

Lower Texas Creek Seepage Study

September 18, 2008

A seepage study was conducted September 18, 2008 by IDWR staff. The study consisted of measuring surface water flows (stream flows, diversion rates, return flows and tributary inputs) in Texas Creek in order to quantify gaining and losing reaches. This study was conducted from a measurement site above TC6 to a site below diversions on Texas Creek. During the study thirteen measurements or observations were taken (Figure 1; Table 1). TX3 diverted all of Texas Creek, 4.6 cfs, but Texas Creek gained nearly 6 cfs above TX1 and TX2. The combination of diversions TX1 and TX2 diverted the entire flow, including the inflow from the Big Timber Creek Carey Act diversion (3.7 cfs). Below TX1, TX2, and the cross-ditch Texas Creek is typically dry during late summer but gains flows closer to Leadore. Lower Texas Creek (~0.5miles upstream of Leadore) gained 6 cfs during this seepage study; this lower reach meanders through pastures with little riparian vegetation. The lower reach of this study was not examined in detail so that the location and rate of the return flow below TX1 and TX2 is not known.

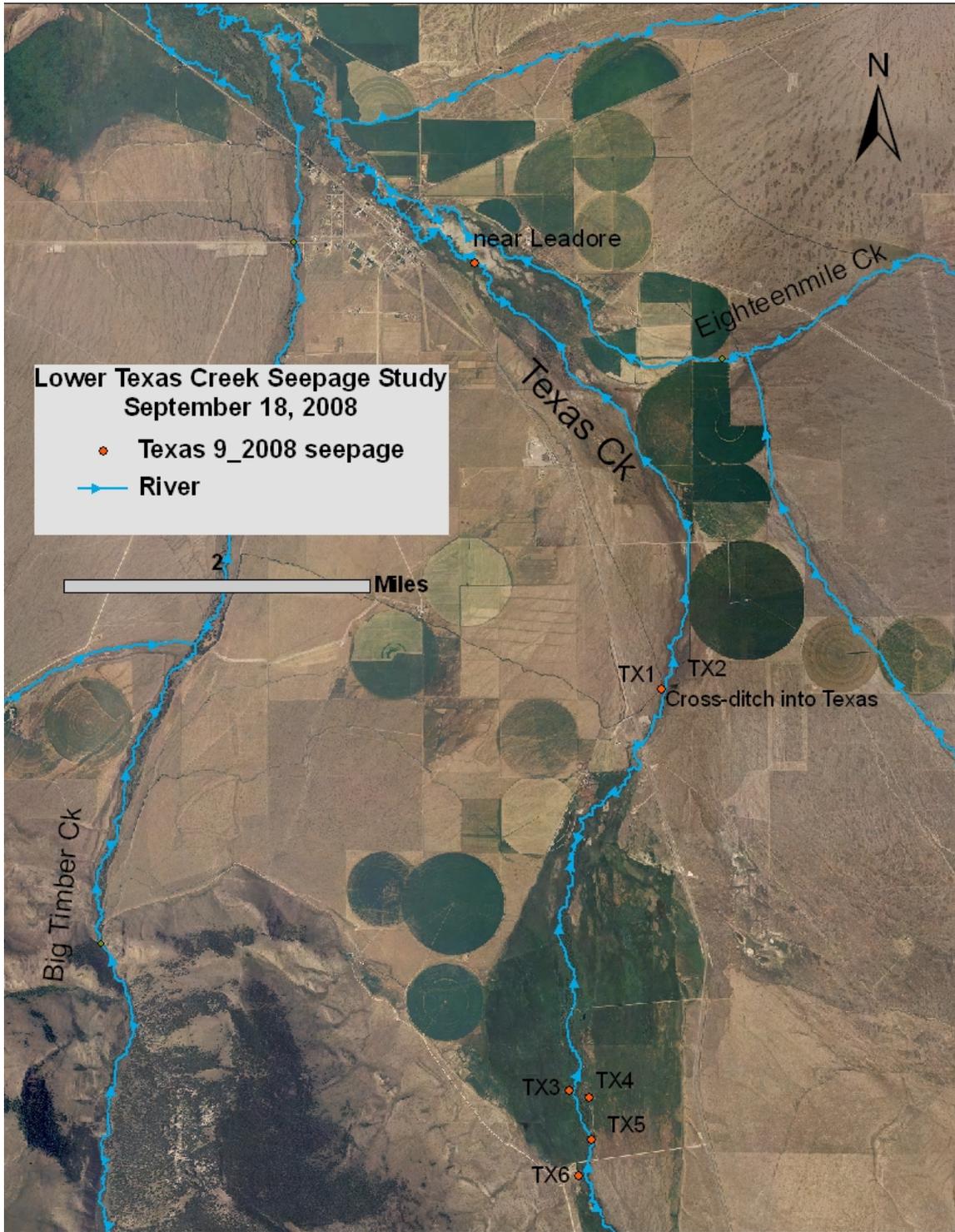


Figure 1. Map of Texas Creek with important surface water features labeled.

Main stream location	Trib/diversion location	Discharge	Q diverted out	Trib/diversion Q in	Texas Creek Q	Seepage	Point_X	Point_Y	Date and time	Notes
Above TX6		15.17			15.17					
	TX6	5.60	5.60				2552855	1487979	9/18/2008 1:48pm	4ft Cipoletti Weir H=0.55 Q=5.493cfs
Below TX6		9.57			9.57		2552988	1487772	9/18/2008 2:25pm	Below TX6 in willow complex. Several large trout 12-15 inches.
Above TX6 to Below TX6						0.00				
Above TX5		10.43			10.43		2552974	1488296	9/18/2008 3:50pm	
	TX5	1.98	1.98				2552991	1488358	9/18/2008 3:50pm	Adjustable measuring device is not level and has fast approach velocities. Read 2cfs on left side and 1.5cfs on the right.
Below TX5		8.45			8.45					
Above TX4		8.03			8.03					
	TX4	3.22	3.22				2552967	1488804	9/18/2008 3:30pm	
Below TX4		4.81			4.81					
Above TX3		4.81								
	TX3	4.61	4.61				2552749	1488881	9/18/2008 3:12pm	Measuring device is a NU-Way Flume, is not level. It read 2.3cfs on the left and 3.7cfs on the right. The diversion has a push up dam that blocks the strea and takes all but a trickle.
Below TX3		0.20			0.20				9/18/2008 3:12pm	Stream is a trickle, flow was estimated.
Above TX5 to below TX3						0.45				
Gauge/above TX2 and TX1		5.83			5.83				9/18/2008 12:22pm	
	TX2	2.36	2.36						9/18/2008 12:12pm	Flume read 4cfs on one side and 4.5cfs on the other.
Carey Act	Cross-ditch into Texas	3.73		3.73			2553721	1493085	9/18/2008 12:40pm	
	TX1	8.01	8.01				2553721	1493085	9/18/2008 11:20am	Rectangular weir (6ft) on ditch ~250ft downstream of diversion read 0.5ft equal to 7.06cfs.
Below TX2 and TX1		0.00			0.00					
Mouth/upstream of Leadore		6.22			6.22		2551767	1497561	9/18/2008 5:28pm	Visible seeps with small return channels, not sure if this is still considered Texas Creek or the beginning of the Lemhi River.
TX3 to mouth						12.67				

Table 1. Summary of seepage study for Texas Creek, including reach gains and losses calculated from the measured flows.

Texas Creek Summary	
Initial flow/input	15.17
Diverted rate out of Texas Creek	25.79
Tributary/injection Input	3.73
Cumulative reach losses	0.00
Cumulative reach gains	13.11
Calculated output	6.22
Measured output	6.22

Table 2. Summary of Texas Creek seepage study.