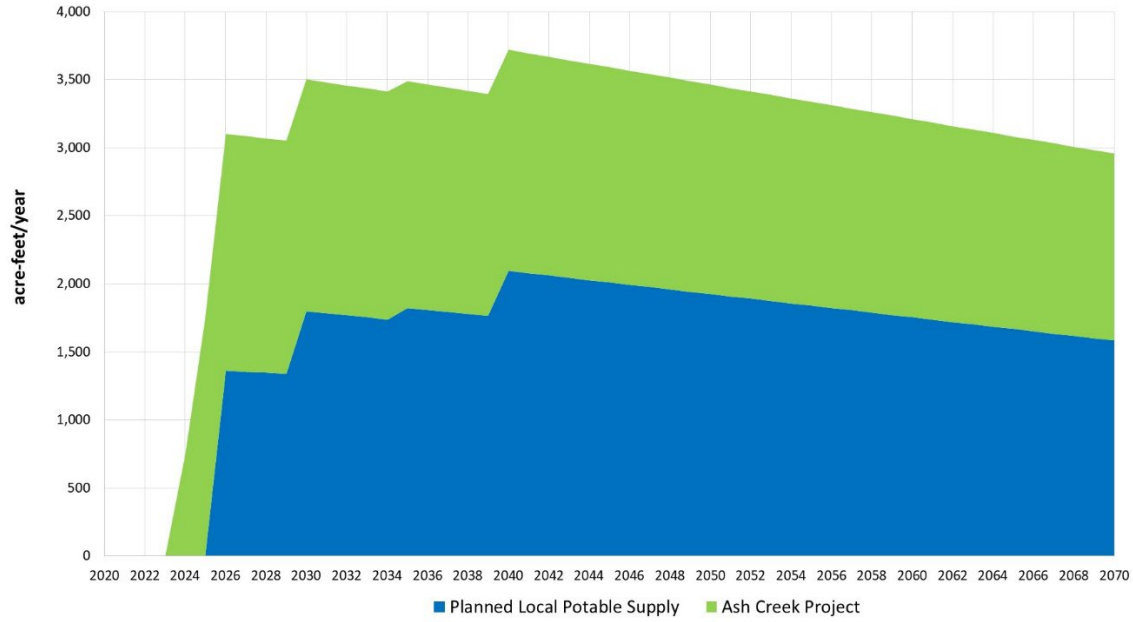


Figure 12. Ash Creek Project Water Supply Compared to Planned Virgin River Basin Potable Supply under a Changing Climate

2) Will the project reduce or eliminate the reliance on imported water or other sources of surface water supplies that are less reliable? Explain.

The Ash Creek Project will lessen the quantity and urgency of imported water projects, such as the Lake Powell Pipeline (LPP). The LPP is a planned 140-mile-pipeline to import water from the Colorado River to Washington County. Future hydrology on the Colorado River and agreements with the Basin states are uncertain, and while the LPP remains a component of the district's long-term water resources plan, it is recognized that the project's timing and scope may have to change. At this time, development of the few remaining local projects offers a more reliable supply for the district. Without the Ash Creek Project being fully implemented by 2025, the county would be at risk of perpetual shortages, and the district would need to accelerate plans for the LPP.

3) Will the project reduce groundwater overdraft and positively contribute to the sustainable yield of a groundwater basin or local aquifer? Explain.

The Utah Division of Water Rights implements Groundwater Management Plans in defined areas to promote wise use of groundwater, protect existing water rights, and address water quality issues and over-appropriation of groundwater. The Virgin River Basin (Utah Division of Water Rights Area 81) is currently closed for additional groundwater appropriation, but to date a Groundwater Management Plan has not been required to repair or prevent Virgin River Basin overdraft.

Groundwater and natural springs in the Hurricane, La Verkin, and Toquerville area (Table 3) are the predominate potable water supply for these communities, similar to other communities in the basin. Studies have shown, however, that the average natural recharge to the local aquifer is likely much less than the total water rights allocated for the basin[5]. The Ash Creek Project will support a more sustainable use of local groundwater resources. Without the project to support future demands, these groundwater supplies could be used more heavily and may necessitate a Groundwater Management Plan to manage potential future overdraft.

[5] Marston, T.M., and Heilweil, V.M., 2012, Numerical simulation of groundwater movement and managed aquifer recharge from Sand Hollow Reservoir, Hurricane Bench area, Washington County, Utah: U.S. Geological Survey Scientific Investigations Report 2012–5236, 34 p.

Table 3. Potable Groundwater Supplies for Hurricane, La Verkin, and Toquerville

Potable Groundwater Supply	Baseline Reliable Annual Yield (acre-feet)
Hurricane	
Stratton Well #1 & #2; West Well	2,100.0
Toquerville Springs & Ash Creek Springs	1,420.42
La Verkin	
Ash Creek Springs & Upper Ash Creek Springs	473.35
Toquerville Springs	241.1
Toquerville	
Toquerville Springs	538.76

The district's existing Sand Hollow Reservoir was designed to allow water to infiltrate into and recharge the underlying Navajo Sandstone aquifer. This water is managed conjunctive with other district groundwater and surface water supplies for both normal and emergency water demand, increasing the reliability and flexibility of the system. Additional aquifer recharge and recovery via Toquer Reservoir was originally proposed for the Ash Creek Project. It was projected to yield approximately 700 acre-feet per year. As a result of additional field data collection, the district has added a reservoir lining to Toquer Reservoir to limit excessive seepage, keeping most of the 700-acre-foot benefit in the reservoir to strengthen the project's surface water operations. The liner does not necessarily eliminate aquifer recharge and recovery at Toquer Reservoir, and the district continues to evaluate the opportunity. This potential for positive contribution to sustainable groundwater supply is recognized, but is not included in the current Ash Creek Project analyses.

4) *Will the project alleviate pressure on existing water supplies and/or facilities? If so, please identify the supplies and/or facilities and explain how they will benefit from the project, including quantifications where applicable. Please include a description of the conditions that exist in the area and the projections of the future with, and without, the project.*

The Ash Creek Project will alleviate pressure on existing groundwater supplies, as described in the previous question. The project will alleviate pressure on the existing Quail Creek Diversion Structure during emergency outages, and on the Sand Hollow Aquifer water supply reserves, as described in Question No. 1 under Subcriterion No. 1b.

Baseline conditions represent the state of the service area water supply and demand without implementation of the proposed project. In addition to the existing municipal and district water supply projects, baseline conditions in the service include the following planned projects:

- Sullivan Well Field
- Cove Reservoir
- Diamond Valley Well
- Ence Wells Expansion
- Agricultural Conversion

Figure 13 and Figure 14 compare two different futures for potable water supply in the district service area: high population growth in a hotter, drier climate, and a median climate scenario, respectively. Current and projected water demands in these figures incorporate Washington County water conservation plans. Both figures illustrate future supplies both without the Ash Creek Project (sum of municipal and district supplies) and with the Ash Creek Project yield. The existing municipal supply is predominately groundwater and is expected to decline due to hotter, drier climate change. The existing and planned local district potable supplies, which are predominately surface water, are projected to decrease under hotter, drier climate change.

5) What performance measures and monitoring will be used to quantify and track actual benefits upon completion of the project?

The following performance measures will be used to quantify Ash Creek Project benefits:

- Toquer Reservoir annual deliveries to the TSWS Regulating Pond; measures water supply reliability and avoided treatment cost benefit by quantifying the water available for exchange from the Toquerville Springs to potable supply.
- Annual visitation to Toquer Reservoir Recreation Area; measures recreation benefit.

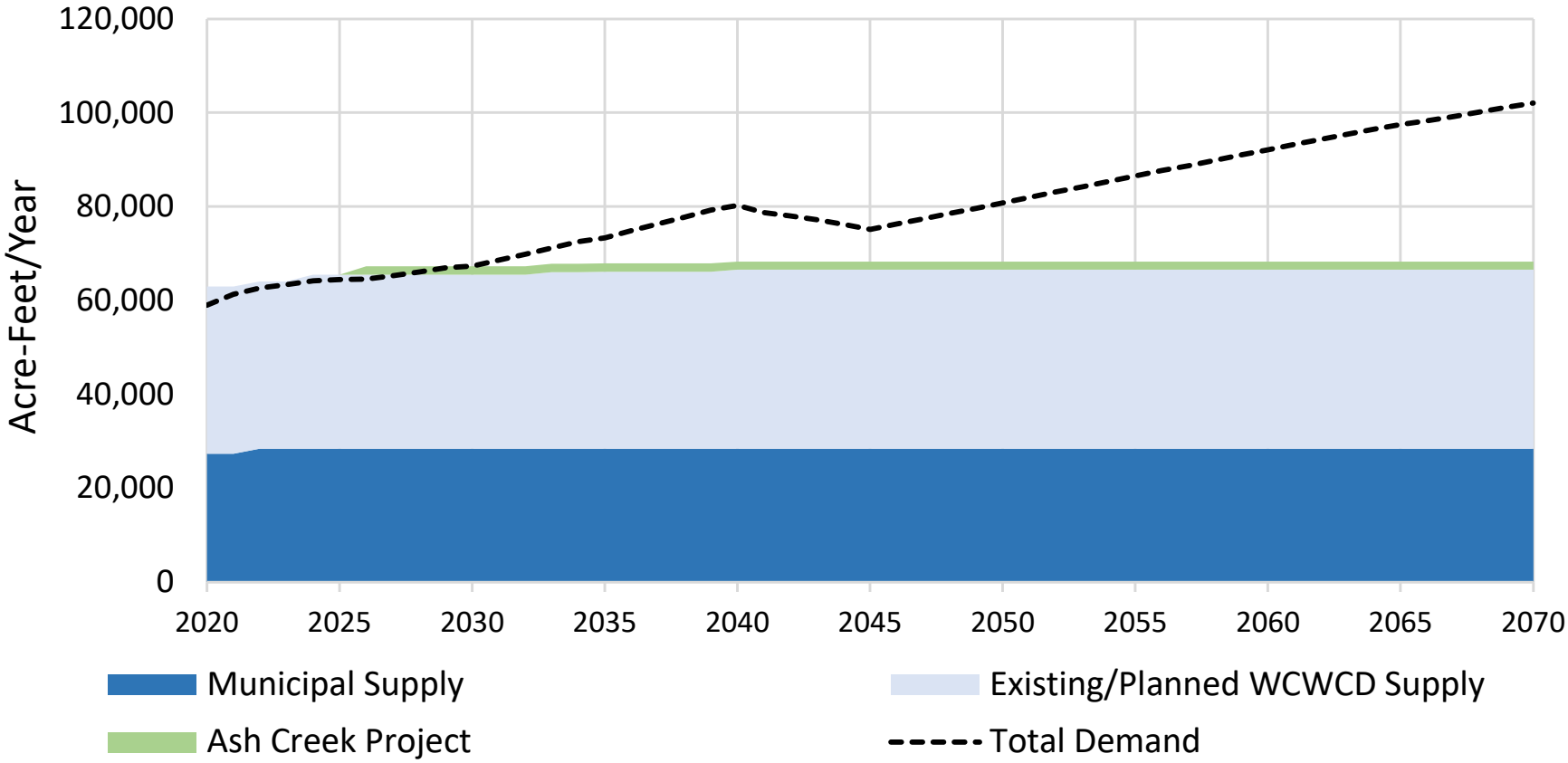


Figure 13. Projected Potable Water Needs and Supply for Entire District Service Area under a Median Climate and Baseline Growth Scenario

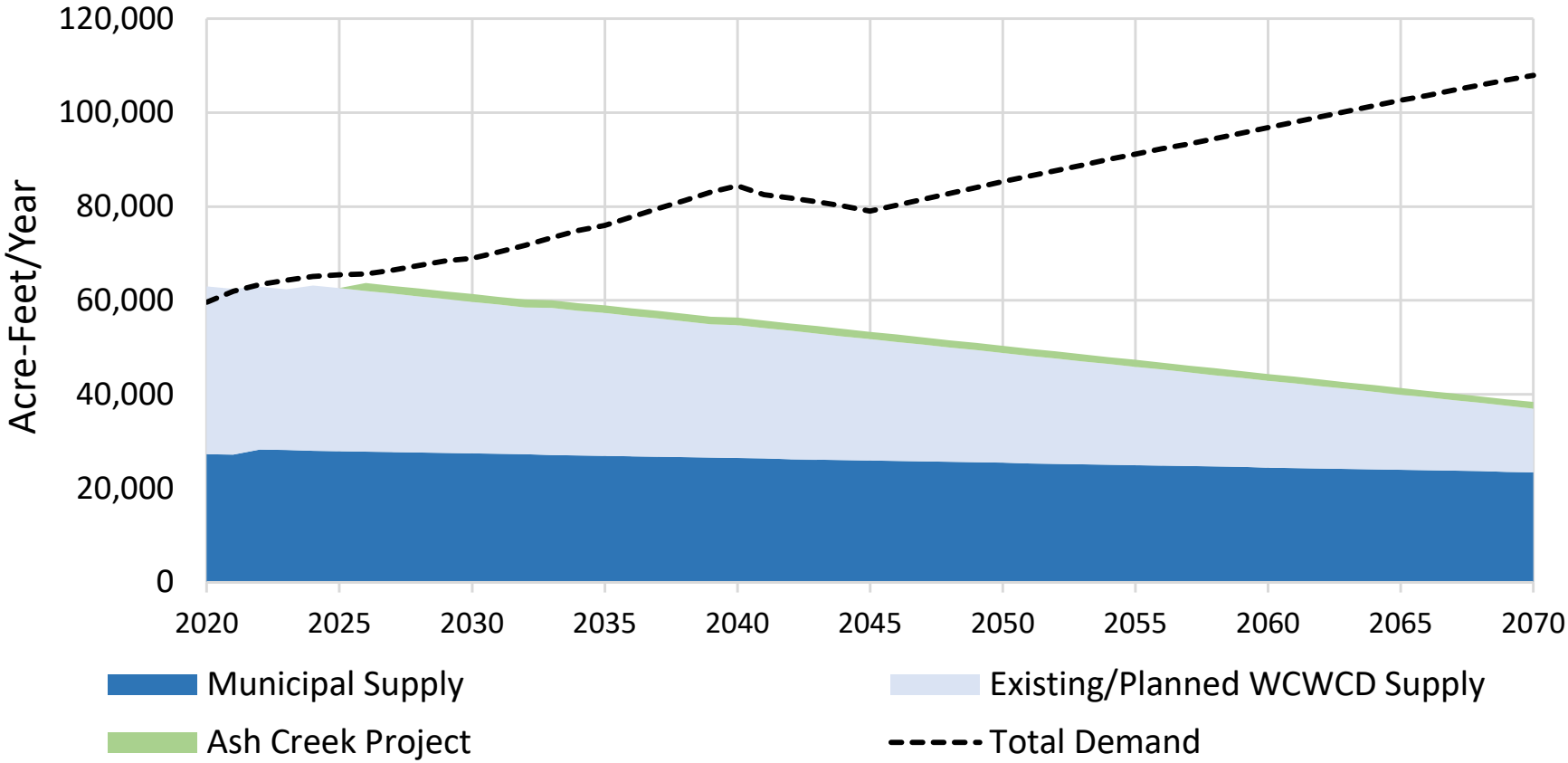


Figure 14. Projected Potable Water Needs and Supply under a Hotter, Drier Climate and High Growth Scenario

SUBCRITERION NO. 1B—CONTRIBUTIONS TO WATER SUPPLY SUSTAINABILITY

1) *Explain the role of the project in addressing any of the below concerns and the extent to which the project will address them. Consider the number of acre-feet of water that the project will make available and the severity of the concerns addressed.*

Meet Statutory Source Sizing Standard

The State of Utah requires water systems to establish a "source sizing standard" that is used to determine the volume of water supply that needs to be available to users (Utah Code Annotated or UCA § 19-4-114). This rule assures that "facilities are reliably capable of supplying adequate quantities of water" (Utah Admin Code R309-515-1). The source sizing standard is typically evaluated in terms of source capacity needed per "Equivalent Residential Connection" (ERC). The new district source sizing standard is 0.59 acre-feet/year per ERC.

There is an immediate need for the Ash Creek Project to meet Washington County's source sizing standard. The Ash Creek Project will contribute a substantial portion of the district's near-term planned supply portfolio, and Figure 13 shows that these proposed local potable supplies will meet the district total source sizing requirements in the short term under a median climate scenario. Under a hotter, drier climate scenario (Figure 14), the district may need to use banked groundwater reserves in the short term to meet total service area demands, although this climate change impact would be partially mitigated by building the Ash Creek Project. It should be noted that the district is currently evaluating other local projects, such as potable reuse and hot springs desalination, to help meet the source sizing requirements in the long term, along with development of other projects such as the LPP. These projects are not shown in Figure 13 and Figure 14.

Reduce Groundwater Depletion

As discussed in the previous section, without the Ash Creek Project, the district will need to rely more heavily upon banked groundwater reserves below Sand Hollow Reservoir to meet potable demands. This reserve supply is intended to meet demands during short-term, acute drought periods. Relying on these reserves for multiple years under non-drought emergency conditions weakens the region's drought resiliency.

As discussed in Question No. 3 under Subcriterion No. 1a, natural groundwater recharge in the Hurricane area may not meet all groundwater rights. Growth will further strain these supplies. The Ash Creek Project will enable the district and local municipalities to better manage available groundwater and avoid unsustainable aquifer depletions.

Preserve Higher Quality Water for Potable Use

Similar to other desert rivers, the Virgin River is characterized by large flow fluctuations and high salinity, temperature, and turbidity. The naturally occurring La Verkin hot springs in the Hurricane area discharge 10-12 cfs of water with approximately 10,000

milligrams per liter concentration of salt into the Virgin River[6,7], thus rendering all downstream water unsuitable for potable use.

With limited surface water supply suitable for potable use, it's essential for the Hurricane, La Verkin, and Toquerville area to efficiently use high quality sources. As described above in the *Technical Project Description* section, Toquerville Springs is a high quality water source that is partially used to irrigate outdoor landscaping as part of the TSWS. The Ash Creek Project will provide new surface water supply to the TSWS and through exchange allow Toquerville Springs water to be delivered as reliable potable municipal water. This exchange operation preserves higher quality water for potable use and avoids excessive treatment costs if other lower quality sources were used.

Mitigate Natural Disasters

The majority of the district's surface water supply originates from the upper Virgin River watershed in and near Zion National Park. The Ash Creek Project source is the Ash Creek watershed, and while a tributary of the Virgin River, it occurs further downstream than the main watershed. The Ash Creek Project is subject to different localized wildfire, flooding, and other infrastructure risks than the district's main Virgin River system (i.e., Quail Creek Diversion Structure) and would alleviate some pressure on this existing supply during an emergency outage.

Reduce Competition for Water Supplies

Agriculture is a large water user in Washington County, but as the population grows there will be more competition for both land and water. Currently, agriculture has approximately 44,000 acre-feet of depletion water rights in the county, but only 38,890 acre-feet are considered reliable (i.e., have a 1900 or earlier priority date)[8]. Preliminary climate change analysis by the district indicates that only agricultural water rights with a priority date of 1890 or earlier will be reliable in the future, for approximately 16,000 acre-feet.

There is generally a State and local desire to maintain a healthy agricultural economy and culture[9]. As agricultural land in Washington County is developed, the district intends to acquire approximately 4,230 to 7,650 acre-feet of the 16,000 to 38,390 acre-feet (depending on climate change scenario) of reliable agricultural conversion water supply by 2070, with the remaining reliable agricultural water supply anticipated to stay in agriculture. If the Ash Creek Project is not built, there will be added pressure to convert additional agricultural supplies to municipal use (i.e., buy and dry schemes), resulting in negative environmental and socioeconomic consequences. The Ash Creek project reduces this competition by developing additional local supply via Ash Creek and building

[6] U.S. Bureau of Reclamation. 1981. La Verkin Springs Unit, Utah: Concluding Report. December 1981.
[7] U.S. Geological Survey. 2018. Effects of Groundwater Withdrawals From the Hurricane Fault Zone on Discharge of Saline Water From Pah Tempe Springs, Washington County, Utah. SIR 2018-5040.
[8] Olds, J.D. 2021. Evaluation of the Potential Conversion of Irrigation Water to Municipal Use in the Virgin River Basin, Washington County, Utah. September 2021.
[9] Utah Division of Water Resources. 2021. Utah State Water Plan. December 2021.

agricultural optimization projects and sending conserved water to the proposed Toquer Reservoir for use by the district.

Augments Water-Based Recreation

One of BLM's objectives for the proposed Ash Creek Project during its environmental review process was "to provide an array of quality recreation experiences within the agency's capability and logical recreation niche to meet the reasonable needs and expectations of local residents and visitors from outside the area"[10]. Toquer Reservoir and adjacent Toquer Reservoir Recreation Area would increase the availability of aquatic recreation in Washington County and would help to a small degree alleviate congestion at existing recreational sites in Washington County such as Quail Creek State Park, Sand Hollow State Park, Zion National Park, and other areas of dispersed camping on public lands.

2) *EO 14008 focuses on increasing resilience to climate change and supporting climate resilient development. EO 14008 also emphasizes the need to prioritize and take robust actions to reduce climate pollution; increase resilience to the impacts of climate change; protect public health; and conserve our lands, waters, oceans, and biodiversity.*

   a) *Will the project address climate change in the service area? Explain.*

The Ash Creek Project will address climate change in Washington County, as follows:

- Existing potable water supplies in Washington County are expected to decrease up to 45% (Figure 15) due to climate change impacts on Virgin River streamflow and groundwater recharge (Figure 3). Maximizing local supplies (e.g., Ash Creek Project) and implementing aggressive conservation and water reuse measures will partly mitigate decreasing water supply due to climate change.

- Agricultural water supply will be conserved by replacing existing open canals/ditches with pipelines along Leap Creek and South Ash Creek. Increasing temperatures under climate change will increase losses in all open water bodies. By piping these supplies, the saved losses can then be used for municipal supply as part of the Ash Creek Project.

- Both surface water and groundwater resources will be affected by climate change. Impacts to surface water are likely to be more severe, especially in the near term. By shifting more secure Toquerville Springs water to indoor M&I use and using climate-susceptible Ash Creek Project water for outdoor secondary irrigation, the district increases its system flexibility in dealing with drier periods under climate change. Outdoor use is more easily curtailed under drought contingency plans, and is more targeted in ongoing district conservation efforts.

[10] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.

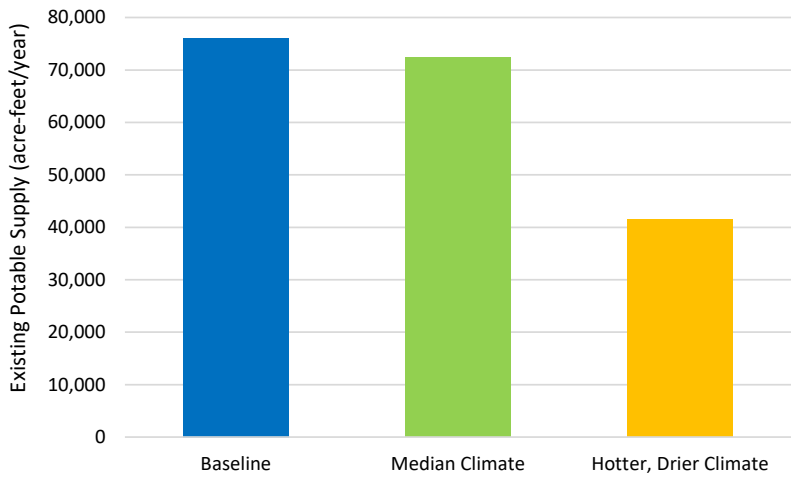


Figure 15. Existing Reliable Potable Supply for Washington County under Climate Change by 2070

b) Will water made available by this project be resilient to the impacts of climate change? Particularly in consideration of alternative water supply options that exist in the service area, to what extent does the project represent a resilient alternative. Explain.

The Ash Creek Project yield will decrease under climate change, but the supply will be a more resilient alternative than imports from the Colorado River. As previously described, the Ash Creek Project will provide a reliable water supply between 1,373 and 1,793 acre-feet per year, depending on the climate scenario. Without the Ash Creek Project, the district would need to accelerate LPP plans. Imports via LPP would be subject to an increasing risk of curtailment due to climate change. The State of Utah and the district continue to evaluate LPP under climate change, but the Ash Creek Project is not subject to curtailment risk and is considered a resilient supply.

c) Does the project contribute to climate change resiliency in other ways not described above? Explain.

The Ash Creek SSD provides wastewater services for the Hurricane area. Ash Creek SSD has partnered with the City of St. George and the district to develop a regional water reuse system to meet a substantial portion of the county's future demand. Although the Ash Creek Project yield will be affected by climate change, that impact is accounted for in the district's long range plan, and a large portion of the project's supply will be reused. Reusing water supply that already accounts for climate change impacts will add resiliency to the county's system.

3) The severity of actual or potential drought impacts that the project will address is an important consideration in assessing its contribution to water supply resiliency. Describe recent, existing, or potential drought conditions in the project area, including the severity of actual or potential drought impacts that the project will address.

a) Will the project help create additional flexibility to address drought?

Ash Creek Project supply will create additional flexibility to address drought, as follows:

- As discussed in Question No. 1 under Subcriterion No. 1b, without the Ash Creek Project the district will rely more heavily upon banked groundwater reserves below Sand Hollow Reservoir to meet potable demands in the short term. Relying on these reserves for multiple years under non-drought emergency conditions weakens the region's drought resiliency.

- As discussed in Question No. 2 under Subcriterion No. 1b, the exchange operation of the Ash Creek Project will shift more secure Toquerville Springs water to indoor M&I use and use more drought-susceptible Ash Creek Project water for outdoor secondary irrigation. Outdoor use is more easily curtailed, if needed, under drought contingency plans, and is more targeted in ongoing district conservation efforts.

- As discussed in Question No. 3 under Subcriterion No. 1a, additional aquifer recharge and recovery via Toquer Reservoir was originally proposed for the Ash Creek Project. Although not part of the current project description, opportunities for aquifer recharge and recovery at Toquer Reservoir to potentially support the district's groundwater drought reserves will continue to be evaluated.

Will water made available by this project continue to be available during periods of drought?

The Ash Creek Project reliable yield of between 1,373 and 1,793 acre-feet per year, depending on climate change, will be available during most drought periods. Ash Creek Project reliable yield calculations account for both the amount of streamflow and storage available during droughts in the hydrologic record, and the ability of the district to mitigate small, infrequent shortages in the proposed system. These yields are then further assessed under climate change conditions. It is likely that in most years the project will yield more than the reliable yield, and during most drought years will decrease to the reliable yield amount. It is possible that more extreme droughts not currently evident in the projected hydrology will decrease project reliable yields, although the exchange operations described in the previous question will help to mitigate these conditions.

To what extent is the water made available by this project more drought resistant than alternative water supply options?

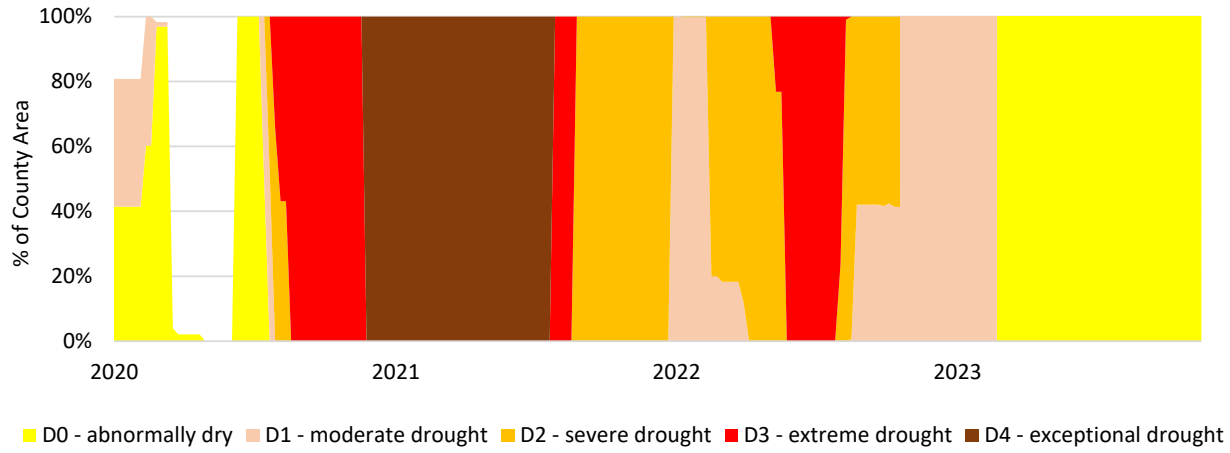
As discussed in Question No. 2 under Subcriterion No. 1b, without the Ash Creek Project, the district would need to accelerate LPP plans. Imports via LPP would be subject to an increasing risk of curtailment due to extreme drought. The State of Utah and the district continue to evaluate LPP under projected drought conditions, but the Ash Creek Project is not subject to curtailment risk and is considered a resilient supply.

b) Has the United States Drought Monitor identified the area served by the project as experiencing extreme (D3) or exceptional (D4) drought for at least 1 consecutive year in the last 4 years? Explain.

Between July 2020 and August 2021, the county was in extreme or exceptional drought for 56 consecutive weeks (Figure 16). Washington County, Utah, has been in some form of drought 80% of the time over the last 22 years (Figure 17).

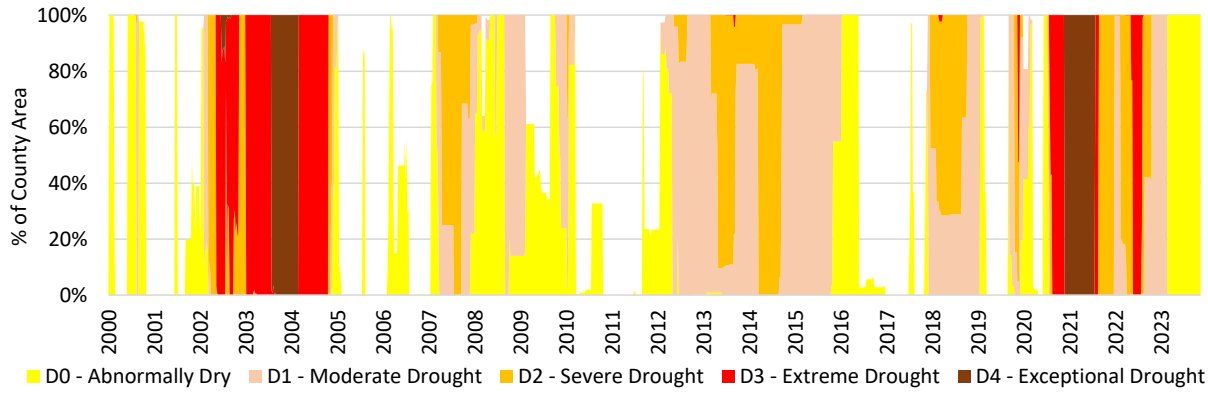
c) Has the State designated the area served by the project as a drought disaster area in the last 4 years? Explain.

On March 17, 2021, and again on April 21, 2022, Utah Governor Spencer J. Cox issued an Executive Order declaring a state of emergency due to drought (see Appendix A). These declarations allow drought-affected communities, farmers/ranchers, and others to officially begin the process to access state or federal resources.



Data Source: U.S. Drought Monitor, 2023

Figure 16. Percent of Washington County in Drought over Last Four Years



Data Source: U.S. Drought Monitor, 2023

Figure 17. Percent of Washington County in Drought over Last Twenty-two Years

Evaluation Criterion 2—Water Management Flexibility

SUBCRITERION NO. 2A—OPERATIONAL FLEXIBILITY

1) *Will the project help create additional operational flexibility to improve the management of water supplies? If so, how?*

The Ash Creek Project will increase operational flexibility in the district's system as follows:

- The district has a water right (Water Right # 81-351, priority date 1956) to 10,000 acre-feet from the Ash Creek Reservoir but does not have adequate storage or a pipeline system in place to fully capture and convey the water. The Ash Creek Project will improve the timing and capacity in how Ash Creek water rights are stored and delivered.

- The Ash Creek Project, via exchange with the Toquerville Springs, will provide another local potable water source to the Hurricane area and provide short-term redundancy. Depending on localized conditions at each source (e.g., maintenance or emergency outages), the district and the local municipalities will have the flexibility to use the best mix of this more diverse portfolio, including local groundwater supply, district Quail Creek project deliveries, and Toquerville Springs to meet potable demand.

2) *Will the project protect or improve the quality of surface water or groundwater? If so, explain how the project will accomplish this and the extent to which the project will do this.*

The Ash Creek Project will improve the quality of potable water being supplied to the Hurricane area via exchange with the Toquerville Springs, as described in Question No. 1 under Subcriterion No. 1b. The project will not directly improve or adversely affect water quality in the Ash Creek watershed, per the Ash Creek Project Final Environmental Assessment (EA)[11].

3) *Will the project take steps to minimize the environmental impacts of source water acquisition (intakes or groundwater pumping) as part of the project? If so, explain.*

Steps to minimize or avoid environmental impacts associated with constructing and operating the Ash Creek Project are outlined in the project's best management practices, standard operating procedures, and environmental protection measures, all of which are

[11] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.

described in the Ash Creek Project Plan of Development (POD)[12] and Final EA[13]. Example measures include, but are not limited to, the following:

- Cultural resources Memorandum of Agreement (MOA) and treatment plan
- Spatial and seasonal buffers and construction restrictions for raptors, migratory birds, mule deer, and listed species
- Open pit/trench measures to avoid wildlife entrapment
- Storm Water Pollution Prevention Plan
- Fire prevention and suppression requirements
- Post-construction stabilization and rehabilitation measures

4) *Will the project provide water or habitat for non-listed species? If so, how?*

The Final EA[14] determined that the proposed Toquer Reservoir would provide a water source, aquatic habitat, and 20-40 acres of marsh/wetland fringe which, in combination with fish stocked in the reservoir serving as a prey source, would attract waterfowl, resident or migrating bird populations, bats, and other non-listed species. Riparian vegetation established around the reservoir would provide long-term habitat for a variety of species, including BLM-sensitive species.

Diversions into the Ash Creek pipeline will decrease water retention time within the existing Ash Creek Reservoir, and 3,200 linear feet of Ash Creek riparian area is expected to redevelop in the upper reaches of the Ash Creek Reservoir footprint. The Ash Creek stream channel beneath the existing reservoir is expected to revert back to a riparian zone dominated with tree species similar to conditions found upstream of the existing Ash Creek Reservoir.

SUBCRITERION NO. 2B—LEGAL AND CONTRACTUAL WATER SUPPLY OBLIGATIONS

1) *Does the project help fulfill any of Reclamation's legal or contractual obligations such as providing water for Tribes, water right settlements, river restoration, minimum flows, legal court orders, or other obligations? Explain.*

No U.S. Bureau of Reclamation (Reclamation) legal or contractual obligations are associated with the Ash Creek Project.

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[12] Washington County Water Conservancy District. 2019. Plan of Development, Ash Creek Project. October 2019.
[13] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.
[14] ibid.

2) Will the project provide water or habitat for, or otherwise help protect, Federally listed threatened or endangered species? If so, how?

Per the Final EA[15], the Ash Creek Project will not provide water or habitat to Federally listed threated or endangered species. Twelve listed species were identified to potentially occur in the project area, but most were eliminated from further analysis due to lack of habitat or elevation constraints. Presence of the remaining species were not found in subsequent surveys. No long-term or likely adverse impacts to threatened, endangered, or candidate species are anticipated.

3) Does the local area depend in whole or in part on imported water from the Colorado River Basin or other basins experiencing comparable levels of long-term drought? If so, will the project reduce reliance on imports specifically from the Colorado River or other basins experiencing severe drought? Explain.

Yes, the Ash Creek Project may lessen the urgency of proposed imported water projects, such as the LPP. Without maximizing local supplies, the district would need to accelerate LPP plans to import water from the Colorado River. See the discussion in Question No. 2 under Subcriterion No. 1a.

Evaluation Criterion 3—Disadvantaged Communities

1) Will the proposed project deliver the anticipated water supply benefits to communities identified as disadvantaged by the Climate and Economic Justice Screening Tool (CEJST)?

The Ash Creek Project will provide benefits to disadvantaged and underserved communities by delivering higher quality potable water supply. Hurricane, Toquerville and LaVerkin are each fully or partially identified by the CEJST tool as disadvantaged (approximately 40% of the three community area), with the identified applicable primary burden categories summarized in Table 4. Per analyses conducted by Reclamation in the 2020 LPP Environmental Impact Statement (EIS), the Hurricane area's census blockgroups are between 24% to 41% low income and 10% to 20% minority populations.

As discussed in Question No. 1 under Subcriterion No. 1a, on average over the 100-year project life, the Ash Creek Project will meet 7.1% of the Hurricane, La Verkin, and Toquerville area potable demand through exchange with Toquerville Springs water. The Ash Creek project will supplement their existing water supply with reliable water supply between 1,373 and 1,793 acre-feet per year. The yield depends on future climate change, with lower yields associated with hotter, drier climate scenarios. Table 4 lists how the project will generally be used by each beneficiary.

[15] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.

Table 4. Population of Rural Communities to be Served by Ash Creek Project

Community	Population	Ash Creek Project Supply under Changing Climate (acre-feet)	Urban or Rural Designation	Exceeded Burden/Socioeconomic Thresholds
Hurricane (Tract No. 49053270901)	21,808 (Tract population is 4,079)	1,006	Rural	low income, expected building loss rate, abandoned mine land
La Verkin (Tract No. 49053271000)	4,374	148		low income, expected building loss rate, projected wildfire risk, formerly used defense sites, high school education
Toquerville (Tract No. 49053270100)	1,931 (Tract population is 9,197)	305		low income, expected building loss rate, expected population loss rate, projected wildfire risk, abandoned mine land, high school education

Data Source: Climate and Economic Justice Screening Tool, 2023.

2) Will the proposed project provide any additional benefits (such as economic growth opportunities, increases to short or long-term local employment, water quality, etc.) to communities identified as disadvantaged by the CEJST.

The project will result in providing a more reliable, and higher quality, potable water supply to the CEJST identified communities of Toquerville, Hurricane and La Verkin, as described in the previous question. The project will also provide short term employment opportunities through the duration of construction, as well as longer term employment and economic growth opportunities due to the increased public recreational opportunities provided by the reservoir. The reservoir will provide safe and enjoyable water-based public uses, in turn benefitting residents and visitors to the area. Additional benefits of the project are described qualitatively in Question No. 3 under Subcriterion No. 5b.

Evaluation Criterion 4—Stakeholder Support

1) Does the project promote collaborative partnerships to address water and related issues? Explain.

The district has formed collaborative partnerships with municipalities in Washington County as part of its RWSA. As described in the *Technical Project Descriptions* section above, the district operates its water system to address existing and future regional

municipal demand, in coordination with individual cities maintaining their existing water infrastructure systems and fully utilizing their respective municipal supplies. As part of the RWSA, the district will develop the Ash Creek Project to supply water to Hurricane, La Verkin, and Toquerville. Letters of support for the project are in Appendix B.

The Ash Creek Project will promote ongoing collaboration with the Ash Creek SSD, St. George, and the district to develop a regional water reuse system, which will reuse Toquerville Springs supply, as discussed in Question No. 2 under Subcriterion No. 1b.

2) *Does the project implement a regional or state water plan or an integrated resource management plan? Explain.*

Constructing and operating the Ash Creek Project will implement needed actions identified in State of Utah water plans. In 2013, Utah's Governor asked the Utah Division of Water Resources and most of the state's water conservancy districts to develop a statewide "road map" for Utah's municipal water needs. The first Utah Statewide Water Infrastructure Plan or SWIP quantified the state's future water demands and outlined specific conservation, rehabilitation, and new infrastructure needs. Multiple projects were explicitly identified as needed actions in the Virgin River Basin, including the Ash Creek Project. This requirement for additional infrastructure investment in the Virgin River Basin was reiterated in the 2020 SWIP[16] and the state's 2021 Water Resources Plan[17].

In July of 2023, the district released it's 20-Year Plan,[18] which outlines integrated water supply objectives at a regional level. The 20-Year Plan introduces new water conservation targets, optimization of existing local supplies like the Ash Creek Project, and development of additional reuse capacity.

3) *Does the project include outreach and opportunities for the public to learn about the project beyond what environmental compliance requires? Please describe these opportunities, including future opportunities, at the following phases of the project:*

a) *planning and design,*

Planning and permitting of the Ash Creek Project has been discussed with the public at district board meetings, Pintura Irrigation public meetings, Toquerville City Council meetings, and Toquerville Joint Utility Commission public meetings.

b) *construction,*

The district updates the public on construction status during monthly board meetings and website updates. Recently, the district held a public groundbreaking ceremony on November 7, 2023 for Toquer Reservoir. Toquerville City held a public groundbreaking

[16] Utah Division of Water Resources (Prepare60). 2020. Statewide Water Infrastructure Plan, 2nd Edition.
[17] Utah Division of Water Resources. 2021. Utah State Water Plan. December 2021.
[18] Washington County Water Conservancy District. 2023. 20-Year Plan: To Secure New Water Supplies for Washington County Utah. July 2023.

ceremony on February 24, 2022 for Toquerville parkway, which included construction of a portion of the Toquer Reservoir to TSWS pipeline for the Ash Creek Project.

c) implementation.

Once implemented, the district plans to update the public on operations and metrics during monthly board meetings and website updates, as needed.

4) How has the project addressed competing or conflicting interests from either affected stakeholders and/or the public?

No competing or conflicting interests exist for the Ash Creek Project.

5) Does the project have documented support from Tribes? If so, please identify these Tribes and describe the nature of their support for the project.

The Ash Creek Project will not directly benefit a Tribe. While not documented support, the district is in the process of changing the name of the project's Toquer Reservoir to Chief Toquer Reservoir as a result of recent coordination with the Shivwits Band of Paiutes.

Evaluation Criterion 5—Economic Benefits

SUBCRITERION NO. 5A—COST EFFECTIVENESS

1) Reclamation will calculate the cost per acre-foot of water produced by the project using information provided by project sponsors. Please provide the following information for this calculation:

a) The total estimated construction costs, by year, for the project (include all previous and planned work).

The annual construction costs for the Ash Creek Project are in Table 5.

Table 5. Ash Creek Project Construction Costs By Year

Calendar Year[1]	Construction Cost[2]
2022	$17,089,333
2023	$24,983,239
2024	$28,118,735
2025	$23,471,692
Total	**$93,663,000**

Notes:
[1] 2022 costs include cost (incurred or estimated) from November 15, 2021 through December 30, 2022.
[2] Construction cost is the field costs plus the non-contract costs, per Directives and Standards FAC 09-01. The non-contract costs are also separately listed in Question No. 1b under Subcriterion No. 5A.

b) The total estimated or actual costs to plan and design the project.

The total non-contract costs for the Ash Creek Project are $8,517,000. Of this amount, approximately $2,980,000 are for planning and design activities.

c) The average annual operation and maintenance costs for the life of the project.

The annual operation and maintenance costs for the Ash Creek Project are in Table 6. The Ash Creek Project is gravity driven, does not have pumping costs, and has low labor/operator costs. This makes the project's operating, maintenance, and replacement (OM&R) costs much less than alternatives with large pumping and operator requirements.

Table 6. Ash Creek Project Annual Operation and Maintenance Costs

Operations & Maintenance Activity	Annual Expense ($)
Consumables and minor repairs	$7,500
Road maintenance	$7,000
Utilities	$5,000
SCADA	$1,000
Labor/equipment/department expenses	$30,600
Total	**$51,100**

d) The year the project will begin delivery from stored water upon completion.

The Ash Creek Project will begin deliveries at the end of 2025.

e) The projected life (in years) that the project is expected to last. Note: this should be measured from the time the project starts delivering water.

The projected life of the Ash Creek Project will be 100 years.

f) All estimated replacement costs by year.

The Ash Creek Project replacement costs are in Table 7.

Table 7. Ash Creek Project Replacement Costs by Year

Description of Replacement Requirement	Year[1]	Cost ($, present value)[2]
pipe valve refurbishment/replacement	2045	$38,203
pipe valve refurbishment/replacement, air valve replacement, recreation facilities	2065	$2,928,924
dam appurtenant equipment and instrumentation, reservoir liner refurbishment	2075	$5,832,380
pipe valve refurbishment/replacement	2085	$38,203
pipeline refurbishment	2100	$18,541,365
pipe valve refurbishment/replacement, air valve replacement, recreation facilities	2105	$2,928,924
	Total	**$30,308,000**

Notes:
[1] Project construction complete in 2025
[2] Costs include estimates of mobilization, contingency, and non-contract costs.

g) The maximum volume of new water (in acre-feet) that will be available for delivery annually upon completion of the project.

The Ash Creek Project will be operated to meet reliable yields. Under this operational scheme and under baseline climate conditions, the maximum volume of water for delivery will be 1,793 acre-feet/year. As discussed in Question No. 1 under Subcriterion 1a, the Ash Creek Project's reliable water supply yield will be between 1,373 and 1,793 acre-feet/year, depending on future climate change. Assuming the climate changes from a median climate to a hotter, drier climate over the next 50 years, then the average annual project yield over a 100 year project life would be 1,461 acre-feet.

2) Reclamation will calculate the cost per acre-foot for the project using the information requested in Section E.1.5.1, Question 1, and compare it to any other water supply options identified by the applicant as a potential alternative to evaluate the cost effectiveness of the project. Please provide the following information for this comparison:

a) The cost per acre-foot of other water supply alternatives that could be implemented by the non-Federal project sponsor in lieu of the project.

The comparison of annualized costs of the Ash Creek Project and other alternatives is in Table 8. The La Verkin Hot Springs Reverse Osmosis (RO) alternative is described below in Question 1b under Subcriterion 5b. The LPP is described in the 2020 LPP Draft EIS[19].

b) If available, the cost per acre foot of one water supply project with similar characteristics to the project.

[19] U.S. Bureau of Reclamation. 2020. Lake Powell Pipeline Draft Environmental Impact Statement. June 2020.

The La Verkin Hot Springs RO alternative is comparable to the Ash Creek Project in that both rely on local water sources, have similar magnitudes of water supply yield, and would serve similar areas (i.e., Hurricane, La Verkin, and Toquerville). The La Verkin Hot Springs RO alternative cost per acre-foot is listed in the previous question, and is described in more detail below in Question 1b under Subcriterion 5b.

c) *Discussion of the degree to which the project is cost-effective, including, where applicable, a discussion of why the project may be cost effective even if the overall project cost appears to be high.*

As shown in Table 8, the LPP is the most cost effective water supply project, but as discussed in this application, the LPP would import Colorado River water that is subject to an increasing risk of curtailment due to climate change. The State of Utah and the district continue to evaluate LPP under climate change, however the Ash Creek Project is not subject to curtailment risk and is considered a resilient, effective local supply, especially in the short term.

Compared to a local supply alternative (La Verkin Hot Springs RO), the Ash Creek Project is more cost effective except under the hotter, drier climate scenarios, which would decrease the Ash Creek Project's effectiveness over time. This scenario also affects the cost effectiveness of the average of the climate scenarios. The La Verkin Hot Springs RO alternative cost effectiveness, however, is highly sensitive to the cost of power because RO processes are energy intensive. Just a $0.02/kilowatt-hour rise in power costs would make this alternative less cost effective than the Ash Creek Project under the climate scenario that would reach hotter, drier conditions by 2070. Although up front construction costs are high for the Ash Creek Project, relative to its yield, its low and less volatile OM&R costs make the Ash Creek Project more cost effective in the long term compared to other alternatives.

Table 8. Cost Comparison of Water Supply Alternatives

Alternative	Capital Costs ($, PV)	Operation, Maintenance, and Replacement/ Rehabilitation Costs ($, PV[1])	Annualized Costs[1] ($/year)	Reliable Potable Water Yield (acre-feet/year)	Cost per Acre-Foot ($, annual)
Ash Creek Project	$93,663,000	$32,080,000	$3,434,000	1,793 (baseline climate)	$1,915
				1,748 (median climate)	$1,965
				1,461 (average[2])	$2,350
				1,373 (hotter, drier climate)	$2,501
La Verkin Hot Springs Reverse Osmosis[3]	$153,065,000	$453,245,000	$16,559,000	7,259	$2,281
Lake Powell Pipeline[4]	$1,705,200,000	$410,200,000	$57,776,000	83,756	$690

Notes:
[1] 100 years and 2.5% discount rate.
[2] Assumes the climate changes from a median climate to a hotter, drier climate over the next 50 years.
[3] Costs from 2010 WCWCD Conceptual Water Treatment Study, indexed to 2022 price level using U.S. Bureau of Reclamation Construction Cost Trends, U.S. Bureau of Labor Statistics CPI Inflation Calculator, and the U.S. Energy Information Administration electricity data browser.
[4] Costs from the 2020 LPP Draft EIS, indexed to 2022 price level using U.S. Bureau of Reclamation Construction Cost Trends and the U.S. Energy Information Administration electricity data browser.

The district and its partner communities continue to plan and regionalize their current water reuse system. Integration of the Ash Creek Project's Toquer Reservoir into the storage components of the regional reuse system is currently being evaluated. This integration will increase the reservoir's overall yield and cost effectiveness. Concurrent to this Small Surface Water Storage Program application, the district and its partner communities have prepared a Large-Scale Water Recycling Projects Feasibility Study. To avoid double counting, the reuse storage yield and benefits of Toquer Reservoir will be described under that process.

The threat of substantial and long-term water supply shortages in the near term for Washington County is continuously increasing during unprecedented drought and growth. This is evident across Southwestern communities that find themselves with less certain water supplies and even perilously close to running out (e.g., Las Vegas, New

Mexico). The district must implement all planned local supply projects, in addition to aggressive conservation and reuse measures, to meet projected demand in both the near and long term. It cannot wait until current volatile construction markets settle. The district continues to consider the Ash Creek Project to be beneficial (see the next section) and cost effective as opposed to acute shortages and resulting emergency costs.

SUBCRITERION NO. 5B—ECONOMIC ANALYSIS AND PROJECT BENEFITS

1) Summarize the economic analysis performed for the project, including information on the project's estimated benefits and costs. Describe the methodologies used for the analysis. Reclamation will award points based on a comparison of the benefits and costs of the project. The information provided should include:

a) Quantified and monetized project costs, including capital costs and operations and maintenance costs.

The annual construction costs for the Ash Creek Project are in Table 9 for a construction cost of $93,663,000. The annual operating and maintenance costs are estimated to be $51,100 per year (Table 10) or a present value of $1,772,489 (100 years, 2.50% discount rate). The present value replacement costs are a present value of $30,308,000 (Table 11). Total monetized project costs are in Table 12 for a total present value of $125,842,000. Detailed Ash Creek Project construction cost estimates are in Appendix C and OM&R details are in Appendix D.

Table 9. Ash Creek Project Construction Costs

Component Description	Field Cost Estimate[1]	Construction Cost Estimate[2]
Toquer Reservoir	$36,852,000	$40,538,000
Ash Creek Pipeline and Appurtenant Structures	$31,184,000	$34,303,000
Tributary Pipelines and Appurtenant Structures	$7,306,000	$8,037,000
Toquer Reservoir to TSWS Pipeline	$4,058,000	$4,464,000
Recreation Area	$5,746,000	$6,321,000
Total	**$85,146,000**	**$93,663,000**

Notes:
[1] Component cost estimate price levels are June 2022.
[2] Construction cost estimates include non-contract costs such as planning, engineering, design, construction management, environmental compliance, and land acquisition.

Table 10. Ash Creek Project Annual Operation and Maintenance Costs

Operations & Maintenance Activity	Annual Expense ($)	Present Value Cost ($)[1]
Consumables and minor repairs	$7,500	$260,150
Road maintenance	$7,000	$242,807
Utilities	$5,000	$173,433
SCADA	$1,000	$34,687
Labor/equipment/department expenses	$30,600	$1,061,412
Total	**$51,100**	**$1,772,000**

Notes:
[1] 100 years and 2.50% discount rate

Table 11. Ash Creek Project Replacement Costs by Year

Description of Replacement Requirement	Year[1]	Cost ($, present value)[2]
pipe valve refurbishment/replacement	2045	$38,203
pipe valve refurbishment/replacement, air valve replacement, recreation facilities	2065	$2,928,924
dam appurtenant equipment and instrumentation, reservoir liner refurbishment	2075	$5,832,380
pipe valve refurbishment/replacement	2085	$38,203
pipeline refurbishment	2100	$18,541,365
pipe valve refurbishment/replacement, air valve replacement, recreation facilities	2105	$2,928,924
Total		**$30,308,000**

Notes:
[1] Project construction complete in 2025
[2] Costs include estimates of mobilization, contingency, and non-contract costs.

Table 12. Total Ash Creek Project Costs

Alternative	Construction Costs ($, PV)	Operation, Maintenance, and Replacement/ Rehabilitation Costs ($, PV)	Total Present Value Cost ($)	Annualized Costs ($/year)[1]
Ash Creek Project	$93,663,000	$32,080,000	$125,743,000	$3,434,000

Notes:
[1] 100 years and 2.50% discount rate

b) Quantified and monetized project benefits. This includes benefits that can be quantified and expressed as a monetized benefit per acre-foot.

The Ash Creek Project would achieve the following monetized project benefits:

1. Water Supply Reliability
2. Recreation

Two methods are used in this analysis to quantify the water supply reliability benefit: benefit transfer and cost of most likely alternative. This approach was taken to explore the sensitivity of the benefits calculations to such methods. The recreation benefits are the same for each approach. All monetized benefits are summarized in Table 13 and described below.

Table 13. Ash Creek Project Benefits Summary

Benefit	Ash Creek Project Benefits ($, PV)			
	Historical Climate - 1,793 acre-feet reliable yield	**Warmer Climate - 1,748 acre-feet reliable yield**	**Average of Warmer to Hotter, Drier Climate[1] - 1,461 acre-feet reliable yield**	**Hotter, Drier Climate - 1,373 acre-feet reliable yield**
Benefit Transfer Method				
Water Supply Reliability Benefit (high population, best reliability value)	$179,686,984	$176,161,258	$153,096,959	$145,630,819
Recreation Benefit	$8,259,407	$8,259,407	$8,259,407	$8,259,407
Total Benefit (PV)	**$187,946,392**	**$184,420,665**	**$161,356,366**	**$153,890,226**
Cost of Most Likely Alternative Method				
Water Supply Reliability Benefit[2]	$144,735,064	$141,102,561	$117,936,088	$110,831,703
Recreation Benefit	$8,259,407	$8,259,407	$8,259,407	$8,259,407
Total Benefit (PV)	**$152,994,471**	**$149,361,968**	**$126,195,495**	**$119,091,110**

Notes:
[1] Assumes the climate changes from a median climate to a hotter, drier climate over the next 50 years.
[2] Per acre-foot present value of the avoided La Verkin Hot Springs RO Treatment Alternative multiplied by Ash Creek Project reliable yields.

1. Water Supply Reliability

Water supply reliability benefits are an important consideration in evaluating water supply benefits of the Ash Creek Project. Additional supplies provided by the project will reduce potential gaps in supply and demand in the future as well as decrease the potential for shortage events at any particular time. The Department of the Interior's economic analysis guidelines (707 DM 1 Handbook) lists several methods to quantify water supply benefits. Two methods are used in this analysis, as follows:

- **Benefits transfer method**: This methodology was used by Reclamation economists to quantify the benefits of the LPP. The methodology (i.e., transfer of willingness-to-pay values from other areas to Washington County) will be applied directly to Ash Creek Project beneficiaries and yields.

- **Cost of most likely alternative**: Recognizing the reliability or uncertainty of a benefit transfer method, as discussed in the Department of the Interior's 707 DM 1 Handbook, this economic analysis includes the cost of the most likely alternative as an additional point of reference in quantifying benefits.

Benefits Transfer

Studies completed in several states have estimated water reliability benefits and the benefits of avoiding water supply shortages. These studies typically have quantified a willingness-to-pay (WTP) or willingness-to-accept value using survey data to estimate how water users would react to different magnitudes of shortages and various event probabilities. Pages 16-21 of Appendix C-23 of the Draft LPP Environmental Impact contain specific details on these WTP studies (see Appendix E to this document). The studies indicate there are significant benefits associated with improving water supply reliability for future demands and these benefits accrue to residential and commercial/industrial water users.

In the LPP analysis, household benefits from avoiding a shortage, or increasing water supply reliability, were estimated to range from about $89 to $360 per household per year, with a best estimate of $300 per household per year (2019 dollars). For the Ash Creek Project analysis, the 2019 dollar values were adjusted to July 2022 dollars using the U.S. Bureau of Labor Statistics CPI Inflation Calculator, resulting in a WTP value range of $103, $346, and $415 per household (Table 14). July 2022 was used to be consistent with most of the Ash Creek Project's cost estimate price level.

Commercial water supply benefits are attributable to avoiding revenue losses that could occur during periods of low reliability. Consistent with the LPP methodology (see Appendix E), the high estimate of household WTP has been applied to the commercial establishment projection as a lower bound estimate of commercial benefits (Table 14). The second level of effect, or high bound estimate, would be approximately five times the effect on revenues, or five times the high household WTP estimate.

Table 14. Willingness-to-Pay Values for Ash Creek Project Water Supply Reliability Benefits

Projection	Willingness-to-Pay Value ($ per household or establishment, 2022 dollars)		
	Low	Best	High
Household	$103	$346	$415
Commercial	$415	$415 x 5	$415 x 5

Water supply reliability benefits for the Ash Creek Project were estimated by applying the WTP value to the household and commercial establishment growth projections in the project beneficiary area (i.e., Hurricane, La Verkin, and Toquerville), as follows. Calculation details are in Appendix E.

- Household and commercial establishment growth projections were calculated using baseline and high population growth scenarios from the 2017/18 Kem C. Gardner Institute studies[20,21]. Household, commercial establishments, and demand projections values are kept constant after Year 50.
- The household and commercial establishment projections were multiplied by the WTP values (Table 14) over the 100-year period and discounted back to a present value (2.50 discount rate).
- The present value water supply reliability benefits were prorated by the average portion of total future water demands in the study area met by Ash Creek Project deliveries (see Appendix E). The WTP values are interpreted as a benefit of maintaining future water supply reliability, but this reliability will be achieved through a variety of future water supplies for Hurricane, La Verkin, and Toquerville, with each future supply contributing toward the benefit.

The water supply reliability benefits of the Ash Creek Project for the baseline and high population growth scenarios are in Table 15.

[20] Kem C. Gardner. 2017. Utah's Long-term Demographic and Economic Projections. July 2017.
[21] Kem C. Gardner. 2018. Technical Memorandum: Washington County Long-term Projection Scenario. January 2018.

Table 15. Water Supply Reliability Benefits of the Ash Creek Project

Growth Scenario	Total Water Supply Reliability Benefit for Hurricane, La Verkin, and Toquerville ($, PV)		Benefits of Ash Creek Project Reliable Yield ($, PV)			
			Historical Climate - 1,793 acre-feet reliable yield	Warmer Climate - 1,748 acre-feet reliable yield	Average of Warmer to Hotter, Drier Climate - 1,461 acre-feet reliable yield	Hotter, Drier Climate - 1,373 acre-feet reliable yield
			Percent of New Hurricane Area Demand Met by Ash Creek Project			
			28.1%	*27.5%*	*23.9%*	*22.7%*
Households						
Baseline Population Growth	Low	$117,731,255	$33,035,187	$32,386,988	$28,146,650	$26,774,011
	Best	$396,851,053	$111,355,721	$109,170,756	$94,877,335	$90,250,414
	High	$476,225,853	$133,628,153	$131,006,170	$113,853,900	$108,301,541
High Population Growth	Low	$125,504,655	$35,216,390	$34,525,392	$30,005,079	$28,541,809
	Best	$423,053,795	$118,708,166	$116,378,935	$101,141,767	$96,209,346
	High	$507,669,447	$142,451,172	$139,656,067	$121,371,290	$115,452,328
Commercial Establishments						
Baseline Population Growth	Low	$40,941,441	$11,488,098	$11,262,684	$9,788,092	$9,310,753
	Best	$204,707,203	$57,440,488	$56,313,420	$48,940,462	$46,553,763
	High	$204,707,203	$57,440,488	$56,313,420	$48,940,462	$46,553,763
High Population Growth	Low	$43,463,431	$12,195,764	$11,956,465	$10,391,038	$9,884,294
	Best	$217,317,154	$60,978,819	$59,782,324	$51,955,192	$49,421,472
	High	$217,317,154	$60,978,819	$59,782,324	$51,955,192	$49,421,472
Total Benefit						
Baseline Population Growth	Low	$158,672,696	$44,523,285	$43,649,672	$37,934,743	$36,084,764
	Best	$601,558,256	$168,796,210	$165,484,177	$143,817,798	$136,804,178
	High	$680,933,056	$191,068,642	$187,319,590	$162,794,362	$154,855,304
High Population Growth	Low	$168,968,085	$47,412,153	$46,481,856	$40,396,117	$38,426,104
	Best	$640,370,949	$179,686,984	$176,161,258	$153,096,959	$145,630,819
	High	$724,986,601	$203,429,990	$199,438,391	$173,326,482	$164,873,800

Cost of Most Likely Alternative

If the Ash Creek Project cannot be used to help meet future water demand, the most likely alternative source would be the limited remaining water in the Virgin River mainstem. The La Verkin hot springs discharges water with 10,000 milligrams per liter of total dissolved solids at a rate of about 10 cfs into the Virgin River near the La Verkin Bridge, thus rendering all downstream water unsuitable for potable use. Additional water diversions upstream from the hot springs are not feasible due to potential impacts to endangered fish species. Under this alternative, the district would construct a 4,500 gallons per minute (approximately 7,260 acre-feet per year) RO treatment facility and related infrastructure to treat water diverted near the La Verkin Hot Springs.

The La Verkin Hot Springs RO alternative is comparable to the Ash Creek Project in that both rely on local water sources, have similar magnitudes of water supply yield, and would serve similar areas (i.e., Hurricane, La Verkin, and Toquerville). There is a reasonable expectation that the RO alternative would be constructed in the absence of the Ash Creek Project, as this alternative has been and continues to be evaluated by the district for potential implementation, and because there are limited other local options. The cost to avoid constructing this alternative (Table 16), therefore, is a measure of the Ash Creek Project's water supply benefit. Details of the cost of this alternative are in Appendix F.

Table 16. Cost of Most Likely Water Supply Alternative to the Ash Creek Project

Alternative	Capital Costs ($, PV)	Operation, Maintenance, and Replacement/ Rehabilitation Costs ($, PV[1])	Annualized Costs[1] ($/year)	Reliable Potable Water Yield or Savings (acre-feet/year)	Cost per Acre-Foot ($, annual)
La Verkin Hot Springs Reverse Osmosis[2]	$153,065,000	$453,245,000	$16,559,000	7,259	$2,281

Notes:
[1] 100 years and 2.5% discount rate.
[2] Costs from 2010 WCWCD Conceptual Water Treatment Study, indexed to 2022 price level using U.S. Bureau of Reclamation Construction Cost Trends, U.S. Bureau of Labor Statistics CPI Inflation Calculator, and the U.S. Energy Information Administration electricity data browser.

2. Recreation

The existing Ash Creek Reservoir is located on private land, does not have developed recreational facilities, and is not managed for recreational uses. The proposed Ash Creek Project facilities will offer recreation amenities similar to nearby Quail Creek State Park, such as fishing, camping, and picnicking. Assuming similar rates of visitation and spending, the new Ash Creek Project will generate approximately $240,000 annually ($8.3 million, 2022 present value over 100 years) in local wages, earnings, rents, and tax revenues related to recreation (see Table 17). This benefit could increase if annual visitation increases with population growth.

Table 17. Recreation Benefits of the Ash Creek Project

Feature	Surface Water Acreage	Annual Visitors[1]	Annual Benefit (2022 dollars)[2]
Quail Creek State Park	600	84,055	$1,242,337
Proposed Ash Creek Project	115	16,111	$238,115

Notes:
[1] Annual visitors for Quail Creek State Park is an average of 2009-2018. More recent years were excluded in this analysis to avoid skewing due to pandemic effects on outdoor recreation. Ash Creek Project visitors are projected using the same visitor per surface water acre as Quail Creek State Park.
[2] Utah State Parks estimates the Quail Creek State Park local benefit per visitor in 2009 dollars to be $10.77 ($14.78 in 2022 dollars).

c) If quantified and/or monetized information for these benefits is not available, they may be addressed in response to Question 2 below.

Monetized benefits are described under this subcriterion.

d) A comparison of the project's quantified and monetized benefits and costs.

A comparison of monetized costs and benefits for the Ash Creek Project is in Table 18. The benefits of the Ash Creek Project exceed costs under all benefit approaches and climate change scenarios except for the hotter, drier climate scenario under the cost of most likely alternative approach. This scenario assumes a hotter, drier climate starting in 2025, as opposed to the climate steadily progressing to this condition by 2070, and is considered a lower bound for the climate in this study.

Table 18. Ash Creek Project Monetized Costs and Benefits

Benefit	Ash Creek Project Benefits ($, PV)			
	Historical Climate - 1,793 acre-feet reliable yield	**Warmer Climate - 1,748 acre-feet reliable yield**	**Average of Warmer to Hotter, Drier Climate[1] - 1,461 acre-feet reliable yield**	**Hotter, Drier Climate - 1,373 acre-feet reliable yield**
Benefit Transfer Method				
Water Supply Reliability Benefit (high population, best reliability value)	$179,686,984	$176,161,258	$153,096,959	$145,630,819
Recreation Benefit	$8,259,407	$8,259,407	$8,259,407	$8,259,407
Total Benefit (PV)	**$187,946,392**	**$184,420,665**	**$161,356,366**	**$153,890,226**
Total Cost (PV)	**$125,743,000**			
Cost of Most Likely Alternative Method				
Water Supply Reliability Benefit[2]	$144,735,064	$141,102,561	$117,936,088	$110,831,703
Recreation Benefit	$8,259,407	$8,259,407	$8,259,407	$8,259,407
Total Benefit (PV)	**$152,994,471**	**$149,361,968**	**$126,195,495**	**$119,091,110**
Total Cost (PV)	**$125,753,000**			

Notes:
[1] Assumes the climate changes from a median climate to a hotter, drier climate over the next 50 years.
[2] Per acre-foot present value of the avoided La Verkin Hot Springs RO Treatment Alternative multiplied by Ash Creek Project reliable yields.

2) Describe any economic benefits of the project that are difficult to quantify and/or monetize. Provide a qualitative discussion of the economic impact of these benefits.

Other qualitative benefits of the Ash Creek Project include the following:

- Delivers a higher quality water supply to low-income, minority communities[22] (census blockgroups are 24% to 41% low income and 10% to 20% minority)
- Increases the operational flexibility of the district to use its Ash Creek water rights and supply potable water to the Hurricane, La Verkin, and Toquerville.
- Lessens the quantity and urgency of imported water projects, such as the LPP.
- Provides future opportunities for aquifer recharge and recovery.

[22] U.S. Bureau of Reclamation. 2020. Lake Powell Pipeline Draft Environmental Impact Statement. June 2020.

- Alleviates recreational congestion at Zion National Park, Quail Creek State Park, Sand Hollow State Park, and other nearby areas.
- Improves the efficiency of the rural agricultural irrigation system in Pintura, Utah.

3) Does the project provide multiple benefits, or is it a single purpose facility? Explain.

The Ash Creek Project will provide the following benefits:

- Water supply reliability via storage of Ash Creek water rights and improved irrigation efficiency for the Pintura agricultural users.
- Enhance potable water supply quality via exchange with TSWS.
- Recreation at the Toquer Reservoir Recreation area.

These benefits are further described in Questions 1 and 2 in this section.

Project Budget Detail and Narrative

Clearly identify all items of cost (total estimated project cost), including those contributed as non-Federal cost share by the applicant (required and voluntary), third-party in-kind contributions, and those covered using the funding requested from Reclamation, and any requested pre-award costs.

The Ash Creek Project budget proposal is summarized in Table 19. This budget is consistent with the budget submitted by the district under NOFO No. R23AS00019. The district is requesting the remaining federal amount ($6,971,821) to reach the 25% cost share. This requested amount would be applied to post-award construction costs.

The budget narrative is summarized below. Details of the budget narrative, along with cost estimate back-up and a letter certifying labor rates, is in the Budget Detail and Narrative Tables (Appendix C). Federal environmental compliance is complete for the Ash Creek Project and has been review by Reclamation.

Table 19. Ash Creek Project Budget Proposal Summary

Budget Object Category	Total Cost	Federal Estimated Amount	Non-Federal Estimated Amount
Personnel	**$295,965**		
Fringe Benefits	**$216,548**		
Travel	**$55,900**		
Equipment	**$0**		
Supplies	**$0**		
Contractual	**$0**		
Construction	**$46,233,745**		
Other Direct Costs	**$0**		
Total Direct Costs	**$46,802,159**		
Indirect Charges	**$56,841**		
Total Costs	**$46,859,000**	**$11,714,750**	**$35,144,250**
Cost Share Percentage		**25%**	**75%**
Amount awarded under NOFO No. R23AS00019 (68041)		$4,742,929	---
Requested Reclamation Funding		**$6,971,821**	---

- **Personnel:** The principal investigator for the Ash Creek Project is Corey Cram, district Associate General Manager (Associate GM). The Associate GM will manage the district project managers and other staff in contract/construction activities for each of the project features and years. An hourly rate (escalated through time by 3%/year) is applied to estimated hours for each task/year. Compensation rates are consistently applied to Federal and non-Federal activities.

All other positions will be occupied by two or more people. Hourly rates are based on the average of all personnel occupying this position. Hourly rates (escalated through time by 3%/year) are applied to estimated hours for each position/task/year. Compensation rates are consistently applied to Federal and non-Federal activities. These positions will manage contracts and contractors design and construction activities, manage compliance activities, and complete inspections for each of the project features and years. Administrative staff costs are included in the indirect costs of this budget estimate.

- **Fringe Benefits:** District fringe benefits are calculated based on a percentage of employee compensation costs. Percentages vary by employee account for Medicare/SUTA/Life/LTD, medical & dental, retirement, and holidays and leave. Fringe benefit percentages are applied to compensation quantities based on level of effort calculated in the "6a. Personnel sheet" of this budget estimate.

- **Travel**: The budget includes estimated travel costs through 2025 for day trip site visits by the district Associate General Manager, Project Manager, and Inspector. Project travel will entail driving from the Washington County Water Conservancy District office (533 East Waterworks Drive, St. George, UT 84770) to project sites located between Anderson Junction, UT, and New Harmony, UT. Travel to project sites will be between 40 and 80 miles round trip, depending on the project feature visited. Toquer Reservoir and Recreation Area site visits will be 40 miles round trip. Pipeline site visits vary in length; an average round trip per day of 60 miles was used in this budget calculation. The mileage rate of $0.625 is used and no assumptions are made regarding escalation of this rate. Due to the number of day trips, travel is aggregated per staff per site over the course of project construction. Purpose of site visits will be for construction/contractor management, compliance management, QC/QA, and inspections.

- **Equipment**: There are no non-construction related equipment costs.

- **Supplies**: There are no non-construction related supply costs.

- **Contractual:** All contractors on the Ash Creek Project are related to engineering, design, permitting, demolition, acquisition, and construction activities. These contracts are described under construction.

- **Construction:** Contracts have been or will be awarded by the district for the final design, engineering, permitting, management, and construction of the Ash Creek Project. Cost estimate sheets and bid documents in Appendix C describe these costs. The contractual construction costs exclude the portion of estimated non-contract costs (design, engineering, permitting, construction management) that are assigned to the district (i.e., personnel, fringe, travel, indirect costs) or are set aside for U.S. Bureau of Reclamation review of completed federal environmental compliance documents (i.e., other construction-related costs).

- **Other Direct Cost:** There are no other direct costs not listed in the above categories.
- **Indirect Costs:** The district does not have a Federal negotiated indirect cost rate. This budget includes a 10% de minimis rate of modified total direct costs.

Environmental and Cultural Resources Compliance

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The Ash Creek Project includes a reservoir, various pipelines, and associated facilities on private and state lands, and lands administered by the BLM St. George Field Office. Table 20 summarizes the extent of earth disturbing work for the project, and includes clearing, grubbing, trenching, excavation, stockpiling, road construction and access, reservoir filling, and restoration activities. Of the disturbed area, 161.1 acres will be permanently disturbed, with the remaining acres being restored.

Table 20. Acres of Ash Creek Project Disturbance

Land Owner/Administrator	Temporary Construction ROW (acres)	Permanent ROW (acres)
Bureau of Land Management	182.7	203.9
Utah School and Institutional Trust Lands Administration	11.3	29.7
Private	72.9	96.4
Total	**266.9**	**330.0**

Construction activities will temporarily displace wildlife and vegetation from areas not associated with permanent above ground features. Impacts to water resources, water quality, and air quality are expected to be negligible. Twenty-five eligible cultural resource sites will be impacted by the project. Impacts to threatened or endangered species and impacts to wetlands are described in questions below. All impacts of the Ash Creek Project are described in the Final EA[23].

Steps to minimize or avoid environmental impacts associated with constructing and operating the Ash Creek Project are outlined in the project's best management practices, standard operating procedures, and environmental protection measures, all of which are

[23] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.

described in the Ash Creek Project POD[24] and Final EA[25]. Example measures include, but are not limited to, the following:

- Cultural resources MOA and treatment plan
- Spatial and seasonal buffers and construction restrictions for raptors, migratory birds, mule deer, and listed species
- Open pit/trench measures to avoid wildlife entrapment
- Noxious weed control measures
- Storm Water Pollution Prevention Plan
- BLM fire prevention and suppression requirements
- Dust control measures
- Post-construction stabilization and rehabilitation measures

Is the applicant aware of any species listed or proposed to be listed as a Federal threatened or endangered species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

Twelve threatened or endangered animal and plant species were identified as potentially occurring in the Project Area[26]. A small portion of the Project Area (approximately 19 acres) overlaps Mexican spotted owl designated critical habitat in the first mile downstream of Ash Creek Reservoir. No long-term or significant impacts to threatened, endangered, or candidate species are anticipated[27].

Are there wetlands or other surface waters inside the project boundaries that potentially fall under CWA jurisdiction as "Waters of the United States?" If so, please describe and estimate any impacts the proposed project may have.

The U.S. Army Corps of Engineers Preliminary Jurisdictional Determination (February 12, 2014; SPK-2011-01121) concurred with the amount and location of water bodies

[24] Washington County Water Conservancy District. 2019. Plan of Development, Ash Creek Project. October 2019.
[25] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.
[26] U.S. Fish and Wildlife Service. 2019. Federally listed and proposed endangered threatened and candidate species and critical habitat in Utah – species list by county. https://ecos.fws.gov/ecp0/reports/species-by-currentrange-county?fips=49053; accessed 9/26/2019.
[27] U.S. Bureau of Land Management. 2021. Final Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. June 2021.

within the Project Area—18,647 linear feet of intermittent or ephemeral streambed and no wetlands within the areas of surface disturbing activities. Adverse impacts to intermittent or ephemeral streambed from constructing tributary diversion structures would be negligible to minor. The riparian zone would increase within the existing Ash Creek Reservoir basin with reduced pool retention and elevation, and continuous flow. Construction and operation of Toquer Reservoir would create 20 to 40 acres of wetland fringe around the reservoir and propagate riparian trees in previously dry upland areas.

The U.S. Army Corps of Engineers has issued an individual permit (SPK-2011-01121) for the Ash Creek Project.

When was the water delivery system constructed?

The various irrigation facilities on the tributaries were built as early as the late 1800's (see response to the following question). Toquerville Springs has evidence of use as early as the 1860's. The existing Ash Creek Dam and related infrastructure was constructed in 1960. The bulk of the municipal distribution systems in Hurricane, La Verkin, and Toquerville were constructed in the 1980's and 1990's, with several pipelines being replaced in the last 5-10 years.

Will the proposed project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

The following irrigation system features will be modified as part of the proposed Ash Creek Project:

- The proposed Leap Creek Pipeline will tie into an existing pipeline that is owned by the district (constructed in 1995) and convey this water 2.12 miles to the proposed Pintura regulating pond.
- The proposed South Ash Creek Pipeline will collect water from a replacement concrete diversion structure and convey it along the existing ditch alignment 1.32 miles to a proposed Pintura regulating pond. The original instream diversion structure was constructed in the late 1800's, but is frequently rebuilt when large storm flows wash through the stream.
- A proposed pipeline segment will run 1.77 miles and connect the new Pintura regulating pond to the existing Pintura irrigation system. Components of the Pintura irrigation system was constructed as early as the late 1800's.

Existing irrigation system features within the Area of Potential Effect were evaluated for cultural resource impact (see responses to the next two questions).

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

See response to next question.

Are there any known archeological sites in the proposed project area?

Class III level inventories were completed and 23 previously documented archeological sites were relocated and site recordings updated, as needed, and 41 previously undocumented sites were recorded by the identification efforts. The BLM engaged in Section 106 consultations with the Utah State Historic Preservation Office (SHPO), after determining that of the 64 sites within the APE, 25 were eligible for listing to the National Register of Historic Places as they retained integrity and satisfied one or more of the eligibility criteria listed at 36 CFR 60.4 (a-d). To lessen adverse effects, an Archeological Monitoring and Treatment Plan was developed and a MOA was signed between BLM and other consulting parties to ensure the approved treatment plan will be implemented. Cultural resource study reports, the Monitoring and Treatment Plan, and the MOA can be obtained by appropriate parties from the BLM.

Table 21. Eligible Historic Properties and Proposed Treatment for the Ash Creek Project

Site Number	Style Type	Land Owner	Proposed Treatment
42WS3578	Historic road	Private, BLM, SITLA	Flag, avoid, monitor
42WS3709	Historic road	Private, BLM, SITLA	Develop historic context
42WS3715	Historic road	BLM	Develop historic context
42WS3834	Historic trash scatter	BLM	Analysis and plotting of artifacts
42WS3836	Prehistoric open artifact scatter	Private, BLM	Phase I testing; Phase II data recovery
42WS3849	Historic road	Private	Flag, avoid, monitor
42WS4095	Prehistoric open artifact scatter	BLM	Phase I testing; Phase II data recovery
42WS4096	Prehistoric open artifact scatter	BLM	Phase I testing; Phase II data recovery
42WS4097	Prehistoric open lithic scatter	Private, BLM	Phase I testing; Phase II data recovery
42WS4098	Prehistoric open campsite	Private, BLM	Phase I testing; Phase II data recovery
42WS4099	Historic road	Private, BLM	Develop historic context
42WS4101	Prehistoric open campsite	BLM	Phase I testing; Phase II data recovery

Table 24 (continued). Eligible Historic Properties and Proposed Treatment for the Ash Creek Project

Site Number	Style Type	Land Owner	Proposed Treatment
42WS5131	Prehistoric open campsite and historic trash scatter	BLM	Flag, avoid, monitor
42WS5132	Historic inscriptions and trash scatter	BLM	Plotting and analysis of artifacts
42WS5133	Prehistoric open campsite and historic dump	BLM	Phase I testing; Phase II data recovery
42WS5135	Historic habitation	Private	Flag, avoid, monitor
42WS5136	Prehistoric open lithic scatter	BLM	Flag, avoid, monitor
42WS5137	Prehistoric rock shelter	SITLA	Temporary fence, avoid, monitor
42WS5138	Prehistoric open campsite	SITLA	Temporary fence, avoid, monitor
42WS5139	Prehistoric open campsite	SITLA	Temporary fence, avoid, monitor
42WS5140	Prehistoric open campsite	BLM	Phase I testing; Phase II data recovery
42WS5142	Prehistoric open campsite	BLM	Flag, avoid, monitor
42WS5156	Historic ditch	Private, SITLA	Develop historic context
42WS5354	Prehistoric open lithic scatter	BLM	Phase I testing; Phase II data recovery
42WS5550	Prehistoric rock art with grinding slicks and historic inscriptions	Private	Flag, avoid, monitor

Data Source: Ash Creek Project Final EA, BLM 2021

Will the proposed project have a disproportionately high and adverse effect on low income or minority populations?

BLM determined in the Draft EA Interdisciplinary Team Checklist[28] that no minority or economically disadvantaged communities or populations would be adversely affected by construction activities under the proposed action.

Will the proposed project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

The Ash Creek Project is not anticipated to limit access to Indian sacred sites and will not impact tribal lands. In 2011, the BLM initiated consultations with the Paiute Indian Tribe of Utah and its respective Bands, the Kaibab Band of Paiute Indians, the Hopi Tribe, the Pueblo of Zuni, and the Navajo Nation regarding the Ash Creek Project and the potential adverse effects that could result from the federal and state authorization of this undertaking. In 2014, a MOA was signed in consultation with the above mentioned tribes and Utah SHPO. Due to the length of time for processing the Project, the BLM St. George Field Office re-initiated Tribal consultation on a new MOA with the above mentioned tribes and Utah SHPO in January 2020, a Tribal Council Briefing was performed on February 10, 2020, and a site visit was conducted on March 17, 2020 with a follow up Tribal Council briefing on May 4, 2020. While the tribal parties declined to be signatories, tribal consultation will continue throughout the life of the Project.

Will the proposed project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

BLM determined in the Draft EA Interdisciplinary Team Checklist[29] that the project could contribute to impacts associated with noxious weeds and invasive species, but the impact would be small and not require detailed analysis in the Final EA. The district will implement best management practices to avoid spread of noxious weeks or invasive species during construction.

[28] U.S. Bureau of Land Management. 2019 DRAFT Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. October 2019.
[29] U.S. Bureau of Land Management. 2019 DRAFT Environmental Assessment of the Right-of-Way Grant for the Ash Creek Project and Recreation and Public Purposes Act Lease/Patent for the Toquer Reservoir Recreation Area. DOI-BLM-UT-C030-2012-0001-EA. October 2019.

Permits, Letters, and Statements

Required Permits or Approvals

State in the application whether any permits or approvals are required and explain the plan for obtaining such permits or approvals.

Requirements and status for Ash Creek Project permits are listed in Table 22. All completed permits are available for review by Reclamation.

Table 22. Summary of Permitting Requirements for the Ash Creek Project

Jurisdiction	Permit	Purpose	Status
Bureau of Land Management	ROW Grant; Recreation and Public Purposes Act Lease/Patent	ROW	Complete; DOI-BLM-UT-C030-2012-0001-EA
Bureau of Land Management	Section 106 Consultation	Cultural resources impacts	Complete, MOU
US Army Corps of Engineers	404 Individual Permit	Jurisdictional waters impacts	Complete, SPK-2011-01121
US Fish and Wildlife Service	Section 7 Consultation	Threatened and endangered species	Complete, Biological Opinion
Utah Division of Water Rights	Stream Alteration Permit	Alteration of natural streams	Complete, 20-81-02SA
Utah Division of Water Quality	401 Certification	Water quality impacts	Complete, DWQ-2022-03001
Washington County	Conditional Use Permit	ROW	Contractors will acquire
Toquerville City	Conditional Use Permit	ROW	Contractors will acquire
Toquerville City	Extraction Permit	Basalt quarry	Contractors will acquire

Overlap or Duplication of Effort Statement

State if the proposal submitted for consideration under this program does or does not in any way duplicate any proposal or project that has been or will be submitted for funding consideration to any other potential funding source—whether it be Federal or non-Federal.

On December 9, 2022, the district submitted an application for funding under the Reclamation Small Surface Water and Grant program NOFO No. R23AS00019. Funding was announced on April 6, 2023, and the district was awarded $4,742,929 for design and construction.

On October 17, 2022, the district submitted an application for funding under the Southern Utah Reuse ARPA Grant program. The program is a competitive grant program for wastewater reuse projects in Southern Utah. The Utah Department of Environmental Quality Water Quality Board is administering the funding. The district submitted for the Toquer Reservoir. Funding was announced on December 14, 2022 and the district was awarded $4,976,000. The funding for Toquer Reservoir will be used for construction.

Conflict of Interest Disclosure

Per the Financial Assistance Interior Regulation (FAIR), 2 CFR §1402.112, applicants must state in their application if any actual or potential conflict of interest exists at the time of submission.

No actual or potential conflict of interest exists at this time.

Uniform Audit Reporting Statement

Applicants must state if their organization was or was not required to submit a single audit report for the most recently closed fiscal year.

The district was not required to a submit a single audit report for the most recently closed fiscal year.

Letters of Support

Include letters from interested stakeholders supporting the proposed project.

Letters of support from Hurricane, La Verkin, and Toquerville for the Ash Creek Project are in Appendix B.

Official Resolution

Include an official resolution adopted by the applicant's board of directors or governing body to commit the applicant to the financial and legal obligations associated with receipt of a financial assistance award.

An updated official resolution of the district board for the Ash Creek Project will be submitted to Reclamation within 30 days of this application submittal.

WASHINGTON COUNTY WATER CONSERVANCY DISTRICT

Procurement Memo

To Zachary Renstrom, General Manager

From Randy Johnson, Project Manager

Date December 6th, 2023

Subject Procurement of Construction Services for Quail to Cottam Pipeline Project

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Type of Procurement: Invitation for Bids for Construction Services

Item Description: A contractor is needed to install and construct a pipeline for the Quail to Cottam Pipeline Project

Reason for Procurement: The Project Development Department of the Washington County Water Conservancy District (district) needs to procure this service to secure a contractor for the construction of the Quail to Cottam Pipeline Project.

Review of Bidders: Feller Enterprises submitted the lowest responsive bid of $3,045,514.57. Other bids received are described in the attached bid tabulation.

Feller	Whitaker	JP Ex.	Interstate Rock	PCI	Harward and Rees	Condie	WW Clyde	Vancon
$3,045,514.57	$4,791,388	$5,840,421	$5,843,870	$6,512,822	$6,870,338	$7,726,341.20	$9,779,515	$9,895,000

Purchase Amount: $3,045,514.57

Contract Type(s): Fixed

Accounting Code: 60-5411-720

Approved:

Zachary Renstrom, General Manager

BOWEN COLLINS & ASSOCIATES

20 NORTH MAIN, SUITE NO. 107 • ST. GEORGE, UTAH 84770
TEL: (435) 656-3299

December 1, 2023

Randy Johnson
Project Manager
Washington County Water Conservancy District
533 E. Waterworks Dr.
St. George, UT 84770

Subject: **Recommendation for Award of Contract to Feller Enterprises for the Quail to Cottam Pipeline Project.**

Dear Randy:

Bids for the Quail to Cottam Pipeline Project were received by Washington County Water Conservancy District (District) on Thursday, November 30, 2023. Bowen Collins & Associates (BC&A) completed a review of the bids that were received from nine (9) general contractors. Feller Enterprises was the apparent low bidder with a Base Bid – Bid Schedule A price of $3,045,514.57. Feller Enterprises has signed and submitted the appropriate bid forms, signed the Acknowledgement of Review form, and acknowledged all contract addenda.

A summary of the bids received for the project is provided below (in the order they were received). A detailed breakdown of the bids is attached for information.

Rank	Contractor	Base Bid Price	Difference from Low Bid
1	Harward & Rees	$6,870,338.00	$3,824,823 (125.6%)
2	Condie Construction	$7,726,341.20	$4,680,827 (153.7%)
3	VanCon	$9,895,000.00	$6,849,485 (224.9%)
4	WW Clyde	$9,779,515.00	$6,734,000 (221.1%)
5	Whitaker Construction	$4,791,388.00	$1,745,873 (57.3%)
6	Progressive Contracting	$6,512,822.00	$3,467,307 (113.8%)
7	**Feller Enterprises**	**$3,045,514.57**	**-**
8	Interstate Rock	$5,843,870.00	$2,798,355 (91.9%)
9	JP Excavation	$5,640,421.00	$2,594,906 (85.2%)

Our review has found the bid from Feller Enterprises to be responsive and we recommend that the District consider awarding the contract to Feller Enterprises in the amount of $3,045,514.57 for the Quail to Cottam Pipeline Project. An Agreement should be executed pending receipt of appropriate bonds and insurance documents following Notice of Award.

Please call with any questions or concerns regarding this recommendation.

Sincerely,

Bowen, Collins & Associates

Aaron Anderson, P.E.
Project Manager

Attachment

BID SCHEDULE SUMMARY
QUAIL TO COTTAM PIPELINE PROJECT
Washington County Water Conservancy District
Bids Were Opened On: November 30, 2023

BOWEN COLLINS & ASSOCIATES

BASE BID - BID SCHEDULE A				Harward & Rees		Condie Construction		VanCon		WW Clyde		Whitaker Construction		Progressive Contracting		Feller Enterprises		Interstate Rock		JP Excavation		Unit Price Summary		
Item No.	Description	Quantity	Unit	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	*Average*	*Low*	*High*
1	Mobilization, Demobilization, and Administrative Items	1	LS	$645,000.00	$645,000.00	$645,000.000	$645,000.00	$832,000.00	$832,000.00	$775,000.00	$775,000.00	$492,000.00	$492,000.00	$420,000.00	$420,000.00	$120,000.00	$120,000.00	$97,100.00	$97,100.00	$530,000.00	$530,000.00	*$506,233*	*$97,100*	*$832,000*
2	Traffic Control	1	LS	$235,000.00	$235,000.00	$712,000.000	$712,000.00	$200,000.00	$200,000.00	$350,000.00	$350,000.00	$183,500.00	$183,500.00	$230,000.00	$230,000.00	$71,435.96	$71,435.96	$109,500.00	$109,500.00	$108,000.00	$108,000.00	*$244,382*	*$71,436*	*$712,000*
3	Survey Control and Staking	1	LS	$46,000.00	$46,000.00	$24,294.000	$24,294.00	$62,966.00	$62,966.00	$268,000.00	$268,000.00	$12,000.00	$12,000.00	$17,000.00	$17,000.00	$11,057.94	$11,057.94	$20,300.00	$20,300.00	$77,000.00	$77,000.00	*$59,846*	*$11,058*	*$268,000*
4	Stormwater Pollution Prevention Plan	1	LS	$80,000.00	$80,000.00	$45,000.000	$45,000.00	$125,000.00	$125,000.00	$80,000.00	$80,000.00	$24,800.00	$24,800.00	$11,000.00	$11,000.00	$7,860.89	$7,860.89	$36,900.00	$36,900.00	$14,500.00	$14,500.00	*$47,229*	*$7,861*	*$125,000*
5	24-inch CL 350 Ductile Iron Pipe (Install)	19,227	LF	$125.00	$2,403,375.00	$92.600	$1,780,420.20	$217.00	$4,172,259.00	$190.00	$3,653,130.00	$74.00	$1,422,798.00	$70.00	$1,345,890.00	$30.55	$587,384.85	$130.00	$2,499,510.00	$65.00	$1,249,755.00	*$110*	*$31*	*$217*
6	11.25° CL 350 24-inch Ductile Iron Fitting (Install)	26	EA	$2,250.00	$58,500.00	$3,025.000	$78,650.00	$1,175.00	$30,550.00	$1,050.00	$27,300.00	$1,000.00	$26,000.00	$690.00	$17,940.00	$260.62	$6,776.12	$970.00	$25,220.00	$750.00	$19,500.00	*$1,241*	*$261*	*$3,025*
7	22.5° CL 350 24-inch Ductile Iron Fitting (Install)	10	EA	$2,250.00	$22,500.00	$1,942.000	$19,420.00	$1,175.00	$11,750.00	$1,050.00	$10,500.00	$1,000.00	$10,000.00	$690.00	$6,900.00	$273.73	$2,737.30	$970.00	$9,700.00	$750.00	$7,500.00	*$1,122*	*$274*	*$2,250*
8	45° 24-inch CL 350 Ductile Iron Fitting (Install)	12	EA	$2,250.00	$27,000.00	$3,110.000	$37,320.00	$1,175.00	$14,100.00	$1,050.00	$12,600.00	$1,000.00	$12,000.00	$690.00	$8,280.00	$273.73	$3,284.76	$970.00	$11,640.00	$750.00	$9,000.00	*$1,252*	*$274*	*$3,110*
9	90° 24-inch CL 350 Ductile Iron Fitting (Install)	8	EA	$2,250.00	$18,000.00	$3,110.000	$24,880.00	$1,175.00	$9,400.00	$1,050.00	$8,400.00	$1,000.00	$8,000.00	$690.00	$5,520.00	$260.62	$2,084.96	$970.00	$7,760.00	$750.00	$6,000.00	*$1,251*	*$261*	*$3,110*
10	12-inch CL 350 Ductile Iron Pipe	86	LF	$180.00	$15,480.00	$395.000	$33,970.00	$325.00	$27,950.00	$380.00	$32,680.00	$120.00	$10,320.00	$97.00	$8,342.00	$157.08	$13,508.88	$140.00	$12,040.00	$146.00	$12,556.00	*$216*	*$97*	*$395*
11	90° 12-inch CL 350 Ductile Iron Fitting	2	EA	$3,192.00	$6,384.00	$1,775.000	$3,550.00	$2,500.00	$5,000.00	$2,300.00	$4,600.00	$5,520.00	$11,040.00	$1,600.00	$3,200.00	$1,285.84	$2,571.68	$3,400.00	$6,800.00	$1,500.00	$3,000.00	*$2,564*	*$1,286*	*$5,520*
12	10-inch CL 350 Ductile Iron Pipe	180	LF	$148.00	$26,640.00	$237.000	$42,660.00	$300.00	$54,000.00	$325.00	$58,500.00	$75.00	$13,500.00	$70.00	$12,600.00	$122.52	$22,053.60	$120.00	$21,600.00	$115.00	$20,700.00	*$168*	*$70*	*$325*
13	11.25° 10-inch CL 350 Ductile Iron Fitting	1	EA	$1,230.00	$1,230.00	$1,015.000	$1,015.00	$1,500.00	$1,500.00	$2,000.00	$2,000.00	$895.00	$895.00	$1,200.00	$1,200.00	$903.24	$903.24	$1,550.00	$1,550.00	$1,100.00	$1,100.00	*$1,266*	*$895*	*$2,000*
14	22.5° 10-inch CL 350 Ductile Iron Fitting	1	EA	$1,230.00	$1,230.00	$1,015.000	$1,015.00	$1,500.00	$1,500.00	$2,000.00	$2,000.00	$900.00	$900.00	$1,200.00	$1,200.00	$905.09	$905.09	$1,550.00	$1,550.00	$1,100.00	$1,100.00	*$1,267*	*$900*	*$2,000*
15	45° 10-inch CL 350 Ductile Iron Fitting	2	EA	$1,230.00	$2,460.00	$1,390.000	$2,780.00	$1,500.00	$3,000.00	$2,000.00	$4,000.00	$830.00	$1,660.00	$1,200.00	$2,400.00	$906.02	$1,812.04	$1,500.00	$3,000.00	$1,100.00	$2,200.00	*$1,295*	*$830*	*$2,000*
16	90° 10-inch CL 350 Ductile Iron Fitting	1	EA	$1,330.00	$1,330.00	$1,393.000	$1,393.00	$1,500.00	$1,500.00	$1,050.00	$1,050.00	$2,400.00	$2,400.00	$1,300.00	$1,300.00	$1,022.68	$1,022.68	$3,050.00	$3,050.00	$1,100.00	$1,100.00	*$1,572*	*$1,023*	*$3,050*
17	8-inch CL 350 Ductile Iron Pipe	240	LF	$124.00	$29,760.00	$195.000	$46,800.00	$225.00	$54,000.00	$320.00	$76,800.00	$74.50	$17,880.00	$65.00	$15,600.00	$95.33	$22,879.20	$120.00	$28,800.00	$92.00	$22,080.00	*$146*	*$65*	*$320*
18	90° 8-inch CL 350 Ductile Iron Fitting	1	EA	$1,528.00	$1,528.00	$1,050.000	$1,050.00	$1,400.00	$1,400.00	$2,000.00	$2,000.00	$1,280.00	$1,280.00	$1,100.00	$1,100.00	$672.54	$672.54	$1,950.00	$1,950.00	$930.00	$930.00	*$1,323*	*$673*	*$2,000*
19	24" X 12" CL 350 Ductile Iron Tee (Install)	1	EA	$2,600.00	$2,600.00	$2,960.000	$2,960.00	$1,700.00	$1,700.00	$1,050.00	$1,050.00	$1,000.00	$1,000.00	$700.00	$700.00	$677.61	$677.61	$1,950.00	$1,950.00	$2,100.00	$2,100.00	*$1,638*	*$678*	*$2,960*
20	24" X 10" CL 350 Ductile Iron Tee (Install)	2	EA	$2,600.00	$5,200.00	$2,500.000	$5,000.00	$1,500.00	$3,000.00	$1,050.00	$2,100.00	$1,000.00	$2,000.00	$700.00	$1,400.00	$677.61	$1,355.22	$1,950.00	$3,900.00	$2,100.00	$4,200.00	*$1,564*	*$678*	*$2,600*
21	4-inch Sch 80 Drain/Blowoff Pipe	400	LF	$62.00	$24,800.00	$124.000	$49,600.00	$100.00	$40,000.00	$225.00	$90,000.00	$44.50	$17,800.00	$35.00	$14,000.00	$56.82	$22,728.00	$59.00	$23,600.00	$45.00	$18,000.00	*$83*	*$35*	*$225*
22	4-inch CL 350 Ductile Iron Drain Pipe	450	LF	$80.00	$36,000.00	$148.000	$66,600.00	$175.00	$78,750.00	$400.00	$180,000.00	$67.50	$30,375.00	$69.00	$31,050.00	$91.50	$41,175.00	$75.50	$33,975.00	$72.00	$32,400.00	*$131*	*$68*	*$400*
23	4-inch Combination Air Valve Assembly, See C/2660, Portion of Materials Provided by Owner	18	EA	$13,875.00	$249,750.00	$12,240.000	$220,320.00	$22,500.00	$405,000.00	$31,500.00	$567,000.00	$12,700.00	$228,600.00	$38,000.00	$684,000.00	$11,098.56	$199,774.08	$10,900.00	$196,200.00	$12,000.00	$216,000.00	*$18,313*	*$10,900*	*$38,000*
24	Major Drain Assembly, See C/2672, Portion of Materials Provided by Owner	7	EA	$8,500.00	$59,500.00	$4,525.000	$31,675.00	$5,000.00	$35,000.00	$14,500.00	$101,500.00	$8,840.00	$61,880.00	$6,000.00	$42,000.00	$3,709.15	$25,964.05	$6,100.00	$42,700.00	$8,900.00	$62,300.00	*$7,342*	*$3,709*	*$14,500*
25	Fiber Optic Conduit	19,400	LF	$7.25	$140,650.00	$7.420	$143,948.00	$9.00	$174,600.00	$11.00	$213,400.00	$4.00	$77,600.00	$15.00	$291,000.00	$1.92	$37,248.00	$1.20	$23,280.00	$8.50	$164,900.00	*$7*	*$1*	*$15*
26	Fiber Optic Pull Box	20	EA	$4,200.00	$84,000.00	$2,485.000	$49,700.00	$6,000.00	$120,000.00	$3,800.00	$76,000.00	$2,560.00	$51,200.00	$3,300.00	$66,000.00	$2,358.85	$47,177.00	$1,400.00	$28,000.00	$2,200.00	$44,000.00	*$3,145*	*$1,400*	*$6,000*
27	Split Case Pipe Encasement	3	EA	$23,900.00	$71,700.00	$50,000.000	$150,000.00	$75,000.00	$225,000.00	$35,500.00	$106,500.00	$12,100.00	$36,300.00	$18,000.00	$54,000.00	$22,735.73	$68,207.19	$13,600.00	$40,800.00	$44,000.00	$132,000.00	*$32,760*	*$12,100*	*$75,000*
28	6-inch HDPE Temporary Water Main	1	LS	$100,000.00	$100,000.00	$238,000.000	$238,000.00	$25,000.00	$25,000.00	$180,000.00	$180,000.00	$37,800.00	$37,800.00	$115,000.00	$115,000.00	$60,890.92	$60,890.92	$100,500.00	$100,500.00	$60,000.00	$60,000.00	*$101,910*	*$25,000*	*$238,000*
29	Water Service Connection, Open Cut for Lateral, See C/2638, Portion of Materials Provided by Owner	4	EA	$6,654.00	$26,616.00	$7,471.000	$29,884.00	$7,000.00	$28,000.00	$7,400.00	$29,600.00	$3,840.00	$15,360.00	$5,650.00	$22,600.00	$3,511.41	$14,045.64	$5,000.00	$20,000.00	$4,500.00	$18,000.00	*$5,670*	*$3,511*	*$7,471*
30	Water Service Connection, Jack and Bore with 2" Casing, See C/2638, Portion of Materials Provided by Owner	3	EA	$6,000.00	$18,000.00	$32,100.000	$96,300.00	$35,000.00	$105,000.00	$20,000.00	$60,000.00	$24,700.00	$74,100.00	$27,000.00	$81,000.00	$27,244.75	$81,734.25	$10,000.00	$30,000.00	$20,000.00	$60,000.00	*$22,449*	*$6,000*	*$35,000*
31	SR-318 Jack and Bore with 8-inch Steel Casing	1	LS	$68,756.00	$68,756.00	$110,700.000	$110,700.00	$75,000.00	$75,000.00	$73,000.00	$73,000.00	$26,000.00	$26,000.00	$28,000.00	$28,000.00	$33,198.67	$33,198.67	$77,600.00	$77,600.00	$94,000.00	$94,000.00	*$65,139*	*$26,000*	*$110,700*
32	SR-318 Jack and Bore and 36" Casing	1	LS	$238,375.00	$238,375.00	$183,400.000	$183,400.00	$225,000.00	$225,000.00	$193,000.00	$193,000.00	$50,300.00	$50,300.00	$67,000.00	$67,000.00	$51,325.55	$51,325.55	$218,500.00	$218,500.00	$234,000.00	$234,000.00	*$162,322*	*$50,300*	*$238,375*
33	Hydrant Connection, STA 69+00	1	EA	$14,250.00	$14,250.00	$5,065.000	$5,065.00	$20,000.00	$20,000.00	$3,600.00	$3,600.00	$3,300.00	$3,300.00	$5,000.00	$5,000.00	$3,504.05	$3,504.05	$7,200.00	$7,200.00	$3,900.00	$3,900.00	*$7,313*	*$3,300*	*$20,000*
34	Hydrant Connection, STA 118+50	1	EA	$12,200.00	$12,200.00	$4,372.000	$4,372.00	$10,000.00	$10,000.00	$3,600.00	$3,600.00	$4,800.00	$4,800.00	$5,000.00	$5,000.00	$3,504.05	$3,504.05	$7,700.00	$7,700.00	$4,500.00	$4,500.00	*$6,186*	*$3,504*	*$12,200*
35	External Joint Restraint on Hurricane Waterline, STA 38+70	2	EA	$2,600.00	$5,200.00	$1,568.000	$3,136.00	$10,000.00	$20,000.00	$14,500.00	$29,000.00	$1,920.00	$3,840.00	$6,900.00	$13,800.00	$4,964.29	$9,928.58	$2,900.00	$5,800.00	$9,200.00	$18,400.00	*$6,061*	*$1,568*	*$14,500*
36	Tracer Wire Valve Box	20	EA	$600.00	$12,000.00	$1,911.000	$38,220.00	$1,000.00	$20,000.00	$2,500.00	$50,000.00	$785.00	$15,700.00	$1,500.00	$30,000.00	$475.40	$9,508.00	$1,200.00	$24,000.00	$1,300.00	$26,000.00	*$1,252*	*$475*	*$2,500*
37	Temporary Water Service Connection, STA 68+00	1	LS	$10,000.00	$10,000.00	$5,420.000	$5,420.00	$15,000.00	$15,000.00	$8,000.00	$8,000.00	$6,480.00	$6,480.00	$7,700.00	$7,700.00	$9,723.13	$9,723.13	$7,300.00	$7,300.00	$4,100.00	$4,100.00	*$8,191*	*$4,100*	*$15,000*
38	Quail Creek WTP PRV Vault	1	LS	$117,387.00	$117,387.00	$179,200.000	$179,200.00	$200,000.00	$200,000.00	$196,000.00	$196,000.00	$119,500.00	$119,500.00	$165,000.00	$165,000.00	$93,360.28	$93,360.28	$123,000.00	$123,000.00	$80,000.00	$80,000.00	*$141,494*	*$80,000*	*$200,000*
39	Harrisburg PRV Vault	1	LS	$170,870.00	$170,870.00	$255,243.000	$255,243.00	$250,000.00	$250,000.00	$234,000.00	$234,000.00	$164,000.00	$164,000.00	$127,000.00	$127,000.00	$102,846.83	$102,846.83	$134,000.00	$134,000.00	$111,000.00	$111,000.00	*$172,107*	*$102,847*	*$255,243*
40	Backup Hurricane City Connection Meter Vault	1	LS	$207,858.00	$207,858.00	$156,370.000	$156,370.00	$200,000.00	$200,000.00	$157,000.00	$157,000.00	$89,100.00	$89,100.00	$130,000.00	$130,000.00	$84,022.39	$84,022.39	$134,000.00	$134,000.00	$88,000.00	$88,000.00	*$138,483*	*$84,022*	*$207,858*
41	Harrisburg Pipe Bridge Crossing	1	LS	$98,636.00	$98,636.00	$178,750.000	$178,750.00	$175,000.00	$175,000.00	$145,000.00	$145,000.00	$88,100.00	$88,100.00	$92,000.00	$92,000.00	$81,962.37	$81,962.37	$106,000.00	$106,000.00	$120,000.00	$120,000.00	*$120,605*	*$81,962*	*$178,750*
42	12-inch D50 Riprap Stabilization	50	CY	$110.00	$5,500.00	$261.000	$13,050.00	$225.00	$11,250.00	$95.00	$4,750.00	$93.00	$4,650.00	$92.00	$4,600.00	$48.68	$2,434.00	$200.00	$10,000.00	$82.00	$4,100.00	*$134*	*$49*	*$261*
43	18-inch D50 Riprap Stabilization	75	CY	$110.00	$8,250.00	$227.000	$17,025.00	$225.00	$16,875.00	$95.00	$7,125.00	$93.00	$6,975.00	$92.00	$6,900.00	$48.68	$3,651.00	$200.00	$15,000.00	$82.00	$6,150.00	*$130*	*$49*	*$227*
44	Geotextile Fabric	400	SY	$10.00	$4,000.00	$6.420	$2,568.00	$15.00	$6,000.00	$4.00	$1,600.00	$3.10	$1,240.00	$12.75	$5,100.00	$7.72	$3,088.00	$9.60	$3,840.00	$4.50	$1,800.00	*$8*	*$3*	*$15*
45	Bollard	11	EA	$998.00	$10,978.00	$888.000	$9,768.00	$1,500.00	$16,500.00	$2,000.00	$22,000.00	$840.00	$9,240.00	$4,700.00	$51,700.00	$2,174.95	$23,924.45	$1,200.00	$13,200.00	$950.00	$10,450.00	*$1,695*	*$840*	*$4,700*
46	Alignment Grading (STA 11+50 to 13+00)	1	LS	$9,960.00	$9,960.00	$3,860.000	$3,860.00	$15,000.00	$15,000.00	$16,000.00	$16,000.00	$3,390.00	$3,390.00	$32,000.00	$32,000.00	$4,722.36	$4,722.36	$20,300.00	$20,300.00	$13,000.00	$13,000.00	*$13,137*	*$3,390*	*$32,000*
47	10-inch Waterline Abandonment with Flowable Fill	1	LS	$138,000.00	$138,000.00	$53,610.000	$53,610.00	$20,000.00	$20,000.00	$109,000.00	$109,000.00	$79,300.00	$79,300.00	$55,000.00	$55,000.00	$47,081.28	$47,081.28	$79,800.00	$79,800.00	$200,000.00	$200,000.00	*$86,866*	*$20,000*	*$200,000*
48	Access Road Widening and Intersection Raising (STA 32+50 to 39+00)	1	LS	$19,850.00	$19,850.00	$97,000.000	$97,000.00	$150,000.00	$150,000.00	$48,000.00	$48,000.00	$15,900.00	$15,900.00	$32,000.00	$32,000.00	$13,027.61	$13,027.61	$52,700.00	$52,700.00	$49,000.00	$49,000.00	*$53,053*	*$13,028*	*$150,000*
49	Raise Existing Manholes	3	EA	$1,000.00	$3,000.00	$2,445.000	$7,335.00	$850.00	$2,550.00	$2,600.00	$7,800.00	$595.00	$1,785.00	$620.00	$1,860.00	$2,443.70	$7,331.10	$1,050.00	$3,150.00	$2,300.00	$6,900.00	*$1,545*	*$595*	*$2,600*
50	Raise Existing Valve Boxes	4	EA	$900.00	$3,600.00	$2,025.000	$8,100.00	$600.00	$2,400.00	$750.00	$3,000.00	$420.00	$1,680.00	$435.00	$1,740.00	$475.40	$1,901.60	$770.00	$3,080.00	$1,800.00	$7,200.00	*$908*	*$420*	*$2,025*
51	Remove and Reinstall Existing Gate STA 39+70	1	LS	$2,000.00	$2,000.00	$2,900.000	$2,900.00	$3,000.00	$3,000.00	$3,500.00	$3,500.00	$1,670.00	$1,670.00	$4,600.00	$4,600.00	$3,329.47	$3,329.47	$3,550.00	$3,550.00	$1,400.00	$1,400.00	*$2,883*	*$1,400*	*$4,600*
52	Remove and Reinstall Fence Near Utah DNR Office	1	LS	$5,000.00	$5,000.00	$2,480.000	$2,480.00	$2,500.00	$2,500.00	$8,500.00	$8,500.00	$1,340.00	$1,340.00	$10,000.00	$10,000.00	$3,502.95	$3,502.95	$10,700.00	$10,700.00	$11,000.00	$11,000.00	*$6,114*	*$1,340*	*$11,000*
53	Remove and Reinstall Road Sign in Harisburg (STA 182+60)	1	LS	$2,000.00	$2,000.00	$580.000	$580.00	$1,500.00	$1,500.00	$1,200.00	$1,200.00	$475.00	$475.00	$10,500.00	$10,500.00	$509.94	$509.94	$1,000.00	$1,000.00	$600.00	$600.00	*$2,041*	*$475*	*$10,500*
54	UDOT Asphalt Replacement	9,800	SY	$75.00	$735,000.00	$111.760	$1,095,248.00	$100.00	$980,000.00	$89.50	$877,100.00	$73.00	$715,400.00	$135.00	$1,323,000.00	$53.43	$523,614.00	$90.00	$882,000.00	$104.00	$1,019,200.00	*$92*	*$53*	*$135*
55	Hurricane City Asphalt Replacement	7,300	SY	$62.00	$452,600.00	$85.090	$621,157.00	$75.00	$547,500.00	$75.10	$548,230.00	$62.50	$456,250.00	$100.00	$730,000.00	$57.24	$417,852.00	$57.50	$419,750.00	$72.00	$525,600.00	*$72*	*$57*	*$100*
56	Flowable Fill Trench Backfill as Directed by Engineer	120	CY	$425.00	$51,000.00	$440.000	$52,800.00	$250.00	$30,000.00	$250.00	$30,000.00	$180.00	$21,600.00	$370.00	$44,400.00	$134.44	$16,132.80	$140.00	$16,800.00	$400.00	$48,000.00	*$288*	*$134*	*$440*
57	Trench Stabilization Material as Directed by Engineer	50	CY	$100.00	$5,000.00	$80.000	$4,000.00	$200.00	$10,000.00	$150.00	$7,500.00	$67.50	$3,375.00	$54.00	$2,700.00	$30.65	$1,532.50	$75.50	$3,775.00	$180.00	$9,000.00	*$104*	*$31*	*$200*
58	24-inch Double Offset Butterfly Valve (Install), See C/2662	3	EA	$2,985.00	$8,955.00	$7,780.000	$23,340.00	$3,000.00	$9,000.00	$2,900.00	$8,700.00	$1,520.00	$4,560.00	$3,000.00	$9,000.00	$1,694.02	$5,082.06	$2,050.00	$6,150.00	$12,000.00	$36,000.00	*$4,103*	*$1,520*	*$12,000*
59	45° 12-inch CL 350 Ductile Iron Fitting	2	EA	$2,865.00	$5,730.00	$1,740.000	$3,480.00	$2,000.00	$4,000.00	$1,800.00	$3,600.00	$1,710.00	$3,420.00	$1,500.00	$3,000.00	$1,088.14	$2,176.28	$3,700.00	$7,400.00	$2,300.00	$4,600.00	*$2,078*	*$1,088*	*$3,700*
60	12" x 12" CL 350 Ductile Iron Tee	1	EA	$4,150.00	$4,150.00	$2,960.000	$2,960.00	$8,000.00	$8,000.00	$4,000.00	$4,000.00	$3,030.00	$3,030.00	$2,000.00	$2,000.00	$1,808.58	$1,808.58	$3,700.00	$3,700.00	$2,600.00	$2,600.00	*$3,583*	*$1,809*	*$8,000*
		Bid Schedule A Price:			**$6,870,338.00**		**$7,726,341.20**		**$9,895,000.00**		**$9,779,515.00**		**$4,791,388.00**		**$6,512,822.00**		**$3,045,514.57**		**$5,843,870.00**		**$5,640,421.00**	***$6,678,357***	***$3,045,515***	***$9,895,000***
		DIFFERENCE FROM LOW BID:			**$3,824,823**		**$4,680,827**		**$6,849,485**		**$6,734,000**		**$1,745,873**		**$3,467,307**		**$0**		**$2,798,355**		**$2,594,906**			
		% DIFFERENCE FROM LOW BID:			**125.6%**		**153.7%**		**224.9%**		**221.1%**		**57.3%**		**113.8%**		**0.0%**		**91.9%**		**85.2%**			

ALTERNATE BID - BID SCHEDULE B				Harward & Rees		Condie Construction		Van Con		WW Clyde		Whitaker		Progressive Contracting		Feller Ent.		Interstate Rock		JP Excavation		Unit Price Summary		
Item No.	Description	Quantity	Unit	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	*Average*	*Low*	*High*
1B	Full Road Replacement of Hurricane City Portion of SR-318 (Approx STA 131+00 to 169+50)	4900	SY	$62.00	$303,800.00	$82.89	$406,161.00	$110.00	$539,000.00	$91.50	$448,350.00	$72.50	$355,250.00	$48.00	$235,200.00	$59.00	$289,100.00	$57.50	$281,750.00	$73.00	$357,700.00	$72.93	$48.00	$110.00
		Bid Schedule B Price:			**$303,800.00**		**$406,161.00**		**$539,000.00**		**$448,350.00**		**$355,250.00**		**$235,200.00**		**$289,100.00**		**$281,750.00**		**$357,700.00**			

BOARD OF TRUSTEES 2024 SCHEDULE

Board Meetings

All board meetings are scheduled on the First Monday at 6 p.m. unless otherwise noted.

January 17 (Wednesday)

February 5

March 4

April 1

May 6

June 3

July 1

August 5

September 2

October 7 ** (field trip 3 pm, public hearing 6 pm)

November 4

December 2

December 20*** (noon lunch mtg. if needed)

* *Work meeting scheduled to start at 3 p.m. followed by a 6 p.m. meeting*

** *Board facility tour to start at 3 p.m. followed by public hearing/board meeting at 6 pm*

*** *Noon lunch meeting, if needed*