

## Br Tracer Tests

Three Br tracer tests were performed, with injection into Well 699-96-45 and monitoring in Well 699-96-44. Water was pumped from Well 699-96-44 from the interval of 44-50ft from the TOC.

**The 1<sup>st</sup> injection test** was performed on February 27, 2004. The total volume of the LiBr solution injected within both the Hanford and Ringold formations was 12 liters with the Br concentration of 15,300 mg/l.

The tracer moved under natural regional hydraulic gradient. No tracer was detected in the monitoring Well 699-96-45 located 15 ft from the injection well until April 27, 2004.

**The 2<sup>nd</sup> injection test** was performed on April 27, 2004 (from 11:40 am to 2:15 p.m), and **the 3<sup>rd</sup> injection test** was performed on August 3, 2004 (7 p.m.). For each test, the total volume of the KBr solution (injected within the Hanford formation) was 12 liters with the Br concentration of 8,330 mg/l. Changes in water levels and Br concentrations with time are shown in Figures 1-3. Br injection was accompanied by pumping from Well 699-96-45 (within the Hanford formation). For the 2nd test, pumping started 9 days before the tracer injection. For the 3<sup>rd</sup> test, pumping started just before the Br injection. The water level and the pumping rate measurements are shown in Figures below.

Table 1 summarizes the results of the carbon concentration before and during the test.

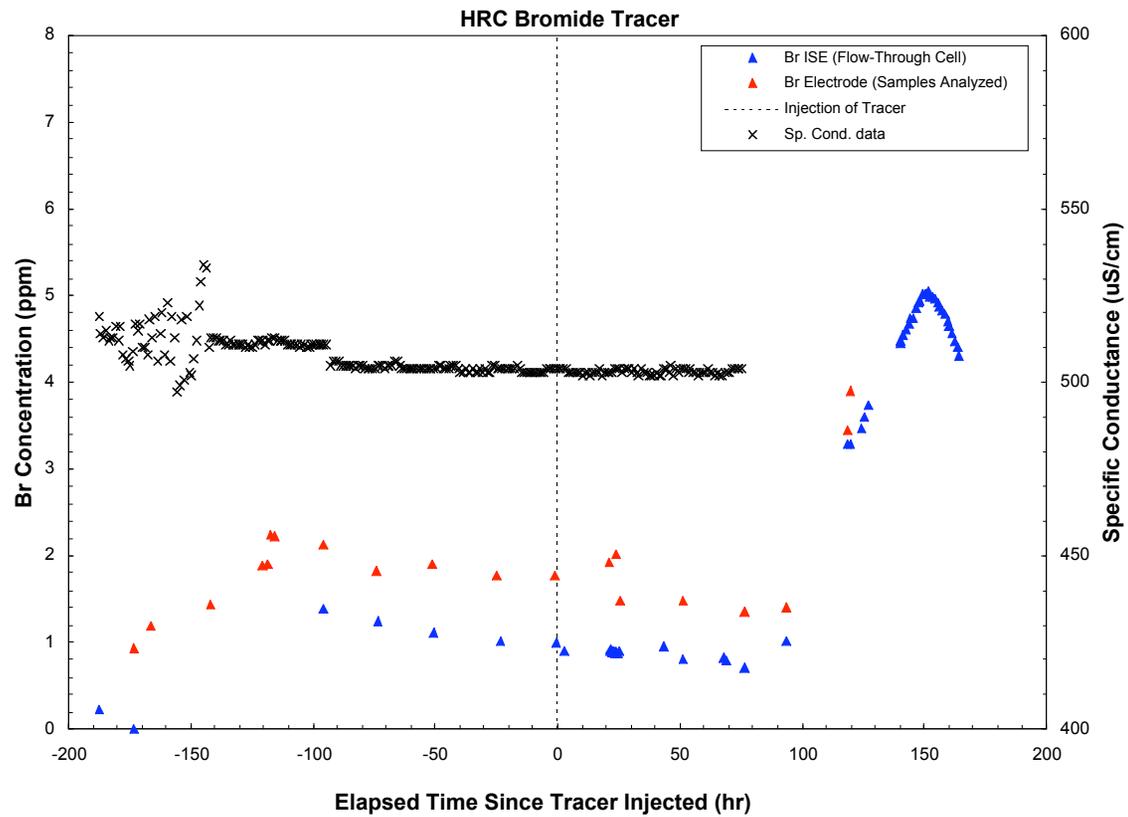


Figure 1. Changes with time of Br concentration and specific conductance during the pumping/KBr injection test. The initial increase in the Br concentration was caused by the arrival of Br accumulated in soils from the first LiBr injection test on 2 /27, 2004. The new tracer was injected  $t=0$ , which is 4/27/2004 11:40 am.

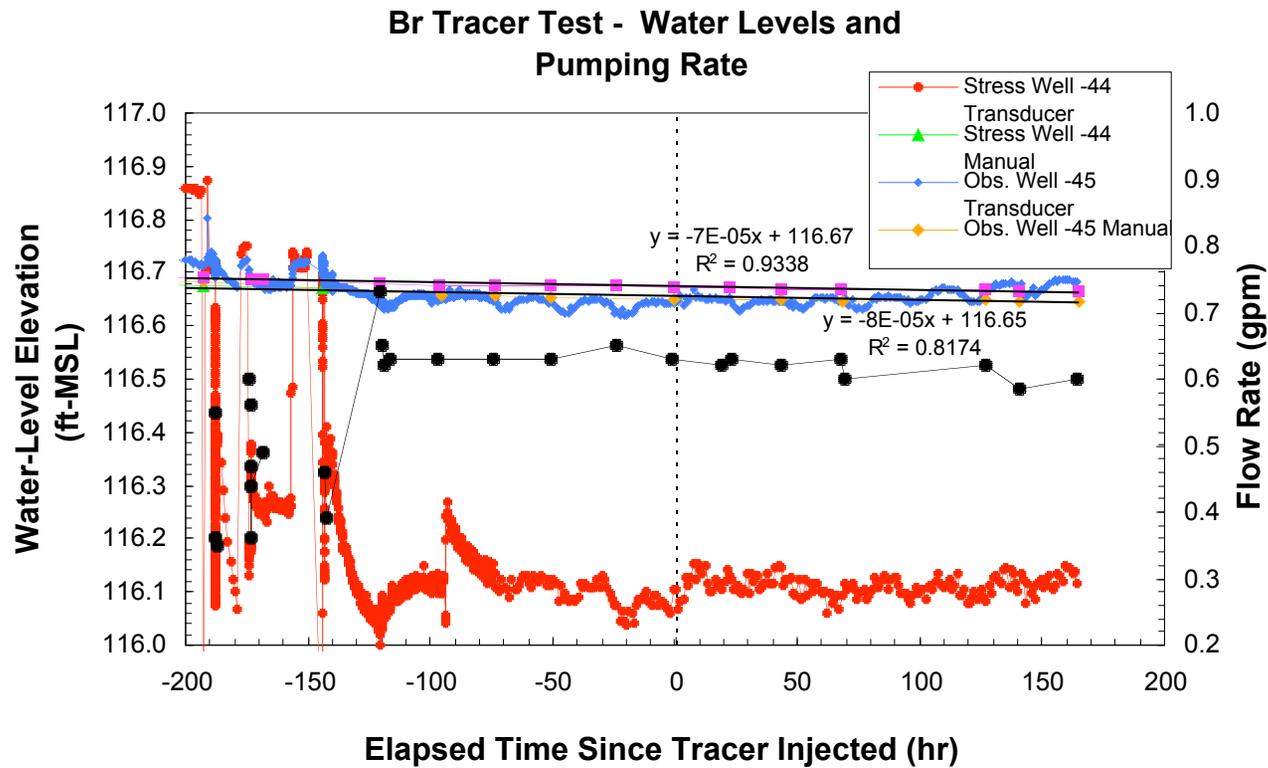
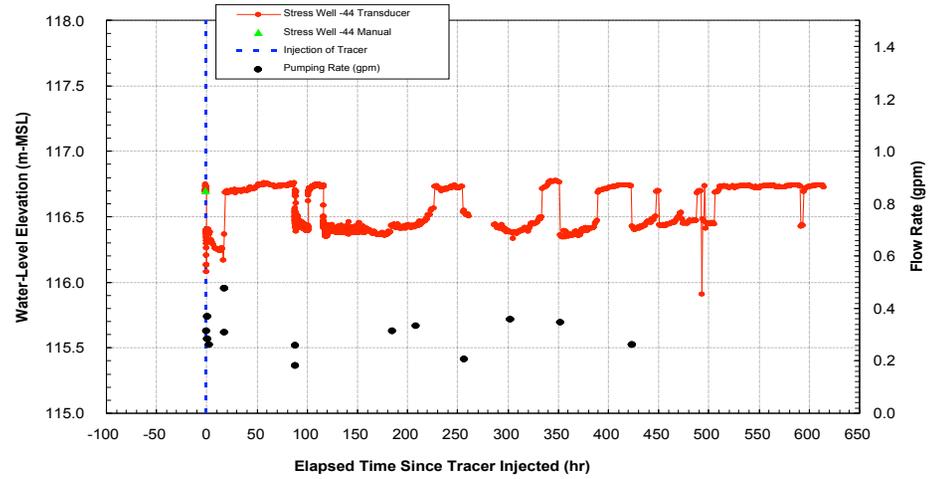


Figure 2. Changes with time of the pumping rate and water levels in the pumping well (699-96-44), and upgradient Wells 699-96-45 (tracer injection well), and 699-96-43.  $t=0$  is the beginning of the KBr injection on 4/27 at 11:40 a.m.

<b>Table 1. Carbon Analysis by Dohrman Model D-80, WB63579</b>				
The carbon analysis was performed by Tom Resch on 5/4/04.				
Work Package F38333				
<b>Pumping began on April 27,2004, at 11:40 am</b>				
	<b>A</b>	<b>B</b>	<b>(B-A)</b>	
	inorganic C, (mg/L C)	total C	dis. organic C	alkalinity
Spl ID	direct	direct	indirect	HCO3
	(mg/L C)	(mg/L C)	(mg/L C)	(mg/L)
4/20/04 1333hrs	28.58	31.61	3.03	145
4/27/04 1340hrs	28.73	31.11	2.37	146
5/1/04 0900hrs	28.91	31.00	2.09	147
5/3/04 1645hrs	29.24	31.29	2.05	149

**Bromide Tracer Test #3 Water Levels in Pumping/Monitoring Well 699-96-44**



**Bromide Concentration - Tracer Test #3**

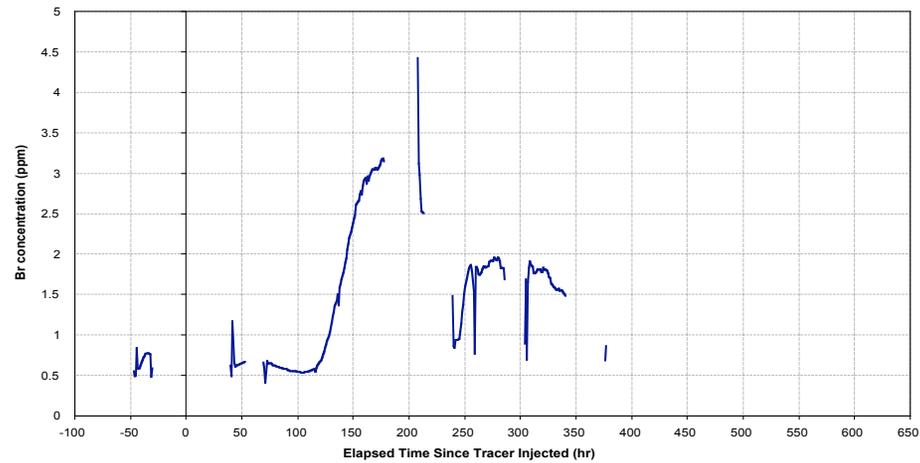


Figure 3. Changes with time of the pumping rate, water level, and Br-concentration in the pumping well (699-96-44).  $t=0$  is the beginning of the KBr injection on 8/03 at 7:00 p.m.