April 7, 2025

Idaho Department of Water Resources
PO Box 83720
Boise, Idaho 83720-0098

To Whom It May Concern:

Thank you for allowing us to submit comments during this process. My name is Nathan Garner. I am a young farmer who resides in the Raft River Valley. Because I have grown up here, I am aware of the water concerns and issues that we have. I farm about 2,000 irrigated acres and serve as a board member on the Raft River Groundwater District. I also serve as a board member and participant in the Raft River Irrigation District and Raft Recharge Group.

I want to begin by saying, we understand that dramatic changes need to happen. Because many of us have farmed in this community so long, I would like to say that we have seen the water consumption increase, but efficiency also increase. This valley is very proactive in utilizing the water resource as effectively as we can. For this reason, we want to make sure that the numbers presented to us are accurate and proven correct. I believe that they are not correct. I will give three points for your consideration in support of my argument.

1. **Hydrogeologic Framework:** In the McVay study that has been presented along with previous studies, we have found inaccurate and contradicting information that we would like to have addressed. (I will attach this study to my email). We know that there were 12 new wells (slide 4) drilled across the valley over the past couple years to help in understanding the makeup of our hydrogeologic framework. On slide 6, we can see how complicated and abruptly different each section of the valley is. I do not understand how IDWR can conclusively say that 80% of our water us coming from underflow from the river to our valley given the sporadic changes in the subsurface. On slide 7, he addresses the water quality. The water quality in all the of wells changes dramatically from every location. This must mean that not all the water is coming from the same locations and varies underground. If we are going to accept an 80% impact, there must be some correlation. We do not see any correlation.

2. **Groundwater Flow:** For my next point, I want to refer to slides 9, 10, 11 and 12. It is quoted that “[the] Groundwater historically flowed from the Raft River Basin into the ESPA.” On slide 11, we are shown a map with elevations. We can see that the Snake River is currently at 4175 to 4200 above sea-level. Because of our declining water levels, pumpers approximately 13 miles to the south, or Idahome Road, could

possibly be pumping from a combination of water from the river or water from our aquifer. We have large amounts of recharge occurring in this area. This only accounts for approximately 45,000 acre feet that could *potentially* be influenced from the ESPA. Based on my very simple and possibly flawed analysis, common sense suggests that there is a massive discrepancy between my suggested 45,000 acre feet and IDWR stating that 111,000 acre feet are directly affecting the ESPA.

3. **Declining Water Levels:** I believe that there is limited pumping from the ESPA because (slide 11) we can see that our declining water levels have not stabilized. If we were being supplemented by some external source, there should be a "leveling off" of our declining levels. We do not see this, therefore additional investigation needs to occur.

I understand that many of these numbers are difficult to calculate and understand. The challenge that we, as groundwater users, have is that there seems to be some key decisions made by information that has not yet been proven or accurate. For example, some of these numbers were taken from wells on the far north end of the valley, rather than considering the entire valley. For these reasons, we do not feel comfortable with accepting the data as it has been presented.

It is difficult to review and express such complicated information over a letter, so please don't hesitate in reaching out to myself or many others in the valley to discuss our options moving forward. I appreciate your time and consideration on this topic. Our experience with the officials at IDWR has been nothing short of professional and positive.

Sincerely

Nathan Garner

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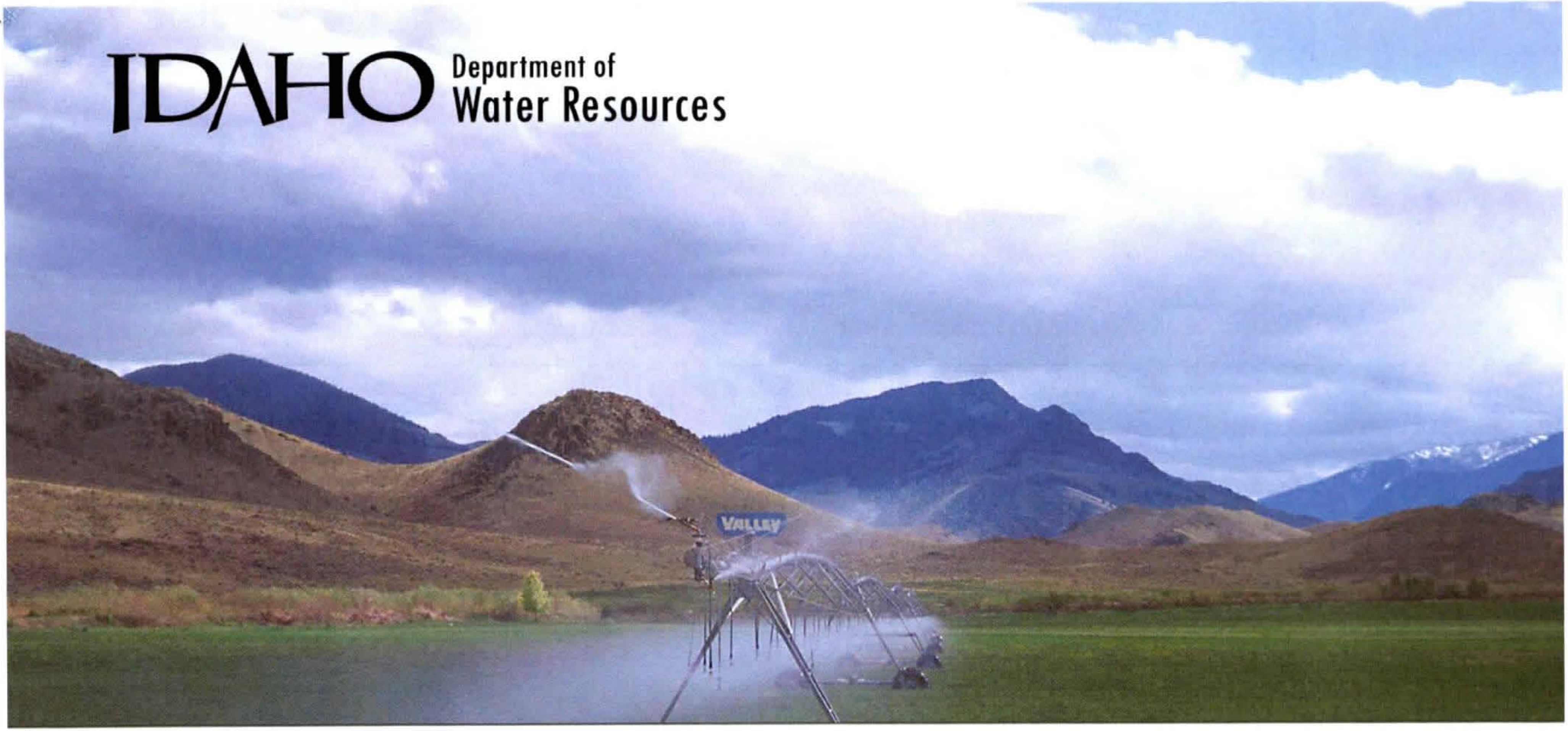
Declo, ID 83323

garnerfarms5@gmail.com
208-670-5521

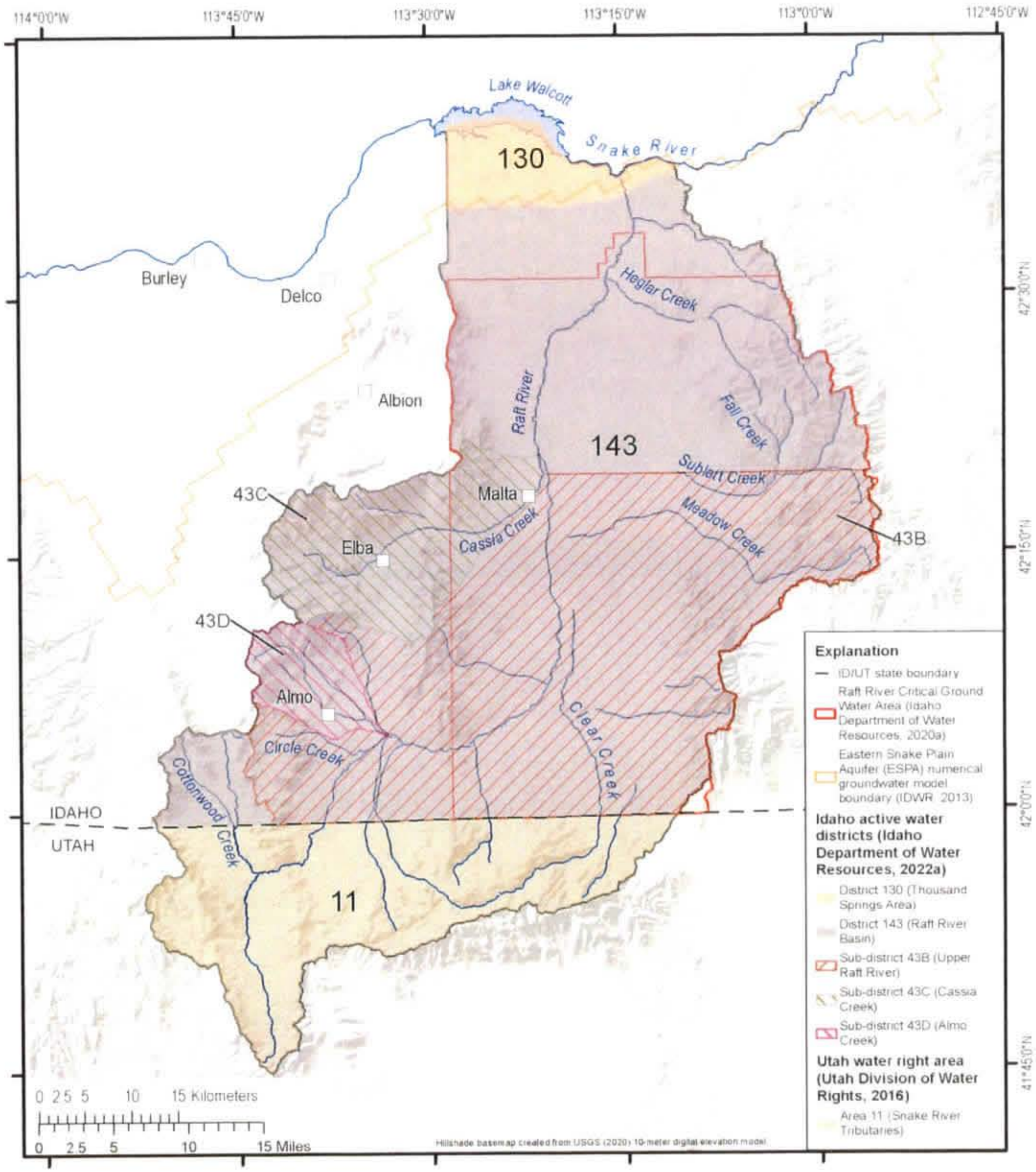


Raft River Hydrologic Investigation

Presented by Mike McVay, P.E., P.G. Alexis Clark

January 28, 2025

IDWR



Raft River Basin Hydrogeologic Investigation

Overview

- Tributary to the ESPA
- Critical Ground Water Area (since 1963)

Watershed scale investigation – ID-UT

- Phase 1 – data compilation and review, data gaps evaluation, support for IDWR-led field data collection
- Phase 2 – hydrogeologic framework and groundwater budget

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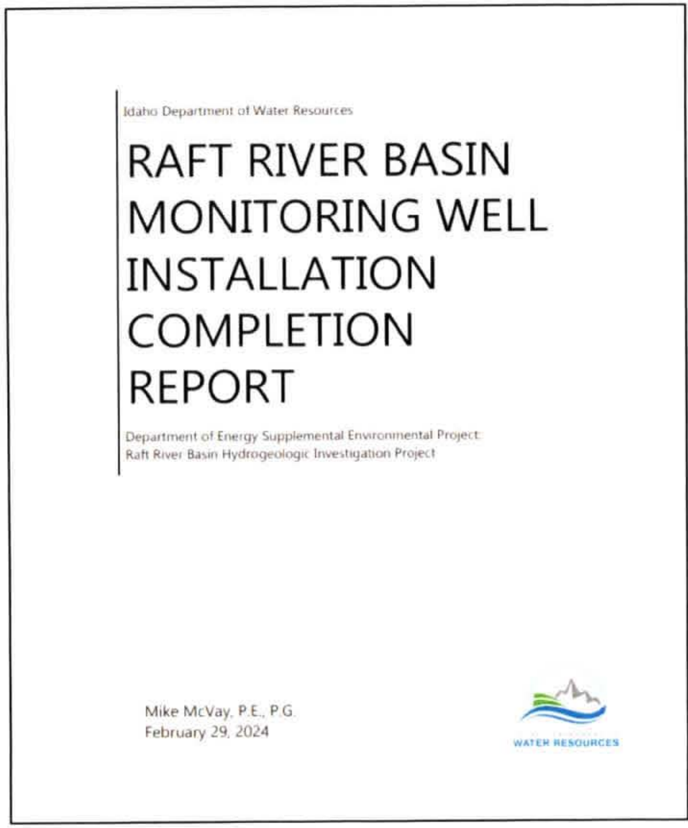
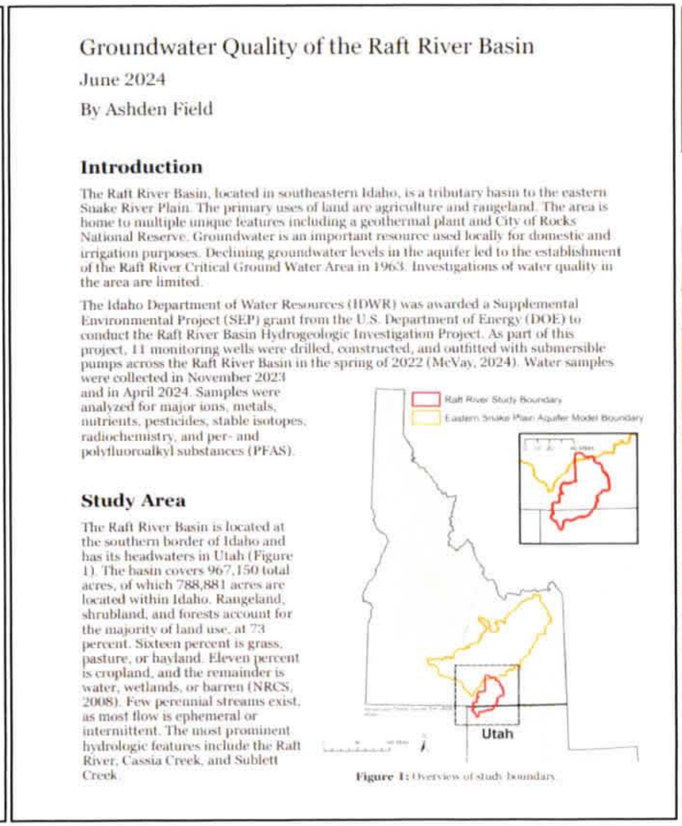
Raft River Hydrologic Investigation


Idaho Department of Water Resources

RAFT RIVER BASIN MONITORING WELL INSTALLATION COMPLETION REPORT

Department of Energy Supplemental Environmental Project: Raft River Basin Hydrogeologic Investigation Project

Mike McVay, P.E., P.G.
February 29, 2024


Groundwater Quality of the Raft River Basin

June 2024

By Ashden Field

Introduction

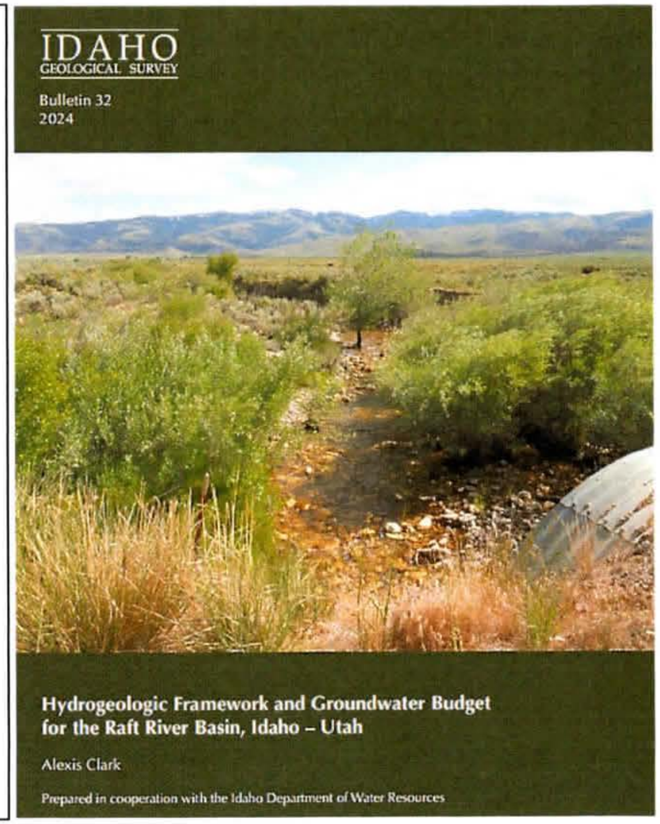
The Raft River Basin, located in southeastern Idaho, is a tributary basin to the eastern Snake River Plain. The primary uses of land are agriculture and rangeland. The area is home to multiple unique features including a geothermal plant and City of Rocks National Reserve. Groundwater is an important resource used locally for domestic and irrigation purposes. Declining groundwater levels in the aquifer led to the establishment of the Raft River Critical Ground Water Area in 1963. Investigations of water quality in the area are limited.

The Idaho Department of Water Resources (IDWR) was awarded a Supplemental Environmental Project (SEP) grant from the U.S. Department of Energy (DOE) to conduct the Raft River Basin Hydrogeologic Investigation Project. As part of this project, 11 monitoring wells were drilled, constructed, and outfitted with submersible pumps across the Raft River Basin in the spring of 2022 (McVay, 2024). Water samples were collected in November 2023 and in April 2024. Samples were analyzed for major ions, metals, nutrients, pesticides, stable isotopes, radiochemistry, and per- and polyfluoroalkyl substances (PFAS).

Study Area

The Raft River Basin is located at the southern border of Idaho and has its headwaters in Utah (Figure 1). The basin covers 967,150 total acres, of which 788,881 acres are located within Idaho. Rangeland, shrubland, and forests account for the majority of land use, at 73 percent. Sixteen percent is grass, pasture, or hayland. Eleven percent is cropland, and the remainder is water, wetlands, or barren (NRCS, 2008). Few perennial streams exist, as most flow is ephemeral or intermittent. The most prominent hydrologic features include the Raft River, Cassia Creek, and Sublett Creek.

Figure 1: Overview of study boundary



Project was funded by the Idaho Water Resources Board and the US Department of Energy. Work was a collaboration between the Idaho Geological Survey and the Idaho Department of Water Resources with support from the University of Idaho.

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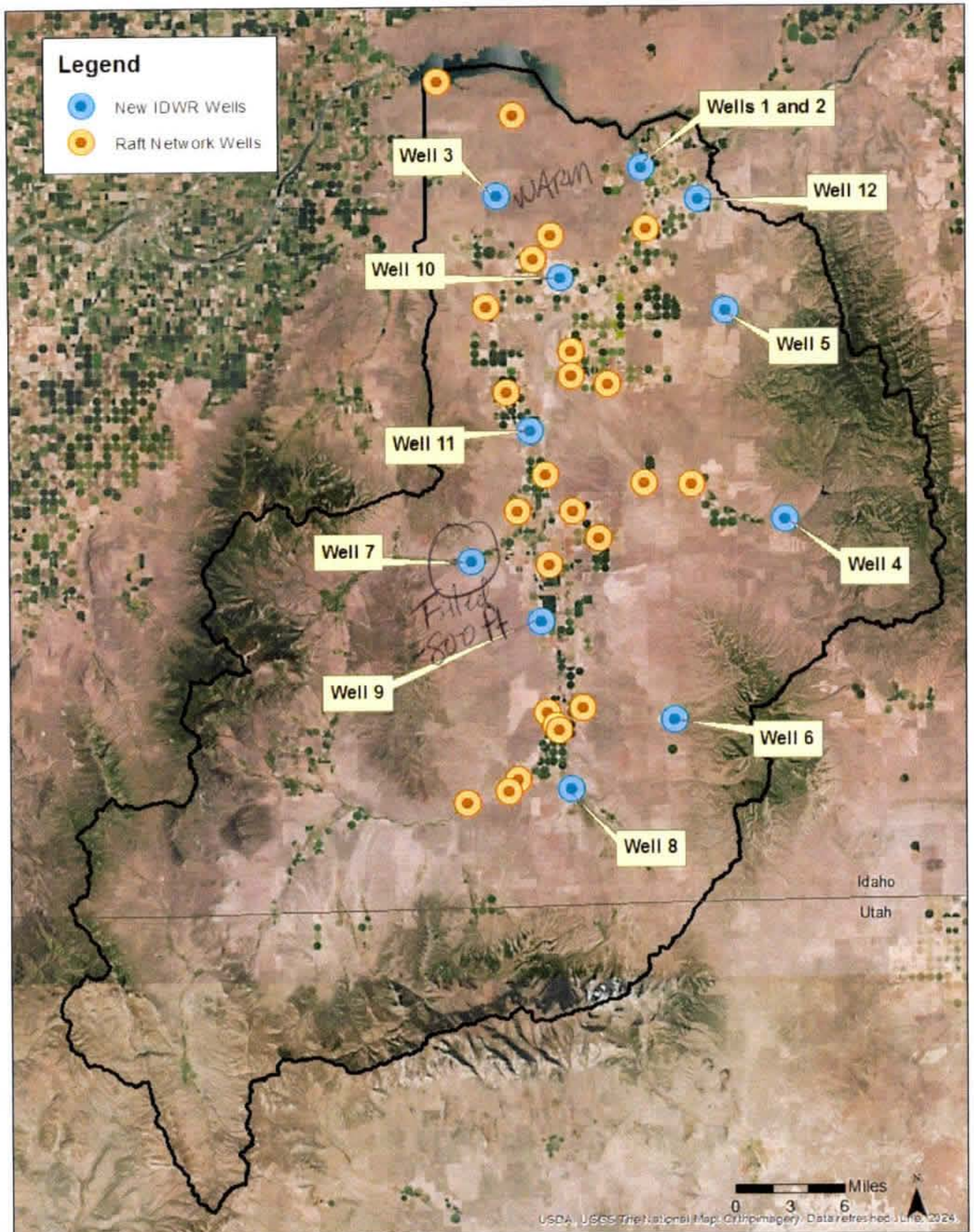
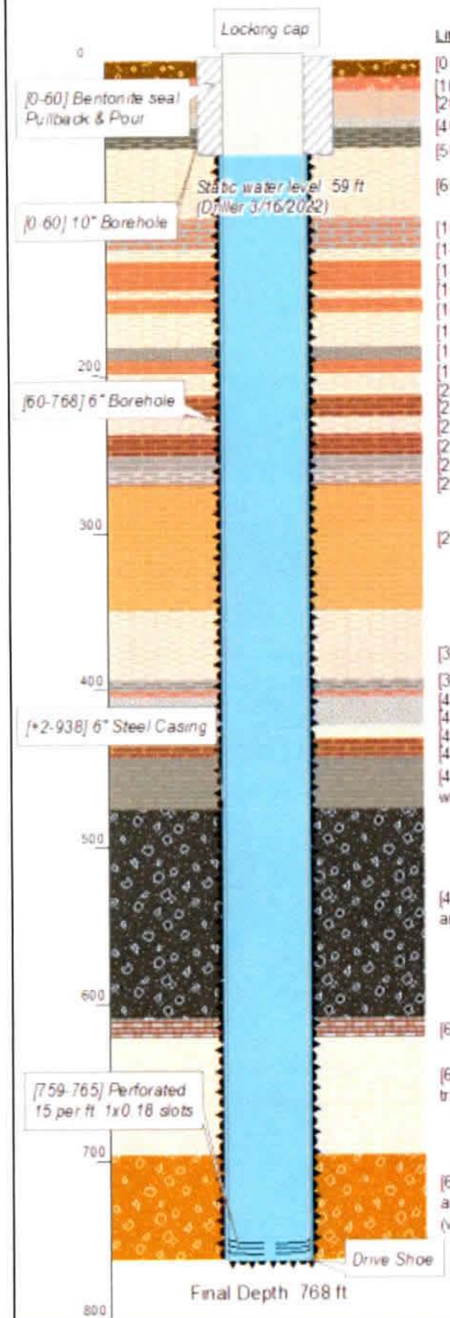
New Wells Drilled



IDWR installed 12 new wells as part of the investigation.

Locations were chosen to compliment the existing groundwater monitoring network and to provide geologic data throughout the basin.

Raft Well #2



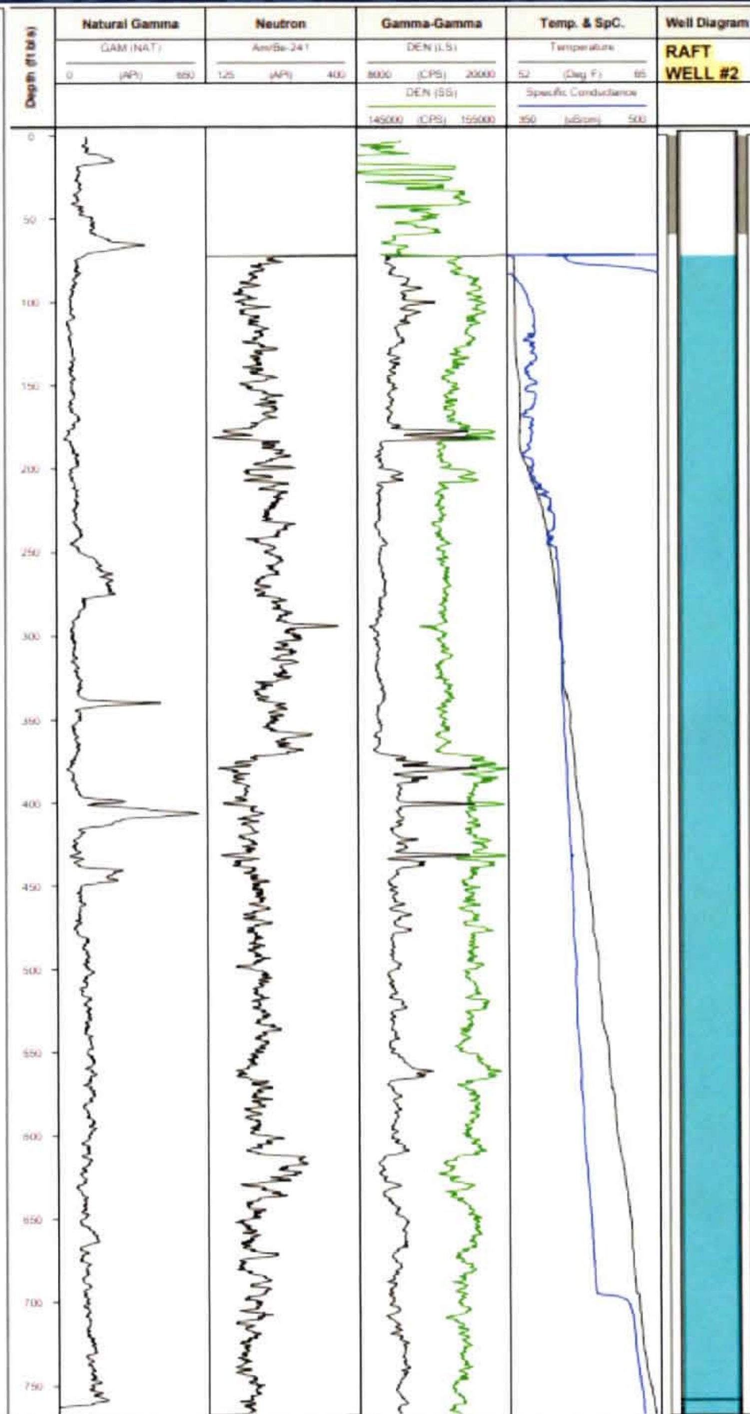
Lithologic Description

[0-10] Topsoil
[10-20] Poorly sorted multicolored gravel and sand
[20-40] Light-brown to Tan silty fine sand some shells
[40-50] Gray fine sand with silty clay and shell fragments
[50-65] Dark gray silty clay trace shells petrified wood
[65-100] Tan sticky clay
[100-140] Light to dark tan sandstone with sand
[140-145] Tan sticky clay
[145-160] Dark tan sandstone
[160-165] Tan sandy clay
[165-170] Dark tan sandstone
[170-190] Tan sticky clay with sand
[190-195] Dark gray sand
[195-200] Dark tan sandstone
[200-215] Light brown to tan sandy clay
[215-225] Brown sandstone
[225-235] Tan sticky clay
[235-250] Brown sandstone
[250-260] Gray sandstone with gravel
[260-275] Gray clay
[275-365] Tan to brown sandstone wi
[365-395] Tan sticky clay with sand
[395-400] Gray sticky clay with sand
[400-405] Light brown clay trace shel
[405-420] Gray sand and clay
[420-425] Tan sticky clay
[425-435] Light brown sandstone
[435-470] Dark gray siltstone with dark gray clay and sand
[470-610] Coarse basaltic sand and multicolor gravel
[610-620] Multicolored sandstone gravel with clay
[615-695] Multicolored sandstone trace clay
[695-768] Weathered orange-brown sandstone and light gray rhyolitic sand (very high water production zone)

Site Location Information
Lat/Long 42.590960 -113.235008
PLS 09S 28E Sec 31
Cassia County

Tag No. D0092852
Drilling Permit No. 904141
Static Water Level 59.0 ft BGS
Completed Depth 768 ft

Well drilled by: Cold Steel Mechanical
Dual Rotary
Start Date 3/11/2022
End Date 3/16/2022



Lithology

Zero reference top of 6-inch casing (depth in feet below land surface (ft bls))

General construction information includes:

6.0-in. steel casing set 2.13 ft AGL to 759 ft BLS
6.0-in. perforated steel casing set 759 to 765 ft BLS
6.0-in. steel casing set 765 to 768 ft BLS

Cement grout estimated depth: land surface to 60 ft BLS

Water level measured at 71.77 ft BLS @ 10:10 on 11/15/2022

Generalized Lithology

Depth - Unit
0 to 10 - soil, sand, and clay
10 to 17 - clay with sand
17 to 48 - sand with gravel
48 to 59 - silt and sand
59 to 70 - clay
70 to 85 - sand and gravel
85 to 176 - sandstone
176 to 184 - sand
184 to 200 - sandstone
200 to 210 - sand
210 to 250 - sandstone
250 to 278 - clay
278 to 338 - sandstone
338 to 344 - clay
344 to 398 - sandstone
398 to 415 - clay
415 to 440 - sandstone
440 to 449 - clay
449 to 480 - silt and sand
480 to 610 - sand and gravel
610 to 722 - sandstone
722 to 768 - sand

Note: Lithology was developed based on driller report and geophysical data. Changes in units were inferred based on geophysical data.

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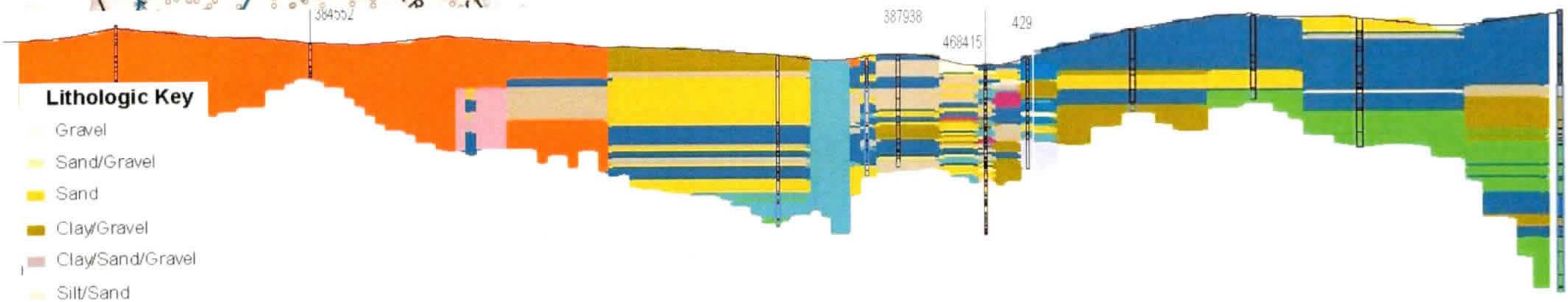
Hydrogeologic Framework



The hydrogeologic framework describes the subsurface. It provides the shape and sized of the aquifer and what the aquifer is composed of.

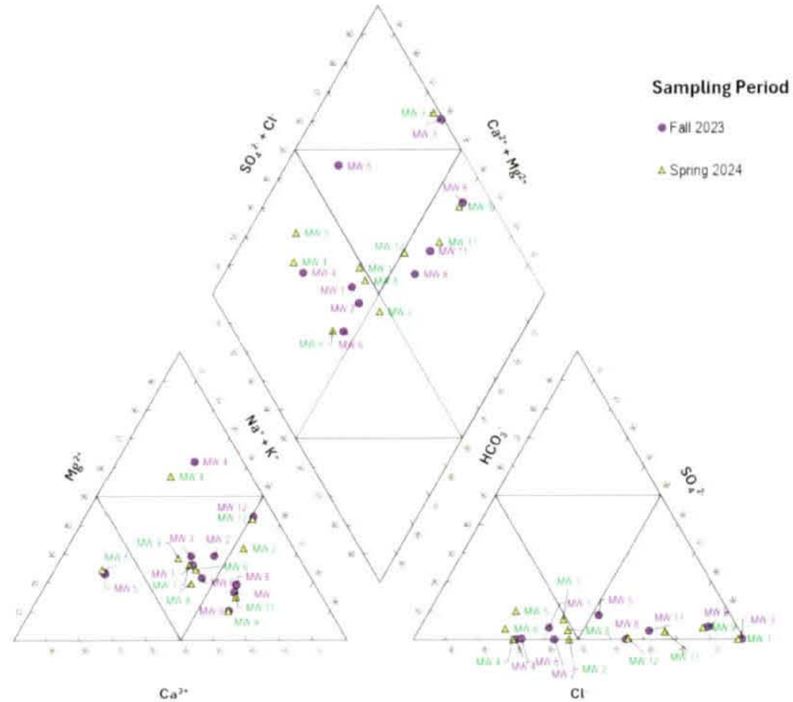
The cross-section trace is WE1-WE1' across the mouth of the basin.

Water Quality

Parameter type	Parameter
Physical Parameters	Alkalinity (mg/L) Dissolved Oxygen (mg/L) pH Specific Conductance (µS/cm) Total Dissolved Solids (mg/L) Water Temperature (°C)
Major Ions and Metals	Antimony (mg/L) Arsenic (µg/L) Beryllium (mg/L) Cadmium (mg/L) Calcium (mg/L) Chloride (mg/L) Cobalt (mg/L) Copper (µg/L) Fluoride (mg/L) Iron (mg/L) Magnesium (mg/L) Manganese (mg/L) Molybdenum (mg/L) Nickel (mg/L) Potassium (mg/L) Selenium (µg/L) Silica (mg/L) Sodium (mg/L) Sulfate (mg/L) Thallium (µg/L) Uranium (µg/L)
Nutrients	Ammonia (mg/L) Nitrate (mg/L) Total Phosphorus (mg/L)
Stable Isotopes	δ2H (‰) δ18O (‰)
Radiochemistry	Gross Alpha Gross Beta
PFAS	25 PFAS analytes

Sampled 11 new wells in fall 2023 and spring 2024; tested for 35 parameters to characterize the dominant water types, assess water quality, and identify changes throughout the year.

No Maximum Contaminant Levels (MCLs) were exceeded, but several secondary contaminant levels were exceeded (manganese, chloride, iron, total dissolved solids (TDS)).



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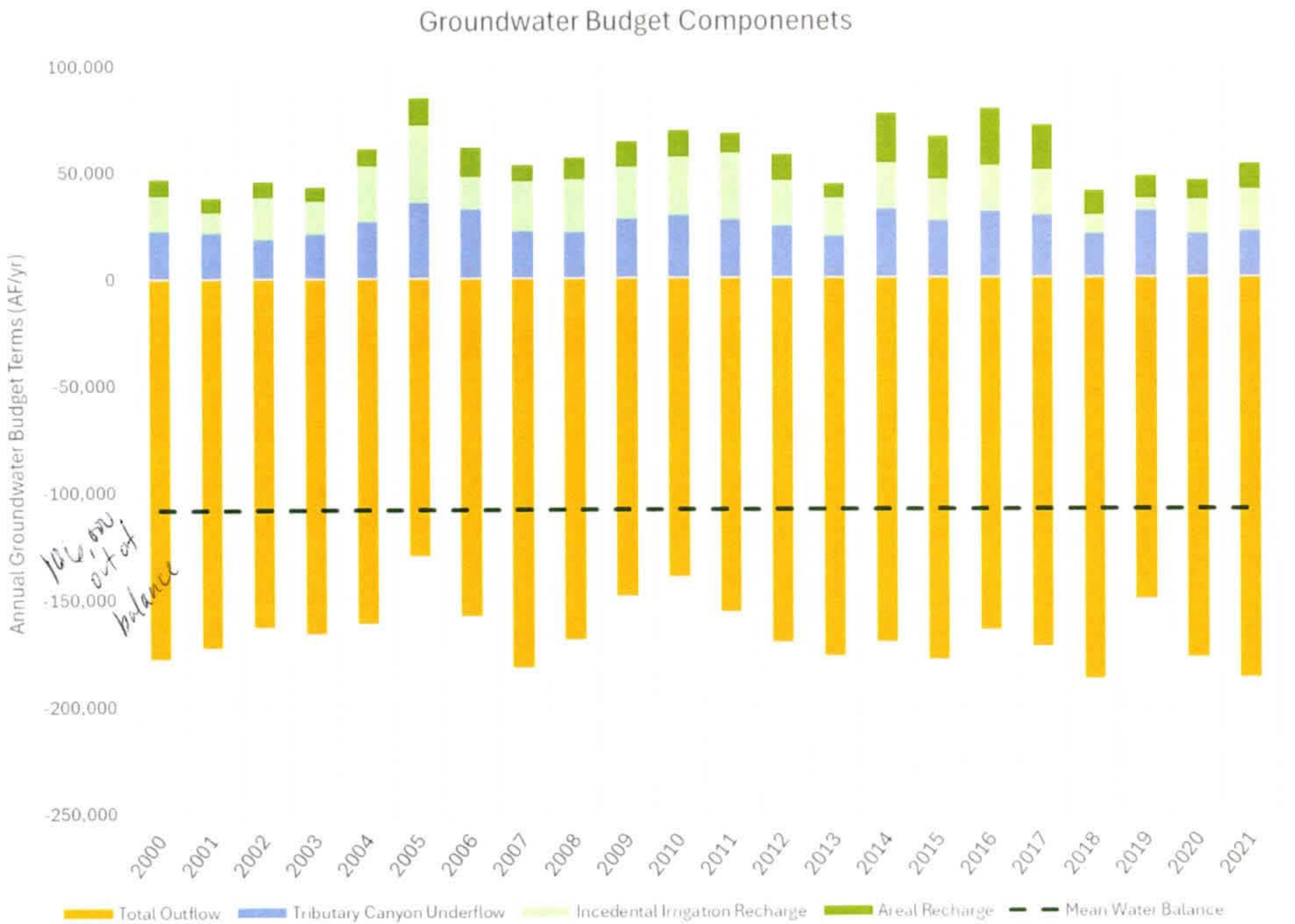
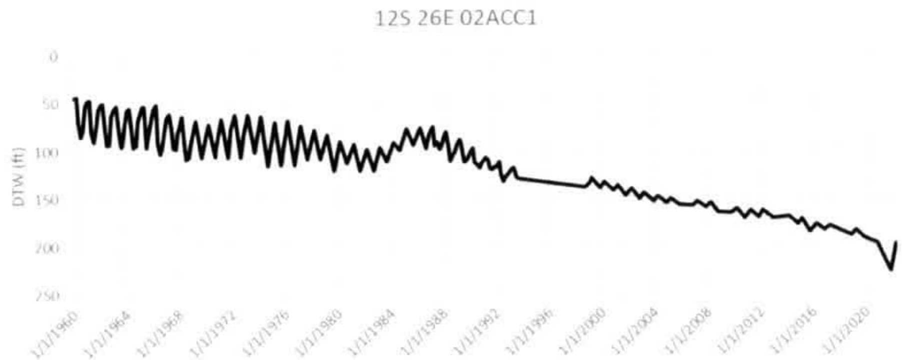
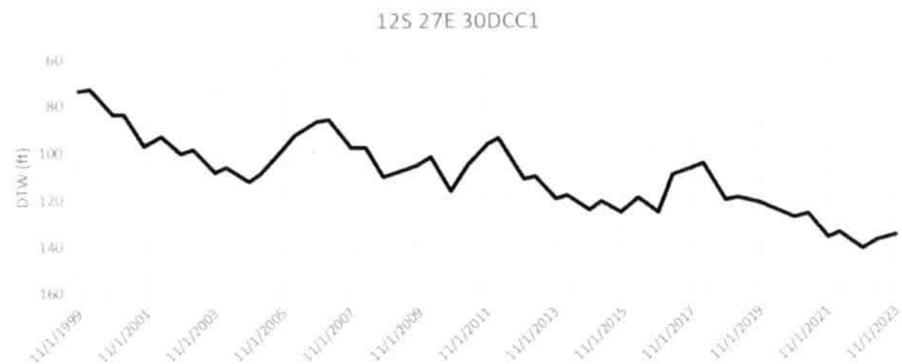
Water Budget

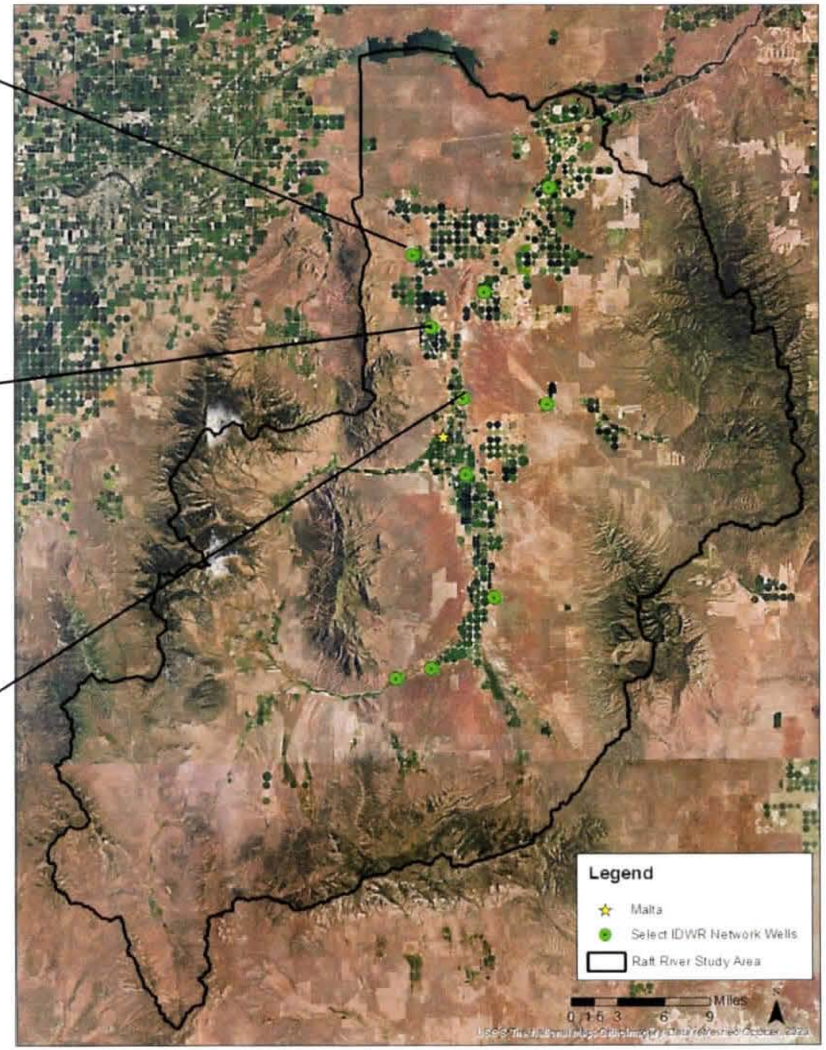


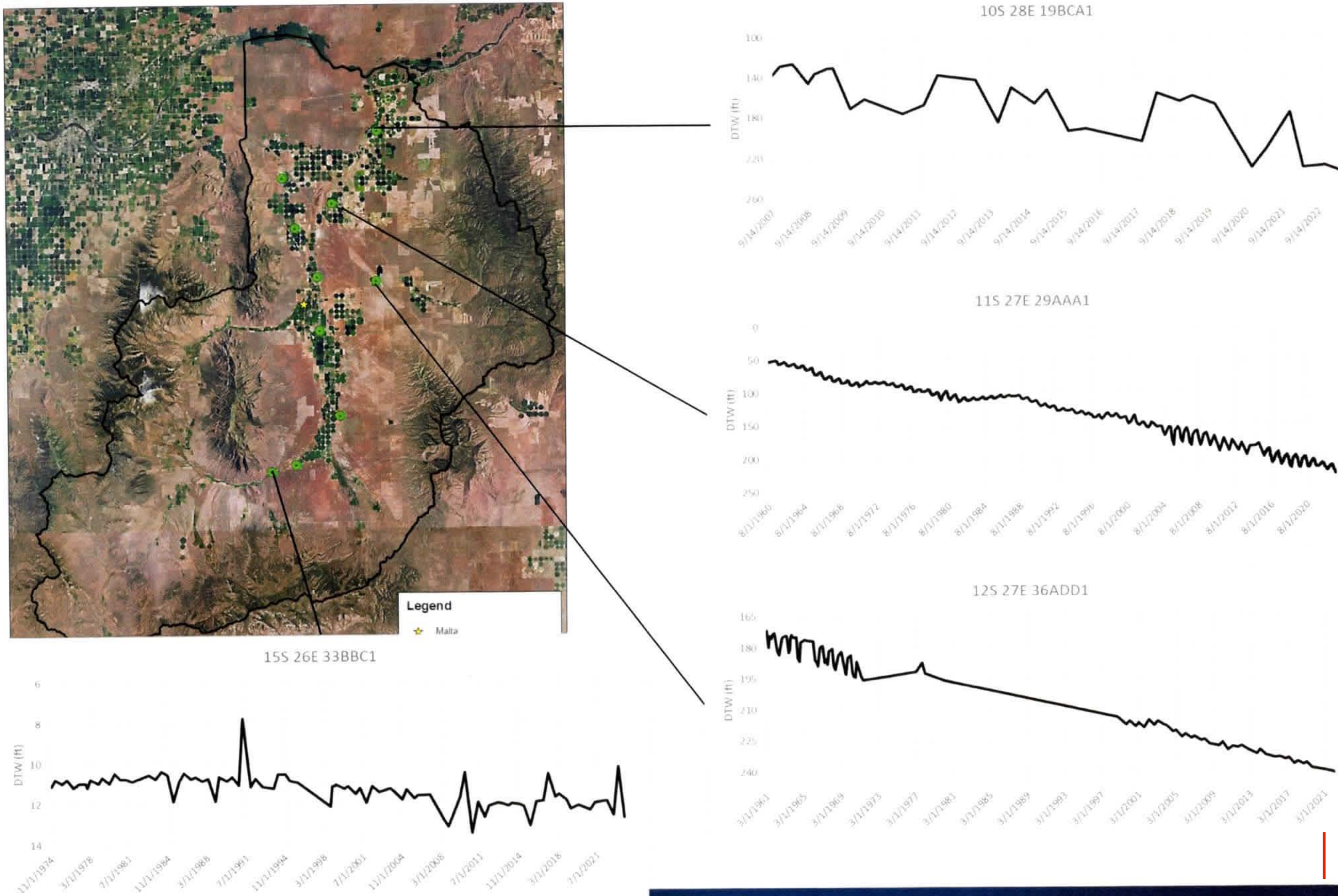
The water budget calculations illustrate that there is more consumptive use than recharge. Note that the "Total Outflow" in the chart represents primarily groundwater pumping to support consumptive use.

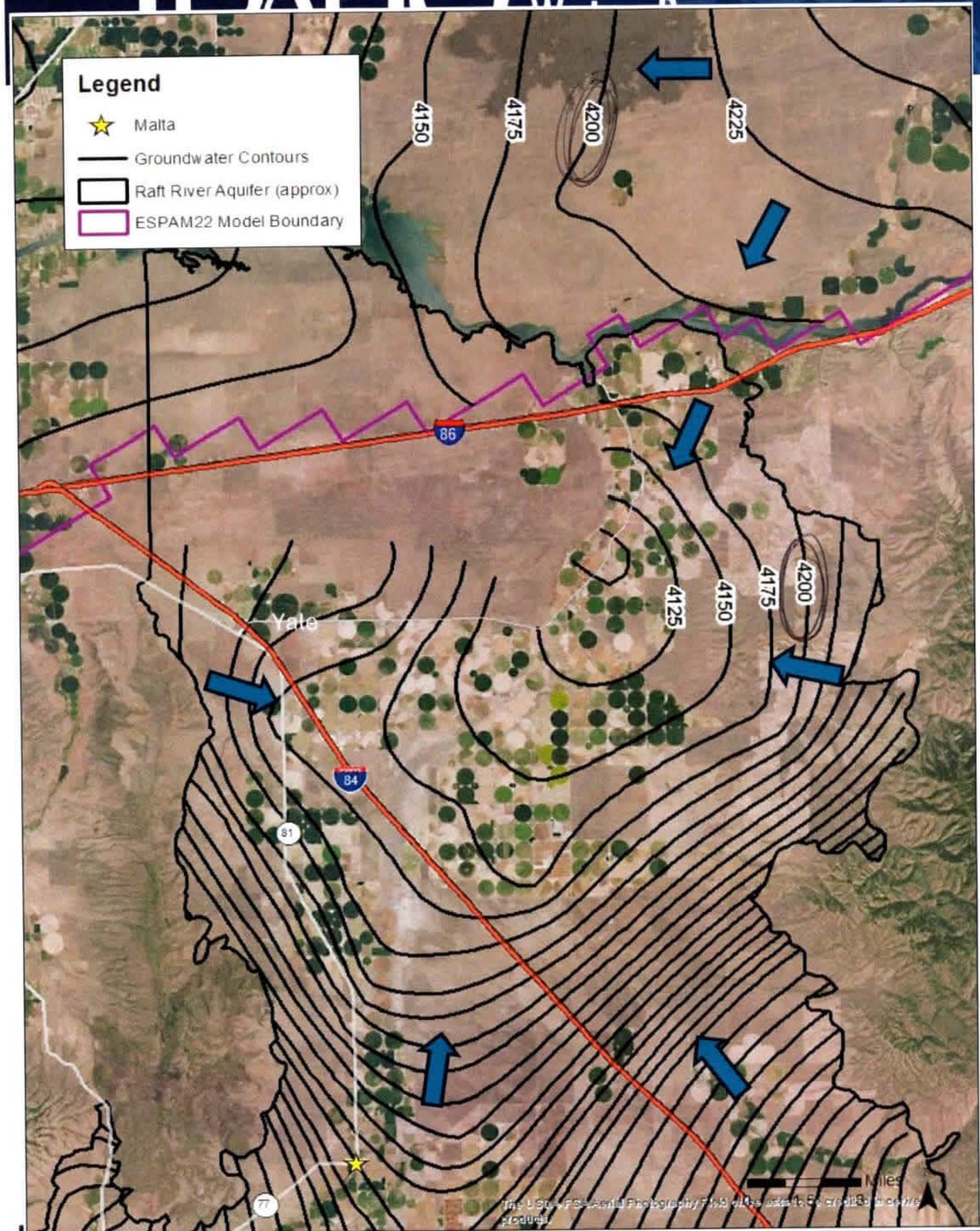
Declining Water Levels








10S 28E 19BCA1
DTW (ft)
11S 27E 29AAA1
DTW (ft)
12S 27E 36ADD1
DTW (ft)
15S 26E 33BBC1
DTW (ft)
Legend
Malta



Groundwater Flow has Reversed Direction

Groundwater flows from higher head to lower head (i.e., from shallower water levels to deeper water levels).

It has reversed.

Groundwater historically flowed from the Raft River Basin into the Eastern Snake Plain Aquifer (ESPA).

Water levels in the Raft River basin have been declining over the last 70 years and water levels in the northern part of the basin are now lower than in the ESPA, and groundwater now flows from the ESPA into the Raft River Basin.

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Underflow Calculation

Year	Annual Residual (Inflows -Outflows) full aquifer extent	Annual Aquifer Storage Change partial aquifer extent	Groundwater Underflow to the ESPA mixed aquifer extent
2000	-131,100	-7,200	-123,900
2001	-134,800	-46,300	-88,500
2002	-117,500	-19,900	-97,600
2003	-123,000	-36,300	-86,700
2004	-100,400	-43,800	-56,600
2005	-45,500	-13,900	-31,600
2006	-96,700	21,200	-117,900
2007	-129,400	17,800	-147,100
2008	-112,700	-26,200	-86,500
2009	-85,400	-	-
2010	-71,000	-	-
2011	-88,700	5,500	-94,200
2012	-112,600	4,900	-117,500
2013	-133,200	-59,600	-73,500
2014	-93,900	-30,100	-63,800
2015	-112,700	-28,100	-84,600
2016	-86,300	-9,200	-77,100
2017	-101,700	35,300	-136,900
2018	-147,700	-10,000	-137,700
2019	-103,200	-31,000	-72,200
2020	-132,500	-	-
2021	-134,400	-	-
Mean (2000-2019)	-106,400	-15,400	-94,100
Min (2000-2019)	-147,700	-59,600	-147,100
Max (2000-2019)	-45,500	35,300	-31,600

NOT REAL

The water budget is negative, and that negative value incorporates both change in aquifer storage and change in underflow to the ESPA.

The change in storage was calculated for only part of the aquifer; therefore, the resulting volume of underflow from the ESPA is an estimate that does not include all of the necessary storage change information.

IDWR is currently working to improve both the change in storage and underflow volumes.

Sy = 0.05 for storage and underflow

Suggestions for Future Work

1. Future Data Collection
   a) Additional geologic mapping
   b) Additional monitoring wells
   c) Synoptic water level measurement events
   d) Installation of AgriMet weather station in the southern part of the basin.

2. Focused Data Collection Programs
   a. Seepage surveys for Lake Walcott and Sublett Reservoir
   b. Aquifer testing to improve aquifer properties
   c. Establish a survey program to monitor subsidence
   d. Establish a streamflow monitoring program

Conclusion

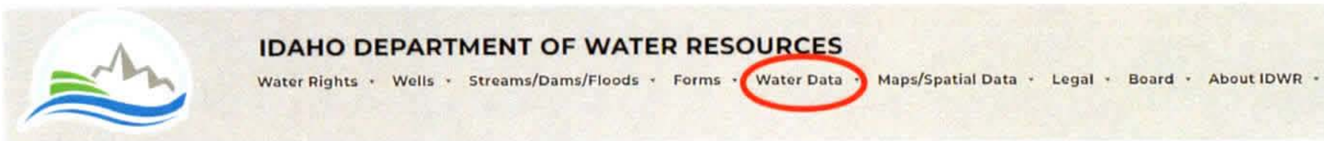
This study should be viewed as a first step:
Some of the estimates are more uncertain than others (e.g., recharge from tributary canyons and aquifer storage change) and more data collection/analyses will help to improve the estimates. Despite the uncertainty, the study provides important information about the aquifer.

IDWR is continuing this work:
IDWR is currently working to improve aquifer storage changes and the flow of groundwater from the ESPA. Other water-budget parameter estimates will be refined in the future.

More Information

To find all the information IDWR has on the Raft Basin water resources:

1. Go to the IDWR website at https://idwr.idaho.gov/
2. Click on the “Water Data” tab near the top of the page.



More Raft Basin Info, cont'd

3. After selecting "Water Data", click on "Hydrologic Projects"

Water Data

Drought Declarations

View drought emergency declarations issued by IDWR and approved by the Idaho governor which apply only to the administrative processing of water right applications.

Groundwater Levels

Learn how IDWR's Hydrology Section analyzes data to determine regional groundwater level trends, evaluates groundwater availability for new water uses, and identifies areas with declining groundwater levels that might need administrative action.

Groundwater Quality

Discover how the Statewide Groundwater Quality Monitoring Program provides valuable information about Idaho's groundwater quality to private citizens, consulting companies, and governmental entities.

Hydrologic Projects

Review the comprehensive aquifer planning and management effort conducted by the Idaho Water Resource Board and IDWR including performing technical studies, hydrologic monitoring, measurements, and basin plan development.

Technical Publications

Read reports, water information bulletins, and groundwater quality publications.

Water Diversion Measurement Network

More Raft Basin Info, cont'd

Overview

Big Lost River Basin

Camas Prairie Hydrologic Investigation

East Ada

ESPAM

Mountain Home Plateau

North Ada

Portneuf River Basin Hydrologic Investigation

Raft River Basin

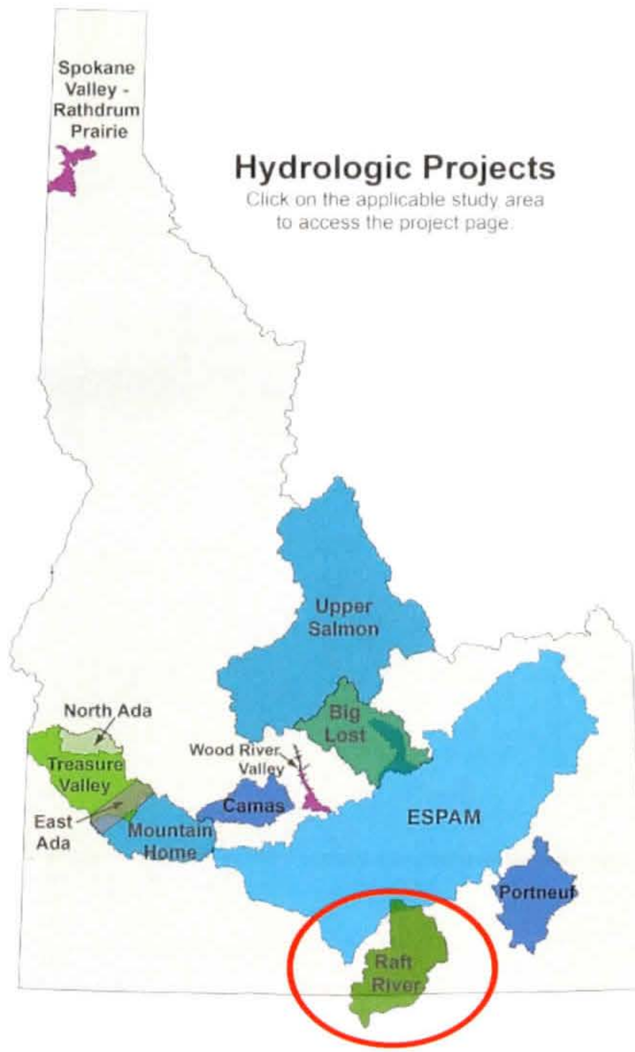
Spokane Valley-Rathdrum Prairie

Treasure Valley Groundwater Flow Model

Upper Salmon Hydrologic Project

Wood River Valley Groundwater-Flow Model

IWRB Projects



4. Click on the "Raft River" basin on the map (or text on the left side of the page).

More Raft Basin Info, cont'd

Raft River Basin

Overview | Reports | Data | Reference Material

Raft River Basin Hydrologic Investigation

The Raft River Basin is located primarily in Cassia County of south-central Idaho, with extensions to the east into Oneida and Power Counties. Much of the basin was designated a Critical Groundwater Management Area, pursuant to Idaho Code § 42, Chapter 233a and 233b, on July 23, 1963 due to concerns regarding decreased aquifer water levels and flow in the Raft River.

In 2019, the Idaho Geologic Survey (IGS) in partnership with IDWR and the Idaho Water Resource Board (IWRB), embarked on a four-year hydrologic characterization of the Raft River Basin. The monitoring infrastructure in the basin will be augmented with new wells and stream gages. The study will produce water-budget and hydrogeologic framework reports which, along with current and future data and reports, will be served from this webpage. Water users and resource managers will be able to use the information for water-supply planning and management. The framework and water budget will also provide a foundation for future groundwater model development.

Other Resources

- IDWR Critical Groundwater Areas
- IDWR Water Districts
- IDWR Geothermal Well Construction
- Idaho Geological Survey
- Utah Geological Survey

Thank You