

# BLACKFOOT CHALLENGE

## WEEKLY IRRIGATION REPORT

Friday August 5, 2022



Blackfoot watershed croplands again had little or no rain this week and sunny skies. Temperatures were the hottest of the year and similar weather is predicted for next week. Soil moisture fell about 2 inches unless irrigated. Crop water use continues to be above average. Remember that water use drops for two weeks after harvesting hay. Blackfoot streamflows are below average and expected to reach the 700 CFS drought response trigger level this week. We have continued to avoid hoot owl fishing restrictions due to cool water temperatures.

### HOTTEST WEATHER THIS YEAR

We had no rain again this week and the hottest temperatures of the year with some sites reaching 100F. Hay crops dried quickly. Next week will again be dry with high temperatures in the 90s and lows in the 40s and 50s. The 30-day forecast says average rainfall and 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 WITH HOT WEATHER

Crop water use continues to be above average due to hot dry weather. Most crops will again use about 2 inches of soil moisture next week (see chart below). Peak crop water use this year is about 2 weeks behind last year. Reduce these figures by 2/3 the first week after cutting hay and by 1/3 the second week.

<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>2.1</b>	<b>2.0</b>	<b>.29</b>	<b>19.2</b>
<b>PASTURE</b>	<b>1.7</b>	<b>1.6</b>	<b>.23</b>	<b>16.2</b>
<b>SPRING GRAINS</b>	<b>2.4</b>	<b>2.0</b>	<b>.29</b>	<b>17.1</b>
<b>WINTER WHEAT</b>	<b>0.5</b>	<b>0.0</b>	<b>.00</b>	<b>16.8</b>
<b>LAWNS</b>	<b>2.0</b>	<b>1.8</b>	<b>.26</b>	<b>18.4</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 about the same next week. Continue to check your soil moisture and refill with at least as much as the weekly crop water use. Remember that crop water use drops by 2/3 the first week after cutting and by 1/3 the second week after cutting. Haying is a good time to replenish soil moisture while crop water use is reduced and there is less foliage to catch and evaporate water.



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								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
<b>TOTAL</b>	<b>3.71</b>	<b>19.20</b>	<b>16.20</b>	<b>17.10</b>	<b>15.80</b>	<b>15.30</b>	<b>18.40</b>	<b>26.25</b>	<b>37.20</b>	<b>17.80</b>

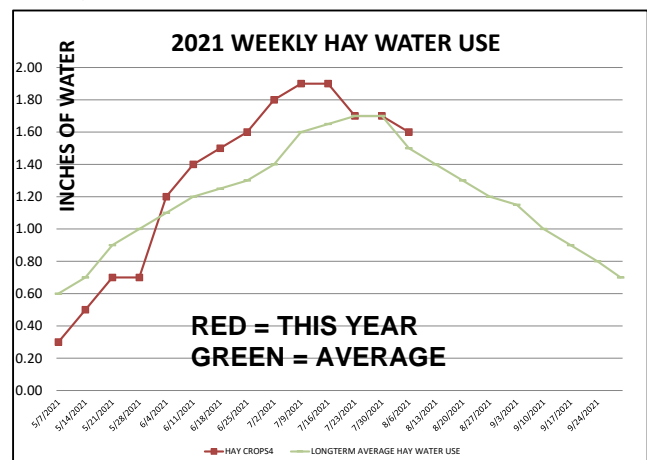
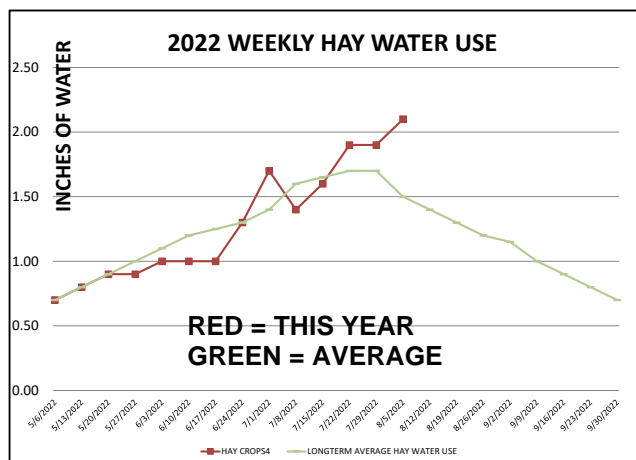
<sup>1</sup> Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-April, May and Sept, 0.15-June and August, 0.2-July) (This rainfall figure is an average across all Blackfoot croplands - use your own rain gauge for better accuracy)

<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.

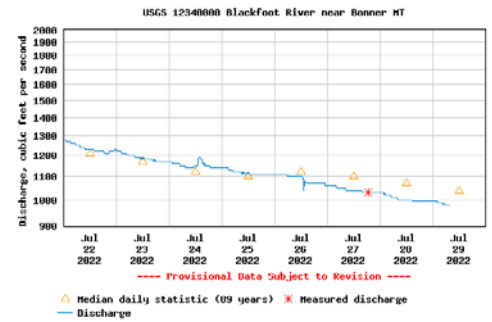
<sup>4</sup> Hay Crop water use drops approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.

### 2022 Weekly Crop Water Use Again Exceeds Last Year



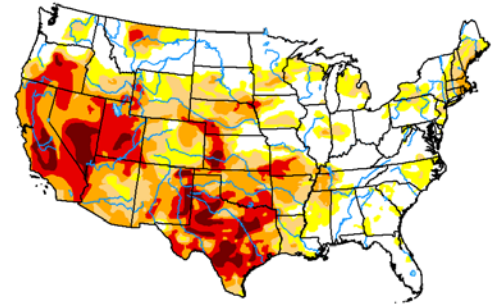
## RAPID DECLINE IN STREAMFLOW

The Blackfoot river flow at Bonner continues to drop fast and is now below average. Today flow is **800 CFS** (average for this date is 933 CFS). 1899 saw the highest flow at 2,360 CFS while the lowest flow was 379 CFS in 1988. Flow at Bonner is expected to hit 700 CFS this week and trigger drought response. Hoot owl restrictions have been implemented elsewhere in Montana but not here yet due to our cooler temperatures.



## BLACKFOOT DROUGHT RESPONSE

The US Drought Monitor Map now shows most of Powell County in the “Extremely Dry” category while Missoula County still has avoided this yet ([Montana | Drought.gov](http://Montana | Drought.gov)). The Blackfoot Challenge Drought Committee is now meeting weekly and expects streamflow at Bonner to reach the 700 CFS trigger level this week. Water temps have remained cool enough to not yet be a concern.



The Blackfoot Drought Response Plan is based on the premise of “**shared sacrifice**” with the goal that all Blackfoot water users (agricultural, irrigators, outfitters, anglers, recreational users, government agencies, homeowners associations, businesses, conservation groups, and others) voluntarily agree to take actions that will result in water savings and/or the reduction of stress to fisheries resources during critical low flow periods. **Low flows this week will likely cause the Drought Committee to implement the plan.** Please review your drought plan and start thinking about ways you can help by cutting back water withdrawals and balancing irrigation needs with fishing and boating interests.



## Drought Options – Things You Can Do Now

- Reduce Irrigated Acreage
- Rotate Irrigation Systems During Low River Flows
- Concentrate Your Efforts on the First Cutting and Then Rest
- 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 start times to alternate the area irrigated during peak afternoon heat
- Irrigate a smaller area well instead of a large area poorly for best yield
- Switch to pasture which uses less water compared with hayfields since animals constantly remove part of the crop (less crop leaves = less interception = less water use)

For further information contact Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 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- KEEP IRRIGATING SMALL GRAINS UNTIL KERNELS MATURE, BE DROUGHT AWARE!

- 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.