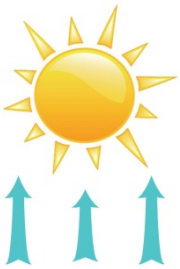
BLACKFOOT CHALLENGE WEEKLY IRRIGATION REPORT

Friday August 7, 2015

Last week had some hot days and some cooler but still warm days with a few scattered showers and no significant rainfall. The local **potential crop water use has continued at 1-1 ½ inches per week for most crops**. Crop use drops by about 2/3 the first week after cutting and about 1/3 the second week. Recent Blackfoot River flows (525 CFS) are well below the 700 CFS limit resulting in drought plan implementation across the drainage. Hoot Owl fishing restrictions are in effect from 2pm to midnight. A condensed overview of the entire irrigation season is presented on the last page of this report as a reminder to plan ahead. More information about irrigation and drought is available on the Challenge website.

WEATHER – HOT, THEN SMOKY AND A BIT COOLER

It was hot to start with last week. Then smoky skies and mixed cloud cover were combined with cooler temperatures and light winds. Warm weather with scattered thunderstorms is predicted through next week. The 30 and 90 day forecasts continue suggesting above normal temperatures and normal rainfall. Local streamflows are approaching record low levels.



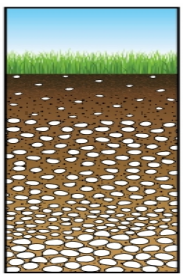
HIGH CROP WATER USE CONTINUES

Potential crop water use was slightly above normal this week. Most crops used 1 - 1 ½ inches and will use about the same next week. For those who just cut hay - crop water use drops by about 2/3 the first week after cutting hay crops and about 1/3 the second week. The table and chart on Page 3 illustrate crop water use throughout the whole season.

WATER USE IN INCHES	LAST 7 DAYS	NEXT 7 DAYS[1]	SEASON TOTAL[2]
HAY CROPS	**1.6**	**1.6** (1.4 - 1.8)	21.0
PASTURE	**1.3**	**1.3** (1.1 - 1.5)	17.6
SPRING GRAINS (planted May1)	**1.7**	**1.7** (1.2 - 1.7)	15.8
WINTER WHEAT	**0.0**	**0.0** (0.0 - 0.25)	18.2
LAWNS	**1.5**	**1.5** (1.3 – 1.7)	19.9

E
xpected water use (range if weather becomes cooler or hotter than expected)

[2]Beginning April 1 – note in 2010-13 we started our seasonal total on May 1 but now include April



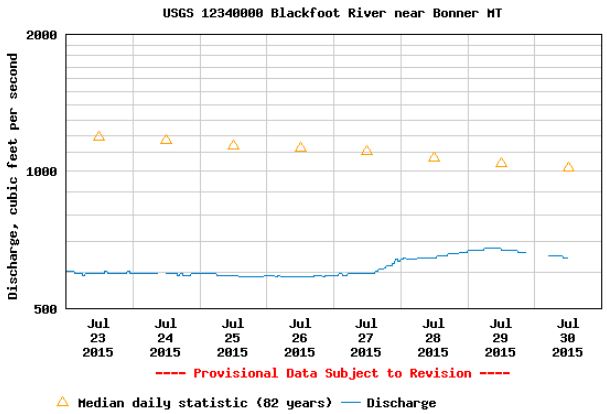
SOIL MOISTURE

Harvest stresses plants, especially alfalfa and a post-cut irrigation is a good idea if you have water available. However, you may have cut your hay and are through irrigating - congratulations! Boosting soil moisture will have to wait for fall rains for most folks.

WEEKLY TIPS

Drought in 2015

We appreciate the generosity and sacrifice of everyone who is reducing irrigation use during this drought. Local streamflows are approaching record low levels and could exceed them this year. Thank our good fortune to live at the top of a water-rich drainage system. Millions of acres of croplands worldwide will not produce anything this year due to drought.



Drought Relief Hints

Here are some options for reducing water use and stream effects. Not everyone is in a position to use these but they will work for many. Let us know your own ideas for dealing with drought. Our full irrigation guide has more detail and is available at: http://blackfootchallenge.org/Articles/wp-content/uploads/2013/06/BFIrrigationGuideFinalv3.0.pdf

- Run fewer systems or sprinkers at a time to reduce the amount diverted
- Reduce your irrigated acreage
- Be satisfied with that great first cutting of hay and don't irrigate until streamflows increase
- Be happy with that small grain crop and don't replant until streamflows increase
- Other brilliant ideas you come up with and share

Water Quality Hints: Dilution is Not a Good Water Quality Solution in Drought

Initially man threw his waste into whatever handy water body was available – stream, river, lake, ocean. This worked because dilution and natural biotic systems could quickly render this waste harmless. As mankind expanded and many of us became 'downstream' water users, dilution didn't always work and so it became a major part of many water treatment technologies and government regulations. However, we quickly found that dilution alone was not going to solve all our problems. This becomes especially important in drought years when dilution doesn't function very well. Constant inputs from wastewater plants and industrial discharges are combined with accidental spills of chemicals, petroleum products and other materials into local rivers, streams and lakes. When there is less water, there is less dilution and the concentration of all pollutants rises.

You can help by being especially cautious during drought conditions and low streamflows. Transport, store, mix and use chemicals as far away from water bodies as possible and practical. Consider reduced applications near water bodies, especially where soils are sandy. Consider spot spraying instead of broadcast for weed control. Prevent or eliminate irrigation tail-water returns to water bodies. Keep fuel away from water bodies and park your oil-leaking truck up the road a ways.

For more information contact Jennifer Schoonen, Blackfoot Challenge Water Steward, 406-360-6445 or Barry Dutton, Professional Soil Scientist, 406-240-7798 barry@landandwaterconsulting.net

BLACKFOOT 2015 GROWING SEASON WEEKLY RAINFALL & CROP WATER USE (INCHES OF WATER)

	RAIN[1]	2015 WEEKLY POTENTIAL CROP WATER USE[2]						AVERAGE POTENTIAL 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	0.50	0.90	1.00	0.00	0.00	1.20	1.10			
5/1/2015	0.01	0.80	0.90	0.10	0.00	1.10	0.90	0.50	0.80	0.20
5/8/2015	0.01	1.10	1.00	0.20	0.00	1.20	1.10	0.70	0.90	0.30
5/15/2015	0.10	1.10	0.90	0.20	0.00	1.20	1.00	0.80	1.00	0.50
5/22/2015	0.25	0.80	0.60	0.25	0.20	0.90	0.80	1.00	1.10	0.70
5/29/2015	0.25	1.10	0.80	0.40	0.30	1.20	1.00	1.20	1.20	0.80
6/5/2015	0.50	0.90	0.80	0.50	0.40	1.00	0.90	1.30	1.30	0.90
6/12/2015	0.00	1.60	1.40	1.10	0.90	1.60	1.50	1.40	1.50	1.00
6/19/2015	0.00	1.60	1.40	1.50	1.25	1.70	1.50	1.50	1.70	1.10
6/26/2015	0.00	1.60	1.30	1.70	1.60	1.70	1.50	1.50	1.90	1.10
7/3/2015	0.00	1.70	1.40	1.80	1.80	1.80	1.60	1.50	2.00	1.20
7/10/2015	0.00	1.70	1.40	1.80	1.80	1.80	1.60	1.60	2.10	1.30
7/17/2015	0.01	1.40	1.10	1.50	1.50	1.00	1.30	1.60	2.00	1.20
7/24/2015	0.01	1.50	1.20	1.60	1.60	0.50	1.40	1.50	1.90	1.10
7/31/2015	0.50	1.30	1.10	1.40	1.40	0.25	1.20	1.50	2.20	1.10
8/7/2015	0.01	1.60	1.30	1.70	1.70	0.00	1.50	1.40	1.70	1.00
8/14/2015								1.20	1.50	0.90
8/21/2015								1.00	1.30	0.70
8/28/2015								0.80	1.00	0.50
9/4/2015								0.60	0.80	0.40
9/11/2015								0.50	0.70	0.30
9/18/2015								0.50	0.70	0.30
9/25/2015								0.40	0.60	0.20
9/30/2015								0.40	0.60	0.20
TOTAL	**2.15**	**20.70**	**17.60**	**15.75**	**14.45**	**18.15**	**19.90**	**24.40**	**30.50**	**17.00**

[1] Rainfall should be reduced to account for immediate evaporation from crop and soil surfaces (0.1-May and Sept, 0.15-June and August, 0.2-July)

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

[3] Average water use for each crop each week based on long-term historic data.

[4] Hay Crop water use should be reduced by approximately 2/3 the first week after cutting, 1/2 the second and 1/3 the third.

2015 CROP WATER USE (RED LINE)

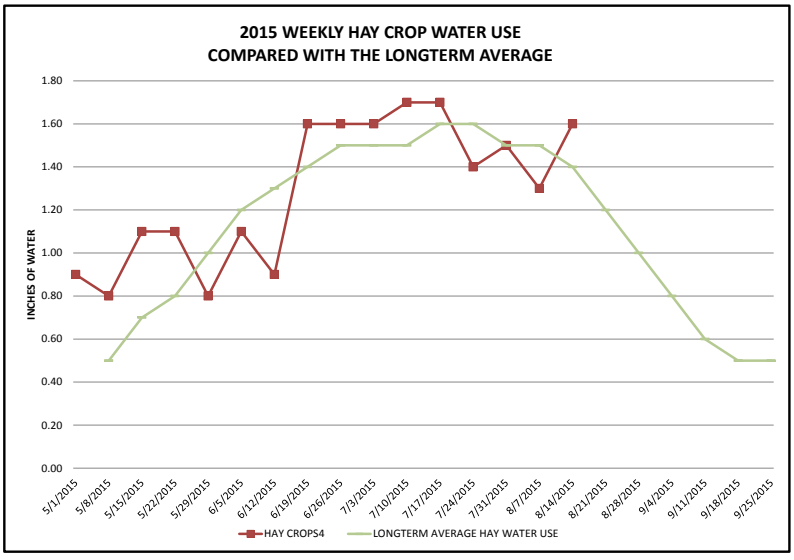
STARTED OUT ABOVE AVERAGE,

DROPPED BELOW AVERAGE FOR 3 WEEKS,

SHOT UP ABOVE AVERAGE FOR 5 WEEKS,

BOUNCED AROUND AVERAGE FOR 4 WEEKS

(GREEN LINE = LONG TERM AVERAGE)



THE BLACKFOOT DRAINAGE IRRIGATION SEASON IN BRIEF

This is a summary of general activities and recommendations with more detail provided throughout our irrigation guide.

APRIL – GET READY AND PLAN YOUR IRRIGATION STRATEGY!

- Get your irrigation system ready – perform maintenance and test system.
- Evaluate weather conditions and predictions then plan for 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 (May 1) 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.
- Stop irrigating small grains at the milk to soft dough stage but be sure there are 1- 2 inches of soil moisture left at this stage to prevent kernels from shrinking.

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 drainage, especially in drought years.
- Reduce river withdrawals by rotating systems and reducing the amount of irrigation at one time.

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.