



Department of
Environmental Quality

Kimberly D. Shelley
Executive Director

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

State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Water Quality Board
James Webb, Chair
Michelle Kaufusi, Vice Chair
Carly Castle
Michela Harris
Joseph Havasi
Trevor Heaton
Robert Fehr
Jill Jones
Kimberly D. Shelley
John K. Mackey
Executive Secretary

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

**March 27, 2024
Board Meeting Begins at 8:30 am**

AGENDA

Water Quality Board Meeting – Call to Order & Roll Call

Jim Webb

Minutes:

Approval of Minutes for January 24, 2024 Water Quality Board Meeting

Jim Webb

Executive Secretary Report

John K. Mackey

Funding:

1. Financial Status Report
2. Kane County Water Conservancy District, Duck Creek Supplemental Funding Request
3. Ash Creek SSD Virgin Sewer Project Feasibility Report

Adriana Hernandez

**Skyler Davies
Glen Lischeske**

Groundwater Protection:

1. Request for Authorization to Conduct Public Hearing & Comment Period for the Aquifer Classification Petition of the Shallow Aquifer of Davis County.

Dan Hall & Benj Morris

Public Comment Period

Meeting Adjournment

Jim Webb

Page 2
March 27, 2024
Water Quality Board
Agenda

Next Meeting
April 23, 2024 (Time-TBA)
Location TBA & Via [Zoom](#)

DWQ-2024-002184



State of Utah

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MINUTES

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY

UTAH WATER QUALITY BOARD

MASOB, Board Room 1015

and
Via Zoom

January 24, 2024
8:30 am Meeting

UTAH WATER QUALITY BOARD MEMBERS PRESENT

Jim Webb
Carly Castle
Trevor Heaton
Michela Harris
Jill Jones
Joe Havasi
John Mackey
Excused
Kim Shelley
Mayor Kaufusi
Robert Fehr

Ty Howard (for Kim Shelley)

DIVISION OF WATER QUALITY STAFF MEMBERS PRESENT & ONLINE

Emily Cantón	Skyler Davis	David Jamison
Ken Hoffman	Samantha Heusser	James Harris
Clanci Hawks	Andrew Pompeo	
Haley Sousa	Lonnie Shull	
George Meados	Judy Etherington	
Ben Holcomb	Dave Pierson	
Beth Wondimu	Alex Heppner	
Linsey Shafer	Jennifer Robinson	
Robert Beers	Jeff Studenka	
Dan Griffin	Benj Morris	
Jennifer Berjikian	Tessa Scheuer	
Eric Castrejon	Amber Loveland	
Leanna Littler-Wolf	Harry Campbell	
Paul Burnett	Porter Henze	
Adrianna Hernandez	Brendon Quirk	
Justine Marshall	Mark Stanger	

OTHERS PRESENT & ONLINE

Adam Richens
Weber-Morgan Health
Jean Krause
Joe Phillips
Renn Lambert

Mr. Webb, Chair, called the Meeting to order at 8:30 AM.

ROLL CALL

Mr. Webb took roll call for the members of the Board.

APPROVAL OF MINUTES OF DECEMBER 13, 2023 BOARD MEETING

Mr. Webb moved to approve the minutes of the December 13, 2023 Board meeting.

Motion: Mr. Havasi motioned to accept the minutes.

Ms. Harris seconded the motion.

The motion passed unanimously to approve the December 13, 2023 meeting minutes.

EXECUTIVE SECRETARY REPORT

Mr. Mackey addressed the Board regarding the following:

- State/Division News:
 - Mr. Mackey provided a description on the new bills that will be coming this Legislative Session.
 - House Bill H.B.280 – Water Related Changes: This bill addresses issues related to water modifying provisions related to the formulation of a State Water Plan and requiring a study water infrastructure project financing.
 - House Bill H.B. 230 – State Agency Application Review Requirements: This bill addresses procedures for state agencies to act on a request for agency action. It requires that specified agencies respond within a specified time period to a request for agency action.
 - House Bill H.B.335 – State Grant Process Amendments: This bill enacts provisions governing the administration of state grants. It requires that a grant recipient provide a proposed budget & agree to deliverables, reporting, and audit requirements before receiving any grant funds. It also addresses the disbursement schedule for grant funds and provides for review for ongoing appropriations.
 - Mr. Mackey mentioned EPA’s proposed amendment to the Meat and Poultry Products Effluent Guidelines. The amendment would establish more stringent effluent limitations for nitrogen, phosphorus, and E. coli for direct dischargers and extend coverage to include indirect dischargers.

- Mr. Mackey discussed holding the April Board meeting at the WEAU conference located in southern Utah. The conference is scheduled from April-23-26, 2024. Mr. Mackey noted that the Board meeting would take place on Tuesday, April 23, 2024. Further details regarding meeting time and travel will follow.

FUNDING

Financial Status Report: Ms. Hernandez presented the financial status report to the Board as indicated in the packet.

Sherwood Shores – Southern Utah ARPA Funding Update: Mr. Meados & Mr. Pompeo presented Millard County’s request for the reauthorization of ARPA grant funding in the amount of \$595,000. The funding was originally authorized during the December 14, 2022 Board meeting to construct a collection system and wastewater treatment facility for reuse.

Motion: Ms. Jones motioned that the Board reserve the \$595,000 of ARPA funds for Sherwood Shores with the conditions recommended in the packet and require the community to present a progress report at the June 2024 Board meeting. If the Board doesn’t see evidence that the project is meeting required milestones and timelines, the Board will reassess funding at that time.

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

Town of Virgin – Grant Request, Septic Density Ground Water Study: Mr. Beers and Mr. Hoffman presented on behalf of Virgin Town’s request for a hardship planning grant in the amount of \$60,000 to conduct a hydrologic/water quality study within the town boundaries to determine sewage management recommendations.

Motion: Mr. Heaton motioned to authorize a short-term unsecured loan in the amount of \$60,000 with an interest rate of 0% and repayable over 5 years with the stated special conditions.

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

COMPLIANCE & ENFORCEMENT

Board Role in Settlements - Presentation given by Haley Sousa, Assistant Attorney General

Ralph L. Wadsworth Construction Company, LLC, Docket No. M21-15, Request for Approval of Settlement Agreement: Mr. Castrejon presented to the board a request for approval of the administrative settlement agreement for Docket No. M21-15.

Motion: Mr. Heaton motioned to authorize the settlement agreement in the amount of \$117,243.95 as indicated in the packet.

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

South Davis Sewer District, North Plant, Docket No. M22-02, Request for Approval of Settlement Agreement: Ms. Loveland presented to the board a request for approval of the administrative settlement agreement for Docket No. M22-02.

Motion: Mr. Havasi motioned to authorize the settlement agreement in the amount of \$80,000 as indicated in the packet.

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

RULE MAKING

Initiate Rulemaking for R317-16 Great Salt Lake Mineral Extraction Facility Operator Certification Approval: Mr. Harris requested to initiate rulemaking for R317-16, which is related to HB513 Great Salt Lake Amendments.

Motion: Ms. Jones motioned to initiate rulemaking procedures for R317-16.

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

OTHER

Approval of Recommendations for Appointment to the Wastewater Operator Certification Council 2024-2027: Ms. Etherington & Ms. Scheuer requested approval for recommendations of Chad Burrell and Rob Jaterka to renew their current positions on the Council.

Motion: Ms. Jones motioned to reappoint Chad Burrell & Rob Jaterka to the Council.

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

PUBLIC COMMENTS

No comments were presented.

MEETING ADJOURNMENT

Motion: Ms. Jones motioned to adjourn the meeting.
Mr. Havasi seconded the motion to adjourn the meeting.

Next Meeting – February 28, 2024
Meeting begins at 8:30 am

In-Person
MASOB
Board Room 1015
195 North 1950 West
Salt Lake City, UT 84116

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

James Webb, Chair
Utah Water Quality Board

DWQ-2024-

LOAN FUNDS FINANCIAL STATUS REPORT MARCH 2024

	State Fiscal Year 2024	State Fiscal Year 2025	State Fiscal Year 2026	State Fiscal Year 2027	State Fiscal Year 2028
STATE REVOLVING FUND (SRF)					
CAP Grant Base Program					
Capitalization Grant Awards (FY22)	\$ -				
Future Capitalization Grant	\$ 3,952,000				
State Cap Grant Match (FY22)	\$ -	\$ -	\$ -	\$ -	\$ -
Future State Cap Grant Match	\$ 790,400	\$ -	\$ -	\$ -	\$ -
CAP Grant General Supplemental					
General Supplemental Grants (FY22)	\$ 9,378,000	\$ -	\$ -	\$ -	\$ -
Future General Supplemental Grant	\$ 10,983,000	\$ 11,234,025	\$ 12,169,025	\$ 12,169,025	\$ -
State General Supplemental Grants Match (FY22)	\$ 937,800				
Future State Gen. Sup Grants Match	\$ 1,098,300	\$ 2,246,805	\$ 2,433,805	\$ 2,433,805	\$ -
SRF - 2nd Round					
Account Balance	\$ 25,075,162	\$ (21,512,073)	\$ (759,977)	\$ 24,173,464	\$ 49,391,266
Interest Earnings at 5.4807%	\$ 458,098	\$ -	\$ -	\$ -	\$ -
Loan Repayments (5255)	\$ 1,530,815	\$ 17,272,300	\$ 17,225,194	\$ 16,977,794	\$ 20,691,107
Total Funds Available	\$ 54,203,575	\$ 9,241,056	\$ 31,068,047	\$ 55,754,088	\$ 70,082,373
CWSRF Program Obligations					
Admin Expenses for all CAP Grant Awards	\$ (1,037,080)	\$ (894,361)	\$ (931,761)	\$ (400,000)	\$ (400,000)
Cap Grant Principal Forgiveness (PF) (FY18-22)	\$ (12,358,600)				
Future Cap Grant (PF portion)	\$ (1,185,600)	\$ -	\$ -	\$ -	\$ -
General Supplemental Grants (PF portion)	\$ (4,595,220)				
Future General Supplemental Grants (PF portion)	\$ (5,381,670)	\$ (5,504,672)	\$ (5,962,822)	\$ (5,962,822)	
Project Obligations					
Moab City	\$ (80,000)	\$ -	\$ -	\$ -	\$ -
Provo City 262	\$ (8,800,500)	\$ -	\$ -	\$ -	\$ -
Provo City 262b	\$ (1,855,621)	\$ -	\$ -	\$ -	\$ -
Millville City Loan	\$ (5,146,000)	\$ -	\$ -	\$ -	\$ -
Mountain Green	\$ (2,234,000)	\$ -	\$ -	\$ -	\$ -
Payson City	\$ (13,425,000)	\$ -	\$ -	\$ -	\$ -
Loan Authorizations					
Millville Refinance Loan	\$ (1,261,000)				
Long Valley	\$ (1,250,000)				
North Logan	\$ (3,500,000)				
Mt. Pleasant	\$ (2,535,000)				
Monticello	\$ (1,214,000)				
Wolf Creek	\$ (3,202,000)	\$ (3,202,000)			
Brian Head	\$ (1,900,000)				

LOAN FUNDS FINANCIAL STATUS REPORT MARCH 2024

Lewiston		\$ (400,000)			
Planned Projects					
Ash Creek SSD*	\$ (4,754,358)				
CWSRF Obligations	\$ (75,715,649)	\$ (10,001,033)	\$ (6,894,583)	\$ (6,362,822)	\$ (400,000)
CWSRF Remaining Loan Balance	\$ (21,512,073)	\$ (759,977)	\$ 24,173,464	\$ 49,391,266	\$ 69,682,373
Add'l Subsidy - Principal Forgiveness					
PF Balances (max for FY18-22)	\$ 12,358,600	\$ 645,090	\$ 6,149,762	\$ 12,112,585	\$ 18,075,407
Future Cap Grant (PF portion)	\$ 1,185,600	\$ -	\$ -	\$ -	\$ -
General Supplemental Balances (PF portion)	\$ 4,595,220				
Future General Supplemental Grants (PF portion)	\$ 5,381,670	\$ 5,504,672	\$ 5,962,822	\$ 5,962,822	
Project Obligations					
South Salt Lake City (A)	\$ (2,584,000)	\$ -	\$ -	\$ -	\$ -
Millville City	\$ (3,604,000)	\$ -	\$ -	\$ -	\$ -
Provo City	\$ (7,000,000)	\$ -	\$ -	\$ -	\$ -
Payson City	\$ (1,000,000)	\$ -	\$ -	\$ -	\$ -
Millville City Refinance	\$ (3,750,000)	\$ -	\$ -	\$ -	\$ -
Add'l Subsidy Authorizations					
Hanksville	\$ (1,838,000)				
Lewiston	\$ (3,100,000)				
Planned Projects					
Principal Forgiveness Obligations	\$ (22,876,000)	\$ -	\$ -	\$ -	\$ -
Principal Forgiveness Remaining Balance	\$ 645,090	\$ 6,149,762	\$ 12,112,585	\$ 18,075,407	\$ 18,075,407
	State Fiscal Year	State Fiscal Year	State Fiscal Year	State Fiscal Year	State Fiscal Year
UTAH WASTEWATER LOAN FUND (UWLF)	2024	2025	2026	2027	2028
Funds Available					
UWLF	\$ 35,735,295	\$ 23,345,945	\$ 25,368,099	\$ 27,073,701	\$ 28,534,621
Sales Tax Revenue	\$ (0)	\$ 3,587,500	\$ 3,587,500	\$ 3,587,500	\$ 3,587,500
State Match Appropriation	\$ 2,900,850				
Loan Repayments (5260)	\$ 752,000	\$ 2,606,859	\$ 2,477,307	\$ 2,232,625	\$ 2,259,259
Total Funds Available	\$ 39,388,145	\$ 29,540,304	\$ 31,432,906	\$ 32,893,826	\$ 34,381,380
General Obligations					
State Match Transfers Base Cap Grant	\$ (790,400)	\$ -	\$ -	\$ -	\$ -

LOAN FUNDS FINANCIAL STATUS REPORT MARCH 2024

State Match Transfers Gen. Supplemental Grant	\$ (937,800)	\$ -	\$ -	\$ -	\$ -
State Match Transfers Gen. Supplemental Grant	\$ (1,098,300)	\$ (2,246,805)	\$ (2,433,805)	\$ (2,433,805)	\$ -
DWQ Administrative Expenses	\$ (962,700)	\$ (1,925,400)	\$ (1,925,400)	\$ (1,925,400)	\$ (1,925,400)
Project Obligations					
South Salt Lake City (B)	\$ (4,891,000)	\$ -	\$ -	\$ -	\$ -
South Salt Lake City (C)	\$ (982,000)	\$ -	\$ -	\$ -	\$ -
Loan Authorizations					
Spanish Fork	\$ (4,500,000)				
Hanksville	\$ (350,000)				
Long Valley	\$ (220,000)				
Grantsville	\$ (1,000,000)				
Kane County*	\$ (310,000)				
Planned Projects	\$ -				
Total Obligations	\$ (16,042,200)	\$ (4,172,205)	\$ (4,359,205)	\$ (4,359,205)	\$ (1,925,400)
UWLF Remaining Loan Balance	\$ 23,345,945	\$ 25,368,099	\$ 27,073,701	\$ 28,534,621	\$ 32,455,980
TOTAL LOAN FUND BALANCE	\$ 2,478,961	\$ 30,757,884	\$ 63,359,749	\$ 96,001,293	\$ 120,213,759
PROJECT RESERVE	\$ -	\$ (5,000,000)	\$ (10,000,000)	\$ (15,000,000)	\$ (20,000,000)
TOTAL AVAILABLE LOAN FUNDS	\$ 2,478,961	\$ 25,757,884	\$ 53,359,749	\$ 81,001,293	\$ 100,213,759

*WQB Agenda Items

HARDSHIP GRANT FUNDS FINANCIAL STATUS REPORT MARCH 2024

	State Fiscal Year 2024	State Fiscal Year 2025	State Fiscal Year 2026	State Fiscal Year 2027	State Fiscal Year 2028
HARDSHIP GRANT FUNDS (HGF)					
Funds Available					
Beginning Balance	\$ -	\$ 2,547,017	\$ 2,497,228	\$ 2,395,461	\$ 2,240,987
Federal HGF Beginning Balance (5250)	\$ 2,727,699	\$ -	\$ -	\$ -	\$ -
State HGF Beginning Balance (5265)	\$ 6,028,118	\$ -	\$ -	\$ -	\$ -
Hardship Grant Assessments (5255)	\$ 117,831	\$ 689,765	\$ 657,624	\$ 624,522	\$ 590,676
Interest Payments - (5260)	\$ 64,230	\$ 260,446	\$ 240,609	\$ 221,004	\$ 206,353
Advance Repayments	\$ -	\$ -	\$ -	\$ -	\$ -
Total Funds Available	\$ 8,937,878	\$ 3,497,228	\$ 3,395,461	\$ 3,240,987	\$ 3,038,016
St George Appropriation					
Beginning Balance	\$ 13,066,000				
Authorizations					
St. George Graveyard Wash Res	\$ (13,066,000)				
Total Funds Available	\$ -	\$ -	\$ -	\$ -	\$ -
Financial Assistance Project Obligations					
Big Water-Planning Grant	\$ (28,241)	\$ -	\$ -	\$ -	\$ -
Delta - Design Grant	\$ (159,500)	\$ -	\$ -	\$ -	\$ -
Dutch John - Planning	\$ (95,000)	\$ -	\$ -	\$ -	\$ -
Dutch John - HGF Loan	\$ (60,000)	\$ -	\$ -	\$ -	\$ -
Eagle Mountain City - Construction Grant	\$ (510,000)	\$ -	\$ -	\$ -	\$ -
Elwood - Planning	\$ (18,200)	\$ -	\$ -	\$ -	\$ -
Hinckley Hardship Planning Grant	\$ (15,000)	\$ -	\$ -	\$ -	\$ -
Kanab City Planning Advance	\$ (29,800)	\$ -	\$ -	\$ -	\$ -
Lewiston City - Design and Construction	\$ (460,000)	\$ -	\$ -	\$ -	\$ -
Lewiston City - De-Obligation	\$ 460,000				
Long Valley - Design	\$ (103,700)	\$ -	\$ -	\$ -	\$ -
Millville City - Construction Grant	\$ (1,000,000)	\$ -	\$ -	\$ -	\$ -
Spanish Fork - Hardship Grant	\$ (500,000)	\$ -	\$ -	\$ -	\$ -
Stockton - Planning	\$ (20,000)	\$ -	\$ -	\$ -	\$ -
Spring City - Design Advance	\$ (174,250)				
Non-Point Source/Hardship Grant Obligations					
OSG Cost Share Balances (FY20-21)	\$ (56,000)				
McKees ARDL interest-rate buy down	\$ (55,261)	\$ -	\$ -	\$ -	\$ -
Munk Dairy ARDL interest-rate buy down	\$ (16,017)	\$ -	\$ -	\$ -	\$ -
(FY12) Utah Department of Agriculture	\$ (122,748)	\$ -	\$ -	\$ -	\$ -
(FY15) DEQ - Ammonia Criteria Study	\$ (27,242)	\$ -	\$ -	\$ -	\$ -
(FY17) DEQ - Utah Lake Water Quality Study	\$ (348,301)	\$ -	\$ -	\$ -	\$ -
(FY19) USU - Nutrient Concentrations Paleolimnology of Utah Lake	\$ (4,715)	\$ -	\$ -	\$ -	\$ -
FY 2018 - Remaining Payments	\$ (7,100)	\$ -	\$ -	\$ -	\$ -
FY 2019 - Remaining Payments	\$ (45,522)	\$ -	\$ -	\$ -	\$ -
FY 2020 - Remaining Payments	\$ (104,425)	\$ -	\$ -	\$ -	\$ -

HARDSHIP GRANT FUNDS FINANCIAL STATUS REPORT MARCH 2024

FY 2021 - Remaining Payments	\$ (109,105)	\$ -	\$ -	\$ -	\$ -
FY 2022 - Remaining Payments	\$ (423,540)	\$ -	\$ -	\$ -	\$ -
FY 2023 - Remaining Payments	\$ (500,746)				
FY 2024 - Remaining Payments	\$ (959,576)				
Future NPS Annual Allocations		\$ (1,000,000)	\$ (1,000,000)	\$ (1,000,000)	\$ (1,000,000)
Authorizations					
Grantsville - Design Advance	\$ (300,000)				
Kane County - Hardship Grant*	\$ (200,000)				
Rockville Town - Hardship Grant	\$ (27,172)				
Mt. Pleasant - Hardship Grant	\$ (135,000)				
Richmond - Short Term Loan	\$ (99,800)				
Hyrum - Short Term Loan	\$ (74,900)				
Virgin Town - Short Term Loan	\$ (60,000)				
Planned Projects					
Total Obligations	\$ (6,390,861)	\$ (1,000,000)	\$ (1,000,000)	\$ (1,000,000)	\$ (1,000,000)
HGF Unobligated Funds	\$ 2,547,017	\$ 2,497,228	\$ 2,395,461	\$ 2,240,987	\$ 2,038,016



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**WATER QUALITY BOARD
FEASIBILITY REPORT FOR WASTEWATER TREATMENT PROJECT
AUTHORIZATION FOR SUPPLEMENTAL FUNDING**

APPLICANT: Kane County Water Conservancy District
725 E. Kaneplex Drive
Kanab, Utah 84741
Telephone: 435-644-3997

PRESIDING OFFICIAL: Mike Noel, Executive Director

CONTACT: Amanda Buhler, Office Manager

TREASURER/RECORDER: Mike Kenner, Board Member

CONSULTING ENGINEER: Joe Phillips, P.E.
Sunrise Engineering
11 North 300 West
Washington, Utah 84780
Telephone: 435-652-8450

BOND COUNSEL: Richard Chamberlain
Chamberlain Associates
225 North 100 East
Richfield, Utah 84701
Telephone: 435-896-4461

APPLICANTS REQUEST

Kane County Water Conservancy District (“KCWCD”) is requesting Supplemental funding of \$320,000 for the construction of a third lagoon wastewater treatment cell. In addition, KCWCD is requesting the scope of work for the funding authorized by the Water Quality Board (“Board”) on May 24, 2023 to be modified from primary cell rehabilitation and cost overruns of the existing project to add the construction of this third cell.

APPLICANT'S LOCATION

Duck Creek is an unincorporated community in Kane County located on the edge of Cedar Mountain, approximately 30 miles east of Cedar City.

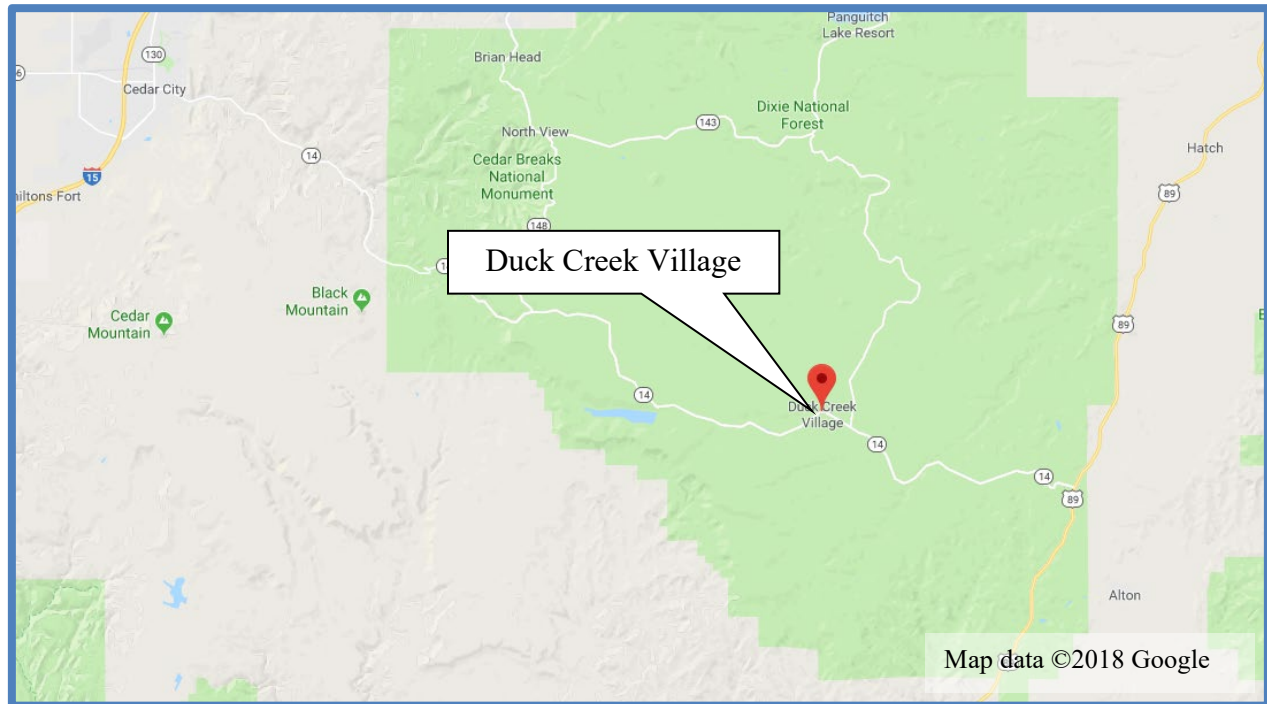


Figure 1

PROJECT BACKGROUND

In 2018, KCWCD began the challenging project to construct a publicly owned collection and treatment works for Duck Creek Village. During the past 6 years the project has progressed through construction and is nearing completion. On May 24, 2023, the Board authorized supplemental funding in the amount of \$310,000.00 as a loan, and an additional \$200,000.00 as a Hardship Grant, to KCWCD to remove material from Cell No. 1 of the Duck Creek lagoon and reline it (the "Project") as well as to cover project overruns. This supplemental funding was in addition to a previously authorized funding from June of 2020 in the amount of \$1,000,000.00 loan at 0% for 30 years and Hardship Grants totaling \$3,997,000.00, to construct a new wastewater system for the Duck Creek Village, the supplemental request memo is included as Attachment 2. This brought the total funding package to a \$1,310,000 loan 0% interest and a \$4,197,000 grant.

Due to the heavy moisture received last year, KCWCD was unable to complete the Cell No. 1 project as the cell did not dry out sufficiently over the course of the entire summer preventing entry of the cell and to complete the work. Additionally, the projected usage was exceeded. In response KCWCD decided to look into the alternative of constructing an additional cell instead of dredging and relining the existing Cell No. 1. It has been determined that the Authorized funding is not sufficient to complete the work.

PROJECT NEED

The project need has not changed since the supplemental authorization was approved; only the allowed scope of work will change. This project is needed as the existing cells do not have sufficient flexibility to properly operate the lagoon system and they lack capacity for wet weather events and future growth. This will allow KCWCD the ability to temporarily take a cell offline in order to perform maintenance or other work on the cell, and prepare for future upgrades.

ALTERNATIVES EVALUATED

KCWCD evaluated dredging and relining the existing cell but were unable to complete it due to the inability to dry it out in a single season, therefore, they have pivoted to the alternative of constructing a new cell, and master planning for additional cells.

PROJECT DESCRIPTION

This project consists of covering the cost overruns from the previously authorized project and expanding the scope to allow KCWCD to construct a third cell rather than dredge and reline the existing cell. The third lagoon requires additional piping, a splitter structure, and valves that would not have been required for the rehabilitation. In addition, the third lagoon requires additional fencing and design work.

APPLICANT’S CURRENT USER CHARGE

The current residential base rate is \$60.00 per month and only includes the first 1,000 gallons. After 1,000 gallons the residences are charged \$0.50 per 1,000 gallons up to 3,000 gallons and the \$1.00 per 1,000 gallons after that. This project primarily serves Commercial connections; the current commercial base rate is \$90.00 per month and only includes the first 1,000 gallons after that residences are charged \$0.75 per 1,000 gallons up to 3,000 gallons and then \$1.50 per 1,000 gallons after that. Therefore, the current average user rate exceeds 1.4% of MAGI, and the minimum rate is near 1.4% of MAGI. For Reference 1.4% of MAGI for Duck Creek village is \$62.07 per Equivalent Residential Connection (ERC) per month.

COST ESTIMATE

TABLE 1-PROJECT COST ESTIMATE			
Item	Description	5/2023 Budget	Reauthorization Budget
1	Lagoon Upgrades	\$259,600	\$399,581
2	Lagoon Upgrade Contingency	\$52,720.92	\$55,361
3	Clay Purchase and Fence Purchase	N/A	\$127,050
4	Lagoon Engineering, CMS, Bidding and Negotiating	\$57,679.08	\$58,000
	Lagoon Upgrade Subtotal	\$370,000	\$639,992
5	Overage Costs for Existing Project	\$110,000	\$110,000
6	Change Order 7	N/A	\$15,508
7	Overage Cost for Engineering	N/A	\$24,200
8	Engineering Project Closeout	N/A	\$20,000
	Project Cost Subtotal	\$480,000	\$809,700

KCWCD Duck Creek Supplemental Funding Authorization

March 27, 2024

Page 4

9	Legal/Bonding if Loan is Authorized	\$15,200	\$14,000
10	DWQ Loan Origination Fee	\$3,100	\$6,300
11	Cost for Loan Closing	\$18,300	\$20,300
	Total Additional Project Cost	\$500,000	\$830,000
	Total Supplemental Funding	\$510,000.00	\$830,000.00

COST SHARING

The Total supplemental funding needed for the project is \$830,000

Funding Source	Cost Sharing	Percent of Project
WQB Hardship Grant	\$200,000	24 %
WQB Funding	\$630,000	76%
Total Amount:	\$830,000	100%

ESTIMATED ANNUAL COST FOR SEWER SERVICE

Different funding options result in different annual sewer costs. A cost model is shown in Attachment 1, which analyzes a few possible funding options. The resulting total annual sewer cost is shown for each funding option.

STAFF COMMENTS

Division of Water Quality (Division) Staff are supportive of the third cell alternative, as it will provide for having three cells rather than two, which allows greater flexibility. Having 3 cells would allow them to dry out the existing cell and clean it out with local staff in the future, and better provide for expansion of the system to connect more users.

A financial burden analysis was not conducted for this project as census data does not exist for Duck Creek Village, Utah where the project is located and the request is for additional Loan funding at the same terms as the previously authorized funding.

As a reminder on May 24, 2023, the Board authorized supplemental funding in the amount of \$310,000 as a loan at 0% interest for 30 years, and an additional \$200,000 as a Hardship Grant. The Staff Recommendation will be for funding in addition to this previous amount. This was approximately 40% in grant funding for the previous supplemental funding and overall the project has received 67% grant funding totaling \$4,197,000 as grant.

This project was bid and constructed without Clean Water State Revolving Fund (CWSRF) requirements and thus, must be funded with Utah Wastewater Loan Funds (UWLF) or Hardship Grant Funds (HGF). Considering the fact that the request is coming outside of the normal funding schedule Staff recommends that the funding be authorized as loan. However, staff has included a draft motion for Option 2 if the Board wishes to supplement the funding with additional grant funds. KCWCD has stated they could proceed with only loan funds and appreciates any further assistance the Board could offer with grant funds.

STAFF RECOMMENDATIONS

In addition to the loan funds authorized on May 24, 2023, Staff recommends the Board **authorize additional supplemental funding in the amount of \$320,000 at 0% interest for 30 years under the following special conditions:**

1. KCWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. KCWCD must develop, commit to adopt, and implement a capital asset management plan that is consistent with currently public noticed requirements of Utah Administrative Code (UAC) R317-3-101.
3. KCWCD must complete a Water Conservation and Management Plan.
4. The approved scope of work for the May 24, 2023 is modified to include construction of a third wastewater treatment cell.

Option 2: Hardship Grant Funds

In addition to the grant funds authorized on May 24, 2023, the Board authorize funding to KCWCD in the amount of \$XX0,000 as a hardship grant under the following special conditions:

1. KCWCD must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. KCWCD must develop, commit to adopt, and implement a capital asset management plan that is consistent with currently public noticed requirements of Utah Administrative Code (UAC) R317-3-101.
3. KCWCD must complete a Water Conservation and Management Plan.
4. The approved scope of work for the May 24, 2023 is modified to include construction of a third wastewater treatment cell.

KCWCD Duck Creek Supplemental Funding Reauthorization Memo
 March 27, 2024
 Attachment 1 – Static Cost Model

WATER QUALITY BOARD STATIC COST MODEL										
KCWCD-Duck Creek Sewer System Supplemental Funding										
Project Costs					Current Customer Base & User Charges			Number	ERC	
Legal/Bonding				14,000				Residential Connections	5	5
DWQ Loan Origination Fee				6,300				Comercial Connections	31	104
Supplemental Construction				399,581				Forest Service Connection	1	39
Supplemental Contingency (~14%)				55,361				Total Connections	37	222
Supplemental Owner Purchases				127,050	14%					
Lagoon Engineering/CMS/Negotiating				58,000				MAGI (Duck Creek 2021 household):		\$ 53,200
Project Overrun funding and Change Orders				125,508				1.4% MAGI Sewer Bill:		\$ 62.07
Project Engeeneering and Overrun				44,200						
Total Project Cost:				830,000				Existing WQB Loan		\$ 34,000
								Existing WQB Loan Reserve		\$ 8,500
								Existing O&M expenses Treatment & Collection		\$100,000
								O&M Expenses		\$100,000
Project Funding								Funding Conditions		
KCWCD Supplemental Local Contribution				\$0.00				Loan Repayment Term:		30
WQB Additional Funding				\$ 830,000.00				Reserve Funding Period:		6
Total Project Funding:				\$830,000						
ESTIMATED COST OF SEWER SERVICE										
WQB Grant Amount	WQB Loan Amount	WQB Loan Interest Rate	WQB Loan Debt Service	WQB Loan Reserve	ExistingWQB Loan Debt Service	Existing WQB Loan Reserve	Annual Sewer O&M Cost	Total Annual Sewer Cost	Monthly Sewer Cost/ERU	Sewer Cost as a % of MAGI
\$ 200,000	\$ 310,000	0.00%	\$10,333	\$ 2,583	\$ 34,000	\$ 8,500	\$ 100,000	\$ 155,417	58.34	1.32%
\$ 281,000	\$ 549,000	0.00%	\$18,300	\$ 4,575	\$ 34,000	\$ 8,500	\$ 100,000	\$ 165,375	62.08	1.40%
\$ 200,000	\$ 630,000	0.00%	\$21,000	\$ 5,250	\$ 34,000	\$ 8,500	\$ 100,000	\$ 168,750	63.34	1.43%
\$ -	\$ 830,000	0.00%	\$27,667	\$ 6,917	\$ 34,000	\$ 8,500	\$ 100,000	\$ 177,083	66.47	1.50%

*Highlighted Cell is the previously authorized supplemental funding

KCWCD Duck Creek Supplemental Funding Reauthorization Memo

March 27, 2024

Attachment 2 – Kane County Water Conservancy District Duck Creek Sewer Project Authorization of Supplemental Funding” May 24, 2023



State of Utah

SPENCER J. COX
Governor

DEIDRE HENDERSON
Lieutenant Governor

Department of Environmental Quality

Kimberly D. Shelley
Executive Director

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

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

TO: Water Quality Board

THROUGH: John K. Mackey, P.E.

FROM: Skyler C. Davies, P.E.

DATE: May 24, 2023

SUBJECT: Kane County Water Conservancy District Duck Creek Sewer Project
Authorization of Supplemental Funding

APPLICANTS REQUEST

The Kane County Water Conservancy District is requesting \$480,000 of supplemental funding to remove material from the primary cell of the Duck Creek lagoon and reline it. In addition, these funds will cover a budget shortfall that was not discovered until late in the original collections and lagoon project. Staff estimates \$30,000 in legal and loan origination fees if a bond is authorized, bringing the required loan amount to \$510,000.

BACKGROUND

On August 22, 2018, the Water Quality Board (Board) authorized a loan of \$1 million at 0% interest and a hardship grant of \$2.997 million for Kane County Water Conservancy District (District) for design and construction of a new wastewater system. The Staff feasibility report that was provided to the Board at the time is included as Attachment 1 for reference. The total estimated cost at that time was \$4.414 million which included a culinary water project estimated at \$417,000 requiring that they obtain separate funding for the \$417,000, which at the time was included in the project but has since separated into a standalone project with funding from other sources. On July 22, 2020, the project was Reauthorized with a total funding package of \$1 million at 0% interest and a hardship grant of \$3.997 million. The staff feasibility memo for reauthorization that was presented at the July 2020 meeting is included as Attachment 2 for reference. Since that time the majority of the project is complete with some punch list items remaining on the collection system.

The District is before the Board today to request additional funding needed to remove excess material and reline a lagoon cell. The needed upgrades were not apparent at the time of the initial request as the cell had water in it hiding the condition of the cell. There is also a request for some funding to cover cost overruns from the initial project that are a result of a misunderstanding of available funds, that was discovered toward the end of the project.

PROJECT DESCRIPTION

The original project was for the construction of the Duck Creek collection system; the purchase of the Duck Creek Lagoons and property from the US Forest Service (USFS); and upgrades to the treatment facility that were necessary to connect and provide effective sewer service to the town. This project is further described in Attachment 1 and 2 Board Packets for August 2018 and June 2020, respectively. This project incurred \$110,000 in cost overruns.

The additional project includes improvements to a lagoon cell consisting of removal of vegetation, biosolids, original liner, excavation and relining of the cell with a clay liner.

COST OVERRUN FUNDING NEED

It is anticipated that it will be significantly less expensive and easier to complete within the tight timeline, if they are able to have the existing contractor complete the work rather than bid it separately. Additionally, due to an extended construction schedule partially due to weather, and supply chain conditions there have been some unforeseen change orders as well as increase construction management costs. Exacerbating this issue was a misunderstanding related to local contribution of \$207,000 that was meant for the Water Project but when the projects were separated it remained as a budget item in the wastewater project spreadsheet, this created a perceived contingency that was not actually available, and was not caught until the majority of Board funds were disbursed. This has resulted in a budget shortfall of \$110,000 for the original project.

LAGOON RELINING PROJECT NEED

The additional funding will allow the District to reline the pond while it is still empty, prior to the sewer building up to the point where both lagoons are needed later in the year. The need for the pond relining was only identified recently, as some customers were added during phase 1, the water year was significantly higher than anticipated, and additional material was discovered in the lagoon once it dried out. As such the District is concerned about maxing out the capacity of the lagoons much earlier than anticipated if this work is not undertaken.

To explain the additional material in the lagoons: The District had a recent conversation with the USFS in which they learned that the USFS placed several inches of base in the bottom of the lagoon on top of the liner. This not only took up part of the design volume, but also facilitated the growth of reeds in the pond, taking up more volume and adding bio loading. The reeds tend to accumulate material in the wind and waves, taking up additional volume. The District is requesting funds to assist in removing this material from the lagoon to restore volume and capacity. Once the system is in full operation, expected with the summer tourism rush later this year, both lagoons will be utilized and the opportunity to clean and reline the pond will be lost until an additional pond can be constructed.

COST ESTIMATE

TABLE 1-PROJECT COST ESTIMATE		
Item	Description	5/2023 Budget
1	Overage Costs for Original Project	\$110,000
2	Lagoon Upgrades	\$259,600
3	Lagoon Upgrade Contingency	\$52,721
4	Lagoon Engineering, CMS, Bidding and Negotiating	\$57,679
5	*Legal/Bonding if Loan is Authorized	\$30,000
	Needed Funding Funded if as a Loan	\$510,000

*This was added by staff and is needed if the project is authorized as a loan, if it is authorized as a grant, the authorized amount could be reduced by this amount.

FINANCIAL BURDEN ANALYSIS

The District has a current user rate of \$60 per month for residential and \$90 per month for commercial for the first 1,000 gallons with a progressive surcharge for every 1,000 over the included 1,000 gallons ranging from \$0.50 to \$1.50/1,000 gallons. As the current MAGI is \$29,800 for Duck Creek Village the current rate results in a minimum charge of 2.4% of MAGI $((\$60 * 12) / \$29,800)$. A financial burden analysis was not conducted for this project for two reasons.

1. This is supplemental funding and the original analysis was based on limited financial information for a new area with limited connections requiring a high user rate, with an indication by the District that \$1 million was all they could afford to finance.
2. The information necessary for a financial burden analysis is not available on the census website for this area, and information that might be available for adjacent areas does not account for the unique circumstances in the area.

STAFF DISCUSSION OF GRANT FUNDS

Currently, the Board requires projects for construction funding apply by June 30. These projects are introduced during the August Board meeting, a Finance Committee meeting is held in September, and authorizations are made during the October Board meeting. A second application date for construction funding is identified as December 31, if balances remain available for the current fiscal year. Staff believes it is important for the program to allow for funding recipients to reappear in front of the Board if financial issues come up during a project. However, staff is concerned about requests for additional funding, particularly for grant consideration, appearing outside of the annual application period. Staff position is all available FY23 construction grant funds were awarded during October 2022. Based on this, **staff recommends grant funds not be considered for construction projects outside of this June’s annual funding application process.** This is not a recommendation relating to the District’s project or funding request but a reflection of funding requests being prioritized during the August Board meeting.

STAFF COMMENTS

This project was bid and constructed without Clean Water State Revolving Fund (CWSRF) requirements and thus must be funded with Utah Wastewater Loan Funds (UWLF) or Hardship Grant Funds (HGF). Staff sees four options for evaluation:

1. Authorize the entire amount as loan. Due to the special nature of this project staff would recommend 0% interest loan for 30 years.
2. Authorize a mix of HGF and UWLF. (An example of such a deal would be \$110,000 as hardship grant for the overage costs and \$400,000 as 0% interest 30-year loan for the lagoon relining project.)
3. Fully fund the request as HGF.
4. Require the District to come back during the annual funding application process and appear in October if they wish to have the project funded as grant.

Due to the desire to utilize the current contractor Option 4 is not feasible. Due to the limited balances in the HGF fund staff believes Option 3 is not feasible. Considering the fact that the request is coming outside of the normal funding schedule staff recommends that the funding be authorized as loan. However, staff has included a draft motion for Option 2 if the Board wishes to supplement the funding with additional grant funds.

STAFF RECOMMENDATIONS

Option 1: Utah Wastewater Loan Funds

Staff recommends the Board Authorize funding to Kane County Water Conservation District in the amount of **\$510,000 as a loan at an interest rate of 0 percent repayable over 30 years under the following special conditions:**

1. The District must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. The District must develop, commit to adopt, and implement a capital asset management plan that is consistent with currently public noticed requirements of Utah Administrative Code (UAC) R317-3-101.
3. The District must complete a Water Conservation and Management Plan.

Option 2: Hardship Grant Funds

The Board Authorize funding to Kane County Water Conservation District (District) in the amount of **\$XX0,000 as a hardship grant under the following special conditions:**

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

KCWCD Duck Creek Supplemental Funding Authorization

May 24, 2023

Page 5

2. The District must develop, commit to adopt, and implement a capital asset management plan that is consistent with currently public noticed requirements of UAC R317-3-101.

3. The District must complete a Water Conservation and Management Plan.

DWQ-2023-006487

File: SRF KCWCD Duck Creek, Planning, Section

Date Received: May 17, 2018
Date to be presented to the WQB: August 22, 2018

WATER QUALITY BOARD
FEASIBILITY REPORT FOR WASTEWATER COLLECTION & TREATMENT
PROJECT

AUTHORIZATION

APPLICANT: Kane County Water Conservancy District
725 E. Kaneplex Drive
Kanab, Utah 84741
Telephone: 435-644-3997

PRESIDING OFFICIAL: Mike Noel, Executive Director

CONTACT PERSON: Amanda Buhler, Office Manager

TREASURER: Mike Kenner, Board Member

CONSULTING ENGINEER: Joe Phillips, P.E.
Sunrise Engineering
11 North 300 West
Washington, Utah 84780
Telephone: 435-652-8450

BOND COUNSEL: Richard Chamberlain
Chamberlain Associates
225 North 100 East
Richfield, Utah 84701
Telephone: 435-896-4461

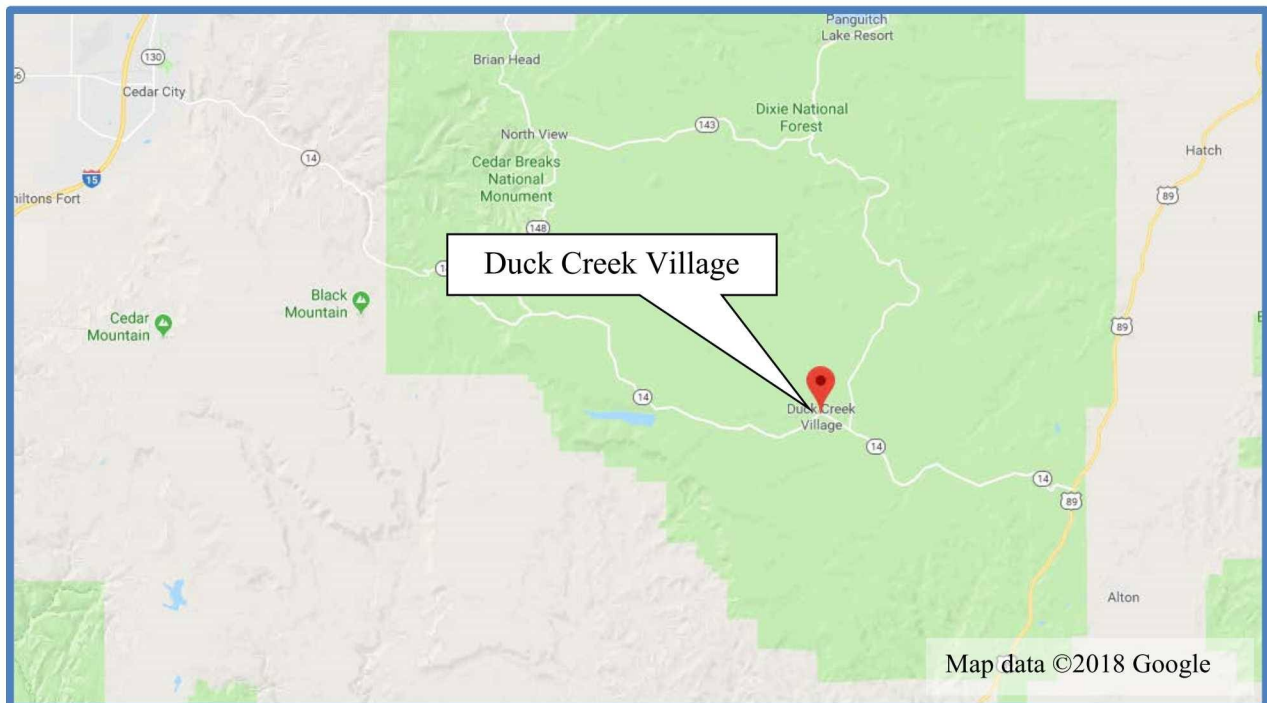
APPLICANT'S REQUEST

Kane County Water Conservancy District (the District) requests **financial assistance in the amount of \$3,997,000** including a **\$759,500 Design Advance**; this also includes the previously authorized **\$203,000 in property acquisition costs advance** that was approved in the June 27, 2018 Water Quality Board meeting. This funding will be used for the construction of the collection system, the purchase of the Forest Service lagoons and property, and upgrades to the treatment facility that are necessary to connect and provide effective sewer service to the town.

The applicant has stated that the most they can afford to repay is a \$1,000,000 loan, based on 30 year 0% interest terms.

APPLICANT'S LOCATION

Duck Creek is an unincorporated community in Kane County located on the edge of Cedar Mountain, approximately 30 miles east of Cedar City.



[Figure 1]

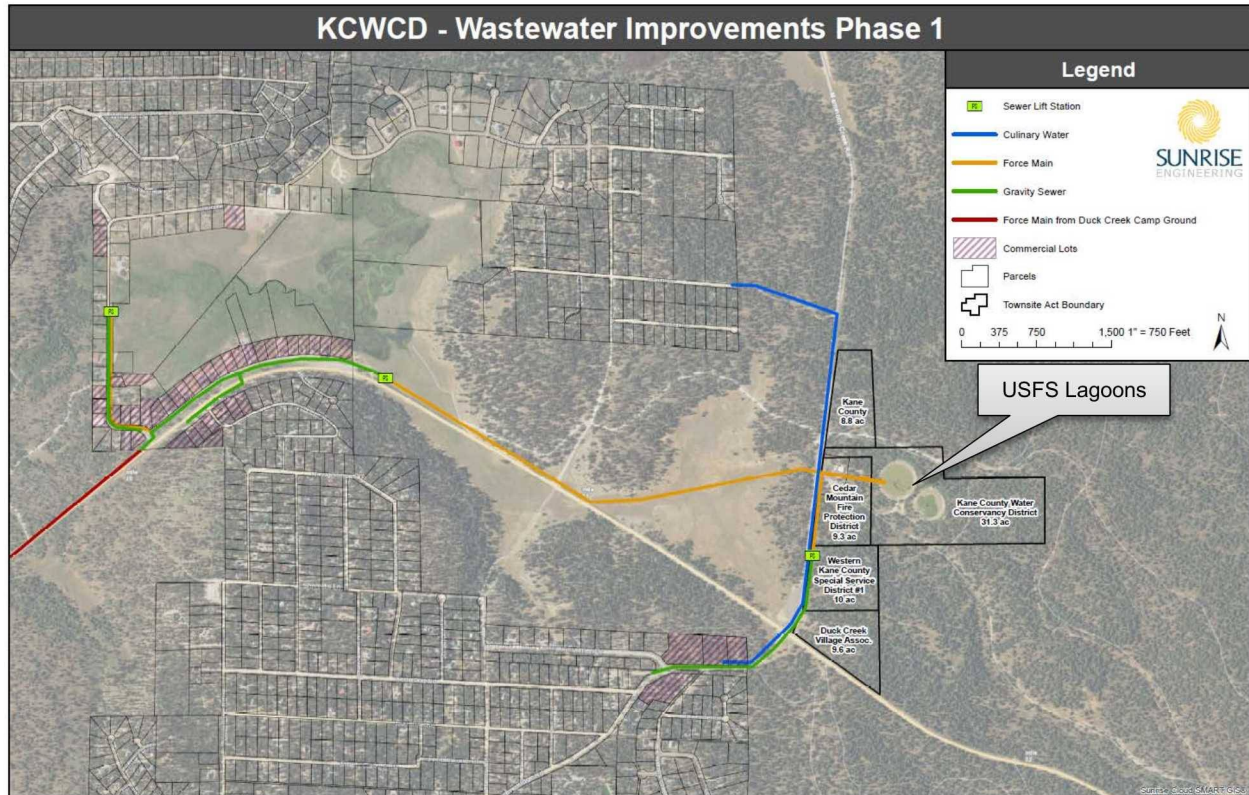
BACKGROUND

In 2007, the District commissioned a Wastewater Planning Study that documented significant risk to ground and surface waters from failing onsite systems in the Duck Creek area. Of particular concern is the “valley area” near Duck Creek Village [Figure 2] where high ground water levels frequently cause the onsite systems in the area to become inundated with water. This high groundwater limits the ability of the soils to provide adequate absorption and treatment. Surfacing septage has occurred on numerous occasions, creating a risk to public health and water quality. The recommended alternative in the 2007 study was to purchase the nearby wastewater lagoon facility that services the Duck Creek campground and extend service to the Duck Creek area. The lagoon system is located within the Dixie National Forest and is owned and operated by the USFS.

On May 1, 2013 the Water Quality Board authorized a planning grant of \$173,000 to assist the District in funding a Townsite Act application. The Townsite Act process is one of only two mechanisms to purchase property from the United States Department of Agriculture Forest Service (USFS); the other mechanism is Congressional Action.

On June 27, 2018 the project was introduced to the Water Quality Board and the Board

authorized an advance of \$203,000 to purchase land that contains the USDA Forest Service lagoons. Since that meeting, more accurate information on the number of ERU's being served has been obtained and is included in the cost model provided in Appendix 1.



[Figure 2]

ALTERNATIVES

The District thoroughly explored alternatives to address the onsite wastewater system problem in the Duck Creek area. They investigated constructing various mechanical treatment plants but the issue of effluent disposal in this area is unusually complicated. The District evaluated several alternative treatment and collection systems including:

Collection System Alternatives

- Alternative 1 - Gravity Collection with Lift Stations
- Alternative 2 - Pressurized Effluent Sewer System
- Alternative 3 - Pressurized Grinder Pump Sewer System

Treatment System Alternatives

- Alternative A - Total Containment Lagoon Treatment
- Alternative B - SBR Treatment with Rapid Infiltration Basin (RIB) Disposal
- Alternative C - SBR Treatment with Injection Well Disposal

The above alternatives were analyzed in the Facility Plan and the preferred alternative - Collection System Alternative 1 and Treatment System Alternative B – was identified. Due to high costs, a phased implementation approach was developed. The first phase consists of purchasing the existing lagoon facility and constructing a sewer collection and transmission system that will connect most of the businesses in Duck Creek. Several residences are reasonably close to the proposed alignment and could be connected in the near future. Additionally, the lagoons will be improved to bring them into compliance with DWQ standards. This phase will establish a collection system backbone to which other customers can be connected as it becomes feasible. As connections are added and the lagoons treatment capacity is reached, Phase 2 of the project would be implemented wherein the lagoons would be replaced with SBR treatment system and RIB disposal.

PROJECT DESCRIPTION

The Duck Creek Wastewater Project, Phase 1, represents the project phase that will most directly address the identified surface and groundwater contamination concerns in the Duck Creek area of Cedar Mountain, Kane County, Utah.

The Phase 1 project accomplishes multiple critical steps in establishing an overall wastewater solution in the Duck Creek area, including:

- I. The project is in the process of transferring the existing Duck Creek Campground wastewater lagoon site from the USFS into the ownership of Kane County Water Conservancy District. The site will serve as the treatment facility for the Phase 1 project and as the treatment site for future phases that could ultimately serve the Duck Creek, Strawberry Creek, Swains Creek, and Zion View Estates areas, all now on septic systems.
- II. The project will establish a new public wastewater utility service in the area that will be sponsored and administered by the Kane County Water Conservancy District. Operational and maintenance capacity will be initiated and developed through operation of the Phase 1 project.
- III. The project will establish a “backbone” infrastructure system and a “rate base” that will develop operational and financial capacity upon which future expansion can be built as need and feasibility occur.
- IV. The project will establish key alignment rights-of-way in the form of Special Use Permits issued by the USFS for the Phase 1 project and future expansions expected to become necessary in the Duck Creek valley.
- V. The Phase 1 project eliminates septic tank use by the commercial entities in Duck Creek Village; these on-site treatment units are considered to be the greatest threat to surface and groundwater quality in the Duck Creek area.
- VI. The project converts the USFS from a wastewater system operator to a wastewater system customer.
- VII. The Phase 1 project capitalizes on the current support of the commercial property owners to participate in the development of a wastewater treatment solution at Duck Creek.
- VIII. The Phase 1 project capitalizes on the current intent of the USFS to dispose the lagoon site through the Townsite Act process and to issue Special Use Permits for the necessary

infrastructure improvements.

- IX. The project establishes a wastewater treatment solution for future governmental services at Duck Creek, including the Townsite parcels reserved for Kane County, Cedar Mountain Fire Protection District, Western Kane County SSD #1, and the Duck Creek Village Association, and potentially the future Duck Creek Town.

The Phase 1 project includes as primary infrastructure components approximately 7,500 linear feet of 8-inch and 10-inch gravity sewer main, 7,000 linear feet of 6-inch and 8-inch force main, two secondary and one primary lift stations, basic lagoon site improvements, 40 gravity and pressurized sewer connections, power and SCADA improvements necessary to operate the wastewater system, and other miscellaneous appurtenances typical of a wastewater system installation in an alpine environment. Professional and incidental costs include those related to planning and environmental updates, mapping and survey efforts, design, bidding, construction administration, financing the project, and establishing the wastewater utility administratively. Also included in the project is the effort to finalize the Townsite Act process which transfers and subdivides the Townsite parcel disposed by the Forest Service.

IMPLEMENTATION SCHEDULE:

Introduction to WQB for Funding:	June 27, 2018
To WQB for Funding Authorization:	August 22, 2018
Begin Construction	2019
Complete Construction:	2021

POSITION ON PROJECT PRIORITY LIST:

The project is currently ranked 7th of 7 projects.

COST ESTIMATE:

Engineering (Design & CMS)	\$	688,000
Construction	\$	3,002,000
Contingency (~ 15%)	\$	451,000
Property Purchase	\$	203,000
Legal & Bonding	\$	30,000
Loan Origination (1% of Loan)	\$	40,000
Total	\$	4,414,000

COST SHARING:

<u>Funding Request</u>	<u>Cost Sharing</u>
Local Contribution (Culinary Water Portion of Project)	\$417,000
WQB Loan (0% 30 Years)	\$1,000,000
WQB (Requested as Grant)	\$2,997,000
Total	\$4,414,000

STAFF COMMENTS

A cost model is included as Appendix 1. The model indicates that the applicant will exceed 1.4% of MAGI with operation and maintenance costs alone. However, this phase of the project primarily serves businesses, which makes it difficult to rely on the normal affordability criteria alone. As such the recommendation is based on the District's indication that proposed commercial rate payers are "willing-to-pay" a maximum loan of \$1,000,000, based on a 0% 30 year term. A \$1,000,000 loan commits the District to significant repayments that are well above normal affordability standards. Staff believes this level of commitment should motivate the District to continue the phased approach of connecting additional customers as it becomes feasible, to provide broader water quality protection and to help support loan repayments.

Staff recognizes that there are water quality and human health concerns that this project would address. There have been failed septic systems in the area, and a sewer will provide a long term solution.

The O&M budget in the cost model indicates the anticipated O&M costs to operate the wastewater system. The budget is based on a similarly sized entity. To minimize the operation budget for this system, the District plans to utilize existing resources and staff to economize. The District estimated this will reduce the operation and maintenance costs for the wastewater system by about \$36,800 per year. This reduction in cost is indicated in the cost model as Shared Utility Labor & Overhead Savings as a negative \$36,783 per year.

STAFF RECOMMENDATION

Staff recommends that the Water Quality Board Authorize Kane County Water Conservancy District's requests **for a loan in the amount of \$1,000,000 at an interest rate of 0% repayable over 30 years and a grant in the amount of \$2,997,000 including a \$759,500 Design Advance, and the previously authorized \$203,000 in property acquisition costs advance** subject to these special conditions:

1. The District must agree to participate annually in the Municipal Wastewater Planning Program (MWPP).
2. As part of the facility planning, the District must complete a Water Conservation and Management Plan.
3. The District must pursue and retain additional funding necessary to fully implement the project.
4. The District must provide a Plan of Operation consistent with R317-101-3 Q.
5. As part of its Plan of Operations, the District must develop and implement an asset management program that is consistent with EPA's Fiscal Sustainability Plan guidance.
6. The District must consult the Division of Water Quality prior to disposing any of the land purchased with Water Quality Board funding.

eDocs: DWQ-2018-008072

File: SRF- KCWCD Duck Creek, Administration, Section 1

KCWCD Duck Creek
Introduction
June 27, 2018
Appendix 1

WATER QUALITY BOARD STATIC COST MODEL								
Duck Creek Sewer System Project								
Project Costs				Current Customer Base & User Charges				
Legal/Bonding		30,000			Residential ERUs			5
DWQ Loan Origination Fee		40,000			Comercial ERUs			104
Engineering (Design & CMS)		688,000			Haul-In Disposal ERUs			3
Construction		3,002,000			Forest Service ERUs			39
Contingency (~15%)		451,000			Total ERUs			151
Property Obtainment		203,000						
Total Project Cost:		4,414,000			MAGI (Duck Creek 2016 household):			25,344
					1.4% MAGI Sewer Bill:			\$29.57
Project Funding								
Applicant Contribution		417,000			Existing O&M expenses Treatment & Collection			\$0
WQB Funding		3,997,000			New O&M expenses Treatment & Collectioen			\$ 76,495.00
Total Project Cost:		4,414,000			Shared Utility Labor & Overhead Savings			\$ (36,783.00)
					Net New O&M Expenses			\$ 39,712.00
Funding Conditions								
Loan Repayment Term:		30						
Reserve Funding Period:		6						
ESTIMATED COST OF SEWER SERVICE								
WQB Grant Amount	WQB Loan Amount	WQB Loan Interest Rate	WQB Loan Debt Service	WQB Loan Reserve	Annual Sewer O&M Cost	Total Annual Sewer Cost	Monthly Sewer Cost/ERU	Sewer Cost as a % of MAGI
\$ 3,997,000	\$ -	0.00%	\$0	\$ -	\$ 39,712	\$ 39,712	21.92	1.04%
\$ 3,500,000	\$ 397,000	0.00%	\$13,233	\$ 3,308	\$ 39,712	\$ 56,254	31.05	1.47%
\$ 2,997,000	\$ 1,000,000	0.00%	\$33,333	\$ 8,333	\$ 39,712	\$ 81,379	44.91	2.13%
\$ 2,737,945	\$ 1,259,055	0.00%	\$41,969	\$ 10,492	\$ 39,712	\$ 92,173	50.87	2.41%
\$ 1,998,500	\$ 1,998,500	0.00%	\$66,617	\$ 16,654	\$ 39,712	\$ 122,983	67.87	3.21%
\$ 1,998,500	\$ 1,998,500	0.00%	\$66,617	\$ 16,654	\$ 39,712	\$ 122,983	67.87	3.21%
\$ 1,868,000	\$ 2,129,000	0.00%	\$70,967	\$ 17,742	\$ 39,712	\$ 128,420	70.87	3.36%
\$ 1,530,851	\$ 2,466,149	0.00%	\$82,205	\$ 20,551	\$ 39,712	\$ 142,468	78.62	3.72%
\$ -	\$ 3,997,000	0.00%	\$133,233	\$ 33,308	\$ 39,712	\$ 206,254	113.83	5.39%



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

L. Scott Baird
Executive Director

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
Director

Water Quality Board
Jennifer Grant, Chair
Gregg A. Galecki, Vice Chair
Steven K. Earley
Brandon Gordon
Michael D. Luers
L. Scott Baird
Emily Niehaus
James Webb
Dr. James VanDerslice
Dr. Erica Brown Gaddis
Executive Secretary

TO: Water Quality Board

THROUGH: Erica Brown Gaddis, PhD

FROM: Skyler C. Davies, P.E.

DATE: June 24, 2020

SUBJECT: Kane County Water Conservancy District Duck Creek Sewer Project Reauthorization Request Memo

On August 22, 2018 the Water Quality Board authorized a loan of \$1 Million at 0% interest and a hardship grant of \$2,997,000 to the Kane County Water Conservancy District (the District) for design and construction of a new wastewater system. The total estimated project cost at that time was \$4.414 million, which included a culinary water project estimated at \$417,000 that would be constructed with alternative financing. The culinary water project is now funded and will be managed as a separate project. The proposed sewer project will build the backbone of sewer works needed by the District, enabling future phases to connect more of the community to the sewerage system.

Due to cost increases the District **is requesting that the hardship grant be increased to \$3,997,000, and that the loan remain at \$1 Million.** The project also includes abandonment of septic tanks and laterals on private property which are not eligible for SRF funding. This will require the District to seek separate funding for this part of the project which is identified in the cost model as being paid for with a "Market Loan" and a parcel connection fee, which is being charged to each connection.

The original \$4.414 million estimated cost was based on a planning level estimate which included construction costs of about \$3 Million and a 15% contingency of about \$0.45 Million. KCWCD conducted a bid opening, the second week of April 2020, for the project for which they received several bids from general contractors; the low bid came in at \$4,034,001.06. With the higher than estimated construction bid, the overall project costs are now estimated to be \$5,446,000. The project costs include \$460,000 for converting existing residents from septic systems to sewer connections, costs that will be funded separately by the district. A comparison of project costs is provided Table 1:

TABLE 1-PROJECT COSTS COMPARISON

Item	Description	8/2018 Budget	6/2020 Budget
1	Legal/Bonding	\$30,000	\$34,500
2	DWQ Loan Origination Fee	\$40,000	\$20,000
3	Engineering (Design & CMS)	\$688,000	\$732,500
4	Construction	\$2,585,000	\$4,034,001
5	Culinary Water System Improvements (Funding and Project Separated from DWQ project)	\$417,000	Separate Project
6	Garkane Connection	In Construction	\$110,700
7	Contingency	\$451,000	\$367,013
8	Property Procurement	\$203,000	\$158,720
Total Project Costs		\$4,414,000	\$5,457,434

As the Board is aware, construction costs began increasing in Utah in 2017, due to a new statewide growth period. The construction labor market has continued to drive costs higher since 2018, primarily driven by a continued shortage of skilled labor. Materials cost have also increased and the proposed construction is more complex than was anticipated at the planning level.

The April 2018 authorization for the project was a \$1 million loan at 0% for 30 years and \$2,997,000 grant. The District has the same concerns regarding affordability as they did at the time of the authorization. The staff comments from the August 2018 memo are largely the same today, as was stated in that feasibility report.

A cost model is included as Appendix 1. The model indicates that the applicant will exceed 1.4% of MAGI with operation and maintenance costs alone. However, this phase of the project primarily serves businesses, which makes it difficult to rely on the normal affordability criteria alone. As such the recommendation is based on the District’s indication that the commercial rate payers are “willing-to-pay” a maximum loan of \$1,000,000, based on a 0% 30 year term. A \$1,000,000 loan commits the District to significant repayments that are well above normal affordability standards. Staff believes this level of commitment encourages the District to continue the phased approach of connecting additional customers as it becomes feasible, to provide broader water quality protection and to help support loan repayments.

This project addresses ongoing water quality and human health concerns. There have been failed septic systems in the village area that will receive service, and the proposed sewerage system will provide a long term solution for the areas of shallow ground water and will support broader sewer service availability in the future.

Table 2 below shows the comparison between the authorized funding sources, and the proposed funding sources.

TABLE 2-PROJECT FUNDING COMPARISON			
Item	Description	8/2018 Budget	6/2020 Budget
1	KCWCD Financing (for culinary water project, since separated into standalone project)	\$417,000	NA
1	KCWCD Financing (for Septic Tank Abandonment and Connection on Private Property)	Not Identified in 2018 Budget	\$377,934
2	WQB Funding Grant	\$2,997,000	\$3,997,000
3	WQB Funding Loan	\$1,000,000	\$1,000,000
4	Private Parcel Connection		\$82,500
5	Total Project Costs	\$4,414,000	\$5,457,434

It should be noted that due to the separate financing of the septic tank abandonment and the laterals on private property that the District will be required to increase rates above those anticipated in the previous authorization, even without an increase in the loan amount from the Water Quality Board.

The original Feasibility Report is included as Attachment 2.

Taking into account the high cost of sewer service per connection, staff recommends the Board reauthorize funding to Kane County Water Conservation District of \$1,000,000 loan for 30 years at 0 percent and a hardship grant of \$3,997,000 with the same special conditions as the original authorization.

Attachment 2 –August 2018 Authorization KCWCD Feasibility Memo

**WATER QUALITY BOARD STATIC COST MODEL
 KCWCD-Duck Creek Sewer System Project**

Project Costs		Current Customer Base & User Charges		Number	ERC
Legal/Bonding	34,500	Residential Connections		5	5
*DWQ Loan Origination Fee	20,000	Comercial Connections		31	104
Engineering (Design & CMS)	732,500	Forest Service Connection		1	39
Construction	4,034,001	Total Connections		37	148
Contingency (~11%)	367,013				
Property Obtainment	158,720	MAGI (Duck Creek 2018 household):			30,800
Garkane Connection	110,700	1.4% MAGI Sewer Bill:			\$35.93
Total Project Cost:	5,457,434				
* Loan origination fee could be reduced to 10,000 if Board authorizes as requestd.					
Project Funding		Funding Conditions			
KCWCD Financing (Septic Tank Abandonment/Latteral on P.P.)	\$377,934	Existing O&M expenses Treatment & Collection			\$0
KCWCD Local Share (Parcel Connection Fees)	\$82,500	New O&M expenses Treatment & Collectioen			\$ 40,978.00
WQB Funding	4,997,000	Net New O&M Expenses			\$ 40,978.00
Total Project Cost:	\$5,457,434	Loan Repayment Term:			30
		Reserve Funding Period:			6

ESTIMATED COST OF SEWER SERVICE

WQB Grant Amount	WQB Loan Amount	WQB Loan Interest Rate	WQB Loan Debt Service	WQB Loan Reserve	Market Loan Amount	Market Loan Interest Rate	Market Loan Debt Serv	Annual Sewer O&M Cost	Total Annual Sewer Cost	Monthly Sewer Cost/ERU	Sewer Cost as a % of MAGI
\$ 2,997,000	\$ 1,000,000	0.00%	\$33,333	\$ 8,333	\$ 622,066	4.00%	\$ 35,974	\$ 40,978	\$ 118,619	66.79	2.60%
\$ 3,997,000	\$ 1,000,000	0.00%	\$33,333	\$ 8,333	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 104,501	58.84	2.29%
\$ 3,750,000	\$ 1,247,000	0.00%	\$41,567	\$ 10,392	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 114,792	64.64	2.52%
\$ 3,700,000	\$ 1,297,000	0.00%	\$43,233	\$ 10,808	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 116,876	65.81	2.56%
\$ 3,500,000	\$ 1,497,000	0.00%	\$49,900	\$ 12,475	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 125,209	70.50	2.75%
\$ 3,300,000	\$ 1,697,000	0.00%	\$56,567	\$ 14,142	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 133,542	75.19	2.93%
\$ 3,200,000	\$ 1,797,000	0.00%	\$59,900	\$ 14,975	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 137,709	77.54	3.02%
\$ 2,997,000	\$ 2,000,000	0.00%	\$66,667	\$ 16,667	\$ 377,934	4.00%	\$ 21,856	\$ 40,978	\$ 146,167	82.30	3.21%



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WATER QUALITY BOARD FEASIBILITY REPORT FOR WASTEWATER TREATMENT PROJECT INTRODUCTION

APPLICANT: Ash Creek Special Services District
1350 Sandhollow Road
Hurricane, Utah 84737
Telephone: 435-635-2348

PRESIDING OFFICIAL: Mike Chandler, General Manager

CONTACT: Mike Chandler, General Manager
Email: mike@ashcreekssd.com

CONSULTING ENGINEER: Steve Jackson, P.E.
Jackson Engineering
Telephone: 801-558-5293

APPLICANT'S REQUEST

Ash Creek Special Services District (ACSSD) is requesting funding from the Water Quality Board (Board) in the amount **\$6,876,000** for the construction of a regional sewer lift station and pressure sewer force main to connect the Town of Virgin to the ACSSD collection system in La Verkin, UT.

APPLICANT'S LOCATION

The project is primarily located between the Town of Virgin and La Verkin, Northeast of St. George in Washington County.



PROJECT BACKGROUND

The Town of Virgin does not currently have a sanitary sewer collection system. Existing residential dwellings rely on private septic systems for sewage disposal, including several Large Underground Wastewater Disposal Systems (LUWDS). Since the town is located close to the Virgin River, there has been rising concern about potential for degradation of surface water quality in the area due to the rising number of onsite systems, including other developments planned in the area.

In 2022, a recent study was completed by Sunrise Engineering, commissioned by the State of Utah (2022 Update Virgin Town Wastewater Study), which outlined several options for wastewater treatment in the region. These alternatives included a proposed sewer system connecting to the regional treatment facility in La Verkin. In February 2024, Town of Virgin voted to annex into ACSSD.

Currently, the Town of Virgin is the 19th largest community in the State without a sanitary sewer system. The community is under serious growth and development pressures. The Division of Water Quality (Division) has been pursuing construction of a sanitary sewer system trunkline to service the Town of Virgin for several years. Most of the recent pursuits have required consideration of extensive grant dollars and most recently the Division attempted to access American Rescue Plan Act (ARPA) funds to construct this trunkline.

In late 2023, Division staff were approached about a commercial development proposing to construct a truckline to connect a commercial facility to Ash Creek SSD. Staff desired to capitalize on the opportunity and construct a trunkline large enough to service both the commercial development and the Town of Virgin. In addition, as this would primarily serve commercial development so grant funds would not be discussed. Finally, this project is attempting to move quickly. For these reasons staff agreed to bring this project as soon as possible in front of the Board “off schedule.”

PROJECT NEED

This project will provide a regional sewer lift station for the Town of Virgin and will mitigate current and future wastewater flows by conveying to the ACSSD lagoons and/or new confluence park treatment plants. The following facilities would be connected including: White Bison Resort (168 RV Pads, and 47 Glamping Sites), Zions Sunset Convenience Store and Restaurant, Kerlin Mobile Home Park, K&K Properties Residential project, and Smith Residential Project.

Once the future gravity sewer line is put through the Town of Virgin to the proposed Regional Sewer Lift Station, the majority of the towns Commercial Projects will be taken off the their LUWDS and conventional septic systems. These include: Zion River RV Park, Furber Resort, Zion Wildflower Resort, Autocamp Resort, and the Fairfield inn and Suites; eliminating an approximate 109,000 GPD of sewage treatment by LUWDS and septic systems overall.

ALTERNATIVES EVALUATED

An alternatives analysis was included in the 2022 Town of Virgin Wastewater Study. The analysis included alternative onsite treatment, construction of a new lagoon facility, and a sewer line connection to ACSSD. ACSSD concluded that a pressurized force main would be the best option for providing for current and future needs in the Town of Virgin.

PROJECT DESCRIPTION

The project will be divided into two initial phases (Phase 1A and 1B). Phase 1A will include the construction of a regional sewer lift station in the Town of Virgin and an 8-inch pressurized force main providing a connection between the Lift Station and the regional sewer treatment facility in La Verkin. This will also provide connections to a limited number of approved and existing projects, as outlined in the “Project Needs” section. Phase 1B will include connections for several other existing communities, and provide the backbone for future connections in the Town of Virgin.

POPULATION GROWTH

Based on 2020 and 2010 census data, the annual growth rate in the Town of Virgin is 1.18%, lower than the state average. However, looking at only data from the past 5 years, as was recommended by the 2022 Wastewater Study, the annual population growth rate is much higher (3.32%).

PUBLIC PARTICIPATION AND DEMONSTRATION OF PUBLIC SUPPORT

In February 2024, the Town of Virgin approved annexation into ACSSD. One of the primary goals of this project is to create a public/private partnership with the existing and anticipated communities that are or would be connected to onsite systems without this project. So, ACSSD anticipates this project to include \$767,000 in private contributions.

IMPLEMENTATION SCHEDULE

Construction is anticipated to begin this year as soon as funding is approved, with construction expected to be completed by the end of 2024.

APPLICANT’S CURRENT USER CHARGE

The current user charges for ACSSD \$36.75 per month per residential connection and \$18.90 per month per RV pad connection. The proposed project indicates debt service being paid by 297 Equivalent Residential Connections (ERC). Based on the attached cost model a 0% interest loan with a 30-year term would be approximately \$57/month for debt service. Adding in operation and maintenance of the collection system and a treatment fee from ACSSD the monthly rate per ERC would be approximately \$122.

COST ESTIMATE

The total estimated cost of the project is **\$7,643,000**, and the request for funding is **\$6,876,000**. This includes 15% Engineering Design & CMS and a 50% contingency with the cost estimate. Note that the 50% contingency has been increased from the application, which originally had a 10% contingency. A breakdown of the cost by project is included below.

Construction Phase 1A	\$3,100,000
Construction Phase 1B	\$1,867,000
50% Contingency (1A+1B)	\$2,484,000
Engineering Design & CMS	\$82,000
DWQ Loan Origination Fee	\$70,000
Legal/Bonding	\$40,000
Total Cost	\$7,643,000
Local Contributions	-\$767,000.00
Request for Funding	\$6,876,000

STAFF COMMENTS AND RECOMMENDATION

Staff is very supportive of this project. The Town of Virgin is one of the larger unsewered areas in the State of Utah, and a public/private partnership leading to the construction of a sewer collection system and connection to a nearby treatment facility would solve many environmental concerns about onsite systems in the area. The Town of Virgin, ACSSD, and private entities in the region have all shown support for the project. This is only an introduction and no motions are anticipated during this Board meeting.

**Town of Virgin (ACSSD) - Water Quality Board
 20 Year Loan Static Cost Model**

Project Costs

Legal/Bonding	\$	40,000
DWQ Loan Origination Fee	\$	70,000
Engineering - Design & CMS	\$	82,000
Phase 1A - Regional LS & Force Main	\$	3,099,675
Phase 1B - Local LS & Connection	\$	1,867,250
Construction subtotal	\$	4,966,925
Contingency (50%)	\$	2,483,463
Total Project Cost:	\$	7,642,388

Anticipated Customer Base & User Charges

Estimated Total Customer (ERC's)	297	Taken From 2022 Study
MAGI for Virgin (2021):	\$47,100	
State Affordability Criteria (1.4%)	\$54.95	
Estimated Impact Fee (per ERU):	\$2,000	
Current ACSSD Monthly Fee (per ERU)	\$36.75	
Debt Service	\$0	
Annual O&M expense	\$100,000	

Project Funding

Local Contribution	\$	766,600
Amount to be Funded	\$	6,875,788
WQB Grant	\$	-
Total Project Cost:	\$	7,642,388

Funding Conditions

Loan Repayment Term:	30
Reserve Funding Period:	6

ESTIMATED COST OF SEWER SERVICE

WQB Grant	WQB Loan	Private Loan Amount	WQB Loan Interest Rate	Private Loan Interest Rate*	WQB Loan Debt Service	WQB Loan Reserve	Private Loan Debt Service	Annual Sewer	Treatment fee	Total Annual Sewer Cost	Monthly Sewer Cost/ ERU	Sewer Cost as % of MAGI	Financial Burden
	0	6,875,788	0.00%	4.50%	0	0	422,115	100,000	130,977	653,092	183.25	4.67%	MEDIUM
	6,875,788	0	0.00%	4.50%	229,193	57,298	0	100,000	130,977	517,468	145.19	3.70%	MEDIUM
	6,875,788	0	0.50%	4.50%	247,383	61,846	0	100,000	130,977	540,206	151.57	3.86%	MEDIUM
	6,875,788	0	1.00%	4.50%	266,424	66,606	0	100,000	130,977	564,007	158.25	4.03%	MEDIUM
	6,875,788	0	1.50%	4.50%	286,302	71,576	0	100,000	130,977	588,855	165.22	4.21%	MEDIUM
	6,875,788	0	2.00%	4.50%	307,003	76,751	0	100,000	130,977	614,731	172.48	4.39%	MEDIUM
	6,875,788	0	2.50%	4.50%	328,509	82,127	0	100,000	130,977	641,613	180.03	4.59%	MEDIUM
	6,875,788	0	3.00%	4.50%	350,798	87,699	0	100,000	130,977	669,474	187.84	4.79%	MEDIUM
	6,875,788	0	3.50%	4.50%	373,846	93,461	0	100,000	130,977	698,284	195.93	4.99%	MEDIUM

*Staff Estimate

FNI Calculation					
	Local Value	State Value	Score	Weighting Factor	Weighting Score
Unemployment Rate	4.2%	3.6%	2.30	4	9.20
Poverty Rate	23.4%	9.1%	3.00	2.5	7.50
Threshold LQI	\$ 32,025	\$ 35,445	1.39	2.5	3.48
Population Growth Rate	12.0%	18.6%	2.29	1	2.29
Financial Need Indicator (Sum of weighted Scores/10)					2.25

Table **
 S2301
 S1701
 B19080
 B01003

Financial Burden Matrix					
FNI	Modified MAGI				
	Below 1.4%	1.4% to 1.75%	1.75% to 2.1%	2.1% to 2.45	Above 2.45
Below 1.5	Low	Low	Medium	Medium	High
1.5 to 2.5	Low	Medium	Medium	High	High
Above 2.5	Medium	Medium	High	High	High



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John K. Mackey
Executive Secretary

MEMORANDUM

TO: Water Quality Board

FROM: John K. Mackey, PE
Director, Division of Water Quality

FROM: Benj Morris
Environmental Scientist III

Dan Hall
Groundwater Protection Section Manager

DATE: March 27, 2024

SUBJECT: Request for Authorization to Conduct Public Hearing and Comment Period for the Aquifer Classification Petition of the Shallow Aquifer of Davis County, Utah

In accordance with the provisions of Utah Admin. Code R317-6-5, Friends of Great Salt Lake has requested to submit a petition to the Utah Water Quality Board (“Board”) to classify the ground water of the shallow, unconfined aquifer in the east shore area of the Great Salt Lake, Davis County, Utah. Attached to this memo is a copy of the petition request from Friends of Great Salt Lake (“Petitioner”). The petition was prepared for Friends of Great Salt Lake by Dr. Greg Carling, Brigham Young University, and Janae Wallace, Utah Geological Survey. Technical review on the draft aquifer classification report and maps were conducted by staff of the Division of Water Quality, Groundwater Protection Section (“Staff”).

The Petitioner requests a classification of 1C based on the Ground Water use. Class 1C is considered Ecologically Important Ground Water and as stated in Utah Admin. Code R317-6-4.4, “Class 1C ground water will be protected as a source of water for potentially affected wildlife habitat.” Plate 1 from the petition shows the location and boundaries of the aquifers for which classification is requested (see also Figure 10 showing recharge areas).

Aquifer petition rules allow the Board to classify entire aquifers or parts of aquifers according to the quality or use of the ground water contained therein.

Boundaries for the classification areas are to be delineated and based on hydrogeologic properties and existing ground water quality or usage. Parts of the same aquifer may be classified differently. When considering an aquifer classification petition, the Board should be aware of the following applications and limitations:

Aquifer Classification is:

1. In the absence of other more site-specific data, a predetermined basis for establishing protection levels and best available control technology in the issuance of ground water discharge permits by the Division of Water Quality;
2. A common ground water quality management objective to be maintained when used as a land use management tool by local agencies;
3. A consolidation of knowledge about a given hydrologic setting from a number of scientific and technical sources; and
4. A formal administrative prioritization of the ground water resource.

Aquifer Classification is not:

1. A mandatory requirement to take specific action on the part of local government including application of any land use zoning restrictions;
2. An obligation by local government to perform technical assessments, monitoring or ongoing financial investments; or
3. An assumption of the state responsibility to enforce or enact county or local ordinances on waste management practices.

Staff have reviewed the petition and supporting information and has determined that the criteria in Utah Admin. Code R317-6-5.5 have been sufficiently met. Therefore, it is recommended that the Board initiate action for aquifer classification. With the Board's approval, the Division of Water Quality will set a date for conducting a public hearing in the county and issue the required public notice. Staff also request a volunteer from the Board to be the hearing officer at a hearing should the Board approve the Division to move forward. After holding the public hearing and consideration of any comments that are received, information will be returned to the Board for the disposition of the classification petition.

**GROUNDWATER QUALITY CLASSIFICATION FOR DISCHARGE
ZONE OF THE SHALLOW, UNCONFINED BASIN-FILL AQUIFER,
EAST SHORE AREA, DAVIS COUNTY, UTAH**

Prepared for FRIENDS of Great Salt Lake

by

Dr. Greg Carling, Brigham Young University

&

Janae Wallace, Utah Geological Survey

2024

INTRODUCTION

This is a formal petition to the Utah Water Quality Board (Board) submitted by Dr. Greg Carling (Brigham Young University) and Janae Wallace (Utah Geological Survey) on behalf of FRIENDS of Great Salt Lake to classify groundwater quality in the discharge zone of the shallow, unconfined aquifer in the east shore area, Davis County, Utah, pursuant to Utah Administrative Code R317-6-5, Ground Water Classification for Aquifers as Class IC or Ecologically Important Groundwater. A map of the area to be protected is provided in [Plate 1](#).

Davis County has the third largest county population in Utah, estimated at 367,285 in 2021 (<https://www.census.gov/quickfacts/daviscountyutah>). In 2021, Davis County residents made up 11% of Utah's total population of 3,337,975 (<https://www.census.gov/quickfacts/UT>). Based on projections made in 2015, the population of Davis County is expected to increase to 544,958 by 2065, an increase of 62% over the period 2015–2065 (Perlich et al., 2017).

The principal basin-fill aquifer underlying Davis County is currently protected for drinking water quality as part of an existing aquifer classification ([Plate 2](#)). However, the existing protections do not apply to all groundwater in Davis County. As stated in the existing aquifer petition document, “This classification does not apply to the shallow unconfined aquifer, which overlies the principal aquifer in much of the study area” (Wallace et al., 2011). The shallow aquifers (shallow unconfined and shallow confined) underlying Davis County contribute water to Great Salt Lake and perimeter freshwater wetlands, and thus groundwater discharge from these aquifers is important to the continued support of the lake's designated beneficial uses. We therefore petition the Board to classify the discharge zone of the shallow unconfined aquifer beneath Davis County as Class IC groundwater or Ecologically Important Groundwater.

FACTUAL DATA

Sufficient information is available to classify groundwater quality in the discharge zone of the shallow, unconfined aquifer system, located in the southern part of the east shore area of Davis County, Utah. Data required to formally petition the Board were obtained from previously published studies. The information required for classification is contained in maps submitted with this report and in Plate 1.

In addition, the following previously released publications contain valuable information about the Davis County part of the east shore area of the Great Salt Lake aquifer systems. Copies of these reports are available upon request or online:

- Clark, D.W., Appel, C.L., Lambert, P.M., Puryear, R.L., 1990. Ground-water resources and simulated effects of withdrawals in the east shore area of Great Salt Lake, Utah. Utah Department of Natural Resources Technical Publication No. 93:150. <https://waterrights.utah.gov/cgi-bin/docview.exe?Folder=TP20-6-330&Title=Technical+Publication+93>
- Kirby, S.M., Inkenbrandt, P.C., Rupke, A., 2019. Mapping groundwater quality and chemistry adjacent to Great Salt Lake, Utah. Utah Geological Survey Open-File Report 699. https://ugspub.nr.utah.gov/publications/open_file_reports/ofr-699/ofr-699.pdf
- Wallace, J., Inkenbrandt, P., Lowe, M., 2011. Ground-water quality classification for the principal basin-fill aquifer, East Shore area, Davis County, Utah. Utah Geological Survey Open-File Report 592. https://ugspub.nr.utah.gov/publications/open_file_reports/OFR-592.pdf

GEOLOGIC SETTING

The study area is the southern part of the east shore area of Great Salt Lake in Davis County, Utah, east of Farmington Bay (Figure 1). The study area was the subject of a previous groundwater classification petition for the principal basin-fill aquifer (Wallace et al., 2011). The

current groundwater petition seeks protection for the shallow, unconfined aquifer overlying the principal basin-fill aquifer.

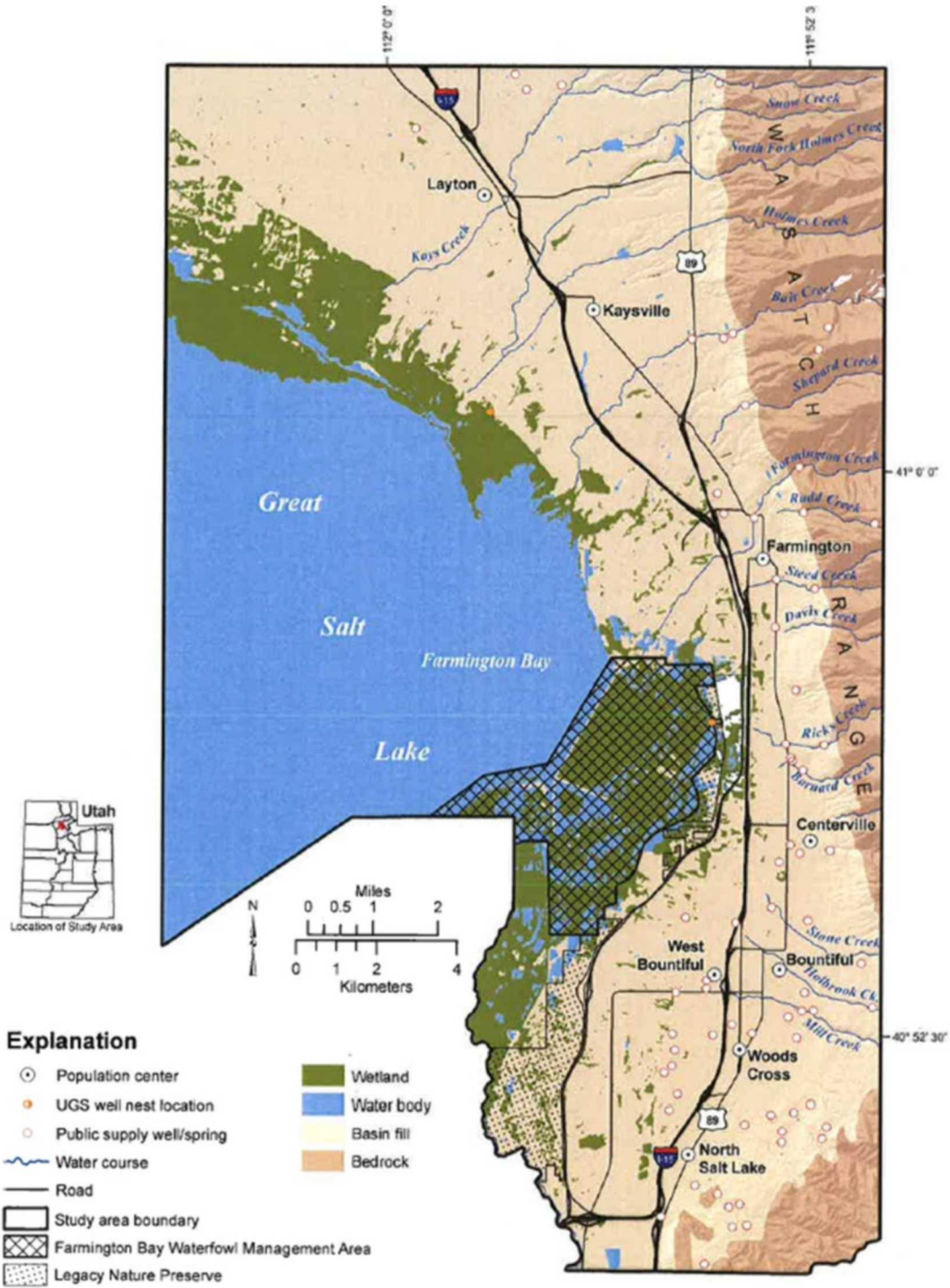


Figure 1. Study area map of the southern part of the east shore of Great Salt Lake in Davis County, east of Farmington Bay. Figure from Wallace et al. (2011).

The east shore area is defined as the area extending from North Salt Lake to the town of Willard in Box Elder County, and from the eastern shore of Great Salt Lake to the western margin of the Wasatch Range (Clark et al., 1990). The area considered for groundwater classification covers the Davis County portion of the east shore area. The description of the geologic setting includes information about the larger east shore area because it is a connected hydrologic system.

Elevation across the east shore area ranges from over 9000 feet in the Wasatch Range to about 4190 feet at the shore of Great Salt Lake. The Weber and Ogden Rivers in Weber County are the largest streams in the east shore area, accounting for 90% of surface water flow (Clark et al., 1990). Davis County streams include Holmes, Farmington, Parrish, Centerville, Stone, and Mill Creeks (Figure 1), with dozens of other perennial, intermittent, and ephemeral streams that flow westward from the Wasatch Range into the east shore area (Clark et al., 1990).

The geology of the east shore area was described in the previous aquifer classification petition by Wallace et al. (2011). Here we provide a brief overview of the geology. Rocks in the Farmington area of the Wasatch Range include the Precambrian Farmington Canyon Complex metamorphic and igneous basement rocks overlain by Paleozoic metasedimentary and sedimentary rocks, Tertiary sedimentary rocks, and Quaternary surficial deposits (Hintze and Kowallis, 2009). The rocks have been deformed and fractured by late Mesozoic to early Cenozoic thrust faulting and Miocene to Quaternary normal faulting along the Wasatch fault (Hintze and Kowallis, 2009).

The east shore area of Great Salt Lake is a structural graben that started to develop during the Tertiary with basin and range normal faulting. The active Wasatch fault is at the base of the Wasatch Range, the eastern margin of the graben. The graben, or basin, has accumulated large

amounts of sediment shed from the uplifting Wasatch Range. The basin fill consists mainly of the Salt Lake Formation, with a maximum thickness of 14,000 feet beneath Great Salt Lake (Hintze and Kowallis, 2009).

The graben is located within the hydrologically closed Bonneville basin, with water draining towards Great Salt Lake and leaving only by evapotranspiration. The basin has been internally drained for much of the past 15 million years, having lakes of various sizes during much of that time. Four major lake cycles occurred during the last 780,000 years (Oviatt et al., 1999). Lake Bonneville was the last major lake cycle in the basin, existing from 30 ka to 13 ka, with modern Great Salt Lake as a remnant of the larger lake (Oviatt, 2015). With a history of deep lake cycles interspersed with periods of small lakes or nonexistent lakes, the basin-fill deposits in the east shore area contain interfingering gravel, sand, silt, and clay deposited in lacustrine and fluvial environments (Sprinkel, 1993).

GROUNDWATER CONDITIONS

The groundwater system of the central east shore area was described in detail by Feth et al. (1966). Groundwater in the east shore area occurs under both confined and unconfined conditions in the basin-fill sediments to depths of at least 3000 feet. The major artesian aquifers are the Delta aquifer, which is located about 500–700 feet below ground surface and is primarily 50–150 feet thick, and the Sunset aquifer, which is located about 200–400 feet below ground surface and is 50–250 feet thick. The deeper Delta aquifer is more productive with wells of large yield, whereas the shallower Sunset aquifer is less permeable with wells of small yield. The shallow aquifer supplies water to wells in Roy and Syracuse. In the Roy area, the shallow aquifer yields water from depths between 50 and 150 feet below ground surface. In the Syracuse area, the shallow aquifer yields water in wells less than 250 feet deep. The water table contours in the

shallow aquifer create a sloping surface from the Wasatch Range to Great Salt Lake, paralleling the shoreline of the wetlands.

Additional characterization of the east shore aquifers, including the Bountiful area, was provided by Clark et al. (1990). The groundwater flow direction is primarily from the mountain block and mountain front towards Great Salt Lake (Figure 2). The east shore aquifer system was defined by Clark et al. (1990) as the saturated sediments in the valley fill between the Wasatch Range and Great Salt Lake, including the Sunset and Delta aquifers, but not including the shallow unconfined aquifers in the study area (Figure 3). A shallow unconfined aquifer commonly exists above the upper confining beds within the Quaternary surficial deposits. Unconfined groundwater is generally located along stream channels, in perched aquifers on the bench areas, and throughout the valley lowlands within a few feet of the surface. The shallow water table zone receives large amounts of seepage from irrigation and infiltration of urban runoff. A geologic profile of the Delta and Sunset aquifers in the Weber Delta part of the east shore area was provided by Hurlow et al. (2011); modified after Feth et al. (1966) (Figure 4). A conceptual model of groundwater flow in the east shore area (Figure 5) shows groundwater discharge from deep and shallow aquifers to Great Salt Lake and perimeter wetlands (Kirby et al., 2019). Discharge from the east shore aquifer system includes water withdrawal from wells and flow into the shallow unconfined aquifer (Clark et al., 1990). The shallow unconfined aquifer discharges to the surface through springs and gaining stretches of streams, evapotranspiration of shallow groundwater, and diffuse shallow groundwater flow to Great Salt Lake (Clark et al., 1990).

Groundwater in the east shore area occurs in unconsolidated basin-fill deposits under both water table (unconfined) and artesian (confined) conditions, but most of the water

withdrawn by wells is from the artesian aquifers and is used for public supply (Smith et al., 2019). Total estimated withdrawal from the east shore area in 2017 was 38,200 acre-feet, which is about 11,000 acre-feet less than the average annual withdrawal for the period of 2007–2016 (Smith et al., 2019). Of the total withdrawal in 2017, 30,900 acre-feet was for public supply, 3,600 acre-feet for irrigation, and 2,600 acre-feet for industrial use (Smith et al., 2019). Water levels have generally declined since the mid-1980s in wells south of Kaysville and have generally declined since the mid-1950s in wells north of Kaysville (Smith et al., 2019).

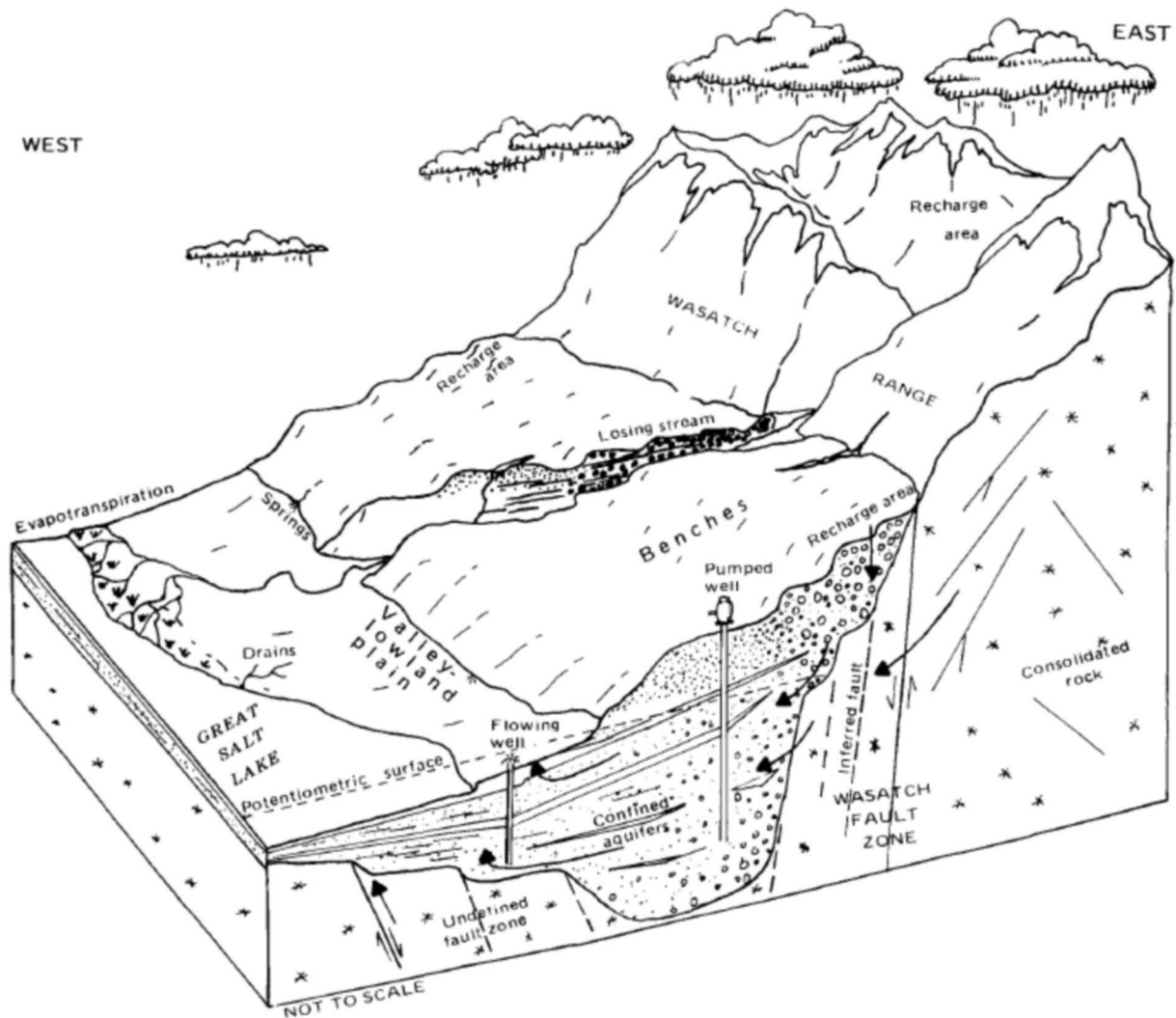
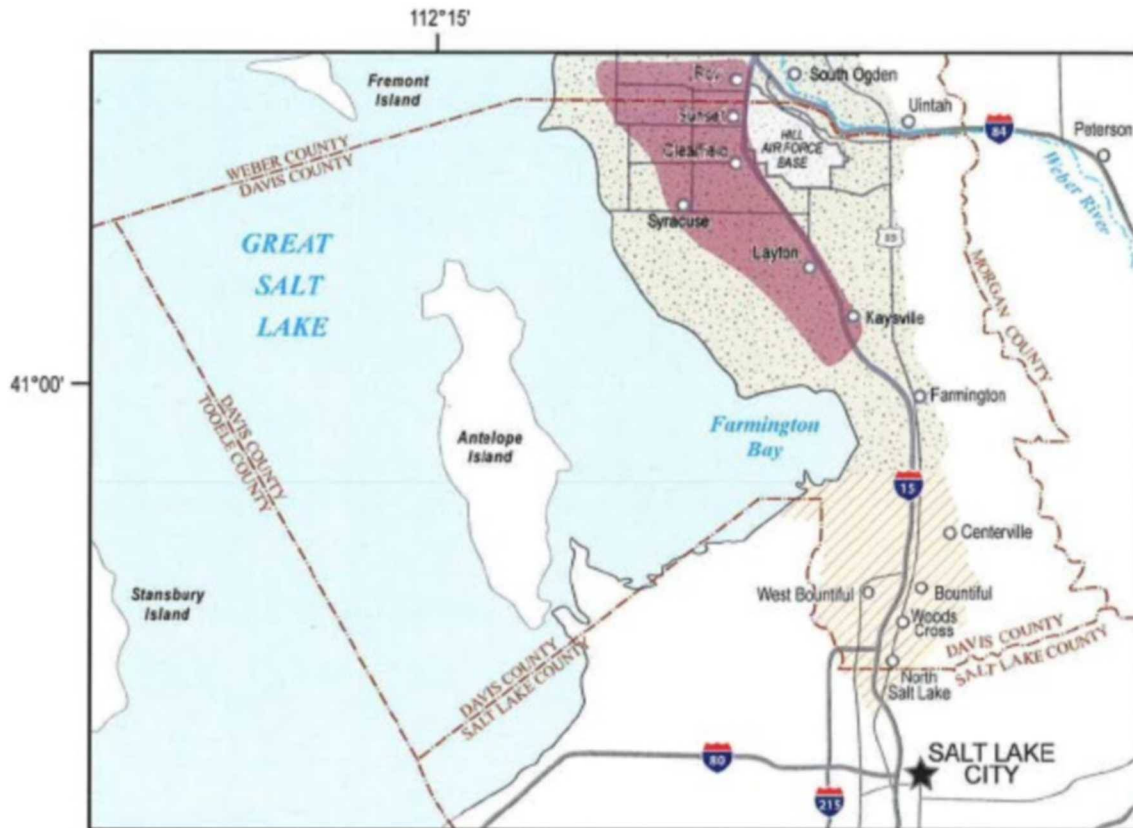


Figure 2. Generalized block diagram showing the aquifer systems, probable directions of groundwater movement, and recharge and discharge areas. Figure from Clark et al. (1990).



Explanation



-  Bountiful area
-  Weber Delta area
-  Area where the Sunset and Delta Aquifers can be differentiated



Figure 3. Map of the Sunset and Delta aquifers in Davis County, including the Bountiful and Weber Delta areas. Figure from Wallace et al. (2011); modified after Clark et al. (1990).

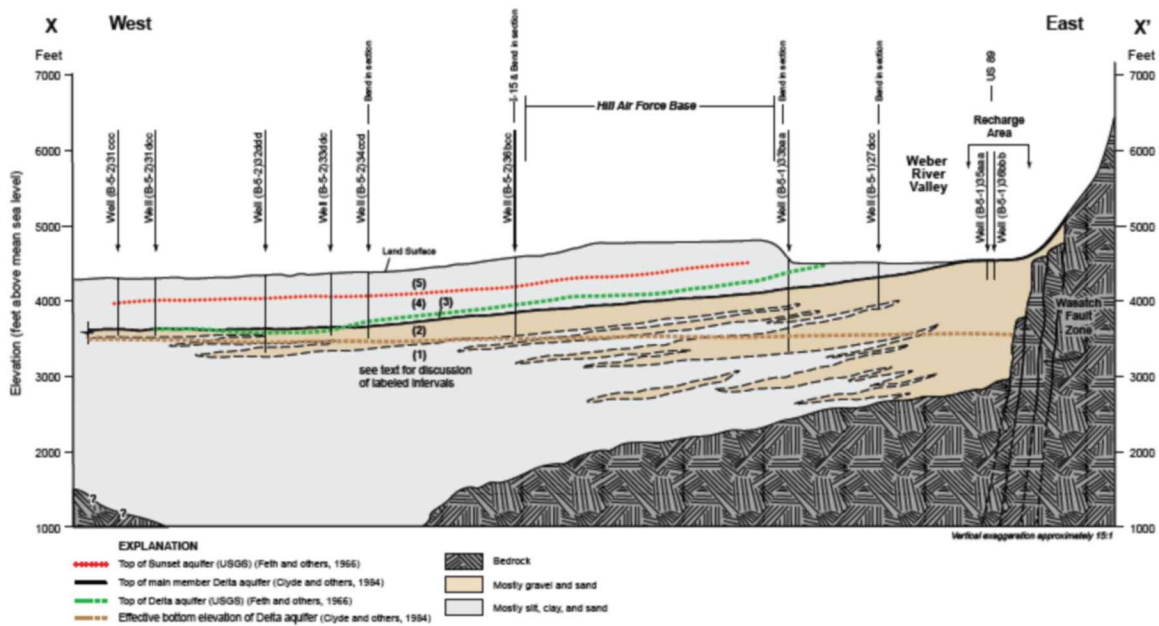


Figure 4. Geologic profile of the Sunset and Delta aquifers in the Weber Delta portion of the east shore area. Figure from Hurlow et al. (2011; modified after Feth and others [1966]).

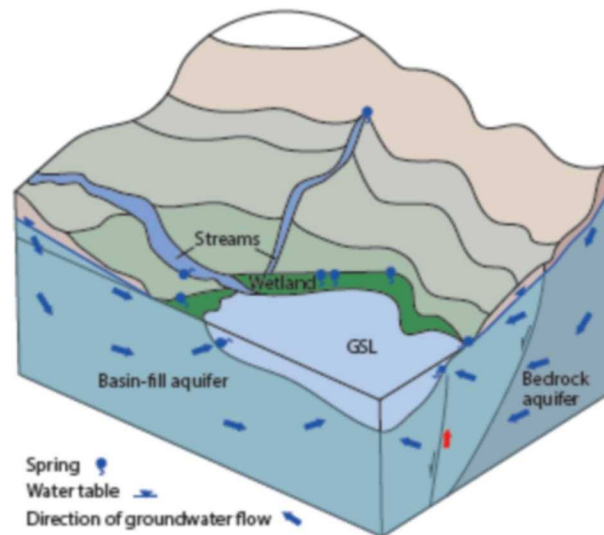


Figure 5. Conceptual model of groundwater flow to Great Salt Lake and perimeter wetlands. Figure from Kirby et al. (2019). The lake is the discharge area for groundwater and surface water in the watershed. The red arrow indicates potential input of hydrothermal water.

PREVIOUS STUDIES

Previous studies in the east shore area have primarily focused on the deep principal aquifers. These studies are described in Wallace et al. (2011). Only a few studies have focused on the shallow aquifer system. Yidana et al. (2010) investigated the connections between deep confined aquifers and shallow unconfined aquifers. The purpose of their study was to determine whether groundwater pumping from the principal aquifer caused a significant decrease in groundwater discharged from the deep aquifer to the shallow aquifer. In Salt Lake Valley, the shallow unconfined aquifer overlies confining beds above the principal aquifer system and provides water to approximately 58,000 acres of wetlands in groundwater discharge areas. Yidana et al. (2010) installed shallow monitoring wells in Salt Lake Valley wetlands on the fringe of Great Salt Lake to determine the hydraulic gradient and water quality conditions. Through a MODFLOW model, the study showed that development of the principal aquifer could dramatically decrease the amount of water that the wetlands receive. Carling et al. (2013) investigated the impacts of shallow groundwater discharge on water chemistry and ecology of wetlands on the east side of Great Salt Lake. Kirby et al. (2019) compiled existing groundwater chemistry data adjacent to Great Salt Lake. Their study focused primarily on deep groundwater but also included a comparison with chemistry of wetlands adjacent to the lake.

GROUNDWATER QUALITY FROM PREVIOUS STUDIES

Groundwater quality is generally good in the east shore aquifer system, though most work focused on the confined aquifers (Wallace et al., 2011). A recent comprehensive study investigated all available groundwater chemistry data adjacent to Great Salt Lake, including the east shore area (Kirby et al., 2019). The major ion water type for groundwater in the east shore area of Davis County is mainly calcium-bicarbonate waters with some sodium-bicarbonate

waters near the shore of Great Salt Lake (Figure 6). Total-dissolved-solids (TDS) concentrations are generally low (<500 mg/L) in confined aquifers of the east shore area (Figure 7).

Groundwater with TDS concentrations higher than 500 mg/L is found in isolated locations in the confined aquifers of the east shore area, with some samples falling in the 500 to 1000 mg/L and 1000 to 2500 mg/L categories, reflecting some local variability (Figure 7). The map in Figure 7 shows samples from confined aquifers and limited data are available for TDS for unconfined aquifers in the east shore area. In certain locations, the deep groundwater system may act as a source of water having TDS concentrations >500 mg/L to the shallow groundwater system.

In the unconfined aquifer, former hazardous waste disposal sites at Hill Air Force Base located on the Weber Delta in northern Davis County have contaminated the shallow perched groundwater with halogenated organic compounds (solvents such as trichloroethylene, TCE) and heavy metals (including cadmium and chromium) and is under remediation (Dalpiaz et al., 1989). Hill Air Force Base overlies three aquifers: an unnamed unconfined aquifer and the confined Sunset and Delta Aquifers, with groundwater contamination in the top 100 feet of the unconfined aquifer (Figure 8) (EA-Engineering, 2015). Contamination plumes are located in multiple locations on and off the base (Figure 9), with cleanup expected to continue for decades (EA-Engineering, 2015). Ongoing efforts are remediating the groundwater contamination using monitored natural attenuation, enhanced bioremediation, and institutional controls (EA-Engineering, 2015).

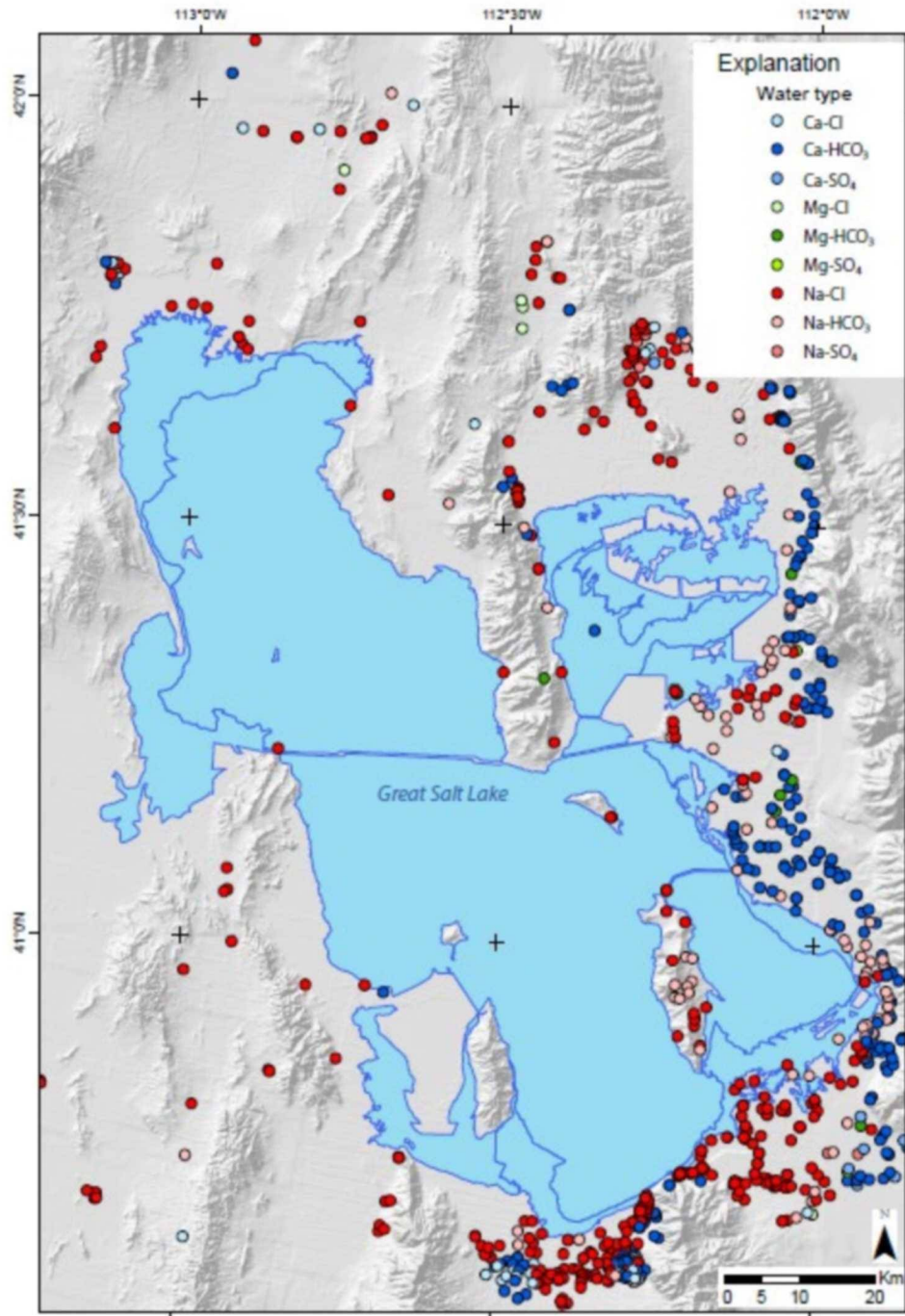


Figure 6. Major ion water type for groundwater samples collected adjacent to Great Salt Lake. Figure from Kirby et al. (2019). The blue lines in the lake indicate bathymetry and the locations of causeways.

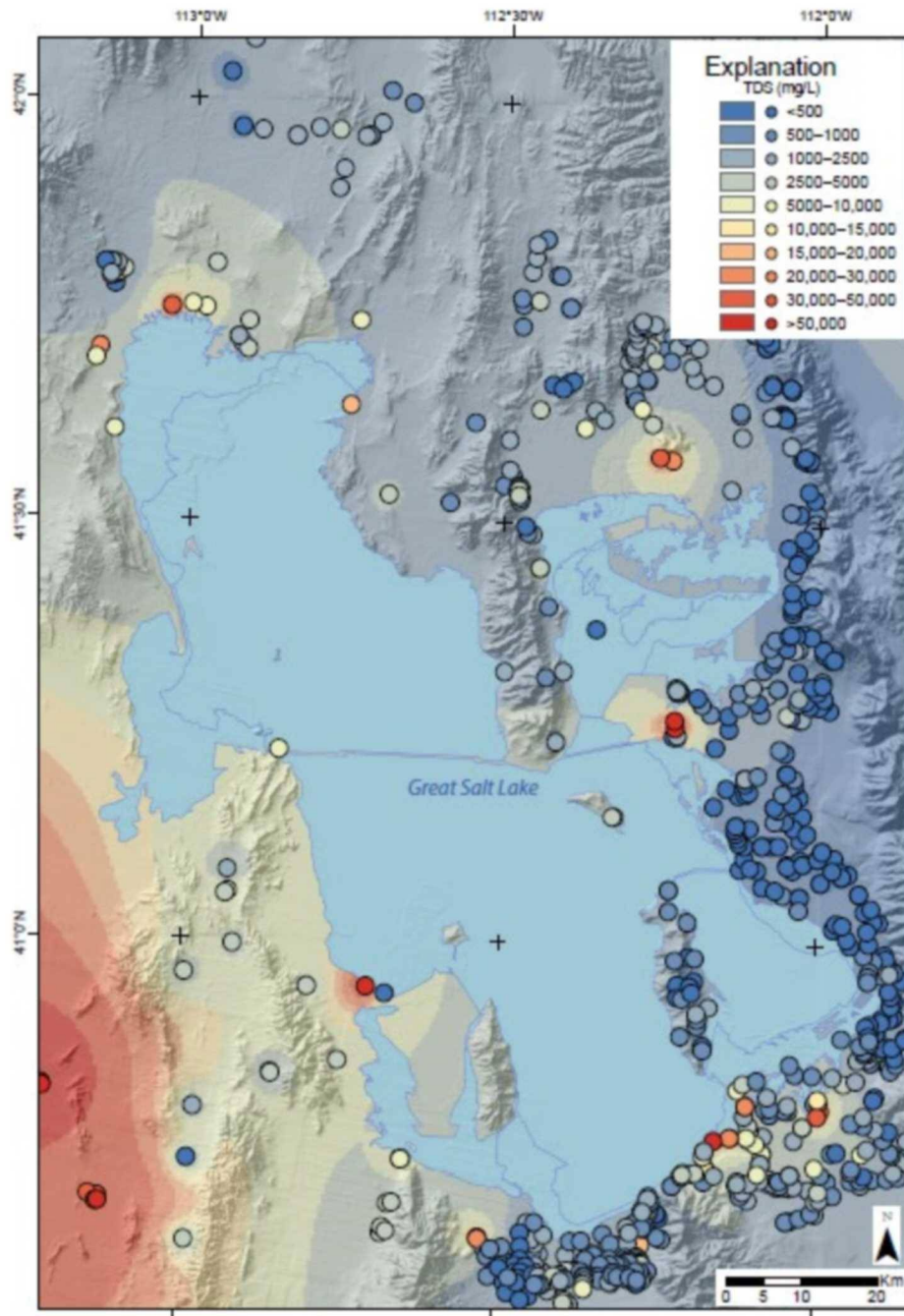
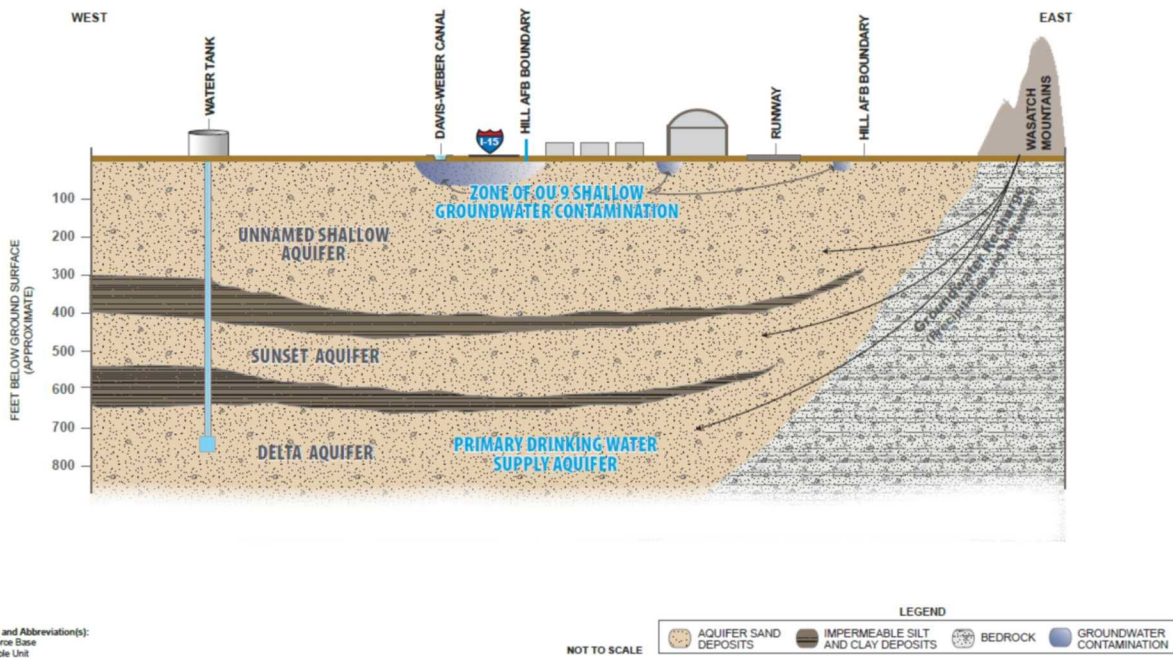


Figure 7. Interpolated total-dissolved-solids concentrations for groundwater samples collected adjacent to Great Salt Lake. Figure from Kirby et al. (2019). The blue lines in the lake indicate bathymetry and the locations of causeways.



Acronym(s) and Abbreviation(s):
 AFB = Air Force Base
 OU = Operable Unit

Figure 8. Conceptual geologic cross section beneath Hill Air Force Base showing the three aquifer systems and location of shallow groundwater contamination. Figure from EA-Engineering (2015).

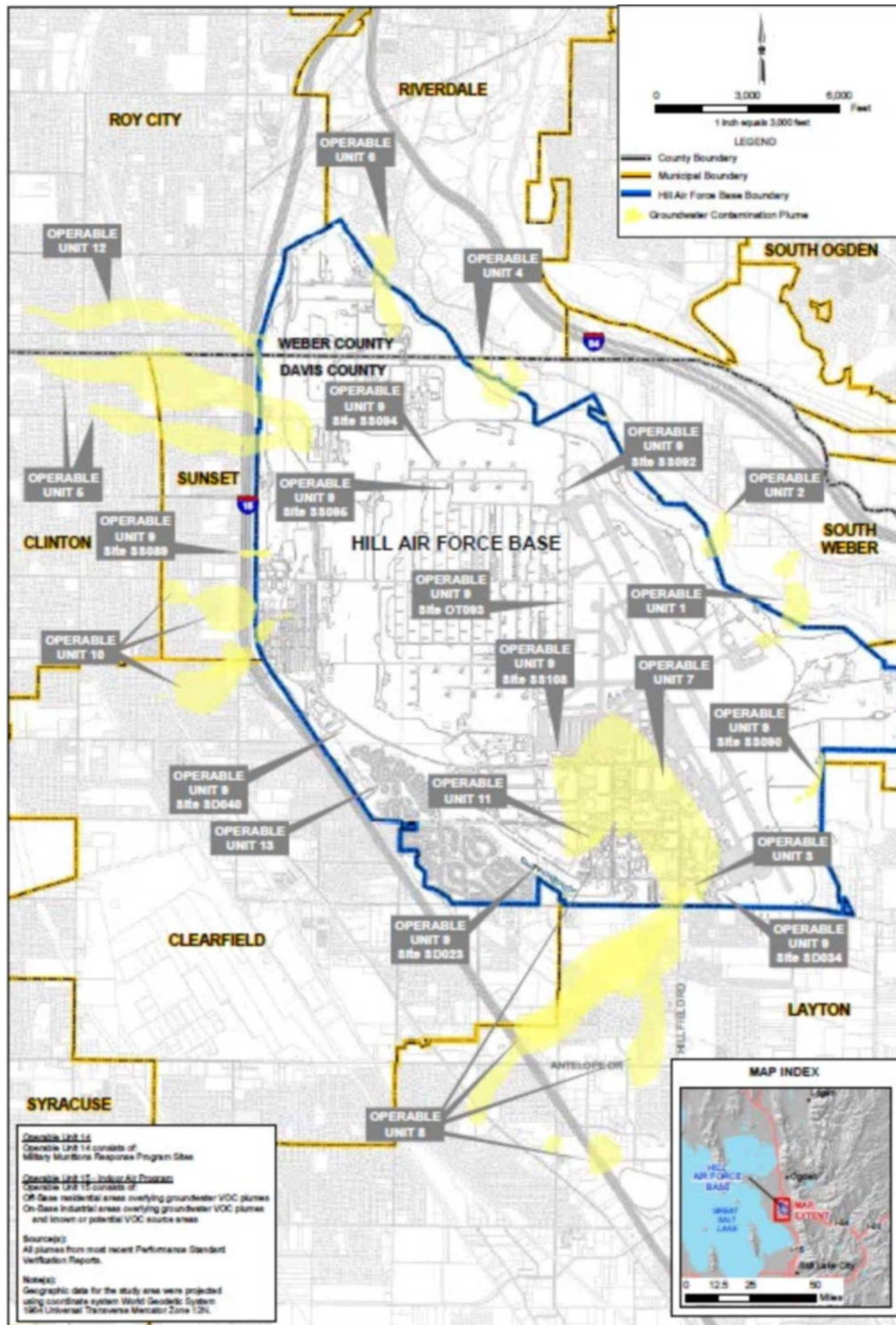


Figure 9. Map of groundwater contamination plumes on and around Hill Air Force Base. Figure from EA-Engineering (2015).

PROPOSED CLASSIFICATION

This petition seeks to classify the discharge zone of the shallow, unconfined aquifer in the east shore area of Davis County as Class IC groundwater. Class IC groundwater is considered ecologically important groundwater and is a source of groundwater discharge that is important to the continued survival of an existing wildlife habitat. Limits on increases of total dissolved solids and organic and inorganic compounds are determined to meet applicable surface water standards (<https://deq.utah.gov/water-quality/classes-utah-ground-water-quality-protection-program>).

FRIENDS of Great Salt Lake is petitioning the Utah Water Quality Board to classify the discharge zone of the shallow, unconfined aquifer in the east shore area of Davis County as Class IC, Ecologically Important Groundwater. Specifically, the area includes the shallow, unconfined aquifer overlying the discharge zone (but not the primary or secondary recharge zones) as mapped by Anderson et al. (1994) and shown in [Figure 10](#). The confined aquifers that comprise the principal drinking-water aquifer are currently classified as Class IA, Pristine, or Class IB, Drinking Water Quality ([Plate 2](#)), but the overlying unconfined aquifers have no protection. Here, we define the shallow, unconfined aquifer as groundwater at a maximum of 300 feet below ground surface, residing above a confining layer of variable depth. The shallow groundwater system overlies the deep aquifer system with a similar footprint as the deep confined aquifers (compare [Plate 2](#) and [Figure 10](#)). For example, in the Weber Delta area, the shallow groundwater system resides above the Sunset Aquifer and ranges from approximately 300 feet deep at Hill Air Force Base to 100 feet deep at the edge of Great Salt Lake ([Figures 4 and 8](#)). Farther south in the Farmington and Bountiful areas, the unconfined aquifer is approximately 100 feet deep (Clark et al., 1990).

The shallow unconfined and deep confined aquifers are directly connected to the wetlands on the east side of Great Salt Lake. Water in the confined shallow aquifer contributes to groundwater upwelling in freshwater wetlands and seeps in the lakebed of Great Salt Lake (Yidana et al., 2010). Protecting the shallow unconfined aquifers also provides further protection for the deep principal water-supply aquifers in the east shore area where the confining layer that separates the two aquifers is thin or absent and/or where vertical hydraulic gradients are not strongly upward.

The petition to classify the principal drinking-water aquifers in Davis County noted that “this classification does not apply to the shallow unconfined aquifer, which overlies the principal aquifer in much of the study area. This is technically justified by the presence of low-permeability confining layers between the shallow unconfined and deep aquifers, which act as an aquitard to protect the deep aquifer from surface contamination, and the upward vertical hydraulic gradient in ground-water discharge areas underlying much of the area where a shallow unconfined aquifer exists” (Wallace et al., 2011). This statement describes the footprint of the shallow unconfined aquifer as overlying the principal aquifer and that groundwater in the east shore area has a generally upward gradient, where groundwater contributes to surface water wetlands, streams, and Great Salt Lake.

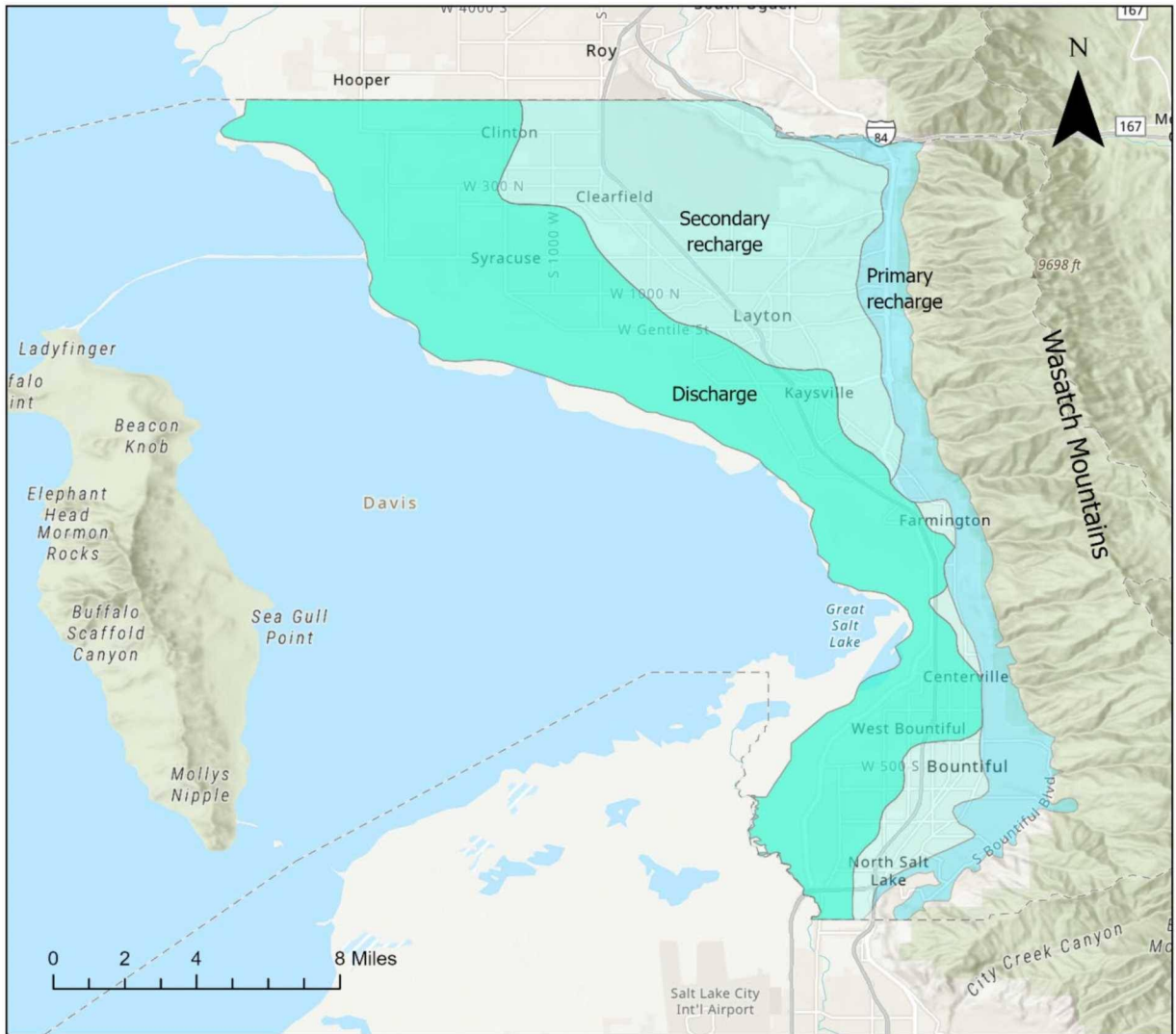


Figure 10. Map of primary recharge, secondary recharge, and discharge zones in the principal aquifer underlying the east shore of Davis County. The shallow aquifer overlying the discharge zone is the area that will be protected as part of the current petition. The recharge and discharge zones were mapped by Anderson et al. (1994).

CURRENT BENEFICIAL USES

In Davis County, groundwater from the shallow unconfined aquifer is an important source of water for the wetlands on the east side of Great Salt Lake and for diffuse seepage to Great Salt Lake. Great Salt Lake and its perimeter wetlands were declared a bird habitat of hemispheric importance by the Western Hemisphere Shorebird Reserve Network

(https://whsrn.org/whsrn_sites/great-salt-lake/). Recent estimates suggest that groundwater contributes 10%–12% of all inflow to Great Salt Lake (Bunce et al., 2022).

Groundwater discharge from the shallow aquifer to Great Salt Lake and its perimeter wetlands primarily impacts Farmington Bay, which is classified as Class 5D, and Gilbert Bay, which is classified as Class 5A in the beneficial use classification scheme. Both Farmington and Gilbert Bay have similar designated beneficial uses and both bays are protected for “waterfowl, shore birds and other water-oriented wildlife including their necessary food chain” under Utah Administrative Code R317-2-6.5. The classification systems for surface water and groundwater used by DWQ differ in that surface water classifications are primarily broken out based on how the water is used (e.g., Class 1 – Protected for use as a raw water source for domestic water systems. *See generally* R317-2-6), whereas groundwater classifications are generally broken out based on the level of TDS contained in the water (i.e., Class II groundwater has TDS levels greater than 500 mg/L but less than 3000 mg/L. *See generally* R317-6-3). An exception to the TDS level classification is Class IC – Ecologically Important Groundwater which “is a source of ground water discharge important to the continued existence of wildlife habitat” (R317-6-3.4).

WATER SUPPLY WELLS

The shallow unconfined aquifer is an important source of water, likely for agricultural and industrial use, but it is not clear to what extent water from the shallow aquifer is used for municipal water. A map of existing wells, including shallow wells, is provided in [Figure 11](#). This petition does not seek to classify specific shallow wells in Davis County. Rather, the petition seeks to protect shallow groundwater that flows to Great Salt Lake, where it is considered ecologically important.

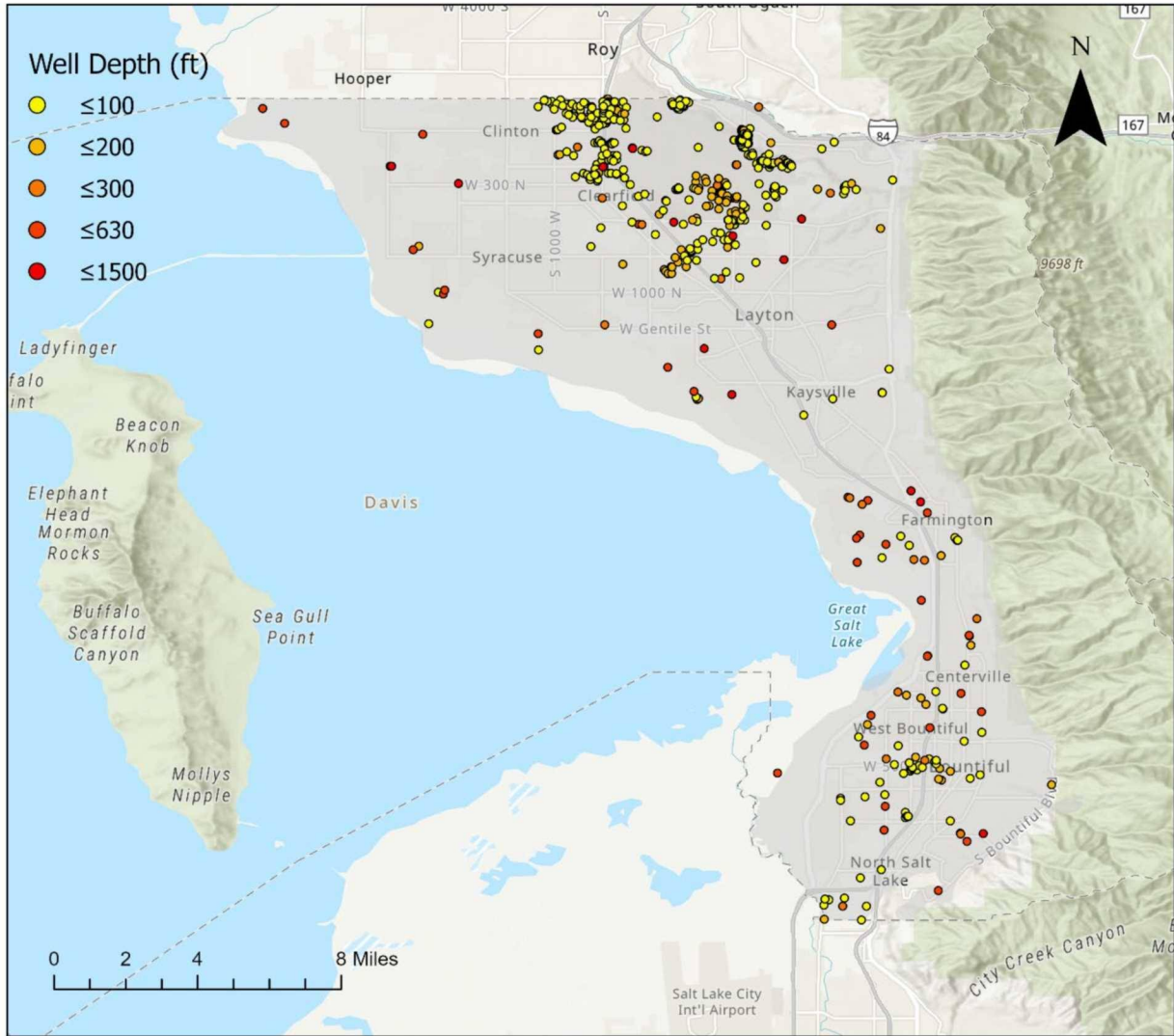


Figure 11. Map of existing wells in Davis County color-coded by depth (ft) below ground surface. Well locations and depths obtained from the Utah Division of Water Rights database (www.waterrights.utah.gov).

POTENTIAL CONTAMINANT SOURCES

Potential contaminant sources in the Davis County portion of the east shore aquifer system were described in detail in the previous groundwater petition (Wallace et al., 2011). Wallace et al. mapped 1798 potential contaminant sources including facilities related to mining, agriculture, industry, fuel storage, and junkyard/salvage areas. Additionally, there are 257 private septic systems (as of 2010) that may potentially pollute groundwater. Changes to potential contaminant sources since 2011 consist primarily of the transition of open, agricultural areas to subdivisions and the accompanying infrastructure, especially in the northwestern part of the county. The increase in population in the Davis County area has also resulted in the addition of numerous roads, including the West Davis Corridor which is located to the east of Great Salt Lake wetlands.

To update the list of potential contaminant sources for this petition, we obtained records for all drinking water source protection plans since 2011 associated with wells in the mapped discharge zone of Davis County. The request generated 76 source protection plans for the area of interest. Each source protection plan listed numerous potential contaminant sources. The compiled list includes 1411 potential contaminant sources, and is included as [Table 1](#).

EXISTING POLLUTION SOURCES

Existing pollution sources include contaminants that have been documented and/or are currently being treated. As described in Wallace et al. (2011), known sources of pollution exist in the Davis County part of the east shore aquifer system. In northern Davis County, groundwater contamination plumes with concentrations of organic solvents such as tetrachloroethylene (PCE)

and trichloroethylene (TCE) exceeding drinking water quality standards (EPA, 2022) have been identified in the shallow unconfined aquifer in and around Hill Air Force Base with ongoing remediation (Dalpiaz et al., 1989; EA-Engineering, 2015). In southern Davis County, a groundwater contamination plume of PCE exists in the Five Points area of Woods Cross and is currently undergoing remediation

(<https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0802654#bkgground>).

GROUNDWATER FLOW DIRECTION

Groundwater flow in the east shore area is generally westward from the Wasatch Range towards Great Salt Lake (Clark et al., 1990), as shown in [Figure 12](#).

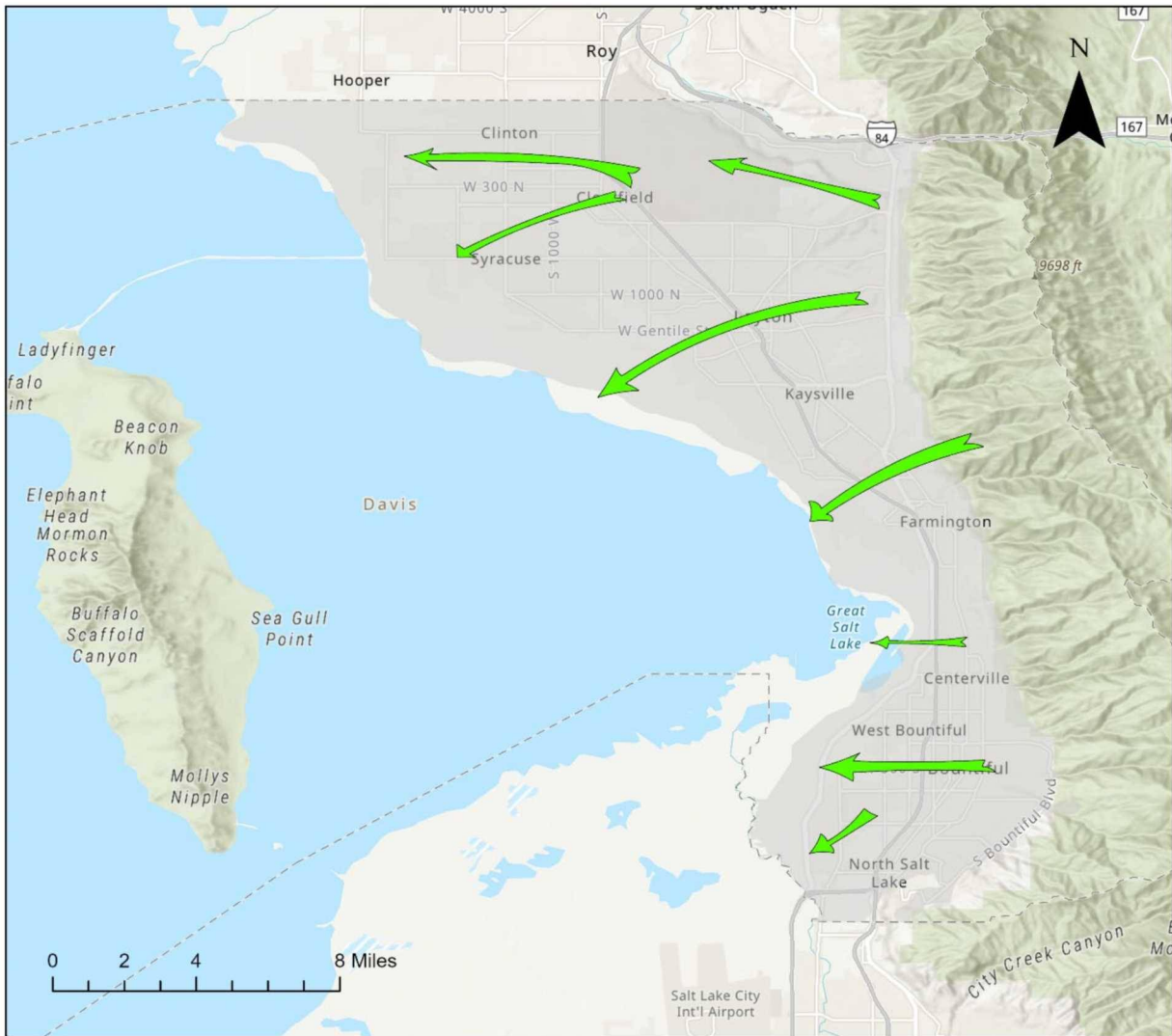


Figure 12. Map of groundwater flow direction in the shallow aquifer underlying Davis County, based on data in Clark et al. (1990).

CONCLUSIONS

The shallow unconfined aquifer system in the east shore area of Davis County provides critical water flow to bird habitats in Great Salt Lake and adjacent wetlands. Groundwater classification is a tool that may be used to manage potential groundwater contamination sources

and protect the quality of groundwater resources in Utah. The deep confined aquifer in the east shore of Davis County contains groundwater with generally low total-dissolved-solids concentrations (<500 mg/L) with isolated areas having elevated total-dissolved-solids concentrations (>500 mg/L) that may contribute salts to the shallow aquifer. The shallow aquifer at Hill Air Force Base is contaminated with an organic solvent plume exceeding drinking water standards that is currently undergoing remediation and would not have an effect on the waters to be classified in this petition. Classifying the discharge zone of the shallow, unconfined aquifer as IC, Ecologically Important Groundwater, would provide tools for protecting this groundwater resource for wildlife habitat and would also further protect the deep underlying principal drinking water aquifer.

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