4.3.5.1.10 *Waste Management*

This section summarizes the impacts for the construction and operation of a MOX fuel fabrication facility. There is no spent nuclear fuel or HLW associated with a MOX fuel fabrication facility. Table 4.3.5.1.10–1 provides the estimated operational waste volumes projected to be generated at the DOE sites analyzed and a generic site as a result of the MOX fuel fabrication facility. Facilities that would support the MOX fuel fabrication facility would treat and package all generated waste into forms that would enable long-term storage and/or disposal in accordance with the regulatory requirements of RCRA and other applicable statutes. Depending in part on decisions in waste-type-specific RODs for the Waste Management PEIS, wastes at DOE sites could be treated, and depending on the type of waste, disposed of onsite or at regionalized or centralized DOE sites. For the purposes of analyses only, this PEIS assumes that TRU and mixed TRU waste would treated onsite to the current planning-basis WIPP WAC, and shipped to WIPP for disposal. This PEIS also assumes that LLW, mixed LLW, hazardous, and nonhazardous waste would be treated and disposed on in accordance with current site practice. The projected incremental waste volumes generated from a MOX fuel fabrication facility and the resultant waste effluent that was used for the waste impact analysis can be found in Section E.3.2.3. A detailed description of the waste management activities that would be required to support the MOX fuel fabrication facility can also be found in Section E.3.2.3.

Construction and operation of a MOX fuel fabrication facility would impact existing waste management activities at each of the DOE sites analyzed and a generic commercial site, increasing the generation of TRU, low-level, mixed, hazardous, and nonhazardous wastes. Waste generated during construction would consist of wastewater, and solid nonhazardous and liquid hazardous wastes. The nonhazardous wastes would be disposed of as part of the construction project by the contractor, and the hazardous wastes would be shipped to commercial RCRA-permitted treatment and disposal facilities. No soil contaminated with hazardous or radioactive constituents is expected to be generated during construction. However, if any contaminated soil is generated it would be managed in accordance with site practice and all applicable Federal and State regulations.

Transuranic and mixed TRU wastes would be generated from Pu oxide purification, fuel fabrication, and material recycle. Following treatment and volume reduction, approximately 306 m^3 (400 yd^3) of TRU and 4 m^3 (5 yd^3) mixed TRU wastes consisting of filters, resins, job control waste, process equipment, and sweepings would require treatment and packaging to meet the current planning-basis WIPP WAC. This waste would be treated and packaged in a facility constructed with the MOX plant at ORR, NTS, Pantex, and the commercial MOX facility, or in an expanded central facility at the Hanford, INEL, or SRS sites. This waste would also require storage facilities where it could be staged until it would be shipped to WIPP or an alternate facility for disposal. To transport TRU waste to WIPP or an alternate facility, 36 additional truck shipments per year or, if applicable, 18 regular train shipments or 6 dedicated train shipments per year would be required.

All the sites analyzed have facilities to handle LLW. The approximately 153 m^3 (200 yd^3) of LLW generated in materials purification, uranium and Pu oxide processing and preparation, and rod pressing and processing would consist of contaminated job control waste, filters, and process equipment. This waste quantity is small in comparison to the No Action waste volumes disposed of at Hanford, INEL, NTS, ORR, and SRS. Using the land usage factors from Section E.1.4, the area required for LLW disposal would be 0.05 ha/yr (0.1 acre/yr) at Hanford and ORR, 0.03 ha/yr (0.06 acre/yr) at INEL and NTS, and 0.02 ha/yr (0.04 acre/yr) at SRS. Pantex and the generic commercial MOX facility would require nine LLW shipments per year to NTS or a commercial disposal facility, respectively. A commercial LLW disposal facility would require approximately 0.01 ha/yr (0.02 acre/yr) to dispose of this waste. For DOE sites, the ultimate disposal of LLW will be in accordance with the ROD(s) from the Waste Management PEIS.

Less than 1 m^3 (200 gal) of liquid and 38 m^3 (50 yd^3) of solid mixed LLW is estimated to be generated in the MOX fuel fabrication facility. Mixed LLW would consist of radioactively-contaminated solvents, lead, and scintillation vials. All the sites analyzed have the capacity to treat mixed LLW. [Text deleted.] Mixed LLW

Table 4.3.5.1.10–1. Estimated Annual Generated Waste Volumes for the Mixed Oxide Fuel Fabrication Facility[a]

Category	New Facility (m^3)	Hanford No Action (m^3)	NTS No Action (m^3)	INEL No Action (m^3)	Pantex No Action (m^3)	ORR No Action (m^3)	SRS No Action (m^3)	Generic Site No Action (m^3)
Transuranic								
Liquid	0	None	None	None	None	None	None	None
Solid	306	271	None	3.5	None	119	338	None
Mixed Transuranic								
Liquid	0	None	None	None	None	None	None	None
Solid	4	98	None	Included in TRU	None	None	Included in TRU	None
Low-Level								
Liquid	4[b]	None	Dependent on restoration activities	None	8	2,970	74,000	4
Solid	153	3,390	15,000	7,200	32	7,320	16,400	41
Mixed Low-Level								
Liquid	0.8	3,760	None	4	4	87,600	1,330	0.8
Solid	38	1,505	50	170	46	432	7,700	2
Hazardous								
Liquid	4	Included in solid	Included in solid	Included in solid	2	6,460	1,260	4
Solid	153	560	212	1,200	31	26	15,100	153
Nonhazardous (Sanitary)								
Liquid	43,300	414,000	Not reported separately; included in solid	Not reported separately; included in solid	141,000	550,000	703,000	6,910
Solid	76	5,107	2,120	52,000	339	53,100	61,200	246
Nonhazardous (Other)								
Liquid	227	Included in sanitary	None	None	Included in sanitary	650,000	Included in sanitary	264
Solid	84[c]	Included in sanitary	76,500	Included in sanitary	Included in sanitary	321	Included in sanitary	84[c]

[a] The No Action volumes are from Tables 4.2.1.10–1, 4.2.2.10–1, 4.2.3.10–1, 4.2.4.10–1, 4.2.5.10–1, and 4.2.6.10–1, and Section 3.10.10. Incremental waste generation volumes for MOX Fuel Fabrication facility are from Table E.3.2.3–1. Waste effluent volumes (that is, after treatment and volume reduction) that are used in the narrative description of the impacts are also provided in Table E.3.2.3–1.

[b] Liquid LLW would be treated and solidified prior to disposal.

[c] Includes recyclable wastes.

would be managed in accordance with the Tri-Party Agreement for Hanford, and the respective site treatment plans that were developed to comply with the *Federal Facility Compliance Act* for the remainder of the DOE sites. Mixed LLW would be managed in accordance with the NRC license conditions and other applicable requirements for the generic commercial site.

Approximately 4 m^3 (1,000 gal) of liquid and 153 m^3 (200 yd^3) of solid hazardous waste would be generated in the MOX fuel fabrication facility from the use of chemical and organic lubricants, coolants, solvents, and paints. Accommodation in existing facilities is feasible at Hanford, INEL, and ORR, though expansion may be required. Additional RCRA-permitted staging facilities would be required at NTS, Pantex, SRS, and the generic facility, where the hazardous waste would be stored pending onsite or offsite treatment at a RCRA-permitted facility.

Approximately 43,500 m^3 (11.5 million gal) of liquid nonhazardous sanitary, industrial, and other wastewater would require treatment in accordance with site practice and discharge permits. This waste would require a separate treatment facility at Hanford, INEL, and NTS, since these sites do not have centralized nonhazardous wastewater treatment facilities. At ORR, Pantex, and SRS, the plant or central wastewater facilities have the capacity to accommodate this increased flow. The generic MOX fuel fabrication facility may require expansion of the wastewater treatment facilities to handle this flow, or it may be possible to accommodate the increase in a public treatment facility. The approximately 76 m^3 (100 yd^3) of solid sanitary and industrial nonhazardous waste, and 84 m^3 (110 yd^3) of other nonhazardous waste generated by the MOX fuel fabrication facility is a small fraction of the solid nonhazardous wastes normally handled at any of the sites analyzed for this action, and would be recycled or shipped to onsite or offsite disposal facilities in accordance with site-specific practice.