

# 5.0

## Environmental Consequences



# 5.0

## Environmental Consequences

### 5.1 Introduction

Chapter 5 describes the potential environmental consequences of implementing each of the alternatives described in Chapter 3. *This Final EIS analyzes the alternatives in the Draft EIS and provides corrections and updates as needed. In addition, it analyzes the State of Idaho's Preferred Alternative, Direct Vitrification, and a new option of the Non-Separations Alternative, the Steam Reforming Option. Furthermore, the Minimum INEEL Processing Alternative has been modified, and other changes have been made to the analyses based on information received during the public comment period.*

## *Environmental Consequences*

Environmental consequences of actions could include direct physical disturbance of resources, consumption of affected resources, and degradation of resources caused by effluents and emissions. Potentially affected resources include air, water, soils, plants, animals, cultural artifacts, and people, including workers and people in nearby communities. Consequences may be detrimental (e.g., wildlife habitat lost as a result of new construction) or beneficial (e.g., ***reducing the risk of contamination to the Snake River Plain Aquifer by removing and treating hazardous and radioactive waste from underground tanks***).

DOE prepared engineering studies that identify activities required under the various alternatives and supply data necessary for the impact analysis. Operating parameters for existing facilities and on-going operations were determined by examining historical data and impacts associated with these operations. If new processes or facilities ***are*** required under a particular alternative, the operating parameters for it were extrapolated from similar processes or facilities, or from the scientific literature, or developed by engineering scoping studies.

***In general, conservative assumptions were used in this EIS to prepare impact assessments for normal operations and facility accidents. Consequently, the identified impacts tend to exceed in magnitude and intensity those that can realistically be expected to occur.*** For routine operations, estimates from actual operations provide a reasonable basis for predictions of impacts. ***Estimates based on scientific literature or engineering scoping studies provide a reasonable basis for predicting impacts for new facilities.*** For accidents there is more uncertainty because the estimates are based on events that have not occurred. In this EIS, DOE selected hypothetical accidents that would produce impacts as severe or more severe than any reasonably foreseeable accidents.

To ensure that small potential impacts are not over-analyzed and large potential impacts are not under-analyzed, analysts have assessed potential impacts in a level of detail that is commensurate with their significance. This methodology follows the recommendation for the use of a “sliding scale” approach to analysis described in *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* (DOE 1993).

This EIS is concerned with two kinds of potential impacts, impacts from ***processing*** (i.e., retrieving, treating, and packaging) mixed HLW and mixed transuranic waste (SBW and newly generated liquid waste) and impacts from the ***disposition*** of facilities used to manage these wastes. Potential impacts from the ***six*** waste processing alternatives are discussed in Section 5.2. Potential impacts from the ***six*** facility disposition alternatives are discussed in Section 5.3. ***Section 5.3 also presents long-term impacts associated with the waste processing alternatives such as storage of untreated waste under the No Action Alternative.***

Impacts that are cumulative with other past, present, or reasonably foreseeable actions are discussed in Section 5.4, Cumulative Impacts. Section 5.5, Mitigation Measures, describes measures that could reduce or offset the potential environmental consequences of the alternatives presented in this EIS. Unavoidable adverse environmental impacts are summarized in Section 5.6. Section 5.7 compares the potential short-term influences of each alternative with the resultant long-term productivity of the environment. Irreversible and irretrievable resource commitments are discussed in Section 5.8.

***When DOE calculates numbers in this EIS, two significant digits are used to report the results. Rounding off numbers can make it appear that the totals of a column of figures are inaccurate because they are inexact, but the slight variance is due to the rounding of the values.***