KANSAS DEPARTMENT OF AGRICULTURE

Pawnee-Buckner-Sawlog Subbasin Newsletter

September 2010

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Upcoming Meetings

GMD 5 Meeting
September 9, 2010
9:00 a.m.
Stafford

Upper Arkansas BAC Meeting
September 14, 2010
1:30 p.m.
Deerfield Community Center

Water, taken in moderation, cannot hurt anybody.

~ Mark Twain

Water is the driving force of all nature.

~ Leonardo da Vinci

Pawnee-Buckner Baseflow Conditions in 2009

During 2009, Division of Water Resources staff measured Pawnee-Buckner streamflow in February, August and November. The manual measurements are important to the continuous study of the subbasin because they provide baseflow values. Baseflow is the amount of natural flow in the stream under normal conditions or times without precipitation. In essence, baseflow is groundwater that discharges to the stream. Of course, precipitation events can have a significant impact on streamflow. So, to get the most accurate determination of baseflow, staff wait a minimum of three days following a rain event before measuring streamflow.

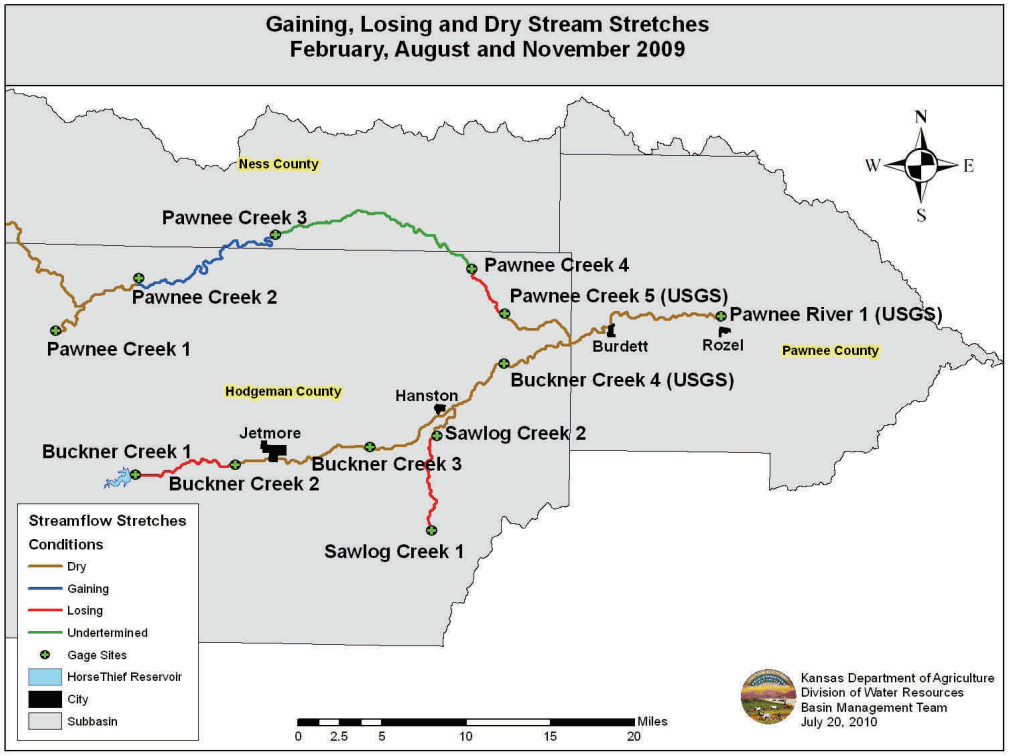

Figure 1: Pawnee-Buckner Streamflow Stretches for 2009.

The subbasin has nine manual streamflow measuring sites on Pawnee Creek, Buckner Creek and Sawlog Creek. It has three USGS gages sites further downstream also used for the baseflow conditions analysis. Each stretch is evaluated based on the difference in discharge between consecutive gage sites. If the downstream gage shows more flow than the upstream gage, the reach is "gaining." When two consecutive sites have zero flow, it is considered a dry stretch because there are no discharge numbers to compare. Table 1 shows measurements taken during the year and the map compares the measurements to determine if stream stretches are gaining, losing, dry or undetermined between gage sites (Figure 1). Red indicates a losing stretch of stream,

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blue a gaining stretch, brown a dry stretch and green an undetermined stretch. An undetermined stretch of the stream indicates the flow was equal in conditions. Staff calculate baseflow for each stretch in cubic feet per second (cfs).

In 2009, the subbasin had four dry stretches, three losing stretches, one gaining stretch and one undetermined stretch. Due to the construction and completion of HorseThief Reservoir, the Buckner Creek sites are no longer measured. Future analyses will include USGS gage data for Buckner Creek. More information regarding the Pawnee-Buckner subbasin streamflow is available on the Basin Management Team website.

Table 1: Baseflow Values and Conditions in 2009

Site	February Flow (cfs)	Condition	August Flow (cfs)	Condition	November Flow (cfs)	Condition
Sawlog Creek 1	0.6		0		1.3	
Sawlog Creek 2	0	Loss	0	Dry	0	Loss
Buckner Creek 1	0.9		0.4		N/A	
Buckner Creek 2	0	Loss	0	Loss	N/A	
Buckner Creek 3	0	Dry	0	Dry	N/A	
Buckner Creek 4	0	Dry	0	Dry	N/A	
Pawnee Creek 1	0		0		0	
Pawnee Creek 2	0	Dry	0	Dry	0	Dry
Pawnee Creek 3	0	Dry	0.1	Gain	2.4	Gain
Pawnee Creek 4	0	Dry	0	Loss	3.4	Gain
Pawnee Creek 5	0	Dry	0	Dry	0	Dry
Pawnee River 1	0	Dry	0	Dry	0	Dry

HorseThief Reservoir Webpage

To make it easier for staff to monitor conditions at the reservoir—and recognizing substantial public interest in this new water body in the dry region of southwest Kansas—DWR staff recently created a new, one-stop web page. DWR's HorseThief Reservoir webpage contains photographs, links to the operations plan, USGS stage and streamflow measurement sites on Buckner Creek and a history of the project's permitting through our office. It also has a link to the official HorseThief Reservoir website managed by local government.