Centennial Valley Water Report - October 2022

Please contact drought@centennialvalleyassociation.org if you have any questions, comments, or suggestions.

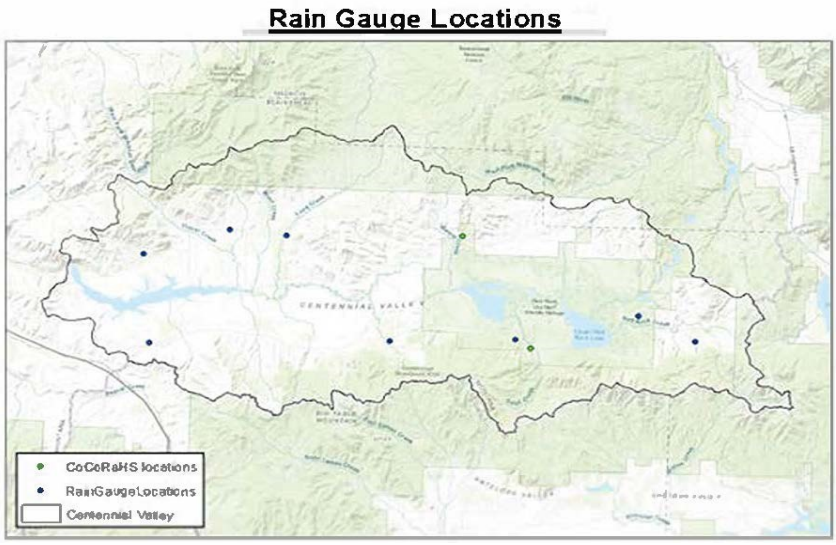
Greetings from the Centennial Valley Association!

After a mostly dry month, October rewarded us with some precipitation last week! Between the 21st and 23rd, the Centennial Valley received both rain and snow. After the storm, snow depths ranged from 20 inches at the Clover Meadow SNOTEL station to 4 inches at the Lakeview Ridge SNOTEL station. Although another storm was predicted to move through the valley on the 26th, we saw very little precipitation from the event. While the snow has stuck around at higher elevations, the snow on the valley floor is melting. The Centennial Valley has a chance for more precipitation in the upcoming week. On Tuesday the 1st, the valley is supposed to receive rain and snow, with very little accumulation likely. The 2nd through the 4th brings a chance of snow each day with temperatures dropping into the single digits each night.

Please note that this October Water Report marks the end of the summer field season water reports. The winter reports will be slightly shorter, as we will no longer include streamflow data or fire reports. Instead, we will include data on snowpack and winter weather conditions. As always, please don't hesitate to reach out to drought@centennialvalleyassociation.org if you have any suggestions as to how to make these reports more useful to you, especially during these cold winter months! Have a happy start to your holiday season and stay warm!

Precipitation Data - October 2022

Please note that CVA's automatic rain gauges were uninstalled on October 21st to prevent damage from freezing temperatures. The *italicized* data below reflects precipitation totals from October 1st—October 21st. During these dates, the valley experienced less precipitation than during the month of September. During September, rain gauges received between 0.84" (Long Creek) and 3.66" (Lakeview). The RRLNWR and TNC CoCoRaHS and Red Rock BLM RAWS station reflect data for the entire month of October.



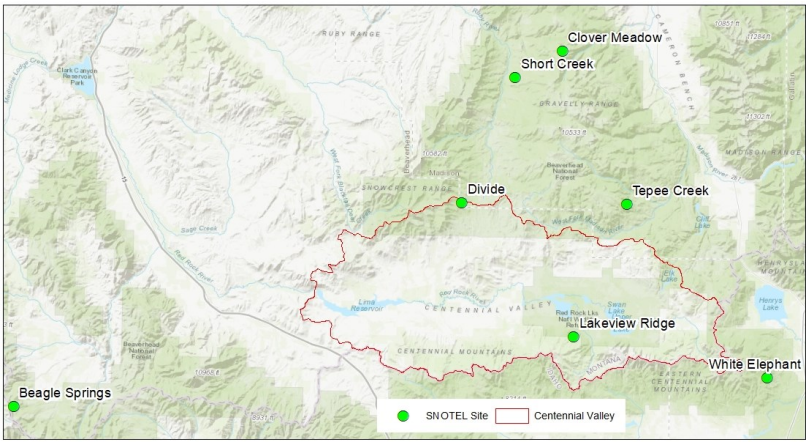
Source: CVA & Partner Monitoring

Rain Gauge Name	Precipitation Accumulation in inches (end of period values)
Elk Lake Road	*0.53*
Alaska Basin	*0.26*
RRLNWR CoCoRaHS	2.67
Lakeview	2.36
South Valley Road	*0.13*
Monida Hill	*0.56*
Lima Dam	*0.26*
Wolverine	*n/a*
Long Creek	*0.13*
TNC CoCoRaHS	1.17
Red Rock BLM RAWS	0.61

Snowpack and Precipitation Data - As of October 31st

There are seven Natural Resources Conservation Service (NRCS) SNOTEL sites that surround the Centennial Valley (right). Percent median for precipitation accumulation for the month of October ranged from 82% (Beagle Springs) to 211% (Tepee Creek). The White Elephant station received the most precipitation (4.3") and the Beagle Springs station received the least precipitation (1.4"). Each station is above 118% of median snow water equivalent.

Source: NRCS Report Generator

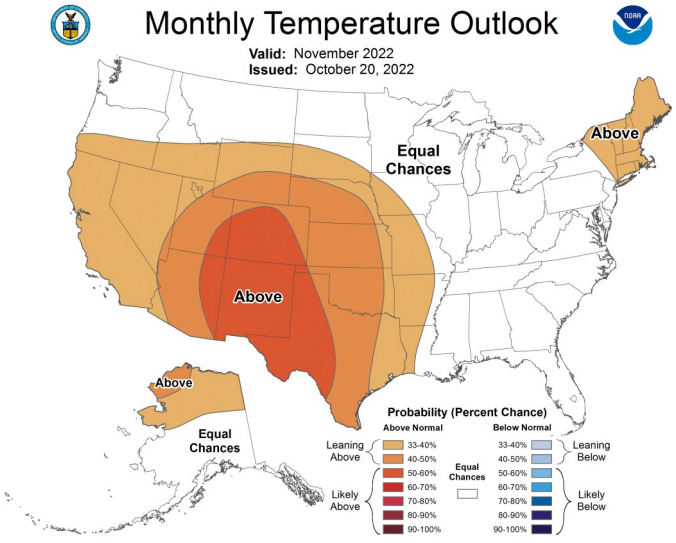


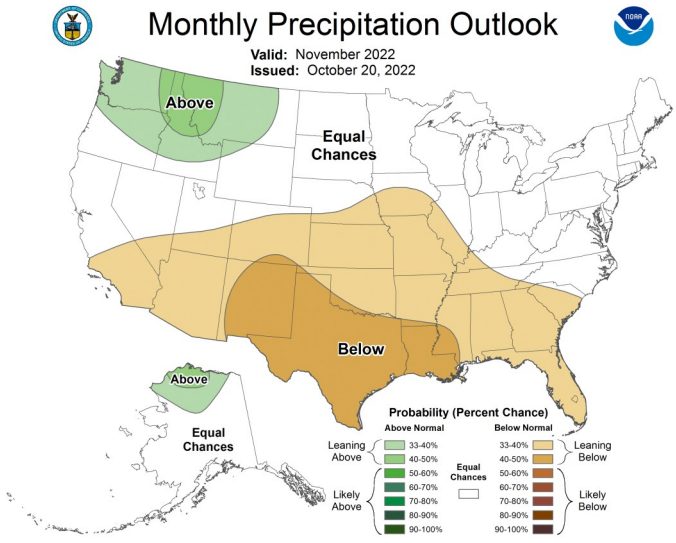
	Precipitation Accumulation (in)	Median Precipitation Accumulation (1991-2020) (in)	Precipitation Accumulation % of Median (1991-2020)	Snow Water Equivalent (in)	Median Snow Water Equivalent (1991-2020)	Snow Water Equivalent % of Median (1991-2020)	Snow Depth (in)
Beagle Springs (8,850 ft)	1.4	1/8	82%	1.0	0.6	167%	4
Clover Meadow (8,600 ft)	3.3	2.8	118%	2.6	2.2	118%	11
Divide (7,800 ft)	2.5	2.0	125%	1.4	1.0	140%	4
Lakeview Ridge (7,400 ft)	3.4	2.0	170%	0.8	0.1	800%	0
Short Creek (7,000 ft)	1.5	1.6	94%	0.6	0.3	200%	2
Tepee Creek (8,000 ft)	3.8	1.8	211%	1.9	0.8	238%	8
White Elephant (7,710 ft)	4.3	2.8	154%	2.1	0.7	300%	8

Precipitation and Temperature Outlook – November 2022

The temperature outlook for the month of November is predicting equal chances of above normal or below normal temperatures for Montana. Precipitation has a 40-60% chance of being above normal for the month of November.

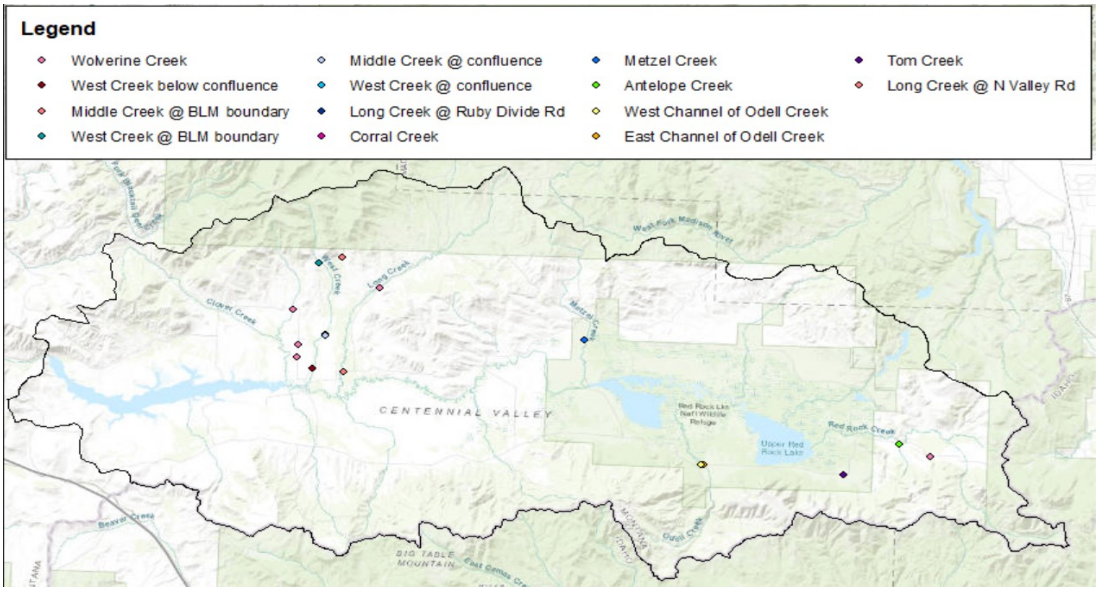
Source: NWS NOAA Climate Prediction Center





Streamflow Data - October 2022

MT Fish, Wildlife, and Parks (FWP) has several streamflow monitoring sites throughout the valley. CVA also has an additional site of our own, but is not monitoring this summer due to capacity and program analysis. Data loggers were installed in May, and FWP is out monitoring sites once or twice per month. The table below highlights earlier October readings. Streamflow measurements have concluded for the season until next spring. Please note that all data is provisional.

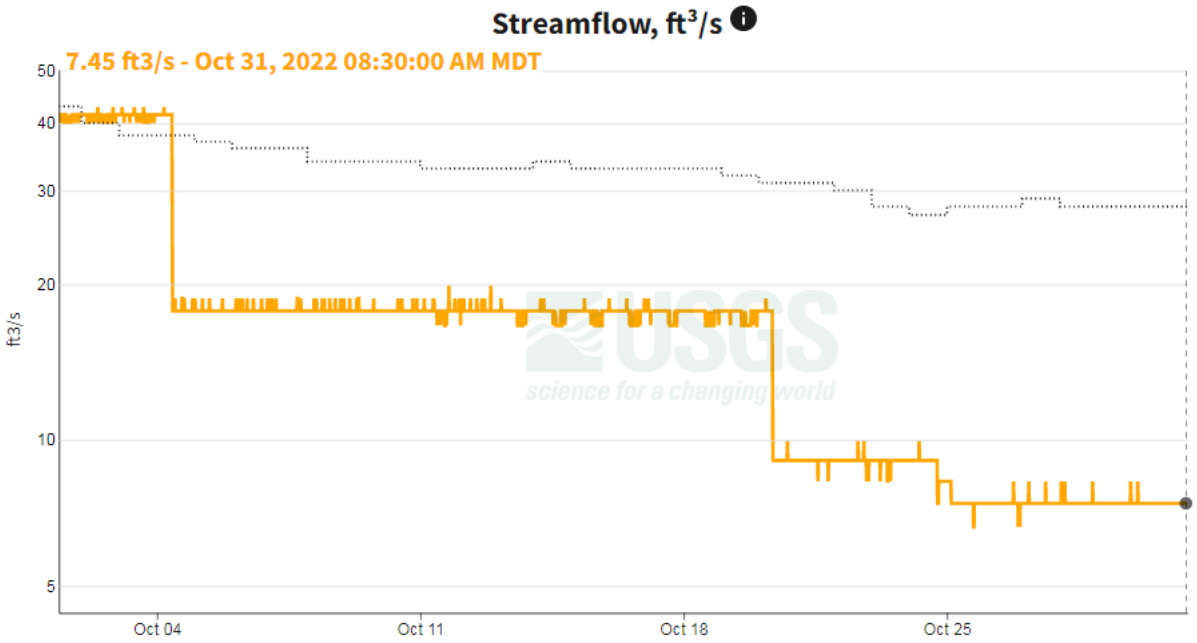


	Current Reading		Previous Readings	
Streamflow Site	**Date**	**Flow Rate (CFS)**	**Date**	**Flow Rate (CFS)**
West Creek below confluence	10/12/2022	5.50	9/14/2022	6.47
West Creek @ confluence	10/12/2022	2.63	9/14/2022	2.94
West Creek @ BLM Boundary	10/12/2022	3.21	9/14/2022	4.48
Middle Creek @ confluence	10/12/2022	1.79	9/14/2022	2.36
Middle Creek @ BLM Boundary	10/12/2022	1.72	9/14/2022	2.25
Long Creek @ Ruby Divide Rd	10/13/2022	2.32	9/15/2022	2.66
Long Creek @ N. Valley Rd	10/13/2022	1.70	9/15/2022	2.66
Long Creek @ TNC	10/13/2022	1.93	9/15/2022	2.16
Metzel Creek	10/12/2022	4.81	9/14/2022	4.75
Odell Creek	10/13/2022	5.38	9/15/2022	3.32
Tom Creek	10/13/2022	0.72	9/15/2022	1.02
Antelope Creek	10/13/2022	0.57	9/15/2022	0.49
Corral Creek	10/13/2022	0.23	9/15/2022	0.71

USGS Stream Gage Data - October 2022

Below is the graph that represents the streamflow of Red Rock River for the month of October. Please note that the Red Rock Creek stream gage only operates through September. This site will no longer be in use until April. As of October 31st, Red Rock River was discharging around 7.45 CFS and the gage height was 1.17 feet. In comparison, as of October 6th, Red Rock River was discharging 17.8 CFS and the gage height was 1.28 feet.

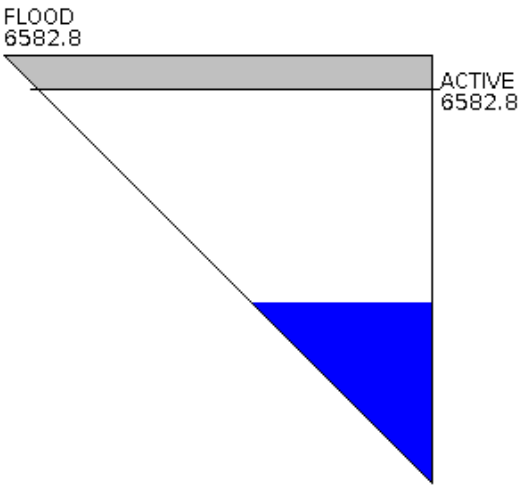
Source: USGS Streamflow Data



Lima Reservoir Data - As of October 31st, 2022

The Lima Reservoir currently has a pool elevation of 6564.21 feet and is 20.7% full. The reservoir inflow is 83.0 CFS and the outflow is 3.1 CFS. On October 5th, 2022, the Lima Reservoir had a pool elevation of 6563.5 feet and was 19.3% full. The reservoir inflow was 18.8 CFS and the outflow was 27.2 CFS.
Source: Bureau of Reclamation

Water Users Irrigation Company
Current Reservoir Data for Lima Reservoir, MT



Daily Reservoir Data as of 10/31/2022

Pool Elevation is 6564.2 Feet
Reservoir Storage is 17416.5 Acre-Feet
Reservoir Inflow is 83.0 CFS
Reservoir Outflow is 3.1 CFS
Reservoir is 20.7 % Full*
Reservoir Flood Control Pool is filled 0.0 %

Hourly Reservoir Data as of 11/01/2022 06:30

Pool Elevation is 6564.21 Feet
Reservoir Storage is 17381.39 Acre-Feet

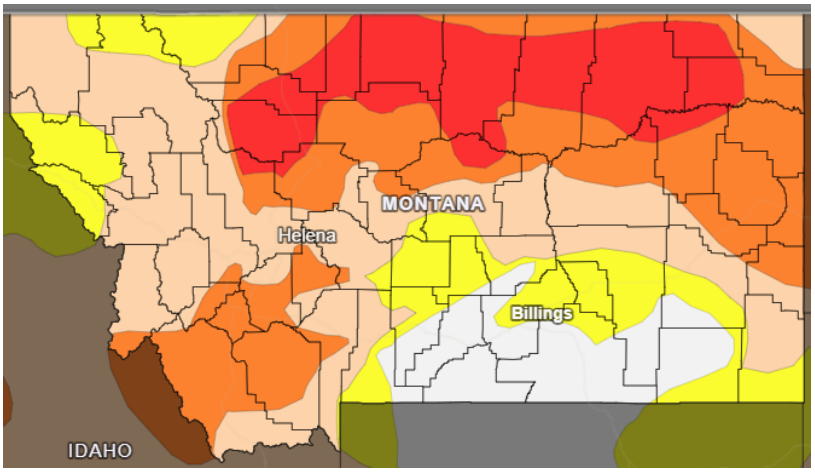
Note: 998877. Indicates A Missing Value
** Reservoir is considered "full" when pool elevation is at top of active conservation pool. Percentage is based on total reservoir volume below that level.*

** Reservoir is considered "full" when pool elevation is at top of active conservation pool. Percentage is based on total reservoir volume below that level.*

Drought Data - October 2022

With most of October being very dry, drought conditions have worsened across Montana. As of October 31st, 89.6% of Montana is experiencing some level of drought, an increase from 77.5% in September. The percentage of the state experiencing extreme drought has increased from 12.2% in September to 15.6% in October. Currently, 100% of Beaverhead County is experiencing drought, which has not changed since August. The Centennial Valley is currently listed as experiencing moderate drought conditions.

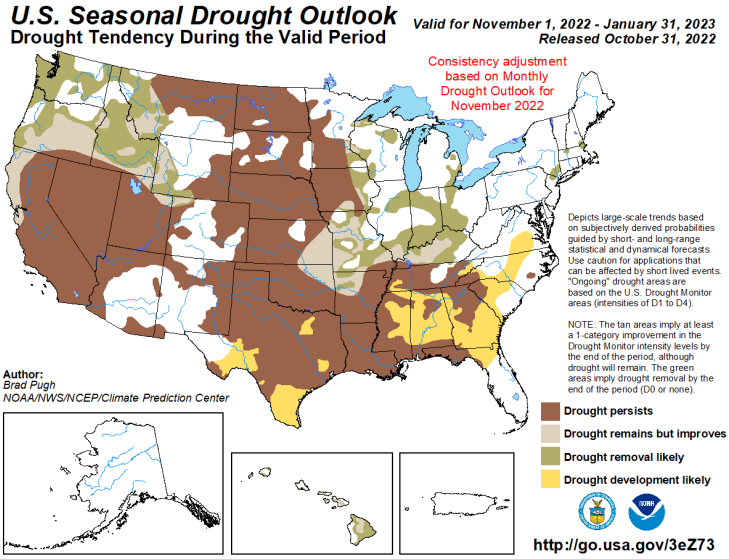
Source: National Integrated Drought Information System



Drought Outlook – November 2022

Drought conditions will persist during the month of November for most of Montana. Drought may improve for parts of western Montana and drought removal is likely for northwestern Montana.

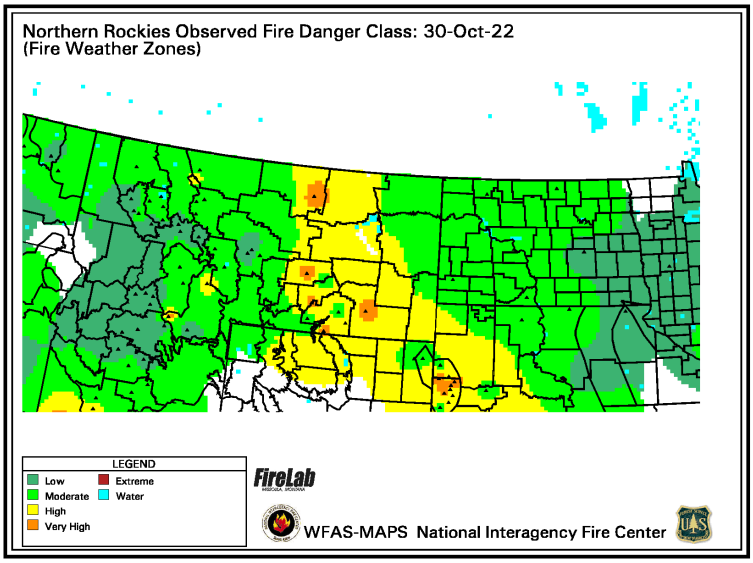
Source: NWS NOAA Climate Prediction Center

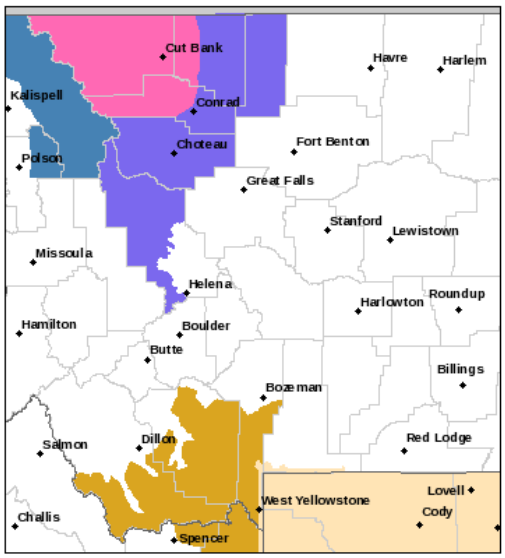


Fire Weather Conditions - October 30th, 2022

Fire danger has increased for parts of Montana. As of October 30th, Beaverhead County is classified as moderate fire danger. Eastern and Central Montana are experiencing high to very high fire danger. There is currently a high wind watch for parts of Beaverhead and Madison Counties.

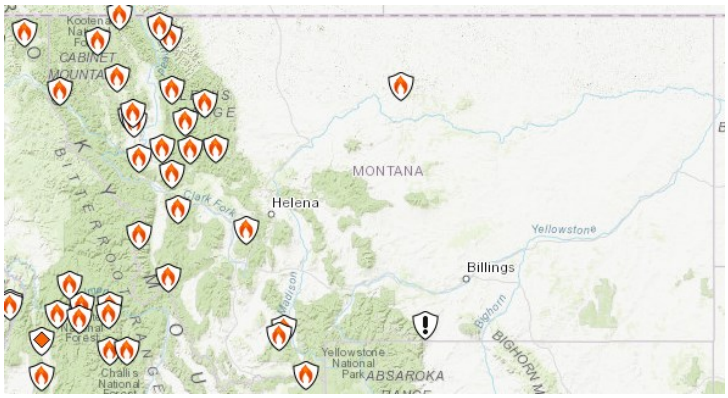
Sources: US Forest Service Wildland Fire Assessment System; National Weather Service





Fire Report - October 2022

Wildfire activity has continued to slow down throughout the month of October. According to Inciweb, no new fires were reported in Montana during October. Most fire updates have ceased as fire activity has slowed down, fire weather conditions have improved, or they have been contained. The only fire with updates is the Trail Ridge Fire, burning northwest of Wisdom, is now listed as 80% contained and has burned 18,138 acres. Please note that unless there is significant fire activity during the month of November, this will be the last Fire Report until next fire season.



More Fire Resources

DNRC Interactive Fire Map: https://gis.dnrc.mt.gov/apps/firemap/
Montana Wildfire News: https://www.npr.org/podcasts/490249415/montana-wildfire-news
Northern Rockies Fire Weather Daily Outlook: https://gacc.nifc.gov/nrcc/predictive/weather_Day1.jpg
Northern Rockies Significant Fire Potential: https://fsapps.nwcg.gov/psp/npsg/data/conus-sevenday/d1_0.png

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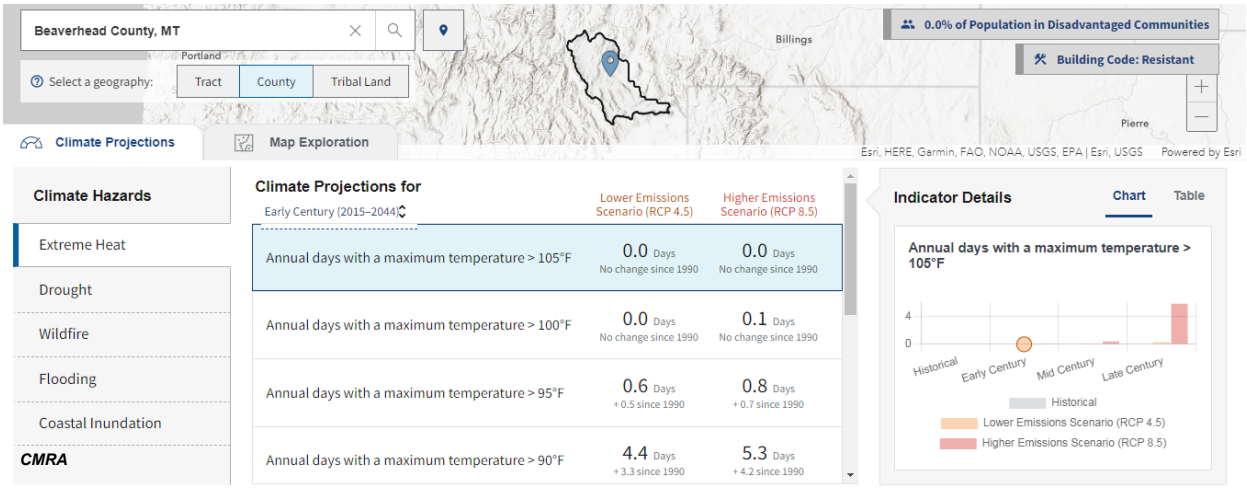
Climate Mapping for Resilience and Adaptation

The Climate Mapping for Resilience and Adaptation website has created a useful tool to help you assess climate conditions in your area. The interactive tool provides data on climate hazards like extreme heat, drought, wildfire, and flooding. The goal of CMRA's tool is to help people plan for future drought conditions and build drought resiliency within their communities. Check it out!
Tool: https://livingatlas.arcgis.com/assessment-tool/home



If you have any questions, comments, or trouble interpreting the data, please contact drought@centennialvalleyassociation.org!

Helpful Links:
Montana Drought Status Percentage
NRCS SNOTEL Report Generator
USGS Streamflow Data
Lima Reservoir
Palmer Drought Severity Index
BLM Weather Station

October 2022 Photos