## 5.3.5 WATER RESOURCES

### 5.3.5.1 Short-Term Impacts

Facility disposition activities would be carried out after HLW ***management*** facilities are no longer operational. HLW ***management*** facilities would be decontaminated to the extent practicable, then, depending on the facility disposition option selected and the facility in question, they would be entombed and left standing, partially removed, completely removed, or returned to (restricted) industrial use. Long-term impacts to human health from transport of residual contamination in environmental media such as groundwater are discussed in Appendix C.9 and summarized in Section 5.3.8.

New facilities for all alternatives would be located primarily in the northern portion of INTEC. A U.S. Geological Survey modeling study (Berenbrock and Kjelstrom 1998) indicates that those areas are in the 100-year floodplain. However, Big Lost River flows and frequencies based on paleohydrologic geomorphic, stream gauge, and two-dimensional modeling data indicate that no part of INTEC would be inundated by Big Lost River 100- and 500-year flow events (BOR 1999).

***All newly constructed facilities necessary to implement the waste processing alternatives would be designed and constructed consistent with measures that facilitate clean closure.*** Under Clean Closure, radioactive and hazardous constituents would be removed from the site or treated so that residual contamination is no higher than background levels. This could require removal of all buildings, vaults, tanks, transfer piping, and contaminated soil. No post-closure monitoring would be required because potential sources of contamination would no longer be present. Unrestricted industrial use of clean-closed facilities and sites will be permissible. Impacts to water resources would not be expected ***from the disposition of new facilities***.

For Performance-Based Closure, most above-ground structures would be razed and most below-ground structures (tanks, vaults, and transfer piping) would be decontaminated, stabilized with grout, and left in place. The concentration of residual waste would be reduced to meet the closure performance standard(s) in an approved closure plan. Under Performance-Based Closure, small amounts of residual waste could leach into groundwater; however, concentrations of these wastes in groundwater would be below levels known to cause adverse health effects (see Section 5.3.8). The closed facility would be monitored for the long term, as would groundwater in the vicinity.

For the Closure to Landfill Standards Alternative, waste residues within tanks, vaults, and piping would be stabilized with grout to minimize the release of contaminants to the environment. An engineered cap would be placed over vaults and tanks to minimize the intrusion of water that could leach waste residues to the environment. The structural integrity and effectiveness of the cap would be monitored in accordance with state and Federal regulations for closure effectiveness, as would groundwater in the vicinity. Closure to Landfill Standards would also have potential for impacts to water resources because waste residues would be left in place, although stabilized with grout. Section 5.3.8 analyzes potential human health impacts from these residual concentrations of contaminants.

Under Performance-Based Closure with Class A Grout Disposal, facilities would be closed as described under the Performance-Based Closure Alternative, but following completion of these activities low-level waste Class A type grout (produced under the Full Separations Option or

Planning Basis Option) would be disposed of in the Tank Farm and bin sets. Under this alternative, small amounts of residual waste could leach into groundwater; however, concentrations of these wastes in groundwater would be below levels known to cause adverse health effects (see Section 5.3.8). The closed facility would be monitored for the long term, as would groundwater in the vicinity.

Under Performance-Based Closure with Class C Grout Disposal, facilities would be closed as described under the Performance-Based Closure Alternative, but following completion of these activities low-level waste Class C type Grout (produced under the Transuranic Separations Option) would be disposed of in the Tank Farm and bin sets. Under this alternative, small amounts of residual waste could leach into groundwater; however, concentrations of these wastes in groundwater would be below levels known to cause adverse health effects (see Section 5.3.8). The closed facility would be monitored for the long term, as would groundwater in the vicinity.

### 5.3.5.2 Long-Term Impacts

In addition to the short-term impacts evaluated in Section 5.3.5.1, DOE has also calculated the potential long-term impacts that may occur as a result of closure activities. Because the residual contamination that could be released to the environment is underground, the primary means by which contamination could reach receptors is through leaching into the soil surrounding the facilities and eventually into ***the Snake River Plain Aquifer*** near the facilities.

***No additional long-term impacts would be expected from implementing any of the waste processing alternatives because all newly constructed facilities would be designed and constructed consistent with measures that facilitate clean closure.***

DOE performed modeling of the movement of contaminants using the computer codes MEPAS and TETRAD. Contaminants were postulated to leach from the facilities following an assumed instantaneous structural failure at 500 years postclosure. After this structural failure occurs, rainwater is assumed to infiltrate and leach some of the contaminants and transport them downward to the aquifer.

DOE calculated the maximum concentration of the individual contaminants in the aquifer for comparison to the EPA drinking water standards in 40 CFR 141. Concentrations of nonradiological constituents may be directly compared to the standards while beta-gamma emitting contaminants must be compared to the drinking water standards in terms of radiation dose based on a ***hypothetical*** individual who drinks the water.

Table 5.3-***8*** presents a comparison of the concentrations (for nonradiological constituents), radiation dose (for radiological contaminants), and drinking water standards for the various facility disposition alternatives. As the table shows, there are a few instances where the peak groundwater concentration could exceed the respective maximum contaminant level. With the exception of technetium-99 in the bin sets - No Action scenario, all radionuclide concentrations are well below their MCLs. ***With the exception of cadmium, all nonradionuclide concentrations are within currently specified limits. Cadmium concentrations could exceed the maximum contaminant level under the bin sets - No Action scenario and the scenarios involving disposal of Class A or C-type grout in a Low-Activity Waste Disposal Facility. Additional details regarding methodology and results of the long-term facility disposition modeling are presented in Appendix C.9.***

## 5.3.6 ECOLOGICAL RESOURCES

Facility disposition includes a number of activities that would occur after HLW ***management*** facilities are no longer operational. After waste management operations are completed, HLW treatment and storage facilities at INTEC would be deactivated. ***The INEEL Comprehensive Land Use Plan*** (DOE 1997) discusses the changing mission of INTEC and the planned disposition of surplus facilities. It notes that DOE's goal is to place surplus INEEL facilities in a safe, stable shutdown condition and monitor them while awaiting decommissioning. HLW ***management*** facilities would be decontaminated to the extent practicable, then, depending on the