
3.0 Vadose Zone

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Radioactive and hazardous waste in the soil column from past intentional liquid waste disposal, unplanned leaks, solid waste burial grounds, and underground tanks at the Hanford Site are potential sources of continuing and future vadose zone and groundwater contamination. Subsurface characterization and vadose zone monitoring were conducted during fiscal year 2003 to better understand the distribution and movement of subsurface vadose zone contamination. Also, several technical studies were completed, and the results could lead to new understandings of moisture and contaminant movement in the vadose zone, contaminant interactions with the soil column, and new and improved methods to characterize and monitor the vadose zone. Finally, vadose zone characterization to assess remediation and post-remediation activities was done in fiscal year 2003 as part of cleanup efforts at the Hanford Site.

This chapter summarizes major findings from those efforts, focused primarily on vadose zone soil contamination associated with past single-shell tank leaks and liquid disposal to ground as a result of spent fuel processing.

An overview of the major soil column sources of groundwater contamination is provided in PNNL-13080. This chapter discusses vadose zone contamination that could affect groundwater in the future. An overall evaluation depends, to a large degree, on the integration of data from monitoring and characterization of the vadose zone and groundwater to present a comprehensive picture of contaminant fate and transport. Significant fiscal year 2003 vadose zone results are summarized in the chapter. However, the bulk of the data interpretation on the effect to groundwater is presented and discussed in Chapter 2.