



WY Conditions & Outlooks:

Precipitation, Temperatures, Drought, Floods, & Everything In-between

May 25, 2023



Presentation Outline

- **Current Conditions:** Overview
 - SWE
 - Streamflow
 - Reservoir Supply
- **Outlooks:** Temperature & Precipitation
 - Flood Potential
- **Highlight of the Month**
 - Gauge to Page
- **Questions**

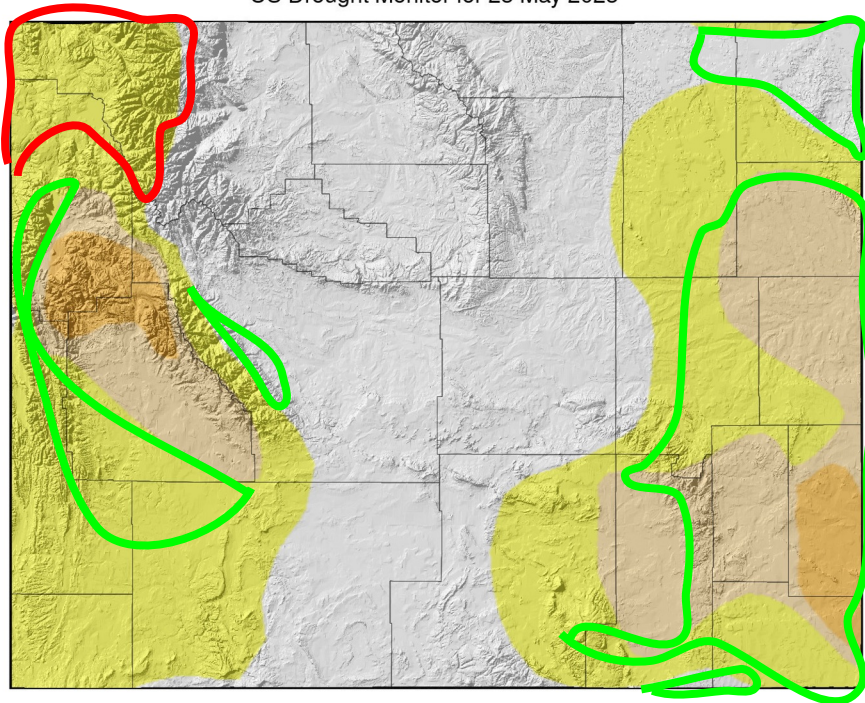


Current Conditions

US Drought Monitor for May 23, 2023

(Released Thursday, May 25, 2023)
Valid 8 a.m. EDT

US Drought Monitor for 23 May 2023



US Drought Monitor	
35.89%	D0 Abnormally Dry
14.90%	D1 Moderate Drought
3.64%	D2 Severe Drought
0.00%	D3 Extreme Drought
0.00%	D4 Exceptional Drought

Map Created by:
National Drought Mitigation Center
<https://droughtmonitor.unl.edu>



Map Layout Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



Drought Level	Percentile
None	>30
D0 (Abnormally Dry)	21 to 30
D1 (Moderate Drought)	11 to 20
D2 (Severe Drought)	6 to 10
D3 (Extreme Drought)	3 to 5
D4 (Exceptional Drought)	0 to 2

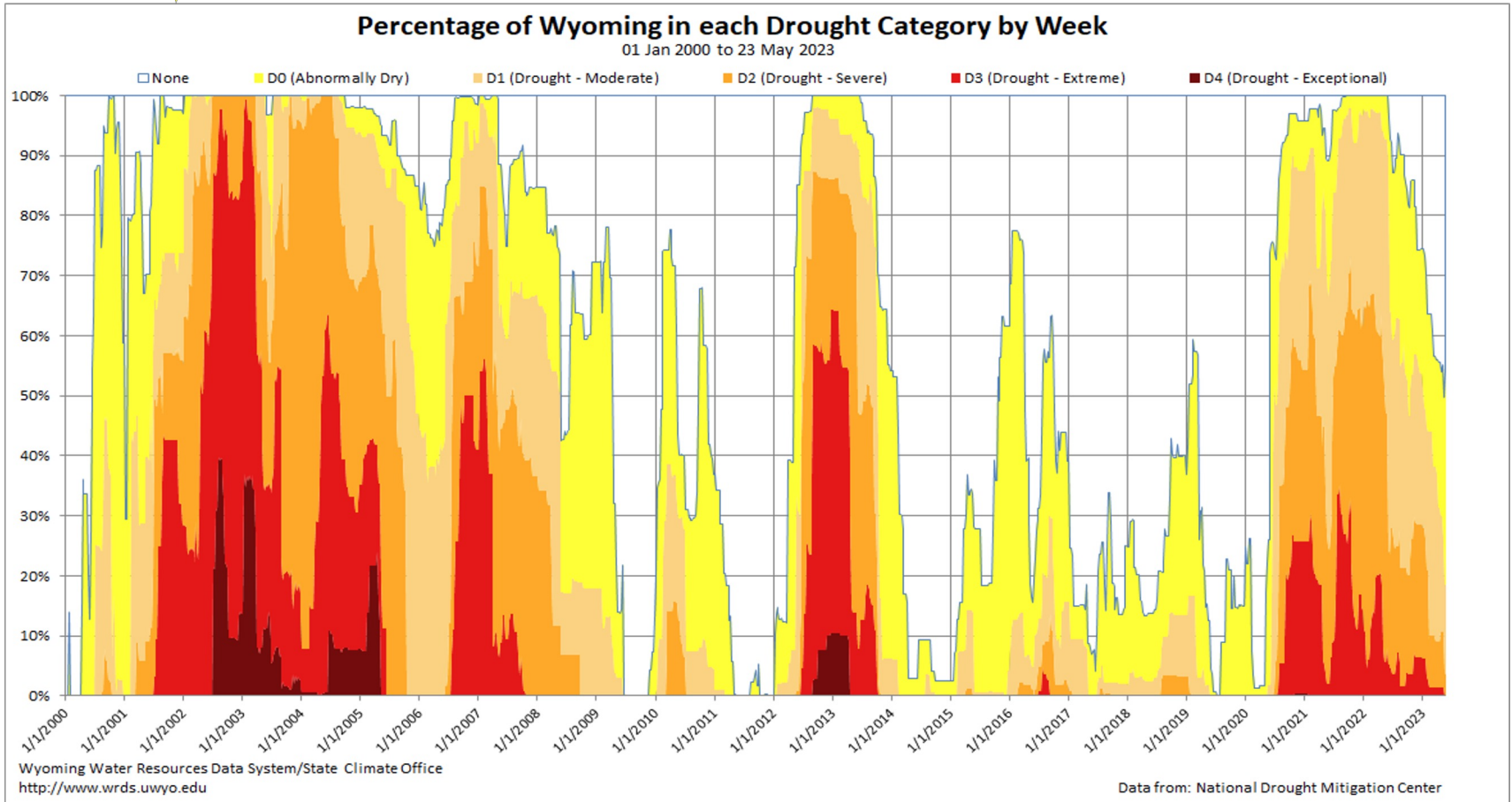
<https://youtu.be/45MQ1GB-uTc>

Improvements since the last webinar throughout the east and west central parts of the state. **Degradation** in the northwest where precipitation deficits are beginning to accumulate, impacting soils.

The U.S. Drought Monitor, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln. The U.S. Drought Monitor website is hosted and maintained by the NDMC. <http://droughtmonitor.unl.edu>

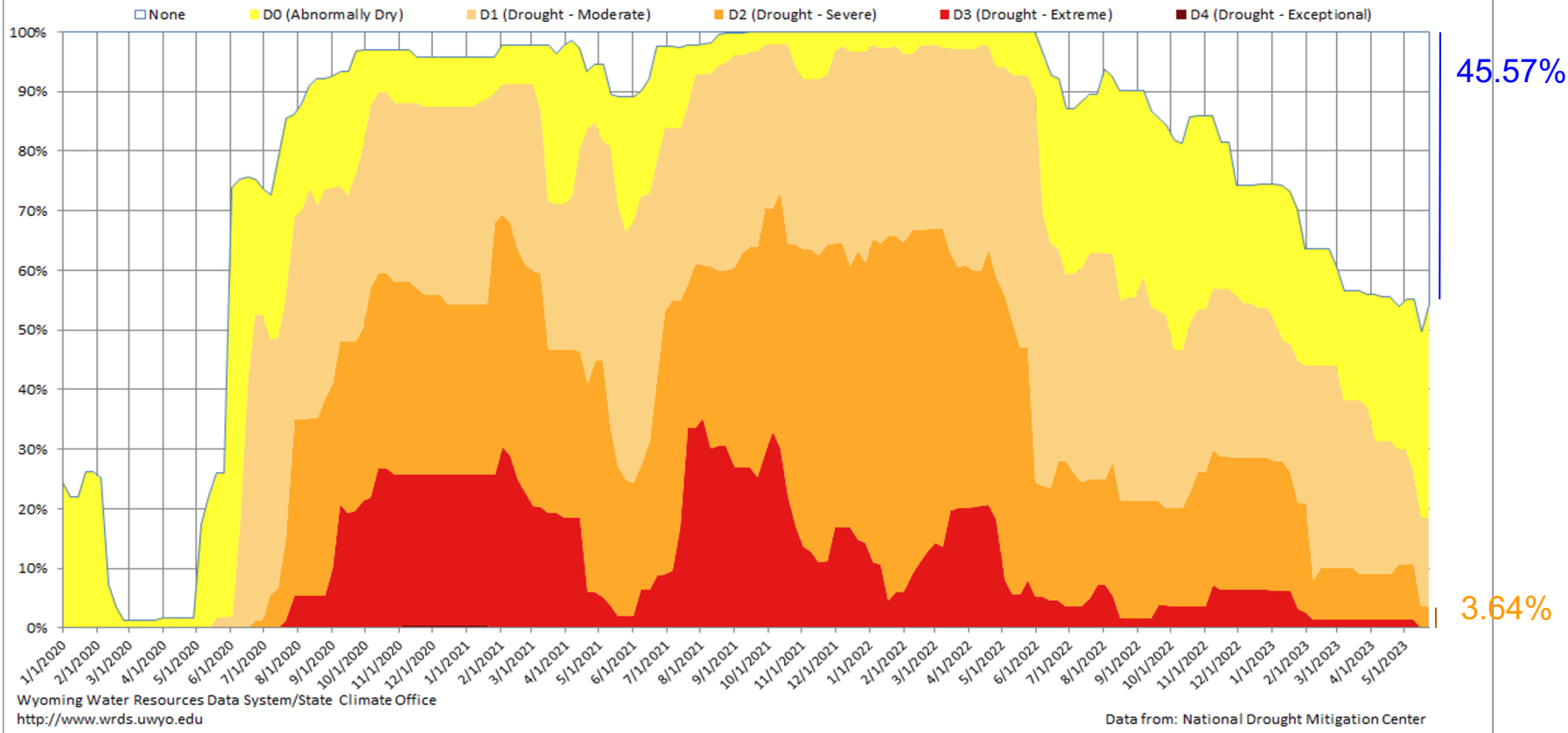
Map Layout Created 25 May 2023 <http://www.wrds.uwyo.edu>

Wyoming Area Affected: 54.43% D0-D4 ; 18.53% D1-D4



Percentage of Wyoming in each Drought Category by Week

01 Jan 2020 to 23 May 2023



14-Day Precipitation Percentile (11 May 2023 to 24 May 2023)

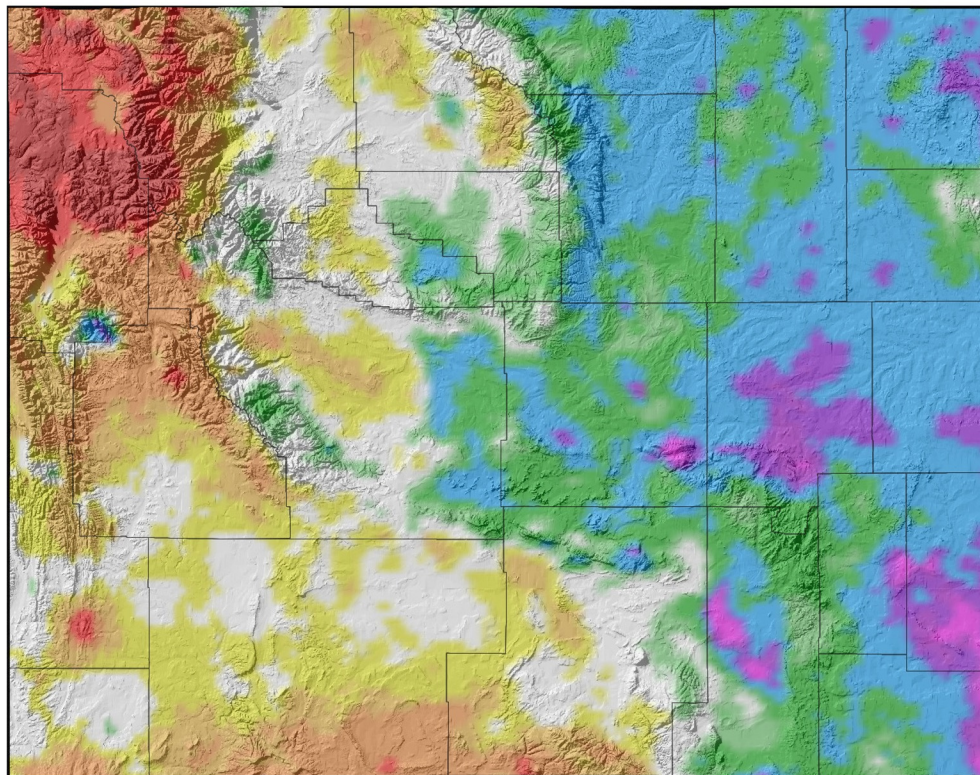
14-Day Precipitation (Percentile) for 11 May 2023 to 24 May 2023

Above Median:

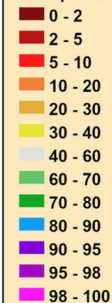
- ~ Eastern Half

Below Median (Areas of Concern):

- Northwest
- Southwest/South Central



Precipitation Percentile



Precipitation Data
PRISM Climate Group
<http://prism.oregonstate.edu>



Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



Provisional data, subject to revision

90-Day Precipitation Percentile (23 Feb 2023 to 24 May 2023)

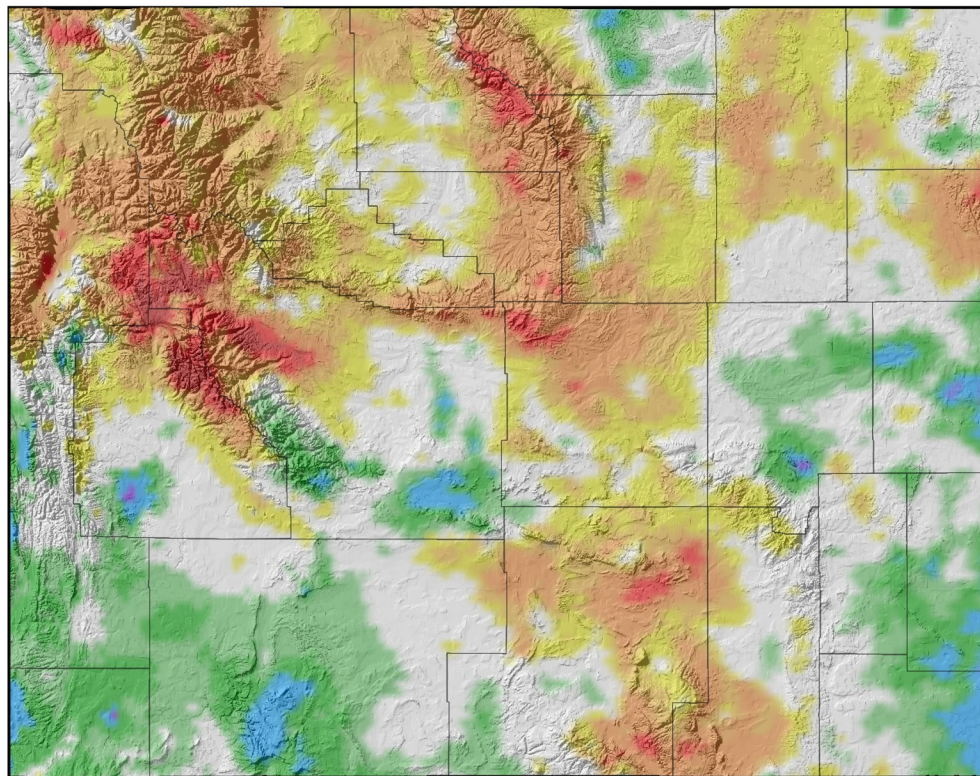
90-Day Precipitation (Percentile) for 23 Feb 2023 to 23 May 2023

Above Median:

- Southeast
- Southwest

Below Median (Areas of Concern):

- Northern Winds
- Tetons
- Bighorns
- Med Bows, Saratoga Valley
- Weston County



Precipitation Data
PRISM Climate Group
<http://prism.oregonstate.edu>



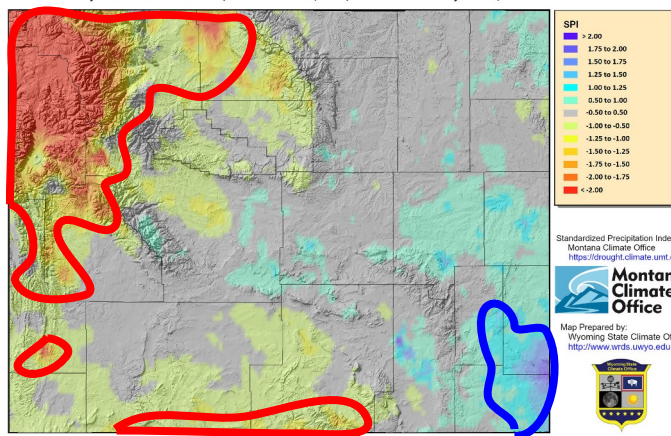
Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



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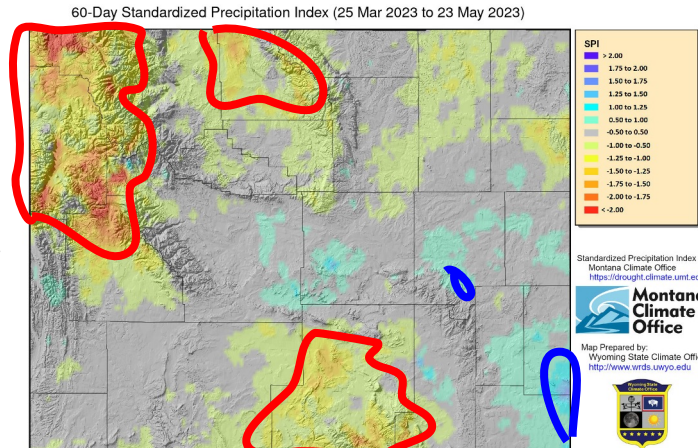
30-Day Standardized Precipitation Index (24 Apr 2023 to 23 May 2023)

30-Day
→
April 24 - May 23



Standardized Precipitation Index Created by Montana Climate Office <https://drought.climate.umt.edu>
Map Created 25 May 2023 <http://www.wrds.uwyo.edu>

60-Day
→
March 25 - May 23

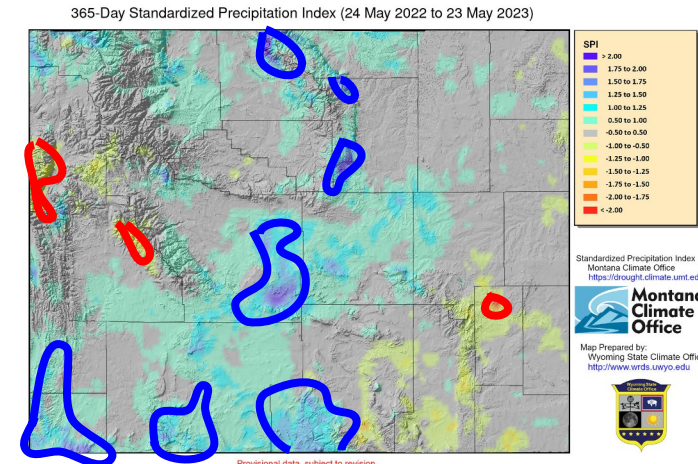


Standardized Precipitation Index Created by Montana Climate Office <https://drought.climate.umt.edu>
Map Created 25 May 2023 <http://www.wrds.uwyo.edu>

Standardized Precipitation Index (SPI)

Short term: Northwest, West, Southcentral, Bighorn Basin, Southwest
Long term: Southwest, central Areas of Winds/Tetons, Southeast

1-Year
→

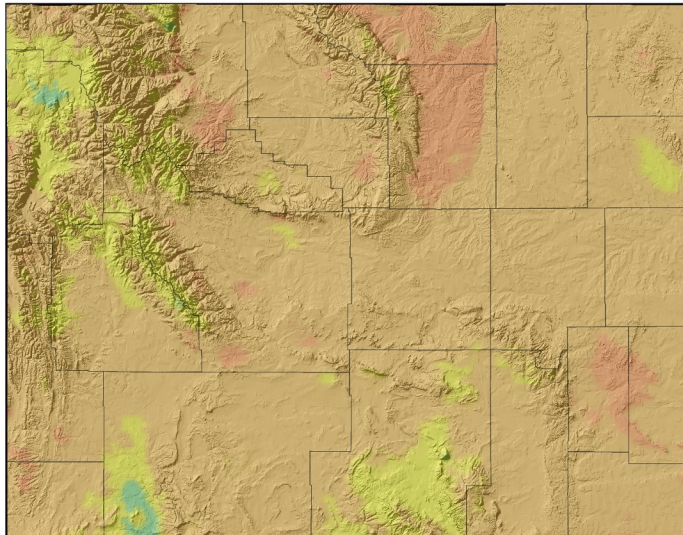


Standardized Precipitation Index Created by Montana Climate Office <https://drought.climate.umt.edu>
Map Created 25 May 2023 <http://www.wrds.uwyo.edu>

14-Day Average Minimum Temperature (11 May to 24 May)

- High elevation mins still below freezing
- East and Low Elev Central/N-Central 40F+
- S Central/Southwest 35-40F

14-Day Average Minimum Temperature (Departure from 1991-2020 Average) for 11 May 2023 to 24 May 2023



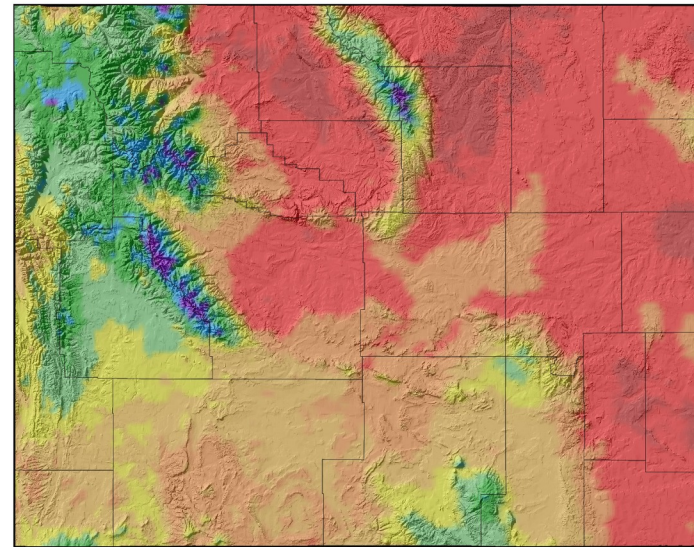
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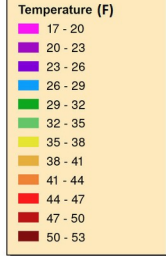
Temperature Data
PRISM Climate Group
<http://prism.oregonstate.edu>



Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



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Temperature Data
PRISM Climate Group
<http://prism.oregonstate.edu>



Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
Map Created 25 May 2023 <http://www.wrds.uwyo.edu>
Temperature averages created from PRISM daily tempWYerature grids

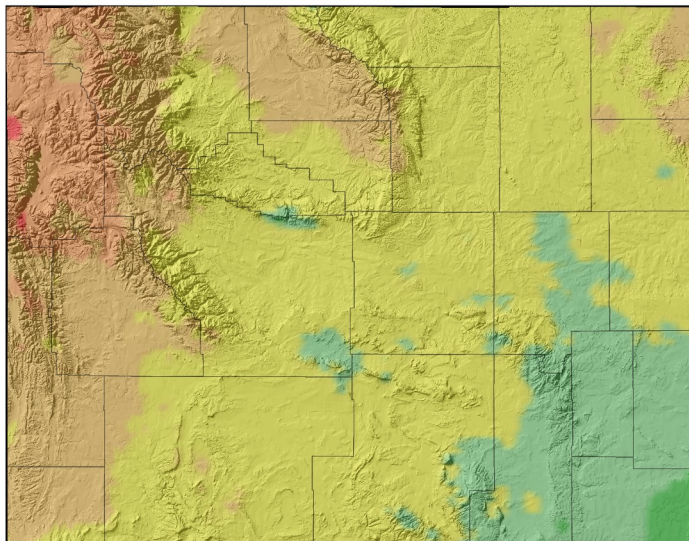
14-Day *Departure from Normal* Average Minimum Temperature

- Mostly above normal with a few 0-3F below average in areas in Sweetwater Co and Northwest
- Parts Platte/Gosh/Campbell/Shr Co 6-9F above average
- Few parts of South and NW up to 3F above avg

14-Day Average **Maximum** Temperature (11 May to 24 May)

- Highs now above 32F statewide
- Bighorn Basin warmest, up to 75F avg

14-Day Average Maximum Temperature (Departure from 1991-2020 Average) for 11 May 2023 to 24 May 2023



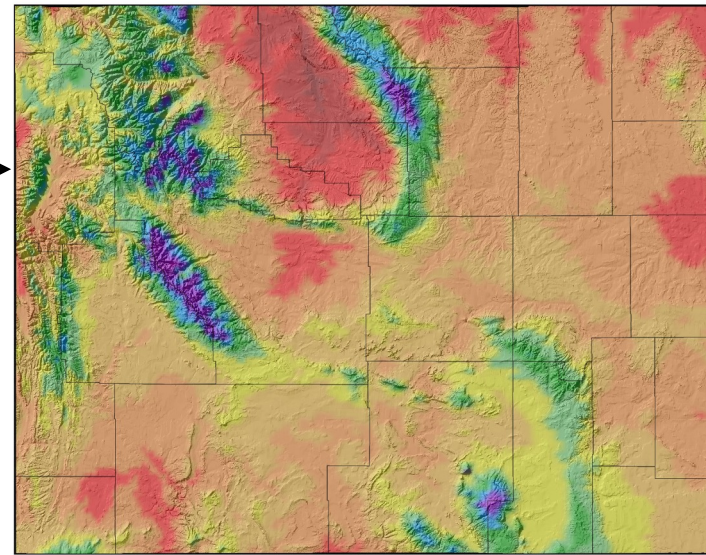
Temperature Data
PRISM Climate Group
<http://prism.oregonstate.edu>



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Daily Temperature data from PRISM Climate Group, Copyright ©2021, PRISM Climate Group, Oregon State University, <http://prism.oregonstate.edu>
Map Created 25 May 2023 <http://www.wrds.uwyo.edu>
Temperature averages created from PRISM daily tempWYerature grids

14- Day *Departure from Normal* Average **Maximum** Temperature

- West/BH Basin 3-9F above average
- Southwest 0-3F below average
- Far southwest, spots up to 6F below average
- Remainder 0-3F above average

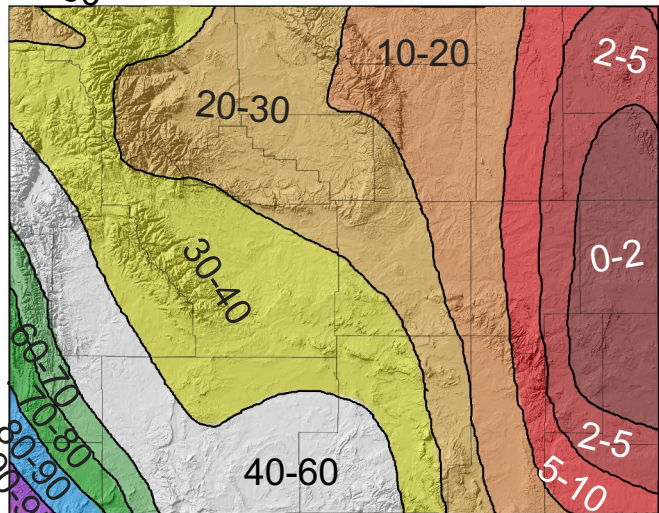
Soil Moisture Percentile

Two Weeks Ago

24 May 2023

20-30

Soil Moisture Percentile for 11 May 2023



Soil Moisture Percentile
Climate Prediction Center



Provisional data, subject to revision

Modeled Soil Moisture Percentile https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php
Map Created 12 May 2023 <http://www.wrds.uwyo.edu>

Soil Moisture Percentile

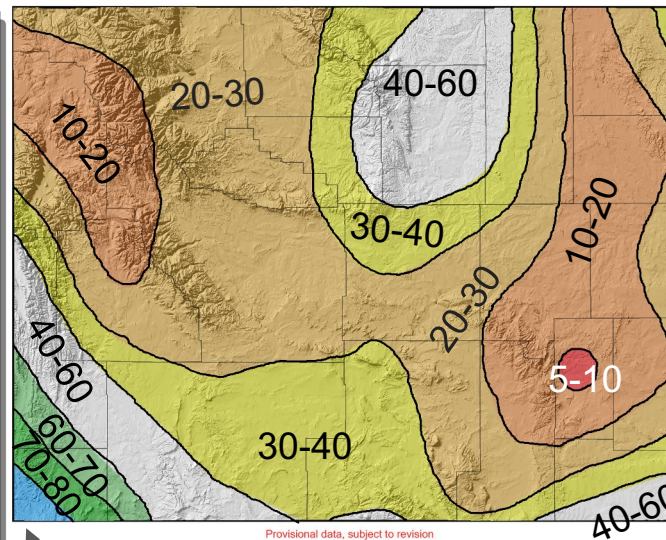


Soil Moisture Percentile
Climate Prediction Center



Provisional data, subject to revision

Soil Moisture Percentile for 24 May 2023



Modeled Soil Moisture Percentile https://www.cpc.ncep.noaa.gov/products/GIS/GIS_DATA/USDM_Products/soil/soil_percentile.php
Map Created 24 May 2023 <http://www.wrds.uwyo.edu>

80-90

Improvement in east thanks to early May precipitation, but **Worsening west and central Wyoming**



Snow

May 25, 2023

Peak Snow Water Equivalent Dates and Totals by Basin With Meltout Dates

This year's "to-date" peak snow water equivalent (SWE) compared to median.

Red indicates **earlier** peak date or **lower** SWE compared to median

Blue indicates **later** peak date or **higher** SWE compared to median

1 2 3 4 **Click Column Headers to Sort** 5 6 7 8 9 10

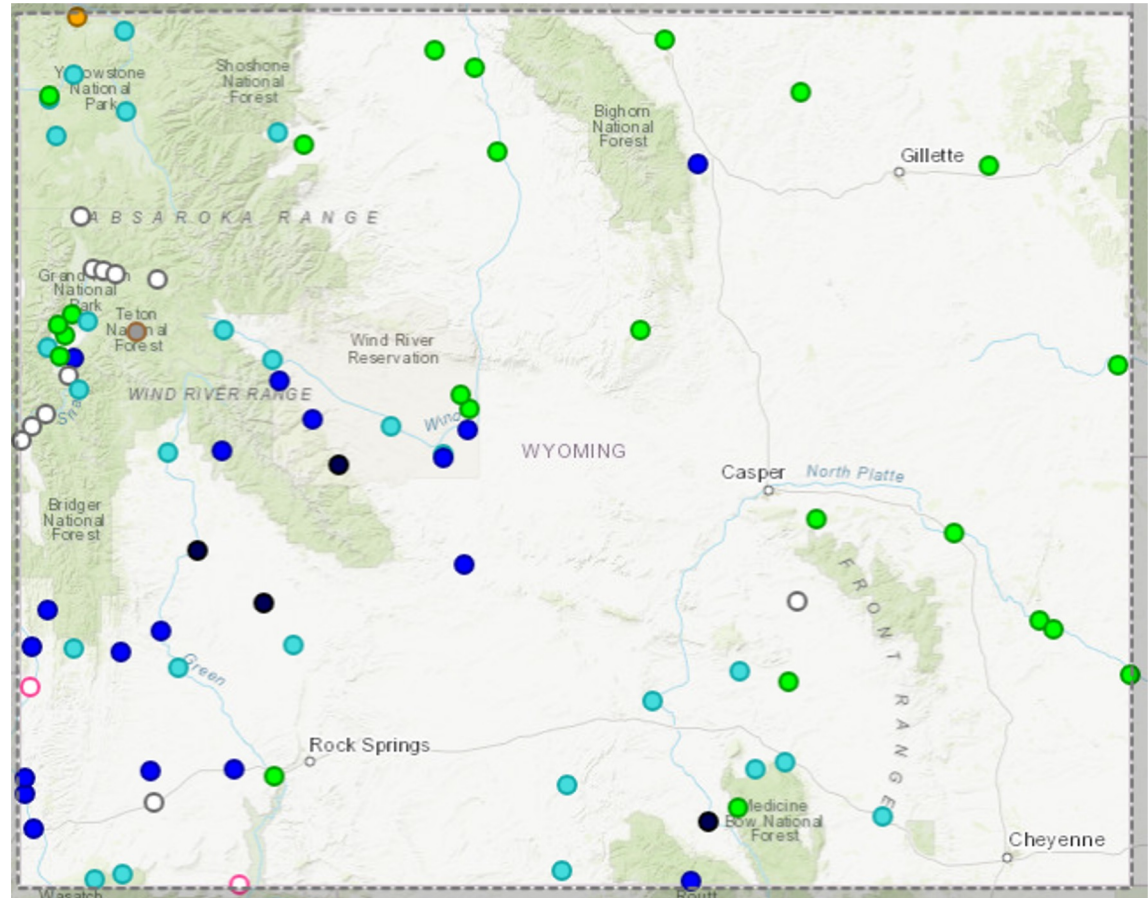
Basin Click to View Chart	This Year Peak Date	This Year Peak SWE (inches)	Days Early/Late	Peak SWE Dif (inches)	Percent of Median Peak SWE	Median Peak Date	Median Peak SWE (inches)	Current SWE	Median Meltout Date
Belle Fourche	07 Apr 2023	9.5	5	2.6	138%	02 Apr IMG	6.9 IMG	0.0	30 Apr IMG
South Platte	09 Apr 2023	6.0	11	-1.2	83%	29 Mar IMG	7.2 IMG	0.0	26 Apr IMG
Cheyenne	07 Apr 2023	9.2	5	1.7	123%	02 Apr IMG	7.5 IMG	0.0	30 Apr IMG
Lower North Platte	09 Apr 2023	14.7	-6	1.9	115%	15 Apr IMG	12.8 IMG	0.2	29 May IMG
Tongue	09 Apr 2023	12.8	-23	-0.6	96%	02 May IMG	13.4 IMG	0.7	09 Jun IMG
Powder	08 Apr 2023	11.6	-9	1.0	109%	17 Apr IMG	10.6 IMG	1.1	08 Jun IMG
Bighorn	09 Apr 2023	12.0	-16	0.3	103%	25 Apr IMG	11.7 IMG	1.9	19 Jun IMG
Laramie	08 Apr 2023	17.3	-11	1.4	109%	19 Apr IMG	15.9 IMG	4.0	12 Jun IMG
Lower Green	09 Apr 2023	18.4	0	4.8	135%	09 Apr IMG	13.6 IMG	4.4	12 Jun IMG
Wind	28 Apr 2023	15.6	6	1.6	111%	22 Apr IMG	14.0 IMG	4.8	25 Jun IMG
Shoshone	09 Apr 2023	18.1	-15	0.0	100%	24 Apr IMG	18.1 IMG	5.0	29 Jun IMG
Upper Green	08 Apr 2023	18.2	-5	2.2	114%	13 Apr IMG	16.0 IMG	6.4	18 Jun IMG
Upper Bear	09 Apr 2023	25.9	-3	9.3	156%	12 Apr IMG	16.6 IMG	7.2	15 Jun IMG
Yellowstone	28 Apr 2023	24.1	4	2.9	114%	24 Apr IMG	21.2 IMG	9.0	02 Jul IMG
Snake	25 Apr 2023	25.6	13	5.0	124%	12 Apr IMG	20.6 IMG	10.2	28 Jun IMG
Sweetwater	28 Apr 2023	20.0	10	5.0	133%	18 Apr IMG	15.0 IMG	10.3	05 Jun IMG
Little Snake	09 Apr 2023	32.1	3	11.6	157%	06 Apr IMG	20.5 IMG	13.4	19 Jun IMG
Upper North Platte	09 Apr 2023	29.2	-7	4.8	120%	16 Apr IMG	24.4 IMG	14.2	26 Jun IMG
Madison	09 Apr 2023	29.4	-6	5.6	124%	15 Apr IMG	23.8 IMG	19.6	24 Jun IMG

Data from Natural Resources Conservation Service SnoTel Network

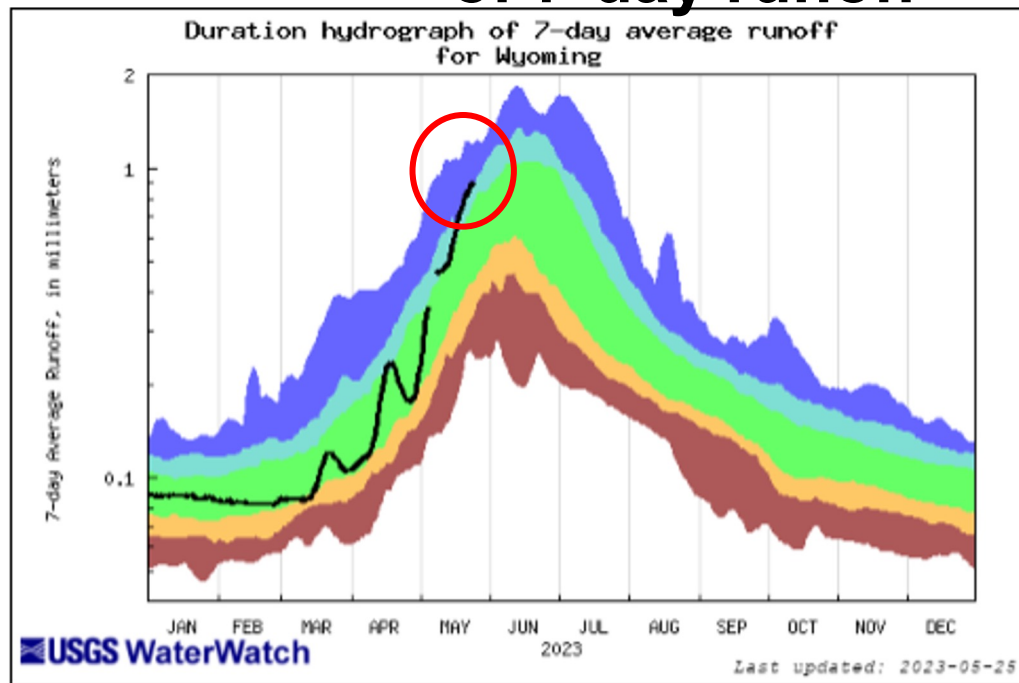
Streamflow Status

Streamflow: Status

- Above flood stage
- All-time high for this day (100th percentile (maximum))
- Much above normal (>90th percentile)
- Above normal (76th – 90th percentile)
- Normal (25th – 75th percentile)
- Below normal (10th – 24th percentile)
- Much below normal (<10th percentile)
- All-time low for this day (0th percentile (minimum))
- Not flowing
- Not ranked
- Measurement flag
- Recent measurement unavailable



WY Duration Hydrograph of 7-day runoff



Spring Streamflow

- Nearing the peak
- Mountain snowpack and spring rains driving flow.
- Abundant water supply- Normal & above

Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Runoff
Much below normal	Below normal	Normal	Above normal	Much above normal	

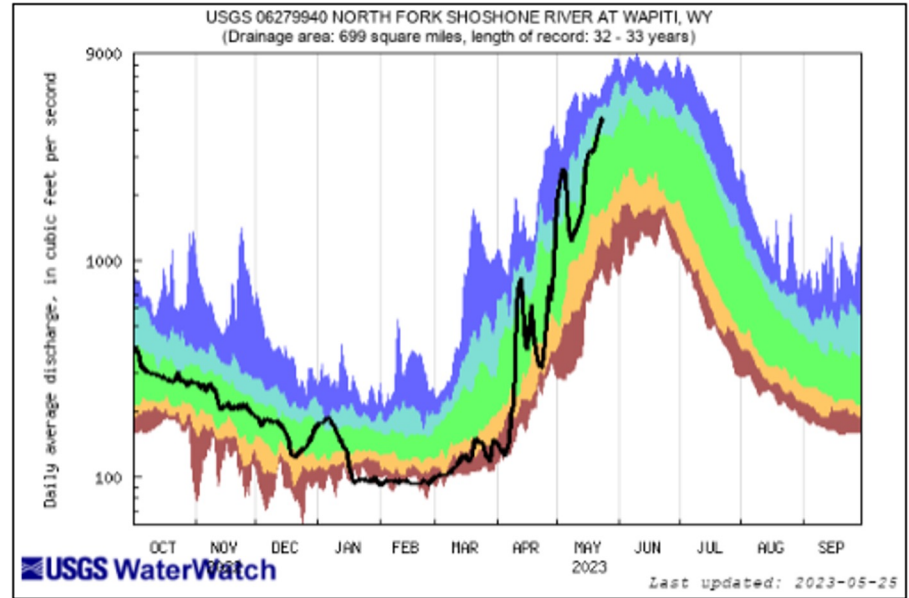
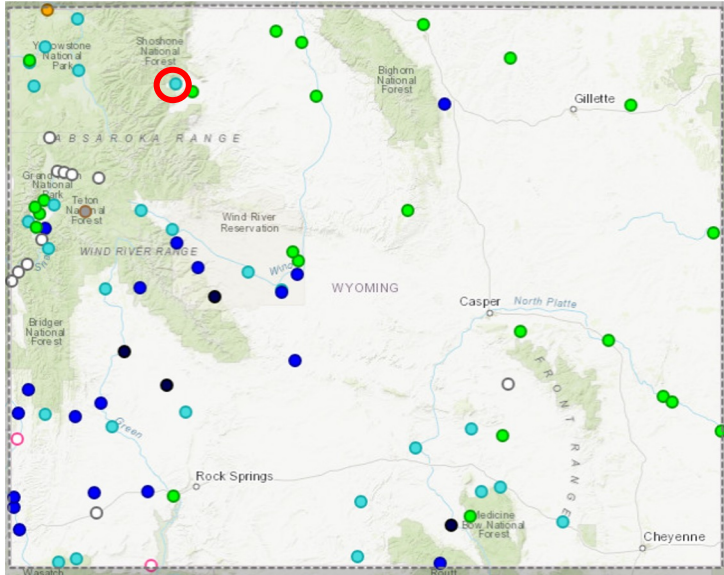
<https://dashboard.waterdata.usgs.gov/>

<https://waterdata.usgs.gov/>

North Fork Shoshone River, WY

Last updated May 25, 2023

Select WY Streamflows

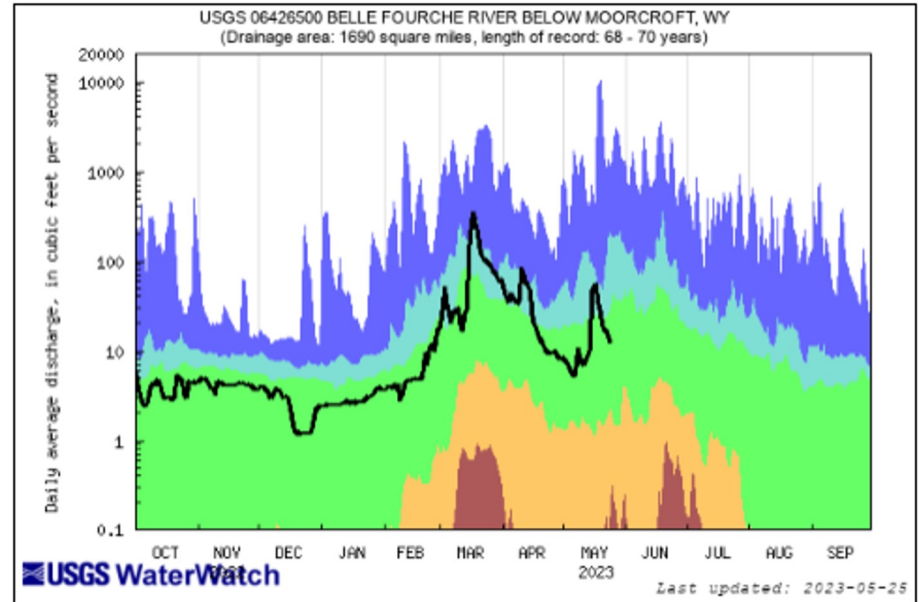
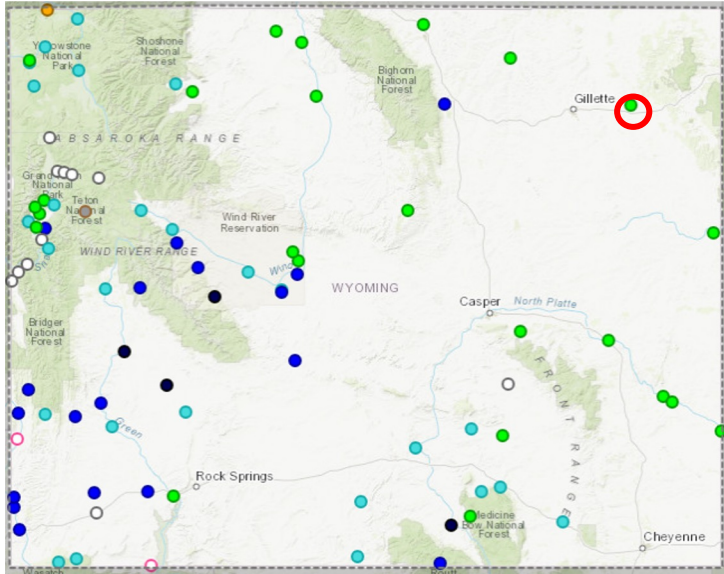


<https://dashboard.waterdata.usgs.gov/>

<https://waterdata.usgs.gov/>

Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile-highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Flow

Select WY Streamflows

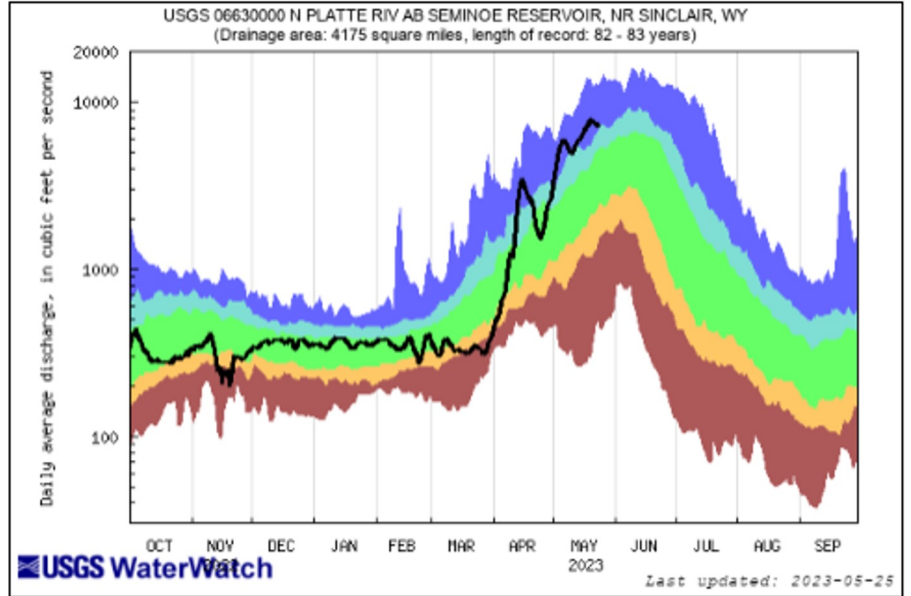
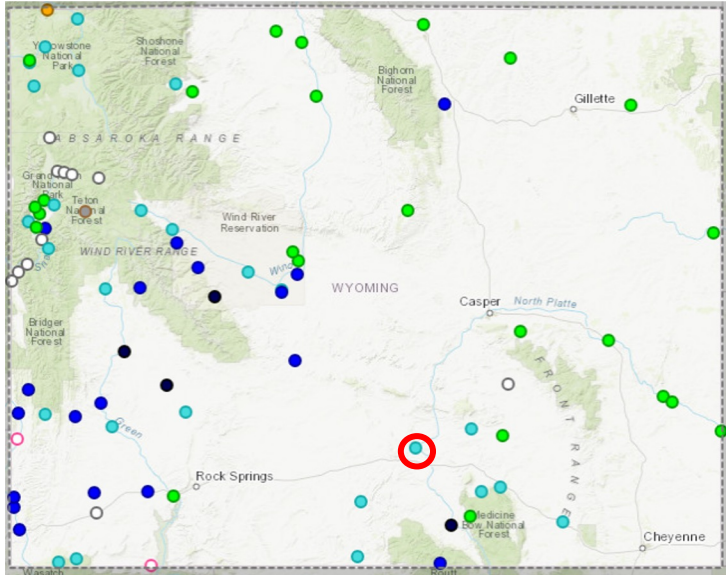


<https://dashboard.waterdata.usgs.gov/>

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Explanation - Percentile classes						
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Much below Normal	Below normal	Normal	Above normal	Much above normal		Flow

Select WY Streamflows

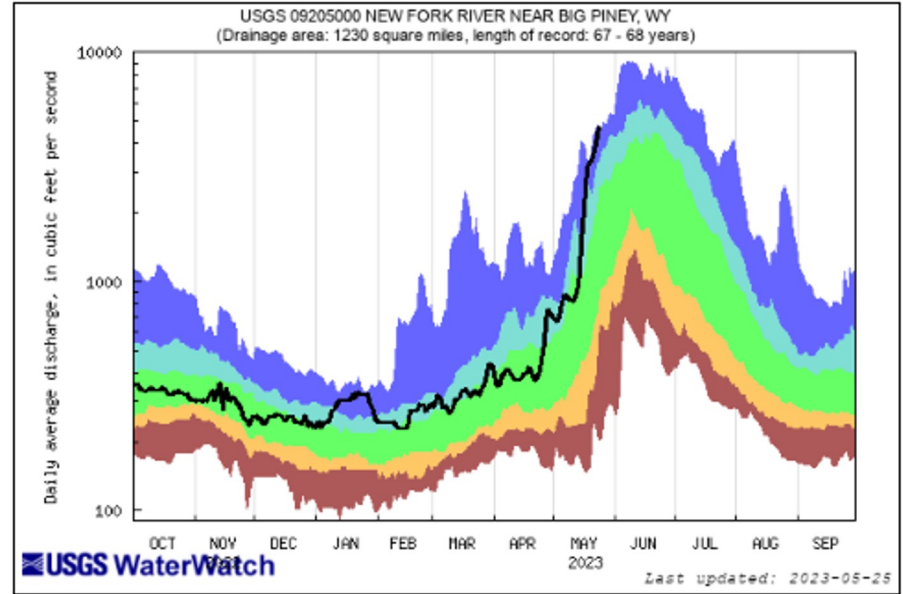
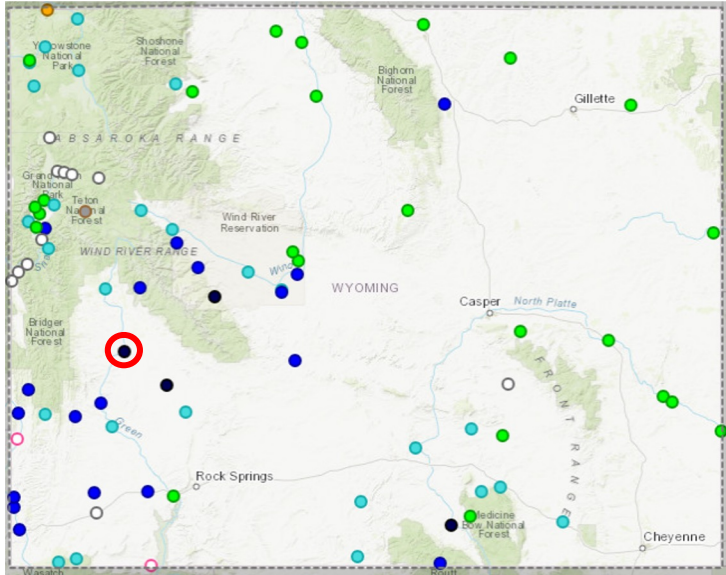


<https://dashboard.waterdata.usgs.gov/>

<https://waterdata.usgs.gov/>

Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Flow

Select WY Streamflows



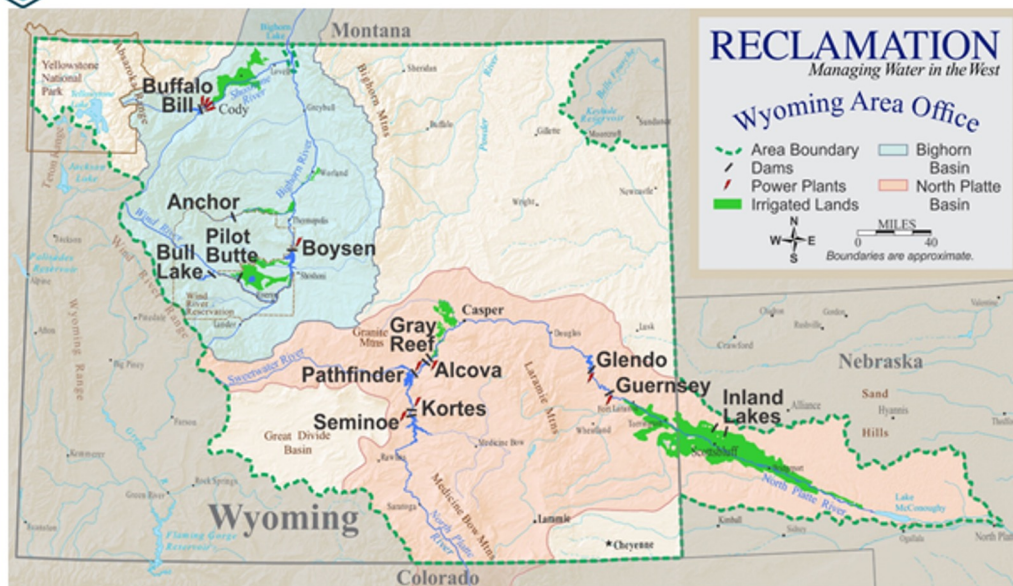
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Explanation - Percentile classes						
lowest-10th percentile	5	10-24	25-75	76-90	95	90th percentile - highest
Much below Normal	Below normal	Normal	Above normal	Much above normal		Flow



Current Reservoir Conditions: Bighorn System



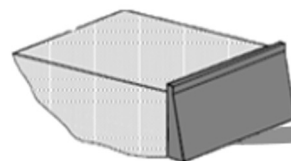
As of May 23, Bighorn System: 72% of Full, 110% of Average

<u>Reservoir</u>	<u>Content</u>	<u>Capacity</u>	<u>% of Full</u>	<u>% of Avg</u>
Bull Lake	95,750	152,500	63%	113%
Buffalo Bill	467,944	646,600	72%	115%
Boysen	550,914	741,600	74%	105%



BUFFALO BILL RESERVOIR (BBR)

Top	644126 af,	5393.5 ft
Current	467944 af,	5370.0 ft
To fill	176182 af,	23.5 ft
Computed Inflow	6285 cfs	
Total Outflow	2097 cfs	



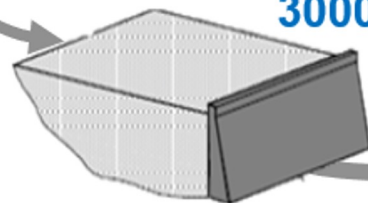
1800 cfs

BOYSEN RESERVOIR

Top	741594 af,	4725.0 ft
Current	550914 af,	4714.0 ft
To fill	190680 af,	11.0 ft
Computed Inflow	6387 cfs	
Total Outflow	1781 cfs	



800 cfs



3000 cfs

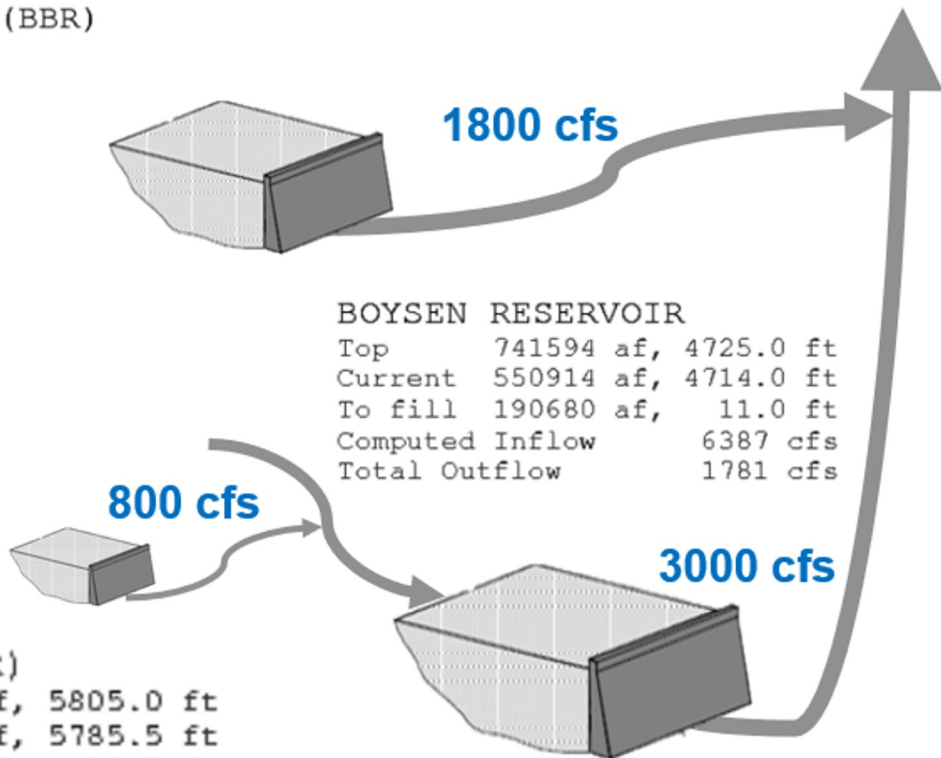
BULL LAKE (BLR)

Top	152459 af,	5805.0 ft
Current	95751 af,	5785.5 ft
To fill	56708 af,	19.5 ft
Computed Inflow	1165 cfs	
Total Outflow	615 cfs	

Forecast May – July Runoff:

Buffalo Bill: 664,000 AF 95% of average

Boysen: 608,000 AF 109% of average

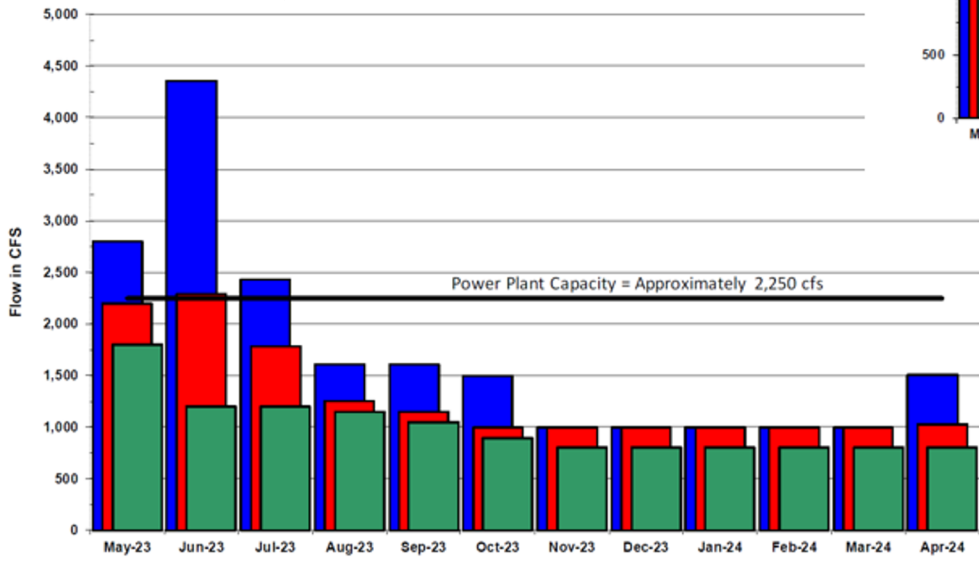


Reservoir Release Plans

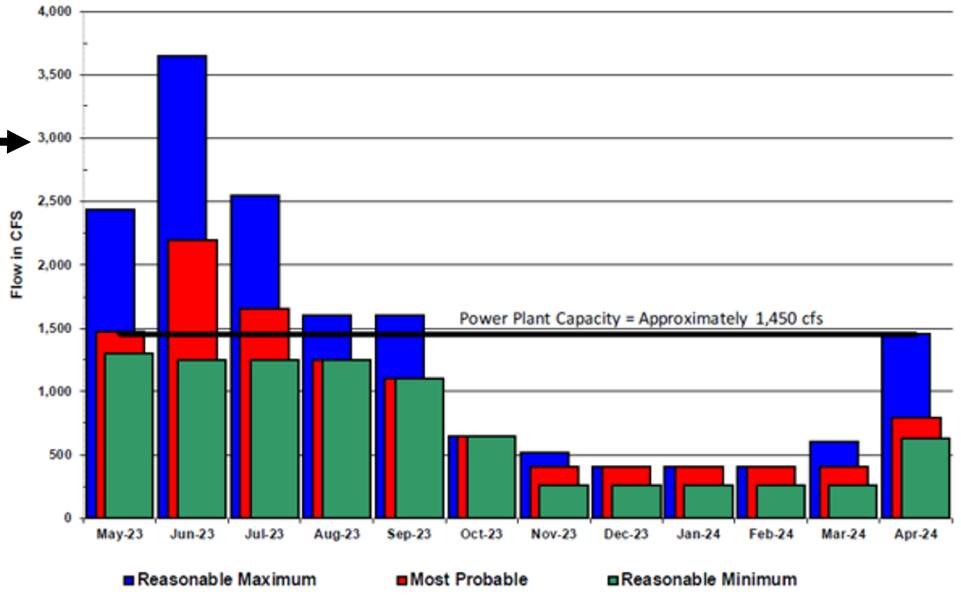
Buffalo Bill →

Boysen ↓

BOYSEN RESERVOIR RELEASES



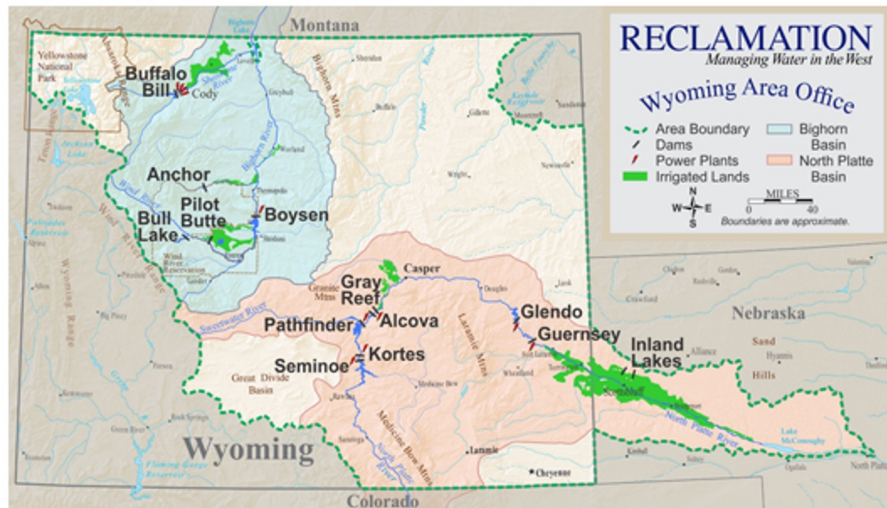
BUFFALO BILL RESERVOIR RELEASES



Wyoming Area Office Water Order Changes – <https://www.usbr.gov/gp/woc/indexwy.html>



Current Reservoir Conditions: North Platte System

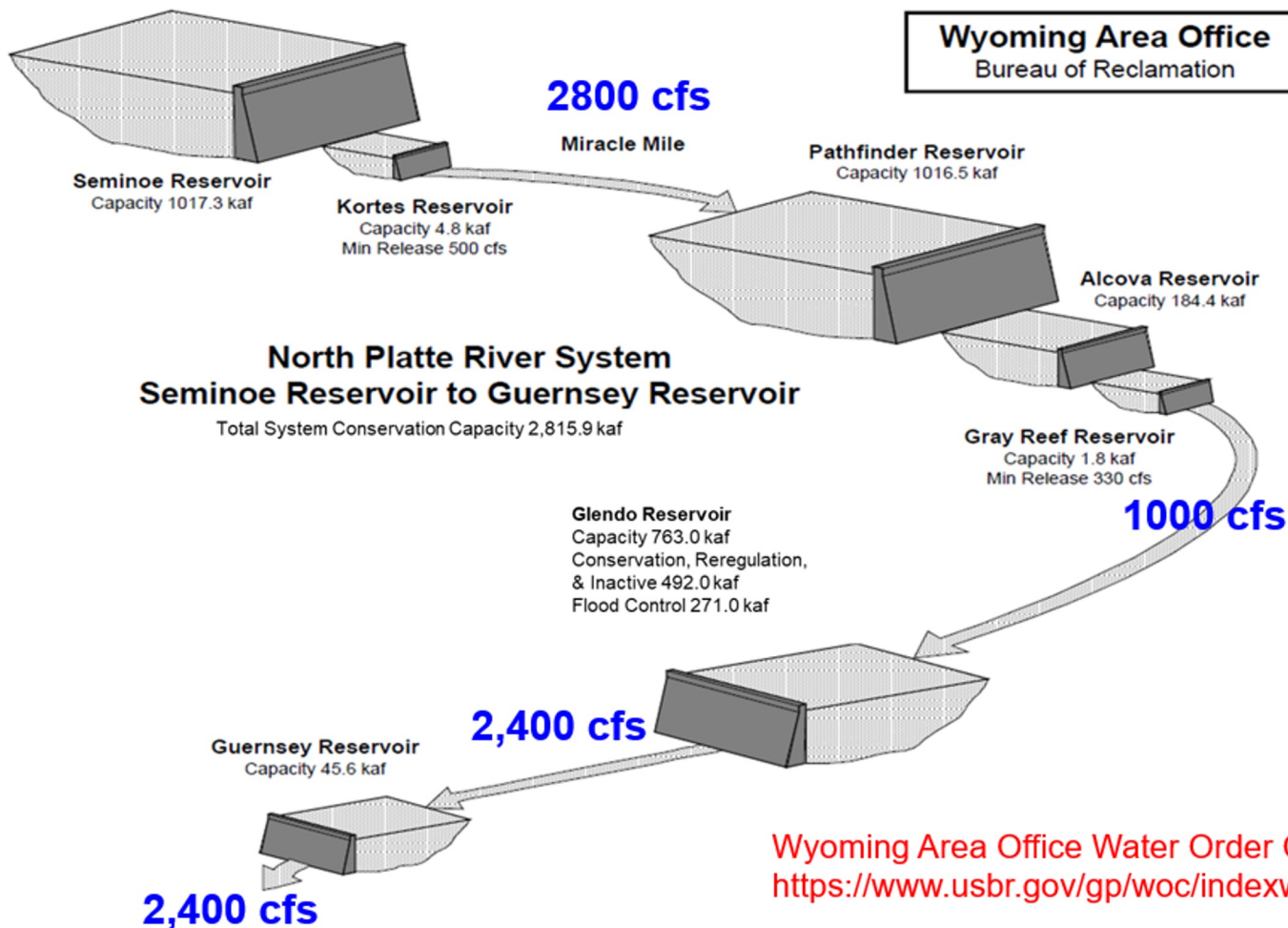


Forecast April – July Runoff:

<u>Forecast Point</u>	<u>Runoff (AF)</u>	<u>% of Avg</u>
<u>Seminole</u>	1,000,000	139
Sweetwater above Pathfinder	70,000	131
<u>Alcova to Glendo</u>	110,000	76

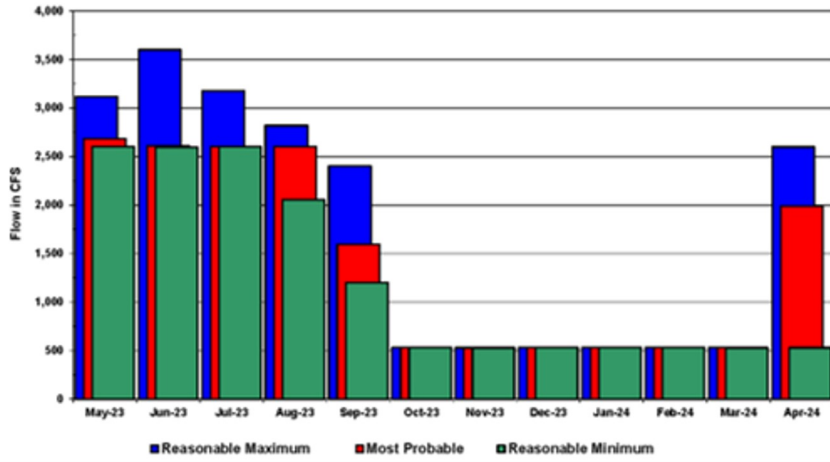
As of May 23, North Platte System: 45% of Full, 93% of Average

<u>Reservoir</u>	<u>Content (AF)</u>	<u>Capacity</u>	<u>% of Full</u>	<u>% of Avg</u>
Seminole	631,666	1,017,300	62%	107%
Pathfinder	511,311	1,070,000	48%	77%
Glendo	452,181	492,000	92%	97%



Wyoming Area Office Water Order Changes –
<https://www.usbr.gov/gp/woc/indexwy.html>

SEMINOIE RESERVOIR RELEASES



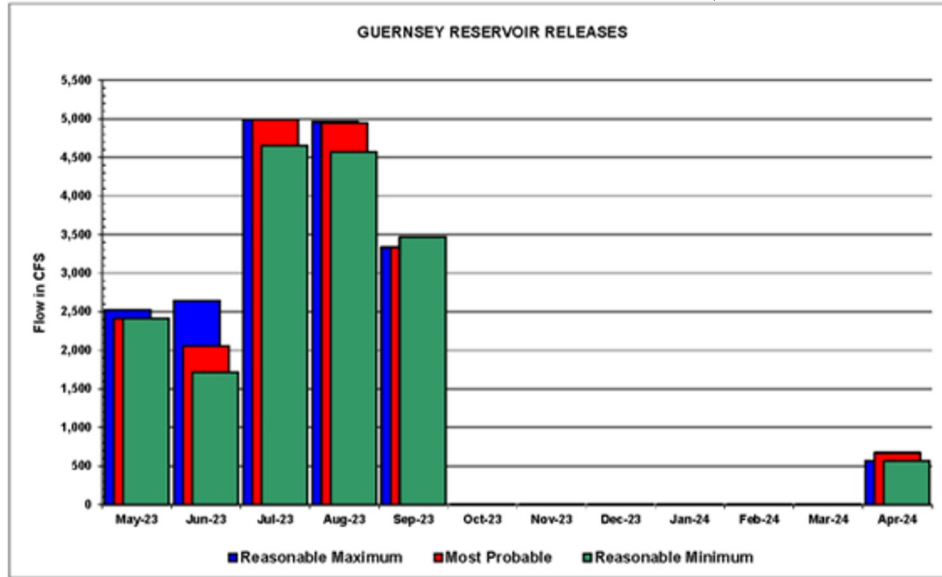
Seminole



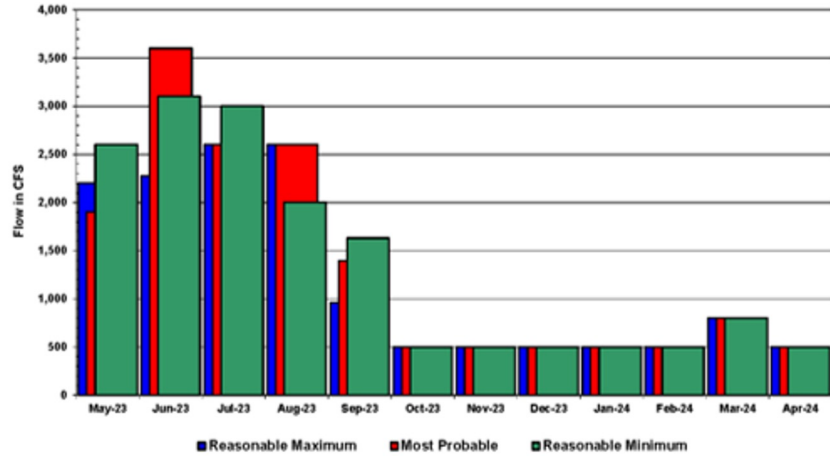
Guernsey



GUERNSEY RESERVOIR RELEASES



GRAY REEF RESERVOIR RELEASES



Gray Reef



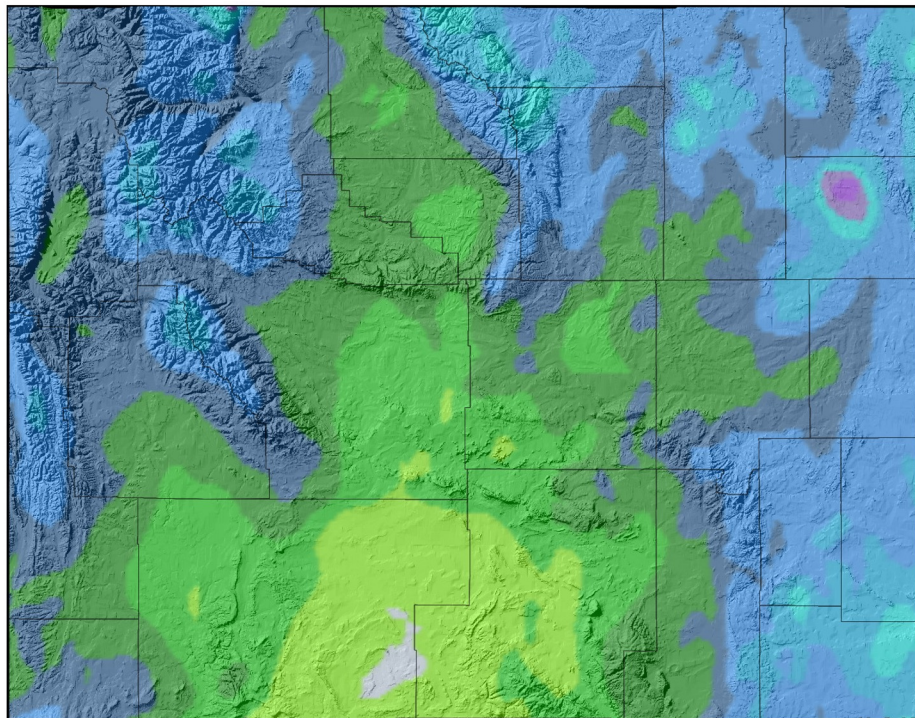


Forecasts & Outlooks

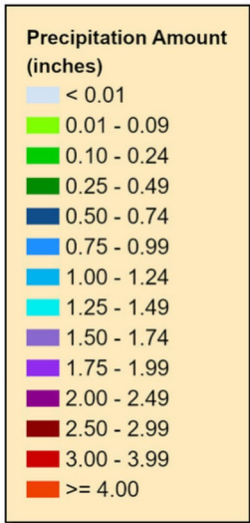


7-Day Total Precipitation Forecast Through 6/1/23

7-Day Quantitative Precipitation Forecast 25 May 2023



Provisional data, subject to revision



Map Prepared by:
Wyoming State Climate Office
<http://www.wrds.uwyo.edu>



- Wet period, but mostly convective, not stratiform
 - Some locations could miss out on precipitation, despite map showing smoothed appearance
- Numerous afternoon & evening showers & thunderstorms through the weekend
- More isolated showers continue during the first half of next week
- Wettest in mountains and eastern WY

https://bit.ly/7_dayQPForecast



6-10 Day Outlooks (May 30 - June 3)

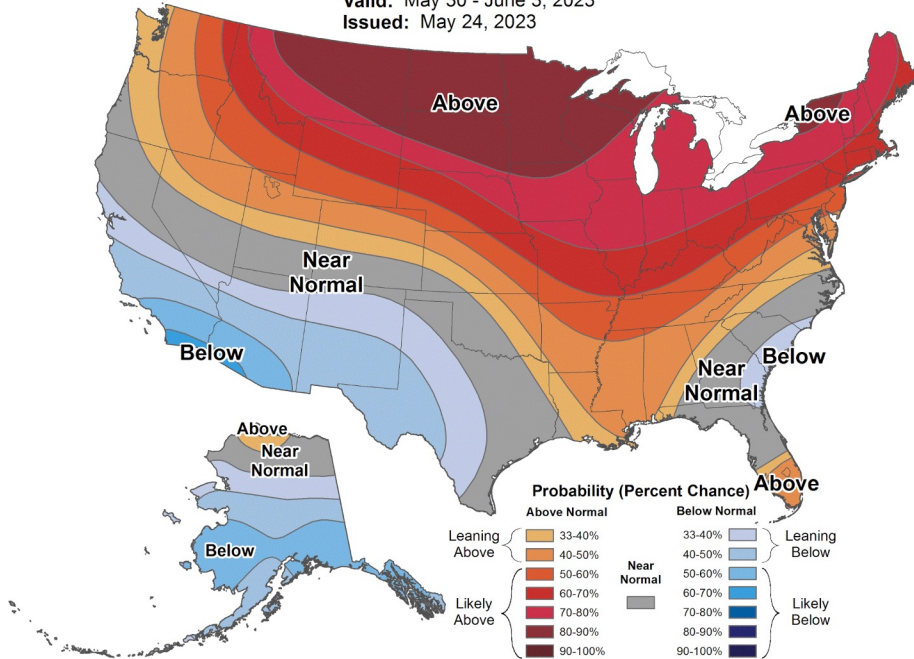
https://bit.ly/CPC6_10Day



6-10 Day Temperature Outlook



Valid: May 30 - June 3, 2023
Issued: May 24, 2023



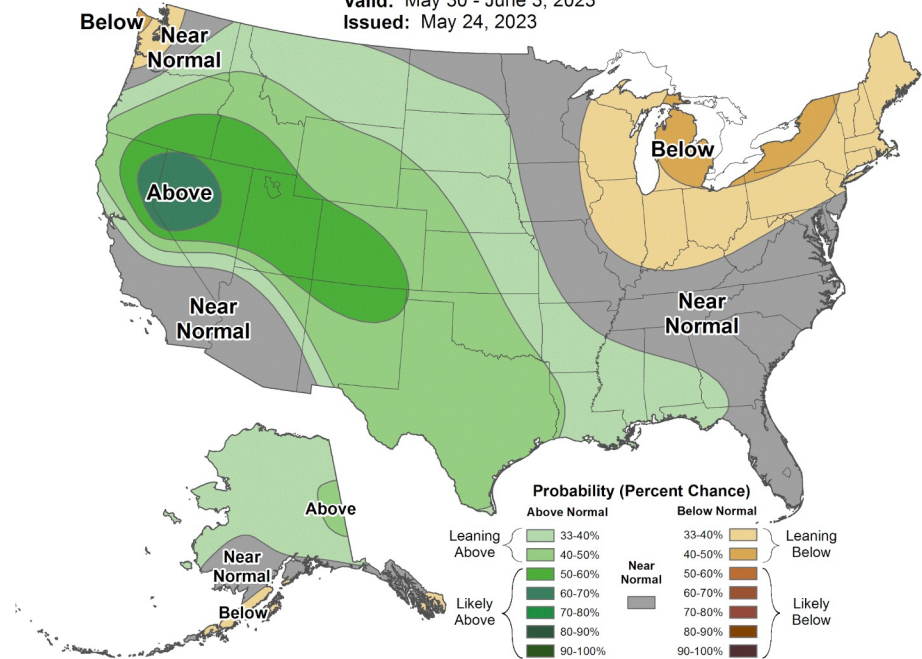
Likely above normal, especially in the north



6-10 Day Precipitation Outlook



Valid: May 30 - June 3, 2023
Issued: May 24, 2023



Lean toward wetter than normal, especially in southwest



8-14 Day Outlooks (June 1 - 7)

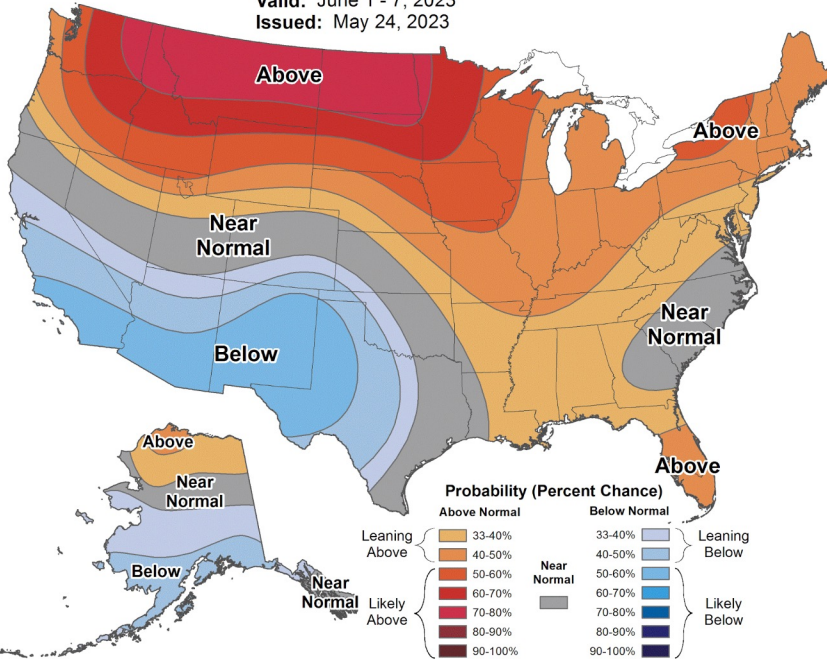
https://bit.ly/CPC8_14Day



8-14 Day Temperature Outlook



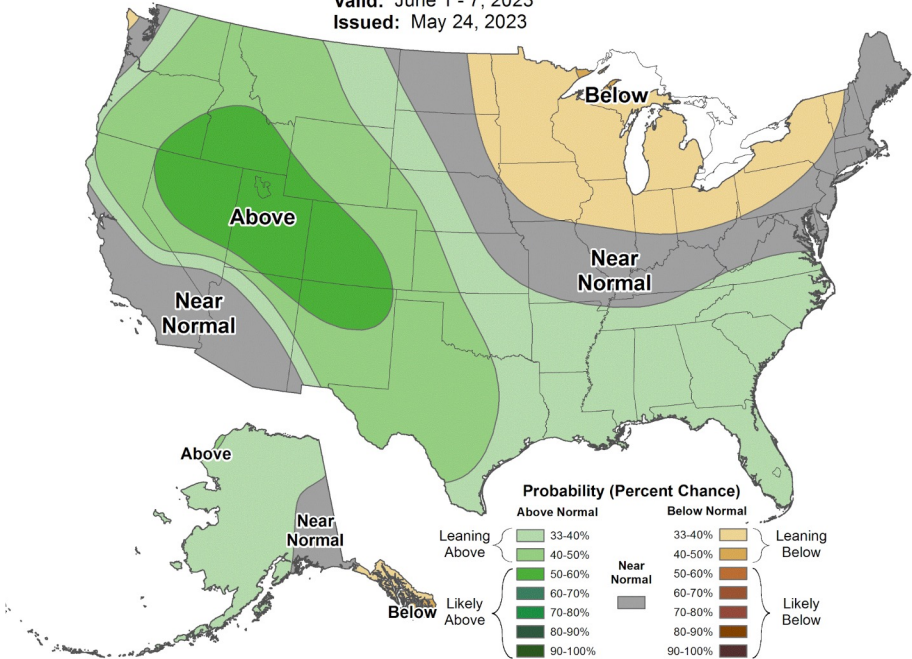
Valid: June 1 - 7, 2023
Issued: May 24, 2023



8-14 Day Precipitation Outlook



Valid: June 1 - 7, 2023
Issued: May 24, 2023



Above normal remains most likely, with strongest signal in the north

Wetter than normal remains most likely, with strongest signal in southwest



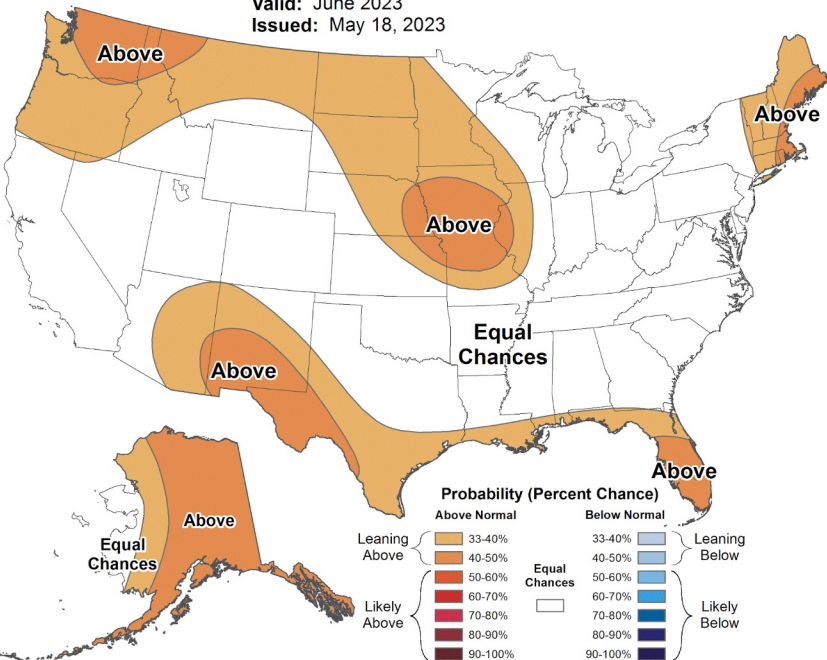
1-Month Outlooks (June)



Monthly Temperature Outlook



Valid: June 2023
Issued: May 18, 2023



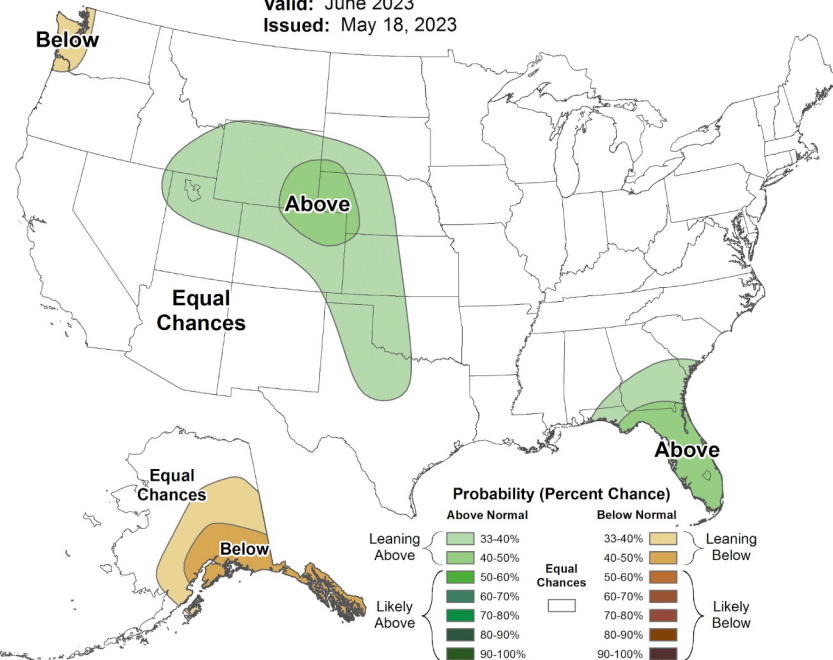
No clear global weather pattern signal:
Near climatology is best forecast



Monthly Precipitation Outlook



Valid: June 2023
Issued: May 18, 2023



Slight lean toward wetter than normal, with
strongest lean in southeast



3-Month Outlooks (June-July-August)

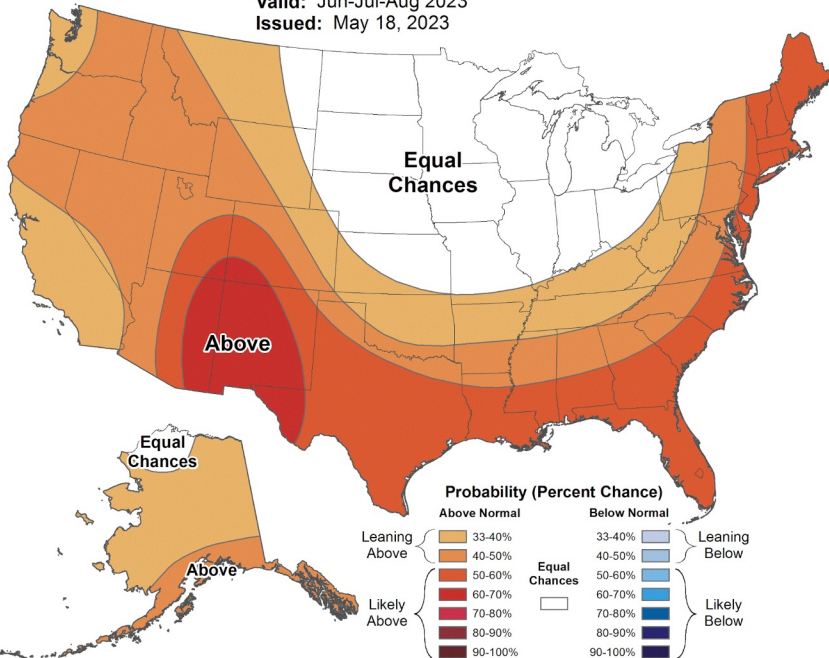
https://bit.ly/CPC_Seasonal



Seasonal Temperature Outlook



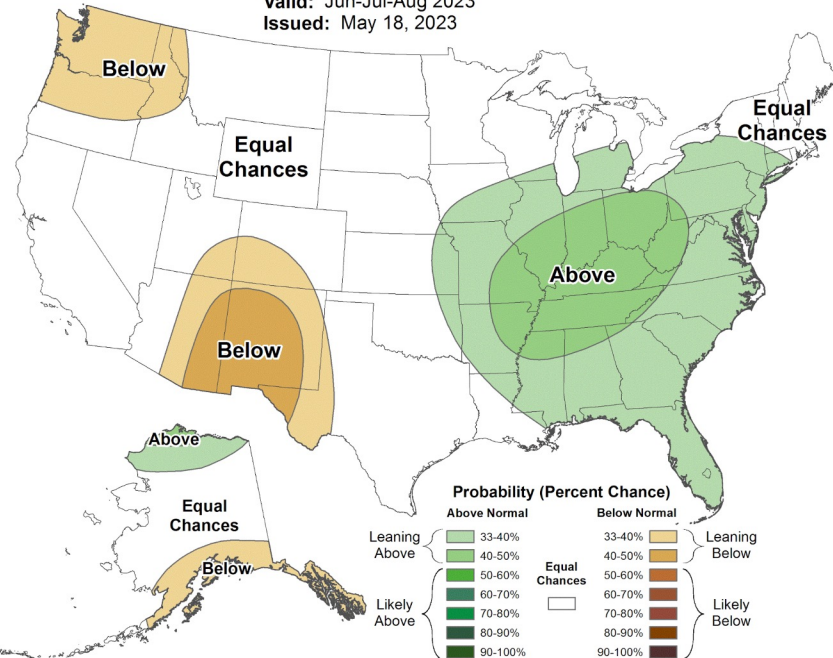
Valid: Jun-Jul-Aug 2023
Issued: May 18, 2023



Seasonal Precipitation Outlook



Valid: Jun-Jul-Aug 2023
Issued: May 18, 2023



Lean toward above normal, with stronger lean in southwest

No clear global weather pattern signal:
Near climatology is best forecast



National Weather Service May-June-July Flood Potential

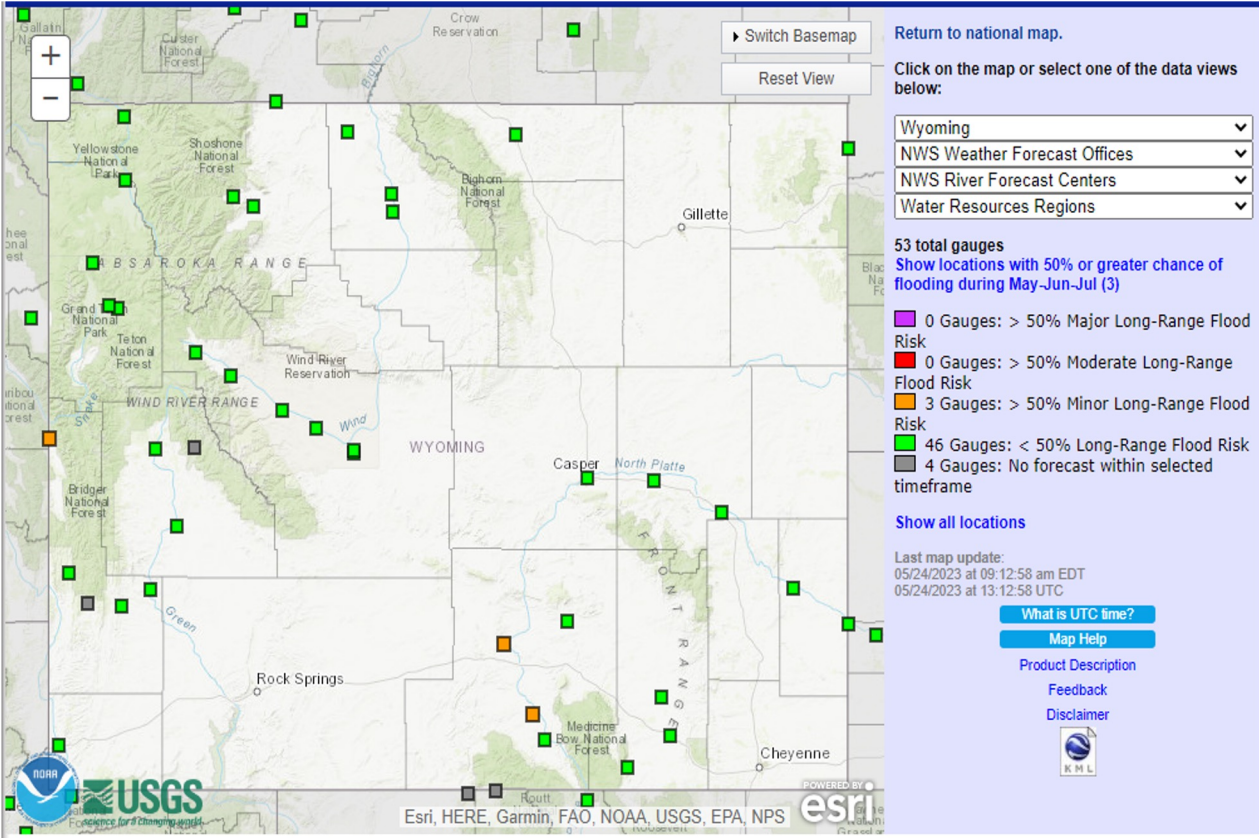
Current flooding along North Platte River, Salt River, and Bear River.

Other rivers of some concern:

- Green River
- Encampment River
- Wind River
- Pacific Creek

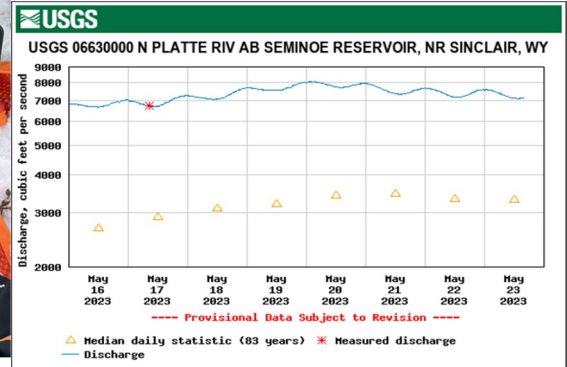
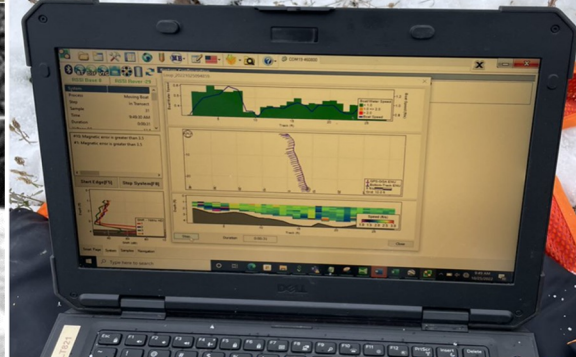
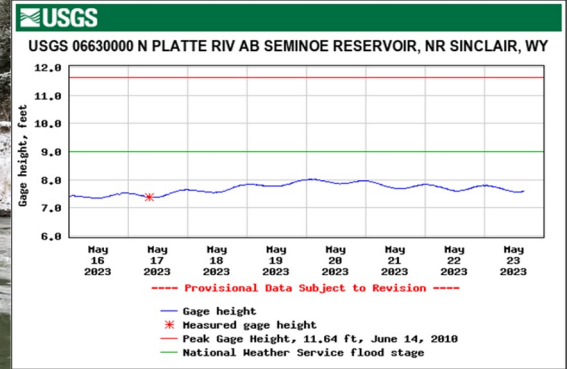
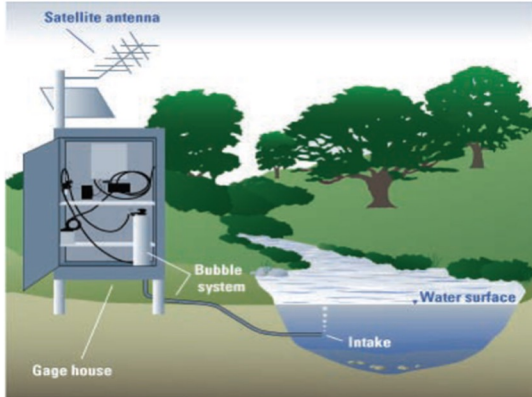
More information available on RFC pages [cbrfc.noaa.gov; nwrfc.noaa.gov; weather.gov/mbrfc]

NWS Long Range River Flood Outlooks: <https://bit.ly/3AgAyy0>

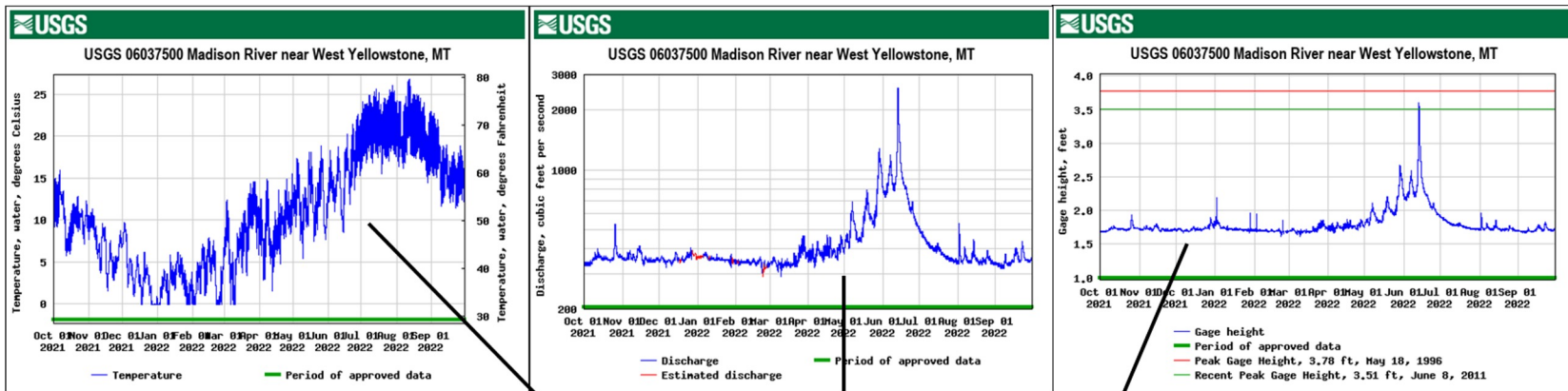




Highlight of the Month ... *Gage to Page*

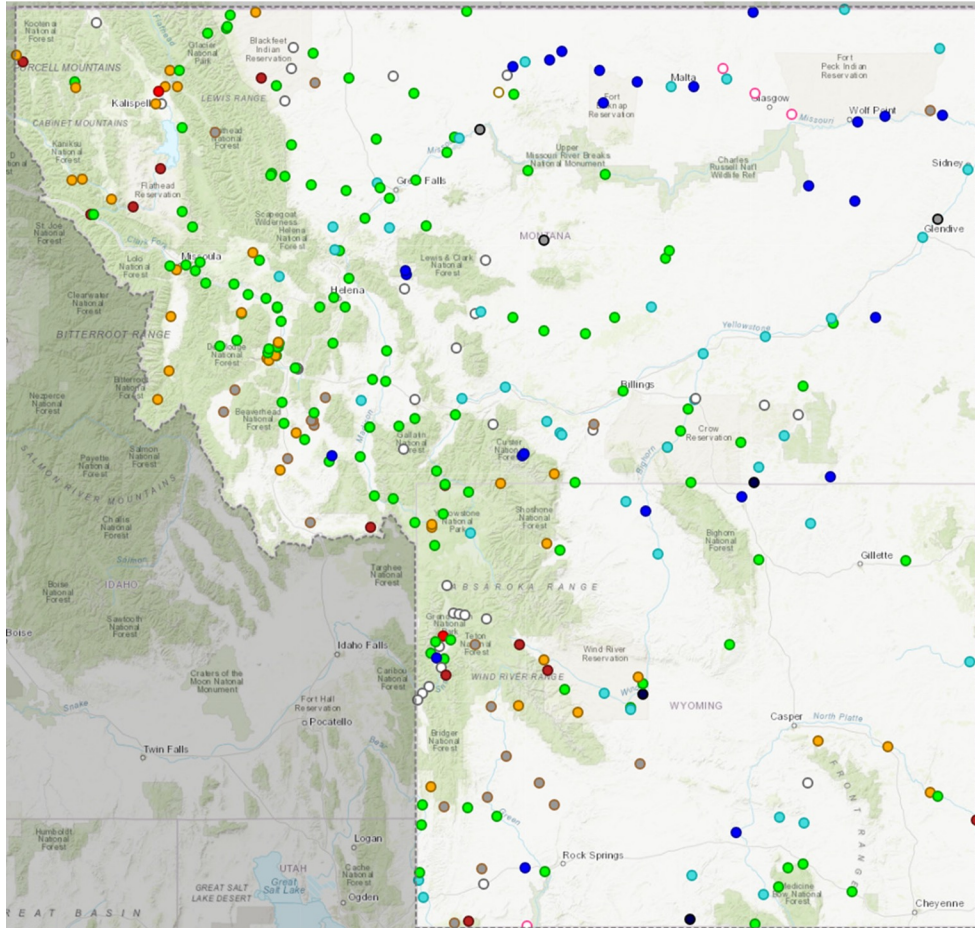


Current Data Product



Date / Time	Temperature, water, deg C,	Discharge, ft ³ /s,	Gage height, feet,
10/01/2021 00:00 MDT	10.8 ^A	335 ^A	1.69 ^A
10/01/2021 00:15 MDT	10.7 ^A	335 ^A	1.69 ^A
10/01/2021 00:30 MDT	10.6 ^A	335 ^A	1.69 ^A
10/01/2021 00:45 MDT	10.5 ^A	335 ^A	1.69 ^A
10/01/2021 01:00 MDT	10.4 ^A	329 ^A	1.68 ^A
10/01/2021 01:15 MDT	10.4 ^A	335 ^A	1.69 ^A
10/01/2021 01:30 MDT	10.3 ^A	335 ^A	1.69 ^A
10/01/2021 01:45 MDT	10.2 ^A	335 ^A	1.69 ^A
10/01/2021 02:00 MDT	10.2 ^A	329 ^A	1.68 ^A
10/01/2021 02:15 MDT	10.1 ^A	335 ^A	1.69 ^A
10/01/2021 02:30 MDT	10.1 ^A	335 ^A	1.69 ^A
10/01/2021 02:45 MDT	10.0 ^A	335 ^A	1.69 ^A
10/01/2021 03:00 MDT	10.0 ^A	335 ^A	1.69 ^A
10/01/2021 03:15 MDT	9.9 ^A	335 ^A	1.69 ^A
10/01/2021 03:30 MDT	9.8 ^A	335 ^A	1.69 ^A
10/01/2021 03:45 MDT	9.8 ^A	335 ^A	1.69 ^A
10/01/2021 04:00 MDT	9.7 ^A	329 ^A	1.68 ^A
10/01/2021 04:15 MDT	9.6 ^A	335 ^A	1.69 ^A

Current WY-MT Data Collection



Streamflow: Status

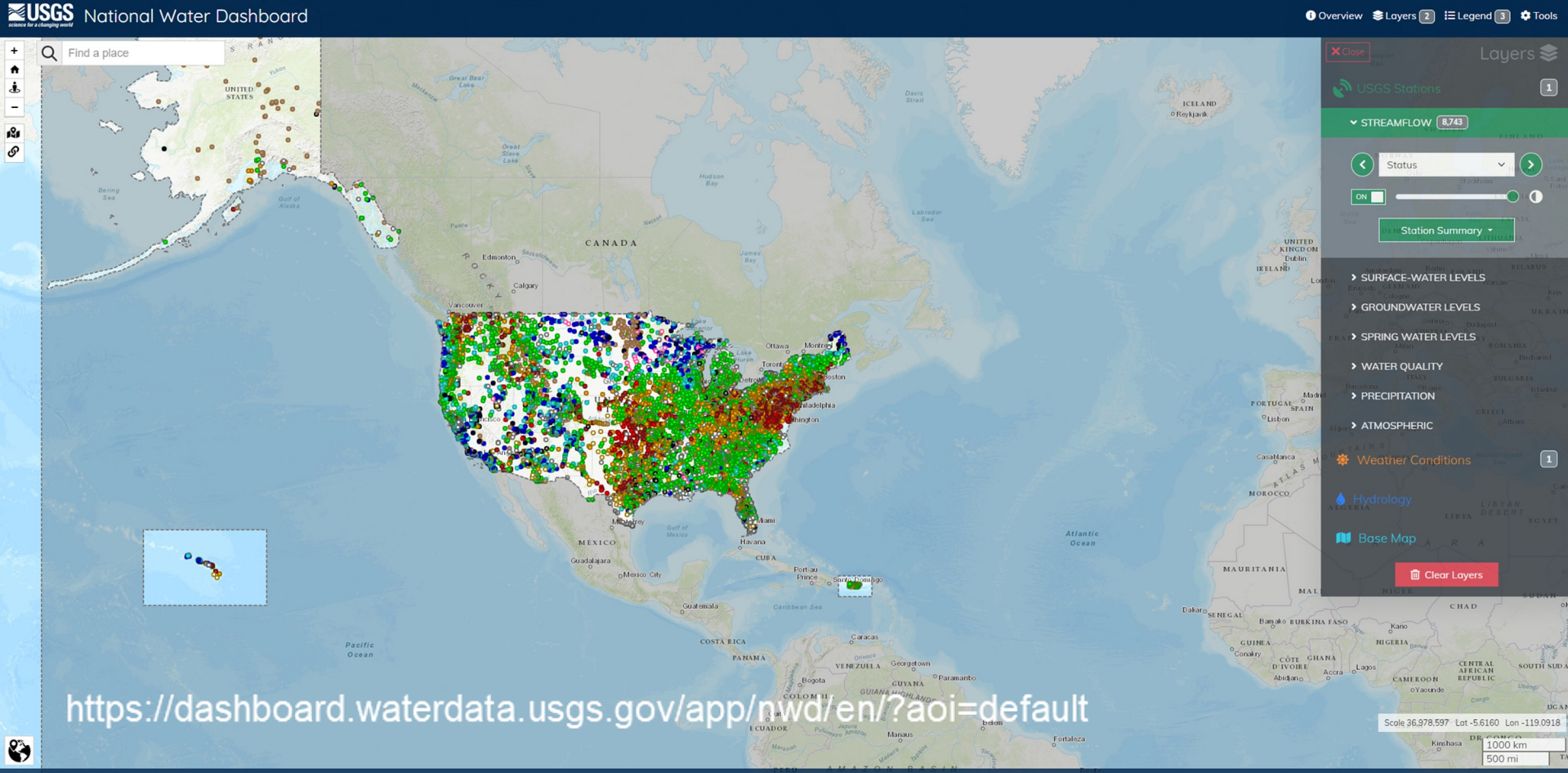
- Above flood stage
- All-time high for this day
- Much above normal
- Above normal
- Normal
- Below normal
- Much below normal
- All-time low for this day
- Not flowing
- Not ranked
- Measurement flag
- Recent measurement unavailable

Comments: Marker color indicates the current streamflow condition. Categories are based on the percentile of existing streamflow records on this day-of-the-year. A streamgage is not ranked when there is less than 10 years of record or a current streamflow value is unavailable. Flood stages are maintained by the National Weather Service (NWS) and are not established for all USGS streamgages.

Data Source: [USGS Water Data for the Nation](#)

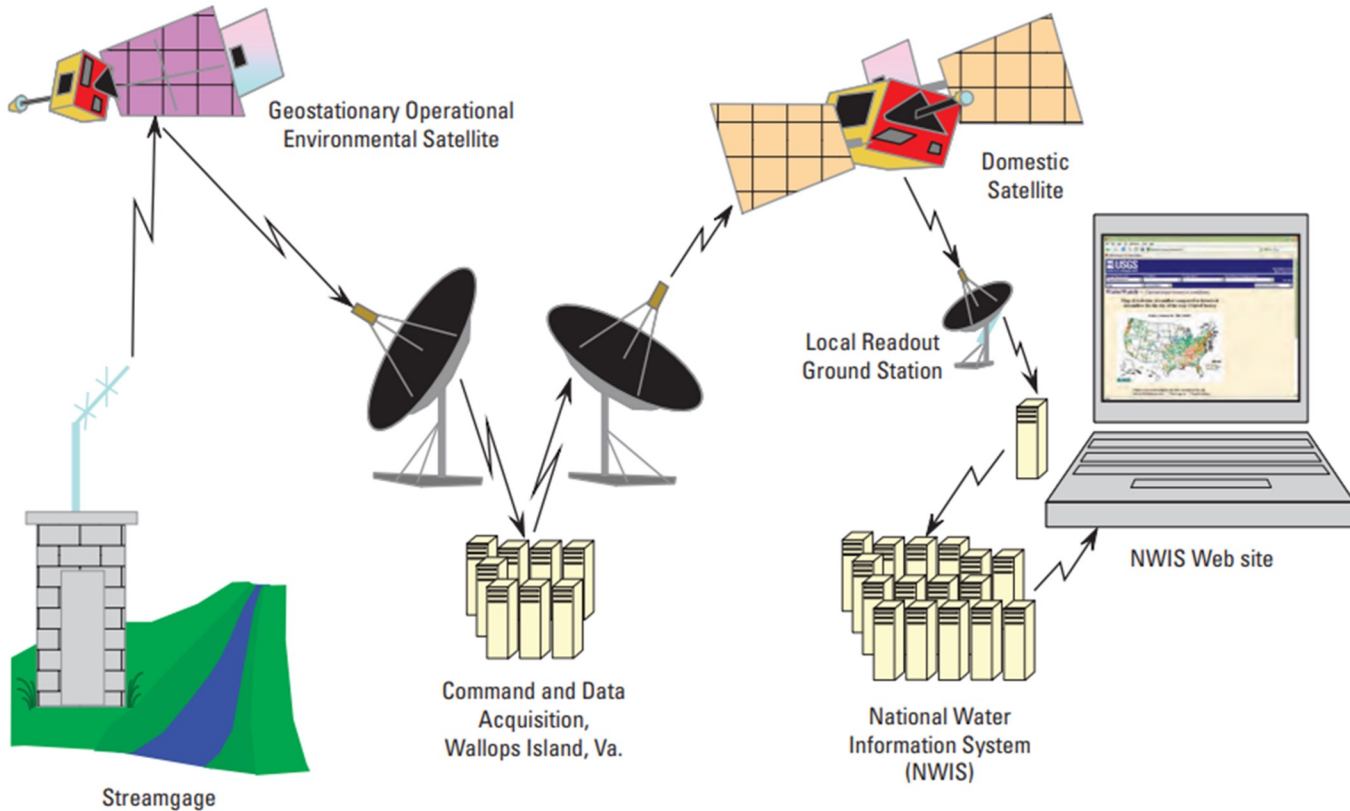
Click streamflow stations to access real-time data, time-series graphs, and station information.

Feeding into a Larger Data Deliverable - Dashboard

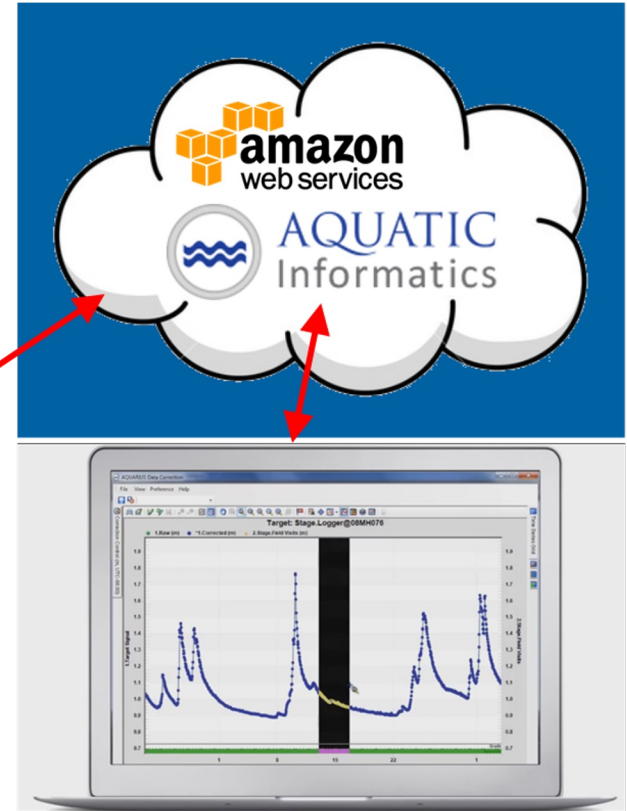
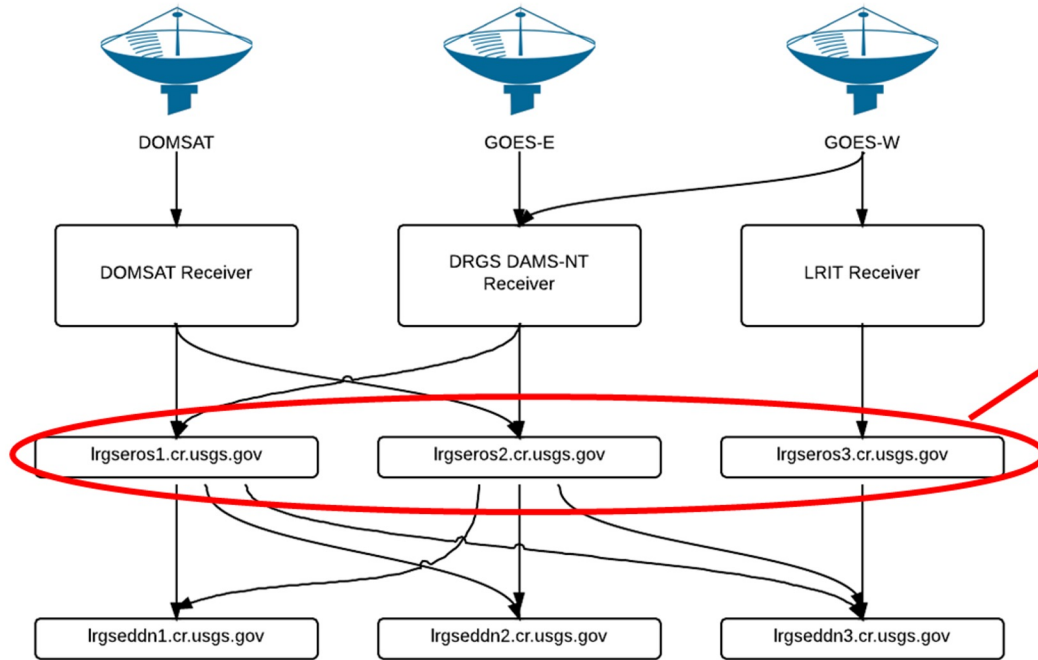


The image shows the USGS National Water Dashboard interface. At the top left is the USGS logo. The main title is "National Water Dashboard". Below the title is a search bar with the text "Find a place". The central part of the dashboard is a map of the United States, densely populated with small, multi-colored circular markers representing data points. The markers are concentrated in the eastern and central US, with some scattered in the western US and Alaska. A small inset map in the bottom left corner shows the location of the main map area. On the right side, there is a "Layers" panel with a "Close" button and a "Layers" icon. The panel lists several data layers: "USGS Stations" (1), "STREAMFLOW" (8,743), "Status" (with a dropdown menu and a slider), "Station Summary", "SURFACE-WATER LEVELS", "GROUNDWATER LEVELS", "SPRING WATER LEVELS", "WATER QUALITY", "PRECIPITATION", "ATMOSPHERIC", "Weather Conditions" (1), "Hydrology", and "Base Map". There is a "Clear Layers" button at the bottom of the panel. At the bottom of the dashboard, there is a URL: <https://dashboard.waterdata.usgs.gov/app/nwd/en/?aoi=default>. In the bottom right corner, there is a scale bar showing 1000 km and 500 mi, and coordinates: Scale 36,978,597, Lat -5.6160, Lon -119.0918.

But How Do We Get the Data to the Users



But How Do We Get the Data to the Users



This block shows a cloud storage interface for Amazon Web Services. A white cloud contains the Amazon Web Services logo and the text "AQUATIC Informatics" with a blue wave icon. Two red arrows point from the cloud to a laptop screen below. The laptop screen displays a software interface titled "AQUATIC Data Collection" with a graph showing "Target Stage" over time. The graph has a blue line with data points and a yellow line, with a vertical black bar highlighting a specific data point.

Data Field Retrieval - Work - Microsoft Edge
 https://rgrseros3.cr.usgs.gov/cgi-bin/fieldtest.pl?DCPID=345A83D2&SINCE=0

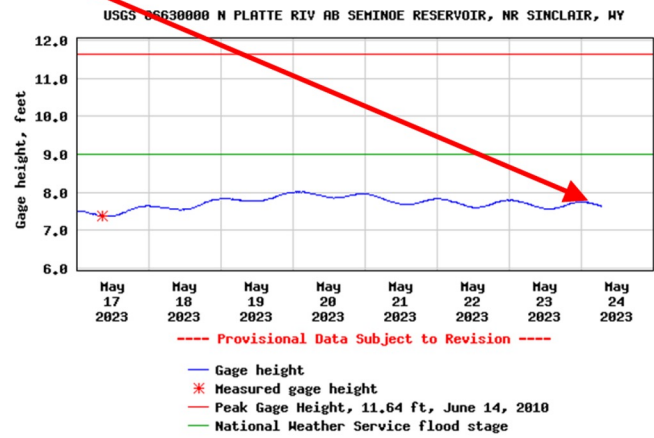
Data Field Retrieval

DCP: 345A83D2 From now minus 8 hours until now.

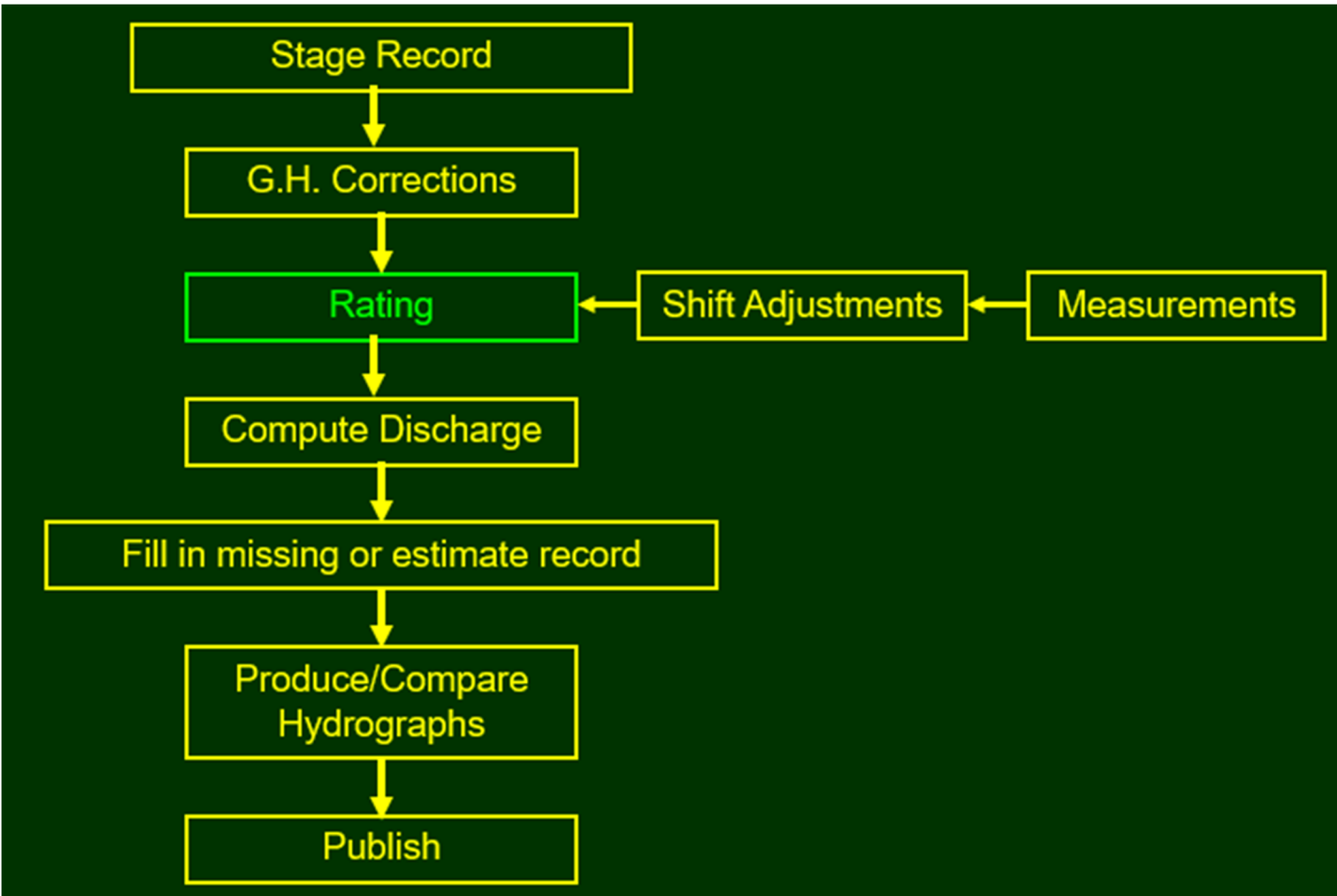
345A83D223144134541G36-0NN138WXW00134	HG 15 #15 7.62 7.62 7.63 7.64 7.64 7.65 7.66 7.66	:AT 15 #15 56.62 55.54 55.27 54.83 55.16 55.09 55.24 55.54 :BL 12.45 :SN 22090688
345A83D223144124541G36+0NN138WXW00134	HG 15 #15 7.64 7.65 7.66 7.66 7.67 7.67 7.68 7.68	:AT 15 #15 55.16 55.09 55.24 55.54 56.03 55.62 55.95 56.41 :BL 12.39 :SN 22090688
345A83D223144114541G36-0NN138WXW00134	HG 15 #15 7.67 7.67 7.68 7.68 7.69 7.70 7.70 7.70	:AT 15 #15 56.03 55.62 55.95 56.41 56.64 56.18 56.18 55.95 :BL 12.42 :SN 22090688
345A83D223144104541G37+0NN138WXW00134	HG 15 #15 7.69 7.70 7.70 7.70 7.71 7.72 7.72 7.72	:AT 15 #15 56.64 56.18 56.18 55.95 55.42 55.62 54.96 54.40 :BL 12.44 :SN 22090688
345A83D223144094541G36-0NN138WXW00134	HG 15 #15 7.71 7.72 7.72 7.72 7.73 7.74 7.73	:AT 15 #15 55.42 55.62 54.96 54.40 52.92 53.17 51.65 52.53 :BL 12.47 :SN 22090688
345A83D223144084541G37-0NN138WXW00134	HG 15 #15 7.72 7.73 7.74 7.73 7.74 7.75 7.75 7.75	:AT 15 #15 52.92 53.17 51.65 52.53 53.89 55.19 55.32 56.28 56.44 57.43 :BL 12.50 :SN 22090688
345A83D223144074541G37-0NN138WXW00134	HG 15 #15 7.74 7.75 7.75 7.75 7.75 7.75 7.75 7.75	:AT 15 #15 53.28 53.89 55.19 55.32 56.28 56.44 57.43 :BL 12.50 :SN 22090688
345A83D223144064541G37-0NN138WXW00134	HG 15 #15 7.75 7.75 7.75 7.75 7.75 7.75 7.75 7.75	:AT 15 #15 55.54 56.28 56.44 57.43 58.73 59.29 59.35 :BL 12.51 :SN 22090688

Gage height, feet

Most recent instantaneous value: 7.63 05-24-2023 06:45 MDT



Data Processing Overview



Stage Record

Review/Edit GH record in DRT

- Data gaps
- Delete erroneous data
- Apply gage-height corrections
- Document findings



Streamflow Measurement Method Improvements

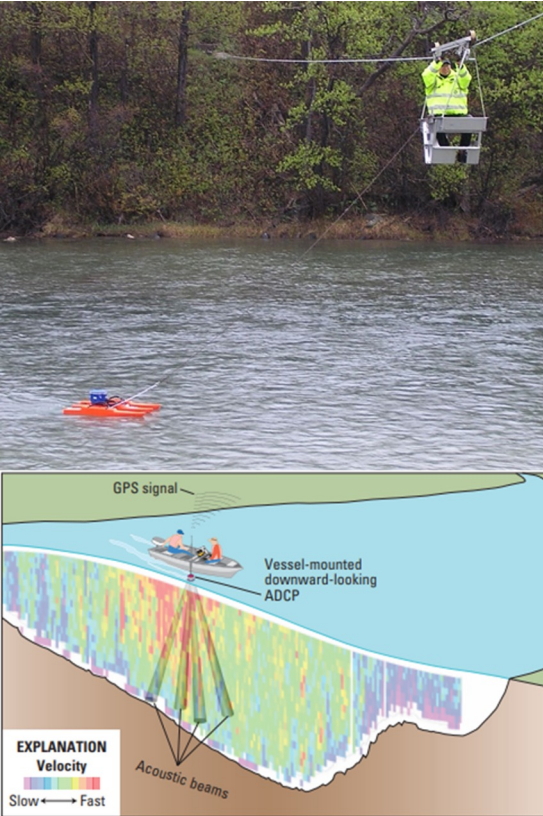
Traditional Methods



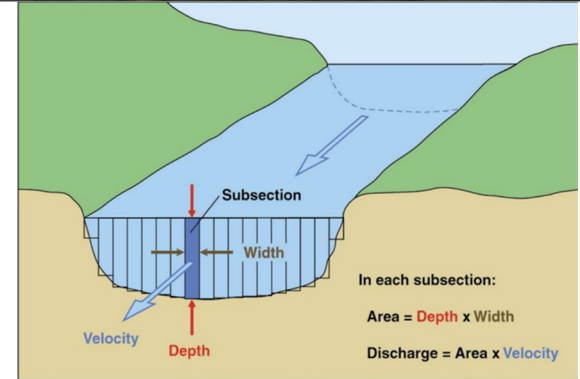
Newer Hydroacoustic Methods



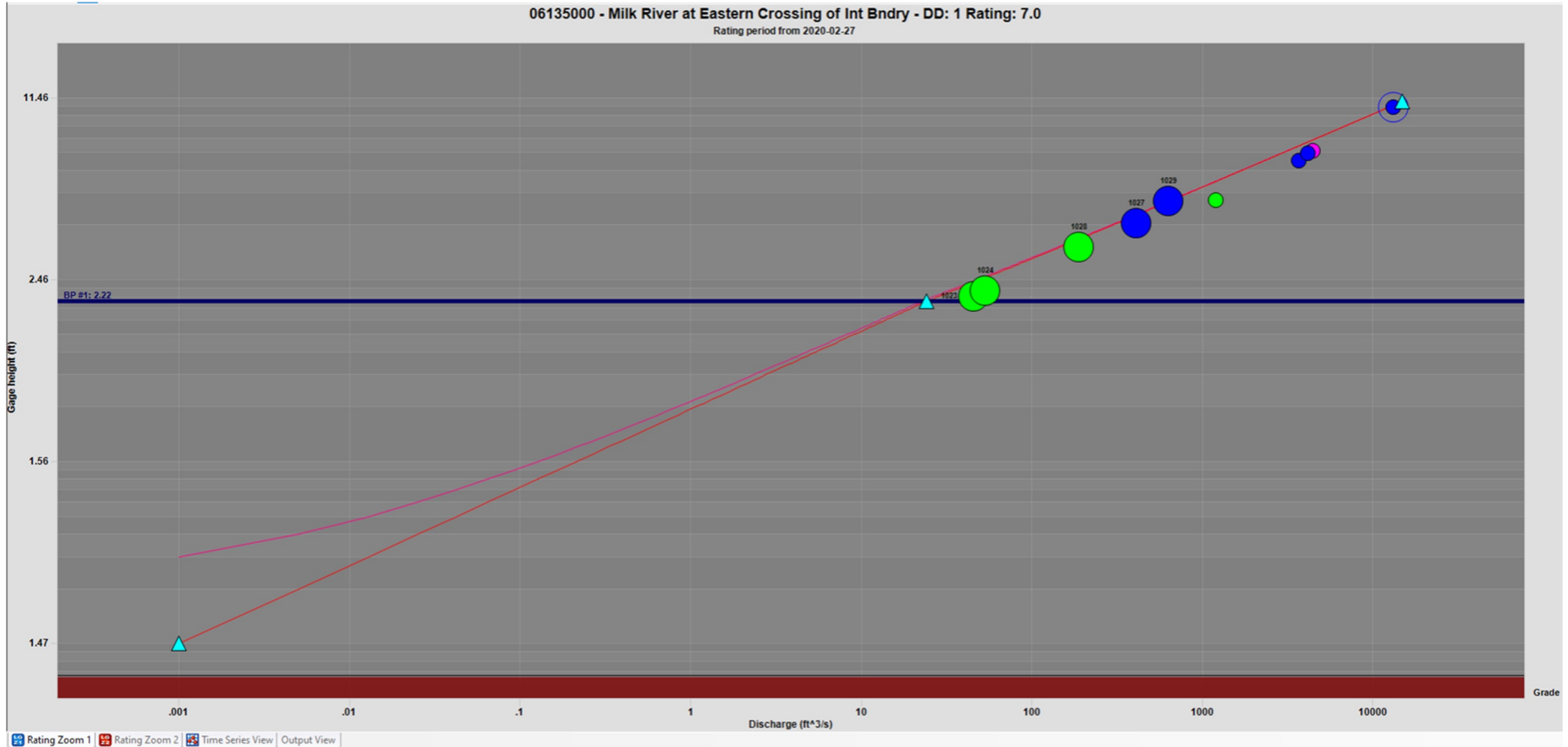
Streamflow Measurement



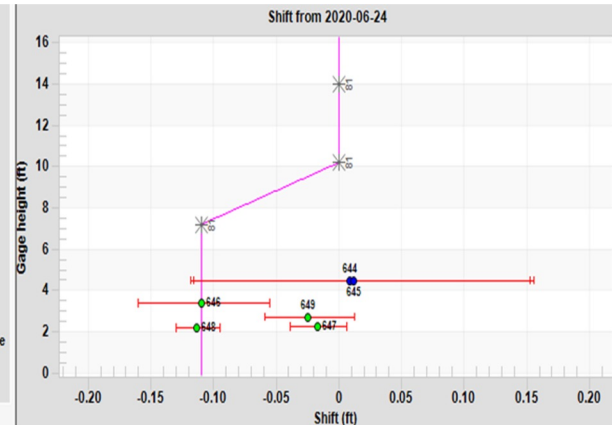
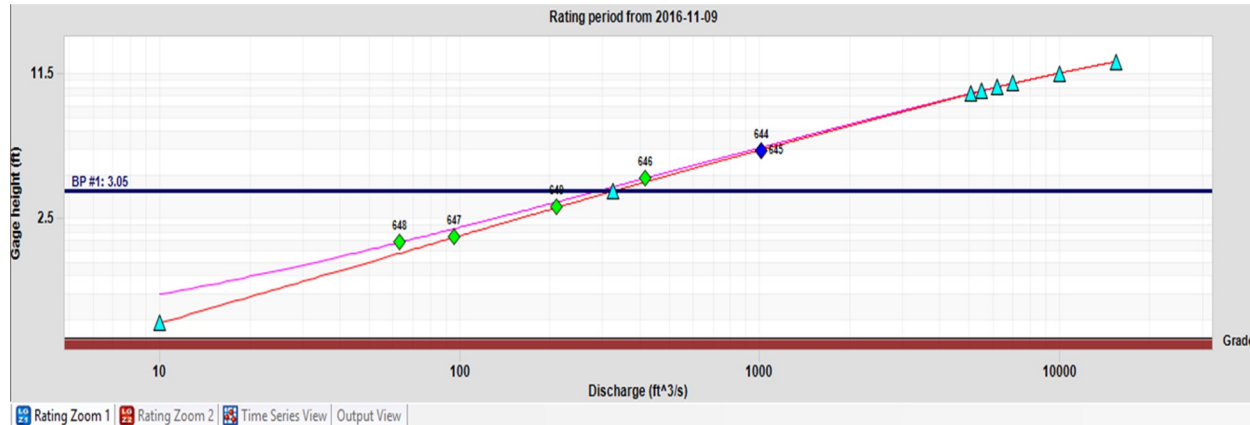
- A streamflow measurement is calculated from field determinations of stream width, depth, and velocity.
- Stream discharge is a volume of water moving past a point at given period of time. Typically, cubic feet per second (cfs).



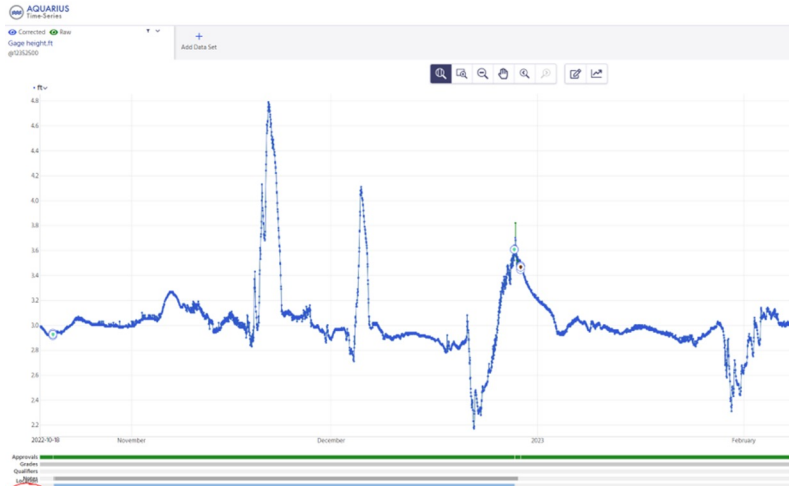
An Example of a Stage-Discharge Relation Also Known as a “Rating Model”



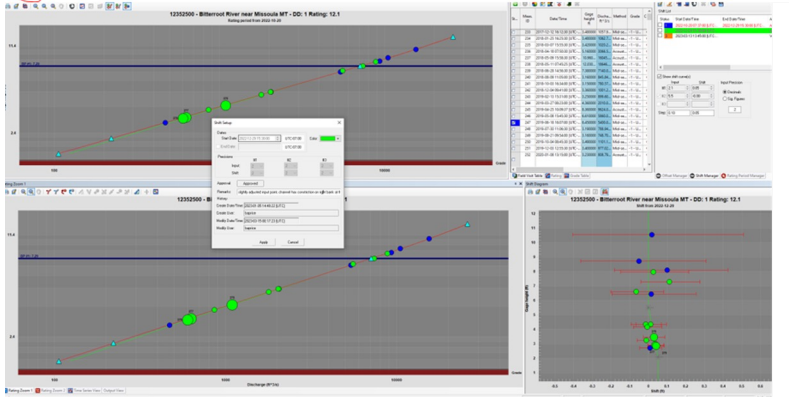
Current Data Product



Record Analyzation and Approval



Category	Type	Processing priority	Comment or Note	Start	End	Created	Created by	Tags
Correction	Override	Normal	Override: Copy & Paste Source Data Set: Gage	2023-03-10 20:45:00	2023-03-13 11:00:00	2023-03-14 16:58:52	babprice	
Approval	Approved	Normal	Approval changed to Working by kvam/feet	2022-10-20 07:37:00	2022-12-28 15:09:59	2023-03-06 10:34:51	kvam/feet	
Location Note		Normal	Approver Comments:	2022-10-20 08:42:00	2022-12-28 15:57:00	2023-03-06 10:34:26	kvam/feet	
Approval	Analyzed	Normal	Approval changed to Analyzed by babprice	2022-10-20 07:37:00	2022-12-28 15:09:59	2023-01-05 08:07:58	babprice	
Note		Normal	Record is complete for the period - no gaps in the data.	2022-10-20 11:45:00	2022-12-29 04:00:00	2023-01-05 07:20:00	babprice	
Correction	Delete Region	Normal	SPIKE DUE TO ICE BREAKING UP BETWEEN THE VISITS	2022-12-28 17:45:00	2022-12-28 17:45:00	2023-01-05 07:14:16	babprice	
Correction	Multipoint	Normal	ICE OVER THE PAST DAY APPEARED TO LIBURRY OBSERVE, DROPPING THE	2022-12-28 16:15:00	2022-12-29 15:15:00	2022-12-29 17:45:23	babprice	
Approval	Approved	Normal	Approval changed to Approved by kvam/feet	2022-03-02 17:16:00	2022-10-20 07:36:59	2022-07-14 14:55:32	kvam/feet	
Approval	Analyzed	Normal	Approval changed to Analyzed by babprice	2022-09-07 12:45:00	2022-10-20 07:36:59	2023-10-20 12:19:21	babprice	
Note		Normal	W/W is upstream, should be around .01 to .02 higher stage	2022-10-20 07:45:00	2022-10-20 08:45:00	2022-10-20 12:04:56	babprice	
Approval	Working	Normal		Beginning of time	End of time	2017-03-05 23:04:45	admin	



Station Analysis Template: Stage-Discharge Streamflow Records

Analysis Period: Dates of record associated with this analysis
Analyst: Name of record-period analyst

Gage Height Record: State the quality of the gage height record (good, fair, poor) for the analysis period. State the range of stage experienced during analysis period (min and max), including general discussion of periods with any problems (missing record, for example).

Datum: Provide the date of the most recent levels. If run during analysis period, discuss the results of the level cut, provide the reasoning/justification for any datum correction, and explain how the datum correction was applied, include dates.

Backup Data: Describe source of the backup data (EDL, etc.), the quality of the backup data, why there was a gap in the primary time-series, and the period that contains the merged data.

Ice Affected: Provide dates for periods when recorded gage heights are affected by ice.

Edits: Discuss all edits to the recorded gage heights, including reasoning for the erroneous values and methods used in making edits. Provide dates for any gaps in recorded gage heights.

Gage-Height Corrections: Clearly describe the reasoning and timing for any gage height corrections. Briefed statements for small instrument drift (≤ 0.02 ft) can be provided. Larger corrections need detailed discussion.

Other Corrections: Provide the reasoning and application period for any flushing, purge, or drawdown corrections. Provide detailed discussion on any other types of corrections that were developed, their period of applicability, and why they were deemed necessary for the analysis period. (Note: corrections that vary by stage such as drawdown corrections require a well defined relationship built upon direct observations of the reference gage and recorder over range of stages and events. Documents) with supporting plots/analyses/discussions should be referenced and properly stored in accordance with WSC policy)

Peak Stage: Provide the maximum recorded peak stage value, and the independent peak stage value (including assessed uncertainty of the independent peak stage value and the type of independent peak stage device used). The results of the verification procedure should be described, including which peak stage value was determined to be the valid maximum stage for the analysis period (See CSM TMA 14.06). Finally, indicate how this peak value relates to the previous peaks observed during the water year.

New Data Retrieval-15-minute Interval

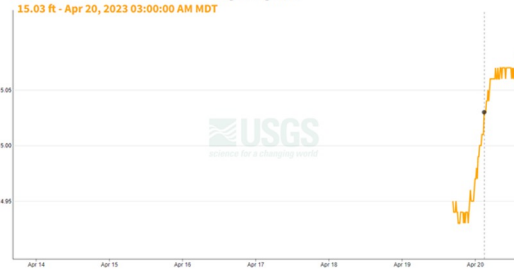
The screenshot shows the LinkComm software interface. On the left, a list of stations includes 'Yellowstone R. @ Intake' with ID '06120500'. The main panel shows configuration for this station, with 'Connect type' set to 'TCP/IP' and 'Host' set to '10.13.2.125'. A red circle highlights these two fields. To the right, a 'Cell Diagnostics' window is open, displaying cell status information such as 'Cell signal: 4/4 bars at 2023/04/20 22:14:23' and a 'Cell signal strength' graph. A red arrow points from the 'Host' field to the 'Cell IP' field in the diagnostics window. Another red arrow points from the 'Connect type' field to the 'Cell status' section. The bottom navigation bar includes 'Dashboard', 'Measurements', 'Data', 'Telemetry', 'Other Setup', and 'Diagnostics'.



Yellowstone River Fish Bypass Channel nr Intake MT - 06328495

April 13, 2023 - April 20, 2023

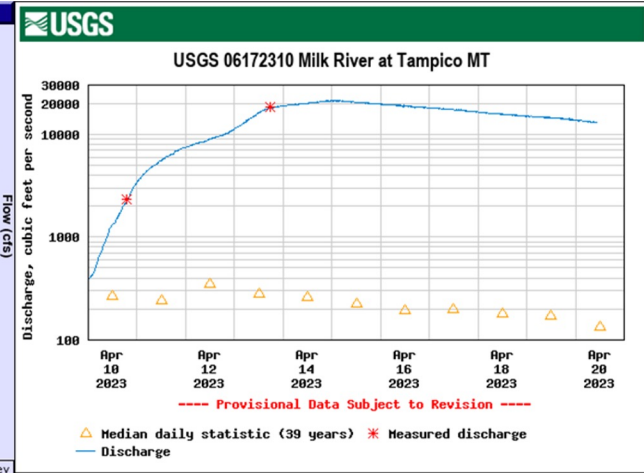
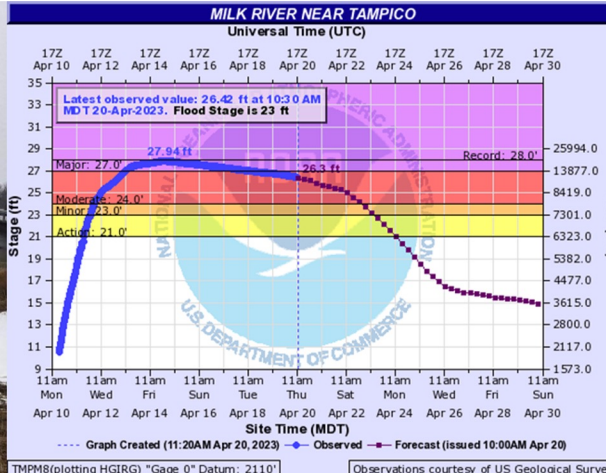
Gage height, ft



What Comes with a USGS Streamgage

- **Quality assurance/Quality Control**
 - The Data Program is reviewed on a 3-year cycle (internally on an annual basis).
- **Continuity**
 - All USGS data collection activities operate under the same guidelines.
- **Archived and Publicly Available Data**
 - All data is archived and accessible on the USGS web page.
- **Accurate and continuous data**
 - Current monitored data is available on the USGS web page (updated each hour or less)
- **Cooperative approach with State and Local entities**

The NWS...



Great advocates for the USGS Streamgaging Program



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paul.miller@noaa.gov

Get Involved!
Submit a [Condition Monitoring Observer Report](#)



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Scott Whiteman
USGS
whiteman@usgs.gov

The WY Conditions Monitoring Team (WCMT) organized and hosted this webinar. The WCMT is a collaborative effort of state, federal, tribal, and university partners that monitor conditions & impacts throughout WY weekly – and communicate this info to the U.S. Drought Monitor & others.
Learn more at:
<https://drought.wyo.gov>

Thank you!