WATERMASTER'S ANNUAL REPORT

From: January 1, 2021 **To:** September 30, 2021

Water District No. 11

Water District Name: Bear River

Name of Watermaster: Josh Hanks

Mailing Address: 132 E 400 S Richmond UT 84333

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 2/8/2022

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.

2021 Annual Watermaster Report

Idaho Water District 11- Bear River

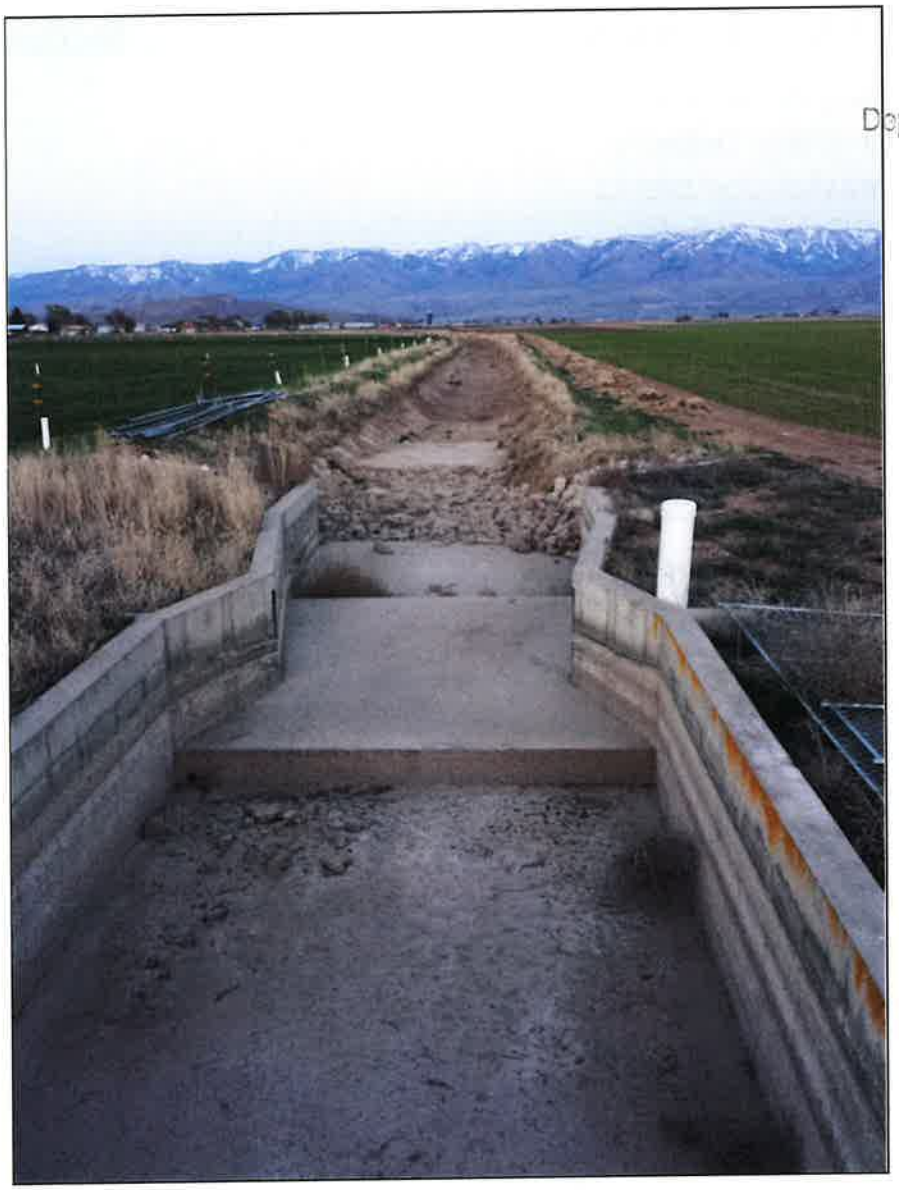

Photo: Cub River Canal Cutthroat Flume

February 8, 2022
Report provided by Josh Hanks
Bear River Watermaster
Idaho Water District 11
watermasterdist11@gmail.com

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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

10-1-2020	Bear Lake Beginning Elevation: 5,916.34 ft (64% full)
11-13-2020	Bear Lake Low Elevation: 5,916.07 ft (63% full)
5-3-2021	Bear Lake High Elevation: 5,916.94 ft (67% full)
5-2-2021	Outlet Canal Opened for Irrigation
6-16-2021	Outlet Canal Maximum Release: 1,680 cfs
9-30-2021	Bear Lake Ending Elevation: 5,912.26 ft (45% full)

PacifiCorp Summary of Water Year 2021

The Bear Lake Irrigation Storage Allocation for 2021 was 245,000 acre-feet. Runoff was much below normal with a net runoff of -19,600 acre-feet. Due to very-low runoff, storage water was a larger than normal portion of the total irrigation supply. Preparations were undertaken to allow irrigation deliveries in excess of the allocation, but precipitation events increased the natural flow and decreased the demand which made the excess allocation un-necessary.

Water Delivery Cost

90,613 (24 Hour CFS) total delivered for irrigation
(central and lower divisions)
522,960 (24 Hour CFS) delivered for power generation. Oct. 1 - Sept. 31

Total delivered for the 2021 season is 613,573 (24 Hour CFS) with $79,746 total expenses.

Cost per 24 Hour CFS = $0.13
(Cost of Bear River irrigation usage and power flows combined)

Watermaster Comments for 2021 Season

Due to a very low beginning soil moisture and a below average snow pack we experienced a record low runoff and natural flow for this irrigation season. This was the first season in my 9 years as watermaster that required me to regulate, based on priority date, in the lower division. There were also multiple users that were asked to stop irrigation during this season because

of the lack of natural flow. The use of storage water was critical and the storage contracts for many were pushed right to the limit.

Early in the season the flow estimates looked bleak, and they turned out to be bleak. I think that many were surprised at the lack of early runoff and we found that many of the water users began taking storage water as soon as the pumps at Bear Lake were turned on.

The Idaho small irrigators worked very hard to distribute storage water in the most efficient way possible amongst their members. I appreciate the patience that was shown by the users this season and was impressed by how well everyone worked together to try and make the water last. We were very fortunate to receive precipitation in August that helped to lessen the need for storage water use.

2022 Scenario - This Coming Season

The end of 2021 and early January of 2022 brought much needed precipitation and the snowpack was looking to be above average for the coming year. Soil moisture numbers for the mountains and valleys improved and those numbers look better for the coming season. However, we have had a very dry end to January and February does not show much potential for adding to the snowpack. As of the date of this report we are not showing much sign of a good spring runoff. We would need a normal year runoff to reach the allocation of 245,000 acre-feet. At this point PacifiCorp has provided the following estimates for what we could expect for an allocation from Bear Lake.

Rise of 0.4 feet at Bear Lake = 218,000 Acre-feet allocation
Rise of 1.8 feet at Bear Lake = 225,000 Acre-feet allocation

For reference, in 2021 the lake raised 0.9 feet and in 2020 the lake raised 1.65 feet.

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.

I feel it is good to note that the telemetry system has been working very well for about 11 years now. It would be good to start to prepare for system components to be updated and be ready for failure of equipment as these components age.

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 quits reading until the site is visited and cleaned. The sensor is installed in the culvert near the head gate.

#10043110 Rigby Pump
Battery was replaced on the magmeter. And will need to be replaced again this season. The battery is located in a plastic case that sits under the meter. It can be recharged, but only lasts about 2 months.

#10043120 Nuffer Canal

#10043140 Sorenson Ditch
The sensor cable was cut this season. Not sure what happened to it, but it is not usable. I will talk to the users and discuss a replacement.

#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. At the end of the season I found that the solar panel and cable had been destroyed, possibly by cows.

#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
(This still needs to be done) The flume at this site needs to have the brush and trees cut back, the vegetation is beginning to grow into the flume and that does affect the flume's ability to read flows correctly.

#10044200 Black Otter
The stilling well house is beginning to tip towards the canal. It may be an issue to consider fixing soon. I have mentioned it to the users.

#10044450 Preston/Montpelier Canal
No issues this year.

#10044450 Todd Lloyd Pump (Preston/Montpelier use)
Needs a new battery for the magmeter AG2000

#10044700 Keetch (Larocco-Kent) Pump
May need a new battery the meter screen was sometimes not displaying

#10044714 Fern Keetch Pump
I will be adding radio telemetry to this site and sending the data to the website for the 2022 season.

#10044800 Pugmire Pump
I replaced the battery and a screen data cable and it worked all season.

#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. 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.

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

#10067855 Dean Kunz
Storage contract - Rhett Phelps Pump
The magmeter failed in the 2016 season and needs to be replaced.

#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)
Need to add a solar panel to this battery to keep it charged throughout the season.

#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 battery for the meter has died. This user was asked to stop pumping due to the water regulations, but continued to pump as desired. IDWR suggested putting a lock on the pump panel, however, I believe they would

have just cut it off. Will discuss further with IDWR if regulation is needed again.

#10079600 Last Chance Canal
#10079800 Bench B Canal
#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
The meter worked this season with the telemetry. The user also installed a portable pump downstream with approval of IDWR to water a corn crop. My understanding is that this is a one-time use. Water used at the temporary site was accounted for in the users accounting.

#10086950 Smith/Bosen Ditch
Spoke to water users in (2017) about a new flume to be installed. The old concrete parshall flume now becomes submerged during the season. Did not see that any progress was made by the end of the season for the new flume site. Have not heard any more about this project.

#10089820 Boyack Pump

#10089880 Upper Riverdale Canal and Pump
#1089881 Upper Riverdale Subdivision
The users were very helpful this season and reported their use every week by texting me the meter total.

#10089850 Nelson Ditch
The AVFM display at this site is starting to fall apart. I will try to get this into a more protected enclosure for the coming season.

#10089950 Riverdale Irrigation Canal

#10089955 Higley Pump
Needs a new battery or power supply of some type.

#10089960 Riverdale/Preston Pump
#10089970 Lucia Pump
Still needs a new flow meter

#10090250 West Cache Canal
They hired a new water master for this season (Lyle). We also measured their parshall flume to check for accuracy. Lyle will install a new staff gauge to make sure it is showing the correct level.

#10091120 Hodges Pump
#10091110 Johnson Pump
#10091495 Griffith Pump (Bastion Pump)
#10091455 Floyd Jensen Pump

#10091460 Bear Grove LLC (S. Bobka Pump)
Meter seems to be reading but may need new batteries for next season.

#10091503 Inglet Lamont

#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
Installed a new area velocity sensor. The radio struggled this season to get data to the cellular data site. It may be that trees have now grown to block the signal or the radio in the logger is worn out. I will troubleshoot more this season.

#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	800.5
10043110 - RIGBY	52
10043120 - NUFFER CANAL	1,419
10043140 - TRANSTRUM (SORENSEN)	239.1
10043150 - URE NORTH HILLS	169.9
10043160 - WILLIAMSON (JENSEN)	674.1
10043180 - J SMITH (LLOYD)	59.9
10044010 - HUGHES PUMP 1	0.00
10044020 - HUGHES PUMP 2	0.00
10044060 - DINGLE IRRIGATION CANAL	4,043
10044070 - REAM-CROCKETT CANAL	2,295
10044200 - BLACK OTTER CANAL	2,497
10044450 - PRESTON-MONTPELIER CANAL	5,015
10044700 - KEETCH (LAROCCO-KENT)	231.4
10044714 - FERN KEETCH	177.2
10044800 - J KEETCH (PUGMIRE)	112.8
10045800 - WESTFORK CANAL	5,582
10047305 - STEWART	0.00
10050400 - INDIAN CREEK LLC	0.00
10067705 - HARDCASTLE	5.40
10067725 - ROCKIN G RANCH	42.7
10067831 - CHARLES KUNZ	0.00
10067834 - S R KUNZ	20.6

10067855 - PACIFICORP 3 (D. Kunz)	0.00
10067870 - PACIFICORP 2 (P. Kunz)	0.25
10067874 - PACIFICORP 1 (P. Kunz 2)	19.0
10068205 - ALLEMAN	0.00
10068210 - ALAN PHELPS	10.8
10072550 - EIGHT MILE RANCH (HARRIS)	605.9
10072554 - EIGHT MILE 2 (HARRIS)	38.1
10074805 - BEAR R MEADOWS LLC	11.5
10076000 - SODA CREEK TRANSFER FLOW	94.6
10078905 - SODA GOLF	32.6
10079600 - LAST CHANCE CANAL	14,843
10079800 - BENCH 'B' CANAL	13,876
10080105 - GENTILE VALLEY CANAL	4,680
10080355 - WHEELER	43.1
10080385 - MATHEWS, B	83.6
10081650 - SKABELUND 1	14
10082550 - DAVID SKABELUND	0.00
10083505 - MUSSLER (FOX)	28.8
10086950 - SMITH-BOSEN CANAL	61.9
10086975 - TWIN LAKES PUMPS	0.00
10089820 - BOYACK	44.4
10089850 - NELSON CANAL	420.1
10089880 - UPPER RIVERDALE CANAL	0.00
10089881 - READ LANE SUBDIVISION	29.7
10089950 - RIVERDALE CANAL	1,198
10089955 - HIGLEY	2.55
10089960 - RIVERDALE-PRESTON PUMP	361
10089970 - T LUCHIA	5.10
10090250 - WEST CACHE CANAL	19,784

10091110 - B JOHNSON PUMP	0.00
10091120 - L BRYCE	0.00
10091455 - FLOYD JENSEN	64.2
10091460 - BEAR GROVE LLC	20
10091495 - GRIFFITH	41.1
10091503 - B LAMONT	159.6
10091563 - M CURRY	69.7
10092650 - CUB RIVER PUMPS	8,727
10092755 - C WHITNEY	0.00
10092900 - WEST CACHE NO.2 (UTAH)	1,245
10109375 - WEST CACHE NO.4 (UTAH)	562
Total Irrigation Delivery 24 Hour CFS =	**90,613.2**

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