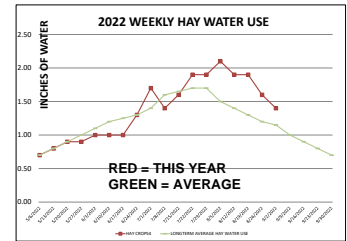


BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday September 2, 2022



Crop water use continues to be above average for the 7th week in a row. Soil moisture fell 1-1½ inches this week unless irrigated or recently cut for hay. Another week of warm temperatures and no rain throughout most of the watershed left a dry landscape and diminished streamflows. Next week starts hot and dry then cools off Thursday with a chance of showers. Blackfoot streamflows fell steadily this week and are again below average for this time of year. Cooler temperatures and the chance of rain may help. Most irrigators report average to slightly higher than average production this year despite cooler early conditions and hotter later ones.

HOT AND DRY THEN COOLER AND A LITTLE RAIN MAYBE PERHAPS

Most of the watershed had little or no rain again this week. Temperatures were slightly cooler but still very warm. Next week will start hot and dry then cool off at weeks end with the potential for a few showers. High temperatures will start out in the 80s and 90s with lows in the 40s then cool to the 70s with lows in the 30s and 40s. The 30-day forecast says below average rainfall and above average 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: CONTINUES ABOVE AVERAGE WITH HOT WEATHER

Most crops used 1 - 1½ inches of soil moisture last week and will use slightly less next week (see chart below). Hay crops used only 1/3 this amount the first week after cutting and 2/3 this amount the second week. By the third week after cutting crop water use returns to its full potential. Peak crop water use this year has passed although it is still unusually high for this time of year.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS TOTAL¹	NEXT 7 DAYS DAILY AVE²	SEASON TOTAL³
HAY CROPS	1.4	1.3	.19	26.0
PASTURE	1.0	0.9	.14	21.6
SPRING GRAINS	0.8	0.3	.04	22.0
WINTER WHEAT	0.0	0.0	.00	15.3
LAWNS	1.3	1.2	.18	24.9

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 - DROPS 1-1½ INCHES UNLESS IRRIGATED

Soil moisture dropped 1-1½ inches this week in fields not irrigated or recently cut. Soil moisture will drop about the same next week. 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.

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

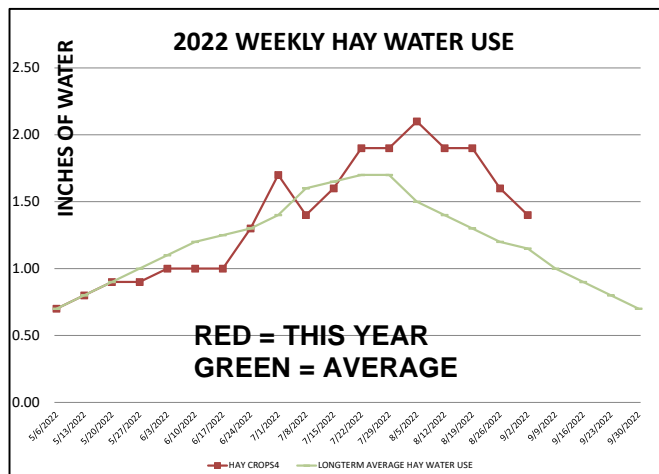
WEEK ENDING	RAIN ¹	2022 WEEKLY POTENTIAL CROP WATER USE ²						AVERAGE WEEKLY CROP WATER USE ³		
	RAIN	HAY CROPS ⁴	PASTURE	SPRING GRAINS 5-1 START	SPRING GRAINS 5-15 START	WINTER WHEAT	LAWNS	LONGTERM AVERAGE HAY WATER USE	HOT WEEK HAY WATER USE	COOL WEEK HAY WATER USE
APRIL	1.25	1.00	1.00	0.00	0.00	1.00	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	0.01	1.90	1.50	1.50	1.80	0.00	1.80	1.30	2.00	0.90
8/26/2022	0.25	1.60	1.30	1.00	1.60	0.00	1.60	1.20	1.80	0.90
9/2/2022	0.10	1.40	1.00	0.20	0.80	0.00	1.30	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	4.08	26.00	21.60	21.70	22.00	15.30	24.90	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.

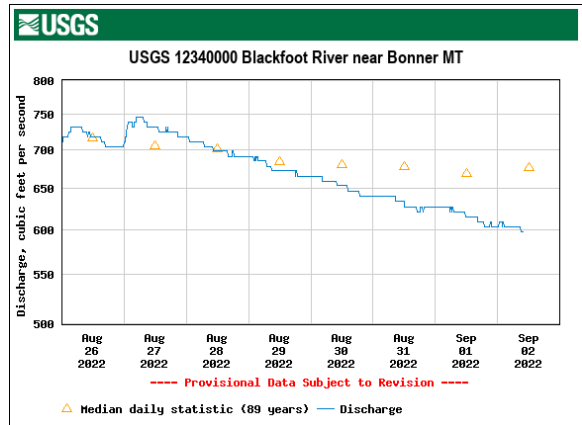


RIVER FLOWS DROP STEADILY WITH HOT TEMPS AND NO RAIN

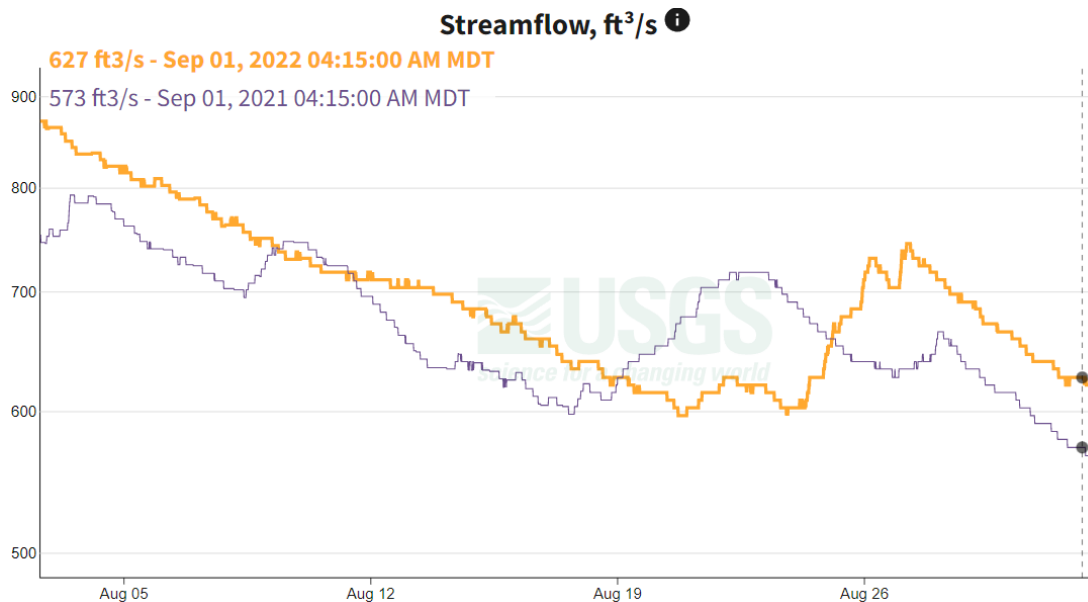
The Blackfoot river flow at Bonner dropped quickly this week from above average to below average levels. Today flow is **597 CFS** (average for this date is 690 CFS). 1899 saw the highest flow at 1,340 CFS while the lowest flow was 327 CFS in 1988. Today's flow at Bonner has dropped below the 600 CFS drought plan trigger and we ask everyone to implement their individual plans to help boost streamflows.

Streamflows declined throughout most of August except for last week when a combination of drought plan implementation, haying and scattered thunderstorm events boosted flows significantly.

Hopefully, cooler weather at this week's end will slow or stop the continued decline in flows.



Flows (orange line) are not quite as low as last year at this time (purple line).



Drought Options - Things You Can Still Keep Doing to Help

- Implement your individual drought plan
- 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)

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 & PREP FOR WINTER!

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