BEAR RIVER COMMISSION

226 South 200 West
Farmington, Utah 84025-2407
801-292-4662

MINUTES

BEAR RIVER COMMISSION ANNUAL MEETING
ONE HUNDRED FORTY-SECOND COMMISSION MEETING
April 18, 2023

I. Call to order – The regular meeting of the Bear River Commission was called to order by Chairwoman Jody Williams at 1:00 p.m. on Tuesday, April 18, 2023, at the Bear River Migratory Bird Refuge's Visitor Center in Brigham City, UT. This was the one hundred forty-second meeting of the Commission. Williams announced that alternate Commissioner Mark Ipsen was sitting in the place of Curtis Stoddard and alternate Commissioner Kevin Payne was sitting in the place of Adrian Hunolt. Williams expressed appreciation to Erin Holmes, refuge Project Leader and the refuge staff for hosting the group over several days of meetings and tours. Williams then asked those in the room to introduce themselves, beginning with the Commissioners. An attendance roster is attached to these minutes as Appendix A.

Williams then addressed the agenda for the meeting. There were no changes made to the agenda and it was approved by a vote of the Commission. A copy of the agenda is attached to these minutes as Appendix B.

II. Welcome to the Bear River Migratory Bird Refuge – Erin Holmes then addressed the Commission. She discussed her role in managing the Fish Springs Refuge, the Bear River Migratory Bird Refuge and conservation easements within the Bear River watershed in Utah. Holmes indicated that the refuge had been created 95 years ago and comprises 77,000 acres. She indicated that the refuge is the connection between the Bear River watershed and the Great Salt Lake. Commissioner Spackman noted that he had been raised along the banks of the Bear River and really appreciates all of the efforts to preserve it.

III. Approval of minutes of last Commission meeting – Williams asked if there were any changes to the draft minutes of the previous Commission meeting held on November 22, 2022. After a discussion on several edits, a motion was made to adopt the minutes and the motion was seconded and unanimously approved by the Commission.

IV. Commission business/reports of Secretary and Treasurer – Commissioner Hasenyager, the Commission's Secretary, indicated that she would make the report in the absence of Randy Staker, the Commission's Treasurer (see Appendix C). She commenced by providing a report on the 2023 expenditures to date. The green sheet provides income and expenses in comparison to the budgeted amounts. She noted that interest income was higher than anticipated. She also noted a new banking charge which will be looked into further.

Hasenyager then turned to the proposed FY 2024 budget (white sheet). She indicated that there is an estimated beginning balance of $145,867.59 and an anticipated income in FY2024 of $145,624.01. She then reviewed the proposed budget. She explained that the USGS contract is paid in the fiscal year after it is approved. She also noted a 5% increase in the professional and clerical services consistent with the State of Utah's cost of living adjustment. She then turned to the out year of 2025 and noted that the shown USGS contract was only for a 3% increase and that it will in fact be 4.9% and so that will need to be adjusted. A motion was made and passed to adopt the proposed FY 2024 budget as listed.

V. 2023 Water Supply Outlook Report – Logan Jamison, a hydrologist with the Utah NRCS Snow Survey then provided a report to the Commission (see Appendix D). He provided background on their network of 900 SNOWTEL sites in the west of which there are 26 in the Bear River Basin or along the basin boundaries. He showed a time-series of the snow water equivalent in the Bear River Basin which was then at 176% of normal. He then reviewed the snowpack in each of the subbasins within the Bear River. He noted that snowmelt had begun in all of the subbasins. Jamison also showed similar information from a precipitation standpoint with varying precipitation projections. He indicated that if the Bear River Basin receives normal (50 percentile) precipitation for the remainder of the water year then it would end 10.1 inches above normal and when combined with the three prior drier than normal years, the combined precipitation deficit would be reduced to about 92% of normal.

He then moved to charts showing the streamflow forecasts for various gage locations in the basin. The shown values are in acre-feet and show the 90th, 70th, 50th, 30th and 10th percentile of exceedance. The range between the forecast sites was 140% to 354% of normal. He also showed the streamflow records for each of the sites. Jamison indicated that the soil moisture was about 7% below normal but that is probably due to the fact that snowmelt had just begun. He also noted that the reservoir carry-over storage was fairly low as compared to capacity. When the storage is coupled with forecasted streamflow amounts, the Surface Water Supply Index is determined. Jamison indicated that the low storage supplies, particularly Bear Lake, led to a total Surface Water Supply Index only at the 34th percentile.

In response to a question, Jamison indicated that most of the SNOWTEL sites are at relatively high elevations and so they generally do not account for the lower elevation snow. Connely Baldwin indicated that the National Forecast Center numbers try to account for the lower elevation snow. He also indicated that the water supply index does not reflect the storage allocation, just amount available and that there would be a full allocation of storage water out of Bear Lake.

VI. Commission Depletion Estimates – Williams introduced the topic by expressing appreciation for the significant efforts which have gone into the depletion estimates. She reminded the group that they had received a detailed report on the depletion estimates at the prior meeting. She also indicated that some of the technological advancements have led to the need to change the Commission's procedures. She then turned the time to Don Barnett, the Commission's Engineer-Manager, to report on proposed changes to the Commission's *Procedures for Depletion Estimates*.

Barnett reminded the group that in November the Commission had been alerted to a number of minor changes to the procedures. These were reviewed in detail by the Management Committee in January. Also, in January the Management Committee reviewed three more major changes which deal with changes in methodology used to make the depletion estimates (see Appendix E for Barnett's presentation). The first change (II.A.1.) was to accommodate the states' abilities to use land-sat

imagery and directly estimate depletions on a field-by-field basis for lands put into production since January 1, 1976 and then by summing those values create an average depletion rate by subbasin. For acreage retired from irrigation the same methodology was applied except that the depletion rate included both pre and post January 1, 1976, irrigated acres. Barnett then referred the Commission to the revised Appendix B which includes a table of depletion rates, by subbasin, for both added and subtracted acres. The second methodology change was the recommendation from the TAC that the depletion associated with acres irrigated with a post January 1, 1976, supplemental water rights be estimated by multiplying the full supply depletion rate by 40%. He indicated that, after looking at a number of years and methodologies, 40% appeared to be a good average. The third methodology change dealt with the Banking Procedures. The Procedures since their inception have provided several different methodologies for tabulating and tracking banked depletion amounts, but the actual actions of the states has been to simply net the added acres' depletions with the subtracted acres's depletions when calculating depletion estimates and so this additional option was added to the procedures.

Barnett also reported that, though not a methodology change, discussions had occurred relative to the depletion reporting intervals and that the recommended change to the Procedures was to set a standard five-year reporting interval for the Upper and Central Divisions and ten years for the Lower Division. After review of the proposed changes to the Procedures, upon motion, the changes to the Procedures for Depletion estimates were adopted, after which Barnett passed out a clean copy of the revised procedures to the Commissioners.

Matt Anders, TAC Chair, then provided a report to the Commission on final Depletion Estimates (see Appendix F). He reviewed the definition of depletions and then the methodologies employed by the TAC for each category of uses. Relative to agricultural depletions, Anders indicated that all irrigated fields within the Bear River Basin we categorized as to those that were irrigated prior to January 1, 1976, and those on which irrigation commenced after this date. He then discussed the creation of a depletion rate by subbasin. He also discussed efforts to try to determine the depletion associated with acres which have a supplemental water supply. He indicated that the TAC was working on using a methodology developed by Wyoming, but all states did not have sufficient data to employ this method. He discussed the TAC's determination to recommend the use of a factor of 40% of the full-supply depletion rate which appears to be fairly reasonable in normal years, but he cautioned the group that analysis of the supplemental depletion rate by Wyoming in 2021, an extremely dry year, yielded a supplemental depletion rate of nearly 80% and so he indicated that there is still work to be done by the TAC on this matter.

Anders then discussed the municipal depletion methodology which uses population data, multiplied by a per capita depletion rate, to determine the estimated depletion amount. He also discussed the methods used by the states to estimate the depletions for industrial uses which are outside of municipal systems. The methodologies employed use water right data and water usage information to estimate industrial depletions. Lastly, Anders reviewed the efforts to estimate depletions from reservoir evaporation. Generally, the methodology simply employed multiplying the reservoir surface area by an ET rate, but Anders indicated that Woodruff Narrows Reservoir is some what unique and so a computer model was employed.

Anders then showed a table listing the estimated depletions by category and by section. Shown on the table are the remaining allocations by state. He noted that in the Utah section in the Lower Division that the net depletions were negative, meaning that pre 1976 depletions that have been retired exceed those that have been added since 1976. Anders also showed the total depletion amounts by sections and states for the prior depletion update efforts. Lastly, Anders reported to the

Commission a list of TAC recommendations which are more fully detailed on page 26 of the report. Commissioner Spackman called to the attention of the Commission the list of TAC recommendations and indicated that the TAC is looking for direction from the Management Committee as to a prioritization of these recommendations. Upon motion, the 2019 Depletions Report, with an expression of appreciation, was accepted by the Commission.

VII. History of the Bear River Commission/Compact – Barnett then provided to the Commission a brief report on the history of the development of the Bear River Compact and the Commission (see Appendix G). He noted the role of Wally Jibson initially with the USGS and then as the first Engineer-Manager of the Bear River Commission. Barnett highlighted the history of the Commission and the Compact which was written by Wally Jibson and which has now been remastered for easier reading. Commissioner Spackman reflected on going to high school with Jibson's son, after which the group took a short break.

VIII. Water Quality Committee Report – John Mackey provided a report for the Water Quality Committee which met the week prior, also at the refuge. He indicated that in association with their meeting they had also toured the refuge. The water quality agencies had discussed their respective Integrated Reports as required by the Clean Wate Act. Those reports require the states to review all water bodies within their states as to their compliance with required standards. Mackey reported that the Bear River system is among the better water quality systems in Utah. He discussed the issues faced by agricultural water users as they do the best that they can protect water quality. He also discussed the increasing of number of harmful algal blooms incidents within the states. He reported that concerns with invasive species like quagga mussels and milfoil are continuing concerns for the state water quality agencies. He indicated that the states are developing methods to use DNA information to identify species within water bodies. The Water Quality Committee had also heard a report on how to control carp within waterfowl units. They also received a report from Trout Unlimited on reestablishing continuous fish passage on tributaries to Bear Lake.

Mackey provided the group with an update on the water quality platforms in Bear Lake. The initial five-year effort has been completed and a report is being written. He noted that they have now agreed to fund continuance of the effort for a sixth year. The states have also been collaborating on water quality tracking on the tributaries to Bear Lake.

IX. Records & Public Involvement Committee Report – In the absence of Curtis Stoddard, Commissioner Tiechert asked Ethan Geisler to provide the Records Committee report. He indicated that the committee had reviewed stream gages within the basin and noted a new USGS gage on the Malad River. They had discussed the national priority gages within the basin which are fully supported by USGS. They had also noted issues with ice on gages and backwater issues at the Pixley gage. A new gage will be added on the West Cache Canal Cutler pump. He also reported that the water quality agencies intend to continue providing 20% of the cost of the Commission's stream gaging program. The committee had also talked about a summer tour which was originally scheduled for the reach below Oneida Dam down to the Idaho-Utah state line but which was now being changed to the reach from Culter Dam downstream due to the desire to witness high flows in this lower reach. Geisler also reported that the committee discussed the biennial reports and the Commission's website. He reported that the Water Information System website has been removed by Utah State and the water quality committee is looking at options for preserving some of the data. Other committee discussions included recent meetings and publications of interest.

X. Operations Committee Report – Charles Holmgren provided a report for the Operations Committee which had met earlier in the day. The committee had reviewed the potential of upstream storage restrictions and potential movement of storage allocations between reservoirs, but these now appear to be unlikely in 2023 due to the anticipated high flows. The committee had reported to it pressure transducer issues at Whitney and Woodruff Narrows Reservoirs. He also reported that there is anticipated little or reduced interstate regulation in 2023. The committee had reviewed the development of the Commission's approved procedures and Holmgren reviewed the procedures which had been adopted by the Commission over the years. New applications of interest discussed by the committee included the Dry Canyon application, the Utah Governor's proclamation and an extension on the CCN2 Trust applications in Wyoming.

Commissioner Holmgren then had Connely Baldwin of PacifiCorp provide a report (Appendix H). Baldwin indicated that in 2022 Bear Lake dropped four feet to a low elevation of 5909.71 feet in October, that it had risen to a current elevation of 5911.39 feet and that by his calculations it reached the 5911 foot equivalent elevation on March 9. He provided graphs showing present inflow to Mud Lake and Bear Lake and indicated that the Outlet Canal was closed all winter. He then presented graphs showing forecasted flows in comparison to prior wet years. He also noted that the low elevation snow (below 7000 feet) is well above the historic maximum. Baldwin presented graphs showing the stream gages below Bear Lake which had come up significantly in the few weeks before the meeting.

Baldwin then turned to the Bear Lake high elevation forecast which he projected to be 5918.5 feet. This projected high elevation yields a full storage allocation of 245,000 acre-feet. He then reported on an analysis of anticipated storage use which is well below normal leading to the potential drop in the summer Bear Lake elevation from the high of only a little more than one foot. Baldwin indicated that at the TAC meeting there had been some discussion on the history of ice-over at Bear Lake (at the time of the meeting Bear Lake was still frozen over). An analysis indicates that the frequency of ice-over has been declining.

XI. Technical Advisory Committee Report – Matt Anders reported that almost the full focus of the TAC during the past six months had been on the depletions study. The TAC is now turning its attention to other matters. He indicated that their list of assignments includes looking at adding the Bear River Migratory Bird Refuge to the accounting models and monitoring the Idaho adjudication.

XII. Management Committee report – Commissioner Spackman reported for the Management Committee. He expressed his appreciation to Matt Anders and Kevin Payne, who was the prior TAC chair, on the significant accomplishments of the depletions report, which was not only technical, but which also included compromise. The TAC has now approached the Management Committee for direction on future efforts and activities. The Management Committee has asked the TAC to report back with an initial prioritization of future tasks. Spackman also reported that the Management Committee had reviewed the sinking nature of the Commission's budget and has targeted FY2026 as a potential increase in state dues of about $5,000.

XIII. Engineer-Manager's report – Barnett indicated that there were no additional items to be reported.

XIV. State Reports

Idaho – Commissioner Spackman reported for Idaho. He reported on Idaho's Bear River adjudication efforts. He indicated that IDWR has sent out several thousand notices with an initial tepid response but which he believes is now gaining in participation. He also expressed appreciation to Commissioners Romrell and Ipsen who are both receiving a number of calls due to the adjudication.

Utah – Commissioner Hasenyager reported for Utah. She indicated that Utah, like the other states has gone through a wild ride of drought and flooding. She reported that as of April 7, the statewide SWE peaked at 30" smashing the prior record of 26" in 1983. She also reported on Great Salt levels and discussed the prior record low levels with increasing salinity levels and the efforts to balance by changing the berm level which divides the two arms of the lake. The increases in lake levels which have been seen this year equate to about 1.5 million acre-feet of direct precipitation and inflow. She also reported on efforts under an agreement between Utah and Wyoming for monitoring and water measurement on Mill Creek. She also reported on a number of other efforts by the Utah State Engineer's Office for water measurement within the Bear River Basin. Utah has also been working on a water accounting model for the lower Bear River distribution and has created a watershed council for the Bear River Basin. She also reported on significant funding again by the Utah Legislature for water matters. Hasenyager then noted that the Utah Legislature had changed the Utah chair of the Bear River Commission to the Utah State Engineer effective in May and she expressed her appreciation for having worked with people on the Commission and asked that people now welcome the Utah State Engineer.

Wyoming – Commissioner Gebhart reported for Wyoming. He indicated that the water year was also pretty good in Wyoming, and he wondered if the low elevation snow was really captured in the forecasts. He indicated that Wyoming received $1 million for studies in the Colorado River Basin which he believes will ultimately spill over into the other basins. They also continue to fund weather modification efforts. He also was pleased to announce that he had hired a Deputy State Engineer, Jack Morey.

XV. Other – Emily Lewis asked to address the Commission on behalf of the Bear River Water Users Association. She indicated that they had been closely involved in PacifiCorp's Dry Canyon Project. She also indicated that her members had been involved in late 2022 in looking at options of leasing water to Great Salt Lake. Claudia Cottle then addressed the group on behalf of Bear Lake Watch. She indicated that they had been working on defining the issues of Bear Lake and urged the states to come up with a joint expectation for the future of Bear Lake. Their efforts first focused on getting each state to, individually in statute, express their expectations for Bear Lake. In Utah they worked with Senator Wilson and in Idaho Senator Mark Harris. In Idaho the effort ultimately led to a bill which recognized the beauty and value of Bear Lake and the duality of the lake for storage and power uses along with its natural values. Hence the bill asks the agencies to manage for the various needs as it goes up and down in elevation.

XVI. Next Commission meeting – Chairwoman Williams noted that the next Commission meeting was set for the Tuesday, November 14, 2023. The meeting was then adjourned at about 4:30 p.m.

ATTENDANCE ROSTER

BEAR RIVER COMMISSION
REGULAR MEETING

Brigham City, Utah
April 18, 2023

IDAHO COMMISSIONERS
Gary Spackman
Kerry Romrell

WYOMING COMMISSIONERS
Kevin Payne
Brandon Gebhart
Tim Teichert

FEDERAL CHAIR
Jody Williams

UTAH COMMISSIONERS
Charles Holmgren
Candice Hasenyager
Norm Weston

ENGINEER-MANAGER & STAFF
Don Barnett
Jacob Barnett

OTHERS IN ATTENDANCE

IDAHO
Matt Anders, Department of Water Resources
Mat Weaver, Department of Water Resources
James Cefalo, Department of Water Resources
Ethan Geisler, Department of Water Resources
Mark Ipsen, Alternate Commissioner
Josh Hanks, Bear River Watermaster

UTAH
Tom Moore, Division of Water Resources
Teresa Wilhelmsen, State Engineer
Blake Bingham, Deputy State Engineer
Will Atkin, Division of Water Rights
Skyler Buck, Division of Water Rights
John Mackey, Division of Water Quality
Bart Argyle, Alternate Commissioner Upper
Ryan Merrill, Alternate Commissioner Lower
Clint Ballard, Lower Bear River
Mike Allred, Division of Water Quality

WYOMING
Mike Johnson, State Engineer's Office
Mel Fegler, State Engineer's Office
Nick Dayton, Hydrographer Cokeville
Trevor Hurd, State Engineer's Office

OTHERS
Connely Baldwin, PacifiCorp Energy
Nathan Daugs, Cache Water District
Erin Holmes, Bear River Migratory Bird Refuge
Claudia and David Cottle, Bear Lake Watch
Emily Lewis, Bear River Water Users Association
Ann Neville, The Nature Conservancy
Logan Jamison, NRCS
Jim DeRito, Trout Unlimited
Ryan Rowland, USGS
Carl Mackley, Bear River Water Cons. Dist.

BEAR RIVER COMMISSION
ANNUAL MEETINGS

April 12 and 18, 2023

COMMISSION AND ASSOCIATED MEETINGS

[Note: the Commission Meeting and all committee meetings, including the Water Quality Committee Meeting on April 12, will be held in person at the Bear River Migratory Bird Refuge's visitor center, 2155 W Forest St, Brigham City, UT 84302]

Wednesday, April 12

10:00 a.m.	Water Quality Committee Meeting	Nelson

Tuesday, April 18

9:00 a.m.	Records & Public Involvement Committee Meeting	Committee
10:00 a.m.	Operations Committee Meeting	Holmgren
11:00 a.m.	Informal Meeting of the Commission	Barnett
11:05 a.m.	State Caucuses	Spackman/Hasenyager/Gebhart
1:00 p.m.	Commission Meeting	Williams

PROPOSED AGENDA
ANNUAL COMMISSION MEETING
April 18, 2023

Convene Meeting: 1:00 p.m.
Chair: Jody Williams

I.	Call to order	Williams
	A. Welcome of guests and overview of meeting	
	B. Approval of agenda	
II.	Welcome to the Bear River Migratory Bird Refuge	Holmes
III.	Approval of minutes of last Commission meeting (November 22, 2022)	Williams
IV.	Commission business/reports of Secretary and Treasurer	Hasenyager/Staker
	A. 2023 expenditures to date	
	B. 2024 budget approval	
	C. Other	Williams
V.	2023 Water Supply Outlook Report	Jamison
VI.	Commission Depletion Estimates	
	A. Changes to *Procedures for Depletion Estimates*	Barnett
	B. *2019 Depletions Update* report	Anders
VII.	History of the Bear River Commission/Compact	Barnett

BREAK

VIII.	Water Quality Committee report	Mackey
IX.	Records & Public Involvement Committee report	Committee
X.	Operations Committee report	Holmgren
	A. Committee meeting	
	B. 2023 BL storage allocations	Baldwin
	C. PacifiCorp operations	Baldwin
XI.	Technical Advisory Committee report	Anders
XII.	Management Committee report	Spackman
XIII.	Engineer-Manager's report	Barnett
XIV.	State reports	
	A. Idaho	Spackman
	B. Utah	Hasenyager
	C. Wyoming	Gebhart
XV.	Other	Williams
XVI.	Next Commission meeting (Tuesday, November 14, 2023, location?)	Williams

Anticipated adjournment: 4:15 p.m.

BEAR RIVER COMMISSION

STATEMENT OF INCOME AND EXPENDITURES
FY2023

FOR THE PERIOD OF July 1, 2022 to April 11, 2023

INCOME	CASH ON HAND	OTHER INCOME	FROM STATES	INCOME
Cash Balance 07-01-22	154,815.58			154,815.58
State of Idaho			45,000.00	45,000.00
State of Utah			45,000.00	45,000.00
State of Wyoming		6,469.34		6,469.34
Water Quality		3,458.80		3,458.80
Interest on Savings		87.61		87.61
Interest on Checking		(907.56)		(907.56)
Checking Service Charge				
TOTAL INCOME TO 11-Apr-23	154,815.58	9,108.19	90,000.00	253,923.77

DEDUCT OPERATING EXPENSES

		APPROVED BUDGET	UNEXPENDED BALANCE	EXPENDITURES TO DATE
USGS Stream Gages Contract		47,920.00	-	47,920.00
	SUBTOTAL	47,920.00	-	47,920.00
EXPENDED THROUGH COMMISSION				
Personal Services	BIWC	76,821.00	25,607.00	51,214.00
Travel (Eng-Mgr)		1,200.00	923.13	276.87
Office Expenses		1,600.00	1,013.18	586.82
Printing Biennial Report		1,000.00	1,000.00	-
Treasurer Bond & Audit		1,400.00	1,300.00	100.00
Printing		1,600.00	1,467.40	132.60
Realtime Web Hosting		8,400.00	1,179.01	7,220.99
Clerical		10,149.00	10,110.94	38.06
Tour		2,500.00	2,500.00	-
Contingency		2,000.00	2,000.00	-
	SUBTOTAL	106,670.00	47,100.66	59,569.34
TOTAL EXPENSES		154,590.00	47,100.66	107,489.34
CASH BALANCE AS OF 04/11/2023				146,434.43

BEAR RIVER COMMISSION

DETAILS OF EXPENDITURES

FOR PERIOD ENDING April 11, 2023

937	07/15/2022	USGS	47,920.00
938	06/17/2022	Stone Fly	3,600.00
941	07/21/2022	BIWC	6,401.75
942	08/10/2022	BIWC	6,514.55
943	09/22/2022	BIWC	6,476.49
944	12/30/2022	BIWC	32,855.56
945	12/05/2022	Stone Fly	3,620.99
946	04/15/2023	CNA Surety	100.00

TOTAL EXPENDITURES 107,489.34

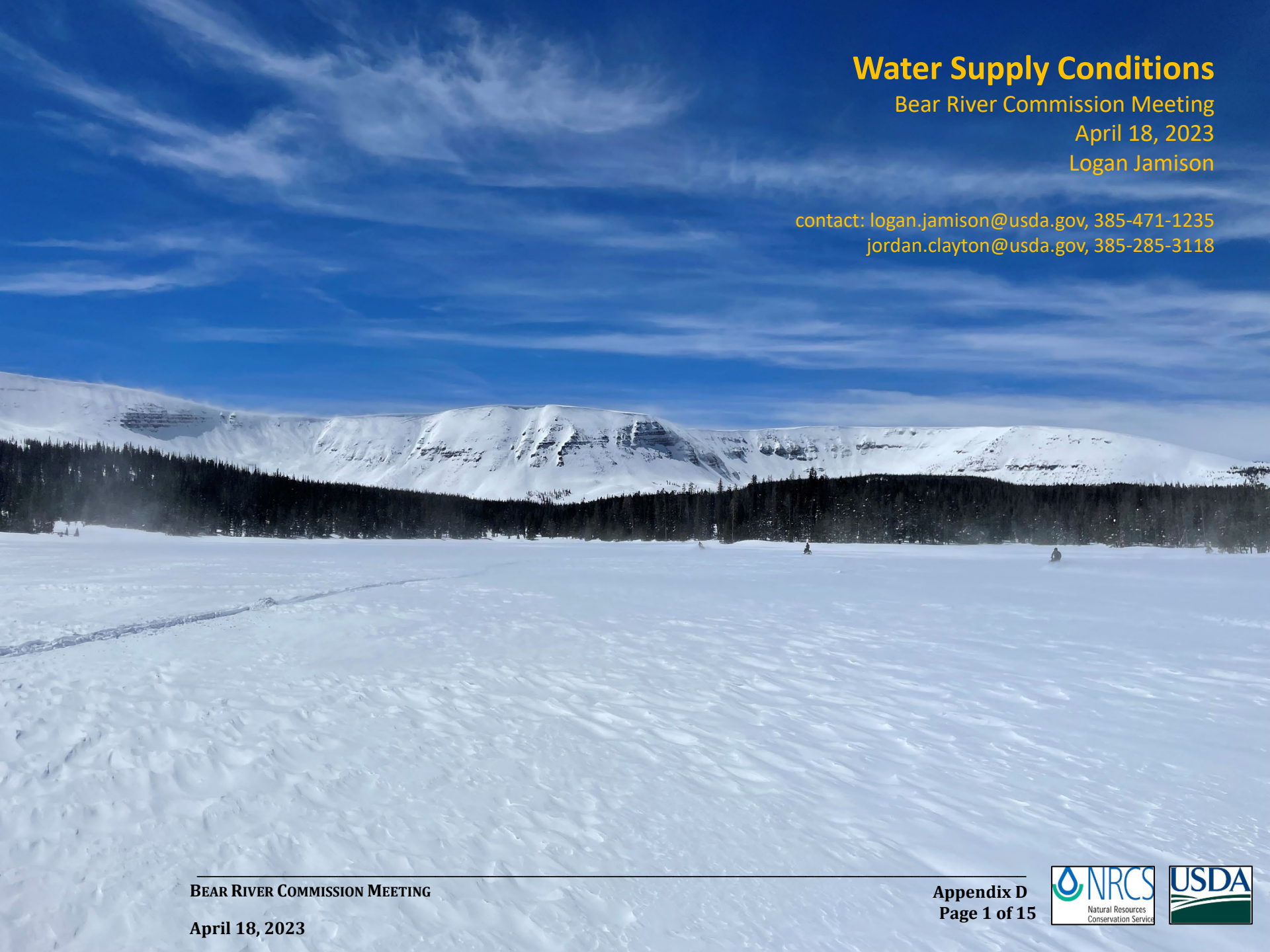
BANK RECONCILIATION

Cash in Bank per Statement 04/11/23	4,615.68
Plus: Intransit Deposits	
Less: Outstanding Checks	
Total Cash in Bank	4,615.68
Plus: Savings Account-Utah State Treasurer	141,818.75
CASH BALANCE AS OF 04/11/23	146,434.43

BEAR RIVER COMMISSION

BUDGET FOR FY 2023 AND PROPOSED BUDGETS FOR FY 2024 & 2025

	FY2023 APPROVED BUDGET	FY2024 PROPOSED BUDGET	FY2025 PROPOSED BUDGET
	-INCOME-	**-INCOME-**	**-INCOME-**
BEGINNING BALANCE	154,815.58	145,867.59	131,353.60
IDAHO	45,000.00	45,000.00	45,000.00
UTAH	45,000.00	45,000.00	45,000.00
WYOMING	45,000.00	45,000.00	45,000.00
WATER QUALITY	9,824.01	9,824.01	9,824.01
INTEREST ON SAVINGS	800.00	800.00	800.00
TOTAL INCOME	300,439.59	291,491.60	276,977.61
	-EXPENDITURES-	**-EXPENDITURES-**	**-EXPENDITURES-**
STREAM GAGING-U.S.G.S.	47,902.00	49,120.00	50,594.00
PERSONNEL SERVICES CONTRACT	76,821.00	80,662.00	84,695.00
TRAVEL	1,200.00	1,200.00	1,200.00
OFFICE EXPENSES	1,600.00	1,600.00	1,600.00
BIENNIAL REPORT	1,000.00	1,000.00	1,000.00
TREASURER'S BOND & AUDIT	1,400.00	1,400.00	1,400.00
PRINTING	1,600.00	1,600.00	1,600.00
REALTIME WEB HOSTING	8,400.00	8,400.00	8,400.00
CLERICAL	10,149.00	10,656.00	11,189.00
TOUR	2,500.00	2,500.00	2,500.00
CONTINGENCY	2,000.00	2,000.00	2,000.00
TOTAL EXPENDITURES	154,572.00	160,138.00	166,178.00
	145,867.59	131,353.60	110,799.61



Water Supply Conditions

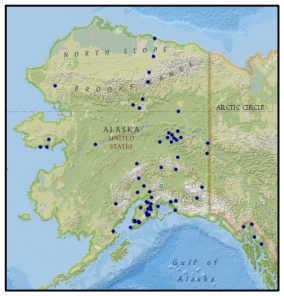
Bear River Commission Meeting
April 18, 2023
Logan Jamison

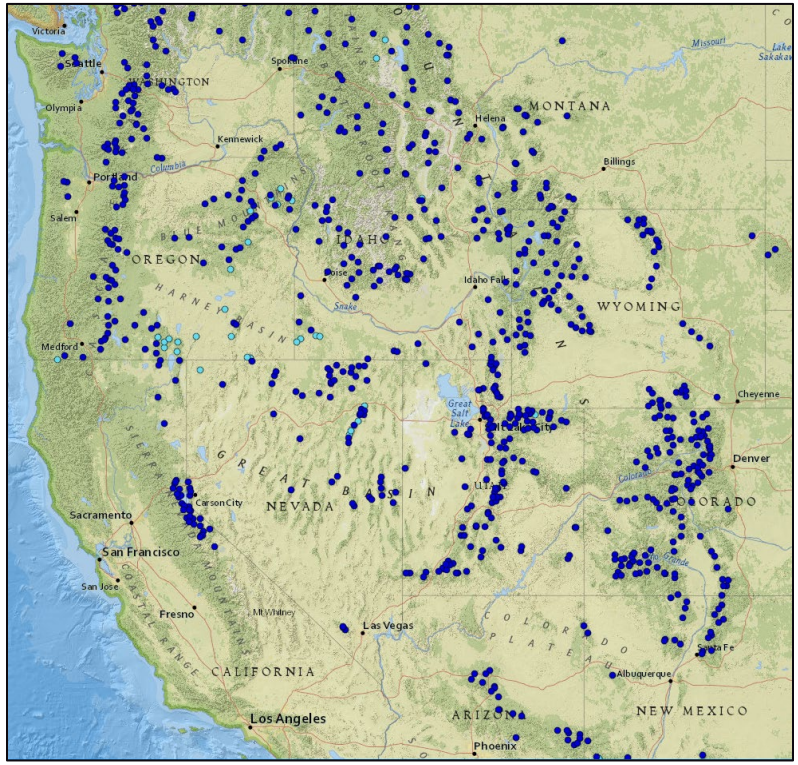
contact: logan.jamison@usda.gov, 385-471-1235
jordan.clayton@usda.gov, 385-285-3118

SNOTEL sites

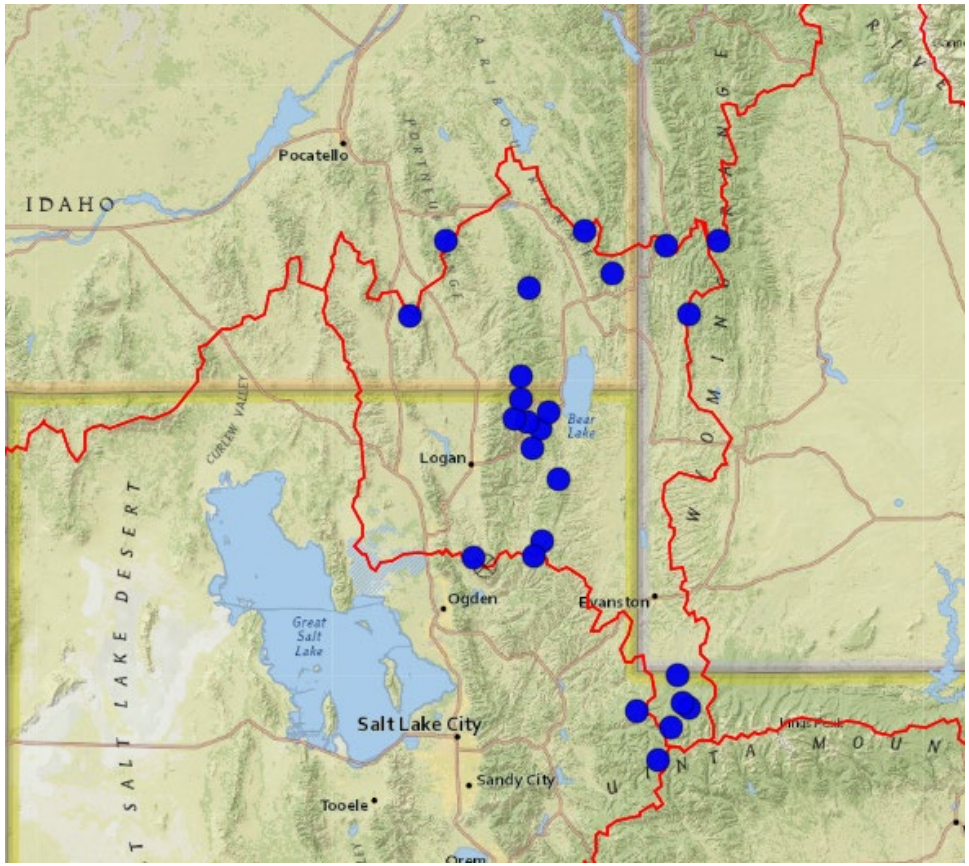
- automated weather stations in mountainous areas
- snow water equivalent, snow depth, precipitation, air temperature, soil moisture & temperature
- delivers hourly data

SNOTEL network



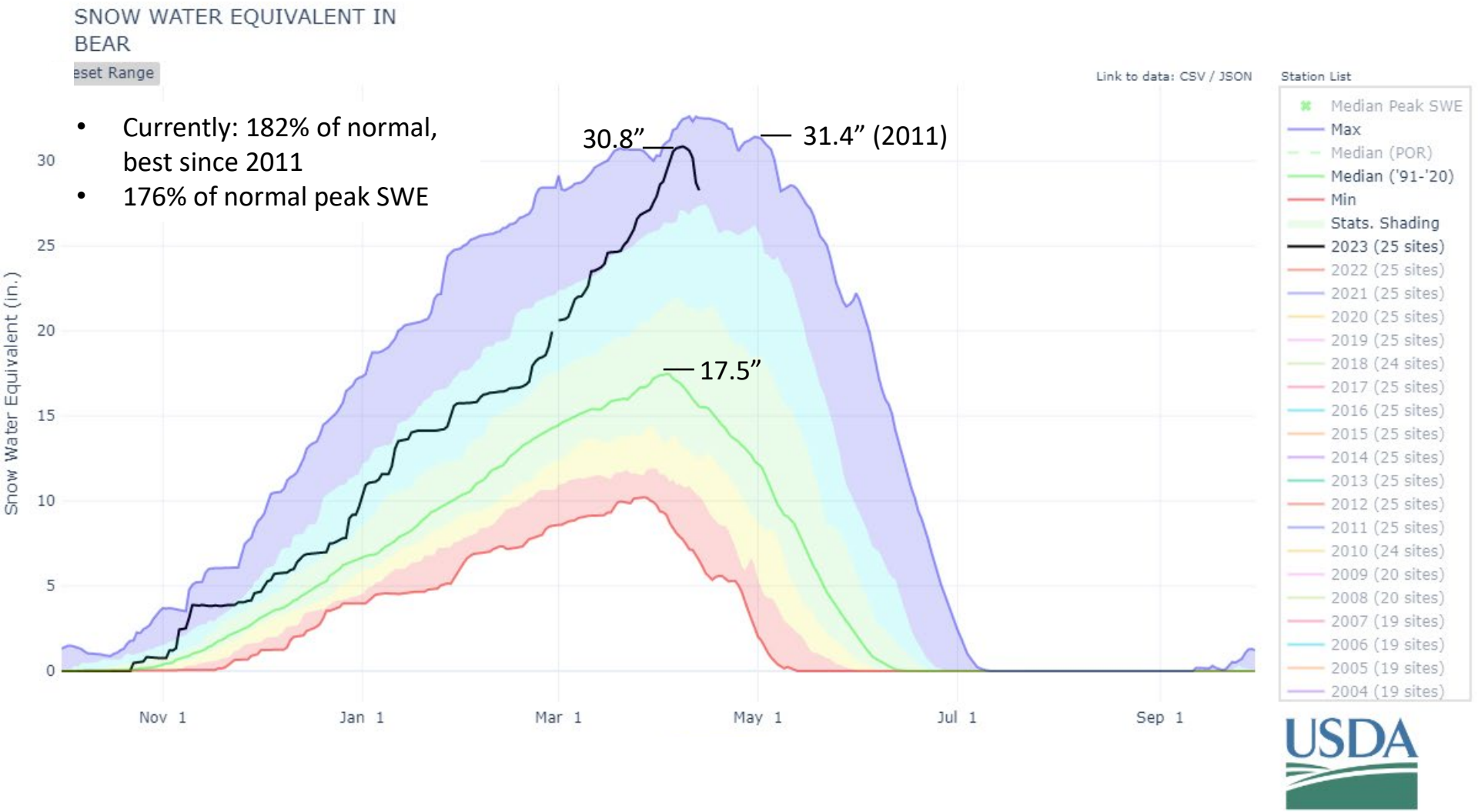


~900 SNOTEL sites in West



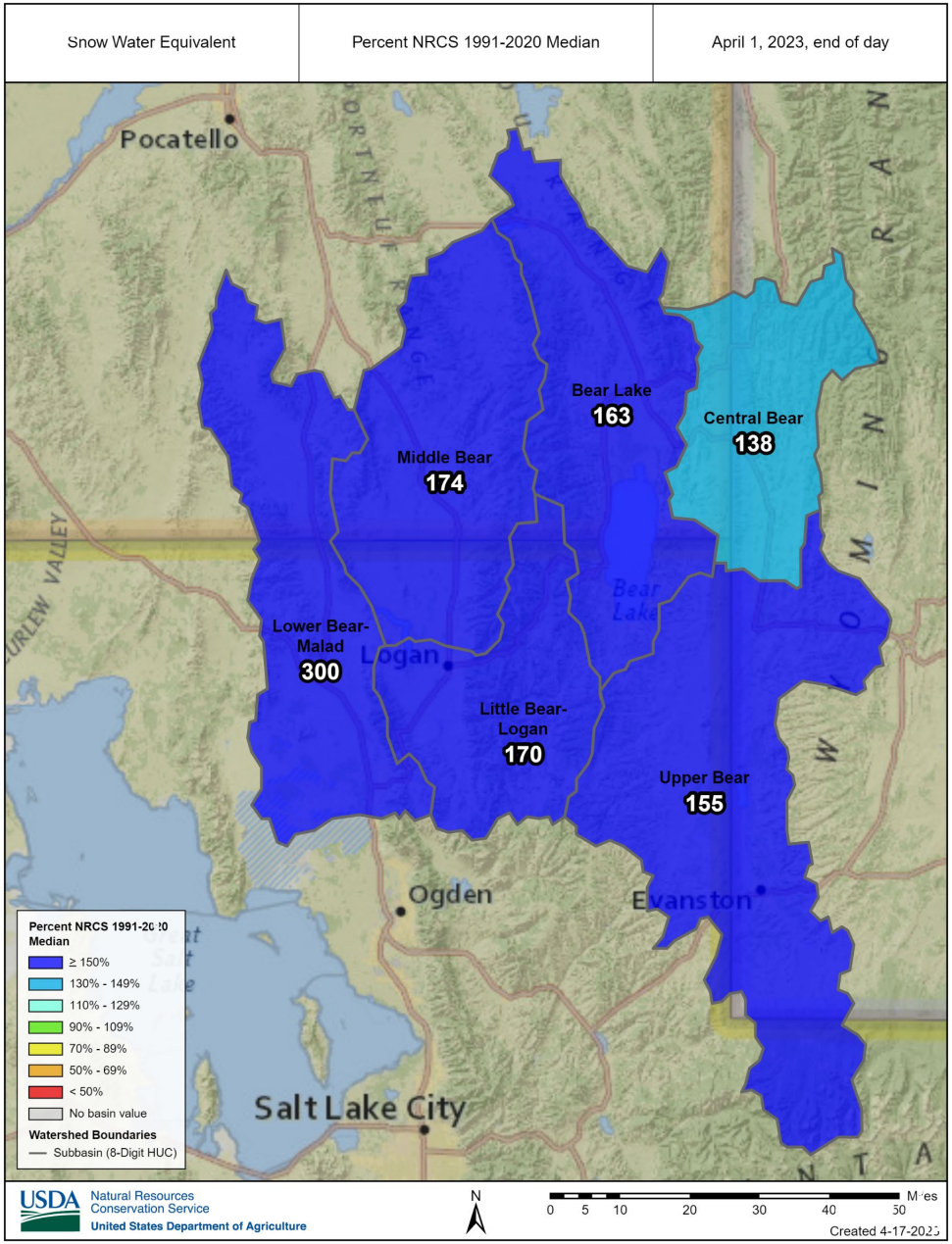
26 Bear River Basin SNOTEL sites

Bear River Basin SWE

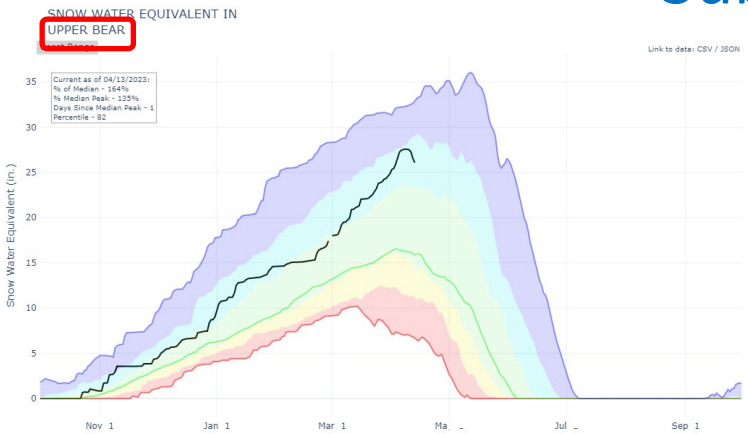


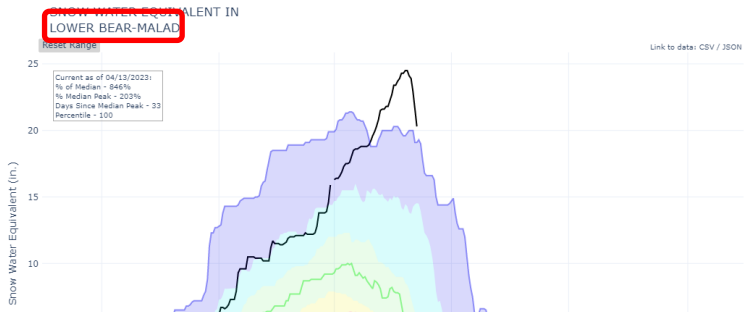
- Currently: 182% of normal, best since 2011
- 176% of normal peak SWE

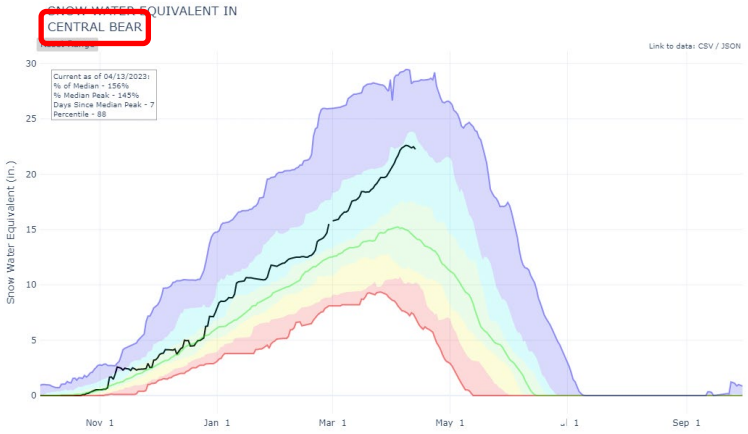
Subbasin SWE

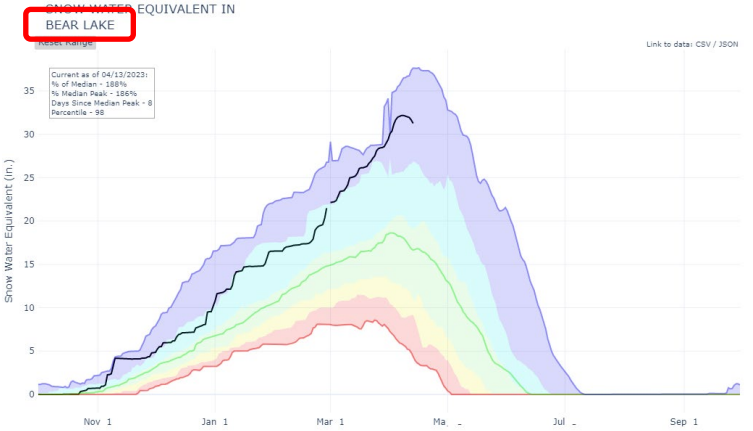


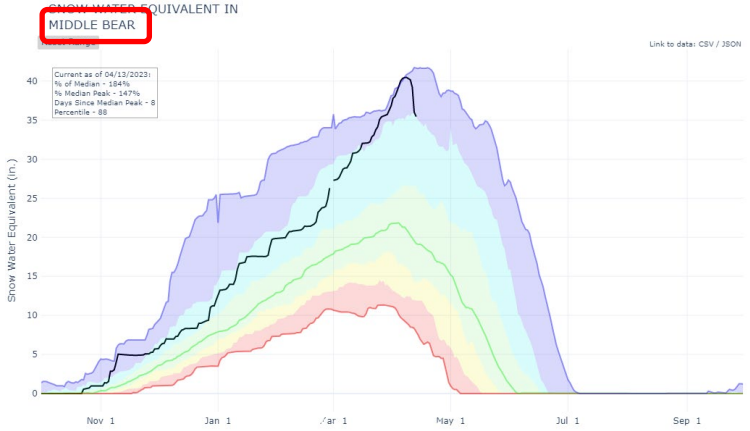
Subbasin SWE

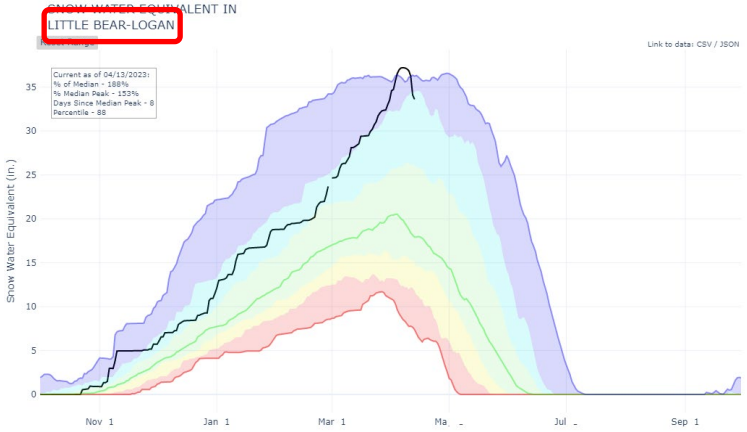




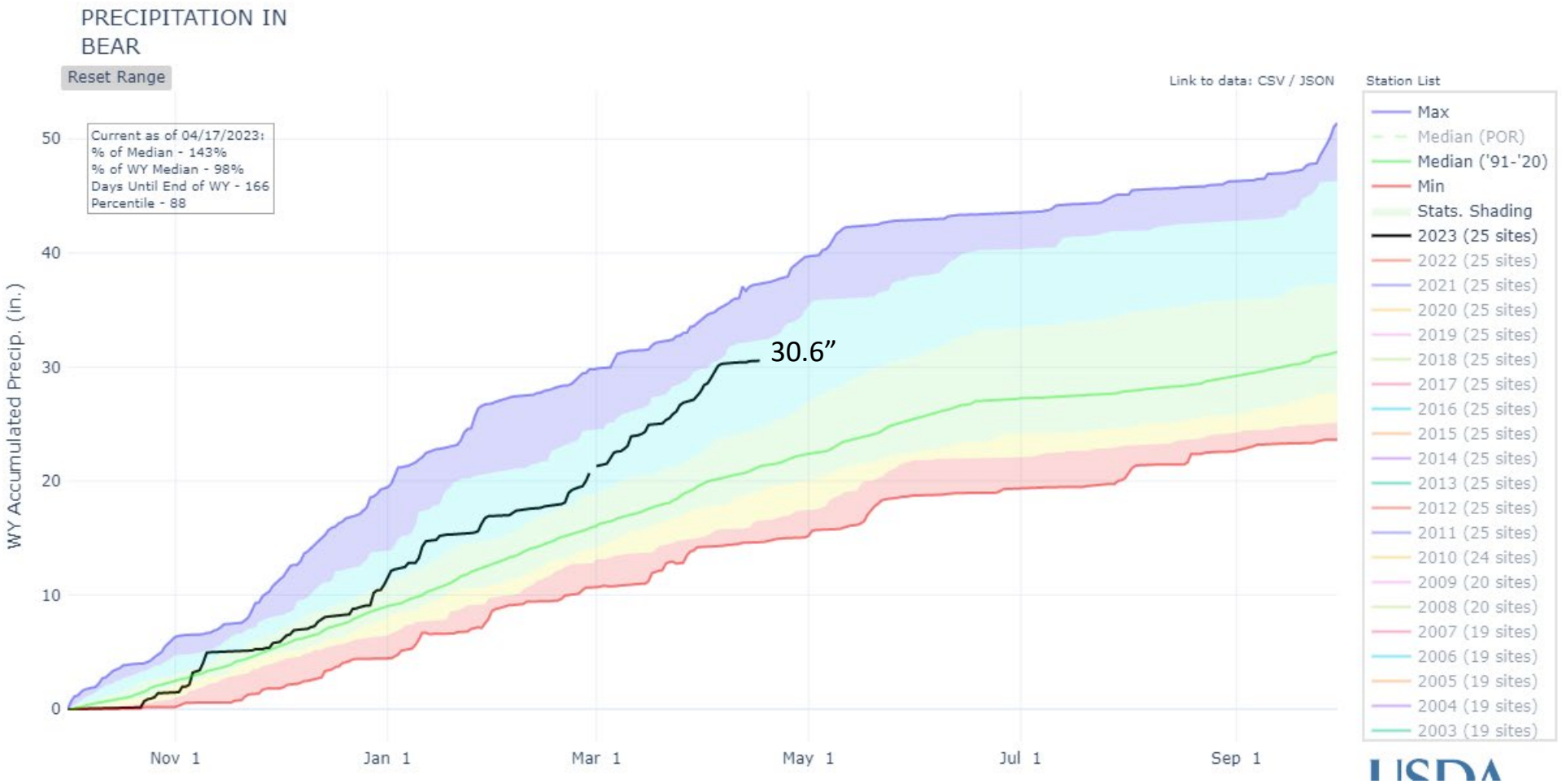






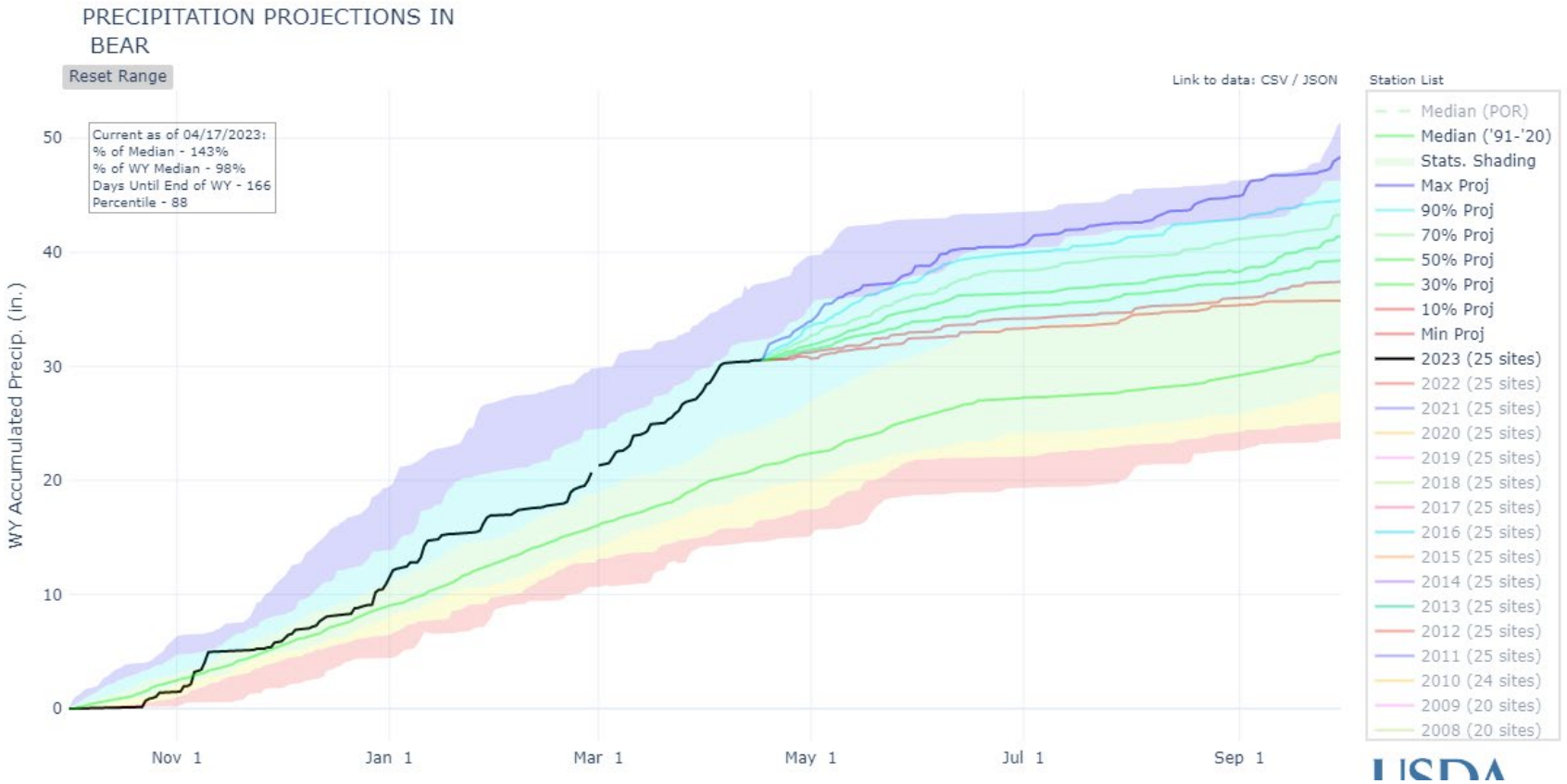


Precipitation in Bear River Basin



- Above normal precipitation at our SNOTEL sites (143%) for WY23

Precipitation projections in basin



- Most probable projection for precipitation = 41.4”
- That would be 10.1” above normal for WY23

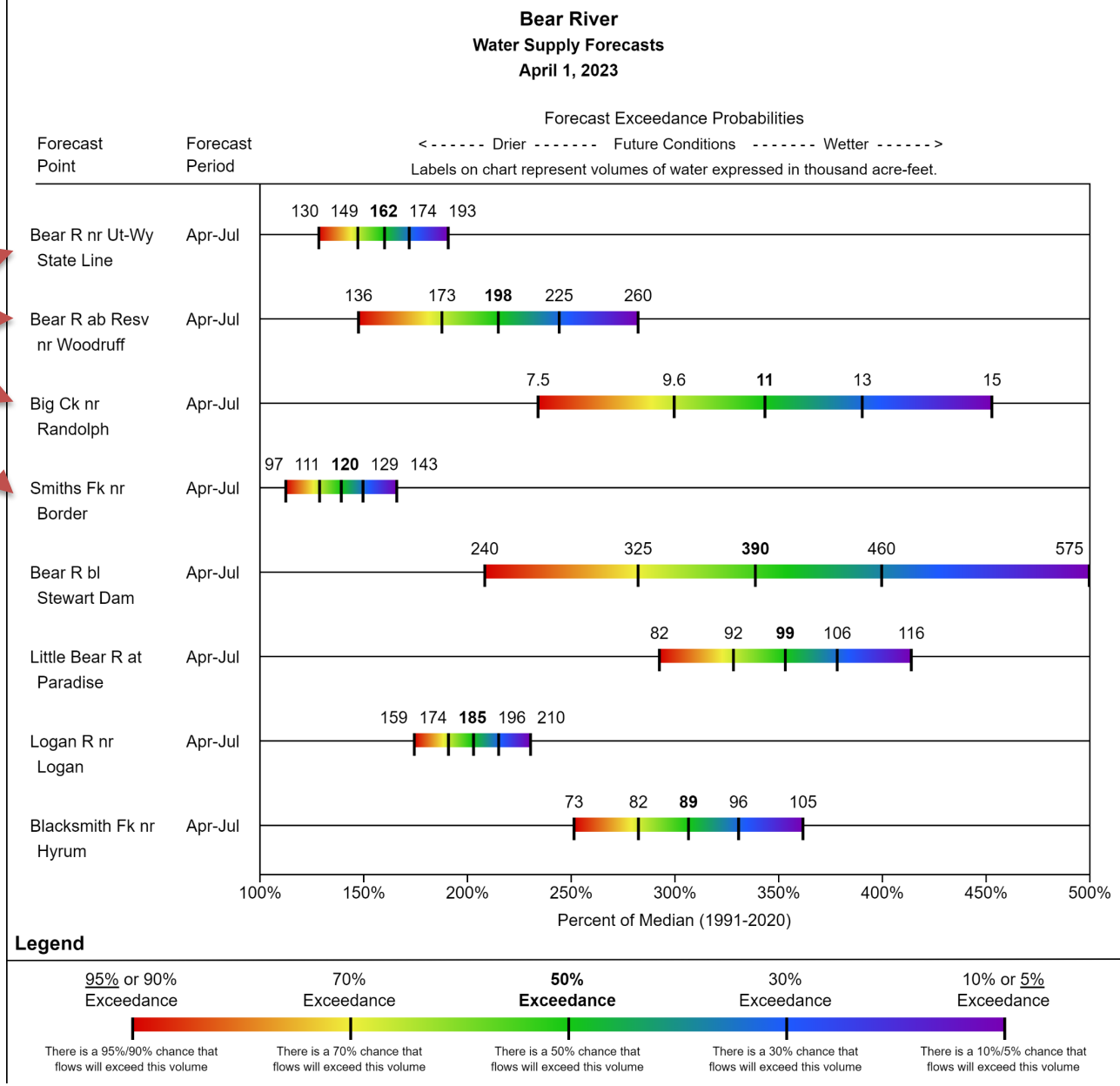
Precipitation deficit								
	WY20	WY21	WY22	WY23	Normal	WY20-22 deficit	WY20-23 deficit	**% change in deficit**
Bear River Basin	27.7	25.1	30.1	41.4	31.3	11	0.9	**92%**

- Projected precipitation (50th %) for WY23 would nearly eliminate deficit

Streamflow forecasts for region

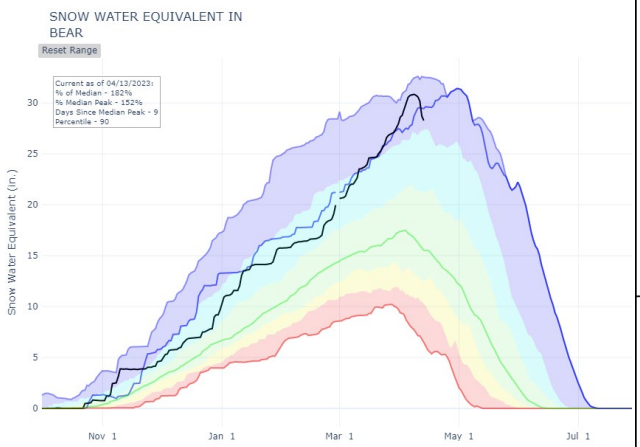
Forecast locations

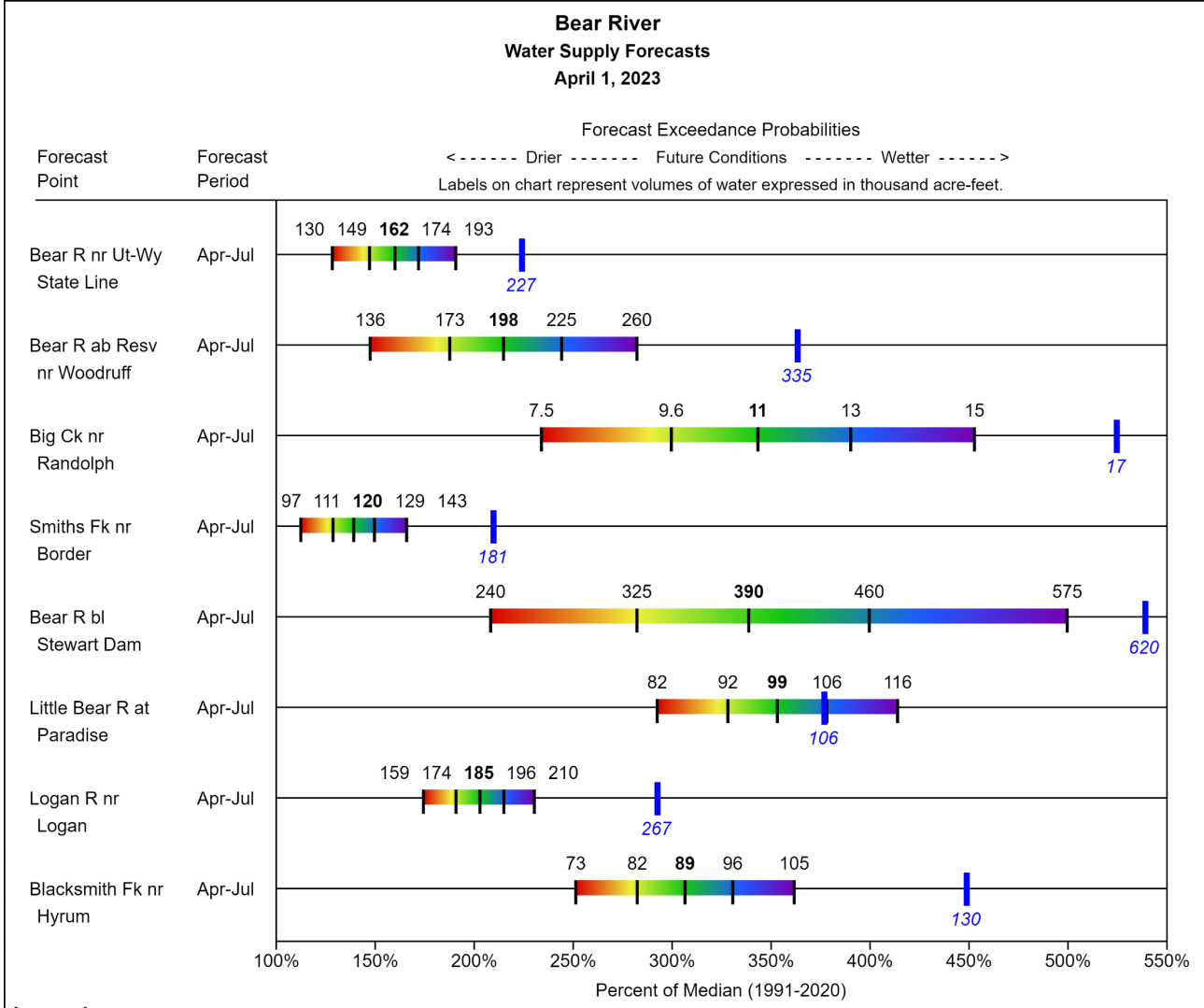
- Forecast values = #'s (in KAF), with 50% exceedance (most likely) in bold
- % normal values on x-axis
- Basin-wide: 230% of normal
- Individual forecast points range from 140% to 354% of normal



Streamflow forecasts for region

- Record maximum shown with dark blue lines
- Unlikely to break records at most locations, unless heavy snowfall is received through late spring (like 2011)





Legend

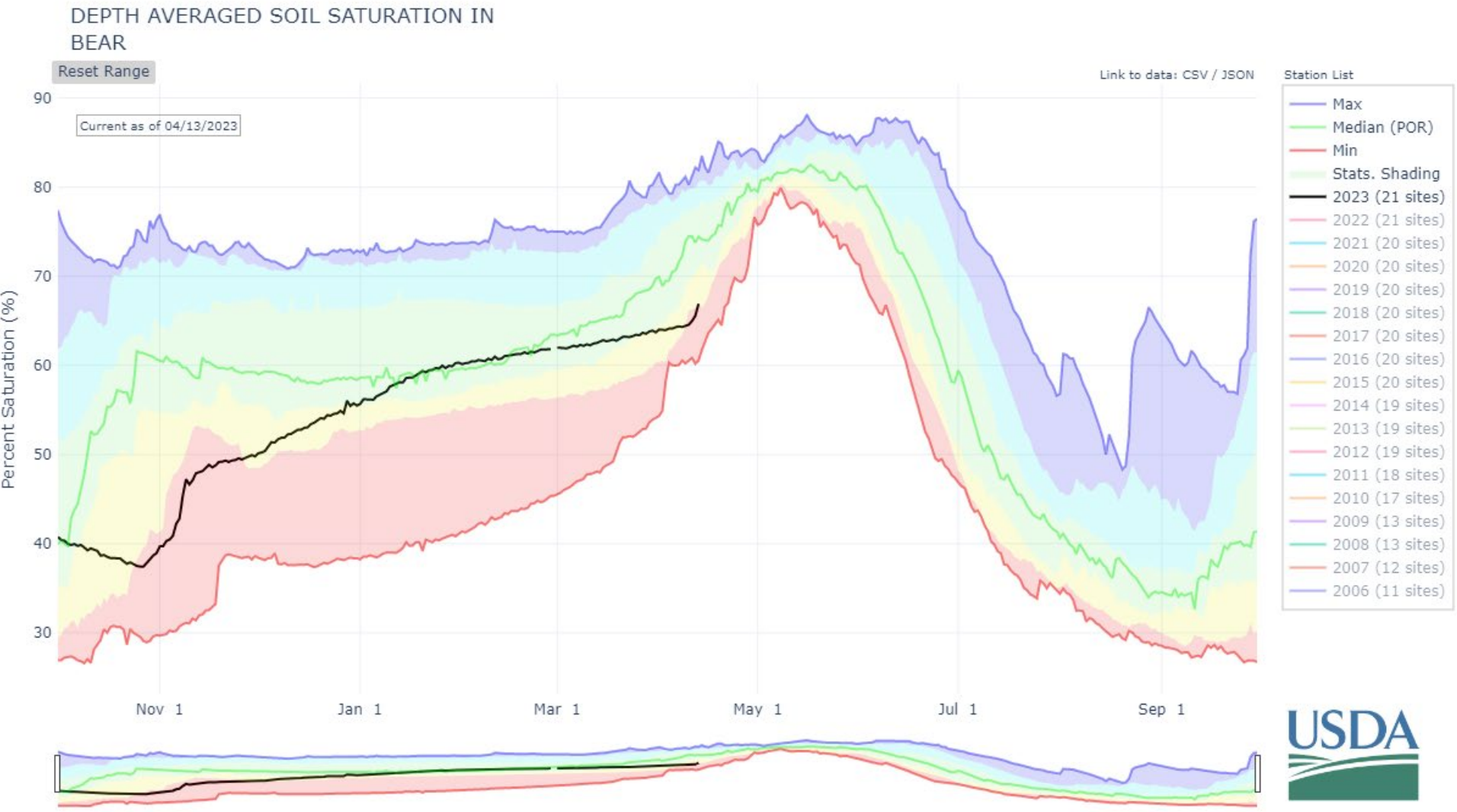
95% or 90% Exceedance	70% Exceedance	**50% Exceedance**	30% Exceedance	10% or 5% Exceedance
There is a 95%/90% chance that flows will exceed this volume	There is a 70% chance that flows will exceed this volume	There is a 50% chance that flows will exceed this volume	There is a 30% chance that flows will exceed this volume	There is a 10%/5% chance that flows will exceed this volume

When selected, the following historic streamflow values and statistics will be shown.

Period of Record Minimum Streamflow KAF (Year)	*1991-2020 Normal Streamflow KAF*	*Observed Streamflow KAF*	*Period of Record Maximum Streamflow KAF (Year)*

Some forecasts may be for volumes that are regulated or influenced by diversions and water management.

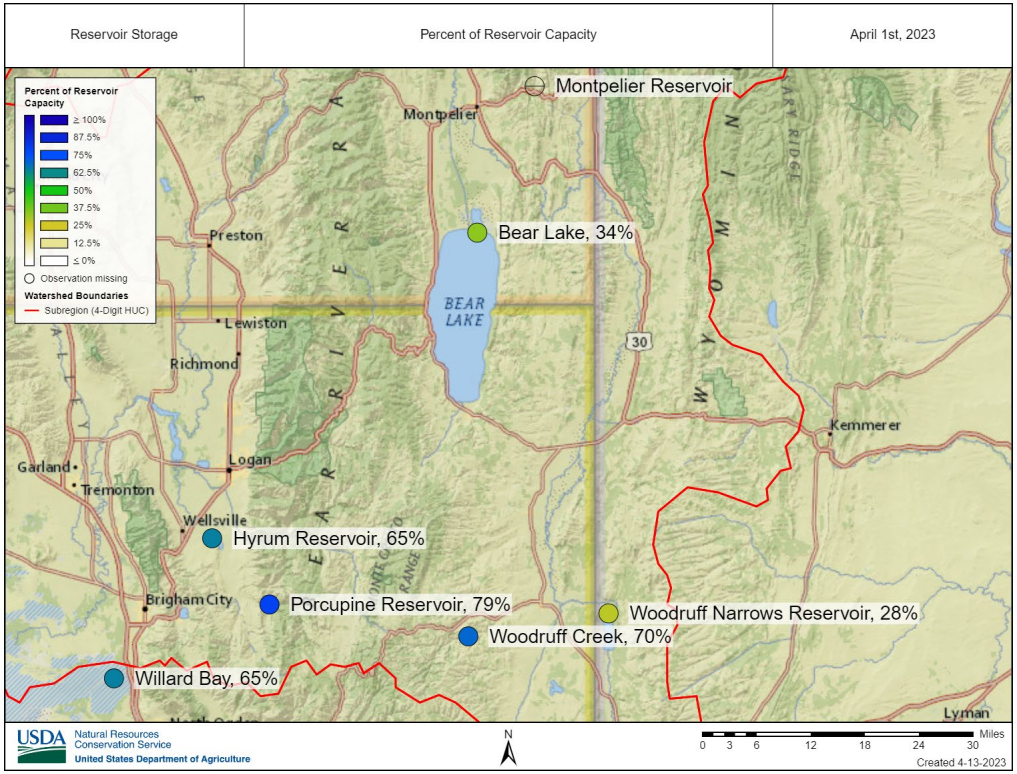
Soil Moisture

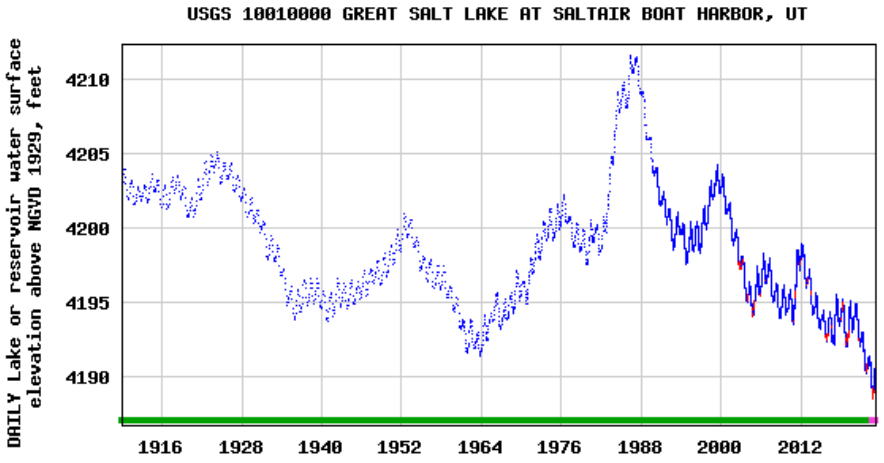


- Soil moisture is 7% below normal for the Bear River basin
- Likely due to later start of snowmelt, which wets soils

Reservoirs in region

- Reservoirs range from 28-79% capacity
- Basin-wide storage is 34% capacity, down from 45% last year.
- Bear Lake currently at around 444 KAF compared with 1302 KAF capacity → not likely to fill
- Great Salt Lake still near historically low elevation





April 1, 2023 | Surface Water Supply Index (SWSI)

Basin or Region	Reservoir Storage[1] (KAF)[2]	Apr-July Forecast (KAF)[2]	Forecast + Storage (KAF)[2]	SWSI[3]	Percentile[4] (%)	Similar Years
Bear	443.5	162.0	605.5	-1.33	34	[2007, 2016]
Woodruff Narrows	16.3	198.0	214.3	2.46	79	[1993, 2017]
Little Bear	9.9	99.0	108.9	3.65	94	[1998, 2011]
Ogden	42.3	280.0	322.3	3.6	93	[1986, 1998]
Weber	257.6	625.0	882.6	3.22	89	[1982, 1984]
Provo	817.6	436.4	1254.0	-0.28	47	[2001, 2019]
Western Uintas	173.1	90.0	263.1	2.84	84	[1986, 1999]
Eastern Uintas	28.9	194.0	222.9	2.84	84	[1999, 2011]
Blacks Fork	11.4	110.0	121.4	2.34	78	[1999, 2005]
Smiths Fork	6.7	36.0	42.7	2.95	85	[1986, 1999]
Price	18.3	95.0	113.3	3.41	91	[1985, 1986]
Joes Valley	30.4	90.0	120.4	2.65	82	[1986, 2006]
Ferron Creek	9.0	57.0	66.0	3.03	86	[2017, 2019]
Moab	1.8	9.9	11.7	3.72	95	[1993, 2005]
Upper Sevier	57.0	203.0	260.0	3.41	91	[1995, 2011]
San Pitch	1.1	26.0	27.1	0.0	50	[1994, 2007]
Lower Sevier	58.0	275.0	333.0	2.65	82	[1995, 1997]
Beaver River	8.7	60.0	68.7	3.6	93	[1984, 1998]
Virgin River	38.7	195.0	233.7	3.65	94	[1993, 2005]

[1] End of Month Reservoir Storage; [2] KAF, Thousand Acre-Feet; [3] SWSI, Surface Water Supply Index; [4] Threshold for coloring: >75% Green, <25% Red

- SWSI is a combination of forecasted streamflow and current reservoir storage
- Bear River basin is an exception to generally high SWSI values in UT
- Current surface water supply in Bear is greater than only 34% of years on record

Utah Water Supply Outlook Report

- Current conditions summarized in Snow Survey's April 1st Water Supply Outlook Report
- go to: *Utah Snow Survey webpage* → *"Water Supply"* for pdf

April 1, 2023

Tall Poles snow course, near Parowan

Photo by Jason Bradshaw (NRCS-Utah)

QUESTIONS?

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385-471-1235
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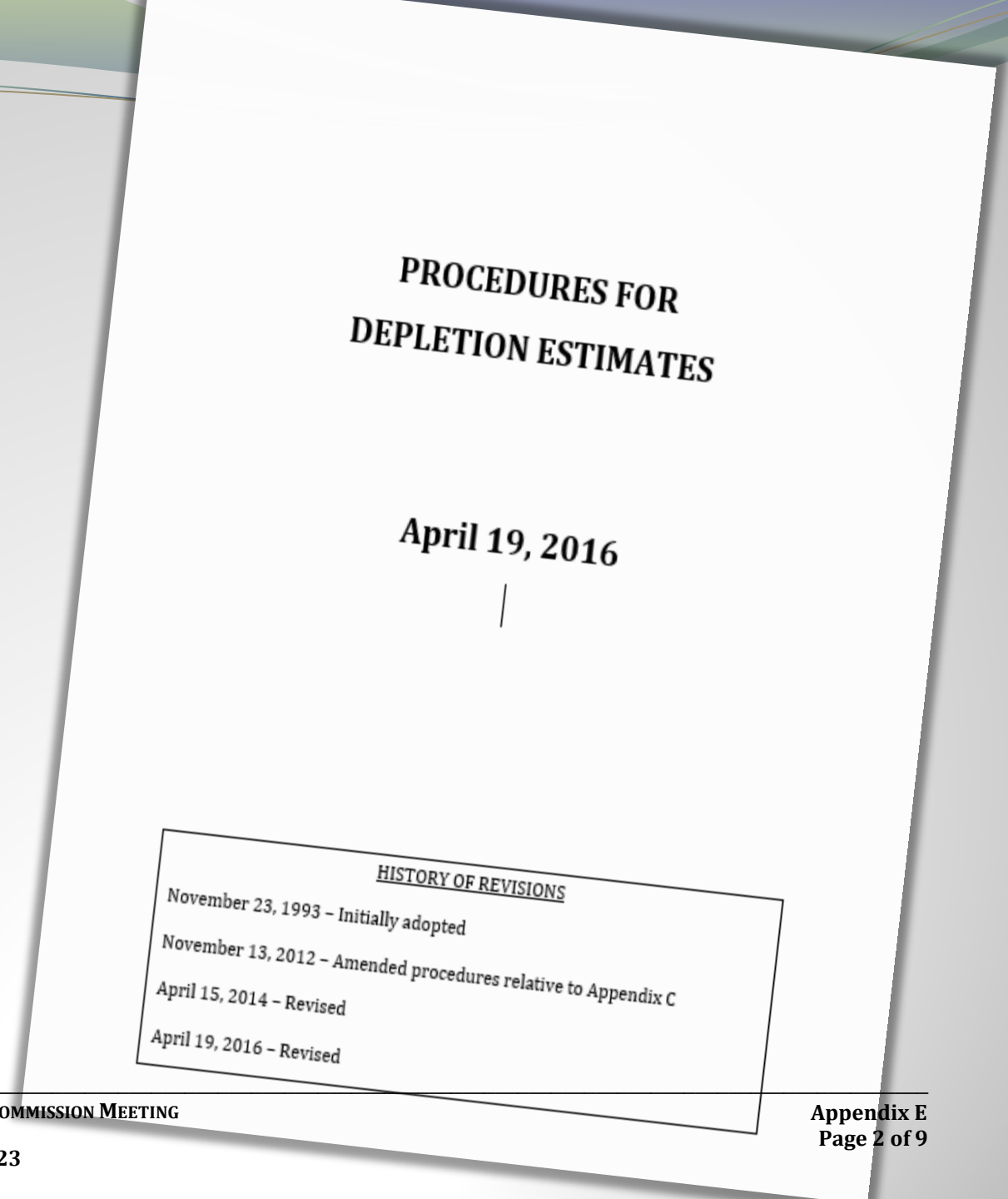
385-285-3118

Proposed Edits to: *Procedures for Depletion Estimates*

Bear River Commission Meeting
April 18, 2023
Brigham City, UT

Depletion Procedures



PROCEDURES FOR
DEPLETION ESTIMATES

April 19, 2016

HISTORY OF REVISIONS

November 23, 1993 – Initially adopted

November 13, 2012 – Amended procedures relative to Appendix C

April 15, 2014 – Revised

April 19, 2016 – Revised

Depletion Procedures – additional edits

BEAR RIVER COMMISSION

PROCEDURES FOR DEPLETION ESTIMATES

~~April 19, 2016~~November 22, 2022

I. INTRODUCTION

Congress ratified ~~T~~the Amended Bear River Compact (Amended Compact)~~was ratified by Congress~~ in 1980. ~~and~~ The Amended Compact established depletion amounts ~~to which states were entitled~~for each state bound by the Compact. The Amended Compact did not spell out in detail how depletions would be calculated. Instead, the Amended Compact directed that these depletion calculations would be completed in accordance with "Commission-approved procedures." In November of 1989, the Bear River Commission (Commission) adopted interim approved procedures with an understanding that with time and experience, the States ~~may~~could choose to amend the approved procedures.

The phrase "Commission-approved procedure" is found twice within the Amended ~~Bear River~~ Compact relative to depletion calculations. These places are as follows:

Article V.C.: "Water depletions permitted under provisions of subparagraphs (1), (2), (3), and (4) above, shall be calculated and administered by a *Commission-approved procedure*."

Article VI.B.: "Water depletions permitted under this Paragraph B shall be calculated and administered by a *Commission-approved procedure*."

In fulfillment of the Amended Compact, ~~T~~these procedures ~~will~~ set forth the methods the States will use to determine~~out how water~~ depletions ~~will be determined~~. These procedures are set forth as general guidelines to be used by the states to report to the ~~Bear River Commission (~~Commission~~)~~ the additional depletions that have occurred as ~~provided for under~~allowed by the Amended ~~Bear River~~ Compact. The Commission is required to~~will~~ account for depletions forward from January 1, 1976. ~~A~~The Commission~~,~~ approved and finalized a mapping project ~~was completed and approved~~ in April 1992 to establish base data from which the States could prepare future maps and tabulations of new depletions ~~could be prepared~~.

To account for the irrigation requirements of crops grown in the Bear River Basin, the Commission contracted with Utah State University, in cooperation with the University of Idaho and the University of Wyoming, to estimate irrigation depletions for subbasins within the Bear River ~~b~~Basin. A map illustrating~~of~~ the subbasins and Compact division boundaries is shown in Appendix A. Appendix B ~~shows~~summarizes the amount of depletions per acre ~~that was~~ estimated for each subbasin. The following narrative~~procedures will~~ describes the

Depletion Procedures

II. DEPLETION PROCEDURES

A. Irrigation Depletion

1. New Irrigated Lands

Depletion amounts from new irrigated lands, put in production since January 1, 1976, will be determined by multiplying the acreage brought into production by the irrigation depletion rate of the crop being irrigated on each field. These values will be summed, and an area-weighted average depletion rate for added acres will be calculated. For irrigated lands retired from irrigation, the number of acres retired will be multiplied by an area-weighted average depletion rate computed from the pre- and post-January 1, 1976 acres within a given subbasin. These depletion values by subbasin are summarized in Appendix B. Depletion values from Appendix B will be used unless modified by the Commission. Future modifications will require supporting information, and appropriate adjusted tables to verify depletion values. Any modifications to depletion values must be documented to the satisfaction of the Commission. Justification as to why the depletion values were modified will be documented in the report and approved by the Commission.

Depletion Procedures

An example depletion calculation for new acreage brought into irrigated agricultural production is made as follows:

Example area: Thomas Fork Subbasin

Criteria: 40 new acres of irrigation brought into production

40 acres x 1.17 acre-feet/acre* = 46.8 acre-feet of annual depletion

*(Based on Estimated Depletion from Appendix B)

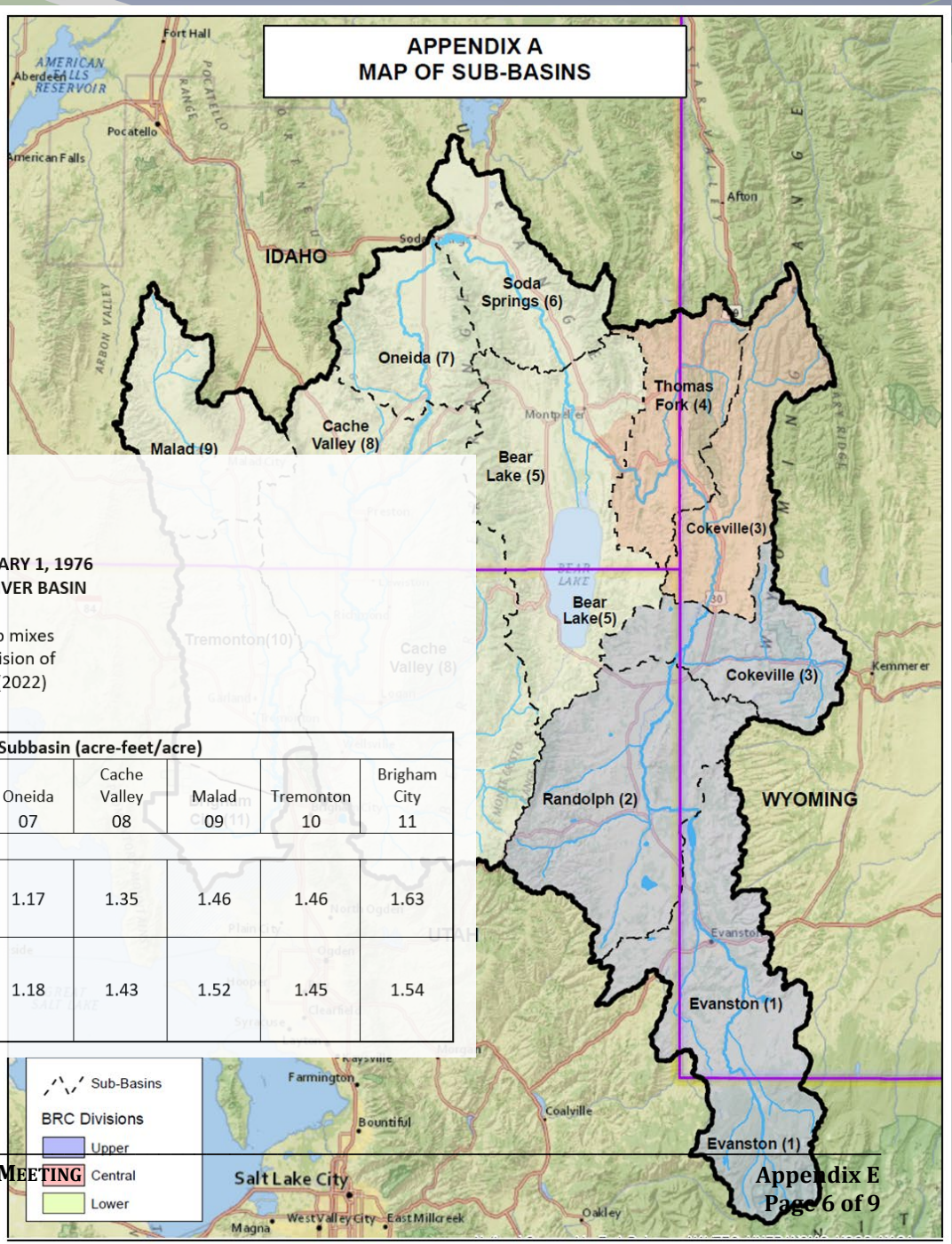
Similar calculations will be made for lands which were irrigated prior to January 1, 1976 which have since been retired from irrigation, except that the "Subtracted" depletion value will be used for the respective subbasin. The calculated subtraction depletion value will then be subtracted from the new or added depletion value to determine the net irrigation depletion change since January 1, 1976 for each subbasin.

APPENDIX B

ESTIMATED DEPLETION FOR POST JANUARY 1, 1976
LANDS FOR SUBBASINS OF THE BEAR RIVER BASIN

Based on average (2015 - 2019) crop mixes and updated ET rates from Utah Division of Water Resources' GridET program (2022)

	Bear River Irrigation Depletion Rates by Subbasin (acre-feet/acre)										
	Evanston 01	Randolph 02	Cokeville 03	Thomas Fork 04	Bear Lake 05	Soda 06	Oneida 07	Cache Valley 08	Malad 09	Tremonton 10	Brigham City 11
Rate for Added Acres	1.24	1.36	1.25	1.17	1.15	1.09	1.17	1.35	1.46	1.46	1.63
Rate for Subtracted Acres	1.30	1.34	1.28	1.22	1.20	1.09	1.18	1.43	1.52	1.45	1.54



Depletion Procedures

b. Other Supplemental Irrigation Development

The depletion estimate assigned to smaller supplemental rights or filings will be calculated by each state in a manner acceptable to the Commission. For depletions associated with the use of supplemental irrigation water rights, each state will apply the factor of 40% of the full supply depletion rate to acres irrigated with a post-1976 supplemental water right.

Depletion Procedures

D. Banking Procedures

When determining the net increase of irrigated acres in a subbasin, each state may subtract its post January 1, 1976, decrease in irrigated acres from the post January 1, 1976, increases in irrigated acres to determine a net change in irrigated acres, which it shall report to the Commission. In the alternative, at their discretion, individual states may elect to use either of the following options to account for pre-1976 depletions that are no longer occurring.

Depletion Procedures

b. Reporting Intervals

For the Upper and Central Divisions (above Stewart Dam), the states will determine the changes in depletion every five years, or as determined by the Commission. For the Lower Division (below Stewart Dam), the states will determine depletions every ten years.

Technical Advisory Committee (TAC)
2019 Depletion Study Update

Matt Anders
Idaho Department of Water Resources

Technical Advisory Committee (TAC) Participants

Bear River Commission

Don Barnett
Jody Williams

Wyoming

- Kevin Payne
- Mike Johnson
- Mel Fegler
- Travis McInnis
- Sam Swartz
- Charlie Ferrantelli

Utah

- Will Atkin
- Jake Serago
- Skyler Buck
- Thomas Moore
- Clay Lewis

Idaho

- Ethan Geisler
- Margie Wilkins
- Phil Blankenau
- Mat Weaver
- James Cefalo
- Cody Parker
- Matt Anders

What is a Depletion?

- Water that was put to beneficial use on or after January 1, 1976, that reduces the flow of the Bear River and its tributaries.
  - Equivalent to Consumptive Use

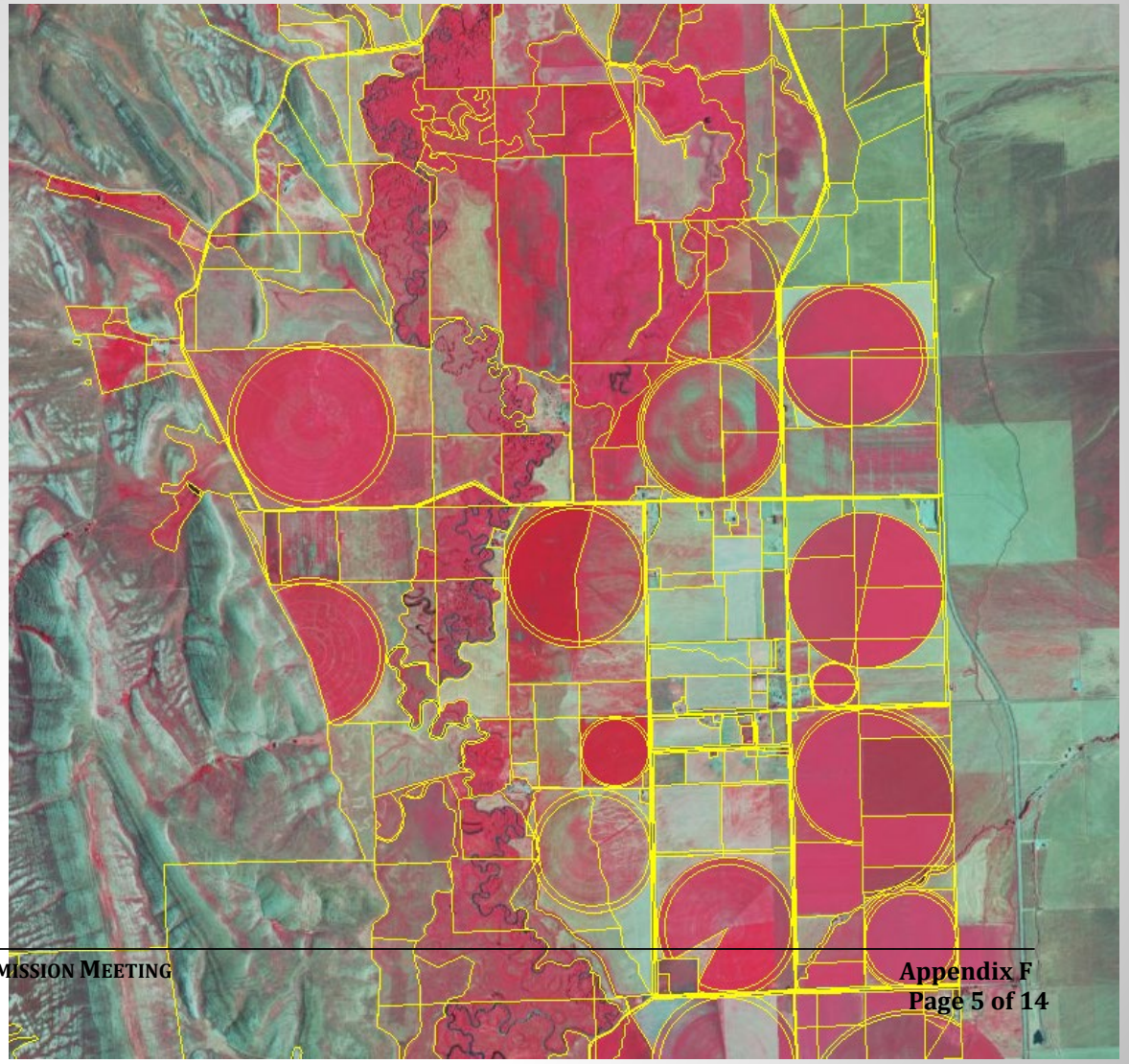
- Categories
  - Irrigation
  - Municipal
  - Industrial
  - Reservoir Evaporation
  - Ordinary Domestic & Stockwater – Exemption in Article VI.E

Agricultural Depletions

- Sources of depletion
  - Water that transpires from plants as they grow.
  - Water that evaporates from the soil surface and foliage.

Agricultural Depletions - Mapping

- Mapped all agricultural fields in the Bear River Basin.
- New irrigated land since 1976.
- Land irrigated in 1976 that was retired or changed use.



BEAR RIVER COMMISSION

Agricultural Depletions – ET Rates

- Calculated depletion from irrigation that started after January 1, 1976, on a field-by-field basis using GridET software created by Utah.

	Bear River Irrigation Depletion Rates by Subbasin (acre-feet/acre)										
	Evanston 01	Randolph 02	Cokeville 03	Thomas Fork 04	Bear Lake 05	Soda 06	Oneida 07	Cache Valley 08	Malad 09	Tremonton 10	Brigham City 11
Rate for Added Acres	1.24	1.36	1.25	1.17	1.15	1.09	1.17	1.35	1.46	1.46	1.63
Rate for Subtracted Acres	1.30	1.34	1.28	1.22	1.20	1.09	1.18	1.43	1.52	1.45	1.54

Agricultural Depletions – Supplemental

- Land with a water right with a priority date prior to January 1, 1976, that is also irrigated with a water right established after January 1,1976.

- The TAC was unable to develop a universal method, so it was determined to use 40% of the full depletion for the subbasin as a common method, based on averages of estimated usage.

    - Wyoming determined that for the 2021 water year, supplemental depletion was 80%.

Municipal Depletions

- Public water systems or county population data
- Sources of depletion
  - Production, exterior
  - washing, irrigation, etc.
- Calculation method
  - Depletion = # people * 0.11 AF

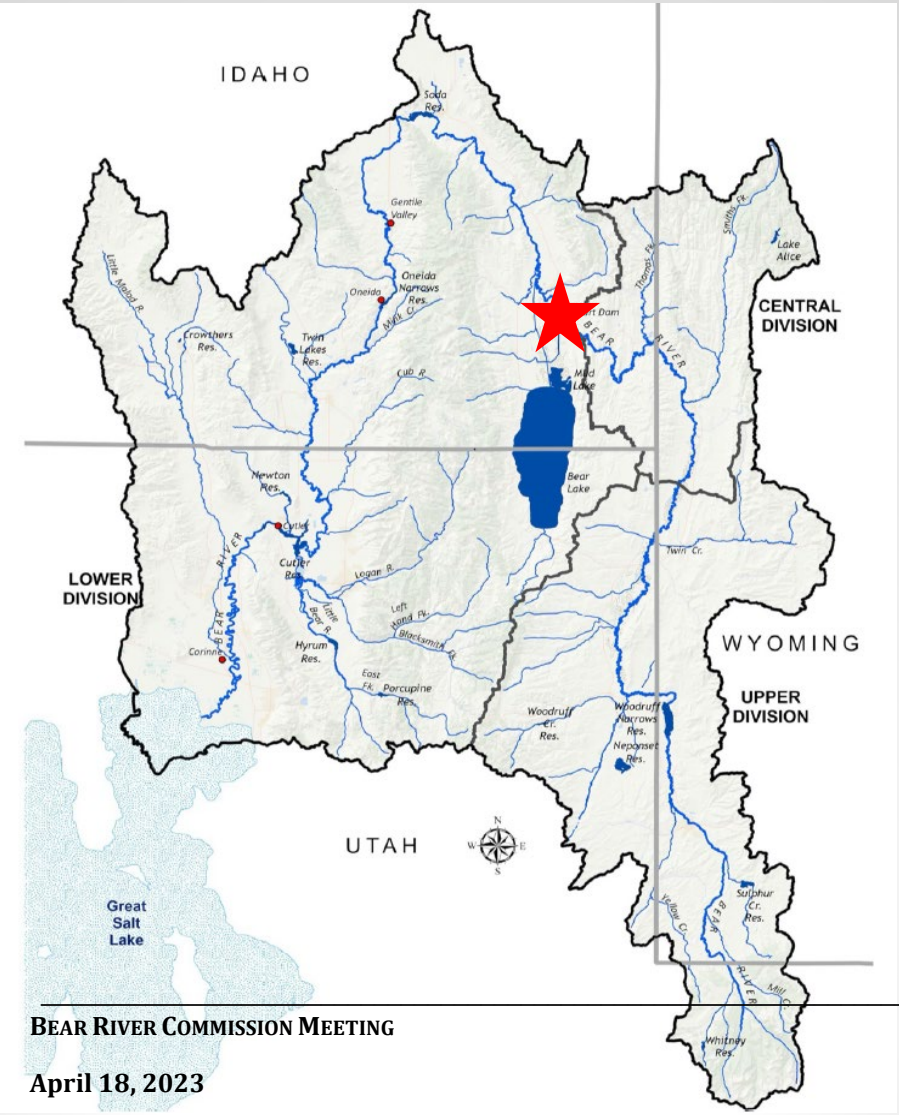
Industrial Depletions

- Industrial use not included in the municipal depletion.
- Sources of depletion
  - Water consumed by products or processing: Cement plant and phosphate processing.
- Calculation method
  - Depletion was estimated for each facility using water right or water usage data.

Reservoir Evaporation Depletions

- Evaporation from new reservoir storage since January 1, 1976.
  - Includes new reservoirs and expansion of pre-1976 reservoirs.
- Calculation methods
  - Depletion = surface area X ET (GridET)
  - Woodruff Narrows was estimated using a computer model and ET (GridET)

Depletion Study Results



Bear River Commission
Estimated Annual Depletions (Acre-Feet)[1]
Changes from January 1, 1976, to December 31, 2019

ABOVE STEWART DAM

State	Allocation	Agricultural Depletions	M&I Depletions	Reservoir Evaporation	Total Depletions	Remaining Allocation
Utah	13,000	5,839	-8	582	6,413	51% 6,587
Wyoming	13,000	5,058	826	140	6,024	54% 6,976
Idaho	2,000	1,150	3	0	1,153	42% 847

LOWER DIVISION

State	Allocation	Agricultural Depletions	M&I Depletions	Reservoir Evaporation	Total Depletions	Remaining Allocation
Idaho	125,000[2]	16,387	245	11	16,643	108,357
Utah	275,000[3]	-16,879	11,543	0	-5,336	275,000

[1]Any reductions in pre-1976 depletions are reflected in the above numbers.

[2]First right under Compact. Compact grants additional rights.

[3]Second right under Compact. Compact grants additional rights.

Figure 1 – Summary table of depletion amounts

Depletion Study Results – Total Depletions

Above Stewart Dam

State	Allocation (AF)	1990 Depletion Study (AF)	2009 Depletion Study (AF)	2019 Depletion Study (AF)	2019 Remaining Allocation (AF)
Utah	13,000	5,381	6,860	6,413	6,587
Wyoming	13,000	3,210	3,295	6,024	6,976
Idaho	2,000	1,293	1,313	1,153	847

Below Stewart Dam

State	Allocation (AF)	1990 Depletion Study (AF)	2009 Depletion Study (AF)	2019 Depletion Study (AF)	2019 Remaining Allocation (AF)
Idaho	125,000	7,300	8,977	16,643	108,357
Utah	275,000	4,114	407	-5,336	275,000

Depletion Study Results – Recommendations

- Identify ways to maintain a GIS dataset to be used for the next depletion study.
- Continue development of a methodology for supplemental water right depletions.
- Review the method used to calculate the ET for removed acres.
- Follow the development of OpenET for possible use in future depletion estimates.
- Support additional weather and eddy covariance stations to increase accuracy of future depletion estimates.
- Review the per capita method for calculating municipal depletions.
- Review the method use for industrial use in the updated Woodruff Narrows Model.

History of the Bear River Commission/Compact

Bear River Commission
April 18, 2023
BRMBR, Brigham City, UT

BEAR RIVER COMMISSION

The Herald Journal

Vol. 80, No. 129 | Tuesday, May 30, 1989 | Covering Bridgerland, Northern Utah and Southern Idaho | Logan, Utah | 16 pages, 2 sections | 35 cents

Bush welcomes accord

BONN, West Germany (UPI) — President Bush said today NATO's accord on a troop-cut proposal and nuclear missile talks are "a victory for the alliance" that gives the West new leverage to meet the challenge of change in the Soviet Union.

Bush called the allied backing for his plan for sharp reductions of conventional military forces in Europe and a compromise on the thorny issue of negotiations over short-range nuclear forces a "double hit" that has given the 40-year-old Western alliance "something sound and solid to build on."

Without gloating, Bush said at a summit-ending news conference in Brussels, Belgium, before flying to West Germany that the "successful results" of his first turn on the stage as a world leader vindicated his cautious approach to putting his own stamp on U.S. foreign policy.

Bush welcomed the compromise on short-range nuclear weapons that defused a NATO rift over negotiations with Moscow on the missiles.

The issue, fanned by the public relations skills of Soviet leader Mikhail Gorbachev, pitted West Germany and other NATO members that favored early talks with the Kremlin against the United States and Britain.

"I don't view it as a victory for the United States," Bush said of the compromise, a deal in which the United States yielded little of substance. "I view it as a victory for the alliance.

"We're here as part of an alliance and I don't think we ought to have winners or losers out of a summit that everybody agrees has been very, very unified."

Similarly, Bush was pleased by the allied leaders' endorsement of his proposal to limit U.S. and Soviet troops in Europe to 275,000 — which would cut 30,000 Americans and perhaps 10 times as many Soviets — as well as negotiate reductions in armor, artillery and combat aircraft.

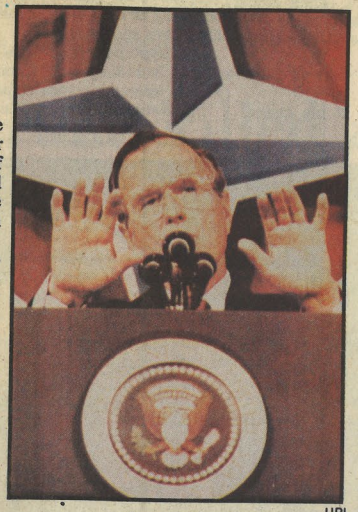
"Taken in tandem, it demonstrates the alliance's ability to manage change to our advantage, to move beyond the era of containment," Bush said. "Our overall aim is to overcome the division of Europe and to forge a unity based on Western values.

"The starting point, of course, is to maintain our security while seeking lessened tensions and adapt to changing circumstances."

Bush, clearly pleased with his performance at the summit, was to meet late Tuesday with West German Chancellor Helmut Kohl, the president's main antagonist in the controversy over the nuclear missiles that had threatened to sour the 40th anniversary NATO meeting.

Opening their 25-hour visit, the president and first lady Barbara Bush were

See SUMMIT on page 2



George Bush UPI

Soviets call for cuts in military

MOSCOW (UPI) — Soviet leader Mikhail Gorbachev revealed the nation's military budget today for the first time, listing it at $123.6 billion and proposing to cut it by 14 percent.

Making known the once sacrosanct secret figure meets what President Bush has called one of the tests by which his

"...Jibson has spent much of his life making sure everybody gets their fair share, no more, no less."

Jibson's ties to Bear River go long way back

By John J. Wise
staff writer

If any name is synonomous with the Bear River, it's Wallace N.

about the 500-mile long river and its
ably know, or at least know of, Wally

eights resident, retired last month for
eer spent in Cache Valley and in the

1980 when he wrapped up 34 years
ior's Geological Survey.
r job," Jibson said. "I had a contract
, but I was actually civil service."
ed a local USGS office on Logan's
u til the office was closed in 1983.
n '80, Jibson stayed on with the Bear
that administers the important Bear
rs he was the federal representative and
nission, working as its engineer/manager until April

actual river basin figured into Jibson's long career,
the
er Compact between Utah, Idaho, and Wyoming
may be
gnificant.

In a 198
Journal story about Jibson, a reporter summed it up well:

"The Bear Riv
ows through an unusual area — Wally Jibson's veins. The river is Ji
n's lifeblood. It's the lifeblood of Utah, Idaho and Wyoming too, and Jibson has spent much of his life making sure everybody gets their fair share, no more no less."

Anyone who retires has a story to tell. Jibson's story is the Bear and the compact that parts its waters. In his mind, the Bear River Compact stands out as a single chapter in his career that he is most proud of.

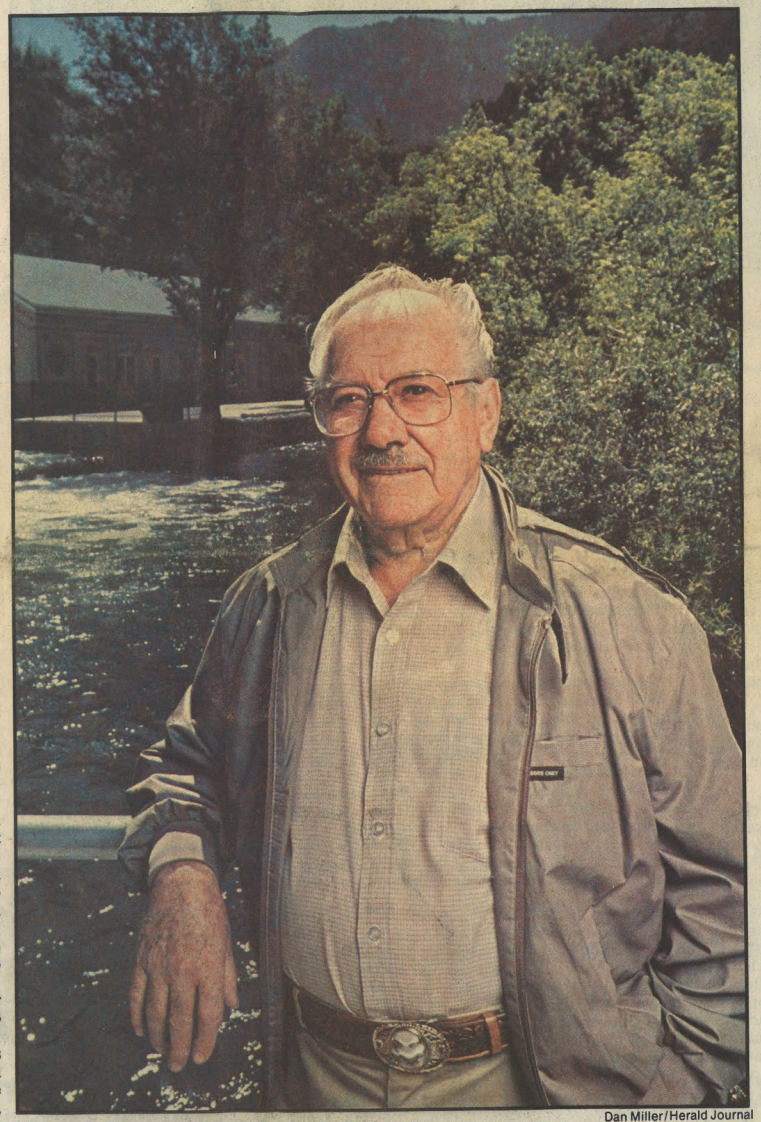
"I wasn't here a year when my boss had me working with him and the Bear River Commission negotiating team," Jibson said, who chaired the engineering committee that gathered technical information for compact negotiators.

"Our comittee put together all of the technical studies that the negotiators needed to help them divide the water. I'm really happy to have been involved in that," he said.

One of three men still alive who served on the original 20-member compact negotiating team in the early 1950s, he has been asked to write the history of the Bear River Compact.

Two things led to the compact, he said: Utah Power and Light Co.'s 1928 decreed right to store water in Bear Lake; and the natural flow in the river — which he said became critical in the dry '30s when the Bear River sent little water down its course. Users below had priority,

See JIBSON on page 2



Wallace N. Jibson

Dan Miller/Herald Journal

History of the Bear River Compact

Key Dates

Original Compact

- 1943 informal meetings
- 1946 Congressional consent
- 1948 First official negotiation meeting
- 1955 Compact approved by states
- 1958 Compact signed

Amended Compact

- 1943 informal
- 1970 Tri-state Negotiating Committee
- 1978 signed by states
- 1980 Compact signed

Bear Lake Conditions and 2023 Irrigation Storage Allocation

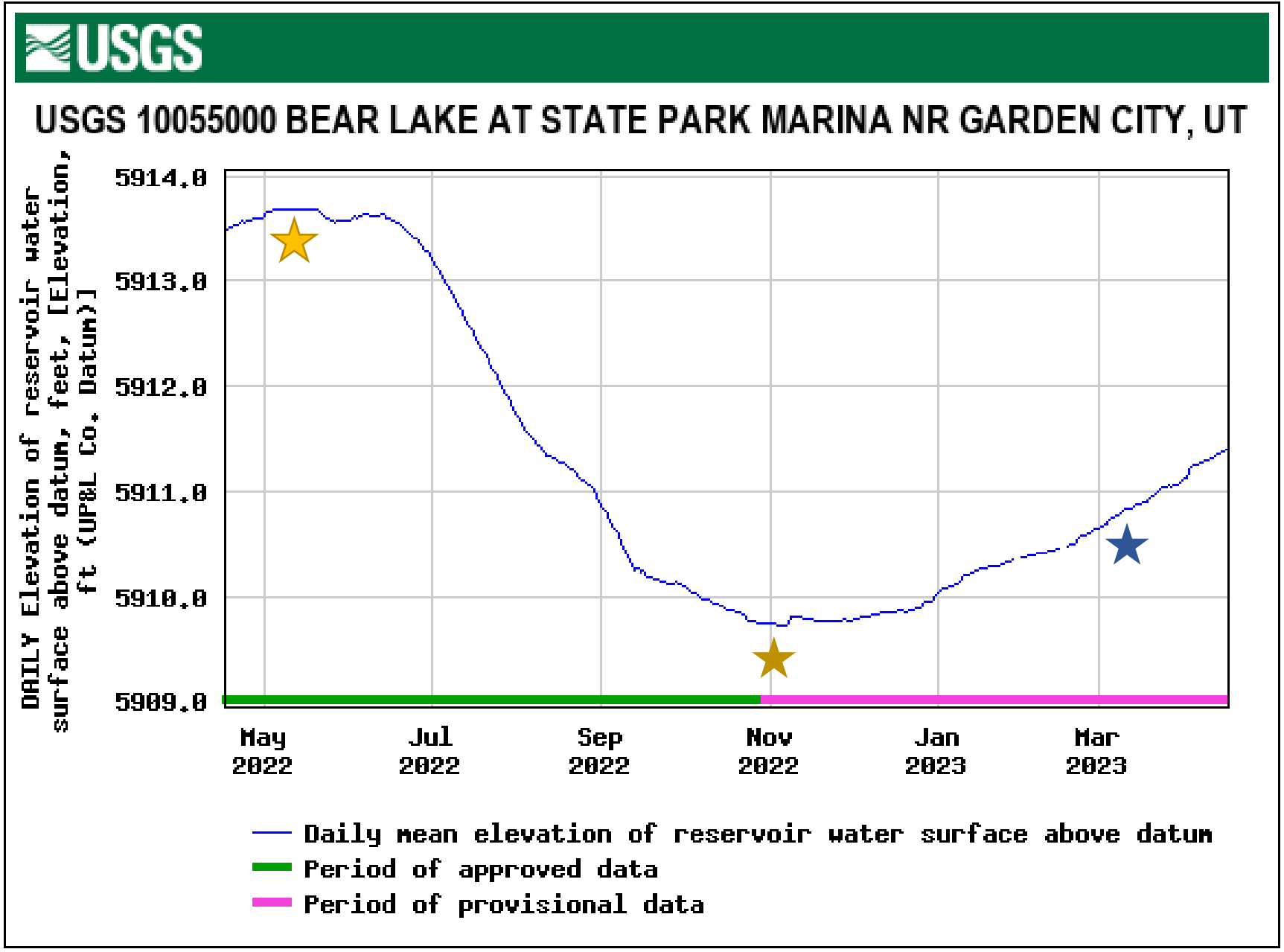
Bear River Commission
April 18, 2023






Appendix H

PACIFICORP
POWERING YOUR GREATNESS



Notable Bear Lake Elevations

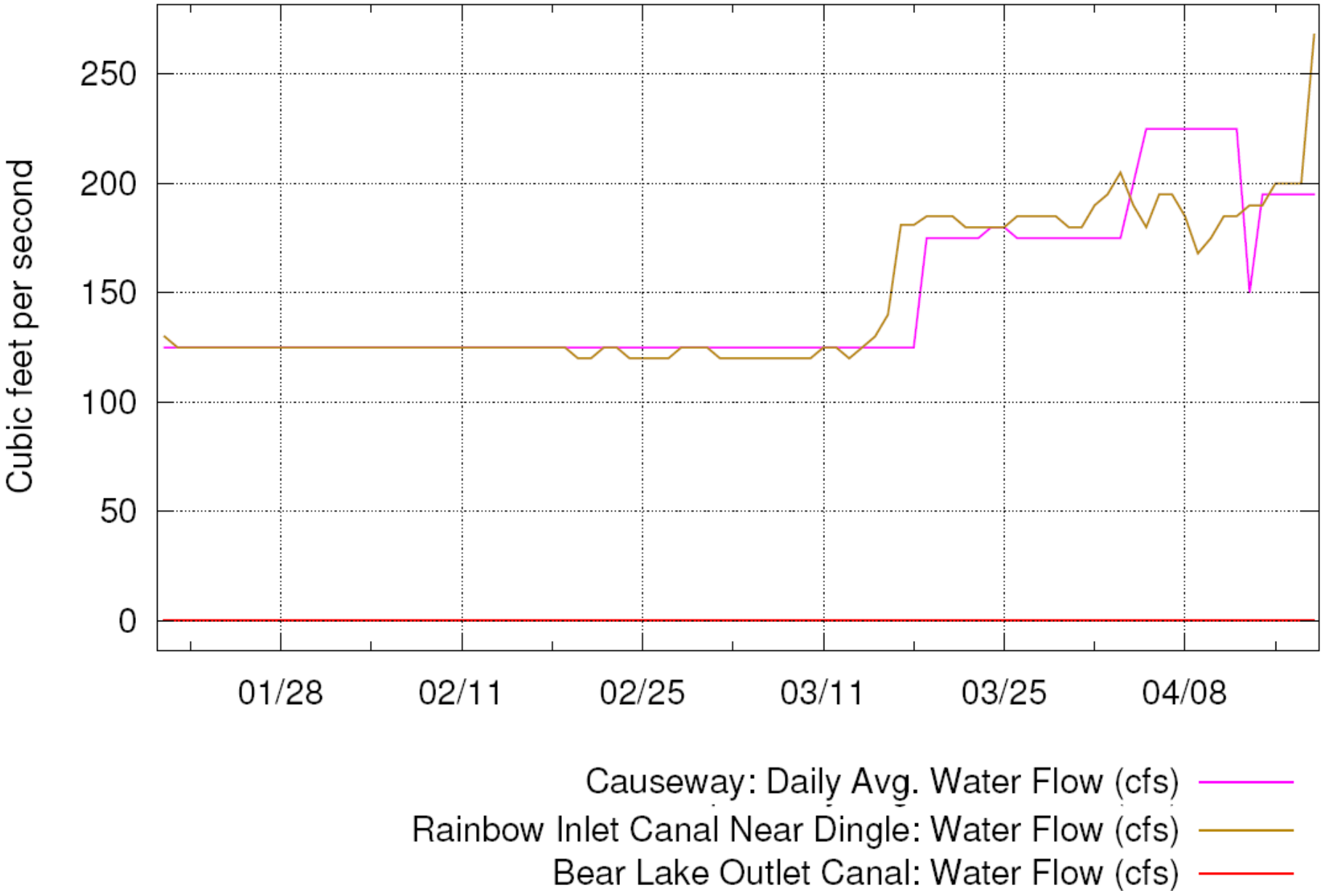
May 6, 2022
High Elevation 5,913.69’ ★

October 6, 2022
Low Elevation 5909.71’ ★

Current
April 17, 2023 5911.39’

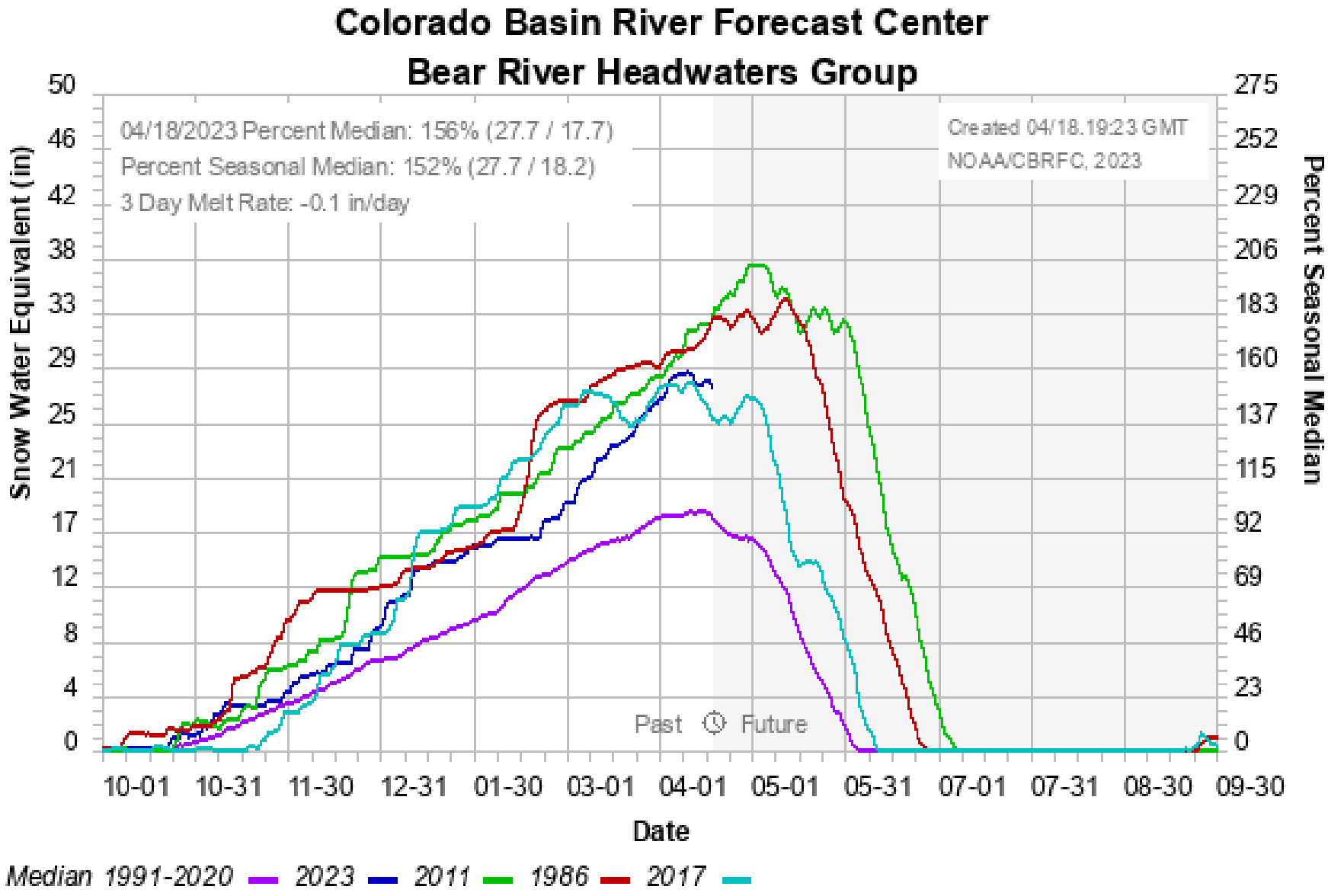
Bear Lake/Mud Lake Equivalent Elevation exceeded 5911.0’ March 9, 2023 ★

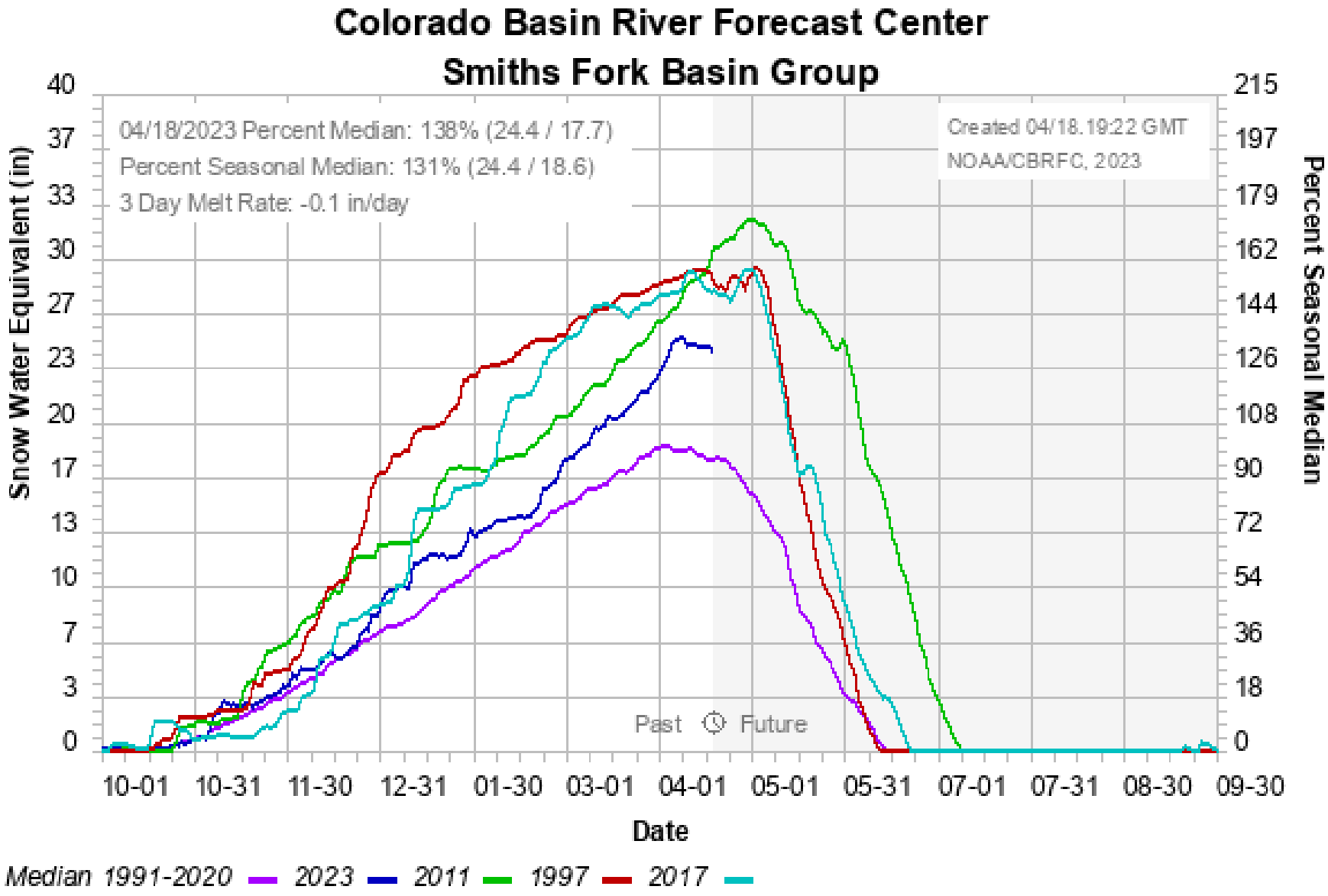
Recent Flows at Bear Lake



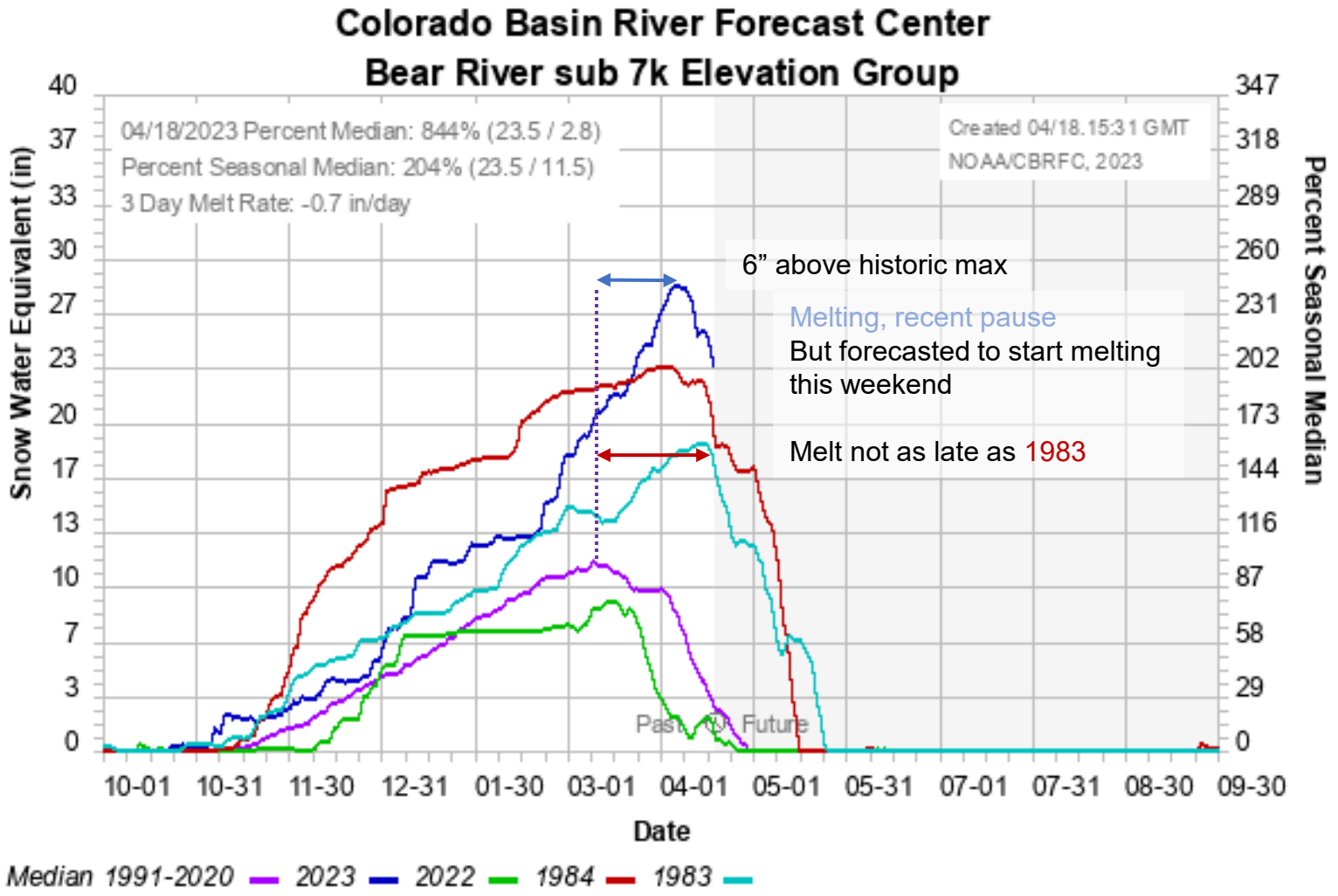
Current Flows:

April 17, 2023
Rainbow: 268 cfs
Causeway: 195 cfs
Outlet: Closed

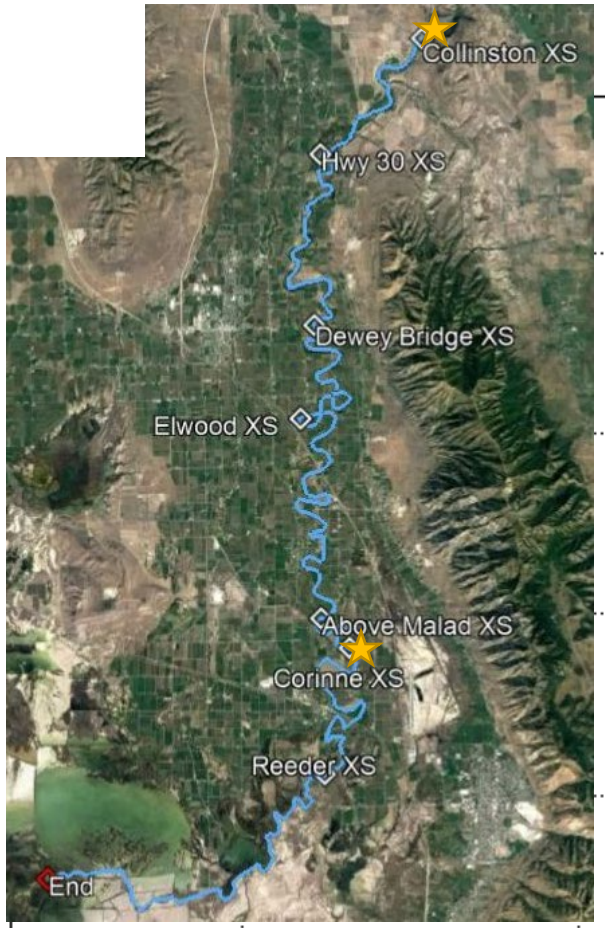

Colorado Basin River Forecast Center
Bear River Headwaters Group
04/18/2023 Percent Median: 156% (27.7 / 17.7)
Percent Seasonal Median: 152% (27.7 / 18.2)
3 Day Melt Rate: -0.1 in/day
Created 04/18.19:23 GMT
NOAA/CBRFC, 2023
Snow Water Equivalent (in)
Percent Seasonal Median
50
46
42
38
33
29
25
21
17
12
8
4
0
275
252
229
206
183
160
137
115
92
69
46
23
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1991-2020
2023
2011
1986
2017


Colorado Basin River Forecast Center
Smiths Fork Basin Group
04/18/2023 Percent Median: 138% (24.4 / 17.7)
Percent Seasonal Median: 131% (24.4 / 18.6)
3 Day Melt Rate: -0.1 in/day
Created 04/18.19:22 GMT
NOAA/CBRFC, 2023
Snow Water Equivalent (in)
Percent Seasonal Median
40
37
33
30
27
23
20
17
13
10
7
3
0
215
197
179
162
144
126
108
90
72
54
36
18
0
Past
Future
10-01
10-31
11-30
12-31
01-30
03-01
04-01
05-01
05-31
07-01
07-31
08-30
09-30
Date
Median 1991-2020
2023
2011
1997
2017

Historical Max SWE in low elevation (below 7,000 feet)



Recent Flows at Streamflow Gages below Bear Lake



Cubic feet per second

5000
4000
3000
2000
1000
0

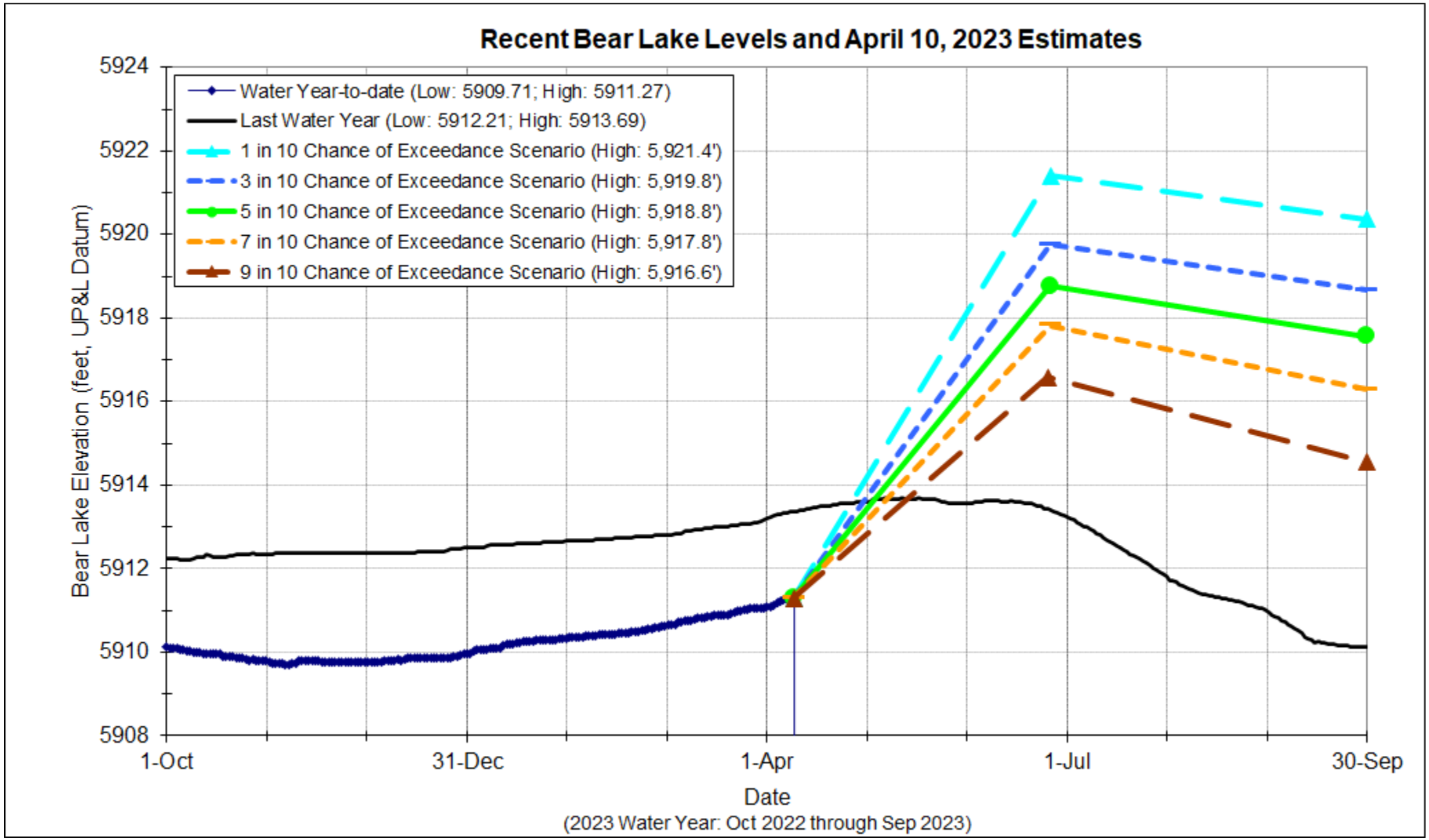
01/28
02/11
02/25
03/11
03/25
04/08

Corinne

Utah-Idaho Stateline

Below Cutler (Collinston Gage)

Below Oneida


Recent Bear Lake Levels and April 10, 2023 Estimates
Water Year-to-date (Low: 5909.71; High: 5911.27)
Last Water Year (Low: 5912.21; High: 5913.69)
1 in 10 Chance of Exceedance Scenario (High: 5,921.4')
3 in 10 Chance of Exceedance Scenario (High: 5,919.8')
5 in 10 Chance of Exceedance Scenario (High: 5,918.8')
7 in 10 Chance of Exceedance Scenario (High: 5,917.8')
9 in 10 Chance of Exceedance Scenario (High: 5,916.6')
Bear Lake Elevation (feet, UP&L Datum)
5924
5922
5920
5918
5916
5914
5912
5910
5908
1-Oct
31-Dec
1-Apr
1-Jul
30-Sep
Date
(2023 Water Year: Oct 2022 through Sep 2023)

2023 Bear Lake Irrigation Storage Allocation

- Bear Lake estimated maximum spring elevation is **5,918.8** feet
- Bear Lake Irrigation Storage Allocation is **245,000** acre-feet

Additional Estimates

Probability of Exceedance	NRCS **April 10, 2023** April-July Forecast (Thousands of AF) Bear River at Stewart Dam	Estimated Spring Maximum Bear Lake Elevation	Estimated Date of Spring Maximum Bear Lake Elevation	Increase from Previous Low Elevation	Irrigation Allocation (Thousands of AF)	Estimated Irrigation Storage Demand (TAF)	Following Fall Low Elevation using Lesser of Allocation or Estimated Storage Demand (includes Average Net Bear Lake Inflow)	Estimated Seasonal Bear Lake Decrease (Spring Max to Fall Low) in feet
10%	**575**	5921.4'	June 26	11.7'	245	0	5920.4'	1.0
30%	**460**	5919.8'	June 26	10.1'	245	3	5918.7'	1.1
50%	**390**	5918.8'	June 26	9.1'	245	11	5917.6'	1.2
70%	**325**	5917.8'	June 26	8.1'	245	33	5916.3'	1.5
90%	**240**	5916.6'	June 25	6.9'	245	66	5914.5'	2.0

Bear Lake Ice-Over Records

- **101 years of data**
- PacifiCorp Lifton operators started in 1923
- Now maintained by Emily Wright of Utah Division of Wildlife Resources
- If Bear Lake completely ices-over, record:
  - Date of first ice-over
  - Date of complete thaw

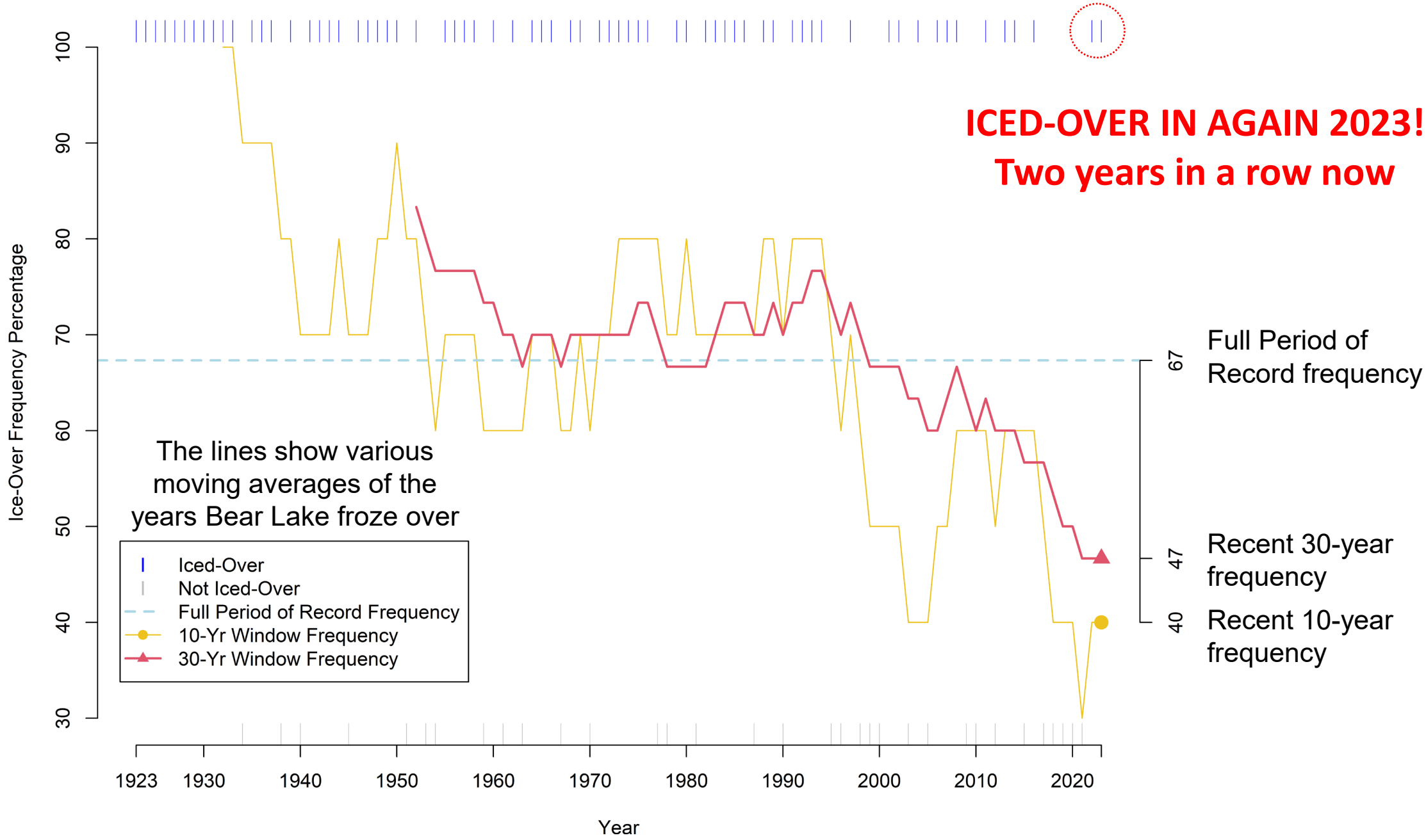
Bear Lake Freeze and Ice Out Data (1923-present)

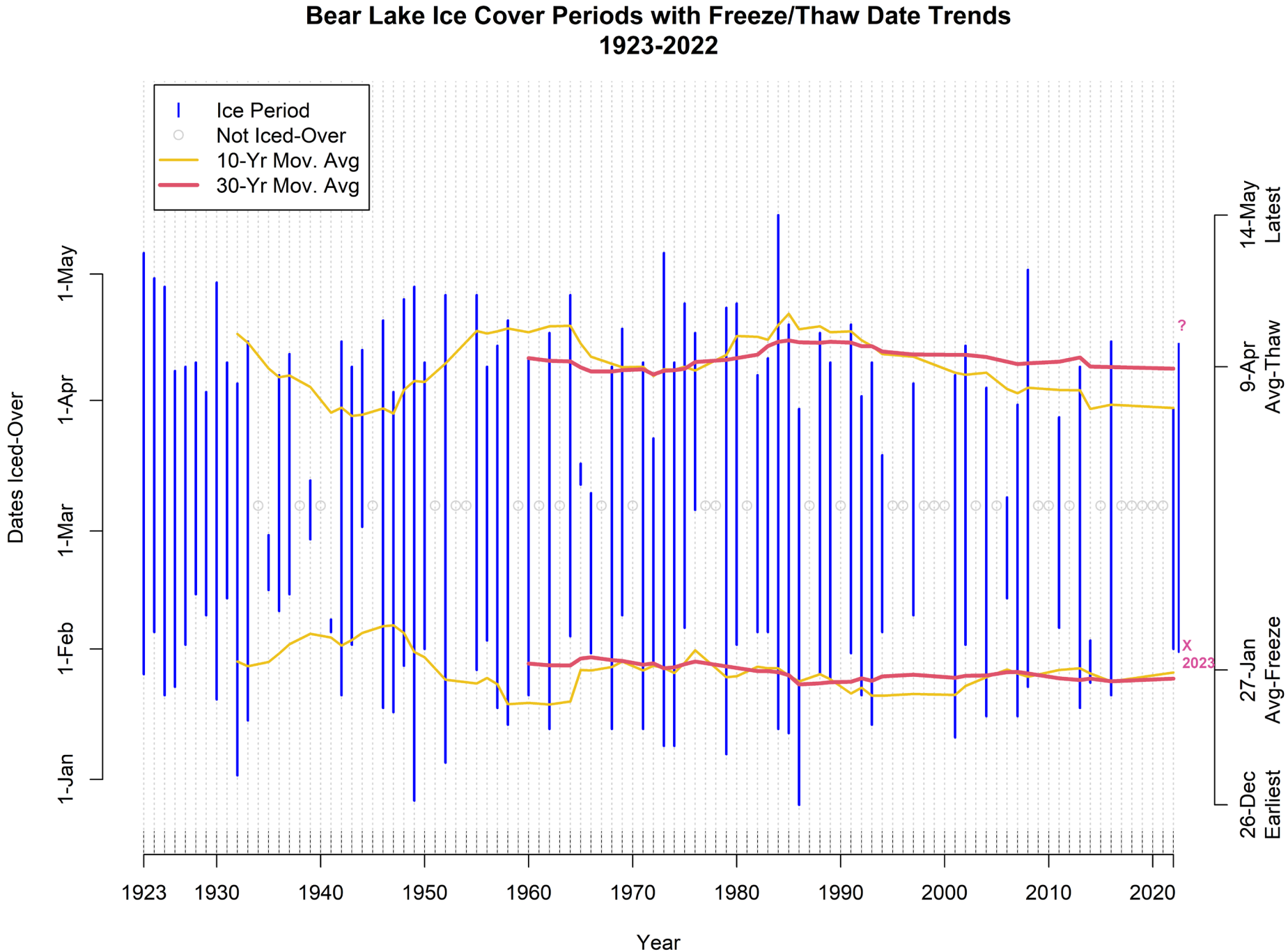
Bear Lake was judged to have "frozen over" when you could go up to a high point (Logan Canyon overlook) and look down and not see any open water on the lake*

Data from UP&L. Rock Holbrook, retired UP&L kept data from mid-1970's-2000. After 2000, Scott Tolentino, UDWR, has kept the record

Year	Julian Freeze	Julian Ice Out	# Days	Ice Over?		Fun Statistics
1923	23	126	103	1	1923	- On average, since 1923, Bear Lake has froze over 68% of the time
1924	36	120	84	1	1924	in the last 97 years, but only 44% of the time in the last 25 years (1995-2019)
1925	21	118	97	1	1925	
1926	23	98	75	1	1926	- Longest period of no freeze: 3 years ('98, '99, '00 & '17, '18, '19)
1927	26.41538462	57	31	1	1927	
1928	45	100	55	1	1928	- Earliest freeze over: 12/27/1985
1929	4	93	89	1	1929	
1930	20	119	99	1	1930	- Latest freeze over: 3/12/1965
1931	44	100	56	1	1931	
1932	2	95	93	1	1932	- Average date of freeze over: January 18
1933	15	105	90	1	1933	
1934	NA	NA	0	0	1934	- Average date ice gone: April 9
1935	46	59	13	1	1935	
1936	41	97	56	1	1936	- Average number of days frozen = 73
1937	45	102	57	1	1937	
1938	NA	NA	0	0	1938	- Earliest date ice gone: 2/8/1941
1939	58	72	14	1	1939	
1940	NA	NA	0	0	1940	- Latest date ice gone: 5/14/1984
1941	36	39	3	1	1941	
1942	21	105	84	1	1942	- Shortest amount of time frozen: 3 days (1941)
1943	33	99	66	1	1943	
1944	61	103	42	1	1944	- Driest period recorded: 61 days (Sep 12 - Nov 12- 1952)
1945	NA	NA	0	0	1945	
1946	18	110	92	1	1946	- Average frost-free period 137 days
1947	17	93	76	1	1947	
1948	28	115	0	0	1948	
1949	-4	118	122	1	1949	

Bear Lake Ice-Over Frequency Trends 1923-2023





Still frozen over

2023 Notes
Froze over Feb 1, 2023


Questions?