

APPENDIX B. RAINFALL DATA AND ASSOCIATED SEASONAL CHANGES IN GROUNDWATER ELEVATIONS

Appendix B. Rainfall Data and Associated Seasonal Changes in Groundwater Elevations

Rainfall during the spring of 2004 was lower than the most recent 16-yr average (Figure B-1). Thus, some stakeholders expressed concern that some seeps may not have been observed this spring because of the drier than normal conditions, particularly in February, March, and April. To assess this concern, available rainfall and groundwater level data from 1994-1995 and from this year were evaluated, as discussed below.

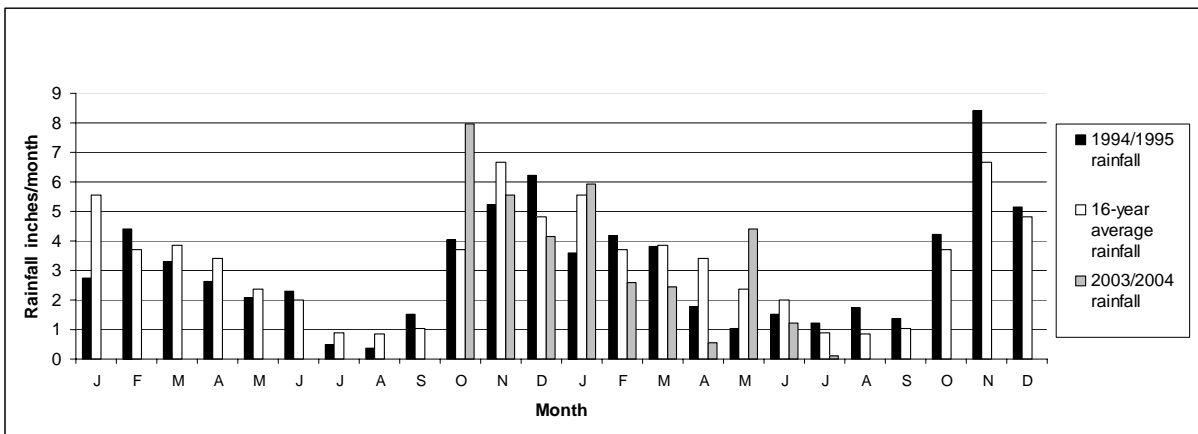


Figure B-1. Monthly rainfall at Auburn, Washington in 1994/1995 and 2003/2004 relative to the 16-year average

Figure B-1 presents rainfall data for January 1994-December 1995, October 2003-July 2004, and the 16-yr average from King County’s rain gage in Auburn.¹ Rainfall was substantially higher than the 16-yr average in October 2003 and May 2004,² but lower in February, March, April, June, and July of 2004. Table B-1 shows cumulative rainfall for February through April and October through July for 1994/1995, 2003/2004, and the 16-yr average. The cumulative rainfall from October 2003 through July 2004 was 2.1 inches lower than the 16-yr average.

¹ The 16-yr average in Auburn will not necessarily match the rainfall average in LDW due to variations in rainfall by subbasin. However, the relative differences should be indicative of those in the LDW

² May 2004 rainfall was almost twice the 16-year average rainfall for May.

Table B-1. Cumulative rainfall (inches) at Auburn, Washington in 1994/1995 and 2003/2004 relative to the 16-year average

YEAR	FEBRUARY TO APRIL	OCTOBER TO JULY
1994/1995	10.0	32.6
2003/2004	5.6	34.9
16-year average	9.8	37.0

The seasonal variations in groundwater levels were evaluated using data from 1994 and 1995 collected as part of the Boeing Plant 2 Comprehensive Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI; Weston 1998). Two groundwater monitoring wells, located in the northern (PL2 -270A) and southern (PL2-319A) portion of the facility, were selected for this analysis. These monitoring wells are located along the eastern edge of the Plant 2 facility where tidal effects are negligible. The RFI report presents the groundwater elevations for September 1994, March 1995, August 1995, and November 1995. As shown in Table B-2, groundwater elevations varied by about 1.5-2.0 ft seasonally in each monitoring well. The groundwater elevations measured in March 2004 were 8-11 in. less than levels measured in March 1995.

Table B-2. Groundwater elevations at Boeing Plant 2 monitoring wells

MONITORING WELL	GROUNDWATER ELEVATION (ft above MLLW) ^a				
	SEPTEMBER 1994	MARCH 1995	AUGUST 1995	NOVEMBER 1995	MARCH 2004
PL2-270A	7.9	9.4	8.0	8.7	8.6
PL2-319A	9.0	10.9	9.4	9.8	9.9

^a Groundwater elevations were adjusted to MLLW by adding 6.1 ft to the NGVD 29 references used in the RFI report (Weston 1998).

Most of the seeps observed during the reconnaissance survey were emerging in the mid-to-lower intertidal zone. Based on the groundwater elevations of 8.6 to 9.9 ft relative to MLLW measured in March 2004, and the relatively minor seasonal variations in groundwater elevation in 1994-1995, it is not expected that groundwater levels in May 2004 would have been so low that seeps within the intertidal zone would be dry. Therefore, it does not appear that the lower than normal rainfall this spring would have had a significant effect on the ability to identify or sample seeps.

REFERENCE

Weston. 1998. Human health and environmental evaluation, RCRA facility investigation, Duwamish Waterway sediment, Boeing Plant 2, Seattle/Tukwila, Washington. Roy F. Weston, Inc., Seattle, WA.