

BLACKFOOT CHALLENGE

WEEKLY IRRIGATION REPORT

Friday August 12, 2022



It's been 5 weeks of almost no rain and 4 weeks of very hot temperatures on Blackfoot watershed croplands. Next week looks like more of the same. A cool, moist spring and early summer suddenly changed to desert conditions. Soil moisture fell about 2 inches again this week unless irrigated and crop water use continues to be way above average. Haying went quicker for many due to good weather but slower due to higher yields (one of the best crops ever). Blackfoot streamflows continue below average and reached the 700 CFS drought response trigger this week. We continue to avoid hoot owl fishing restrictions due to cool water temperatures.

5 WEEKS OF NO RAIN AND 4 OF VERY HOT TEMPERATURES

We had little or no rain again this week and more hot temperatures with some sites again reaching 100F. Haying has proceeded quickly since crops dried faster than normal with no weather interruptions. Next week will again be dry with high temperatures in the 90s and lows in the 40s and 50s. The 30-day forecast says below average rainfall and above temperatures. The 90-day forecast says average rainfall and above average temperatures.

Your own rain gauge is your best source of rainfall information.

CROP WATER USE - ABOVE AVERAGE AGAIN WITH HOT WEATHER

Crop water use continues to be above average due to hot dry weather. Most crops will use just over 1½ inches of soil moisture next week (see chart below). Peak crop water use this year was last week and came about 2 weeks later than last year.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.9	1.7	.24	21.1
PASTURE	1.6	1.4	.20	17.8
SPRING GRAINS	2.0	1.5	.21	19.0
WINTER WHEAT	0.0	0.0	.00	15.3
LAWNS	1.8	1.6	.23	20.2

¹Expected water use over the next week (range if weather becomes cooler or hotter than expected)

²Expected average daily water use over the next week (compare this with your soil moisture content)

³Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but since include April

SOIL MOISTURE-AGAIN DROPS 2 INCHES UNLESS IRRIGATED OR CUT

Soil moisture again dropped by about 2 inches this week unless irrigated. Soil moisture will drop almost the same amount next week. This is the time soil moisture usually drops in most fields. Many irrigators will irrigate once after cutting hay crops and stop during drought response. Others will continue irrigating but dramatically reduce irrigation by limiting the number of systems running at once or the number of surface diversions. Crops use soil moisture from deeper layers during dry periods when the easy pickings in surface layers dry out. Congratulations to those who irrigate deeply. Most local crops simply go dormant as soil moisture is exhausted.

The table on Page 1 provides a quick summary of crop water use this last week and an estimate for next week. The table and chart below summarize the entire irrigation season and compare it with average, hot and cool conditions so you can plan ahead. This table and chart will be updated weekly all season.

BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

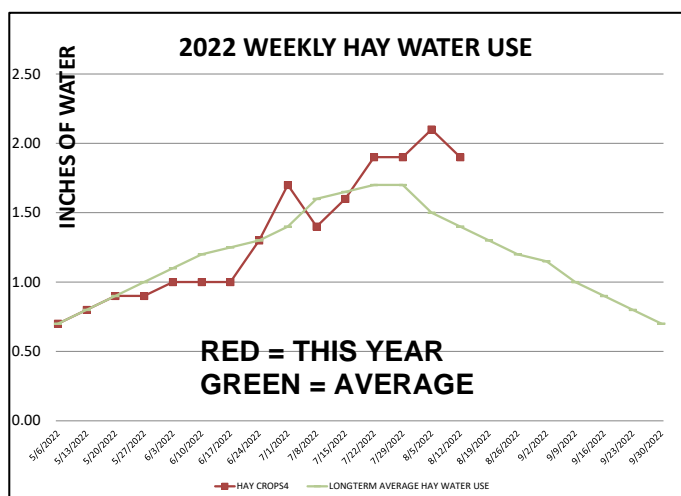
WEEK ENDING	RAIN ¹	2022 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.25	1.00	1.00	0.00	0.00	1.00	1.00			
5/6/2022	0.25	0.70	0.60	0.10	0.00	0.80	0.80	0.70	1.00	0.40
5/13/2022	0.01	0.80	0.70	0.20	0.00	0.90	0.90	0.80	1.10	0.60
5/20/2022	0.10	0.90	0.80	0.40	0.20	1.00	0.90	0.90	1.20	0.70
5/27/2022	0.20	0.90	0.80	0.70	0.50	1.00	0.90	1.00	1.30	0.70
6/3/2022	0.10	1.00	0.80	0.80	0.60	1.10	0.90	1.10	1.50	0.80
6/10/2022	0.50	1.00	0.80	0.90	0.70	1.10	0.90	1.20	1.70	0.80
6/17/2022	0.75	1.00	0.80	1.10	0.90	1.10	0.90	1.25	1.90	0.90
6/24/2022	1.00	1.30	1.10	1.30	1.20	1.30	1.20	1.30	2.00	1.00
7/1/2022	0.01	1.70	1.40	1.60	1.70	1.70	1.60	1.40	2.00	1.00
7/8/2022	0.75	1.40	1.20	1.60	1.60	1.50	1.30	1.60	2.10	1.10
7/15/2022	0.01	1.60	1.30	1.70	1.70	1.30	1.50	1.65	2.20	1.10
7/22/2022	0.01	1.90	1.60	2.10	2.10	1.00	1.80	1.70	2.20	1.10
7/29/2022	0.01	1.90	1.60	2.20	2.20	0.50	1.80	1.70	2.20	1.10
8/5/2022	0.01	2.10	1.70	2.40	2.40	0.00	2.00	1.50	2.20	1.00
8/12/2022	0.01	1.90	1.60	1.90	2.00	0.00	1.80	1.40	2.20	1.00
8/19/2022								1.30	2.00	0.90
8/26/2022								1.20	1.80	0.90
9/2/2022								1.15	1.60	0.70
9/9/2022								1.00	1.40	0.60
9/16/2022								0.90	1.40	0.50
9/23/2022								0.80	1.20	0.50
9/30/2022								0.70	1.00	0.40
TOTAL	3.72	21.10	17.80	19.00	17.80	15.30	20.20	26.25	37.20	17.80

¹ Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April, May and Sept, 0.15-June and August, 0.2-July)
(This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

² This years maximum water use by healthy crops that are well-fertilized and irrigated, disease and insect-free. Will vary slightly across the drainage.

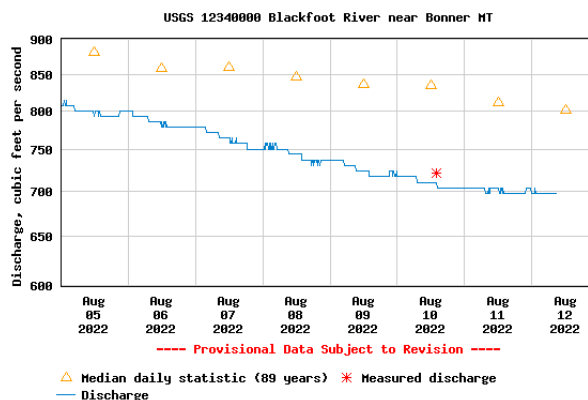
³ Longterm average water use for each crop each week based on long-term historic data.

⁴ Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.



RIVER FLOW HITS THE 700 CFS DROUGHT RESPONSE TRIGGER

The Blackfoot river flow at Bonner continues to drop fast and to be below average. Today flow is **698 CFS** (average for this date is 829 CFS). 1899 saw the highest flow at 2,040 CFS while the lowest flow was 364 CFS in 1988. Current low flows are mainly due to recent hot, dry weather. However, irrigation demand has also been high because haying was delayed by cool early-season weather. Irrigators try to irrigate at least once after cutting to help hay crops recover from that stress.



New Blackfoot Challenge Water Steward

Jennifer Schoonen has moved into a new role at the Challenge as the Communications & Fund Development Manager. I am happy to introduce our new **Water Steward Clancy Jandreau**. Clancy has been the City of Missoula Conservation Lands Program Specialist for the past five years.

Previously, Clancy worked for the Sage Grouse Initiative in Washington State and for Colorado Parks and Wildlife near where he grew up in rural western Colorado. Clancy has a degree in Wildlife and Conservation Biology from Colorado State University and a Master's in Resource Conservation from the University of Montana. He enjoys fishing, floating, hunting, camping, hiking, biking and skiing. Clancy and his wife live in Potomac. You can reach Clancy at: Office: (406)793-3900 Cell: (406)304-5423 clancy@blackfootchallenge.org



Drought Options - Things You Can Do Now

- Reduce Irrigated Acreage
- Rotate Irrigation Systems During Low River Flows
- Irrigate once after Cutting hay crops then wait until streamflows recover
- Apply More Water During Each Application
- Shut off during peak afternoon heat when water just evaporates from crop leaves
- Irrigate at night and early morning if possible
- Stagger pivot start times to alternate the area irrigated during peak afternoon heat
- Irrigate a smaller area well instead of a large area poorly
- Switch to pasture which uses less water compared with hayfields since animals constantly remove part of the crop (less crop leaves = less interception and transpiration = less water use)

BLACKFOOT DROUGHT RESPONSE - WHAT HAPPENS NEXT?

The Blackfoot Drought Committee is meeting weekly to evaluate conditions and implement the Drought Response Plan. The plan has been triggered by flows at Bonner falling below 700 CFS. With the hot, dry weather predicted for the immediate future, it is possible that the next trigger level of 600 CFS may be reached prompting further restrictions. ***If you are a current drought plan holder, we are asking you to enact your water conservation plan AND confirm your participation as soon as possible with our Drought Technician Kate Mannix at kate@blackfootchallenge.org.***

When flows in the Blackfoot River fall to/or below 700 cfs, the Committee will:

- Upon having requested consumptive water users to implement their individual drought response plans, request Montana FWP to issue a “call for water” on non-participating junior water users under the Murphy Right. MT FWP, in consultation with the rest of the committee and in absence of extenuating circumstances, will issue a “call for water” on non-participating junior water right holders whose continued water use, in the judgment of FWP, warrants a call. If FWP declines to issue a call for water on any water users at all under its Murphy Right, it will provide the committee with a written explanation of its decision not to issue a call.
- Notify consumptive water users (primarily irrigators) that the Blackfoot Drought Response is active and request implementation of their individual drought response plans.
- Confirm that junior water users with approved drought response plans are participating through response cards, personal communication, and field checks.
- Assess effectiveness of the Drought Response. If needed, the Committee may solicit additional voluntary reductions in water use from existing drought plan participants or from senior water users not already participating in the Drought Response.
- Contact the roster of anglers and angling businesses to alert them of the potential need for angling time and location restrictions if not already in place.
- Contact anglers and angling businesses should the Drought Committee recommend that voluntary fishing technique restrictions go into place. These may be recommended for the entire Blackfoot and all tributaries or just for specific sections of the river and streams, based on flow and temperature conditions. Particularly later in the summer, anglers are advised to make an effort to know current river flows and water temperatures so that they are prepared to observe voluntary technique restrictions. Suggested technique restrictions can be found on the Blackfoot Challenge web site or by contacting the Challenge staff.
- Implement outreach activities to inform water users and the general public of drought conditions and the need for participation in the Drought Response. If flows in the Blackfoot River are below 700 cfs and maximum daily water temperatures reach or exceed 71° F for three consecutive days at Bonner:
- MT FWP will issue partial (2:00 pm – midnight) or all-day fishing restrictions on the mainstem of the Blackfoot River, depending on when high water temperatures are being reached during the day. (For example, if temperatures are exceeding 71° in the Blackfoot Drought Response Plan Revised April 2016 Page 8 of 10 morning, then angling restrictions will be all day.

For further information contact Clancy Jandreau, Blackfoot Challenge Water Steward, 406-304-5423 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

THE BLACKFOOT WATERSHED IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations for the whole season (more detail in the irrigation guide).

APRIL – GET READY AND PLAN YOUR IRRIGATION STRATEGY!

- Get your irrigation system ready – perform maintenance and test system.
- Evaluate soil moisture conditions and weather predictions then plan for irrigation and drought if needed.



MAY – CHECK SOIL MOISTURE & BE READY FOR UNUSUAL HEAT OR COLD!

- Check the soil moisture content at the start of growing season and fill up the soil to its water holding capacity during early irrigations (2-4 inches).
- Watch for dry soil conditions, especially with new plantings and apply water to ensure good germination and emergence.
- Irrigate deeply at least once early in the season to promote deep root growth.
- Apply 2-5 inches of irrigation to hay and pasture crops in May depending on weather. Apply 0-2 inches to spring grains and new plantings as needed based on weather and growth. Apply extra water to fill up the soil (2-4 in).

JUNE – THIS IS THE TIME TO MAKE YOUR BIGGEST EFFORT SO POUR IT ON!

- Apply 6-8 inches of irrigation in June to hay and pasture crops and winter wheat depending on weather. Apply 5-8 inches to spring grains and new plantings as needed based on weather and growth.
- Consider irrigating deeply to fill up soil root zone and promote deep root growth.
- Be sure small grains are irrigated well during their critical periods of boot, bloom and early heading.



JULY – POUR IT ON UNTIL HARVEST AND RETURN QUICKLY

- Apply 1 - 2 ½ inches of irrigation per week in July to all crops - depending on weather.
- Cutting is a critical stress period for hay crops, especially alfalfa so irrigate deeply to fill up the root zone before cutting then get back across the field quickly after cutting. Crop water use declines when hay is cut so this is a good opportunity to fill up the soil again. Irrigate at least once after cutting. Small grains harvested for seed are usually irrigated up to the milk to soft dough stage but be sure soil moisture remains to prevent kernel shriveling. Small grains for forage are often harvested earlier when plants are less dry and seeds soft.

AUGUST- BE DROUGHT AWARE, REDUCE IRRIGATION DURING DROUGHT

- Apply 1 - 2 inches of irrigation per week in August to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed.
- Many folks irrigate for pasture following their one hay cutting. Irrigate according to how much pasture you seek and with consideration for other water needs in the watershed, especially in drought years.
- Reduce river withdrawals by rotating systems and reducing the amount of irrigation at one time. Stop irrigating if you can to help streamflows.



SEPTEMBER – APPLY AS NEEDED/AVAILABLE & GET READY FOR SPRING!

- Apply ½ - 1 ½ inches of irrigation per week in September to hay and pasture crops for full production depending on weather. Irrigate new plantings as needed. Prepare the system for winter and an early start next spring.