In Section 3.1.3.1, DOE describes three methods for disposing of the grouted low-level waste fraction: (1) in a new INEEL Low-Activity Waste Disposal Facility; (2) in an offsite low-level waste disposal facility; and (3) in the Tank Farm and bin sets. The vitrified low-level waste fraction returned from Hanford would not be suitable for disposal in the Tank Farm and bin sets. Therefore, only the remaining two disposal methods are analyzed for the Minimum INEEL Processing Alternative.

Figure 3-1*0* shows the Minimum INEEL Processing Alternative. The major facilities and projects required to implement the Minimum INEEL Processing Alternative are listed in Appendix C.6, except for the transportation projects, which are addressed in Appendix C.5. Appendix C.8 describes the Hanford Site and the activities that would be performed there treating INEEL waste.

## *3.1.6 DIRECT VITRIFICATION ALTERNATIVE*

***The Direct Vitrification Alternative is to vitrify the mixed transuranic waste/SBW and vitrify the calcine with or without separations. In addition, newly generated liquid waste could be vitrified in the same facility as the mixed transuranic waste/SBW or DOE could construct a separate facility to grout the newly generated liquid waste. DOE has identified two options for vitrification.***

***The option to vitrify the mixed transuranic waste/SBW and calcine without separations would be similar to the Early Vitrification Option. Mixed transuranic waste/SBW would be retrieved from the INTEC Tank Farm and vitrified. Calcine would be retrieved from the bin sets, vitrified, and interim stored pending disposal in a geologic repository.***

***The option to vitrify the mixed transuranic waste/SBW and vitrify the HLW fraction after calcine separations would be similar to the Full Separations Option and would be selected if it were technically and economically practical. Mixed transuranic waste/SBW would be retrieved from the INTEC Tank Farm and vitrified. The calcine would be retrieved and chemically separated into a HLW fraction and transuranic or low-level waste fractions depending on the characteristics. The HLW fraction would be vitrified and interim stored pending disposal in a geologic repository. The transuranic or low-level waste fractions would be disposed of at an appropriate disposal facility.***

***The waste vitrification facility would be designed, constructed, and operated to treat the mixed transuranic waste/SBW and the calcine. The vitrified glass waste form would be poured into stainless steel canisters for transport and disposal out of Idaho. Although the EIS assumes that treatment of the mixed transuranic waste/SBW under this alternative would not be completed until 2015, it may be possible to either complete treatment or transfer any remaining waste to RCRA-compliant tanks by December 2012 in order to meet the Notice of Noncompliance Consent Order requirement to cease use of the HLW tanks by that date. If it is technically and economically practical, chemical separations would be integrated into the INTEC vitrification facility for the treatment of calcine.***

***Figure 3-11 shows the Vitrification without Calcine Separations Option under the Direct Vitrification Alternative. Figure 3-12 shows the Vitrification with Calcine Separations Option under this alternative. The major facilities and projects required to implement the Direct Vitrification Alternative are listed in Appendix C.6, except for transportation projects, which are addressed in Appendix C.5.***

### *3.1.6.1 Mixed Transuranic Waste/ SBW Treatment*

***A program would be implemented to determine the specific vitrification technology to be used and would result in the design and construction of a facility with module(s) or unit(s) sized to treat the mixed transuranic waste/SBW and removable tank heels. DOE would cease use of the 11 tanks that comprise the INTEC Tank Farm by December 31, 2012. All mixed transuranic waste/SBW would be vitrified and placed in a road-ready form suitable for transport out of Idaho by a target date of 2035. This would satisfy the Notice of Noncompliance Consent Order (modified on August 18, 1998)***

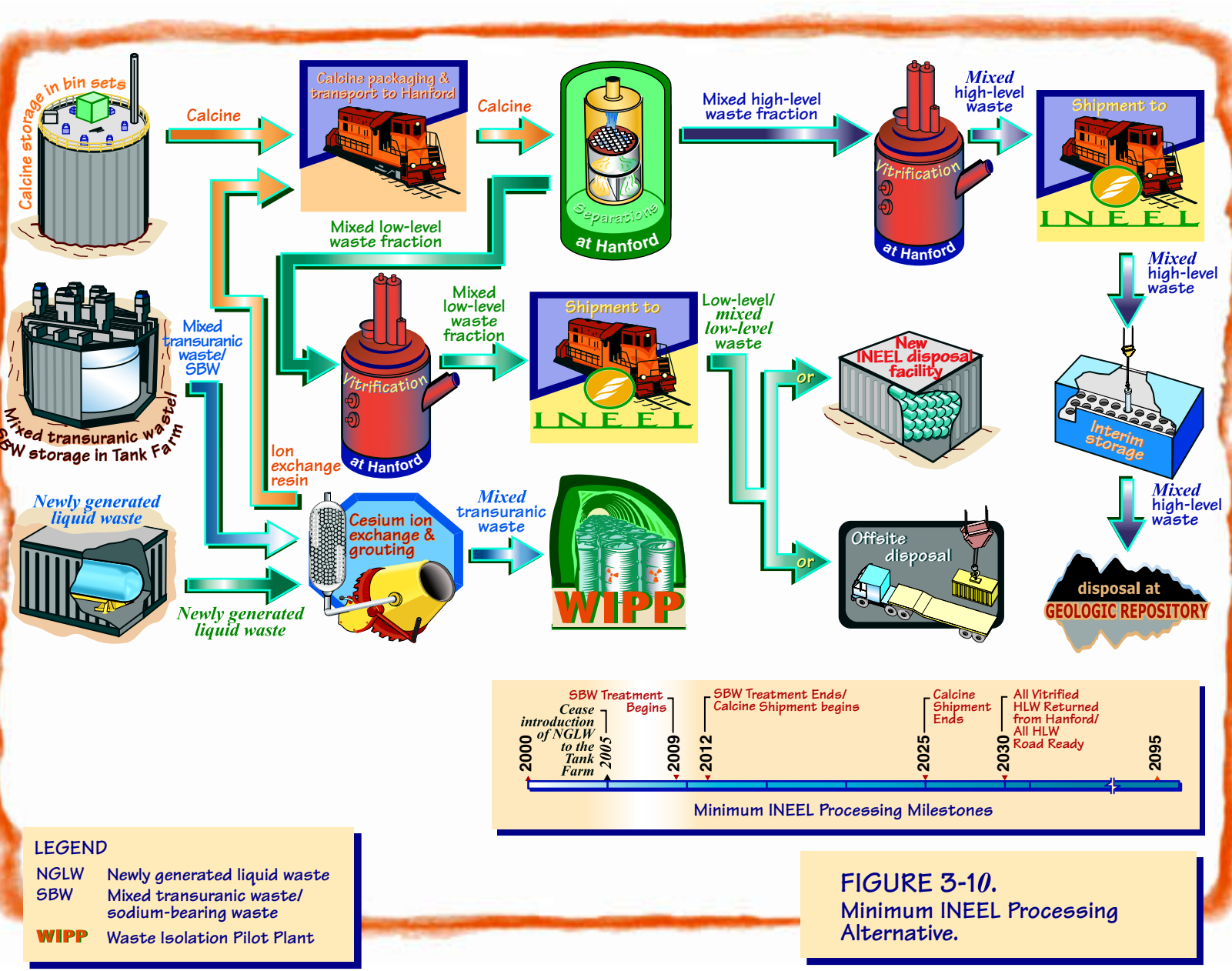


FIGURE 3-10.
Minimum INEEL Processing Alternative.

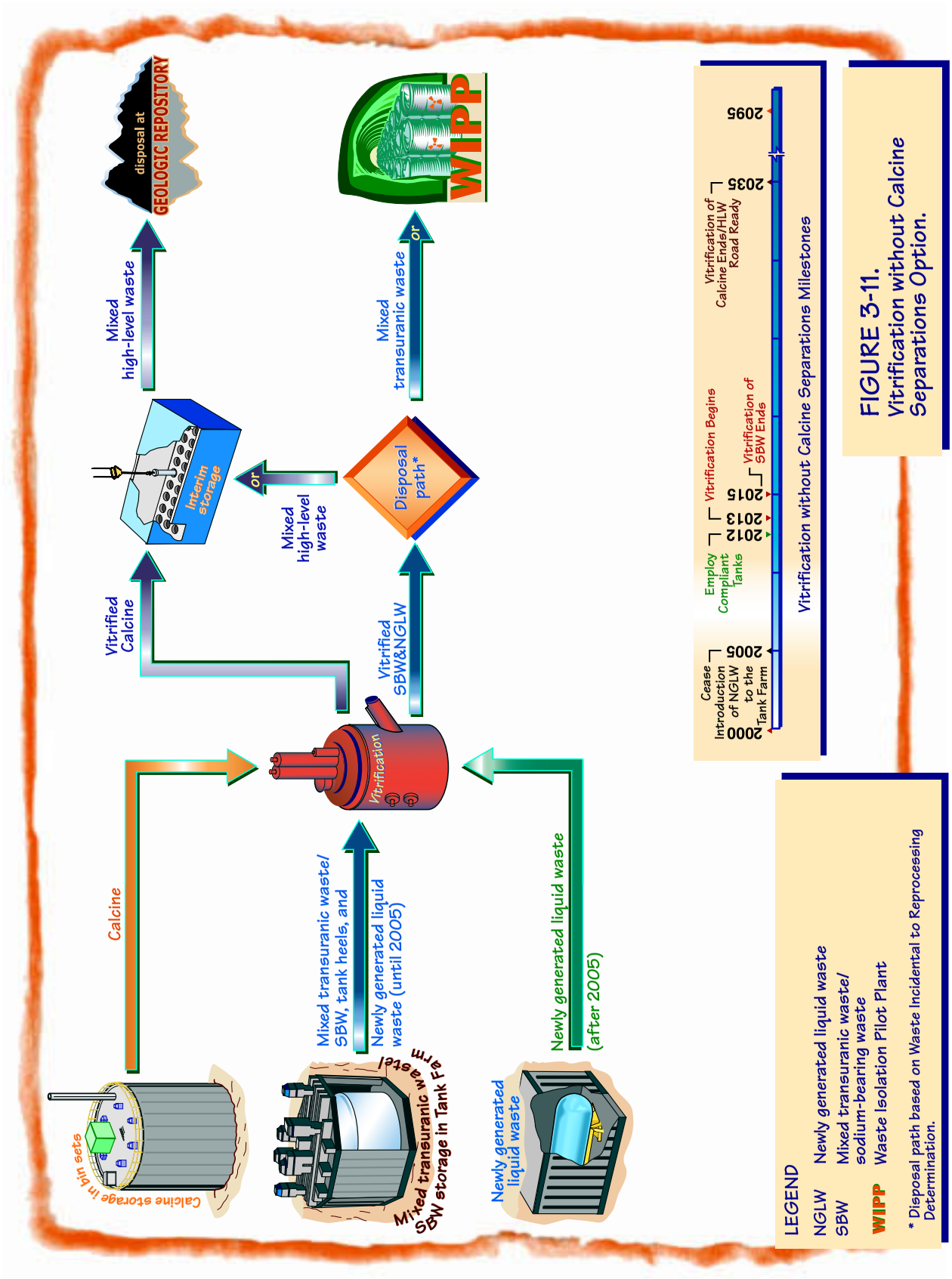


FIGURE 3-11.
Vitrification without Calcine Separations Option.

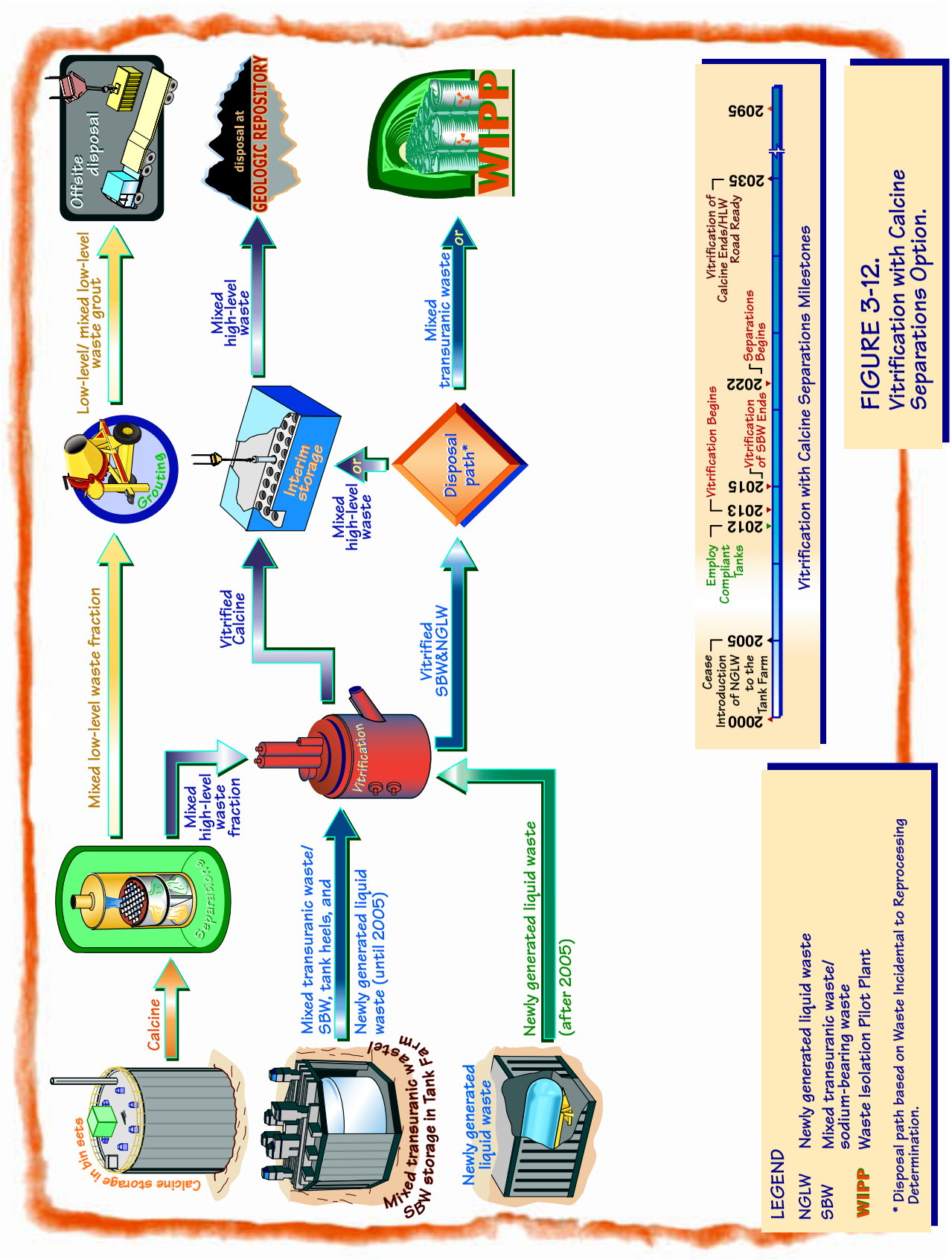


FIGURE 3-12.
Vitrification with Calcine Separations Option.

and comply with requirements of the Settlement Agreement/Consent Order.

If the waste incidental to reprocessing determination results in a decision to treat and dispose of the SBW as transuranic waste, DOE would vitrify the waste and transport it to the Waste Isolation Pilot Plant. However, if the waste incidental to reprocessing determination results in a decision to treat, store, and dispose of the SBW as HLW, then DOE would vitrify the waste and dispose of it in a geologic repository. If a repository is not immediately available, the treated HLW would be stored at INTEC in an interim storage facility until a repository was available. Chapter 5 presents the impacts associated with interim storage and transportation of the treated SBW for both possible outcomes of the waste incidental to reprocessing determination.

### 3.1.6.2 Calcine Treatment

The Direct Vitrification Alternative for calcine treatment is to retrieve the calcine presently stored in the six bin sets at INTEC, vitrify it, and place it in a form to enable compliance with the current legal requirement to have HLW road ready by a target date of 2035. Concurrent with the program to design, construct, and operate the vitrification facility for mixed transuranic waste/SBW, DOE would initiate a program to characterize the calcine, and develop methods to construct and install the necessary equipment to retrieve calcine from the bin sets. DOE would focus technology development on the feasibility and benefits of performing calcine separations as well as refine cost and engineering design. Conditioned on the outcome of future technology development and resulting treatment decisions, DOE may design and construct the appropriate calcine separations capability at INEEL.

For calcine vitrification at INEEL, the mixed transuranic waste/SBW vitrification facility could be scaled-up by a new modular addition or modification of unit(s) to accommodate calcine treatment. The size of the vitrification facility would depend on whether the entire inventory of calcine or only a separated mixed HLW fraction would need to be vitrified. Vitrified calcine or any vitrified mixed HLW fraction resulting from calcine separations would be stored in an interim storage facility to be constructed at INTEC pending transport to a storage facility or national geologic repository outside of Idaho. Alternatively, if calcine were separated at INEEL, DOE could decide to send the HLW fraction to Hanford for vitrification. DOE would evaluate the advantages of this option as the Hanford vitrification facility is being developed (see Appendix C.8 and Section 3.1.5).

If separations technologies are used, DOE would make a waste incidental to reprocessing determination under DOE Order 435.1 and Manual 435.1-1 to determine if the non-HLW fractions would be managed as transuranic waste or low-level waste. If it were determined that a waste fraction was transuranic, then it would be treated, containerized, and shipped to the Waste Isolation Pilot Plant. Low-level or mixed low-level waste fractions would be packaged and disposed of at licensed commercial facilities or at the Hanford Site or Nevada Test Site in accordance with the DOE's Record of Decision for the Final Waste Management Programmatic EIS (65 FR 10061, February 25, 2000). For purposes of the transportation analysis, DOE used the commercial radioactive waste disposal site operated by Envirocare of Utah, Inc., located 80 miles west of Salt Lake City.

### 3.1.6.3 Newly Generated Liquid Waste Treatment

After September 30, 2005, DOE intends to segregate newly generated liquid waste from the mixed transuranic waste/SBW. The post-2005 newly generated liquid waste could be vitrified in the same facility as the mixed transuranic waste/SBW or DOE could construct a separate facility to grout the newly generated liquid waste. The vitrified or grouted waste would be packaged and disposed of as low-level or transuranic waste, depending on its characteristics.

Under this alternative, DOE analyzed impacts of treating newly generated liquid waste as mixed transuranic waste/SBW (by vitrification). This was done for comparability of impacts with the other waste processing alternatives, which assumed newly generated liquid waste would be treated in the same manner as the mixed

***transuranic waste/SBW. The EIS also presents the impacts for a grout facility (see Project P2001 in Appendix C.6) that could be used to treat the waste generated after 2005. For purposes of assessing transportation impacts, DOE assumed the grouted waste would be characterized as remote-handled transuranic waste and transported to the Waste Isolation Pilot Plant for disposal (see Appendix C.5).***

## 3.2 Facility Disposition Alternatives

The waste processing alternatives described in Section 3.1 do not include any specific facility disposition ***alternatives*** except for those cases where facility disposition is an integral part of implementation of the option (e.g., disposal of low-level waste Class A or Class C type grout in the Tank Farm and bin sets). However, DOE intends to make decisions regarding disposition of HLW facilities (including existing facilities and facilities that would be constructed under the waste processing alternatives).

***The facility disposition analysis considers disposition of currently existing HLW facilities and HLW facilities that would be constructed under the waste processing alternatives. Because most INEEL HLW facilities contain RCRA wastes, the facility disposition alternatives analyzed in this EIS are consistent with RCRA closure requirements. Section 5.3 describes the impacts to the environment of facility disposition alternatives.***

Existing HLW facilities would be dispositioned under all waste processing alternatives. The facility disposition alternatives are modular in nature and can be integrated with any waste processing alternative or option. However, each waste processing alternative would result in the construction (and the need for ultimate disposition) of a different number of facilities (as described in the following section). Table 3-***1*** identifies the major facilities that would be constructed for each waste processing alternative.

### Facility Disposition

*Facility disposition would include activities performed under multiple regulatory programs to address INTEC facilities that no longer **had** a mission and **required placement** in a condition consistent with land use decisions and end-state planning for the INEEL. Some of the activities that would be encompassed by the facility disposition alternatives include:*

*Closure – Removal, decontamination, or encapsulation of hazardous and radiological contaminants from regulated facilities in accordance with applicable regulatory requirements.*

*Deactivation – Removal of potentially hazardous (non-waste) materials from the process vessels and transport systems, de-energizing power supplies, disconnecting or reloading utilities, and other actions to place the facility in an interim state that requires minimal surveillance and maintenance.*

*Decommissioning – Decontamination of facilities that have been deactivated. This may include demolition of the facility and removal of the rubble from the site or entombment by means such as collapsing the aboveground portions of the structure into its below-grade levels and capping the contaminated rubble in place or constructing containment structures around the facility.*

*The facility disposition activities are intended to reach an end state where the contamination has been removed, contained, or reduced such that the level of risk associated with the residual contamination is no longer considered a threat to human health or the environment. At that time, DOE could either reuse the facilities for new missions or transfer control of the facilities to others.*