

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday August 19, 2022



It's been 6 weeks of almost no rain and 5 weeks of very hot temperatures on Blackfoot watershed croplands. Next week will be warm with thunderstorms. 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 will pass the 600 CFS drought response trigger early in the week then may hit the 500 CFS trigger by weeks end.

### WARM TEMPERATURES, THUNDESTORMS AND LITTLE RAIN

We had little or no rain again this week and more hot temperatures with some sites reaching 100F. Haying proceeded quickly since crops dried faster than normal with no weather interruptions. The thunderstorms and little rain. Next week will have warm temperatures in the 80s and 90s and lows in the 40s and 50s. Thunderstorms could produce significant rain at some sites. 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 normal.

<b>WATER USE IN INCHES</b>	<b>LAST 7 DAYS</b>	<b>NEXT 7 DAYS TOTAL<sup>1</sup></b>	<b>NEXT 7 DAYS DAILY AVE<sup>2</sup></b>	<b>SEASON TOTAL<sup>3</sup></b>
<b>HAY CROPS</b>	<b>1.9</b>	<b>1.7</b>	<b>.24</b>	<b>23.0</b>
<b>PASTURE</b>	<b>1.6</b>	<b>1.3</b>	<b>.19</b>	<b>19.3</b>
<b>SPRING GRAINS</b>	<b>2.0</b>	<b>1.7</b>	<b>.24</b>	<b>20.7</b>
<b>WINTER WHEAT</b>	<b>0.0</b>	<b>0.0</b>	<b>.00</b>	<b>15.3</b>
<b>LAWNS</b>	<b>1.8</b>	<b>1.6</b>	<b>.23</b>	<b>22.0</b>

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

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

<sup>3</sup>Beginning 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 slightly less next week with cooler weather. 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 these dry periods when the easy pickings in surface layers are exhausted. 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.

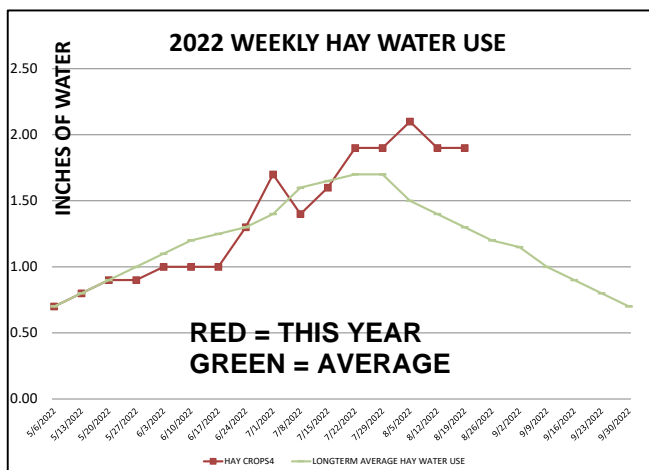
<b>BLACKFOOT 2022 GROWING SEASON WEEKLY RAINFALL &amp; CROP WATER USE</b> (INCHES OF WATER)										
WEEK ENDING	RAIN <sup>1</sup>	2022 WEEKLY POTENTIAL CROP WATER USE <sup>2</sup>						AVERAGE WEEKLY CROP WATER USE <sup>3</sup>		
	RAIN	HAY CROPS <sup>4</sup>	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 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	0.01	1.90	1.50	1.70	1.90	0.00	1.80	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
<b>TOTAL</b>	<b>3.73</b>	<b>23.00</b>	<b>19.30</b>	<b>20.70</b>	<b>19.70</b>	<b>15.30</b>	<b>22.00</b>	<b>26.25</b>	<b>37.20</b>	<b>17.80</b>

<sup>1</sup> 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)

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

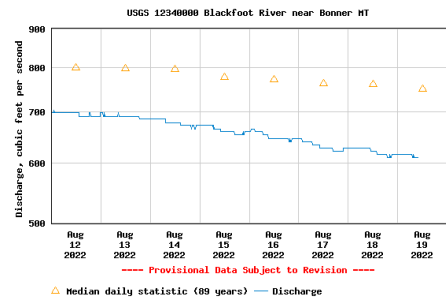
<sup>3</sup> Longterm average water use for each crop each week based on long-term historic data.

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



# RIVER FLOW WILL PASS THE 600 CFS DROUGHT TRIGGER THIS WEEK

The Blackfoot river flow at Bonner continues to drop fast and to be below average. Today flow is **609 CFS** (average for this date is 829 CFS). 1899 saw the highest flow at 1,690 CFS while the lowest flow was 359 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.



## 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
- 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 Response Plan has been triggered by flows at Bonner falling below 700 CFS. The next trigger level of 600 CFS will be reached early this week prompting further restrictions. It's possible the 500 CFS trigger level could be reached by weeks end. ***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](mailto:kate@blackfootchallenge.org).***

As flows at Bonner approach 600 cfs, the Committee will:

- Contact the roster of anglers and angling businesses to alert them of the potential need for angling restrictions if not already in place or of the need for additional angling restrictions.
- Implement outreach activities necessary to inform water users and the general public of drought conditions and the need for participation in the Drought Response.
- Re-confirm that junior water users are participating through response cards, email, personal communication and/or field checks, including notice to ALL juniors with an accepted drought plan that FWP is likely to make call if river conditions reach 500 cfs. If flows in the Blackfoot River at Bonner fall below 600 cfs and/or maximum daily water temperatures in the North Fork Blackfoot River below the falls and Monture Creek reach or exceed 65° F for three consecutive days:
  - MT FWP will issue partial (2:00 pm – midnight) or all day fishing restrictions on all critical bull trout streams. These may include Gold Creek, Belmont Creek, Cottonwood Creek, Monture Creek, North Fork Blackfoot River below the falls, Copper Creek, Landers Fork, and Morrell Creek.

As flows at Bonner approach 500 cfs, "all water users whose individual drought response involves a water trade in which there is less than a 1-to-1 exchange of senior water rights for junior water rights, that FWP will make call on their junior rights."

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](mailto: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.