4.6.2 LONG-TERM STORAGE ALTERNATIVES

Tables 4.6.2–1 through 4.6.2–6 present the maximum requirements for key environmental resources. The following paragraphs discuss the unique impacts related to each alternative evaluated.

Table 4.6.2–1. Maximum Incremental Direct Employment Over No Action Generated During Operation at Each Candidate Site

Site	Total Site Employment in 2005	Upgrade	Consolidation	Collocation
Hanford	14,586	252[a]	443	572
NTS	3,800	NA	527[b]	641[b]
INEL	6,911	116[a]	432	561
Pantex	3,559	90[c]	509[b]	601
ORR	18,010	111	[d]	566[e]
SRS	16,562	30[f]	485	614

[a] Upgrade with RFETS and LANL material.
[b] Construct new and modify existing facilities.
[c] Upgrade with RFETS and LANL materials. Actual number of employees during operation could be higher.
[d] Since HEU is currently stored at ORR, the Consolidation and Collocation Alternatives would be the same.
[e] Construct new Pu and HEU facilities.
[f] Workers would be supplied from existing workforce.
Note: NA=not applicable.

Table 4.6.2–2. Maximum Annual Net Incremental Water Usage Over No Action During Operation at Each Candidate Site

Site	Water Usage in 2005 (MLY)	Upgrade (MLY)	Consolidation (MLY)	Collocation (MLY)
Hanford	195	8.9[a]	110	150
NTS	2,400	NA	130[b]	190[b]
INEL	7,570	22[a]	66	87
Pantex	249	110[a]	110[c]	130
ORR	14,760	0.24	[d]	360[e]
SRS	13,247	7.1[a]	360	460

[a] Upgrade with RFETS and LANL material.
[b] Modify P-Tunnel.
[c] Construct new and modify existing facilities.
[d] Since HEU is currently stored at ORR, the Consolidation and Collocation Alternatives would be the same.
[e] Construct new Pu and HEU facilities.
Note: NA=not applicable.

Table 4.6.2–3. Maximum Annual Net Incremental Volume of Solid Low-Level Waste Generated Over No Action During Operation at Each Candidate Site

Site	Water Generation in 2005 (m^3)	Upgrade (m^3)	Consolidation (m^3)	Collocation (m^3)
Hanford	3,390	89[a]	1,260	1,300
NTS	15,000	NA	1,260	1,300
INEL	7,200	500[a]	1,260	1,300
Pantex	32	1,260[a]	1,260	1,300
ORR	7,320	3	[b]	1,300[c]
SRS	16,400	0[a]	1,220[d]	1,260[d]

[a] Upgrade with RFETS and LANL material.
[b] Since HEU is currently at ORR, the Consolidation and Collocation Alternatives would be the same.
[c] Construct new Pu and HEU facilities.
[d] Net waste from new facility and from phaseout of existing facility.
Note: NA=not applicable.

Table 4.6.2–4. Maximum Annual Net Incremental Volume of Solid Transuranic Waste Generated Over No Action During Operation at Each Candidate Site

Site	Water Generation in 2005 (m^3)	Upgrade (m^3)	Consolidation (m^3)	Collocation (m^3)
Hanford	271	21[a]	10	10
NTS	0	NA	10	10
INEL	3.5	2[a]	10	10
Pantex	0	10[a]	10	10
ORR	119	0	[b]	10
SRS	338	0	2[c]	2[c]

[a] Upgrade with RFETS and LANL material.
[b] Since HEU is currently stored at ORR, the Consolidation and Collocation Alternatives would be the same.
[c] Net waste from new facility and phaseout of existing facility.
Note: NA=not applicable.

Table 4.6.2–5. Maximum Annual Net Incremental Volume of Solid Hazardous Waste Generated Over No Action During Operation at Each Candidate Site

Site	Water Generation in 2005 (m^3)	Upgrade (m^3)	Consolidation (m^3)	Collocation (m^3)
Hanford	560	4	2	2
NTS	212	NA	2	2
INEL	1,200	1	2	2
Pantex	31	2[a]	2	2
ORR	26	0.8[b]	[c]	2
SRS	15,100	0.8[a]	2	2

[a] Upgrade with RFETS and LANL material.
[b] Solid hazardous material includes mixed low-level waste at ORR.
[c] Since HEU is currently stored at ORR, the Consolidation and Collocation Alternatives would be the same.
Note: NA=not applicable.

Table 4.6.2–6. Maximum Latent Cancer Fatalities Over No Action for Maximally Exposed Individual for 50 Years From Normal Operation

Site	Risk of Fatal Cancer in 2005	Upgrade	Consolidation	Collocation
Hanford	1.0×10^{-8}	4.5×10^{-11}	6.2×10^{-11}	6.2×10^{-11}
NTS	1.0×10^{-7}	NA	1.4×10^{-10}	1.4×10^{-10}
INEL	4.4×10^{-7}	1.3×10^{-11}	4.0×10^{-11}	4.0×10^{-11}
Pantex	1.5×10^{-9}	4.5×10^{-13}	2.4×10^{-10}	2.4×10^{-10}
ORR	3.5×10^{-8}	5.5×10^{-13}	[a]	1.1×10^{-9}
SRS	2.0×10^{-5}	2.1×10^{-10}	3.5×10^{-10}	3.5×10^{-10}

[a] Since HEU is currently stored at ORR, the Consolidation and Collocation Alternatives would be the same.
Note: NA=not applicable.

4.6.2.1 *No Action*

The No Action Alternative, which would continue existing storage practices, would have no or negligible impacts to land resources at all of the DOE sites under consideration. Land use would conform with existing land-use plans, policies, and controls, and the landscape character would remain compatible. The No Action Alternative would not affect site infrastructure and waste management facilities beyond the normal, scheduled maintenance, repair, and upgrades. Most of the DOE sites under consideration are operating at or below their respective site infrastructure and waste management capacities.

Air emissions from continuing operations would continue to affect local air quality, but the sites are expected to continue to comply with the ambient air quality standards and guidelines. Noise emissions from ongoing operations are consistent with the land-use categories and do not violate any existing local government noise standards. Geology and soils are not being affected by ongoing operations.

Biological resources and cultural and paleontological resources would experience no or negligible impacts from the No Action Alternative. Most industrial areas of the DOE sites have already been heavily disturbed, so existing storage practices are not causing any further disturbance of cultural and paleontological resources or terrestrial plant communities. Any wildlife still inhabiting the area, including any threatened and endangered or other special status species, have adjusted to the existing environment, and continuing operations are unlikely to have any additional impacts. Under the No Action Alternative, surplus fissile materials would stay in place, so there would be no impact from intersite transportation. Due to ongoing changes in workforce size, the No Action Alternative could continue to generate employment impacts to the local communities surrounding the DOE sites under consideration.

[Text deleted.]

Impacts to water resources at Pantex result from the continued local drawdown of the Ogallala Aquifer, one of the largest aquifers in the western United States. By 2005, changes in activities and improvements in operation that will reduce Pantex's contribution to this drawdown are expected to decrease drawdown by approximately 70 percent from current levels. Neither surface nor groundwater resources at the other DOE sites would be affected.

4.6.2.2 Upgrade

The Upgrade Alternative does not apply to NTS, RFETS or LANL. The implementation of the Upgrade Alternative would have no or negligible additional impacts to land resources, biological resources, and waste management at any of the remaining DOE sites under consideration. [Text deleted.]

The Upgrade Alternative would have the potential for additional impacts to air quality at Hanford (both options), INEL, Pantex, and SRS, because air pollutant concentrations would increase during construction and operations. Projected emissions would be lower at ORR. At all sites, projected emissions for both criteria and hazardous pollutants would not exceed, and would comply with ambient air quality standards and NESHAPS during both construction and operations. Cultural and paleontological resources at candidate DOE sites could be affected wherever there is ground disturbance due to construction activities, except at Hanford under the modification of existing facilities option, and at Pantex, where construction would be within an area that was previously disturbed. Operation of facilities may have some effect on Native American resources at Hanford, INEL, and SRS. Soil resources would be affected at DOE sites under consideration wherever ground disturbance due to construction activities occurs. Implementation of the Upgrade Alternative would have no or negligible impacts to geologic resources.

[Text deleted.]

Because of the continued depletion of the Ogallala Aquifer, water resources would be affected at Pantex. Either Upgrade Alternative (with or without RFETS and LANL material) would require additional water for construction and operation. However, this additional use, factored in with the projected decrease under No Action, would result in an overall decrease in water use at Pantex. Surface and groundwater resources at the other DOE sites would be adequate to meet the additional water requirements for this alternative.

4.6.2.3 Consolidation

Under this alternative, there could be a temporary decrease in level of service on one or more local roads at INEL during construction. [Text deleted.] Air quality could potentially be affected at all DOE sites by construction and operations activities that would increase emissions, especially PM_{10} and TSP. The sites are expected to comply with ambient air quality standards and guidelines. At all of the DOE sites under consideration, cultural and paleontological resources could be affected wherever there is ground disturbance due to construction activities. Additionally, some Native American resources may be affected by facility operations at Hanford, NTS, INEL, Pantex, and SRS.

[Text deleted.]

The Consolidation Alternative would generate potential impacts on the following: land use at NTS under the P-Tunnel modification option; soil resources at all DOE sites considered; water resources at Pantex (both options); biological resources at Hanford, NTS under the new facility construction option, INEL, Pantex (both options), and SRS; and waste management at all sites. Land resources at NTS under the P-Tunnel modification option could have impacts on weapons effects testing ability. [Text deleted.]

At all of the DOE sites under consideration, soil resources would be affected by ground disturbance associated with construction activities. Because of the continued depletion of the Ogallala Aquifer, water resources would be affected at Pantex. This alternative would require an additional 110 million l/yr (29.1 million gal/yr). However, this additional use, factored in with the projected decrease under No Action, would result in an overall decrease in water use of 57 percent by 2005. Surface and groundwater resources at the other DOE sites would not be affected by this alternative.

With the exception of NTS (under the P-Tunnel modification option) and Pantex, where no or negligible impacts would occur, biological resources would experience impacts under the Consolidation Alternative at all of the DOE sites. There would be habitat loss, and some reptiles and small mammals would not be expected to survive the ground disturbance associated with construction activities. In addition, the potential exists for impacts to either federally or State-listed threatened and endangered or special status species at Hanford, NTS (under the new facility construction option), INEL, and SRS. There could be impacts to playa wetlands at Pantex (both

options). Impacts to waste management would occur at NTS (both options) and INEL where construction of utility and process wastewater treatment systems for nonhazardous liquid wastes would be required. In addition, NTS would require new sanitary lagoons.

4.6.2.4 Collocation

Under the Collocation Alternative, the level of service on one or more local roads would increase during construction at INEL, Pantex, and ORR (all three options). [Text deleted.] The potential for impacts to air quality would occur at all of the DOE sites due to increased levels of PM_{10} and TSP emissions from construction and operation activities. The sites are expected to comply with ambient air quality standards and guidelines. Cultural and paleontological resources at all candidate sites could potentially be affected wherever there is ground disturbance due to construction activities at all of the DOE sites under consideration. Operation could potentially affect Native American resources at all sites.

[Text deleted.]

The Collocation Alternative would cause impacts to the following: land resources at NTS (under the P-Tunnel modification option) and ORR (all three options); soil resources at all DOE sites; water resources at Pantex; biological resources at all DOE sites except Pantex; and waste management at Hanford, NTS (both options), and INEL. Land use at NTS under the P-Tunnel modification option could have impacts on weapons effects testing ability. [Text deleted.] At ORR, construction and operation of the proposed sites for all three options could result in visual impacts to Bear Creek Road and Route 95 sensitive viewpoints and could cause the VRM classifications to change from Class 4 to Class 5.

At all of the DOE sites under consideration, soil resources would be affected by ground disturbance associated with construction activities. Because of the continued depletion of the Ogallala Aquifer, water resources would be affected at Pantex. This alternative would require an additional 130 million l/yr (34.3 million gal/yr). However, this additional use, factored in with the projected decrease under No Action, would result in an overall decrease in water use of 55 percent by 2005. Surface and groundwater resources at the other DOE sites would not be affected by this alternative.

With the exception of NTS (under the P-Tunnel modification option) and Pantex, where no or negligible impacts would occur, biological resources at all of the DOE sites would experience impacts under the Collocation Alternative. There would be habitat loss, and some reptiles and small mammals would not be expected to survive the ground disturbance associated with construction activities. In addition, the potential exists for impacts to either federally or State-listed threatened and endangered or special status species at, Hanford, NTS (under the new facility construction option), INEL, ORR, and SRS. There could be impacts to wetlands and aquatic resources at Pantex and ORR (all three options) from sediment runoff during construction.

Implementation of this alternative would require construction of sanitary, utility, and process wastewater treatment systems to treat nonhazardous liquid wastes at Hanford and at NTS under the new facility construction option. Under the P-Tunnel modification option at NTS, expansion of the Area 12 sanitary wastewater treatment facility would be required to treat liquid nonhazardous waste. Construction of utility and process wastewater treatment systems to treat nonhazardous liquid wastes would be required at INEL.

4.6.2.5 Subalternative Not Including Strategic Reserve and Weapons Research and Development Materials

If the strategic reserve and weapons R&D materials are not included, the incremental impacts would remain the same for some resources because the building would be approximately the same (for example, land, geology, cultural). For other resources the change would be minimal because there would be a slight decrease if the strategic reserve is not included (for example, radiological releases to the public). Other impacts are proportional to the amount of material being stored.

4.6.2.6 Phaseout

For both the Consolidation and Collocation Alternatives, storage of existing Pu and HEU materials at various sites would be phased out. In addition, storage of existing Pu and HEU materials would be phased out at LANL and RFETS as a result of some of the Upgrade Alternatives. Phaseout would have no or negligible impacts for all environmental resource and issue areas except cultural resources at all DOE sites other than Pantex, and public and occupational health and safety at all DOE sites. The impacts of intersite transportation are addressed under the Consolidation and Collocation Alternatives. For all DOE sites, with the exception of Pantex, phaseout could potentially affect cultural resources if any of the structures eligible for NRHP listing are modified or are not maintained. Currently, none of the affected structures in Zone 4 at Pantex are considered eligible for NRHP listing. All of the regional economic areas surrounding the affected DOE sites would experience a loss in employment with phaseout. However, compared to the total employment in these areas, the loss of jobs would be small and would have no or negligible impacts.

[Text deleted.] Phaseout of existing Pu storage facilities would reduce the impacts from radiological and chemical releases and exposures to levels slightly below the No Action levels for normal operations. All workers involved in the transfer of the Pu would be monitored to ensure that their doses remain within acceptable levels. However, the radiological dose to onsite workers and the public would be within radiological limits. The health risk to the public and onsite workers would be within hazardous chemical regulatory levels. However, there would be a potential for accidents during the phaseout process from Pu handling, packaging, and transportation that could affect workers and the public. These potential accidents and their consequences have been included in the intersite transportation analysis. As mentioned in the No Action Alternative, only under unusual wind conditions at SRS would low income and minority populations have the potential to be disproportionately affected by an accidental release. Potential intersite transportation impacts related to all DOE sites could occur because of the increased risk of traffic accident fatalities.

For air quality, there could be some short-term impacts resulting from handling and shipping operations, but overall, the elimination of storage alternatives is not expected to result in any long-term impacts.

[Text deleted.]

4.6.3 DISPOSITION ALTERNATIVES

[Text deleted.]

Table 4.6.3–1 represents the incremental impacts to key environmental resources for the activities common to disposition alternatives. Table 4.6.3–2 represents the incremental impacts to the same resources for each individual disposition alternative.