

Direct Vitrification Alternative – This alternative would require a number of new waste management and support facilities within the developed portion of INTEC (see Table 5.2-1). The greatest number of new facilities would be associated with the Vitrification with Calcine Separations Option. Some temporary visual degradation of the cultural setting of the INEEL and adjacent lands would occur from process air emissions under the Direct Vitrification Alternative. Stack emissions from all waste processing operations would cease upon completion in 2035. Section 5.2.6, Air Resources, discusses emission levels and air impacts in greater detail. In general, increased employment would result in approximately the same number of workers employed at INTEC under this alternative as under the Separations Alternative (see Section 5.2.2). This would result in the Direct Vitrification Alternative having the highest increase in traffic. This increase, however, would be small relative to existing levels. Therefore, DOE does not expect impacts to cultural resources from the Direct Vitrification Alternative.

5.2.4 AESTHETIC AND SCENIC RESOURCES

5.2.4.1 Methodology

This section presents potential aesthetic and scenic resource impacts from implementing the proposed waste processing alternatives described in Chapter 3. DOE assessed potential impacts by reviewing project plans for the **twelve** proposed options that define the **six** alternatives to determine if (1) project activities would be likely to produce aesthetic and scenic resource changes and (2) those changes would likely result in significant impacts to the aesthetic and scenic resources of the INEEL and its adjacent lands. Because one of the alternatives (Minimum INEEL Processing) would involve shipment of calcined HLW to the Hanford Site for treatment, possible impacts to Hanford's aesthetic and scenic resources were also evaluated (see Appendix C.8). Unless otherwise noted, however, the discussion of impacts presented in this section applies specifically to the INEEL. DOE did not analyze separately the **twelve** individual options within the **six** alternatives because

there are no significant distinctions between them for the purposes of the aesthetics analysis. In order to keep the discussions clear, concise, and easy to compare, this analysis presents only the differences between the alternatives.

Most of the waste processing activities would take place inside the perimeter security fence at INTEC, an area that has been highly altered by development and dedicated to industrial use for more than 40 years. Potential impacts to aesthetic and scenic resources include (a) the addition or modification of structures and (b) the addition of construction and process emissions that could alter the view. Determination of significant visual resource degradation from new or modified structures is based on the extent of modification to the area. The definition of the degree of acceptable modification considers the nature, density, and extent of sensitive visual resources that contribute to the visual character of an area. If construction activities and ground disturbances associated with the alternative could result in a visual impact that is incompatible with the general setting and the Bureau of Land Management Visual Resource Management Class designation for the area, DOE would consider the impacts to be significant.

DOE used conservative screening-level methods to quantitatively assess impacts to visibility at Craters of the Moon National Wilderness Area, which at 27 miles *west*-southwest of INTEC is the nearest Class I area. The results (see Appendix C.2 for numerical results) indicate that predicted levels of particulate matter and oxides of nitrogen from any of the HLW processing alternatives would be well below the numerical criteria that represent a threshold for perceptible impacts. ***Additional modeling using the Park Service-recommended CALPUFF model, indicates that numerical visibility criteria (namely, a 5% change in 24-hour light extinction) could be exceeded on 8 days out of a 5-year simulation period. This would occur at Craters of the Moon under the Planning Basis Option; all other options would have less impact, and there would be no impacts on visibility at Yellowstone or Grand Teton National Parks.***

Visual resources include the natural and man-made physical features that give a particular

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landscape its character and value. There are four visual resource classes in the Bureau of Land Management inventory (BLM 1986). Classes I and II are the most valued; Class III is moderately valued; and Class IV is of least value (see Table 5.2-5). The industrialized area of INTEC has a Bureau of Land Management Visual Resource Management rating of Class IV.

Within the region of influence, potential impacts to aesthetic and visual resources include factors resulting from waste processing activities that would be detrimental to the available views, such as visibility degradation caused by air emissions from INTEC operating plants. Emissions released into the atmosphere during both the construction and operation of waste processing facilities have the potential to result in visual resource degradation by reducing contrast and causing discoloration. In particular, emissions of oxides of nitrogen and particulate matter may decrease contrast, such as that of a dark object against the horizon, and/or cause a discoloration of the sky or viewed objects. Visibility has been specifically designated as an air quality-related value under the 1977 Prevention of Significant Deterioration Amendments to the Clean Air Act.

The visual setting, particularly in the Middle Butte area located in the southern portion of the INEEL, is regarded by the Shoshone-Bannock Tribes as an important Native American visual resource. The Shoshone-Bannock Tribes would be consulted before projects were developed that could have impacts to resources of importance to the tribes.

5.2.4.2 Construction Impacts

Under the Separations and Minimum INEEL Processing Alternatives, DOE *could* choose to dispose of the low-level waste fraction onsite in a new Low-Activity Waste Disposal Facility. ***This facility is described in Section 5.2.1.3.*** The facility would be equipped with an engineered cap sloping from the center to ground level with a 4-percent grade (Kiser et al. 1998). The cap would be revegetated with selected indigenous species to minimize erosion and restore appearance. From U.S. 20, the nearest public access, the revegetated cap would blend in with the rolling topography of the area and would not be visible.

Table 5.2-5. Bureau of Land Management Visual Resource Management objectives.^a

Rating	Management objectives
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

a. Source: BLM (1986).

Construction activities under all the alternatives would produce fugitive dust that could affect visibility temporarily in localized areas; however, it would not be visible from lands adjacent to the INEEL or beyond and would not exceed the Class III objectives. Heavy equipment would produce some exhaust emissions; however, these emissions would not be expected to produce any significant visual impacts. Section 5.2.6, Air Resources, discusses emission levels in greater detail. Construction activities would be limited in duration, and DOE would follow standard best management practices (e.g., spraying or misting) to minimize both erosion and dust; therefore, DOE does not expect significant visual impacts from construction activities.

5.2.4.3 Operational Impacts

No Action Alternative – Under this alternative, a new Calcine Retrieval and Transport System would be the only new facility. The New Waste Calcining Facility calciner would be placed in standby mode *by* June 2000 (*completed May 2000*), and would not be upgraded and returned to service; therefore, no further stack emissions would occur from calcining operations. Using emission levels from calcining operations prior to June 2000 as the baseline for no impacts, this alternative would not exceed the Bureau of Land Management Visual Resource Management Class III or Class IV objectives of the INEEL or the Class I or Class II objectives of adjacent lands.

Continued Current Operations Alternative – Under this alternative, ongoing HLW management activities would continue and there would be two new facilities (see Table 5.2-1). Section 5.2.6, Air Resources, discusses in greater detail emissions associated with on-going HLW management activities at INTEC. Maximum Achievable Control Technology upgrades to the calciner as well as abatement devices on other processing equipment would reduce emissions affecting visibility. These improvements could be partially offset by an increase in visibility related emissions from fuel-burning steam generator equipment, but no perceptible change in the visual resource is expected to occur.

Separations Alternative – This alternative would have the highest number of new facilities (see Table 5.2-1). The dimensions of the new facilities would not significantly exceed the dimensions of the existing facilities. New emissions stacks, if any, are not expected to exceed the height of the existing INTEC main stack.

Stack emissions would result from operation of an offgas treatment process and a Separations Organic Incinerator. These emissions would be limited to the requirements set by their respective permits. Section 5.2.6, Air Resources, discusses emission levels in greater detail. New facilities and emissions resulting from implementation of this alternative would not exceed the Bureau of Land Management Visual Resource Management Class III or Class IV objectives of the INEEL or the Class I or Class II objectives of adjacent lands.

Non-Separations Alternative – This alternative would have the second highest number of new facilities (see Table 5.2-1). The new facilities would not significantly exceed the dimensions of the existing facilities. New emissions stacks, if any, are not expected to exceed the height of the existing INTEC main stack. Stack emissions would result from operation of the waste immobilization plant. These emissions would be limited to the requirements set by their respective permits. Section 5.2.6, Air Resources, discusses emission levels in greater detail. New facilities and emissions resulting from implementation of this alternative would not exceed the Bureau of Land Management Visual Resource Management Class III or Class IV objectives of the INEEL, or the Class I or Class II objectives of adjacent lands.

Minimum INEEL Processing Alternative – This alternative would have approximately the same number of new facilities as the Non-Separations Alternative (see Table 5.2-1). The new facilities would not significantly exceed the dimensions of the existing facilities. New emissions stacks, if any, are not expected to exceed the height of the existing calciner stack. Stack emissions would result from operation of the new facilities. These emissions would be limited to the requirements set by the facility permit. Section 5.2.6, Air Resources, discusses emission levels in greater detail. New facilities and emissions resulting

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from implementation of this alternative would not exceed the Bureau of Land Management Visual Resource Management Class III or Class IV objectives of the INEEL, or the Class I or Class II objectives of adjacent lands. In addition, two new facilities could be built within the 200-East Area of the Hanford Site. The dimensions of the new facilities, including stacks, would not exceed the dimensions of the existing 200-East Area facilities.

Direct Vitrification Alternative – *The Vitrification with Calcine Separations Option would have a number of new facilities similar to the Separations Alternative (see Table 5.2-1). The dimensions of the new facilities would be of the same relative size and scale as the existing facilities. New emission stacks, if any, are not expected to exceed the height of the existing INTEC main stack.*

Under this alternative, stack emissions would result from operations associated with the vitrification facility. These emissions would be limited to the requirements set by their respective permits. Section 5.2.6, Air Resources, discusses emission levels and air impacts in greater detail. New facilities and emissions resulting from implementation of this alternative would not exceed the Bureau of Land Management Visual Resource Management Class III or Class IV objectives of the INEEL or the Class I or Class II visual resource objectives of adjacent lands.

5.2.5 GEOLOGY AND SOILS

This section presents potential impacts to geological resources from implementing the proposed waste processing alternatives described in Chapter 3. Potential impacts were assessed by reviewing project plans for the *twelve* proposed options to determine impacts to geologic resources and soils. Potential impacts to the Snake River Plain Aquifer, a unique hydrogeological resource, are discussed in Section 5.2.7. Because the Minimum INEEL Processing *Alternative* involves shipment of mixed HLW to the Hanford Site for treatment, possible impacts to geological resources at Hanford were also

evaluated (see Appendix C.8). Unless otherwise noted, the discussion of impacts presented in this section specifically applies to INEEL.

Most of the waste processing activities would take place inside the perimeter fence at INTEC, an area that has been dedicated to industrial use for more than 40 years. Table 5.2-1 of Section 5.2.1 lists new facilities that would be built inside and outside of the INTEC perimeter fence and acreage of new areas that would be disturbed. No mineral deposits or unique geologic resources have been found in the INTEC area (see Section 4.6.2); therefore, no impacts are expected to these resources under any of the alternatives. Most of the impacts to soils are expected to be associated with construction activities (e.g., excavating, earthmoving, and grading). Waste management facilities would be designed with safeguards to minimize operational impacts (e.g., spills of toxic substances) to soils. Consequently, no operational impacts are discussed.

Potential seismic activity was discussed in Section 4.6.3. Potential impacts to HLW facilities from seismic events and volcanism are evaluated in Section 5.2.14, Facility Accidents, and thus are not discussed further in this section.

5.2.5.1 No Action

Under this alternative, DOE would build a Calcine Retrieval and Transport System to move calcine from bin set 1 to bin set 6 or 7. No other new facilities would be required; therefore, there would be minimal impact to soils and no impact to geologic resources.

5.2.5.2 Continued Current Operations Alternative

Under this alternative, current HLW processing activities would continue, and several INTEC facilities, including the New Waste Calcining Facility, would be upgraded or expanded. DOE would build a Newly Generated Liquid Waste Treatment Facility and a Calcine Retrieval and Transport System to move calcine from bin set 1