2022 Annual Watermaster Report

Idaho Water District 11- Bear River

Photo: Rainbow Canal (Dingle, Idaho)

February 7, 2023
Report by Josh Hanks
Bear River Watermaster
Idaho Water District 11
watermasterdist11@gmail.com

Table of Contents

Section 1 – Season Summary & Comments

Data within this report has been provided by the Idaho Department of Water Resources, PacifiCorp and Bear River Watermaster records.

Bear Lake Water Supply - Season Summary

10-1-2021	Bear Lake Beginning Elevation: 5,912.25 ft (45% full)
10-07-2021	Bear Lake Low Elevation: 5,912.21 ft (45% full)
5-16-2022	Bear Lake High Elevation: 5,913.69 ft (52% full)
5-21-2022	Outlet Canal Opened for Irrigation
7-01-2022	Outlet Canal Maximum Release: 1,700 cfs
9-30-2022	Bear Lake Ending Elevation: 5,910.13 ft (35% full)

PacifiCorp Summary of Water Year 2022 - Provided by Connely Baldwin

The Bear Lake Irrigation Storage Allocation for 2022 was 225,700 acre-feet. Runoff was below normal, with Bear Lake net runoff at 76,700 acre-feet. Precipitation events increased natural flow and delayed storage releases, such that despite the lower-than-normal spring runoff, the Bear Lake Outlet Canal was opened for steady irrigation deliveries on June 7. Precipitation events in September also allowed for closing the Bear Lake Outlet Canal on Sept 22. Due to the demand for natural flow for the U.S. Fish and Wildlife Service Bear River Migratory Bird Refuge, the Bear Lake Outlet Canal was reopened September 30th, 2022 and Bear River Canal Company used some additional Bear Lake storage water in October (4,000 acre-feet).

Water Delivery Cost

103,707 (24 Hour CFS) total delivered for irrigation
(central and lower divisions)
433,230 (24 Hour CFS) delivered for power generation. Oct. 1 - Sept. 31

Total delivered for the 2022 season is 536,937 (24 Hour CFS) with $92,941 total expenses.

Cost per 24 Hour CFS = $0.17
(Cost of Bear River irrigation usage and power flows combined)

Watermaster Comments for 2022 Season

The water season started out looking bleak even with a decent soil moisture report going into spring. Natural flow was not very good until we received some much needed precipitation which helped delay the use of the pumps at

Bear Lake. We also received precipitation in September which helped supplement the storage water and allowed users to finish the season without incident. This season, as opposed to last, we only had a couple users that needed to be regulated in the lower division based on priority date. Water regulation in the central division began in April and lasted through the entire season.

This season we ran the flow model through the end of October to see how the flow rates after the irrigation season, and possible stock water flows, affect the reach gain calculations and flows that are going to the Bear River Bird Refuge. I continued to enter data for sites that were taking stock water in the Lower Division, the model was successfully run, and reach gains were calculated. There were not very many users diverting flows for stock water. The Bear River Canal in Tremonton Utah continued to take water during this time and used approximately 4,000 acre-feet in October.

Water use was entered into the State accounting system and the flow model was run bi-weekly as often as possible until September when we lessened the reporting to weekly.

2023 Scenario - This Coming Season

As of Early February 2023 the snow pack and soil moisture conditions look favorable to have an average to above average runoff and water supply for the coming 2023 irrigation season. The model that estimates lake level shows that we may see a rise of 4.5 feet or more in Bear Lake. This would give us an allotment of 226,000 acre-feet available to be delivered for the 2023 season. If the lake rises 5.6 ft then we would have a full 245,000 acre-feet allocation.

Meters, Telemetry System and Bear River Basin Website

I plan to install a telemetry station at the Fern Keetch pump site in Dingle. This data will be sent to the base station cellular receiver located at the West Fork site. I will also work with West Cache to get the data from their new Pump 4 location added to the Bear River Basin website.

There have a been a few sites this last season that have had older Seametrics magmeters start to report zero flow, when there is flow. I believe that most of these meters can be cleaned inside and then re-installed in the correct manner as called out in the meter manual. I will work with users to make sure that meters are working and possibly replaced if needed.

Section 2 - Individual Diversions Report

Note: The site numbers below are the Idaho Department of Water Site ID numbers.

#10043105 Miller Ditch
I installed a new flow sensor here at the beginning of the 2021 season. It survived the season and functioned decently for most of the year. The issue is that the sensor can get covered in silt and will quit reading until the site is visited and cleaned. The sensor is installed in the culvert near the head gate.

#10043110 Rigby Pump
The meter stopped showing a flow rate and needs cleaning, repair or replacement.

#10043120 Nuffer Canal

#10043140 Sorenson Ditch
Repaired the cable and installed the sensor again. Seemed to work well this last season.

#10043150 Ure North Hills Diversions
The flume was installed in the early summer of 2021. It is a metal ramp flume. However, it was submerged and not reading the few times I visited the site.

#10043180 Smith/Lloyd Ditch
The flume at this location does not read correctly due to sediment and vegetation in the ditch downstream. The flume needs to be raised. I will work with the user to get the flume installed correctly.

#10043160 Jensen Ditch
A new area velocity sensor was installed for the 2021 season. It seemed to perform well and give decent readings.

#10044010 Hughes Pump 1
Not used this season.
#10044020 Hughes Pump 2
Did not get used this season

#10044060 Dingle Canal
The AVFM sensor did well this season until the last couple of weeks. It was then giving zero flow data even though there was flow. It seems that the slime and growth on the sensor stops it from reading. I cleaned the sensor a couple times this season and it would work again for a few days. I am considering moving the sensor to the side wall to see if that helps with the issue.

#10044070 Ream/Crockett Canal
The stilling well access pipe clogs regularly I would like to use a ultrasonic sensor on the outside of the still well mounted above the flume. Or, a pressure sensor mounted inside the mouth of the flume.

#10044200 Black Otter
Users fixed the leaning stilling well and it worked well this season.

#10044450 Preston/Montpelier Canal
No issues this year.

#10044450 Todd Lloyd Pump (Preston/Montpelier use)
Changed the meter battery and it works.

#10044700 Keetch (Larocco-Kent) Pump
Quit showing a flow rate this season (2022) may need cleaning or adjustment.

#10044714 Fern Keetch Pump
I will be adding radio telemetry to this site and sending the data to the website for the 2023 season.

#10044800 Pugmire Pump

#10045800 West Fork Canal
Still using a water level sensor to calculate flow based on an old flow rating formula. It tracked fairly accurately, but still has issues when flow changes in large amounts, or when vegetation changes in the channel. This site will need an area velocity sensor, or flume, installed to be able to read this flow accurately throughout the season.

#10050400 Indian Creek (pumps direct from Bear Lake)
Was not used this season due to lack of water.

#10067831 Woolstenhume (Pacificorp #3)
Has not been used for many seasons.

#10047305 Wayne Kunz Pump
#10067705 Hardcastle Pump
#10067725 - L Stevens (Rockin G Ranch)

#10067870 & 10067874 Woolstenhume #1, #2 (Pacificorp)
Pivots were installed this last winter and the user needs to make sure the flow meters are operational and working for the pivots. Water was not used much this season due to lack of natural flow. (out of priority)

#10067834 Steven Kunz Pump
The meter is still broken and needs replacement.

#10067855 Dean Kunz
Storage contract - Rhett Phelps Pump

#10068205 Chris Christensen or Alleman Pump

#10072550 Eight Mile (Harris Pump 1)
The AVFM flow sensor is struggling at this location. I have requested that the user install a flume but they want to continue using the sensor. If it fails again I will push for the flume again.

#10072550 Eight Mile 2 (Harris Pump2)
Tried a solar panel on this meter and it didn't work well, I need to try a different solar charger.

#10074805 Bear Meadows
Did not use water much this season due to low natural flow.

#11-00449/11-00531C Soda Golf Transfer
The parshall flume is in need of maintenance and cleaning.

#10078905 Soda Golf Pump

The meter quit working again this season, but not due to power. I installed an external battery and charger in the pump house. The users still pumped after Oct 1 and may not know that they are not allowed. A message has been sent to the course President about this and the meter issue.

#10079600 Last Chance Canal
#10079800 Bench B Canal - Flume needs to be cleaned out.
#10080105 Gentile Valley Canal

#10080355 Wheeler Pump
The magmeter was replaced and is working well.

#10080385 Matthews Pump (Wanlass Pump)

#10081650 & 10082550 Skabelund Pumps
One of these sites the flow meter has died and needs to be replaced.

#10083505 Mussler (Fox) Pump

#10086950 Smith/Bosen Ditch
#10089820 Boyack Pump

#10089880 Upper Riverdale
No usage, cannot find a water right to go with this diversion.
#1089881 Read Lane Subdivision
The users were very helpful this season and reported their use every week by texting me the meter total.
#10089850 Nelson Ditch
I installed a wooden cover for the AVFM display and it seems to be weathering better. The sensor needs to be moved to the pipe for the next season to try and get a better reading.

#10089950 Riverdale Irrigation Canal
#10089955 Higley Pump
Needs a new battery or power supply of some type.
#10089960 Riverdale/Preston Pump
#10089970 Lucia Pump
He installed a new flow meter this season (2022)

#10090250 West Cache Canal
#10091120 Hodges Pump
#10091110 Johnson Pump
#10091495 Holliday-Fuqua (was Griffin)
#10091455 Floyd Jensen Pump

#10091497 Christensen Pump
This was the first season that I have seen use at this site. A new pump and magmeter were installed and it was used successfully. This meter is located across the river from the Floyd Jensen pump and right next to the Green Acres pump.

#10091499 Green Acres Pump
This was the first season that I have seen use at this site. A new pump and magmeter were installed and it was used successfully. This meter is located across the river from the Floyd Jensen pump and right next to the Christensen pump.

#10091460 Bear Grove LLC (S. Bobka Pump)
Meter seems to be reading but may need new batteries for next season. Mary DeWitt tells me that Lamont uses this pump the most.

#10091503 Inglet Lamont
This meter struggled to read the total flow this season. Around June it stopped showing a flow rate and then started to show again after about a month. I will talk with Bruce Lamont about rotating the meter so that the display is at about 11 o clock instead of facing straight up.
#10091563 M Curry
The meter screen is hard to read. User says that he will try to get that fixed.
#10092755 Carol Whitney Pump
#10092650 Cub River Pumps
The cable for the pump station flow meter has been run to the datalogger site, I need to work with the water users to find out which signal in the PLC to connect to for getting that data to our datalogger.
#10092900 West Cache Pumps
Replaced the antenna at the cub river base station and now this site reports in regularly. The issue is that the sensor is not reading once it gets covered in silt.

#10109375 West Cache 4 (Cutler)
This is a new site located on Cutler Reservoir. There are three pumps and

three magmeters. I plan to get these meters on a telemetry link to the BearRiverBasin website. This is in Utah but records are kept for Idaho use.

Section 3 - Individual Diversions Flow Data

The data below is gathered from the Idaho Dept. of Water website. This data is collected throughout the water season by way of meters, flumes, dataloggers, and manual flow measurements by the Watermaster.

Water District 11 Points of Diversion	Total 24 Hour CFS
10043105 - MILLER CANAL	934.8
10043110 - RIGBY	31.2
10043120 - NUFFER CANAL	2025
10043140 - TRANSTRUM (SORENSEN)	351.7
10043150 - URE NORTH HILLS	267
10043160 - WILLIAMSON (JENSEN)	1208
10043180 - J SMITH (LLOYD)	175.8
10044010 - HUGHES PUMP 1	0.00
10044020 - HUGHES PUMP 2	0.00
10044060 - DINGLE IRRIGATION CANAL	4143
10044070 - REAM-CROCKETT CANAL	2570
10044200 - BLACK OTTER CANAL	3151
10044450 - PRESTON-MONTPELIER CANAL	6705
10044700 - KEETCH (LAROCCO-KENT)	153
10044714 - FERN KEETCH	216.9
10044800 - J KEETCH (PUGMIRE)	107.1
10045800 - WESTFORK CANAL	8612
10047305 - STEWART	0.00
10050400 - INDIAN CREEK LLC	0.00
10067705 - HARDCASTLE	14.3

10067725 - ROCKIN G RANCH	80.9
10067831 - CHARLES KUNZ	0.00
10067834 - S R KUNZ	0.00
10067855 - PACIFICORP 3 (D. Kunz)	0.00
10067870 - PACIFICORP 2 (P. Kunz)	16.8
10067874 - PACIFICORP 1 (P. Kunz 2)	25.2
10068205 - ALLEMAN	0.00
10068210 - ALAN PHELPS	14.1
10072550 - EIGHT MILE RANCH (HARRIS)	523.4
10072554 - EIGHT MILE 2 (HARRIS)	55.1
10074805 - BEAR R MEADOWS LLC	9.5
10076000 - SODA CREEK TRANSFER FLOW	135.2
10078905 - SODA GOLF	44.5
10079600 - LAST CHANCE CANAL	17,864
10079800 - BENCH 'B' CANAL	17,676
10080105 - GENTILE VALLEY CANAL	4869
10080355 - WHEELER	115.2
10080385 - MATHEWS, B	127.4
10081650 - SKABELUND 1	0.00
10082550 - DAVID SKABELUND	0.00
10083505 - MUSSLER (FOX)	14.6
10086950 - SMITH-BOSEN CANAL	76.6
10086975 - TWIN LAKES PUMPS	0.00
10089820 - BOYACK	33.5
10089850 - NELSON CANAL	381
10089880 - UPPER RIVERDALE	0.00
10089881 - READ LANE SUBDIVISION	27
10089950 - RIVERDALE CANAL	1425
10089955 - HIGLEY	0.6

10089960 - RIVERDALE-PRESTON PUMP	338.7
10089970 - T LUCHIA	3.55
10090250 - WEST CACHE CANAL	20,369
10091110 - B JOHNSON PUMP	0.00
10091120 - L BRYCE	0.00
10091455 - FLOYD JENSEN	55.4
10091460 - BEAR GROVE LLC	11.1
10091495 - HOLLIDAY-FUQUA(griffin)	34.9
10091497 - CHRISTENSEN	9.92
10091499 - GREEN ACRES	12.7
10091503 - B LAMONT	126.8
10091563 - M CURRY	43.7
10092650 - CUB RIVER PUMPS	6677
10092755 - C WHITNEY	0.00
10092900 - WEST CACHE NO.2 (UTAH)	1084
10109375 - WEST CACHE NO.4 (UTAH)	760.3
Total Irrigation Delivery 24 Hour CFS =	**103,707.47**

Reported data for each of these sites is publicly available on the Idaho Department of Water Resources website.

https://idwr.idaho.gov/apps/wm/DiversionDataApplication

WATERMASTER'S ANNUAL REPORT

From: January, 2022 **To:** October, 2022

Water District No. 11

Water District Name: Bear River

Name of Watermaster: Josh Hanks

Mailing Address: _____

AFFIDAVIT OF WATERMASTER

As the appointed watermaster of water district no. 11, I hereby certify that the information contained in this report is true and correct to the best of my knowledge.

Josh Hanks — 2/7/2023

Watermaster signature — *Date*

Pursuant to Section 42-606 Idaho Code, this Watermaster's Annual Report shall be filed prior to the end of the watermaster's appointment for the current year, and kept in the office of the Idaho Department of Water Resources (IDWR). The Watermaster's Daily Diversion Records should be attached to this report if those records are not submitted electronically to IDWR.

BEFORE THE DEPARTMENT OF WATER RESOURCES
OF THE STATE OF IDAHO

State of Idaho)
) **ss** **Official Oath**
County of Caribou)

I do solemnly swear or affirm that I will support the Constitution of the United States, the Constitution and laws of the State of Idaho, specifically including the provisions of Section 42-605 and 42-607, Idaho Code, and that I will faithfully discharge all the duties of the office of **Watermaster** of Water District No. 11 according to the best of my ability. So help me God.

Josh Vonk 2/7/2023
Watermaster *Date*

SUBSCRIBED AND SWORN TO before me this 7 day of February, 2023.

LYNDA L LEWIS
NOTARY PUBLIC - STATE OF IDAHO
COMMISSION NUMBER 63850
MY COMMISSION EXPIRES 8-10-2026
SEAL

Lynda L Lewis
Notary Public

Residing At Soda Springs Id

Commission Expires 8/10/2026